Memo

Date: March 9, 2016

To: Ruben Hurin

From: Janna Waligorski, Senior Project Manager
Mary Bean, Project Director

Subject: Review of 1509 El Camino Real Project Changes and Substantial Conformity Analysis

The applicant for the 1509 El Camino Real project has submitted revised plans, which address the comments raised during the Planning Commission hearing held on December 14, 2015.

At the request of the City, FirstCarbon Solutions (FCS) has reviewed the revised plans to determine whether the revisions would result in any significant additional environmental impacts beyond those concluded in the previously prepared Revised IS/MND (dated October 7, 2015). The following is a summary of the identified changes and a discussion regarding the potential for those changes to result in significant additional environmental impacts.

Summary of Project Changes

Table 1 summarizes the changes made to the project since the Revised IS/MND.

Table 1: Summary of Project Changes

Feature	2015 Project	2016 Project	Change
Number of Units	10 two 1-bedroom two 2-bedroom six 3-bedroom (24 bedrooms total)	11 two 1-bedroom five 2-bedroom four 3-bedroom (24 bedrooms total)	Increase of 1 unit; no change to total number of bedrooms
Parking Spaces	28[1] (11 standard, 14 compact, 2 ADA, 1 service)	28[2] (11 standard, 14 compact, 2 ADA, 1 service)	Same
Total Square Footage	28,564 sq ft	28,564 sq ft	Same
Building Height	Three floors	Three floors	Same
CUP	Inclusionary Zoning incentive would allow building height without CUP	Inclusionary Zoning incentive would allow building height without CUP	Same

Table 1 (cont.): Summary of Project Changes

Feature	2015 Project	2016 Project	Change
Rooftop Air Conditioning Unit Location	Front of building	Front of building	Same
Creek Improvements	Eliminate erosion and undercutting issue	Same	Same
Wall along rear of property line	No wall	8-foot CMU wall with 2-foot lattice above	Addition of wall along rear of property/adjoining alley.
East Elevation	Three exterior balconies	Four exterior balconies	On balcony added
South Elevation	Eight exterior balconies	Ten exterior balconies	One window replaced with Juliette balcony and one new balcony added
West Elevation	One exterior balcony	One exterior balcony	Balcony moved from center of building façade to corner of building
Bocce Court	Located in northwestern corner of site	Replaced with vegetable garden area	Bocce court replaced with vegetable garden
Protected Tree Removal	1	1	Same
Landscaping	Mixture of deciduous and evergreen trees/shrubs along western and southern boundaries	Additional evergreen trees (fern pine) planted along western and southern boundaries and in vegetable garden area	Additional, year round visual screening

Note:
1 Required parking space minimum is 25 (22 for residents, two for guests, and one for service vehicles).
2 Required parking space minimum is 26 (23 for residents, two for guests, and one for service vehicles).
Source: City of Burlingame, 2015.

As shown in Table 1, the project remains primarily the same as that analyzed in the 2015 Revised IS/MND. The main difference is the addition of one unit; however, the overall bedroom count would remain the same. Consistent with the change in unit types, two additional exterior balconies have been added to the south elevation of the building. In addition, an 8-foot concrete masonry wall with an additional 2 feet of lattice along the top has been added to the length of the project site's western boundary, along the adjacent alley. The previously proposed bocce court has been replaced with a vegetable garden, and additional evergreen trees were added along the western and southern boundary and in the vegetable garden area. All other project characteristics have remained the same.

Traffic Analysis

Trip Generation

Table 2 and Table 3 provide a summary of the previously proposed and currently proposed project's expected trip generation compared with the existing on-site use. As shown in Table 3, the addition of one condominium unit would increase daily trip generation by approximately 7 daily trips. The number of AM peak-hour trips would increase by 2 trips compared with the 10-unit project but would still not exceed the trip generation of the existing use. The number of PM peak-hour trips would increase by one but would continue to be below the existing use trip generation. The increase of 7 daily trips as a result of the additionally proposed unit would not change the conclusions of the Revised IS/MND related to potential traffic impacts.

Table 2: Trip Generation Summary—Previously Proposed

Land Use	Units	Daily		AM Peak Hour				PM Peak Hour			
		Rate	Trips	Rate	Trips	In	Out	Rate	Trips	In	Out
Existing											
Apartment	-11	17.29	-190	0.82	-9	-2	-7	2.18	-24	-16	-8
Previously Proposed											
Condominium	10	8.68	87	0.73	7	1	6	0.87	9	6	3
Net New Trips	**—**	**—**	**-103**	**—**	**-2**	**-1**	**-1**	**—**	**-15**	**-10**	**-5**
Note: du = dwelling unit											

Table 3: Trip Generation Summary–Currently Proposed

Land Use	Units	Daily		AM Peak Hour				PM Peak Hour			
		Rate	Trips	Rate	Trips	In	Out	Rate	Trips	In	Out
Existing											
Apartment	-11	17.29	-190	0.83	-9	-2	-7	2.15	-24	-15	-9
Currently Proposed											
Condominium	11	8.57	94	0.80	9	2	7	0.89	10	7	3
Net New Trips	**—**	**—**	**-96**	**—**	**0**	**0**	**0**	**—**	**-14**	**-8**	**-6**
Note: du = dwelling unit											

Apartment versus Condominium Trip Generation Rates

With respect to trip generation rates, apartments have higher trip generation rates than condominiums. Apartments are considered rented units with a higher turnover of occupants than condominiums, which are units for purchase. As such, there are often more individuals per apartment unit with varying

schedules and a need for each occupant to drive, compared to a condominium where there is more likely one family per unit with more similar schedules and fewer individuals needing to drive.

Sensitivity Analysis

An analysis of the intersection of El Camino Real/Trousdale Drive was completed to determine the project size required to trigger a significant impact. This intersection was chosen because of the availability of recent traffic count data and its proximity to the project. Volumes for the AM and PM peak hours at El Camino Real/Trousdale Drive were taken from a traffic study for 1600 Trousdale Drive, with an optimized traffic signal cycle length for both peak hours to calculate the Existing traffic operations conditions.

Currently, the intersection operates at LOS C during the AM peak hour and LOS D during the PM peak hour. Project-related trips at this intersection would be considered significant if the project causes the intersection to go from an acceptable LOS C to a deficient LOS E during the AM peak hour, or from an acceptable LOS D to a deficient LOS E during the PM peak hour. The Level of Service calculations are provided in Attachment A.

In looking at the possible trip distribution of the condominium project, it was determined that the most conservative analysis would be to add volumes to the northbound left-turn movement at El Camino Real/Trousdale Avenue and determine how much traffic would be needed to result in a deficient LOS E.

Existing northbound left-turn volumes are 262 vehicles during the AM peak hour. The intersection has the ability to accommodate 142 additional vehicles before the intersection deteriorates from LOS C to LOS E. After taking existing trips from the apartment into account, it was determined the project would have to include at least 410 condominium units to generate 142 additional outbound trips that would trigger a significant impact at this intersection, as shown in Table 4.

Table 4: Trip Generation Summary–Sensitivity Analysis

Land Use	Units	Daily		AM Peak Hour				PM Peak Hour			
		Rate	Trips	Rate	Trips	In	Out	Rate	Trips	In	Out
Existing											
Apartment	-11 du	17.29	-190	0.83	-9	-2	-7	2.15	-24	-15	-9
Currently Proposed											
Condominium	410 du	5.81	2,382	0.44	180	31	149	0.52	213	143	40
Net New Trips	—	—	2,192	—	171	29	**142**	—	228	154	74

Note:
du = dwelling unit

During the PM peak hour, existing northbound left-turn volumes are 252 vehicles and the intersection can accommodate 74 additional vehicles before triggering a significant impact and reaching LOS E, which equates to 485 condominium units after deducting the existing trips, as shown in Table 5.

Table 5: Trip Generation Summary—Sensitivity Analysis

Land Use	Units	Daily		AM Peak Hour				PM Peak Hour			
		Rate	Trips	Rate	Trips	In	Out	Rate	Trips	In	Out
Existing											
Apartment	-11 du	17.29	-190	0.83	-9	-2	-7	2.15	-24	-15	-9
Currently Proposed											
Condominium	485 du	5.81	2,818	0.44	213	36	177	0.52	252	169	83
Net New Trips	—	—	2,628	—	204	34	170	—	228	154	**74**
Note: du = dwelling unit											

Since trips generated by a project size of 485 condominium units cannot be accommodated during the AM peak hour without causing a significant impact, the maximum size of the project, prior to triggering a significant impact, is 410 condominium units.

As currently proposed, only 11 condominium units would be constructed at the project site. Therefore, the project's contribution to traffic at the El Camino Real/Trousdale Drive intersection would be far below the level that would result in significant traffic impacts. Furthermore, as indicated under the heading "Trip Generation," and supported by the information provided under the heading "Apartment versus Condominium Trip Generation Rates," the project would result in an overall reduction of trips to and from the project site.

City of Burlingame Wastewater Treatment Plant Capacity

The City of Burlingame has requested that the Wastewater treatment Plant's Capacity and its ability to accept the project's wastewater be reviewed.

According to the San Francisco Bay Regional Water Quality Control Board's March 9, 2015 NPDES Compliance Evaluation Inspection Report, the wastewater treatment plant's current average dry weather flow is 2.7 million gallons per day (mgd) based on data from September 2014 through November 2014 (the most recent data available). The permitted average dry weather flow is 5.5 mgd. As such, the wastewater treatment plant is operating, on average, at 49 percent of its total capacity and has approximately 2.8 mgd of available capacity.

The applicant previously estimated that the 10-unit project would produce 2,000 gallons per day (gpd) of wastewater or 200 gpd per unit. Using this assumption, the newly proposed 11 unit project would be estimated to produce approximately 2,200 gpd of wastewater. This amount is equivalent to less than

0.08 percent of available capacity. Therefore, sufficient wastewater treatment plant capacity exists to serve the project.

Conclusion

Overall, project's changes are not significant enough to result in additional significant environmental impacts beyond those disclosed in the 2015 Revised IS/MND. Because the building footprint would remain the same as previously proposed, impacts related to biologic resources, cultural resources, geology, hydrology, hazards, and minerals would remain the same. The addition of one residential unit would not cause the project's impacts related to trip generation, public services, utilities, air quality, or greenhouse gases to change significantly. Noise levels on-site would remain substantially the same and would remain consistent with the Revised IS/MND's conclusion of less than significant. However, the proposed wall along the western project boundary may offer some additional noise reduction. The addition of the one residential unit would result in slightly different population numbers on-site, but this change would not be significant as it relates to potential environmental impacts. The project would continue to be consistent with applicable zoning and land use regulations. Finally, the project's overall aesthetic impacts, though not considered significant to begin with, would be reduced as a result of the planting of evergreen trees in place of deciduous trees, thereby offering year-round visual screening.

As such, the revised 11-unit project is substantially similar to the 10-unit project analyzed in the Revised IS/MND, and the resulting potentially significant impacts and related mitigation measures would still be applicable. The revised 11-unit project would not result in any significant additional environmental impacts.

Attachment A:
Burlingame Condominiums Sensitivity Analysis

Memorandum

Date: February 12, 2016

Project: BUR002-1

To: Ms. Mary Bean
First Carbon Solutions

From: Mark Spencer
mspencer@w-trans.com
Lauren Davini
ldavini@w-trans.com

Subject: Burlingame Condominiums Sensitivity Analysis

As requested, W-Trans has prepared an assessment of the Burlingame Condominiums project regarding the maximum number of condominiums that can be built without triggering an impact to the intersection of El Camino Real and Trousdale Drive. The project site is located at 1509 El Camino Real in the City of Burlingame.

Study Area and Project Description

The study area is located on the west side of El Camino Real between Ray Drive and Adeline Drive in the City of Burlingame. Within the study area, El Camino Real (SR 82) is an undivided four-lane State Highway and a Congestion Management Program (CMP) facility as per C/CAG, which is the Congestion Management Agency in San Mateo County.

Currently, the project site located at 1509 El Camino Real consists of two separate lots. The first lot with Mills Creek is empty and zoned R-2 (duplex residential). The second lot is zoned R-3 (multifamily residential) and contains 11 apartment units in three separate buildings.

The proposed project would merge the two lots into one lot and rezone it to R-3. The originally proposed project consisted of a three-story, 10-unit condominium complex that would be constructed over an at-grade parking garage. The access to the proposed project would be provided via a one-way motor court along El Camino Real. The currently proposed project is 11 condominium units, with a similar access scheme.

Trip Generation

The anticipated trip generation for the proposed project was estimated using standard rates published by the Institute of Transportation Engineers (ITE) in *Trip Generation Manual*, 9th Edition, 2012 for "Residential Condominium/Townhouse" (ITE LU #230). Trips associated with the 11 apartment units that currently exist on the site were estimated using the fitted curve equation for an "Apartment" (ITE LU 220).

The expected trip generation potential for the proposed project is indicated in Table 1, with deductions taken for trips made to and from the existing apartment buildings, which will cease with the construction of the project. Under the original proposal with 10 units, there would be a net decrease of two trips during the morning peak hour and a net decrease of 15 trips during the evening peak hour, as shown in Table 1.

Table 1 – Trip Generation Summary – Previously Proposed

Land Use	Units	Daily		AM Peak Hour				PM Peak Hour			
		Rate	Trips	Rate	Trips	In	Out	Rate	Trips	In	Out
Existing											
Apartment	-11 du	17.29	-190	0.82	-9	-2	-7	2.18	-24	-16	-8
Previously Proposed											
Condominium	10 du	8.68	87	0.73	7	1	6	0.87	9	6	3
Net New Trips			**-103**		**-2**	**-1**	**-1**		**-15**	**-10**	**-5**

Note: du = dwelling unit, ITE Trip Generation 8th Edition used for both Existing and Previously Proposed, as the 8th Edition was the most current at the time of the original analysis.

Under the currently proposed project, with 11 units, there would be no net new trips during the a.m. peak hour and a net decrease of 14 trips during the p.m. peak hour, as shown in Table 2.

Table 2 – Trip Generation Summary – Currently Proposed

Land Use	Units	Daily		AM Peak Hour				PM Peak Hour			
		Rate	Trips	Rate	Trips	In	Out	Rate	Trips	In	Out
Existing											
Apartment	-11 du	17.29	-190	0.83	-9	-2	-7	2.15	-24	-15	-9
Currently Proposed											
Condominium	11 du	8.57	94	0.80	9	2	7	0.89	10	7	3
Net New Trips			**-96**		**0**	**0**	**0**		**-14**	**-8**	**-6**

Note: du = dwelling unit, ITE Trip Generation 9th Edition used for both Existing and Currently Proposed, as the 9th Edition was the most current at the time of the updated analysis.

With respect to trip generation rates, apartments have higher trip generation rates than condominiums (resulting in more trips generated by an apartment complex and condominium development of the same size). Apartments are considered rented units with a higher turnover of occupants than condominiums, which are units for purchase. As such, there are often more individuals per apartment unit with varying schedules and a need for each occupant to drive themselves places, compared to a condominium where there is more likely one family per unit with more similar schedules and less individuals needing to independently drive themselves places.

Sensitivity Analysis

An analysis of the intersection of El Camino Real/Trousdale Drive was completed to determine the maximum possible size of the condominium project prior to triggering a significant impact. Volumes for the a.m. and p.m. peak hours at El Camino Real/Trousdale Drive were taken from a traffic study for 1600 Trousdale Drive, with an optimized traffic signal cycle length for both peak hours to calculate the Existing traffic operations conditions. Currently, the intersection operates at LOS C during the a.m. peak hour and LOS D during the p.m. peak hour. For the El Camino Real/Trousdale Drive intersection, project-related operational impacts at the intersection would be considered significant if the project causes the intersection to go from an acceptable LOS C to a deficient LOS E

during the a.m. peak hour, or from an acceptable LOS D to a deficient LOS E during the p.m. peak hour. The Level of Service calculations are attached.

In looking at the possible trip distribution of the condominium project, it was determined that the most conservative analysis would be to add volumes to the northbound left-turn movement at El Camino Real/Trousdale Avenue and determine how much traffic would be needed to result in a deficient LOS E.

Existing northbound left-turn volumes are 262 vehicles during the a.m. peak hour. The intersection has the ability to accommodate 142 additional vehicles before the intersection deteriorates from LOS C to LOS E. After taking existing trips from the apartment into account, it was determined the project would have to be at least 410 condominium units to generate 142 additional outbound trips before triggering a significant impact at this intersection, as shown in Table 3.

Table 3 – Trip Generation Summary – Sensitivity Analysis

Land Use	Units	Daily		AM Peak Hour				PM Peak Hour			
		Rate	Trips	Rate	Trips	In	Out	Rate	Trips	In	Out
Existing											
Apartment	-11 du	17.29	-190	0.83	-9	-2	-7	2.15	-24	-15	-9
Currently Proposed											
Condominium	410 du	5.81	2,382	0.44	180	31	149	0.52	213	143	40
Net New Trips			2,192		171	29	**142**		228	154	74

Note: du = dwelling unit

During the p.m. peak hour, existing northbound left-turn volumes are 252 vehicles and the intersection can accommodate 74 additional vehicles before triggering a significant impact and reaching LOS E, which equates to 485 condominium units after deducting the existing trips, as shown in Table 4.

Table 4 – Trip Generation Summary – Sensitivity Analysis

Land Use	Units	Daily		AM Peak Hour				PM Peak Hour			
		Rate	Trips	Rate	Trips	In	Out	Rate	Trips	In	Out
Existing											
Apartment	-11 du	17.29	-190	0.83	-9	-2	-7	2.15	-24	-15	-9
Currently Proposed											
Condominium	485 du	5.81	2,818	0.44	213	36	177	0.52	252	169	83
Net New Trips			2,628		204	34	170		228	154	**74**

Note: du = dwelling unit

Since trips generated by a project size of 485 condominium units cannot be accommodated during the a.m. peak hour without causing a significant impact, the maximum size of the project, prior to triggering a significant impact, is 410 condominium units.

Conclusions and Recommendations

- The project as proposed with 10 condominium units would generate a net decrease of 103 daily trips, including a decrease of two trips during the a.m. peak hour and a decrease of 15 trips during the p.m. peak hour, after deducting the trips generated by the existing apartments.

- If the project were 11 condominium units, there would be a net decrease of 96 daily trips, including zero trips during the a.m. peak hour and a net decrease of 14 trips during the p.m. peak hour.

- The project could be as large as 410 condominium units prior to triggering a significant impact at the intersection of El Camino Real/Trousdale Drive.

Thank you for giving W-Trans the opportunity to provide these services. Please call if you have any questions.

MS/lgd/BUR002-1.M1

Attachments: Level of Service Calculations

HCM Signalized Intersection Capacity Analysis
1: El Camino Real & Trousdale Dr

2/11/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	268	228	180	9	174	33	262	535	37	84	462	207
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.91	0.91			0.95		1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	0.94			0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00			1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1610	3171			3451		1770	5085	1583	1770	5085	1583
Flt Permitted	0.95	1.00			1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1610	3171			3451		1770	5085	1583	1770	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	291	248	196	10	189	36	285	582	40	91	502	225
RTOR Reduction (vph)	0	96	0	0	18	0	0	0	25	0	0	124
Lane Group Flow (vph)	250	389	0	0	217	0	285	582	15	91	502	101
Turn Type	Split	NA		Split	NA		Prot	NA	Perm	Prot	NA	pm+ov
Protected Phases	4	4		8	8		5	2		1	6	4
Permitted Phases									2			6
Actuated Green, G (s)	14.2	14.2			13.4		15.2	29.8	29.8	7.6	22.2	36.4
Effective Green, g (s)	14.2	14.2			13.4		15.2	29.8	29.8	7.6	22.2	36.4
Actuated g/C Ratio	0.18	0.18			0.17		0.19	0.37	0.37	0.09	0.27	0.45
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	282	555			570		332	1870	582	166	1393	789
v/s Ratio Prot	c0.16	0.12			c0.06		c0.16	0.11		0.05	c0.10	0.02
v/s Ratio Perm									0.01			0.04
v/c Ratio	0.89	0.70			0.38		0.86	0.31	0.03	0.55	0.36	0.13
Uniform Delay, d1	32.6	31.4			30.1		31.9	18.3	16.3	35.1	23.7	13.0
Progression Factor	1.00	1.00			1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	26.5	4.0			0.4		19.2	0.4	0.1	3.7	0.7	0.1
Delay (s)	59.1	35.4			30.5		51.1	18.7	16.4	38.7	24.4	13.1
Level of Service	E	D			C		D	B	B	D	C	B
Approach Delay (s)		43.5			30.5			28.8			22.9	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	31.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	81.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	56.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
1: El Camino Real & Trousdale Dr

2/11/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	268	228	180	9	174	33	404	535	37	84	462	207
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.91	0.91			0.95		1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	0.94			0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00			1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1610	3171			3451		1770	5085	1583	1770	5085	1583
Flt Permitted	0.95	1.00			1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1610	3171			3451		1770	5085	1583	1770	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	291	248	196	10	189	36	439	582	40	91	502	225
RTOR Reduction (vph)	0	96	0	0	18	0	0	0	25	0	0	124
Lane Group Flow (vph)	250	389	0	0	217	0	439	582	15	91	502	101
Turn Type	Split	NA		Split	NA		Prot	NA	Perm	Prot	NA	pm+ov
Protected Phases	4	4		8	8		5	2		1	6	4
Permitted Phases									2			6
Actuated Green, G (s)	14.2	14.2			13.4		15.2	29.8	29.8	7.6	22.2	36.4
Effective Green, g (s)	14.2	14.2			13.4		15.2	29.8	29.8	7.6	22.2	36.4
Actuated g/C Ratio	0.18	0.18			0.17		0.19	0.37	0.37	0.09	0.27	0.45
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	282	555			570		332	1870	582	166	1393	789
v/s Ratio Prot	c0.16	0.12			c0.06		c0.25	0.11		0.05	c0.10	0.02
v/s Ratio Perm									0.01			0.04
v/c Ratio	0.89	0.70			0.38		1.32	0.31	0.03	0.55	0.36	0.13
Uniform Delay, d1	32.6	31.4			30.1		32.9	18.3	16.3	35.1	23.7	13.0
Progression Factor	1.00	1.00			1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	26.5	4.0			0.4		164.6	0.4	0.1	3.7	0.7	0.1
Delay (s)	59.1	35.4			30.5		197.5	18.7	16.4	38.7	24.4	13.1
Level of Service	E	D			C		F	B	B	D	C	B
Approach Delay (s)		43.5			30.5			92.6			22.9	
Approach LOS		D			C			F			C	

Intersection Summary			
HCM 2000 Control Delay	54.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	81.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	64.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	233	152	223	18	152	48	252	705	26	125	911	225
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.91	0.91			0.95		1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	0.92			0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00			1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1610	3096			3408		1770	5085	1583	1770	5085	1583
Flt Permitted	0.95	1.00			1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1610	3096			3408		1770	5085	1583	1770	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	253	165	242	20	165	52	274	766	28	136	990	245
RTOR Reduction (vph)	0	210	0	0	38	0	0	0	19	0	0	133
Lane Group Flow (vph)	228	222	0	0	199	0	274	766	9	136	990	112
Turn Type	Split	NA		Split	NA		Prot	NA	Perm	Prot	NA	pm+ov
Protected Phases	4	4		8	8		5	2		1	6	4
Permitted Phases									2			6
Actuated Green, G (s)	9.2	9.2			12.5		9.2	22.2	22.2	9.4	22.4	31.6
Effective Green, g (s)	9.2	9.2			12.5		9.2	22.2	22.2	9.4	22.4	31.6
Actuated g/C Ratio	0.13	0.13			0.18		0.13	0.32	0.32	0.14	0.32	0.46
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	213	411			614		234	1628	507	240	1643	813
v/s Ratio Prot	c0.14	0.07			c0.06		c0.15	0.15		0.08	c0.19	0.02
v/s Ratio Perm									0.01			0.05
v/c Ratio	1.07	0.54			0.32		1.17	0.47	0.02	0.57	0.60	0.14
Uniform Delay, d1	30.0	28.1			24.7		30.0	18.8	16.1	28.0	19.7	10.9
Progression Factor	1.00	1.00			1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	81.6	1.5			0.3		112.8	1.0	0.1	3.1	1.6	0.1
Delay (s)	111.6	29.5			25.0		142.9	19.8	16.2	31.1	21.4	11.0
Level of Service	F	C			C		F	B	B	C	C	B
Approach Delay (s)		57.9			25.0			51.3			20.5	
Approach LOS		E			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	38.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	69.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	63.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
1: El Camino Real & Trousdale Dr

2/12/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	233	152	223	18	152	48	326	705	26	125	911	225
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.91	0.91			0.95		1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	0.92			0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00			1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1610	3096			3408		1770	5085	1583	1770	5085	1583
Flt Permitted	0.95	1.00			1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1610	3096			3408		1770	5085	1583	1770	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	253	165	242	20	165	52	354	766	28	136	990	245
RTOR Reduction (vph)	0	210	0	0	38	0	0	0	19	0	0	133
Lane Group Flow (vph)	228	222	0	0	199	0	354	766	9	136	990	112
Turn Type	Split	NA		Split	NA		Prot	NA	Perm	Prot	NA	pm+ov
Protected Phases	4	4		8	8		5	2		1	6	4
Permitted Phases									2			6
Actuated Green, G (s)	9.2	9.2			12.5		9.2	22.2	22.2	9.4	22.4	31.6
Effective Green, g (s)	9.2	9.2			12.5		9.2	22.2	22.2	9.4	22.4	31.6
Actuated g/C Ratio	0.13	0.13			0.18		0.13	0.32	0.32	0.14	0.32	0.46
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	213	411			614		234	1628	507	240	1643	813
v/s Ratio Prot	c0.14	0.07			c0.06		c0.20	0.15		0.08	c0.19	0.02
v/s Ratio Perm									0.01			0.05
v/c Ratio	1.07	0.54			0.32		1.51	0.47	0.02	0.57	0.60	0.14
Uniform Delay, d1	30.0	28.1			24.7		30.0	18.8	16.1	28.0	19.7	10.9
Progression Factor	1.00	1.00			1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	81.6	1.5			0.3		251.6	1.0	0.1	3.1	1.6	0.1
Delay (s)	111.6	29.5			25.0		281.6	19.8	16.2	31.1	21.4	11.0
Level of Service	F	C			C		F	B	B	C	C	B
Approach Delay (s)		57.9			25.0			100.5			20.5	
Approach LOS		E			C			F			C	

Intersection Summary			
HCM 2000 Control Delay	54.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	69.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	67.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group