APPENDIX E
Water Quality Management Plan

Water Quality Management Plan (WQMP)

Project Name:

Rancho San Clemente Tennis Club

111 Avenida Vista Montana

Lot F, Tract 12124

Prepared for:

LTF Real Estate Company, Inc.

2902 Corporate Place

Chanhassen, MN 55317

APN: 688-101-03

JN 15575

Prepared by:

Toal Engineering, Inc.

Engineer: <u>**Caleb O. Rios**</u> **Registration No.:** <u>**57587**</u>

139 Avenida Navarro

San Clemente, CA 92672

Tel: (949) 492-8586

Prepared on:

11/15/2016

Template Prepared:

December 20, 2013

Project Owner's Certification

Permit/Application No.		Grading Permit No.	
Tract/Parcel Map No.	Tract 12124, Lot F	Building Permit No.	
CUP, SUP, and/or APN (Specify Lot Numbers if Portions of Tract)			688-101-03

This Water Quality Management Plan (WQMP) has been prepared for LTF Real Estate Company, Inc. by Toal Engineering, Inc. The WQMP is intended to comply with the requirements of the local NPDES Stormwater Program requiring the preparation of the plan.

The undersigned, while it owns the subject property, is responsible for the implementation of the provisions of this plan and will ensure that this plan is amended as appropriate to reflect up-to-date conditions on the site consistent with the current Orange County Drainage Area Management Plan (DAMP) and the intent of the non-point source NPDES Permit for Waste Discharge Requirements for the County of Orange, Orange County Flood Control District and the incorporated Cities of Orange County within the San Diego Region (South Orange County).. Once the undersigned transfers its interest in the property, its successors-in-interest shall bear the aforementioned responsibility to implement and amend the WQMP. An appropriate number of approved and signed copies of this document shall be available on the subject site in perpetuity.

Owner:			
Title	Justin Schmidt, P.E.		
Company	LTF Real Estate Company, Inc.		
Address	2902 Corporate Place, Chanhassen, MN 55317		
Email	JSchmidt@lifetimefitness.com		
Telephone #	952-947-0000		
Signature		Date	

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Attachments

Section I Discretionary Permit(s) and Water Quality Conditions

Project Infomation

Permit/Application No.	_____	Tract/Parcel Map No.	Parcel A, LLA 2006-223
Additional Information/ Comments:			

Water Quality Conditions

Water Quality Conditions (list verbatim)	Per the Model WQMP for South Orange County (dated December 20, 2013), this development project meets the following criteria: 6. Parking lots 5,000 square feet or more, or parking lots with 15 parking spaces or more, including associated drive aisle, and potentially exposed to urban stormwater runoff. A parking lot is defined as land area or facility for the temporary parking or storage of motor vehicles used personally, for business, or for commerce. 8. Those redevelopment projects that create, add, or replace at least 5,000 square feet of impervious surface on an already developed site and the existing development or redevelopment project falls under another Priority Development Project Category. Where redevelopment results in the addition or replacement of less than 50 percent of the impervious surfaces of a previously existing development site, and the existing development was not subject to WQMP requirements, the numeric sizing criteria discussed below only applies to the addition or replacement, and not the entire development. Where redevelopment results in an addition or replacement of more than 50 percent of the impervious surfaces, the Project WQMP requirements apply to the entire development. 10. Effective December 16, 2012, all pollutant generating development or redevelopment projects that result in the disturbance of one acre or more of land are considered a Priority Development Project. This category of Priority Development Project is <u>in addition</u> to those categories described above.

Watershed-Based Plan Conditions

Provide applicable conditions from watershed - based plans including TMDLS.	The site is located within the San Clemente Coastal Streams Watershed. Per the 2013 San Clemente Coastal Streams Watershed Workplan, the Pacific Ocean Shoreline at North Beach is 303(d) listed for Indicator Bacteria and the Segunda Deshecha Creek is impaired for Toxicity, Phosphorus, and Turbidity. The Pacific Ocean Shoreline at North Beach is under an active TMDL per the current NPDES MS4 Regional Permit.

Section II Project Description

II.1 Project Description

Description of Proposed Project

Development Category (Verbatim from WQMP):	Redevelopment project with more than 5,000 square feet of impervious surface, more than 5,000 square feet of parking lot improvements, and a total disturbed area greater than 1 acre. See category descriptions in Section I of this WQMP under Water Quality Conditions.			
Project Area (ft^2): **179,900**	Number of Dwelling Units: **N/A**		SIC Code: **7991 & 7997**	
Narrative Project Description:	The project consists of: 1) demolition of the existing tennis club building, swimming pool, driveway, basketball court, four (4) tennis courts, and miscellaneous hardscape and softscape on the upper pad; 2) construction of a new tennis club building, driveway, parking lot, swimming pool, and miscellaneous hardscape and softscape improvements; 3) replacement of the walkways interconnecting the existing tennis court buildings; and 4) preservation of the existing improvements and landscaping outside of the project area. Total Site Area: 10.39 acres (452,709 sq. ft.) Project Area: 4.13 acres (179,900 sq. ft.) Proposed Building Footprint: 0.52 acres (22,600 sq. ft.) Proposed Parking Lot and Driveway: 1.45 acres (63,100 sq. ft.) Proposed Walkways and Patios: 0.85 acres (37,140 sq. ft.)			
Total Site Area Improvements	Pervious		Impervious	
	Area (acres or sq ft)	Percentage	Area (acres or sq ft)	Percentage
Pre-Project Conditions	4.73 Acres	46%	5.66 Acres	54.5%
Addition/Replacement			2.82 Acres	49.8% (of exist.)
Post-Project Conditions	4.41 Acres	42%	6.05 Acres	58.2%
Drainage Patterns/Connections	Storm runoff within the NE corner of the property (~1 acre) is collected and conveyed to a curb outlet drain onto Calle Del Cerro. The remaining runoff on the Northerly side of the property (~5 acres) flows to the NW corner for discharge into the City storm drain system flowing beneath Del Cerro. Runoff on the South side of the property (~4 acres) discharges into a natural channel flowing Westerly along the Southerly boundary. All runoff ultimately discharges to the Segunda Deshecha Creek and flows to the Pacific Ocean at North Beach.			

II.2 Potential Stormwater Pollutants

Determine and list expected stormwater pollutants based on land uses and site activities. *Refer to Section 2.2.2 and Table 2.1 in the TGD for guidance.*

Pollutants of Concern			
Pollutant	Circle One: E=Expected to be of concern N=Not Expected to be of concern		Additional Information and Comments
Suspended-Solid/ Sediment	E	N	
Nutrients	E	N	
Heavy Metals	E	N	
Pathogens (Bacteria/Virus)	E	N	
Pesticides	E	N	
Oil and Grease	E	N	
Toxic Organic Compounds	E	N	
Trash and Debris	E	N	

II.3 Hydrologic Conditions of Concern

Determine if streams located downstream from the project area are determined to be potentially susceptible to hydromodification impacts. *Refer to Appendix C of the Model WQMP for reference to applicable technical guidance for determining if downstream channels are susceptible to HCOCs.*

☐ No – Show map and/or describe and reference supporting documentation in the space below.

☒ Yes – Describe applicable hydrologic conditions of concern in the space below.

On the above map, Figure J-7a from the South Orange County Hydromodification Management Plan dated April 1, 2015, the project site is represented by the star and the storm drain discharge point into Segunda Deshecha Creek is represented by the donut. As shown, the project site and discharge point both lie outside of the hydromodification exempt area (denoted by the red hatching) and thus the project is susceptible to hydromodification impacts. See Hydromodification Control BMPs in Section IV.3.5 for details.

II.4 Post Development Drainage Characteristics

The post-development drainage design is intended to mimic the pre-development conditions. Site runoff from the NE corner of the development (~2.6 acres) will continue to discharge onto Calle Del Cerro for collection by the City storm drain system. Existing improvements on the North side of the property, and lying outside of the development limits, (~3.5 acres) will continue to flow to the Northwest corner for collection by the City storm drain system. Proposed development on the South side of the property (~1.5 acres) will be collected and discharged into the natural channel running Westerly along the Southerly site boundary. The remaining 2.5 acres of untouched area on the South side of the property will continue to flow into this same natural channel. All runoff ultimately enters the City storm drain system and is discharged into the Segunda Deschecha Creek at the intersection of Avenida Pico and Avenida Presidio.

The proposed impervious area (addition and replacement) of 2.82 acres represents 49.8% of the existing impervious area (5.66 acres) on-site. As this is less than 50%, sizing requirements for selected BMPs are limited to only the proposed impervious improvements and not the entire site per the Model WQMP for South Orange County.

All runoff from the proposed improvements will be routed through LID BMPs intended to reduce the volume and pollutant loading prior to off-site discharge. Specific BMPs implemented for this development are discussed in more detail in Section IV of this WQMP.

II.5 Property Ownership/ Management

The property is a Tennis Club and will be owned and maintained by LTF Real Estate Company, Inc. Independent contractors may be hired by the owner to perform landscaping maintenance and other on-site housekeeping duties, however, all storm water BMPs will remain the responsibility of the Owner.

Section III Site Description

III.1 Physical Setting

Planning Area/ Community Name	Rancho San Clemente
Location/Address	111 Avenida Vista Montana San Clemente, CA 92672
Project Area Description	Corner of Calle Del Cerro and Avenida Vista Montana
Land Use	Open Space - Private (Rancho San Clemente Specific Plan)
Zoning	Rancho San Clemente - Specific Plan
Acreage	10.39 acres (452,709 sq. ft.)
Predominant Soil Types, Slopes, Groundwater Conditions, etc.	Per the Orange County Public Works Land Records Website, the project is located in an area with Type D soils and the groundwater elevation is more than 10 feet below existing grades.

III.2 Site Characteristics

Fill out table with relevant information and include information as it relates to BMP sizing, suitability, and feasibility, as applicable. *Refer to Section 2.3.2 in the TGD.* Include additional narrative, as applicable, to summarize findings of site investigations. Include references to applicable studies/reports related to investigation of the site and evaluation of feasibility of LID BMPs.

Precipitation Zone	0.85" (per the Rainfall Zones map in the Technical Guidance Document)
Topography	The site has ~70' of relief from East to West, with several terraced pads for buildings, parking, and tennis courts. The maximum gradient of on-site slopes is 2:1, with a maximum height of ~25 feet.
Drainage Patterns/Connections	As briefly described in Section II.1, site runoff drains to three distinct locations under existing conditions. On the North side of the site, a curb outlet discharges site runoff into the curb and gutter along Calle Del Cerro for collection by the City storm drain system. At the Northwest corner, a drainage inlet collects storm water from on-site areas, as well as runoff from the neighboring natural area, and connects directly to the City storm drain system. Lastly, a natural channel along the southerly property boundary recieves site runoff and conveys the water in a Westerly direction toward Avenida Pico; the water is then collected by the City storm drain system. Water collected at each of these locations is ultimately discharged into the Segunda Deschecha Creek, at the intersection of Avenida Pico and Avenida Presidio, and conveyed to the Pacific Ocean at North Beach. The post-development drainage patterns are intended to mimic the existing condition, with runoff discharged to the aforementioned three distinct collection locations. Additionally, all runoff from areas within the proposed development limits will be routed through LID BMPs intended to reduce the volume and pollutant loading of discharged storm water. These BMPs are discussed in Section IV.
Soil Type, Geology, and Infiltration Properties	Per the Orange County Public Works Land Records Website, the project is located in an area with Type D soils. Further, Geotechnical Professionals, Inc. has classified the on-site soil type as highly expansive clay. Based upon the on-site soil type, infiltration is not considered feasible for this site.

Site Characteristics (continued)	
Hydrogeologic (Groundwater) Conditions	Groundwater is not a design concern based upon the Groundwater and Infiltration Maps in the Technical Guidance Document. At this time, Geotechnical Professionals, Inc. has not provided any specific information regarding observed depth to groundwater.
Geotechnical Conditions (relevant to infiltration)	Infiltration is not feasible at this site due to the presence of highly expansive clays.
Off-Site Drainage	There is no off-site run-on to consider for this Water Quality Management Plan.
Utility and Infrastructure Information	Drainage improvements will be installed on-site for the benefit of improvements within the development limits. Other wet and dry utilities will be installed using existing service laterals provided for the current development.

III.3 Watershed Description

Fill out table with relevant information. *Refer to Section 2.3.3 in the TGD.* Expand discussion beyond summary table, as needed. Include references to applicable studies/reports related to the watershed description.

Receiving Waters	Segunda Deshecha Creek and the Pacific Ocean at North Beach.
303(d) Listed Impairments	Segunda Deschecha Creek is 303(d) listed by the State Water Resources Control Board for: Phosphorus, Toxicity, and Turbidity. The Pacific Ocean at North Beach is 303(d) listed for Indicator Bacteria.
Applicable TMDLs	At present, there is only a TMDL in place for Indicator Bacteria along the Pacific Ocean Shoreline at North Beach.
Pollutants of Concern for the Project	Suspended Solids / Sediment, Nutrients, and Pathogens (Bacteria / Virus)
Environmentally Sensitive and Special Biological Significant Areas	Segunda Deschecha Creek and the Pacific Ocean at North Beach are both considered ESAs, as they are on the 303(d) list of impaired water bodies.

Section IV Best Management Practices (BMPs)

IV. 1 Project Performance Criteria

Describe project performance criteria. Several steps must be followed in order to determine what performance criteria will apply to a project. These steps include:

- Determine applicable hydromodification control performance criteria. *Refer to Appendix C of the Model WQMP.*
- Determine applicable LID performance criteria. *Refer to Section 7.II-2.4.3 of the Model WQMP.*
- Calculate the LID DCV (DCV) for the project. *Refer to Section 7.II-2.4.3 of the Model WQMP.*

Project Performance Criteria	
If HCOC exists, list applicable hydromodification control performance criteria (MWQMP Appendix C)	For projects that may have an impact on the site's hydrologic regime, an assessment of potential hydromodification impacts and appropriate controls is required. If an HCOC exists, priority projects shall implement on-site or regional hydromodification controls such that: • Post-development runoff volume for the two-year frequency storm does not exceed that of the predevelopment condition by more than five percent, and • Time of concentration of post-development runoff for the two-year storm event is not less than that for the predevelopment condition by more than five percent.
List applicable LID performance criteria (Section 7.II-2.4.3 from MWQMP)	• Priority Projects must infiltrate, harvest and use, evapotranspirate, or biotreat/biofilter, the 85th percentile, 24-hour storm event (Design Capture Volume). • A properly designed biotreatment system may only be considered if infiltration, harvest and use, and evapotranspiration (ET) cannot be feasibly implemented for the full design capture volume. In this case infiltration, harvest and use, and ET practices must be implemented to the greatest extent feasible and biotreatment may be provided for the remaining design capture volume.
Calculate LID DCV for Project.	The proposed development has been split into two Drainage Management Areas (DMAs). DMA-1 represents the parking improvements and other areas on the North side of the proposed recreation center building. DMA-2 represents the remaining development areas on the South side of the property. The Design Control Volumes (DCV) for each DMA, calculated using Worksheet B, are provided on the following pages. To summarize: DMA-1 DCV = 5,174 cu-ft DMA-2 DCV = 3,300 cu-ft TOTAL DCV = 8,474 cu-ft

Worksheet B: Simple Design Capture Volume Sizing Method

DMA-1

Step 1: Determine the design capture storm depth used for calculating volume				
1	Enter design capture storm depth from Figure III.1, *d* (inches)	d=	**0.85**	inches
2	Enter the effect of provided HSCs, d_{HSC} (inches) (Worksheet A)	d_{HSC}=	**-**	inches
3	Calculate the remainder of the design capture storm depth, $d_{remainder}$ (inches) (Line 1 – Line 2)	$d_{remainder}$=	**0.85**	inches
Step 2: Calculate the DCV				
1	Enter Project area tributary to BMP (s), *A* (acres)	A=	**2.58**	acres
2	Enter Project Imperviousness, *imp* (unitless)	imp=	**0.66**	
3	Calculate runoff coefficient, $C = (0.75 \times imp) + 0.15$	C=	**0.65**	
4	Calculate runoff volume, $V_{design} = (C \times d_{remainder} \times A \times 43560 \times (1/12))$	V_{design}=	**5,174**	cu-ft
Step 3: Design BMPs to ensure full retention of the DCV				
Step 3a: Determine design infiltration rate				
1	Enter measured infiltration rate, $K_{measured}$ (in/hr) (Appendix VII)	$K_{measured}$=		In/hr
2	Enter combined safety factor from Worksheet H, S_{final} (unitless)	S_{final}=		
3	Calculate design infiltration rate, $K_{design} = K_{measured} / S_{final}$	K_{design}=		In/hr
Step 3b: Determine minimum BMP footprint				
4	Enter drawdown time, *T* (max 48 hours)	T=		Hours
5	Calculate max retention depth that can be drawn down within the drawdown time (feet), $D_{max} = K_{design} \times T \times (1/12)$	D_{max}=		feet
6	Calculate minimum area required for BMP (sq-ft), $A_{min} = V_{design} / d_{max}$	A_{min}=		sq-ft

Worksheet B: Simple Design Capture Volume Sizing Method

DMA-2

Step 1: Determine the design capture storm depth used for calculating volume				
1	Enter design capture storm depth from Figure III.1, *d* (inches)	d=	**0.85**	inches
2	Enter the effect of provided HSCs, d_{HSC} (inches) (Worksheet A)	d_{HSC}=	**-**	inches
3	Calculate the remainder of the design capture storm depth, $d_{remainder}$ (inches) (Line 1 – Line 2)	$d_{remainder}$=	**0.85**	inches
Step 2: Calculate the DCV				
1	Enter Project area tributary to BMP (s), *A* (acres)	A=	**1.55**	acres
2	Enter Project Imperviousness, *imp* (unitless)	imp=	**0.72**	
3	Calculate runoff coefficient, $C = (0.75 \times imp) + 0.15$	C=	**0.69**	
4	Calculate runoff volume, $V_{design} = (C \times d_{remainder} \times A \times 43560 \times (1/12))$	V_{design}=	**3,300**	cu-ft
Step 3: Design BMPs to ensure full retention of the DCV				
Step 3a: Determine design infiltration rate				
1	Enter measured infiltration rate, $K_{measured}$ (in/hr) (Appendix VII)	$K_{measured}$=		In/hr
2	Enter combined safety factor from Worksheet H, S_{final} (unitless)	S_{final}=		
3	Calculate design infiltration rate, $K_{design} = K_{measured} / S_{final}$	K_{design}=		In/hr
Step 3b: Determine minimum BMP footprint				
4	Enter drawdown time, *T* (max 48 hours)	T=		Hours
5	Calculate max retention depth that can be drawn down within the drawdown time (feet), $D_{max} = K_{design} \times T \times (1/12)$	D_{max}=		feet
6	Calculate minimum area required for BMP (sq-ft), $A_{min} = V_{design} / d_{max}$	A_{min}=		sq-ft

IV.2. SITE DESIGN AND DRAINAGE PLAN

The following Site Design Practices have been considered for the proposed residential development:

- Preserve Existing Drainage Patterns and Time of Concentration (to the MEP)
- Preserve and Protect Existing Vegetation (on-site, beyond the limits of the development area)
- Disconnect Impervious Area (by providing landscape improvements between, and adjacent to, proposed impervious walkways and driveway, where possible)
- Minimize Construction Footprint (construction will be limited to only the area designated for improvements)
- Re-vegetate Disturbed Areas (disturbed areas not designated for impervious covering will be re-planted in accordance with project landscape plans.

The proposed site improvements include the recreation center, swimming pool, parking lot, driveway, walkways and patios, and miscellaneous landscaping. The construction footprint shall be limited to only the areas designated for improvements per the Precise Grading and Drainage Plans prepared by Toal Engineering, Inc. Impervious areas shall be designed to drain into adjacent landscaping, to the maximum extent practicable. Disturbed areas within the limits of project construction shall be re-planted upon completion of the project.

There are two (2) Drainage Management Areas (DMA) for this recreation club development with the following characteristics:

DMA	Impervious Area	Imp. %	d	d_{HSC}	V_{design}
DMA-1	1.70 acres	66%	0.85 in.	-	5,174 cu. ft.
DMA-2	1.12 acres	72%	0.85 in.	-	3,300 cu. ft.

BMPs utilized for this project include the following:

- Impervious Area Dispersion (drain hardscape areas into adjacent landscaping)
- Storm Water Retention (holding tanks designed to address hydromodification concerns)
- Biotreatment BMPs (enclosed planter boxes at the downstream end of the improvement areas)

See the WQMP Site Plan provided in Section VI of this report for locations of implemented BMPs. Due to the size of this project, GIS coordinates for each BMP are nearly identical at: 33.590034, -117.856262.

IV.3 BMP SELECTION AND PROJECT CONFORMANCE ANALYSIS

IV.3.1 Hydrologic Source Controls

If HSCs are included, fill out applicable check box forms. If the retention criteria are otherwise met with other LID BMPs, include a statement indicating HSCs not required.

Name	Included?
Localized on-lot infiltration	☐
Impervious area dispersion (e.g. roof top disconnection)	☐
Street trees (canopy interception)	☐
Residential rain barrels (not actively managed)	☐
Green roofs/Brown roofs	☐
Blue roofs	☐
Impervious area reduction (e.g. permeable pavers, site design)	☐
Other:	☐
Other:	☐
Other:	☐
Other:	☐

Hydrologic Source Controls are to be considered and implemented in the final landscape design. At the time of this report, pervious area locations and footprints have not been finalized. Selected BMPs outlined in later sections have been designed to address the full DCV without HSCs, should the effect of provided HSCs be too limited to affect the design storm depth.

IV.3.2 Infiltration BMPs

Name	Included?
Bioretention without underdrains	☐
Rain gardens	☐
Porous landscaping	☐
Infiltration planters	☐
Retention swales	☐
Infiltration trenches	☐
Infiltration basins	☐
Drywells	☐
Subsurface infiltration galleries	☐
French drains	☐
Permeable asphalt	☐
Permeable concrete	☐
Permeable concrete pavers	☐
Other:	☐
Other:	☐

As noted in Sections III.1 and III.2, this property is underlain by highly expansive clays further classified as Type D soils. Full scale infiltration BMP's are not feasible due to the soil composition and the recommendations of the project geotechnical consultant.

IV.3.3 Evapotranspiration, Rainwater Harvesting BMPs

Name	Included?
All HSCs; *See Section IV.3.1*	☐
Surface-based infiltration BMPs	☐
Other vegetated BMPs	☐
Above-ground cisterns and basins	☐
Underground detention	☐
Other:	☐
Other:	☐
Other:	☐

On-site landscaping within the proposed disturbed area limits represents only a fraction of the project scope. The bulk of the on-site landscaping is located outside of the disturbed area limits and will remain untouched. Further, irrigation is already in place for these areas and the owner does not wish to demolish any more of the existing landscaping than is necessary. Lastly, the total on-site pervious area is not large enough for feasible implementation of this BMP; see Worksheet J on the following page.

Worksheet J: Summary of Harvested Water Demand and Feasibility

1	What demands for harvested water exist in the tributary area (check all that apply):			
2	Toilet and urinal flushing			□
3	Landscape irrigation			□
4	Other:____			□
5	What is the design capture storm depth? (Figure III.1)	d	**0.85**	inches
6	What is the project size?	A	**10.39**	ac
7	What is the acreage of impervious area?	IA	**6.05**	ac
	For projects with multiple types of demand (toilet flushing, irrigation demand, and/or other demand)			
8	What is the minimum use required for partial capture? (Table X.6)			gpd
9	What is the project estimated wet season total daily use (Section X.2)?			gpd
10	Is partial capture potentially feasible? (Line 9 > Line 8?)			
	For projects with only toilet flushing demand			
11	What is the minimum TUTIA for partial capture? (Table X.7)			
12	What is the project estimated TUTIA?			
13	Is partial capture potentially feasible? (Line 12 > Line 11?)			
	For projects with only irrigation demand			
14	What is the minimum irrigation area required based on conservation landscape design? (Table X.8)	**6.17**		ac
15	What is the proposed project irrigated area? (multiply conservation landscaping by 1; multiply active turf by 2)	**4.34**		ac
16	Is partial capture potentially feasible? (Line 15 > Line 14?)	**No**		

Provide supporting assumptions and citations for controlling demand calculation:

The value of “6.08 acres” on line 14 is based upon the Minimum Required Irrigated Area per Tributary Impervious Area of 1.02 for the Laguna ET station at the design storm depth of 0.85 inches per Table X.8.

IV.3.4 Biofiltration BMPs

Name	Included?
Bioretention with underdrains	☒
Stormwater planter boxes with underdrains	☐
Proprietary vegetated biotreatment systems	☐
Other:	☐
Other:	☐

As discussed in Section II.4, BMP sizing applies only to the impervious areas added or replaced as part of this development project. Roof, driveway, and other impervious area runoff collected on-site will be routed through LID BMPs for volume and pollutant reduction prior to off-site discharge. Underground storm water chambers, specifically provided for volume reduction associated with hydromodification, are discussed in further detail in Section IV.3.5. The runoff stored in these chambers will then filter through bioretention planter boxes for treatment prior to discharge into the City storm drain system. Each bioretention planter box is designed for 80% capture efficiency, and will utilize the storage area within the unit and the aforementioned underground chamber to comply with the volume sizing requirements specific to South Orange County. See Section IV.3.4 in Attachment A for Worksheets C and SOC-1 for both DMAs, as well as the Fact Sheet for Bioretention BMPs with Underdrain.

IV.3.5 Hydromodification Control BMPs

Hydromodification Control BMPs	
BMP Name	**BMP Description**
Underground Storm Water Retention	Install interlocking CUDO (Kristar Enterprises) cubes to create an underground storm water storage gallery. The system shall be wrapped in impervious liner to avoid infiltration into the underlying soils, as the on-site soils are not appropriate for infiltration (see Section IV.3.2).

Runoff from the project site flows into the City storm drain system and discharges to Segunda Deshecha Creek at the intersection of Avenida Pico and Avenida Presidio. At this location, the Creek is not concrete lined and is subject to hydromodification. Thus, the post-development hydrology shall be designed to comply with the requirements listed in the Model WQMP and Technical Guidance Document for South Orange County. Using the South Orange County Hydrology Model software, the pre-development and post-development conditions were processed and compared to determine the on-site storage volume needed to avoid downstream hydromodification impacts. This total volume was then split amongst the two DMAs (according to percentage of impervious improvement) to determine the storage volume needed for each DMA. DMA-1 has a calculated storage volume of 3,520 cu. ft., while DMA-2 has a calculated volume of 2,380 cu. ft., for a total required storage volume of 5,900 cu. ft. Retained storm water will then flow into the biotreatment planter boxes discussed in Section IV.3.4 for filtration prior to off-site discharge. See SOHM results in Section IV.3.5 of Attachment A.

IV.3.6 Non-structural Source Control BMPs

Fill out non-structural source control check box forms or provide a brief narrative explaining if non-structural source controls were not used.

Non-Structural Source Control BMPs				
Identifier	Name	Check One		If not applicable, state brief reason
		Included	Not Applicable	
N1	Education for Property Owners, Tenants and Occupants	☒	☐	
N2	Activity Restrictions	☒	☐	
N3	Common Area Landscape Management	☒	☐	
N4	BMP Maintenance	☒	☐	
N5	Title 22 CCR Compliance (How development will comply)	☐	☒	
N6	Local Industrial Permit Compliance	☐	☒	
N7	Spill Contingency Plan	☐	☒	
N8	Underground Storage Tank Compliance	☐	☒	
N9	Hazardous Materials Disclosure Compliance	☐	☒	
N10	Uniform Fire Code Implementation	☐	☒	
N11	Common Area Litter Control	☒	☐	
N12	Employee Training	☒	☐	
N13	Housekeeping of Loading Docks	☐	☒	
N14	Common Area Catch Basin Inspection	☒	☐	
N15	Street Sweeping Private Streets and Parking Lots	☒	☐	
N16	Retail Gasoline Outlets	☐	☒	

N1 – Education for Property Owners: The Owner must understand the purpose of all BMPs and how they work. The contractor who installs the BMP shall educate the owner and the owner shall share the information with any maintenance personnel. Additionally, the owner shall keep a copy of this WQMP and the O&M Plan (Attachment C) on site at all times. Educational materials available at the time of print are provided in Attachment B. Consult with the City of San Clemente for updated information and practices pertinent to good housekeeping and preservation of water resources.

N2 – Activity Restrictions: Impervious areas shall be swept and not hosed down. Wash water from any on-site activities shall be contained and properly disposed of into the sewer, not into the storm drain.

N3 – Common Area Landscape Management: The Owner shall keep garden areas clean, planted, and weed free. The Owner shall verify that landscape activities are consistent with those in the County Water Conservation Resolution that include fertilizer and/or pesticide usage consistent with Management Guidelines for Use of Fertilizers (DAMP Section 5.5).

N4 – BMP Maintenance: The owner shall be responsible for each non-structural BMP and scheduled cleaning and/or maintenance of all structural BMP facilities. Visual inspection shall be performed by the owner or contracted personnel. More thorough inspection should be required if ponding water sits for more than 48 hours

N11 – Common Area Litter Control: The owner may contract with their landscape maintenance firms to keep site clean of litter, which should consist of litter patrol, emptying of trash receptacles in common areas, and noting trash disposal violations for investigation**.**

N12 – Employee Training: Consistent with N1, the Owner shall share the information in the WQMP and O&M Plan with all contracted maintenance personnel so they understand the purpose of all BMPs and the water quality design goals for the property.

N14 – Common Area Catch Basin Inspection: The owner is required to have at least 80 percent of drainage facilities inspected, cleaned and maintained on an annual basis with 100 percent of the facilities included in a two year period. Cleaning should take place in the late summer/early fall prior to the start of the rainy season. Drainage facilities include catch basins (storm drain inlets), detention basins, retention basins, sediment basins, open drainage channels and lift stations. Records should be kept to document the annual maintenance. Drain inlets and catch basins shall be inpspected and inlet covers shall be kept clean.

N15 – Street Sweeping Parking Lots: The parking lot shall be swept by contracted personnel on a quarterly basis. Additional sweeping may be required based upon observed waste and sediment accumulation. Parking lot shall be swept, and not hosed down, to limit the amount of pollutants entering the City storm drain system.

IV.3.7 Structural Source Control BMPs

Fill out structural source control check box forms or provide a brief narrative explaining if Structural source controls were not used.

Structural Source Control BMPs				
Identifier	**Name**	**Check One**		**If not applicable, state brief reason**
		Included	**Not Applicable**	
S1	Provide storm drain system stenciling and signage	☒	☐	
S2	Design and construct outdoor material storage areas to reduce pollution introduction	☐	☒	
S3	Design and construct trash and waste storage areas to reduce pollution introduction	☒	☐	
S4	Use efficient irrigation systems & landscape design, water conservation, smart controllers, and source control	☒	☐	
S5	Protect slopes and channels and provide energy dissipation	☐	☒	
	Incorporate requirements applicable to individual priority project categories (from SDRWQCB NPDES Permit)	☐	☒	
S6	Dock areas	☐	☒	
S7	Maintenance bays	☐	☒	
S8	Vehicle wash areas	☐	☒	
S9	Outdoor processing areas	☐	☒	
S10	Equipment wash areas	☐	☒	
S11	Fueling areas	☐	☒	
S12	Hillside landscaping	☐	☒	
S13	Wash water control for food preparation areas	☐	☒	
S14	Community car wash racks	☐	☒	

S1 – Storm Drain Stenciling: Stenciling or labeling of all storm drain inlets and catch basins, constructed or modified, within the project area with prohibitive language and/or graphical icons, which discourage illegal dumping shall be provided by the Owner or contracted personnel. Specifically, the owner shall ensure that all catch basins are stencilled "No Dumping – Drains To Ocean."

S3 – Trash Enclosures: The Owner shall keep trash storage areas clean and orderly to reduce pollutant introduction. All trash container areas shall be paved with an impervious surface, designed not to allow run-on, screened or walled to prevent off-site transport of trash, and be provided with a roof or awning to prevent direct precipitation. The trash area shall remain free of litter and waste on the ground, and all receptacles shall have lids that are kept closed when not in use. Employees shall be trained to maintain the trash area to these standards.

S4 – Efficient Irrigation: Owner or contracted maintenance personnel shall ensure that sprinklers are working properly and minimize unnecessary irrigation. Projects shall design the timing and application methods of irrigation water to minimize the runoff of excessive irrigation water into the municipal storm drain system. Additionally, owner shall: Employ rain shutoff devices, design irrigation systems to each landscape areas specific requirements, use flow reducers, and group plants with similar water requirements together.

IV.4 ALTERNATIVE COMPLIANCE PLAN (IF APPLICABLE)

IV.4.1 Request of Waiver of LID BMPs

N/A

IV.4.2 Water Quality Credits

<table>
<tr><th colspan="6">Description of Proposed Project</th></tr>
<tr><td colspan="6">Project Types that Qualify for Water Quality Credits (Select all that apply):</td></tr>
<tr><td colspan="2">☐Redevelopment projects that reduce the overall impervious footprint of the project site.</td><td colspan="2">☐Brownfield redevelopment, meaning redevelopment, expansion, or reuse of real property which may be complicated by the presence or potential presence of hazardous substances, pollutants or contaminants, and which have the potential to contribute to adverse ground or surface WQ if not redeveloped.</td><td colspan="2">☐ Higher density development projects which include two distinct categories (credits can only be taken for one category): those with more than seven units per acre of development (lower credit allowance); vertical density developments, for example, those with a Floor to Area Ratio (FAR) of 2 or those having more than 18 units per acre (greater credit allowance).</td></tr>
<tr><td colspan="2">☐ Mixed use development, such as a combination of residential, commercial, industrial, office, institutional, or other land uses which incorporate design principles that can demonstrate environmental benefits that would not be realized through single use projects (e.g. reduced vehicle trip traffic with the potential to reduce sources of water or air pollution).</td><td colspan="3">☐ Transit-oriented developments, such as a mixed use residential or commercial area designed to maximize access to public transportation; similar to above criterion, but where the development center is within one half mile of a mass transit center (e.g. bus, rail, light rail or commuter train station). Such projects would not be able to take credit for both categories, but may have greater credit assigned</td><td>☐ Redevelopment projects in an established historic district, historic preservation area, or similar significant city area including core City Center areas (to be defined through mapping).</td></tr>
<tr><td>☐Developments with dedication of undeveloped portions to parks, preservation areas and other pervious uses.</td><td>☐ Developments in a city center area.</td><td>☐ Developments in historic districts or historic preservation areas.</td><td colspan="2">☐ Live-work developments, a variety of developments designed to support residential and vocational needs together – similar to criteria to mixed use development; would not be able to take credit for both categories.</td><td>☐In-fill projects, the conversion of empty lots and other underused spaces into more beneficially used spaces, such as residential or commercial areas.</td></tr>
<tr><td colspan="4">Calculation of Water Quality Credits (if applicable)</td><td colspan="2">None.</td></tr>
</table>

IV.4.4 Treatment Control BMPs

BMP Name	BMP Description
	As the on-site Bioretention Planter Boxes and underground stormwater storage chambers address the 80% capture efficiency DCV and the runoff volume required to address hydromodification concerns, Treatment Control BMPs are not required.

IV.4.3 Regional/ Sub-Regional LID BMPs

Regional/ Sub-Regional LID BMPs

IV.4.4 Other Alternative Compliance Measures

Describe additional alternative compliance measures that will fully or partially meet the remaining LID obligations in association with treatment control BMP use (i.e., off-site mitigation project and/or stormwater mitigation fund). Include calculations to demonstrate how remaining alternative compliance. *Refer to Section 7.II-3.4 in the Model WQMP.*

An Alternative Compliance Plan is not required for this development, where the water quality design flow has been met with Bio-retention Planter boxes.

Section V Inspection/Maintenance Responsibility for BMPs

See information provided in Section IV of this WQMP, as well as the Operations and Maintenance (O&M) Plan provided as Attachment C. All BMPs are the responsibility of the owner, and will be maintained by the owner or contracted personnel as identified on the O&M Plan. Inspection and maintenance records must be kept for a minimum of five years for inspection by the regulatory agencies.

Section VI Site Plan and Drainage Plan

VI.1 SITE PLAN AND DRAINAGE PLAN

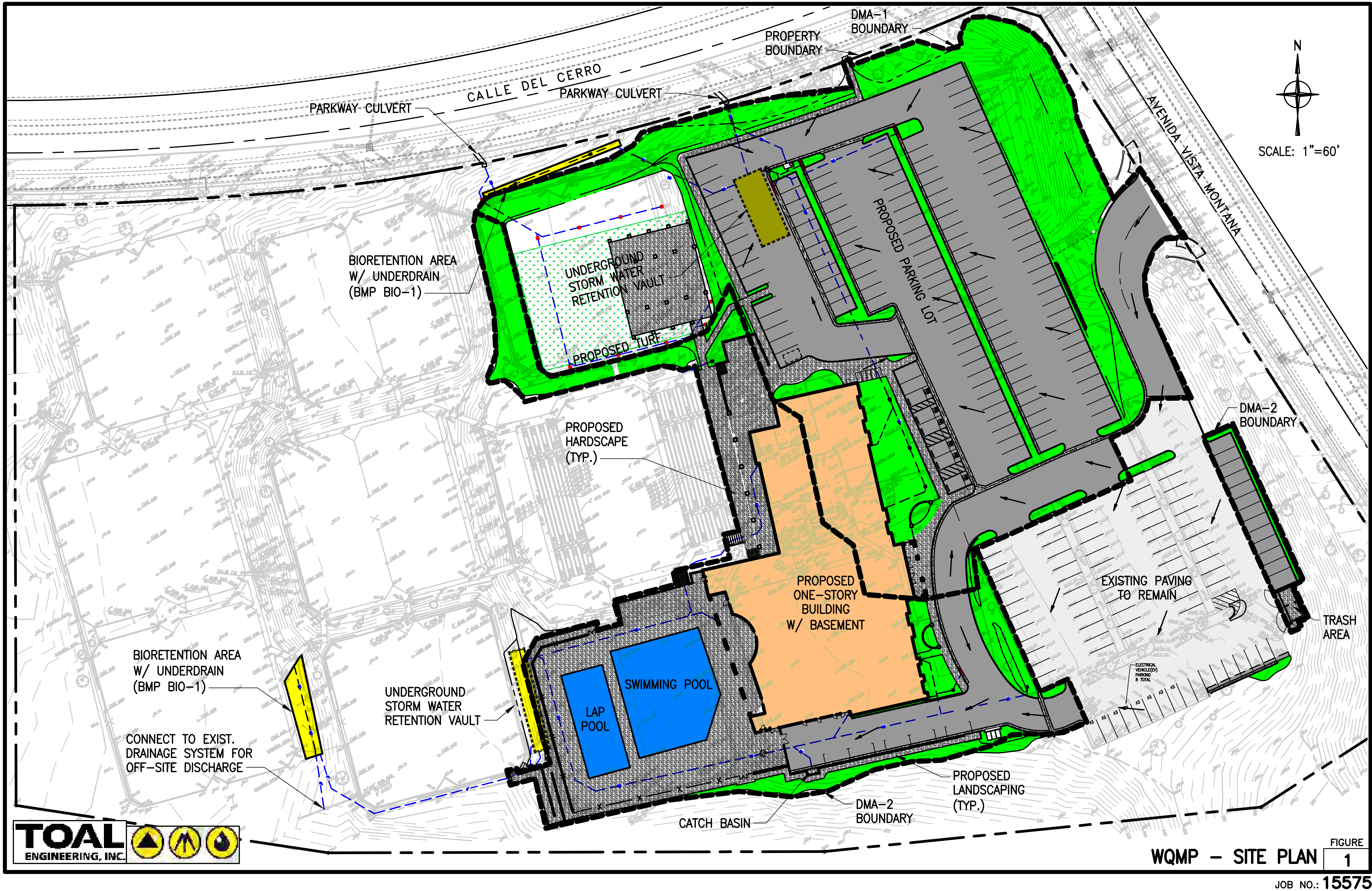
Include a site plan and drainage plan sheet set containing the following minimum information:

- Project location
- Site boundary
- Land uses and land covers, as applicable
- Suitability/feasibility constraints
- Structural BMP locations
- Drainage delineations and flow information
- Drainage connections
- BMP details

VI.2 ELECTRONIC DATA SUBMITTAL <optional – delete if not used>

The minimum requirement is to provide submittal of PDF exhibits in addition to hard copies. Format must not require specialized software to open.

If the local jurisdiction requires specialized electronic document formats (CAD, GIS) to be submitted, this section will be used to describe the contents (e.g., layering, nomenclature, georeferencing, etc.) of these documents so that they may be interpreted efficiently and accurately.


CALLE DEL CERRO
AVENIDA VISTA MONTANA
PARKWAY CULVERT
PARKWAY CULVERT
PROPERTY BOUNDARY
DMA-1 BOUNDARY
N
SCALE: 1"=60'
BIORETENTION AREA W/ UNDERDRAIN (BMP BIO-1)
UNDERGROUND STORM WATER RETENTION VAULT
PROPOSED TURF
PROPOSED PARKING LOT
PROPOSED HARDSCAPE (TYP.)
PROPOSED ONE-STORY BUILDING W/ BASEMENT
DMA-2 BOUNDARY
EXISTING PAVING TO REMAIN
TRASH AREA
BIORETENTION AREA W/ UNDERDRAIN (BMP BIO-1)
UNDERGROUND STORM WATER RETENTION VAULT
SWIMMING POOL
LAP POOL
CONNECT TO EXIST. DRAINAGE SYSTEM FOR OFF-SITE DISCHARGE
CATCH BASIN
DMA-2 BOUNDARY
PROPOSED LANDSCAPING (TYP.)
TOAL ENGINEERING, INC.
WQMP - SITE PLAN
FIGURE 1
JOB NO.: 15575
2/15/2017 3:52:55 PM N:\155xx\15575\Reports\WQMP\15575-wqmp-01.dwg

Section VII Educational Materials

Refer to the Orange County Stormwater Program (ocwatersheds.com) for a library of materials available. For the copy submitted to the Permittee, only attach the educational materials specifically applicable to the project. Other materials specific to the project may be included as well and must be attached.

Education Materials			
Residential Material (http://www.ocwatersheds.com)	**Check If Applicable**	**Business Material (http://www.ocwatersheds.com)**	**Check If Applicable**
The Ocean Begins at Your Front Door	☒	Tips for the Automotive Industry	☐
Tips for Car Wash Fund-raisers	☐	Tips for Using Concrete and Mortar	☐
Tips for the Home Mechanic	☐	Tips for the Food Service Industry	☐
Homeowners Guide for Sustainable Water Use	☐	Proper Maintenance Practices for Your Business	☒
Household Tips	☐	Compliance BMPs for Mobile Businesses	☐
Proper Disposal of Household Hazardous Waste	☒	**Other Material**	**Check If Attached**
Recycle at Your Local Used Oil Collection Center (North County)	☐		
Recycle at Your Local Used Oil Collection Center (Central County)	☐		☐
Recycle at Your Local Used Oil Collection Center (South County)	☐		☐
Tips for Maintaining a Septic Tank System	☐		☐
Responsible Pest Control	☒		☐
Sewer Spill	☐		☐
Tips for the Home Improvement Projects	☐		☐
Tips for Horse Care	☐		☐
Tips for Landscaping and Gardening	☒		☐
Tips for Pet Care	☐		☐
Tips for Projects Using Paint	☐		☐

Attachments

Attachment A
Worksheets, BMP Fact Sheets, and Excerpts
from
Technical Guidance Document
for
WQMP Section IV

Section IV.3.1
Hydrologic Source Controls

Section IV.3.4
Biotreatment BMPs

DMA-1:

Worksheet C: Capture Efficiency Method for Volume-Based, Constant Drawdown BMPs

Step 1: Determine the design capture storm depth used for calculating volume				
1	Enter design capture storm depth from Figure III.1, *d* (inches)	d=	**0.85**	inches
2	Enter calculated drawdown time of the proposed BMP based on equation provided in applicable BMP Fact Sheet, *T* (hours)	T=	**7.2**	hours
3	Using Figure III.2, determine the "fraction of design capture storm depth" at which the BMP drawdown time (T) line achieves 80% capture efficiency, X_1	X_1=	**0.42**	
4	Enter the effect depth of provided HSCs upstream, d_{HSC} (inches) (Worksheet A)	d_{HSC}=	**-**	inches
5	Enter capture efficiency corresponding to d_{HSC}, Y_2 (Worksheet A)	Y_2=	**-**	%
6	Using Figure III.2, determine the fraction of "design capture storm depth" at which the drawdown time (T) achieves the equivalent of the upstream capture efficiency(Y_2), X_2	X_2=	**-**	
7	Calculate the fraction of design volume that must be provided by BMP, *fraction* = $X_1 - X_2$	fraction=	**0.42**	
8	Calculate the resultant design capture storm depth (inches), $d_{fraction}$= *fraction* × *d*	$d_{fraction}$=	**0.36**	inches
9	SOC Only: When using this method for biofiltration sizing, check that the resulting volume in ponding plus pore spaces is at least 0.75× the remaining DCV (after accounting for upstream HSC/retention BMPs). (See Worksheet SOC-1)		**Y** / N / NA	
Step 2: Calculate the DCV				
1	Enter Project area tributary to BMP (s), *A* (acres)	A=	**2.58**	acres
2	Enter Project Imperviousness, *imp* (unitless)	imp=	**0.63**	
3	Calculate runoff coefficient, *C= (0.75 x imp) + 0.15*	C=	**0.62**	
4	Calculate runoff volume, V_{design}= $(C \times d_{rfraction} \times A \times 43560 \times (1/12))$	V_{design}=	**2,090**	cu-ft
Supporting Calculations				
Describe system: Enclosed Planter Box w/ 18" ponding depth, 3" mulch layer, 36" of top soil/planting mix, over 3" pea gravel, over 15" gravel w/ a 4" diameter underdrain pipe. Planter Box 1 area per Figure II in Section VI of WQMP = 400 sq. ft. A = V_{design} / Ponding Depth (d_p) → 2,090 cu. ft. / 1.5 ft. = 1,394 sq. ft.				

Worksheet C: Capture Efficiency Method for Volume-Based, Constant Drawdown BMPs

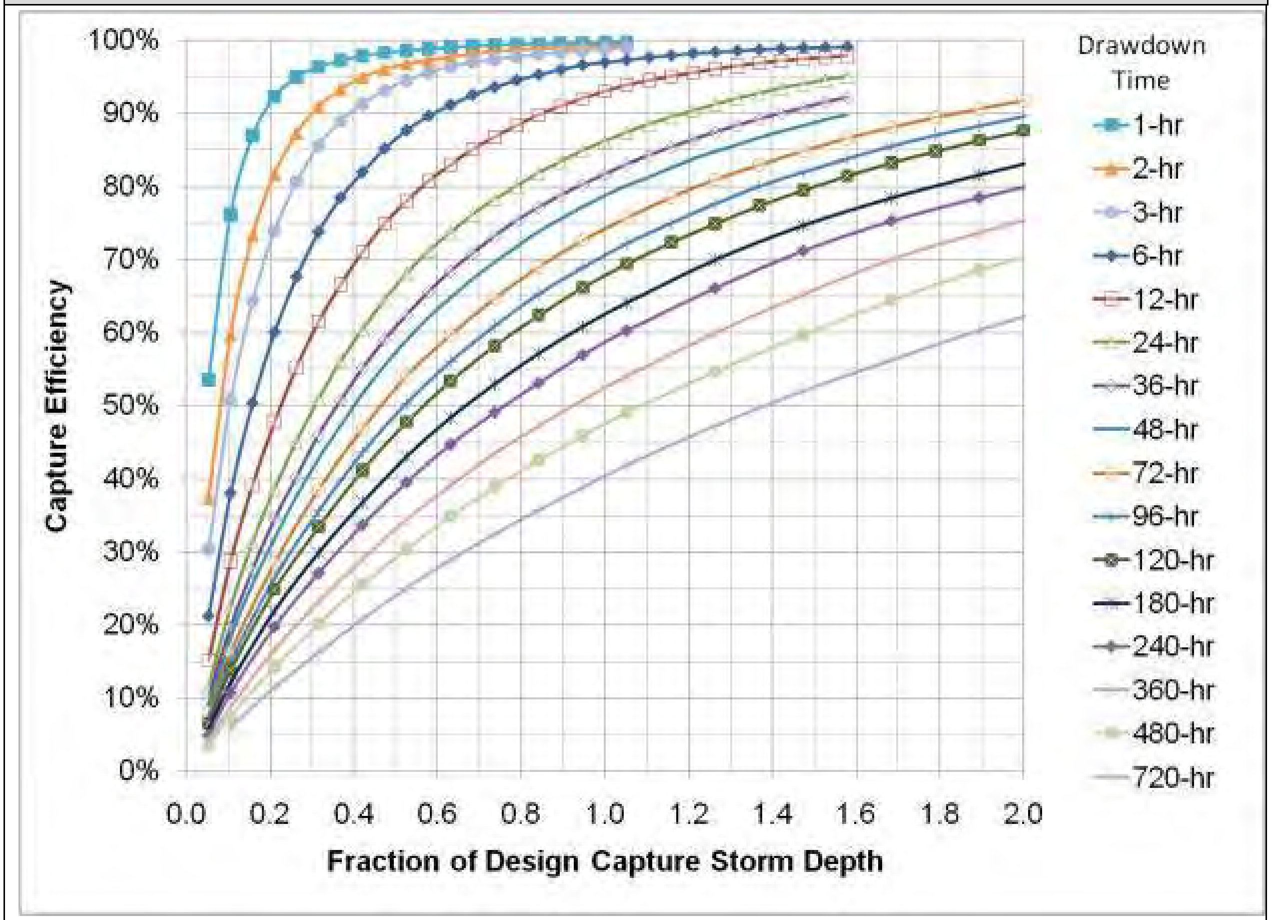
Runoff stored to address hydromodification concerns will be discharged into the biotreatment planter as it drains. This will allow for a reduction in the footprint of the biotreatment planter, while addressing the storage requirement of 0.75 x DCV for South Orange County.

Provide drawdown time calculations per applicable BMP Fact Sheet:

DD = (d_p / K_{MEDIA}) * 12 in./ft. → DD = (1.5 / 2.5) * 12 → <u>DD = 7.2 hours</u>

where: K_{MEDIA} = 2.5 in./hr (per TGD Appendix XIV-53, Capture Efficiency Method for Biotreatment)

Graphical Operations



Provide supporting graphical operations. See Example III.6.

DMA-2:

Worksheet C: Capture Efficiency Method for Volume-Based, Constant Drawdown BMPs

Step 1: Determine the design capture storm depth used for calculating volume				
1	Enter design capture storm depth from Figure III.1, *d* (inches)	d=	**0.85**	inches
2	Enter calculated drawdown time of the proposed BMP based on equation provided in applicable BMP Fact Sheet, *T* (hours)	T=	**7.2**	hours
3	Using Figure III.2, determine the "fraction of design capture storm depth" at which the BMP drawdown time (T) line achieves 80% capture efficiency, X_1	X_1=	**0.42**	
4	Enter the effect depth of provided HSCs upstream, d_{HSC} (inches) (Worksheet A)	d_{HSC}=	**-**	inches
5	Enter capture efficiency corresponding to d_{HSC}, Y_2 (Worksheet A)	Y_2=	**-**	%
6	Using Figure III.2, determine the fraction of "design capture storm depth" at which the drawdown time (T) achieves the equivalent of the upstream capture efficiency(Y_2), X_2	X_2=	**-**	
7	Calculate the fraction of design volume that must be provided by BMP, *fraction* = X_1 - X_2	fraction=	**0.42**	
8	Calculate the resultant design capture storm depth (inches), $d_{fraction}$= *fraction* × *d*	$d_{fraction}$=	**0.36**	inches
9	SOC Only: When using this method for biofiltration sizing, check that the resulting volume in ponding plus pore spaces is at least 0.75× the remaining DCV (after accounting for upstream HSC/retention BMPs). (See Worksheet SOC-1)		**Y** / N / NA	
Step 2: Calculate the DCV				
1	Enter Project area tributary to BMP (s), *A* (acres)	A=	**1.55**	acres
2	Enter Project Imperviousness, *imp* (unitless)	imp=	**0.72**	
3	Calculate runoff coefficient, *C= (0.75 x imp) + 0.15*	C=	**0.69**	
4	Calculate runoff volume, V_{design}= *(C x* $d_{rfraction}$ *x A x 43560 x (1/12))*	V_{design}=	**1,398**	cu-ft
Supporting Calculations				

Describe system:

Enclosed Planter Box w/ 18" ponding depth, 3" mulch layer, 36" of top soil/planting mix, over 3" pea gravel, over 15" gravel w/ a 4" diameter underdrain pipe. Planter Box 1 area per Figure II in Section VI of WQMP = 860 sq. ft.

A = V_{design} / Ponding Depth (d_p) → 1,398 cu. ft. / 1.5 ft. = 932 sq. ft.

Worksheet C: Capture Efficiency Method for Volume-Based, Constant Drawdown BMPs

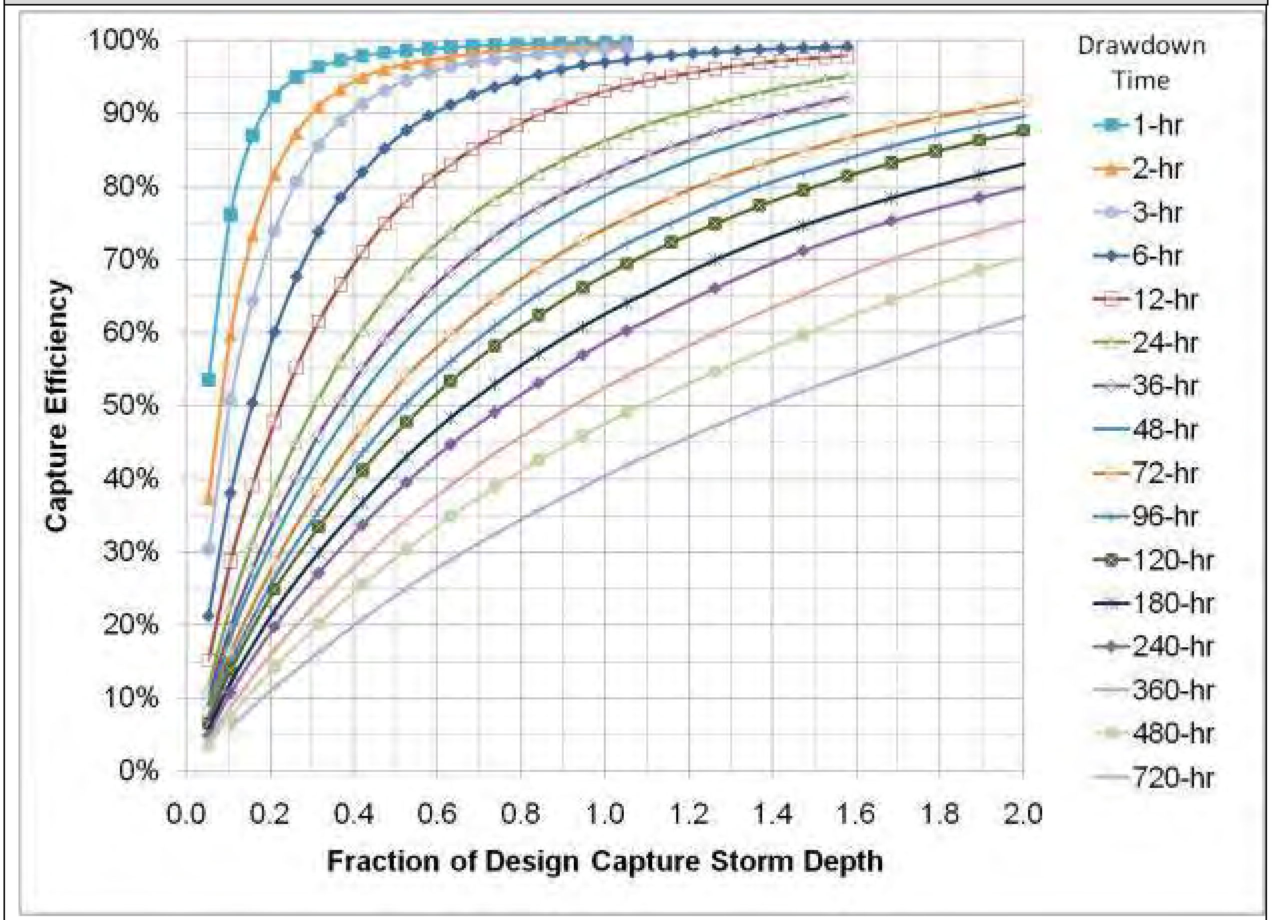
Runoff stored to address hydromodification concerns will be discharged into the biotreatment planter as it drains. This will allow for a reduction in the footprint of the biotreatment planter, while addressing the storage requirement of 0.75 x DCV for South Orange County.

Provide drawdown time calculations per applicable BMP Fact Sheet:

DD = (d_p / K_{MEDIA}) * 12 in./ft. → DD = (1.5 / 2.5) * 12 → DD = 7.2 hours

where: K_{MEDIA} = 2.5 in./hr (per TGD Appendix XIV-53, Capture Efficiency Method for Biotreatment)

Graphical Operations



Provide supporting graphical operations. See Example III.6.

DMA-1:

Worksheet SOC-1: Calculating Provided Biofiltration Volume as a Fraction of Remaining DCV (SOC Only)

Step 1: Determine the remaining DCV				
1	Enter total DCV for the DMA (see Section IV.1)	DCV	**4,936**	cu-ft
2	Enter the DCV that has already been retained in the DMA (either upstream of BMP or in sump below outlet of BMP)	$V_{retained}$	**3,520**	cu-ft
3	Enter the DCV that has already been retained (either upstream of BMP (such as by HSCs) or in sump below outlet of BMP) (Line 1 minus Line 2)	DCV_{remain}	**1,416**	cu-ft
Step 2: Compare pre-filter detention volume plus pore volume to remaining DCV				
4	Enter BMP ponding volume based on proposed BMP design (for simple designs, multiple effective footprint area by ponding depth to estimate volume)	V_{pond}	**600**	cu-ft
5	Enter any additional pre-filter detention volume provided, such as in a cistern or tank.	V_{detain}		cu-ft
6	Enter BMP available pore space volume by multiplying soil and gravel volumes by respective available porosity. Available porosity should be estimated based on material properties. In general, available pore space of 0.2 for amended media and 0.4 for open graded drain rock are considered to be reasonable.	V_{pores}	**480**	cu-ft
7	Calculate total pre-filter detention plus pore volume (add Lines 4 through 6)	$V_{pond+pores}$	**1080**	cu-ft
8	Calculate total pre-filter plus pore volume as fraction of remaining DCV (Line 7 divided by Line 3)		**0.76**	unitless
9	Does pre-filter detention plus pore volume greater than 0.75 of remaining DCV? Enter Y or N		**Y**	Y or N
Provide description of system and/or calculations justifying the volumes entered under Step 2.				

DMA-2:

Worksheet SOC-1: Calculating Provided Biofiltration Volume as a Fraction of Remaining DCV (SOC Only)

Step 1: Determine the remaining DCV				
1	Enter total DCV for the DMA (see Section III.1)	DCV	**3,300**	cu-ft
2	Enter the DCV that has already been retained in the DMA (either upstream of BMP or in sump below outlet of BMP)	$V_{retained}$	**2,380**	cu-ft
3	Enter the DCV that has already been retained (either upstream of BMP (such as by HSCs) or in sump below outlet of BMP) (Line 1 minus Line 2)	DCV_{remain}	**920**	cu-ft
Step 2: Compare pre-filter detention volume plus pore volume to remaining DCV				
4	Enter BMP ponding volume based on proposed BMP design (for simple designs, multiple effective footprint area by ponding depth to estimate volume)	V_{pond}	**1,290**	cu-ft
5	Enter any additional pre-filter detention volume provided, such as in a cistern or tank.	V_{detain}	**-**	cu-ft
6	Enter BMP available pore space volume by multiplying soil and gravel volumes by respective available porosity. Available porosity should be estimated based on material properties. In general, available pore space of 0.2 for amended media and 0.4 for open graded drain rock are considered to be reasonable.	V_{pores}	**1,032**	cu-ft
7	Calculate total pre-filter detention plus pore volume (add Lines 4 through 6)	$V_{pond+pores}$	**2,322**	cu-ft
8	Calculate total pre-filter plus pore volume as fraction of remaining DCV (Line 7 divided by Line 3)		**2.52**	unitless
9	Does pre-filter detention plus pore volume greater than 0.75 of remaining DCV? Enter Y or N		**Y**	Y or N
Provide description of system and/or calculations justifying the volumes entered under Step 2.				

Section IV.3.5
Hydromodification Control BMPs

SOHM

PROJECT REPORT

General Model Information

Project Name:	15575 - Hydromod
Site Name:	Tennis Club
Site Address:	111 Avenida Vista Montana
City:	San Clemente
Report Date:	2/22/2016
Gage:	Laguna Beach
Data Start:	10/01/1949
Data End:	09/30/2006
Timestep:	15 Minute
Precip Scale:	1.00
Version:	2013/12/14

POC Thresholds

Low Flow Threshold for POC1:	10 Percent of the 2 Year
High Flow Threshold for POC1:	10 Year

Landuse Basin Data
Predeveloped Land Use

Basin 1

Bypass:	No
GroundWater:	No
Pervious Land Use	Acres
D,Urban,Steep(10-15)	4.73
Pervious Total	4.73
Impervious Land Use	Acres
Impervious,Flat(0-5)	5.66
Impervious Total	5.66
Basin Total	10.39

Element Flows To:

Surface	Interflow	Groundwater

Mitigated Land Use

Basin 1

Bypass:	No
GroundWater:	No
Pervious Land Use	Acres
D,Urban,Steep(10-15)	4.43
Pervious Total	4.43
Impervious Land Use	Acres
Impervious,Flat(0-5)	5.96
Impervious Total	5.96
Basin Total	10.39

Element Flows To:

Surface	Interflow	Groundwater
Vault 1	Vault 1	

Mitigated Routing

Vault 1

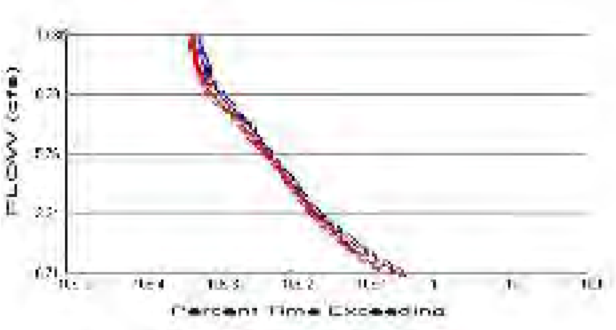
Width:	38.3644891132838 ft.
Length:	38.3644891132838 ft.
Depth:	4 ft.
Discharge Structure	
Riser Height:	3 ft.
Riser Diameter:	18 in.
Notch Type:	Rectangular
Notch Width:	1.498 ft.
Notch Height:	0.763 ft.
Orifice 1 Diameter:	4.86407451118628 in. Elevation:0 ft.
Element Flows To:	
Outlet 1	Outlet 2

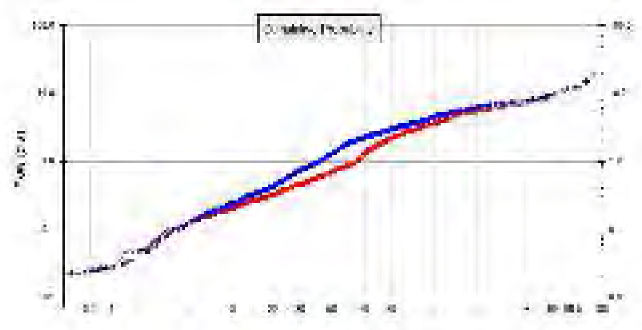
Vault Hydraulic Table

Stage(ft)	**Area(ac)**	**Volume(ac-ft)**	**Discharge(cfs)**	**Infilt(cfs)**
0.0000	0.033	0.000	0.000	0.000
0.0444	0.033	0.001	0.131	0.000
0.0889	0.033	0.003	0.185	0.000
0.1333	0.033	0.004	0.226	0.000
0.1778	0.033	0.006	0.262	0.000
0.2222	0.033	0.007	0.292	0.000
0.2667	0.033	0.009	0.320	0.000
0.3111	0.033	0.010	0.346	0.000
0.3556	0.033	0.012	0.370	0.000
0.4000	0.033	0.013	0.393	0.000
0.4444	0.033	0.015	0.414	0.000
0.4889	0.033	0.016	0.434	0.000
0.5333	0.033	0.018	0.453	0.000
0.5778	0.033	0.019	0.472	0.000
0.6222	0.033	0.021	0.490	0.000
0.6667	0.033	0.022	0.507	0.000
0.7111	0.033	0.024	0.524	0.000
0.7556	0.033	0.025	0.540	0.000
0.8000	0.033	0.027	0.555	0.000
0.8444	0.033	0.028	0.571	0.000
0.8889	0.033	0.030	0.585	0.000
0.9333	0.033	0.031	0.600	0.000
0.9778	0.033	0.033	0.614	0.000
1.0222	0.033	0.034	0.628	0.000
1.0667	0.033	0.036	0.641	0.000
1.1111	0.033	0.037	0.655	0.000
1.1556	0.033	0.039	0.668	0.000
1.2000	0.033	0.040	0.680	0.000
1.2444	0.033	0.042	0.693	0.000
1.2889	0.033	0.043	0.705	0.000
1.3333	0.033	0.045	0.717	0.000
1.3778	0.033	0.046	0.729	0.000
1.4222	0.033	0.048	0.741	0.000
1.4667	0.033	0.049	0.752	0.000
1.5111	0.033	0.051	0.763	0.000
1.5556	0.033	0.052	0.775	0.000
1.6000	0.033	0.054	0.786	0.000

1.6444	0.033	0.055	0.796	0.000
1.6889	0.033	0.057	0.807	0.000
1.7333	0.033	0.058	0.818	0.000
1.7778	0.033	0.060	0.828	0.000
1.8222	0.033	0.061	0.838	0.000
1.8667	0.033	0.063	0.849	0.000
1.9111	0.033	0.064	0.859	0.000
1.9556	0.033	0.066	0.868	0.000
2.0000	0.033	0.067	0.878	0.000
2.0444	0.033	0.069	0.888	0.000
2.0889	0.033	0.070	0.898	0.000
2.1333	0.033	0.072	0.907	0.000
2.1778	0.033	0.073	0.917	0.000
2.2222	0.033	0.075	0.926	0.000
2.2667	0.033	0.076	0.960	0.000
2.3111	0.033	0.078	1.044	0.000
2.3556	0.033	0.079	1.156	0.000
2.4000	0.033	0.081	1.290	0.000
2.4444	0.033	0.082	1.442	0.000
2.4889	0.033	0.084	1.610	0.000
2.5333	0.033	0.085	1.792	0.000
2.5778	0.033	0.087	1.989	0.000
2.6222	0.033	0.088	2.197	0.000
2.6667	0.033	0.090	2.418	0.000
2.7111	0.033	0.091	2.650	0.000
2.7556	0.033	0.093	2.893	0.000
2.8000	0.033	0.094	3.145	0.000
2.8444	0.033	0.096	3.408	0.000
2.8889	0.033	0.097	3.680	0.000
2.9333	0.033	0.099	3.961	0.000
2.9778	0.033	0.100	4.251	0.000
3.0222	0.033	0.102	4.451	0.000
3.0667	0.033	0.103	4.662	0.000
3.1111	0.033	0.105	4.960	0.000
3.1556	0.033	0.106	5.323	0.000
3.2000	0.033	0.108	5.741	0.000
3.2444	0.033	0.109	6.208	0.000
3.2889	0.033	0.111	6.718	0.000
3.3333	0.033	0.112	7.269	0.000
3.3778	0.033	0.114	7.857	0.000
3.4222	0.033	0.115	8.480	0.000
3.4667	0.033	0.117	9.137	0.000
3.5111	0.033	0.118	9.825	0.000
3.5556	0.033	0.120	10.54	0.000
3.6000	0.033	0.121	11.29	0.000
3.6444	0.033	0.123	12.06	0.000
3.6889	0.033	0.124	12.86	0.000
3.7333	0.033	0.126	13.69	0.000
3.7778	0.033	0.127	14.55	0.000
3.8222	0.033	0.129	15.43	0.000
3.8667	0.033	0.130	16.33	0.000
3.9111	0.033	0.132	17.25	0.000
3.9556	0.033	0.133	18.20	0.000
4.0000	0.033	0.135	19.17	0.000
4.0444	0.033	0.136	20.16	0.000
4.0889	0.000	0.000	21.17	0.000

Analysis Results
POC 1





+ Predeveloped x Mitigated

Predeveloped Landuse Totals for POC #1
Total Pervious Area: 4.73
Total Impervious Area: 5.66

Mitigated Landuse Totals for POC #1
Total Pervious Area: 4.43
Total Impervious Area: 5.96

Flow Frequency Method: Cunnane

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	**Flow(cfs)**
2 year	7.144943
5 year	8.497418
10 year	10.797436
25 year	13.225001

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	**Flow(cfs)**
2 year	6.217272
5 year	7.788352
10 year	10.845986
25 year	12.856303

Duration Flows

The Facility PASSED

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.7145	6859	6528	95	Pass
0.8163	5886	4817	81	Pass
0.9182	5075	3342	65	Pass
1.0200	4385	2850	64	Pass
1.1219	3845	2548	66	Pass
1.2237	3412	2282	66	Pass
1.3256	3034	2049	67	Pass
1.4274	2710	1853	68	Pass
1.5293	2442	1691	69	Pass
1.6311	2200	1541	70	Pass
1.7330	1985	1423	71	Pass
1.8348	1802	1302	72	Pass
1.9367	1623	1186	73	Pass
2.0385	1474	1089	73	Pass
2.1404	1341	995	74	Pass
2.2422	1228	925	75	Pass
2.3441	1106	846	76	Pass
2.4459	1010	782	77	Pass
2.5478	921	718	77	Pass
2.6496	833	656	78	Pass
2.7515	760	603	79	Pass
2.8533	700	563	80	Pass
2.9551	637	520	81	Pass
3.0570	592	487	82	Pass
3.1588	550	457	83	Pass
3.2607	503	423	84	Pass
3.3625	463	396	85	Pass
3.4644	424	376	88	Pass
3.5662	406	355	87	Pass
3.6681	381	336	88	Pass
3.7699	356	314	88	Pass
3.8718	328	289	88	Pass
3.9736	308	269	87	Pass
4.0755	293	251	85	Pass
4.1773	279	241	86	Pass
4.2792	268	230	85	Pass
4.3810	254	221	87	Pass
4.4829	243	210	86	Pass
4.5847	226	198	87	Pass
4.6866	215	186	86	Pass
4.7884	205	182	88	Pass
4.8903	191	171	89	Pass
4.9921	173	167	96	Pass
5.0940	161	158	98	Pass
5.1958	147	147	100	Pass
5.2976	140	136	97	Pass
5.3995	135	124	91	Pass
5.5013	128	119	92	Pass
5.6032	122	111	90	Pass
5.7050	113	102	90	Pass
5.8069	108	99	91	Pass
5.9087	102	93	91	Pass
6.0106	96	89	92	Pass

6.1124	90	84	93	Pass
6.2143	84	77	91	Pass
6.3161	80	70	87	Pass
6.4180	76	65	85	Pass
6.5198	70	59	84	Pass
6.6217	68	58	85	Pass
6.7235	68	53	77	Pass
6.8254	67	49	73	Pass
6.9272	63	47	74	Pass
7.0291	57	45	78	Pass
7.1309	54	43	79	Pass
7.2328	49	40	81	Pass
7.3346	45	37	82	Pass
7.4365	42	37	88	Pass
7.5383	38	36	94	Pass
7.6402	38	31	81	Pass
7.7420	35	29	82	Pass
7.8438	33	25	75	Pass
7.9457	31	22	70	Pass
8.0475	29	21	72	Pass
8.1494	27	20	74	Pass
8.2512	24	18	75	Pass
8.3531	24	17	70	Pass
8.4549	24	16	66	Pass
8.5568	22	16	72	Pass
8.6586	22	16	72	Pass
8.7605	20	15	75	Pass
8.8623	17	14	82	Pass
8.9642	16	14	87	Pass
9.0660	16	14	87	Pass
9.1679	16	13	81	Pass
9.2697	16	12	75	Pass
9.3716	16	12	75	Pass
9.4734	16	12	75	Pass
9.5753	15	11	73	Pass
9.6771	15	11	73	Pass
9.7790	15	11	73	Pass
9.8808	14	11	78	Pass
9.9827	14	11	78	Pass
10.0845	13	11	84	Pass
10.1863	13	11	84	Pass
10.2882	13	10	76	Pass
10.3900	13	10	76	Pass
10.4919	13	10	76	Pass
10.5937	12	10	83	Pass
10.6956	12	10	83	Pass
10.7974	10	10	100	Pass

Disclaimer

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Attachment B
Educational Materials

Attachment C
Operations and Maintenance Plan

APPENDIX F
Noise Impact Analysis

Life Time Athletic & Tennis Club

NOISE IMPACT ANALYSIS

CITY OF SAN CLEMENTE

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JULY 13, 2017

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LIST OF ABBREVIATED TERMS

(1)	Reference
ANSI	American National Standards Institute
CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level
dBA	A-weighted decibels
EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
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
OPR	Office of Planning and Research
PPV	Peak Particle Velocity
Project	Life Time Athletic & Tennis Club
RMS	Root-Mean-Square
VdB	Vibration Decibels

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1 INTRODUCTION

This noise analysis has been completed to determine the noise impacts associated with the development of the proposed Life Time Athletic & Tennis Club Project ("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 noise analysis, and evaluates the future exterior noise environment. In addition, this study includes an analysis of the potential Project-related long-term stationary/area-source and short-term Project construction noise impacts.

1.1 SITE LOCATION

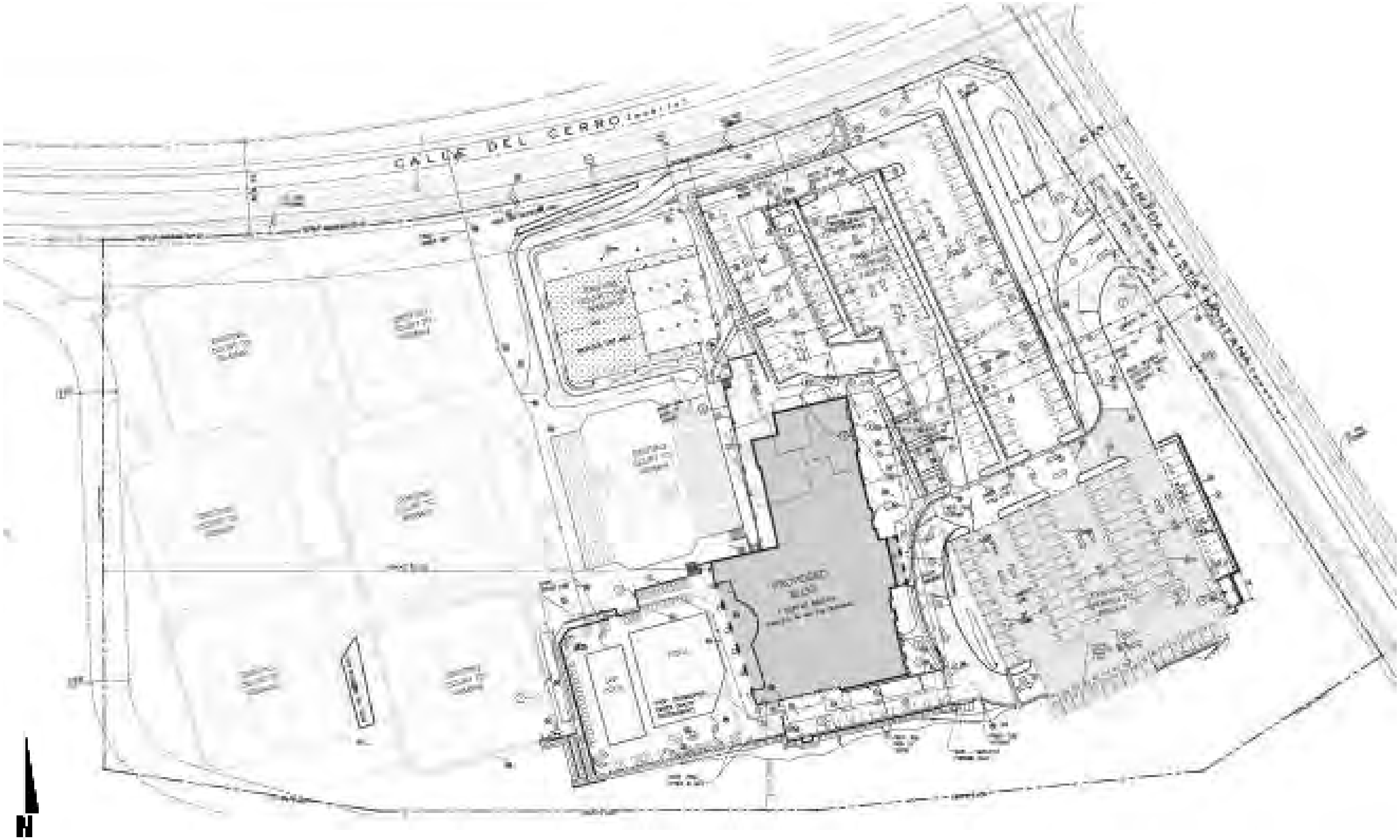
The proposed Life Time Athletic & Tennis Club site is located at 111 Avenida Vista Montana in the City of San Clemente, as shown on Exhibit 1-A. The Project site is currently developed with the existing Rancho San Clemente Tennis & Fitness Club, which includes an 11,000-square-foot clubhouse, 19 tennis courts, a swimming pool, and basketball courts. Properties to the north (across Call del Cerro), west, and south are vacant and undeveloped. Easterly of the Project site, across Avenida Vista Montana, properties are developed with single-family residential uses. (1)

1.2 PROJECT DESCRIPTION

The Project is proposed to consist of the redevelopment of the eastern portions of the existing site with proposed clubhouse, outdoor recreational areas, swimming pools, and supporting parking and landscape areas, as shown on Exhibit 1-B. Of the existing tennis courts in the westerly portion of the Project site, 13 would be retained in place. Typical on-site Project-related noise sources are expected to include: roof-top air conditioning units, parking lot vehicle movements, pool activity, and tennis court activity. Under special permit, the Project may also accommodate limited live music/event activity.

EXHIBIT 1-A: LOCATION MAP

EXHIBIT 1-B: SITE PLAN



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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		
NEAR JET ENGINE		130	[illegible]	
		120		[illegible]
JET FLY-OVER AT 300m (1000 ft)	ROCK BAND	110		
LOUD AUTO HORN		100		
GAS LAWN MOWER AT 1m (3 ft)		90	VERY NOISY	
DIESEL TRUCK AT 15m (50 ft), at 80 km/hr (50 mph)	FOOD BLENDER AT 1m (3 ft)	80		
NOISY URBAN AREA, DAYTIME	VACUUM CLEANER AT 3m (10 ft)	70	LOUD	SPEECH INTERFERENCE
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	
QUIET RURAL NIGHTTIME	BEDROOM AT NIGHT, CONCERT HALL (BACKGROUND)	20		NO EFFECT
	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. (2) 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. (3) 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. The City of San Clemente Municipal Code relies on the percentile noise levels to describe the stationary source noise level limits. While the L_{50} describes the mean 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 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 particular time, but rather represents the total sound exposure. The City of San Clemente 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. (4)

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. (5)

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. (4)

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. (5)

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. (5)

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. (6)

2.7 COMMUNITY RESPONSE TO NOISE

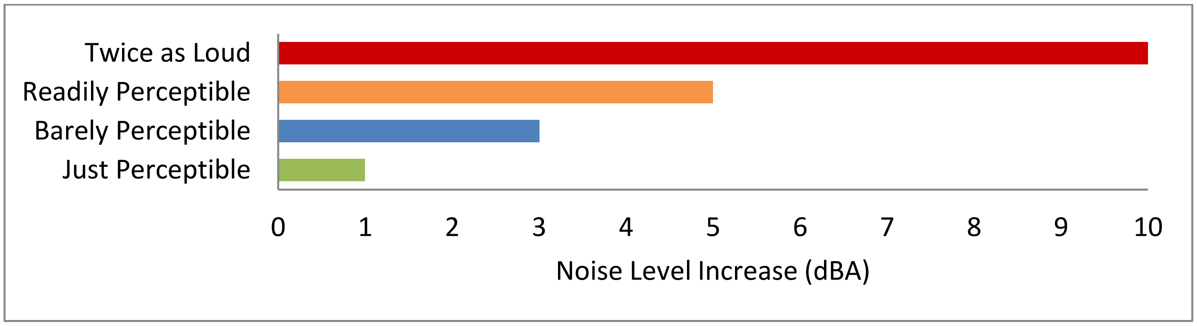
Community responses to noise may range from registering a complaint by telephone or letter, to initiating court action, depending upon everyone's susceptibility to noise and personal attitudes about noise. Several factors are related to the level of community annoyance including:

- 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. (7) 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. (7)

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*. (5)

EXHIBIT 2-B: NOISE LEVEL INCREASE PERCEPTION



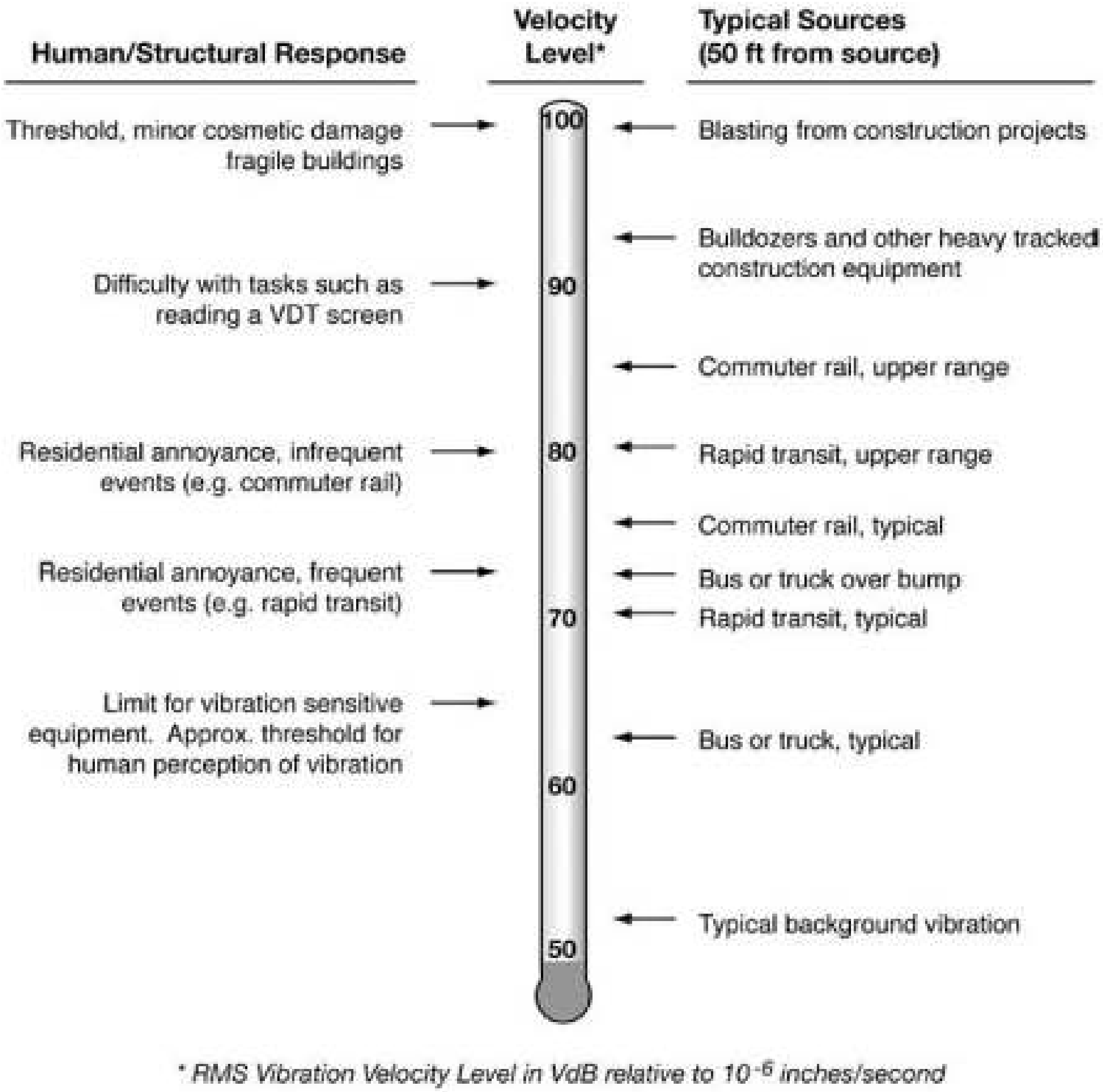
2.8 VIBRATION

Per the Federal Transit Administration (FTA) *Transit Noise Impact and Vibration Assessment* (8), 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.

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. (9) 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.

3.3 CITY OF SAN CLEMENTE GENERAL PLAN SAFETY ELEMENT

The City of San Clemente has adopted a Safety Element of the General Plan which includes a Noise section as a tool for managing noise by planning for and maintaining compatibility between sensitive land uses and noise sources. (10) The goal of the Noise section of the City of San Clemente Safety Element is to minimize exposure to excessive noise levels by taking appropriate actions to avoid or mitigate the detrimental effects of exposure to excessive noise levels on humans and animals and in particular, on sensitive land uses.

3.4 STATIONARY/AREA-SOURCE NOISE STANDARDS

For this noise study, the potential stationary/area-source (operational) and construction noise are evaluated based on the appropriate noise level standards identified in the City of San Clemente Municipal Code as described below.

The City of San Clemente Municipal Code regulates stationary non-transportation related noise originating from private properties such as the Project site. Section 8.48.050 of the Municipal Code establishes maximum allowable exterior noise levels for noise-sensitive residential land uses in the Project study area. Nearby noise-sensitive receptor land uses include the single-family residential uses southwest and east of the Project site. The exterior noise standards for these receptor land uses (residential use) are presented below on Table 3-1. As presented in the City of San Clemente Municipal Code, the base noise standards on Table 3-1 shall apply for a cumulative period of 30 minutes in any hour; the base noise standard plus 5 dBA shall not be exceeded for a cumulative period of more than 15 minutes in any hour; the base standard plus 10 dBA shall not be exceed for a cumulative period of more than 5 minutes in any hour; the base standard plus 15 dBA shall not be exceeded for a cumulative period of more than 1 minute in any hour; the base standard plus 20 dBA shall not be exceeded for any period of time. (11) The City of San Clemente Municipal Code is included in Appendix 3.1.

TABLE 3-1: STATIONARY/AREA-SOURCE EXTERIOR NOISE STANDARDS

Land Use	Maximum Duration Period	Percentile Noise Level[2]	Noise Level Adjustments Above Base Noise Standard	Exterior Noise Level Standards (dBA)[3]	
				Daytime	Nighttime
Residential	> 30 Minutes	L_{50}	+0	55	50
	15 Minutes	L_{25}	+5	60	55
	5 Minutes	L_8	+10	65	60
	1 Minutes	L_2	+15	70	65
	Any Period	L_{max}	+20	75	70

[1] Source: City of San Clemente Municipal Code, Section 8.48.050 (Appendix 3.1).
[2] The percent noise level is the level exceeded "n" percent of the time during the measurement period. L_{50} is the noise level exceeded 50% of the time.
[3] Base Exterior Noise Levels plus the noise level adjustments.
"Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 p.m.

3.5 CONSTRUCTION-SOURCE NOISE STANDARDS

Noise from construction activities are typically limited to the hours of operation established under a City's Municipal Code. The Municipal Code noise standards for construction are described below for the City of San Clemente and summarized in Table 3-2.

The City of San Clemente Municipal Code, Section 8.48.090(E) establishes the permitted hours during which construction within the City of San Clemente may take place: between 7:00 a.m. to 6:00 p.m. Monday to Friday; 8:00 a.m. to 6:00 p.m. on Saturdays; no activity allowed on Sundays or holidays. (11) No exterior construction noise level standards are identified for the residential land uses in the Project study area. For the purposes of this analysis, the construction noise level limit of 75 dBA Lmax is evaluated using the maximum allowable noise level limit for residential uses, as previously described in Section 3.4. The City of San Clemente construction standards are shown on Table 3-2 and included in Appendix 3.1.

TABLE 3-2: CONSTRUCTION NOISE STANDARDS

Jurisdiction	Permitted Hours of Construction Activity	Thresholds For Determining Significance (dBA Lmax)[2]
City of San Clemente[1]	7:00 a.m. to 6:00 p.m. Monday to Friday; 8:00 a.m. to 6:00 p.m. on Saturdays; no activity allowed on Sundays or holidays.	75

[1] Source: City of San Clemente Municipal Code, Section 8.48.090 (E) (Appendix 3.1).
[2] Threshold based on the City of San Clemente Municipal Code, Section 8.48.050 75 dBA Lmax maximum noise level limit for residential land uses.

3.6 CONSTRUCTION VIBRATION STANDARDS

The City of San Clemente has not identified or adopted specific vibration standards. However, the United States Department of Transportation Federal Transit Administration (FTA) provides guidelines for maximum-acceptable vibration criteria for different types of land uses. These guidelines allow for 72 VdB for frequent events (rail transit) and 80 VdB for infrequent events (construction) at residential uses and buildings where people normally sleep. (8)

Construction activity can result in varying degrees of ground-borne vibration, depending on the equipment and methods used, distance to the affected structures and soil type. Construction vibration is generally associated with pile driving and rock blasting. Other construction equipment such as air compressors, light trucks, hydraulic loaders, etc., generates little or no ground vibration. Occasionally large bulldozers and loaded trucks can cause perceptible vibration levels at close distances. While not enforceable regulations within the City of San Clemente, the FTA guidelines for sensitive land uses provide the basis for determining the relative significance of potential Project-related vibration impacts.

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4 THRESHOLDS OF SIGNIFICANCE

This section outlines the applicable thresholds of significance that were used assess the potential Project impacts. The significance criteria for each analysis is summarized on Table 4-1.

4.1 STANDARDS OF SIGNIFICANCE

Based on the noise criteria presented in Section 3, and direction provided within the CEQA Guidelines as implemented by the City of San Clemente, Project noise impacts would be considered potentially significant if the Project results in or causes the following conditions:

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.

4.2 NOISE IMPACT SIGNIFICANCE CRITERIA

The Life Time Athletic & Tennis Club noise impact significance criteria are discussed below.

Threshold Consideration: *Potential to expose persons to, or generate, noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.*

Project Stationary/Area-Source Noise[1] Exceeding City Standards Would be Considered Potentially Significant. The City of San Clemente Municipal Code Section 8.48.050, previously shown on Table 3-1, establishes the acceptable noise levels that can be generated by stationary/area noise sources as received at off-site land uses within the City of San Clemente. Project stationary/area-source noise that would cause or result in noise levels exceeding the levels in Table 3-1 would potentially expose persons to noise levels in excess of standards established in the City of San Clemente Municipal Code, and would therefore be potentially significant.

[1] For the purposes of this analysis, area-source noise includes noise that would be generated by construction activities.

The City of San Clemente has set restrictions to control noise impacts associated with construction activities throughout the City. Section 8.48.090(E) establishes the permitted hours during which construction within the City of San Clemente may take place: between 7:00 a.m. to 6:00 p.m. Monday to Friday; 8:00 a.m. to 6:00 p.m. on Saturdays; no activity allowed on Sundays or holidays. (11)

No exterior construction noise level standards are identified for the residential land uses in the Project study area. For the purposes of this analysis, the construction noise level limit of 75 dBA Lmax is evaluated using the maximum allowable noise level limit for residential uses, as previously described in Section 3.4. Project construction source noise that would cause or result in noise levels exceeding 75 dBA Lmax would potentially expose persons to noise levels in excess of standards established as the threshold for determining the relative significance of Project construction noise levels, and would therefore be potentially significant.

Project Stationary/Area-Source Vibration[2] Exceeding City Standards Would be Considered Potentially Significant. The City of San Clemente has not identified or adopted specific vibration standards. However, the United States Department of Transportation Federal Transit Administration (FTA) provides guidelines for maximum-acceptable vibration criteria for different types of land uses. These guidelines allow for 72 VdB for frequent events (rail transit) and 80 VdB for infrequent events (construction) at residential uses and buildings where people normally sleep. (8) Project construction-source and/or stationary/area-source vibration that would cause or result in vibration levels exceeding 80 VdB would potentially expose persons to vibration levels in excess of the quantified standards established by the FTA, and would therefore be potentially significant.

Summary

The potential for the Project to expose persons to, or generate, noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies would occur if:

- Project stationary/area-source noise would exceed City of San Clemente Municipal Code Noise Standards; or
- Project stationary/area-source vibration would exceed City of San Clemente Vibration Standards.

Threshold Consideration: *Potential to result in or cause a substantial temporary or periodic increase in ambient noise levels in the Project vicinity above levels existing without the Project; or*

Threshold Consideration: *Potential to result in or cause a substantial permanent increase in ambient noise levels in the Project vicinity above levels existing without the Project.*

Perceptible Project Stationary/Area-Source Noise Exceeding Maximum Acceptable Ambient Conditions Would be Considered Substantial and Potentially Significant. For the purposes of this analysis, City of San Clemente Municipal Code noise standards are also defined as the

[2] For the purposes of this analysis, area-source vibration includes vibration that would be generated by construction activities.

maximum acceptable ambient condition when considering stationary/area-source noise impacts. In this regard, the maximum acceptable ambient noise conditions established in this analysis reflect local standards for acceptable noise conditions.

When ambient noise conditions are within acceptable standards and perceptible (3.0 dBA or greater) Project stationary/area-source noise (whether temporary/periodic or permanent) would individually or in combination with ambient noise levels, exceed acceptable standards, Project-source increases in ambient conditions could adversely affect area land uses, and land use/noise compatibility standards may not be maintained. Perceptible Project stationary/area-source noise that would cause ambient conditions to exceed acceptable standards would therefore be considered substantial and potentially significant.

When Noise Levels Exceed Maximum Acceptable Ambient Conditions, Project Stationary/Area-Source Noise Increases of 1.5 dBA or Greater Would be Considered Substantial and Potentially Significant. Similarly, when ambient noise conditions are at or above normally acceptable standards, Project stationary/area-source increases of 1.5 dBA or greater in ambient conditions would contribute to existing unacceptable conditions and could result in increased community annoyance, citizen complaints, and potential litigation. For the purposes of this analysis then, when ambient conditions equal or exceed acceptable standards, Project stationary/area-source noise increases of 1.5 dBA more in ambient conditions would therefore be considered substantial and potentially significant.

Summary

A substantial temporary or permanent increase in ambient noise conditions would occur if Project-source noise would:

- Result in a perceptible increase in noise levels (3.0 dBA or greater) that would cause the acceptable ambient condition to be exceeded; (5) or
- Result in an increase of 1.5 dBA in ambient conditions when the noise environment at receiving land uses already exceeds the acceptable ambient noise condition.

Threshold Consideration: *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.*

Threshold Consideration: *For a project within the vicinity of a private airstrip, expose people residing or working in the Project area to excessive noise levels.*

The Project site is not located within two miles of a public airport or within the vicinity of a private airstrip, 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 these thresholds.

TABLE 4-1: SUMMARY OF SIGNIFICANCE THRESHOLDS

Noise Source/Type	Receptor Land Use	Ambient Condition/ Exposure Scenario	Metric	Significance Criteria	
				Daytime	Nighttime
Stationary/Area-Source	Residential	≥ 30 minutes	L_{50}	55	50
		≥ 15 minutes	L_{25}	60	55
		≥ 5 minutes	L_{8}	65	60
		≥ 1 minute	L_{2}	70	65
		Any Period	L_{max}	75	70
	Noise-Sensitive	if ambient is below the noise level standard	Any	Project increase of ≥ 3 dBA causes ambient to exceed the standard	
		if ambient is greater than the noise level standard	Any	≥ 1.5 dBA Project increase	
Construction	Noise-Sensitive	Permitted hours of 7:00 a.m. to 6:00 p.m. Monday to Friday; 8:00 a.m. to 6:00 p.m. on Saturdays; no activity allowed on Sundays or holidays.			
		Noise Exposure	L_{max}	75	n/a
		Vibration Exposure	VdB	80	n/a

Notes: "Daytime" = 7:00 a.m. - 10:00 p.m.; "Nighttime" = 10:00 p.m. - 7:00 a.m.; "n/a" = Threshold does not apply to the given time period; "VdB" = Vibration Decibels

5 EXISTING NOISE LEVEL MEASUREMENTS

To assess the existing noise level environment, six 24-hour noise level measurements were taken at various receiver locations in the Project study area. The receiver locations were selected to describe and document the existing noise environment within the Project study area. 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. on Thursday, June 29th, 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 over a 24-hour period. 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. (12)

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*. (2) 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*. (8)

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. (8) 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.

EXHIBIT 5-A: NOISE MEASUREMENT LOCATIONS

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 unmitigated 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. The median noise level (dBA L_{50}) at each measurement location is included in Table 5-1 to reflect the City of San Clemente percentile noise level standards. Appendix 5.2 provides a summary of the existing hourly ambient noise levels described below:

- Location L1 represents the noise levels northeast of the Project site on Maracay near existing residential homes. The noise level measurements collected show an overall 24-hour exterior noise level of 61.7 dBA CNEL. The hourly noise levels measured at location L1 ranged from 54.2 to 60.5 dBA Leq during the daytime hours and from 43.6 to 60.4 dBA Leq during the nighttime hours. The energy (logarithmic) average daytime noise level was calculated at 57.8 dBA Leq with an average nighttime noise level of 54.3 dBA Leq.
- Location L2 represents the noise levels south of the Project site on Calle Familia in an existing residential community. The 24-hour CNEL indicates that the overall exterior noise level is 49.8 dBA CNEL. The hourly noise levels measured at location L2 ranged from 36.6 to 49.0 dBA Leq during the daytime hours and from 36.3 to 47.3 dBA Leq during the nighttime hours. The energy (logarithmic) average daytime noise level was calculated at 44.5 dBA Leq with an average nighttime noise level of 43.1 dBA Leq.
- Location L3 represents the noise levels within the existing Rancho San Clemente Tennis and Fitness Club parking lot. The noise level measurements collected show an overall 24-hour exterior noise level of 48.5 dBA CNEL. At location L3 the background ambient noise levels ranged from 40.0 to 49.2 dBA Leq during the daytime hours to levels of 35.8 to 44.4 dBA Leq during the nighttime hours. The energy (logarithmic) average daytime noise level was calculated at 46.5 dBA Leq with an average nighttime noise level of 40.1 dBA Leq.
- Located at the eastern Project site boundary, location L4 represents the noise levels adjacent to the existing Rancho San Clemente Tennis and Fitness Club parking lot on Avenida Vista Montana. The noise level measurements collected show an overall 24-hour exterior noise level of 59.2 dBA CNEL. The hourly noise levels measured at location L4 ranged from 52.8 to 60.8 dBA Leq during the daytime hours and from 42.6 to 54.0 dBA Leq during the nighttime hours. The energy (logarithmic) average daytime noise level was calculated at 57.3 dBA Leq with an average nighttime noise level of 50.4 dBA Leq.
- Location L5 represents the noise levels at the northern Project site boundary adjacent to an existing Rancho San Clemente Tennis and Fitness Club basketball court on the south side of Calle Del Cerro. The noise level measurements collected show an overall 24-hour exterior noise level of 63.3 dBA CNEL. At location L5 the background ambient noise levels ranged from 56.0 to 60.6 dBA Leq during the daytime hours to levels of 46.2 to 61.5 dBA Leq during the nighttime hours. The energy (logarithmic) average daytime noise level was calculated at 58.6 dBA Leq with an average nighttime noise level of 56.2 dBA Leq.
- Location L6 represents the noise levels at the northern Project site boundary adjacent to existing Rancho San Clemente Tennis and Fitness Club tennis courts on Calle Del Cerro. The noise level measurements collected show an overall 24-hour exterior noise level of 69.8 dBA CNEL. At

location L6 the background ambient noise levels ranged from 63.3 to 66.6 dBA Leq during the daytime hours to levels of 57.7 to 67.5 dBA Leq during the nighttime hours. The energy (logarithmic) average daytime noise level was calculated at 65.2 dBA Leq with an average nighttime noise level of 62.6 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. Table 5-1 also shows the median noise level (dBA L_{50}) at each of the noise level measurement locations. 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 ambient noise levels in the Project study area are dominated by the transportation related noise associated with the arterial roadway network. This includes the auto and heavy truck activities on roadways and freight near the noise level measurement locations. The 24-hour existing noise level measurements shown on Table 5-1 present the worst-case existing unmitigated ambient noise conditions.

TABLE 5-1: 24-HOUR AMBIENT NOISE LEVEL MEASUREMENTS

Location[1]	Distance to Project Boundary (Feet)	Description	Energy Average Hourly Noise Level (dBA Leq)[2]		Average Median Noise Level (dBA L_{50})[2]		CNEL
			Daytime	Nighttime	Daytime	Nighttime	
L1	995'	Located northeast of the Project site on Maracay near existing residential homes.	57.8	54.3	50.1	39.9	61.7
L2	480'	Located south of the Project site on Calle Familia in an existing residential community.	44.5	43.1	39.7	38.4	49.8
L3	0'	Located within the existing Rancho San Clemente Tennis and Fitness Club parking lot.	46.5	40.1	41.6	36.8	48.5
L4	0'	Located at the eastern Project site boundary adjacent to Avenida Vista Montana.	57.3	50.4	45.1	37.0	59.2
L5	0'	Located at the norther Project site boundary adjacent to an existing Rancho San Clemente Tennis and Fitness Club basketball court on the south side of Calle Del Cerro.	58.6	56.2	52.8	41.7	63.3
L6	0'	Located at the northern Project site boundary adjacent to existing Rancho San Clemente Tennis and Fitness Club tennis courts on Calle Del Cerro.	65.2	62.6	59.9	55.3	69.8

[1] See Exhibit 5-A for the noise level measurement locations.
[2] The long-term 24-hour measurement printouts are included in Appendix 5.2.
"Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

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6 METHODS AND PROCEDURES

The following section outlines the methods and procedures used to model and analyze the potential Project-related stationary/area-source and construction noise impacts.

6.1 STATIONARY/AREA-SOURCE REFERENCE NOISE LEVELS

To estimate the potential stationary/area-source noise impacts at the sensitive receivers in the Project study area, reference noise level measurements were collected from similar types of activities to represent the noise levels expected with the development of the proposed Life Time Athletic & Tennis Club Project. This section provides a detailed description of the reference noise level measurements shown on Table 6-1 used to estimate the stationary/area-source noise impacts. It is important to note that the following projected noise levels assume the worst-case noise environment with the roof-top air conditioning units, parking lot vehicle movements, pool activity, and tennis court activity. Under special permit, the Project may also accommodate limited live music/event activity all operating simultaneously. These noise level impacts will likely vary throughout the day.

TABLE 6-1: REFERENCE NOISE LEVEL MEASUREMENTS

Noise Source	Duration (hh:mm:ss)	Distance From Source (Feet)	Noise Source Height (Feet)	Hourly Activity (Min.)[6]	Reference Noise Level (dBA L_{50})	
					@ Ref. Dist.	@ 50 Feet
Roof-Top Air Conditioning Unit[1]	96:00:00	5'	5'	39	74.4	54.4
Parking Lot Vehicle Movements[2]	01:00:00	10'	5'	60	49.0	38.5
Pool Activity[3]	00:10:00	5'	4'	60	68.7	48.7
Tennis Court Activity[4]	00:02:30	35'	5'	60	52.7	49.6
Live Music/Event Activity[5]	00:01:20	5'	8'	60	73.1	53.1

[1] As measured by Urban Crossroads, Inc. on 7/27/2015 at the Santee Walmart located at 170 Town Center Parkway.
[2] As measured by Urban Crossroads, Inc. on 5/17/2017 at the Panasonic Avionics Corporation parking lot in the City of Lake Forest at typical lunch hour (12:00 p.m. to 1:00 p.m.).
[3] As measured by Urban Crossroads, Inc. on 7/5/2017 at the Covenant Hill Clubhouse Pool in the unincorporated community of Ladera Ranch in the County of Orange.
[4] As measured by Urban Crossroads, Inc. on 7/10/2017 at Bill Barber Park in the City of Irvine.
[5] As measured by Urban Crossroads, Inc. on 9/19/2013 at the Gate 12 Outdoor Event Space in Laguna Woods.
[6] Anticipated duration (minutes within the hour) of noise activity during peak hourly conditions expected at the Project site.

6.1.1 ROOF-TOP AIR CONDITIONING UNITS

To assess the noise levels created by the roof-top air conditioning units at the Project site, reference noise levels measurements were taken at the Santee Walmart on July 27th, 2015. Located at 170 Town Center Parkway in the City of Santee, the noise level measurements describe a single mechanical roof-top air conditioning unit on the roof of an existing Walmart store. The reference noise level represents a Lennox SCA120 series 10-ton model packaged air conditioning unit. Using a uniform reference distance of 50 feet, the reference noise level noise level is 54.4 dBA L_{50}. The operating conditions of the reference noise level measurement reflect peak summer cooling requirements with measured temperatures approaching 96 degrees Fahrenheit (°F) with average daytime temperatures of 82°F. The roof-top air condition units were observed to operate the most during the daytime hours for a total of 39 minutes per hour.

6.1.2 Parking Lot Vehicle Movements

To determine the noise levels associated with parking lot vehicle movements, Urban Crossroads collected reference noise level measurements over a 24-hour period on May 17th, 2017 at the parking lot for the Panasonic Avionics Corporation adjacent to the Project site in the City of Lake Forest. The peak hour of activity measured over the 24-hour noise level measurement period occurred between 12:00 p.m. to 1:00 p.m., or the typical lunch hour for employees working in the area. The measured reference noise level at 50 feet from parking lot vehicle movements was measured at 38.5 dBA L_{50}. The parking lot noise levels are mainly due to cars pulling in and out of spaces during peak lunch hour activity and employees talking. Noise associated with parking lot vehicle movements is expected to operate for the entire hour (60 minutes).

6.1.3 Pool Activity

To represent the noise levels associated with pool activities, Urban Crossroads collected a reference noise level measurement on July 5th, 2017 at the Covenant Hill Clubhouse Pool in the unincorporated community of Ladera Ranch in the County of Orange. The measured reference noise level at the uniform 50-foot reference distance is 48.7 dBA L_{50} for pool activity. The pool activity noise levels include kids playing, running, screaming, splashing, playing with a ball, and parents talking. Noise associated with pool activities is expected to occur for the entire hour (60 minutes).

6.1.4 Tennis Court Activity

To describe the noise levels associated with tennis court activities, Urban Crossroads collected a reference noise level measurement on July 10th, 2017 at Bill Barber Park in the City of Irvine. The measured reference noise level at the uniform 50-foot reference distance is 49.6 dBA L_{50} for tennis court activity. The tennis court activity noise levels include an instructor and student playing tennis, the instructor giving constant verbal feedback, the sound of rackets hitting tennis balls, metal tennis court gates closing, and background park noise sources including people talking. Noise associated with tennis court activities is expected to occur for the entire hour (60 minutes).

6.1.5 Live Music/Event Activity

To assess the impacts created by potential unamplified crowd noise, public address systems, and amplifying equipment for live or recorded music at the outdoor seating area of the Project's restaurant use, a reference noise level measurement was taken at a Revelation Classic Jazz Band concert on September 19th, 2013. Located at the entrance of Clubhouse 2 of the Gate 12 Outdoor Event Space in the City of Laguna Woods, the noise level measurements describe a community concert including a stage, sound amplifying equipment (e.g. speakers), and unamplified crowd noise. At the uniform reference distance of 50 feet, the reference noise level is 53.1 dBA L_{50}. Live music concerts and crowd activities are expected to occur for the full hour under special event conditions at the Project site, however, are modeled simultaneously with all typical operational activities to present a conservative analysis.

6.2 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. The number and mix of construction equipment is expected to occur in the following stages:

- Demolition
- Site Preparation
- Grading
- Building Construction
- Paving
- Architectural Coating

This construction noise analysis was prepared using reference noise level measurements taken by Urban Crossroads, Inc. to describe the typical construction activity noise levels for each stage of 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 64 dBA to in excess of 85 dBA when measured at 50 feet. However, these noise levels diminish with distance from the construction site at a rate of 6 dBA per doubling of distance. For example, a noise level of 85 dBA measured at 50 feet from the noise source to the receiver would be reduced to 79 dBA at 100 feet from the source to the receiver, and would be further reduced to 73 dBA at 200 feet from the source to the receiver. The construction phases used in this analysis are consistent with the data used to support the construction emissions in the *Life Time Athletic & Tennis Club Air Quality Impact Analysis* prepared by Urban Crossroads Inc. (13)

CONSTRUCTION REFERENCE NOISE LEVELS

To describe the Project construction noise levels, measurements were collected for similar activities at several construction sites. Table 6-2 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 6-2 have been adjusted to describe a common reference distance of 50 feet.

TABLE 6-2: CONSTRUCTION REFERENCE NOISE LEVELS

ID	Noise Source	Reference Distance From Source (Feet)	Reference Noise Levels @ Reference Distance (dBA Lmax)	Reference Noise Levels @ 50 Feet (dBA Lmax)[7]
1	Truck Pass-Bys & Dozer Activity[1]	30'	68.1	63.7
2	Dozer Activity[1]	30'	76.4	72.0
3	Construction Vehicle Maintenance Activities[2]	30'	74.8	70.4
4	Foundation Trenching[2]	30'	74.9	70.5
5	Rough Grading Activities[2]	30'	84.8	80.4
6	Framing[3]	30'	76.7	72.3
7	Water Truck Pass-By & Backup Alarm[4]	30'	82.3	77.9
8	Dozer Pass-By[4]	30'	89.9	85.5
9	Two Scrapers & Water Truck Pass-By[4]	30'	89.0	84.6
10	Two Scrapers Pass-By[4]	30'	86.9	82.5
11	Scraper, Water Truck, & Dozer Activity[4]	30'	87.7	83.3
12	Concrete Mixer Truck Movements[5]	50'	73.1	73.1
13	Concrete Paver Activities[5]	30'	75.7	71.3
14	Concrete Mixer Pour & Paving Activities[5]	30'	76.3	71.9
15	Concrete Mixer Backup Alarms & Air Brakes[5]	50'	78.8	78.8
16	Concrete Mixer Pour Activities[5]	50'	79.2	79.2
17	Forklift, Jackhammer, & Metal Truck Bed Loading	50'	81.6	81.6

[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 a 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).

6.3 VIBRATION ASSESSMENT

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.

However, while vehicular traffic is rarely perceptible, construction 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 6-3. Based on the representative vibration levels presented for various construction equipment types, it is possible to estimate the human response (annoyance) using the following vibration assessment methods defined by the FTA. To describe the human response (annoyance) associated with vibration impacts the FTA provides the following equation (8): $L_{VdB}(D) = L_{VdB}(25\ ft) - 30log(D/25)$

TABLE 6-3: VIBRATION SOURCE LEVELS FOR CONSTRUCTION EQUIPMENT

Equipment	Vibration Decibels (VdB) at 25 feet
Small bulldozer	58
Jackhammer	79
Loaded Trucks	86
Large bulldozer	87

Source: Federal Transit Administration, Transit Noise and Vibration Impact Assessment, May 2006.

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7 RECEIVER LOCATIONS

To assess the potential for long-term stationary/area-source and short-term construction noise impacts, the following five receiver locations, as shown on Exhibit 9-A, were identified as representative locations for analysis. Sensitive receivers are generally defined as locations where people reside or where the presence of unwanted sound could otherwise adversely affect the use of the land. Noise-sensitive land uses are generally considered to include: schools, hospitals, single-family dwellings, mobile home parks, churches, libraries, and recreation areas. Moderately noise-sensitive land uses typically include: multi-family dwellings, hotels, motels, dormitories, out-patient clinics, cemeteries, golf courses, country clubs, athletic/tennis clubs, and equestrian clubs. Land uses that are considered relatively insensitive to noise include business, commercial, and professional developments. Land uses that are typically not affected by noise include: industrial, manufacturing, utilities, agriculture, natural open space, undeveloped land, parking lots, warehousing, liquid and solid waste facilities, salvage yards, and transit terminals.

Representative sensitive receivers near the Project site include the single-family residential homes at locations R1 to R5, as follows:

- R1 Located approximately 620 feet northeast of the Project site, R1 represents the existing residential homes on South Montilla. A long-term noise measurement was taken near this location, L1, to describe the existing ambient noise environment.
- R2 Location R2 represents the existing residential homes roughly 258 feet northeast of the southwest Project site boundaries across Avenida Vista Montana.
- R3 Location R3 represents the existing residential homes located roughly 410 feet southeast of the Project site, south of South Montilla.
- R4 Location R4 represents the residential homes south of the Project site at the cul-de-sac of Calle Familia approximately 244 feet from the Project site. A long-term noise measurement was taken near this location, L2, to describe the existing ambient noise environment.
- R5 Located approximately 222 feet south of the Project site, R5 represents the existing residential homes on Calle Empalme.

EXHIBIT 7-A: RECEIVER LOCATIONS

8 STATIONARY/AREA-SOURCE NOISE IMPACTS

This section analyzes the potential stationary/area-source noise impacts due to the Project's stationary noise sources on the sensitive receiver locations. Exhibit 8-A identifies the receiver locations and noise source locations used to assess the stationary/area-source noise levels due to the operation of the Project.

8.1 STATIONARY/AREA-SOURCE NOISE STANDARDS

The City of San Clemente Municipal Code regulates stationary non-transportation related noise originating from private properties such as the Project site. Section 8.48.050 of the Municipal Code establishes maximum allowable exterior noise levels for noise-sensitive residential land uses in the Project study area. For example, nearby noise-sensitive receptor land uses consist of the single-family residential uses southwest and east of the Project site. The exterior noise standards for these receptor land uses (residential use) are presented below on Table 3-1. As presented in the City of San Clemente Municipal Code, the base noise standards on Table 3-1 shall apply for a cumulative period of 30 minutes in any hour; the base noise standard plus 5 dBA shall not be exceeded for a cumulative period of more than 15 minutes in any hour; the base standard plus 10 dBA shall not be exceed for a cumulative period of more than 5 minutes in any hour; the base standard plus 15 dBA shall not be exceeded for a cumulative period of more than 1 minute in any hour; the base standard plus 20 dBA shall not be exceeded for any period of time. (11) The City of San Clemente Municipal Code is included in Appendix 3.1.

8.2 STATIONARY/AREA NOISE SOURCES

Substantive Project stationary noise sources would include: roof-top air conditioning units, parking lot vehicle movements, pool activity, and tennis court activity. Under special permit, the Project may also accommodate limited live music/event activity. Exhibit 8-A shows the noise source and the distance to each of the receiver locations used in this analysis.

EXHIBIT 8-A: STATIONARY/AREA-SOURCES AND RECEIVER LOCATIONS

8.3 STATIONARY/AREA-SOURCE NOISE LEVELS

Based upon the reference noise levels, previously discussed in Section 6, it is possible to estimate the Project stationary/area-source noise levels at the sensitive receiver locations, as shown on Exhibit 8-A. The stationary/area-source noise level calculations shown in this section account for the distance attenuation provided due to geometric spreading, when sound from a localized stationary source (i.e., a point source) propagates uniformly outward in a spherical pattern. Hard site conditions are used in the operational 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. The basic noise attenuation equation shown below is used to calculate the distance attenuation based on a reference noise level (SPL_1):

$$SPL_2 = SPL_1 - 20\log(D_2/D_1)$$

Where SPL_2 is the resulting noise level after attenuation, SPL_1 is the source noise level, D_2 is the distance to the reference sound pressure level (SPL_1), and D_1 is the distance to the receiver location. Table 8-1 shows the 24-hour Project-related stationary/area-source noise levels at the nearby receiver locations. The hourly noise levels at the off-site receiver locations are expected to range from 19.7 to 31.6 dBA L_{50} during the daytime and nighttime hours. The stationary/area-source noise level calculations are provided in Appendix 8.1 and include the additional barrier attenuation provided by the existing berms and topographic changes in the Project study area.

TABLE 8-1: PROJECT STATIONARY/AREA-SOURCE NOISE LEVELS

Receiver Location[1]	Noise Sources[2]	Operational Noise Levels (dBA)[3]				
		L_{50} (30 mins)	L_{25} (15 mins)	L_{8} (5 mins)	L_{2} (1 min)	L_{max} (Anytime)
R1	Roof-Top Air Conditioning Unit	17.7	19.4	20.7	21.0	21.5
	Parking Lot Vehicle Movements	12.5	13.5	18.5	24.5	35.4
	Pool Activity	4.3	7.3	10.6	13.7	19.1
	Tennis Court Activity	6.4	8.0	9.7	11.2	12.8
	Live Music/Event Activity	10.2	26.3	29.2	31.0	37.5
	Combined Noise Level:	19.7	27.4	30.2	32.3	39.7
R2	Roof-Top Air Conditioning Unit	22.8	24.5	25.8	26.1	26.6
	Parking Lot Vehicle Movements	20.4	21.4	26.4	32.4	43.3
	Pool Activity	8.4	11.4	14.7	17.8	23.2
	Tennis Court Activity	19.5	21.1	22.8	24.3	25.9
	Live Music/Event Activity	14.3	30.4	33.3	35.1	41.6
	Combined Noise Level:	26.3	32.2	35.0	37.6	45.7
R3	Roof-Top Air Conditioning Unit	19.4	21.1	22.4	22.7	23.2
	Parking Lot Vehicle Movements	15.2	16.2	21.2	27.2	38.1
	Pool Activity	14.6	17.6	20.9	24.0	29.4
	Tennis Court Activity	6.8	8.4	10.1	11.6	13.2
	Live Music/Event Activity	10.6	26.7	29.6	31.4	37.9
	Combined Noise Level:	22.2	28.5	31.3	33.7	41.4
R4	Roof-Top Air Conditioning Unit	23.6	25.3	26.6	26.9	27.4
	Parking Lot Vehicle Movements	12.9	13.9	18.9	24.9	35.8
	Pool Activity	24.5	27.5	30.8	33.9	39.3
	Tennis Court Activity	28.8	30.4	32.1	33.6	35.2
	Live Music/Event Activity	21.8	37.9	40.8	42.6	49.1
	Combined Noise Level:	31.6	39.1	41.9	43.8	49.9
R5	Roof-Top Air Conditioning Unit	19.9	21.6	22.9	23.2	23.7
	Parking Lot Vehicle Movements	10.5	11.5	16.5	22.5	33.4
	Pool Activity	19.4	22.4	25.7	28.8	34.2
	Tennis Court Activity	27.9	29.5	31.2	32.7	34.3
	Live Music/Event Activity	19.6	35.7	38.6	40.4	46.9
	Combined Noise Level:	29.6	36.9	39.6	41.5	47.5

[1] See Exhibit 8-A for the receiver and noise source locations.
[2] Reference noise sources as shown on Table 6-1.
[3] Stationary source noise level calculations are provided in Appendix 8.1.

8.4 STATIONARY/AREA-SOURCE NOISE LEVEL COMPLIANCE

To demonstrate compliance with local noise standards, the Project-only stationary/area-source noise levels are evaluated against the City of San Clemente daytime and nighttime percentile noise level standards, previously shown on Table 3-1. Table 8-2 shows the stationary/area-source noise levels associated with the Life Time Athletic & Tennis Club will satisfy the daytime (7:00 a.m. to 10:00 p.m.) and nighttime (10:00 p.m. to 7:00 a.m.) noise level standards at the sensitive receivers in the City of San Clemente.

TABLE 8-3: STATIONARY/AREA-SOURCE NOISE LEVEL COMPLIANCE

Receiver Location[1]	Land Use	Noise Level at Receiver Locations (dBA)[2]					Threshold Exceeded?[3]	
		L_{50} (30 mins)	L_{25} (15 mins)	L_8 (5 mins)	L_2 (1 min)	L_{max} (Anytime)	Daytime	Nighttime
Residential Thresholds	**Daytime**	**55**	**60**	**65**	**70**	**75**	**-**	**-**
	Nighttime	**50**	**55**	**60**	**65**	**70**	**-**	**-**
R1	Residential	19.7	27.4	30.2	32.3	39.7	No	No
R2	Residential	26.3	32.2	35.0	37.6	45.7	No	No
R3	Residential	22.2	28.5	31.3	33.7	41.4	No	No
R4	Residential	31.6	39.1	41.9	43.8	49.9	No	No
R5	Residential	29.6	36.9	39.6	41.5	47.5	No	No

[1] See Exhibit 8-A for the receiver and noise source locations.
[2] Estimated Project stationary/area-source noise levels as shown on Table 6-1.
[3] Do the estimated Project stationary/area-source noise levels exceed the City's noise standards (Table 3-1)?
"Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

8.5 PROJECT STATIONARY/AREA-SOURCE NOISE CONTRIBUTION

To describe the Project stationary/area-source noise level contributions, the Project stationary/area-source noise levels were combined with the existing ambient noise level measurements for the nearby receiver locations potentially impacted by Project stationary/area-sources. The difference between the combined Project and ambient noise levels describe the Project noise level contributions. Noise levels that would be experienced at receiver locations when Project-source noise is added to the ambient daytime and nighttime conditions are presented on Tables 8-3 and 8-4.

Tables 8-3 and 8-4 show that the Project will contribute stationary/area-source noise level increases during the daytime hours of up to 2.2 dBA L_{25} and up to 2.7 dBA L_8 during the nighttime hours at receiver locations in the City of San Clemente. Based on the stationary/area-source noise analysis, the Project-related noise level contributions will not discernably affect the ambient noise levels at the nearby sensitive receiver locations.

TABLE 8-3: DAYTIME STATIONARY/AREA-SOURCE NOISE LEVEL CONTRIBUTIONS

Location		Type of Noise	Noise Levels (dBA)					Threshold Exceeded?[7]
Receiver[1]	Meas.[2]		L_{50} (30 mins)	L_{25} (15 mins)	L_{8} (5 mins)	L_{2} (1 min)	L_{max} (Anytime)	
R1	L1	Project Noise Level[3]	19.7	27.4	30.2	32.3	39.7	No
		Ambient Noise Level[4]	50.1	55.3	60.1	65.1	84.4	
		Combined[5]	50.1	55.3	60.1	65.1	84.4	
		Project Contribution[6]	0.0	0.0	0.0	0.0	0.0	
R2	L1	Project Noise Level[3]	26.3	32.2	35.0	37.6	45.7	No
		Ambient Noise Level[4]	50.1	55.3	60.1	65.1	84.4	
		Combined[5]	50.1	55.3	60.1	65.1	84.4	
		Project Contribution[6]	0.0	0.0	0.0	0.0	0.0	
R3	L1	Project Noise Level[3]	22.2	28.5	31.3	33.7	41.4	No
		Ambient Noise Level[4]	50.1	55.3	60.1	65.1	84.4	
		Combined[5]	50.1	55.3	60.1	65.1	84.4	
		Project Contribution[6]	0.0	0.0	0.0	0.0	0.0	
R4	L2	Project Noise Level[3]	31.6	39.1	41.9	43.8	49.9	No
		Ambient Noise Level[4]	39.7	40.9	43.8	47.4	76.2	
		Combined[5]	40.3	43.1	46.0	49.0	76.2	
		Project Contribution[6]	0.6	2.2	2.2	1.6	0.0	
R5	L2	Project Noise Level[3]	29.6	36.9	39.6	41.5	47.5	No
		Ambient Noise Level[4]	39.7	40.9	43.8	47.4	76.2	
		Combined[5]	40.1	42.4	45.2	48.4	76.2	
		Project Contribution[6]	0.4	1.5	1.4	1.0	0.0	

[1] See Exhibit 8-A for the receiver and noise source locations.
[2] Measurement locations as shown on Exhibit 5-A.
[3] Total stationary/area-source noise levels as shown on Table 8-2.
[4] Existing ambient noise level measurements provided in Appendix 5.2.
[5] Represents the combined ambient conditions plus the Project activities.
[6] The noise level increase expected with the addition of the proposed Project activities.
[7] Significance Criteria (Section 4).

TABLE 8-4: NIGHTTIME STATIONARY/AREA-SOURCE NOISE LEVEL CONTRIBUTIONS

Location		Type of Noise	Noise Levels (dBA)					Threshold Exceeded?[7]
Receiver[1]	Meas.[2]		L_{50} (30 mins)	L_{25} (15 mins)	L_{8} (5 mins)	L_{2} (1 min)	L_{max} (Anytime)	
R1	L1	Project Noise Level[3]	19.7	27.4	30.2	32.3	39.7	No
		Ambient Noise Level[4]	39.9	43.1	51.3	59.1	83.0	
		Combined[5]	39.9	43.2	51.3	59.1	83.0	
		Project Contribution[6]	0.0	0.1	0.0	0.0	0.0	
R2	L1	Project Noise Level[3]	26.3	32.2	35.0	37.6	45.7	No
		Ambient Noise Level[4]	39.9	43.1	51.3	59.1	83.0	
		Combined[5]	40.1	43.4	51.4	59.1	83.0	
		Project Contribution[6]	0.2	0.3	0.1	0.0	0.0	
R3	L1	Project Noise Level[3]	22.2	28.5	31.3	33.7	41.4	No
		Ambient Noise Level[4]	39.9	43.1	51.3	59.1	83.0	
		Combined[5]	40.0	43.2	51.3	59.1	83.0	
		Project Contribution[6]	0.1	0.1	0.0	0.0	0.0	
R4	L2	Project Noise Level[3]	31.6	39.1	41.9	43.8	49.9	No
		Ambient Noise Level[4]	38.4	40.0	42.6	45.4	74.4	
		Combined[5]	39.2	42.6	45.3	47.7	74.4	
		Project Contribution[6]	0.8	2.6	2.7	2.3	0.0	
R5	L2	Project Noise Level[3]	29.6	36.9	39.6	41.5	47.5	No
		Ambient Noise Level[4]	38.4	40.0	42.6	45.4	74.4	
		Combined[5]	38.9	41.7	44.4	46.9	74.4	
		Project Contribution[6]	0.5	1.7	1.8	1.5	0.0	

[1] See Exhibit 8-A for the receiver and noise source locations.
[2] Measurement locations as shown on Exhibit 5-A.
[3] Total stationary/area-source noise levels as shown on Table 8-2.
[4] Existing ambient noise level measurements provided in Appendix 5.2.
[5] Represents the combined ambient conditions plus the Project activities.
[6] The noise level increase expected with the addition of the proposed Project activities.
[7] Significance Criteria (Section 4).

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9 CONSTRUCTION IMPACTS

This section analyzes potential impacts resulting from the short-term construction activities associated with the development of the Project.

9.1 CONSTRUCTION NOISE STANDARDS

The City of San Clemente Municipal Code, Section 8.48.090(E) establishes the permitted hours during which construction within the City of San Clemente may take place: between 7:00 a.m. to 6:00 p.m. Monday to Friday; 8:00 a.m. to 6:00 p.m. on Saturdays; no activity allowed on Sundays or holidays. (11) No exterior construction noise level standards are identified for the residential land uses in the Project study area. For the purposes of this analysis, the construction noise level limit of 75 dBA Lmax is evaluated using the maximum allowable noise level limit for residential uses, as previously described in Section 3.4. The City of San Clemente construction standards are shown on Table 3-2 and included in Appendix 3.1.

9.2 CONSTRUCTION NOISE ANALYSIS

Using the reference construction equipment noise levels, previously discussed in Section 6, calculations of the Project construction noise levels at the nearby sensitive receiver locations were completed. Tables 9-1 to 9-6 present the short-term construction noise levels for each stage of construction. Table 9-7 provides a summary of the construction noise levels by activity at the nearby noise receiver locations. Based on the stages of construction, the noise impacts associated with the proposed Project are expected to create temporarily high noise levels at the nearby receiver locations. This analysis identifies the highest reference construction equipment noise level for each stage of construction using the reference noise levels provided in Section 6, based on the construction stages used in the *Life Time Athletic & Tennis Club Air Quality Impact Analysis*. To assess the peak construction noise levels at each receiver location, this analysis shows the highest noise impacts when the equipment with the highest reference noise level is operating at the Project site boundary for each stage of construction.

TABLE 9-1: DEMOLITION EQUIPMENT NOISE LEVELS

Reference Construction Activity[1]	Reference Noise Level @ 50 Feet (dBA Lmax)
Truck Pass-Bys & Dozer Activity	63.7
Dozer Activity	72.0
Dozer Pass-By	85.5
Forklift, Jackhammer, & Metal Truck Bed Activities	81.6
Peak Reference Noise Level at 50 Feet:	85.5

Receiver Location	Distance to Construction Activity (Feet)[2]	Distance Attenuation (dBA)[3]	Estimated Berm Attenuation (dBA)[4]	Construction Noise Level (dBA Lmax)
R1	643'	-22.2	0.0	63.3
R2	300'	-15.6	0.0	69.9
R3	539'	-20.7	0.0	64.8
R4	271'	-14.7	0.0	70.8
R5	266'	-14.5	0.0	70.9

[1] Reference construction noise level measurements taken by Urban Crossroads, Inc. (Table 6-7).
[2] Distance from the nearest point of construction activity to the nearest receiver.
[3] Point (stationary) source drop off rate of 6.0 dBA per doubling of distance.
[4] Worst-case analysis assumes no additional attenuation provided by existing berms.

TABLE 9-2: SITE PREPARATION EQUIPMENT NOISE LEVELS

Reference Construction Activity[1]	Reference Noise Level @ 50 Feet (dBA Lmax)
Truck Pass-Bys & Dozer Activity	63.7
Dozer Activity	72.0
Dozer Pass-By	85.5
Peak Reference Noise Level at 50 Feet:	85.5

Receiver Location	Distance to Construction Activity (Feet)[2]	Distance Attenuation (dBA)[3]	Estimated Berm Attenuation (dBA)[4]	Construction Noise Level (dBA Lmax)
R1	643'	-22.2	0.0	63.3
R2	300'	-15.6	0.0	69.9
R3	539'	-20.7	0.0	64.8
R4	271'	-14.7	0.0	70.8
R5	266'	-14.5	0.0	70.9

[1] Reference construction noise level measurements taken by Urban Crossroads, Inc. (Table 6-7).
[2] Distance from the nearest point of construction activity to the nearest receiver.
[3] Point (stationary) source drop off rate of 6.0 dBA per doubling of distance.
[4] Worst-case analysis assumes no additional attenuation provided by existing berms.

TABLE 9-3: GRADING EQUIPMENT NOISE LEVELS

Reference Construction Activity[1]	Reference Noise Level @ 50 Feet (dBA Lmax)
Truck Pass-Bys & Dozer Activity	63.7
Dozer Activity	72.0
Rough Grading Activities	80.4
Dozer Pass-By	85.5
Peak Reference Noise Level at 50 Feet:	85.5

Receiver Location	Distance to Construction Activity (Feet)[2]	Distance Attenuation (dBA)[3]	Estimated Berm Attenuation (dBA)[4]	Construction Noise Level (dBA Lmax)
R1	643'	-22.2	0.0	63.3
R2	300'	-15.6	0.0	69.9
R3	539'	-20.7	0.0	64.8
R4	271'	-14.7	0.0	70.8
R5	266'	-14.5	0.0	70.9

[1] Reference construction noise level measurements taken by Urban Crossroads, Inc. (Table 6-7).
[2] Distance from the nearest point of construction activity to the nearest receiver.
[3] Point (stationary) source drop off rate of 6.0 dBA per doubling of distance.
[4] Worst-case analysis assumes no additional attenuation provided by existing berms.

TABLE 9-4: BUILDING CONSTRUCTION EQUIPMENT NOISE LEVELS

Reference Construction Activity[1]	Reference Noise Level @ 50 Feet (dBA Lmax)
Construction Vehicle Maintenance Activities	70.4
Foundation Trenching	70.5
Framing	72.3
Peak Reference Noise Level at 50 Feet:	72.3

Receiver Location	Distance to Construction Activity (Feet)[2]	Distance Attenuation (dBA)[3]	Estimated Berm Attenuation (dBA)[4]	Construction Noise Level (dBA Lmax)
R1	643'	-22.2	0.0	50.1
R2	300'	-15.6	0.0	56.7
R3	539'	-20.7	0.0	51.6
R4	271'	-14.7	0.0	57.6
R5	266'	-14.5	0.0	57.7

[1] Reference construction noise level measurements taken by Urban Crossroads, Inc. (Table 6-7).
[2] Distance from the nearest point of construction activity to the nearest receiver.
[3] Point (stationary) source drop off rate of 6.0 dBA per doubling of distance.
[4] Worst-case analysis assumes no additional attenuation provided by existing berms.

TABLE 9-5: PAVING EQUIPMENT NOISE LEVELS

Reference Construction Activity[1]	Reference Noise Level @ 50 Feet (dBA Lmax)
Concrete Mixer Truck Movements	73.1
Concrete Paver Activities	71.3
Concrete Mixer Pour & Paving Activities	71.9
Concrete Mixer Backup Alarms & Air Brakes	78.8
Concrete Mixer Pour Activities	79.2
Peak Reference Noise Level at 50 Feet:	79.2

Receiver Location	Distance to Construction Activity (Feet)[2]	Distance Attenuation (dBA)[3]	Estimated Berm Attenuation (dBA)[4]	Construction Noise Level (dBA Lmax)
R1	643'	-22.2	0.0	57.0
R2	300'	-15.6	0.0	63.6
R3	539'	-20.7	0.0	58.5
R4	271'	-14.7	0.0	64.5
R5	266'	-14.5	0.0	64.7

[1] Reference construction noise level measurements taken by Urban Crossroads, Inc. (Table 6-7).
[2] Distance from the nearest point of construction activity to the nearest receiver.
[3] Point (stationary) source drop off rate of 6.0 dBA per doubling of distance.
[4] Worst-case analysis assumes no additional attenuation provided by existing berms.

TABLE 9-6: ARCHITECTURAL COATING EQUIPMENT NOISE LEVELS

Reference Construction Activity[1]	Reference Noise Level @ 50 Feet (dBA Lmax)
Construction Vehicle Maintenance Activities	70.4
Framing	72.3
Peak Reference Noise Level at 50 Feet:	72.3

Receiver Location	Distance to Construction Activity (Feet)[2]	Distance Attenuation (dBA)[3]	Estimated Berm Attenuation (dBA)[4]	Construction Noise Level (dBA Lmax)
R1	643'	-22.2	0.0	50.1
R2	300'	-15.6	0.0	56.7
R3	539'	-20.7	0.0	51.6
R4	271'	-14.7	0.0	57.6
R5	266'	-14.5	0.0	57.7

[1] Reference construction noise level measurements taken by Urban Crossroads, Inc. (Table 6-7).
[2] Distance from the nearest point of construction activity to the nearest receiver.
[3] Point (stationary) source drop off rate of 6.0 dBA per doubling of distance.
[4] Worst-case analysis assumes no additional attenuation provided by existing berms.

9.3 CONSTRUCTION NOISE THRESHOLDS OF SIGNIFICANCE

The construction noise analysis shows that the highest construction noise levels will occur when mobile equipment is operating at the Project site boundary. As shown on Table 9-7, the unmitigated peak construction noise levels are expected to range from 63.3 to 70.9 dBA Lmax. No additional barrier attenuation from the existing topographic changes (earthen berms) in the Project study area is included in the construction noise levels presented in this report to provide a conservative, worst-case analysis of potential Project-related construction noise levels.

TABLE 9-7: UNMITIGATED CONSTRUCTION NOISE LEVEL SUMMARY (DBA LMAX)

Receiver Location[1]	Construction Stage Hourly Noise Level (dBA Lmax)						
	Demolition	Site Preparation	Grading	Building Construction	Paving	Architectural Coating	Peak Activity[2]
R1	63.3	63.3	63.3	50.1	57.0	50.1	63.3
R2	69.9	69.9	69.9	56.7	63.6	56.7	69.9
R3	64.8	64.8	64.8	51.6	58.5	51.6	64.8
R4	70.8	70.8	70.8	57.6	64.5	57.6	70.8
R5	70.9	70.9	70.9	57.7	64.7	57.7	70.9

[1] Noise receiver locations are shown on Exhibit 9-A.
[2] Estimated construction noise levels during peak operating conditions.

Based on the significance criteria for construction noise described in Section 4, the potential short-term unmitigated construction noise levels will satisfy construction noise level threshold of 75 dBA Lmax used in this analysis at all nearby sensitive receiver locations, as shown below on Table 9-8.

TABLE 9-8: UNMITIGATED CONSTRUCTION NOISE LEVEL COMPLIANCE

Receiver Location[1]	Peak Construction Activity Noise Levels (dBA Lmax)[2]	Threshold (dBA Lmax)[3]	Threshold Exceeded?[4]
R1	63.3	75	No
R2	69.9	75	No
R3	64.8	75	No
R4	70.8	75	No
R5	70.9	75	No

[1] Noise receiver locations are shown on Exhibit 9-A.
[2] Estimated construction noise levels during peak operating conditions, as shown on Table 9-6.
[3] Construction noise standards as shown on Table 3-2.
[4] Do the estimated Project construction noise levels exceed the construction noise level thresholds?

EXHIBIT 9-A: CONSTRUCTION ACTIVITY AND RECEIVER LOCATIONS

9.4 CONSTRUCTION NOISE LEVEL INCREASES

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. 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 9-9. No nighttime construction activity is allowed unless permitted by the City of San Clemente Municipal Code, and therefore, nighttime noise level increases are not analyzed in this noise study.

As indicated in Table 9-9, the Project will contribute unmitigated, worst-case construction noise level increases approaching 1.1 dBA Lmax during the daytime hours at the closest sensitive receiver locations. The construction noise level increase of up to 1.1 dBA Lmax satisfies the 1.5 dBA Lmax threshold employed in this analysis for when the ambient levels already exceed the standard of 75 dBA Lmax for residential uses.

TABLE 9-9: UNMITIGATED CONSTRUCTION-RELATED TEMPORARY NOISE LEVEL INCREASES

Receiver Location[1]	Peak Construction Noise Level[2]	Measurement Location[3]	Reference Ambient Noise Levels[4]	Combined Project Construction and Ambient[5]	Project Contribution[6]	Threshold Exceeded?[7]
R1	63.3	L1	84.4	84.4	0.0	No
R2	69.9	L1	84.4	84.6	0.2	No
R3	64.8	L1	84.4	84.4	0.0	No
R4	70.8	L2	76.2	77.3	1.1	No
R5	70.9	L2	76.2	77.3	1.1	No

[1] See Exhibit 9-A for the sensitive receiver locations.
[2] Peak Project construction noise levels as shown on Table 9-8.
[3] Ambient noise level measurement locations as shown on Exhibit 5-A.
[4] Observed daytime ambient noise levels as shown on Table 5-1.
[5] Represents the combined ambient conditions plus the Project activities.
[6] The noise level increase expected with the addition of the proposed Project activities.
[7] Significance Criteria as defined in Section 4.

9.5 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. Construction activities that would have the potential to generate low levels of ground-borne vibration within the Project site include demolition and grading. Using the vibration source levels of construction equipment provided on Table 6-3 and the construction vibration assessment methodology published by the FTA, it is possible to estimate the Project vibration impacts. Table 9-9 presents the expected Project related vibration levels at each of the sensitive receiver locations.

Based on the reference vibration levels provided by the FTA, a large bulldozer represents the peak source of vibration with a reference velocity of 87 VdB at 25 feet. At distances ranging from 266 to 643 feet from Project construction activity, construction vibration velocity levels are expected to approach 56.2 VdB, as shown on Table 9-9. Based on the FTA vibration standards, the proposed Project site will not include or require equipment, facilities, or activities that would result in a *barely perceptible* human response (annoyance) for infrequent events.

Further, vibration levels at the site of the closest sensitive receiver are unlikely to be sustained during the entire construction period, but will occur rather only during the times that heavy construction equipment is operating simultaneously adjacent to the Project site perimeter. Moreover, construction at the Project site will be restricted to daytime hours consistent with City requirements thereby eliminating potential vibration impacts during the sensitive nighttime hours.

TABLE 9-9: CONSTRUCTION EQUIPMENT VIBRATION LEVELS

Receiver Location[1]	Distance to Construction Activity (Feet)	Receiver Vibration Levels (VdB)[2]					Threshold Exceeded?[3]
		Small Bulldozer	Jackhammer	Loaded Trucks	Large Bulldozer	Peak Vibration	
R1	643'	15.7	36.7	43.7	44.7	44.7	No
R2	300'	25.6	46.6	53.6	54.6	54.6	No
R3	539'	18.0	39.0	46.0	47.0	47.0	No
R4	271'	26.9	47.9	54.9	55.9	55.9	No
R5	266'	27.2	48.2	55.2	56.2	56.2	No

[1] Noise receiver locations are shown on Exhibit 9-A.
[2] Based on the Vibration Source Levels of Construction Equipment included on Table 6-3.
[3] Does the peak vibration exceed the FTA maximum acceptable vibration standard of 80 VdB?

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10 FINDINGS AND CONCLUSIONS

This report evaluated the potential noise impacts associated with the development of the proposed Project including stationary/area-source noise impacts and temporary construction noise impacts. This section summarizes the significance criteria and Project noise impacts.

10.1 STATIONARY/AREA-SOURCE NOISE ANALYSIS

Using reference noise levels to represent the noise sources from the Life Time Athletic & Tennis Club site, this analysis estimates the Project-related 24-hour stationary/area-source noise levels at nearby sensitive receiver locations. The normal activities associated with the proposed Life Time Athletic & Tennis Club are anticipated to include roof-top air conditioning units, parking lot vehicle movements, pool activity, and tennis court activity. Under special permit, the Project may also accommodate limited live music/event activity. The analysis shows that the unmitigated Project-related stationary/area-source noise levels will satisfy the City of San Clemente Municipal Code noise level standards at the sensitive receivers nearest the Project site. Further, this analysis demonstrates that the Project would not contribute a stationary/area-source noise level impact to the existing ambient noise environment at any of the sensitive receiver locations.

10.2 CONSTRUCTION NOISE AND VIBRATION ANALYSIS

Construction noise represents a short-term increase on the ambient noise levels. Construction-related noise levels are expected to create temporary and intermittent high-level noise conditions at receivers surrounding the Project site when certain activities occur at the Project site boundary. The unmitigated Project-related construction noise levels are shown to approach 70.9 dBA Lmax, and will satisfy the 75 dBA Lmax construction noise level threshold at the nearby sensitive receiver locations. Further, construction noise levels will not contribute a construction-source noise level impact to the existing ambient noise environment at any of the sensitive receiver locations.

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. This analysis shows the construction vibration levels are expected to approach 56.2 VdB at the nearby sensitive receiver locations and will satisfy the FTA vibration standard of 80 VdB.

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11 REFERENCES

1. **Applied Planning, Inc.** *Life Time Athletic & Tennis Club Initial Study/Mitigated Negative Declaration.* July 2017.
2. **California Department of Transportation Environmental Program.** *Technical Noise Supplement - A Technical Supplement to the Traffic Noise Analysis Protocol.* Sacramento, CA : s.n., September 2013.
3. **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.
4. **California Department of Transportation Environmental Program.** *Technical Noise Supplement - A Technical Supplement to the Traffic Noise Analysis Protocol.* Sacramento, CA : s.n., September 2013.
5. **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.
6. **U.S. Department of Transportation, Federal Highway Administration.** *Highway Traffic Noise in the United States, Problem and Response.* April 2000. p. 3.
7. **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.
8. **U.S. Department of Transportation, Federal Transit Administration.** *Transit Noise and Vibration Impact Assessment.* May 2006. FTA-VA-90-1003-06.
9. **Office of Planning and Research.** *State of California General Plan Guidlines 2003.* October 2003.
10. **City of San Clemente.** *Centennial General Plan Safety Element.* February 2014.
11. —. *Municipal Code, Section 8.48.050.*
12. **American National Standards Institute (ANSI).** *Specification for Sound Level Meters ANSI S1.4-2014/IEC 61672-1:2013.*
13. **Urban Crossroads, Inc.** *Life Time Athletic & Tennis Club Air Quality Impact Analysis* . July 2017.

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12 CERTIFICATION

The contents of this noise study report represent an accurate depiction of the noise environment and impacts associated with the proposed Life Time Athletic & Tennis Club 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 SAN CLEMENTE MUNICIPAL CODE

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Chapter 8.48 - NOISE CONTROL

Sections:

8.48.010 - Declaration of policy.

A. ..... 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.

B. ..... 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 pro-hibited by or not in conformity with the provisions of this chapter, is a public nuisance and shall be punishable as such.

(Ord. 1450 § 1 (part), 2007: prior code § 16-22)

8.48.020 - Definitions.

The following words, phrases and terms as used in this chapter shall have the meaning as indicated below:

"Ambient noise level" shall mean the all-encompassing noise level associated with a given environment, being a composite of all 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. The ambient noise shall be measured using the same weighting (e.g., A-weighting or C-weighting) required by this chapter for the measurement of the alleged offensive noise.

"A-weighting" shall mean a frequency response adjustment applied to a measured sound pressure level in order to approximate the frequency response of the human ear. Such weighting is typically applied automatically by a sound level meter on the A-scale setting.

"A-weighted decibel [dB(A)]" shall mean a unit for measuring sound pressure level, identical to the decibel (dB), except that level shall be adjusted per the A-weighting adjustment.

"C-weighting" shall mean a frequency response adjustment applied to a measured sound pressure level in order to assess low frequency noise, such as that produced by drums or bass guitars. Such weighting is typically applied automatically by a sound level meter on the C-scale setting.

"C-weighted decibel [dB(C)]" shall mean a unit for measuring sound pressure level, identical to the decibel (dB), except that level shall be adjusted per the C-weighting adjustment.

"Construction activity" shall mean any construction or demolition activity including, but not limited to: construction, demolition, repair, alteration, remodeling, excavation, filling or grading of any real property, building, street or highway. Construction activity shall also include the arrival and departure of personnel at the construction site, the delivery to and collection from the site of equipment and materials, and the running of any construction equipment.

"Cumulative period" shall mean an additive period of time composed of individual time segments which may be continuous or interrupted.

"Decibel (dB)" shall mean a unit for measuring sound pressure level, equal to twenty (20) times the logarithm to the base ten (10) of the ratio of the root-mean-squared (r m s) pressure of the measured sound to the reference pressure. The reference pressure shall be twenty (20) microPascals.

"Dwelling unit" shall mean a single unit providing complete, independent living facilities for one (1) or more persons including permanent provisions for living, sleeping, eating, cooking and sanitation.

"Emergency machinery, vehicle or work" shall mean 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.

"Fixed noise source" shall mean 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.

"Impact noise" shall mean 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.

"Lot" shall mean that portion of any geographical location under the direct custody and control of any person.

"Mobile noise source" shall mean any noise source other than a fixed noise source.

"Noise level" shall mean the sound pressure level obtained using a sound level meter. Unless specifically stated otherwise, the noise level shall refer to the A-weighted sound pressure level and the unit of measurement shall be designated as dB(A).

"Person" shall mean a person, firm, association, co-partnership, joint venture, corporation or any entity, public or private in nature.

"Residential property" shall mean a parcel of real property which is developed and used for residential purposes, regardless of the underlying land-use zoning, other than transient uses such as hotels and motels. Where residential uses occur within mixed-use developments, only that portion of the property used for residential purposes shall be considered residential property.

"Sound amplifying equipment" shall mean any machine or device for the amplification of the human voice, music or any other sound.

"Sound level meter" shall mean an instrument meeting American National Standard Institute's Standard S1.4-1971, or later any later revision thereof for Type 0, Type 1 or Type 2 sound level meters or an instrument and the associated recording and analyzing equipment which will provide equivalent data.

"Sound pressure level" shall mean the level of a sound in decibels, as defined above.

(Ord. 1450 § 1 (part), 2007: prior code § 16-22.1)

8.48.030 - Noise measurement procedures.

A. ..... Any noise level measurements made pursuant to the provisions of this chapter shall be performed using a sound level meter as defined in Section 8.48.020. Unless noted otherwise, the measurement shall be obtained utilizing the A-weighting scale of the sound level meter and the "slow" meter response. ("Fast" response shall be used if the alleged offending noise is predominantly impact noise.) Calibration of the measurement equipment, utilizing an acoustic calibrator, shall be performed prior to recording any noise data.
B. ..... The location selected for measuring exterior noise levels shall be at any point on the affected property, including decks and balconies. The measurement microphone height shall be five (5) feet above the finished ground elevation or, in the case of a deck or balcony, above the finished floor level of the deck or balcony. The measurement microphone shall not be placed above or on top of a property line fence or wall. The microphone should typically not be placed within three (3) feet of any property line fence or wall, or within ten (10) feet of any other acoustically reflective surfaces; however, shorter distances may be utilized as necessary to provide a measurement of the worst-affected area of the property (such as a narrow side yard).
C. ..... Interior noise measurements shall be made within the affected dwelling unit. 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 (any exterior doors, including French doors or sliding glass doors, shall remain closed).

(Ord. 1450 § 1 (part), 2007: prior code § 16-22.6)

8.48.040 - General noise regulations.

It shall be unlawful for any person to willfully or negligently make or continue, or cause to be made or continued, any loud, unnecessary, or unusual noise which disturbs the peace and quiet of any neighborhood or which causes any discomfort or annoyance to any reasonable person of normal sensitiveness residing in the area.

The factors which shall be considered in determining whether a violation of the provisions of this section exists shall include, but not be limited to, the following:

A. The sound level of the objectionable noise.

B. The sound level of the ambient noise.

C. The proximity of the noise to residential sleeping facilities.

D. The nature and zoning of the area within which the noise emanates.

E. The number of persons affected by the noise source.

F. The time of day or night the noise occurs.

G. The duration of the noise and its tonal, informational or musical content.

H. Whether the noise is continuous, recurrent, or intermittent.

I. Whether the noise is produced by a commercial or non-commercial activity.

J. Whether the noise can be heard from a distance of 20 feet or more from the noise source, or from a distance determined to be reasonable by the Officer (as defined in Section 9.16.010 G. of the Code).

Where a noise source is operated in compliance with a permit or exception as described in this chapter, it shall be considered to comply with the general noise regulations of this section, provided said use is in compliance with any and all conditions imposed by the relevant permit or exception.

(Ord. 1450 § 1 (part), 2007; Ord. No. 1617, § 5, 2-16-2016)

8.48.050 - Exterior noise standards.

The following exterior noise standards, unless otherwise specifically indicated, shall apply to all property within the City. The Land Use category refers to the affected receiver property:

Land Use	Allowable Exterior Noise Level	
	7:00 a.m. to 10:00 p.m.	10:00 p.m. to 7:00 a.m.
Residential	55 dB (A)	50 dB (A)

Residential portions of mixed-use, or residences located on property zoned for commercial, industrial or manufacturing land use	60 dB (A)	50 dB (A)
Commercial	65 dB (A)	60 dB (A)*
Industrial or manufacturing	70 dB (A)	70 dB (A)*

* Standard only applies if commercial, industrial or manufacturing buildings are occupied during these hours.

A. It shall be unlawful for any person at any location within 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.
B. In the event the ambient noise level exceeds any of the five (5) noise limit categories above, the allowable noise level under said category shall be increased to reflect the ambient noise level.
C.

If possible, the ambient noise shall be measured at the same location as the noise source measurement, with the alleged offending noise source inoperative. If for any reason the alleged offending noise source cannot be shut down, the ambient noise must be estimated by performing a measurement in the same general area of the source but at a sufficient distance such that the noise from the source is at least ten (10) dB below the ambient in order that only the ambient level be measured. If the difference between the ambient and the noise source is five (5) to ten (10) dB, then the level of the ambient itself can be reasonably determined by subtracting a one (1) decibel correction to account for the contribution of the source.

(Ord. 1450 § 1 (part), 2007: prior code § 16-22.3)

8.48.060 - Interior noise standards.

The following interior noise standards, unless otherwise specifically indicated, shall apply to all residential property within the City. The Land Use category refers to the affected receiver property:

Land Use	Allowable Interior Noise Level	
	7:00 a.m. to 10:00 p.m.	10:00 p.m. to 7:00 a.m.
Residential, including residential portions of mixed-use.	50 dB (A)	40 dB (A)

A. 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 residential dwelling unit to exceed:
    1. The interior ambient noise level plus five (5) dB(A) for a cumulative period of more than five (5) minutes in any hour; or
    2. The interior ambient noise level plus ten (10) dB(A) for a cumulative period of more than one (1) minute in any hour; or
    3. The interior ambient noise level plus fifteen (15) dB(A) for any period of time.

B.

In the event the ambient noise level exceeds any of the three (3) noise limit categories above, the allowable noise level under said category shall be increased to reflect the ambient noise level.

(Ord. 1450 § 1 (part), 2007: prior code § 16-22.4)

8.48.070 - Specific noises prohibited.

The following acts, among others, are declared to be loud, disturbing and unnecessary noises in violation of this chapter, unless specifically exempted from the provisions of this chapter in Section 8.48.090; the following list shall not be deemed to be exclusive:

A. **Horns, signaling devices, etc.** The sounding of any horn or other audible signaling device on any automobile, motorcycle, or other vehicle, except as a danger warning; the creation by means of any such signaling device of any unreasonably loud or harsh sound; the sounding of any such device for an unnecessary and unreasonable period of time; the use of any horn, whistle or other device operated by engine exhaust; and the use of any signaling device when traffic is for any reason held up.

B. **Radios, phonographs, etc.** Operating, playing or permitting the operation or playing of any radio, receiving set, television set, phonograph, drum, musical instrument, or similar device which produces or reproduces sound:

   1. In such manner as to disturb the peace, quiet and comfort of a person of normal sensitiveness.
   2. At any time with louder volume than is necessary to provide convenient hearing of the device by voluntary listeners located in the same room, vehicle or chamber as the device.
   3. Between the hours of ten (10:00) p.m. and seven (7:00) a.m. in such a manner as to create a noise disturbance across a residential or commercial real property line or at any time to violate the provisions of Sections 8.48.050 and 8.48.060.

   Such restrictions shall not apply to use operating under a conditional use permit or exception as described in this chapter, provided said use is in compliance with any and all conditions imposed by the permit or exception.

C. **Loudspeakers, amplifiers 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 which is cast upon the public streets for the purpose of commercial advertising or attracting the attention of the public to any building or structure, except as permitted in Section 8.48.080 of this chapter.

D. **Yelling, shouting, etc.** Yelling, shouting, hooting, whistling or singing on the public streets, particularly between the hours of ten (10:00) p.m. and seven (7:00) a.m. or at any time or place so as to annoy or disturb the quiet, comfort or repose of persons in any office, or in any dwelling, hotel or other type of residence, or of any persons in the vicinity.

E.

Animals, birds, etc. The keeping of any animal or bird which by causing frequent or long continued noise shall disturb the comfort or repose of any persons in the vicinity.

F. **Exhausts.** The discharge into the open air of the exhaust of any steam engine, stationary internal combustion engine, or motor vehicle except through a muffler or other device which will effectively prevent loud or explosive noises therefrom.

G. **Blowers and fans.** The operation of any noise-creating blower or power fan, unless the noise from such blower or fan is muffled.

H. **Defect in vehicle or load.** The use of any automobile, motorcycle or vehicle so out of repair, so loaded, or in such manner as to create loud and unnecessary grating, grinding, rattling or other noise.

I. **Schools, courts, churches, hospitals.** The creation of any excessive noise on any street adjacent to any school, institution of learning, church or court while the same are in use, or adjacent to any hospital, which unreasonably interferes with the workings of such institution, or which disturbs or unduly annoys patients in the hospitals; provided that conspicuous signs are displayed in such streets indicating the presence of a school, hospital or court.

J. **Hawkers, peddlers.** The shouting and crying of peddlers, hawkers and vendors which disturbs the peace and quiet of the neighborhood.

K. **Drums.** The use of any drum or other instrument or noise-producing device for the purpose of attracting attention to any performance, show or sale.

L. **HVAC and pool equipment.** Any motor, machinery, pump, etc. associated with heating, ventilation and air conditioning (HVAC) equipment or with the operation of any pool, spa, fountain, etc. shall be sufficiently enclosed or muffled and maintained so as not to create a noise disturbance in accordance with Section 8.48.050. Submission of written proof that said equipment complies with the standards prescribed in Section 8.48.050 may be required by the City.

M. **Refuse collection vehicles.** No person shall collect refuse with a refuse collection vehicle between the hours of 7:00 p.m. and 6:00 am, within or adjacent to a residential area.

N. **Metal rails, pillars and columns, transportation thereof.** The transportation of rails, pillars or columns of iron, steel or other material over and along streets and other public places upon carts, drays, cars, trucks or in any other manner so loaded as to cause loud noises or as to disturb the peace and quiet of such streets or other public places between the hours of ten (10:00) p.m. and seven (7:00) a.m.

O. **Loading, unloading, opening boxes.** The creation of a loud and excessive noise in connection with loading or unloading any vehicle or the opening and destruction of bales, boxes, crates and containers between the hours of ten (10:00) p.m. and seven (7:00) a.m.

P. **Commercial/retail center maintenance activities.** No noise-generating maintenance activities at commercial/retail centers adjacent to residential areas shall be conducted between the hours of ten (10:00) p.m. and seven (7:00) a.m. Such prohibited activities include, but are not limited to, dumping trash into outside trash bins, the use of parking lot sweepers, and the use of high-pressure washers.

Q. **Prima facie violation.** Any of the above noises violating the provisions of Sections 8.48.050 or 8.48.060 of this chapter shall be considered a prima facie violation of these provisions.

(Ord. 1450 § 1 (part), 2007)

8.48.080 - Amplified sound.

A. ..... The use of amplified sound, including the electronically amplified sound of music, human voice, or other sound within a business, restaurant, bar or other commercial establishment is not permitted except under a conditional use permit (CUP) granted by the City Manager or authorized designee (the "permit authority").

B. ..... In granting an application for a CUP, the permit authority shall consider the potential of such amplified sound to result in a violation of other provisions of this chapter, and shall establish amplifier settings and other limitations on the use of such amplified sound as conditions of approval. Such approval shall not consider the information content of the amplified sound (except as noted in item D.2 of this section), but only its noise level and resulting potential to violate other provisions of this chapter. Prior to issuance of a CUP, the permit authority shall solicit the comments and any recommendation of Police Services.

C. ..... No CUP shall be issued that allows the use or operation of sound amplifying equipment in any residential zone or on residential property.

D. ..... Any CUP that allows the use or operation of sound amplifying equipment shall include, at a minimum, the following requirements:

1. Noise from such sound amplifying equipment shall comply with the noise standards of Sections 8.48.050 and 8.48.060 of this chapter, except that:

   i. The sound level meter used to obtain the noise measurements shall be configured to use the C-weighting network instead of the A-weighting network.

   ii The noise standards identified in Sections 8.48.050 and 8.48.060 shall be denoted as "dB(C)" instead of "dB(A)".

   Submission of written proof by a qualified acoustical consultant that said sound am-plifying equipment complies with these standards may be required by the permit authority.

2. Such sound amplifying equipment shall be used only for the producing of human speech or song or music and the speech or song shall not be profane, lewd, indecent, slanderous or of such character as to tend to incite riot or other public disorder nor shall such speech or song advocate disloyalty to or the overthrow of the government of the United States by arms or other unlawful means nor shall such speech or song urge any unlawful conduct or encourage or reasonably tend to encourage a breach of the public peace of the community.

E. ..... In addition, the following should be considered and, where deemed appropriate by the permit authority, related conditions or limits should be included as part of the permit:

1. Hours and days of operation.
2. The potential for such sound amplifying equipment to interfere with or disturb the occupants of any hospital, sanitarium, school, church, courtroom, place of residence or public assemblage.
3. The construction of the building or structure, if any, in which sound amplifying equipment is to be located and the ability of said structure to contain noise.
4. Operational controls to be implemented during the use of sound amplifying equipment including, but not limited to, closing of doors and/or windows, security/administrative controls, etc.
5. Any other consideration deemed appropriate by the permit authority.

F. ..... After the issuance of any CUP, the permit authority shall revoke such CUP if the sound amplifying equipment permitted to be used thereby is used or operated contrary to any of the provisions of this code.

(Ord. 1450 § 1 (part), 2007)

8.48.090 - Exemptions from Chapter.

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.
B. Any events (including outdoor gatherings, public dances, shows and sporting and entertainment events) conducted pursuant to a Special Event Permit or Special Activity Permit issued by the City.
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 activity, provided said activities take place only between the hours of seven (7:00) am. and six (6:00) p.m. on Monday through Friday, between the hours of eight (8:00) am. and six (6:00) p.m. on Saturday, and at no time on a Sunday or a City-recognized holiday, and provided all grading activities also comply with Section 15.36.190 of the City's Municipal Code regarding time of grading operations.
F. Noise sources associated with construction activity for which a permit has been granted by the City based upon:
    1. A case of urgent necessity in the interest of public health and safety. Such permit may be granted for a period not to exceed three (3) days while the emergency continues; or,
    2. A determination by the City that the public health and safety will not be impaired and that no loss or inconvenience would result to any party in interest.

G. Noise sources associated with the maintenance of real property provided said activities take place only between the hours of seven (7:00) am. and six (6:00) p.m. on Monday through Friday, except on a City-recognized holiday, or between the hours of eight (8:00) am. and six (6:00) p.m. on Saturday, Sunday or a City-recognized holiday.

H. Activities carried out under the City's weed abatement program, provided said activities take place only between the hours of seven (7:00) am. and six (6:00) p.m. on Monday through Friday, between the hours of eight (8:00) am. and six (6:00) p.m. on Saturday, and at no time on a Sunday or a City-recognized holiday.

I. Any activity to the extent regulation thereof has been preempted by state or federal law.

J. Activities of the federal, state or local government and its duly franchised utilities.

K. Trains operated in conformity with and regulated by any federal or state agency.

L. Traffic operating on public streets or highways, with the exception of the specific noises pro-hibited in Section 8.48.070 of this chapter. All such traffic remains subject to the noise limits prescribed by the California Vehicle Code.

M. Activities necessary to continue to provide utility services to the general public, whether this service is installing additional facilities, restoring worn or damaged facilities and/or maintaining existing services.

N. Warning devices necessary for the protection of public safety, as for example, police, fire and ambulance sirens, and train horns.

O. Those commercial and/or industrial operations in existence prior to the date of adoption of this chapter, if in compliance with local zoning statutes, shall be granted a six (6) month period from the date of adoption with which to comply with the provisions of this chapter. If, at the end of the six (6) month period, it can be shown that compliance with the provisions herein constitutes a hardship in terms of technical and economic feasibility, an exception may be granted on an annual basis until such time as compliance may be affected.

(Ord. 1450 § 1 (part), 2007)

8.48.100 - Exceptions procedure.

A. ..... The owner or operator of a noise source which violates any of the provisions of this chapter may file an application with the Community Development Director for an exception from the provisions thereof wherein said owner or operator shall set forth all actions taken to comply with said provisions and the reasons why immediate compliance cannot be achieved. Said application shall be accompanied by a fee in the amount determined by the City's Fee Resolution. A separate application shall be filed for each noise source; provided, however, that several mobile sources under common ownership, or several fixed sources on a single property may be combined into one (1) application. Upon receipt of said application and fee, the Community Development Director, Planning Commission and/or City Council shall take action thereon in accordance with the provisions of this chapter.

B. ..... An applicant for an exception shall remain subject to prosecution under the terms of this chapter until an exception is granted.

C. ..... The Planning Commission shall evaluate all applications for exception from the requirements of this chapter and may grant said exceptions with respect to time for compliance, subject to such terms, conditions and requirements as it may deem reasonable to achieve maximum compliance with the provisions of this chapter. Said terms, conditions and requirements may include, but shall not be limited to limitations on noise levels and operating hours. Each such exception shall set forth in detail the approved method of achieving maximum compliance and a time schedule for its accomplishment. In its determinations the Planning Commission shall consider the magnitude of nuisance caused by the offensive noise; the uses of property within the area of impingement by the noise; the time factors related to study, design, financing and construction of remedial work; the economic factors related to age and useful life of equipment; and the general public interest and welfare. Any violation of the terms of said exception shall be unlawful.

(Ord. 1450 § 1 (part), 2007)

8.48.110 - Exceptions appeals.

A. ..... Within fifteen (15) days following the decision of the Planning Commission on an application, the applicant may appeal the decision to the City Council by filing a notice of appeal with the Secretary of the City Council. In the case of an appeal by the applicant for an exception, the notice of appeal shall be accompanied by a fee to be computed by the Secretary on the basis of the estimated cost of preparing the materials required to be forwarded to the City Council as discussed hereafter. If the actual cost of such preparation differs from the estimated cost, appropriate payments shall be made either to or by the Secretary.

B. ..... Within fifteen (15) days following receipt of a notice of appeal and the appeal fee, the Secretary of the City Council shall forward to the City Council copies of the application for exception; the notice of appeal; all evidence concerning said application received by the Planning Commission and its decision thereon. In addition, any person may file with the City Council written arguments supporting or attacking said decision and the City Council may in its discretion hear oral arguments thereon. The City Clerk shall mail to the applicant a notice of the date set for hearing of the appeal. The notice shall be mailed at least ten (10) days prior to the hearing date.

C. ..... Within sixty (60) days following its receipt of the notice of the appeal, the City Council shall affirm, modify or reverse the decision of the Planning Commission. Such decision shall be based upon the City Council's evaluation of the matters submitted to the City Council in light of the powers conferred on the Planning Commission and the factors to be considered.

D. ..... As part of its decision, the City Council may direct the Planning Commission to conduct further proceedings on said application. Failure of the City Council to affirm, modify or reverse the decision of the Planning Commission within said sixty (60) day period shall constitute a confirmation of the decision.

(Ord. 1450 § 1 (part), 2007: prior code § 16-22.13)

8.48.120 - Revocation of exceptions.

Once granted, an exception may be revoked at any time in the event that any of the terms, conditions and requirements of the exception are not met.

(Ord. 1450 § 1 (part), 2007)

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APPENDIX 5.1:

STUDY AREA PHOTOS

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L1
33, 26' 39.550000", 117, 36' 13.320000"

L1_N
33, 26' 40.230000", 117, 36' 12.990000"

L1_NE
33, 26' 40.230000", 117, 36' 12.990000"

L1_S
33, 26' 28.910000", 117, 36' 13.080000"

L1_W
33, 26' 40.230000", 117, 36' 12.990000"

L2_N
33, 26' 24.760000", 117, 36' 32.970000"

JN:11091 Lifetime Fitness

L2_W
33, 26' 25.420000", 117, 36' 33.090000"

L3_E
33, 26' 30.000000", 117, 36' 24.250000"

L3_N
33, 26' 30.000000", 117, 36' 24.250000"

L3_NE
33, 26' 30.000000", 117, 36' 24.250000"

L4
33, 26' 28.580000", 117, 36' 26.490000"

L4_N
33, 26' 31.240000", 117, 36' 22.560000"

L4_S
33, 26' 31.240000", 117, 36' 22.560000"


L4_W
33, 26' 31.240000", 117, 36' 22.560000"


L5
33, 26' 28.580000", 117, 36' 26.490000"

L5_NE
33, 26' 28.580000", 117, 36' 26.490000"


L5_S
33, 26' 34.610000", 117, 36' 25.460000"


L5_SE
33, 26' 34.610000", 117, 36' 25.460000"

JN:11091 Lifetime Fitness

L5_W
33, 26' 34.610000", 117, 36' 25.460000"

L6
33, 26' 33.990000", 117, 36' 28.270000"

L6_N
33, 26' 35.030000", 117, 36' 9.330000"

L6_NE
33, 26' 35.030000", 117, 36' 9.330000"

L6_W
33, 26' 33.990000", 117, 36' 28.270000"

Site
33, 26' 33.740000", 117, 36' 23.540000"

APPENDIX 5.2:

NOISE LEVEL MEASUREMENT WORKSHEETS

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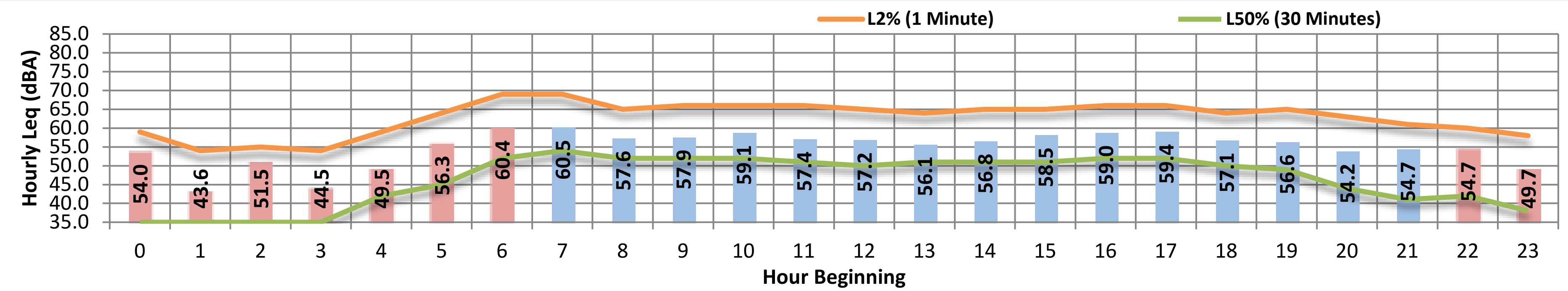
24-Hour Noise Level Measurement Summary

			Energy Average Leq		24-Hour
Project Name: Lifetime Fitness	*JN:* 11091		Day	Night	CNEL
Location: L1 - Located northeast of the Project site on Maracay near existing residential homes.	*Analyst:* A. Wolfe	*Date:* 6/29/2017	57.8	54.3	61.7

Hourly Leq dBA Readings (unadjusted)

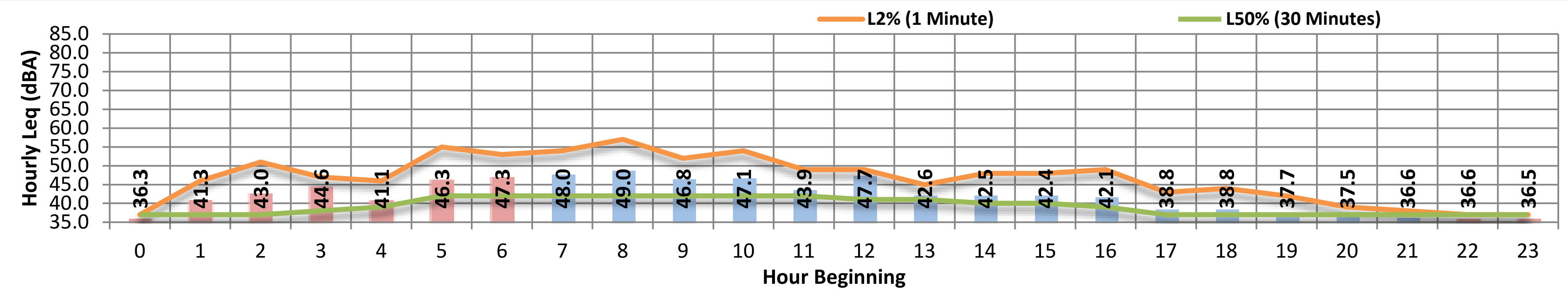


Time Period	*Hour*	*Leq*	*Lmax*	*Lmin*	*L1%*	*L2%*	*L5%*	*L8%*	*L25%*	*L50%*	*L90%*	*L95%*	*L99%*
Day	Min	54.2	72.1	37.6	64.0	61.0	59.0	57.0	50.0	41.0	38.0	38.0	37.0
	Max	60.5	84.4	41.0	71.0	69.0	65.0	63.0	59.0	54.0	44.0	43.0	42.0
Energy Average:		57.8	Average:		67.8	65.1	61.7	60.1	55.3	50.1	42.3	41.5	40.3
Night	Min	43.6	66.1	35.1	56.0	54.0	48.0	42.0	35.0	35.0	35.0	35.0	35.0
	Max	60.4	83.0	36.9	73.0	69.0	64.0	62.0	57.0	52.0	40.0	39.0	38.0
Energy Average:		54.3	Average:		62.4	59.1	54.6	51.3	43.1	39.9	36.1	35.8	35.3
Hourly Summary													
Night	0	54.0	79.3	35.1	64.0	59.0	55.0	52.0	39.0	35.0	35.0	35.0	35.0
	1	43.6	66.1	35.1	56.0	54.0	48.0	43.0	35.0	35.0	35.0	35.0	35.0
	2	51.5	79.8	35.1	61.0	55.0	48.0	42.0	35.0	35.0	35.0	35.0	35.0
	3	44.5	67.6	35.1	56.0	54.0	49.0	44.0	35.0	35.0	35.0	35.0	35.0
	4	49.5	67.4	35.1	61.0	59.0	55.0	54.0	47.0	42.0	35.0	35.0	35.0
	5	56.3	79.3	35.1	68.0	64.0	60.0	58.0	52.0	45.0	38.0	37.0	35.0
	6	60.4	82.2	36.9	73.0	69.0	64.0	62.0	57.0	52.0	40.0	39.0	38.0
Day	7	60.5	79.6	38.1	71.0	69.0	65.0	63.0	59.0	54.0	43.0	42.0	40.0
	8	57.6	78.5	41.0	68.0	65.0	61.0	60.0	56.0	52.0	44.0	43.0	42.0
	9	57.9	76.3	41.0	68.0	66.0	63.0	61.0	57.0	52.0	44.0	43.0	42.0
	10	59.1	84.4	40.2	69.0	66.0	62.0	60.0	56.0	52.0	44.0	43.0	42.0
	11	57.4	75.6	40.1	68.0	66.0	62.0	60.0	56.0	51.0	44.0	43.0	41.0
	12	57.2	79.5	39.8	67.0	65.0	61.0	60.0	55.0	50.0	43.0	42.0	41.0
	13	56.1	72.9	39.8	66.0	64.0	61.0	60.0	55.0	51.0	43.0	42.0	41.0
	14	56.8	75.8	40.6	68.0	65.0	62.0	60.0	55.0	51.0	43.0	42.0	41.0
	15	58.5	80.2	40.9	69.0	65.0	62.0	60.0	56.0	51.0	43.0	42.0	41.0
	16	59.0	81.5	39.8	69.0	66.0	62.0	61.0	56.0	52.0	44.0	43.0	41.0
	17	59.4	80.5	39.6	71.0	66.0	63.0	61.0	57.0	52.0	43.0	42.0	40.0
	18	57.1	79.8	38.3	67.0	64.0	61.0	60.0	55.0	50.0	41.0	40.0	39.0
	19	56.6	74.6	38.1	67.0	65.0	62.0	60.0	55.0	49.0	40.0	39.0	38.0
	20	54.2	72.1	38.0	65.0	63.0	60.0	58.0	52.0	44.0	38.0	38.0	38.0
	21	54.7	81.7	37.6	64.0	61.0	59.0	57.0	50.0	41.0	38.0	38.0	37.0
Night	22	54.7	83.0	35.1	62.0	60.0	58.0	56.0	47.0	42.0	37.0	36.0	35.0
	23	49.7	74.3	35.1	61.0	58.0	54.0	51.0	41.0	38.0	35.0	35.0	35.0

24-Hour Noise Level Measurement Summary

Project Name: Lifetime Fitness	*JN:* 11091	*Energy Average Leq*	*24-Hour*
Location: L2 - Located south of the Project site on Calle Familia in an existing residential community.	*Analyst:* A. Wolfe	*Day* 44.5 / *Night* 43.1	*CNEL* 49.8
	Date: 6/29/2017		

Hourly Leq dBA Readings (unadjusted)



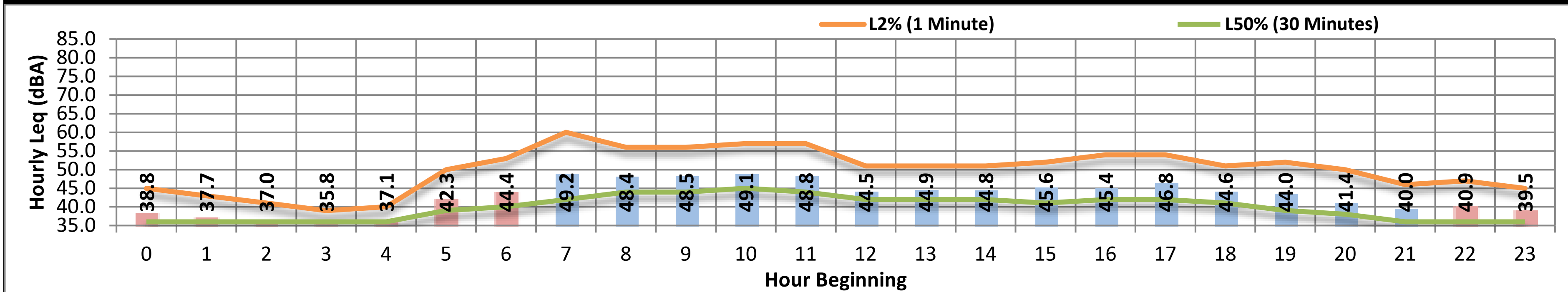
Time Period	*Hour*	*Leq*	*Lmax*	*Lmin*	*L1%*	*L2%*	*L5%*	*L8%*	*L25%*	*L50%*	*L90%*	*L95%*	*L99%*
Day	Min	36.6	44.8	36.8	40.0	38.0	37.0	37.0	37.0	37.0	37.0	37.0	37.0
	Max	49.0	76.2	40.1	59.0	57.0	53.0	49.0	45.0	42.0	41.0	41.0	40.0
Energy Average:		44.5	Average:		49.3	47.4	45.1	43.8	40.9	39.7	38.8	38.6	38.3
Night	Min	36.3	40.2	34.1	37.0	37.0	37.0	37.0	37.0	37.0	37.0	36.0	35.0
	Max	47.3	74.4	39.9	57.0	55.0	50.0	48.0	44.0	42.0	41.0	40.0	40.0
Energy Average:		43.1	Average:		47.1	45.4	43.7	42.6	40.0	38.4	38.0	37.6	37.3
Hourly Summary													
Night	0	36.3	40.2	34.1	37.0	37.0	37.0	37.0	37.0	37.0	37.0	36.0	35.0
	1	41.3	65.0	36.2	47.0	46.0	45.0	44.0	40.0	37.0	37.0	37.0	36.0
	2	43.0	55.0	37.1	52.0	51.0	49.0	47.0	41.0	37.0	37.0	37.0	37.0
	3	44.6	74.4	37.1	50.0	47.0	45.0	42.0	39.0	38.0	37.0	37.0	37.0
	4	41.1	58.3	37.1	47.0	46.0	44.0	43.0	41.0	39.0	38.0	37.0	37.0
	5	46.3	64.2	39.2	57.0	55.0	50.0	48.0	44.0	42.0	41.0	40.0	40.0
	6	47.3	71.4	39.9	57.0	53.0	49.0	48.0	44.0	42.0	41.0	40.0	40.0
Day	7	48.0	76.2	38.9	56.0	54.0	51.0	49.0	44.0	42.0	41.0	40.0	40.0
	8	49.0	74.0	38.9	59.0	57.0	53.0	49.0	44.0	42.0	40.0	40.0	40.0
	9	46.8	71.7	38.9	55.0	52.0	50.0	49.0	45.0	42.0	40.0	40.0	40.0
	10	47.1	74.5	40.1	55.0	54.0	51.0	49.0	44.0	42.0	41.0	41.0	40.0
	11	43.9	64.3	39.9	52.0	49.0	46.0	45.0	43.0	42.0	41.0	40.0	40.0
	12	47.7	74.8	39.2	52.0	49.0	46.0	45.0	42.0	41.0	40.0	40.0	40.0
	13	42.6	64.6	38.8	49.0	45.0	44.0	43.0	42.0	41.0	40.0	40.0	38.0
	14	42.5	60.8	38.2	49.0	48.0	46.0	45.0	42.0	40.0	39.0	38.0	38.0
	15	42.4	63.8	37.1	49.0	48.0	46.0	45.0	41.0	40.0	38.0	38.0	37.0
	16	42.1	64.8	37.1	51.0	49.0	46.0	44.0	40.0	39.0	37.0	37.0	37.0
	17	38.8	54.9	37.1	45.0	43.0	40.0	39.0	38.0	37.0	37.0	37.0	37.0
	18	38.8	53.6	37.1	45.0	44.0	43.0	41.0	37.0	37.0	37.0	37.0	37.0
	19	37.7	47.5	37.0	43.0	42.0	39.0	39.0	37.0	37.0	37.0	37.0	37.0
	20	37.5	53.5	37.0	40.0	39.0	38.0	38.0	37.0	37.0	37.0	37.0	37.0
	21	36.6	44.8	36.8	40.0	38.0	37.0	37.0	37.0	37.0	37.0	37.0	37.0
Night	22	36.6	46.4	36.9	40.0	37.0	37.0	37.0	37.0	37.0	37.0	37.0	37.0
	23	36.5	46.8	36.9	37.0	37.0	37.0	37.0	37.0	37.0	37.0	37.0	37.0

URBAN CROSSROADS

24-Hour Noise Level Measurement Summary

Project Name: Lifetime Fitness	*JN:* 11091	*Energy Average Leq*		*24-Hour*
Location: L3 - Located within the existing Rancho San Clemente Tennis and Fitness Club parking lot.	*Analyst:* A. Wolfe	*Day*	*Night*	*CNEL*
	Date: 6/29/2017	46.5	40.1	48.5

Hourly Leq dBA Readings (unadjusted)

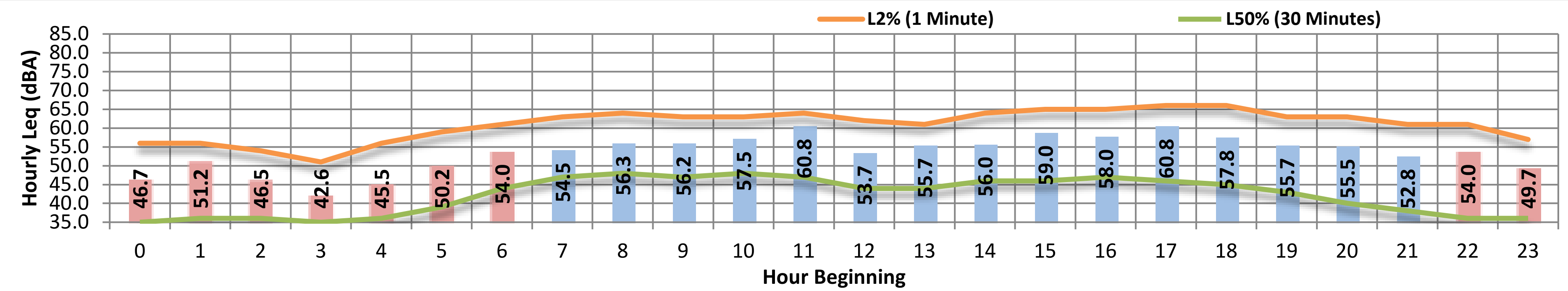


Time Period	*Hour*	*Leq*	*Lmax*	*Lmin*	*L1%*	*L2%*	*L5%*	*L8%*	*L25%*	*L50%*	*L90%*	*L95%*	*L99%*
Day	Min	40.0	58.5	36.1	49.0	46.0	43.0	42.0	39.0	36.0	36.0	36.0	36.0
	Max	49.2	71.0	39.9	61.0	60.0	55.0	53.0	48.0	45.0	42.0	41.0	40.0
Energy Average:		46.5	Average:		55.4	53.2	49.7	47.9	43.9	41.6	39.2	38.7	38.2
Night	Min	35.8	46.1	36.1	40.0	39.0	38.0	36.0	36.0	36.0	36.0	36.0	36.0
	Max	44.4	62.4	36.1	54.0	53.0	50.0	47.0	42.0	40.0	38.0	37.0	36.0
Energy Average:		40.1	Average:		47.6	44.8	41.6	40.2	37.9	36.8	36.2	36.1	36.0
Hourly Summary													
Night	0	38.8	61.2	36.1	48.0	45.0	40.0	39.0	36.0	36.0	36.0	36.0	36.0
	1	37.7	55.3	36.1	48.0	43.0	39.0	37.0	36.0	36.0	36.0	36.0	36.0
	2	37.0	56.9	36.1	44.0	41.0	39.0	37.0	36.0	36.0	36.0	36.0	36.0
	3	35.8	47.6	36.1	40.0	39.0	38.0	36.0	36.0	36.0	36.0	36.0	36.0
	4	37.1	46.1	36.1	41.0	40.0	39.0	39.0	37.0	36.0	36.0	36.0	36.0
	5	42.3	60.9	36.1	52.0	50.0	45.0	44.0	41.0	39.0	36.0	36.0	36.0
	6	44.4	62.4	36.1	54.0	53.0	50.0	47.0	42.0	40.0	38.0	37.0	36.0
Day	7	49.2	64.5	37.6	61.0	60.0	55.0	52.0	45.0	42.0	39.0	39.0	39.0
	8	48.4	64.8	39.1	58.0	56.0	54.0	52.0	47.0	44.0	41.0	40.0	40.0
	9	48.5	66.0	39.1	58.0	56.0	54.0	52.0	47.0	44.0	41.0	40.0	40.0
	10	49.1	68.0	39.9	58.0	57.0	54.0	53.0	48.0	45.0	42.0	41.0	40.0
	11	48.8	69.2	39.0	58.0	57.0	54.0	51.0	46.0	44.0	41.0	40.0	39.0
	12	44.5	58.8	36.1	53.0	51.0	49.0	47.0	44.0	42.0	40.0	39.0	39.0
	13	44.9	63.7	38.9	53.0	51.0	48.0	47.0	44.0	42.0	40.0	39.0	39.0
	14	44.8	58.9	37.4	53.0	51.0	48.0	47.0	44.0	42.0	40.0	39.0	39.0
	15	45.6	66.4	36.1	56.0	52.0	49.0	47.0	43.0	41.0	39.0	39.0	38.0
	16	45.4	62.0	36.1	56.0	54.0	50.0	47.0	43.0	42.0	39.0	39.0	38.0
	17	46.8	71.0	36.1	57.0	54.0	49.0	47.0	44.0	42.0	39.0	39.0	38.0
	18	44.6	62.6	36.1	54.0	51.0	48.0	46.0	43.0	41.0	39.0	38.0	36.0
	19	44.0	63.3	36.1	55.0	52.0	46.0	45.0	42.0	39.0	36.0	36.0	36.0
	20	41.4	58.5	36.1	52.0	50.0	44.0	43.0	40.0	38.0	36.0	36.0	36.0
	21	40.0	61.3	36.1	49.0	46.0	43.0	42.0	39.0	36.0	36.0	36.0	36.0
Night	22	40.9	61.5	36.1	53.0	47.0	42.0	41.0	38.0	36.0	36.0	36.0	36.0
	23	39.5	57.7	36.1	48.0	45.0	42.0	42.0	39.0	36.0	36.0	36.0	36.0

24-Hour Noise Level Measurement Summary

Project Name:	Lifetime Fitness	*JN:*	11091	*Energy Average Leq*	*24-Hour*
		Analyst:	A. Wolfe	*Day* / *Night*	*CNEL*
Location:	L4 - Located at the eastern Project site boundary adjacent to Avenida Vista Montana.	*Date:*	6/29/2017	57.3 / 50.4	59.2

Hourly Leq dBA Readings (unadjusted)



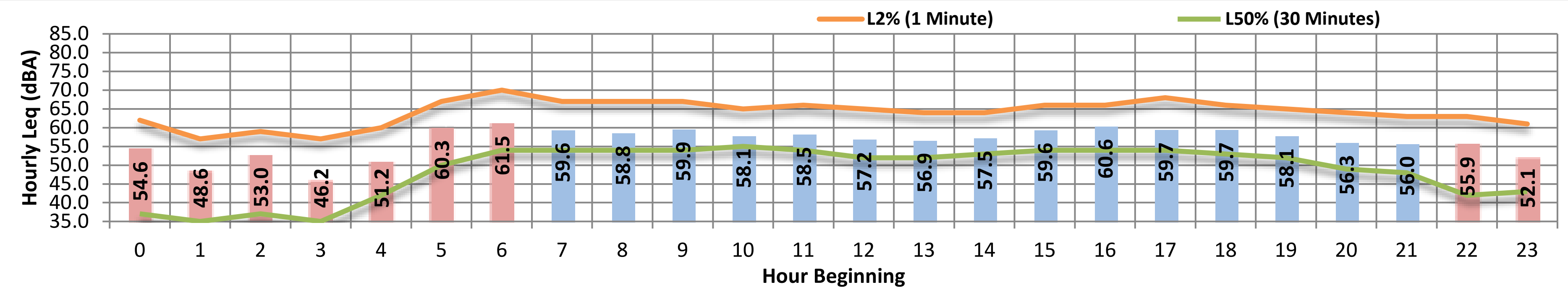
Time Period	*Hour*	*Leq*	*Lmax*	*Lmin*	*L1%*	*L2%*	*L5%*	*L8%*	*L25%*	*L50%*	*L90%*	*L95%*	*L99%*
Day	Min	52.8	74.7	33.3	64.0	61.0	58.0	56.0	45.0	38.0	35.0	35.0	35.0
	Max	60.8	88.2	39.9	72.0	66.0	62.0	59.0	54.0	48.0	42.0	41.0	40.0
Energy Average:		57.3	Average:		66.5	63.5	59.8	58.0	51.8	45.1	39.7	38.8	38.1
Night	Min	42.6	64.9	33.3	56.0	51.0	42.0	38.0	35.0	35.0	35.0	35.0	35.0
	Max	54.0	81.5	36.2	65.0	61.0	58.0	57.0	52.0	44.0	38.0	36.0	36.0
Energy Average:		50.4	Average:		60.0	56.8	51.6	48.7	41.0	37.0	35.4	35.2	35.2
Hourly Summary													
Night	0	46.7	70.6	33.3	59.0	56.0	49.0	44.0	36.0	35.0	35.0	35.0	35.0
	1	51.2	78.2	33.3	61.0	56.0	49.0	48.0	39.0	36.0	35.0	35.0	35.0
	2	46.5	72.9	33.3	57.0	54.0	49.0	48.0	44.0	36.0	35.0	35.0	35.0
	3	42.6	64.9	33.3	56.0	51.0	42.0	38.0	35.0	35.0	35.0	35.0	35.0
	4	45.5	68.8	33.3	57.0	56.0	52.0	48.0	38.0	36.0	35.0	35.0	35.0
	5	50.2	68.3	35.5	61.0	59.0	57.0	55.0	46.0	39.0	36.0	36.0	36.0
	6	54.0	78.5	36.2	65.0	61.0	58.0	57.0	52.0	44.0	38.0	36.0	36.0
Day	7	54.5	74.7	37.6	65.0	63.0	60.0	58.0	53.0	47.0	40.0	39.0	38.0
	8	56.3	78.0	38.8	66.0	64.0	60.0	59.0	54.0	48.0	41.0	40.0	39.0
	9	56.2	84.2	39.2	65.0	63.0	59.0	58.0	53.0	47.0	41.0	40.0	40.0
	10	57.5	86.7	39.9	66.0	63.0	59.0	58.0	53.0	48.0	42.0	41.0	40.0
	11	60.8	88.2	38.6	69.0	64.0	60.0	58.0	53.0	47.0	41.0	40.0	39.0
	12	53.7	78.6	38.0	64.0	62.0	59.0	57.0	51.0	44.0	40.0	39.0	38.0
	13	55.7	84.8	39.2	64.0	61.0	58.0	57.0	50.0	44.0	41.0	40.0	39.0
	14	56.0	81.7	38.0	66.0	64.0	60.0	58.0	52.0	46.0	41.0	40.0	39.0
	15	59.0	87.8	37.8	68.0	65.0	62.0	59.0	54.0	46.0	40.0	39.0	38.0
	16	58.0	83.3	37.9	69.0	65.0	61.0	59.0	54.0	47.0	40.0	39.0	38.0
	17	60.8	86.6	37.6	72.0	66.0	61.0	59.0	53.0	46.0	40.0	39.0	38.0
	18	57.8	83.7	36.3	69.0	66.0	61.0	59.0	53.0	45.0	40.0	39.0	38.0
	19	55.7	81.2	36.2	65.0	63.0	60.0	58.0	51.0	43.0	38.0	36.0	36.0
	20	55.5	81.2	35.9	66.0	63.0	59.0	57.0	48.0	40.0	36.0	36.0	36.0
	21	52.8	78.8	33.3	64.0	61.0	58.0	56.0	45.0	38.0	35.0	35.0	35.0
Night	22	54.0	81.5	33.3	64.0	61.0	56.0	53.0	41.0	36.0	35.0	35.0	35.0
	23	49.7	78.8	33.3	60.0	57.0	52.0	47.0	38.0	36.0	35.0	35.0	35.0

URBAN CROSSROADS

24-Hour Noise Level Measurement Summary

Project Name: Lifetime Fitness	*JN:* 11091	*Energy Average Leq*		*24-Hour*
Location: L5 - Located at the norther Project site boundary adjacent to an existing Rancho San Clemente Tennis and Fitness Club basketball court on the south side of Calle Del Cerro.	*Analyst:* A. Wolfe	*Day*	*Night*	*CNEL*
	Date: 6/29/2017	58.6	56.2	63.3

Hourly Leq dBA Readings (unadjusted)



Time Period	*Hour*	*Leq*	*Lmax*	*Lmin*	*L1%*	*L2%*	*L5%*	*L8%*	*L25%*	*L50%*	*L90%*	*L95%*	*L99%*
Day	Min	56.0	75.0	34.9	65.0	63.0	61.0	59.0	54.0	48.0	37.0	37.0	37.0
	Max	60.6	86.6	43.1	70.0	68.0	64.0	63.0	58.0	55.0	48.0	47.0	44.0
Energy Average:		58.6	Average:		68.0	65.5	62.7	61.5	57.1	52.8	45.0	43.4	41.2
Night	Min	46.2	66.8	34.9	59.0	57.0	52.0	48.0	37.0	35.0	35.0	35.0	35.0
	Max	61.5	87.9	37.9	73.0	70.0	65.0	63.0	59.0	54.0	46.0	44.0	40.0
Energy Average:		56.2	Average:		64.4	61.8	57.4	54.9	46.7	41.7	36.9	36.3	35.8

Hourly Summary

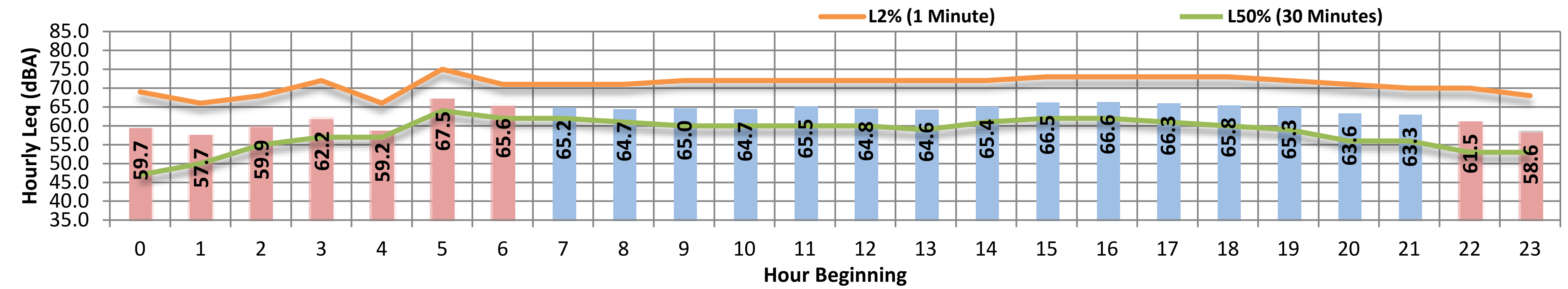
Time Period	*Hour*	*Leq*	*Lmax*	*Lmin*	*L1%*	*L2%*	*L5%*	*L8%*	*L25%*	*L50%*	*L90%*	*L95%*	*L99%*
Night	0	54.6	80.4	34.9	65.0	62.0	58.0	55.0	43.0	37.0	35.0	35.0	35.0
	1	48.6	70.2	34.9	61.0	57.0	53.0	50.0	39.0	35.0	35.0	35.0	35.0
	2	53.0	83.1	34.9	63.0	59.0	52.0	48.0	37.0	37.0	35.0	35.0	35.0
	3	46.2	66.8	34.9	59.0	57.0	52.0	48.0	37.0	35.0	35.0	35.0	35.0
	4	51.2	68.3	34.9	63.0	60.0	57.0	56.0	49.0	42.0	35.0	35.0	35.0
	5	60.3	87.9	37.6	70.0	67.0	63.0	61.0	55.0	50.0	40.0	38.0	37.0
	6	61.5	83.2	37.9	73.0	70.0	65.0	63.0	59.0	54.0	46.0	44.0	40.0
Day	7	59.6	82.7	39.6	69.0	67.0	64.0	63.0	58.0	54.0	47.0	44.0	41.0
	8	58.8	78.3	41.8	69.0	67.0	63.0	62.0	58.0	54.0	48.0	47.0	43.0
	9	59.9	81.2	40.9	70.0	67.0	64.0	62.0	58.0	54.0	47.0	46.0	44.0
	10	58.1	76.7	43.1	67.0	65.0	62.0	61.0	58.0	55.0	48.0	47.0	44.0
	11	58.5	80.9	40.8	68.0	66.0	63.0	61.0	57.0	54.0	47.0	45.0	43.0
	12	57.2	77.7	40.6	68.0	65.0	61.0	60.0	56.0	52.0	45.0	43.0	41.0
	13	56.9	75.0	42.1	67.0	64.0	62.0	61.0	56.0	52.0	45.0	44.0	43.0
	14	57.5	78.5	41.9	66.0	64.0	62.0	61.0	57.0	53.0	46.0	45.0	43.0
	15	59.6	84.8	39.7	69.0	66.0	63.0	62.0	58.0	54.0	46.0	44.0	42.0
	16	60.6	85.9	39.7	70.0	66.0	63.0	62.0	58.0	54.0	46.0	44.0	42.0
	17	59.7	83.4	39.4	70.0	68.0	64.0	63.0	58.0	54.0	46.0	44.0	41.0
	18	59.7	86.6	39.5	68.0	66.0	64.0	62.0	58.0	53.0	45.0	43.0	40.0
	19	58.1	81.3	37.8	68.0	65.0	63.0	62.0	57.0	52.0	43.0	40.0	37.0
	20	56.3	75.2	37.8	66.0	64.0	62.0	61.0	55.0	49.0	39.0	38.0	37.0
	21	56.0	81.3	34.9	65.0	63.0	61.0	59.0	54.0	48.0	37.0	37.0	37.0
Night	22	55.9	84.8	34.9	64.0	63.0	60.0	58.0	50.0	42.0	36.0	35.0	35.0
	23	52.1	75.0	34.9	62.0	61.0	57.0	55.0	51.0	43.0	35.0	35.0	35.0

URBAN CROSSROADS

24-Hour Noise Level Measurement Summary

Project Name:	Lifetime Fitness	*JN:* 11091	*Energy Average Leq*		*24-Hour*
Location:	L6 - Located at the northern Project site boundary adjacent to existing Rancho San Clemente Tennis and Fitness Club tennis courts on Calle Del Cerro.	*Analyst:* A. Wolfe	*Day*	*Night*	*CNEL*
		Date: 6/29/2017	65.2	62.6	69.8

Hourly Leq dBA Readings (unadjusted)



Time Period	*Hour*	*Leq*	*Lmax*	*Lmin*	*L1%*	*L2%*	*L5%*	*L8%*	*L25%*	*L50%*	*L90%*	*L95%*	*L99%*
Day	Min	63.3	78.0	41.2	71.0	70.0	69.0	68.0	62.0	56.0	48.0	45.0	43.0
	Max	66.6	87.0	53.8	74.0	73.0	72.0	71.0	68.0	62.0	57.0	57.0	55.0
Energy Average:		65.2	Average:		73.1	71.9	70.6	69.7	65.5	59.9	51.0	48.9	46.6
Night	Min	57.7	74.0	45.7	68.0	66.0	62.0	60.0	52.0	47.0	46.0	46.0	45.0
	Max	67.5	83.6	59.3	75.0	75.0	73.0	71.0	67.0	64.0	61.0	60.0	60.0
Energy Average:		62.6	Average:		71.0	69.4	66.6	64.3	58.1	55.3	53.3	53.0	52.8
Hourly Summary													
Night	0	59.7	81.2	45.8	71.0	69.0	65.0	62.0	52.0	47.0	46.0	46.0	46.0
	1	57.7	75.4	45.7	69.0	66.0	62.0	61.0	55.0	50.0	46.0	46.0	45.0
	2	59.9	82.3	51.0	70.0	68.0	64.0	60.0	56.0	55.0	52.0	51.0	51.0
	3	62.2	78.0	55.4	73.0	72.0	69.0	67.0	57.0	57.0	56.0	56.0	56.0
	4	59.2	74.0	54.7	68.0	66.0	63.0	61.0	58.0	57.0	55.0	55.0	55.0
	5	67.5	80.0	59.3	75.0	75.0	73.0	71.0	67.0	64.0	61.0	60.0	60.0
	6	65.6	82.5	58.4	73.0	71.0	70.0	69.0	65.0	62.0	60.0	59.0	59.0
Day	7	65.2	82.2	53.8	73.0	71.0	70.0	69.0	65.0	62.0	57.0	57.0	55.0
	8	64.7	78.2	48.6	73.0	71.0	70.0	69.0	65.0	61.0	54.0	52.0	50.0
	9	65.0	79.9	46.4	73.0	72.0	71.0	70.0	65.0	60.0	52.0	50.0	47.0
	10	64.7	81.0	45.9	73.0	72.0	70.0	69.0	65.0	60.0	52.0	50.0	47.0
	11	65.5	82.2	43.5	74.0	72.0	71.0	70.0	66.0	60.0	51.0	48.0	46.0
	12	64.8	79.7	43.4	73.0	72.0	70.0	69.0	65.0	60.0	50.0	47.0	45.0
	13	64.6	78.9	43.4	73.0	72.0	70.0	69.0	65.0	59.0	49.0	46.0	44.0
	14	65.4	78.0	43.5	73.0	72.0	71.0	70.0	66.0	61.0	50.0	48.0	45.0
	15	66.5	82.1	43.4	74.0	73.0	72.0	71.0	68.0	62.0	51.0	48.0	44.0
	16	66.6	81.2	43.3	74.0	73.0	72.0	71.0	68.0	62.0	51.0	48.0	45.0
	17	66.3	81.9	42.1	74.0	73.0	71.0	71.0	67.0	61.0	51.0	48.0	44.0
	18	65.8	86.2	41.2	74.0	73.0	71.0	70.0	66.0	60.0	48.0	45.0	43.0
	19	65.3	86.5	44.9	73.0	72.0	71.0	70.0	66.0	59.0	48.0	47.0	46.0
	20	63.6	83.9	46.3	72.0	71.0	70.0	69.0	63.0	56.0	49.0	48.0	47.0
	21	63.3	87.0	50.4	71.0	70.0	69.0	68.0	62.0	56.0	52.0	52.0	51.0
Night	22	61.5	83.6	51.4	71.0	70.0	68.0	66.0	58.0	53.0	52.0	52.0	51.0
	23	58.6	74.7	51.9	69.0	68.0	65.0	62.0	55.0	53.0	52.0	52.0	52.0

URBAN CROSSROADS

APPENDIX 8.1:

STATIONARY/AREA-SOURCE NOISE LEVEL CALCULATIONS

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STATIONARY SOURCE NOISE PREDICTION MODEL

7/11/2017

Observer Location: **R1**
Source: Roof-Top Air Conditioning Units
Condition: Operational

Project Name: Lifetime Fitness
Job Number: 11091
Analyst: A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	904.0 feet
Noise Distance to Barrier:	894.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Elevation:	348.0 feet
Noise Source Elevation:	273.0 feet
Barrier Elevation:	273.0 feet
Barrier Height:	**75.0 feet**
Noise Source Height:	5.0 feet
Observer Height:	5.0 feet
Barrier Type (0-Wall, 1-Berm):	1
Drop Off Coefficient:	20.0

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	0.0	74.4	76.1	77.4	77.7	78.2
Distance Attenuation	904.0	-45.1	-45.1	-45.1	-45.1	-45.1	-45.1
Shielding (Barrier Attenuation)	894.0	-9.7	-9.7	-9.7	-9.7	-9.7	-9.7
Raw (Distance + Barrier)		-54.8	19.6	21.3	22.6	22.9	23.4
39 Minute Hourly Adjustment		**-56.7**	**17.7**	**19.4**	**20.7**	**21.0**	**21.5**

STATIONARY SOURCE NOISE PREDICTION MODEL

7/11/2017

Observer Location: **R1**
Source: Parking Lot Vehicle Movements
Condition: Operational

Project Name: Lifetime Fitness
Job Number: 11091
Analyst: A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	700.0 feet
Noise Distance to Barrier:	690.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Elevation:	348.0 feet
Noise Source Elevation:	245.0 feet
Barrier Elevation:	245.0 feet
Barrier Height:	**103.0 feet**
Noise Source Height:	5.0 feet
Observer Height:	5.0 feet
Barrier Type (0-Wall, 1-Berm):	1
Drop Off Coefficient:	15.0

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	10.0	0.0	49.0	50.0	55.0	61.0	71.9
Distance Attenuation	700.0	-27.7	-27.7	-27.7	-27.7	-27.7	-27.7
Shielding (Barrier Attenuation)	690.0	-8.8	-8.8	-8.8	-8.8	-8.8	-8.8
Raw (Distance + Barrier)		-36.5	12.5	13.5	18.5	24.5	35.4
60 Minute Hourly Adjustment		**-36.5**	**12.5**	**13.5**	**18.5**	**24.5**	**35.4**

STATIONARY SOURCE NOISE PREDICTION MODEL

7/11/2017

Observer Location: **R1**
Source: Pool Activity
Condition: Operational

Project Name: Lifetime Fitness
Job Number: 11091
Analyst: A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	1,106.0	feet
Noise Distance to Barrier:	10.0	feet
Barrier Distance to Observer:	1,096.0	feet
Observer Elevation:	348.0	feet
Noise Source Elevation:	227.0	feet
Barrier Elevation:	227.0	feet
Barrier Height:	**28.0**	**feet**
Noise Source Height:	4.0	feet
Observer Height:	5.0	feet
Barrier Type (0-Wall, 1-Berm):	0	
Drop Off Coefficient:	20.0	

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	0.0	68.7	71.7	75.0	78.1	83.5
Distance Attenuation	1,106.0	-46.9	-46.9	-46.9	-46.9	-46.9	-46.9
Shielding (Barrier Attenuation)	10.0	-17.5	-17.5	-17.5	-17.5	-17.5	-17.5
Raw (Distance + Barrier)		-64.4	4.3	7.3	10.6	13.7	19.1
60 Minute Hourly Adjustment		**-64.4**	**4.3**	**7.3**	**10.6**	**13.7**	**19.1**

STATIONARY SOURCE NOISE PREDICTION MODEL

7/11/2017

Observer Location: **R1**
Source: Tennis Court Activity
Condition: Operational

Project Name: Lifetime Fitness
Job Number: 11091
Analyst: A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	921.0	feet
Noise Distance to Barrier:	911.0	feet
Barrier Distance to Observer:	10.0	feet
Observer Elevation:	348.0	feet
Noise Source Elevation:	230.0	feet
Barrier Elevation:	230.0	feet
Barrier Height:	**145.0**	**feet**
Noise Source Height:	5.0	feet
Observer Height:	5.0	feet
Barrier Type (0-Wall, 1-Berm):	1	
Drop Off Coefficient:	20.0	

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	35.0	0.0	52.7	54.3	56.0	57.5	59.1
Distance Attenuation	921.0	-28.4	-28.4	-28.4	-28.4	-28.4	-28.4
Shielding (Barrier Attenuation)	911.0	-17.9	-17.9	-17.9	-17.9	-17.9	-17.9
Raw (Distance + Barrier)		-46.3	6.4	8.0	9.7	11.2	12.8
60 Minute Hourly Adjustment		**-46.3**	**6.4**	**8.0**	**9.7**	**11.2**	**12.8**

STATIONARY SOURCE NOISE PREDICTION MODEL

7/11/2017

Observer Location:	**R1**	*Project Name:*	Lifetime Fitness
Source:	Live Music/Events	*Job Number:*	11091
Condition:	Operational	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	972.0 feet	***Barrier Height:***	**28.0 feet**
Noise Distance to Barrier:	10.0 feet	*Noise Source Height:*	8.0 feet
Barrier Distance to Observer:	962.0 feet	*Observer Height:*	5.0 feet
Observer Elevation:	348.0 feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	240.0 feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	240.0 feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	0.0	73.1	89.2	92.1	93.9	100.4
Distance Attenuation	972.0	-45.8	-45.8	-45.8	-45.8	-45.8	-45.8
Shielding (Barrier Attenuation)	10.0	-17.1	-17.1	-17.1	-17.1	-17.1	-17.1
Raw (Distance + Barrier)		-62.9	10.2	26.3	29.2	31.0	37.5
60 Minute Hourly Adjustment		**-62.9**	**10.2**	**26.3**	**29.2**	**31.0**	**37.5**

STATIONARY SOURCE NOISE PREDICTION MODEL

7/11/2017

Observer Location:	**R2**	*Project Name:*	Lifetime Fitness
Source:	Roof-Top Air Conditioning Units	*Job Number:*	11091
Condition:	Operational	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	550.0 feet	***Barrier Height:***	**78.0 feet**
Noise Distance to Barrier:	540.0 feet	*Noise Source Height:*	5.0 feet
Barrier Distance to Observer:	10.0 feet	*Observer Height:*	5.0 feet
Observer Elevation:	351.0 feet	*Barrier Type (0-Wall, 1-Berm):*	1
Noise Source Elevation:	273.0 feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	273.0 feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	0.0	74.4	76.1	77.4	77.7	78.2
Distance Attenuation	550.0	-40.8	-40.8	-40.8	-40.8	-40.8	-40.8
Shielding (Barrier Attenuation)	540.0	-8.9	-8.9	-8.9	-8.9	-8.9	-8.9
Raw (Distance + Barrier)		-49.7	24.7	26.4	27.7	28.0	28.5
39 Minute Hourly Adjustment		**-51.6**	**22.8**	**24.5**	**25.8**	**26.1**	**26.6**

STATIONARY SOURCE NOISE PREDICTION MODEL

7/11/2017

Observer Location: **R2**
Source: Parking Lot Vehicle Movements
Condition: Operational

Project Name: Lifetime Fitness
Job Number: 11091
Analyst: A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	315.0 feet	***Barrier Height:***	**105.0 feet**
Noise Distance to Barrier:	305.0 feet	*Noise Source Height:*	5.0 feet
Barrier Distance to Observer:	10.0 feet	*Observer Height:*	5.0 feet
Observer Elevation:	351.0 feet	*Barrier Type (0-Wall, 1-Berm):*	1
Noise Source Elevation:	246.0 feet	*Drop Off Coefficient:*	15.0
Barrier Elevation:	246.0 feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	10.0	0.0	49.0	50.0	55.0	61.0	71.9
Distance Attenuation	315.0	-22.5	-22.5	-22.5	-22.5	-22.5	-22.5
Shielding (Barrier Attenuation)	305.0	-6.1	-6.1	-6.1	-6.1	-6.1	-6.1
Raw (Distance + Barrier)		-28.6	20.4	21.4	26.4	32.4	43.3
60 Minute Hourly Adjustment		**-28.6**	**20.4**	**21.4**	**26.4**	**32.4**	**43.3**

STATIONARY SOURCE NOISE PREDICTION MODEL

7/11/2017

Observer Location: **R2**
Source: Pool Activity
Condition: Operational

Project Name: Lifetime Fitness
Job Number: 11091
Analyst: A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	703.0 feet	***Barrier Height:***	**28.0 feet**
Noise Distance to Barrier:	10.0 feet	*Noise Source Height:*	4.0 feet
Barrier Distance to Observer:	693.0 feet	*Observer Height:*	5.0 feet
Observer Elevation:	351.0 feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	227.0 feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	227.0 feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	0.0	68.7	71.7	75.0	78.1	83.5
Distance Attenuation	703.0	-43.0	-43.0	-43.0	-43.0	-43.0	-43.0
Shielding (Barrier Attenuation)	10.0	-17.3	-17.3	-17.3	-17.3	-17.3	-17.3
Raw (Distance + Barrier)		-60.3	8.4	11.4	14.7	17.8	23.2
60 Minute Hourly Adjustment		**-60.3**	**8.4**	**11.4**	**14.7**	**17.8**	**23.2**

STATIONARY SOURCE NOISE PREDICTION MODEL

7/11/2017

***Observer Location:* R2**
Source: Tennis Court Activity
Condition: Operational

Project Name: Lifetime Fitness
Job Number: 11091
Analyst: A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	639.0 feet
Noise Distance to Barrier:	629.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Elevation:	351.0 feet
Noise Source Elevation:	224.0 feet
Barrier Elevation:	224.0 feet
Barrier Height:	**127.0 feet**
Noise Source Height:	5.0 feet
Observer Height:	5.0 feet
Barrier Type (0-Wall, 1-Berm):	1
Drop Off Coefficient:	20.0

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	35.0	0.0	52.7	54.3	56.0	57.5	59.1
Distance Attenuation	639.0	-25.2	-25.2	-25.2	-25.2	-25.2	-25.2
Shielding (Barrier Attenuation)	629.0	-8.0	-8.0	-8.0	-8.0	-8.0	-8.0
Raw (Distance + Barrier)		-33.2	19.5	21.1	22.8	24.3	25.9
60 Minute Hourly Adjustment		**-33.2**	**19.5**	**21.1**	**22.8**	**24.3**	**25.9**

STATIONARY SOURCE NOISE PREDICTION MODEL

7/11/2017

***Observer Location:* R2**
Source: Live Music/Events
Condition: Operational

Project Name: Lifetime Fitness
Job Number: 11091
Analyst: A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	625.0 feet
Noise Distance to Barrier:	10.0 feet
Barrier Distance to Observer:	615.0 feet
Observer Elevation:	351.0 feet
Noise Source Elevation:	240.0 feet
Barrier Elevation:	240.0 feet
Barrier Height:	**28.0 feet**
Noise Source Height:	8.0 feet
Observer Height:	5.0 feet
Barrier Type (0-Wall, 1-Berm):	0
Drop Off Coefficient:	20.0

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	0.0	73.1	89.2	92.1	93.9	100.4
Distance Attenuation	625.0	-41.9	-41.9	-41.9	-41.9	-41.9	-41.9
Shielding (Barrier Attenuation)	10.0	-16.9	-16.9	-16.9	-16.9	-16.9	-16.9
Raw (Distance + Barrier)		-58.8	14.3	30.4	33.3	35.1	41.6
60 Minute Hourly Adjustment		**-58.8**	**14.3**	**30.4**	**33.3**	**35.1**	**41.6**

STATIONARY SOURCE NOISE PREDICTION MODEL
7/11/2017

Observer Location:	**R3**	*Project Name:*	Lifetime Fitness
Source:	Roof-Top Air Conditioning Units	*Job Number:*	11091
Condition:	Operational	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	785.0 feet	***Barrier Height:***	**90.0 feet**
Noise Distance to Barrier:	775.0 feet	*Noise Source Height:*	5.0 feet
Barrier Distance to Observer:	10.0 feet	*Observer Height:*	5.0 feet
Observer Elevation:	359.0 feet	*Barrier Type (0-Wall, 1-Berm):*	1
Noise Source Elevation:	269.0 feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	269.0 feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	0.0	74.4	76.1	77.4	77.7	78.2
Distance Attenuation	785.0	-43.9	-43.9	-43.9	-43.9	-43.9	-43.9
Shielding (Barrier Attenuation)	775.0	-9.2	-9.2	-9.2	-9.2	-9.2	-9.2
Raw (Distance + Barrier)		-53.1	21.3	23.0	24.3	24.6	25.1
39 Minute Hourly Adjustment		**-55.0**	**19.4**	**21.1**	**22.4**	**22.7**	**23.2**

STATIONARY SOURCE NOISE PREDICTION MODEL
7/11/2017

Observer Location:	**R3**	*Project Name:*	Lifetime Fitness
Source:	Parking Lot Vehicle Movements	*Job Number:*	11091
Condition:	Operational	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	542.0 feet	***Barrier Height:***	**113.0 feet**
Noise Distance to Barrier:	532.0 feet	*Noise Source Height:*	5.0 feet
Barrier Distance to Observer:	10.0 feet	*Observer Height:*	5.0 feet
Observer Elevation:	359.0 feet	*Barrier Type (0-Wall, 1-Berm):*	1
Noise Source Elevation:	246.0 feet	*Drop Off Coefficient:*	15.0
Barrier Elevation:	246.0 feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	10.0	0.0	49.0	50.0	55.0	61.0	71.9
Distance Attenuation	542.0	-26.0	-26.0	-26.0	-26.0	-26.0	-26.0
Shielding (Barrier Attenuation)	532.0	-7.8	-7.8	-7.8	-7.8	-7.8	-7.8
Raw (Distance + Barrier)		-33.8	15.2	16.2	21.2	27.2	38.1
60 Minute Hourly Adjustment		**-33.8**	**15.2**	**16.2**	**21.2**	**27.2**	**38.1**

STATIONARY SOURCE NOISE PREDICTION MODEL

7/11/2017

Observer Location:	**R3**	*Project Name:*	Lifetime Fitness
Source:	Pool Activity	*Job Number:*	11091
Condition:	Operational	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	917.0 feet	***Barrier Height:***	**132.0 feet**
Noise Distance to Barrier:	907.0 feet	*Noise Source Height:*	4.0 feet
Barrier Distance to Observer:	10.0 feet	*Observer Height:*	5.0 feet
Observer Elevation:	359.0 feet	*Barrier Type (0-Wall, 1-Berm):*	1
Noise Source Elevation:	227.0 feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	227.0 feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	0.0	68.7	71.7	75.0	78.1	83.5
Distance Attenuation	917.0	-45.3	-45.3	-45.3	-45.3	-45.3	-45.3
Shielding (Barrier Attenuation)	907.0	-8.8	-8.8	-8.8	-8.8	-8.8	-8.8
Raw (Distance + Barrier)		-54.1	14.6	17.6	20.9	24.0	29.4
60 Minute Hourly Adjustment		**-54.1**	**14.6**	**17.6**	**20.9**	**24.0**	**29.4**

STATIONARY SOURCE NOISE PREDICTION MODEL

7/11/2017

Observer Location:	**R3**	*Project Name:*	Lifetime Fitness
Source:	Tennis Court Activity	*Job Number:*	11091
Condition:	Operational	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	938.0 feet	***Barrier Height:***	**28.0 feet**
Noise Distance to Barrier:	10.0 feet	*Noise Source Height:*	5.0 feet
Barrier Distance to Observer:	928.0 feet	*Observer Height:*	5.0 feet
Observer Elevation:	359.0 feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	224.0 feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	224.0 feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	35.0	0.0	52.7	54.3	56.0	57.5	59.1
Distance Attenuation	938.0	-28.6	-28.6	-28.6	-28.6	-28.6	-28.6
Shielding (Barrier Attenuation)	10.0	-17.3	-17.3	-17.3	-17.3	-17.3	-17.3
Raw (Distance + Barrier)		-45.9	6.8	8.4	10.1	11.6	13.2
60 Minute Hourly Adjustment		**-45.9**	**6.8**	**8.4**	**10.1**	**11.6**	**13.2**

STATIONARY SOURCE NOISE PREDICTION MODEL — 7/11/2017

Observer Location:	**R3**	*Project Name:*	Lifetime Fitness
Source:	Live Music/Events	*Job Number:*	11091
Condition:	Operational	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	935.0 feet	***Barrier Height:***	**28.0 feet**
Noise Distance to Barrier:	10.0 feet	*Noise Source Height:*	8.0 feet
Barrier Distance to Observer:	925.0 feet	*Observer Height:*	5.0 feet
Observer Elevation:	359.0 feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	240.0 feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	240.0 feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	0.0	73.1	89.2	92.1	93.9	100.4
Distance Attenuation	935.0	-45.4	-45.4	-45.4	-45.4	-45.4	-45.4
Shielding (Barrier Attenuation)	10.0	-17.1	-17.1	-17.1	-17.1	-17.1	-17.1
Raw (Distance + Barrier)		-62.5	10.6	26.7	29.6	31.4	37.9
60 Minute Hourly Adjustment		**-62.5**	**10.6**	**26.7**	**29.6**	**31.4**	**37.9**

STATIONARY SOURCE NOISE PREDICTION MODEL — 7/11/2017

Observer Location:	**R4**	*Project Name:*	Lifetime Fitness
Source:	Roof-Top Air Conditioning Units	*Job Number:*	11091
Condition:	Operational	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	481.0 feet	***Barrier Height:***	**57.0 feet**
Noise Distance to Barrier:	471.0 feet	*Noise Source Height:*	5.0 feet
Barrier Distance to Observer:	10.0 feet	*Observer Height:*	5.0 feet
Observer Elevation:	326.0 feet	*Barrier Type (0-Wall, 1-Berm):*	1
Noise Source Elevation:	269.0 feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	269.0 feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	0.0	74.4	76.1	77.4	77.7	78.2
Distance Attenuation	481.0	-39.7	-39.7	-39.7	-39.7	-39.7	-39.7
Shielding (Barrier Attenuation)	471.0	-9.2	-9.2	-9.2	-9.2	-9.2	-9.2
Raw (Distance + Barrier)		-48.9	25.5	27.2	28.5	28.8	29.3
39 Minute Hourly Adjustment		**-50.8**	**23.6**	**25.3**	**26.6**	**26.9**	**27.4**

STATIONARY SOURCE NOISE PREDICTION MODEL

7/11/2017

Observer Location:	**R4**	*Project Name:*	Lifetime Fitness
Source:	Parking Lot Vehicle Movements	*Job Number:*	11091
Condition:	Operational	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	645.0 feet	***Barrier Height:***	**85.0 feet**
Noise Distance to Barrier:	635.0 feet	*Noise Source Height:*	5.0 feet
Barrier Distance to Observer:	10.0 feet	*Observer Height:*	5.0 feet
Observer Elevation:	326.0 feet	*Barrier Type (0-Wall, 1-Berm):*	1
Noise Source Elevation:	241.0 feet	*Drop Off Coefficient:*	15.0
Barrier Elevation:	241.0 feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	10.0	0.0	49.0	50.0	55.0	61.0	71.9
Distance Attenuation	645.0	-27.1	-27.1	-27.1	-27.1	-27.1	-27.1
Shielding (Barrier Attenuation)	635.0	-9.0	-9.0	-9.0	-9.0	-9.0	-9.0
Raw (Distance + Barrier)		-36.1	12.9	13.9	18.9	24.9	35.8
60 Minute Hourly Adjustment		**-36.1**	**12.9**	**13.9**	**18.9**	**24.9**	**35.8**

STATIONARY SOURCE NOISE PREDICTION MODEL

7/11/2017

Observer Location:	**R4**	*Project Name:*	Lifetime Fitness
Source:	Pool Activity	*Job Number:*	11091
Condition:	Operational	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	365.0 feet	***Barrier Height:***	**99.0 feet**
Noise Distance to Barrier:	355.0 feet	*Noise Source Height:*	4.0 feet
Barrier Distance to Observer:	10.0 feet	*Observer Height:*	5.0 feet
Observer Elevation:	326.0 feet	*Barrier Type (0-Wall, 1-Berm):*	1
Noise Source Elevation:	227.0 feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	227.0 feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	0.0	68.7	71.7	75.0	78.1	83.5
Distance Attenuation	365.0	-37.3	-37.3	-37.3	-37.3	-37.3	-37.3
Shielding (Barrier Attenuation)	355.0	-6.9	-6.9	-6.9	-6.9	-6.9	-6.9
Raw (Distance + Barrier)		-44.2	24.5	27.5	30.8	33.9	39.3
60 Minute Hourly Adjustment		**-44.2**	**24.5**	**27.5**	**30.8**	**33.9**	**39.3**

STATIONARY SOURCE NOISE PREDICTION MODEL

7/11/2017

Observer Location:	**R4**	*Project Name:*	Lifetime Fitness
Source:	Tennis Court Activity	*Job Number:*	11091
Condition:	Operational	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	289.0 feet	***Barrier Height:***	**110.0 feet**
Noise Distance to Barrier:	279.0 feet	*Noise Source Height:*	5.0 feet
Barrier Distance to Observer:	10.0 feet	*Observer Height:*	5.0 feet
Observer Elevation:	326.0 feet	*Barrier Type (0-Wall, 1-Berm):*	1
Noise Source Elevation:	216.0 feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	216.0 feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	35.0	0.0	52.7	54.3	56.0	57.5	59.1
Distance Attenuation	289.0	-18.3	-18.3	-18.3	-18.3	-18.3	-18.3
Shielding (Barrier Attenuation)	279.0	-5.6	-5.6	-5.6	-5.6	-5.6	-5.6
Raw (Distance + Barrier)		-23.9	28.8	30.4	32.1	33.6	35.2
60 Minute Hourly Adjustment		**-23.9**	**28.8**	**30.4**	**32.1**	**33.6**	**35.2**

STATIONARY SOURCE NOISE PREDICTION MODEL

7/11/2017

Observer Location:	**R4**	*Project Name:*	Lifetime Fitness
Source:	Live Music/Events	*Job Number:*	11091
Condition:	Operational	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	643.0 feet	***Barrier Height:***	**86.0 feet**
Noise Distance to Barrier:	633.0 feet	*Noise Source Height:*	8.0 feet
Barrier Distance to Observer:	10.0 feet	*Observer Height:*	5.0 feet
Observer Elevation:	326.0 feet	*Barrier Type (0-Wall, 1-Berm):*	1
Noise Source Elevation:	240.0 feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	240.0 feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	0.0	73.1	89.2	92.1	93.9	100.4
Distance Attenuation	643.0	-42.2	-42.2	-42.2	-42.2	-42.2	-42.2
Shielding (Barrier Attenuation)	633.0	-9.1	-9.1	-9.1	-9.1	-9.1	-9.1
Raw (Distance + Barrier)		-51.3	21.8	37.9	40.8	42.6	49.1
60 Minute Hourly Adjustment		**-51.3**	**21.8**	**37.9**	**40.8**	**42.6**	**49.1**

STATIONARY SOURCE NOISE PREDICTION MODEL
7/11/2017

***Observer Location:* R5**
Source: Roof-Top Air Conditioning Units
Condition: Operational
Project Name: Lifetime Fitness
Job Number: 11091
Analyst: A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer 663.0 feet
Noise Distance to Barrier: 653.0 feet
Barrier Distance to Observer: 10.0 feet

Observer Elevation: 300.0 feet
Noise Source Elevation: 269.0 feet
Barrier Elevation: 269.0 feet

Barrier Height: **31.0 feet**
Noise Source Height: 5.0 feet
Observer Height: 5.0 feet

Barrier Type (0-Wall, 1-Berm): 1
Drop Off Coefficient: 20.0

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	0.0	74.4	76.1	77.4	77.7	78.2
Distance Attenuation	663.0	-42.5	-42.5	-42.5	-42.5	-42.5	-42.5
Shielding (Barrier Attenuation)	653.0	-10.1	-10.1	-10.1	-10.1	-10.1	-10.1
Raw (Distance + Barrier)		-52.6	21.8	23.5	24.8	25.1	25.6
39 Minute Hourly Adjustment		**-54.5**	**19.9**	**21.6**	**22.9**	**23.2**	**23.7**

STATIONARY SOURCE NOISE PREDICTION MODEL
7/11/2017

***Observer Location:* R5**
Source: Parking Lot Vehicle Movements
Condition: Operational
Project Name: Lifetime Fitness
Job Number: 11091
Analyst: A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer 820.0 feet
Noise Distance to Barrier: 810.0 feet
Barrier Distance to Observer: 10.0 feet

Observer Elevation: 300.0 feet
Noise Source Elevation: 240.0 feet
Barrier Elevation: 240.0 feet

Barrier Height: **60.0 feet**
Noise Source Height: 5.0 feet
Observer Height: 5.0 feet

Barrier Type (0-Wall, 1-Berm): 1
Drop Off Coefficient: 15.0

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	10.0	0.0	49.0	50.0	55.0	61.0	71.9
Distance Attenuation	820.0	-28.7	-28.7	-28.7	-28.7	-28.7	-28.7
Shielding (Barrier Attenuation)	810.0	-9.8	-9.8	-9.8	-9.8	-9.8	-9.8
Raw (Distance + Barrier)		-38.5	10.5	11.5	16.5	22.5	33.4
60 Minute Hourly Adjustment		**-38.5**	**10.5**	**11.5**	**16.5**	**22.5**	**33.4**

STATIONARY SOURCE NOISE PREDICTION MODEL 7/11/2017

***Observer Location:* R5**
Source: Pool Activity
Condition: Operational

Project Name: Lifetime Fitness
Job Number: 11091
Analyst: A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	524.0 feet	***Barrier Height:***	**73.0 feet**
Noise Distance to Barrier:	514.0 feet	*Noise Source Height:*	4.0 feet
Barrier Distance to Observer:	10.0 feet	*Observer Height:*	5.0 feet
Observer Elevation:	300.0 feet	*Barrier Type (0-Wall, 1-Berm):*	1
Noise Source Elevation:	227.0 feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	227.0 feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	0.0	68.7	71.7	75.0	78.1	83.5
Distance Attenuation	524.0	-40.4	-40.4	-40.4	-40.4	-40.4	-40.4
Shielding (Barrier Attenuation)	514.0	-8.9	-8.9	-8.9	-8.9	-8.9	-8.9
Raw (Distance + Barrier)		-49.3	19.4	22.4	25.7	28.8	34.2
60 Minute Hourly Adjustment		**-49.3**	**19.4**	**22.4**	**25.7**	**28.8**	**34.2**

STATIONARY SOURCE NOISE PREDICTION MODEL 7/11/2017

***Observer Location:* R5**
Source: Tennis Court Activity
Condition: Operational

Project Name: Lifetime Fitness
Job Number: 11091
Analyst: A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	293.0 feet	***Barrier Height:***	**93.0 feet**
Noise Distance to Barrier:	283.0 feet	*Noise Source Height:*	5.0 feet
Barrier Distance to Observer:	10.0 feet	*Observer Height:*	5.0 feet
Observer Elevation:	300.0 feet	*Barrier Type (0-Wall, 1-Berm):*	1
Noise Source Elevation:	207.0 feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	207.0 feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	35.0	0.0	52.7	54.3	56.0	57.5	59.1
Distance Attenuation	293.0	-18.5	-18.5	-18.5	-18.5	-18.5	-18.5
Shielding (Barrier Attenuation)	283.0	-6.3	-6.3	-6.3	-6.3	-6.3	-6.3
Raw (Distance + Barrier)		-24.8	27.9	29.5	31.2	32.7	34.3
60 Minute Hourly Adjustment		**-24.8**	**27.9**	**29.5**	**31.2**	**32.7**	**34.3**

STATIONARY SOURCE NOISE PREDICTION MODEL	7/11/2017

Observer Location:	**R5**	*Project Name:*	Lifetime Fitness
Source:	Live Music/Events	*Job Number:*	11091
Condition:	Operational	*Analyst:*	A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	767.0 feet	***Barrier Height:***	**60.0 feet**
Noise Distance to Barrier:	757.0 feet	*Noise Source Height:*	8.0 feet
Barrier Distance to Observer:	10.0 feet	*Observer Height:*	5.0 feet
Observer Elevation:	300.0 feet	*Barrier Type (0-Wall, 1-Berm):*	1
Noise Source Elevation:	240.0 feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	240.0 feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	0.0	73.1	89.2	92.1	93.9	100.4
Distance Attenuation	767.0	-43.7	-43.7	-43.7	-43.7	-43.7	-43.7
Shielding (Barrier Attenuation)	757.0	-9.8	-9.8	-9.8	-9.8	-9.8	-9.8
Raw (Distance + Barrier)		-53.5	19.6	35.7	38.6	40.4	46.9
60 Minute Hourly Adjustment		**-53.5**	**19.6**	**35.7**	**38.6**	**40.4**	**46.9**

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APPENDIX G
Traffic Impact Analysis

Rancho San Clemente Tennis Life Time Fitness

UPDATED TRAFFIC & PARKING STUDY

CITY OF SAN CLEMENTE

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JUNE 16, 2017

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LIST OF ABBREVIATED TERMS

HCM	Highway Capacity Manual
ICU	Intersection Capacity Utilization
ITE	Institute of Transportation Engineers
LOS	Level of Service
OCTA	Orange County Transportation Authority
Project	Rancho San Clemente Tennis Club – Life Time Fitness facility
sf	Square Feet
TIA	Traffic Impact Analysis
TSF	Thousand Square Feet
v/c	Volume/Capacity Ratio

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1 INTRODUCTION

This report presents an updated traffic impact analysis (TIA) for the proposed Rancho San Clemente Tennis Club – Life Time Fitness facility ("Project") located at the southwest corner of Avenida Vista Montana and Calle Del Cerro in the City of San Clemente. The Project was initially evaluated in the draft Rancho San Clemente Tennis Club Traffic and Parking Study (Austin Transportation Consulting, November 15, 2016). This updated analysis has been prepared in response to City comments regarding the draft Traffic and Parking Study.

1.1 STUDY OBJECTIVES

The purpose of this traffic impact analysis is to evaluate the Rancho San Clemente Tennis Club – Life Time Fitness facility from a traffic circulation standpoint. Study objectives include: (1) documentation of existing traffic conditions in the vicinity of the site with the existing facility and with the Project; (2) evaluation of Opening Year (2018) Conditions with the existing facility and with the Project; and (3) evaluation of on-site parking demands.

1.2 SITE LOCATION

The Project upgrades and expands an older, smaller clubhouse at the Rancho San Clemente Tennis Club located south of Calle Del Cerro and west of Avenida Vista Montana in the City of San Clemente. Exhibit 1-1 illustrates the project location and draft site plan. The improvements involve updating the clubhouse, parking lot and pool area. The Project will reduce the number of existing tennis courts from 19 to 13 and will expand the clubhouse from approximately 11,000 square feet to approximately 44,700 square feet. With the exception of adding a salon/spa, the Project does not change the existing uses of the Tennis Club.

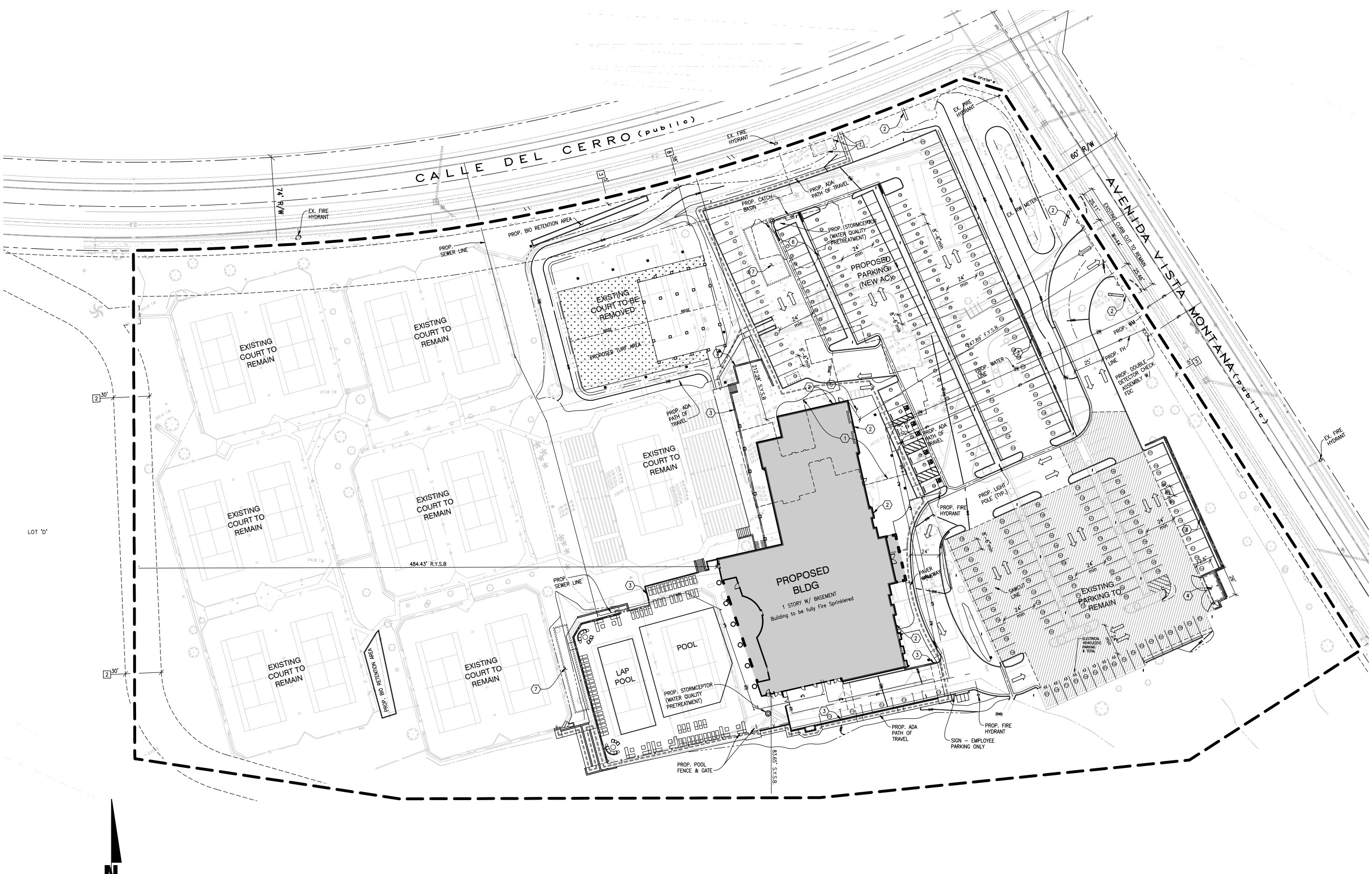
1.3 STUDY AREA

Exhibit 1-1 illustrates the project study area, which includes key intersections where the Project potentially adds 50 or more peak hour vehicle trips. Based on discussions with City staff, the study area includes the following three (3) existing intersections:

TABLE 1-1: INTERSECTION ANALYSIS LOCATIONS

ID	Intersection Location	Traffic Control
1	Avenida Pico / Calle Del Cerro	Traffic Signal
2	Avenida Vista Montana / Calle Del Cerro	Traffic Signal
3	Avenida Vista Montana / Project Dwy.	Cross-Street Stop

EXHIBIT 1-1: PROJECT LOCATION AND DRAFT SITE PLAN



2 AREA CONDITIONS

The current driveway access location to the project from Avenida Vista Montana will remain unchanged with the Project.

2.1 EXISTING TRAFFIC VOLUMES AND INTERSECTION GEOMETRICS

Exhibit 2-1 identifies the existing roadway conditions for the study area roadways. The number of traffic lanes for the existing roadways and the existing intersection controls are identified.

Existing traffic volume data was collected in April 2017. Existing (2017) AM and PM peak hour intersection volumes are also shown on Exhibit 2-1. Traffic count data sheets are included in Appendix 2.1 of this report.

2.2 EXISTING (2017) CONDITIONS INTERSECTION OPERATIONS ANALYSIS

Existing (2017) peak hour traffic operations have been evaluated for the study area intersections. A detailed description of the methodologies for the intersection operations analysis is included in subsequent Section 4.3 of this report. For this study, the technical guide used in the evaluation of traffic operations is the 2010 Highway Capacity Manual (HCM) for all study area intersections. In addition, the Intersection Capacity Utilization (ICU) methodology is also used in the evaluation of signalized intersections.

The results of an intersection operations analysis are expressed in terms of "Level of Service" (LOS), ranging from LOS "A", which is free flowing traffic, to LOS "F", which is stop-and-go traffic. The LOS criteria policies for the City of San Clemente are discussed in subsequent Section 4.2 of this report.

The results of this Existing (2017) analysis are summarized in Table 2-1, based on the existing intersection geometrics and traffic control devices at each analysis location. For Existing (2017) traffic conditions, the study area intersections are currently operating at acceptable levels of service during the peak hours.

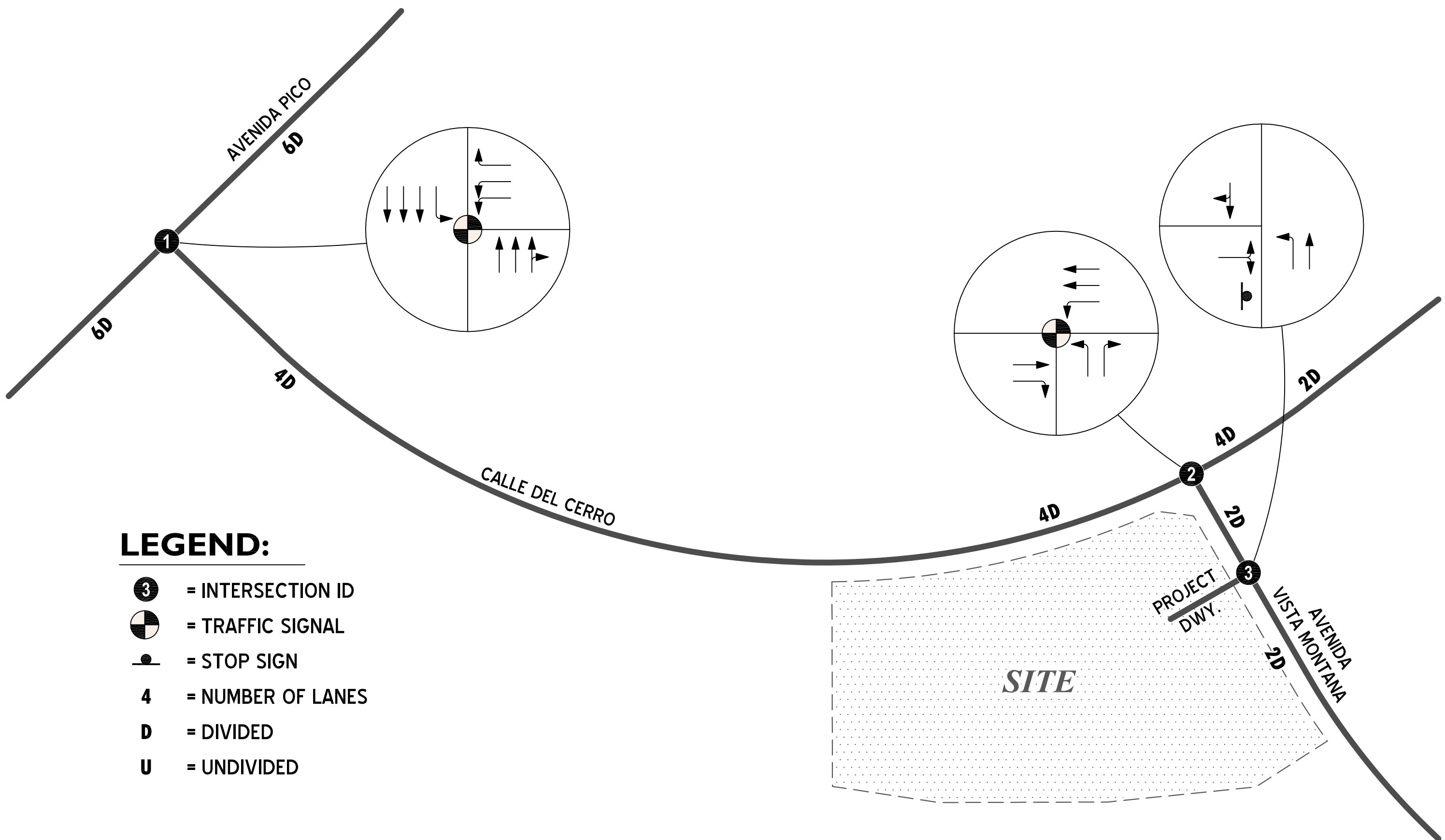
Existing (2017) Conditions intersection operations analysis worksheets are included in Appendix 2.2 of this report.

2.3 GENERAL PLAN DESIGNATIONS

Exhibit 2-2 shows the City of San Clemente Roadway System Map. Avenida Vista Montana and Calle Del Cerro are both designated as Collector facilities. Avenida Pico is a Major Arterial which provides access southwesterly to the I-5 Freeway and northeasterly to Avenida La Pata and the Talega master planned community.

The City of San Clemente Bikeway Map is presented on Exhibit 2-3. Avenida Vista Montana and Calle Del Cerro are both designated as Class 3 Bike Routes adjacent to the project site. The Calle Del Cerro bike route connects to both Class 1 (Bike Path) and Class 2 (Bike Lane) facilities along Avenida Pico.

EXHIBIT 2-1: EXISTING (2017) VOLUMES AND INTERSECTION APPROACH LANES



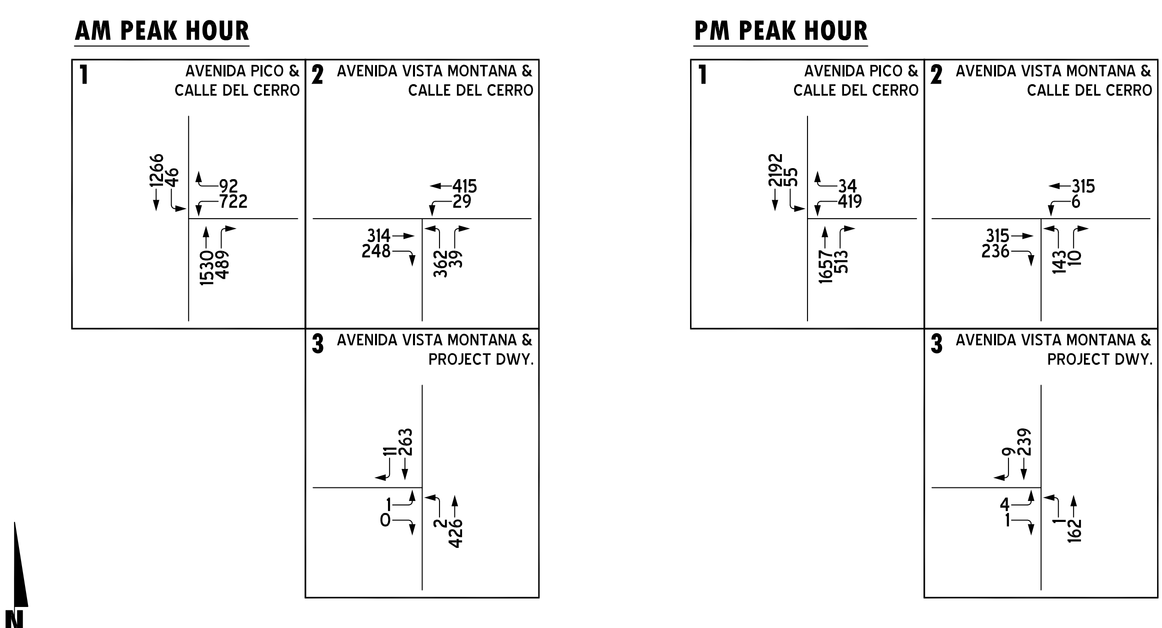


TABLE 2-1: INTERSECTION ANALYSIS FOR EXISTING (2017) CONDITIONS

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												ICU				HCM			
			Northbound			Southbound			Eastbound			Westbound			ICU[2] (v/c)		Level of Service[2]		Delay[2] (Secs)		Level of Service[2]	
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM	AM	PM	AM	PM
1	Avenida Pico / Calle Del Cerro	TS	0	3	0	1	3	0	0	0	0	2	0	1	0.68	0.62	B	B	21.2	12.4	C	B
2	Avenida Vista Montana / Calle Del Cerro	TS	1	0	1	0	0	0	0	1	1	1	2	0	0.44	0.29	A	A	18.8	9.4	B	A
3	Avenida Vista Montana / Project Dwy.	CSS	1	1	0	0	1	0	0	1!	0	0	0	0	--	--	--	--	17.7	11.2	C	B

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes. L = Left; T = Through; R = Right; ! = Shared Left/Through/Right Lane

[2] Volume/Capacity Ratio and Level of Service calculated using the TRAFFIX operation analysis software, Traffix Version 8.0 R1 (2008), based on the Intersection Capacity Utilization (ICU) method.

[3] Delay (in seconds) and Level of Service calculated using Synchro 9 analysis software based on the 2010 Highway Capacity Manual (HCM) method.

[4] LOS = Level of Service based on HCM methodology.

[5] TS = Traffic Signal; Cross-Street Stop

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EXHIBIT 2-2: CITY OF SAN CLEMENTE ROADWAY SYSTEM MAP

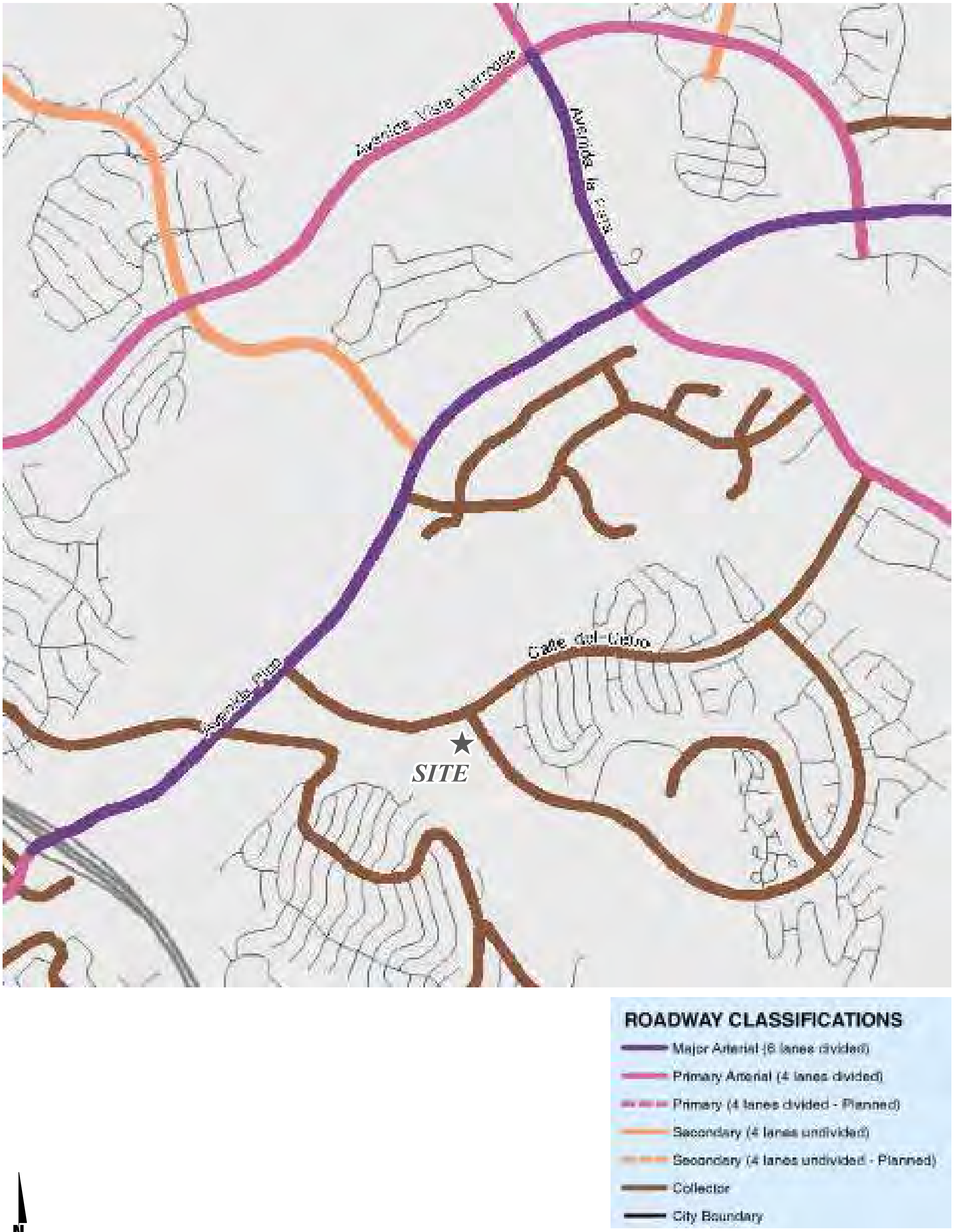

EXHIBIT 2-3: CITY OF SAN CLEMENTE BIKEWAY MAP

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3 PROJECTED FUTURE TRAFFIC

To assess future traffic conditions, project traffic is combined with existing traffic and ambient growth. For Existing plus Project conditions, projected future traffic is represented by the sum of existing (2017) traffic and project traffic.

For opening year (2018) conditions, a 2% ambient growth rate is utilized to estimate for year 2018 traffic conditions. This section discusses how projected future traffic from these various sources has been determined.

3.1 PROJECT TRIP GENERATION

The Project was initially evaluated in the draft Rancho San Clemente Tennis Club Traffic and Parking Study (Austin Transportation Consulting, November 15, 2016). In the November 2016 analysis, the trips generated by the Project were separated into five different on-site uses, each with their own traffic characteristics and with their own units of measure (number of tennis courts, building square footage for health club and office facilities, and number of seats for the bar and restaurant uses). Applicable trips rates were then applied to the quantities of each use to calculate the trip generation for the existing and proposed project, and an internal interaction was presented.

In this updated analysis, the application of ITE trip rates have been reviewed, and it was determined that a straightforward application of ITE Land Use Code 492 (Health/Fitness Club) results in realistic estimates of both existing and proposed trip generation.

ITE Land Use Code 492 notes that *"Health/Fitness clubs are privately-owned facilities that primarily focus on individual fitness or training. Typically they provide exercise classes; weightlifting, fitness and gymnastics equipment; spas; locker rooms; and small restaurants or snack bars, with ancillary facilities such as swimming pools, whirlpools, saunas, tennis, racquetball and handball courts and limited retail."*

ITE Land Use Code 492 is directly applicable to the Project site for both existing and future conditions. The gross floor area (square feet) of the club building accounts for all activity generated on-site, including outdoor spaces such as tennis courts and the pool area.

Revised trip generation rates and resulting calculations for the entire project are shown in Table 3-1. The trip generation rates are based upon published data in the Institute of Transportation Engineers (ITE) Trip Generation Manual (9th Edition). As shown on Table 3-1, the proposed project is expected to generate a total of 1,472 daily trips with 64 AM peak hour trips and 158 PM peak hour trips.

When the existing facility is considered, the Project results in a net increase of 1,110 daily trips with 48 AM peak hour trips and 119 PM peak hour trips.

TABLE 3-1: PROJECT TRIP GENERATION SUMMARY

Trip Generation Rates[1]									
Land Use	ITE LU Code	Units[2]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Health/Fitness Club[3]	492	TSF	0.71	0.71	1.42	2.01	1.52	3.53	32.93

Existing Trip Generation Results									
Land Use	ITE LU Code	Quantity[2]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Health/Fitness Club[3]	492	11 TSF	8	8	16	22	17	39	362

Proposed Trip Generation Results									
Land Use	ITE LU Code	Quantity[2]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Health/Fitness Club[3]	492	44.7 TSF	32	32	64	90	68	158	1,472
NET TRIP GENERATION INCREASE OVER EXISTING			**24**	**24**	**48**	**68**	**51**	**119**	**1,110**

[1] Trip Generation Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, 9th Edition (2012).

[2] TSF = Thousand Square Feet

[3] Health/Fitness clubs are privately-owned facilities that primarily focus on individual fitness or training. Typically they provide exercise classes; weightlifting, fitness and gymnastics equipment; spas; locker rooms; and small restaurants or snack bars, with ancillary facilities such as swimming pools, whirlpools, saunas, tennis, racquetball and handball courts and limited retail.

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3.2 PROJECT TRAFFIC

Trip distribution represents the directional orientation of traffic to and from the project site. Trip distribution is heavily influenced by the geographical location of the site, the location of commercial, employment and recreational opportunities and the proximity to the regional freeway system.

The directional orientation of traffic was determined by evaluating existing and proposed land uses and highways within the study area, and existing traffic volumes. The trip distribution patterns for the project are graphically depicted on Exhibit 3-1.

Based on the identified project net traffic generation and trip distribution, project-only peak hour intersection turning movement volumes are illustrated on Exhibit 3-2.

3.3 EXISTING PLUS PROJECT AND OPENING YEAR (2018) VOLUMES

Estimated peak hour intersection volumes for Existing (2017) Plus Project Conditions are shown on Exhibit 3-3.

For opening year (2018) conditions, a 2% ambient growth rate is utilized to estimate for year 2018 traffic conditions. Estimated peak hour intersection volumes for Opening Year (2018) With the Existing Facility (ie, without project improvements) are shown on Exhibit 3-4.

Estimated peak hour intersection volumes for Opening Year (2018) With Project Conditions are shown on Exhibit 3-5.

3.4 PROJECT VOLUME INCREASES

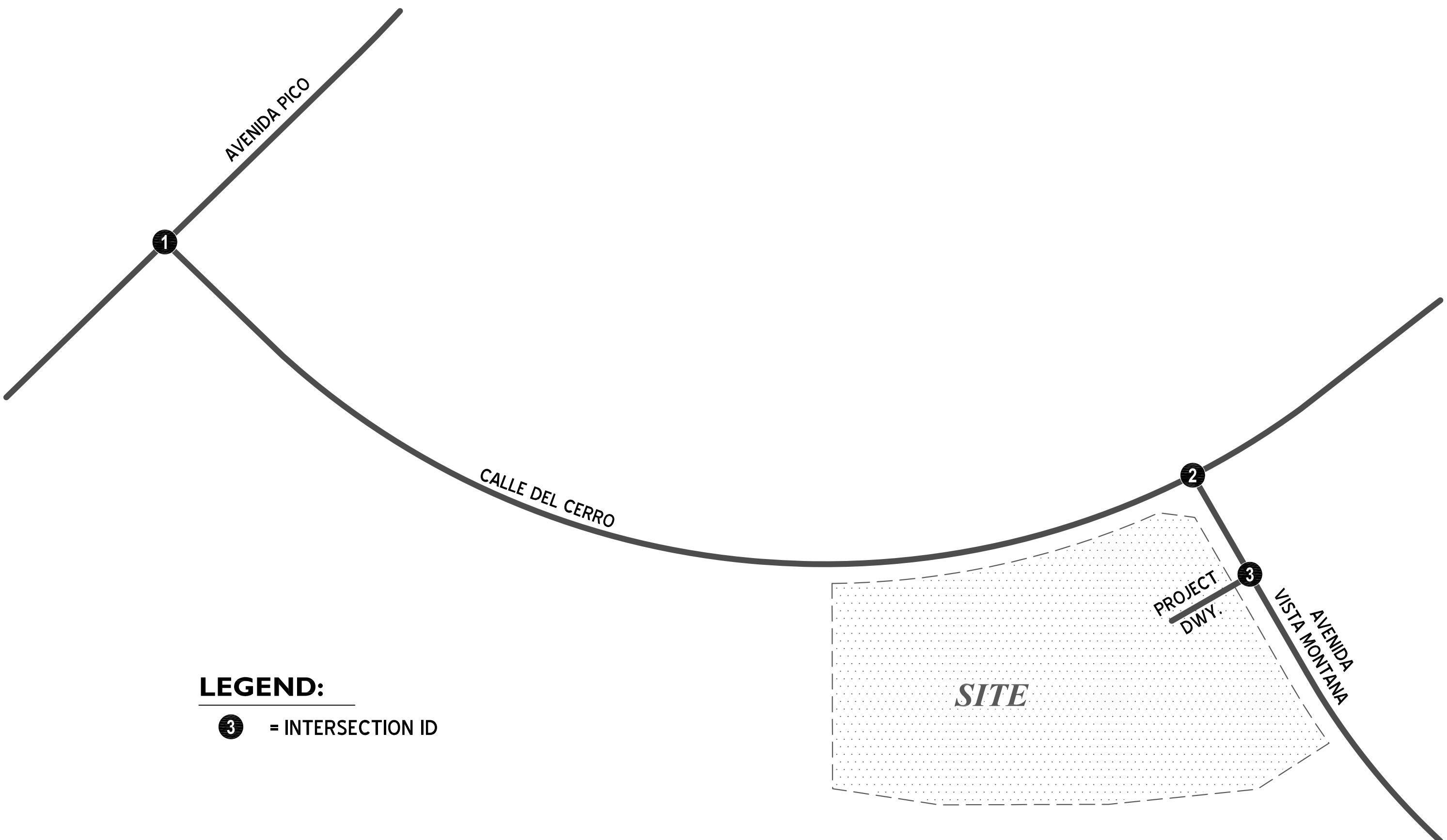
The Project only volumes have been compared to opening year volumes on Table 3-2. For the intersection of Avenida Pico at Calle Del Cerro, the AM peak hour Project volume is less than one percent of opening year, while the PM peak hour Project volume is 1.7% of opening year

EXHIBIT 3-1: PROJECT TRIP DISTRIBUTION

LEGEND:

10 = PERCENT TO/FROM PROJECT

EXHIBIT 3-2: PROJECT ONLY PEAK HOUR INTERSECTION VOLUMES



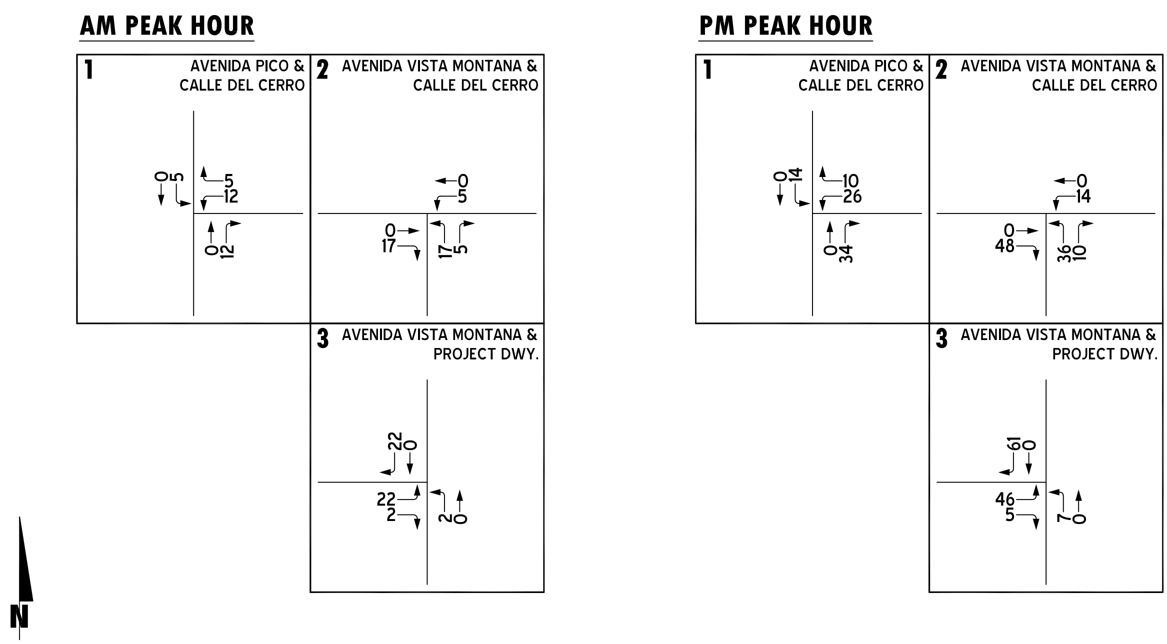


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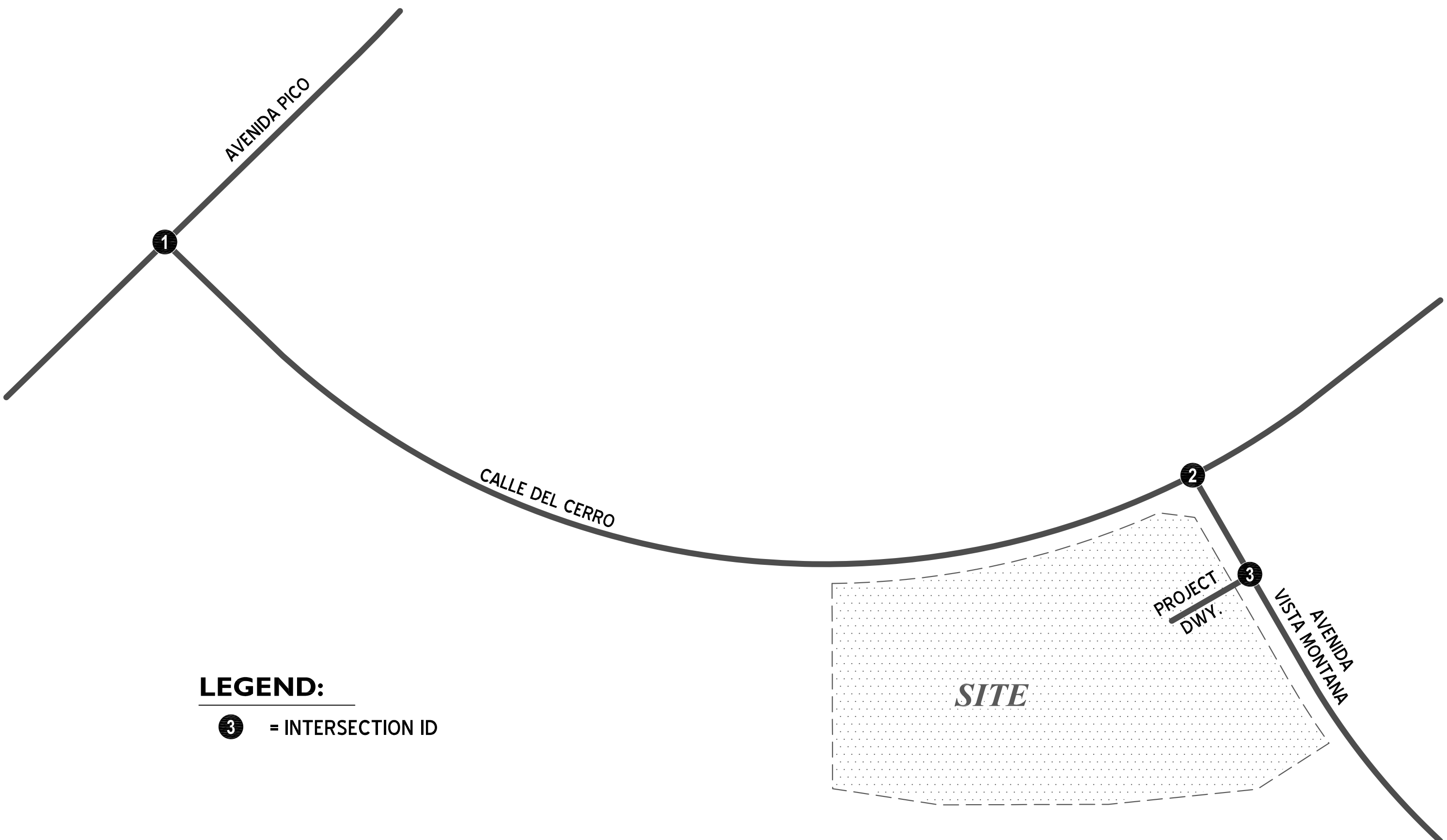
EXHIBIT 3-3: EXISTING PLUS PROJECT PEAK HOUR INTERSECTION VOLUMES



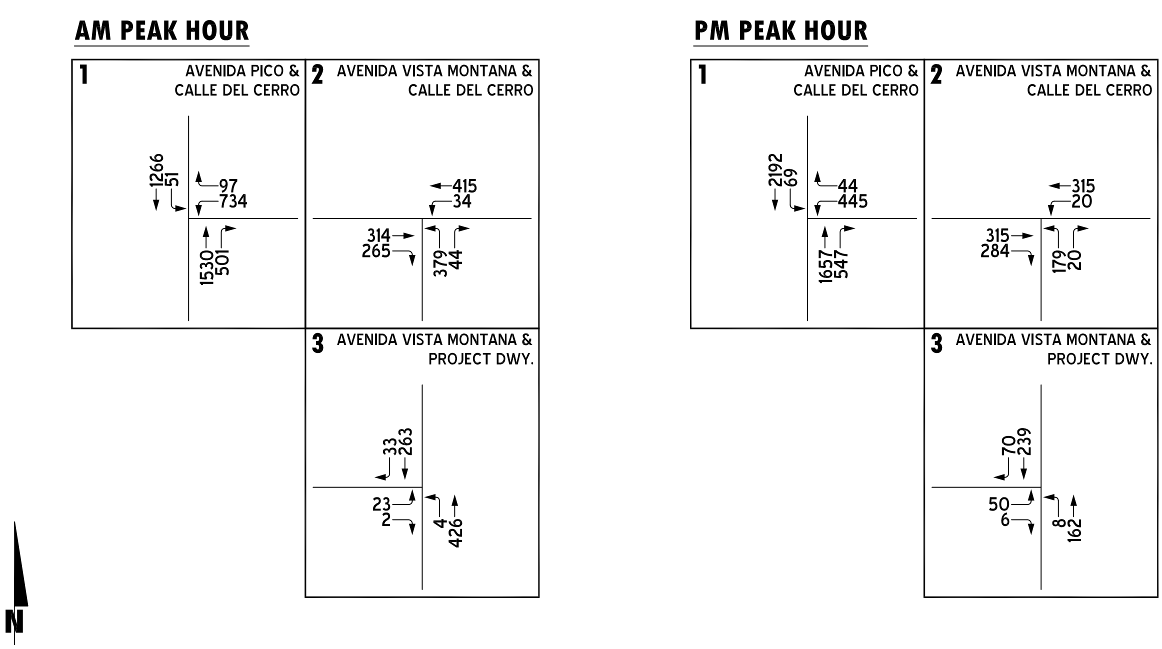


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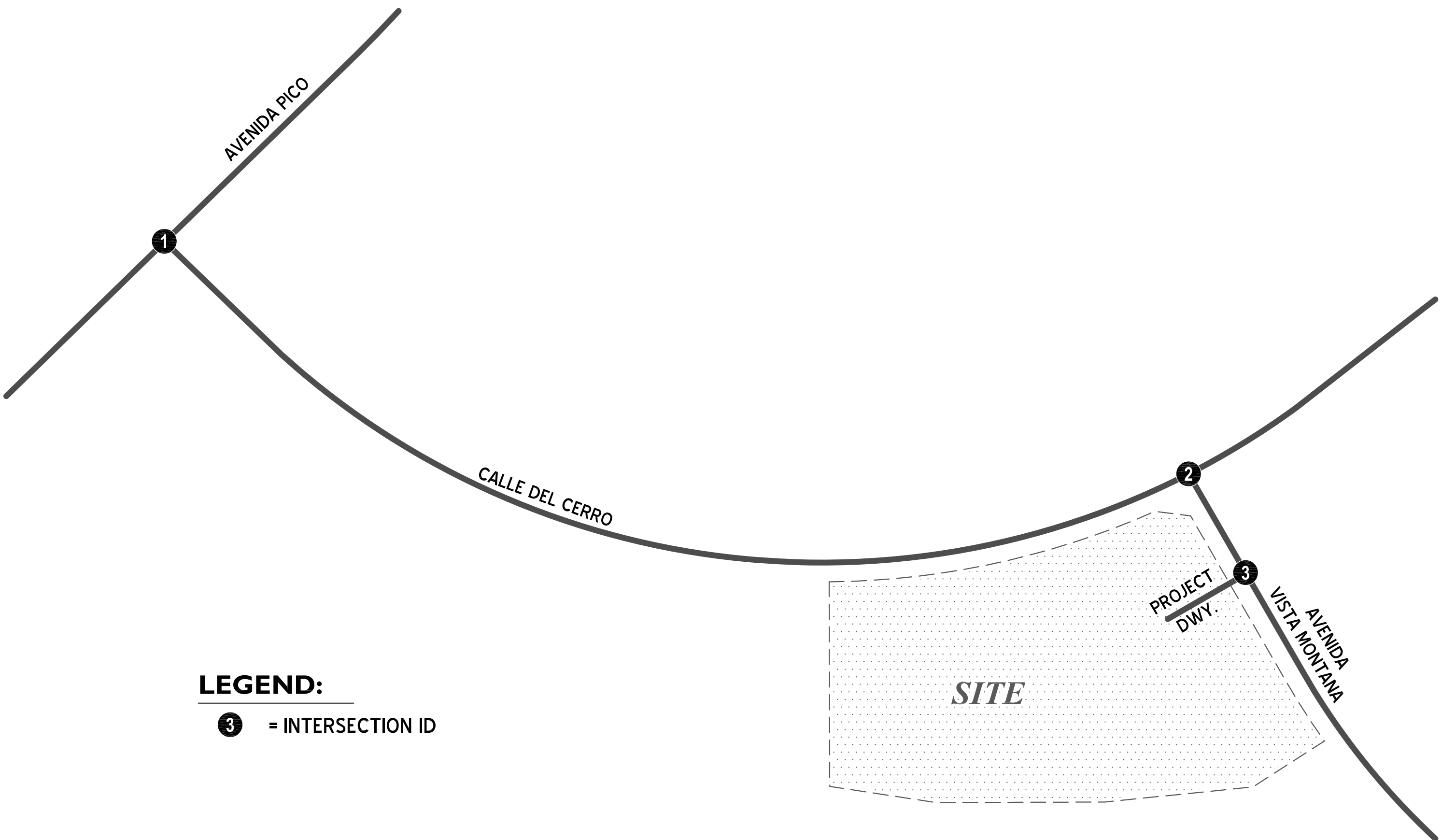
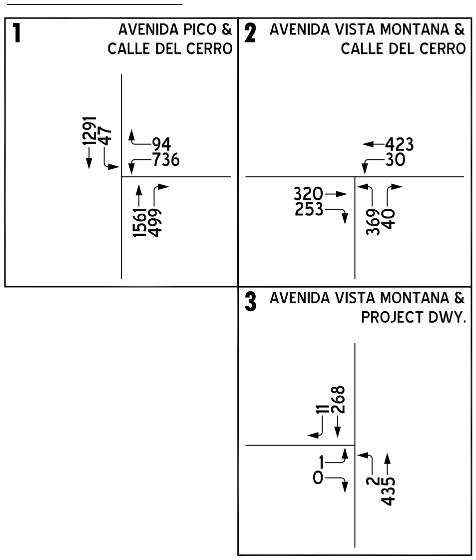
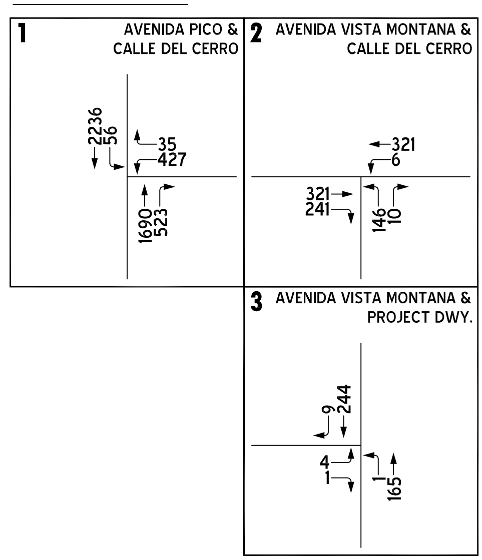
EXHIBIT 3-4: OPENING YEAR 2018 WITH THE EXISTING FACILITY PEAK HOUR INTERSECTION VOLUMES



AM PEAK HOUR



PM PEAK HOUR



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URBAN CROSSROADS

EXHIBIT 3-5: OPENING YEAR 2018 WITH PROJECT PEAK HOUR INTERSECTION VOLUMES

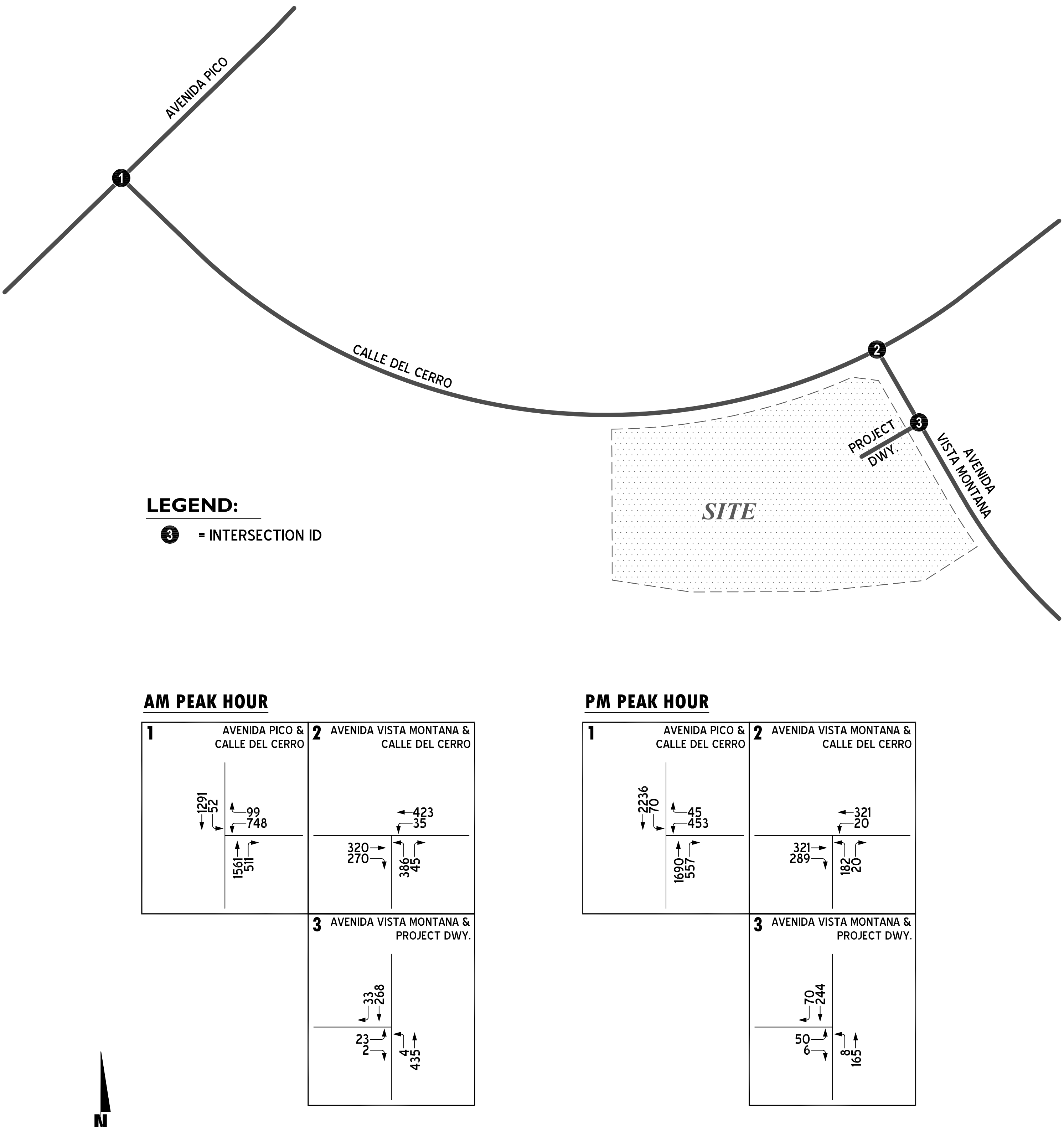

TABLE 3-2: OPENING YEAR (2018) PROJECT VOLUME CONTRIBUTION

ID	Intersection	Existing (2017) Traffic	Background Growth[1] (2018)	Project Only Traffic	Opening Year (Existing Plus Background Plus Project)	Project Percent of Opening Year (%)[2]
1	Avenida Pico / Calle Del Cerro					
	• AM Peak Hour	4,145	83	34	4,262	0.8%
	• PM Peak Hour	4,870	97	84	5,051	1.7%
2	Avenida Vista Montana / Calle Del Cerro					
	• AM Peak Hour	1,407	28	44	1,479	3.0%
	• PM Peak Hour	1,025	21	108	1,154	9.4%

1 A 2% ambient growth rate is utilized for year 2018 background traffic

2 Project Percent of Opening Year = (Project Only Traffic / Existing Plus Background Plus Project)

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4 TRAFFIC ANALYSIS METHODOLOGIES

Traffic operations are quantified through the determination of "Level of Service" (LOS). Level of Service is a qualitative measure of traffic operating conditions, whereby a letter grade "A" through "F" is assigned to an infrastructure facility (roadway segment, intersection, or freeway facility) representing progressively worsening traffic conditions. This section presents the LOS definition, LOS criteria, and the methodologies for the Intersection Operations Analysis.

4.1 CITY GENERAL PLAN POLICIES

The following City of San Clemente General Plan Polices provide the context for evaluation of traffic conditions with the Project:

M-1.01. ***Roadway system.*** City's roadways are required to:

- Accommodate public transit, motor vehicles, bicyclists, skateboarders and pedestrians within the public right-of-way wherever feasible.
- Consider Federal, State, Orange County and City standards and guidelines for roadway design, maintenance and operation.
- Comply with Orange County Transportation Authority (OCTA) requirements for arterial highways as determined through the Master Plan of Arterial Highways (MPAH) and Measure M. Maintain at least a Level of Service (LOS) D or better at all intersections, except where flexibility is warranted based on a multi-modal LOS evaluation, or where LOS E is deemed appropriate to accommodate complete streets facilities.
- Provide future capacity as called for by the Element and as shown in the Future Roadway System map.
- Ensure that new roadways, ramps, traffic control devices, bridges or similar facilities, and significant changes to such facilities, are designed to accommodate multi-modal facilities, and where feasible, retrofit existing facilities to improve the balance for the users of the roadway.
- Be maintained in accordance with best practices and the City's Street Improvement Program.

M-1.02. ***Transportation Infrastructure.*** Traffic control devices and transportation infrastructure operate to serve the needs of all roadway users, including motorists, public transit, pedestrians and cyclists.

M-1.03. ***Off-Peak Circulation System Design.*** For transportation system planning purposes, the circulation system is designed for "off peak" season (non-Summer months) demand and meet the needs of residents and local businesses to maintain San Clemente's village character.

M-1.04. ***Level of Service.*** When the City determines there is a suitable tool available, roadway performance will be measured and evaluated from a multi- modal, Complete Streets perspective.

M-1.05. ***Development project impacts.*** Development projects are required to analyze potential off-site traffic impacts and related environmental impacts through the CEQA process and to mitigate adverse impacts to less-than-significant levels.

4.2 INTERSECTION OPERATIONS ANALYSIS METHODOLOGY

4.2.1 INTERSECTION CAPACITY UTILIZATION (ICU) METHOD

The ICU value is usually expressed as a decimal percent (e.g., 0.86). The decimal percent represents that portion of the hour required to provide sufficient capacity to accommodate all intersection traffic if all approaches operate at capacity.

A number of assumptions are required regarding specific input values to the ICU methodology. The specific assumptions include the use of a saturation flow rate of 1,600 vehicles per lane per hour. No capacity adjustments are applied for protected movements with dedicated lanes (including both right and left turns).

Signalized study area intersections have been analyzed using the software package Traffix (Version 8.0 R1, 2008).

The V/C ratio (ICU) and corresponding Level of Service (LOS) are presented below:

Level of Service	Critical Volume To Capacity Ratio / ICU
A	0.00 - 0.60
B	0.61 - 0.70
C	0.71 - 0.80
D	0.81 - 0.90
E	0.91 - 1.00
F	>1.00

4.2.2 HIGHWAY CAPACITY MANUAL (HCM) METHOD

The HCM defines Level of Service as a qualitative measure, which describes operational conditions within a traffic stream, generally in terms of such factors as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience, and safety. The criteria used to evaluate Level of Service (LOS) conditions vary based on the type of roadway and whether the traffic flow is considered interrupted or uninterrupted.

The definitions of level of service for interrupted traffic flow (flow restrained by the existence of traffic signals and other traffic control devices) differ slightly depending on the type of traffic control. The level of service is typically dependent on the quality of traffic flow at the intersections along a roadway. The HCM methodology expresses the level of service at an intersection in terms of delay time for the various intersection approaches. The HCM uses different procedures depending on the type of intersection control.

The study area intersection that is stop sign controlled with stop control on the minor street only have been analyzed using the HCM's unsignalized intersection methodology. For this intersection, the calculation of level of service is dependent on the frequency and size of gaps occurring in the traffic flow of the main street. Using data collected describing the intersection configuration and traffic volumes at the location, the level of service has been calculated. The level of service criteria for this type of intersection analysis is based on average total delay per vehicle for the worst minor street movement(s).

The levels of service for the HCM delay methodology, for signalized and unsignalized intersections, are defined as follows:

Level of Service	Average Total Delay Per Vehicle (Seconds)	
	Signalized	Unsignalized
A	0 to 10.00	0 to 10.00
B	10.01 to 20.00	10.01 to 15.00
C	20.01 to 35.00	15.01 to 25.00
D	35.01 to 55.00	25.01 to 35.00
E	55.01 to 80.00	35.01 to 50.00
F	80.01 and up	50.01 and up

The intersection operations analyses are based on calculations using the traffic modeling and signal timing optimization software package Synchro (Version 9.1). Synchro is a macroscopic traffic software program that is based on the signalized intersection capacity analysis as specified in the Chapter 18 of the HCM2010. Macroscopic level models represent traffic in terms of aggregate measures for each movement at the study intersections. Equations are used to determine measures of effectiveness such as delay and queue length. The level of service and capacity analysis performed by Synchro takes into consideration optimization and coordination of signalized intersections within a network.

4.3 FUTURE CONDITIONS INTERSECTION OPERATIONS ANALYSIS

The intersection operations analysis for the following future conditions has been evaluated, based on Intersection Capacity Utilization (ICU) and Highway Capacity Manual (HCM) methods.

- Existing (2017) Plus Project Conditions
- 2018 With the Existing Facility Conditions
- 2018 With Project Conditions

4.3.1 INTERSECTION OPERATIONS ANALYSIS, EXISTING (2017) PLUS PROJECT CONDITIONS

Table 4-1 summarizes the intersection operations analysis results at the study area intersections for Existing (2017) Plus Project Conditions, based on the existing geometrics at the intersections. AM and PM peak hour intersection turning movement volumes for Existing (2017) With Project Conditions are shown previously on Exhibit 3-3.

TABLE 4-1: INTERSECTION ANALYSIS FOR EXISTING PLUS PROJECT CONDITIONS

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												ICU				HCM			
			Northbound			Southbound			Eastbound			Westbound			ICU[2] (v/c)		Level of Service[2]		Delay[2] (Secs)		Level of Service[2]	
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM	AM	PM	AM	PM
1	Avenida Pico / Calle Del Cerro	TS	0	3	0	1	3	0	0	0	0	2	0	1	0.68	0.64	B	B	22.0	13.6	C	B
2	Avenida Vista Montana / Calle Del Cerro	TS	1	0	1	0	0	0	0	1	1	1	2	0	0.45	0.32	A	A	19.5	11.3	B	B
3	Avenida Vista Montana / Project Dwy.	CSS	1	1	0	0	1	0	0	1!	0	0	0	0	--	--	--	--	19.0	12.7	C	B

Existing (2017) Conditions

#	Intersection	ICU				HCM			
		ICU[2] (v/c)		Level of Service[2]		Delay[2] (Secs)		Level of Service[2]	
		AM	PM	AM	PM	AM	PM	AM	PM
1	Avenida Pico / Calle Del Cerro	0.68	0.62	B	B	21.2	12.4	C	B
2	Avenida Vista Montana / Calle Del Cerro	0.44	0.29	A	A	18.8	9.4	B	A
3	Avenida Vista Montana / Project Dwy.	--	--	--	--	17.7	11.2	C	B

Project Net Change[6]

#	Intersection	ICU				HCM			
		ICU[2] (v/c)		Level of Service[2,7]		Delay[2] (Secs)		Level of Service[2,7]	
		AM	PM	AM	PM	AM	PM	AM	PM
1	Avenida Pico / Calle Del Cerro	0.00	+0.02	n/c	n/c	+0.8	+1.2	n/c	n/c
2	Avenida Vista Montana / Calle Del Cerro	+0.01	+0.03	n/c	n/c	+0.7	+1.9	n/c	B
3	Avenida Vista Montana / Project Dwy.	--	--	--	--	+1.3	+1.5	n/c	n/c

1 When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes. L = Left; T = Through; R = Right; ! = Shared Left/Through/Right Lane

2 Volume/Capacity Ratio and Level of Service calculated using the TRAFFIX operation analysis software, Traffix Version 8.0 R1 (2008), based on the Intersection Capacity Utilization (ICU) method.

3 Delay (in seconds) and Level of Service calculated using Synchro 9 analysis software based on the 2010 Highway Capacity Manual (HCM) method.

4 LOS = Level of Service based on HCM methodology.

5 TS = Traffic Signal; Cross-Street Stop

6 Difference between "Existing Without Project" versus "Existing With Project Conditions.

7 n/c = No Change in Level of Service

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As shown in Table 4-1, study area intersections are anticipated to operate at acceptable levels of service with existing geometrics, during the peak hours for Existing (2017) Plus Project Conditions.

Existing (2017) Plus Project Conditions intersection operations analysis worksheets are included in Appendix 4.1 of this report.

4.3.2 INTERSECTION OPERATIONS ANALYSIS, OPENING YEAR (2018) WITH THE EXISTING FACILITY

Table 4-2 summarizes the intersection operations analysis results at the study area intersections for Opening Year (2018) With the Existing Facility, based on the existing geometrics at the intersections. AM and PM peak hour intersection turning movement volumes for Opening Year (2018) With the Existing Facility are shown previously on Exhibit 3-4.

As shown in Table 4-2, study area intersections are anticipated to operate at acceptable levels of service with existing geometrics, during the peak hours for Opening Year (2018) With the Existing Facility.

Opening Year (2018) With the Existing Facility intersection operations analysis worksheets are included in Appendix 4.2 of this report.

4.3.3 INTERSECTION OPERATIONS ANALYSIS, OPENING YEAR (2018) WITH PROJECT CONDITIONS

Table 4-2 also summarizes the intersection operations analysis results at the study area intersections for Opening Year (2018) With Project Conditions, based on the existing geometrics at the intersections. AM and PM peak hour intersection turning movement volumes for Opening Year (2018) With Project Conditions are shown previously on Exhibit 3-5.

As shown in Table 4-2, study area intersections are anticipated to operate at acceptable levels of service with existing geometrics, during the peak hours for Opening Year (2018) With Project Conditions.

Opening Year (2018) With Project Conditions intersection operations analysis worksheets are included in Appendix 4.3 of this report.

TABLE 4-2: INTERSECTION ANALYSIS FOR OPENING YEAR (2018) CONDITIONS

OPENING YEAR (2018) WITH THE EXISTING FACILITY

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												ICU				HCM			
			Northbound			Southbound			Eastbound			Westbound			ICU[2] (v/c)		Level of Service[2]		Delay[2] (Secs)		Level of Service[2]	
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM	AM	PM	AM	PM
1	Avenida Pico / Calle Del Cerro	TS	0	3	0	1	3	0	0	0	0	2	0	1	0.69	0.63	B	B	22.2	12.8	C	B
2	Avenida Vista Montana / Calle Del Cerro	TS	1	0	1	0	0	0	0	1	1	1	2	0	0.45	0.30	A	A	19.1	9.4	B	A
3	Avenida Vista Montana / Project Dwy.	CSS	1	1	0	0	1	0	0	1!	0	0	0	0	--	--	--	--	18.0	11.2	C	B

OPENING YEAR (2018) WITH PROJECT

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												ICU				HCM			
			Northbound			Southbound			Eastbound			Westbound			ICU[2] (v/c)		Level of Service[2]		Delay[2] (Secs)		Level of Service[2]	
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM	AM	PM	AM	PM
1	Avenida Pico / Calle Del Cerro	TS	0	3	0	1	3	0	0	0	0	2	0	1	0.70	0.65	B	B	23.1	14.1	C	B
2	Avenida Vista Montana / Calle Del Cerro	TS	1	0	1	0	0	0	0	1	1	1	2	0	0.46	0.33	A	A	19.8	11.3	B	B
3	Avenida Vista Montana / Project Dwy.	CSS	1	1	0	0	1	0	0	1!	0	0	0	0	--	--	--	--	19.5	12.8	C	B

1 When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes. L = Left; T = Through; R = Right; ! = Shared Left/Through/Right Lane

2 Volume/Capacity Ratio and Level of Service calculated using the TRAFFIX operation analysis software, Traffix Version 8.0 R1 (2008), based on the Intersection Capacity Utilization (ICU) method.

3 Delay (in seconds) and Level of Service calculated using Synchro 9 analysis software based on the 2010 Highway Capacity Manual (HCM) method.

4 LOS = Level of Service based on HCM methodology.

5 TS = Traffic Signal; Cross-Street Stop

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5 ON-SITE PARKING

The project will be providing a total of 231 off-street parking spaces. This section discusses the parking requirement for the project in relation to this parking availability.

5.1 REQUIRED PARKING

The parking requirements for different land uses are set out in Table 17.64.050 of the City of San Clemente Zoning Code. Table 5-1 in this updated study presents the use allocation for the Project based upon Parking Land Use Codes provided in Table 17.64.050. This amounts to a code requirement of 231 parking spaces for the Project, while accounting for the entirety of the Gross Floor Area (GFA) of the health and fitness building.

In the draft Rancho San Clemente Tennis Club Traffic and Parking Study (Austin Transportation Consulting, November 15, 2016), the proposed project was evaluated in terms of shared parking from the mix of on-site uses. As described in Section 17.64.120 of the City of San Clemente Zoning Code, shared parking is allowed, subject to certain conditions and with adequate information submitted to the City to justify a shared parking discount. The primary justification is when there is a mix of uses such that the peak parking demand for different uses occur at different times during the day. The calculated total parking requirement with the mix of Project uses, discounted by the shared parking, indicated a Project peak parking demand which is less than the 231 on-site parking spaces recommended for the Project.

5.2 PARKING DEMAND

Actual parking demand has been measured for both a nearby facility (Laguna Niguel) as well as a similar facility in Norcross, Georgia. The Laguna Niguel Life Time Fitness facility (128 TSF) is larger than the proposed Rancho San Clemente Tennis Club – Life Time Fitness facility (44.7 TSF), while the Norcross, GA health and fitness facility is smaller (34.8 TSF). In both cases, the mix of on-site activity is similar and applicable to the Project based upon accumulated parking per thousand square feet (TSF).

Parking counts summarized in Appendix 5.1 for the Laguna Niguel Life Time Fitness facility indicate that no more than 68% of the available stalls (401 stalls) were occupied at any given time. With the floor area of 128,000 square feet, the total parking demand was always less than 3.15 stalls per thousand square feet (TSF). During three days of counts, the highest occupancy recorded remained fairly consistent on Saturday, Tuesday, and Wednesday. Moreover, the peak periods were also consistent with the highest parking occupancy rates occurring at and around 10:30 AM and 6:30 PM (though 6:30 PM was far less popular on Saturday).

Parking counts summarized in Appendix 5.2 for the Norcross Life Time Fitness Center indicate that the maximum number of occupied spaces in this facility ranges from 72 to 109 on a typical weekday and between 99 and 123 on Saturday. This translates into a parking ratio of 3.53 spaces per 1000 SF calculated for the health and fitness facility including all activity related to the 8 indoor tennis courts, 20 outdoor tennis courts, 6 practice courts and a swimming pool.

TABLE 5-1: PROJECT PARKING REQUIREMENTS

Use Allocation*	Number of Units	Units	Parking Rate	Max. Parking Spaces
Tennis Courts	13	Courts	3.00	39
Fitness Facility	16.36	TSF	6.67	109
Group Instruction	50.00	Attendees	**	29
Office	2.83	TSF	3.33	9
Warehouse / Storage	7.25	TSF	0.5	4
Restaurant	56.00	Seats	0.25	14
Bar	9.00	Seats	0.25	2
Outdoor Restaurant	30.00	Seats	0.25	8
Beauty Shop / Massage	3.13	TSF	5	16
Day Care	0.00	-	0.2	0
Retail	0.41	TSF	3.33	1
		TOTAL PARKING SPACES		231

*Use Allocation based on Parking Land Use Codes provided in Table 17.64.050 of the San Clemente Municipal Code.

**Utilizing Sample Program Schedule, Approximately 50 Group Instruction Attendees at one time, with 4 instructors total.

In its approval process in 2012, the Laguna Niguel Life Time Fitness facility was granted "alternative parking standards". The parking ratio used was 4.16 spaces per thousand square feet (TSF) compared to 6.67 for the City Code.

The Project parking supply of 231 spaces would accommodate up to 207 parked vehicles at 90% occupancy, while leaving 24 spaces unoccupied. This represents a peak usage of 4.63, with a buffer of 10% over peak demand. The resulting parking ratio of 5.17 is 24.3% greater than the parking ratio used for the Laguna Niguel Life Time Fitness facility.

In conclusion, the provision of 231 parking spaces appropriately accommodates parking demands based upon the data from comparable facilities as well as the standards applied to comparable facilities.

5.3 ALTERNATIVE PARKING STRATEGIES

Several City of San Clemente General Plan Polices provide context for reducing auto parking by efficient on-site mixed use provisions and bicyclist accommodations:

M-4.03. ***Automobile Parking Demand.*** Automobile parking demand is reduced by improving public transit, bicycle and pedestrian mobility…

M-4.04. ***Alternative Parking Strategies.*** Consider alternative parking strategies that address multi-modal parking needs, improve land use efficiency and enhance environmental quality, such as use of energy-saving/generating features, demand based parking strategies, stacking, alternative paving, and accommodating multiple uses.

M-4.07. ***Alternative Parking Requirements and Incentives.*** Consider incentives to encourage alternative parking, such as crediting bicycle, neighborhood electric vehicles (NEV), motorcycle and scooter parking spaces toward meeting a portion of the required automobile parking.

The Rancho San Clemente Tennis Club – Life Time Fitness facility accommodates multiple fitness, athletic, and revitalization uses within one venue. With one auto trip to the site, patrons will often use a variety on-site features for exercise, relaxation, and dining.

The site also includes bicycle lockers to accommodate patrons who arrive using this non-motorized travel mode.

The combination of mixed-use efficiencies and bicyclist accommodations are anticipated to reduce the difference between peak parking demands and the automobile parking provided on-site. Life Time Fitness also encourages cycling via a fully developed outdoor cycle club.

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6 FINDINGS AND CONCLUSIONS

This report presents an updated traffic impact analysis (TIA) for the proposed Rancho San Clemente Tennis Club – Life Time Fitness facility ("Project") located at the southwest corner of Avenida Vista Montana and Calle Del Cerro in the City of San Clemente. The Project was initially evaluated in the draft Rancho San Clemente Tennis Club Traffic and Parking Study (Austin Transportation Consulting, November 15, 2016). This updated analysis has been prepared in response to City comments regarding the draft Traffic and Parking Study.

6.1 PROJECT TRIP GENERATION

Revised trip generation rates and resulting calculations for the entire project are shown in Table 3-1. The trip generation rates are based upon published data in the Institute of Transportation Engineers (ITE) Trip Generation Manual (9th Edition). As shown on Table 3-1, the proposed project is expected to generate a total of 1,472 daily trips with 64 AM peak hour trips and 158 PM peak hour trips.

When the existing facility is considered, the Project results in a net increase of 1,110 daily trips with 48 AM peak hour trips and 119 PM peak hour trips.

6.2 TRAFFIC IMPACTS AND LEVEL OF SERVICE

For Existing (2017), Existing (2017) Plus Project, and 2018 With Existing Facility and With Project conditions, the following study area intersections are operating at acceptable levels of service during peak hours, and Project traffic impacts are less than significant:

ID	Intersection Location	Traffic Control
1	Avenida Pico / Calle Del Cerro	Traffic Signal
2	Avenida Vista Montana / Calle Del Cerro	Traffic Signal
3	Avenida Vista Montana / Project Dwy.	Cross-Street Stop

6.3 ON-SITE PARKING

Table 5-1 in this updated study presents the use allocation for the Project based upon Parking Land Use Codes provided in the City of San Clemente Zoning Code. This amounts to a code requirement of 231 parking spaces for the Project, which would accommodate up to 207 parked vehicles at 90% occupancy, while leaving 24 spaces unoccupied. This represents a peak usage of 4.63 parking stalls per 1,000 square feet of gross floor area, with a buffer of 10% over peak demand. The resulting overall parking ratio of 5.17 parking stalls per 1,000 square feet of gross floor area is 24.3% greater than the parking ratio used for the Laguna Niguel Life Time Fitness facility, which exceeds measured parking demands based upon available counts.

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APPENDIX 2.1:

TRAFFIC COUNT DATA SHEETS

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Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

City: SAN CLEMENTE
N-S Direction: AVENIDA PICO
E-W Direction: CALLE DEL CERRO

File Name : H1704001
Site Code : 00005054
Start Date : 4/10/2017
Page No : 1

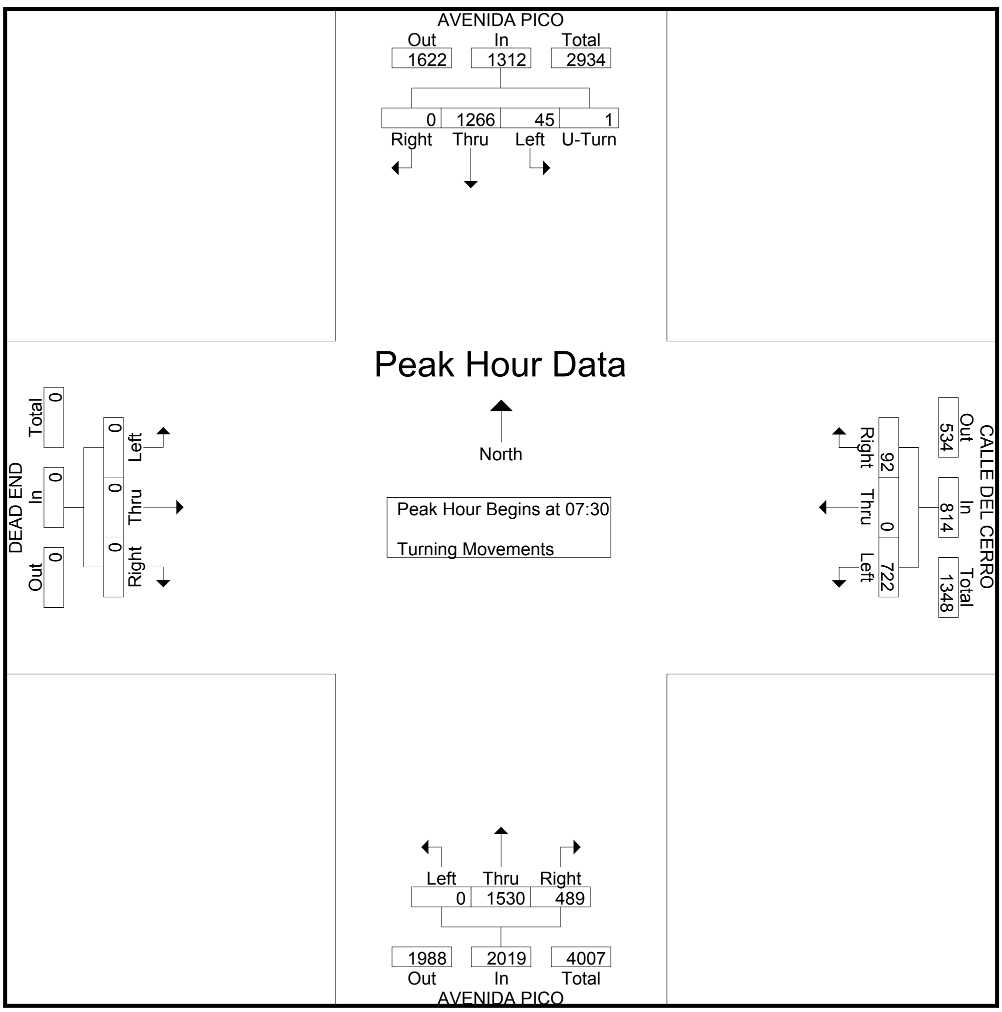
Groups Printed- Turning Movements

	AVENIDA PICO Southbound				CALLE DEL CERRO Westbound			AVENIDA PICO Northbound			DEAD END Eastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Int. Total
07:00	0	123	2	0	10	0	136	64	259	0	0	0	0	594
07:15	0	186	6	0	5	0	130	109	212	0	0	0	0	648
07:30	0	227	9	1	24	0	220	152	297	0	0	0	0	930
07:45	0	336	15	0	23	0	221	130	372	0	0	0	0	1097
Total	0	872	32	1	62	0	707	455	1140	0	0	0	0	3269
08:00	0	390	11	0	19	0	183	127	428	0	0	0	0	1158
08:15	0	313	10	0	26	0	98	80	433	0	0	0	0	960
08:30	0	192	16	2	25	0	82	86	381	0	0	0	0	784
08:45	0	186	15	2	12	0	95	91	335	0	0	0	0	736
Total	0	1081	52	4	82	0	458	384	1577	0	0	0	0	3638
16:00	0	404	13	0	21	0	84	111	321	0	0	0	0	954
16:15	0	474	6	1	13	0	118	119	298	0	0	0	0	1029
16:30	0	504	19	2	14	0	105	125	317	0	0	0	0	1086
16:45	0	514	16	1	11	0	119	116	402	0	0	0	0	1179
Total	0	1896	54	4	59	0	426	471	1338	0	0	0	0	4248
17:00	0	599	11	0	10	0	96	151	402	0	0	0	0	1269
17:15	0	572	15	0	5	0	104	125	363	0	0	0	0	1184
17:30	0	507	12	0	8	0	100	121	490	0	0	0	0	1238
17:45	0	515	13	0	6	0	81	82	365	0	0	0	0	1062
Total	0	2193	51	0	29	0	381	479	1620	0	0	0	0	4753
Grand Total	0	6042	189	9	232	0	1972	1789	5675	0	0	0	0	15908
Apprch %	0	96.8	3	0.1	10.5	0	89.5	24	76	0	0	0	0	
Total %	0	38	1.2	0.1	1.5	0	12.4	11.2	35.7	0	0	0	0	

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

File Name : H1704001
Site Code : 00005054
Start Date : 4/10/2017
Page No : 2

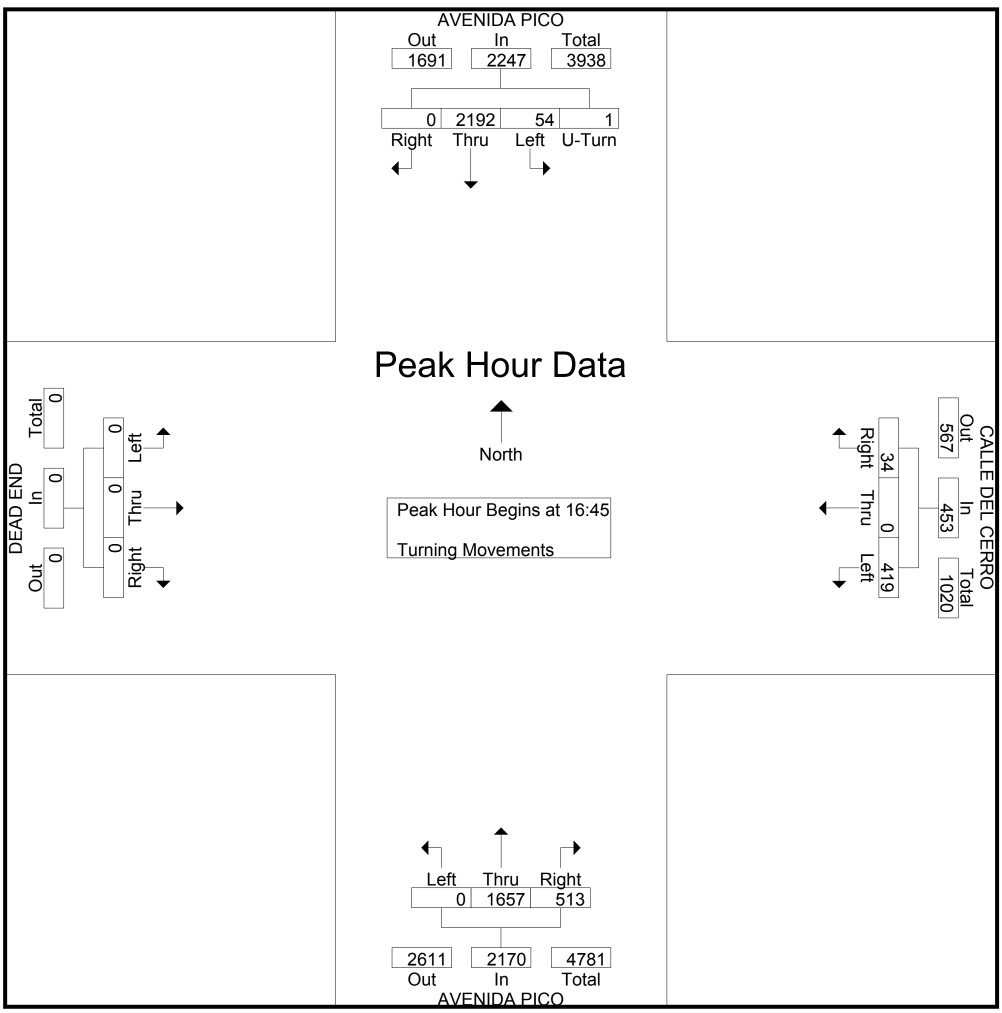
	AVENIDA PICO Southbound					CALLE DEL CERRO Westbound				AVENIDA PICO Northbound				DEAD END Eastbound				
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																		
Peak Hour for Entire Intersection Begins at 07:30																		
07:30	0	227	9	**1**	237	24	0	220	**244**	**152**	**297**	**0**	**449**	**0**	**0**	**0**	**0**	**930**
07:45	**0**	**336**	**15**					**221**										
08:00	0	**390**	11	0	**401**	19	0	183	202	127	428	0	**555**	0	0	0	0	**1158**
08:15	0	313	10	0	323	**26**	0	98	124	80	**433**	0	513	0	0	0	0	960
Total Volume	0	1266	45	1	1312	92	0	722	814	489	1530	0	2019	0	0	0	0	4145
% App. Total	0	96.5	3.4	0.1		11.3	0	88.7		24.2	75.8	0		0	0	0		
PHF	.000	.812	.750	.250	.818	.885	.000	.817	.834	.804	.883	.000	.909	.000	.000	.000	.000	.895



Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

File Name : H1704001
Site Code : 00005054
Start Date : 4/10/2017
Page No : 3

	AVENIDA PICO Southbound					CALLE DEL CERRO Westbound				AVENIDA PICO Northbound				DEAD END Eastbound				
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																		
Peak Hour for Entire Intersection Begins at 16:45																		
16:45	0	514	**16**	**1**	531	**11**	0	**119**	**130**	116	402	0	518	0	0	0	0	1179
17:00	0	**599**	11	0	**610**	10	0	96	106	**151**	**402**	**0**	**553**	**0**	**0**	**0**	**0**	**1269**
17:15	0	572	15	0	587	5	0	104	109	125	363	0	488	0	0	0	0	1184
17:30	0	507	12	0	519	8	0	100	108	121	**490**	0	**611**	0	0	0	0	1238
Total Volume	0	2192	54	1	2247	34	0	419	453	513	1657	0	2170	0	0	0	0	4870
% App. Total	0	97.6	2.4	0		7.5	0	92.5		23.6	76.4	0		0	0	0		
PHF	.000	.915	.844	.250	.921	.773	.000	.880	.871	.849	.845	.000	.888	.000	.000	.000	.000	.959



Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

City: SAN CLEMENTE
N-S Direction: AVENIDA VISTA MONTANA
E-W Direction: CALLE DEL CERRO

File Name : H1704002
Site Code : 00005054
Start Date : 4/11/2017
Page No : 1

Groups Printed- Turning Movements

	DEAD END Southbound			CALLE DEL CERRO Westbound			AVENIDA VISTA MONTANA Northbound			CALLE DEL CERRO Eastbound			
Start Time	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Int. Total
07:00	0	0	0	0	78	0	1	0	48	17	62	0	206
07:15	0	0	0	0	130	1	2	0	54	24	65	0	276
07:30	0	0	0	0	139	17	14	0	106	90	75	0	441
07:45	0	0	0	0	79	9	17	0	130	82	84	0	401
Total	0	0	0	0	426	27	34	0	338	213	286	0	1324
08:00	0	0	0	0	67	2	6	0	72	52	90	0	289
08:15	0	0	0	0	78	1	4	0	77	27	68	0	255
08:30	0	0	0	0	53	4	0	0	49	33	64	0	203
08:45	0	0	0	0	71	1	2	0	59	27	74	0	234
Total	0	0	0	0	269	8	12	0	257	139	296	0	981
16:00	0	0	0	0	84	3	5	0	36	57	64	0	249
16:15	0	0	0	0	69	0	1	0	26	53	78	0	227
16:30	0	0	0	0	74	0	0	0	28	55	75	0	232
16:45	0	0	0	0	78	4	2	0	30	55	86	0	255
Total	0	0	0	0	305	7	8	0	120	220	303	0	963
17:00	0	0	0	0	87	0	1	0	41	64	69	0	262
17:15	0	0	0	0	78	0	3	0	34	55	89	0	259
17:30	0	0	0	0	72	2	4	0	38	62	71	0	249
17:45	0	0	0	0	72	1	6	0	36	62	72	0	249
Total	0	0	0	0	309	3	14	0	149	243	301	0	1019
Grand Total	0	0	0	0	1309	45	68	0	864	815	1186	0	4287
Apprch %	0	0	0	0	96.7	3.3	7.3	0	92.7	40.7	59.3	0	
Total %	0	0	0	0	30.5	1	1.6	0	20.2	19	27.7	0	

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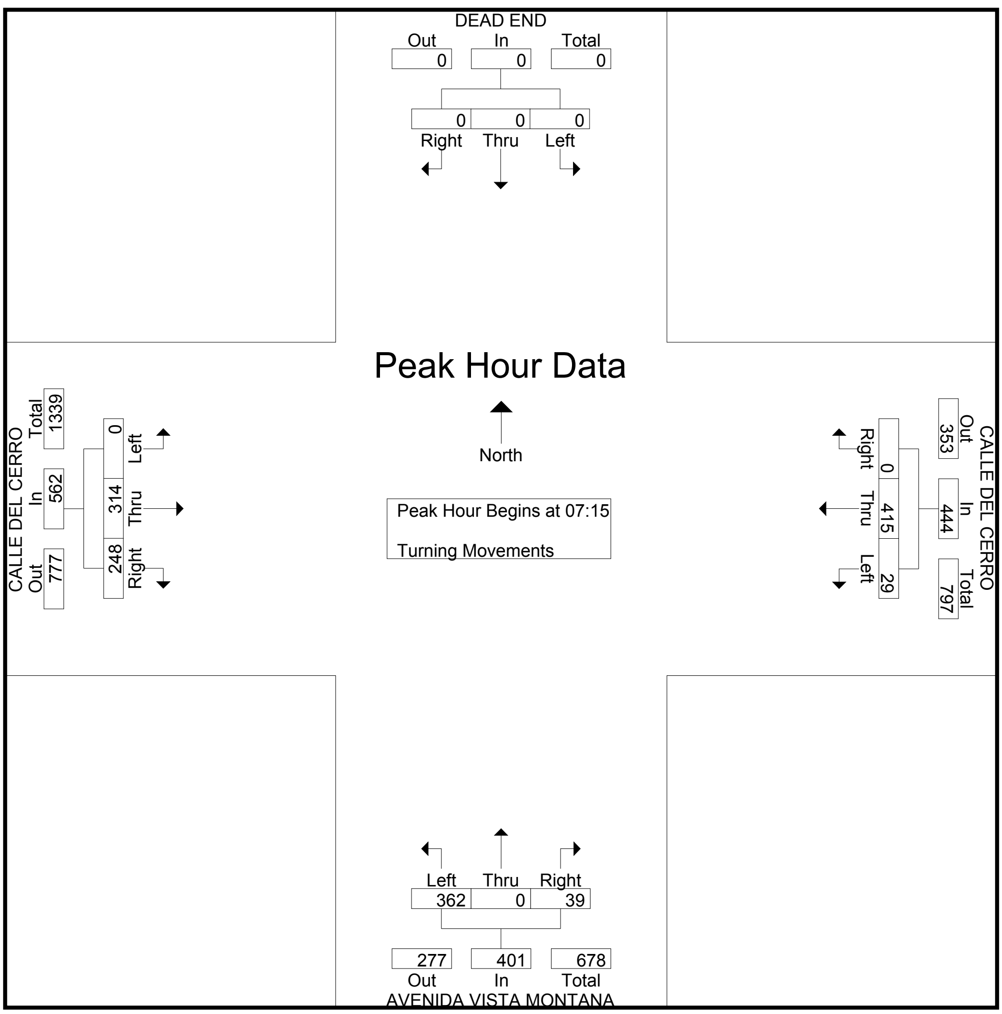
	DEAD END Southbound				CALLE DEL CERRO Westbound				AVENIDA VISTA MONTANA Northbound				CALLE DEL CERRO Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15																	
07:15	0	0	0	0	0	130	1	131	2	0	54	56	24	65	0	89	276
07:30	0	0	0	0	0	**139**	**17**	**156**	14	0	106	120	**90**	75	0	165	**441**
07:45	0	0	0	0	0	79	9	88	**17**	0	**130**	**147**	82	84	0	**166**	401
08:00	0	0	0	0	0	67	2	69	6	0	72	78	52	**90**	0	142	289
Total Volume	0	0	0	0	0	415	29	444	39	0	362	401	248	314	0	562	1407
% App. Total	0	0	0		0	93.5	6.5		9.7	0	90.3		44.1	55.9	0		
PHF	.000	.000	.000	.000	.000	.746	.426	.712	.574	.000	.696	.682	.689	.872	.000	.846	.798



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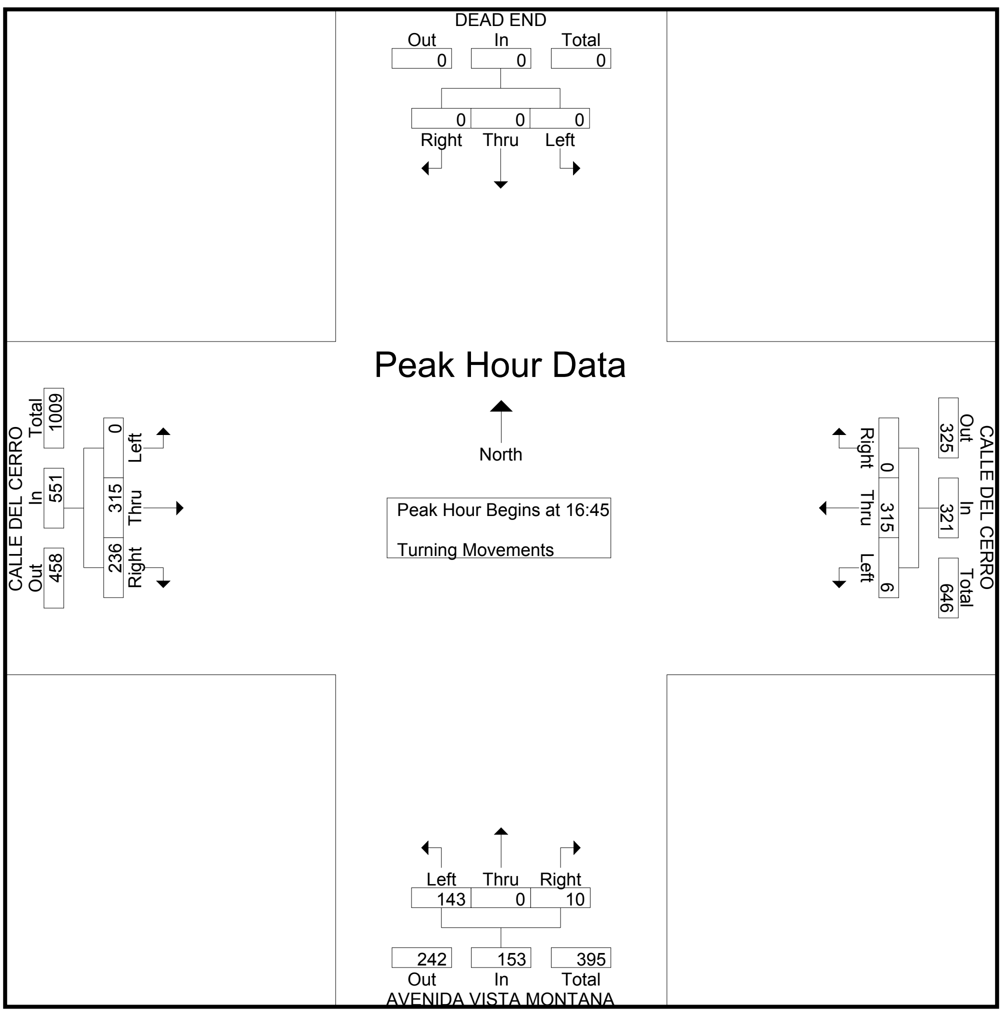
File Name : H1704002
Site Code : 00005054
Start Date : 4/11/2017
Page No : 3

	DEAD END Southbound				CALLE DEL CERRO Westbound				AVENIDA VISTA MONTANA Northbound				CALLE DEL CERRO Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:45																	
16:45	0	0	0	0	0	78	**4**	82	2	0	30	32	55	86	0	141	255
17:00	0	0	0	0	0	**87**	0	**87**	1	0	**41**	**42**	**64**	69	0	133	**262**
17:15	0	0	0	0	0	78	0	78	3	0	34	37	55	**89**	0	**144**	259
17:30	0	0	0	0	0	72	2	74	**4**	0	38	42	62	71	0	133	249
Total Volume	0	0	0	0	0	315	6	321	10	0	143	153	236	315	0	551	1025
% App. Total	0	0	0		0	98.1	1.9		6.5	0	93.5		42.8	57.2	0		
PHF	.000	.000	.000	.000	.000	.905	.375	.922	.625	.000	.872	.911	.922	.885	.000	.957	.978



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City: SAN CLEMENTE
N-S Direction: AVENIDA VISTA MONTANA
E-W Direction: TENNIS CLUB

File Name : H1704003
Site Code : 00005054
Start Date : 4/12/2017
Page No : 1

Groups Printed- Turning Movements

	AVENIDA VISTA MONTANA Southbound			DEAD END Westbound			AVENIDA VISTA MONTANA Northbound			TENNIS CLUB Eastbound			
Start Time	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Int. Total
07:00	1	24	0	0	0	0	0	42	0	0	0	0	67
07:15	1	28	0	0	0	0	0	47	0	0	0	1	77
07:30	0	99	0	0	0	0	0	142	0	0	0	0	241
07:45	0	78	0	0	0	0	0	149	2	0	0	0	229
Total	2	229	0	0	0	0	0	380	2	0	0	1	614
08:00	4	55	0	0	0	0	0	61	0	0	0	1	121
08:15	7	31	0	0	0	0	0	74	0	0	0	0	112
08:30	8	22	0	0	0	0	0	65	1	0	0	2	98
08:45	3	19	0	0	0	0	0	59	1	0	0	2	84
Total	22	127	0	0	0	0	0	259	2	0	0	5	415
16:00	12	56	0	0	0	0	0	27	0	0	0	12	107
16:15	0	49	0	0	0	0	0	28	0	0	0	5	82
16:30	0	51	0	0	0	0	0	30	0	0	0	1	82
16:45	0	58	0	0	0	0	0	26	0	0	0	0	84
Total	12	214	0	0	0	0	0	111	0	0	0	18	355
17:00	3	61	0	0	0	0	0	43	0	0	0	1	108
17:15	1	70	0	0	0	0	0	45	0	0	0	2	118
17:30	1	63	0	0	0	0	0	37	0	0	0	0	101
17:45	4	45	0	0	0	0	0	37	1	1	0	1	89
Total	9	239	0	0	0	0	0	162	1	1	0	4	416
Grand Total	45	809	0	0	0	0	0	912	5	1	0	28	1800
Apprch %	5.3	94.7	0	0	0	0	0	99.5	0.5	3.4	0	96.6	
Total %	2.5	44.9	0	0	0	0	0	50.7	0.3	0.1	0	1.6	

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File Name : H1704003
Site Code : 00005054
Start Date : 4/12/2017
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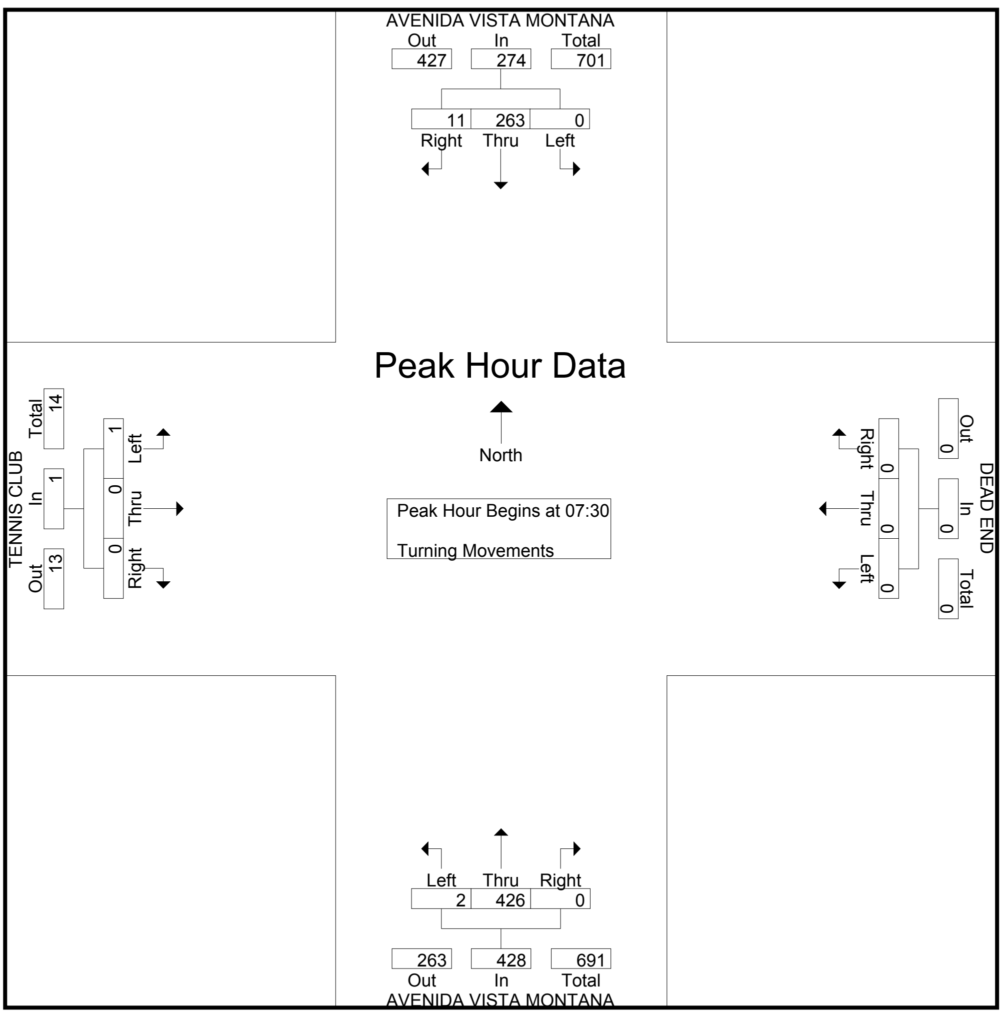
	AVENIDA VISTA MONTANA Southbound				DEAD END Westbound				AVENIDA VISTA MONTANA Northbound				TENNIS CLUB Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30																	
07:30	0	**99**	0	**99**	0	0	0	0	0	142	0	142	0	0	0	0	**241**
07:45	0	78	0	78	0	0	0	0	0	**149**	**2**	**151**	0	0	0	0	229
08:00	4	55	0	59	0	0	0	0	0	61	0	61	0	0	**1**	**1**	121
08:15	**7**	31	0	38	0	0	0	0	0	74	0	74	0	0	0	0	112
Total Volume	11	263	0	274	0	0	0	0	0	426	2	428	0	0	1	1	703
% App. Total	4	96	0		0	0	0		0	99.5	0.5		0	0	100		
PHF	.393	.664	.000	.692	.000	.000	.000	.000	.000	.715	.250	.709	.000	.000	.250	.250	.729



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File Name : H1704003
Site Code : 00005054
Start Date : 4/12/2017
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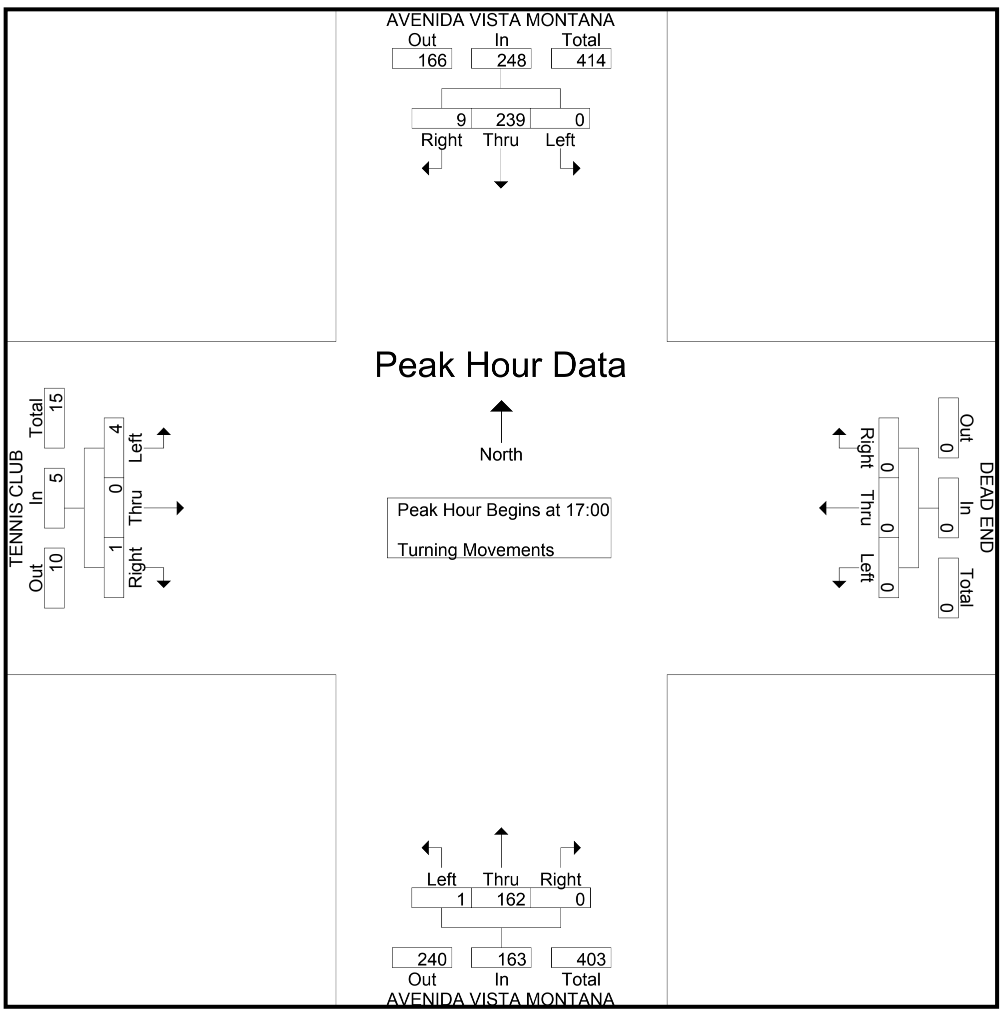
	AVENIDA VISTA MONTANA Southbound				DEAD END Westbound				AVENIDA VISTA MONTANA Northbound				TENNIS CLUB Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 17:00																	
17:00	3	61	0	64	0	0	0	0	0	43	0	43	0	0	1	1	108
17:15	1	**70**	0	**71**	0	0	0	0	0	**45**	0	**45**	0	0	**2**	**2**	**118**
17:30	1	63	0	64	0	0	0	0	0	37	0	37	0	0	0	0	101
17:45	**4**	45	0	49	0	0	0	0	0	37	**1**	38	**1**	0	1	2	89
Total Volume	9	239	0	248	0	0	0	0	0	162	1	163	1	0	4	5	416
% App. Total	3.6	96.4	0		0	0	0		0	99.4	0.6		20	0	80		
PHF	.563	.854	.000	.873	.000	.000	.000	.000	.000	.900	.250	.906	.250	.000	.500	.625	.881



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APPENDIX 2.2:

EXISTING (2017) CONDITIONS
INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

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--------------------------------------------------------------------------------
Avenida Vista Montana Fitness Facility Updated Traffic & Parking Study (JN:1095
                          Existing (2017) Conditions
                                 AM Peak Hour
--------------------------------------------------------------------------------

                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
********************************************************************************
Intersection #1 Avenida Pico/Calle Del Cerro
********************************************************************************
Cycle (sec):        100               Critical Vol./Cap.(X):        0.675
Loss Time (sec):      0               Average Delay (sec/veh):     xxxxxx
Optimal Cycle:       57               Level Of Service:                 B
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Protected         Permitted        Protected
Rights:          Include          Include           Include          Include
Min. Green:    0    0     0    0    0     0    0    0     0    0    0     0
Y+R:          4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0
Lanes:        0  0  2  1  0    1  0  3  0  0    0  0  0  0  0    2  0  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0 1530   489    46 1266     0     0    0     0   722    0    92
Growth 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
Initial Bse:    0 1530   489    46 1266     0     0    0     0   722    0    92
User 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
PHF 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
PHF Volume:     0 1530   489    46 1266     0     0    0     0   722    0    92
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0 1530   489    46 1266     0     0    0     0   722    0    92
PCE 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
MLF 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
FinalVolume:    0 1530   489    46 1266     0     0    0     0   722    0    92
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.00 2.27  0.73  1.00 3.00  0.00  0.00 0.00  0.00  2.00 0.00  1.00
Final Sat.:     0 3637  1163  1600 4800     0     0    0     0  3200    0  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.42  0.42  0.03 0.26  0.00  0.00 0.00  0.00  0.23 0.00  0.06
Crit Moves:       ****        ****                                ****
********************************************************************************
```

```
--------------------------------------------------------------------------------
Avenida Vista Montana Fitness Facility Updated Traffic & Parking Study (JN:1095
                         Existing (2017) Conditions
                                AM Peak Hour
--------------------------------------------------------------------------------

                       Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
********************************************************************************
Intersection #2 Avenida Vista Montana/Calle Del Cerro
********************************************************************************
Cycle (sec):         100                 Critical Vol./Cap.(X):        0.441
Loss Time (sec):       0                 Average Delay (sec/veh):     xxxxxx
Optimal Cycle:        33                 Level Of Service:                 A
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Permitted        Permitted        Protected
Rights:           Include          Include          Include          Include
Min. Green:    0    0     0    0    0     0    0    0     0    0    0     0
Y+R:          4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0
Lanes:        1  0  0  0  1   0  0  0  0  0   0  0  1  0  1   1  0  2  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     362    0    39    0    0     0    0  314   248   29  415     0
Growth 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
Initial Bse:  362    0    39    0    0     0    0  314   248   29  415     0
User 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
PHF 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
PHF Volume:   362    0    39    0    0     0    0  314   248   29  415     0
Reduct Vol:     0    0     0    0    0     0    0    0     0    0    0     0
Reduced Vol:  362    0    39    0    0     0    0  314   248   29  415     0
PCE 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
MLF 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
FinalVolume:  362    0    39    0    0     0    0  314   248   29  415     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600 1600 1600  1600 1600 1600  1600 1600 1600  1600
Adjustment:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Lanes:       1.00 0.00  1.00 0.00 0.00  0.00 0.00 1.00  1.00 1.00 2.00  0.00
Final Sat.:  1600    0  1600    0    0     0    0 1600  1600 1600 3200     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.23 0.00  0.02 0.00 0.00  0.00 0.00 0.20  0.16 0.02 0.13  0.00
Crit Moves:  ****                                 ****         ****
********************************************************************************
```

```
--------------------------------------------------------------------------------
Avenida Vista Montana Fitness Facility Updated Traffic & Parking Study (JN:1095
                     Existing (2017) Conditions
                            PM Peak Hour
--------------------------------------------------------------------------------

                  Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #1 Avenida Pico/Calle Del Cerro
*******************************************************************************
Cycle (sec):          100              Critical Vol./Cap.(X):        0.617
Loss Time (sec):        0              Average Delay (sec/veh):     xxxxxx
Optimal Cycle:         49              Level Of Service:                 B
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Permitted        Protected        Permitted        Protected
Rights:         Include          Include          Include          Include
Min. Green:    0    0     0    0    0     0    0    0     0    0    0     0
Y+R:         4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0
Lanes:       0  0  2  1  0   1  0  3  0  0   0  0  0  0  0   2  0  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      0 1657   513   55 2192     0    0    0     0  419    0    34
Growth 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
Initial Bse:   0 1657   513   55 2192     0    0    0     0  419    0    34
User 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
PHF 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
PHF Volume:    0 1657   513   55 2192     0    0    0     0  419    0    34
Reduct Vol:    0    0     0    0    0     0    0    0     0    0    0     0
Reduced Vol:   0 1657   513   55 2192     0    0    0     0  419    0    34
PCE 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
MLF 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
FinalVolume:   0 1657   513   55 2192     0    0    0     0  419    0    34
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600 1600 1600  1600 1600 1600  1600 1600 1600  1600
Adjustment:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Lanes:       0.00 2.29  0.71 1.00 3.00  0.00 0.00 0.00  0.00 2.00 0.00  1.00
Final Sat.:    0 3665  1135 1600 4800     0    0    0     0 3200    0  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.45  0.45 0.03 0.46  0.00 0.00 0.00  0.00 0.13 0.00  0.02
Crit Moves:       ****       ****                             ****
*******************************************************************************
```

```
--------------------------------------------------------------------------------
Avenida Vista Montana Fitness Facility Updated Traffic & Parking Study (JN:1095
                          Existing (2017) Conditions
                                 PM Peak Hour
--------------------------------------------------------------------------------

                       Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
********************************************************************************
Intersection #2 Avenida Vista Montana/Calle Del Cerro
********************************************************************************
Cycle (sec):          100                Critical Vol./Cap.(X):         0.290
Loss Time (sec):        0                Average Delay (sec/veh):      xxxxxx
Optimal Cycle:         26                Level Of Service:                  A
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Permitted        Permitted        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0    0    0     0    0    0     0    0    0     0
Y+R:          4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0
Lanes:        1  0  0  0  1   0  0  0  0  0   0  0  1  0  1   1  0  2  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     143    0    10    0    0     0    0  315   236    6  315     0
Growth 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
Initial Bse:  143    0    10    0    0     0    0  315   236    6  315     0
User 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
PHF 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
PHF Volume:   143    0    10    0    0     0    0  315   236    6  315     0
Reduct Vol:     0    0     0    0    0     0    0    0     0    0    0     0
Reduced Vol:  143    0    10    0    0     0    0  315   236    6  315     0
PCE 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
MLF 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
FinalVolume:  143    0    10    0    0     0    0  315   236    6  315     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600 1600 1600  1600 1600 1600  1600 1600 1600  1600
Adjustment:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Lanes:       1.00 0.00  1.00 0.00 0.00  0.00 0.00 1.00  1.00 1.00 2.00  0.00
Final Sat.:  1600    0  1600    0    0     0    0 1600  1600 1600 3200     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.09 0.00  0.01 0.00 0.00  0.00 0.00 0.20  0.15 0.00 0.10  0.00
Crit Moves:  ****                                 ****        ****
********************************************************************************
```

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	722	92	1530	489	46	1266
Future Volume (vph)	722	92	1530	489	46	1266
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	260	150		150	205	
Storage Lanes	1	0		0	1	
Taper Length (ft)	90				90	
Right Turn on Red		Yes		Yes		
Link Speed (mph)	40		45			45
Link Distance (ft)	2337		815			619
Travel Time (s)	39.8		12.3			9.4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Shared Lane Traffic (%)						
Turn Type	Prot	Perm	NA		Prot	NA
Protected Phases	8		2		1	6
Permitted Phases		8				
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	22.5	22.5	22.5		10.0	10.0
Total Split (s)	26.0	26.0	44.0		10.0	54.0
Total Split (%)	32.5%	32.5%	55.0%		12.5%	67.5%
Yellow Time (s)	3.5	3.5	3.5		3.5	3.5
All-Red Time (s)	1.0	1.0	1.0		1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5		4.5	4.5
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	C-Max		None	C-Max

Intersection Summary	
Area Type:	Other
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	

Splits and Phases: 1: Avenida Pico & Calle Del Cerro

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	722	92	1530	489	46	1266
Future Volume (veh/h)	722	92	1530	489	46	1266
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	802	102	1700	543	51	1407
Adj No. of Lanes	2	1	3	0	1	3
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	888	409	2043	634	75	3201
Arrive On Green	0.26	0.26	0.53	0.53	0.04	0.63
Sat Flow, veh/h	3442	1583	4016	1194	1774	5253
Grp Volume(v), veh/h	802	102	1492	751	51	1407
Grp Sat Flow(s),veh/h/ln	1721	1583	1695	1652	1774	1695
Q Serve(g_s), s	18.0	4.1	29.5	31.3	2.3	11.3
Cycle Q Clear(g_c), s	18.0	4.1	29.5	31.3	2.3	11.3
Prop In Lane	1.00	1.00		0.72	1.00	
Lane Grp Cap(c), veh/h	888	409	1799	877	75	3201
V/C Ratio(X)	0.90	0.25	0.83	0.86	0.68	0.44
Avail Cap(c_a), veh/h	925	426	1799	877	122	3201
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.85	0.85	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.7	23.5	15.7	16.2	37.8	7.6
Incr Delay (d2), s/veh	10.3	0.3	4.6	10.6	10.2	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.8	1.8	14.8	16.8	1.3	5.3
LnGrp Delay(d),s/veh	39.0	23.8	20.3	26.7	48.0	8.0
LnGrp LOS	D	C	C	C	D	A
Approach Vol, veh/h	904		2243			1458
Approach Delay, s/veh	37.3		22.5			9.4
Approach LOS	D		C			A

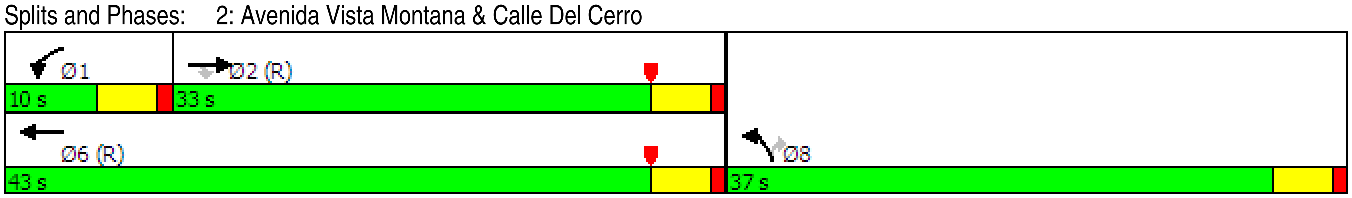
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	7.9	47.0				54.9		25.1
Change Period (Y+Rc), s	4.5	4.5				4.5		4.5
Max Green Setting (Gmax), s	5.5	39.5				49.5		21.5
Max Q Clear Time (g_c+I1), s	4.3	33.3				13.3		20.0
Green Ext Time (p_c), s	0.0	6.0				32.7		0.6

Intersection Summary	
HCM 2010 Ctrl Delay	21.2
HCM 2010 LOS	C

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	314	248	29	415	362	39
Future Volume (vph)	314	248	29	415	362	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		150	160		90	150
Storage Lanes		0	1		1	0
Taper Length (ft)			90		60	
Right Turn on Red		Yes				Yes
Link Speed (mph)	40			40	30	
Link Distance (ft)	2337			624	212	
Travel Time (s)	39.8			10.6	4.8	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Shared Lane Traffic (%)						
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases		2				8
Detector Phase	2	2	1	6	8	8
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	10.0	10.0	22.5	22.5
Total Split (s)	33.0	33.0	10.0	43.0	37.0	37.0
Total Split (%)	41.3%	41.3%	12.5%	53.8%	46.3%	46.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Max	C-Max	None	C-Max	None	None

Intersection Summary	
Area Type:	Other
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	

Splits and Phases: 2: Avenida Vista Montana & Calle Del Cerro



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	314	248	29	415	362	39
Future Volume (veh/h)	314	248	29	415	362	39
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	392	310	36	519	452	49
Adj No. of Lanes	1	1	1	2	1	1
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	953	810	61	2131	506	452
Arrive On Green	0.51	0.51	0.03	0.60	0.29	0.29
Sat Flow, veh/h	1863	1583	1774	3632	1774	1583
Grp Volume(v), veh/h	392	310	36	519	452	49
Grp Sat Flow(s),veh/h/ln	1863	1583	1774	1770	1774	1583
Q Serve(g_s), s	10.4	9.5	1.6	5.5	19.5	1.8
Cycle Q Clear(g_c), s	10.4	9.5	1.6	5.5	19.5	1.8
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	953	810	61	2131	506	452
V/C Ratio(X)	0.41	0.38	0.59	0.24	0.89	0.11
Avail Cap(c_a), veh/h	953	810	122	2131	721	643
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.91	0.91	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.1	11.9	38.1	7.4	27.4	21.1
Incr Delay (d2), s/veh	1.2	1.2	8.7	0.3	10.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.7	4.4	0.9	2.7	11.0	0.8
LnGrp Delay(d),s/veh	13.3	13.1	46.8	7.7	37.5	21.2
LnGrp LOS	B	B	D	A	D	C
Approach Vol, veh/h	702			555	501	
Approach Delay, s/veh	13.2			10.2	35.9	
Approach LOS	B			B	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	7.3	45.4				52.7		27.3
Change Period (Y+Rc), s	4.5	4.5				4.5		4.5
Max Green Setting (Gmax), s	5.5	28.5				38.5		32.5
Max Q Clear Time (g_c+I1), s	3.6	12.4				7.5		21.5
Green Ext Time (p_c), s	0.0	6.1				7.7		1.3

Intersection Summary	
HCM 2010 Ctrl Delay	18.8
HCM 2010 LOS	B

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	1	0	2	426	263	11
Future Volume (vph)	1	0	2	426	263	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150	150	60			150
Storage Lanes	0	0	1			0
Taper Length (ft)	90		90			
Link Speed (mph)	30			30	30	
Link Distance (ft)	181			242	212	
Travel Time (s)	4.1			5.5	4.8	
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73
Shared Lane Traffic (%)						
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	0	2	426	263	11
Future Vol, veh/h	1	0	2	426	263	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	60	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	73	73	73	73	73	73
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	0	3	584	360	15

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	957	368	375	0	-	0
Stage 1	368	-	-	-	-	-
Stage 2	589	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	286	677	1183	-	-	-
Stage 1	700	-	-	-	-	-
Stage 2	554	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	285	677	1183	-	-	-
Mov Cap-2 Maneuver	285	-	-	-	-	-
Stage 1	700	-	-	-	-	-
Stage 2	553	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.7	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1183	-	285	-	-
HCM Lane V/C Ratio	0.002	-	0.005	-	-
HCM Control Delay (s)	8.1	-	17.7	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	419	34	1657	513	55	2192
Future Volume (vph)	419	34	1657	513	55	2192
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	260	150		150	205	
Storage Lanes	1	0		0	1	
Taper Length (ft)	90				90	
Right Turn on Red		Yes		Yes		
Link Speed (mph)	40		45			45
Link Distance (ft)	2337		815			619
Travel Time (s)	39.8		12.3			9.4
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Shared Lane Traffic (%)						
Turn Type	Prot	Perm	NA		Prot	NA
Protected Phases	8		2		1	6
Permitted Phases		8				
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	22.5	22.5	22.5		10.0	10.0
Total Split (s)	22.6	22.6	47.4		10.0	57.4
Total Split (%)	28.3%	28.3%	59.3%		12.5%	71.8%
Yellow Time (s)	3.5	3.5	3.5		3.5	3.5
All-Red Time (s)	1.0	1.0	1.0		1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5		4.5	4.5
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	C-Max		None	C-Max

Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle: 70
Control Type: Actuated-Coordinated

Splits and Phases: 1: Avenida Pico & Calle Del Cerro

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	419	34	1657	513	55	2192
Future Volume (veh/h)	419	34	1657	513	55	2192
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	436	35	1726	534	57	2283
Adj No. of Lanes	2	1	3	0	1	3
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	547	252	2435	732	80	3705
Arrive On Green	0.16	0.16	0.63	0.63	0.04	0.73
Sat Flow, veh/h	3442	1583	4049	1166	1774	5253
Grp Volume(v), veh/h	436	35	1501	759	57	2283
Grp Sat Flow(s),veh/h/ln	1721	1583	1695	1657	1774	1695
Q Serve(g_s), s	9.8	1.5	23.7	25.2	2.5	17.7
Cycle Q Clear(g_c), s	9.8	1.5	23.7	25.2	2.5	17.7
Prop In Lane	1.00	1.00		0.70	1.00	
Lane Grp Cap(c), veh/h	547	252	2127	1040	80	3705
V/C Ratio(X)	0.80	0.14	0.71	0.73	0.72	0.62
Avail Cap(c_a), veh/h	779	358	2127	1040	122	3705
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.98	0.98	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.4	28.9	10.0	10.2	37.7	5.3
Incr Delay (d2), s/veh	3.8	0.2	2.0	4.5	11.3	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.9	0.7	11.4	12.7	1.5	8.3
LnGrp Delay(d),s/veh	36.2	29.2	12.0	14.8	49.0	6.1
LnGrp LOS	D	C	B	B	D	A
Approach Vol, veh/h	471		2260			2340
Approach Delay, s/veh	35.6		12.9			7.2
Approach LOS	D		B			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	8.1	54.7				62.8		17.2
Change Period (Y+Rc), s	4.5	4.5				4.5		4.5
Max Green Setting (Gmax), s	5.5	42.9				52.9		18.1
Max Q Clear Time (g_c+I1), s	4.5	27.2				19.7		11.8
Green Ext Time (p_c), s	0.0	15.5				32.3		0.9

Intersection Summary		
HCM 2010 Ctrl Delay		12.4
HCM 2010 LOS		B

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	315	236	6	315	143	10
Future Volume (vph)	315	236	6	315	143	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		150	160		90	150
Storage Lanes		0	1		1	0
Taper Length (ft)			90		60	
Right Turn on Red		Yes				Yes
Link Speed (mph)	40			40	30	
Link Distance (ft)	2337			624	212	
Travel Time (s)	39.8			10.6	4.8	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Shared Lane Traffic (%)						
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases		2				8
Detector Phase	2	2	1	6	8	8
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	10.0	10.0	22.5	22.5
Total Split (s)	39.0	39.0	12.0	51.0	29.0	29.0
Total Split (%)	48.8%	48.8%	15.0%	63.8%	36.3%	36.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Max	C-Max	None	C-Max	None	None

Intersection Summary	
Area Type:	Other
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow	
Natural Cycle: 55	
Control Type: Actuated-Coordinated	

Splits and Phases: 2: Avenida Vista Montana & Calle Del Cerro

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	315	236	6	315	143	10
Future Volume (veh/h)	315	236	6	315	143	10
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	321	241	6	321	146	10
Adj No. of Lanes	1	1	1	2	1	1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1336	1136	14	2765	188	168
Arrive On Green	0.72	0.72	0.01	0.78	0.11	0.11
Sat Flow, veh/h	1863	1583	1774	3632	1774	1583
Grp Volume(v), veh/h	321	241	6	321	146	10
Grp Sat Flow(s),veh/h/ln	1863	1583	1774	1770	1774	1583
Q Serve(g_s), s	4.7	4.1	0.3	1.7	6.4	0.5
Cycle Q Clear(g_c), s	4.7	4.1	0.3	1.7	6.4	0.5
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1336	1136	14	2765	188	168
V/C Ratio(X)	0.24	0.21	0.43	0.12	0.78	0.06
Avail Cap(c_a), veh/h	1336	1136	166	2765	543	485
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.92	0.92	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	3.9	3.8	39.5	2.1	34.8	32.2
Incr Delay (d2), s/veh	0.4	0.4	19.9	0.1	6.7	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	1.9	0.2	0.9	3.5	0.2
LnGrp Delay(d),s/veh	4.3	4.2	59.5	2.2	41.5	32.3
LnGrp LOS	A	A	E	A	D	C
Approach Vol, veh/h	562			327	156	
Approach Delay, s/veh	4.2			3.2	40.9	
Approach LOS	A			A	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	5.1	61.9				67.0		13.0
Change Period (Y+Rc), s	4.5	4.5				4.5		4.5
Max Green Setting (Gmax), s	7.5	34.5				46.5		24.5
Max Q Clear Time (g_c+I1), s	2.3	6.7				3.7		8.4
Green Ext Time (p_c), s	0.0	4.9				5.2		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	9.4
HCM 2010 LOS	A

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	4	1	1	162	239	9
Future Volume (vph)	4	1	1	162	239	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150	150	60			150
Storage Lanes	0	0	1			0
Taper Length (ft)	90		90			
Link Speed (mph)	30			30	30	
Link Distance (ft)	181			242	212	
Travel Time (s)	4.1			5.5	4.8	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Shared Lane Traffic (%)						
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	1	1	162	239	9
Future Vol, veh/h	4	1	1	162	239	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	60	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	1	1	184	272	10

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	463	277	282	0	-	0
Stage 1	277	-	-	-	-	-
Stage 2	186	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	557	762	1280	-	-	-
Stage 1	770	-	-	-	-	-
Stage 2	846	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	557	762	1280	-	-	-
Mov Cap-2 Maneuver	557	-	-	-	-	-
Stage 1	770	-	-	-	-	-
Stage 2	845	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.2	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1280	-	589	-	-
HCM Lane V/C Ratio	0.001	-	0.01	-	-
HCM Control Delay (s)	7.8	-	11.2	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

APPENDIX 4.1:

EXISTING (2017) PLUS PROJECT CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

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--------------------------------------------------------------------------------
              Avenida Vista Montana Fitness Facility (JN:10953)
                  Existing Plus Project Traffic Conditions
                                AM Peak Hour
--------------------------------------------------------------------------------

                     Level Of Service Computation Report
      ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)
********************************************************************************
Intersection #1 Avenida Pico/Calle Del Cerro
********************************************************************************
Cycle (sec):          100              Critical Vol./Cap.(X):        0.684
Loss Time (sec):        0              Average Delay (sec/veh):     xxxxxx
Optimal Cycle:         59              Level Of Service:                 B
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted       Protected        Permitted        Protected
Rights:          Include          Include          Include          Include
Min. Green:    0    0     0    0    0     0    0    0     0    0    0     0
Y+R:          4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0
Lanes:        0  0  2  1  0   1  0  3  0  0   0  0  0  0  0   2  0  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      0 1530   489   46 1266     0    0    0     0  722    0    92
Growth 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
Initial Bse:   0 1530   489   46 1266     0    0    0     0  722    0    92
Added Vol:     0    0    12    5    0     0    0    0     0   12    0     5
PasserByVol:   0    0     0    0    0     0    0    0     0    0    0     0
Initial Fut:   0 1530   501   51 1266     0    0    0     0  734    0    97
User 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
PHF 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
PHF Volume:    0 1530   501   51 1266     0    0    0     0  734    0    97
Reduct Vol:    0    0     0    0    0     0    0    0     0    0    0     0
Reduced Vol:   0 1530   501   51 1266     0    0    0     0  734    0    97
PCE 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
MLF 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
FinalVolume:   0 1530   501   51 1266     0    0    0     0  734    0    97
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600 1600 1600  1600 1600 1600  1600 1600 1600  1600
Adjustment:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Lanes:       0.00 2.26  0.74 1.00 3.00  0.00 0.00 0.00  0.00 2.00 0.00  1.00
Final Sat.:    0 3616  1184 1600 4800     0    0    0     0 3200    0  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.42  0.42 0.03 0.26  0.00 0.00 0.00  0.00 0.23 0.00  0.06
Crit Moves:       ****       ****                              ****
********************************************************************************
```

```
--------------------------------------------------------------------------------
               Avenida Vista Montana Fitness Facility (JN:10953)
                   Existing Plus Project Traffic Conditions
                                 AM Peak Hour
--------------------------------------------------------------------------------
                      Level Of Service Computation Report
       ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)
********************************************************************************
Intersection #2 Avenida Vista Montana/Calle Del Cerro
********************************************************************************
Cycle (sec):          100                Critical Vol./Cap.(X):        0.454
Loss Time (sec):        0                Average Delay (sec/veh):     xxxxxx
Optimal Cycle:         34                Level Of Service:                 A
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected         Permitted         Permitted        Protected
Rights:           Include           Include           Include          Include
Min. Green:     0    0     0    0    0     0    0    0     0    0    0     0
Y+R:          4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0
Lanes:        1  0  0  0  1    0  0  0  0  0    0  0  1  0  1    1  0  2  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     362    0    39    0    0     0    0  314   248   29  415     0
Growth 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
Initial Bse:  362    0    39    0    0     0    0  314   248   29  415     0
Added Vol:     17    0     5    0    0     0    0    0    17    5    0     0
PasserByVol:    0    0     0    0    0     0    0    0     0    0    0     0
Initial Fut:  379    0    44    0    0     0    0  314   265   34  415     0
User 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
PHF 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
PHF Volume:   379    0    44    0    0     0    0  314   265   34  415     0
Reduct Vol:     0    0     0    0    0     0    0    0     0    0    0     0
Reduced Vol:  379    0    44    0    0     0    0  314   265   34  415     0
PCE 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
MLF 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
FinalVolume:  379    0    44    0    0     0    0  314   265   34  415     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600 1600 1600  1600 1600 1600  1600 1600 1600  1600
Adjustment:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Lanes:       1.00 0.00  1.00 0.00 0.00  0.00 0.00 1.00  1.00 1.00 2.00  0.00
Final Sat.:  1600    0  1600    0    0     0    0 1600  1600 1600 3200     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.24 0.00  0.03 0.00 0.00  0.00 0.00 0.20  0.17 0.02 0.13  0.00
Crit Moves:  ****                                 ****        ****
********************************************************************************
```

```
--------------------------------------------------------------------------------
               Avenida Vista Montana Fitness Facility (JN:10953)
                   Existing Plus Project Traffic Conditions
                                 PM Peak Hour
--------------------------------------------------------------------------------

                      Level Of Service Computation Report
      ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)
********************************************************************************
Intersection #1 Avenida Pico/Calle Del Cerro
********************************************************************************
Cycle (sec):          100               Critical Vol./Cap.(X):         0.641
Loss Time (sec):        0               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:         52               Level Of Service:                  B
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Protected         Permitted        Protected
Rights:          Include          Include           Include          Include
Min. Green:    0    0     0    0    0     0    0    0     0    0    0     0
Y+R:          4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0
Lanes:        0  0  2  1  0   1  0  3  0  0   0  0  0  0  0   2  0  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      0 1657   513   55 2192     0    0    0     0  419    0    34
Growth 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
Initial Bse:   0 1657   513   55 2192     0    0    0     0  419    0    34
Added Vol:     0    0    34   14    0     0    0    0     0   26    0    10
PasserByVol:   0    0     0    0    0     0    0    0     0    0    0     0
Initial Fut:   0 1657   547   69 2192     0    0    0     0  445    0    44
User 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
PHF 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
PHF Volume:    0 1657   547   69 2192     0    0    0     0  445    0    44
Reduct Vol:    0    0     0    0    0     0    0    0     0    0    0     0
Reduced Vol:   0 1657   547   69 2192     0    0    0     0  445    0    44
PCE 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
MLF 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
FinalVolume:   0 1657   547   69 2192     0    0    0     0  445    0    44
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600 1600 1600  1600 1600 1600  1600 1600 1600  1600
Adjustment:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Lanes:       0.00 2.26  0.74 1.00 3.00  0.00 0.00 0.00  0.00 2.00 0.00  1.00
Final Sat.:    0 3609  1191 1600 4800     0    0    0     0 3200    0  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.46  0.46 0.04 0.46  0.00 0.00 0.00  0.00 0.14 0.00  0.03
Crit Moves:       ****       ****                              ****
********************************************************************************
```

```
--------------------------------------------------------------------------------
               Avenida Vista Montana Fitness Facility (JN:10953)
                   Existing Plus Project Traffic Conditions
                                 PM Peak Hour
--------------------------------------------------------------------------------

                      Level Of Service Computation Report
       ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)
*******************************************************************************
Intersection #2 Avenida Vista Montana/Calle Del Cerro
*******************************************************************************
Cycle (sec):         100              Critical Vol./Cap.(X):        0.321
Loss Time (sec):       0              Average Delay (sec/veh):     xxxxxx
Optimal Cycle:        27              Level Of Service:                 A
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Protected         Permitted         Permitted         Protected
Rights:          Include           Include           Include           Include
Min. Green:    0    0     0    0    0     0    0    0     0    0    0     0
Y+R:          4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0
Lanes:        1  0  0  0  1   0  0  0  0  0   0  0  1  0  1   1  0  2  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     143    0    10    0    0     0    0  315   236    6  315     0
Growth 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
Initial Bse: 143    0    10    0    0     0    0  315   236    6  315     0
Added Vol:    36    0    10    0    0     0    0    0    48   14    0     0
PasserByVol:   0    0     0    0    0     0    0    0     0    0    0     0
Initial Fut: 179    0    20    0    0     0    0  315   284   20  315     0
User 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
PHF 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
PHF Volume:  179    0    20    0    0     0    0  315   284   20  315     0
Reduct Vol:    0    0     0    0    0     0    0    0     0    0    0     0
Reduced Vol: 179    0    20    0    0     0    0  315   284   20  315     0
PCE 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
MLF 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
FinalVolume: 179    0    20    0    0     0    0  315   284   20  315     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600 1600 1600  1600 1600 1600  1600 1600 1600  1600
Adjustment:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Lanes:       1.00 0.00  1.00 0.00 0.00  0.00 0.00 1.00  1.00 1.00 2.00  0.00
Final Sat.: 1600    0  1600    0    0     0    0 1600  1600 1600 3200     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.11 0.00  0.01 0.00 0.00  0.00 0.00 0.20  0.18 0.01 0.10  0.00
Crit Moves:  ****                                ****        ****
*******************************************************************************
```

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	734	97	1530	501	51	1266
Future Volume (vph)	734	97	1530	501	51	1266
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	260	150		150	205	
Storage Lanes	1	0		0	1	
Taper Length (ft)	90				90	
Right Turn on Red		Yes		Yes		
Link Speed (mph)	40		45			45
Link Distance (ft)	2337		815			619
Travel Time (s)	39.8		12.3			9.4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Shared Lane Traffic (%)						
Turn Type	Prot	Perm	NA		Prot	NA
Protected Phases	8		2		1	6
Permitted Phases		8				
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	22.5	22.5	22.5		10.0	10.0
Total Split (s)	26.0	26.0	44.0		10.0	54.0
Total Split (%)	32.5%	32.5%	55.0%		12.5%	67.5%
Yellow Time (s)	3.5	3.5	3.5		3.5	3.5
All-Red Time (s)	1.0	1.0	1.0		1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5		4.5	4.5
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	C-Max		None	C-Max

Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle: 80
Control Type: Actuated-Coordinated

Splits and Phases: 1: Avenida Pico & Calle Del Cerro

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	734	97	1530	501	51	1266
Future Volume (veh/h)	734	97	1530	501	51	1266
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	816	108	1700	557	57	1407
Adj No. of Lanes	2	1	3	0	1	3
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	898	413	2009	638	80	3187
Arrive On Green	0.26	0.26	0.53	0.53	0.04	0.63
Sat Flow, veh/h	3442	1583	3992	1215	1774	5253
Grp Volume(v), veh/h	816	108	1501	756	57	1407
Grp Sat Flow(s),veh/h/ln	1721	1583	1695	1648	1774	1695
Q Serve(g_s), s	18.4	4.3	30.2	32.1	2.5	11.4
Cycle Q Clear(g_c), s	18.4	4.3	30.2	32.1	2.5	11.4
Prop In Lane	1.00	1.00		0.74	1.00	
Lane Grp Cap(c), veh/h	898	413	1782	866	80	3187
V/C Ratio(X)	0.91	0.26	0.84	0.87	0.72	0.44
Avail Cap(c_a), veh/h	925	426	1782	866	122	3187
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.84	0.84	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.6	23.5	16.2	16.6	37.7	7.7
Incr Delay (d2), s/veh	10.8	0.3	5.0	11.8	11.3	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.1	1.9	15.2	17.3	1.5	5.3
LnGrp Delay(d),s/veh	39.5	23.7	21.2	28.4	49.0	8.2
LnGrp LOS	D	C	C	C	D	A
Approach Vol, veh/h	924		2257			1464
Approach Delay, s/veh	37.6		23.6			9.7
Approach LOS	D		C			A

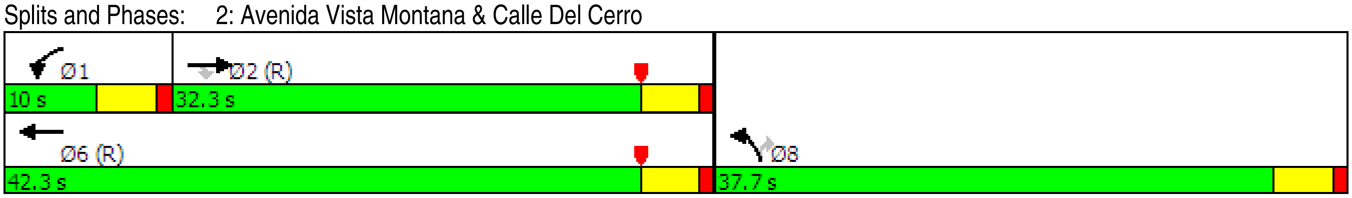
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	8.1	46.5				54.6		25.4
Change Period (Y+Rc), s	4.5	4.5				4.5		4.5
Max Green Setting (Gmax), s	5.5	39.5				49.5		21.5
Max Q Clear Time (g_c+I1), s	4.5	34.1				13.4		20.4
Green Ext Time (p_c), s	0.0	5.2				32.7		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	22.0
HCM 2010 LOS	C

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	314	265	34	415	379	44
Future Volume (vph)	314	265	34	415	379	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		150	160		90	150
Storage Lanes		0	1		1	0
Taper Length (ft)			90		60	
Right Turn on Red		Yes				Yes
Link Speed (mph)	40			40	30	
Link Distance (ft)	2337			624	212	
Travel Time (s)	39.8			10.6	4.8	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Shared Lane Traffic (%)						
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases		2				8
Detector Phase	2	2	1	6	8	8
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	10.0	10.0	22.5	22.5
Total Split (s)	32.3	32.3	10.0	42.3	37.7	37.7
Total Split (%)	40.4%	40.4%	12.5%	52.9%	47.1%	47.1%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Max	C-Max	None	C-Max	None	None

Intersection Summary	
Area Type:	Other
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	

Splits and Phases: 2: Avenida Vista Montana & Calle Del Cerro



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	314	265	34	415	379	44
Future Volume (veh/h)	314	265	34	415	379	44
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	392	331	42	519	474	55
Adj No. of Lanes	1	1	1	2	1	1
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	923	784	67	2086	529	472
Arrive On Green	0.50	0.50	0.04	0.59	0.30	0.30
Sat Flow, veh/h	1863	1583	1774	3632	1774	1583
Grp Volume(v), veh/h	392	331	42	519	474	55
Grp Sat Flow(s),veh/h/ln	1863	1583	1774	1770	1774	1583
Q Serve(g_s), s	10.8	10.7	1.9	5.6	20.5	2.0
Cycle Q Clear(g_c), s	10.8	10.7	1.9	5.6	20.5	2.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	923	784	67	2086	529	472
V/C Ratio(X)	0.42	0.42	0.62	0.25	0.90	0.12
Avail Cap(c_a), veh/h	923	784	122	2086	736	657
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.88	0.88	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.9	12.9	37.9	7.9	26.9	20.4
Incr Delay (d2), s/veh	1.3	1.5	9.1	0.3	10.6	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.8	4.9	1.1	2.8	11.6	0.9
LnGrp Delay(d),s/veh	14.2	14.4	47.0	8.2	37.5	20.5
LnGrp LOS	B	B	D	A	D	C
Approach Vol, veh/h	723			561	529	
Approach Delay, s/veh	14.3			11.1	35.7	
Approach LOS	B			B	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	7.5	44.1				51.7		28.3
Change Period (Y+Rc), s	4.5	4.5				4.5		4.5
Max Green Setting (Gmax), s	5.5	27.8				37.8		33.2
Max Q Clear Time (g_c+I1), s	3.9	12.8				7.6		22.5
Green Ext Time (p_c), s	0.0	6.0				7.7		1.4

Intersection Summary			
HCM 2010 Ctrl Delay			19.5
HCM 2010 LOS			B

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	23	2	4	426	263	33
Future Volume (vph)	23	2	4	426	263	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150	150	60			150
Storage Lanes	0	0	1			0
Taper Length (ft)	90		90			
Link Speed (mph)	30			30	30	
Link Distance (ft)	181			242	212	
Travel Time (s)	4.1			5.5	4.8	
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73
Shared Lane Traffic (%)						
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	23	2	4	426	263	33
Future Vol, veh/h	23	2	4	426	263	33
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	60	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	73	73	73	73	73	73
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	32	3	5	584	360	45

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	978	383	405	0	-	0
Stage 1	383	-	-	-	-	-
Stage 2	595	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	278	664	1154	-	-	-
Stage 1	689	-	-	-	-	-
Stage 2	551	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	277	664	1154	-	-	-
Mov Cap-2 Maneuver	277	-	-	-	-	-
Stage 1	689	-	-	-	-	-
Stage 2	549	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	19	0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1154	-	291	-	-
HCM Lane V/C Ratio	0.005	-	0.118	-	-
HCM Control Delay (s)	8.1	-	19	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.4	-	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	445	44	1657	547	69	2192
Future Volume (vph)	445	44	1657	547	69	2192
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	260	150		150	205	
Storage Lanes	1	0		0	1	
Taper Length (ft)	90				90	
Right Turn on Red		Yes		Yes		
Link Speed (mph)	40		45			45
Link Distance (ft)	2337		815			619
Travel Time (s)	39.8		12.3			9.4
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Shared Lane Traffic (%)						
Turn Type	Prot	Perm	NA		Prot	NA
Protected Phases	8		2		1	6
Permitted Phases		8				
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	22.5	22.5	22.5		10.0	10.0
Total Split (s)	22.6	22.6	47.4		10.0	57.4
Total Split (%)	28.3%	28.3%	59.3%		12.5%	71.8%
Yellow Time (s)	3.5	3.5	3.5		3.5	3.5
All-Red Time (s)	1.0	1.0	1.0		1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5		4.5	4.5
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	C-Max		None	C-Max

Intersection Summary	
Area Type:	Other
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow	
Natural Cycle: 75	
Control Type: Actuated-Coordinated	

Splits and Phases: 1: Avenida Pico & Calle Del Cerro

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	445	44	1657	547	69	2192
Future Volume (veh/h)	445	44	1657	547	69	2192
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	464	46	1726	570	72	2283
Adj No. of Lanes	2	1	3	0	1	3
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	575	264	2338	746	92	3664
Arrive On Green	0.17	0.17	0.61	0.61	0.05	0.72
Sat Flow, veh/h	3442	1583	3987	1219	1774	5253
Grp Volume(v), veh/h	464	46	1525	771	72	2283
Grp Sat Flow(s),veh/h/ln	1721	1583	1695	1648	1774	1695
Q Serve(g_s), s	10.4	2.0	25.4	27.3	3.2	18.2
Cycle Q Clear(g_c), s	10.4	2.0	25.4	27.3	3.2	18.2
Prop In Lane	1.00	1.00		0.74	1.00	
Lane Grp Cap(c), veh/h	575	264	2076	1009	92	3664
V/C Ratio(X)	0.81	0.17	0.73	0.76	0.78	0.62
Avail Cap(c_a), veh/h	779	358	2076	1009	122	3664
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.96	0.96	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.1	28.6	10.9	11.3	37.5	5.7
Incr Delay (d2), s/veh	4.4	0.3	2.4	5.5	20.6	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.2	0.9	12.3	13.7	2.1	8.5
LnGrp Delay(d),s/veh	36.5	28.9	13.3	16.8	58.0	6.5
LnGrp LOS	D	C	B	B	E	A
Approach Vol, veh/h	510		2296			2355
Approach Delay, s/veh	35.8		14.5			8.1
Approach LOS	D		B			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	8.7	53.5				62.1		17.9
Change Period (Y+Rc), s	4.5	4.5				4.5		4.5
Max Green Setting (Gmax), s	5.5	42.9				52.9		18.1
Max Q Clear Time (g_c+I1), s	5.2	29.3				20.2		12.4
Green Ext Time (p_c), s	0.0	13.5				31.9		1.0

Intersection Summary		
HCM 2010 Ctrl Delay		13.6
HCM 2010 LOS		B

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	315	284	20	315	179	20
Future Volume (vph)	315	284	20	315	179	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		150	160		90	150
Storage Lanes		0	1		1	0
Taper Length (ft)			90		60	
Right Turn on Red		Yes				Yes
Link Speed (mph)	40			40	30	
Link Distance (ft)	2337			624	212	
Travel Time (s)	39.8			10.6	4.8	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Shared Lane Traffic (%)						
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases		2				8
Detector Phase	2	2	1	6	8	8
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	10.0	10.0	22.5	22.5
Total Split (s)	39.0	39.0	12.0	51.0	29.0	29.0
Total Split (%)	48.8%	48.8%	15.0%	63.8%	36.3%	36.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Max	C-Max	None	C-Max	None	None

Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
Natural Cycle: 55
Control Type: Actuated-Coordinated

Splits and Phases: 2: Avenida Vista Montana & Calle Del Cerro

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	315	284	20	315	179	20
Future Volume (veh/h)	315	284	20	315	179	20
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	321	290	20	321	183	20
Adj No. of Lanes	1	1	1	2	1	1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1265	1075	40	2682	230	205
Arrive On Green	0.68	0.68	0.02	0.76	0.13	0.13
Sat Flow, veh/h	1863	1583	1774	3632	1774	1583
Grp Volume(v), veh/h	321	290	20	321	183	20
Grp Sat Flow(s),veh/h/ln	1863	1583	1774	1770	1774	1583
Q Serve(g_s), s	5.3	5.8	0.9	1.9	8.0	0.9
Cycle Q Clear(g_c), s	5.3	5.8	0.9	1.9	8.0	0.9
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1265	1075	40	2682	230	205
V/C Ratio(X)	0.25	0.27	0.50	0.12	0.80	0.10
Avail Cap(c_a), veh/h	1265	1075	166	2682	543	485
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.86	0.86	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	5.0	5.0	38.7	2.6	33.8	30.7
Incr Delay (d2), s/veh	0.4	0.5	9.5	0.1	6.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	2.7	0.5	1.0	4.3	0.4
LnGrp Delay(d),s/veh	5.4	5.6	48.1	2.7	40.0	30.9
LnGrp LOS	A	A	D	A	D	C
Approach Vol, veh/h	611			341	203	
Approach Delay, s/veh	5.5			5.3	39.1	
Approach LOS	A			A	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	6.3	58.8				65.1		14.9
Change Period (Y+Rc), s	4.5	4.5				4.5		4.5
Max Green Setting (Gmax), s	7.5	34.5				46.5		24.5
Max Q Clear Time (g_c+I1), s	2.9	7.8				3.9		10.0
Green Ext Time (p_c), s	0.0	5.1				5.4		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	11.3
HCM 2010 LOS	B

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	50	6	8	162	239	70
Future Volume (vph)	50	6	8	162	239	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150	150	60			150
Storage Lanes	0	0	1			0
Taper Length (ft)	90		90			
Link Speed (mph)	30			30	30	
Link Distance (ft)	181			242	212	
Travel Time (s)	4.1			5.5	4.8	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Shared Lane Traffic (%)						
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	50	6	8	162	239	70
Future Vol, veh/h	50	6	8	162	239	70
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	60	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	57	7	9	184	272	80

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	513	311	351	0	-	0
Stage 1	311	-	-	-	-	-
Stage 2	202	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	521	729	1208	-	-	-
Stage 1	743	-	-	-	-	-
Stage 2	832	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	517	729	1208	-	-	-
Mov Cap-2 Maneuver	517	-	-	-	-	-
Stage 1	743	-	-	-	-	-
Stage 2	826	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.7	0.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1208	-	534	-	-
HCM Lane V/C Ratio	0.008	-	0.119	-	-
HCM Control Delay (s)	8	-	12.7	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.4	-	-

APPENDIX 4.2:

OPENING YEAR (2018) WITHOUT PROJECT CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

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--------------------------------------------------------------------------------
               Avenida Vista Montana Fitness Facility (JN:10953)
                         2018 With Project Conditions
                                 AM Peak Hour
--------------------------------------------------------------------------------

                      Level Of Service Computation Report
       ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)
********************************************************************************
Intersection #1 Avenida Pico/Calle Del Cerro
********************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):        0.688
Loss Time (sec):       0               Average Delay (sec/veh):     xxxxxx
Optimal Cycle:        60               Level Of Service:                 B
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Protected         Permitted        Protected
Rights:          Include          Include           Include          Include
Min. Green:    0    0     0    0    0     0    0    0     0    0    0     0
Y+R:          4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0
Lanes:        0  0  2  1  0   1  0  3  0  0   0  0  0  0  0   2  0  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0 1530   489   46 1266     0    0    0     0  722    0    92
Growth Adj:  1.02 1.02  1.02 1.02 1.02  1.02 1.02 1.02  1.02 1.02 1.02  1.02
Initial Bse:    0 1561   499   47 1291     0    0    0     0  736    0    94
Added Vol:      0    0     0    0    0     0    0    0     0    0    0     0
PasserByVol:    0    0     0    0    0     0    0    0     0    0    0     0
Initial Fut:    0 1561   499   47 1291     0    0    0     0  736    0    94
User 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
PHF 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
PHF Volume:     0 1561   499   47 1291     0    0    0     0  736    0    94
Reduct Vol:     0    0     0    0    0     0    0    0     0    0    0     0
Reduced Vol:    0 1561   499   47 1291     0    0    0     0  736    0    94
PCE 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
MLF 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
FinalVolume:    0 1561   499   47 1291     0    0    0     0  736    0    94
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600 1600 1600  1600 1600 1600  1600 1600 1600  1600
Adjustment:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Lanes:       0.00 2.27  0.73 1.00 3.00  0.00 0.00 0.00  0.00 2.00 0.00  1.00
Final Sat.:     0 3637  1163 1600 4800     0    0    0     0 3200    0  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.43  0.43 0.03 0.27  0.00 0.00 0.00  0.00 0.23 0.00  0.06
Crit Moves:       ****       ****                                ****
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--------------------------------------------------------------------------------
               Avenida Vista Montana Fitness Facility (JN:10953)
                         2018 With Project Conditions
                                 AM Peak Hour
--------------------------------------------------------------------------------
                      Level Of Service Computation Report
       ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)
********************************************************************************
Intersection #2 Avenida Vista Montana/Calle Del Cerro
********************************************************************************
Cycle (sec):         100              Critical Vol./Cap.(X):        0.449
Loss Time (sec):       0              Average Delay (sec/veh):     xxxxxx
Optimal Cycle:        34              Level Of Service:                 A
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected         Permitted         Permitted        Protected
Rights:           Include           Include           Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  0  0  1    0  0  0  0  0    0  0  1  0  1    1  0  2  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     362    0    39     0    0     0     0  314   248    29  415     0
Growth Adj:  1.02 1.02  1.02  1.02 1.02  1.02  1.02 1.02  1.02  1.02 1.02  1.02
Initial Bse:  369    0    40     0    0     0     0  320   253    30  423     0
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  369    0    40     0    0     0     0  320   253    30  423     0
User 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
PHF 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
PHF Volume:   369    0    40     0    0     0     0  320   253    30  423     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  369    0    40     0    0     0     0  320   253    30  423     0
PCE 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
MLF 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
FinalVolume:  369    0    40     0    0     0     0  320   253    30  423     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 0.00  1.00  0.00 0.00  0.00  0.00 1.00  1.00  1.00 2.00  0.00
Final Sat.:  1600    0  1600     0    0     0     0 1600  1600  1600 3200     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.23 0.00  0.02  0.00 0.00  0.00  0.00 0.20  0.16  0.02 0.13  0.00
Crit Moves:  ****                                   ****        ****
********************************************************************************
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Avenida Vista Montana Fitness Facility (JN:10953)
2018 With Project Conditions
PM Peak Hour

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #1 Avenida Pico/Calle Del Cerro

Cycle (sec):	100	Critical Vol./Cap.(X):	0.630
Loss Time (sec):	0	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	50	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Protected			Permitted			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0 2 1 0			1 0 3 0 0			0 0 0 0 0			2 0 0 0 1		
Volume Module:												
Base Vol:	0	1657	513	55	2192	0	0	0	0	419	0	34
Growth Adj:	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
Initial Bse:	0	1690	523	56	2236	0	0	0	0	427	0	35
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	1690	523	56	2236	0	0	0	0	427	0	35
User 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
PHF 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
PHF Volume:	0	1690	523	56	2236	0	0	0	0	427	0	35
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	1690	523	56	2236	0	0	0	0	427	0	35
PCE 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
MLF 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
FinalVolume:	0	1690	523	56	2236	0	0	0	0	427	0	35
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	2.29	0.71	1.00	3.00	0.00	0.00	0.00	0.00	2.00	0.00	1.00
Final Sat.:	0	3665	1135	1600	4800	0	0	0	0	3200	0	1600
Capacity Analysis Module:												
Vol/Sat:	0.00	0.46	0.46	0.04	0.47	0.00	0.00	0.00	0.00	0.13	0.00	0.02
Crit Moves:		****		****						****		

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--------------------------------------------------------------------------------
              Avenida Vista Montana Fitness Facility (JN:10953)
                        2018 With Project Conditions
                                PM Peak Hour
--------------------------------------------------------------------------------
                     Level Of Service Computation Report
       ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)
********************************************************************************
Intersection #2 Avenida Vista Montana/Calle Del Cerro
********************************************************************************
Cycle (sec):         100              Critical Vol./Cap.(X):        0.296
Loss Time (sec):       0              Average Delay (sec/veh):     xxxxxx
Optimal Cycle:        26              Level Of Service:                 A
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Permitted        Permitted        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0    0    0     0    0    0     0    0    0     0
Y+R:          4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0
Lanes:        1  0  0  0  1   0  0  0  0  0   0  0  1  0  1   1  0  2  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     143    0    10    0    0     0    0  315   236    6  315     0
Growth Adj:  1.02 1.02  1.02 1.02 1.02  1.02 1.02 1.02  1.02 1.02 1.02  1.02
Initial Bse:  146    0    10    0    0     0    0  321   241    6  321     0
Added Vol:      0    0     0    0    0     0    0    0     0    0    0     0
PasserByVol:    0    0     0    0    0     0    0    0     0    0    0     0
Initial Fut:  146    0    10    0    0     0    0  321   241    6  321     0
User 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
PHF 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
PHF Volume:   146    0    10    0    0     0    0  321   241    6  321     0
Reduct Vol:     0    0     0    0    0     0    0    0     0    0    0     0
Reduced Vol:  146    0    10    0    0     0    0  321   241    6  321     0
PCE 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
MLF 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
FinalVolume:  146    0    10    0    0     0    0  321   241    6  321     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600 1600 1600  1600 1600 1600  1600 1600 1600  1600
Adjustment:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Lanes:       1.00 0.00  1.00 0.00 0.00  0.00 0.00 1.00  1.00 1.00 2.00  0.00
Final Sat.:  1600    0  1600    0    0     0    0 1600  1600 1600 3200     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.09 0.00  0.01 0.00 0.00  0.00 0.00 0.20  0.15 0.00 0.10  0.00
Crit Moves:  ****                                 ****       ****
********************************************************************************
```

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	736	94	1561	499	47	1291
Future Volume (vph)	736	94	1561	499	47	1291
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	260	150		150	205	
Storage Lanes	1	0		0	1	
Taper Length (ft)	90				90	
Right Turn on Red		Yes		Yes		
Link Speed (mph)	40		45			45
Link Distance (ft)	2337		815			619
Travel Time (s)	39.8		12.3			9.4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Shared Lane Traffic (%)						
Turn Type	Prot	Perm	NA		Prot	NA
Protected Phases	8		2		1	6
Permitted Phases		8				
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	22.5	22.5	22.5		10.0	10.0
Total Split (s)	26.0	26.0	44.0		10.0	54.0
Total Split (%)	32.5%	32.5%	55.0%		12.5%	67.5%
Yellow Time (s)	3.5	3.5	3.5		3.5	3.5
All-Red Time (s)	1.0	1.0	1.0		1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5		4.5	4.5
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	C-Max		None	C-Max

Intersection Summary	
Area Type:	Other
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	

Splits and Phases: 1: Avenida Pico & Calle Del Cerro

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	736	94	1561	499	47	1291
Future Volume (veh/h)	736	94	1561	499	47	1291
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	818	104	1734	554	52	1434
Adj No. of Lanes	2	1	3	0	1	3
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	899	414	2031	628	76	3185
Arrive On Green	0.26	0.26	0.53	0.53	0.04	0.63
Sat Flow, veh/h	3442	1583	4019	1191	1774	5253
Grp Volume(v), veh/h	818	104	1519	769	52	1434
Grp Sat Flow(s),veh/h/ln	1721	1583	1695	1653	1774	1695
Q Serve(g_s), s	18.4	4.2	30.7	32.9	2.3	11.7
Cycle Q Clear(g_c), s	18.4	4.2	30.7	32.9	2.3	11.7
Prop In Lane	1.00	1.00		0.72	1.00	
Lane Grp Cap(c), veh/h	899	414	1787	871	76	3185
V/C Ratio(X)	0.91	0.25	0.85	0.88	0.68	0.45
Avail Cap(c_a), veh/h	925	426	1787	871	122	3185
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.84	0.84	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.6	23.4	16.2	16.7	37.8	7.8
Incr Delay (d2), s/veh	11.0	0.3	5.3	12.5	10.4	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.1	1.9	15.5	17.8	1.3	5.6
LnGrp Delay(d),s/veh	39.6	23.6	21.5	29.2	48.1	8.2
LnGrp LOS	D	C	C	C	D	A
Approach Vol, veh/h	922		2288			1486
Approach Delay, s/veh	37.8		24.1			9.6
Approach LOS	D		C			A

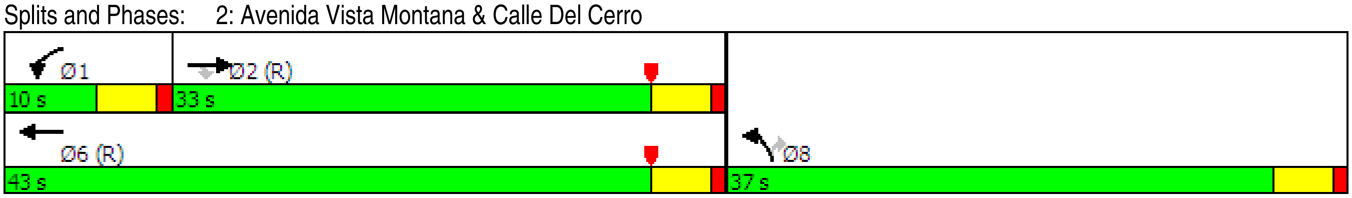
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	7.9	46.7				54.6		25.4
Change Period (Y+Rc), s	4.5	4.5				4.5		4.5
Max Green Setting (Gmax), s	5.5	39.5				49.5		21.5
Max Q Clear Time (g_c+I1), s	4.3	34.9				13.7		20.4
Green Ext Time (p_c), s	0.0	4.5				32.7		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	22.2
HCM 2010 LOS	C

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	320	253	30	423	369	40
Future Volume (vph)	320	253	30	423	369	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		150	160		90	150
Storage Lanes		0	1		1	0
Taper Length (ft)			90		60	
Right Turn on Red		Yes				Yes
Link Speed (mph)	40			40	30	
Link Distance (ft)	2337			624	212	
Travel Time (s)	39.8			10.6	4.8	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Shared Lane Traffic (%)						
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases		2				8
Detector Phase	2	2	1	6	8	8
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	10.0	10.0	22.5	22.5
Total Split (s)	33.0	33.0	10.0	43.0	37.0	37.0
Total Split (%)	41.3%	41.3%	12.5%	53.8%	46.3%	46.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Max	C-Max	None	C-Max	None	None

Intersection Summary	
Area Type:	Other
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	

Splits and Phases: 2: Avenida Vista Montana & Calle Del Cerro



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	320	253	30	423	369	40
Future Volume (veh/h)	320	253	30	423	369	40
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	400	316	38	529	461	50
Adj No. of Lanes	1	1	1	2	1	1
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	941	800	63	2113	515	460
Arrive On Green	0.51	0.51	0.04	0.60	0.29	0.29
Sat Flow, veh/h	1863	1583	1774	3632	1774	1583
Grp Volume(v), veh/h	400	316	38	529	461	50
Grp Sat Flow(s),veh/h/ln	1863	1583	1774	1770	1774	1583
Q Serve(g_s), s	10.8	9.9	1.7	5.7	19.9	1.9
Cycle Q Clear(g_c), s	10.8	9.9	1.7	5.7	19.9	1.9
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	941	800	63	2113	515	460
V/C Ratio(X)	0.43	0.40	0.60	0.25	0.89	0.11
Avail Cap(c_a), veh/h	941	800	122	2113	721	643
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.91	0.91	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.5	12.2	38.0	7.6	27.2	20.8
Incr Delay (d2), s/veh	1.3	1.3	8.8	0.3	10.6	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.9	4.6	1.0	2.8	11.2	0.8
LnGrp Delay(d),s/veh	13.7	13.6	46.8	7.9	37.8	20.9
LnGrp LOS	B	B	D	A	D	C
Approach Vol, veh/h	716			567	511	
Approach Delay, s/veh	13.7			10.5	36.1	
Approach LOS	B			B	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	7.4	44.9				52.3		27.7
Change Period (Y+Rc), s	4.5	4.5				4.5		4.5
Max Green Setting (Gmax), s	5.5	28.5				38.5		32.5
Max Q Clear Time (g_c+I1), s	3.7	12.8				7.7		21.9
Green Ext Time (p_c), s	0.0	6.2				7.9		1.3

Intersection Summary		
HCM 2010 Ctrl Delay		19.1
HCM 2010 LOS		B

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	1	0	2	435	268	11
Future Volume (vph)	1	0	2	435	268	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150	150	60			150
Storage Lanes	0	0	1			0
Taper Length (ft)	90		90			
Link Speed (mph)	30			30	30	
Link Distance (ft)	181			242	212	
Travel Time (s)	4.1			5.5	4.8	
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73
Shared Lane Traffic (%)						
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	0	2	435	268	11
Future Vol, veh/h	1	0	2	435	268	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	60	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	73	73	73	73	73	73
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	0	3	596	367	15

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	976	375	382	0	-	0
Stage 1	375	-	-	-	-	-
Stage 2	601	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	279	671	1176	-	-	-
Stage 1	695	-	-	-	-	-
Stage 2	547	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	278	671	1176	-	-	-
Mov Cap-2 Maneuver	278	-	-	-	-	-
Stage 1	695	-	-	-	-	-
Stage 2	546	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1176	-	278	-	-
HCM Lane V/C Ratio	0.002	-	0.005	-	-
HCM Control Delay (s)	8.1	-	18	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	427	35	1690	523	56	2236
Future Volume (vph)	427	35	1690	523	56	2236
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	260	150		150	205	
Storage Lanes	1	0		0	1	
Taper Length (ft)	90				90	
Right Turn on Red		Yes		Yes		
Link Speed (mph)	40		45			45
Link Distance (ft)	2337		815			619
Travel Time (s)	39.8		12.3			9.4
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Shared Lane Traffic (%)						
Turn Type	Prot	Perm	NA		Prot	NA
Protected Phases	8		2		1	6
Permitted Phases		8				
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	22.5	22.5	22.5		10.0	10.0
Total Split (s)	22.6	22.6	47.4		10.0	57.4
Total Split (%)	28.3%	28.3%	59.3%		12.5%	71.8%
Yellow Time (s)	3.5	3.5	3.5		3.5	3.5
All-Red Time (s)	1.0	1.0	1.0		1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5		4.5	4.5
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	C-Max		None	C-Max

Intersection Summary	
Area Type:	Other
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow	
Natural Cycle: 75	
Control Type: Actuated-Coordinated	

Splits and Phases: 1: Avenida Pico & Calle Del Cerro

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	427	35	1690	523	56	2236
Future Volume (veh/h)	427	35	1690	523	56	2236
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	445	36	1760	545	58	2329
Adj No. of Lanes	2	1	3	0	1	3
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	556	256	2426	727	80	3692
Arrive On Green	0.16	0.16	0.62	0.62	0.05	0.73
Sat Flow, veh/h	3442	1583	4051	1164	1774	5253
Grp Volume(v), veh/h	445	36	1529	776	58	2329
Grp Sat Flow(s),veh/h/ln	1721	1583	1695	1657	1774	1695
Q Serve(g_s), s	10.0	1.6	24.7	26.5	2.6	18.5
Cycle Q Clear(g_c), s	10.0	1.6	24.7	26.5	2.6	18.5
Prop In Lane	1.00	1.00		0.70	1.00	
Lane Grp Cap(c), veh/h	556	256	2117	1035	80	3692
V/C Ratio(X)	0.80	0.14	0.72	0.75	0.72	0.63
Avail Cap(c_a), veh/h	779	358	2117	1035	122	3692
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.98	0.98	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.3	28.8	10.3	10.6	37.7	5.5
Incr Delay (d2), s/veh	4.0	0.2	2.2	5.0	11.5	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.0	0.7	12.1	13.3	1.5	8.7
LnGrp Delay(d),s/veh	36.3	29.0	12.4	15.6	49.2	6.4
LnGrp LOS	D	C	B	B	D	A
Approach Vol, veh/h	481		2305			2387
Approach Delay, s/veh	35.8		13.5			7.4
Approach LOS	D		B			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	8.1	54.5				62.6		17.4
Change Period (Y+Rc), s	4.5	4.5				4.5		4.5
Max Green Setting (Gmax), s	5.5	42.9				52.9		18.1
Max Q Clear Time (g_c+I1), s	4.6	28.5				20.5		12.0
Green Ext Time (p_c), s	0.0	14.3				31.7		1.0

Intersection Summary		
HCM 2010 Ctrl Delay		12.8
HCM 2010 LOS		B

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	321	241	6	321	146	10
Future Volume (vph)	321	241	6	321	146	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		150	160		90	150
Storage Lanes		0	1		1	0
Taper Length (ft)			90		60	
Right Turn on Red		Yes				Yes
Link Speed (mph)	40			40	30	
Link Distance (ft)	2337			624	212	
Travel Time (s)	39.8			10.6	4.8	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Shared Lane Traffic (%)						
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases		2				8
Detector Phase	2	2	1	6	8	8
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	10.0	10.0	22.5	22.5
Total Split (s)	40.0	40.0	12.0	52.0	28.0	28.0
Total Split (%)	50.0%	50.0%	15.0%	65.0%	35.0%	35.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Max	C-Max	None	C-Max	None	None

Intersection Summary	
Area Type:	Other
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow	
Natural Cycle: 55	
Control Type: Actuated-Coordinated	

Splits and Phases: 2: Avenida Vista Montana & Calle Del Cerro

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↱	↰	↑↑	↰	↱
Traffic Volume (veh/h)	321	241	6	321	146	10
Future Volume (veh/h)	321	241	6	321	146	10
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	328	246	6	328	149	10
Adj No. of Lanes	1	1	1	2	1	1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1333	1133	14	2759	191	171
Arrive On Green	0.72	0.72	0.01	0.78	0.11	0.11
Sat Flow, veh/h	1863	1583	1774	3632	1774	1583
Grp Volume(v), veh/h	328	246	6	328	149	10
Grp Sat Flow(s),veh/h/ln	1863	1583	1774	1770	1774	1583
Q Serve(g_s), s	4.9	4.2	0.3	1.8	6.5	0.5
Cycle Q Clear(g_c), s	4.9	4.2	0.3	1.8	6.5	0.5
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1333	1133	14	2759	191	171
V/C Ratio(X)	0.25	0.22	0.43	0.12	0.78	0.06
Avail Cap(c_a), veh/h	1333	1133	166	2759	521	465
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.92	0.92	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	3.9	3.8	39.5	2.1	34.8	32.0
Incr Delay (d2), s/veh	0.4	0.4	19.9	0.1	6.7	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	1.9	0.2	0.9	3.5	0.2
LnGrp Delay(d),s/veh	4.3	4.2	59.5	2.2	41.4	32.2
LnGrp LOS	A	A	E	A	D	C
Approach Vol, veh/h	574			334	159	
Approach Delay, s/veh	4.3			3.3	40.9	
Approach LOS	A			A	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	5.1	61.7				66.9		13.1
Change Period (Y+Rc), s	4.5	4.5				4.5		4.5
Max Green Setting (Gmax), s	7.5	35.5				47.5		23.5
Max Q Clear Time (g_c+I1), s	2.3	6.9				3.8		8.5
Green Ext Time (p_c), s	0.0	5.1				5.3		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	9.4
HCM 2010 LOS	A

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	4	1	1	165	244	9
Future Volume (vph)	4	1	1	165	244	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150	150	60			150
Storage Lanes	0	0	1			0
Taper Length (ft)	90		90			
Link Speed (mph)	30			30	30	
Link Distance (ft)	181			242	212	
Travel Time (s)	4.1			5.5	4.8	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Shared Lane Traffic (%)						
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	1	1	165	244	9
Future Vol, veh/h	4	1	1	165	244	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	60	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	1	1	188	277	10

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	472	282	288	0	-	0
Stage 1	282	-	-	-	-	-
Stage 2	190	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	551	757	1274	-	-	-
Stage 1	766	-	-	-	-	-
Stage 2	842	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	551	757	1274	-	-	-
Mov Cap-2 Maneuver	551	-	-	-	-	-
Stage 1	766	-	-	-	-	-
Stage 2	841	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.2	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1274	-	583	-	-
HCM Lane V/C Ratio	0.001	-	0.01	-	-
HCM Control Delay (s)	7.8	-	11.2	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

APPENDIX 4.3:

OPENING YEAR (2018) WITH PROJECT CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

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Avenida Vista Montana Fitness Facility (JN:10953)
2018 With Project Conditions
AM Peak Hour

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #1 Avenida Pico/Calle Del Cerro

Cycle (sec):	100	Critical Vol./Cap.(X):	0.698
Loss Time (sec):	0	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	62	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Protected			Permitted			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	2	1 0	1 0	3	0 0	0 0	0	0 0	2 0	0	0 1
Volume Module:												
Base Vol:	0	1530	489	46	1266	0	0	0	0	722	0	92
Growth Adj:	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
Initial Bse:	0	1561	499	47	1291	0	0	0	0	736	0	94
Added Vol:	0	0	12	5	0	0	0	0	0	12	0	5
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	1561	511	52	1291	0	0	0	0	748	0	99
User 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
PHF 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
PHF Volume:	0	1561	511	52	1291	0	0	0	0	748	0	99
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	1561	511	52	1291	0	0	0	0	748	0	99
PCE 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
MLF 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
FinalVolume:	0	1561	511	52	1291	0	0	0	0	748	0	99
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	2.26	0.74	1.00	3.00	0.00	0.00	0.00	0.00	2.00	0.00	1.00
Final Sat.:	0	3616	1184	1600	4800	0	0	0	0	3200	0	1600
Capacity Analysis Module:												
Vol/Sat:	0.00	0.43	0.43	0.03	0.27	0.00	0.00	0.00	0.00	0.23	0.00	0.06
Crit Moves:		****		****						****		

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-------------------------------------------------------------------------------
              Avenida Vista Montana Fitness Facility (JN:10953)
                        2018 With Project Conditions
                                AM Peak Hour
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
       ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)
*******************************************************************************
Intersection #2 Avenida Vista Montana/Calle Del Cerro
*******************************************************************************
Cycle (sec):          100             Critical Vol./Cap.(X):        0.463
Loss Time (sec):        0             Average Delay (sec/veh):     xxxxxx
Optimal Cycle:         35             Level Of Service:                 A
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected         Permitted         Permitted        Protected
Rights:           Include           Include           Include          Include
Min. Green:     0    0     0    0    0     0    0    0     0    0    0     0
Y+R:          4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0
Lanes:        1  0  0  0  1   0  0  0  0  0   0  0  1  0  1   1  0  2  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     362    0    39    0    0     0    0  314   248   29  415     0
Growth Adj:  1.02 1.02  1.02 1.02 1.02  1.02 1.02 1.02  1.02 1.02 1.02  1.02
Initial Bse:  369    0    40    0    0     0    0  320   253   30  423     0
Added Vol:     17    0     5    0    0     0    0    0    17    5    0     0
PasserByVol:    0    0     0    0    0     0    0    0     0    0    0     0
Initial Fut:  386    0    45    0    0     0    0  320   270   35  423     0
User 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
PHF 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
PHF Volume:   386    0    45    0    0     0    0  320   270   35  423     0
Reduct Vol:     0    0     0    0    0     0    0    0     0    0    0     0
Reduced Vol:  386    0    45    0    0     0    0  320   270   35  423     0
PCE 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
MLF 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
FinalVolume:  386    0    45    0    0     0    0  320   270   35  423     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600 1600 1600  1600 1600 1600  1600 1600 1600  1600
Adjustment:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Lanes:       1.00 0.00  1.00 0.00 0.00  0.00 0.00 1.00  1.00 1.00 2.00  0.00
Final Sat.:  1600    0  1600    0    0     0    0 1600  1600 1600 3200     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.24 0.00  0.03 0.00 0.00  0.00 0.00 0.20  0.17 0.02 0.13  0.00
Crit Moves:  ****                                 ****        ****
*******************************************************************************
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------------------------------------------------------------------------------
               Avenida Vista Montana Fitness Facility (JN:10953)
                         2018 With Project Conditions
                                 PM Peak Hour
------------------------------------------------------------------------------
                      Level Of Service Computation Report
       ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)
******************************************************************************
Intersection #1 Avenida Pico/Calle Del Cerro
******************************************************************************
Cycle (sec):          100               Critical Vol./Cap.(X):         0.654
Loss Time (sec):        0               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:         54               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Protected         Permitted        Protected
Rights:          Include          Include           Include          Include
Min. Green:    0    0     0    0    0     0    0    0     0    0    0     0
Y+R:         4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0
Lanes:       0  0  2  1  0    1  0  3  0  0    0  0  0  0  0    2  0  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      0 1657   513   55 2192     0    0    0     0  419    0    34
Growth Adj: 1.02 1.02  1.02 1.02 1.02  1.02 1.02 1.02  1.02 1.02 1.02  1.02
Initial Bse:   0 1690   523   56 2236     0    0    0     0  427    0    35
Added Vol:     0    0    34   14    0     0    0    0     0   26    0    10
PasserByVol:   0    0     0    0    0     0    0    0     0    0    0     0
Initial Fut:   0 1690   557   70 2236     0    0    0     0  453    0    45
User 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
PHF 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
PHF Volume:    0 1690   557   70 2236     0    0    0     0  453    0    45
Reduct Vol:    0    0     0    0    0     0    0    0     0    0    0     0
Reduced Vol:   0 1690   557   70 2236     0    0    0     0  453    0    45
PCE 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
MLF 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
FinalVolume:   0 1690   557   70 2236     0    0    0     0  453    0    45
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:   1600 1600  1600 1600 1600  1600 1600 1600  1600 1600 1600  1600
Adjustment: 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Lanes:      0.00 2.26  0.74 1.00 3.00  0.00 0.00 0.00  0.00 2.00 0.00  1.00
Final Sat.:    0 3610  1190 1600 4800     0    0    0     0 3200    0  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:    0.00 0.47  0.47 0.04 0.47  0.00 0.00 0.00  0.00 0.14 0.00  0.03
Crit Moves:      ****       ****                                ****
******************************************************************************
```

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--------------------------------------------------------------------------------
               Avenida Vista Montana Fitness Facility (JN:10953)
                         2018 With Project Conditions
                                 PM Peak Hour
--------------------------------------------------------------------------------
                      Level Of Service Computation Report
       ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)
********************************************************************************
Intersection #2 Avenida Vista Montana/Calle Del Cerro
********************************************************************************
Cycle (sec):          100                Critical Vol./Cap.(X):        0.327
Loss Time (sec):        0                Average Delay (sec/veh):     xxxxxx
Optimal Cycle:         28                Level Of Service:                 A
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected         Permitted         Permitted        Protected
Rights:           Include           Include           Include          Include
Min. Green:    0    0     0    0    0     0    0    0     0    0    0     0
Y+R:          4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0
Lanes:        1  0  0  0  1   0  0  0  0  0   0  0  1  0  1   1  0  2  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     143    0    10    0    0     0    0  315   236    6  315     0
Growth Adj:  1.02 1.02  1.02 1.02 1.02  1.02 1.02 1.02  1.02 1.02 1.02  1.02
Initial Bse: 146    0    10    0    0     0    0  321   241    6  321     0
Added Vol:    36    0    10    0    0     0    0    0    48   14    0     0
PasserByVol:   0    0     0    0    0     0    0    0     0    0    0     0
Initial Fut: 182    0    20    0    0     0    0  321   289   20  321     0
User 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
PHF 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
PHF Volume:  182    0    20    0    0     0    0  321   289   20  321     0
Reduct Vol:    0    0     0    0    0     0    0    0     0    0    0     0
Reduced Vol: 182    0    20    0    0     0    0  321   289   20  321     0
PCE 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
MLF 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
FinalVolume: 182    0    20    0    0     0    0  321   289   20  321     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600 1600 1600  1600 1600 1600  1600 1600 1600  1600
Adjustment:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Lanes:       1.00 0.00  1.00 0.00 0.00  0.00 0.00 1.00  1.00 1.00 2.00  0.00
Final Sat.:  1600    0  1600    0    0     0    0 1600  1600 1600 3200     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.11 0.00  0.01 0.00 0.00  0.00 0.00 0.20  0.18 0.01 0.10  0.00
Crit Moves:  ****                                 ****       ****
********************************************************************************
```

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	748	99	1561	511	52	1291
Future Volume (vph)	748	99	1561	511	52	1291
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	260	150		150	205	
Storage Lanes	1	0		0	1	
Taper Length (ft)	90				90	
Right Turn on Red		Yes		Yes		
Link Speed (mph)	40		45			45
Link Distance (ft)	2337		815			619
Travel Time (s)	39.8		12.3			9.4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Shared Lane Traffic (%)						
Turn Type	Prot	Perm	NA		Prot	NA
Protected Phases	8		2		1	6
Permitted Phases		8				
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	22.5	22.5	22.5		10.0	10.0
Total Split (s)	26.0	26.0	44.0		10.0	54.0
Total Split (%)	32.5%	32.5%	55.0%		12.5%	67.5%
Yellow Time (s)	3.5	3.5	3.5		3.5	3.5
All-Red Time (s)	1.0	1.0	1.0		1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5		4.5	4.5
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	C-Max		None	C-Max

Intersection Summary	
Area Type:	Other
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	

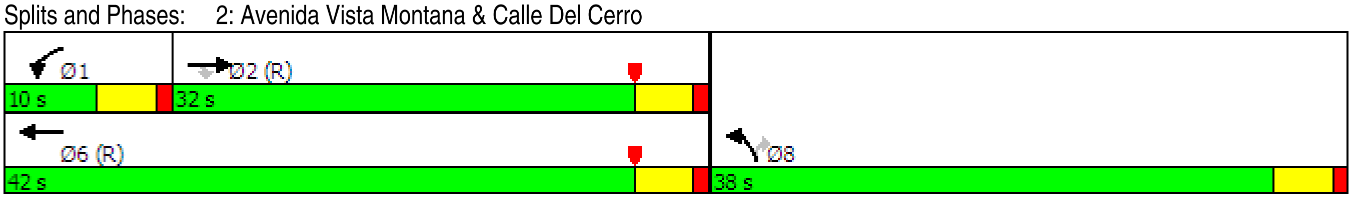
Splits and Phases: 1: Avenida Pico & Calle Del Cerro

Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations								
Traffic Volume (veh/h)	748	99	1561	511	52	1291		
Future Volume (veh/h)	748	99	1561	511	52	1291		
Number	3	18	2	12	1	6		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863		
Adj Flow Rate, veh/h	831	110	1734	568	58	1434		
Adj No. of Lanes	2	1	3	0	1	3		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	907	417	1999	633	80	3172		
Arrive On Green	0.26	0.26	0.52	0.52	0.05	0.62		
Sat Flow, veh/h	3442	1583	3995	1211	1774	5253		
Grp Volume(v), veh/h	831	110	1529	773	58	1434		
Grp Sat Flow(s),veh/h/ln	1721	1583	1695	1649	1774	1695		
Q Serve(g_s), s	18.8	4.4	31.4	33.7	2.6	11.8		
Cycle Q Clear(g_c), s	18.8	4.4	31.4	33.7	2.6	11.8		
Prop In Lane	1.00	1.00		0.73	1.00			
Lane Grp Cap(c), veh/h	907	417	1771	861	80	3172		
V/C Ratio(X)	0.92	0.26	0.86	0.90	0.72	0.45		
Avail Cap(c_a), veh/h	925	426	1771	861	122	3172		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	0.83	0.83	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	28.6	23.3	16.6	17.2	37.7	7.9		
Incr Delay (d2), s/veh	11.6	0.3	5.9	14.1	11.5	0.5		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	10.3	2.0	15.9	18.6	1.5	5.6		
LnGrp Delay(d),s/veh	40.2	23.6	22.5	31.2	49.2	8.4		
LnGrp LOS	D	C	C	C	D	A		
Approach Vol, veh/h	941		2302			1492		
Approach Delay, s/veh	38.2		25.4			9.9		
Approach LOS	D		C			A		
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	8.1	46.3				54.4		25.6
Change Period (Y+Rc), s	4.5	4.5				4.5		4.5
Max Green Setting (Gmax), s	5.5	39.5				49.5		21.5
Max Q Clear Time (g_c+I1), s	4.6	35.7				13.8		20.8
Green Ext Time (p_c), s	0.0	3.7				32.7		0.3
Intersection Summary								
HCM 2010 Ctrl Delay			23.1					
HCM 2010 LOS			C					

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	320	270	35	423	386	45
Future Volume (vph)	320	270	35	423	386	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		150	160		90	150
Storage Lanes		0	1		1	0
Taper Length (ft)			90		60	
Right Turn on Red		Yes				Yes
Link Speed (mph)	40			40	30	
Link Distance (ft)	2337			624	212	
Travel Time (s)	39.8			10.6	4.8	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Shared Lane Traffic (%)						
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases		2				8
Detector Phase	2	2	1	6	8	8
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	10.0	10.0	22.5	22.5
Total Split (s)	32.0	32.0	10.0	42.0	38.0	38.0
Total Split (%)	40.0%	40.0%	12.5%	52.5%	47.5%	47.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Max	C-Max	None	C-Max	None	None

Intersection Summary	
Area Type:	Other
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	

Splits and Phases: 2: Avenida Vista Montana & Calle Del Cerro



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	320	270	35	423	386	45
Future Volume (veh/h)	320	270	35	423	386	45
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	400	338	44	529	482	56
Adj No. of Lanes	1	1	1	2	1	1
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	912	775	69	2070	537	479
Arrive On Green	0.49	0.49	0.04	0.58	0.30	0.30
Sat Flow, veh/h	1863	1583	1774	3632	1774	1583
Grp Volume(v), veh/h	400	338	44	529	482	56
Grp Sat Flow(s),veh/h/ln	1863	1583	1774	1770	1774	1583
Q Serve(g_s), s	11.2	11.1	2.0	5.8	20.8	2.0
Cycle Q Clear(g_c), s	11.2	11.1	2.0	5.8	20.8	2.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	912	775	69	2070	537	479
V/C Ratio(X)	0.44	0.44	0.64	0.26	0.90	0.12
Avail Cap(c_a), veh/h	912	775	122	2070	743	663
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.87	0.87	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.3	13.2	37.9	8.1	26.7	20.2
Incr Delay (d2), s/veh	1.3	1.6	9.3	0.3	10.7	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.0	5.1	1.1	2.9	11.8	0.9
LnGrp Delay(d),s/veh	14.6	14.8	47.2	8.4	37.4	20.3
LnGrp LOS	B	B	D	A	D	C
Approach Vol, veh/h	738			573	538	
Approach Delay, s/veh	14.7			11.4	35.6	
Approach LOS	B			B	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	7.6	43.7				51.3		28.7
Change Period (Y+Rc), s	4.5	4.5				4.5		4.5
Max Green Setting (Gmax), s	5.5	27.5				37.5		33.5
Max Q Clear Time (g_c+I1), s	4.0	13.2				7.8		22.8
Green Ext Time (p_c), s	0.0	6.0				7.9		1.4

Intersection Summary			
HCM 2010 Ctrl Delay			19.8
HCM 2010 LOS			B

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	23	2	4	435	268	33
Future Volume (vph)	23	2	4	435	268	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150	150	60			150
Storage Lanes	0	0	1			0
Taper Length (ft)	90		90			
Link Speed (mph)	30			30	30	
Link Distance (ft)	181			242	212	
Travel Time (s)	4.1			5.5	4.8	
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73
Shared Lane Traffic (%)						
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	23	2	4	435	268	33
Future Vol, veh/h	23	2	4	435	268	33
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	60	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	73	73	73	73	73	73
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	32	3	5	596	367	45

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	997	390	412	0	-	0
Stage 1	390	-	-	-	-	-
Stage 2	607	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	271	658	1147	-	-	-
Stage 1	684	-	-	-	-	-
Stage 2	544	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	270	658	1147	-	-	-
Mov Cap-2 Maneuver	270	-	-	-	-	-
Stage 1	684	-	-	-	-	-
Stage 2	542	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	19.5	0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1147	-	283	-	-
HCM Lane V/C Ratio	0.005	-	0.121	-	-
HCM Control Delay (s)	8.2	-	19.5	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.4	-	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	453	45	1690	557	70	2236
Future Volume (vph)	453	45	1690	557	70	2236
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	260	150		150	205	
Storage Lanes	1	0		0	1	
Taper Length (ft)	90				90	
Right Turn on Red		Yes		Yes		
Link Speed (mph)	40		45			45
Link Distance (ft)	2337		815			619
Travel Time (s)	39.8		12.3			9.4
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Shared Lane Traffic (%)						
Turn Type	Prot	Perm	NA		Prot	NA
Protected Phases	8		2		1	6
Permitted Phases		8				
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	22.5	22.5	22.5		10.0	10.0
Total Split (s)	22.6	22.6	47.4		10.0	57.4
Total Split (%)	28.3%	28.3%	59.3%		12.5%	71.8%
Yellow Time (s)	3.5	3.5	3.5		3.5	3.5
All-Red Time (s)	1.0	1.0	1.0		1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5		4.5	4.5
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	C-Max		None	C-Max

Intersection Summary	
Area Type:	Other
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow	
Natural Cycle: 75	
Control Type: Actuated-Coordinated	

Splits and Phases: 1: Avenida Pico & Calle Del Cerro

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	453	45	1690	557	70	2236
Future Volume (veh/h)	453	45	1690	557	70	2236
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	472	47	1760	580	73	2329
Adj No. of Lanes	2	1	3	0	1	3
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	582	268	2331	740	94	3653
Arrive On Green	0.17	0.17	0.61	0.61	0.05	0.72
Sat Flow, veh/h	3442	1583	3993	1214	1774	5253
Grp Volume(v), veh/h	472	47	1552	788	73	2329
Grp Sat Flow(s),veh/h/ln	1721	1583	1695	1649	1774	1695
Q Serve(g_s), s	10.6	2.0	26.4	28.6	3.3	19.0
Cycle Q Clear(g_c), s	10.6	2.0	26.4	28.6	3.3	19.0
Prop In Lane	1.00	1.00		0.74	1.00	
Lane Grp Cap(c), veh/h	582	268	2066	1004	94	3653
V/C Ratio(X)	0.81	0.18	0.75	0.78	0.78	0.64
Avail Cap(c_a), veh/h	779	358	2066	1004	122	3653
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.96	0.96	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.0	28.5	11.3	11.7	37.4	5.9
Incr Delay (d2), s/veh	4.6	0.3	2.6	6.1	20.9	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.4	0.9	12.8	14.6	2.1	8.9
LnGrp Delay(d),s/veh	36.6	28.7	13.8	17.8	58.4	6.7
LnGrp LOS	D	C	B	B	E	A
Approach Vol, veh/h	519		2340			2402
Approach Delay, s/veh	35.9		15.2			8.3
Approach LOS	D		B			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	8.7	53.2				62.0		18.0
Change Period (Y+Rc), s	4.5	4.5				4.5		4.5
Max Green Setting (Gmax), s	5.5	42.9				52.9		18.1
Max Q Clear Time (g_c+I1), s	5.3	30.6				21.0		12.6
Green Ext Time (p_c), s	0.0	12.2				31.2		1.0

Intersection Summary	
HCM 2010 Ctrl Delay	14.1
HCM 2010 LOS	B

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	321	289	20	321	182	20
Future Volume (vph)	321	289	20	321	182	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		150	160		90	150
Storage Lanes		0	1		1	0
Taper Length (ft)			90		60	
Right Turn on Red		Yes				Yes
Link Speed (mph)	40			40	30	
Link Distance (ft)	2337			624	212	
Travel Time (s)	39.8			10.6	4.8	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Shared Lane Traffic (%)						
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases		2				8
Detector Phase	2	2	1	6	8	8
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	10.0	10.0	22.5	22.5
Total Split (s)	39.0	39.0	12.0	51.0	29.0	29.0
Total Split (%)	48.8%	48.8%	15.0%	63.8%	36.3%	36.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Max	C-Max	None	C-Max	None	None

Intersection Summary	
Area Type:	Other
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow	
Natural Cycle: 55	
Control Type: Actuated-Coordinated	

Splits and Phases: 2: Avenida Vista Montana & Calle Del Cerro

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	321	289	20	321	182	20
Future Volume (veh/h)	321	289	20	321	182	20
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	328	295	20	328	186	20
Adj No. of Lanes	1	1	1	2	1	1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1262	1073	40	2676	233	208
Arrive On Green	0.68	0.68	0.02	0.76	0.13	0.13
Sat Flow, veh/h	1863	1583	1774	3632	1774	1583
Grp Volume(v), veh/h	328	295	20	328	186	20
Grp Sat Flow(s),veh/h/ln	1863	1583	1774	1770	1774	1583
Q Serve(g_s), s	5.5	5.9	0.9	2.0	8.1	0.9
Cycle Q Clear(g_c), s	5.5	5.9	0.9	2.0	8.1	0.9
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1262	1073	40	2676	233	208
V/C Ratio(X)	0.26	0.28	0.50	0.12	0.80	0.10
Avail Cap(c_a), veh/h	1262	1073	166	2676	543	485
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.85	0.85	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	5.1	5.1	38.7	2.6	33.7	30.6
Incr Delay (d2), s/veh	0.4	0.5	9.5	0.1	6.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	2.7	0.5	1.0	4.4	0.4
LnGrp Delay(d),s/veh	5.5	5.7	48.1	2.7	39.9	30.8
LnGrp LOS	A	A	D	A	D	C
Approach Vol, veh/h	623			348	206	
Approach Delay, s/veh	5.6			5.3	39.0	
Approach LOS	A			A	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	6.3	58.7				65.0		15.0
Change Period (Y+Rc), s	4.5	4.5				4.5		4.5
Max Green Setting (Gmax), s	7.5	34.5				46.5		24.5
Max Q Clear Time (g_c+I1), s	2.9	7.9				4.0		10.1
Green Ext Time (p_c), s	0.0	5.2				5.5		0.5

Intersection Summary		
HCM 2010 Ctrl Delay		11.3
HCM 2010 LOS		B

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	50	6	8	165	244	70
Future Volume (vph)	50	6	8	165	244	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150	150	60			150
Storage Lanes	0	0	1			0
Taper Length (ft)	90		90			
Link Speed (mph)	30			30	30	
Link Distance (ft)	181			242	212	
Travel Time (s)	4.1			5.5	4.8	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Shared Lane Traffic (%)						
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	50	6	8	165	244	70
Future Vol, veh/h	50	6	8	165	244	70
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	60	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	57	7	9	188	277	80

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	523	317	357	0	-	0
Stage 1	317	-	-	-	-	-
Stage 2	206	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	514	724	1202	-	-	-
Stage 1	738	-	-	-	-	-
Stage 2	829	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	510	724	1202	-	-	-
Mov Cap-2 Maneuver	510	-	-	-	-	-
Stage 1	738	-	-	-	-	-
Stage 2	823	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.8	0.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1202	-	527	-	-
HCM Lane V/C Ratio	0.008	-	0.121	-	-
HCM Control Delay (s)	8	-	12.8	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.4	-	-

APPENDIX 5.1:

LIFE TIME ATHLETIC LAGUNA NIGUEL CA—PARKING DEMAND STUDY

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Stantec Consulting Services Inc.
38 Technology Drive Suite 100, Irvine CA 92618-5312

July 27, 2015
File: 2073009500

Attention: Justin Schmidt, PE
Life Time – The Healthy Way of Life Company
Real Estate & Development
2902 Corporate Place
Chanhassen, MN 55317

Dear Mr. Schmidt,

Reference: Life Time Athletic Laguna Niguel CA—Parking Demand Study

Stantec Consulting Services, Inc. has been asked to review the parking demand of the existing, approximately 128,000 square foot Life Time Fitness (LTF) Facility in Laguna Niguel, California. The LTF property in question is located at 25600 Rancho Niguel Road, east of Greenfield Drive.

Parking for the facility is located primarily in the four story structure on the southern corner of the site (565 stalls) with limited surface parking outside of the structure (13 stalls) and behind the building along the north edge of the site (12 stalls) for a total of 590 stalls. The as-built site plan for the Laguna Niguel facility is shown in Attachment A. The Laguna Niguel facility has a floor area of 128,000 square feet (SF).

In order to determine parking demand, we collected occupied parking stall counts in 30 minute intervals during both weekend and weekday periods. Three separate counts were performed on Saturday July 18, Tuesday July 21, and Wednesday July 22 of this year between 6:30 AM to 7:00 PM. Please find the complete count data in Attachment B.

Despite the ample parking available, our parking counts revealed that no more than 68% of the available stalls (401 stalls) were occupied at any given time. With the floor area of 128,000 square feet, the total parking demand was always less than 3.15 stalls per thousand square feet (TSF). During the three days of counts, the highest occupancy recorded remained fairly consistent at 65% on Saturday the 18th, 68% on Tuesday the 21st, and 67% on Wednesday the 22nd. Moreover, the peak periods were also consistent with the highest parking occupancy rates occurring at and around 10:30 AM and 6:30 PM (though 6:30 PM was far less popular on Saturday). The highest recorded parking occupancy of 68%, or 401 stalls, equates to a parking utilization rate of just over 3.1 TSF. Finally, peak period demand (65-68% occupancy or 382-401 spaces) was much higher than average demand which ranged from 34-47% occupancy or 201-278 spaces.

Reference: Life Time Athletic Laguna Niguel CA—Parking Demand Study

Regards,

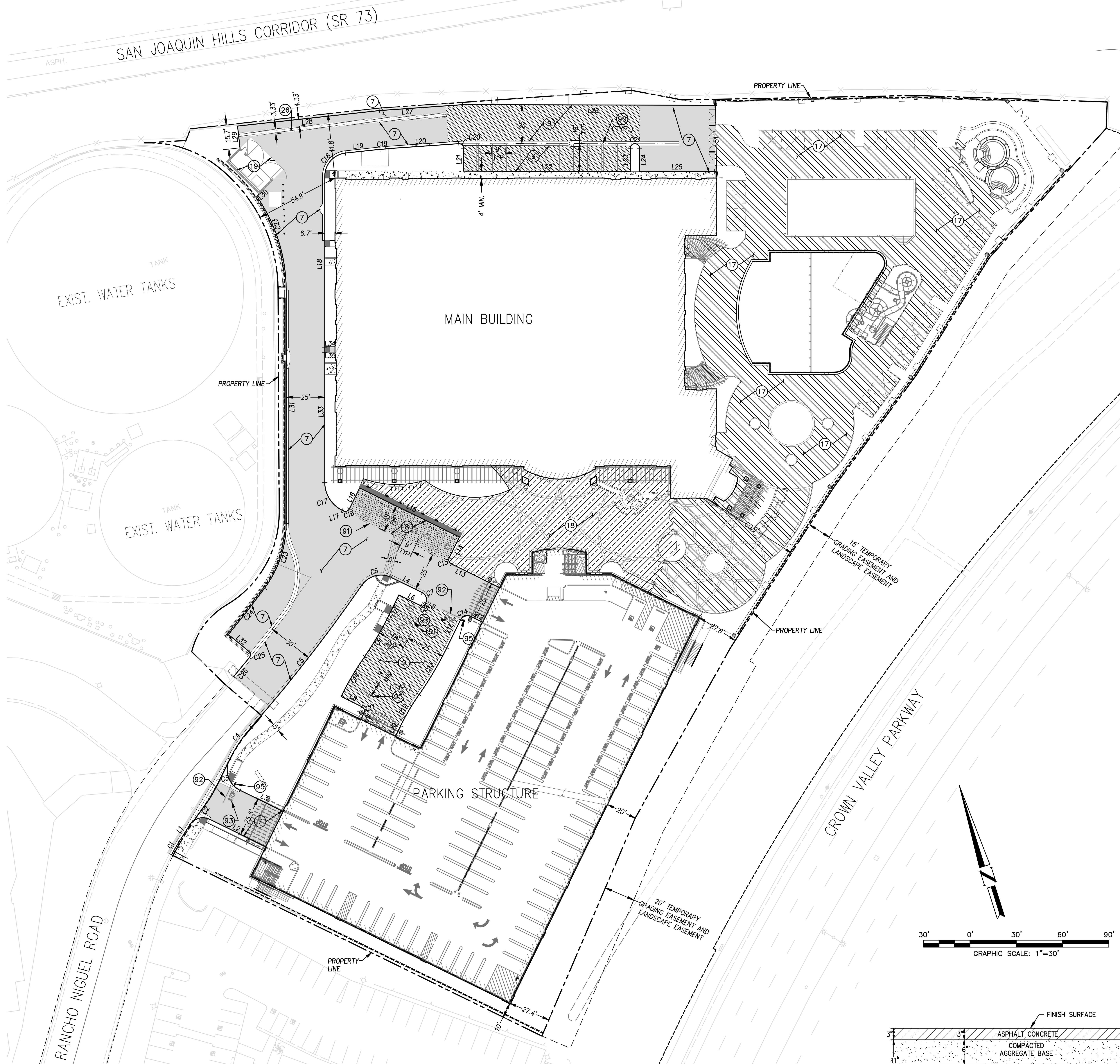
STANTEC CONSULTING SERVICES INC.

Melissa Dugan

Melissa Dugan, PTP, ENV SP
Project Manager
Phone: (949) 923-6216
melissa.dugan@stantec.com

Attachments: Attachment A – As-Built Site Plan
Attachment B – Parking Count Data

ATTACHMENT A



LINE TABLE		
LINE	LENGTH	BEARING
L1	12.94	N50°01'30"E
L2	40.54	N46°21'26"W
L3	31.09	N46°21'26"W
L4	22.42	N46°21'26"W
L5	1.03	N43°38'34"E
L6	16.00	N46°21'26"W
L7	17.09	N43°38'34"E
L8	15.00	N46°21'26"W
L9	4.68	N43°38'34"E
L10	7.68	N43°38'34"E
L11	20.12	N43°38'34"E
L12	8.58	N46°21'26"W
L13	34.91	N46°21'26"W
L14	15.00	N43°38'34"E
L15	72.00	N46°21'26"W
L16	15.00	N43°38'34"E
L17	0.91	N46°21'26"W
L18	111.21	N17°29'01"E
L19	22.50	N78°45'05"W
L20	47.34	N76°34'00"W
L21	14.76	N17°36'02"E
L22	108.00	N72°23'58"W
L23	15.00	N17°36'02"E
L24	15.00	N17°36'02"E
L25	49.11	N72°23'58"W
L26	163.56	N72°23'58"W
L27	53.99	N76°34'00"W
L28	92.43	N78°45'05"W
L29	14.20	N11°14'55"E
L30	2.01	N62°29'01"E
L31	151.18	N17°29'01"E
L32	16.98	N33°12'29"W
L33	84.33	N17°29'01"E
L34	6.61	N72°30'59"W
L35	6.61	N72°30'59"W

CURVE TABLE				
CURVE	LENGTH	RADIUS	DELTA	TANGENT
C1	9.88	99.34	5°42'04"	4.95
C2	14.62	10.00	83°46'50"	8.97
C3	23.75	15.00	90°42'24"	15.19
C4	25.04	100.00	14°20'43"	12.58
C5	116.83	1038.02	6°26'55"	58.48
C6	21.32	15.00	81°26'58"	12.91
C7	7.85	5.00	90°00'00"	5.00
C8	3.14	2.00	90°00'00"	2.00
C9	28.48	182.00	8°58'02"	14.27
C10	30.21	193.00	8°58'02"	15.13
C11	4.71	3.00	90°00'00"	3.00
C12	23.48	150.00	8°58'02"	11.76
C13	35.21	225.00	8°58'02"	17.64
C14	7.85	5.00	90°00'00"	5.00
C15	4.71	3.00	90°00'00"	3.00
C16	4.71	3.00	90°00'00"	3.00
C17	22.28	20.00	63°50'27"	12.46
C18	21.93	15.00	83°45'54"	13.45
C19	3.81	100.00	2°11'05"	1.91
C20	4.93	3.00	94°10'03"	3.23
C21	9.42	3.00	180°00'00"	–
C22	64.55	106.37	34°46'17"	33.31
C23	44.99	70.00	36°49'15"	23.30
C24	41.49	960.00	2°28'34"	20.75
C25	4.72	3.00	90°03'29"	3.00
C26	16.15	1603.85	0°34'37"	8.08

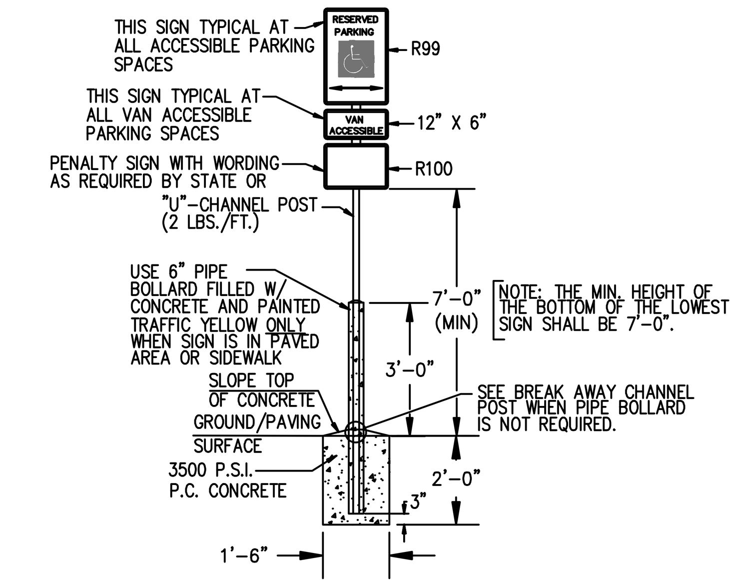
SIGNING & STRIPING NOTES

QUANTITIES:

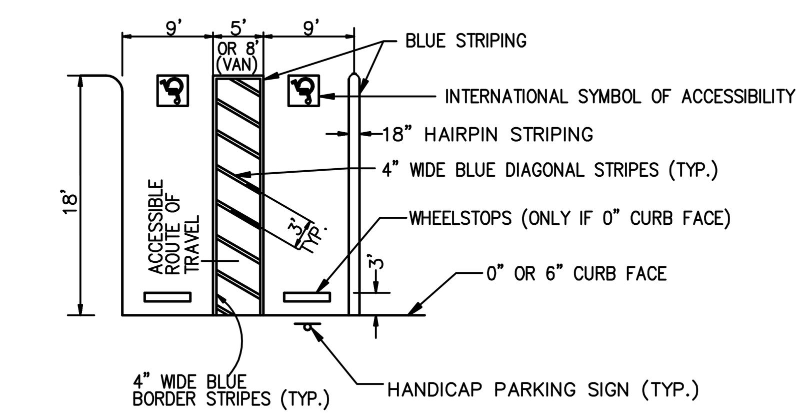
- (90) PARKING STRIPING PER DETAIL HEREON. — 18 EA.
- (91) A.D.A PARKING STANDARDS PER DETAIL HEREON. — E EA.
- (92) PAINT 12" WIDE WHITE STRIPE PER CALTRANS STD. A24E. — 1 EA.
- (93) PAINT WHITE PAVEMENT LEGEND ("STOP"). — 1 EA.
- (94) INSTALL "STOP" SIGN PER DETAIL HEREON. — 1 EA.
- (95) INSTALL STOP SIGN R1-1 PER CALTRANS STANDARD. — 1 EA.

PAVING CONSTRUCTION NOTES:

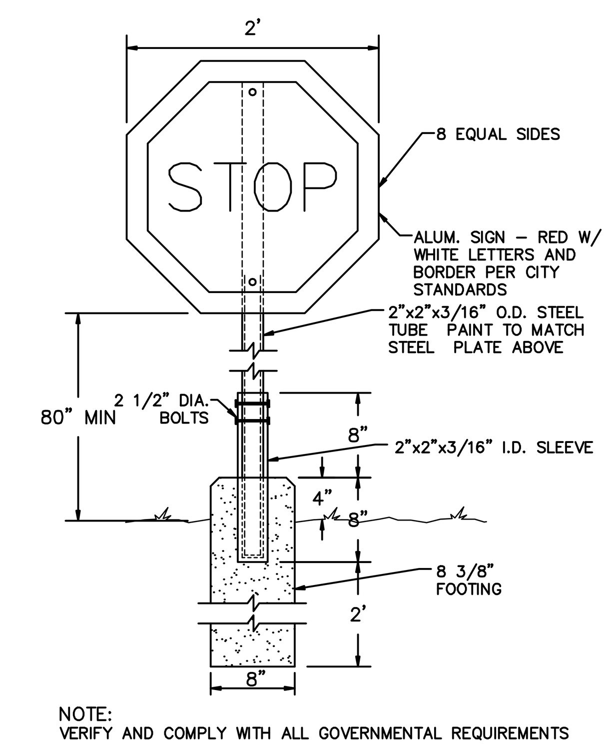
- (7) CONSTRUCT 3"A.C. OVER 11" A.B. IN DRIVEWAY AREAS PER SOILS ENGINEER'S RECOMMENDATIONS. — 20,355 S.F.
- (8) CONSTRUCT 3"A.C. OVER 5" A.B. IN AUTO PARKING AREAS PER SOILS ENGINEER'S RECOMMENDATIONS. — 1,300 S.F.
- (9) CONSTRUCT POROUS PAVEMENT PER DETAIL ON SHEET NO. 2 — 8,112 S.F.
- (17) CONSTRUCT LIGHT DUTY PAVER. SEE DETAIL ON SHEET 2. — 9500 S.F.
- (18) CONSTRUCT HEAVY DUTY PAVER. SEE DETAIL ON SHEET 2. — 40,000 S.F.
- (19) CONSTRUCT 6" PCC OVER 4" AB — 673 S.F.
- (26) CONSTRUCT SLURRY SECTION PER DETAIL HEREON — 450 S.F.



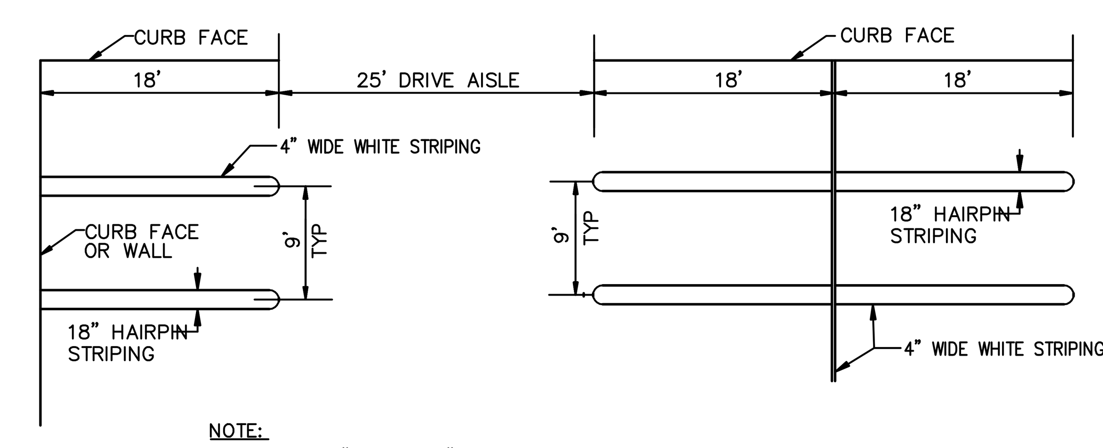
HANDICAP PARKING SIGN DETAIL
N.T.S.



HANDICAP PARKING STALL DETAIL
N.T.S.

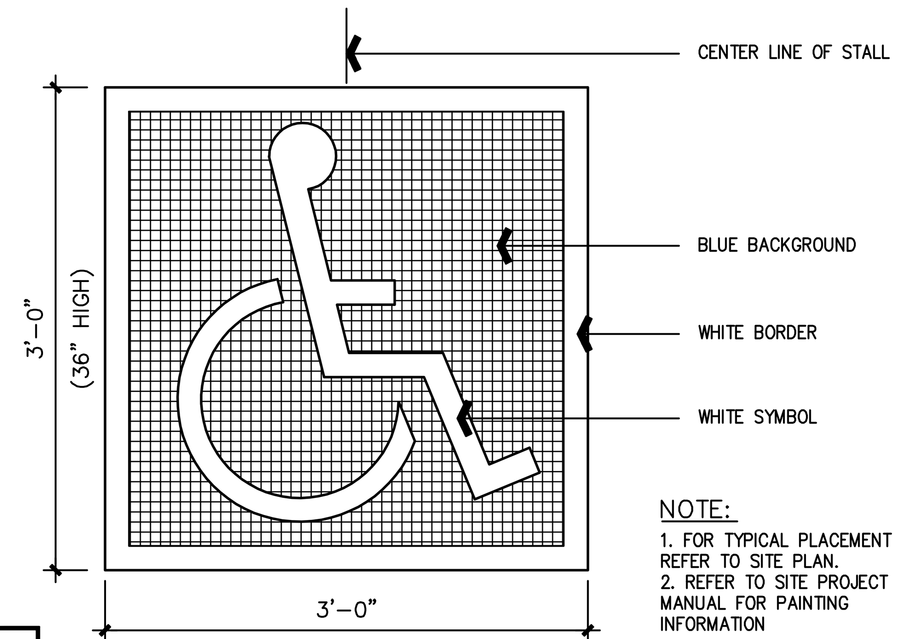


STOP SIGN DETAIL
N.T.S.



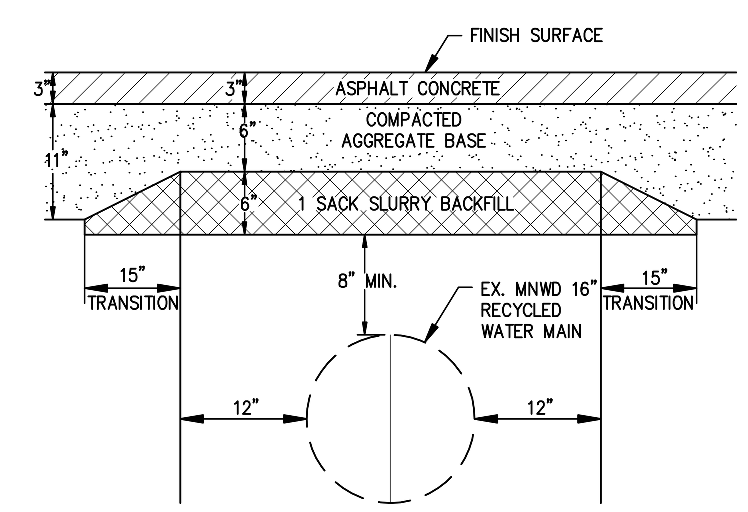
NOTE:
REGULAR OR "FULL SIZE" PARKING STALLS SHALL BE STRIPED WITH WHITE PAINT.

PARKING STALL DETAIL
N.T.S.



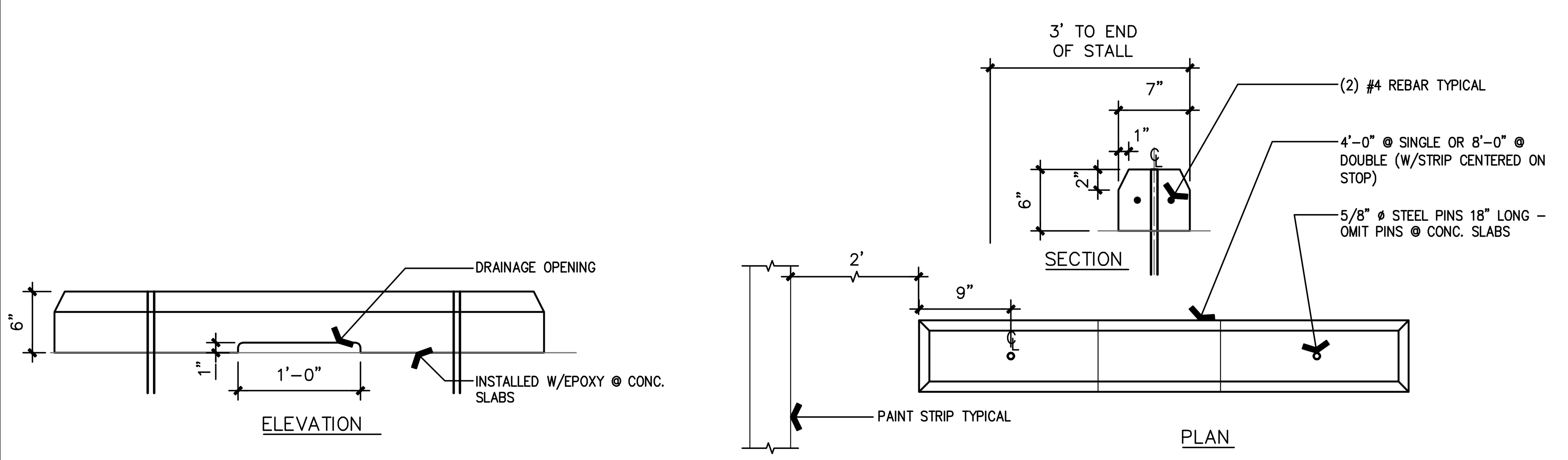
NOTE:
1. FOR TYPICAL PLACEMENT REFER TO SITE PLAN.
2. REFER TO SITE PROJECT MANUAL FOR PAINTING INFORMATION

INTERNATIONAL ACCESSIBILITY SYMBOL
N.T.S.



SLURRY SECTION DETAIL (26)
N.T.S.

NOTE:
THIS SHEET IS NOT PART OF THE GRADING PERMIT, SHOWN FOR REFERENCE ONLY.



WHEELSTOP DETAIL
NTS

AS-BUILT

GRADING PERMIT No. G12-11

REVISIONS			
DATE	INITIAL	DESCRIPTIONS	APPVD
04/18/13	LE	2 ADDED SLURRY SECTION, REVISED PAVING AREAS	
04/17/14	HM	5 AS-BUILT	

REGISTERED PROFESSIONAL ENGINEER GREGORY R. COOKE No. 39478 Exp. 12-31-15 CIVIL STATE OF CALIFORNIA

PREPARED BY:
DRC Engineering, Inc.
Civil Engineering/Land Surveying/Land Planning
160 S. Old Springs Road
Suite 210
Anaheim Hills, CA 92808
714-685-6860
GREGORY R. COOKE R.C.E. No. 39478 DATE

LIFE TIME FITNESS
PARCEL 1 OF PARCEL MAP NO. 99-106
HORIZONTAL CONTROL/ STRIPING & SIGNAGE/PAVING
25600 RANCHO NIGUEL ROAD
LAGUNA NIGUEL, CA

DATE: JANUARY 29, 2013
DRAWING FILE:
PROJECT NO.: 11-600
SHEET NUMBER: 14 OF 17 SHEETS
SCALE: AS SHOWN

ATTACHMENT B

Lifetime Athletics
25600 Rancho Niguel Road
Laguna Niguel, CA 92677
Saturday, July 18, 2015

	Outside of Parking Structure		Level 0 (Lower)	Ramp between Level 0 and 1		Level 1 (Ground Level)			Ramp b/t 1 and 2	Level 2		Ramp b/t 2 and 3	Level 3		Ramp b/t 3 and 4	Level 4 (Rooftop)		Behind Building	Total	
	General	H.C.	General	General	H.C.	General	H.C.	Clean Air	General	General	Clean Air	General	General	Clean Air	General	General	Clean Air	General	*Occupancy*	*Total %*
Inventory	**4**	**9**	**81**	**44**	**1**	**61**	**2**	**7**	46	61	14	46	61	14	46	68	13	12	*590*	-
6:30	3	0	4	2	0	25	0	0	3	4	2	1	1	1	0	0	0	1	*47*	*8%*
7:00	3	1	6	3	0	27	0	2	4	4	2	1	1	1	1	0	0	1	*57*	*10%*
7:30	3	1	8	5	0	37	0	4	4	6	3	1	0	1	1	0	0	1	*75*	*13%*
8:00	4	3	17	6	0	56	0	7	26	17	9	1	0	1	1	1	0	1	*150*	*25%*
8:30	4	3	22	11	0	58	1	9	38	22	12	3	0	1	1	1	0	1	*187*	*32%*
9:00	4	1	40	14	0	57	1	7	45	61	14	32	13	12	2	3	0	1	*307*	*52%*
9:30	4	1	43	16	0	58	2	7	42	58	12	39	18	13	2	3	0	1	*319*	*54%*
10:00	4	1	51	28	0	59	2	7	44	59	14	43	42	14	3	6	3	1	*381*	*65%*
10:30	4	6	59	28	1	57	2	7	42	57	13	36	43	11	5	7	3	1	*382*	*65%*
11:00	3	5	59	31	1	57	1	7	44	55	13	31	41	9	7	8	4	1	*377*	*64%*
11:30	4	5	57	32	1	59	1	7	39	52	13	25	29	7	9	6	4	2	*352*	*60%*
12:00	3	4	54	30	1	57	1	5	42	49	14	17	21	6	10	3	4	2	*323*	*55%*
12:30	3	5	48	24	1	56	1	9	40	39	10	13	5	5	9	4	4	1	*277*	*47%*
13:00	4	4	45	23	0	53	2	7	36	29	9	11	14	3	5	4	1	0	*250*	*42%*
13:30	3	2	41	13	0	49	1	6	29	23	9	7	11	2	4	3	1	0	*204*	*35%*
14:00	4	1	42	13	0	54	1	5	24	17	6	6	8	2	3	2	1	0	*189*	*32%*
14:30	4	4	36	12	0	54	1	3	24	17	5	4	6	1	1	2	1	0	*175*	*30%*
15:00	2	2	36	13	0	55	1	4	17	13	6	2	2	1	1	1	1	0	*157*	*27%*
15:30	2	2	33	12	0	53	0	4	18	12	6	2	2	1	1	1	1	0	*150*	*25%*
16:00	3	2	29	9	0	49	0	7	15	11	6	2	3	1	1	0	1	0	*139*	*24%*
16:30	3	2	26	9	0	49	0	7	9	12	7	2	2	1	1	0	1	0	*131*	*22%*
17:00	3	1	21	8	0	54	0	6	23	15	8	2	3	2	1	1	1	0	*149*	*25%*
17:30	4	0	15	7	0	51	1	6	26	12	7	1	3	2	1	1	1	0	*138*	*23%*
18:00	2	0	14	4	0	40	1	3	24	9	5	1	3	2	1	0	1	0	*110*	*19%*
18:30	2	0	10	5	0	42	0	2	26	6	4	1	4	2	0	1	0	0	*105*	*18%*
19:00	2	0	9	4	0	40	0	4	21	5	4	1	4	2	0	0	0	0	*96*	*16%*

Counts Unlimited, Inc.
P.O. Box 1178
Corona, CA 92878
951-268-6268

Lifetime Athletics
25600 Rancho Niguel Road
Laguna Niguel, CA 92677
Tuesday, July 21, 2015

	Outside of Parking Structure		Level 0 (Lower)	Ramp between Level 0 and 1		Level 1 (Ground Level)			Ramp b/t 1 and 2	Level 2		Ramp b/t 2 and 3	Level 3		Ramp b/t 3 and 4	Level 4 (Rooftop)		Behind Building	Total	
	General	H.C.	General	General	H.C.	General	H.C.	Clean Air	General	General	Clean Air	General	General	Clean Air	General	General	Clean Air	General	*Occupancy*	*Total %*
Inventory	**4**	**9**	**81**	**44**	**1**	**61**	**2**	**7**	46	61	14	46	61	14	46	68	13	12	*590*	-
6:30	1	1	9	5	0	55	0	5	19	7	5	0	3	0	1	0	0	0	*111*	*19%*
7:00	3	1	12	5	0	56	0	4	19	9	6	0	4	0	2	0	0	0	*121*	*21%*
7:30	4	1	14	5	0	51	0	4	20	8	6	0	3	0	2	0	0	0	*118*	*20%*
8:00	3	1	24	3	0	52	0	4	20	11	2	0	3	0	2	0	0	0	*125*	*21%*
8:30	4	1	32	6	0	55	0	7	17	12	0	1	4	0	2	0	0	0	*141*	*24%*
9:00	4	3	46	14	0	59	0	6	40	26	7	2	4	0	2	2	1	0	*216*	*37%*
9:30	4	4	53	23	0	57	1	7	45	53	14	29	31	9	4	3	2	1	*340*	*58%*
10:00	4	4	66	31	0	59	1	7	43	61	14	37	30	14	4	4	1	1	*381*	*65%*
10:30	4	0	63	29	0	58	1	6	43	51	11	31	35	13	5	3	4	1	*358*	*61%*
11:00	3	1	67	26	0	56	1	5	36	43	11	28	29	11	5	2	4	1	*329*	*56%*
11:30	4	2	62	20	0	57	1	6	34	34	8	18	19	6	2	3	3	1	*280*	*47%*
12:00	4	1	58	24	0	58	1	7	33	29	10	15	13	4	1	1	1	1	*261*	*44%*
12:30	4	3	56	17	0	53	1	3	34	27	8	12	9	1	1	0	0	1	*230*	*39%*
13:00	4	2	53	20	0	49	1	5	31	25	9	11	10	2	2	0	0	1	*225*	*38%*
13:30	4	4	53	23	0	49	1	4	24	21	7	7	8	2	2	0	0	1	*210*	*36%*
14:00	4	3	55	19	0	49	0	6	23	20	5	7	6	2	2	0	0	1	*202*	*34%*
14:30	2	3	53	20	0	51	0	6	21	24	6	6	2	2	2	0	0	1	*199*	*34%*
15:00	4	5	56	25	0	59	0	7	30	32	5	7	2	2	2	1	1	1	*239*	*41%*
15:30	4	5	55	27	0	59	0	7	28	27	9	7	3	3	2	1	1	1	*239*	*41%*
16:00	4	5	71	30	0	59	0	7	44	37	13	8	5	3	2	1	1	1	*291*	*49%*
16:30	4	6	81	33	0	60	1	7	46	55	14	13	8	10	3	1	1	1	*344*	*58%*
17:00	4	5	70	34	1	60	1	7	41	54	11	19	14	11	4	1	1	1	*339*	*57%*
17:30	3	5	70	35	1	59	1	7	45	57	14	24	23	11	8	1	1	1	*366*	*62%*
18:00	3	5	66	36	1	60	1	6	45	57	13	38	40	14	8	6	2	0	*401*	*68%*
18:30	2	5	62	33	1	60	1	7	44	52	14	37	41	12	8	7	4	0	*390*	*66%*
19:00	3	2	52	27	0	55	2	5	34	47	12	32	34	13	8	6	2	0	*334*	*57%*

Lifetime Athletics
25600 Rancho Niguel Road
Laguna Niguel, CA 92677
Wednesday, July 22, 2015

	Outside of Parking Structure		**Level 0 (Lower)**	**Ramp between Level 0 and 1**		**Level 1 (Ground Level)**			**Ramp b/t 1 and 2**	**Level 2**		**Ramp b/t 2 and 3**	**Level 3**		**Ramp b/t 3 and 4**	**Level 4 (Rooftop)**		**Behind Building**	*Total Occupancy*	*Total %*
	General	H.C.	General	General	H.C.	General	H.C.	Clean Air	General	General	Clean Air	General	General	Clean Air	General	General	Clean Air	General		
Inventory	**4**	**9**	**81**	**44**	**1**	**61**	**2**	**7**	46	61	14	46	61	14	46	68	13	12	*590*	-
6:30	2	3	12	9	0	56	0	6	16	10	5	0	1	0	2	0	0	0	*122*	*21%*
7:00	4	2	19	10	0	57	0	5	20	10	9	1	3	0	2	0	0	0	*142*	*24%*
7:30	4	2	23	6	0	49	3	4	17	8	5	1	2	0	2	0	0	0	*126*	*21%*
8:00	3	2	28	7	0	57	0	4	22	15	7	1	4	0	2	0	0	0	*152*	*26%*
8:30	3	1	31	9	0	55	0	5	21	16	9	1	5	0	2	1	1	0	*160*	*27%*
9:00	4	3	51	15	0	59	1	5	38	33	11	3	10	0	4	1	1	0	*239*	*41%*
9:30	4	3	53	15	0	60	1	7	46	51	13	17	19	10	4	1	1	0	*305*	*52%*
10:00	3	4	73	30	0	58	1	1	45	57	14	25	27	13	4	2	1	0	*358*	*61%*
10:30	4	5	76	27	0	61	1	6	46	60	14	33	37	14	6	3	3	1	*397*	*67%*
11:00	4	6	78	29	1	61	2	7	43	55	9	31	30	10	6	4	4	1	*381*	*65%*
11:30	4	2	77	30	1	61	2	7	41	48	9	28	30	7	6	3	3	0	*359*	*61%*
12:00	4	3	79	26	0	60	1	7	39	40	14	17	19	4	5	2	2	0	*322*	*55%*
12:30	4	3	70	25	0	56	1	7	33	31	12	15	15	4	5	2	1	0	*284*	*48%*
13:00	4	2	68	25	0	57	1	7	38	31	11	10	13	4	4	2	1	0	*278*	*47%*
13:30	4	1	59	22	0	60	1	5	32	23	10	6	10	5	3	2	1	0	*244*	*41%*
14:00	4	2	68	21	0	61	2	3	32	27	11	8	7	4	3	2	0	1	*256*	*43%*
14:30	4	2	61	20	0	60	1	6	37	28	10	8	8	3	2	1	0	1	*252*	*43%*
15:00	4	2	58	22	0	61	1	6	36	28	9	11	5	3	1	1	2	0	*250*	*42%*
15:30	4	0	56	24	0	61	2	5	32	37	13	8	6	3	2	1	3	0	*257*	*44%*
16:00	4	2	59	33	0	61	1	6	38	48	10	9	9	6	3	2	2	0	*293*	*50%*
16:30	4	2	64	29	0	60	1	6	39	55	13	11	11	7	3	1	2	0	*308*	*52%*
17:00	4	3	67	28	0	61	2	7	44	54	12	14	9	11	3	1	2	0	*322*	*55%*
17:30	3	3	65	30	0	60	2	7	46	61	14	32	29	13	3	2	1	0	*371*	*63%*
18:00	4	4	67	30	0	60	1	7	46	57	14	42	35	13	4	3	3	0	*390*	*66%*
18:30	4	4	61	27	0	61	0	7	42	52	13	34	34	10	6	4	3	0	*362*	*61%*
19:00	4	2	55	22	0	58	0	5	34	43	13	29	25	8	4	3	2	0	*307*	*52%*

APPENDIX 5.2:

LIFE TIME ATHLETIC, NORCROSS, GA. – PARKING DEMAND MEMO

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Memorandum

To:	Ms. Megan Eaton Associate Development Manager Lifetime Athletic Chanhassen, MN.
From:	Abdul K. Amer, PE
Date:	May 05th, 2017.
Subject:	Lifetime Athletic, 6350 Courtside Drive, Norcross, GA. – Parking Demand Memo

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The purpose of this memorandum is to determine the parking demand of the existing Lifetime Athletic Fitness Center located on 6350 Courtside Drive, Norcross, Georgia. This facility is permitted to operate round the clock (24/7) and consists of the following:

- 34,811 SF health and fitness facility
- 8 Indoor Tennis Courts
- 20 Outdoor Tennis Courts, plus 6 practice courts
- Outdoor Pool

The location of the Fitness Center is shown in Figure 1 below.

Figure 1. Life Time Athletic, 6350 Courtside Drive, Norcross, GA.

Parking Demand Study

Lifetime Athletic Fitness facility has a capacity of 258 parking spaces including 8 reserved spaces for handicapped parking and 2 spaces for motor bike parking.

Parking counts were conducted at Life Athletic's parking lot on Tuesday, April 18th, Thursday April 20th, and Saturday April 22nd 2017. Tuesday and Thursday counts were collected from 8:00 AM to 12:00 PM and from 3:30 PM to 7:30 PM and Saturday counts were collected from 08:00 AM to 12:00 PM. As shown in Table 1 and 2 below, on weekdays, the maximum occupancy occurred between 11:00 AM to 12:00 PM in the morning hours and between 5:30 PM and 07:30 PM in the afternoon/evening hours. On Saturday, maximum occupancy occurred between 10:00 AM and 11:00 AM. A graph of parking counts taken every 15-minute for three days is shown in Figures 2 and 3.

TABLE 1

PARKING DEMAND – AM - MAXIMUM OCCUPANCY ON TUESDAY, THURSDAY & SATURDAY

Time (15-Minute Intervals)	Tuesday	Thursday	Saturday
8:00 AM	22	25	23
8:15 AM	24	23	26
8:30 AM	26	24	25
8:45 AM	29	25	41
9:00 AM	31	28	53
9:15 AM	30	35	66
9:30 AM	28	42	73
9:45 AM	46	44	80
10:00 AM	60	47	103
10:15 AM	63	55	117
10:30 AM	72	59	**123**
10:45 AM	76	66	112
11:00 AM	81	**68**	114
11:15 AM	81	65	108
11:30 AM	82	61	99
11:45 AM	**88**	60	88

The maximum occupancy on Tuesday in both morning and evening occurs at the cut-off time of our counts. The entering and exiting trips counted at the driveways (attached with this report) indicate that the number of entering traffic falls considerably after the cut-off times meaning the maximum occupancy has peaked at cut-off time and decreases thereafter.

Table 2 Parking Demand – PM - Maximum Occupancy On Tuesday, Thursday		
Time (15-Minute Intervals)	Tuesday	Thursday
3:30 PM	34	36
3:45 PM	36	38
4:00 PM	38	44
4:15 PM	38	50
4:30 PM	41	57
4:45 PM	47	59
5:00 PM	52	64
5:15 PM	62	71
5:30 PM	64	96
5:45 PM	68	**118**
6:00 PM	85	114
6:15 PM	88	116
6:30 PM	92	109
6:45 PM	92	99
7:00 PM	98	99
7:15 PM	**109**	98

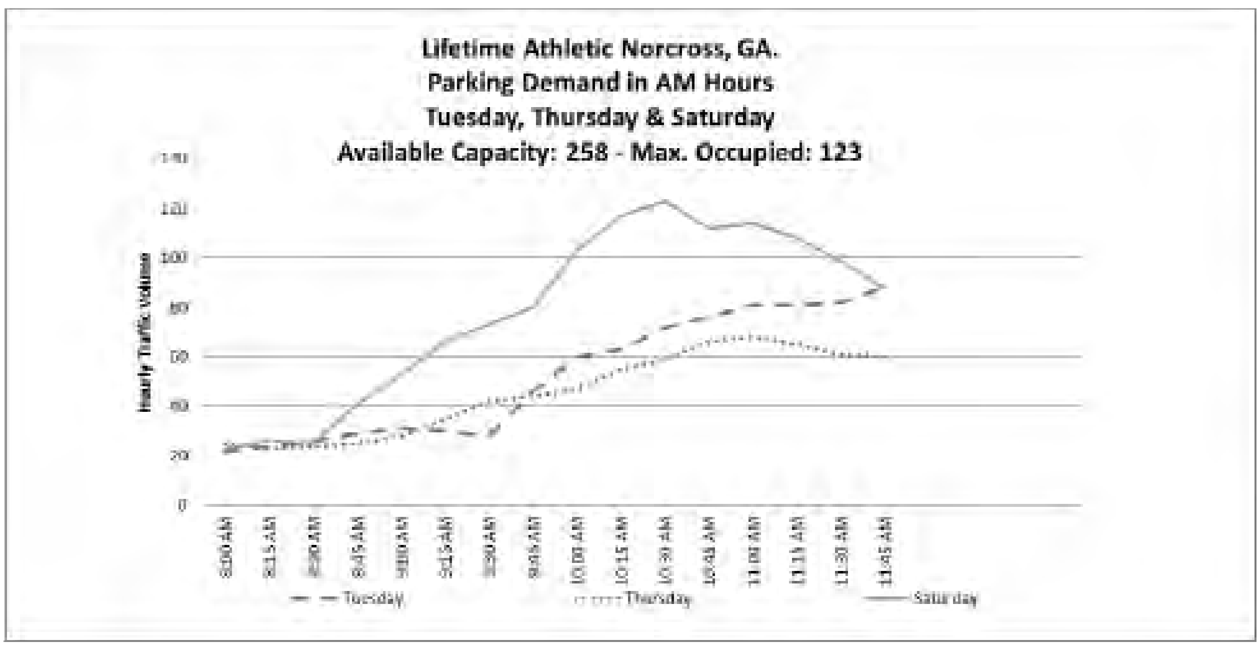

Figure 2 – Parking Demand on Weekdays & Saturday AM

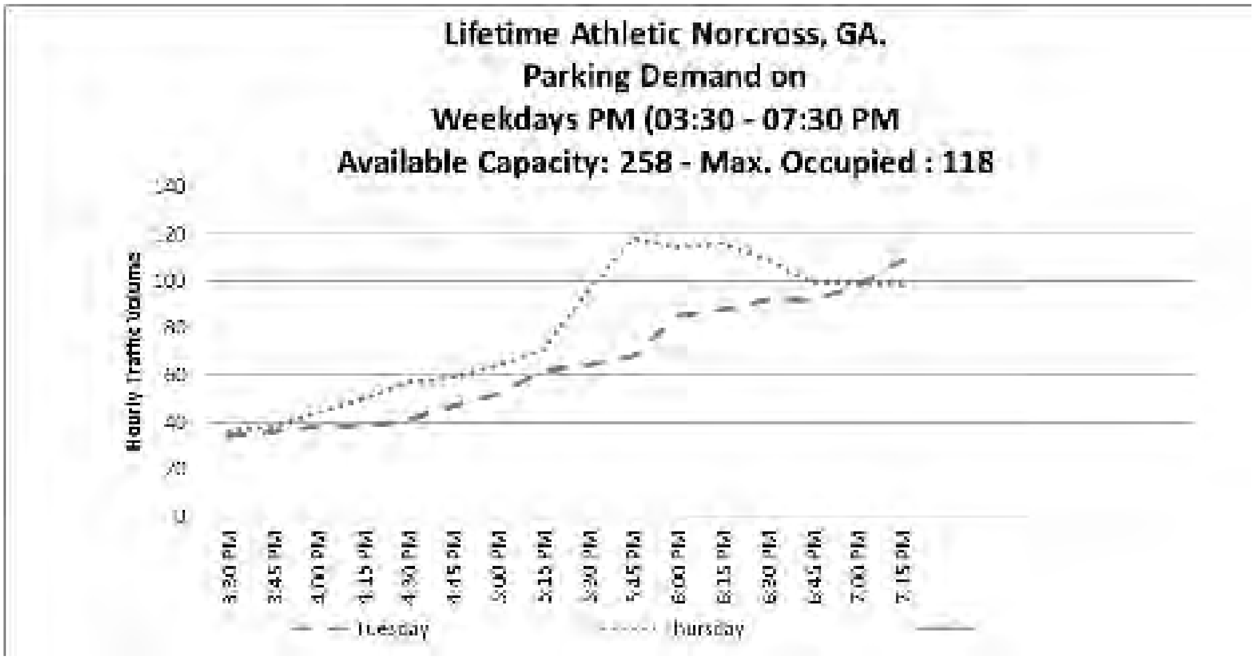

Figure 3 – Parking Demand on Weekdays PM

As shown in Tables 1 and 2 and graphically in Figure 1 and 2, the maximum number of occupied spaces in this facility ranges from 72 to 109 on a typical weekday and between 99 and 123 on Saturday. This translates into a parking ratio of 3.53 spaces per 1000 SF calculated for the health and fitness facility including all activity related to the 8 indoor tennis courts, 20 outdoor tennis courts, 6 practice courts and a swimming pool.

APPENDIX

Reliable Traffic Data Services, LLC
Tel: (770) 578-8158 Fax: (770) 578-8159
reliabletraffic@msn.com

Site Code: 4035
Count Date: Tuesday, April 18, 2017
Study Time: 8:00am - 12:00pm | 3:30pm - 7:30pm
Location: Life Time Athletic and Tennis, Norcross, GA

Section	A	B	C	D	E	F	Total
No of Spaces	47	53	97+2MC	8+8HC	29	14	248+8HC+2MC
8:00 AM	0	0	7	4	7	4	22
8:15 AM	0	0	6	5	7	6	24
8:30 AM	0	0	7	5	8	6	26
8:45 AM	0	0	7	6	9	7	29
9:00 AM	0	0	6	6	11	8	31
9:15 AM	0	0	7	7	8	8	30
9:30 AM	0	0	7	6	7	8	28
9:45 AM	0	0	14	6+1HC	16	9	45+1HC
10:00 AM	0	0	23	6+1HC	20	10	59+1HC
10:15 AM	0	0	24	7+1HC	21	10	62+1HC
10:30 AM	0	0	31	7+1HC	22	11	71+1HC
10:45 AM	0	0	30	7+1HC	24	14	75+1HC
11:00 AM	0	0	34	7+1HC	25	14	80+1HC
11:15 AM	0	0	34	7+1HC	25	14	80+1HC
11:30 AM	0	1	35	7	26	13	82
11:45 AM	1	0	40	7	27	13	88
3:30 PM	1	0	13	5	8	7	34
3:45 PM	1	0	14	6	8	7	36
4:00 PM	1	0	15	6	10	6	38
4:15 PM	1	0	15	6	10	6	38
4:30 PM	1	0	17	5	11	7	41
4:45 PM	1	0	19	6	12	9	47
5:00 PM	1	0	20	7	13	11	52
5:15 PM	1	0	24	7	19	11	62
5:30 PM	1	0	24	8	20	11	64
5:45 PM	1	0	26	7	22	12	68
6:00 PM	2	0	36	8	25	14	85
6:15 PM	1	0	37	8+1HC	27	14	87+1HC
6:30 PM	1	0	42	7+1HC	28	13	91+1HC
6:45 PM	2	0	41	5+3HC	27	14	89+3HC
7:00 PM	2	0	46	5+3HC	28	14	95+3HC
7:15 PM	1	0	57	5+5HC	27	14	104+5HC

HC: Handicap MC: Motor Cycle

Reliable Traffic Data Services, LLC
Tel: (770) 578-8158 Fax: (770) 578-8159
reliabletraffic@msn.com

Site Code: 4035
Count Date: Thursday, April 20, 2017
Study Time: 8:00am - 12:00pm | 3:30pm - 7:30pm
Location: Life Time Athletic and Tennis, Norcross, GA

Section	A	B	C	D	E	F	Total
No of Spaces	47	53	97+2MC	8+8HC	29	14	248+8HC+2MC
8:00 AM	0	0	4	3+1HC	9	8	24+1HC
8:15 AM	1	0	2	3	9	8	23
8:30 AM	1	0	3	4	8	8	24
8:45 AM	1	0	3	4	8	9	25
9:00 AM	1	0	3	4+1HC	10	9	27+1HC
9:15 AM	1	0	4	4+4HC	13	9	31+4HC
9:30 AM	0	0	8	4+2HC	18	10	40+2HC
9:45 AM	0	0	8	5+2HC	18	11	42+2HC
10:00 AM	0	0	8	5+2HC	20	12	45+2HC
10:15 AM	0	0	12	5+2HC	22	14	53+2HC
10:30 AM	0	0	19	5+1HC	20	14	58+1HC
10:45 AM	0	0	25	5+1HC	21	14	65+1HC
11:00 AM	0	0	25	6+1HC	22	14	67+1HC
11:15 AM	0	0	23	6+1HC	22	13	64+1HC
11:30 AM	0	0	22	5+1HC	21	12	60+1HC
11:45 AM	0	0	22	5+1HC	20	12	59+1HC
3:30 PM	2	0	18	5	7	4	36
3:45 PM	2	0	17	6	7	6	38
4:00 PM	3	0	18	7	9	7	44
4:15 PM	3	0	22	7	12	6	50
4:30 PM	3	0	23	7+1HC	16	7	56+1HC
4:45 PM	2	0	24	7+1HC	17	8	58+1HC
5:00 PM	2	0	26	7+1HC	19	9	63+1HC
5:15 PM	2	0	31	8+1HC	20	9	70+1HC
5:30 PM	2	0	48	7+1HC	25	13	95+1HC
5:45 PM	3	0	65	8+1HC	27	14	117+1HC
6:00 PM	3	0	65	7+1HC	24	14	113+1HC
6:15 PM	4	1	62	7+2HC	26	14	114+2HC
6:30 PM	4	1	55	6+2HC	28	13	107+2HC
6:45 PM	4	1	44	6+2HC	29	13	97+2HC
7:00 PM	3	1	48	5+2HC	27	13	97+2HC
7:15 PM	3	1	49	5+2HC	27	11	96+2HC

HC: Handicap   MC: Motor Cycle

Reliable Traffic Data Services, LLC
Tel: (770) 578-8158 Fax: (770) 578-8159
reliabletraffic@msn.com

Site Code: 4035

Count Date: Saturday, April 15, 2017

Study Time: 8:00am - 12:00pm

Location: Life Time Athletic and Tennis, Norcross, GA

Section	A	B	C	D	E	F	Total
No of Spaces	47	53	97+2MC	8+8HC	29	14	248+8HC+2MC
8:00 AM	0	8	3	3+1HC	7	1	22+1HC
8:15 AM	0	8	3	4+2HC	8	1	24+2HC
8:30 AM	0	8	4	3+2HC	6	2	23+2HC
8:45 AM	0	8	19	4+1HC	7	2	40+1HC
9:00 AM	1	8	28	4+1HC	9	2	52+1HC
9:15 AM	1	8	34	4+1HC	15	3	65+1HC
9:30 AM	1	7	38	4+1HC	18	4	72+1HC
9:45 AM	1	7	42	4+1HC	20	5	79+1HC
10:00 AM	1	6	60	4+1HC	23	8	102+1HC
10:15 AM	1	6	64	5+1HC	26	14	116+1HC
10:30 AM	1	6	67	5+1HC	29	14	122+1HC
10:45 AM	1	6	61	5+1HC	25	13	111+1HC
11:00 AM	1	6	63	6+1HC	23	14	113+1HC
11:15 AM	2	6	56	6+1HC	23	14	107+1HC
11:30 AM	3	2	53	5+1HC	22	13	98+1HC
11:45 AM	2	1	47	5+1HC	20	12	87+1HC

HC: Handicap   MC: Motor Cycle

Reliable Traffic Data Services, LLC
Tel: (770) 578-8158 Fax: (770) 578-8159
info@reliabletraffic.org | www.reliabletraffic.org

ADT Data

Site Code: 40350101
Life Time Athletic and Tennis Drwy on
6350 Courtside Dr, Norcross, GA

Start	18-Apr-17	Entering		Hour Totals		Exiting		Hour Totals		Combined Totals	
Time	Tue	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		0	6			0	9				
12:15		0	6			0	10				
12:30		0	5			0	14				
12:45		0	1	0	18	0	14	0	47	0	65
01:00		0	7			0	21				
01:15		0	7			0	8				
01:30		0	8			0	6				
01:45		0	5	0	27	0	13	0	48	0	75
02:00		0	4			1	6				
02:15		0	4			0	6				
02:30		0	3			0	4				
02:45		0	5	0	16	0	8	1	24	1	40
03:00		0	4			0	6				
03:15		0	6			0	7				
03:30		0	2			0	3				
03:45		0	6	0	18	0	0	0	16	0	34
04:00		0	5			0	6				
04:15		0	18			0	10				
04:30		1	19			0	11				
04:45		2	3	3	45	0	4	0	31	3	76
05:00		5	16			1	5				
05:15		11	18			1	13				
05:30		1	18			0	8				
05:45		6	23	23	75	2	6	4	32	27	107
06:00		2	18			1	17				
06:15		7	17			1	7				
06:30		1	6			7	16				
06:45		5	26	15	67	6	9	15	49	30	116
07:00		5	24			5	10				
07:15		2	28			3	14				
07:30		4	8			3	31				
07:45		3	2	14	62	3	12	14	67	28	129
08:00		6	5			3	4				
08:15		3	3			2	9				
08:30		4	3			2	18				
08:45		6	0	19	11	5	12	12	43	31	54
09:00		7	1			8	20				
09:15		0	2			1	12				
09:30		23	0			2	10				
09:45		20	0	50	3	3	1	14	43	64	46
10:00		7	0			4	15				
10:15		13	0			1	7				
10:30		6	0			9	2				
10:45		7	0	33	0	2	0	16	24	49	24
11:00		4	0			7	6				
11:15		6	1			7	4				
11:30		9	0			5	0				
11:45		17	0	36	1	5	0	24	10	60	11
Total		193	343			100	434			293	777
Percent		36.0%	64.0%			18.7%	81.3%			27.4%	72.6%

ADT Data

Reliable Traffic Data Services, LLC
Tel: (770) 578-8158 Fax: (770) 578-8159
info@reliabletraffic.org | www.reliabletraffic.org

Site Code: 40350101
Life Time Athletic and Tennis Drwy on
6350 Courtside Dr, Norcross, GA

Start	19-Apr-17	Entering		Hour Totals		Exiting		Hour Totals		Combined Totals	
Time	Wed	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		0	4			0	12				
12:15		0	5			0	12				
12:30		0	4			0	3				
12:45		0	13	0	26	1	6	1	33	1	59
01:00		0	2			0	20				
01:15		0	6			0	8				
01:30		0	4			0	8				
01:45		0	8	0	20	0	6	0	42	0	62
02:00		0	4			0	5				
02:15		0	2			0	2				
02:30		0	3			0	7				
02:45		0	6	0	15	0	6	0	20	0	35
03:00		0	1			0	6				
03:15		0	4			0	1				
03:30		0	2			0	3				
03:45		0	3	0	10	0	2	0	12	0	22
04:00		0	6			0	2				
04:15		0	13			0	8				
04:30		0	14			0	10				
04:45		2	10	2	43	0	8	0	28	2	71
05:00		5	18			0	6				
05:15		2	27			0	10				
05:30		7	21			2	11				
05:45		6	30	20	96	0	6	2	33	22	129
06:00		2	13			2	17				
06:15		3	15			2	11				
06:30		3	16			0	15				
06:45		5	11	13	55	3	9	7	52	20	107
07:00		2	14			4	19				
07:15		4	20			6	17				
07:30		2	10			2	34				
07:45		1	3	9	47	3	13	15	83	24	130
08:00		1	4			4	14				
08:15		2	2			1	5				
08:30		7	2			5	3				
08:45		9	2	19	10	4	4	14	26	33	36
09:00		8	1			2	10				
09:15		9	3			0	23				
09:30		20	0			1	7				
09:45		11	0	48	4	2	9	5	49	53	53
10:00		7	1			10	8				
10:15		2	0			3	4				
10:30		1	1			1	1				
10:45		4	1	14	3	2	4	16	17	30	20
11:00		7	1			6	3				
11:15		8	0			13	3				
11:30		7	1			9	2				
11:45		18	0	40	2	5	0	33	8	73	10
Total		165	331			93	403			258	734
Percent		33.3%	66.7%			18.8%	81.3%			26.0%	74.0%

ADT Data

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Site Code: 40350101
Life Time Athletic and Tennis Drwy on
6350 Courtside Dr, Norcross, GA

Start	20-Apr-17	Entering		Hour Totals		Exiting		Hour Totals		Combined Totals	
Time	Thu	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		0	6			0	13				
12:15		0	3			0	3				
12:30		0	1			0	13				
12:45		1	3	1	13	1	8	1	37	2	50
01:00		0	9			0	15				
01:15		0	6			1	17				
01:30		0	5			0	7				
01:45		0	5	0	25	0	8	1	47	1	72
02:00		0	3			0	10				
02:15		0	5			0	6				
02:30		0	2			0	4				
02:45		0	5	0	15	0	6	0	26	0	41
03:00		0	3			0	2				
03:15		0	3			0	6				
03:30		0	6			0	0				
03:45		0	7	0	19	0	0	0	8	0	27
04:00		0	10			0	4				
04:15		0	17			0	6				
04:30		0	10			0	7				
04:45		1	9	1	46	0	2	0	19	1	65
05:00		2	14			0	4				
05:15		11	30			0	9				
05:30		1	27			0	13				
05:45		1	12	15	83	0	8	0	34	15	117
06:00		2	16			1	15				
06:15		4	17			1	23				
06:30		5	9			4	18				
06:45		6	10	17	52	5	14	11	70	28	122
07:00		9	9			1	10				
07:15		6	21			3	6				
07:30		2	11			1	27				
07:45		4	7	21	48	3	24	8	67	29	115
08:00		1	2			6	15				
08:15		3	3			6	5				
08:30		6	2			3	4				
08:45		8	1	18	8	1	6	16	30	34	38
09:00		15	1			3	19				
09:15		19	2			6	10				
09:30		4	0			3	8				
09:45		9	1	47	4	0	11	12	48	59	52
10:00		14	1			3	6				
10:15		8	0			2	7				
10:30		12	1			5	2				
10:45		6	0	40	2	7	1	17	16	57	18
11:00		4	0			8	4				
11:15		1	0			2	0				
11:30		7	0			11	0				
11:45		15	0	27	0	7	0	28	4	55	4
Total		187	315			94	406			281	721
Percent		37.3%	62.7%			18.8%	81.2%			28.0%	72.0%

ADT Data

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Site Code: 40350101
Life Time Athletic and Tennis Drwy on
6350 Courtside Dr, Norcross, GA

Start	21-Apr-17	Entering		Hour Totals		Exiting		Hour Totals		Combined Totals	
Time	Fri	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		0	4			0	4				
12:15		0	6			0	6				
12:30		0	3			0	6				
12:45		0	4	0	17	0	9	0	25	0	42
01:00		0	7			0	13				
01:15		1	6			2	11				
01:30		0	5			0	2				
01:45		0	7	1	25	0	8	2	34	3	59
02:00		0	4			0	4				
02:15		0	0			0	4				
02:30		0	4			0	6				
02:45		0	4	0	12	0	4	0	18	0	30
03:00		0	6			0	9				
03:15		0	3			0	2				
03:30		0	5			0	2				
03:45		0	2	0	16	0	1	0	14	0	30
04:00		0	5			0	5				
04:15		0	6			0	1				
04:30		0	9			0	5				
04:45		3	11	3	31	0	8	0	19	3	50
05:00		1	4			0	3				
05:15		3	12			0	3				
05:30		3	8			0	6				
05:45		8	10	15	34	0	3	0	15	15	49
06:00		3	5			2	7				
06:15		2	6			1	2				
06:30		5	1			2	8				
06:45		0	5	10	17	1	6	6	23	16	40
07:00		4	7			7	11				
07:15		2	5			3	5				
07:30		4	4			2	10				
07:45		5	7	15	23	5	9	17	35	32	58
08:00		2	3			2	4				
08:15		9	2			5	6				
08:30		11	1			1	4				
08:45		13	0	35	6	5	5	13	19	48	25
09:00		18	1			6	4				
09:15		7	1			8	2				
09:30		9	3			0	8				
09:45		11	0	45	5	8	3	22	17	67	22
10:00		10	0			4	4				
10:15		5	0			7	3				
10:30		3	1			5	3				
10:45		3	0	21	1	4	1	20	11	41	12
11:00		1	0			8	6				
11:15		9	0			4	0				
11:30		7	1			13	1				
11:45		6	1	23	2	9	1	34	8	57	10
Total		168	189			114	238			282	427
Percent		47.1%	52.9%			32.4%	67.6%			39.8%	60.2%

ADT Data

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Site Code: 40350101
Life Time Athletic and Tennis Drwy on
6350 Courtside Dr, Norcross, GA

Start	22-Apr-17	Entering		Hour Totals		Exiting		Hour Totals		Combined Totals	
Time	Sat	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		0	3			0	14				
12:15		0	6			0	18				
12:30		0	2			0	11				
12:45		0	4	0	15	0	6	0	49	0	64
01:00		0	4			0	18				
01:15		0	4			1	10				
01:30		0	4			0	8				
01:45		0	1	0	13	0	12	1	48	1	61
02:00		0	1			0	4				
02:15		0	6			0	3				
02:30		0	2			0	2				
02:45		0	1	0	10	0	6	0	15	0	25
03:00		0	1			0	3				
03:15		0	8			0	3				
03:30		0	3			0	6				
03:45		0	10	0	22	0	3	0	15	0	37
04:00		0	6			0	5				
04:15		0	3			0	4				
04:30		0	3			0	6				
04:45		0	4	0	16	0	3	0	18	0	34
05:00		0	4			0	2				
05:15		0	4			0	4				
05:30		0	2			0	11				
05:45		1	2	1	12	0	2	0	19	1	31
06:00		1	1			0	3				
06:15		0	0			1	3				
06:30		0	3			0	3				
06:45		1	2	2	6	0	1	1	10	3	16
07:00		1	2			0	2				
07:15		9	3			1	0				
07:30		5	1			0	0				
07:45		13	2	28	8	0	3	1	5	29	13
08:00		2	2			0	1				
08:15		2	0			2	0				
08:30		16	1			6	0				
08:45		24	3	44	6	5	3	13	4	57	10
09:00		8	1			2	2				
09:15		12	1			1	5				
09:30		14	0			5	3				
09:45		33	1	67	3	0	3	8	13	75	16
10:00		10	0			8	6				
10:15		11	0			6	0				
10:30		8	0			16	0				
10:45		7	0	36	0	8	0	38	6	74	6
11:00		6	0			18	0				
11:15		13	2			11	0				
11:30		3	0			14	0				
11:45		5	0	27	2	7	2	50	2	77	4
Total		205	113			112	204			317	317
Percent		64.5%	35.5%			35.4%	64.6%			50.0%	50.0%
Grand Total		918	1291			513	1685			1431	2976
Percent		41.6%	58.4%			23.3%	76.7%			32.5%	67.5%

ADT   ADT 881   AADT 881

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