County of Santa Cruz

PLANNING DEPARTMENT
701 OCEAN STREET, 4TH FLOOR, SANTA CRUZ, CA 95060
(831) 454-2580 FAX: (831) 454-2131
KATHLEEN MOLLOY PREVISICH, PLANNING DIRECTOR
www.sccoplanning.com

NOTICE OF INTENT TO ADOPT A MITIGATED NEGATIVE DECLARATION

NOTICE OF PUBLIC REVIEW AND COMMENT PERIOD

Pursuant to the California Environmental Quality Act, the following project has been reviewed by the County Environmental Coordinator to determine if it has a potential to create significant impacts to the environment and, if so, how such impacts could be solved. A Negative Declaration is prepared in cases where the project is determined not to have any significant environmental impacts. Either a Mitigated Negative Declaration or Environmental Impact Report (EIR) is prepared for projects that may result in a significant impact to the environment.

Public review periods are provided for these Environmental Determinations according to the requirements of the County Environmental Review Guidelines. The environmental document is available for review at the County Planning Department located at 701 Ocean Street, in Santa Cruz. You may also view the environmental document on the web at www.sccoplanning.com under the Planning Department menu. If you have questions or comments about this Notice of Intent, please contact Todd Sexauer of the Environmental Review staff at (831) 454-3511.

The County of Santa Cruz does not discriminate on the basis of disability, and no person shall, by reason of a disability, be denied the benefits of its services, programs or activities. If you require special assistance in order to review this information, please contact Bernice Shawver at (831) 454-3137 to make arrangements.

PROJECT: NISSAN OF SANTA CRUZ

APP #: 161443

APN(S): 030-121-27

PROJECT DESCRIPTION: The proposed development consists of the combination of five parcels and construction of an approximately 12,550 square foot car dealership and an approximately 7,500 square foot service area. Project includes excavation of approximately 3,500 cubic yards of material. The project requires a Rezoning from C-2 (Neighborhood Commercial) to C-4 (Service Commercial) and General Plan Amendment from C-C (Community Commercial) to C-S (Service Commercial), a Commercial Development Permit, a Grading Permit and Sign Exception to exceed 50 square feet of signage.

PROJECT LOCATION: The proposed project is located on the west side of 41st Avenue within the community of Live Oak in the unincorporated County of Santa Cruz. Santa Cruz County is bounded on the north by San Mateo County, on the south by Monterey and San Benito counties, on the east by Santa Clara County, and on the south and west by the Monterey Bay and the Pacific Ocean.

EXISTING ZONE DISTRICT: C-2
APPLICANT: Kimley Horn, Attn: Bill Wiseman
OWNER: Joseph and Karen Calcagno
PROJECT PLANNER: Nathan Macbeth, 454-3118
EMAIL: Nathan.Macbeth@santacruzcounty.us
ACTION: Negative Declaration with Mitigations
REVIEW PERIOD: April 12, 2017 through May 1, 2017

This project will be considered at a public hearing by the Board of Supervisors. The time, date and location have not been set. When scheduling does occur, these items will be included in all public hearing notices for the project.

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MITIGATED NEGATIVE DECLARATION

Project: Nissan of Santa Cruz **APN(S): 030-121-27**

Project Description: The proposed development consists of the combination of five parcels and construction of an approximately 12,550 square foot car dealership and an approximately 7,500 square foot service area. Project includes excavation of approximately 3,500 cubic yards of material. The project requires a Rezoning from C-2 (Neighborhood Commercial) to C-4 (Service Commercial) and General Plan Amendment from C-C (Community Commercial) to C-S (Service Commercial), a Commercial Development Permit, a Grading Permit and Sign Exception to exceed 50 square feet of signage.

Project Location: The proposed project is located on the west side of 41st Avenue within the community of Live Oak in the unincorporated County of Santa Cruz. Santa Cruz County is bounded on the north by San Mateo County, on the south by Monterey and San Benito counties, on the east by Santa Clara County, and on the south and west by the Monterey Bay and the Pacific Ocean.

Owner: Joseph and Karen Calcagno

Applicant: Kimley Horn, Attn: Bill Wiseman

Staff Planner: Nathan Macbeth, (831) 454-3118

Email: Nathan.Macbeth@santacruzcounty.us

This project will be considered at a public hearing by the Board of Supervisors. The time, date and location have not been set. When scheduling does occur, these items will be included in all public hearing notices for the project.

California Environmental Quality Act Mitigated Negative Declaration Findings:

Find, that this Mitigated Negative Declaration reflects the decision-making body's independent judgment and analysis, and; that the decision-making body has reviewed and considered the information contained in this Mitigated Negative Declaration and the comments received during the public review period; and, that revisions in the project plans or proposals made by or agreed to by the project applicant would avoid the effects or mitigate the effects to a point where clearly no significant effects would occur; and, on the basis of the whole record before the decision-making body (including this Mitigated Negative Declaration) that there is no substantial evidence that the project as revised will have a significant effect on the environment. The expected environmental impacts of the project are documented in the attached Initial Study on file with the County of Santa Cruz Clerk of the Board located at 701 Ocean Street, 5th Floor, Santa Cruz, California.

Review Period Ends: May 1, 2017

Date: _____

_____
TODD SEXAUER, Environmental Coordinator
(831) 454-3511

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CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)
INITIAL STUDY/ENVIRONMENTAL CHECKLIST

Date:	April 6, 2017	**Application Number:**	161443
Project Name:	Nissan of Santa Cruz	**Staff Planner:**	Nathan MacBeth

I. OVERVIEW AND ENVIRONMENTAL DETERMINATION

APPLICANT:	Bill Wiseman	**APN(s):**	030-121-27, 08, 12, 13, 53
OWNER:	Calcagno	**SUPERVISORAL DISTRICT:**	First District

PROJECT LOCATION: The proposed project is located on the west side of 41st Avenue within the community of Live Oak in the unincorporated County of Santa Cruz. The County of Santa Cruz is bounded on the north by San Mateo County, on the south by Monterey and San Benito counties, on the east by Santa Clara County, and on the south and west by the Monterey Bay and the Pacific Ocean.

SUMMARY PROJECT DESCRIPTION:

The proposed development consists of the combination of five parcels and construct an approximately 12,550 square foot car dealership and an approximately 7,500 square foot service area. Project includes excavation of approximately 3,500 cubic yards of material. The project requires a rezoning from C-2 (Neighborhood Commercial) to C-4 (Service Commercial) and General Plan Amendment from C-C (Community Commercial) to C-S (Service Commercial), Commercial Development Permit, Grading Permit and Sign Exception to exceed 50 square feet of signage.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED: *All of the following potential environmental impacts are evaluated in this Initial Study. Categories that are marked have been analyzed in greater detail based on project specific information.*

- ☐ Aesthetics and Visual Resources
- ☐ Agriculture and Forestry Resources
- ☒ Air Quality
- ☒ Biological Resources
- ☒ Cultural Resources
- ☒ Geology and Soils
- ☐ Greenhouse Gas Emissions
- ☐ Mineral Resources
- ☒ Noise
- ☐ Population and Housing
- ☐ Public Services
- ☐ Recreation
- ☒ Transportation/Traffic
- ☐ Utilities and Service Systems

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED: *All of the following potential environmental impacts are evaluated in this Initial Study. Categories that are marked have been analyzed in greater detail based on project specific information.*

- ☒ Hazards and Hazardous Materials
- ☐ Hydrology/Water Supply/Water Quality
- ☒ Land Use and Planning
- ☐ Tribal Cultural Resources
- ☐ Mandatory Findings of Significance

DISCRETIONARY APPROVAL(S) BEING CONSIDERED:

- ☒ General Plan Amendment
- ☐ Land Division
- ☒ Rezoning
- ☒ Development Permit
- ☒ Sewer Connection Permit
- ☐ Coastal Development Permit
- ☒ Grading Permit
- ☐ Riparian Exception
- ☐ LAFCO Annexation
- ☒ Sign Exception

OTHER PUBLIC AGENCIES WHOSE APPROVAL IS REQUIRED (e.g., permits, financing approval, or participation agreement):

Permit Type/Action	Agency
None	N/A

DETERMINATION:

On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or

NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

TODD SEXAUER, Environmental Coordinator

4-12-17
Date

NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

TODD SEXAUER, Environmental Coordinator

Date

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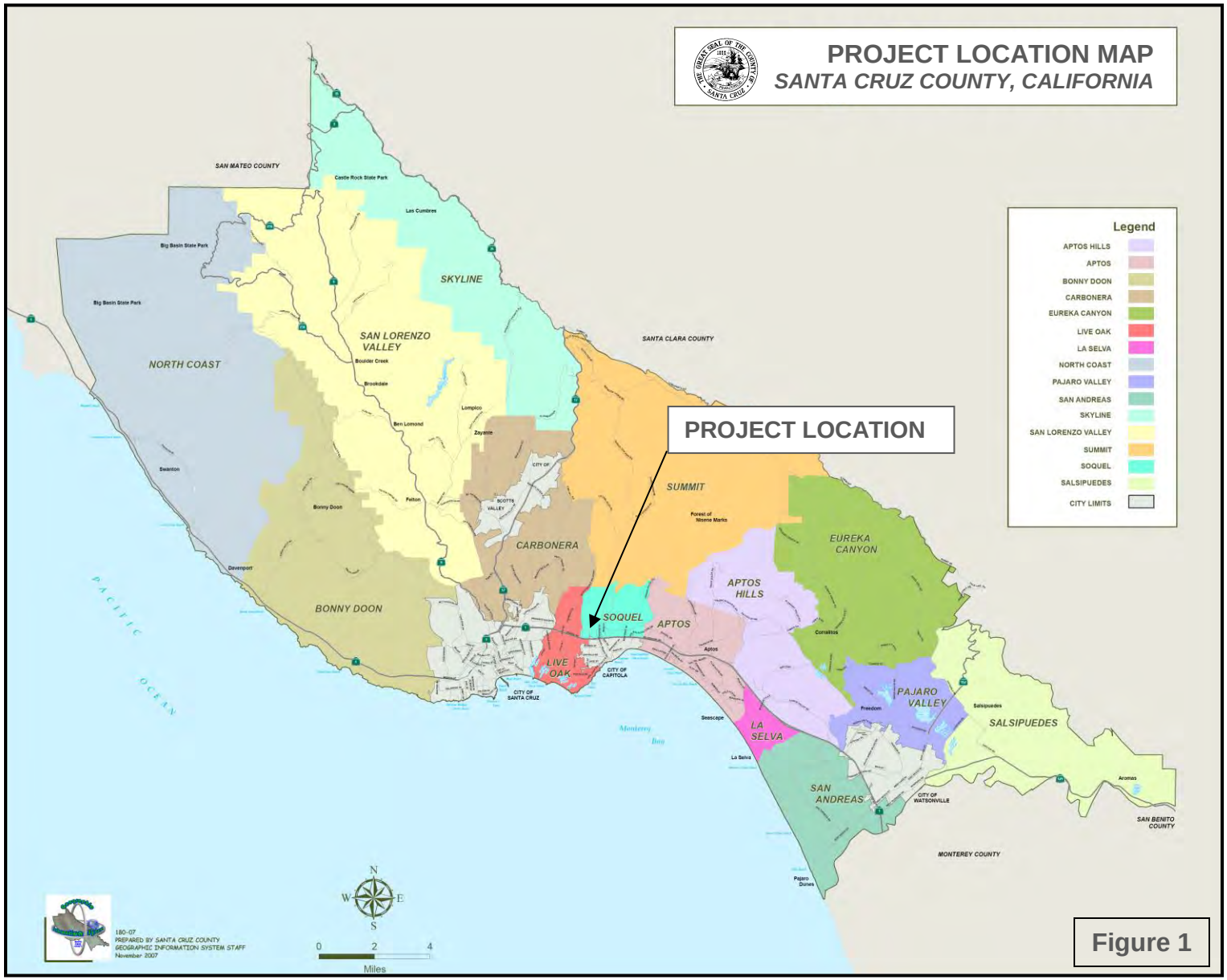
PROJECT LOCATION MAP
SANTA CRUZ COUNTY, CALIFORNIA
PROJECT LOCATION
Legend
APTOS HILLS
APTOS
BONNY DOON
CARBONERA
EUREKA CANYON
LIVE OAK
LA SELVA
NORTH COAST
PAJARO VALLEY
SAN ANDREAS
SKYLINE
SAN LORENZO VALLEY
SUMMIT
SOQUEL
SALSIPUEDES
CITY LIMITS
SAN MATEO COUNTY
SANTA CLARA COUNTY
MONTEREY COUNTY
SAN BENITO COUNTY
SKYLINE
SAN LORENZO VALLEY
NORTH COAST
BONNY DOON
CARBONERA
SUMMIT
EUREKA CANYON
APTOS HILLS
SOQUEL
APTOS
LIVE OAK
PAJARO VALLEY
LA SELVA
SALSIPUEDES
SAN ANDREAS
PACIFIC OCEAN
Monterey Bay
CITY OF SANTA CRUZ
CITY OF CAPITOLA
CITY OF WATSONVILLE
Miles
Figure 1

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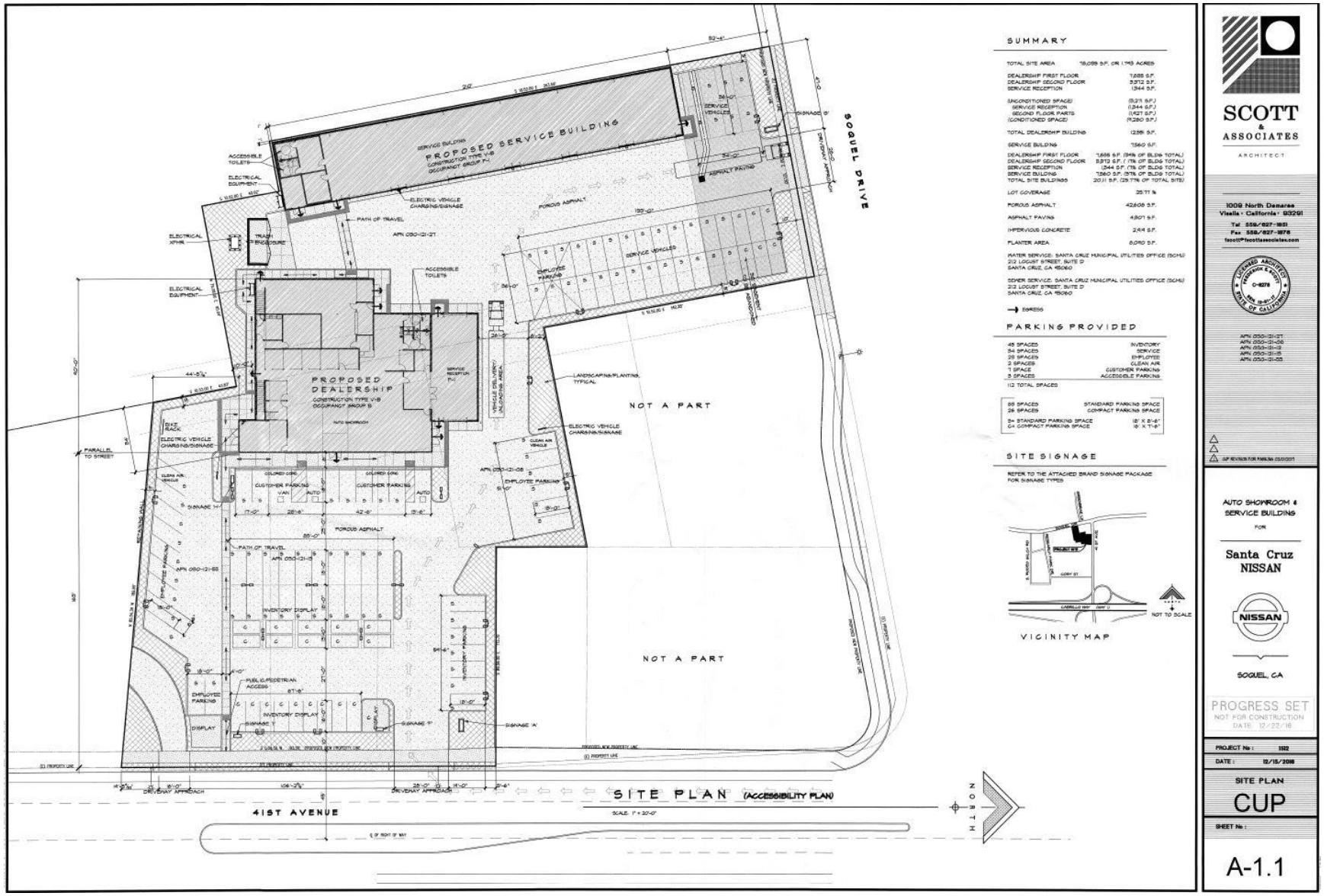

Project Site Plan **Figure 2**

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II. BACKGROUND INFORMATION

EXISTING SITE CONDITIONS:

Parcel Size (acres):	Approximately 1.3 acres (total)
Existing Land Use:	Residential/commercial
Vegetation:	The site contains a mix of existing vegetation including several mature trees in excess of 20 inches.
Slope in area affected by project:	☒ 0 - 30% ☐ 31 – 100% ☐ N/A
Nearby Watercourse:	Rodeo Gulch
Distance To:	Approximately 1,500 feet

ENVIRONMENTAL RESOURCES AND CONSTRAINTS:

Water Supply Watershed:	Not mapped	Fault Zone:	Not Mapped
Groundwater Recharge:	Not Mapped	Scenic Corridor:	Outside Highway 1 corridor
Timber or Mineral:	Not Mapped	Historic:	Not significant
Agricultural Resource:	Not Mapped	Archaeology:	No resources identified
Biologically Sensitive Habitat:	No resources identified	Noise Constraint:	No
Fire Hazard:	Not Mapped	Electric Power Lines:	Yes
Floodplain:	Not Mapped	Solar Access:	Adequate
Erosion:	Low potential	Solar Orientation:	Southeast
Landslide:	Not Mapped	Hazardous Materials:	Yes
Liquefaction:	Low Potential		

SERVICES:

Fire Protection:	Central Fire Protection District	Drainage District:	Zone 5
School District:	Soquel Elementary	Project Access:	41st Avenue and Soquel Drive
Sewage Disposal:	Santa Cruz County Sanitation District	Water Supply:	Santa Cruz Water Department

PLANNING POLICIES:

Zone District: C-2 (Community Commercial)
General Plan: C-C (Community Commercial)
Special Designation: N/A

Urban Services Line:	☒ Inside	☐ Outside
Coastal Zone:	☐ Inside	☒ Outside

ENVIRONMENTAL SETTING AND SURROUNDING LAND USES:

Natural Environment

Santa Cruz County is uniquely situated along the northern end of Monterey Bay approximately 55 miles south of the City of San Francisco along the Central Coast. The Pacific Ocean and Monterey Bay to the west and south, the mountains inland, and the prime agricultural lands along both the northern and southern coast of the county create limitations on the style and amount of building that can take place. Simultaneously, these natural features create an environment that attracts both visitors and new residents every year. The natural landscape provides the basic features that set Santa Cruz apart from the surrounding counties and require specific accommodations to ensure building is done in a safe, responsible and environmentally respectful manner.

The California Coastal Zone affects nearly one third of the land in the urbanized area of the unincorporated County with special restrictions, regulations, and processing procedures required for development within that area. Steep hillsides require extensive review and engineering to ensure that slopes remain stable, buildings are safe, and water quality is not impacted by increased erosion. The farmland in Santa Cruz County is among the best in the world, and the agriculture industry is a primary economic generator for the County. Preserving this industry in the face of population growth requires that soils best suited to commercial agriculture remain active in crop production rather than converting to other land uses.

PROJECT BACKGROUND:

The subject properties are located within the Soquel Planning Area fronting 41st Avenue and Soquel drive. The project site is relatively flat with a gradual downward slope to the south. The project site consists of five individual parcels containing a mix of residential and commercial development. The surrounding area is developed with commercial development including, Home Depot, Best Buy, Safeway super market and gas station along with a variety of retail and commercial services. The project site is adjoined by car washes to the north and south and an existing auto dealer and auto services/ repair (Honda) located across Soquel Drive.

All of the properties are in common ownership and zoned C-2 (Community Commercial) which is consistent with the parcels' General Plan designation of C-C (Community Commercial). The project site is noted as having a C-C (Community Commercial) Land Use

designation in the SSCC Plan (Sustainable Santa Cruz County Plan). The SSCC Plan indicates a potential future street could be located immediately to the west of the project site and highlights other potential circulation improvements along upper 41st Avenue including additional transit drop off, enhanced bike lanes. As proposed, the project would be consistent with the range of concept designs intended to support revenue generating commercial uses in the Upper 41st Avenue area and would construct a number of pedestrian and roadside improvements further meeting the objectives of the Sustainability Plan.

DETAILED PROJECT DESCRIPTION:

The project proposes to demolish four existing single family dwellings and multiple outbuildings and construct a new 12,550 square foot automobile dealership with 7,500 square foot automobile service department. The project also proposes installation of new underground utilities, site drainage improvements, comprehensive landscape plan, and parking lot resulting in approximately 70,000 square feet of impervious area. Grading volumes would include approximately 3,500 cubic yards of excavation and 120 cubic yards of fill.

The project requires the combination of five individual parcels with a total site area of approximately 1.8 acres. The project would be conditioned to require installation or new curb gutter and sidewalk along portions of Soquel Drive laying to the west of the project site and 41st Avenue laying south for the project site. The project proposes the removal of several mature trees consisting of a 48 inch dbh (diameter at breast height) redwood tree, six Podocarpus ranging in diameter of 10 inches to 24 inches in dbh, and one 30 inch dbh walnut tree.

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

III. ENVIRONMENTAL REVIEW CHECKLIST

A. AESTHETICS AND VISUAL RESOURCES

Would the project:

1.	*Have a substantial adverse effect on a scenic vista?*	☐	☐	☒	☐

Discussion: The project would not directly impact any public scenic resources, as designated in the County's General Plan (1994), or obstruct any public views of these visual resources.

2.	*Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?*	☐	☐	☐	☒

Discussion: The project site is not located along a County designated scenic road, public viewshed area, scenic corridor, within a designated scenic resource area, or within a state scenic highway. Therefore, no impact is anticipated.

3.	*Substantially degrade the existing visual character or quality of the site and its surroundings?*	☐	☐	☒	☐

Discussion: The existing visual setting consists of a mix of aging residential homes that are in poor condition and uncharacteristic of the surrounding pattern of commercial development. A mix of large commercial development consisting of a Home Depot, Best Buy and Safeway shopping center is located across 41st Avenue. The shopping center contains a variety of commercial retail uses, including gas stations and a large parking lot that fronts 41st Avenue. The north side of Soquel Drive is developed with a Honda dealership, self-storage facility, and a combination of automobile services, and a mix of commercial retail within the Soquel Town Plaza. The north side of the project site is adjoined by a lumber yard and self-car wash. A full service carwash is located immediately to the south of the project site.

The proposed development would be consistent in terms of architectural style and intensity with the type of construction (concrete masonry) to that of the structures found in the vicinity. Additionally, the proposed parking lot would be landscaped to blend with the surrounding pattern of development and enhance the surrounding built environment and include new roadside improvements to enhance the pedestrian feel along portions of 41st Avenue and Soquel Drive.

The project includes a sign exception to increase the allowed square footage of signage. The proposed sign plan (Attachment I) indicates the location, size and color of all signage. The project would be conditioned to ensure that lighting associated with signage and the site

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

would not result in excessive glare leaving the site. A photometric plan (Attachment B) indicates that lighting would not leave the project site. However, a condition requiring installation of dimmers and shields or relocation fixtures to eliminate glare and or excessive light leaving the site would be required. Therefore impacts would be less than significant.

4.	*Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?*	☐	☐	☒	☐

***Discussion*:** The project would contribute an incremental amount of night lighting to the visual environment. A condition requiring the majority of the site lighting to be turned off after close of business and allow only a limited number of interior lighting to remain on for security purposes. All sign lighting would be turned off after close of business (8:00pm on weekdays, 7:00pm on Saturday and 6:00pm on Sunday). This condition would ensure the impact on nighttime views would be less than significant.

B. AGRICULTURE AND FORESTRY RESOURCES

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

1.	*Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?*	☐	☐	☐	☒

***Discussion*:** The project site does not contain any lands designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency. In addition, the project does not contain Farmland of Local Importance. Therefore, no Prime Farmland, Unique Farmland, Farmland of Statewide or Farmland of Local Importance would be converted to a non-agricultural use. No impact would occur from project implementation.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
2. *Conflict with existing zoning for agricultural use, or a Williamson Act contract?*	☐	☐	☐	☒

Discussion: The project site is currently zoned C-2 (Community Commercial), which is not considered to be an agricultural zone. Additionally, the project site's land is not under a Williamson Act Contract. Therefore, the project does not conflict with existing zoning for agricultural use, or a Williamson Act Contract. No impact is anticipated.

3. *Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?*	☐	☐	☐	☒

Discussion: The project is not located near land designated as Timber Resource. Therefore, the project would not affect the resource or access to harvest the resource in the future. The timber resource may only be harvested in accordance with California Department of Forestry timber harvest rules and regulations.

4. *Result in the loss of forest land or conversion of forest land to non-forest use?*	☐	☐	☐	☒

Discussion: No forest land occurs on the project site or in the immediate vicinity. See discussion under B-3 above. No impact is anticipated.

5. *Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?*	☐	☐	☐	☒

Discussion: The project site and surrounding area within a radius of approximately one mile does not contain any lands designated as Prime Farmland, Unique Farmland, Farmland of Statewide Importance or Farmland of Local Importance as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency. Therefore, no Prime Farmland, Unique Farmland, Farmland of Statewide, or Farmland of Local Importance would be converted to a non-agricultural use. In addition, the project site contains no forest land, and no forest land occurs within 1.5 miles of the proposed project site. Therefore, no impacts are anticipated.

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

C. AIR QUALITY

The significance criteria established by the Monterey Bay Unified Air Pollution Control District (MBUAPCD) has been relied upon to make the following determinations. Would the project:

1. *Conflict with or obstruct implementation of the applicable air quality plan?*	☐	☐	☒	☐

Discussion: The project would not conflict with or obstruct any long-range air quality plans of the Monterey Bay Air Resources District (MBARD). Because general construction activity related emissions (i.e., temporary sources) are accounted for in the emission inventories included in the plans, impacts to air quality plan objectives are less than significant. See C-2 below.

General estimated basin-wide construction-related emissions are included in the MBARD emission inventory (which, in part, form the basis for the air quality plans cited below) and are not expected to prevent long-term attainment or maintenance of the ozone and particulate matter standards within the North Central Coast Air Basin (NCCAB). Therefore, temporary construction impacts related to air quality plans for these pollutants from the proposed project would be less than significant, and no mitigation would be required, since they are presently estimated and accounted for in the District's emission inventory, as described below. No stationary sources would be constructed that would be long-term permanent sources of emissions.

2. *Violate any air quality standard or contribute substantially to an existing or projected air quality violation?*	☐	☐	☒	☐

Discussion: Santa Cruz County is located within the North Central Coast Air Basin (NCCAB). The NCCAB does not meet state standards for ozone (reactive organic gases [ROGs] and nitrogen oxides [NOx]) and fine particulate matter (PM_{10}). Therefore, the regional pollutants of concern that would be emitted by the project are ozone precursors and PM_{10}.

Ozone is the main pollutant of concern for the NCCAB. The primary sources of ROG within the air basin are on- and off-road motor vehicles, petroleum production and marketing, solvent evaporation, and prescribed burning. The primary sources of NOx are on- and off-road motor vehicles, stationary source fuel combustion, and industrial processes. In 2010, daily emissions of ROGs were estimated at 63 tons per day. Of this, area-wide sources represented 49 percent, mobile sources represented 36 percent, and stationary sources represented 15 percent. Daily emissions of NOx were estimated at 54 tons per day with 69 percent from mobile sources, 22 percent from stationary sources, and 9 percent from area-wide sources. In addition, the region is "NOx sensitive," meaning that ozone formation due

to local emissions is more limited by the availability of NOx as opposed to the availability of ROGs (MBARD, 2013b).

PM_{10} is the other major pollutant of concern for the NCCAB. In the NCCAB, highest particulate levels and most frequent violations occur in the coastal corridor. In this area, fugitive dust from various geological and man-made sources combines to exceed the standard. Nearly three quarters of all NCCAB exceedances occur at these coastal sites where sea salt is often the main factor causing exceedance (MBARD, 2005). In 2005 daily emissions of PM_{10} were estimated at 102 tons per day. Of this, entrained road dust represented 35 percent of all PM_{10} emission, windblown dust 20 percent, agricultural tilling operations 15 percent, waste burning 17 percent, construction 4 percent, and mobile sources, industrial processes, and other sources made up 9 percent (MBAPRD, 2008).

Given the modest amount of new traffic that would be generated by the project there is no indication that new emissions of ROGs or NOx would exceed MBARD thresholds for these pollutants; and therefore, there would not be a significant contribution to an existing air quality violation.

Project construction may result in a short term, localized decrease in air quality due to generation of PM_{10}. However, standard dust control best management practices, such as periodic watering, would be implemented during construction to avoid significant air quality impacts from the generation of PM_{10}.

Table 1: Construction Activity with Potentially Significant Impacts from Pollutant PM_{10}

Activity	Potential Threshold*
Construction site with minimal earthmoving	8.1 acres per day
Construction site with earthmoving (grading, excavation)	2.2 acres per day

*Based on Midwest Research Institute, Improvement of Specific Emission Factors (1995). Assumes 21.75 working weekdays per month and daily watering of site.

Note: Construction projects below the screening level thresholds shown above are assumed to be below the **82 lb/day threshold of significance**, while projects with activity levels higher than those above may have a significant impact on air quality. Additional mitigation and analysis of the project impact may be necessary for those construction activities.

Source: Monterey Bay Unified Air Pollution Control District, 2008.

Impacts

As required by the MBARD, construction activities (e.g., excavation, grading, on-site vehicles) which directly generate 82 pounds per day or more of PM_{10} would have a significant impact on local air quality when they are located nearby and upwind of sensitive receptors such as the community of Soquel (Table 1). Construction projects below the screening level thresholds shown in Table 1 are assumed to be below the 82 lb/day threshold of significance, while projects with activity levels higher than those thresholds may have a significant impact on air quality. The proposed project would require minimal grading. Although the project

would produce PM_{10}, it would be far below the 82 pounds per day threshold. This would result in less than significant impacts on air quality from the generation of PM_{10}.

Construction projects using typical construction equipment such as dump trucks, scrapers, bulldozers, compactors and front-end loaders that temporarily emit precursors of ozone [i.e., volatile organic compounds (VOC) or oxides of nitrogen (NOx)], are accommodated in the emission inventories of state- and federally-required air plans and would not have a significant impact on the attainment and maintenance of ozone AAQS (MBARD 2008).

Although not a mitigation measure per se (i.e., required by law), California ultralow sulfur diesel fuel with a maximum sulfur content of 15 ppm by weight will be used in all diesel-powered equipment, which minimizes sulfur dioxide and particulate matter.

The following Best Management Practices (BMPs) and Best Available Control Technology (BACT) will be implemented during all site excavation and grading.

MBPs and BACT

AQ-1: Contracted Diesel Control Measures: In addition to the use of Tiered engines and California ultralow sulfur diesel fuel, the following requirements will be incorporated into contract specifications:

- To minimize potential diesel odor impacts on nearby receptors (pursuant to MBUAPCD Rule 402, Nuisances), construction equipment will be properly tuned. A schedule of tune-ups will be developed and performed for all equipment operating within the project area. A written log of required tune-ups will be maintained and a copy of the log will be submitted to the County of Santa Cruz Department of Public Works (DPW) Planning Director for review every 2,000 service hours.
- Fixed temporary sources of air emissions (such as portable pumps, compressors, generators, etc.) will be electrically powered unless the contractor submits documentation and receives written approval from the County of Santa Cruz DPW that the use of such equipment is not practical, feasible, or available (generally contingent upon power line proximity, capacity, and accessibility). California ultralow sulfur diesel fuel with maximum sulfur content of 15 ppm by weight (ppmw S), or an approved alternative fuel, will be used for on-site fixed equipment not using line power.
- To minimize diesel emission impacts, construction contracts will require off-road compression ignition equipment operators to reduce unnecessary idling with a 2-minute time limit, subject to monitoring and written documentation.
- On-road material hauling vehicles will shut off engines while queuing for loading and unloading for time periods longer than 2 minutes, subject to monitoring and written documentation.

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

- Off-road diesel equipment will be fitted with verified diesel emission control systems (e.g., diesel oxidation catalysts) to the extent reasonably and economically feasible.
- Utilize alternative fuel equipment (i.e., compressed or liquefied natural gas, biodiesel, electric) to the extent reasonably and economically feasible.

Feasibility will be determined consistent with Best Available Control Technology (BACT) general criteria: 1) achieved in practice; 2) contained in adopted control measures; 3) technologically feasible; and 4) cost-effective.

AQ-2: Diesel Particulate Matter Emissions Control Measures: In addition, the project will implement the following measures to reduce particulate matter emissions from diesel exhaust:

- Grid power will be used instead of diesel generators where it is feasible to connect to grid power (generally contingent upon power line proximity, capacity, and accessibility).
- The project specifications will include 13 CCR Sections 2480 and 2485, which limit the idling of all diesel-fueled commercial vehicles (weighing over 10,000 pounds, both California- or non-California-based trucks) to 30 seconds at a school or 5 minutes at any location. In addition, the use of diesel auxiliary power systems and main engines will be limited to 5 minutes when within 100 feet of homes or schools while the driver is resting.
- The project specifications will include 17 CCR Section 93115, Airborne Toxic Control Measure for Stationary Compression Ignition Engines, which specifies fuel and fuel additive requirements; emission standards for operation of any stationary, diesel-fueled, compression-ignition engines; and operation restrictions within 500 feet of school grounds when school is in session.
- A schedule of low-emissions tune-ups will be developed and such tune-ups will be performed on all equipment, particularly for haul and delivery trucks.
- Low-sulfur (≤ 15 ppmw S) fuels will be used in all stationary and mobile equipment.

AQ-3: Dust Control Measures: The following controls will be implemented at the construction and staging sites as applicable:

- Water all active construction areas at least twice daily as necessary and indicated by soil and air conditions.
- Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least 2 feet of freeboard.
- Pave, apply water three times daily, or apply (nontoxic) soil stabilizers on all unpaved access roads, parking areas and staging areas at construction sites.

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

- Sweep daily (with water sweepers) all paved access roads, parking areas and staging areas at construction sites.
- Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets.
- All disturbed areas, including storage piles, which are not being actively utilized for construction purposes, will be effectively stabilized of dust emissions using water, chemical stabilizer/suppressant, covered with a tarp or other suitable cover or vegetative ground cover.
- All on-site unpaved roads and off-site unpaved access roads will be effectively stabilized of dust emissions using water or chemical stabilizer/suppressant.
- All land clearing, grubbing, scraping, excavation, land leveling, grading, cut & fill, and demolition activities will be effectively controlled of fugitive dust emissions utilizing application of water or by presoaking.
- When materials are transported off site, all material will be covered, or effectively wetted to limit visible dust emissions, and at least 6 inches of freeboard space from the top of the container will be maintained.
- All operations will limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday. (The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions. Use of blower devices is expressly forbidden.)
- Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, said piles will be effectively stabilized of fugitive dust emissions utilizing sufficient water or chemical stabilizer/suppressant.
- Within urban areas, trackout will be immediately removed when it extends 50 or more feet from the site and at the end of each workday.
- Any site with 150 or more vehicle trips per day will prevent carryout and trackout.
- Hydroseed or apply (nontoxic) soil stabilizers to inactive construction areas (previously graded areas inactive for 10 days or more).
- Enclose, cover, water twice daily, or apply (nontoxic) soil binders to exposed stockpiles (dirt, sand, etc.).
- Limit traffic speeds on unpaved roads to 15 miles per hour.
- Install sandbags or other erosion control measures to prevent silt runoff to public roadways from sites with a slope greater than 1 percent.
- Replant vegetation in disturbed areas as quickly as possible.
- Install wheel washers for all exiting trucks, or wash off all trucks and equipment leaving the site.

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

- Install wind breaks at windward side(s) of construction areas.
- Suspend excavation and grading activity when winds (instantaneous gusts) exceed 20 miles per hour.
- Limit the area subject to excavation, grading, and other construction activity at any one time.

Implementation of the above BMPs and BACT would ensure that emissions of diesel particulate matter (DPM) and fugitive dust from project excavation and grading would be consistent with the MBARD emissions inventories. Impacts would be less than significant.

3. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☐	☒	☐

***Discussion*:** Project construction would have a limited and temporary potential to contribute to existing violations of California air quality standards for ozone and PM_{10} primarily through diesel engine exhaust and fugitive dust. However, the Santa Cruz monitoring station has not had any recent violations of federal or state air quality standards mainly through dispersion of construction-related emission sources. BMPs and BACT described above under C-2 would ensure emissions remain below a level of significance. Therefore, the proposed project would not result in a cumulatively considerable net increase in criteria pollutants. The impact on ambient air quality would be less than significant.

4. Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐

***Discussion*:** The proposed car dealership and service center project would not generate substantial pollutant concentrations. Emissions from construction activities represent temporary impacts that are typically short in duration. Impacts to sensitive receptors would be less than significant.

Impacts

The proposed project is located in the community of Soquel and sensitive receptors would be as close as 550 feet from the project area (residential homes). Since construction is anticipated to occur over a 26 week period, the sensitive receptors would be affected for a maximum of 26 weeks, which is less than 0.7 percent of the 70-year maximum exposed individual (MEI) criteria used for assessing public health risk due to emissions of certain air pollutants (MBARD 2008).

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

Due to the intermittent and short-term temporary nature of construction activities (i.e., 26 weeks), emissions of DPM, TACs, or MSATs would not be sufficient to pose a significant risk to sensitive receptors from construction equipment operations during the course of the project with implementation of the following BMPs and BACT.

BMPs and BACT

MBUAPCD control measures for diesel exhaust would be implemented as described in BMPs and BACT AQ-1 and AQ-2. The project would not be expected to expose sensitive receptors to substantial pollutant concentrations. Impacts would be less than significant.

5.	*Create objectionable odors affecting a substantial number of people?*	☐	☐	☒	☐

Discussion: California ultralow sulfur diesel fuel with a maximum sulfur content of 15 ppm by weight would be used in all diesel-powered equipment, which minimizes emissions of sulfurous gases (sulfur dioxide, hydrogen sulfide, carbon disulfide, and carbonyl sulfide). Therefore, no objectionable odors are anticipated from construction activities associated with the proposed project, and no mitigation measures would be required. The proposed project would not create objectionable odors affecting a substantial number of people; therefore, impacts are expected to be less than significant.

D. BIOLOGICAL RESOURCES

Would the project:

1.	*Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife, or U.S. Fish and Wildlife Service?*	☐	☒	☐	☐

Discussion: According to the California Natural Diversity Data Base (CNDDB), maintained by the California Department of Fish and Wildlife, indicates that there are known special status plant or animal species in the site vicinity (white-rayed pentacheata, obscure bumble bee, and Zayante band-winged grasshopper). Due to the lack of suitable habitat and the disturbed nature of the site, these special status plant and animal species are not expected to occur in the project area.

Migratory Bird Treaty Act

Migratory birds are protected under the federal Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. 703-711). The MBTA makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in 50 CFR Part 10 including feathers or other parts, nests,

eggs, or products, except as allowed by implementing regulations (50 CFR 21). All migratory bird species are protected by the MBTA. Any disturbance that causes direct injury, death, nest abandonment, or forced fledging of migratory birds, is restricted under the MBTA. Any removal of active nests during the breeding season or any disturbance that results in the abandonment of nestlings is considered a 'take' of the species under federal law.

Impacts

The project area provides potential nesting habitat for birds of prey and birds listed by the Migratory Bird Treaty Act (MBTA). Since nests could become established in the vegetation to be removed before construction begins, implementation of the following mitigation would reduce impacts to below a level of significance.

Mitigation Measures

BIO-1: Under the MBTA, nests that contain eggs or unfledged young are not to be disturbed during the breeding season. The nesting season for migratory birds and birds of prey is generally 1 February through 31 August. Implementation of the following measures will avoid potential impacts.

- If construction begins outside the 1 February to 31 August breeding season, there will be no need to conduct a preconstruction survey for active nests.
- If construction is scheduled to begin between 1 February and 31 August then a qualified biologist shall conduct a preconstruction survey for active nests. The survey will include a 250 foot radius from the work area for nesting birds of prey and a 50 foot radius from the work area for other nesting MBTA protected birds. The survey will be conducted from publicly accessible areas within one two weeks prior to construction. If no active nest of a bird of prey or MBTA bird is found, then no further mitigation measures are necessary.
- If an active nest of a bird of prey or MBTA bird is found, then the biologist shall determine a buffer suitable to protect the nest until fledging. The size of suitable buffers depends on the species of bird, the location of the nest relative to the Project, Project activities during the time the nest is active, and other Project specific conditions.
- No construction activity shall be allowed in the buffer until the biologist determines that the nest is no longer active, or unless monitoring determines that a smaller buffer will protect the active nest. The buffer may be reduced if the biologist monitors the construction activities and determines that no disturbance to the active nest is occurring.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

- If an active nest is identified in or adjacent to the construction zone after construction has started, the above measures will be implemented to ensure construction is not causing disturbance to the nest.

2.	*Have a substantial adverse effect on any riparian habitat or sensitive natural community identified in local or regional plans, policies, regulations (e.g., wetland, native grassland, special forests, intertidal zone, etc.) or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?*	☐	☐	☐	☒

Discussion: There are no mapped or designated sensitive biotic communities on or adjacent to the project site.

3.	*Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?*	☐	☐	☐	☒

***Discussion*:** There are no mapped or designated federally protected wetlands on or adjacent to the project site. Therefore, no impacts would occur from project implementation.

4	*Interfere substantially with the movement of any native resident or migratory fish or wildlife species or migratory wildlife corridors, or impede the use of native wildlife nursery sites?*	☐	☐	☐	☒

***Discussion*:** The proposed project does not involve any activities that would interfere with the movements or migrations of fish or wildlife, or impede use of a known wildlife nursery site.

5.	*Conflict with any local policies or ordinances protecting biological resources (such as the Sensitive Habitat Ordinance, Riparian and Wetland Protection Ordinance, and the Significant Tree Protection Ordinance)?*	☐	☐	☐	☒

***Discussion*:** The project would not conflict with any local policies or ordinances.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
6. *Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?*	☐	☐	☐	☒

Discussion: The proposed project would not conflict with the provisions of any adopted Habitat Conservation Plan Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. Therefore, no impact would occur.

7. *Produce nighttime lighting that would substantially illuminate wildlife habitats?*	☐	☐	☐	☒

Discussion: The subject property is located in an urbanized area and is surrounded by existing commercial development that currently generates nighttime lighting. There are no sensitive animal habitats within or adjacent to the project site. No impact would occur.

E. CULTURAL RESOURCES

Would the project:

1. *Cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5?*	☐	☐	☐	☒

Discussion: The existing structures on the project site are not designated as a historic resource on any federal, state or local inventory. Due to the age of the existing structures, an evaluation for potential historical significance was prepared by Archives & Architecture, LLC. In a Historic Report dated 12/16/16 (Attachment C), it was concluded that the structures do not possess historical significance and do not warrant listing in federal, state or local inventories. As a result, no impacts to historical resources would occur from project implementation.

2. *Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5?*	☐	☐	☐	☒

Discussion: No archeological resources have been identified in the project area. Pursuant to County Code Section 16.40.040, if at any time in the preparation for or process of excavating or otherwise disturbing the ground, any human remains of any age, or any artifact or other evidence of a Native American cultural site which reasonably appears to exceed 100 years of age are discovered, the responsible persons shall immediately cease and desist from

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

all further site excavation and comply with the notification procedures given in County Code Chapter 16.40.040.

3.	*Disturb any human remains, including those interred outside of dedicated cemeteries?*	☐	☐	☒	☐

Discussion: Impacts are expected to be less than significant. However, pursuant to Section 16.40.040 of the Santa Cruz County Code, if at any time during site preparation, excavation, or other ground disturbance associated with this project, human remains are discovered, the responsible persons shall immediately cease and desist from all further site excavation and notify the sheriff-coroner and the Planning Director. If the coroner determines that the remains are not of recent origin, a full archeological report shall be prepared and representatives of the local Native California Indian group shall be contacted. Disturbance shall not resume until the significance of the archeological resource is determined and appropriate mitigations to preserve the resource on the site are established.

4.	*Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?*	☐	☐	☐	☒

Discussion: No unique paleontological resources of unique geologic feature are known to occur in the vicinity of the proposed project.no impacts are anticipated.

F. GEOLOGY AND SOILS

Would the project:

1.	*Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:*				
	A. *Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.*	☐	☐	☒	☐
	B. *Strong seismic ground shaking?*	☐	☐	☒	☐

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
C. Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
D. Landslides?	☐	☐	☐	☒

***Discussion (A through D)*:** The project site is located outside of the limits of the State Alquist-Priolo Special Studies Zone (County of Santa Cruz GIS Mapping, California Division of Mines and Geology, 2001). However, the project site is located approximately eight miles southwest of the San Andreas fault zone, and approximately five miles southwest of the Zayante fault zone. While the San Andreas fault is larger and considered more active, each fault is capable of generating moderate to severe ground shaking from a major earthquake. Consequently, large earthquakes can be expected in the future. The October 17, 1989 Loma Prieta earthquake (magnitude 7.1) was the second largest earthquake in central California history.

All of Santa Cruz County is subject to some hazard from earthquakes. However, the project site is not located within or adjacent to a county or state mapped fault zone. A geotechnical investigation for the proposed project was performed by Butano Geotechnical Engineering, Inc. dated June 2016 (Attachment D). The report concluded that a low probability exists for potential for fault surface rupture and that seismic shaking can be managed by constructing conventional foundation systems and by following the recommendations in the geotechnical report referenced above. Impacts would be less than significant.

2. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☒	☐

***Discussion*:** The geotechnical report cited above (see Discussion under F-1) did not identify a significant potential for damage caused by any of these hazards.

3. Develop land with a slope exceeding 30%?	☐	☐	☐	☒

***Discussion*:** The project site does not contain slopes that exceed 30%. No impact is expected.

4. Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

Discussion: Some potential for erosion exists during the construction phase of the project, however, this potential is minimal because the project site is relatively flat in topography and standard erosion controls are a required condition of the project. Prior to approval of a grading or building permit, the project must have an approved Erosion Control Plan (*Section 16.22.060 of the County Code*), which would specify detailed erosion and sedimentation control measures. The plan would include provisions for disturbed areas to be planted with ground cover and to be maintained to minimize surface erosion. Impacts from soil erosion or loss of topsoil would be considered less than significant.

5.	*Be located on expansive soil, as defined in Section 1802.3.2 of the California Building Code (2007), creating substantial risks to life or property?*	☐	☐	☐	☒

Discussion: The geotechnical report for the project did not identify any elevated risk associated with expansive soils. Therefore, no impact is anticipated.

6.	*Have soils incapable of adequately supporting the use of septic tanks, leach fields, or alternative waste water disposal systems where sewers are not available for the disposal of waste water?*	☐	☐	☒	☐

Discussion: No septic systems are proposed. The project would connect to the Santa Cruz County Sanitation District, and the applicant would be required to pay standard sewer connection and service fees that fund sanitation improvements within the district as a Condition of Approval for the project. A will-serve letter from the Santa Cruz County Sanitation District has been provided (Attachment E).

7.	*Result in coastal cliff erosion?*	☐	☐	☐	☒

Discussion: The proposed project is not located in the vicinity of a coastal cliff or bluff; and therefore, would not contribute to coastal cliff erosion. No impact is anticipated.

G. GREENHOUSE GAS EMISSIONS

Would the project:

1.	*Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?*	☐	☐	☒	☐

Discussion: Greenhouse gas (GHG) emissions for transportation projects can be divided into those produced during construction and those produced during operations. Construction GHG emissions include emissions produced as a result of material processing, emissions

produced by onsite construction equipment, and emissions arising from traffic delays due to construction. These emissions would be produced at different levels throughout the construction phase; their frequency and occurrence can be reduced through innovations in plans and specifications and by implementing better traffic management during construction phases.

The project would result in a small temporary increase in greenhouse gas emissions during construction. Permanent operational project emissions are also expected to be minimal. A California Emissions Estimator Model (CalEEMod) report that was prepared on April 7, 2017 (Attachment G) determined annual operational emissions to be 474 metric tons of CO_2e and expected 116 metric tons of CO_2e during construction. However, in the absence of further regulatory or scientific information related to greenhouse gas emissions and California Environmental Quality Act significance, it is too speculative to make a determination on the project's direct impact and its contribution on the cumulative scale to climate change. Nonetheless, the County has strategies to help reduce greenhouse gas emissions and energy consumption. These measures included in the *County of Santa Cruz Climate Action Strategy* (County of Santa Cruz, 2013) are outlined below.

Strategies for the Reduction of Greenhouse Gases from Transportation

- Reduce vehicle miles traveled (VMT) through County and regional long range planning efforts.
- Increase bicycle ridership and walking through incentive programs and investment in bicycle and pedestrian infrastructure and safety programs.
- Provide infrastructure to support zero and low emissions vehicles (plug in, hybrid plug-in vehicles).
- Increase employee use of alternative commute modes: bus transit, walking, bicycling, carpooling, etc.
- Reduce County fleet emissions.

Strategies for the Reduction of Greenhouse Gases from Energy Use

- Develop a Community Choice Aggregation (CCA) Program, if feasible.
- Increase energy efficiency in new and existing buildings and facilities.
- Enhance and expand the Green Business Program.
- Increase local renewable energy generation.
- Public education about climate change and impacts of individual actions.
- Continue to improve the Green Building Program by exceeding the minimum standards of the state green building code (Cal Green).

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

- Form partnerships and cooperative agreements among local governments, educational institutions, nongovernmental organizations, and private businesses as a cost-effective way to facilitate mitigation and adaptation.
- Reduce energy use for water supply through water conservation strategies.

Impacts are expected to be less than significant.

2.	*Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?*	☐	☐	☒	☐

Discussion: See the discussion under G-1 above. No significant impacts are anticipated.

H. HAZARDS AND HAZARDOUS MATERIALS

Would the project:

1.	*Create a significant hazard to the public or the environment as a result of the routine transport, use or disposal of hazardous materials?*	☐	☐	☒	☐

Discussion: The proposed project would not create a significant hazard to the public or the environment. Though the project would involve the storage of some hazardous materials onsite, no routine transport or disposal of hazardous materials is proposed. During construction, fuel would be used at the project site. In addition, fueling may occur within the limits of the staging area. Best management practices would be used to ensure that no impacts would occur. Impacts are expected to be less than significant.

2.	*Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?*	☐	☒	☐	☐

Discussion: The proposed project would result in the demolition of four residential homes and associated structures at the project site, which may contain asbestos and/or lead. Property records obtained from the County of Santa Cruz Assessors Office stated that structures within the planning area were constructed between 1915 and 1948. The Phase I Environmental Site Assessment prepared by Sierra Delta Consultants LLC on April 21, 2016 (Attachment J) excluded ACMs (asbestos-contained materials) and LBPs (lead based paints) from the evaluation. Therefore it is assumed that ACMs and LBPs are associated with these structures. Potential release of ACMs and LBPs during demolition activities is considered a potentially significant impact. Implementation of the following mitigation measures ensures that this impact is reduced to a less than significant impact.

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

Mitigation Measures

HAZ-1: Pursuant to Cal OSHA regulations, project applicants shall have each structure within the planning area within Assessor Parcel numbers 030-121-08, 030-121-12, and 030-121-13 inspected by a qualified environmental specialist for the presence of ACMs and LBPs prior to obtaining a demolition permit from the County of Santa Cruz Planning Department. If ACMs and LBPs are found during the investigations, project applicants with the planning area shall develop a remediation program to ensure that these materials are removed and disposed of by a licensed contractor in accordance with all federal a, state and local laws and regulation, subject to approval by the MBARD, and the Santa Cruz County Environmental Health Department, as applicable. Any hazardous materials that are removed from the structures shall be disposed of at an approved landfill facility in accordance with federal, state and local laws and regulations.

HAZ-2: Project applicants within the planning area shall have the interior of all on-site structures within Assessor Parcel Numbers: 030-121-08, 030-121-12, and 030-121-13 visually inspected by a qualified environmental specialist to determine the presence of hazardous materials prior to obtaining a demolition permit from the County of Santa Cruz Planning Department. Should any hazardous materials be encountered with any of the structures, the materials shall be tested and properly disposed of in accordance with federal, state and local regulatory requirements. Any stained soils or surfaces underneath the removed materials shall be sampled. Subsequent testing shall indicate the appropriate level of remediation necessary and a work plan shall be prepared in order to remediate the soil in accordance with all applicable federal, state and local regulations prior to issuance of a grading permit.

Implementation of the mitigation measures HAZ-1 and HAZ-2 would ensure that each residential home and associated structures are inspected by a qualified environmental specialist to determine the presence of ACMs and LBPs and hazardous materials prior to demolition. Should any hazardous materials be encountered with any on-site structures, the materials shall be tested and properly disposed of in accordance with State, and Federal regulatory requirements. Implementation of these mitigation measures would reduce this impact to less than significant.

3. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

***Discussion*:** Soquel High School is located at 405 Soquel San Jose Road, approximately 1,700 feet to the northeast of the project site. Although fueling of equipment is likely to occur within the staging area, best management practices would be implemented. No impacts are anticipated.

4. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒

***Discussion*:** The project site is not included on the 12/19/2016 list of hazardous sites in Santa Cruz County compiled pursuant to Government Code Section 65962.5. Additionally, a Phase 1 Environmental Site Assessment, prepared April 21, 2016 (Attachment J) which found no evidence of existing hazardous environmental conditions or risks. No impacts are anticipated from project implementation.

5. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒

***Discussion*:** The proposed project is not located within two miles of a public airport or public use airport. No impact is anticipated.

6. For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒

***Discussion*:** The proposed project is not located in the vicinity of a private airstrip. No impact is anticipated.

7. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒

***Discussion*:** The proposed project would not conflict with implementation of the County of Santa Cruz Local Hazard Mitigation Plan 2015-2020 (County of Santa Cruz, 2020).

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

Therefore, no impacts to an adopted emergency response plan or evacuation Plan would occur from project implementation.

8.	*Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?*	☐	☐	☒	☐

Discussion: The proposed project is not located in a Fire Hazard Area. However, the project design incorporates all applicable fire safety code requirements and includes fire protection devices as required by the local fire agency. Impacts would be less than significant.

I. HYDROLOGY, WATER SUPPLY, AND WATER QUALITY

Would the project:

1.	*Violate any water quality standards or waste discharge requirements?*	☐	☐	☒	☐

Discussion: The project would not discharge runoff either directly or indirectly into a public or private water supply. Commercial and industrial activities involving the storage of hazardous materials would comply with the requirements of the County of Santa Cruz Department of Environmental Health Services and stored in accordance with an approved Hazardous Materials Plan. The parking and driveway associated with the project would incrementally contribute urban pollutants to the environment; however, the contribution would be minimal given runoff would pass through bioswales prior to leaving the site. Potential siltation from the proposed project would be addressed through implementation of erosion control best management practices (BMPs). No water quality standards or waste discharge requirements would be violated. Impacts would be less than significant.

2.	*Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?*	☐	☐	☐	☒

Discussion: The project would obtain water from the City of Santa Cruz and would not rely on private well water. Although the project would incrementally increase water

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

demand, the City of Santa Cruz has indicated that adequate supplies are available to serve the project (Attachment F). The project is not located in a mapped groundwater recharge area.

3.	*Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?*	☐	☐	☐	☒

***Discussion*:** The proposed project is not located near any watercourses, and would not alter the existing overall drainage pattern of the site. Department of Public Works Drainage Section staff has reviewed and approved the proposed drainage plan. No impact would occur from project implementation.

4.	*Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding, on- or off-site?*	☐	☐	☒	☐

***Discussion*:** The proposed project is not located near any watercourses, and would not alter the existing overall drainage pattern of the site. Department of Public Works Drainage Section staff has reviewed and approved the proposed drainage plan. Impacts from project construction would be less than significant.

5.	*Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems, or provide substantial additional sources of polluted runoff?*	☐	☐	☒	☐

***Discussion*:** Drainage Calculations prepared by Bowman & Williams, dated February 22, 2017 (Attachment H), have been reviewed for potential drainage impacts and accepted by the Department of Public Works (DPW) Drainage Section staff. The calculations show that the project has been designed to reduce the estimated peak flow to below predevelopment flow levels. The runoff rate from the property would be controlled by constructing hardscapes with permeable asphalt and maintaining landscaping areas around the perimeter of the site where feasible. Landscape areas would serve as biofiltration prior to discharging into neighboring drainage inlets.

Detention reservoirs within the permeable pavement would reduce increase runoff by providing sufficient storage to allow minimal infiltration back into the native soil. DPW staff

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

have determined that existing storm water facilities are adequate to handle the increase in drainage associated with the project. Refer to response I-1 for discussion of urban contaminants and/or other polluting runoff. Impacts would be considered less than significant.

6.	*Otherwise substantially degrade water quality?*	☐	☐	☒	☐

***Discussion*:** Please see discussion under I-1 above. Impacts would be considered less than significant with the implementation of BMPs.

7.	*Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?*	☐	☐	☒	☐

***Discussion*:** According to the Federal Emergency Management Agency (FEMA) National Flood Insurance Rate Map, dated May 16, 2012, no housing or any other development lies within a 100-year flood hazard area. Impacts from project implementation are expected to be less than significant.

8.	*Place within a 100-year flood hazard area structures which would impede or redirect flood flows?*	☐	☐	☐	☒

***Discussion*:** According to the Federal Emergency Management Agency (FEMA) National Flood Insurance Rate Map, dated May 16, 2012, no portion of the project site lies within a 100-year flood hazard area. Therefore, the proposed project would not impede or redirect flood flows. No impact would occur.

9.	*Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?*	☐	☐	☐	☒

***Discussion*:** The proposed project would not increase the risk of flooding and would not lead to the failure of a levee or dam. No impact would occur.

10.	*Inundation by seiche, tsunami, or mudflow?*	☐	☐	☐	☒

***Discussion*:** There are two primary types of tsunami vulnerability in Santa Cruz County. The first is a teletsunami or distant source tsunami from elsewhere in the Pacific Ocean. This type of tsunami is capable of causing significant destruction in Santa Cruz County. However,

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

this type of tsunami would usually allow time for the Tsunami Warning System for the Pacific Ocean to warn threatened coastal areas in time for evacuation (County of Santa Cruz 2010).

The more vulnerable risk to the County of Santa Cruz is a tsunami generated as the result of an earthquake along one of the many earthquake faults in the region. Even a moderate earthquake could cause a local source tsunami from submarine landsliding in Monterey Bay. A local source tsunami generated by an earthquake on any of the faults affecting Santa Cruz County would arrive just minutes after the initial shock. The lack of warning time from such a nearby event would result in higher causalities than if it were a distant tsunami (County of Santa Cruz 2010).

The project site is located approximately 1.3 miles inland, approximately 0.5 to 1.0 miles beyond the effects of a tsunami. In addition, no impact from a seiche or mudflow is anticipated. No impact would occur.

J. LAND USE AND PLANNING

Would the project:

1.	*Physically divide an established community?*	☐	☐	☐	☒

Discussion: The proposed project does not include any element that would physically divide an established community. No impact would occur.

2.	*Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?*	☐	☐	☒	☐

Discussion: The proposed project does not conflict with any regulations or policies adopted for the purpose of avoiding or mitigating an environmental effect. No impacts are anticipated. The currently land use designation of C-C (Community Commercial) and C-2 (Community Commercial) zoning prohibit the proposed use of the site as an automobile dealership and automobile service facility. However, the proposed land use designation of C-S (Service Commercial) and implementing zone district of C-4 (Service Commercial) would be an appropriate combination of land use designation and zoning for the proposed use. The surrounding area is developed with a number of existing service commercial uses including automobile oriented uses. As indicated, use of the current site has included outdoor storage of lumber materials, and construction materials, and automobiles associated with adjacent uses.

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

The project site is noted as having a C-C (Community Commercial) Land Use designation in the SSCC Plan (Sustainable Santa Cruz County Plan). The SSCC Plan indicates a potential future street could be located immediately to the west of the project site and highlights other potential circulation improvements along upper 41st Avenue including additional transit drop off, enhanced bike lanes. As proposed, the project would be consistent with the range of concept designs intended to support revenue generating commercial uses in the Upper 41st Avenue area and would construct a number of pedestrian and roadside improvements further meeting the objectives of the Sustainability Plan.

3.	*Conflict with any applicable habitat conservation plan or natural community conservation plan?*	☐	☐	☐	☒

Discussion: The proposed project would not conflict with any applicable habitat conservation plan or natural community conservation plan. No impact would occur.

K. MINERAL RESOURCES

Would the project:

1.	*Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?*	☐	☐	☐	☒

Discussion: The site does not contain any known mineral resources that would be of value to the region and the residents of the state. Therefore, no impact is anticipated from project implementation.

2.	*Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?*	☐	☐	☐	☒

Discussion: The project site is currently zoned C-2 (Community Commercial, which is not considered to be an Extractive Use Zone (M-3) nor does it have a Land Use Designation with a Quarry Designation Overlay (Q) (County of Santa Cruz 1994). Therefore, no potentially significant loss of availability of a known mineral resource of locally important mineral resource recovery (extraction) site delineated on a local general plan, specific plan or other land use plan would occur as a result of this project.

L. NOISE

Would the project result in:

1.	*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?

***Discussion*:**

The project proposes to construct a 12,550 square foot car dealership and a 7,500 square foot service area. The existing project area is highly urbanized with both a commercial zone and General Plan designation. Per County policy, average hourly noise levels shall not exceed the General Plan threshold of 50 Leq during the day and 45 Leq during the nighttime (see Table 2). Impulsive noise levels shall not exceed 65 dB during the day or 60 dB at night. However, allowable shall be raised to the ambient noise levels where the ambient levels exceed the allowable levels. In addition, allowable levels shall be reduced 5 dB if the ambient hourly Leq is at least 10 dB lower than the allowable level (County of Santa Cruz, 1994). Prior studies in the project area have concluded that the existing ambient noise level is approximately 68 dB hourly Leq at 50 feet from the centerline of Soquel Drive (County of Santa Cruz 1994).

County of Santa Cruz General Plan

The Santa Cruz County General Plan (County of Santa Cruz 1994) contains the following table, which specifies the maximum allowable noise exposure for stationary noise sources (Table 2). The County of Santa Cruz has not adopted noise thresholds for construction noise.

The following applicable noise related policy is found in the Public Safety and Noise Element of the Santa Cruz County General Plan (Santa Cruz County 1994).

- Policy 6.9.4 Commercial and Industrial Development. For all new commercial and industrial developments which would increase noise levels above the maximum allowable standards of the Land Use Compatibility Guidelines in Figure 6-1, or Figure 6-2, the best available control technologies will be used to minimize noise levels. In no case shall the noise levels exceed the standards of Figure 6-2.
- Policy 6.9.7 Construction Noise. Require mitigation of construction noise as a condition of future project approvals.

Table 2: Maximum Allowable Noise Exposure for Stationary Noise Sources[1]

	Daytime[5] (7:00 am to 10:00 pm)	Nighttime[2, 5] (10:00 pm to 7:00 am)
Hourly Leq average hourly noise level, dB[3]	50	45
Maximum Level, dB[3]	70	65
Maximum Level, dB – Impulsive Noise[4]	65	60

Notes:
1 As determined at the property line of the receiving land use. When determining the effectiveness of noise mitigation measures, the standards may be applied to the receptor side of noise barriers or other property line noise mitigation measures.
2 Applies only where the receiving land use operates or is occupied during nighttime hours
3 Sound level measurements shall be made with "slow" meter response.
4 Sound level measurements shall be made with "fast" meter response
5 Allowable levels shall be raised to the ambient noise levels where the ambient levels exceed the allowable levels. Allowable levels shall be reduced to 5 dB if the ambient hourly Leq is at least 10 dB lower than the allowable level.

Source: County of Santa Cruz 1994

County of Santa Cruz Code

There are no County of Santa Cruz ordinances that specifically regulate construction noise levels. However, Section 8.30.010 (Curfew—Offensive noise) of the Santa Cruz County Code contains the following language regarding noise impacts:

A. No persons shall, between the hours of ten p.m. and eight a.m., make, cause, suffer, or permit to be made any offensive noise:

1. Which is made within one hundred feet of any building or place regularly used for sleeping purposes; or

2. Which disturbs any person of ordinary sensitivities within his or her place of residence.

B. "Offensive noise" means any noise which is loud, boisterous, irritating, penetrating, or unusual, or that is unreasonably distracting in any other manner such that it is likely to disturb people of ordinary sensitivities in the vicinity of such noise, and includes, but is not limited to, noise made by an individual alone or by a group of people engaged in any business, meeting, gathering, gam, dance, or amusement, or appliance, contrivance, device, structure, construction, ride, machine, implement, instrument or vehicle (Ord. 4001 § 1 (part), 1989)

Sensitive Receptors

Some land uses are generally regarded as being more sensitive to noise than others due to the type of population groups or activities involved. Sensitive population groups generally include children and the elderly. Noise sensitive land uses typically include all residential uses (single- and multi-family, mobile homes, dormitories, and similar uses), hospitals, nursing homes, schools, and parks.

The use of construction equipment to accomplish the proposed project would result in noise in the project area, i.e., construction zone. Table 3 shows typical noise levels for common construction

Table 3: Typical Noise Levels for Common Construction Equipment (at 50 feet)

Equipment	L_{max} (dBA)
Air Compressor	81
Backhoe	80
Cement Mixer Truck	85
Cement Pump Truck	82
Chain Saw	85
Compactor	82
Crane	83
Concrete Saw	90
Dozer	85
Excavator	85
Dump Truck	84
Flat Bed Truck	84
Front End Loader	80
Fork Lift	75
Generator	81
Grader	85
Hoe-rams	90
jackhammers	88
Paver	85
Pick-up Truck	55
Pneumatic Tools	85
Rollers	74
Tree Chipper	87

Source: Federal Transit Authority, 2006.

equipment. The sources of noise that are normally measured at 50 feet, are used to determine the noise levels at nearby sensitive receptors by attenuating 6 dB for each doubling of distance for point sources of noise such as operating construction equipment. Noise levels at the nearest sensitive receptors for each site were analyzed on a worst-case basis, using the equipment with the highest noise level expected to be used.

The nearest sensitive receptor (Alimur Mobile Home Park) is located approximately 550 feet to the east of the project construction area behind Safeway and Beverly's. An additional sensitive receptor (Rodeo Mobile Estates) is located approximately 800 feet to the northwest of the project construction area.

Impacts

Although construction activities would likely occur during daytime hours, noise may be audible to nearby residents. However, periods of noise exposure would be temporary. Noise from construction activity may vary substantially on a day-to-day basis. Operational impacts would occur following construction during daily operations of the proposed dealership.

Potential Temporary Construction Noise Impacts

Project construction is anticipated to last approximately 6 months. Construction activity would be expected to use equipment listed in Table 3. Based on the activities proposed for the proposed project, the equipment with the loudest operating noise level that would be used often during activity would be a concrete saw, which would produce noise levels of 90 dBA at a distance of 50 feet. The nearest sensitive receptor is located approximately 550 feet from the construction site. At that distance, the decibel level is reduced by approximately 21 to 69 decibels. In addition, the location of the Safeway and Beverly's would effectively block out any noise that could reach these receptors at that distance. The other sensitive receptor is located approximately 800 feet from the construction site. At that distance, the decibel level is reduced by approximately 24 to 66 decibels. However, these impacts would also be temporary.

The County of Santa Cruz has not adopted significance thresholds for construction noise. However, ·Policy 6.9.7 of the General Plan requires mitigation of construction noise as a condition of future project approvals.

The following mitigation measures will be required to assist in the reduction of temporary construction noise impacts. With the implementation of those measures, no adverse noise impacts are expected occur during construction activities.

Mitigation Measures

NOI-1: Limit construction activity to between the hours of 7:00 a.m. to 6:00 p.m. Monday through Friday, 9:00 a.m. to 5:00 p.m. Saturday in order to avoid noise during more sensitive nighttime hours. Prohibit construction activity on Sundays.

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

NOI-2: Require that all construction and maintenance equipment powered by gasoline or diesel engines have sound-control devices that are at least as effective as those originally provided by the manufacturer and that all equipment be operated and maintained to minimize noise generation.

NOI-3: Prohibit gasoline or diesel engines from having unmuffled exhaust.

NOI-4: Use noise-reducing enclosures around stationary noise-generating equipment capable of 6 dB attenuation.

Potential Operational Noise Impacts

Operation of the dealership would involve six operating service bays with the use of pneumatic tools and impact wrenches. These are expected to produce a maximum level of 85 decibels at 50 feet. This would be reduced to approximately 80 decibels at the eastern property line with the self-serve car wash. It should be noted that this is a maximum level. The overall hourly Leq would be much lower. The use of pneumatic tools would occur in irregular intervals. If it is assumed that pneumatic tools would be used 20 percent of the time, the hourly Leq at the property line would be approximately 70 dB. The threshold according to the General Plan at the property line is 68 decibels due to the high ambient noise level in the area. This is a 2 decibel increase above the allowed threshold. However, the project proposes to construct a six-foot tall masonry block wall that is expected to reduce the noise level at the property line by approximately 5 dB to approximately 65 decibels, which is below the threshold of 68 dB. Therefore, impacts would be less than significant. No mitigation measures would be required for the operation phase.

2. Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☐	☒

***Discussion*:** The use of construction equipment would potentially generate vibration in the project area. The nearest residential property is located at approximately 550 feet to the east of the project site on Robertson Street. Due to this distance, none of the area residences would experience significant groundborne vibration or groundborne noise levels during construction activities associated with the proposed project. Therefore, no impact is anticipated.

3. A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐

***Discussion*:** The proposed project would not result in a permanent increase in the ambient noise level. The main source of ambient noise in the project area is traffic noise along Soquel Drive and Highway 1. The project proposes to construct a six-foot tall masonry wall at the

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

eastern property line adjacent to the self-serve car wash that would reduce noise generated by the six service bays. In addition, no significant increase in noise would occur from the small increase in traffic trips as a result of the proposed project. Impacts are expected to be less than significant.

4.	*A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?*	☐	☒	☐	☐

Discussion: See discussion under L-1 above. Noise generated during project construction would increase the ambient noise levels in adjacent areas. Construction would be temporary, however, and given the limited duration of this impact it is considered to be less than significant with the incorporation of mitigation measures.

5.	*For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?*	☐	☐	☐	☒

Discussion: The proposed project is not within two miles of a public airport. Therefore, the proposed project would not expose people residing or working in the project area. No impact is anticipated.

6.	*For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?*	☐	☐	☐	☒

Discussion: The proposed project is not within two miles of a private airstrip. Therefore, the proposed project would not expose people residing or working in the project area. No impact is anticipated.

M. POPULATION AND HOUSING

Would the project:

1.	*Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?*	☐	☐	☐	☒

Discussion: The proposed project would not induce substantial population growth in an area because the project does not propose any physical or regulatory change that would

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

remove a restriction to or encourage population growth in an area including, but limited to the following: new or extended infrastructure or public facilities; new commercial or industrial facilities; large-scale residential development; accelerated conversion of homes to commercial or multi-family use; or regulatory changes including General Plan amendments, specific plan amendments, zone reclassifications, sewer or water annexations; or LAFCO annexation actions. No impact would occur.

2.	*Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?*	☐	☐	☒	☐

***Discussion*:** The proposed project would result in the loss of four single family dwellings currently located on the project site. The homes are considered non-conforming uses in that the property has a commercial land use designation. Single family homes are uncharacteristic of the area and the homes are in relatively poor condition. Due to the conditions and status as a non-conforming use, it is unclear as to the longevity of the homes. The demolition of these homes is therefore considered a less than significant impact.

3.	*Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?*	☐	☐	☒	☐

***Discussion*:** The proposed project would not displace a substantial number of people since the homes that are to be demolished are in common ownership and the site is designated for commercial uses. Though the project does not intend to construct new housing units, a condition or approval would require the payment of affordable housing impact fees to help offset the loss of housing.

N. PUBLIC SERVICES

Would the project:

1.	*Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:*				
	a. *Fire protection?*	☐	☐	☒	☐
	b. *Police protection?*	☐	☐	☒	☐

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
c. Schools?	☐	☐	☐	☒
d. Parks?	☐	☐	☐	☒
e. Other public facilities; including the maintenance of roads?	☐	☐	☒	☐

***Discussion (a through e)*:** While the project represents an incremental contribution to the need for services, the increase would be minimal. Moreover, the project meets all of the standards and requirements identified by the local fire agency or California Department of Forestry, as applicable, and school, park, and transportation fees to be paid by the applicant would be used to offset the incremental increase in demand for school and recreational facilities and public roads. Impacts would be considered less than significant.

O. RECREATION

Would the project:

1. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☒	☐

***Discussion*:** The proposed project would not substantially increase the use of existing neighborhood and regional parks or other recreational facilities. Impacts would be considered less than significant.

2. Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

***Discussion*:** The proposed project does not propose the expansion or construction of additional recreational facilities. No impact would occur.

P. TRANSPORTATION/TRAFFIC

Would the project:

1. Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to	☐	☒	☐	☐

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?

Discussion: Traffic operations were evaluated at the study intersection shown in Table 4. The results of the evaluation show that the intersection of Soquel Drive and Robertson Street currently operate at an unacceptable LOS E in the AM peak hour and an unacceptable F during the PM peak hour. In addition, the intersection of Soquel Drive and Porter Street operates at an unacceptable LOS E in both the AM and PM peak hours.

Table 4: Existing Conditions Intersection Level of Service

#	Intersection	Control Type	Existing Conditions					
			AM Peak Hour			PM Peak Hour		
			Movement	Delay	LOS	Movement	Delay	LOS
1	Soquel Dr / Rodeo Gulch Rd[1]	Signal	Overall	8.2	A	Overall	8.2	A
2	Soquel Dr / Project Driveway 1[1]	Does Not Exist						
3	Soquel Dr / 41st Ave[1]	Signal	Overall	32.7	C	Overall	37.8	D
4	Soquel Dr / Robertson St[1]	AWSC	Overall	**43.2**	**E**	Overall	**74.8**	**F**
5	Soquel Dr / Daubenbiss Ave[1]	Signal	Overall	11.2	B	Overall	4.9	A
6	Soquel Dr / Porter St[1]	Signal	Overall	**57.1**	**E**	Overall	**77.9**	**E**
7	41st Ave / Project Driveway 2[1]	Does Not Exist						
8	41st Ave / Redwood Shopping Center[1]	Signal	Overall	12.7	B	Overall	15.8	B
9	41st Ave / Hwy 1 NB Ramps[1]	Signal	Overall	15.8	B	Overall	14.3	B
10	41st Ave / Hwy 1 SB Ramps[2]	Signal	Overall	23.2	C	Overall	7.4	A

Notes:

1. Analysis performed using HCM 2010 methodologies.
2. Intersection #10 controller manages operations for two signalized intersections, therefore, analysis performed using HCM 2000 methodologies.

3. Delay indicated in seconds/vehicle.

4. SCC level of service (LOS) standard is D. Caltrans LOS standard is C.

*5. Intersections that operate below maintaining agency's LOS standard are highlighted and shown in **bold**.*

Source: Kimley Horn and Associates, 2017.

The proposed project is anticipated to generate 650 average daily trips, 39 AM peak hour trips (29 in/10 out), and 53 PM peak hour trips (21 in/32 out). The existing homes generate 38 daily trips, 3 AM peak hour trips (1 in/2 out), and 4 PM peak hour trips (3 in/1 out), which was taken as a trip credit. Therefore, the net new trip generation for the proposed project is 612 daily trips, 36 AM peak hour trips (28 in/8 out), and 49 PM peak hour trips (18 in/31 out). Table 5 presents the trip generation for the project.

Table 5: Project Trip Generation

Land Use	Size	Units	Daily Trip Rate	Daily Trips	AM Peak Hour Rate	AM Peak Hour Trips (IN/OUT)	PM Peak Hour Rate	PM Peak Hour Trips (IN/OUT)
Project								
Automobile Sales (LU 841)	20,111	SF	32.30	650	1.92	39 (29/10)	2.62	53 (21/32)
Existing Conditions (Trip Credit)								
Single-Family Detached Housing (LU 210)	4	DU	-9.52	-38	-0.75	-3 (-1/-2)	-1.00	-4 (-3/-1)
Net Trip Generation	**-**	**-**	**-**	**612**	**-**	**36 (28/8)**	**-**	**49 (18/31)**

Source: Kimley Horn and Associates, 2017.

The County of Santa Cruz General Plan Policy 3.12.1 (Level of Service Policy) considers LOS C the objective. However, LOS D would be acceptable where costs, right-of-way acquisitions, or environmental impacts of maintaining operational standards under its LOS policy are excessive and the capacity enhancements infeasible. Proposed developments that would cause LOS at an intersection or on an uninterrupted highway segment to fall below D during the weekday peak hour would be considered to violate County policies and would require mitigation.

The volume/capacity ratio 1% threshold for intersections already operating at LOS E or F, which is contained in General Plan Policy 3.12.1 is no longer enforced due to past case law nullifying the approach to determination of significance for cumulative impacts. Kings County Farm Bureau v. City of Hanford (5th District 1990); Los Angeles Unified School District v. City of Los Angeles (2nd District 1997); Communities for a Better Environment v. California Resources Agency (3rd District 2002). These court rulings invalidated the use of a "ratio theory" or "comparative approach" criterion because they improperly measure a proposed project's incremental impact relative to the existing cumulative effect rather than focus on the combined effects of the project and other relevant past, present, and future projects. Therefore, this threshold will not be applied in this analysis.

Traffic operations for the Existing Plus Project Conditions were evaluated at the study intersection shown in Table 6. The results of the evaluation show that the intersection of Soquel Drive and Robertson Street would operate at an unacceptable LOS E in the AM peak hour and an unacceptable F during the PM peak hour. In addition, the intersection of Soquel Drive and Porter Street would operate at an unacceptable LOS E in both the AM and PM peak hours. Although vehicle delay is slightly higher, no change in the Level of service would occur. However, due to the intersections both operating at LOS E and F, the addition of vehicle trips is considered significant requiring mitigation. The following mitigation measures would be required to reduce impacts to a less than significant level.

Mitigation Measures

TRA-1: Soquel Drive/Robertson Street (Intersection #4)(Existing & Near Term Conditions)

- Install traffic signal control and construct one eastbound left-turn and westbound left-turn pockets on Soquel Drive.
- The project will pay a proportional fair share for improvements at Soquel Drive/Robertson Street of 2.66% based on estimated project AM and PM peak hour trips traveling through the intersection. The nexus for the fair share is based on all future growth in traffic, estimated at the intersection (from Existing to Cumulative conditions). The unfunded planned improvement cost is $500,000 per the County RTP. The project will pay a fair share fee of $13,300.

TRA-2: Soquel Drive/Porter Street (Intersection #6)(PM Peak) (Existing, Near Term, and Cumulative Conditions)

- Construct one additional southbound left-turn pocket and optimized cycle length, phasing, and splits.
- The Project will pay a proportional fair share for improvements at Soquel Drive/Porter Street of 1.75% based on estimated Project AM and PM peak hour trips traveling through the intersection. The nexus for the fair share is based on all future growth in traffic, estimated at the intersection (from Existing to Cumulative conditions). The unfunded planned improvement cost is estimated to be in excess of $1,000,000 and right-of-way would be required. The Project will pay a fair share fee of $17,500 based on a $1,000,000 improvement cost.

Impacts would be reduced to a less than significant level for Existing Plus Project conditions with the incorporation of the above mitigation measures.

Table 6: Existing Plus Project Conditions Intersection Level of Service

#	Intersection	Control Type	Existing Plus Project Conditions					
			AM Peak Hour			PM Peak Hour		
			Movement	Delay	LOS	Movement	Delay	LOS
1	Soquel Dr / Rodeo Gulch Rd[1]	Signal	Overall	8.2	A	Overall	8.2	A
2	Soquel Dr / Project Driveway 1[1]	SSSC	Overall	0.1	A	Overall	0.3	A
			NB	16.9	C	NB	25.3	D
3	Soquel Dr / 41st Ave[1]	Signal	Overall	34.0	C	Overall	39.7	D
4	Soquel Dr / Robertson St[1]	AWSC	Overall	**43.9**	**E**	Overall	**76.0**	**F**
5	Soquel Dr / Daubenbiss Ave[1]	Signal	Overall	11.4	B	Overall	4.9	A
6	Soquel Dr / Porter St[1]	Signal	Overall	**57.7**	**E**	Overall	**78.4**	**E**
7	41st Ave / Project Driveway 2[1]	SSSC	Overall	0.1	A	Overall	0.1	A
			EB	10.1	B	EB	10.5	B
8	41st Ave / Redwood Shopping Center[1]	Signal	Overall	12.7	B	Overall	15.8	B
9	41st Ave / Hwy 1 NB Ramps[1]	Signal	Overall	16.5	B	Overall	14.4	B
10	41st Ave / Hwy 1 SB Ramps[2]	Signal	Overall	24.4	C	Overall	7.5	A

Notes:

1. Analysis performed using HCM 2010 methodologies.
2. Intersection #10 controller manages operations for two signalized intersections, therefore, analysis performed using HCM 2000 methodologies.
3. Delay indicated in seconds/vehicle.
4. SCC level of service (LOS) standard is D. Caltrans LOS standard is C.
*5. Intersections that operate below maintaining agency's LOS standard are highlighted and shown in **bold**.*
Source: Kimley Horn and Associates, 2016.

With the implementation of the above improvements outlined in Mitigation Measures TRA-1 and TRA-2, the Soquel Drive at Robertson Street intersection would improve to LOS B in the AM and LOS C in the PM peak hours with project. Soquel Drive at Porter Street would improve to LOS C in both the AM and PM peak hours with project.

Table 7: Mitigated Existing Plus Project Conditions Intersection Level of Service

#	Intersection	Maintaining Agency	Mitigated Existing Plus Project Conditions					
			AM Peak Hour			PM Peak Hour		
			Movement	Delay	LOS	Movement	Delay	LOS
4	Soquel Dr / Robertson St[1]	SCC	Overall	12.0	B	Overall	21.4	C
6	Soquel Dr / Porter St[1]	SCC	Overall	28.1	C	Overall	30.8	C

Notes:
1. Analysis performed using HCM 2010 methodologies.
2. Delay indicated in seconds/vehicle.
3. SCC level of service (LOS) standard is D. Caltrans LOS standard is C.
4. Intersections that operate below maintaining agency's LOS standard are highlighted and shown in bold.
Source: Kimley Horn and Associates, 2017.

The following Near Term Conditions describes the conditions for the year 2018 when the project would open its doors to the public. Traffic operations for the Near Term Project Conditions were evaluated at the study intersection shown in Table 8. The results of the evaluation show that the intersection of Soquel Drive and Robertson Street would operate at an unacceptable LOS E in the AM peak hour and an unacceptable F during the PM peak hour. In addition, the intersection of Soquel Drive and Porter Street would operate at an unacceptable LOS E during the AM peak hour and F during the PM peak hour.

Table 8: Near Term Conditions Intersection Level of Service

#	Intersection	Control Type	Near Term Conditions					
			AM Peak Hour			PM Peak Hour		
			Movement	Delay	LOS	Movement	Delay	LOS
1	Soquel Dr / Rodeo Gulch Rd[1]	Signal	Overall	8.3	A	Overall	8.3	A
2	Soquel Dr / Project Driveway 1[1]	Does Not Exist						
3	Soquel Dr / 41st Ave[1]	Signal	Overall	33.6	C	Overall	40.2	D
4	Soquel Dr / Robertson St[1]	AWSC	Overall	**46.5**	**E**	Overall	**80.3**	**F**
5	Soquel Dr / Daubenbiss Ave[1]	Signal	Overall	11.6	B	Overall	4.9	A
6	Soquel Dr / Porter St[1]	Signal	Overall	**60.3**	**E**	Overall	**80.9**	**F**
7	41st Ave / Project Driveway 2[1]	Does Not Exist						

8	41st Ave / Redwood Shopping Center[1]	Signal	Overall	12.7	B	Overall	15.9	B
9	41st Ave / Hwy 1 NB Ramps[1]	Signal	Overall	16.3	B	Overall	14.5	B
10	41st Ave / Hwy 1 SB Ramps[2]	Signal	Overall	24.6	C	Overall	7.4	A

Notes:

1. Analysis performed using HCM 2010 methodologies.
2. Intersection #10 controller manages operations for two signalized intersections, therefore, analysis performed using HCM 2000 methodologies.

3. Delay indicated in seconds/vehicle.

4. SCC level of service (LOS) standard is D. Caltrans LOS standard is C.

*5. Intersections that operate below maintaining agency's LOS standard are highlighted and shown in **bold**.*

Source: Kimley Horn and Associates, 2017.

Traffic operations for the Near Term Plus Project Conditions were evaluated at the study intersection shown in Table 9. The results of the evaluation show that the intersection of Soquel Drive and Robertson Street would operate at an unacceptable LOS E in the AM peak hour and an unacceptable F during the PM peak hour. In addition, the intersection of Soquel Drive and Porter Street would operate at an unacceptable LOS E in both the AM and PM peak hours. Although vehicle delay is slightly higher, no change in the Level of service would occur from the Near Term Conditions without project.

Table 9: Near Term Plus Project Conditions Intersection Level of Service

		Near Term Plus Project Conditions					
		AM Peak Hour			PM Peak Hour		
#	Intersection	Movement	Delay	LOS	Movement	Delay	LOS
1	Soquel Dr / Rodeo Gulch Rd[1]	Overall	8.3	A	Overall	8.3	A
2	Soquel Dr / Project Driveway 1[1]	Overall	0.1	A	Overall	0.3	A
		NB	17.1	C	NB	26.0	D
3	Soquel Dr / 41st Ave[1]	Overall	35.1	D	Overall	42.1	D
4	Soquel Dr / Robertson St[1]	Overall	**47.3**	**E**	Overall	**81.3**	**F**
5	Soquel Dr / Daubenbiss Ave[1]	Overall	11.8	B	Overall	4.9	A
6	Soquel Dr / Porter St[1]	Overall	**61.2**	**E**	Overall	**81.4**	**F**
7	41st Ave / Project Driveway 2[1]	Overall	0.1	A	Overall	0.1	A
		EB	10.2	B	EB	10.6	B
8	41st Ave / Redwood Shopping Center[1]	Overall	12.7	B	Overall	15.9	B
9	41st Ave / Hwy 1 NB Ramps[1]	Overall	17.0	B	Overall	14.5	B
10	41st Ave / Hwy 1 SB Ramps[2]	Overall	25.6	C	Overall	7.6	A

Notes:

1. Analysis performed using HCM 2010 methodologies.
2. Intersection #10 controller manages operations for two signalized intersections, therefore, analysis performed using HCM 2000 methodologies.

3. Delay indicated in seconds/vehicle.

4. SCC level of service (LOS) standard is D. Caltrans LOS standard is C.

*5. Intersections that operate below maintaining agency's LOS standard are highlighted and shown in **bold**.*

Source: Kimley Horn and Associates, 2016.

With the implementation of the above improvements outlined in Mitigation Measures TRA-1 and TRA-2, the Soquel Drive at Robertson Street intersection would improve to LOS B in the AM and LOS C in the PM peak hours with project. Soquel Drive at Porter Street would improve to LOS C in both the AM and PM peak hours with project.

Table 10: Mitigated Near Term Plus Project Conditions Intersection Level of Service

#	Intersection	Mitigated Near Term Plus Project Conditions					
		AM Peak Hour			PM Peak Hour		
		Movement	Delay	LOS	Movement	Delay	LOS
4	Soquel Dr / Robertson St[1]	Overall	12.1	B	Overall	22.5	C
6	Soquel Dr / Porter St[1]	Overall	29.0	C	Overall	32.8	C

Notes:

1. Analysis performed using HCM 2010 methodologies.

2. Delay indicated in seconds/vehicle.

3. SCC level of service (LOS) standard is D. Caltrans LOS standard is C.

4. Intersections that operate below maintaining agency's LOS standard are highlighted and shown in bold.

Source: Kimley Horn and Associates, 2017.

Traffic volumes under Cumulative conditions have been evaluated for the year 2035. Per the 2014 Regional Transportation Plan (RTP), improvements at two study intersections have been identified. The improvements are as follows:

- Soquel Drive/41st Avenue (Intersection #3) Construct eastbound right turn pocket.
- Soquel Drive/Robertson Street (Intersection #4) Construct eastbound and westbound left-turn pockets and signalize intersection (all left-turn movements assumed permissive) per 2014 SCCRTP.

It is anticipated that, when the intersection of Soquel Drive/Robertson Street is signalized in the future, Soquel Drive/Daubenbiss Avenue and Soquel Drive/Porter Street signal timings and coordination would be updated and optimized.

Traffic operations were evaluated at the study intersections based on Cumulative lane geometry and traffic control, and Cumulative peak hour traffic volumes as shown in Table 11. The intersection of Soquel Drive at Porter Street (Intersection #6) would operate at an unacceptable LOS F during both the AM and PM peak hours during the Cumulative condition.

Table 11: Cumulative Conditions Level of Service

#	Intersection	Control Type	Cumulative Conditions					
			AM Peak Hour			PM Peak Hour		
			Movement	Delay	LOS	Movement	Delay	LOS
1	Soquel Dr / Rodeo Gulch Rd[1]	Signal	Overall	9.5	A	Overall	9.7	A
2	Soquel Dr / Project Driveway 1[1]	Does Not Exist						
3	Soquel Dr / 41st Ave[1]	Signal	Overall	45.2	D	Overall	30.8	C
4	Soquel Dr / Robertson St[1]	Signal	Overall	18.4	B	Overall	46.1	D

5	Soquel Dr / Daubenbiss Ave[1]	Signal	Overall	15.7	B	Overall	5.2	A
6	Soquel Dr / Porter St[1]	Signal	Overall	**85.7**	**F**	Overall	**114.5**	**F**
7	41st Ave / Project Driveway 2[1]	Does Not Exist						
8	41st Ave / Redwood Shopping Center[1]	Signal	Overall	13.2	B	Overall	16.7	B
9	41st Ave / Hwy 1 NB Ramps[1]	Signal	Overall	20.9	C	Overall	16.4	B
10	41st Ave / Hwy 1 SB Ramps[2]	Signal	Overall	40.9	D	Overall	8.4	A

Notes:

1. Analysis performed using HCM 2010 methodologies.
2. Intersection #10 controller manages operations for two signalized intersections, therefore, analysis performed using HCM 2000 methodologies.

3. Delay indicated in seconds/vehicle.

4. SCC level of service (LOS) standard is D. Caltrans LOS standard is C.

*5. Intersections that operate below maintaining agency's LOS standard are highlighted and shown in **bold**.*

Source: Kimley Horn and Associates, 2017.

Traffic operations for the Cumulative Plus Project Conditions were evaluated at the study intersection shown in Table 12. The results of the evaluation show that the intersection of Soquel Drive and Porter Street would operate at an unacceptable LOS F in both the AM and PM peak hours.

Table 12: Cumulative Plus Project Conditions Level of Service

#	Intersection	Control Type	Cumulative Plus Project Conditions					
			AM Peak Hour			PM Peak Hour		
			Movement	Delay	LOS	Movement	Delay	LOS
1	Soquel Dr / Rodeo Gulch Rd[1]	Signal	Overall	9.5	A	Overall	9.8	A
2	Soquel Dr / Project Driveway 1[1]	SSSC	Overall	0.1	A	Overall	0.3	A
			NB	19.8	C	NB	33.2	D
3	Soquel Dr / 41st Ave[1]	Signal	Overall	47.7	D	Overall	32.2	C
4	Soquel Dr / Robertson St[1]	Signal	Overall	17.7	B	Overall	46.3	D
5	Soquel Dr / Daubenbiss Ave[1]	Signal	Overall	15.9	B	Overall	5.2	A
6	Soquel Dr / Porter St[1]	Signal	Overall	**86.7**	**F**	Overall	**115.0**	**F**
7	41st Ave / Project Driveway 2[1]	SSSC	Overall	0.1	A	Overall	0.1	A
			EB	10.4	B	EB	11.0	B
8	41st Ave / Redwood Shopping Center[1]	Signal	Overall	13.2	B	Overall	16.8	B
9	41st Ave / Hwy 1 NB Ramps[1]	Signal	Overall	21.9	C	Overall	16.5	B
10	41st Ave / Hwy 1 SB Ramps[2]	Signal	Overall	42.0	D	Overall	8.6	A

Notes:

1. Analysis performed using HCM 2010 methodologies.
2. Intersection #10 controller manages operations for two signalized intersections, therefore, analysis performed using HCM 2000 methodologies.

3. Delay indicated in seconds/vehicle.

4. SCC level of service (LOS) standard is D. Caltrans LOS standard is C.

*5. Intersections that operate below maintaining agency's LOS standard are highlighted and shown in **bold**.*

Source: Kimley Horn and Associates, 2017.

Through the payment of Transportation Improvement Area (TIA) fees, the proposed project will mitigate incremental Cumulative impacts. The proposed project is responsible to pay a TIA to Santa Cruz County based on daily net new trips generated. These fees include a $300 per trip Soquel Transportation Improvement Fee and a $300 per trip Soquel Roadside Improvement Fee. Therefore, based on the estimate of 445 average daily net new trips, the proposed project will be responsible to pay a total of $267,000 in County improvement fees. These fees will cover the cost of the fair share payments calculated for Mitigation Measures TRA-1 and TRA-2.

With the implementation of Mitigation Measure TRA-2, Soquel Drive at Porter Street would improve to LOS D in both the AM and PM peak hours with project as shown in Table 13. With payment of the calculated TIA fees and implementation of the recommended mitigation measures, impacts to Cumulative conditions would be reduced to a less than significant level.

Table 13: Mitigated Cumulative Plus Project Conditions Intersection Level of Service

		Mitigated Cumulative Plus Project Conditions					
		AM Peak Hour			PM Peak Hour		
#	Intersection	Movement	Delay	LOS	Movement	Delay	LOS
6	Soquel Dr / Porter St[1]	Overall	40.1	D	Overall	44.3	D

Notes:

1. Analysis performed using HCM 2010 methodologies.

2. Delay indicated in seconds/vehicle.

3. SCC level of service (LOS) standard is D. Caltrans LOS standard is C.

4. Intersections that operate below maintaining agency's LOS standard are highlighted and shown in bold.

Source: Kimley Horn and Associates, 2017.

Pedestrian, Bicycle and Transit Mobility

The project was evaluated to determine if it would adversely affect adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks) or generate pedestrian, bicycle, or transit travel demand that would not be accommodated by transit, bicycle, or pedestrian facilities and plans.

Employees and/or patrons choosing to walk to the site would not be adversely impacted based on pedestrian mobility, accessibility, or safety at the project site once frontage improvements are constructed. The project would also provide ADA compliant sidewalk facilities as part of its street frontage improvements. Only a few pedestrian and/or bicycle trips both in the weekday AM peak period and weekday PM peak period are anticipated for the project.

Employees and/or patrons choosing to bike to the site from Soquel Drive or 41st Avenue would not be adversely impacted based on bicyclist mobility, accessibility, or safety. Only a few pedestrian and/or bicycle trips both in the weekday AM peak period and weekday PM peak period are anticipated for the project. Existing Class II bicycle facilities along Soquel Drive and 41st Avenue provide bicycle

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

access to the site. The Soquel Drive/41st Avenue intersection provides marked crossings for pedestrians and bikes on the intersection's south leg and east leg.

Employees and/or patrons of the development have the option of driving, taking transit, walking, or bicycling. Those that choose to take transit have the option of three transit lines that operate along Soquel Drive and 41st Avenue with bus stops near the project site. According to 2006-2010 U.S. Census data cited by the SCCRTC's Regional Transportation Plan, approximately 3% of Santa Cruz County residents use transit to travel to work. This typically represents the highest level of transit ridership during the day, with other periods being lower. If it is conservatively assumed (from the standpoint of transit demand) that 3% percent of the employees and patrons of the development use transit during the peak hours of the day, it represents approximately one passenger both in the weekday AM peak period and weekday PM peak period, which has negligible adverse impact on transit mobility, accessibility, or safety at any of the study intersections. Bus stops are located within 500 feet from the Project site.

Therefore, the proposed project's impact on pedestrian, bicycle, and/or transit facilities is considered less than significant and no mitigation measures would be required.

2. Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☐	☐	☒

***Discussion*:** In 2000, at the request of the Santa Cruz County Regional Transportation Commission (SCCRTC), the County of Santa Cruz and other local jurisdictions exercised the option to be exempt from preparation and implementation of a Congestion Management Plan (CMP) per Assembly Bill 2419. As a result, the County of Santa Cruz no longer has a Congestion Management Agency or CMP. The CMP statutes were initially established to create a tool for managing and reducing congestion; however, revisions to those statutes progressively eroded the effectiveness of the CMP. There is also duplication between the CMP and other transportation documents such as the Regional Transportation Plan (RTP) and the Regional Transportation Improvement Program (RTIP). In addition, the goals of the CMP may be carried out through the Regional Transportation Improvement Program and the Regional Transportation Plan. Any functions of the CMP which are useful, desirable and do not already exist in other documents may be incorporated into those documents.

The proposed project would not conflict with either the goals and/or policies of the RTP or with monitoring the delivery of state and federally-funded projects outlined in the RTIP. No impact would occur.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
3. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒

***Discussion*:** No change in air traffic patterns would result from project implementation. Therefore, no impact is anticipated.

4. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒

***Discussion*:** The proposed project consists of the construction and operation of a retail auto dealership and service center. No increase in hazards would occur from project design or from incompatible uses. No impact would occur from project implementation.

5. Result in inadequate emergency access?	☐	☐	☐	☒

***Discussion*:** The project's road access meets County standards and has been approved by the local fire agency. No impact is anticipated.

6. Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐	☐	☐	☒

***Discussion*:** The proposed project design would comply with current road requirements to prevent potential hazards to motorists, bicyclists, and/or pedestrians. No impact would occur.

Q. TRIBAL CULTURAL RESOURCES

1. Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
A. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of	☐	☐	☐	☒

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
historical resources Code section 5020.1(k), or				
B. *A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.*	☐	☐	☐	☒

Discussion: The project proposes to establish a new automobile dealership and service facility in an existing urbanized area. Section 21080.3.1(b) of the California Public Resources Code (AB 52) requires a lead agency formally notify a California Native American tribe that is traditionally and culturally affiliated within the geographic area of the discretionary project when formally requested. As of this writing, no California Native American tribes traditionally and culturally affiliated with the Santa Cruz County region have formally requested a consultation with the County of Santa Cruz (as Lead Agency under CEQA) regarding Tribal Cultural Resources. As a result, no Tribal Cultural Resources are known to occur in or near the project area. Therefore, no impact to the significance of a Tribal Cultural Resource is anticipated from project implementation.

R. UTILITIES AND SERVICE SYSTEMS

Would the project:

1. *Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?*	☐	☐	☐	☒

Discussion: The proposed project's wastewater flows would not violate any wastewater treatment standards. No significant impacts would occur from project implementation.

2. *Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?*	☐	☐	☐	☒

Discussion: The project would connect to an existing municipal water supply. The City of Santa Cruz Water Department has determined that adequate supplies are available to serve the project (Attachment E). No impact would occur from project implementation.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

Municipal sewer service is available to serve the project, as reflected in the attached letter from the County of Santa Cruz Sanitation District (Attachment D). No impact would occur from project implementation.

3. *Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?*	☐	☐	☒	☐

***Discussion*:** Drainage analysis of the project Bowman & Williams, dated February 22, 2017 concluded that the proposed project would be designed to reduce stormwater flow rates below preconstruction conditions while improving water quality through the use of biofiltration. Department of Public Works Drainage staff have reviewed the drainage information and have determined that downstream storm facilities are adequate to handle the increase in drainage associated with the project (Attachment G). Therefore, no additional drainage facilities would be required for the proposed project. No impacts are expected to occur from the proposed project.

4. *Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?*	☐	☐	☒	☐

***Discussion*:** The City of Santa Cruz Water Department has indicated that adequate water supplies are available to serve the project and has issued a will-serve letter for the proposed project, subject to the payment of fees and charges in effect at the time of service (Attachment F). The development would also be subject to the water conservation requirements. Therefore, existing water supplies would be sufficient to serve the proposed project, and no new entitlements or expanded entitlements would be required. Impacts would be less than significant.

5. *Result in determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?*	☐	☐	☐	☒

***Discussion*:** The County of Santa Cruz Sanitation District has indicated that adequate capacity is available to serve the project and has issued a will-serve letter for the proposed project, subject to the payment of fees and charges in effect at the time of service (Attachment E). Therefore, existing wastewater treatment capacity would be sufficient to serve the

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

proposed project. Please see discussion under Q-2 above. No impact would occur from project implementation.

6.	*Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?*	☐	☐	☒	☐

Discussion: The proposed development would not generate solid waste during the operational phase of the project. However, construction debris would be generated during demolition and construction. Due to the small incremental increase in solid waste generation by the proposed project during construction, the impact would not be significant.

7.	*Comply with federal, state, and local statutes and regulations related to solid waste?*	☐	☐	☐	☒

Discussion: The project would comply with all federal, state, and local statutes and regulations related to solid waste disposal. No impact would occur.

S. MANDATORY FINDINGS OF SIGNIFICANCE

1.	*Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?*	☐	☒	☐	☐

Discussion: The potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory were considered in the response to each question in Section III (A through Q) of this Initial Study. Resources that have been evaluated as significant would be potentially impacted by the project, particularly nesting migratory birds. However, mitigation has been included that clearly reduces these effects to a level below significance. This mitigation includes conducting a nesting study prior to the removal of mature trees. As a result of this evaluation, there is no substantial evidence that, after

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

mitigation, significant effects associated with this project would result. Therefore, this project has been determined not to meet this Mandatory Finding of Significance.

2. *Does the project have impacts that are individually limited, but cumulatively considerable? ("cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?*	☐	☒	☐	☐

***Discussion*:** In addition to project specific impacts, this evaluation considered the projects potential for incremental effects that are cumulatively considerable. As a result of this evaluation, there were determined to be potentially significant cumulative effects related to increased traffic through intersections operating at a below acceptable level of service. However, mitigation has been included that clearly reduces these cumulative effects to a level below significance. This mitigation includes measures to reduce these impacts to a less than significant level through the payment of Transportation Improvement Area Fees, which includes the Project's fair share contribution of $13,300 for the intersection of Soquel Drive at Robertson Street and $17,500 for the intersection of Soquel Drive at Porter Street. As a result of this evaluation, there is no substantial evidence that there are cumulative effects associated with this project. Therefore, this project has been determined not to meet this Mandatory Finding of Significance.

3. *Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?*	☐	☒	☐	☐

***Discussion*:** In the evaluation of environmental impacts in this Initial Study, the potential for adverse direct or indirect impacts to human beings were considered in the response to specific questions in Section III (A through Q). As a result of this evaluation, there were determined to be potentially significant effects to human beings related to the following: construction generated noise and hazardous materials. However, mitigation has been included that clearly reduces these effects to a level below significance. As a result of this evaluation, there is no substantial evidence that, after mitigation, there are adverse effects to human beings associated with this project. Therefore, this project has been determined not to meet this Mandatory Finding of Significance.

IV. REFERENCES USED IN THE COMPLETION OF THIS INITIAL STUDY

California Department of Conservation. 1980

Farmland Mapping and Monitoring Program Soil Candidate Listing for Prime Farmland and Farmland of Statewide Importance Santa Cruz County U.S. Department of Agriculture, Natural Resources Conservation Service, soil surveys for Santa Cruz County, California, August 1980.

County of Santa Cruz, 2013

County of Santa Cruz Climate Action Strategy. Approved by the Board of Supervisors on February 26, 2013.

County of Santa Cruz, 2014

Sustainable Santa Cruz County Plan. Approved by the Board of Supervisors on October 28, 2014.

County of Santa Cruz, 2015

County of Santa Cruz Local Hazard Mitigation Plan 2015-2020. Prepared by the County of Santa Cruz Office of Emergency Services.

County of Santa Cruz, 1994

1994 General Plan and Local Coastal Program for the County of Santa Cruz, California. Adopted by the Board of Supervisors on May 24, 1994, and certified by the California Coastal Commission on December 15, 1994.

MBUAPCD, 2008

Monterey Bay Unified Air Pollution Control District (MBUAPCD), CEQA Air Quality Guidelines. Prepared by the MBUAPCD, Adopted October 1995, Revised: February 1997, August 1998, December 1999, September 2000, September 2002, June 2004 and February 2008.

MBUAPCD, 2013a

Monterey Bay Unified Air Pollution Control District, NCCAB (NCCAB) Area Designations and Attainment Status – January 2013. Available online at http://www.mbuapcd.org/mbuapcd/pdf/Planning/Attainment_Status_January_2013_2.pdf

MBUAPCD, 2013b

Triennial Plan Revision 2009-2011. Monterey Bay Air Pollution Control District. Adopted April 17, 2013.

Attachment A

Mitigation Monitoring and Reporting Program

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County of Santa Cruz

PLANNING DEPARTMENT
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KATHLEEN MOLLOY PREVISICH, PLANNING DIRECTOR

MITIGATION MONITORING AND REPORTING PROGRAM for the SANTA CRUZ NISSAN

Application No. 161443, April 6, 2017

No.	Environmental Impact	Mitigation Measures	Responsibility for Compliance	Method of Compliance	Timing of Compliance
Air Quality (BMPs and BACT)					
AQ-1	Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	Contracted Diesel Control Measures: In addition to the use of Tiered engines and California ultralow sulfur diesel fuel, the following requirements will be incorporated into contract specifications: • To minimize potential diesel odor impacts on nearby receptors (pursuant to MBUAPCD Rule 402, Nuisances), construction equipment will be properly tuned. A schedule of tune-ups will be developed and performed for all equipment operating within the project area. A written log of required tune-ups will be maintained and a copy of the log will be submitted to the County of Santa Cruz Department of Public Works (DPW) Planning Director for review every 2,000 service hours. • Fixed temporary sources of air emissions (such as portable pumps, compressors, generators, etc.) will be electrically powered unless the contractor submits documentation and receives written approval from the County of Santa Cruz DPW that the use of such equipment is not practical, feasible, or available (generally contingent upon power line proximity, capacity, and accessibility). California ultralow sulfur diesel fuel with maximum sulfur content of 15 ppm by weight (ppmw S), or an approved alternative fuel, will be used for on-site fixed equipment not using line power. • To minimize diesel emission impacts, construction contracts will require off-road compression ignition equipment operators to reduce unnecessary idling with a 2-minute time limit, subject to monitoring and written documentation. • On-road material hauling vehicles will shut off engines while queuing for loading and unloading for time periods longer than 2 minutes, subject to monitoring and written documentation. • Off-road diesel equipment will be fitted with verified diesel emission control systems (e.g., diesel oxidation catalysts) to the extent reasonably and economically feasible. • Utilize alternative fuel equipment (i.e., compressed or liquefied natural gas, biodiesel, electric) to the extent reasonably and economically feasible. Feasibility will be determined consistent with Best Available Control Technology (BACT) general criteria: 1) achieved in practice; 2) contained in	Project Applicant and Contractor	To be monitored by the County Planning and the Contractor.	To be implemented during project design and construction.

No.	Environmental Impact	Mitigation Measures	Responsibility for Compliance	Method of Compliance	Timing of Compliance
		adopted control measures; 3) technologically feasible; and 4) cost-effective.			
AQ-2		Diesel Particulate Matter Emissions Control Measures: In addition, the project will implement the following measures to reduce particulate matter emissions from diesel exhaust: • Grid power will be used instead of diesel generators where it is feasible to connect to grid power (generally contingent upon power line proximity, capacity, and accessibility). • The project specifications will include 13 CCR Sections 2480 and 2485, which limit the idling of all diesel-fueled commercial vehicles (weighing over 10,000 pounds, both California- or non-California-based trucks) to 30 seconds at a school or 5 minutes at any location. In addition, the use of diesel auxiliary power systems and main engines will be limited to 5 minutes when within 100 feet of homes or schools while the driver is resting. • The project specifications will include 17 CCR Section 93115, Airborne Toxic Control Measure for Stationary Compression Ignition Engines, which specifies fuel and fuel additive requirements; emission standards for operation of any stationary, diesel-fueled, compression-ignition engines; and operation restrictions within 500 feet of school grounds when school is in session. • A schedule of low-emissions tune-ups will be developed and such tune-ups will be performed on all equipment, particularly for haul and delivery trucks. • Low-sulfur (≤ 15 ppmw S) fuels will be used in all stationary and mobile equipment.	Project Applicant and Contractor	To be monitored by the County Planning and the Contractor.	To be implemented during project design and construction.
AQ-3		Dust Control Measures: The following controls will be implemented at the construction and staging sites as applicable: • Water all active construction areas at least twice daily as necessary and indicated by soil and air conditions. • Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least 2 feet of freeboard. • Pave, apply water three times daily, or apply (nontoxic) soil stabilizers on all unpaved access roads, parking areas and staging areas at construction sites. • Sweep daily (with water sweepers) all paved access roads, parking areas and staging areas at construction sites. • Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets. • All disturbed areas, including storage piles, which are not being actively utilized for construction purposes, will be effectively stabilized	Project Applicant and Contractor	To be monitored by the County Planning and the Contractor.	To be implemented during project design and construction.

No.	Environmental Impact	Mitigation Measures	Responsibility for Compliance	Method of Compliance	Timing of Compliance
		of dust emissions using water, chemical stabilizer/suppressant, covered with a tarp or other suitable cover or vegetative ground cover. • All on-site unpaved roads and off-site unpaved access roads will be effectively stabilized of dust emissions using water or chemical stabilizer/suppressant. • All land clearing, grubbing, scraping, excavation, land leveling, grading, cut & fill, and demolition activities will be effectively controlled of fugitive dust emissions utilizing application of water or by presoaking. • When materials are transported off site, all material will be covered, or effectively wetted to limit visible dust emissions, and at least 6 inches of freeboard space from the top of the container will be maintained. • All operations will limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday. (The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions. Use of blower devices is expressly forbidden.) • Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, said piles will be effectively stabilized of fugitive dust emissions utilizing sufficient water or chemical stabilizer/suppressant. • Within urban areas, trackout will be immediately removed when it extends 50 or more feet from the site and at the end of each workday. • Any site with 150 or more vehicle trips per day will prevent carryout and trackout. • Hydroseed or apply (nontoxic) soil stabilizers to inactive construction areas (previously graded areas inactive for 10 days or more). • Enclose, cover, water twice daily, or apply (nontoxic) soil binders to exposed stockpiles (dirt, sand, etc.). • Limit traffic speeds on unpaved roads to 15 miles per hour. • Install sandbags or other erosion control measures to prevent silt runoff to public roadways from sites with a slope greater than 1 percent. • Replant vegetation in disturbed areas as quickly as possible. • Install wheel washers for all exiting trucks, or wash off all trucks and equipment leaving the site. • Install wind breaks at windward side(s) of construction areas. • Suspend excavation and grading activity when winds (instantaneous gusts) exceed 20 miles per hour. • Limit the area subject to excavation, grading, and other construction activity at any one time. Implementation of the above BMPs and BACT would ensure that emissions			

No.	Environmental Impact	Mitigation Measures	Responsibility for Compliance	Method of Compliance	Timing of Compliance
		of diesel particulate matter (DPM) and fugitive dust from project excavation and grading would be consistent with the MBARD emissions inventories. Impacts would be less than significant.			
AQ-4	Expose sensitive receptors to substantial pollutant concentrations?	Please see BMPs and BACT AQ-1 through AQ-3.	Project Applicant and Contractor	To be monitored by the County Planning and the Contractor.	To be implemented during project design and construction.
Biological Resources					
BIO-1	Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife, or U.S. Fish and Wildlife Service?	Under the MBTA, nests that contain eggs or unfledged young are not to be disturbed during the breeding season. The nesting season for migratory birds and birds of prey is generally 1 February through 31 August. Implementation of the following measures will avoid potential impacts. • If construction begins outside the 1 February to 31 August breeding season, there will be no need to conduct a preconstruction survey for active nests. • If construction is scheduled to begin between 1 February and 31 August then a qualified biologist shall conduct a preconstruction survey for active nests. The survey will include a 250 foot radius from the work area for nesting birds of prey and a 50 foot radius from the work area for other nesting MBTA protected birds. The survey will be conducted from publicly accessible areas within one two weeks prior to construction. If no active nest of a bird of prey or MBTA bird is found, then no further mitigation measures are necessary. • If an active nest of a bird of prey or MBTA bird is found, then the biologist shall determine a buffer suitable to protect the nest until fledging. The size of suitable buffers depends on the species of bird, the location of the nest relative to the Project, Project activities during the time the nest is active, and other Project specific conditions. • No construction activity shall be allowed in the buffer until the biologist determines that the nest is no longer active, or unless monitoring determines that a smaller buffer will protect the active nest. The buffer may be reduced if the biologist monitors the construction activities and determines that no disturbance to the active nest is occurring. If an active nest is identified in or adjacent to the construction zone after construction has started, the above measures will be implemented to ensure construction is not causing disturbance to the nest.	Project Applicant and Contractor	To be monitored by the County Planning and the Contractor.	To be implemented during project design and construction.
Hazards and Hazardous Materials					
HAZ-1	Create a significant hazard to the public or the environment through reasonably foreseeable	Pursuant to Cal OSHA regulations, project applicants shall have each structure within the planning area within Assessor Parcel numbers 030-121-08, 030-121-12, and 030-121-13 inspected by a qualified environmental specialist for the presence of ACMs and LBPs prior to obtaining a	Project Applicant and Contractor	To be monitored by the County Planning and the Contractor.	To be implemented during project design and construction.

No.	Environmental Impact	Mitigation Measures	Responsibility for Compliance	Method of Compliance	Timing of Compliance
	upset and accident conditions involving the release of hazardous materials into the environment?	demolition permit from the County of Santa Cruz Planning Department. If ACMs and LBPs are found during the investigations, project applicants with the planning area shall develop a remediation program to ensure that these materials are removed and disposed of by a licensed contractor in accordance with all federal a, state and local laws and regulation, subject to approval by the MBARD, and the Santa Cruz County Environmental Health Department, as applicable. Any hazardous materials that are removed from the structures shall be disposed of at an approved landfill facility in accordance with federal, state and local laws and regulations.			
HAZ-2		Project applicants within the planning area shall have the interior of all on-site structures within Assessor Parcel Numbers: 030-121-08, 030-121-12, and 030-121-13 visually inspected by a qualified environmental specialist to determine the presence of hazardous materials prior to obtaining a demolition permit from the County of Santa Cruz Planning Department. Should any hazardous materials be encountered with any of the structures, the materials shall be tested and properly disposed of in accordance with federal, state and local regulatory requirements. Any stained soils or surfaces underneath the removed materials shall be sampled. Subsequent testing shall indicate the appropriate level of remediation necessary and a work plan shall be prepared in order to remediate the soil in accordance with all applicable federal, state and local regulations prior to issuance of a grading permit.	Project Applicant and Contractor	To be monitored by the County Planning and the Contractor.	To be implemented during project design and construction.
Noise					
NOI-1	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?	Limit construction activity to between the hours of 7:00 a.m. to 6:00 p.m. Monday through Friday, 9:00 a.m. to 5:00 p.m. Saturday in order to avoid noise during more sensitive nighttime hours. Prohibit construction activity on Sundays.	Project Applicant and Contractor	To be monitored by the County Planning and the Contractor.	To be implemented during project design and construction.
NOI-2		Require that all construction and maintenance equipment powered by gasoline or diesel engines have sound-control devices that are at least as effective as those originally provided by the manufacturer and that all equipment be operated and maintained to minimize noise generation.	Project Applicant and Contractor	To be monitored by the County Planning and the Contractor.	To be implemented during project design and construction.
NOI-3		Prohibit gasoline or diesel engines from having unmuffled exhaust.	Project Applicant and Contractor	To be monitored by the County Planning and the Contractor.	To be implemented during project design and construction.
NOI-4		Use noise-reducing enclosures around stationary noise-generating equipment capable of 6 dB attenuation.	Project Applicant and Contractor	To be monitored by the County Planning and the Contractor.	To be implemented during project design and construction.
NOI-5	A substantial temporary or periodic increase in ambient noise levels in the project vicinity above	See Mitigation Measures NOI-1 through NOI-4.	Project Applicant and Contractor	To be monitored by the County Planning and the Contractor.	To be implemented during project design and

No.	Environmental Impact	Mitigation Measures	Responsibility for Compliance	Method of Compliance	Timing of Compliance
	levels existing without the project?				construction.
Transportation/Traffic					
TRA-1	Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	Soquel Drive/Robertson Street (Intersection #4)(Existing & Near Term Conditions) • Install traffic signal control and construct one eastbound left-turn and westbound left-turn pockets on Soquel Drive. • The project will pay a proportional fair share for improvements at Soquel Drive/Robertson Street of 2.66% based on estimated project AM and PM peak hour trips traveling through the intersection. The nexus for the fair share is based on all future growth in traffic, estimated at the intersection (from Existing to Cumulative conditions). The unfunded planned improvement cost is $500,000 per the County RTP. The project will pay a fair share fee of $13,300.	Project Applicant	Payment of fees prior to issuance of Building Permit.	To be implemented prior to project construction.
TRA-2		Soquel Drive/Porter Street (Intersection #6)(PM Peak) (Existing, Near Term, and Cumulative Conditions) • Construct one additional southbound left-turn pocket and optimized cycle length, phasing, and splits. • The Project will pay a proportional fair share for improvements at Soquel Drive/Porter Street of 1.75% based on estimated Project AM and PM peak hour trips traveling through the intersection. The nexus for the fair share is based on all future growth in traffic, estimated at the intersection (from Existing to Cumulative conditions). The unfunded planned improvement cost is estimated to be in excess of $1,000,000 and right-of-way would be required. The Project will pay a fair share fee of $17,500 based on a $1,000,000 improvement cost.	Project Applicant	Payment of fees prior to issuance of Building Permit.	To be implemented prior to project construction.

Attachment B

Project Plans

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SANTA CRUZ NISSAN

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DON@GROPPETTIAUTO.COM

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(831) 316-1450
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CIVIL ENGINEERING
BOWMAN & WILLIAMS LAND SURVEYORS
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SANTA CRUZ, CA 95060
(831) 426-3506
BEN@BOWMANANDWILLIAMS.COM

SHEET INDEX

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[illegible]

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REN. 10-31-17
STATE OF CALIFORNIA

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APN 050-151-[illegible]
APN 050-151-[illegible]
APN 050-151-15
APN 050-151-[illegible]

AUTO SHOWROOM & SERVICE BUILDING
FOR

Santa Cruz NISSAN

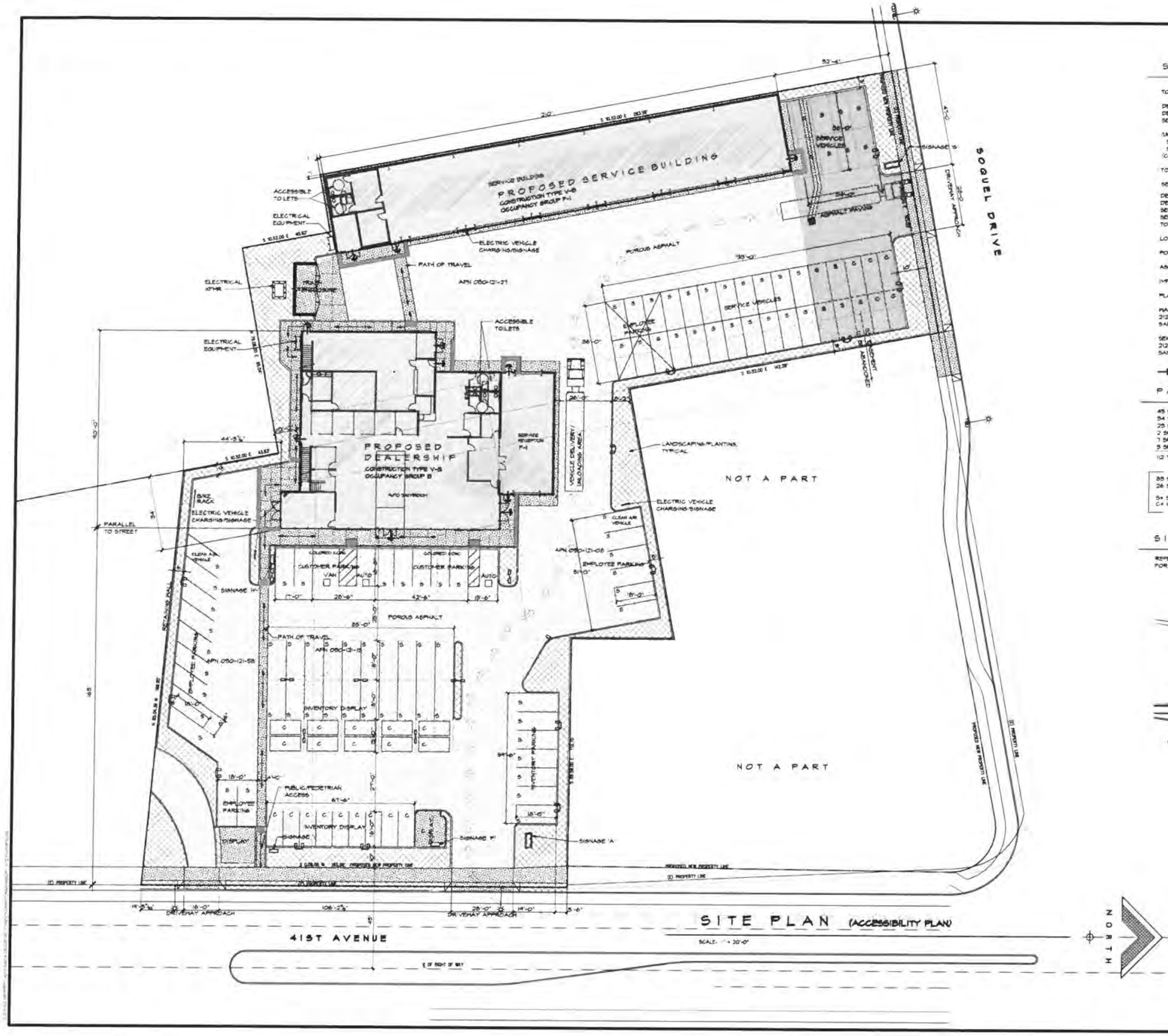
SOQUEL, CA

PROJECT No.: [illegible]
DATE: [illegible]

COVER SHEET

SHEET No.:

G-1



SITE PLAN (ACCESSIBILITY PLAN)

SCALE: 1" = 20'-0"

SUMMARY

TOTAL SITE AREA	78,038 S.F. OR 1.795 ACRES
DEALERSHIP FIRST FLOOR	7,835 S.F.
DEALERSHIP SECOND FLOOR	3,372 S.F.
SERVICE RECEPTION	1,544 S.F.
(UNCONDITIONED SPACE)	(3,271 S.F.)
SERVICE RECEPTION	(1,344 S.F.)
SECOND FLOOR PARTS	(1,927 S.F.)
(CONDITIONED SPACE)	(4,280 S.F.)
TOTAL DEALERSHIP BUILDING	12,551 S.F.
SERVICE BUILDING	7,560 S.F.
DEALERSHIP FIRST FLOOR	7,835 S.F. (39% OF BLDG TOTAL)
DEALERSHIP SECOND FLOOR	3,372 S.F. (17% OF BLDG TOTAL)
SERVICE RECEPTION	1,344 S.F. (7% OF BLDG TOTAL)
SERVICE BUILDING	7,560 S.F. (37% OF BLDG TOTAL)
TOTAL SITE BUILDINGS	20,111 S.F. (25.77% OF TOTAL SITE)
LOT COVERAGE	25.77 %
POROUS ASPHALT	42,608 S.F.
ASPHALT PAVING	4,307 S.F.
IMPERVIOUS CONCRETE	2,914 S.F.
PLANTER AREA	8,040 S.F.

WATER SERVICE: SANTA CRUZ MUNICIPAL UTILITIES OFFICE (SCMU)
212 LOCUST STREET, SUITE D
SANTA CRUZ, CA 95060

SEWER SERVICE: SANTA CRUZ MUNICIPAL UTILITIES OFFICE (SCMU)
212 LOCUST STREET, SUITE D
SANTA CRUZ, CA 95060

→ EGRESS

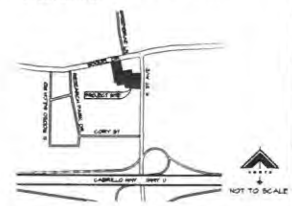
PARKING PROVIDED

45 SPACES	INVENTORY
34 SPACES	SERVICE
25 SPACES	EMPLOYEE
2 SPACES	CLEAN AIR
7 SPACE	CUSTOMER PARKING
5 SPACES	ACCESSIBLE PARKING
112 TOTAL SPACES	

85 SPACES	STANDARD PARKING SPACE
26 SPACES	COMPACT PARKING SPACE
S= STANDARD PARKING SPACE	18' X 8'-6"
C= COMPACT PARKING SPACE	16' X 7'-6"

SITE SIGNAGE

REFER TO THE ATTACHED BRAND SIGNAGE PACKAGE FOR SIGNAGE TYPES



VICINITY MAP

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AUTO SHOWROOM & SERVICE BUILDING
FOR
Santa Cruz NISSAN

NISSAN

SOQUEL, CA

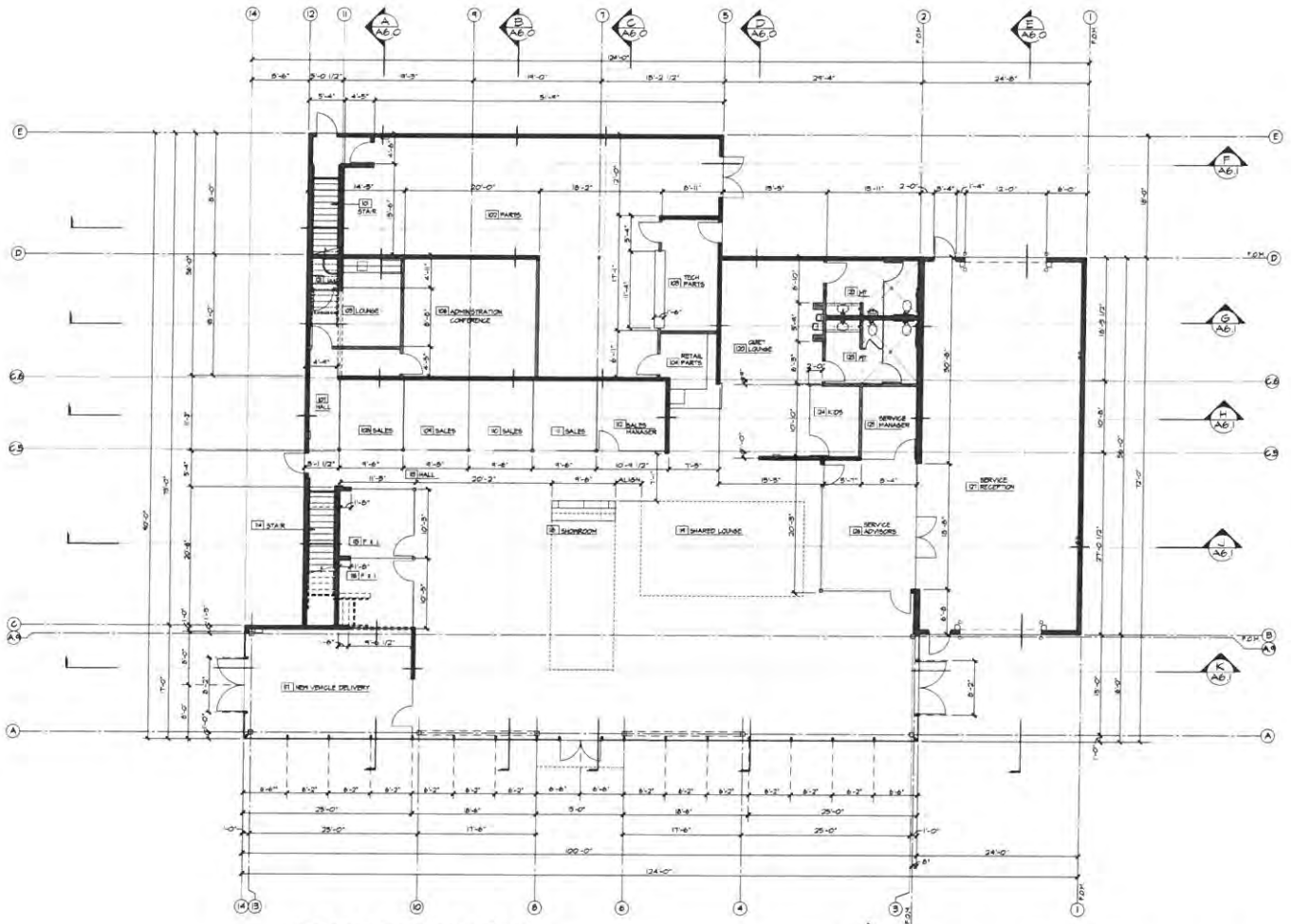
PROGRESS SET
NOT FOR CONSTRUCTION

PROJECT No.:
DATE:

SITE PLAN
CUP

SHEET No.:

A-1.1



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AUTO SHOWROOM & SERVICE BUILDING
FOR
Santa Cruz NISSAN

SOQUEL, CA

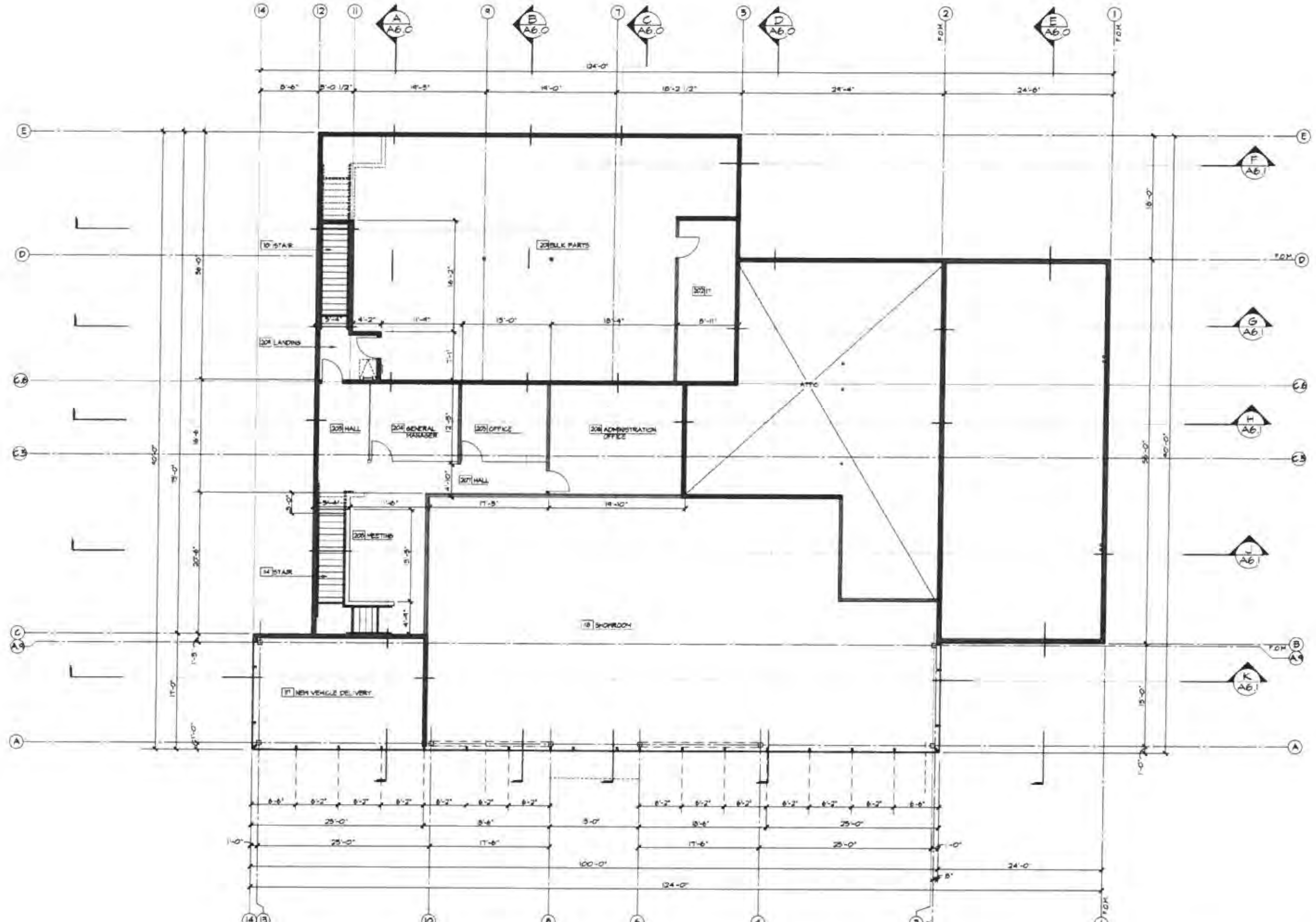
PROJECT No: 1529
DATE: 05/05/2015

FIRST FLOOR PLAN
SHOWROOM

CUP

SHEET No:

A-2.0



SECOND FLOOR PLAN

SCALE: 1/8" = 1'-0"

NORTH

WALL LEGEND

EXTERIOR 8" MASONRY WALL

8" CMU WALL W/ 2X4 WALL FURRING @ 16" O.C. & R-11 BATT INSULATION & 5/8" GYP. BD. ON INTERIOR SIDE

2X4 WD. STUDS @ 16" O.C. & R-11 BATT INSULATION & 5/8" GYP. BD. W/ 1/2" SOUND BOARD ON EXPOSED SIDES

2X6 WD. STUDS @ 16" O.C. & R-19 BATT INSULATION & 5/8" GYP. BD. W/ 1/2" SOUND BOARD ON EXPOSED SIDES

HALF-HEIGHT WALL - 2X6 WD. STUDS @ 16" O.C. W/ 5/8" GYP. BD. EA. SIDE & 1"X FINISHED CAP

SCOTT & ASSOCIATES
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LICENSED ARCHITECT · FREDERICK B. SCOTT · C-8279 · STATE OF CALIFORNIA

AUTO SHOWROOM & SERVICE BUILDING FOR

Santa Cruz NISSAN

SOQUEL, CA

PROJECT No.:

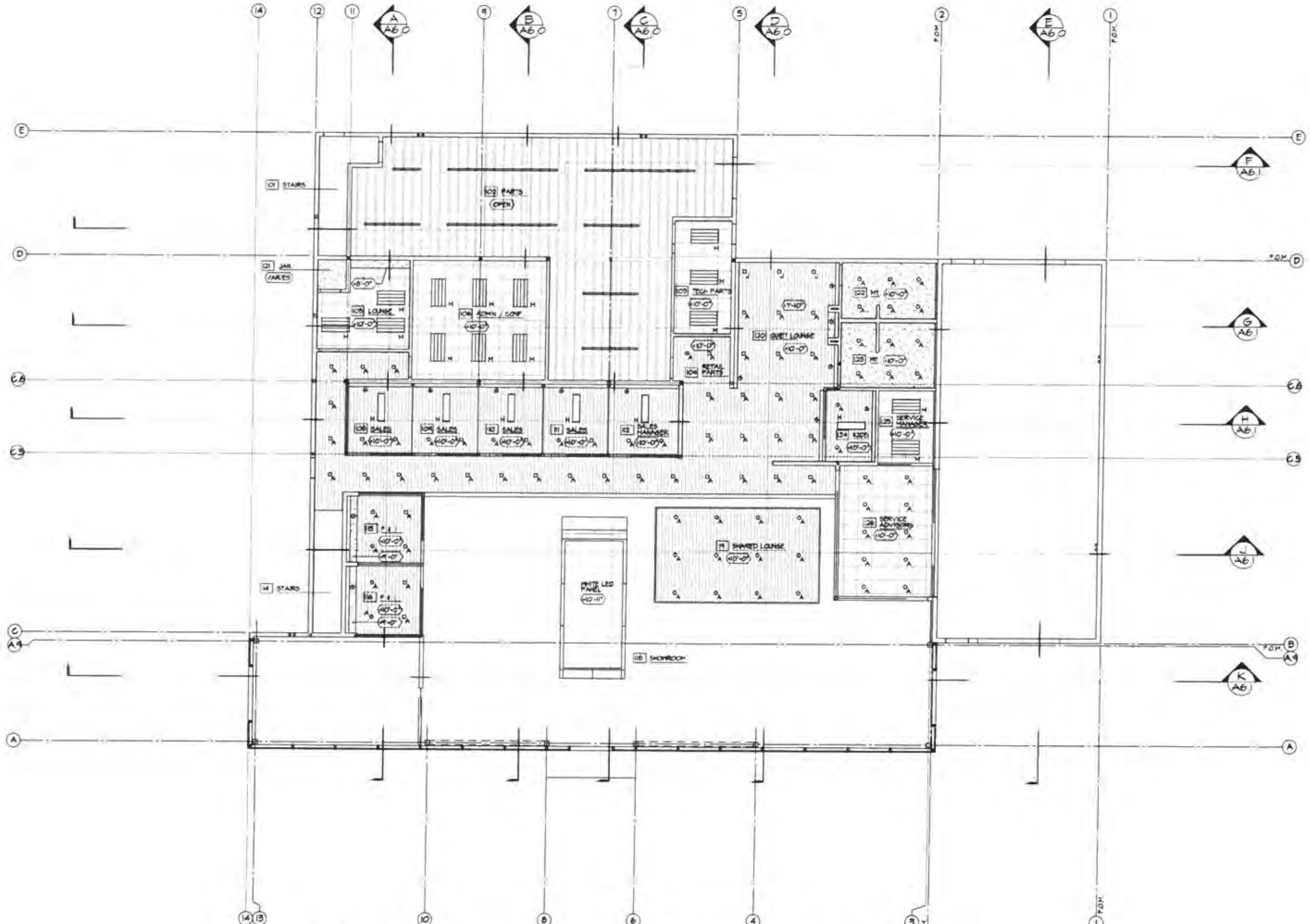
DATE:

SECOND FLOOR SHOWROOM

CUP

SHEET No.:

A-2.1



FIRST FLOOR REFLECTED CELING PLAN

SCALE: 1/8" = 1'-0"

SCOTT & ASSOCIATES
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STATE OF CALIFORNIA

AUTO SHOWROOM & SERVICE BUILDING
FOR

Santa Cruz
NISSAN

SOQUEL, CA

PROJECT No.:

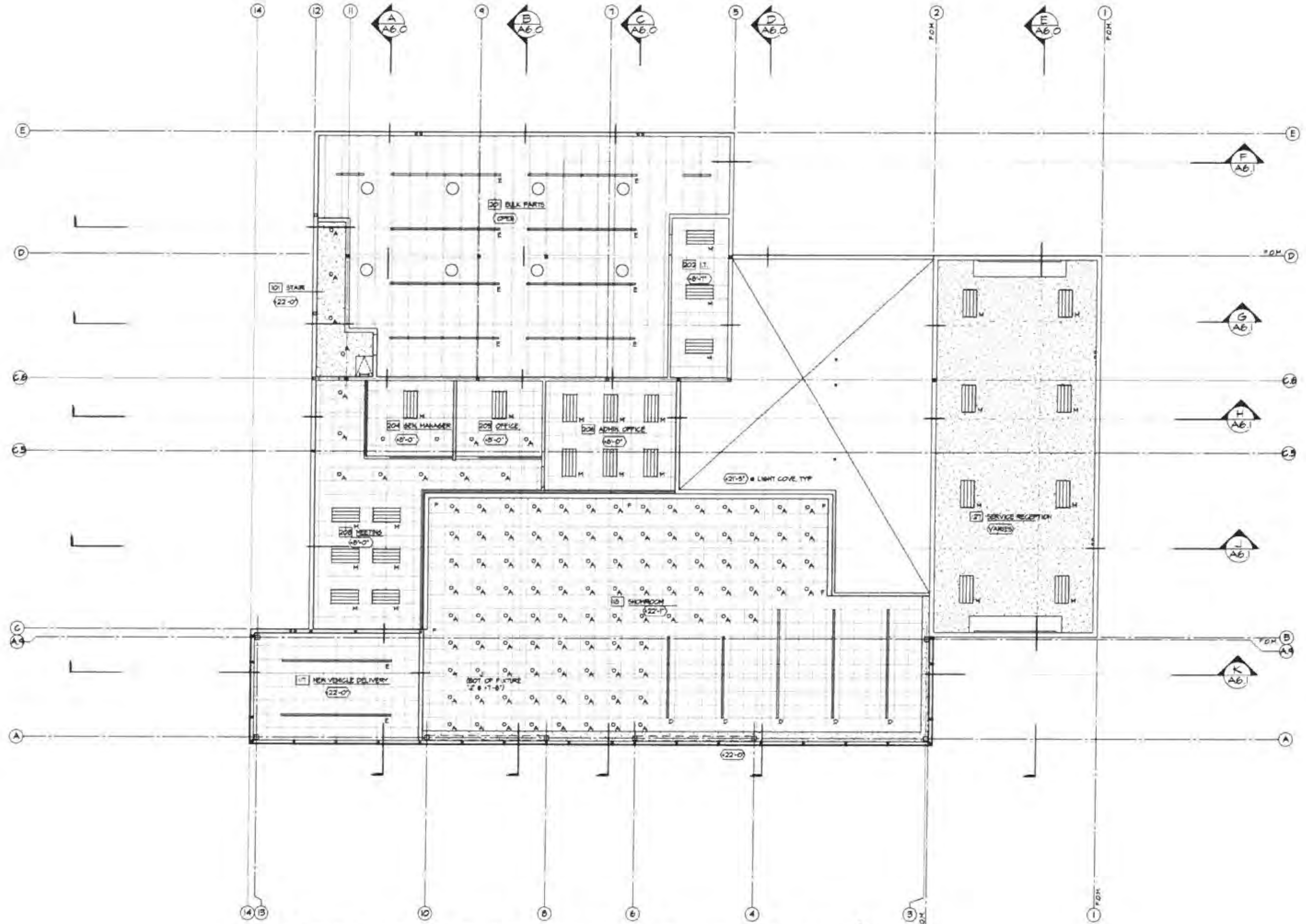
DATE:

FIRST FLOOR
REFLECTED CEILING PLAN
SHOWROOM

CUP

SHEET No.:

A-2.2



SECOND FLOOR REFLECTED CEILING PLAN

SCALE: 1/8" = 1'-0"

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AUTO SHOWROOM & SERVICE BUILDING FOR

Santa Cruz NISSAN

SOQUEL, CA

PROJECT No.:

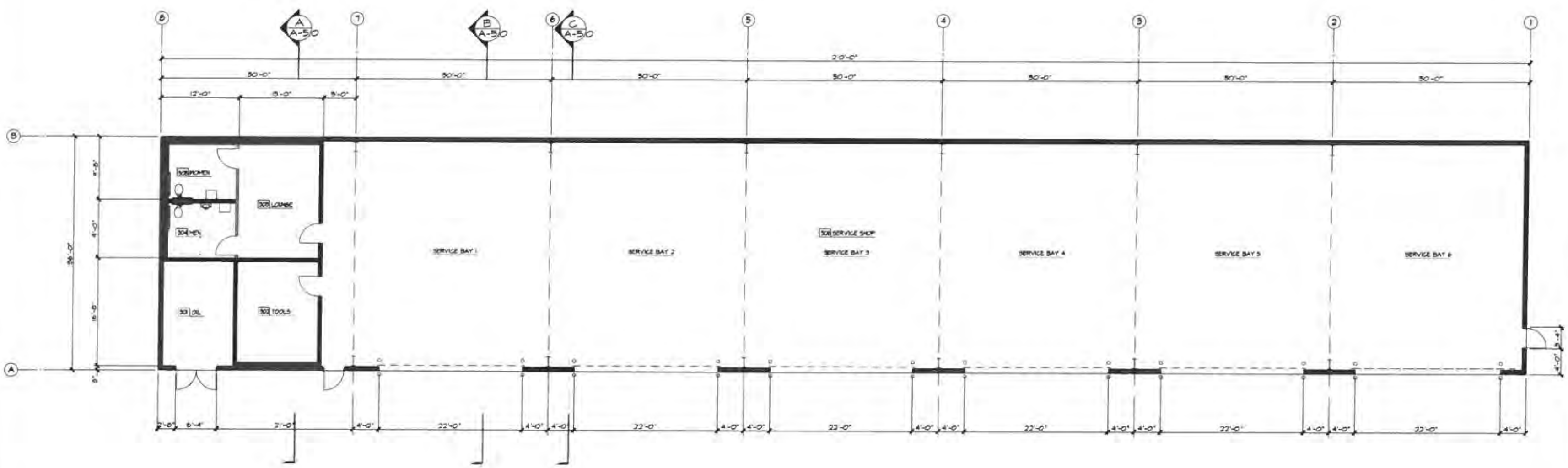
DATE:

SECOND FLOOR REFLECTED CEILING PLAN SHOWROOM

CUP

SHEET No.:

A-2.3



FLOOR PLAN
SERVICE BUILDING

SCALE: 1/8" = 1'-0"

NORTH

WALL LEGEND

EXTERIOR 8" MASONRY WALL	
8" CMU WALL W/ 2X4 WALL FURRING @ 16" O.C. & R-11 BATT INSULATION & 5/8" GYP. BD. ON INTERIOR SIDE	
2X4 WD. STUDS @ 16" O.C. & R-11 BATT INSULATION & 5/8" GYP. BD. W/ 1/2" SOUND BOARD ON EXPOSED SIDES	
2X6 WD. STUDS @ 16" O.C. & R-14 BATT INSULATION & 5/8" GYP. BD. W/ 1/2" SOUND BOARD ON EXPOSED SIDES	

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APN 030-131-30
APN 030-131-13
APN 030-131-15
APN 030-131-56

AUTO SHOWROOM & SERVICE BUILDING
FOR

Santa Cruz
NISSAN

SOQUEL, CA

PROJECT No.:

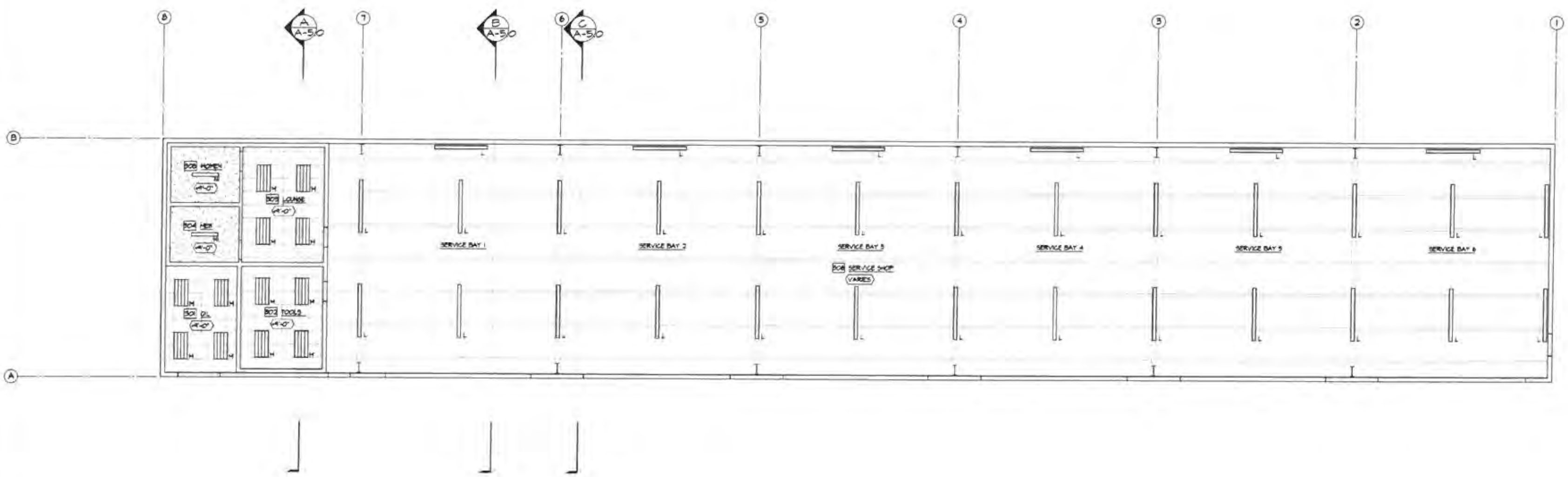
DATE:

FLOOR PLAN
SERVICE BUILDING

CUP

SHEET No.:

A-2.4



REFLECTED CEILING PLAN
SERVICE BUILDING

SCALE: 1/8" = 1'-0"

NORTH

SCOTT & ASSOCIATES
ARCHITECT

LICENSED ARCHITECT FREDERICK E. SCOTT C-8279 STATE OF CALIFORNIA

AUTO SHOWROOM & SERVICE BUILDING
FOR

Santa Cruz NISSAN

NISSAN

SOQUEL, CA

PROJECT No.:

DATE:

REFLECTED CEILING PLAN
SERVICE BUILDING

CUP

SHEET No.:

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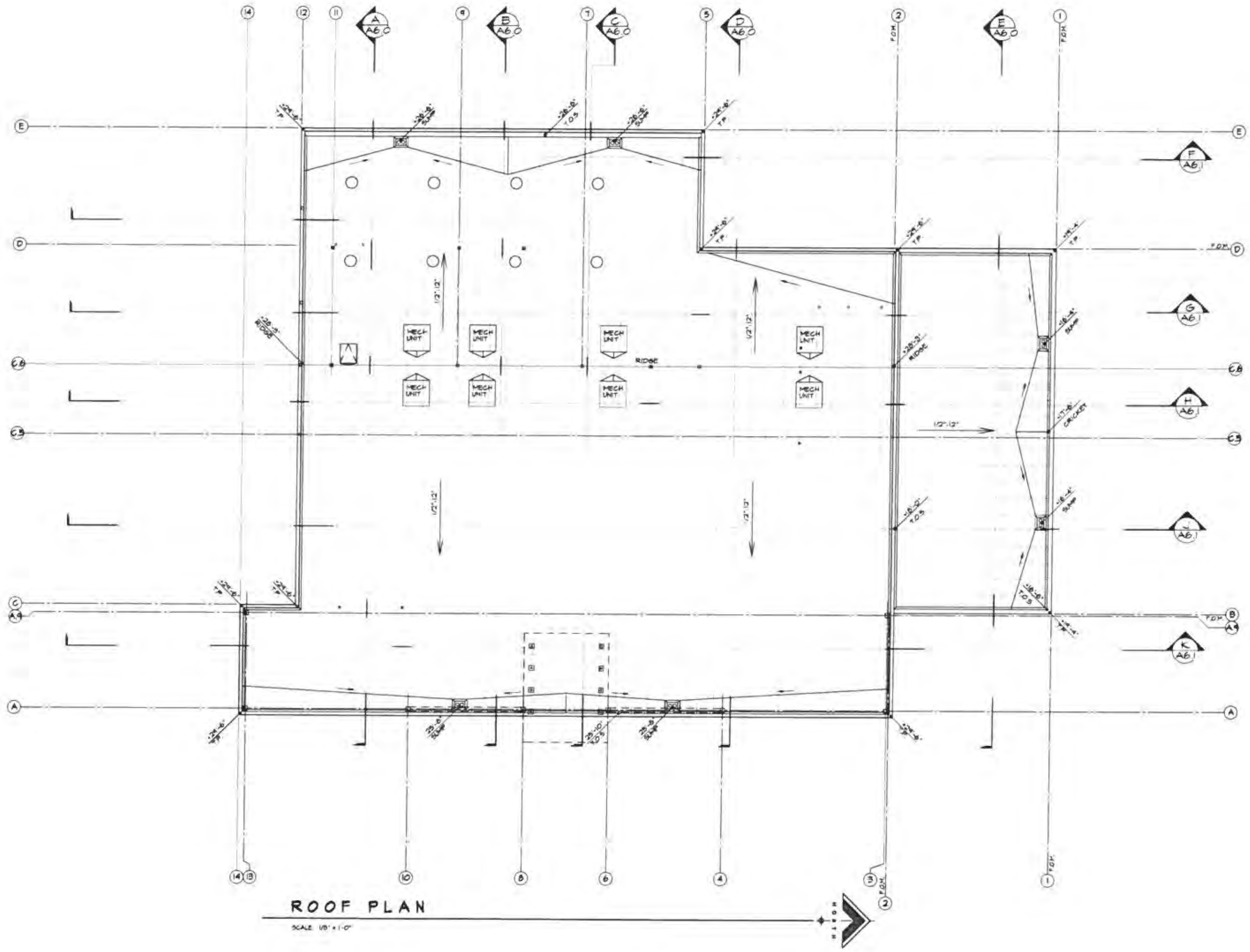

ROOF PLAN

SCALE: 1/8" = 1'-0"

SCOTT & ASSOCIATES

ARCHITECT

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STATE OF CALIFORNIA

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APN: 030-151-28
APN: 030-151-13
APN: 030-151-15
APN: 030-151-40

AUTO SHOWROOM & SERVICE BUILDING

FOR

Santa Cruz NISSAN

SOQUEL, CA

PROJECT No.: [illegible]

DATE: [illegible]

ROOF PLAN
SHOWROOM

CUP

SHEET No.:

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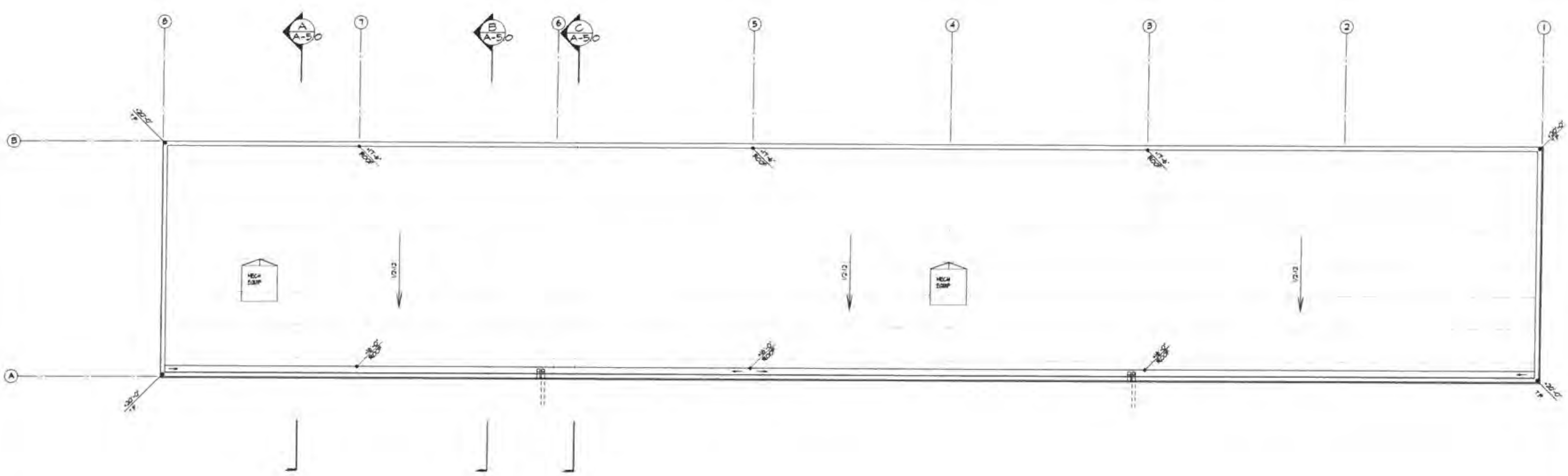

ROOF PLAN

SERVICE BUILDING

SCALE: 1/8" = 1'-0"

SCOTT & ASSOCIATES

ARCHITECT

LICENSED ARCHITECT
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C-8279
STATE OF CALIFORNIA

AUTO SHOWROOM & SERVICE BUILDING FOR

Santa Cruz NISSAN

SOQUEL, CA

PROJECT No.:

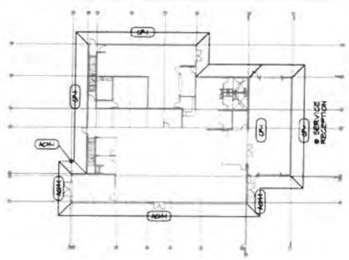
DATE:

ROOF PLAN
SERVICE BUILDING

CUP

SHEET No.:

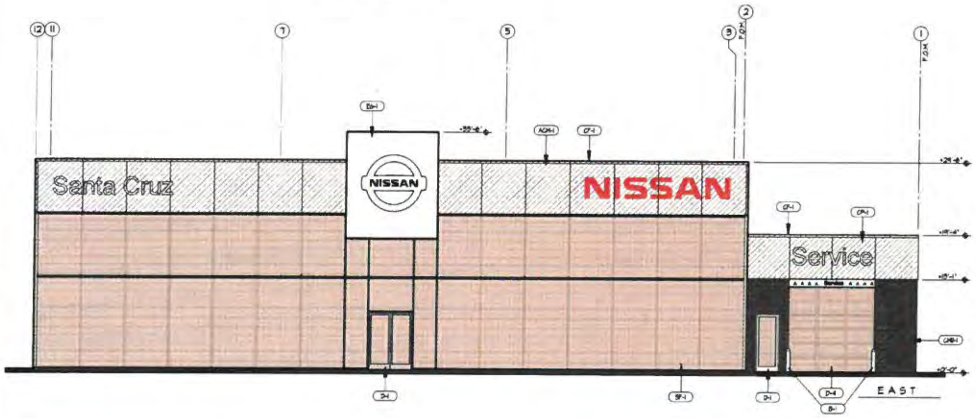
A-4.1

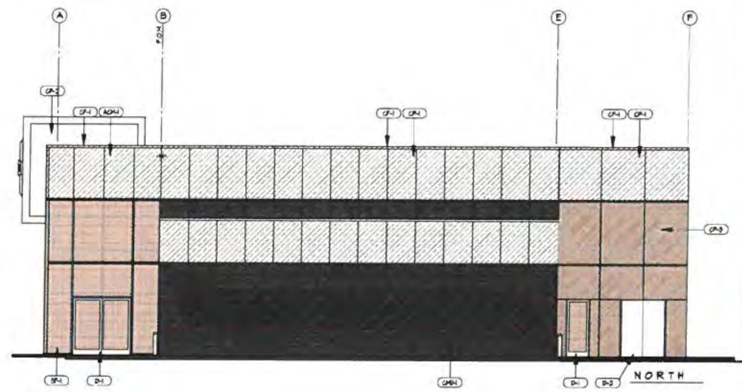


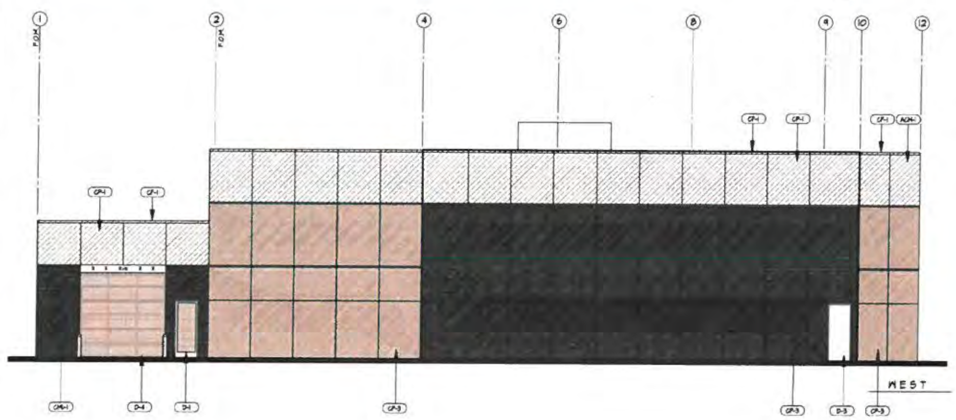
FASCIA KEYPLAN

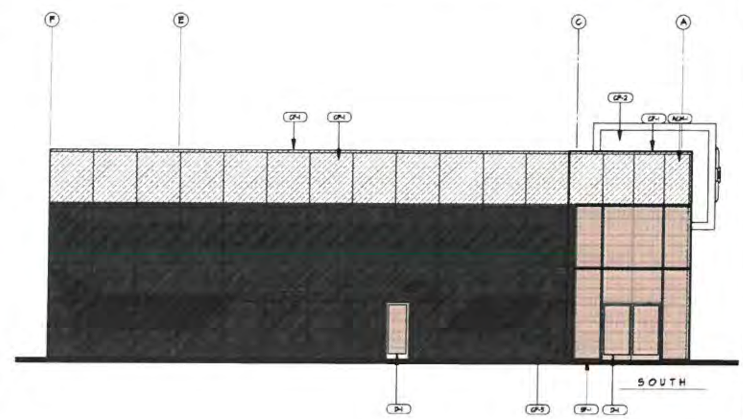
MATERIAL LEGEND

- (ACM-1) ALUMINUM COMPOSITE METAL PANEL ALPOLIC 4MM488X3.5-SILVER METALIC
- (ACM-2) ALUMINUM COMPOSITE METAL PANEL ALPOLIC 754L427 (PEVE)- VALFLON 10742 RED ALUMINUM COMPOSITE METAL PANEL
- (ACM-3) ALPOLIC 752L878 (PEVE)- VALFLON 11524 GREY
- (CP-1) OMEGA "DIAMOND WALL" 3 COAT SYSTEM TO MATCH COLOR ACM-1
- (CP-2) OMEGA "DIAMOND WALL" 3 COAT SYSTEM TO MATCH COLOR ACM-2
- (CP-3) OMEGA "DIAMOND WALL" 3 COAT SYSTEM TO MATCH COLOR ACM-3
- (D-1) CLEAR ANODIZED ALUMINUM DOOR WITH 1" CLEAR INSULATED GLASS
- (D-2) ROLLING OVERHEAD SOLID DOOR (PARTS RECEIVING WAREHOUSE)
- (D-3) 1 3/4" THICK HOLLOW METAL DOOR(S) WITH 2" HOLLOW METAL FRAMES
- (D-4) RYTEC SPIRAL FV DOOR ALUMINUM SLAT FRAMES WITH CLEAR POLYCARBONATE WINDOWS
- (DF-1) CLEAR ANODIZED ALUMINUM DOOR FRAME
- (CF-1) SHEET METAL PARAPET CAP COLOR TO MATCH ACM-1
- (B-1) PIPE BOLLARD BY ID METALCO "DIX BOLLARD" STAINLESS STEEL
- (SF-1) CLEAR ANODIZED FRAMES (INTERIOR AND EXTERIOR) WITH 1" CLEAR INSULATED GLASS. (HORIZONTAL MEMBERS ON THE EXTERIOR ARE TO BE CHARCOAL- @ SILL, HEAD AND +15'-0")
- (SN-1) "NISSAN" TABLET SIGN PER NRED 2.0
- (CMU-1) BRAMPTON BRICK-PROFILE SERIES CONC. BLOCK "ABSOLUTE BLACK QUARTZ" (SERVICE BAYS)









EXTERIOR ELEVATIONS

SCALE: 1/8" = 1'-0"

SCOTT & ASSOCIATES
ARCHITECT

AUTO SHOWROOM & SERVICE BUILDING FOR

Santa Cruz NISSAN

SOQUEL, CA

PROJECT No.:

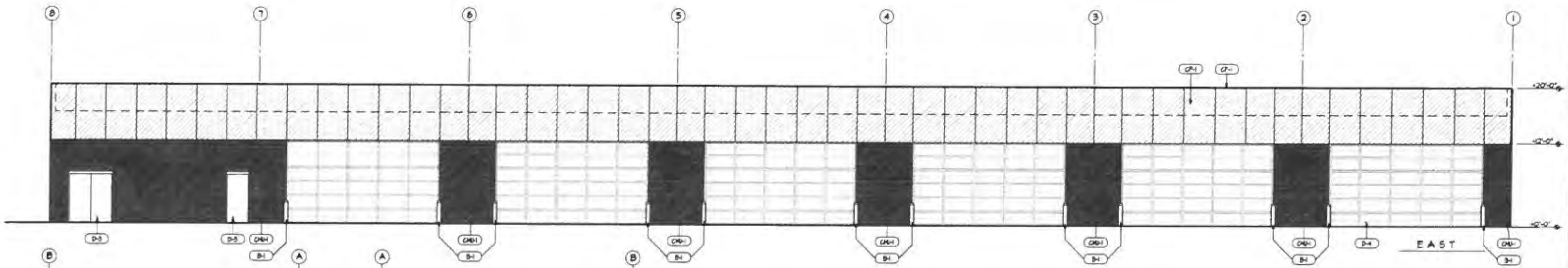
DATE:

EXTERIOR ELEVATIONS SHOWROOM

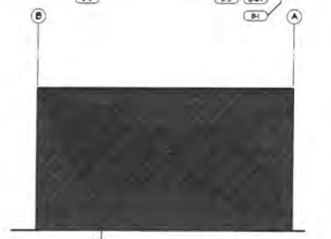
CUP

SHEET No.:

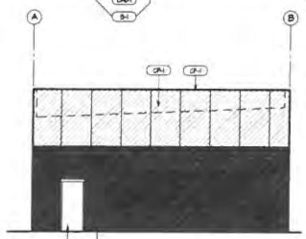
A-5.0



EAST



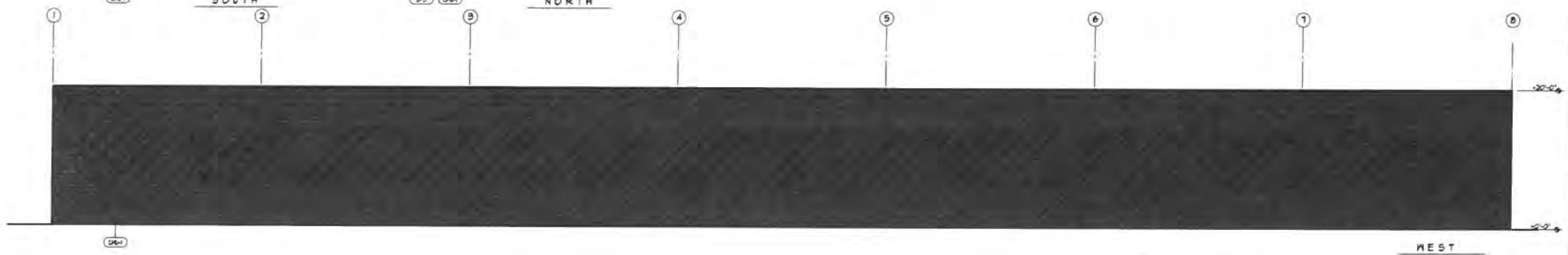
SOUTH



NORTH

MATERIAL LEGEND

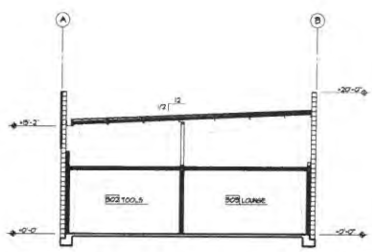
- (ACM-1) ALUMINUM COMPOSITE METAL PANEL ALPOLIC 4MM485X33-SILVER METALIC
- (ACM-2) ALUMINUM COMPOSITE METAL PANEL ALPOLIC 734L427 (FEVE)- VALFLON 10742 RED ALUMINUM COMPOSITE METAL PANEL
- (ACM-3) ALPOLIC 732L878 (FEVE)- VALFLON 1324 GREY
- (CP-1) EIFS (DRYVIT) PLASTER "SANDBLAST DPR" TO MATCH COLOR ACM-1
- (CP-2) EIFS (DRYVIT) PLASTER "SANDBLAST DPR" TO MATCH COLOR ACM-2
- (CP-3) EIFS (DRYVIT) PLASTER "SANDBLAST DPR" TO MATCH COLOR ACM-3
- (D-1) CLEAR ANODIZED ALUMINUM DOOR WITH 1" CLEAR INSULATED GLASS
- (D-2) ROLLING OVERHEAD SOLID DOOR (PARTS RECEIVING WAREHOUSE)
- (D-3) 1 3/4" THICK HOLLOW METAL DOOR(S) WITH 2" HOLLOW METAL FRAMES
- (D-4) RYTEC SPIRAL FV DOOR ALUMINUM SLAT FRAMES WITH CLEAR POLYCARBONATE WINDOWS
- (DF-) CLEAR ANODIZED ALUMINUM DOOR FRAME
- (CF-1) SHEET METAL PARAPET CAP COLOR TO MATCH ACM-1
- (B-1) PIPE BOLLARD BY ID METALCO "DIX BOLLARD" STAINLESS STEEL
- (SF-) CLEAR ANODIZED FRAMES (INTERIOR AND EXTERIOR) WITH 1" CLEAR INSULATED GLASS (HORIZONTAL MEMBERS ON THE EXTERIOR ARE TO BE CHARCOAL - @ SILL, HEAD AND +15'-0")
- (SG-1) "NISSAN" TABLET S-SH PER NREDI 2.0
- (CMU) BRAMPTON BRICK-PROFILE SERIES CONC. BLOCK "ABSOLUTE BLACK QUARTZ" (SERVICE BAYS)



WEST

EXTERIOR ELEVATIONS
SERVICE BUILDING

SCALE: 1/8" = 1'-0"



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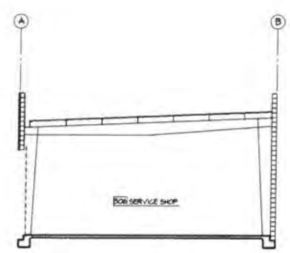

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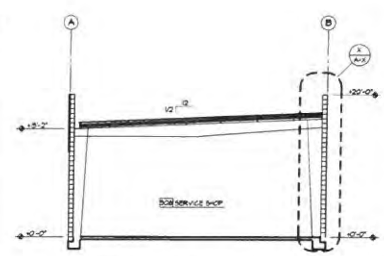

(C) SECTION
SCALE: 1/8" = 1'-0"

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Fax [illegible]
[illegible]

APN [illegible]

AUTO SHOWROOM & SERVICE BUILDING
FOR
Santa Cruz NISSAN

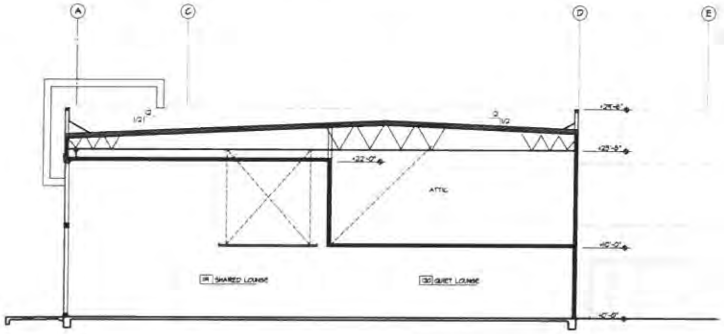
NISSAN

SOQUEL, CA

PROJECT No.: [illegible]
DATE: [illegible]

EXTERIOR ELEVATIONS & SECTIONS
CUP

SHEET No.:
A-5.1



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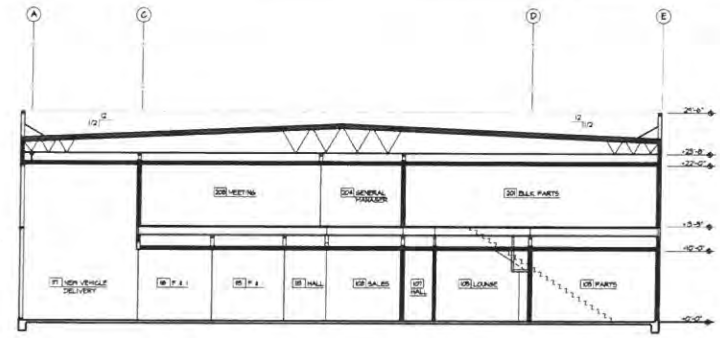

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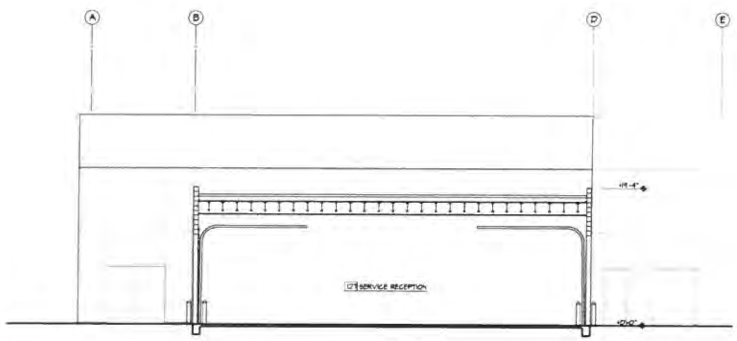

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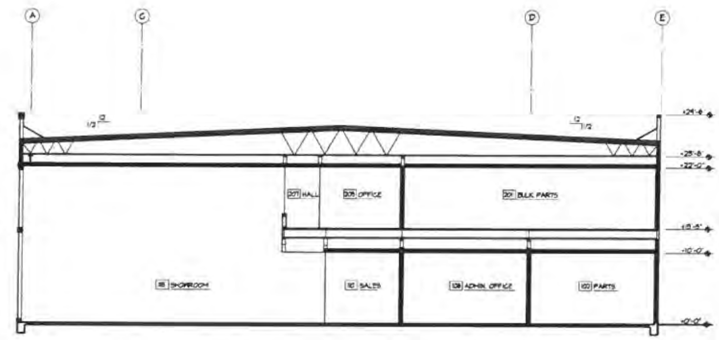

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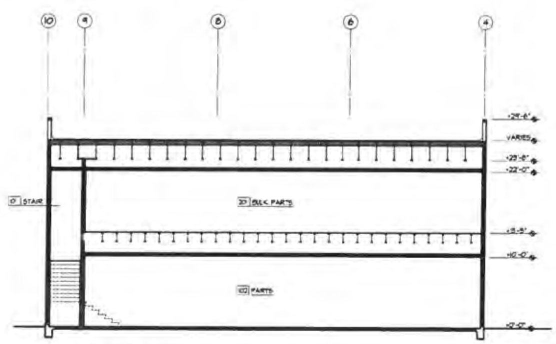

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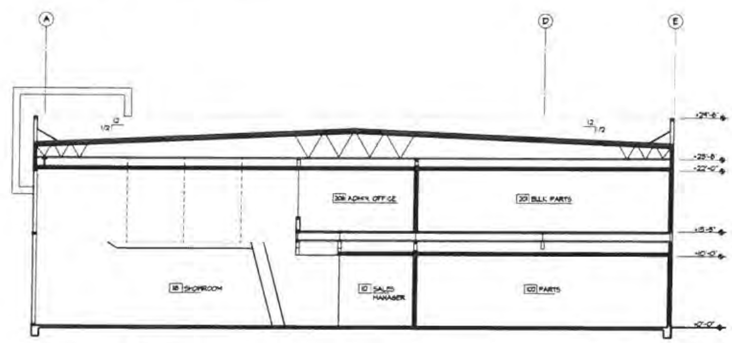


C SECTION
SCALE: 1/8" = 1'-0"

SCOTT & ASSOCIATES
ARCHITECT

AUTO SHOWROOM & SERVICE BUILDING
FOR

Santa Cruz
NISSAN

NISSAN

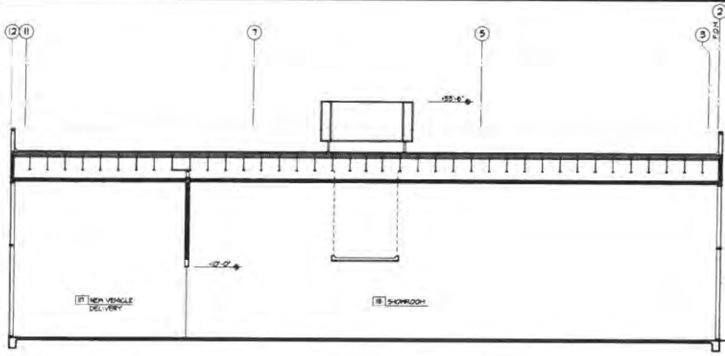
SOQUEL, CA

PROJECT No.:
DATE:
BUILDING SECTIONS - SHOWROOM

CUP

SHEET No.:

A-6.0



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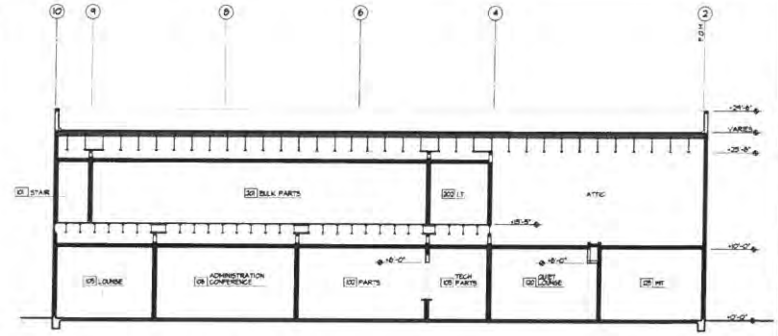

G SECTION
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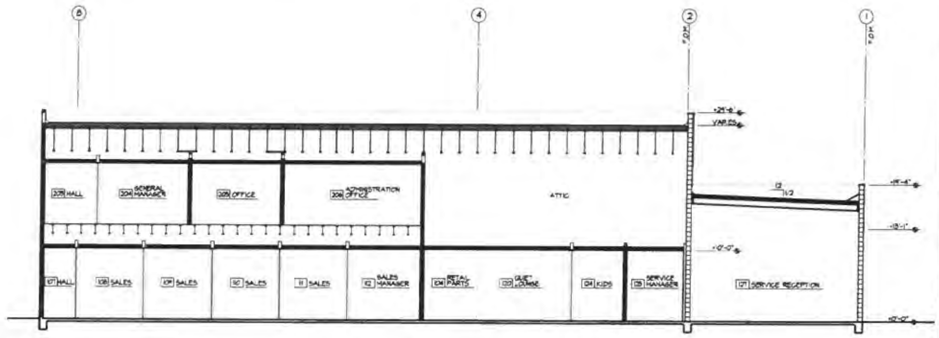

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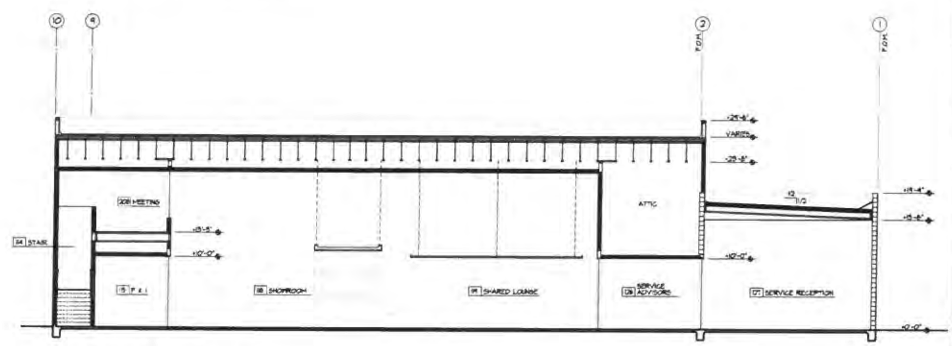

J SECTION
SCALE: 1/8" = 1'-0"

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APN 050-151-13
APN 050-151-15
APN 050-151-36

AUTO SHOWROOM & SERVICE BUILDING
FOR

Santa Cruz
NISSAN

SOQUEL, CA

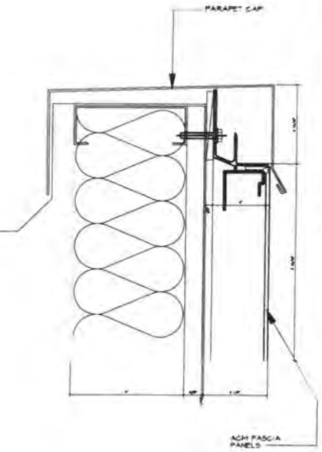
PROJECT No.:
DATE:

BUILDING SECTIONS - SHOWROOM

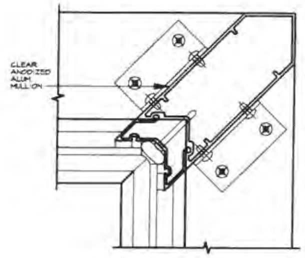
CUP

SHEET No.:

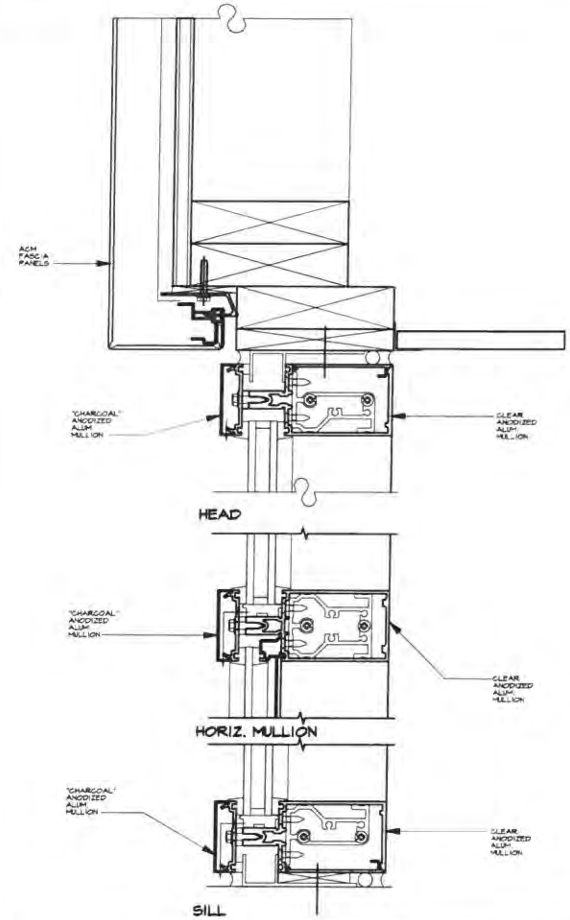
A-6.1



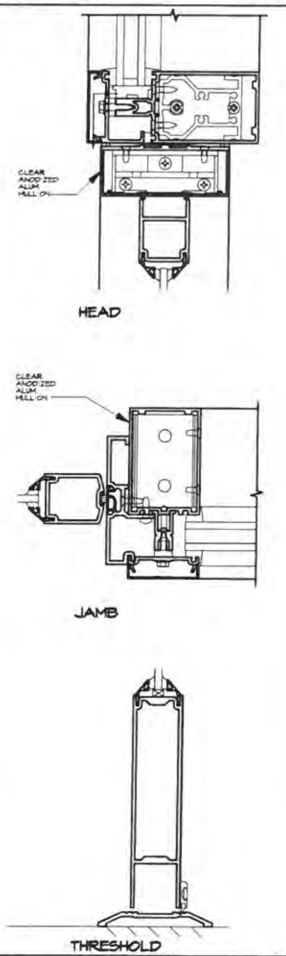
CAP FLASHING 1 1/2" = 1'-0" 14

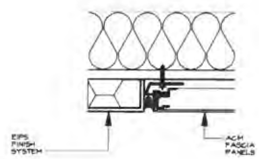


CORNER MULLION 3" = 1'-0" 9

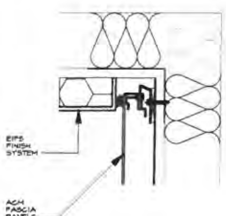


STOREFRONT AND FASCIA 3" = 1'-0" 3

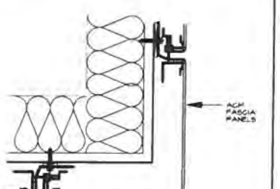




ACM TO PLASTER 1 1/2" = 1'-0" 15

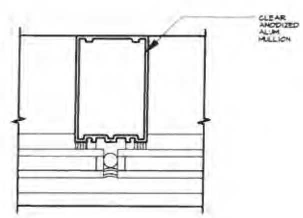


INSIDE CORNER FASCIA 1 1/2" = 1'-0" 20



OUTSIDE CORNER FASCIA 1 1/2" = 1'-0" 16

STOREFRONT DOOR DTLS 3" = 1'-0" 12



STOREFRONT VERTICAL MULLION 3" = 1'-0" 4

SCOTT & ASSOCIATES
ARCHITECT

LICENSED ARCHITECT FREDERICK E. SCOTT STATE OF CALIFORNIA

AUTO SHOWROOM & SERVICE BUILDING
FOR
Santa Cruz NISSAN

NISSAN

SOQUEL, CA

PROJECT No.:
DATE:
TYPICAL DETAILS
CUP
SHEET No.:
A-9.0

SANTA CRUZ NISSAN - PHOTOMETRIC STUDY

POLE & BUILDING FIXTURE MH: +15'-0"

site plan

NORTH

Job Name
[illegible]
Report For: [illegible]
[illegible]
Report by: [illegible] Applications Dept
Mounting Ht: See Drawing
See luminaire schedule for light loss factor - unless otherwise specified by customer
Reflectance: Exterior - unless otherwise specified by customer
Date: [illegible]

----Disclaimer----
Luminaire data is obtained according to IES procedures
under controlled laboratory conditions. Field results
may differ from computer predictions due to many
uncontrollable factors including, but not limited to
line voltage variations, lamp performance, ballast input watts,
LED drivers input watts, temperature variations and jobsite conditions.

Calculation Summary					
Label	CalcType	Units	Avg	Max	Min
CENTER LOT	Illuminance	Fc	54.38	96.7	5.8
CIRCULATION	Illuminance	Fc	19.14	148	1.3
CUSTOMER PRKG	Illuminance	Fc	28.56	39.3	20.8
FRONT NORTH PRKG	Illuminance	Fc	33.39	124	13.4
FRONT ROW	Illuminance	Fc	59.28	137	6.7
MID NORTH PRKG	Illuminance	Fc	23.41	101	3.9
REAR EAST PRKG	Illuminance	Fc	33.29	57.9	9.7
REAR SOUTH PRKG	Illuminance	Fc	21.59	48.8	3.9
REAR WEST PRKG	Illuminance	Fc	21.36	88.1	3.9

Luminaire Schedule						
Symbol	Qty	Label	Arrangement	LLF	Description	BUG Rating
	12	[illegible]	SINGLE	0.900	Beacon Products // VP1_P4[illegible]_5X_T3_UNV	B4-U0-G4
	1	[illegible]	SINGLE	0.900	Beacon Products // VP1_P4[illegible]_5X_T4-[illegible]_UNV	B3-U0-G3
	4	[illegible]	4 @ 90 DEGREES	0.900	Beacon Products // VP-1_P4[illegible]_5X_T3[illegible]_UNV	B3-U0-G3
	7	[illegible]	TWIN	0.900	Beacon Products // VP1_P4[illegible]_5X_T5[illegible]UNV	B4-U0-G4
	4	[illegible]	TWIN	0.900	Beacon Products // VP1_P4[illegible]_5X_T1_[illegible]	B3-U0-G2

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Fax: 559/627-1876
[illegible]

LICENSED ARCHITECT
FREDERICK E. SCOTT
C-[illegible]
REN. [illegible]
STATE OF CALIFORNIA

APN: [illegible]
APN: [illegible]
APN: [illegible]
APN: [illegible]
APN: [illegible]

AUTO SHOWROOM & SERVICE BUILDING
FOR

Santa Cruz NISSAN

NISSAN

SOQUEL, CA

PROJECT No.: [illegible]

DATE: [illegible]

PHOTOMETRIC PLAN

CUP

SHEET No.:

E-1

CONCEPT PLANT SCHEDULE

TREES	BOTANICAL NAME / COMMON NAME	CONT	CALIPER	SIZE	WUCOLS
	EXISTING / Existing Tree to be Removed	>12" DBH	Varies	Varies	
	Lagerstroemia x 'Natchez' / Crape Myrtle Small Deciduous Accent Tree	24"box	2"Cal	5'-6' Ht. x 4'x5' Spr.	M
	Pistacia chinensis / Chinese Pistache Medium Deciduous Tree	24"box	1"Cal	5'-6' Ht. x 4'x5' Spr.	L
	Platanus x acerifolia 'Columbia' / London Plane Tree Tall Deciduous Street Tree	24"box	2"Cal	5'-6' Ht. x 4'x5' Spr.	M

SHRUBS	BOTANICAL NAME / COMMON NAME	CONT	SPACING	WUCOLS
	Agave attenuata / Agave Accent succulent	5 gal	24" O.C.	L
	Anigozanthos flavidus 'Big Red' / Red Kangaroo Paw Accent perennial	5 gal	24" O.C.	M/L
	Arctostaphylos densiflora 'Howard McMinn' / Howard McMinn Manzanita Large shrub / Minitum tree	15 gal	60" O.C.	L
	Callistemon citrinus 'Little John' / Dwarf Bottle Brush Flowering Small shrub / Drought tolerant	5 gal	36" O.C.	L
	Camellia sasanqua 'Bonanza' / Bonanza Camellia Large Screening Flowering Shrub	5 gal	48" O.C.	M/L
	Chondropetalum tectorum / Cape Rush Drought tolerant / Swale plant	5 gal	36" O.C.	M
	Ligustrum japonicum / Japanese Privet Hedging Shrub / Screening	5 gal	48" O.C.	M
	Limonium perezii / Statice Flowering perennial	5 gal	18" O.C.	M/L
	Muhlenbergia rigens / Deer Grass Drought tolerant native grass	1 gal	36" O.C.	L
	Pittosporum tobira 'Turner's Variegated Dwarf' / Variegated Dwarf Pittosporum Low growing shrub	5 gal	24" O.C.	M/L

GROUND COVERS	BOTANICAL NAME / COMMON NAME	CONT	SPACING	WUCOLS
	Arctostaphylos x 'Emerald Carpet' / Emerald Carpet Manzanita Drought tolerant	flat	24" O.C.	L
	Ceanothus griseus horizontalis / Carmel Creeper Flowering ground cover	flat	48" O.C.	L
	Lantana montevidensis 'Purple' / Purple Lantana Flowering ground cover	flat	36" O.C.	L

ROCK / MULCH	BOTANICAL NAME / COMMON NAME	CONT	SPACING
	Rock / Mulch / Small Cobble Install at a minimum 3" depth. 2"-3" MAX DIA	mulch	

*All planter beds to recieve 3" minimum organic wood bark mulch - Refer to landscape notes

STATE OF CALIFORNIA ESTIMATED WATER USE

TOTAL WATER USE IS CALCULATED BY SUMMING THE AMOUNT OF WATER ESTIMATED FOR EACH HYDROZONE. WATER USE FOR EACH HYDROZONE IS ESTIMATED WITH THE FOLLOWING FORMULA:

EWU (HYDROZONE) = ESTIMATED WATER USE (GAL / YEAR)
ETO = REFERENCE EVAPOTRANSPIRATION (INCHES / YEAR)
PF = PLANT ETO ADJUSTMENT FACTOR
HA = HYDROZONE AREA (S.F.)+(16 S.F. PER TREE)
.62 = CONVERSION FACTOR
IE = IRRIGATION EFFICIENCY
SLA = SPECIAL LANDSCAPE AREA (S.F.)

EWU (HYRDROZONE) = (ETO * PF * HA * .62) / (IE)

HYDROZONE A (DRIP - LOW WATER)

ETO	PF	HA	IE	CONVERSION FACTOR	EWU GAL/YEAR
36.6	.2	8,843	.81	.62	49,390

HYDROZONE B (BUBBLER - MOD WATER)

ETO	PF	HA	IE	CONVERSION FACTOR	EWU GAL/YEAR
36.6	.4	308	.81	.62	3,765
ESTIMATED TOTAL WATER USE (ETWU)					53,155

MAWA (MAXIMUM APPLIED WATER ALLOWANCE)

ETO	ET ADJUSTMENT FACTOR	TOTAL HA	CONVERSION FACTOR	MAWA
36.6	.45	9,151	.62	93,445
ESTIMATED ANNUAL WATER USE (% OF MAWA)				57%

NOTE: LOW WATER USE VARIBLES WERE USED TO MAKE PRELIMINARY CALCULATIONS. ONCE AN IRRIGATION PLAN IS FINALIZED, THE CALCULATIONS AND WATER BUDGET WILL BE UPDATED TO REFLECT FINALIZED PLAN.

I HAVE COMPLIED WITH THE CRITERIA OF THE WATER EFFICIENT LANDSCAPE ORDINANCE AND APPLIED THEM FOR THE EFFICIENT USE OF WATER IN THE IRRIGATION DESIGN PLAN.

MICHAEL P. MADSEN, LLA 5145

LANDSCAPE NOTES

1. SCREENING SHRUBS
2. ACCENT FLOWERING TREES
3. BROAD CANOPY DECIDUOUS STREET TREES
4. FOCAL PLANTING AREA WITH FLOWERING SHRUBS
5. TRASH AREA
6. PROPERTY LINE
7. AREA NOT INCLUDED
8. BIKE PARKING AREA
9. MAIN BRAND PYLON SIGNAGE-REFER TO ARCHITECTURE PLANS
10. DRIVEWAY APPROACH
11. DIRECTIONAL SIGN LOCATION-REFER TO ARCHITECTURE PLANS
12. 8' HIGH MASONRY SOUND WALL-REFER TO ARCHITECTURE PLANS
13. EXISTING WATER METER LOCATION – TO BE REUSED FOR LANDSCAPE IRRIGATION ONLY
14. FIRE HYDRANT – KEEP A MINIMUM 5' AREA CLEAR OF LANDSCAPE
15. SWALE AND WATER TREATMENT AREA – REFER TO CIVIL PLANS
16. POROUS ASPHALT – REFER TO ARCHITECTURE PLANS
17. ASPHALT PAVING (TYP) – REFER TO ARCHITECTURE PLANS

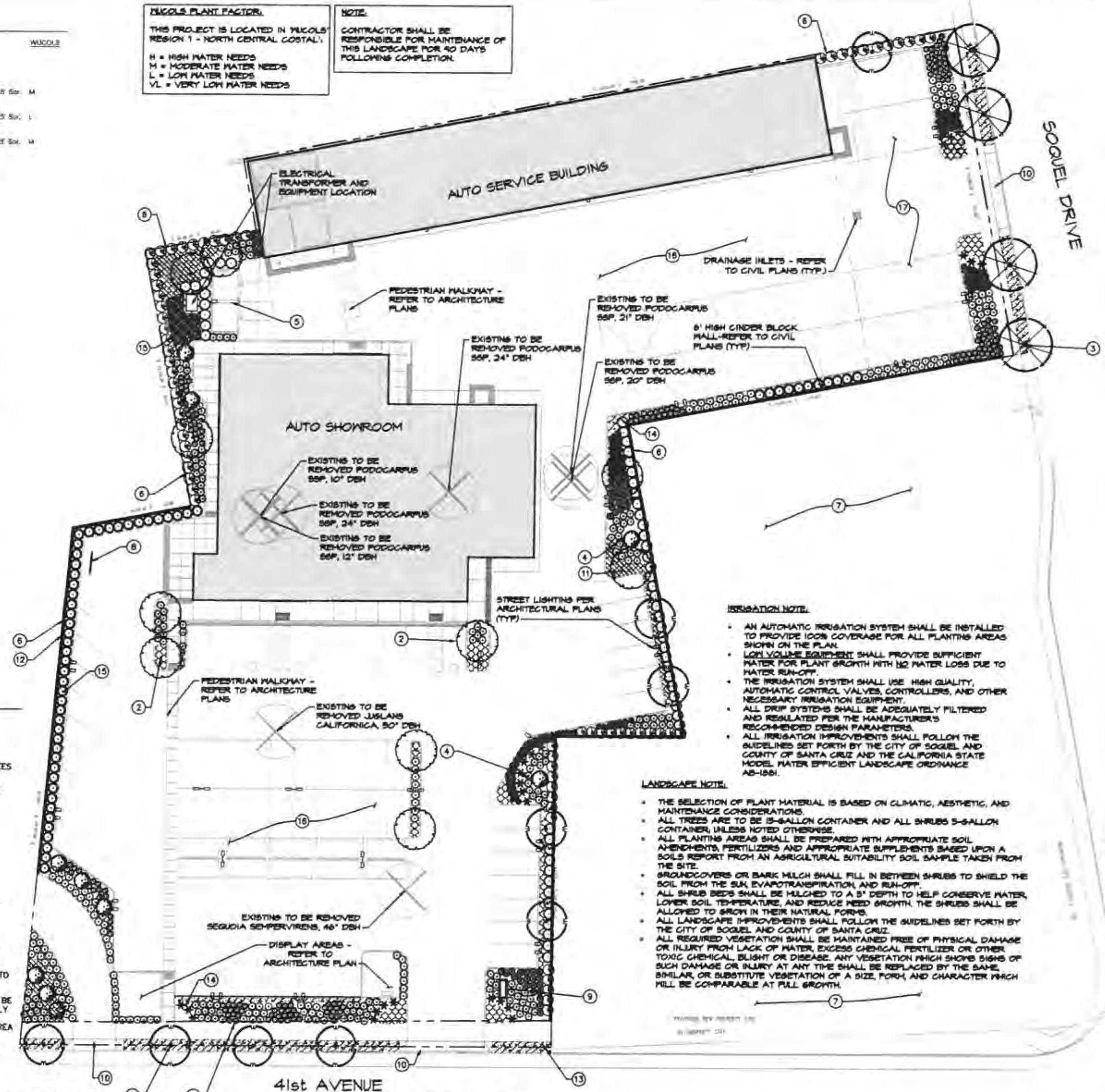
WUCOLS PLANT FACTOR:

THIS PROJECT IS LOCATED IN 'WUCOLS' REGION 1 - NORTH CENTRAL COSTAL':

H = HIGH WATER NEEDS
M = MODERATE WATER NEEDS
L = LOW WATER NEEDS
VL = VERY LOW WATER NEEDS

NOTE:

CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE OF THIS LANDSCAPE FOR 90 DAYS FOLLOWING COMPLETION.



IRRIGATION NOTE:

- AN AUTOMATIC IRRIGATION SYSTEM SHALL BE INSTALLED TO PROVIDE 100% COVERAGE FOR ALL PLANTING AREAS SHOWN ON THE PLAN.
- LOW VOLUME EQUIPMENT SHALL PROVIDE SUFFICIENT WATER FOR PLANT GROWTH WITH NO WATER LOSS DUE TO WATER RUN-OFF.
- THE IRRIGATION SYSTEM SHALL USE HIGH QUALITY, AUTOMATIC CONTROL VALVES, CONTROLLERS, AND OTHER NECESSARY IRRIGATION EQUIPMENT.
- ALL DRIP SYSTEMS SHALL BE ADEQUATELY FILTERED AND REGULATED PER THE MANUFACTURER'S RECOMMENDED DESIGN PARAMETERS.
- ALL IRRIGATION IMPROVEMENTS SHALL FOLLOW THE GUIDELINES SET FORTH BY THE CITY OF SOQUEL AND COUNTY OF SANTA CRUZ AND THE CALIFORNIA STATE MODEL WATER EFFICIENT LANDSCAPE ORDINANCE AB-1881.

LANDSCAPE NOTE:

- THE SELECTION OF PLANT MATERIAL IS BASED ON CLIMATIC, AESTHETIC, AND MAINTENANCE CONSIDERATIONS.
- ALL TREES ARE TO BE 15-GALLON CONTAINER AND ALL SHRUBS 5-GALLON CONTAINER, UNLESS NOTED OTHERWISE.
- ALL PLANTING AREAS SHALL BE PREPARED WITH APPROPRIATE SOIL AMENDMENTS, FERTILIZERS AND APPROPRIATE SUPPLEMENTS BASED UPON A SOILS REPORT FROM AN AGRICULTURAL SUITABILITY SOIL SAMPLE TAKEN FROM THE SITE.
- GROUNDCOVERS OR BARK MULCH SHALL FILL IN BETWEEN SHRUBS TO SHIELD THE SOIL FROM THE SUN, EVAPOTRANSPIRATION, AND RUN-OFF.
- ALL SHRUB BEDS SHALL BE MULCHED TO A 3" DEPTH TO HELP CONSERVE WATER, LOWER SOIL TEMPERATURE, AND REDUCE WEED GROWTH. THE SHRUBS SHALL BE ALLOWED TO GROW IN THEIR NATURAL FORMS.
- ALL LANDSCAPE IMPROVEMENTS SHALL FOLLOW THE GUIDELINES SET FORTH BY THE CITY OF SOQUEL AND COUNTY OF SANTA CRUZ.
- ALL REQUIRED VEGETATION SHALL BE MAINTAINED FREE OF PHYSICAL DAMAGE OR INJURY FROM LACK OF WATER, EXCESS CHEMICAL FERTILIZER OR OTHER TOXIC CHEMICAL, BLIGHT OR DISEASE. ANY VEGETATION WHICH SHOWS SIGNS OF SUCH DAMAGE OR INJURY AT ANY TIME SHALL BE REPLACED BY THE SAME, SIMILAR, OR SUBSTITUTE VEGETATION OF A SIZE, FORM, AND CHARACTER WHICH WILL BE COMPARABLE AT FULL GROWTH.

TREE REMOVAL NOTE:

IF TREE REMOVAL WILL OCCUR DURING THE BIRD NESTING SEASON, FEBRUARY 1 THROUGH AUGUST 15, A QUALIFIED BIOLOGIST SHALL CONDUCT NESTING BIRD SURVEYS NO MORE THAN 2 WEEKS PRIOR TO VEGETATION REMOVAL." IF ACTIVE NESTS ARE OBSERVED, THE BIOLOGIST SHALL DESIGNATE A BUFFER ZONE AROUND THE NEST TREE OR SHRUB AS FOLLOWS: 200 FEET FOR NESTING RAPTORS AND 50 FEET FOR ALL OTHER BIRD SPECIES." NO VEGETATION REMOVAL SHALL TAKE PLACE WITHIN THE BUFFER ZONE UNTIL THE BIOLOGIST HAS DETERMINED THAT ALL CHICKS HAVE FLEDGED AND ARE ABLE TO FEED ON THEIR OWN.

TREE REMOVAL NOTE:

A BAT ECOLOGIST SHALL CONDUCT AN INVESTIGATION WITHIN 30 DAYS OF SCHEDULED DEMOLITION TO DETERMINE IF ANY OF THE STRUCTURES ARE BEING USED BY BATS." IF THERE IS NO EVIDENCE OF BAT USE, ANY OPENINGS SHALL BE SECURED/COVERED TO PREVENT BATS FROM ENTERING PRIOR TO DEMOLITION, AND DEMOLITION MAY PROCEED AS SCHEDULED." IF BAT USE IS DETECTED, DEMOLITION SHALL OCCUR BETWEEN AUGUST 15 AND FEBRUARY 1 TO AVOID BAT BREEDING SEASON, AND THE BAT ECOLOGIST SHALL MAKE RECOMMENDATIONS, IN COORDINATION WITH CDFW, FOR EXCLUSION DEVICES OR OTHER METHODS TO AVOID HARM TO INDIVIDUAL BATS THAT MAY BE USING THE BARN OUTSIDE OF THE BREEDING SEASON.

GRAPHIC SCALE IN FEET
0 10 20 40

NORTH

SCOTT & ASSOCIATES ARCHITECT
1001 North Demaree
Visalia California 93291

Kimley»Horn
401 B STREET, SUITE 600, SAN DIEGO, CA 92101
PHONE: 619-234-9411
WWW.KIMLEY-HORN.COM

PRELIMINARY NOT FOR CONSTRUCTION

apn 030-121-27
apn 030-121-08
apn 030-121-12
apn 030-121-13
apn 030-121-53

AUTO SHOWROOM & SERVICE GARAGE FOR NISSAN OF SANTA CRUZ

Soquel, CA

PROJECT No : 1512
DATE : 2/17/2017

PRELIMINARY LANDSCAPE PLANS

SHEET No : LS-1

NISSAN OF SOQUEL 3820 & 3906 SOQUEL DRIVE AND 2755, 2815, & 2821 41ST AVE, SOQUEL, CA

GENERAL NOTES

1. THE CONTRACTOR SHALL MAKE A DETAILED AND THOROUGH STUDY OF THESE PLANS IN THEIR ENTIRETY PRIOR TO ANY WORK ON THE JOBSITE. HE IS TO VERIFY ALL EXISTING CONSTRUCTION CONDITIONS AND IS TO COORDINATE THESE DRAWINGS WITH ALL OTHER TRADE DISCIPLINES FOR THE COMPLETED WORK. HE IS ALSO TO UNDERSTAND THAT ANY FEATURE OF CONSTRUCTION NOT FULLY SHOWN OR DETAILED SHALL BE OF THE SAME TYPE AS SHOWN FOR SIMILAR CONDITIONS.
2. THE CONTRACTOR SHALL IMMEDIATELY REPORT TO THE ENGINEER ANY DISCREPANCY OCCURRING ON THE DRAWINGS OR FOUND IN HIS COORDINATION WORK. NO CHANGES IN APPROVED PLANS SHALL BE MADE WITHOUT PRIOR WRITTEN APPROVAL OF THE PROJECT ENGINEER.
3. ANY REQUEST FOR ALTERATIONS OR SUBSTITUTIONS MUST BE PRESENTED DIRECTLY TO THE PROJECT ENGINEER, ACCOMPANIED BY A DETAILED SKETCH, FOR REVIEW, BEFORE ANY APPROVAL WILL BE GIVEN AND BEFORE PROCEEDING WITH THE WORK. ABSOLUTELY NO ALTERATIONS OF THESE DOCUMENTS OF ANY KIND WILL BE APPROVED ON ANY SHOP DRAWINGS.
4. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE COUNTY OF SANTA CRUZ STANDARD DETAILS, CALTRANS STANDARD SPECIFICATIONS, AND STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, CURRENT EDITION WITH SUPPLEMENTS (APWA).
5. ALL EXISTING PAVEMENT TO BE REMOVED SHALL BE REMOVED TO CLEAN, STRAIGHT LINES.
6. EXISTING PAVEMENT SHALL BE COATED WITH ASPHALTIC EMULSION AT ALL LOCATIONS WHERE NEW PAVEMENT JOINS EXISTING PAVEMENT.
7. ALL EXISTING P.C.C. SHALL BE SAW CUT PRIOR TO REMOVAL.
8. THE CONTRACTOR SHALL MAINTAIN DUST CONTROL AT ALL TIMES BY WATERING.
9. THE CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION AND ADJUSTMENT OF ALL GAS VALVES, WATER VALVE BOXES AND COVERS, DRAINS, CLEAN-OUTS, ETC.
10. AN APPROVED SOIL STERILIZER SHALL BE USED ON ALL NATURAL-GROUND SUBGRADES WHEN PLACING A.C. PAVEMENT DIRECTLY ON SUBGRADE.
11. NO WORK SHALL BE UNDERTAKEN WITHOUT FIRST OBTAINING AN ENCROACHMENT PERMIT FROM THE COUNTY OF SANTA CRUZ PUBLIC WORKS DEPARTMENT.
12. CONTRACTOR SHALL SATISFY HIMSELF THAT QUANTITIES SHOWN ARE CORRECT BEFORE BIDDING ON ANY ITEM.
13. ALL A.C. OR POROUS PAVEMENT OVER 3-INCHES THICK SHALL BE PLACED IN TWO LIFTS.
14. ALL TEMPORARY PATCHES SHALL BE OF THE "HOT MIX" VARIETY. "COLD MIX" SHALL NOT BE ALLOWED UNDER ANY CIRCUMSTANCES.
15. CONTRACTOR SHALL FURNISH THE CITY ENGINEER WITH ACCURATE "AS-BUILT" DRAWINGS. BONDS WILL NOT BE RELEASED BY THE CITY UNTIL AFTER SATISFACTORY SUBMITTAL OF "AS-BUILT" DRAWINGS HAS BEEN MADE.
16. NO ITEM SHALL EXCEED 8 INCHES HEIGHT ABOVE THE TOP OF CURB WITHIN 18 INCHES FROM THE FACE OF CURB.
17. DEMOLISHED A.C. PAVEMENT SHALL NOT BE USED IN FILL MATERIAL UNLESS GROUND TO A MAXIMUM SIZE OF 3/4" DIAMETER AND SHALL BE MIXED WITH OTHER FILL MATERIAL TO THE SATISFACTION OF THE ENGINEER.
18. WHENEVER LANE CLOSURES OR ANY FORM OF TRAFFIC DIVERSIONS ARE IN PLACE, A 8-FOOT WIDE LANE FOR PEDESTRIAN AND BICYCLE TRAFFIC MUST BE PROVIDED. DURING TIMES OF HEAVY PEDESTRIAN TRAFFIC (I.E. SCHOOL CHILDREN, ETC.) THE USE OF A FLAG PERSON FOR PUBLIC SAFETY IS NECESSARY.
19. ALL TYPES OF WORK ACTIVITY SHALL BE DILIGENTLY AND CONTINUOUSLY PURSUED TO FINAL CONDITION. WORK SUSPENSION WHILE THERE ARE ROUGH OR OPEN TRENCHES, UNFINISHED RE-PAVING, TEMPORARY GUARDRAILS, AND OTHER INTERMEDIATE CONDITIONS SHALL NOT BE ALLOWED FOR ANY REASON.
20. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE AND IDENTIFY ALL UNDERGROUND LINES AND SUBSTRUCTURES OF EVERY NATURE AND PROTECT THEM FROM DAMAGE.
21. A "W" SHALL BE STAMPED ON THE CURB FACE AT WATER LATERAL LOCATION WHERE WATER METER BOXES ARE NOT INSTALLED IMMEDIATELY BEHIND THE CURB.
22. A "S" SHALL BE STAMPED ON THE CURB FACE AT SEWER LATERAL LOCATION.
23. CONTRACTOR SHALL SUBMIT THE TRAFFIC CONTROL PLAN TO ENGINEER FOR REVIEW.

CONSTRUCTION NOTES:

1. TO MINIMIZE NOISE, DUST AND NUISANCE IMPACTS ON SURROUNDING PROPERTIES TO INSIGNIFICANT LEVELS DURING CONSTRUCTION, THE OWNER/APPLICANT SHALL OR SHALL HAVE THE PROJECT CONTRACTOR, COMPLY WITH THE FOLLOWING MEASURES DURING ALL CONSTRUCTION WORK:
2. GRADING ACTIVITIES ARE PROHIBITED DURING PERIODS OF WIND EXCEEDING 15 MPH.
3. EACH DAY IT DOES NOT RAIN, WET ALL EXPOSED SOILS FREQUENTLY ENOUGH TO PREVENT SIGNIFICANT AMOUNTS OF DUST FROM LEAVING THE SITE. THE MINIMUM WATERING SCHEDULE FOR GRADED/EXCAVATED AREAS SHALL BE AT LEAST TWICE DAILY. STREET SWEEPING ON ADJACENT OR NEARBY STREETS MAY BE REQUIRED TO CONTROL THE EXPORT TO EXCESS DUST AND DIRT.
4. THE TEMPORARY ACCESS DRIVEWAY(S) AND ROAD(S) SHALL BE SURFACED WITH ROCK AND WHEEL WASHERS SHALL BE INSTALLED AT THE ENTRANCE FOR ALL TRUCKS LEAVING THE SITE TO AVOID DIRT AND DUST LEAVING THE SITE.
5. CHEMICAL SOIL STABILIZERS SHALL BE APPLIED ON INACTIVE CONSTRUCTION AREAS (DISTURBED LANDS WITHIN THE CONSTRUCTION PROJECT THAT ARE UNUSED FOR AT LEAST FOUR CONSECUTIVE DAYS.)
6. NON-TOXIC BINDERS SHALL BE APPLIED TO EXPOSED CUT AND FILL AREAS OR EXPOSED SLOPES AFTER CONSTRUCTION AND SHALL BE HYDROSEEDED.
7. ALL INACTIVE STOCKPILES SHALL BE COVERED AT ALL TIMES.
8. DURING GRADING AND CONSTRUCTION, A TEMPORARY BARRIER SHALL BE PLACED ALONG THE PERIMETER WESTERN AND NOTHERN PROPERTY LINES TO MINIMIZE DUST, NOISE AND TRESPASS ISSUES ONTO THE ADJACENT DEVELOPED PROPERTIES.

ACCESSIBLE PATH OF TRAVEL:

1. ACCESSIBLE ROUTES SHALL COMPLY WITH CALIFORNIA BUILDING CODE AND AMERICANS WITH DISABILITIES ACT STANDARDS FOR ACCESSIBLE DESIGN.
2. ACCESSIBLE ROUTE SURFACE SHALL BE SLIP RESISTANT AND STABLE. REPAIR EXISTING ASPHALT SURFACE AS REQUIRED.
3. VERTICAL LEVEL CHANGE CANNOT EXCEED ¼". LEVEL CHANGE BETWEEN ¼" AND ½" MUST BE BEVELED AT 2H:1V MAX SLOPE.
4. VERTICAL DROPS ADJACENT TO PEDESTRIAN AREAS CANNOT EXCEED 4" WITHOUT A 6" HIGH WARNING CURB. VERTICAL DROPS CANNOT EXCEED 30" WITHOUT A 42" GUARDRAIL.
5. GRATE OPENINGS CANNOT EXCEED ½" IN DIRECTION OF TRAVEL.
6. PROPOSED PATH OF TRAVEL CROSS SLOPE CANNOT EXCEED 1.5% AND LONGITUDINAL SLOPE CANNOT EXCEED 5% WITHOUT A RAMP. CURB RAMPS SHALL NOT EXCEED 7.5%
7. DETECTABLE WARNING SURFACES SHALL BE COLORED YELLOW PER CBC AND SHALL COMPLY WITH CALTRANS STANDARD PLAN A88A AND CALTRANS STANDARD SPECIFICATIONS
8. SEE ARCHITECTURAL PLANS FOR ADDITIONAL REQUIREMENTS.

VICINITY MAP
NOT TO SCALE

SHEET INDEX

CIVIL ABBREVIATIONS

AC	ASPHALT CONCRETE
ADA	AMERICANS WITH DISABILITIES ACT
APN	ASSESSORS PARCEL NUMBER
C	CURB
CAMUTCD	CALIFORNIA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES
CB	CATCH BASIN
CBC	CALIFORNIA BUILDING CODE
CONC	CONCRETE
DWY	DRIVEWAY
(E) EX	EXISTING
EG	EXISTING GRADE
ELEC	ELECTRIC
FC	FACE OF CURB
FD	FOUND
FF	FINISHED FLOOR
FG	FINISHED GRADE
FL	FLOWLINE
FH	FIRE HYDRANT
G	GUTTER
GR	GRATE
GB	GRADE BREAK
HB	HOSEBIB
INV	INVERT
IP	IRON PIPE
LND	LANDING
MAG	MAGNETIC
(N)	NEW
±	PLUS OR MINUS
(P)	PROPOSED
PA	PLANTING AREA
PG&E	PACIFIC GAS & ELECTRIC
PVMT	PAVEMENT
RCE	REGISTERED CIVIL ENGINEER
RW	REDWOOD
SDCB	STORM DRAIN CATCH BASIN
SQ	SQUARE
STD	STANDARD
S/W	SIDEWALK
TC	TOP OF CURB
TELE	TELEPHONE
WM	WATER METER

PROJECT DESCRIPTION

DEMOLITION OF EXISTING BUILDINGS AND CONSTRUCTION OF A CAR DEALERSHIP WITH CAR SERVICE BUILDING.

CONCRETE FLATWORK NOTES:

MATERIALS

1. ALL CONCRETE SHALL BE CLASS B, MATCH ADJACENT CONCRETE COLOR AND FINISH.
2. REINFORCING STEEL SHALL BE INTERMEDIATE GRADE CONFORMING TO THE REQUIREMENTS OF ASTM A-615, GRADE 40, CLEAN, NEW STOCK.
3. BOND PREVENTATIVE SHALL BE COLORLESS, NON-STAINING, EASILY REMOVED AND NON-INJURIOUS TO ANY SUBSEQUENT FINISHES.
4. EXPANSION JOINT MATERIAL SHALL BE PREFORMED, NON-EXTRUDING, 1/2 INCH THICK, ASPHALT IMPREGNATED FELT.
5. PROVIDE MINIMUM 6" CLASS 2 AGGREGATE BASE, COMPACTED TO 95%.
6. SUBMIT ALL MATERIALS TO ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION.

CONCRETE

1. CONCRETE SHALL BE BATCHED AT A CENTRAL BATCHING PLANT. ALL CONCRETE SHALL HAVE A MINIMUM STRENGTH OF 2,500 PSI AT THE AGE OF 28 DAYS.
2. CONCRETE SHALL NOT BE PLACED UNTIL ALL REINFORCEMENT IS IN PLACE AND SECURE.
3. CONCRETE SHALL BE PLACED IN THE FORMS AS NEARLY AS PRACTICABLE TO ITS FINAL POSITION TO AVOID FLOWING.
4. ONCE CONCRETING IS STARTED, IT SHALL BE CARRIED ON AS A CONTINUOUS OPERATION UNTIL THE PLACING OF THE SECTION IS COMPLETED. WHERE CONSTRUCTION JOINTS ARE NECESSARY, THEY SHALL BE MADE AS SHOWN ON THE DRAWINGS OR AS DIRECTED.
5. ALL CONCRETE SHALL BE THOROUGHLY COMPACTED BY MEANS OF AN INTERNAL VIBRATOR. CARE SHALL BE EXERCISED TO INSURE THAT THE CONCRETE IS WELL VIBRATED, SO AS TO PRODUCE A SMOOTH SURFACE, FREE OF AIR POCKETS, BUT NOT TO THE EXTENT THAT SETTLEMENT OF AGGREGATE OCCURS.
6. PROVIDE (2) 3'-LONG #3 BARS ALL INSIDE CORNERS, TOPS OF CURB RAMP CORNERS, AND UTILITY BOX CORNERS.

SCORE JOINTS AND EDGING AS FOLLOWS

1. ALL JOINTS SHALL BE SCORED WITH A 1/2" RADIUS SCORING TOOL.
2. ALL EDGES OF SLABS, WALLS, STEPS AND OTHER EXPOSED EDGES SHALL BE EDGED WITH A 1/2" RADIUS EDGING TOOL.
3. ALL FLANGE MARKS RESULTING FROM TOOLING OF EDGES AND JOINTS SHALL BE TROWELED OUT.
4. FORMS SHALL BE REMOVED AT SUCH TIMES THAT THE CONCRETE SURFACES MAY BE FINISHED AS SHOWN ON THE DRAWINGS WITHOUT WATER TEMPERING.
5. IMMEDIATELY AFTER FORMS ARE REMOVED, ALL DEFECTIVE SURFACES OR AREAS SHALL BE PATCHED, AND JOINT MARKS, FINS, OR OTHER IRREGULARITIES SHALL BE SMOOTHED OFF AND CLEANED PROPERLY. IF FORM TIES ARE USED, THEY SHALL BE BROKEN OFF CLEANLY 1 INCH FROM THE SURFACE OF THE CONCRETE, AND THE HOLES PATCHED AND/OR FILLED IMMEDIATELY.
6. AT THE COMPLETION OF TROWELING AND EDGING, ALL EXPOSED SURFACES OF THE STEPS AND PAVING SHALL BE BROOM FINISHED TO A MEDIUM, NON-SKID TEXTURE, WITH SMOOTH, EVEN STRIATIONS, PERPENDICULAR TO THE LONGITUDINAL AXIS OF THE STEPS AND WALKS. BROOM FINISH BOTH THE TREADS AND VERTICAL FACES OF THE RISERS.
7. PROVIDE EXPANSION/CONTRACTION JOINTS AT 24 FEET MAXIMUM ON CENTER.
8. PROVIDE CONTROL JOINTS AT 4 FEET ON CENTER, UNLESS APPROVED OTHERWISE
9. WHERE PLACING NEW CONCRETE NEXT TO EXISTING CONCRETE, DOWEL INTO EXISTING CONCRETE AS FOLLOWS:
   - 2'-LONG , #4 BARS AT 1' ON-CENTER AT VEHICULAR CONCRETE PAVEMENT WITH ½" EXPANSION JOINT.
   - 18"-LONG, #4 BARS AT 4' ON-CENTER AT CONCRETE CURB, GUTTER, AND SIDEWALK.

ASPHALT PAVEMENT NOTES:

1. MINIMUM REQUIRED SURFACE COURSE SHALL BE 2 INCHES TYPE B ASPHALT CONCRETE, 1/2 INCH MAXIMUM, MEDIUM AGGREGATE GRADATION.
2. MINIMUM REQUIRED BASE COURSE SHALL BE CLASS 2 AGGREGATE BASE, 6 INCHES THICK.
3. 8" MINIMUM THICK SCARIFY AND RECOMPACT NATIVE MATERIAL TO 95% R.C. BELOW THE AGGREGATE BASE

POROUS ASPHALT PAVEMENT NOTES:

1. THE CONTRACTOR SHALL PROOF ROLL SUBGRADE SURFACE TO CHECK FOR UNSTABLE AREAS AND NOTIFY THE PROJECT GEOTECHNICAL ENGINEER FOR ANY UNSATISFACTORY CONDITIONS.
2. CONTRACTOR SHALL SUBMIT PERMEABLE CONCRETE MIX TO ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION. THE MIX SHALL HAVE 6.5 SACK MIX WITH W/C=0.27.
3. DRAIN ROCK AGGREGATES SHALL BE OPEN-GRADED, WASHED, AND MEET THE FOLLOWING GRADATIONS:
   A. 3/4" DRAIN ROCK – CALTRANS CLASS 1 TYPE B PERMEABLE SPEC 68-1.
   B. 1 1/2" DRAIN ROCK GRADATION SHALL MEET ASTM NO. 4 OR APPROVED EQUAL.
4. 1 1/2" AND 3/4" DRAIN ROCK AGGREGATES SPREAD AND COMPACTED AS ONE 4 IN LIFT WITH PLATE OR STATIC ROLLER COMPACTORS, AT LEAST 4 PASSES; INITIAL PASSES SHALL BE WITH VIBRATION, FINAL PASSES SHALL BE WITHOUT VIBRATION.

811 Know what's below. Call before you dig.

REGISTERED PROFESSIONAL ENGINEER — KENT FRANCIS FLORA — No. 53008 — CIVIL — STATE OF CALIFORNIA

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APN 030-121-27, -06, -12, -13, & -53

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1 2/22/17	COUNTY OF SANTA CRUZ COMMENTS

BOWMAN & WILLIAMS
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1011 CEDAR STREET
SANTA CRUZ, CA 95060
(831) 426-3560
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COVER SHEET

NISSAN OF SOQUEL
3820 & 3906 SOQUEL DRIVE AND 2755, 2815, & 2821 41ST AVE., SOQUEL, CA

SCALE 1" = 20'	DRAWN KAB	JOB NO. 26488	SHEET C0.0
DATE DECEMBER 2016	CHECKED JFR	INDEX	
DESIGN BRR/KAB	DWG NAME C0.0	FILE NO.	OF

LEGEND

- REMOVE (E) STRUCTURES
- REMOVE (E) ASPHALT CONCRETE
- REMOVE (E) FLATWORK, PLANTERS & DECKS
- REMOVE (E) TREE OR TREE STUMP

DEMOLITION NOTES:

1. CONTRACTOR MUST PROVIDE AND SECURE APPROVAL OF A TRAFFIC CONTROL PLAN THAT ADDRESSES PEDESTRIAN AND VEHICULAR SAFETY PRIOR TO DEMOLITION OPERATIONS.
2. CONTRACTOR SHALL VERIFY LOCATION AND DEPTH OF ALL EXISTING UTILITIES PRIOR TO ANY EXCAVATION OR DEMOLITION. CALL UNDERGROUND SERVICE ALERT (USA) AT 8-1-1 AT LEAST 48 HOURS IN ADVANCE OF EXCAVATION TO MARK THE LOCATION OF UTILITIES ON THE SITE. VERIFY DEPTHS BY ACCEPTED "POTHOLING" METHODS PRIOR TO EXCAVATION.
3. CONTRACTOR SHALL VERIFY LOCATION OF ALL EXISTING ABOVE-GROUND UTILITIES AND PROVIDE FOR THEIR TEMPORARY DISCONNECTION, PROTECTION, REMOVAL AND/OR STORAGE AS MAY BE REQUIRED DURING CONSTRUCTION. CONTRACTOR SHALL COORDINATE WITH THE OWNER'S REPRESENTATIVE TO DETERMINE WHETHER TEMPORARY SERVICES ARE NECESSARY.
4. ALL SPOILS AND DEBRIS FROM THE DEMOLITION WORK SHALL BE HAULED OFF SITE BY CONTRACTOR AND BE DISPOSED OF IN A LAWFUL MANNER AS IT ACCUMULATES. EXCAVATED, CLEAN FILL MAY BE USED BETWEEN DEMOLITION AND CONSTRUCTION TO PROVIDE POSITIVE DRAINAGE IF APPROVED BY THE OWNER'S REPRESENTATIVE.
5. CONTRACTOR SHALL REVIEW ALL RELATED WORK REQUIRED ON ALL OTHER DRAWING SHEETS AND/OR SPECIFICATIONS PRIOR TO BIDDING.
6. CONTRACTOR SHALL TAKE CARE NOT TO DAMAGE IN ANY WAY, ANY EXISTING ELEMENTS NOT DESIGNATED FOR REMOVAL. SUCH DAMAGE IS THE RESPONSIBILITY OF THE CONTRACTOR, AND SHALL BE REPAIRED OR REPLACED TO AN "AS-WAS" OR BETTER CONDITION BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
7. ALL DIMENSIONS SHALL BE VERIFIED IN THE FIELD AND CHALKED, FLAGGED OR STRING-LINED PRIOR TO ANY CONSTRUCTION. IF ANY DISCREPANCIES OCCUR, NOTIFY OWNERS REPRESENTATIVE IMMEDIATELY BEFORE PROCEEDING. THE DEPTHS OF ITEMS TO BE REMOVED, UNLESS NOTED, SHALL BE DETERMINED BY THE CONTRACTOR BY VISITING THE SITE.
8. AS APPLICABLE AND UNLESS OTHERWISE NOTED, "DEMOLISH & REMOVE" SHALL INCLUDE ALL FOOTINGS AND ATTACHED APPURTENANCES ABOVE OR BELOW GROUND.
9. ANY TREE TO BE REMOVED SHALL HAVE THEIR STUMPS REMOVED.
10. PRIOR TO BIDDING, THE CONTRACTOR SHALL VISIT THE SITE AND FAMILIARIZE THEMSELVES WITH THE EXISTING SITE CONDITIONS. CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER IF DISCREPANCY IS SUSPECTED BETWEEN THE SITE AND WHAT IS CONTAINED IN THE CONTRACT DOCUMENTS. NO ALLOWANCES WILL BE MADE TO THE CONTRACTOR DUE TO THEIR LACK OF FAMILIARITY WITH THE SITE CONDITIONS.
11. ALL DEBRIS SHALL BE REMOVED FROM THE LOT AND NO DEBRIS FROM THE DEMOLISHED STRUCTURE SHALL BE VISIBLE ON NEARBY PROPERTY.
12. THE LAND SHALL BE GRADED TO A CONSISTENT GRADE WHICH PROVIDES ADEQUATE DRAINAGE. SUFFICIENT EROSION CONTROL MEASURES MUST BE INSTALLED BETWEEN DECEMBER 1 AND MARCH 1. ADDITIONAL MEASURES MAY BE REQUIRED ON STEEP LOTS THROUGHOUT THE YEAR.
13. NO DEBRIS SHALL BE BURIED.
14. NO DEBRIS SHALL BE BURNED.
15. THE STRUCTURE SHALL BE CERTIFIED CLEAR OF ALL HAZARDOUS MATERIALS SUCH AS ASBESTOS AND PCB'S. DISPOSAL OF THIS MATERIAL SHALL BE BY A CERTIFIED DISPOSAL COMPANY. UNDERGROUND STORAGE TANKS SHALL BE PROPERLY REMOVED, AND ANY CONTAMINATION SHALL BE CORRECTED UNDER THE DIRECTION OF THE COUNTY ENVIRONMENTAL HEALTH DEPARTMENT.
16. IF CONNECTION TO A PUBLIC SEWER EXISTS, THE BUILDING SEWER SHALL BE PLUGGED OR CAPPED IN A MANNER APPROVED BY THE PUBLIC WORKS DEPARTMENT, WITHIN 5 FEET OF THE PROPERTY LINE.
17. NAILS, GLASS AND OTHER DEBRIS SHALL BE CLEANED OFF NEARBY SIDEWALKS AND STREETS.
18. IF TREE REMOVAL WILL OCCUR DURING THE BIRD NESTING SEASON, FEBRUARY 1 THROUGH AUGUST 15, A QUALIFIED BIOLOGIST SHALL CONDUCT NESTING BIRD SURVEYS NO MORE THAN 2 WEEKS PRIOR TO VEGETATION REMOVAL. IF ACTIVE NESTS ARE OBSERVED, THE BIOLOGIST SHALL DESIGNATE A BUFFER ZONE AROUND THE NEST TREE OR SHRUB AS FOLLOWS: 200 FEET FOR NESTING RAPTORS AND 50 FEET FOR ALL OTHER BIRD SPECIES. NO VEGETATION REMOVAL SHALL TAKE PLACE WITHIN THE BUFFER ZONE UNTIL THE BIOLOGIST HAS DETERMINED THAT CHICKS HAVE FLEDGED AND ARE ABLE TO FEED ON THEIR OWN.
19. A BAT ECOLOGIST SHALL CONDUCT AN INVESTIGATION WITHIN 30 DAYS OF SCHEDULED DEMOLITION TO DETERMINE IF ANY OF THE STRUCTURES ARE BEING USED BY BATS. IF THERE IS NO EVIDENCE OF BAT USE, ANY OPENINGS SHALL BE SECURED/COVERED TO PREVENT BATS FROM ENTERING PRIOR TO DEMOLITION, AND DEMOLITION MAY PROCEED AS SCHEDULED. IF BAT USE IS DETECTED, DEMOLITION SHALL OCCUR BETWEEN AUGUST 15 AND FEBRUARY 1 TO AVOID BAT BREEDING SEASON, AND THE BAT ECOLOGIST SHALL MAKE RECOMMENDATIONS, IN COORDINATION WITH CDFW, FOR EXCLUSION DEVICES OR OTHER METHODS TO AVOID HARM TO INDIVIDUAL BATS THAT MAY BE USING THE BARN OUTSIDE OF THE BREEDING SEASON.

North

GRAPHIC SCALE

(IN FEET)
1 inch = 20 ft.

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APN 030-121-27, -08, -12, -13, & -53

REVISED	
2/22/17	COUNTY OF SANTA CRUZ COMMENTS

REGISTERED PROFESSIONAL ENGINEER — FRANCIS W. LOA — No. 52888 — CIVIL — STATE OF CALIFORNIA

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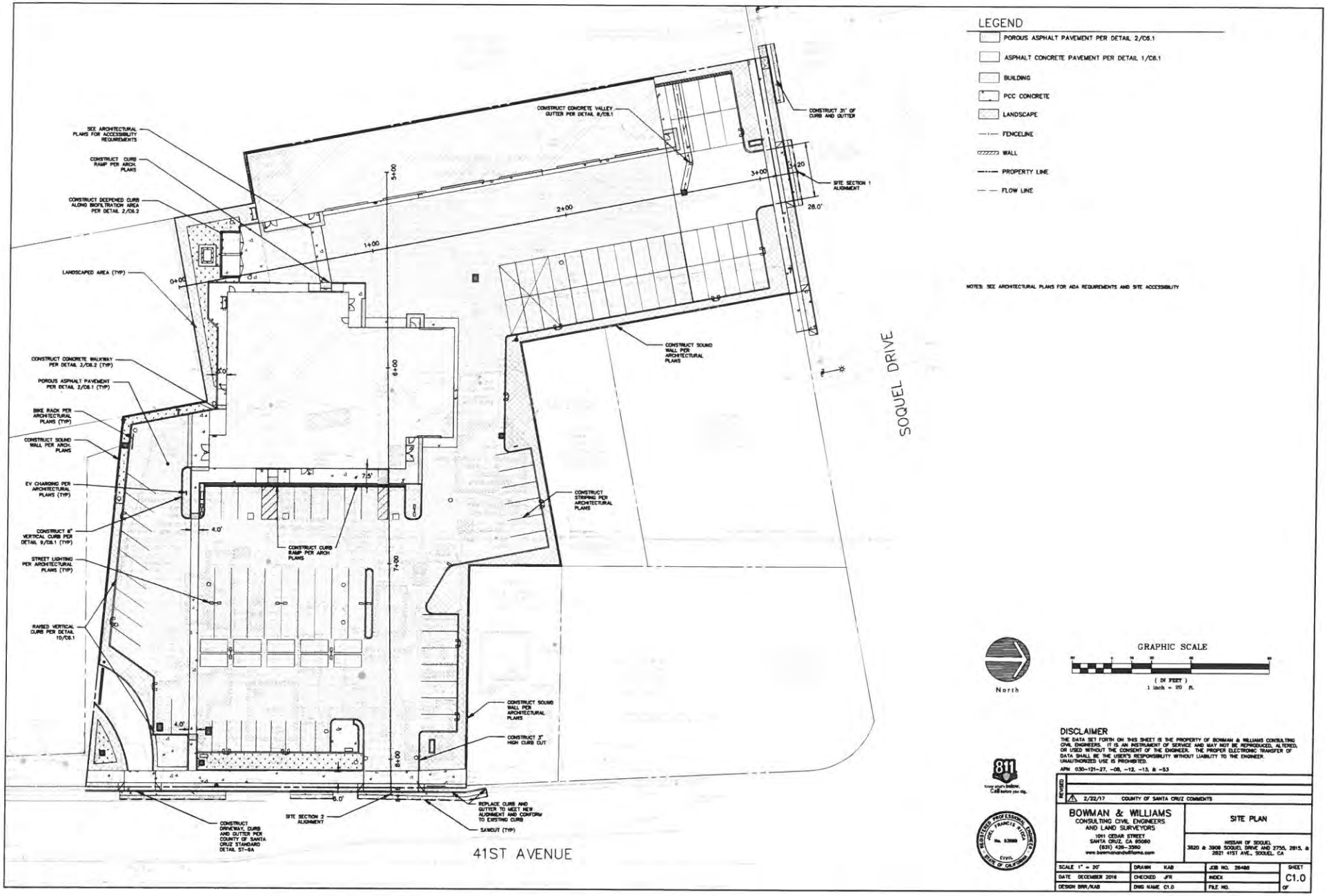
SANTA CRUZ, CA 95060
(831) 426-3560

DEMOLITION PLAN

NISSAN OF SOQUEL
3620 & 3908 SOQUEL DRIVE AND 2755, 2815, & 2821 41ST AVE., SOQUEL, CA

SCALE 1" = 20'	DRAWN KAB	JOB NO. 35488	SHEET
DATE DECEMBER 2016	CHECKED JFR	INDEX	C0.1
DESIGN BRR/KAB	DWG NAME C1.0	FILE NO.	OF



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2/22/17	COUNTY OF SANTA CRUZ COMMENTS

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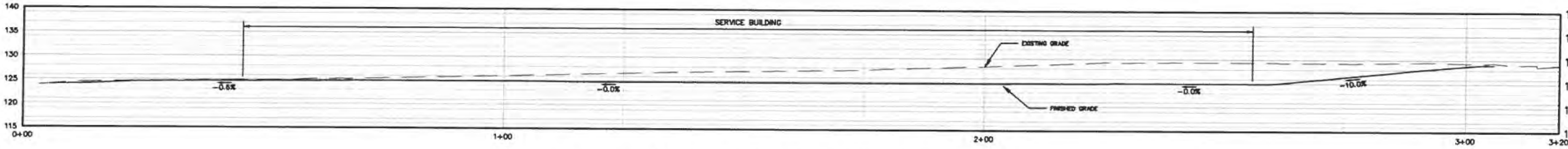
www.bowmanandwilliams.com

SITE PLAN

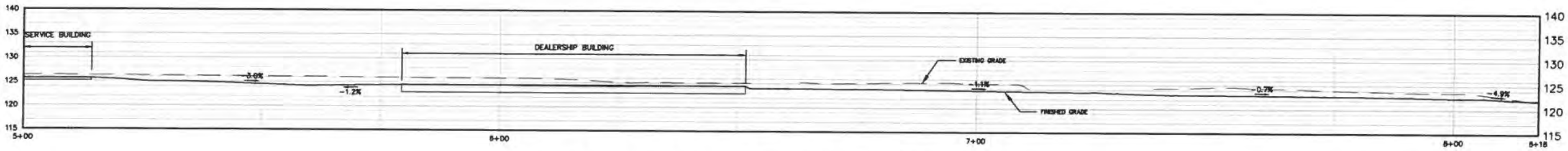
3820 & 3908 SOQUEL DRIVE AND 2735, 2815, & 2821 41ST AVE., SOQUEL, CA

SCALE 1" = 20'	DRAWN KAB	JOB NO. 25486	SHEET C1.0
DATE DECEMBER 2016	CHECKED JFR	INDEX	
DESIGN BRR/KAB	DWG NAME C1.0	FILE NO.	OF



SITE SECTION 1- SOQUEL DRIVE DRIVEWAY

SCALE: H & V=1"=10'



SITE SECTION 2- 41ST AVENUE DRIVEWAY

SCALE: H & V=1"=10'

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APN 030-121-27, -08, -12, -13, & -53

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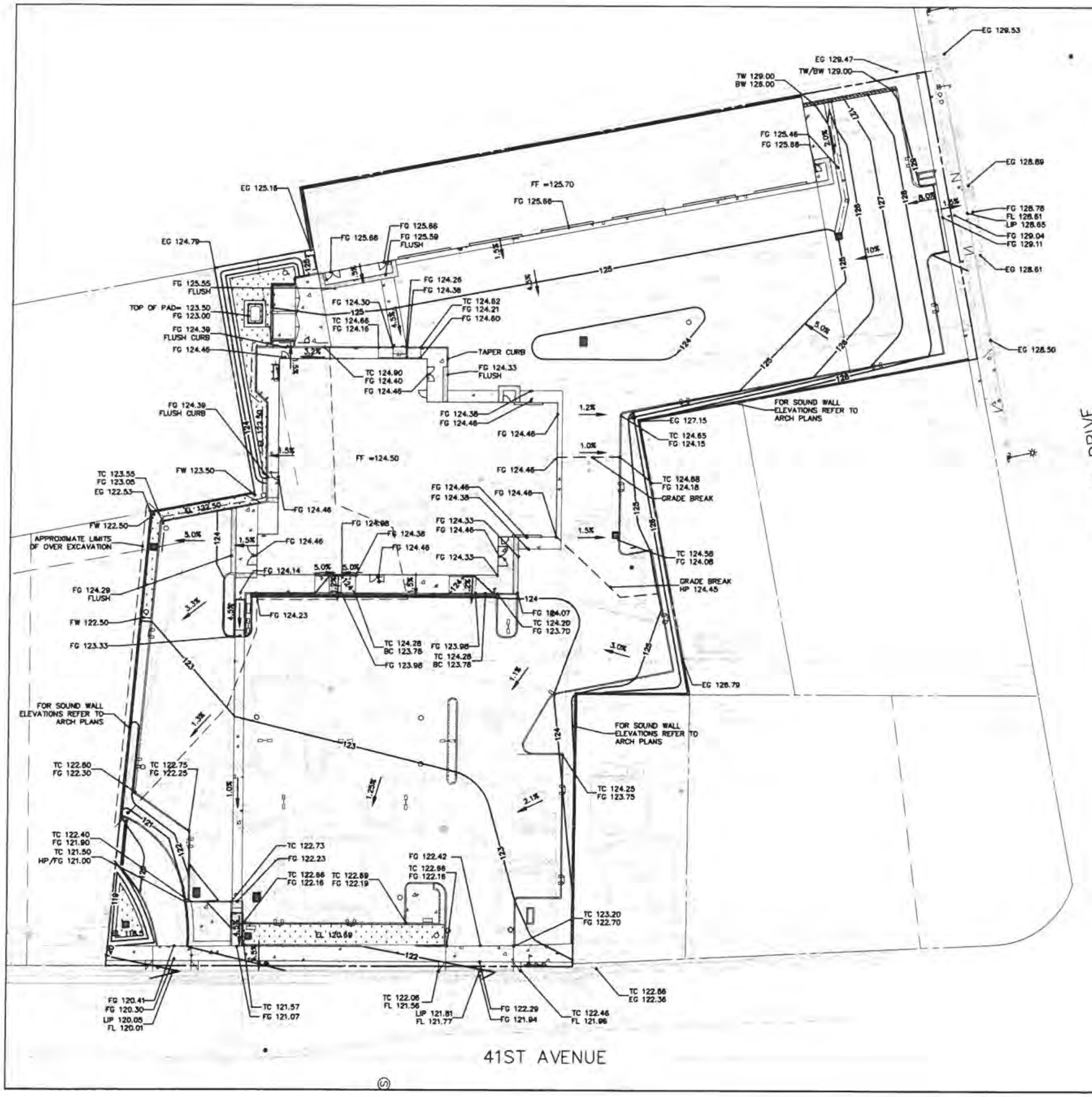
CONSULTING CIVIL ENGINEERS
AND LAND SURVEYORS
1011 CEDAR STREET
SANTA CRUZ, CA 95060
(831) 426-3560
www.bowmanandwilliams.com

SITE SECTIONS

NISSAN OF SOQUEL
3820 & 3808 SOQUEL DRIVE AND 2755, 2815, & 2821 41ST AVE., SOQUEL, CA

SCALE 1" = 20'	DRAWN KAB	JOB NO. 28488	SHEET
DATE DECEMBER 2016	CHECKED JFR	INDEX	C1.1
DESIGN BRR/KAB	DWG NAME C1.0	FILE NO.	OF



EARTHWORK QUANTITIES

AREA	EXCAVATION (CY)	FILL (CY)	NET (CY)
PROJECT SITE	3,500	120	3,380 (CUT)

EARTHWORK AND GRADING NOTES

1. WORK SHALL CONSIST OF ALL CLEARING, GRUBBING, STRIPPING, PREPARATION OF LAND TO BE FILLED, EXCAVATION, SPREADING, COMPACTION AND CONTROL OF FILL, AND ALL SUBSIDIARY WORK NECESSARY TO COMPLETE THE GRADING TO CONFORM TO THE LINES, GRADES, AND SLOPES, AS SHOWN ON THE APPROVED PLANS AND AS SPECIFIED IN THE GEOTECHNICAL INVESTIGATION REPORT.
2. ALL GRADING SHALL CONFORM TO SECTION 19 OF THE CALTRANS STANDARD SPECIFICATIONS, LATEST APPLICABLE EDITION. ALL EARTHWORK SHALL BE DONE IN ACCORDANCE TO THE GEOTECHNICAL INVESTIGATION PREPARED BY BUTANO INC. PROJECT NO. 16-128-SC, DATED JUNE 24, 2016.
3. THE CONTRACTOR SHALL NOTIFY THE PROJECT GEOTECHNICAL ENGINEER, JORED BLOOM, AT LEAST 4 WORKING DAYS PRIOR TO THE COMMENCEMENT OF ANY GRADING OPERATIONS.
4. A PRE-CONSTRUCTION MEETING SHALL BE SCHEDULED 1-4 DAYS PRIOR TO COMMENCEMENT OF EARTHWORK. ATTENDEES SHALL INCLUDE ENVIRONMENTAL PLANNING STAFF, THE GRADING CONTRACTOR, THE SOILS ENGINEER AND THE CIVIL ENGINEER.
5. ALL EXISTING TRASH, DEBRIS, ROOTS, TREE REMAINS AND OTHER RUBBISH SHALL BE REMOVED FROM THE SITE SO AS TO LEAVE THE AREAS THAT HAVE BEEN DISTURBED WITH A NEAT AND FINISHED APPEARANCE FREE FROM UNSIGHTLY DEBRIS. NO BURNING SHALL BE PERMITTED.
6. AFTER THE EARTHWORK OPERATIONS HAVE BEEN COMPLETED AND THE GEOTECHNICAL ENGINEER HAS FINISHED HIS OBSERVATIONS OF THE WORK, NO FURTHER EARTHWORK OPERATIONS SHALL BE PERFORMED EXCEPT WITH THE APPROVAL OF AND UNDER THE OBSERVATION OF THE GEOTECHNICAL ENGINEER.
7. EARTHWORK IS PROHIBITED DURING THE RAINY SEASON (OCTOBER 15– APRIL 15) UNLESS A SEPARATE WINTER GRADING PERMIT IT APPROVED BY THE PLANNING DIRECTOR. THE APPLICATION FOR A WINTER GRADING PERMIT SHALL INCLUDE A WINTERIZED STORMWATER POLLUTION CONTROL PLAN WITH ADEQUATELY-SIZED SEDIMENT BASINS, A DETAILED (AND PHASED) GRADING SCHEDULE, AND WRITTEN APPROVAL FROM THE SOILS ENGINEER.

North

GRAPHIC SCALE

(IN FEET)
1 inch = 20 ft.

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REGISTERED PROFESSIONAL ENGINEER JOEL FRANCIS RICCA No. 53688 CIVIL STATE OF CALIFORNIA

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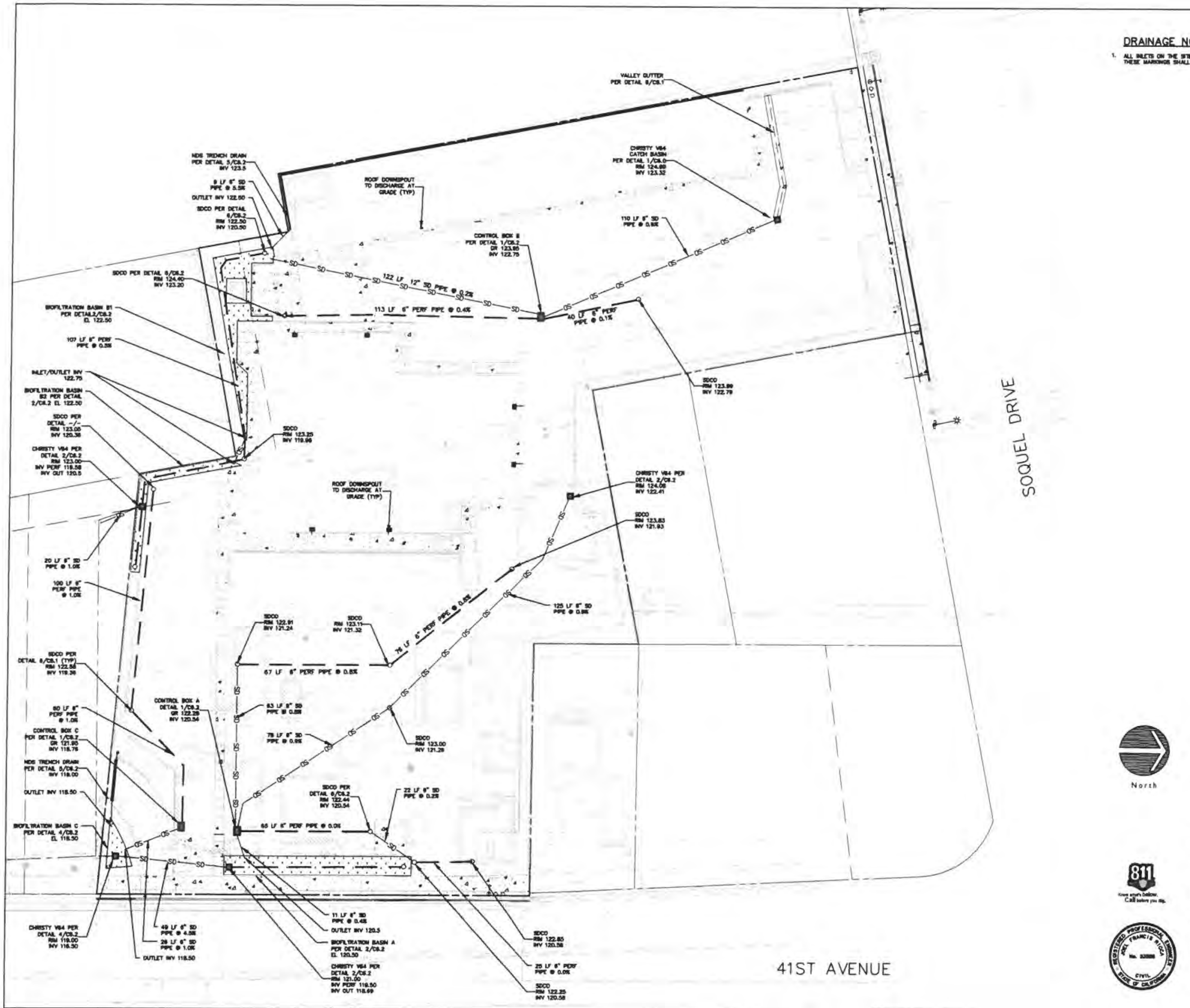
GRADING PLAN

NISSAN OF SOQUEL
3820 & 3908 SOQUEL DRIVE AND 2755, 2815, & 2821 41ST AVE., SOQUEL, CA

SCALE 1" = 20'	DRAWN KAB	JOB NO. 26480	SHEET C2.0
DATE DECEMBER 2016	CHECKED JFR	INDEX	
DESIGN BRR/KAB	DWG NAME C2.0	FILE NO.	OF



DRAINAGE NOTES

1. ALL INLETS ON THE SITE SHALL BE MARKED "NO DUMPING DRAINS TO OCEAN" OR EQUIVALENT. THESE MARKINGS SHALL BE MAINTAINED BY THE PROPERTY OWNER.

DISCLAIMER

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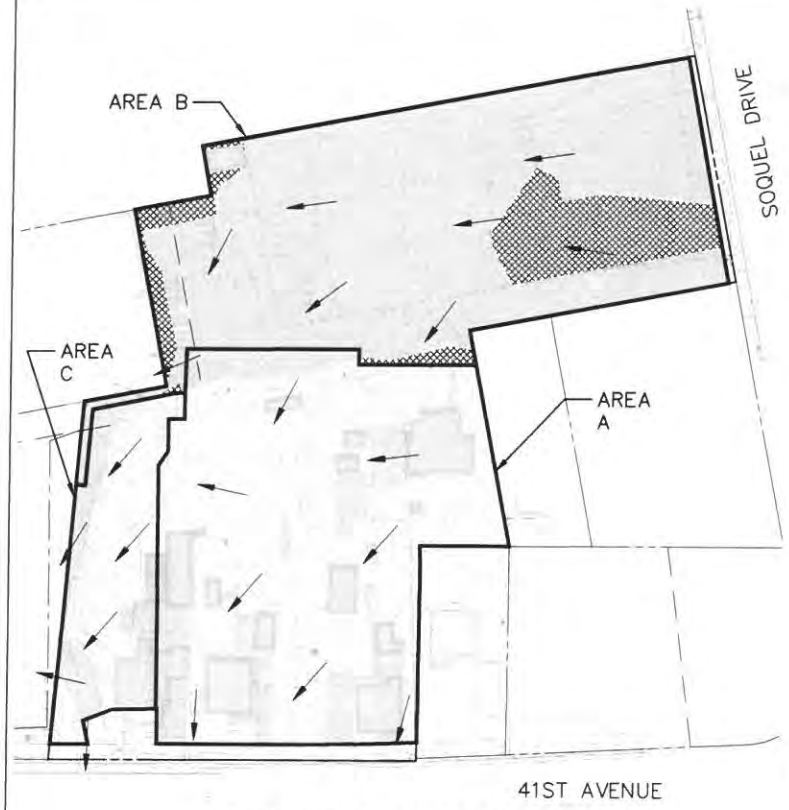
DRAINAGE PLAN

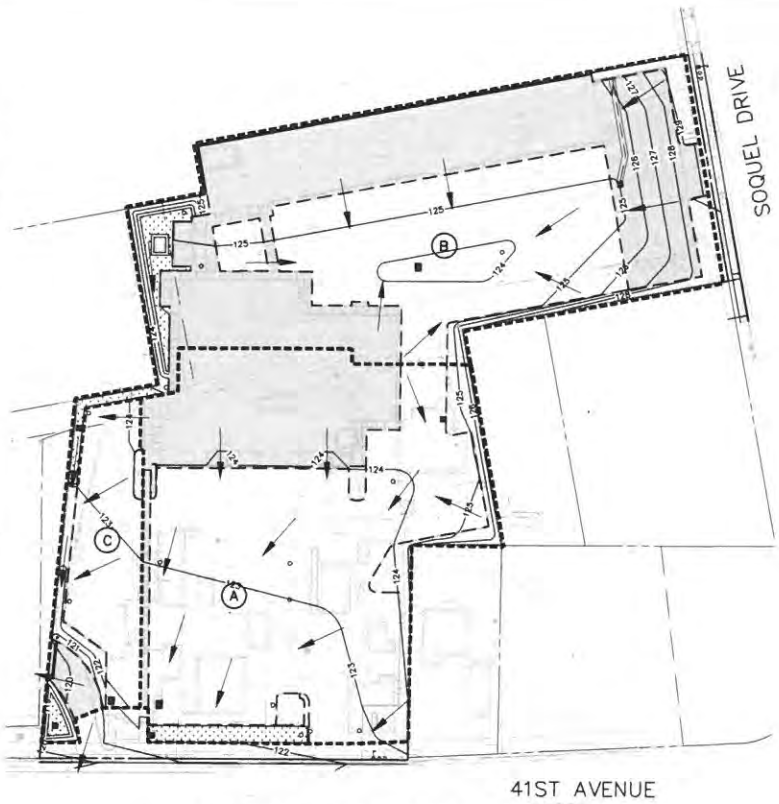
NISSAN OF SOQUEL
3820 & 3908 SOQUEL DRIVE AND 2755, 2815, & 2821 41ST AVE., SOQUEL, CA

SCALE 1" = 20'	DRAWN KAB	JOB NO. 28489	SHEET
DATE DECEMBER 2016	CHECKED JFR	INDEX	C3.0
DESIGN BRR/KAB	DWG NAME C3.0	FILE NO.	OF



PRE-DEVELOPMENT DRAINAGE MAP

SCALE: 1"=30'



POST-DEVELOPMENT DRAINAGE MAP

SCALE: 1"=30'

DRAINAGE MAP LEGEND

SEMI-PERVIOUS

IMPERVIOUS

PERVIOUS

North

GRAPHIC SCALE

(IN FEET)

1 inch = 20 ft.

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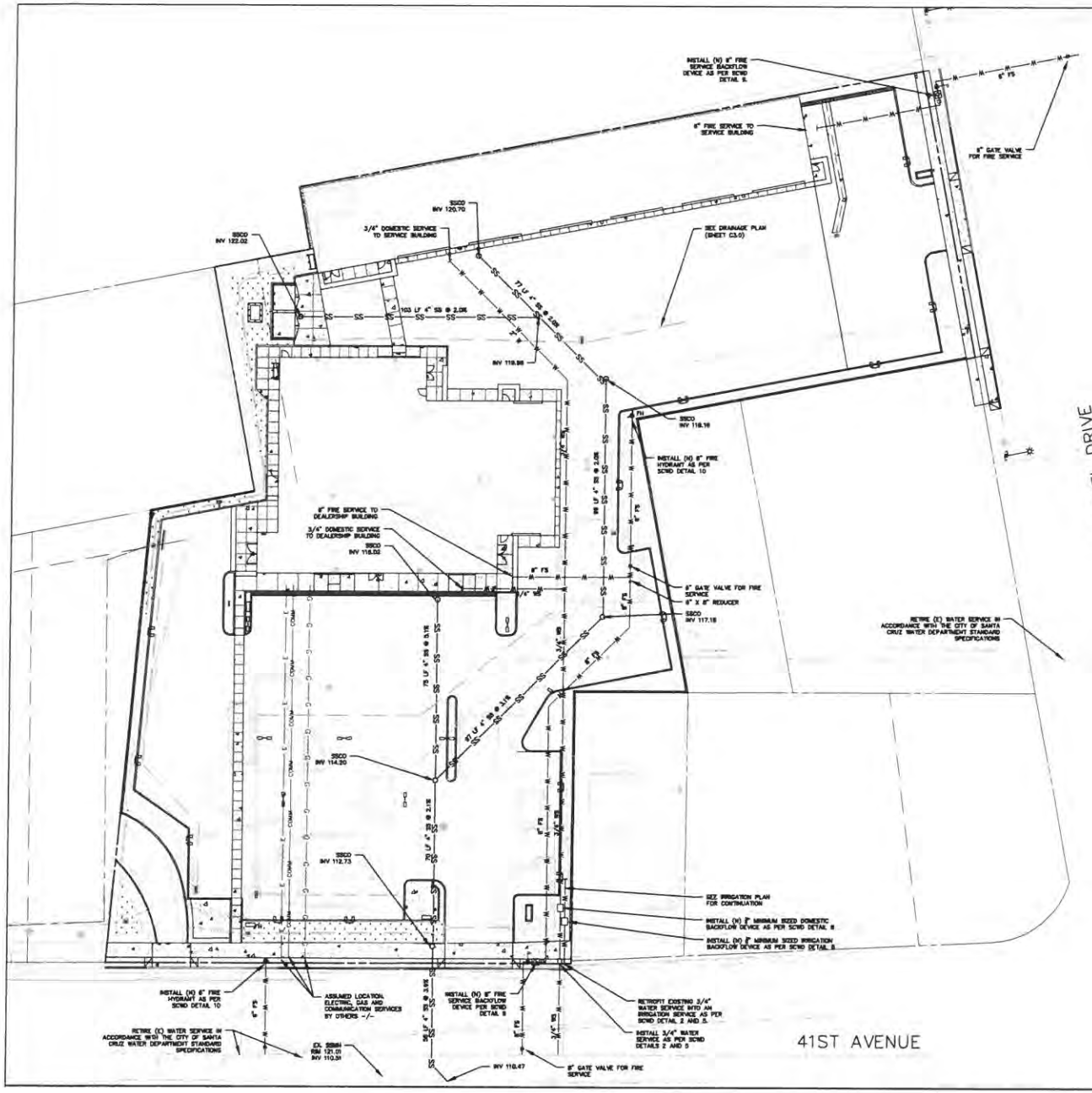
STORMWATER MANAGEMENT PLAN

NISSAN OF SOQUEL
3820 & 3826 SOQUEL DRIVE AND 2720, 2915, & 2921 41ST AVE., SOQUEL, CA

SCALE 1" = 20'	DRAWN KAB	JOB NO. 25488	SHEET
DATE DECEMBER 2016	CHECKED JFR	INDEX	C3.1
DESIGN BRR/KAB	DWG NAME C3.0	FILE NO.	OF



UNDERGROUND NOTES

1. ALL KNOWN EXISTING UTILITY LINES ARE SHOWN FOR INFORMATION ONLY. CONTRACTOR SHALL EXERCISE ALL NECESSARY CAUTION TO AVOID DAMAGE TO ANY EXISTING UTILITIES OR FACILITIES TO REMAIN IN PLACE, WHETHER OR NOT SUCH LINES OR FACILITIES ARE SHOWN ON THESE PLANS, AND SHALL BEAR FULL RESPONSIBILITY FOR ANY DAMAGE THERETO. CONTRACTOR IS ADVISED TO CONTACT UNDERGROUND SERVICE ALERT (U.S.A.) AT 800.642.2444 AND THE AFFECTED UTILITY COMPANY FOR MARKING UNDERGROUND LINES PRIOR TO BEGINNING WORK.
2. CONTRACTOR SHALL EXPOSE AND VERIFY LOCATION AND ELEVATION OF EXISTING UTILITIES, INCLUDING BUT NOT LIMITED TO SANITARY AND STORM SEWERS, AND WATER LINES BEFORE CONSTRUCTING NEW FACILITIES.
3. MATERIALS FOR PIPE, STORM WATER INLETS, AND CLEANOUTS AND INSTALLATION PROCEDURES SHALL BE IN ACCORDANCE WITH APPLICABLE CPC AND CBC SECTIONS, AND THESE PLANS AND DETAILS SHOWN HEREON.
4. STORM SEWER PIPE DESIGNATED "SD" SHALL BE PVC OR HDPE AS OUTLINED IN THE PROJECT SPECIFICATIONS.
5. ALL DRAINAGE PIPE SHALL BE SHIPPED, STORED AND INSTALLED PER THE PIPE MANUFACTURER'S RECOMMENDATIONS.
6. ALL CONCRETE DRAINAGE INLETS CALLED OUT ON THE PLANS SHALL BE CHRISTY BRAND PRECAST CONCRETE OR THE EQUIVALENT. ALL STRUCTURES SHALL BE STORED, HANDLED AND INSTALLED PER THE MANUFACTURERS' RECOMMENDATIONS.
7. STORMDRAIN TRENCH BACKFILL SHALL CONFORM TO PROJECT STANDARD TRENCH DETAIL. JETTING OF BACKFILL MATERIALS TO ACHIEVE COMPACTION IS NOT ALLOWED.
8. ALL TRENCHES AND EXCAVATIONS SHALL BE CONSTRUCTED IN STRICT COMPLIANCE WITH THE APPLICABLE SECTIONS OF CALIFORNIA AND FEDERAL O.S.H.A. REQUIREMENTS AND OTHER APPLICABLE SAFETY ORDINANCES. CONTRACTOR SHALL BEAR FULL RESPONSIBILITY FOR TRENCH SHORING DESIGN AND INSTALLATION.

WATER SERVICE ABANDONMENT (SCWD)

1. THE CONTRACTOR SHALL SCHEDULE A SERVICE LINE RETIREMENT WITH SCWD A MINIMUM OF TWO WORKING DAYS IN ADVANCE OF THE PROPOSED RETIREMENT. THE CONTRACTOR SHALL EXPOSE THE VALVE OR CORPORATION STOP FOR SCWD PERSONNEL TO OPERATE. ONLY SCWD PERSONNEL MAY OPERATE VALVES OR CORPORATION STOPS.
2. FOR SERVICE LATERALS ATTACHED TO THE MAIN WITH A CORPORATION STOP, THE SERVICE LATERAL SHALL BE DISCONNECTED FROM THE CORPORATION STOP BY REMOVAL OF THE FIP/MIP JOINT ADAPTER. THE MALE IRON PIPE THREADS ON THE CORPORATION STOP SHALL BE CLEANED AND PREPARED WITH TAPE AND/OR DOPE. A BRASS CAP SHALL BE TIGHTENED ONTO THE CORPORATION STOP TO PREVENT POSSIBLE LEAKAGE.
3. OLDER SERVICES THAT DO NOT HAVE MIP CORPORATION STOPS SHALL BE CAPPED IN ANOTHER MANNER ACCEPTABLE TO THE ENGINEER. THE REMAINING SERVICE LINE SHALL BE REMOVED TO A MINIMUM DEPTH OF TWO FEET. FOR SERVICE LATERALS WITHOUT CORPORATION STOPS, THE SERVICE LATERAL SHALL BE DISCONNECTED FROM THE VALVE, AND THE VALVE REMOVED IN ACCORDANCE WITH THE PERTINENT SECTIONS OF THESE SPECIFICATIONS. THE REMAINING SERVICE LINE SHALL BE REMOVED TO A MINIMUM DEPTH OF TWO FEET NEAR THE METER BOX AND PLUGGED WITH CONCRETE IN ACCORDANCE WITH THE PERTINENT SECTIONS OF THESE SPECIFICATIONS.
4. THE METER BOX, RELATED FITTINGS AND PIPING SHALL BE REMOVED. IF THE BOX IS LOCATED IN A SIDEWALK, THE SIDEWALK SHALL BE NEATLY SAW CUT AND REPLACED AT THE NEAREST JOINT. ALL RELATED WORK SUCH AS BACKFILL, PAVING AND SITE RESTORATION SHALL BE EXECUTED IN ACCORDANCE WITH THE PERTINENT SECTIONS OF THESE SPECIFICATIONS, AND THE SPECIFICATIONS OF THE APPLICABLE PUBLIC WORKS AGENCY.

North

GRAPHIC SCALE

(IN FEET)
1 inch = 20 ft.

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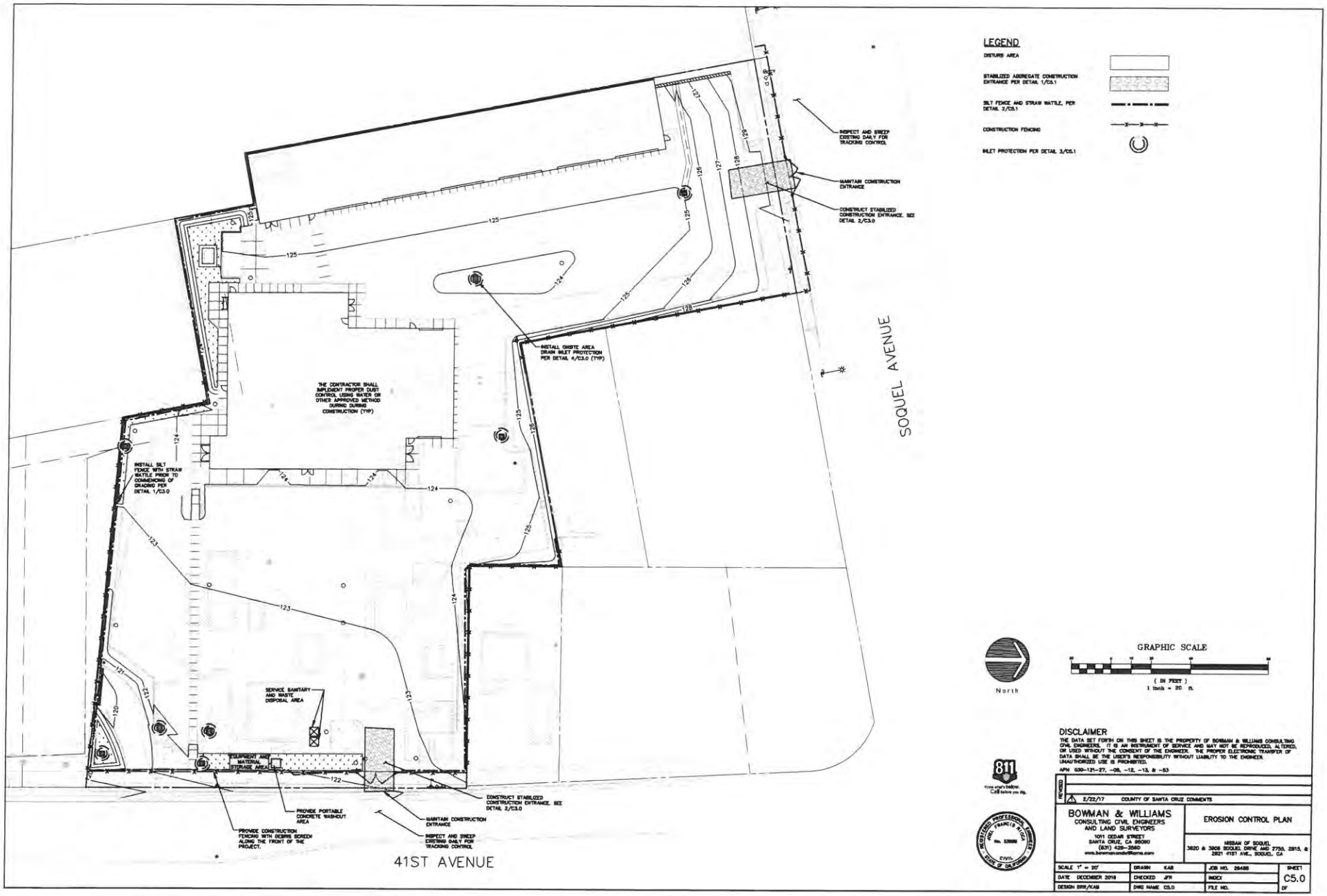
SANTA CRUZ, CA 95060
(831) 426-3560

UTILITY PLAN

3820 & 3908 SOQUEL DRIVE AND 2750, 2915, & 2931 41ST AVE., SOQUEL, CA

SCALE 1" = 20'	DRAWN KAB	JOB NO. 29486	SHEET C4.0
DATE DECEMBER 2016	CHECKED JPW	INDEX	OF
DESIGN BRR/KAB	DWG NAME C4.0	FILE NO.	



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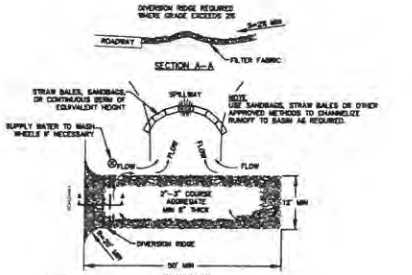
EROSION CONTROL PLAN

NISSAN OF SOQUEL
3820 & 3908 SOQUEL DRIVE AND 2755, 2815, & 2821 41ST AVE., SOQUEL, CA

SCALE 1" = 20'	DRAWN KAB	JOB NO. 25488	SHEET C5.0
DATE DECEMBER 2016	CHECKED JFR	INDEX	
DESIGN BRR/KAB	DWG NAME C5.0	FILE NO.	OF

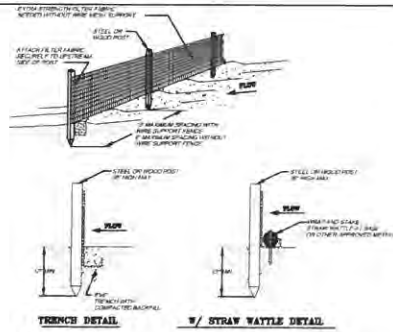


NOTES

1. PROPERLY GRADE ENTRANCE TO PREVENT RUNOFF FROM CONSTRUCTION SITE. ENTRANCE ELEVATION SHOULD BE LOWER THAN STREET.
2. INSPECT ROUTINELY FOR DAMAGE AND REPAIR AS NEEDED. REQUIRE THAT ALL EMPLOYEES, SUBCONTRACTORS AND SUPPLIERS UTILIZE THE STABILIZED CONSTRUCTION ENTRANCE.
3. SERVICE SEDIMENT TRAPPING DEVICES REGULARLY.

1 C5.1 CONSTRUCTION ENTRANCE

SCALE: N.T.S.



NOTES:

1. SILT FENCE SHALL BE PLACED ON SLOPE CONTOURS TO MAXIMIZE PONDING EFFICIENCY.
2. INSPECT AND REPAIR FENCE AFTER EACH STORM EVENT AND REMOVE SEDIMENT WHEN NECESSARY, IF MAXIMUM RECOMMENDED STORAGE HEIGHT.
3. REMOVED SEDIMENT SHALL BE DEPOSITED TO AN AREA THAT WILL NOT CONTRIBUTE SEDIMENT OFF-SITE AND CAN BE PERMANENTLY STABILIZED.

2 C5.1 SILT FENCE

SCALE: NTS

NOTES

1. PLACE STRAW WATTLE AROUND CATCH BASIN TO ALLOW SEDIMENT TO SEPARATE FROM RUNOFF.
2. INSPECT AND REMOVE SEDIMENT AFTER EACH STORM EVENT.

3 C5.1 STRAW WATTLE INLET PROTECTION

SCALE: NTS

TEMPORARY EROSION CONTROL MEASURES

1. EROSION IS TO BE CONTROLLED AT ALL TIMES ALTHOUGH SPECIFIC MEASURES SHOWN ARE TO BE IMPLEMENTED AT A MINIMUM BETWEEN OCTOBER 15TH AND APRIL 15TH. BETWEEN OCTOBER 15TH AND APRIL 15TH FIBER ROLLS, EROSION CONTROL BLANKETS, HYDROSEEDING OR OTHER MEANS SHALL BE EMPLOYED TO PREVENT SEDIMENT FROM LEAVING THE SITE OR ENTERING ANY WATERCOURSE.
2. RUNOFF FROM THE CONSTRUCTION SITE MUST NOT BE ALLOWED TO FLOW OVER ANY FILL SLOPES.
3. RUNOFF SHALL BE DIRECTED TOWARDS THE NEAREST CATCH BASIN WITH TEMPORARY EARTHEN BERMS.
4. SILT BARRIERS SHALL BE CONSTRUCTED ALONG THE BOTTOM OF ALL GRADED SLOPES.
5. CATCH BASINS SHALL BE ENCIRCLED BY A SILT BARRIER ON ALL FOUR SIDES. USE GRAVEL FILLED SANDBAGS OR STRAW BALE SILT BARRIER. PROVIDE FILTER FABRIC UNDER INLET GRATE.
6. UNNECESSARY GRADING AND DISTURBING OF SOIL SHALL BE AVOIDED.
7. DURING CONSTRUCTION, NO TURBID WATER SHALL BE PERMITTED TO ENTER THE CHANNEL OR STORM DRAIN SYSTEM. USE OF SILT AND GREASE TRAPS, FILTER BERMS, HAY BALES OR SILT FENCES SHALL BE USED TO PREVENT SUCH DISCHARGE.
8. ALL EXCAVATED MATERIAL NOT SUITABLE FOR FILL OR REUSE SHALL BE REMOVED TO AN APPROVED DISPOSAL SITE OR DISPOSED OF ON-SITE IN A MANNER THAT WILL NOT CAUSE EROSION.
9. ANY MATERIAL STOCKPILED ON-SITE SHALL BE COVERED WITH PLASTIC, ESPECIALLY DURING THE WINTER MONTHS OR DURING PERIODS OF RAIN.
10. IT IS THE CONTRACTOR'S RESPONSIBILITY TO SEE THAT ADDITIONAL MEASURES, NECESSARY TO CONTROL SITE EROSION AND PREVENT SEDIMENT TRANSPORT OFF-SITE ARE IMPLEMENTED.

QSD /QSP SCOPE OF WORK

A SWPPP IS REQUIRED TO BE PREPARED BY THE DESIGN BUILD CONTRACTOR.

THE CONTRACTOR SHALL:

1. SERVE AS THE QUALIFIED SWPPP PRACTITIONER (QSP), AND ALSO THE QUALIFIED SWPPP DEVELOPER (QSD) IF QSD SERVICES ARE REQUIRED DURING CONSTRUCTION
2. TRAIN ITS EMPLOYEES AND SUBCONTRACTORS AS REQUIRED BY THE CONSTRUCTION GENERAL PERMIT
3. MAINTAIN THE FIELD COPY SWPPP BINDER
4. PERFORM ALL STORM WATER INSPECTIONS, SAMPLING AND ANALYSIS
5. IMPLEMENT THE RAIN EVENT ACTION PLANS (REAPS)
6. PROVIDE A SPILL RESPONSE PLAN (TYPICALLY PART OF THE CONTRACTOR'S INJURY & ILLNESS PROTECTION PROGRAM, IIPP)
7. PROVIDE A STORMWATER ANNUAL REPORT TO THE OWNER EACH YEAR, AND PRIOR TO PROJECT COMPLETION
8. PROVIDE NOTICE OF TERMINATION DOCUMENTATION TO THE OWNER AT PROJECT COMPLETION
9. SERVE AS DATA SUBMITTER FOR THE OWNER FOR ON-LINE SUBMITTALS THROUGH THE STATE'S WEBSITE (SMARTS)
10. ASSIST THE OWNER IN COORDINATING WITH THE REGIONAL WATER QUALITY CONTROL BOARD AND STATE WATER RESOURCES CONTROL BOARD, AS NEEDED
11. IMPLEMENT ALL BEST MANAGEMENT PRACTICES (BMPS) AS NECESSARY TO PROTECT WATER QUALITY, AS REQUIRED BY THE CONSTRUCTION GENERAL PERMIT, AND AS OUTLINED IN THE PROJECT SWPPP.
12. PAY FOR NON-STORMWATER TESTING, IF REQUIRED DUE TO LEAKS OR SPILLS.
13. BE RESPONSIBLE FOR ANY FINES IMPOSED FOR FAILURE TO COMPLY WITH THE CONSTRUCTION GENERAL PERMIT OR OTHER LAWS, REGULATIONS, OR REQUIREMENTS OF THE VARIOUS JURISDICTIONS HAVING AUTHORITY

COUNTY OF SANTA CRUZ CONSTRUCTION BMPS NOTES

GENERAL

1. THE DEVELOPER/CONTRACTOR SHALL COMPLY WITH THE EROSION CONTROL MEASURES SHOWN ON THIS PLAN AND THE SANTA CRUZ COUNTY CONSTRUCTION SITE STORMWATER POLLUTION CONTROL BMP MANUAL. THE MANUAL CAN BE FOUND ON THE COUNTY WEBSITE AT WWW.DPOR.PLANNING.COM UNDER THE "ENVIRONMENTAL" TAB.
2. THE DEVELOPER SHALL BE RESPONSIBLE FOR IMPLEMENTING AND MAINTAINING SITE EROSION CONTROL AT ALL TIMES.
3. ALL EMPLOYEES AND CONTRACTORS SHALL BE INFORMED ABOUT STORM WATER MANAGEMENT REQUIREMENTS AND THEIR RESPONSIBILITIES FOR COMPLIANCE.
4. SEE HOUSEKEEPING REQUIREMENTS AND INSPECTION NOTES ON THIS SHEET.
5. RUNOFF FROM THE CONSTRUCTION SITE MUST NOT BE ALLOWED TO FLOW OVER ANY FILL SLOPES.
6. RUNOFF SHALL BE DIRECTED TOWARDS THE NEAREST CATCH BASIN WITH TEMPORARY EARTHEN BERMS.
7. SILT BARRIERS SHALL BE CONSTRUCTED ALONG THE BOTTOM OF ALL GRADED SLOPES.
8. CATCH BASINS SHALL BE ENCIRCLED BY A SILT BARRIER ON ALL FOUR SIDES. USE STRAW WATTLE BARRIER OR APPROVED EQUAL.
9. ON ALL FINISH GRADED SLOPES, ON- AND OFF-SITE, EXPOSED DURING CONSTRUCTION ACTIVITIES, IF NOT PERMANENTLY LANDSCAPED PER PLAN, SHALL BE COVERED WITH TWO INCHES (2") OF MULCH.
10. UNNECESSARY GRADING AND DISTURBING OF SOIL SHALL BE AVOIDED.
11. DURING CONSTRUCTION, NO TURBID WATER SHALL BE PERMITTED TO ENTER THE CHANNEL OR STORM DRAIN SYSTEM. USE OF SILT AND GREASE TRAPS, FILTER BERMS, HAY BALES OR SILT FENCES SHALL BE USED TO PREVENT SUCH DISCHARGE.
12. 48 HOUR NOTICE SHALL BE GIVEN TO ENVIRONMENTAL PLANNING AT 454-3168 PRIOR TO COMMENCING WORK, AND UPON COMPLETION OF GRADING AND EROSION CONTROL. FAILURE TO COMPLY WILL RESULT IN ISSUANCE OF A STOP WORK ORDER.

SITE HOUSEKEEPING REQUIREMENTS

CONSTRUCTION MATERIALS

1. ALL LOOSE STOCKPILED CONSTRUCTION MATERIALS THAT ARE NOT ACTIVELY BEING USED (I.E. SOIL, SPOILS, AGGREGATE, FLY-ASH, STUCCO, HYDRATED LIME, ETC.) SHALL BE COVERED AND BERMED.
2. ALL CHEMICALS SHALL BE STORED IN WATERTIGHT CONTAINERS (WITH APPROPRIATE SECONDARY CONTAINMENT TO PREVENT ANY SPILLAGE OR LEAKAGE) OR IN A STORAGE SHED (COMPLETELY ENCLOSED).
3. EXPOSURE OF CONSTRUCTION MATERIALS TO PRECIPITATION SHALL BE MINIMIZED. THIS DOES NOT INCLUDE MATERIALS AND EQUIPMENT THAT ARE DESIGNED TO BE OUTDOORS AND EXPOSED TO ENVIRONMENTAL CONDITIONS (I.E. POLES, EQUIPMENT PADS, CABINETS, CONDUCTORS, INSULATORS, BRICKS, ETC.).
4. BEST MANAGEMENT PRACTICES TO PREVENT THE OFF-SITE TRACKING OF LOOSE CONSTRUCTION AND LANDSCAPE MATERIALS SHALL BE IMPLEMENTED.

WASTE MANAGEMENT

5. DISPOSAL OF ANY RINSE OR WASH WATERS OR MATERIALS ON IMPERVIOUS OR PERVIOUS SITE SURFACES OR INTO THE STORM DRAIN SYSTEM SHALL BE PREVENTED.
6. SANITATION FACILITIES SHALL BE CONTAINED (E.G., PORTABLE TOILETS) TO PREVENT DISCHARGES OF POLLUTANTS TO THE STORM WATER DRAINAGE SYSTEM OR RECEIVING WATERS, AND SHALL BE LOCATED A MINIMUM OF 20 FEET AWAY FROM AN INLET, STREET OR DRIVEWAY, STREAM, RIPARIAN AREA OR OTHER DRAINAGE FACILITY.
7. SANITATION FACILITIES SHALL BE INSPECTED REGULARLY FOR LEAKS AND SPILLS AND CLEANED OR REPLACED AS NECESSARY.
8. COVER WASTE DISPOSAL CONTAINERS AT THE END OF EVERY BUSINESS DAY AND DURING A RAIN EVENT.
9. DISCHARGES FROM WASTE DISPOSAL CONTAINERS TO THE STORM WATER DRAINAGE SYSTEM OR RECEIVING WATER SHALL BE PREVENTED.
10. STOCKPILED WASTE MATERIAL SHALL BE CONTAINED AND SECURELY PROTECTED FROM WIND AND RAIN AT ALL TIMES UNLESS ACTIVELY BEING USED.
11. PROCEDURES THAT EFFECTIVELY ADDRESS HAZARDOUS AND NON-HAZARDOUS SPILLS SHALL BE IMPLEMENTED.
12. EQUIPMENT AND MATERIALS FOR CLEANUP OF SPILLS SHALL BE AVAILABLE ON SITE AND THAT SPILLS AND LEAKS SHALL BE CLEANED UP IMMEDIATELY AND DISPOSED OF PROPERLY, AND
13. CONCRETE WASHOUT AREAS AND OTHER WASHOUT AREAS THAT MAY CONTAIN ADDITIONAL POLLUTANTS SHALL BE CONTAINED SO THERE IS NO DISCHARGE INTO THE UNDERLYING SOIL AND ONTO THE SURROUNDING AREAS.

VEHICLE STORAGE AND MAINTENANCE

14. MEASURES SHALL BE TAKEN TO PREVENT OIL, GREASE, OR FUEL TO LEAK IN TO THE GROUND, STORM DRAINS OR SURFACE WATERS.
15. ALL EQUIPMENT OR VEHICLES, WHICH ARE TO BE FUELED, MAINTAINED AND STORED ONSITE SHALL BE IN A DESIGNATED AREA FITTED WITH APPROPRIATE BMPS.
16. LEAKS SHALL BE IMMEDIATELY CLEANED AND LEAKED MATERIALS SHALL BE DISPOSED OF PROPERLY.

LANDSCAPE MATERIALS

17. CONTAIN STOCKPILED MATERIALS SUCH AS MULCHES AND TOPSOIL WHEN THEY ARE NOT ACTIVELY BEING USED.
18. CONTAIN FERTILIZERS AND OTHER LANDSCAPE MATERIALS WHEN THEY ARE NOT ACTIVELY BEING USED.
19. DISCONTINUE THE APPLICATION OF ANY ERODIBLE LANDSCAPE MATERIAL WITHIN 2 DAYS BEFORE A FORECASTED RAIN EVENT OR DURING PERIODS OF PRECIPITATION.
20. APPLY ERODIBLE LANDSCAPE MATERIAL AT QUANTITIES AND APPLICATION RATES ACCORDING TO MANUFACTURE RECOMMENDATIONS OR BASED ON WRITTEN SPECIFICATIONS BY KNOWLEDGEABLE AND EXPERIENCED FIELD PERSONNEL.
21. STACK ERODIBLE LANDSCAPE MATERIAL ON PALLETS AND COVERING OR STORING SUCH MATERIALS WHEN NOT BEING USED OR APPLIED.

INSPECTION & MAINTENANCE NOTES:

1. THE CONTRACTOR SHALL PERFORM AND MAKE WRITTEN RECORD OF ALL SITE INSPECTIONS TO ENSURE ADEQUATE DEPLOYMENT OF BEST MANAGEMENT PRACTICES (BMP'S).
2. DURING INSPECTIONS IDENTIFY AND RECORD BMP'S THAT NEED MAINTENANCE TO OPERATE EFFECTIVELY, THAT HAVE FAILED, OR THAT COULD FAIL TO OPERATE AS INTENDED.
3. REPAIR TO BMP'S SHALL BEGIN WITHIN 72 HOURS OF IDENTIFICATION AND THE CHANGES COMPLETED AS SOON AS POSSIBLE.
4. 48 HOURS PRIOR TO A PREDICTED RAIN EVENT, IN ADDITION TO THE INSTALLED BMPS, THE CONTRACTOR SHALL COVER ANY DISTURBED BARE SOILS WITH MULCH, EROSION CONTROL BLANKETS OR APPROVED EQUAL METHOD. THE CONTRACTOR SHALL IMPLEMENT ADDITIONAL BMPS AS NECESSARY TO MINIMIZE CONSTRUCTION SITE RUNOFF ONTO NEIGHBORING PROPERTIES.

APN 030-121-27, -08, -12, -13, & -53

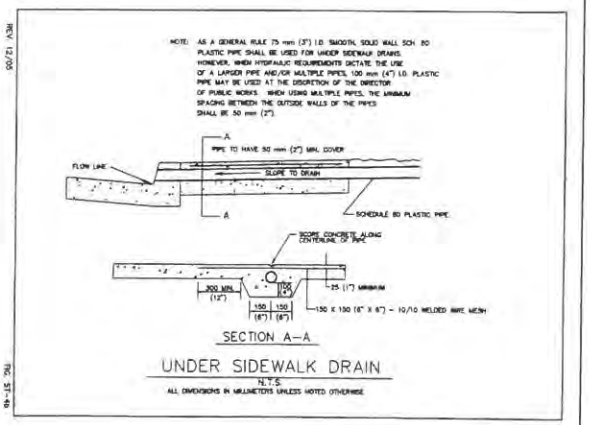
REVISED	
2/22/17	COUNTY OF SANTA CRUZ COMMENTS

BOWMAN & WILLIAMS
CONSULTING CIVIL ENGINEERS AND LAND SURVEYORS
1011 CEDAR STREET
SANTA CRUZ, CA 95060
(831) 426-3560
www.bowmanandwilliams.com

EROSION CONTROL PLAN

MISSION OF SOQUEL
3820 & 3908 SOQUEL DRIVE AND 2755, 2815, & 2821 41ST AVE., SOQUEL, CA

SCALE 1" = 20'	DRAWN KAB	JOB NO. 254418	SHEET
DATE DECEMBER 2016	CHECKED JFR	MODEL	C5.1
DESIGN BRR/KAB	DWG NAME C5.0	FILE NO.	OF

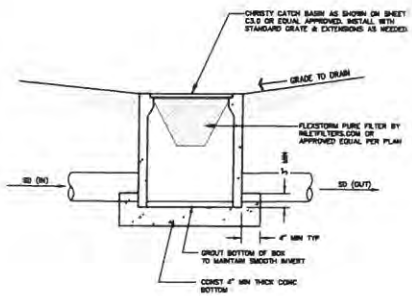


SECTION A–A

UNDER SIDEWALK DRAIN

N.T.S.

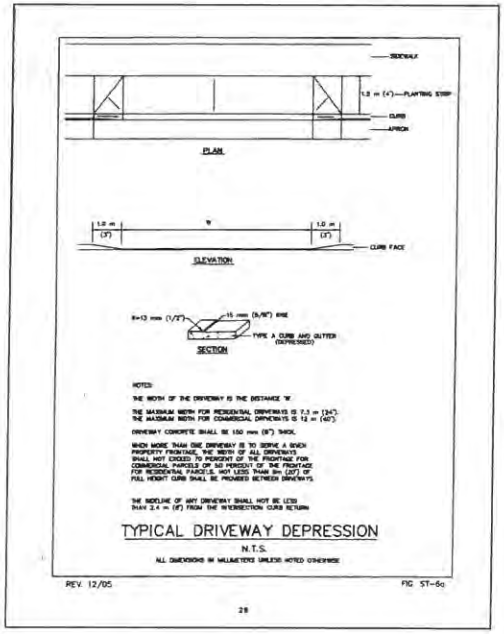
ALL DIMENSIONS IN MILLIMETERS UNLESS NOTED OTHERWISE



1 C6.0

TYPICAL CATCH BASIN

SCALE: N.T.S.



TYPICAL DRIVEWAY DEPRESSION

N.T.S.

ALL DIMENSIONS IN MILLIMETERS UNLESS NOTED OTHERWISE

REV. 12/05

FIG. ST-6a

28

811 Know what's below. Call before you dig.

DISCLAIMER

APN 030-121-27, -09, -12, -13, & -53

REVISED	
2/22/17	COUNTY OF SANTA CRUZ COMMENTS

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AND LAND SURVEYORS
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SANTA CRUZ, CA 95060
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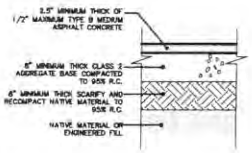
www.bowmanandwilliams.com

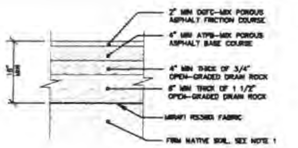
DETAILS

NISSAN OF SOQUEL
3820 & 3900 SOQUEL DRIVE AND 2755, 2815, & 3521 41ST AVE., SOQUEL, CA

SCALE 1" = 20'	DRAWN KAB	JOB NO. 25485	SHEET
DATE DECEMBER 2016	CHECKED JFR	INDEX	C6.0
DESIGN BRR/KAB	DWG NAME C6.0	FILE NO.	OF



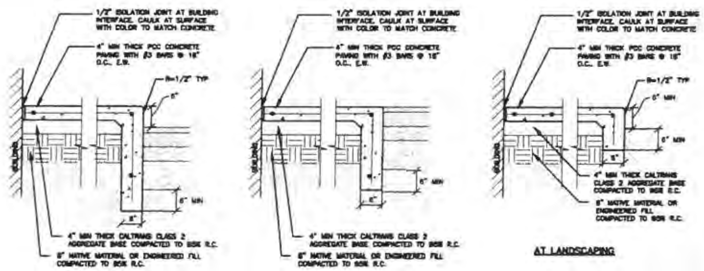
1 / C6.1 ASPHALT PAVEMENT SECTION
SCALE: NTS



NOTES:

1. THE CONTRACTOR SHALL PROOF ROLL SUBGRADE SURFACE TO CHECK FOR UNSTABLE AREAS AND NOTIFY THE PROJECT GEOTECHNICAL ENGINEER FOR ANY UNSATISFACTORY CONDITIONS.
2. CONTRACTOR SHALL SUBMIT PERMEABLE CONCRETE MIX TO ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION. THE MIX SHALL HAVE 6.5 SACK MIX WITH W/C=0.27.
3. DRAIN ROCK AGGREGATES SHALL BE OPEN-GRADED, WASHED, AND MEET THE FOLLOWING GRADATIONS:
   A. 3/4" DRAIN ROCK – CALTRANS CLASS 1 TYPE B PERMEABLE SPEC 68-1.
   B. 1 1/2" DRAIN ROCK GRADATION SHALL MEET ASTM NO. 4 OR APPROVED EQUAL.
4. 1 1/2" AND 3/4" DRAIN ROCK AGGREGATES SPREAD AND COMPACTED AS ONE 4 IN LIFT WITH PLATE OR STATIC ROLLER COMPACTORS. AT LEAST 4 PASSES, INITIAL PASSES SHALL BE WITH VIBRATION. FINAL PASSES SHALL BE WITHOUT VIBRATION.

2 / C6.1 POROUS ASPHALT SECTION
SCALE: 3/4"=1'-0"



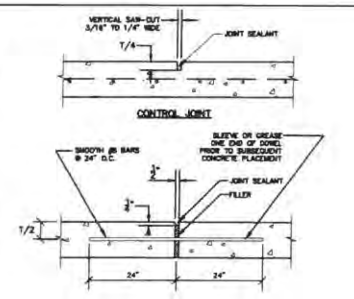
AT DEPRESSED POROUS ASPHALT

AT FLUSH POROUS ASPHALT

AT LANDSCAPING

NOTES:
1. ALL CONCRETE SHALL BE SIX SACK MIX, CLASS "A".
2. SCORE FLATWORK EVERY 4 FT, DEEP JOINT EVERY 12 FT, AND EXPANSION JOINT EVERY 60 FT MAX.

3 / C6.1 CONCRETE WALKWAY DETAIL
SCALE: –

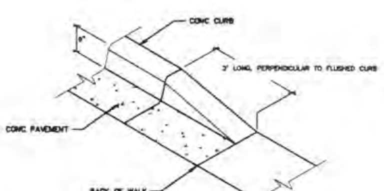


CONTROL JOINT

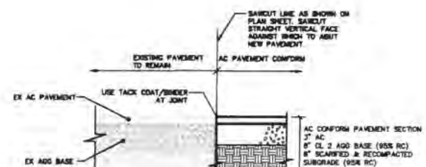
EXPANSION JOINT

NOTES:
1. SAWCUT CONTROL JOINTS SHALL BE CONSTRUCTED EVERY 8 FT MAX.
2. CUT EVERY OTHER REBAR AT SLAB CONTROL JOINT.
3. SAWCUT WITHIN 15 HOURS AFTER POUR.
4. CONST EXPANSION JOINT EVERY 40 FT MAX (EVERY 5 CONTROL JOINTS)

4 / C6.1 CONCRETE PAVEMENT JOINTS
SCALE: NTS

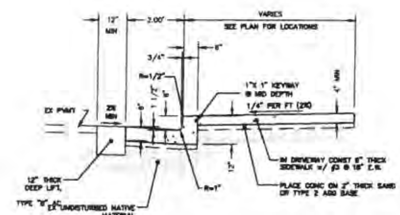


5 / C6.1 TAPERED CURB DETAIL
SCALE: 1/2"=1'-0"



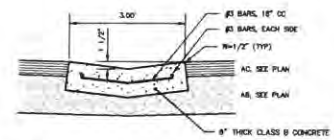
NOTE: SECTION ASSUMED MATCH IN KIND.

6 / C6.1 PAVEMENT CONFORM DETAIL
SCALE: 3/4"=1'-0"



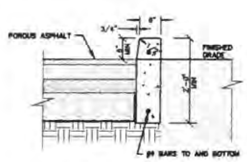
NOTES:
1. ALL CONCRETE TO BE SIX SACK, CLASS "A"
2. GUTTERS ARE TO BE CONSTRUCTED INTEGRALLY WITH THE CURBS
3. ALL DIMENSIONS ARE TRUE, ALLOWANCE FOR NOMINAL MEASURE HAS BEEN GIVEN.
4. PLACE EXPANSION JOINTS EVERY 60 FEET WITH WEAKENED PLANE JOINTS EVERY 20 FEET.
5. WHERE DRIVEWAY OCCURS, PROVIDE AN ACCESSIBLE PASSAGE WAY WITH A MAX CROSS SLOPE OF 2.0% WITH A MIN WIDTH OF 38" AT THE BACK OF THE SIDEWALK.

7 / C6.1 COUNTY OF SANTA CRUZ CURB, GUTTER AND SIDEWALK
SCALE: 1/2"=1'-0"



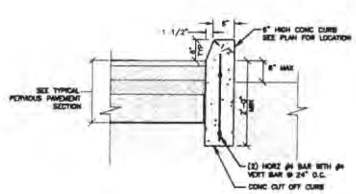
NOTES:
1. CONSTRUCT VALLEY GUTTER w/ CLASS B CONCRETE
2. WEAKENED PLANE JOINTS SHALL BE CONSTRUCTED AT 20' INTERVALS.

8 / C6.1 3 FT VALLEY GUTTER
SCALE: NTS

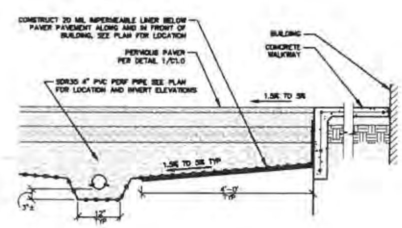


AT PERMEABLE PAVEMENT

9 / C6.1 VERTICAL CONCRETE CURB
SCALE: –



10 / C6.1 RAISED VERTICAL CONCRETE CURB
SCALE: 3/4"=1'-0"



11 / C6.1 PAVEMENT IMPERMEABLE LINER DETAIL
SCALE: 3/4"=1'-0"

APN 030-121-27, -08, -12, -13, & -53

REVISED	
1	2/22/17 COUNTY OF SANTA CRUZ COMMENTS

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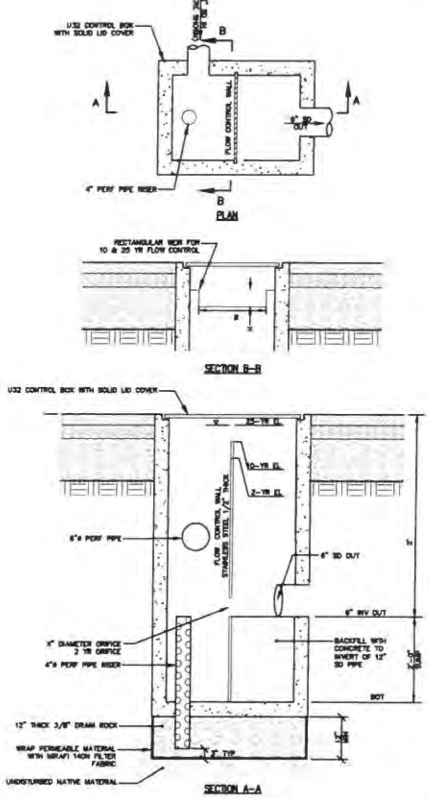
www.bowmanandwilliams.com

DETAILS

NISSAN OF SOQUEL
3520 & 3509 SOQUEL DRIVE AND 2755, 2815, & 2821 41ST AVE., SOQUEL, CA

SCALE 1" = 20'	DRAWN KAB	JOB NO. 26488	SHEET
DATE DECEMBER 2016	CHECKED JFR	INDEX	C6.1
DESIGN BRR/KAB	DWG NAME C6.0	FILE NO.	OF



CONTROL BOX DATA

CONTROL BOX A

Orifice Invert =	120.54
Grate =	122.26
Low Flow Orifice Diameter (D) =	2.87
weir height, H (ft) =	0.16
weir width, B (ft)=	1.67
Top of weir =	121.39
Bottom of Wier =	121.40

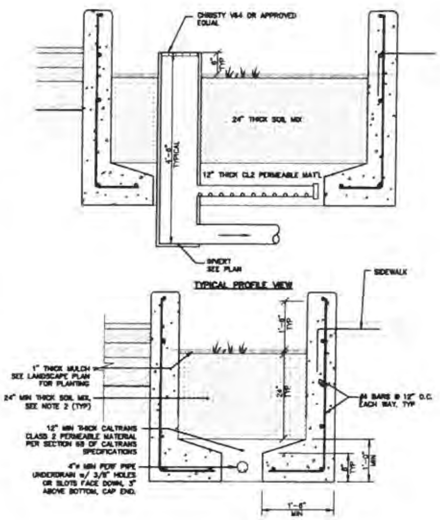
CONTROL BOX B

Orifice Invert =	122.75
Grate =	123.94
Low Flow Orifice Diameter (D) =	4.13
weir height, H (ft) =	0.20
weir width, B (ft)=	1.67
Top of weir =	123.44
Bottom of Wier =	123.24

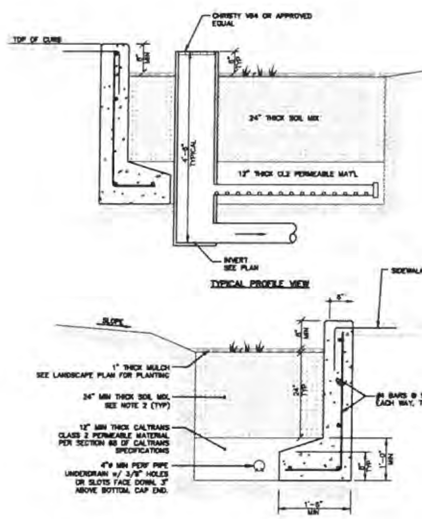
CONTROL BOX C

Orifice Invert =	118.76
Grate =	121.95
Low Flow Orifice Diameter (D) =	1.25
weir height, H (ft) =	0.20
weir width, B (ft)=	0.50
Top of weir =	120.06
Bottom of Wier =	119.86

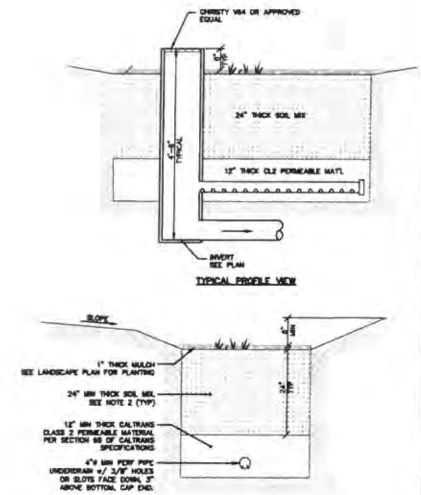
1 / C6.2 CONTROL BOX
SCALE: 3/4"=1'-0"



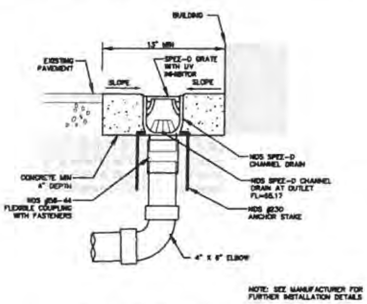
3 / C6.2 BIOFILTRATION AREA A
SCALE: NTS



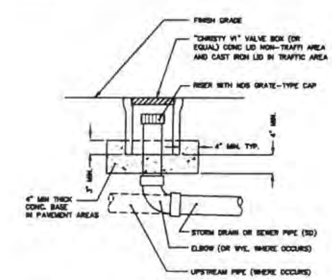
2 / C6.2 BIOFILTRATION AREA B
SCALE: NTS



4 / C6.2 BIOFILTRATION AREA C
SCALE: NTS



5 / C6.2 NDS TRENCH DRAIN DETAIL
SCALE: -



6 / C6.2 STORM DRAIN CLEANOUT DETAIL
SCALE: NTS

APN 030-121-27, -08, -12, -13, & -53

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SANTA CRUZ, CA 95060
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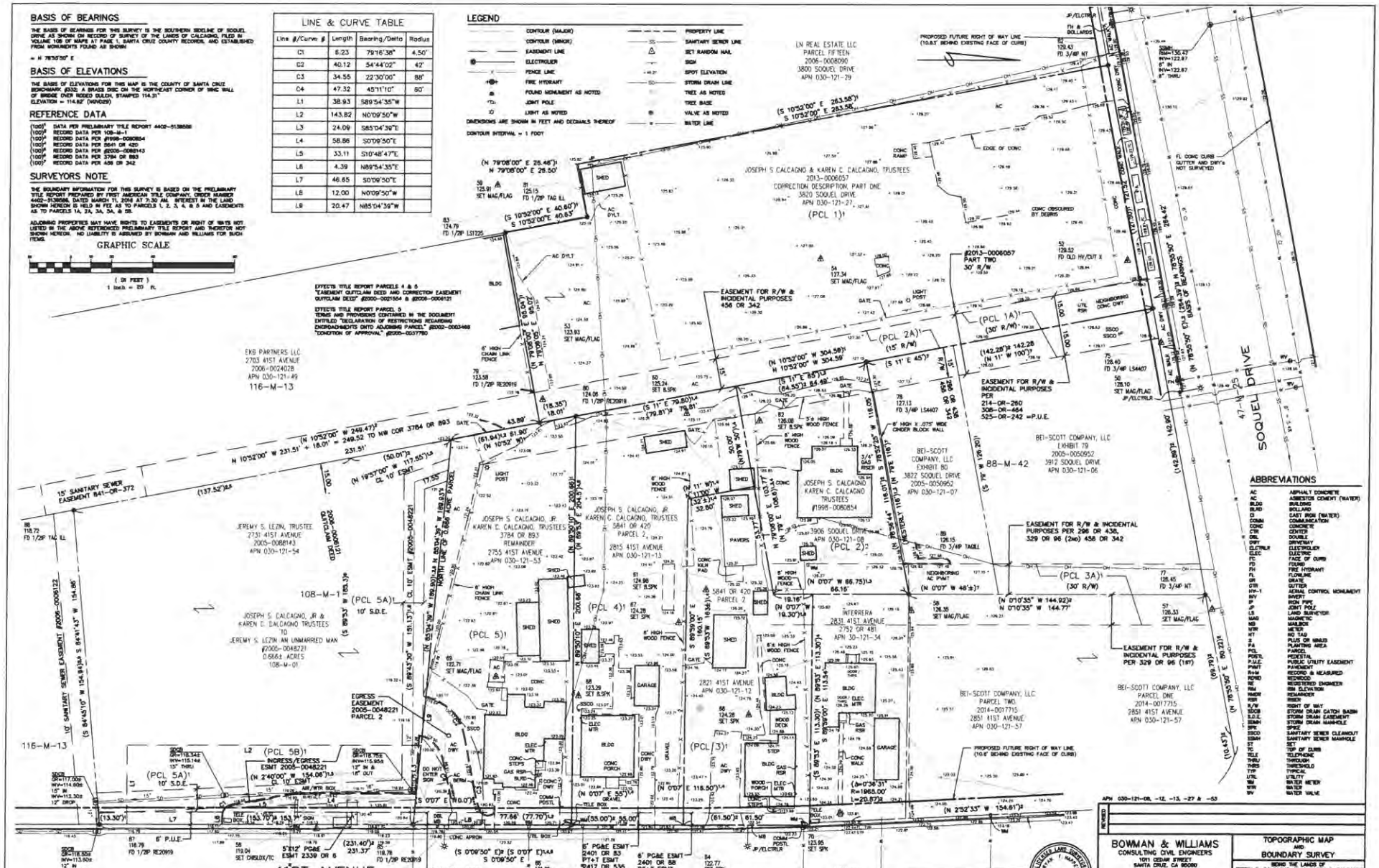
www.bowmanandwilliams.com

DETAILS

NISSAN OF SOQUEL
3820 & 3908 SOQUEL DRIVE AND 2755, 2815, & 2821 41ST AVE., SOQUEL, CA

SCALE 1" = 20'	DRAWN KAB	JOB NO. 26488	SHEET
DATE DECEMBER 2016	CHECKED JFR	INDEX	C6.2
DESIGN BRR/KAB	DWG NAME C6.0	FILE NO.	OF


BASIS OF BEARINGS
THE BASIS OF BEARINGS FOR THIS SURVEY IS THE SOUTHERN SIDELINE OF SOQUEL DRIVE AS SHOWN ON RECORD OF SURVEY OF THE LANDS OF CALCAGNO, FILED IN VOLUME 106 OF MAPS AT PAGE 1, SANTA CRUZ COUNTY RECORDER, AND ESTABLISHED FROM MONUMENTS FOUND AS SHOWN
= N 78°30'00" E
BASIS OF ELEVATIONS
THE BASIS OF ELEVATIONS FOR THIS MAP IS THE COUNTY OF SANTA CRUZ BENCHMARK #332; A BRASS DISC ON THE NORTHEAST CORNER OF WING WALL OF BRIDGE OVER RODEO GULCH, STAMPED 114.31'
ELEVATION = 114.82' (NGVD29)
REFERENCE DATA
(100)1 DATA PER PRELIMINARY TITLE REPORT 4402-5138556
(100)2 RECORD DATA PER 108-M-1
(100)3 RECORD DATA PER #1998-0060854
(100)4 RECORD DATA PER 3784 OR 420
(100)5 RECORD DATA PER #2005-0068143
(100)6 RECORD DATA PER 3784 OR 893
(100)7 RECORD DATA PER 456 OR 342
SURVEYORS NOTE
THE BOUNDARY INFORMATION FOR THIS SURVEY IS BASED ON THE PRELIMINARY TITLE REPORT PREPARED BY FIRST AMERICAN TITLE COMPANY, ORDER NUMBER 4402-5138556, DATED MARCH 11, 2016 AT 7:30 AM. INTEREST IN THE LAND SHOWN HEREON IS HELD IN FEE AS TO PARCELS 1, 2, 3, 4, & 5 AND EASEMENTS AS TO PARCELS 1A, 2A, 3A, 5A, & 5B.
ADJOINING PROPERTIES MAY HAVE RIGHTS TO EASEMENTS OR RIGHT OF WAYS NOT LISTED IN THE ABOVE REFERENCED PRELIMINARY TITLE REPORT AND THEREFOR NOT SHOWN HEREON. NO LIABILITY IS ASSUMED BY BOWMAN AND WILLIAMS FOR SUCH ITEMS.
GRAPHIC SCALE
(IN FEET)
1 inch = 20 ft.
LINE & CURVE TABLE
Line # / Curve # | Length | Bearing / Delta | Radius
C1 | 6.23 | 79°16'38" | 4.50'
C2 | 40.12 | 54°44'02" | 42'
C3 | 34.55 | 22°30'00" | 88'
C4 | 47.32 | 45°11'10" | 60'
L1 | 38.93 | S89°54'35"W |
L2 | 143.82 | N0°09'50"W |
L3 | 24.09 | S85°04'39"E |
L4 | 58.86 | S0°09'50"E |
L5 | 33.11 | S10°48'47"E |
L6 | 4.39 | N89°54'35"E |
L7 | 46.85 | S0°09'50"E |
L8 | 12.00 | N0°09'50"W |
L9 | 20.47 | N85°04'39"W |
LEGEND
CONTOUR (MAJOR)
CONTOUR (MINOR)
EASEMENT LINE
ELECTRO/LIER
FENCE LINE
FIRE HYDRANT
FOUND MONUMENT AS NOTED
JOINT POLE
LIGHT AS NOTED
PROPERTY LINE
SANITARY SEWER LINE
SET RANDOM NAIL
SIGN
SPOT ELEVATION
STORM DRAIN LINE
TREE AS NOTED
TREE BASE
VALVE AS NOTED
WATER LINE
DIMENSIONS ARE SHOWN IN FEET AND DECIMALS THEREOF
CONTOUR INTERVAL = 1 FOOT
LN REAL ESTATE LLC
PARCEL FIFTEEN
2006-0008090
3800 SOQUEL DRIVE
APN 030-121-29
PROPOSED FUTURE RIGHT OF WAY LINE (10.67' BEHIND EXISTING FACE OF CURB)
JOSEPH S CALCAGNO & KAREN C. CALCAGNO, TRUSTEES
2013-0006057
CORRECTION DESCRIPTION PART ONE
3820 SOQUEL DRIVE
APN 030-121-27
(PCL 1)1
#2013-0006057 PART TWO 30' R/W
(PCL 1A)1 (30' R/W)
(PCL 2A)1 (15' R/W)
(PCL 2)1
(PCL 3A)1 (30' R/W)
(PCL 4)1
(PCL 5)1
(PCL 5A)1 10' S.D.E.
(PCL 5B)1 INGRESS/EGRESS ESMT 2005-0048221
EKB PARTNERS LLC
2703 41ST AVENUE
2006-0024028
APN 030-121-49
116-M-13
JEREMY S. LEZIN, TRUSTEE
2731 41ST AVENUE
2005-0068143
APN 030-121-54
JOSEPH S. CALCAGNO, JR. KAREN C. CALCAGNO, TRUSTEES
3784 OR 893
REMAINDER
2755 41ST AVENUE
APN 030-121-53
JOSEPH S. CALCAGNO, JR. KAREN C. CALCAGNO, TRUSTEES
5841 OR 420
PARCEL 2
2815 41ST AVENUE
APN 030-121-13
JOSEPH S. CALCAGNO KAREN C. CALCAGNO TRUSTEES #1998-0060854
3906 SOQUEL DRIVE
APN 030-121-08
JOSEPH S. CALCAGNO, JR. KAREN C. DALCAGNO TRUSTEES TO JEREMY S. LEZIN AN UNMARRIED MAN #2005-0048221 0.666± ACRES 108-M-01
5841 OR 420
PARCEL 2
2821 41ST AVENUE
APN 030-121-12
INFERRERA
2831 41ST AVENUE
2752 OR 481
APN 30-121-54
BEI-SCOTT COMPANY, LLC
EXHIBIT 79
2005-0050952
3912 SOQUEL DRIVE
APN 030-121-06
BEI-SCOTT COMPANY, LLC
EXHIBIT 80
3822 SOQUEL DRIVE
2005-0050952
APN 030-121-07
BEI-SCOTT COMPANY, LLC
PARCEL TWO
2014-0017715
2851 41ST AVENUE
APN 030-121-57
BEI-SCOTT COMPANY, LLC
PARCEL ONE
2014-0017715
2851 41ST AVENUE
APN 030-121-57
SOQUEL DRIVE
41ST AVENUE
59-M-45
108-M-1
88-M-42
116-M-13
EFFECTS TITLE REPORT PARCELS 4 & 5
"EASEMENT QUITCLAIM DEED AND CORRECTION EASEMENT QUITCLAIM DEED" #2000-0021554 & #2006-0006121
EFFECTS TITLE REPORT PARCEL 5
TERMS AND PROVISIONS CONTAINED IN THE DOCUMENT ENTITLED "DECLARATION OF RESTRICTIONS REGARDING ENCROACHMENTS ONTO ADJOINING PARCEL" #2002-0003468
"CONDITION OF APPROVAL" #2005-0037780
EASEMENT FOR R/W & INCIDENTAL PURPOSES 456 OR 342
EASEMENT FOR R/W & INCIDENTAL PURPOSES PER 214-OR-260 305-OR-464 525-OR-242 =P.U.E.
EASEMENT FOR R/W & INCIDENTAL PURPOSES PER 296 OR 436, 329 OR 96 (2nd) 456 OR 342
EASEMENT FOR R/W & INCIDENTAL PURPOSES PER 329 OR 96 (1st)
15' SANITARY SEWER EASEMENT 841-OR-372
10' SANITARY SEWER EASEMENT #2005-0068122
EGRESS EASEMENT 2005-0048221 PARCEL 2
6' PT&T ESMT 2417 OR 539
PG&E ESMT 2406 OR 643
6' PG&E ESMT 2401 OR 83
PT&T ESMT 2417 OR 535
6' PG&E ESMT 2401 OR 88
PT&T ESMT 2417 OR 536
PROPOSED FUTURE RIGHT OF WAY LINE (10.6' BEHIND EXISTING FACE OF CURB)
FL CONC CURB & GUTTER
FL CONC CURB GUTTER AND DRY'S NOT SURVEYED
ABBREVIATIONS
AC ASPHALT CONCRETE
AC ASBESTOS CEMENT (WATER)
BLDG BUILDING
BLVD BOLLARD
CI CAST IRON (WATER)
COMM COMMUNICATION
CONC CONCRETE
CTR CENTER
DBL DOUBLE
DWY DRIVEWAY
ELECTR/LE ELECTROLIER
ELEC ELECTRIC
FC FACE OF CURB
FD FOUND
FH FIRE HYDRANT
FL FLOWLINE
GR GRATE
GUTTER GUTTER
MON-1 AERIAL CONTROL MONUMENT
INV INVERT
IP IRON PIPE
JP JOINT POLE
LS LAND SURVEYOR
MAG MAGNETIC
MB MAILBOX
MTR METER
NO TAG NO TAG
PLUS OR MINUS
PA PLANTING AREA
PCL PARCEL
PEDS PEDESTAL
PUE PUBLIC UTILITY EASEMENT
PVMT PAVEMENT
R+M RECORD & MEASURED
RECMD RECORDED
RE REGISTERED ENGINEER
RIM RIM ELEVATION
REINF REINFORCED
RISER RISER
R/W RIGHT OF WAY
SDCB STORM DRAIN CATCH BASIN
S.D.E. STORM DRAIN EASEMENT
SDMH STORM DRAIN MANHOLE
SPKC SPIKE
SSCO SANITARY SEWER CLEANOUT
SSMH SANITARY SEWER MANHOLE
ST SET
TC TOP OF CURB
TELE TELEPHONE
THRU THROUGH
THRES THRESHOLD
TYP TYPICAL
UTIL UTILITY
WM WATER METER
WTR WATER
WV WATER VALVE
APN 030-121-08, -12, -13, -27 & -53
BOWMAN & WILLIAMS
CONSULTING CIVIL ENGINEERS
1011 CEDAR STREET
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BRYAN HAPPEE PLS 8229
TOPOGRAPHIC MAP AND BOUNDARY SURVEY
BEING THE LANDS OF
JOSEPH S. CALCAGNO JR. & KAREN C. CALCAGNO TRUSTEES - 3784 OR 893 (MAP), 5841 OR 420, #1998-0060854 & #2013-0006057
SITUATE IN RANCHO AGUAYO DEL RODEO
SANTA CRUZ COUNTY, CALIFORNIA
SCALE 1" = 20'
DRAWN ABF/DLH
JOB NO. 25488
DATE DECEMBER 28, 2015
CHECKED BPH
INDEX RODEO 2A
FIELDWORK: MB, ZH
DWG NAME 25488TPO
FILE NO. 25488
SHEET TP-1
OF 1
SURVEYED AT THE REQUEST OF MR. DON DROPPETS

Attachment C

Historic Survey

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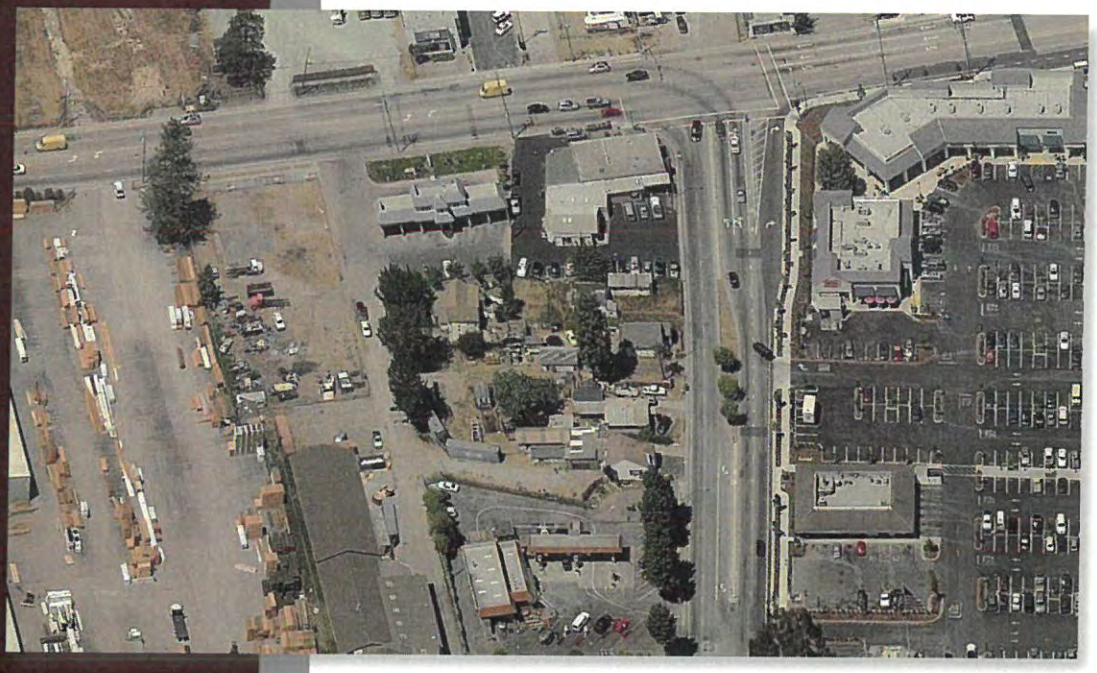
HISTORIC REPORT

Santa Cruz Nissan Dealership Project
2755-2821 41st Avenue and 3906 Soquel Avenue
Soquel, Santa Cruz County, California
(APNs #030-121-08, -12, -13, and -53)



Prepared for:

BLAM-JADE, LP
PO Box 1431
Visalia, CA 93279

12.16.2016

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PO Box 1332
San José, CA 95109-1332
http://www.archivesandarchitecture.com

Table of Contents

Cover image: 2016
(Site overview, from Bing)

Introduction

A Nissan automotive dealership (Santa Cruz Nissan) is being planned on 41st Avenue in the unincorporated community of Soquel, Santa Cruz County. The project includes construction of a new facility after the removal of existing houses and miscellaneous ancillary buildings and structures that currently exist on the project site.

The following report includes a historical background of the property, a summary of the regulatory context for this report, and findings as to potential impacts of the project on historic resources. Attached to the report are DPR523 recording forms that provide technical descriptions of the buildings and sites, statements of integrity, and evaluation of historical significance for the individual properties.

Archives & Architecture, LLC was contracted to prepare this report by BLAM-JADE, LP to meet the submittal requirements of the County of Santa Cruz Planning Department for their review of this project. The investigation was conducted by Franklin Maggi, Architectural Historian.

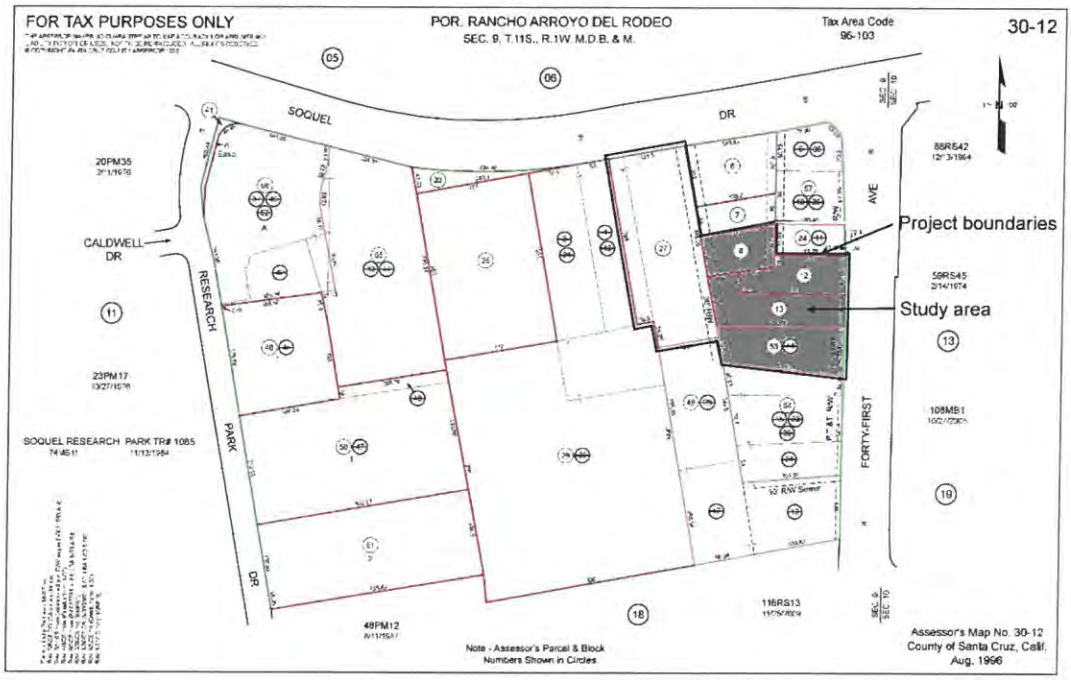
Project Description

Santa Cruz Nissan is proposing to construct a new auto dealership in 1.8 acres (five existing parcels) located near the intersection of Soquel Drive and 41st Avenue in Soquel, Santa Cruz County. The project will involve the demolition of four existing single-family homes and construction of approximately a 21,000-square foot facility comprised of an auto showroom, parts department, offices, service reception, and a separate six-bay service building. The project will include parking for new cars, service vehicles, parts department, offices, service reception, and a separate six-bay service building, as well as onsite parking for customers, with access from both 41st Avenue and Soquel Drive. At the time of preparation of this report, the entitlement process underway is to rezone the project site. The property is in an unincorporated county area and the review is therefore under the jurisdiction of the County of Santa Cruz.

Purpose and Methodology of this Study

This report is intended to clarify the potential historical significance of the property, and assess the impacts, if any, on any historic resources that might be identified as a part of the investigation. The methodology undertaken to conduct this review and prepare the report included a site survey performed by Franklin Maggi in late November 2016, and supplemental archival research that included a review of primary and secondary records at the Santa Cruz Public Library and the Santa Cruz County Recorder's Office. The research included use of online digital maps at the University of California Santa Cruz Map Library Collections, as well as use of census data and R.L. Polk & Co. city and county directories. The *Santa Cruz Sentinel* as well as its predecessor newspapers, the *Santa Cruz News* and *Santa Cruz Evening News*, were queried for information on the early owners and occupants.

Assessor's Map



Summary of Findings

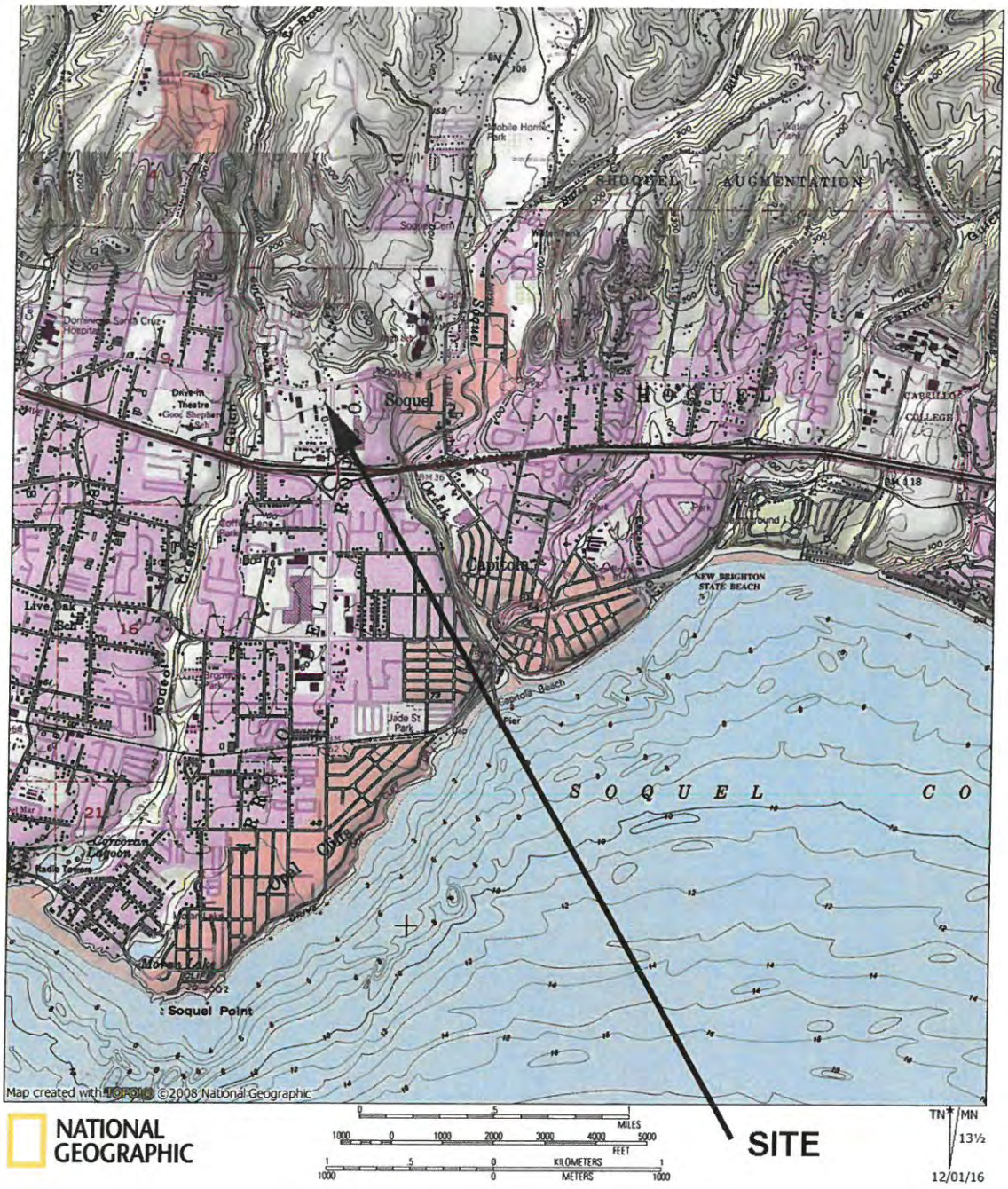
The property being reviewed for the Santa Cruz Nissan dealership project contains four residential buildings that are over 50 years in age. These four buildings are described and evaluated for historical significance in the attached DPR523 recording forms.

The report provides an additional narrative of the site history and context to better understand the physical development of the individual properties. It also provides an explanation of the regulatory context for this evaluation.

Most of the development of the property appears to have been undertaken by Lloyd Garrison Satterlee beginning in the mid-1920s. He planned to build a residential subdivision, but created a small auto tourist camp instead. The individual cottages and restaurant of this camp are now gone, and the remaining structures are reflections of Satterlee's subdivision of the property along 41st Street. The site today is no longer representative of this early history in an understandable way.

No persons of historical importance were found to be associated with the site, and the remaining buildings are not architecturally distinctive. The site and its buildings do not appear to meet the criteria for designation as historic resources by the County of Santa Cruz or listing on the California Register of Historical Resources, and demolition would not cause a significant effect on the environmental under the California Environmental Quality Act.

Location Map



USGS map of the Soquel/Capitola area along the California Coast, 1994 revision.

Background and Historic Context

The project area of the future Santa Cruz Nissan dealership was initially part of the *Rancho Arroyo del Rodeo,* granted on July 28, 1834 by Alta California's Mexican government under then Governor Figueroa to Francisco Rodriguez, a local resident and poet. The rancho consisted of a quarter of a league of land area along the coast between Soquel Creek and the Arroyo del Rodeo (Rodeo Creek). During California's Mexican period, Rodriguez, as well as neighboring Castro families, were known to roundup their cattle and stage rodeos in the natural amphitheater around the Arroyo del Rodeo at about where Highway One crosses the creek today. By the late 1840s, a mill had been constructed along Soquel Creek above where the town of Soquel now exists, operated by John Hames and John Daubenbiss.

After the discovery of gold in 1848, the population of California exploded as immigrants arrived from throughout the world. Following Statehood, in 1853 the United States government created the California Land Claims Commission to ascertain validity of the Mexican land titles by determining legal ownership and establishing fixed boundaries for Mexican-claimed real property. Hames and Daubenbiss had by then acquired the rancho and were the claimants for its 1473 acres, which was patented by the U.S. Land Commission on May 3, 1882. Hames had arrived in San Jose around 1844, and Daubenbiss, originally immigrating from Bavaria, had arrived in California the year before with the Hastings Party via the Oregon Territory. He served with Fremont's battalion during the hostilities with Mexico.

During the latter part of the nineteenth century, the Santa Cruz and Watsonville Road (now known as Soquel Drive) became the primary transportation route between the urbanizing centers of Santa Cruz and Watsonville. The area south of the road remained mostly in agriculture, with the first urban development occurring in a tract first called Fairview, located to the northwest of the Soquel Wharf and the mouth of the Soquel Creek.

During the nineteenth century, agricultural production in the area consisted of wheat, oats, and barley. This local area, which became known as Live Oak around what is now 17th Avenue, began a transition to poultry farming around the beginning of the twentieth century. The Santa Cruz area was considered ideal for poultry ranching due to its moderate climate. The Santa Cruz Poultry Association was established in 1895, and the first private egg exchange was attempted in 1912. Later in the twentieth century the Santa Cruz area was considered the second largest poultry production center in California, following Petaluma.

John Daubenbiss owned much of the land bordering Santa Cruz and Watsonville Road just west of Soquel, and established the road that would become 41st Avenue. By the late 1880s, he had begun to parcel some of the land just south of the road, and most of this land was sold by his estate after he died in 1896.

Historical Development of the Study Area

The earliest identified owner of the subject site after the death of John Daubenbiss appears to be William G. Kropf, a barber who lived and worked in Soquel. Kropf is listed as a barber in the 1900, 1910, and 1920 censuses, but by 1920 his wife Francis H. is listed as a poultry farmer, while William continued his business in Soquel – known popularly as "Billy the Barber."

William died in 1923, and it appears that Francis, then 67 years old, decided to sell the property shortly after. The Kropfs lived on Porter Street in Soquel, and no record was found of them living at the subject property.

By 1925, Lloyd G. Satterlee, a builder in Dearborn, Michigan, had visited California several times with his wife Carrie as they looked for a healthier location for their retirement years. That year they bought a lot on East Cliff Drive, and began building a home. Before completed however, they sold the house, and in May 1926 bought four and a half acres at the southwest corner of the Santa Cruz and Watsonville Highway and 41st Avenue (the Kropf property). The process of the actual conveyance is not clear however, as Satterlee's deed shows him buying the property from Santa Cruz County Title (OR Volume 64, Page 471, May 13, 1926). The legal description only provides some metes and bounds and reference to the Estate of John Daubenbiss. The property extended south from Santa Cruz and Watsonville Road to the present Redwood Shops driveway on 41st Avenue, and to the west along the rear of the long deep building that currently houses Tepui Tents, Discretion Brewing, and others.

A September news account later in 1926 notes that Satterlee had built two houses and a service station at the site. The first house had been sold before he completed it, and the second house was to become his and Carrie's residence. The September article in the *Santa Cruz News* reported that he was planning a larger development on the site called Rose Lawn Terrace Court that would include thirty more homes (of which thirteen would be duplexes), a store, and a cafeteria as well as the gas service station. The project was to be built with a partner, J. A. Brown, who appears to have owned a local bulb growing business and dairy. The residences would be a mix of rentals and saleable units. The complex was intended to have a clubhouse. During this period, Brown appears to have also operated an Ice Cream store in Santa Cruz per city directories.

Satterlee had been an experienced building contractor in Dearborn, Michigan, and it was reported in the Santa Cruz newspaper that he had created a large residential subdivision near the Ford Motor Plant prior to arriving in California.

The historic record is unclear as to what happened to the Rose Lawn Terrace Court project. The newspaper had indicated that by the end of 1926, Satterlee had built two houses, and a third house may have already existed on the site associated with the prior Kropf ownership. In researching this property, there were several recorded transactions found involving the Satterlees during the next five years, involving multiple financing

arrangements that indicate that he was struggling with the construction funding related to his project.

In 1929, Satterlee sold the west portion of the property to W. E. Bassett, retaining a deed of trust, which was paid off in December 1931. Little is known of Bassett, but by 1931 a row of small structures is shown on the Bassett property in the aerial below.

The 1930 census however shows a different arrangement of owners. The corner house is rented by James and Harriet McCann, tourist camp merchants. Satterlee is identified as the proprietor of the tourist camp, living with Carrie in the second house from the corner, and Charles and Marie Christensen own and live in the third house. They are also listed proprietors of a tourist camp. Local directories during this period list a number of tourist camps in Santa Cruz County, and it was likely that the Satterlee property may be that named Pleasant View.

When the automobile made its appearance in the United States at the turn of the twentieth century, drivers had their choice of three million miles of mostly dirt roads on which to drive. This transportation system had served horse-drawn vehicles used largely for short-distance travel. By 1910, trains routinely transported almost a billion passengers a year, and lodging for the long-distance traveler centered around hotels near railroad depots or city downtown districts.

Early automobile owners tended to be adventuresome, and around 1910 some of these affluent individualists began taking their cars out for long tramps across America as they were called. This new class of traveler eschewed the downtown hotels and camped with their automobiles by the side of the road. Rugged driving conditions seemed to go along with the roughing it in the open, which was romanticized in newspapers and magazines which attracted new gypsy tourists to the road.

Registered automobiles in the United States grew from 500,000 in 1910 to eight million in 1920, and an estimated 20,000 were making cross-country trips in 1920. What was innocently called gypsying in 1910 was viewed as squatting by 1920, as more tourists made roadside litter and property damage a problem for farmers. "No Trespassing" signs became common along roadsides. Autocampers found it more difficult to find sites with clean water, exposing them to typhoid and other diseases.

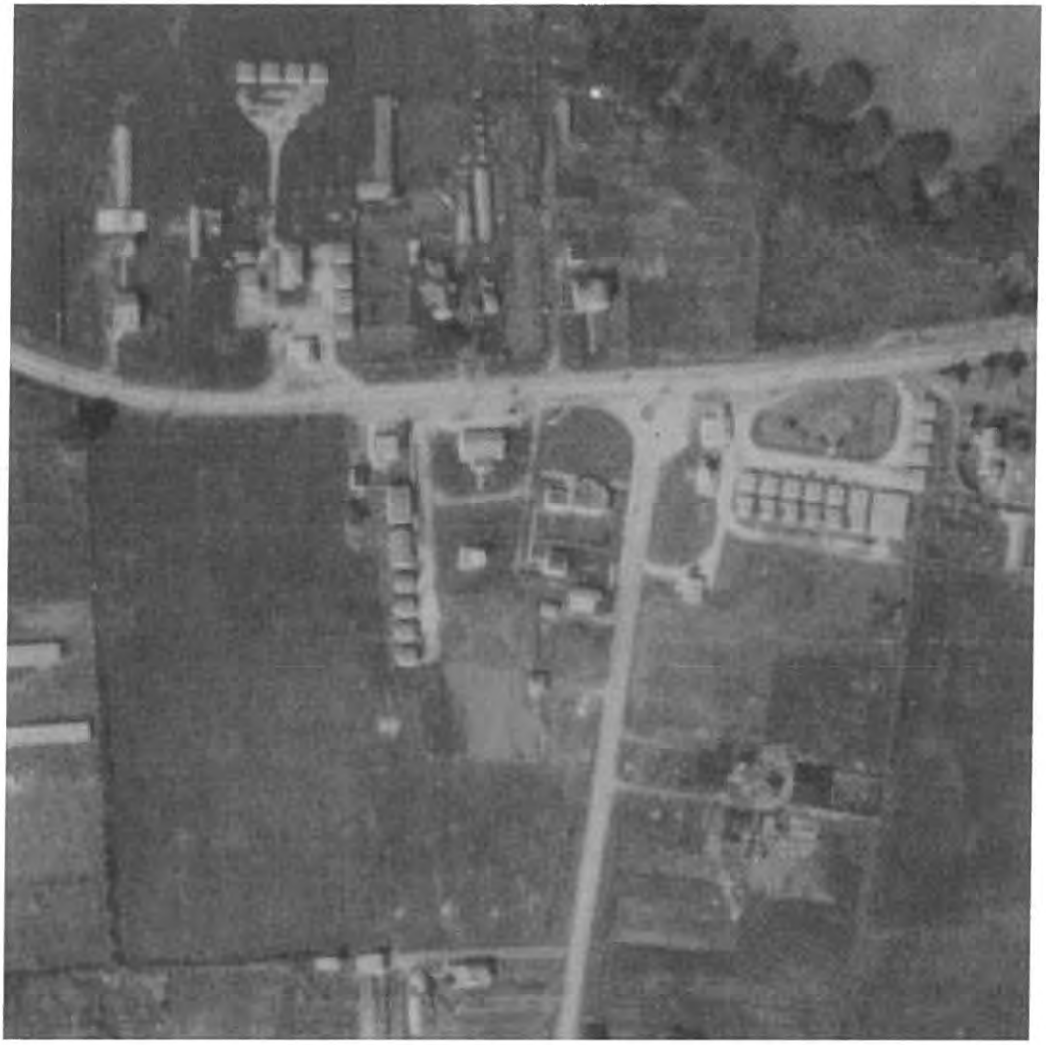
Around 1920, free campgrounds promoted by local chambers of commerce began to appear that preserved order, protected local property, and safeguarded the health and safety of the auto tourists, while local businesses targeted the campers with services. The free auto camps were short-lived however as automobile use increased nation-wide, and tourists demanded better amenities. By the mid-1920s, privately operated auto or tourist camps began to be established, often including gasoline service station, convenience stores for provisions, and restaurants, as well as common kitchen and bath facilities.

Most of the new privately-operated camps were strategically located along highways near populated areas. As the novelty of camping was declining, the late-1920s saw the creation of cottage or cabin camps. These new camps continued to be built into the early

years of Depression, as hard times brought many more tourists to auto camps. Automobile vacation travel continued to be popular during the Depression, and while profits were not good, auto camp owners could continue to make a living. Hotels, on the other hand, fared very poorly during this period.

As can be shown on the 1931 aerial below, the intersection of Santa Cruz and Watsonville Road and 41st Avenue contained a cluster of small cottages. It could not be determined to what degree Satterlee was involved with multiple properties at this location. During this period, there are at least a dozen such tourist camps listed in local directories, although this local west of Soquel is not specifically identified.

The 1931 aerial (Santa Cruz County Flight C1437) shows two of the structures that currently exist on the subject property; 2821 41st Avenue, and 3906 Soquel Drive. The structure at 3906 Soquel Drive appears smaller than what exists on the site today.



This 1931 aerial shows the intersection of Soquel Drive and 41st Avenue. The large building adjacent Soquel Drive appears to be the restaurant.

In February of 1932, Satterlee sold the property at 2755 41st Avenue to Adam A. & Delilah G. Stidham (OR Volume 222, Page 172, Feb. 9, 1932). That property now contains a circa 1932 house that was likely built by Adam Stidham, a Sana Cruz carpenter.

A large house (no longer extant) is also shown on the aerial where the parking lot for King's Paint and Paper store is now located. A larger building along Santa Cruz and Watsonville Highway (not now on the subject site – the site now contains a car wash) is likely the restaurant Satterlee built that was later addressed as 3906 Soquel Drive – the address now used for the landlocked parcel at the center of the site. That restaurant was initially called the Miller Kwick Grill. The July 7, 1928, the *Santa Cruz News* mentioned that the new restaurant was attracting many visitors, many who were staying in the nearby cottages. The restaurant building was owned but leased by the Satterlees.

The Satterlees appear to have sold off the cottages to W. E. Bassett that Lloyd had built on the west side of his property, although in the 1930 census Satterlee is still shown as proprietor. Then in 1935, the Satterlees sold the restaurant property to Allen and Hazel Thole after a court case with the operators. In later years, the restaurant went by the name of Garbini's Inn, which remained in operation until at least the mid-1960s.

After selling the restaurant, the land-locked parcel went through several failed transfers until apparently sold to Olive May and Albert Maxwell in 1936. That same year the south end of the property adjacent the Redwood Shops driveway was sold to Eli and Emma Ashwood. Eli was a retired carpenter and farmer who was living in San Luis Obispo with his wife Emma.

It is not known when the portion of the site at the corner of Soquel Drive and 41st Avenue was parceled and sold off. At least two houses had existed on that corner. The third house from the corner, now vacant and addressed as 2831 41st Avenue, was the last property owned by the Satterlee family. It was sold in 1949 by the executor of Carrie Satterlee's estate, Ivan Satterlee, Lloyd and Carrie's son.

The 1931 aerial on the previous page shows a scattering of small cottage-sized structures around all three sides of the intersection. The long deep structures to the north and west are poultry-related buildings - typical of the greater Live Oak area during this period. Whether these square and rectangular buildings constitute the Satterlee's tourist camp or Pleasant View is not known.

By the time of the 1940 federal census, Lloyd and Carrie Satterlee were living in the second house from the corner (2831 41st Avenue) and are no longer listed as camp proprietors. The Maxwells were living adjacent to them, possibly in the land-locked parcel to their rear, but more likely at the house to the south at 2815 41st Avenue.

The house at the corner of the intersection facing 41st Avenue was by then occupied by Stanley and Ruby Evans, who are identified in the census as owning a store, gas station, and tourist camp. Adjacent to Stanley and Ruby along Watsonville Highway are Edgar and Ellen Evans, who are also listed as owners of a store, gas station, and tourist camp. The Evans family had been on the site since at least 1935 per census takers in 1940.

Policy and Regulatory Context

County of Santa Cruz Ordinance

The County of Santa Cruz, in adopting Chapter 16.42 of the County Code, finds that the protection, enhancement, perpetuation and use of structures, districts, lands, and neighborhoods of historic, architectural, and engineering significance, located within the County of Santa Cruz, are of cultural and aesthetic benefit to the community, and that respecting the heritage of the County enhances the economic, cultural, and aesthetic standing of the County.

Under the ordinance, a "historic resource" is meant to be any structure, object, site, property, or district which has a special historical, archaeological, cultural or aesthetic interest or value as part of the development, heritage, or cultural characteristics of the County, State, or Nation, and which either has been listed in the County General Plan, or has been listed in the Historic Resources Inventory adopted pursuant to Section 16.42.080 of this Chapter and has a rating of significance of NR-1, NR-2, NR-3, NR-4, or NR-5.

The criteria for designation as a historic resource are similar to those for the California Register of Historical Resources. Under the ordinance designation criteria, structures, objects, sites and districts are designated as historic resources if, and only if, they meet one or more of the following criteria and have retained their architectural integrity and historic value:

1. The resource is associated with a person of local, State or national historical significance.
2. The resource is associated with an historic event or thematic activity of local, State or national importance.
3. The resource is representative of a distinct architectural style and/or construction method of a particular historic period or way of life, or the resource represents the work of a master builder or architect or possesses high artistic values.
4. The resource has yielded, or may likely yield, information important to history.

Chapter 16.42 establishes the County's historic resources inventory, and requires that an historic review consistent with the provisions of the Chapter be conducted prior to carrying out of activities or final County approval of projects which affect historic resources.

Under section 16.42.030 F of Definitions, a "historic documentation report" is a report providing documentation of the historic significance and physical appearance of an historic resource and is prepared in accordance with the guidelines established by the Historic Resources Commission. The report may take the form of a narrative with attached photographs and includes California Department of Parks and Recreation Historic Inventory Form. The current version of this form series is DPR523.

California Environmental Quality Act (CEQA)

The California Environmental Quality Act (CEQA) requires regulatory compliance in regards to projects involving historic resources throughout the state. Under CEQA, public agencies must consider the effects of their actions on historic resources—a project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment (Public Resources Code, Section 21084.1).

The CEQA Guidelines define a significant resource as any resource listed in or determined to be eligible for listing in the California Register of Historical Resources (California Register) (see Public Resources Code, Section 21084.1 and CEQA Guidelines Section 15064.5 (a) and (b)).

The California Register of Historical Resources was created to identify resources deemed worthy of preservation and was modeled closely after the National Register of Historic Places. The criteria are nearly identical to those of the National Register, which includes resources of local, state, and regional and/or national levels of significance.

Under California Code of Regulation Section 4852(b) and Public Resources Code Section 5024.1, an historical resource generally must be greater than 50 years old and must be significant at the local, state, or national level under one or more of the following four criteria:

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

Properties of local significance that have been designated under a local preservation ordinance (local landmarks register or landmark districts) or that have been identified in a local historical resources inventory may be eligible for listing in the California Register and are presumed to be historical resources for the purposes of CEQA unless a preponderance of evidence indicates otherwise (Public Resources Code, Section 5024.1g; California Code of Regulations, Title 14, Section 4850).

A historic evaluation, as presented in this report and the attached recording forms, is used by public agencies to determine the potential for historical significance of a building, structure, object, district and/or site under CEQA, which then considers the impact of the project on this significance when applicable.

Integrity

California Code of Regulations Section 4852(c) addresses the issue of "integrity" which is necessary for eligibility for the California Register. Integrity is defined as "the authenticity of an historical resource's physical identity evidenced by the survival of characteristics that existed during the resource's period of significance." Section 4852(c) provides that historical resources eligible for listing in the California Register must meet one of the criteria for significance defined by 4852(b)(1 through 4), and retain enough of their historic character of appearance to be recognizable as historical resources and to convey the reasons for their significance. Integrity is evaluated with regard to the retention of location, design, setting, materials, workmanship, feeling, and association. It must also be judged with reference to the particular criteria under which a resource is proposed for eligibility. Alterations over time to a resource or historic changes in its use may themselves have historical, cultural, or architectural significance.

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Miller's Kwick Grill, April 14, 1930.

Carrie Satterlee obituary, Feb. 27, 1941.

Lloyd Satterlee obituary, Feb. 1, 1949.

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United States Census Bureau; Population census of Santa Cruz County, 1900-1940.

United States Geological Survey; Soquel and Santa Cruz quadrangles, 1914, 1929, 1940, 1954, 1968.

Qualifications

The principal author of this report was Franklin Maggi, Architectural Historian, who consults in the field of historic architecture and urban development. Mr. Maggi has a professional degree in architecture with an area of concentration in architectural history from the University of California, Berkeley.

Franklin Maggi meets the Secretary of the Interior's qualifications to perform identification, evaluation, registration, and treatment activities within the field of Architectural History in compliance with state and federal environmental laws.

Attachments

DPR523 forms

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # _____
HRI # _____
Trinomial _____
NRHP Status Code _____
Other Listings _____
Review Code _____ Reviewer _____ Date _____

Page 1 of 6 *Resource Name or #: (Assigned by recorder) 3906 Soquel Drive

P1. Other Identifier: None

*P2. Location: ☐ Not for Publication ☒ Unrestricted *a. County Santa Cruz
and (P2b and P2c or P2d. Attach a Location Map as necessary.)

*b. USGS 7.5' Quad Soquel Date 1994 T.11S.; R.1W.; Mount Diablo B.M.

c. Address 3906 Soquel Drive, City Soquel Zip 95073

d. UTM: (Give more than one for large and/or linear resources) Zone 10S; 592052mE/ 4093897mN

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)
Assessor's Parcel Number: 030-121-08,
south side of Soquel Drive west of 41st Avenue.

*P3a Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

This house, which appears to be an assemblage of two separate buildings, is presently used for residential purposes and is land-locked with access via an easement from Soquel Drive. The west portion of the building appears to have been built in the mid-1920s, and the easterly portion attached later and is likely of earlier vintage. The actual sequence of assemblage is unknown.

The small west portion of the house has a flat to low-slope roof. The west and north facades rise above the roofline as false fronts, and had originally faced a small assemblage of tourist cabins to the west.

(Continued on page 2, DPR523L)

*P3b. Resource Attributes: (List attributes and codes) HP2. Single family property

*P4 Resources Present: ☒ Building ☐ Structure ☐ Object ☐ Site ☐ District ☐ Element of District ☐ Other (Isolates, etc.)

P5b. Description of Photo: (View, date, accession #)

View facing east, December 2016.

*P6. Date Constructed/Age and Sources:
☒ Historic ☐ Prehistoric ☐ Both

Circa 1915 and later, historic aerial photograph.

*P7. Owner and Address:

Calcagno et al
PO Box 62
Soquel CA 95073

*P8. Recorded by: (Name, affiliation, and address)

Franklin Maggi
Archives & Architecture LLC
PO Box 1332
San Jose CA 95109-1332

*P9. Date Recorded: Dec. 16, 2016

*P10. Survey Type: (Describe)
Intensive

*P11. Report Citation: (Cite survey report and other sources, or enter "none".)

Archives & Architecture LLC: Historic Report, Nissan of Soquel Dealership Project, 2016.

*Attachments: ☐ NONE ☐ Location Map ☐ Sketch Map ☒ Continuation Sheet ☒ Building, Structure and Object Record ☐ Archaeological Record ☐ District Record ☐ Linear Feature Record ☐ Milling State Record ☐ Rock Art Record ☐ Artifact Record ☐ Photograph Record ☐ Other (List)

(Continued from previous page, DPR523A, P3a)

These two false-front walls are of simple wood construction, covered with clapboard drop siding, and trimmed with flat boards at the corners, windows, and doors. It sits close to the ground, and the parapets are minimal, covered with overlap from the built-up roofing.

The fenestration is mostly modern replacement aluminum sliders, except for small multi-lite fixed sash along the south elevation which appear to be salvaged. A short wing is stubbed on the south elevation where this structure abuts a larger dwelling.

The exterior door that faces west is flush with the wall, and protected by a makeshift cantilevered fixed awning composed of wood framing and composition shingle roofing. It appears that this was retrofitted into the wall, as the flashing above was hacked into the siding. The door itself is a two-panel type with dual glazing.

Attached on the east side of the previously discussed structure and rising above it is an L-shaped vernacular house of twentieth century construction. Likely built around 1915, it has a front wing facing 41st Avenue that is gable faced, has a mirrored gable to the rear, and a main body extending north parallel with 41st Avenue with a side gable roof. The roof eaves have open rafter tails, indicating its twentieth century origins.

The structure does not appear on a 1931 aerial, and was likely moved onto the site and attached later. The siding is similar to that of the rear structure, and the fenestration is a mix of aluminum sliders and old multi-pane sash.

The roof is covered with temporary building paper, which continues onto the flat roof of the west portion of the building.

The east elevation has an entry door, but this wall appears to have once contained a wide opening for automobiles or carriages that has since been infilled with matching siding. The inner part of the L of the building has been enclosed with walls and large slider windows. This enclosure has a low-sloped roof over closely spaced rafters that are exposed above the outside wall.

The site is in a deteriorated condition and has some scattered residential landscaping. A wide rigidly attached car canopy has been attached to the building on the south side. The site is fenced, and has no access to 41st Avenue. A gate provides access on the west side of the property from an easement to Soquel Drive.

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
Primary #
HRI #

BUILDING, STRUCTURE, AND OBJECT RECORD

*NRHP Status Code 6z

*Resource Name or # (Assigned by recorder) 3906 Soquel Drive

B1. Historic Name: None known / possible Pleasant View Tourist Camp common area support building

B2. Common Name: None

B3. Original use: Unknown/ tourist camp B4. Present Use: Single family residential

*B5. Architectural Style: Vernacular / no style

*B6. Construction History: (Construction date, alterations, and date of alterations)

Small rectangular wing on west side of structure built by 1931. L-shaped house on east side likely moved onto the site sometime later, of 1915 vintage.

*B7. Moved? ☐ No ☐ Yes ☒ Unknown Date: after 1931 Original Location: Unknown

*B8. Related Features:

None

B9a Architect: Unknown b. Builder: Unknown

*B10. Significance: Theme Residential architecture / tourism Area Soquel

Period of Significance 1930 Property Type Residential Applicable Criteria None

(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

The property at 3906 Soquel Drive in the unincorporated community of Soquel in the County of Santa Cruz and is a land-locked parcel with access to Soquel Drive just west of 41st Avenue via an easement through multiple adjacent properties. The parcel was created sometime in the mid-1930s by Lloyd Satterlee out of a larger 4.5 acres property he had acquired in 1926, and sold to Olive May, a waitress at the restaurant associated with the tourist camp that the Satterlees had established, and her husband Albert H. Maxwell, first in 1936, but then resold around a year and a half later to Albert Jr. and Elzeen Underwood.

The young Underwoods lived in rural Monterey County, and do not appear to have lived on the property or operated the tourist camp. They likely were short-term owners.

In 1926, Lloyd G. and Carrie Satterlee had established a tourist camp within the northwesterly portions of their property, and it appears that the small westerly portion of the house that exists today at 3906 Soquel Drive was initially a service building associated with the camp. The camp continued to operate into the 1940s by a different proprietor, and it appears that the subject property remained associated with the camp or its restaurant on Soquel Drive into the 1960s.

(Continued on next page)

B11. Additional Resource Attributes: (List attributes and codes) None

*B12. References:

R. L. Polk & Company; Santa Cruz city and county directories 1922-1988.

Santa Cruz County Recorder; official records, deeds, and maps (see citations).

United States Census Bureau; Population census of Santa Cruz County, 1900-1940.

B13. Remarks: Proposed demolition

*B14. Evaluator: Franklin Maggi

*Date of Evaluation: December 16, 2016

(This space reserved for official comments.)

(Continued from previous page, DPR523b, B10)

During the 1950s and 1960s, the restaurant was operated by Guilio Garbini, and by that time a member of the Garbini family appears to have lived in the subject building. By that time, it had likely expanded with the addition to the west, but remained inaccessible from 41st Avenue.

The merging of the two structures included modifications to the fenestration and expansion of the building to the west. In the late 1960s, the subject property became home to a series of renters, as it continues into the present.

Integrity

The house at 3609 Soquel Drive retains little integrity to its original design and character per the National Register's seven aspects of historical integrity. It maintains its original location on what was a tourist camp on Soquel Drive in unincorporated Santa Cruz County. The camp buildings are no longer extant except for this small structure, and the surrounding sites are now a mix of uses. The original structure was expanded to the west sometime at mid-century, and the structure moved onto the site is vernacular and not well defined as a stand-alone house or any other type of building type. Most of the fenestration was replaced at mid-century, and a large garage door on the west side was also closed in. The construction of the structure is representative of 1920s or 1920s workmanship, but is compromised and the workmanship is unremarkable in general. The building does not represent its original form or its original scale and feeling associated with either the original tourist camp use or the house that was moved onto the site.

EVALUATION

The immediate area around this property is a mix of residential properties from the first half of the twentieth century and later commercial buildings. The neighborhood is now characterized by mostly contemporary commercial development that has evolved along both the Soquel Drive and 41st Avenue corridors. A visual assessment of the area does not indicate an identifiable district of historic properties in the vicinity, and the early tourist camp uses in the area are no longer evident.

The building appears to have initially been associated with Lloyd and Carrie Satterliee. Although the Satterlees developed some properties in the immediate area as well as what is believed to be the Pleasant View tourist camp, the historic record does not reveal a level of importance that would make their association with the property historically significant. Later occupants of the building appear to have always been renters, and nothing was learned of significance of this chain of occupants.

The house itself is vernacular building composed of two different structures. It is not architecturally distinctive within the larger context of vernacular buildings of the period. The building has a low degree of integrity to its original design, it does not significantly represent the any style or method of construction of interest.

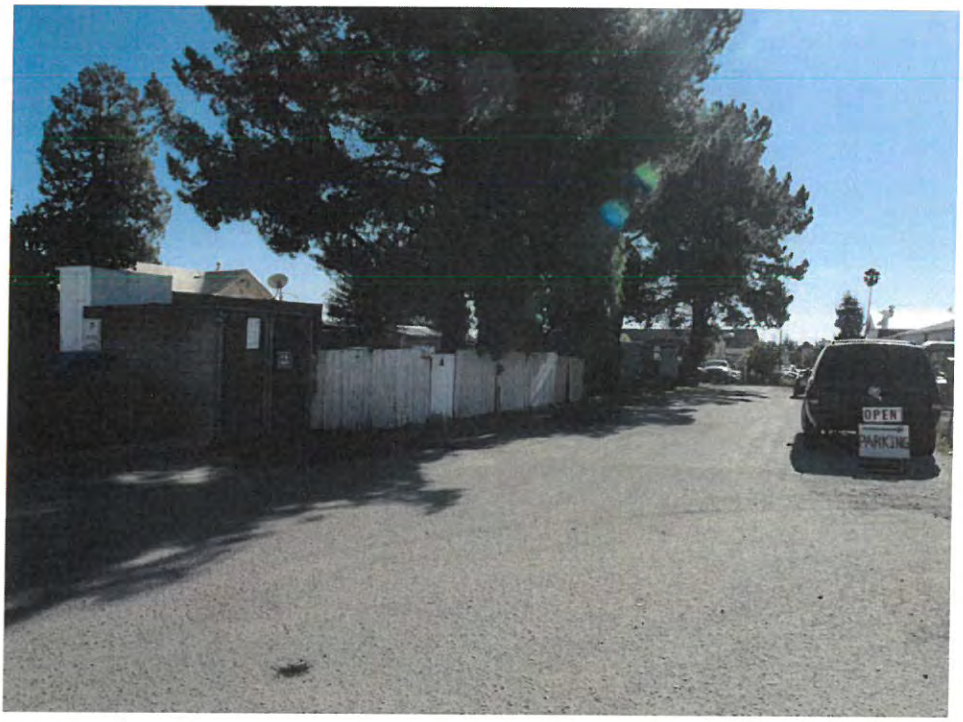
Because the house is not a distinctive example of its style and type, is not associated with important personages in a primary way, nor is the site of important events or representative of patterns important to the history of the County of Santa, the property does not appear eligible for the National Register of Historic Places under any of the applicable Criteria (A), (B), or (C) or the California Register of Historical Resources under (1), (2), or (3).

When considering the property under the County of Santa Cruz Ordinance No. 4922 (Chapter 16.42 of the County Code relating to historic preservation), a historic resource is defined as *Any structure, object, site, property, or district which has a special historical, archaeological, cultural or aesthetic interest or value as part of the development, heritage, or cultural characteristics of the County, State, or Nation, and which either has been listed in the County General Plan, or has been listed in the Historic Resources Inventory adopted pursuant to Section 16.42.080 of this Chapter and has a rating of significance of NR-1, NR-2, NR-3, NR-4, or NR-5.* In considering and evaluating 3906 Soquel Drive under the Santa Cruz County Code, the property does not appear to qualify for listing on the Inventory of Historic Resources under the applicable criteria as required under Section 16.42.080(c).

At driveway entry, viewed facing northeast.

From west side of building, viewed facing southeast.

East side of house, viewed facing southwest.



Property driveway easement and west property line, viewed facing south.

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # _____
HRI # _____
Trinomial _____
NRHP Status Code _____
Other Listings _____
Review Code _____ Reviewer _____ Date _____

*Resource Name or #: (Assigned by recorder) 2755 41st Avenue

P1. Other Identifier: None

*P2. Location: ☐ Not for Publication ☒ Unrestricted *a. County Santa Cruz
and (P2b and P2c or P2d. Attach a Location Map as necessary.)

*b. USGS 7.5' Quad Soquel Date 1994 T.11S.; R.1W.; Mount Diablo B.M.

c. Address 2755 41st Avenue City Soquel Zip 95073

d. UTM: (Give more than one for large and/or linear resources) Zone 10S; 592090mE/ 4093854mN

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)
Assessor's Parcel Number: 030-121-53,
west side of 41st Avenue south of Soquel Drive.

*P3a Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

Located just north of the street exit from Cruz Car Wash and raised slightly above, this one-story Minimal Traditional house was built in the early 1930s as a larger 4.5-acre parcel was being subdivided. The property is deep, extending to a private drive that has access to Soquel Avenue, and that angles into the rear of this property leading to some ancillary storage buildings behind the house and attached garage. The current parcel size is 0.39 acre, which appears to have been split off in recent times from the parcel to the south.

The house has a moderately steep pitched roof with stepped cross gables and a front protruding wing topped by a front facing gable. To the right of the front wing is a driveway that leads to an attached garage that has been converted to living use.
(Continued on page 2, DPR523L)

*P3b. Resource Attributes: (List attributes and codes) HP2. Single family property

*P4 Resources Present: ☒ Building ☐ Structure ☐ Object ☐ Site ☐ District ☐ Element of District ☐ Other (Isolates, etc.)

P5b. Description of Photo: (View, date, accession #)

View facing west, December 2016.

*P6. Date Constructed/Age and Sources:
☒ Historic ☐ Prehistoric ☐ Both

Circa 1932, deeds, historic aerial photograph.

*P7. Owner and Address:

Calcagno et al
PO Box 62
Soquel CA 95073

*P8. Recorded by: (Name, affiliation, and address)

Franklin Maggi
Archives & Architecture LLC
PO Box 1332
San Jose CA 95109-1332

*P9. Date Recorded: Dec. 16, 2016

*P10. Survey Type: (Describe)
Intensive

*P11. Report Citation: (Cite survey report and other sources, or enter "none".)
Archives & Architecture LLC: Historic Report, Nissan of Soquel Dealership Project, 2016.

*Attachments: ☐ NONE ☐ Location Map ☐ Sketch Map ☒ Continuation Sheet ☒ Building, Structure and Object Record ☐ Archaeological Record ☐ District Record ☐ Linear Feature Record ☐ Milling State Record ☐ Rock Art Record ☐ Artifact Record ☐ Photograph Record ☐ Other (List)

(Continued from previous page, DPR523A, P3a)

The rake eaves of the roof are nearly flush with the walls below, and are trimmed with narrow wood trim covered with metal edge flashing. The lower eaves have metal ogee gutters fixed against the walls. The tight roof profile gives the building an English Cottage appearance, although the design is minimal and typical of late versions of this revival style that had been popular during the 1920s. The current roofing consists of composition shingles.

The walls are stucco-clad and have a hand troweled texture. The stucco molding around the windows and doors appears mostly original.

The front entry is set within the front protruding wing, but recessed to align with the front wall that is set back to the left. The recess creates an entry alcove that is finished with stucco without trim, giving the impression that the alcove is carved into the front mass.

Adjacent to the entry to the left is a stucco-clad chimney that is integrated into the massing. The front wall terminates into a thin shed roof set below the line of the main roof above. The front chimney wall is set back from the base, rising in a curve.

Fenestration consists of wood windows that include a fixed focal window in the front wing that appears to be a replacement, a large fixed ten-lite focal window on the left front, a side focal window with top lites, flanked by single- or double-hung sash, and other double-hung windows with upper multi-lite sash or both upper and lower multi-lite sash. The upper sash in the hung windows have dog-ears. The garage door has what appears to be a replacement aluminum sliding door.

The house has a rear extension at its northwest corner, with an additional storage building and other portable buildings set further back into the site. Fencing encloses the rear of the site from the south, but the assessor's map of the property shows this fence mis-aligned with the side property line, with the car wash exit driveway crossing the front corner of the property.

The site is landscaped with residential compatible plantings at the front, although the area directly in front of the house along 41st Avenue has been concreted-in for parking. The building appears to be in very good condition, although the rear buildings and open rear yard appears heavily used and lacks any distinguishing elements consistent with the residential use.

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
BUILDING, STRUCTURE, AND OBJECT RECORD

Primary #
HRI #

*NRHP Status Code 6z

*Resource Name or # (Assigned by recorder) 2755 41st Avenue

B1. Historic Name: Stidham Spec House
B2. Common Name: None
B3. Original use: Single family residential B4. Present Use: Single family residential + secondary use
*B5. Architectural Style: Minimal Traditional
*B6. Construction History: (Construction date, alterations, and date of alterations)
Constructed around 1932 or later. Additions to rear at date unknown.

*B7. Moved? ☒ No ☐ Yes ☐ Unknown Date: N/a Original Location: N/a
*B8. Related Features:

None

B9a Architect: Unknown b. Builder: Unknown (prob. Adam Stidham)
*B10. Significance: Theme Residential architecture Area Soquel
Period of Significance 1930 Property Type Residential Applicable Criteria None
(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

The property at 2755 41st Street was initially created by deed in early 1932 when Lloyd and Carrie Satterlee sold the parcel to Arthur and Delilah Stidham. Both born in Kentucky, they were living in Santa Cruz at the time, and it is likely the house was a speculative venture, as Adam was a carpenter by trade. It does not appear that they ever lived on the property. The parcel was created by Lloyd Satterlee out of a larger 4.5 acres property he had acquired in 1926.

The Stidhams may have continued to own the property for a while, as by the time of the 1940 census it was occupied by renters Orville and Margaret Warner. Orville was at the time working for the W.P.A. on flood control, and they had moved to the Soquel area from Yorba Linda just a few years earlier.

In 1926, Lloyd G. and Carrie Satterlee had established a tourist camp within the northwesterly portions of their property, and it appears that the internal private driveway to the cottages entered from Soquel Drive and had planned to turned to 41st Avenue just south of where the house at 2755 was built. The camp continued to operate into the 1940s by a different proprietor, and it appears that the subject property at some point included the driveway as a part of the rear yard.

(Continued on next page)

B11. Additional Resource Attributes: (List attributes and codes) None

*B12. References:

R. L. Polk & Company; Santa Cruz city and county directories 1922-1988.

Santa Cruz County Recorder; official records, deeds, and maps (see citations).

United States Census Bureau; Population census of Santa Cruz County, 1900-1940.

B13. Remarks: Proposed demolition

*B14. Evaluator: Franklin Maggi

*Date of Evaluation: December 16, 2016

(This space reserved for official comments.)

(Continued from previous page, DPR523b, B10)

By 1950, the property had been acquired by Bartolomeo Calleri and his wife Louise. The Calleri family had been farmers in Hollister, and apparently retired to this house, as by 1950 Barolomeo was seventy years old. He died in 1969. By the time that Louise died in 1978, she had moved to Aptos. Property ownership and occupants after 1975 was not investigated as a part of this recording.

Integrity

The house at 2755 41st Avenue retains substantial integrity to its original design and character per the National Register's seven aspects of historical integrity. It maintains its original location to the southeast of a tourist camp that was on Soquel Drive in unincorporated Santa Cruz County. The camp buildings are no longer extant, but houses built by the proprietor of the camp still exist along 41st Avenue. The original structure has been expanded to the rear, and the attached garage has been converted. The addition and conversion have not disrupted the residential architecture of the original house from the street, and it maintains its original building type. The fenestration is mostly original. The construction of the structure is representative of 1930 residential building and workmanship, and the original design has not been comprised. The building represents its original form and its scale and feeling.

EVALUATION

The immediate area around this property is a mix of residential properties from the first half of the twentieth century and later commercial buildings. The neighborhood is now characterized by mostly contemporary commercial development that has evolved along both the Soquel Drive and 41st Avenue corridors. A visual assessment of the area does not indicate an identifiable district of historic properties in the vicinity, and the early tourist camp uses in the area are no longer evident.

The house appears to have initially been associated with Adam and Delilah Stidham. The Stidhams were investigated for important contributions that would make their association with the property historically significant, but no information of note was found. Later occupants of the building were also considered, but nothing was learned of significance of this chain of owners/occupants.

The house itself is Minimal Traditional building with some aspects of English Cottage revival architecture. It is not architecturally distinctive within the larger context of Minimal Tradition buildings of the period. The building has a high degree of integrity to its original design, and does continue to represent the style in which it was built in.

Because the house is not a distinctive example of its style and type, is not associated with important personages in a primary way, nor is the site of important events or representative of patterns important to the history of the County of Santa, the property does not appear eligible for the National Register of Historic Places under any of the applicable Criteria (A), (B), or (C) or the California Register of Historical Resources under (1), (2), or (3).

When considering the property under the County of Santa Cruz Ordinance No. 4922 (Chapter 16.42 of the County Code relating to historic preservation), a historic resource is defined as *Any structure, object, site, property, or district which has a special historical, archaeological, cultural or aesthetic interest or value as part of the development, heritage, or cultural characteristics of the County, State, or Nation, and which either has been listed in the County General Plan, or has been listed in the Historic Resources Inventory adopted pursuant to Section 16.42.080 of this Chapter and has a rating of significance of NR-1, NR-2, NR-3, NR-4, or NR-5.* In considering and evaluating 2755 41st Avenue under the Santa Cruz County Code, the property does not appear to qualify for listing on the Inventory of Historic Resources under the applicable criteria as required under Section 16.42.080(c).

Viewed facing north at sidewalk.

Side elevation at car wash, viewed facing northwest.

Front façade viewed facing southwest with car wash in distance.

Rear entry to property from private driveway from Soquel Drive.

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # _____
HRI # _____
Trinomial _____
NRHP Status Code _____
Other Listings _____
Review Code _____ Reviewer _____ Date _____

*Resource Name or #: (Assigned by recorder) 2815 41st Avenue

P1. Other Identifier: None

*P2. Location: ☐ Not for Publication ☒ Unrestricted *a. County Santa Cruz
and (P2b and P2c or P2d. Attach a Location Map as necessary.)

*b. USGS 7.5' Quad Soquel Date 1994 T.11S.; R.1W.; Mount Diablo B.M.

c. Address 2815 41st Avenue City Soquel Zip 95073

d. UTM: (Give more than one for large and/or linear resources) Zone 10S; 5920092mE/ 4093867mN

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)
Assessor's Parcel Number: 030-121-13,
west side of 41st Avenue south of Soquel Drive.

*P3a Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

The small house at 2815 41st Avenue in unincorporated Soquel is situated within a grouping of four remaining houses along this thoroughfare, and is the most recently built, constructed around 1948. Modern in form and detail, it is one-story in height. The building form is a simple rectangle; it has a related detached garage closely aligned at the northwest corner behind the building. The site has additional portable buildings scattered at the rear, accessed by a private driveway that leads to Soquel Drive.

The parcel angles northward at the rear adjacent the private drive; the site configuration appearing to be the left-over portions of a property created by deed to the north. The rear of the lot is unfenced, as is the narrow driveway that parallels the northerly property line.
(Continued on page 2, DPR523L)

*P3b. Resource Attributes: (List attributes and codes) HP2. Single family property

*P4 Resources Present: ☒ Building ☐ Structure ☐ Object ☐ Site ☐ District ☐ Element of District ☐ Other (Isolates, etc.)

P5b. Description of Photo: (View, date, accession #)

View facing northwest, December 2016.

*P6. Date Constructed/Age and Sources:
☒ Historic ☐ Prehistoric ☐ Both

Circa 1948, historic aerial photograph, assessor.

*P7. Owner and Address:

Calcagno et al
PO Box 62
Soquel CA 95073

*P8. Recorded by: (Name, affiliation, and address)

Franklin Maggi
Archives & Architecture LLC
PO Box 1332
San Jose CA 95109-1332

*P9. Date Recorded: Dec. 16, 2016

*P10. Survey Type: (Describe)
Intensive

*P11. Report Citation: (Cite survey report and other sources, or enter "none".)
Archives & Architecture LLC: Historic Report, Nissan of Soquel Dealership Project, 2016.

*Attachments: ☐ NONE ☐ Location Map ☐ Sketch Map ☒ Continuation Sheet ☒ Building, Structure and Object Record ☐ Archaeological Record ☐ District Record ☐ Linear Feature Record ☐ Milling State Record ☐ Rock Art Record ☐ Artifact Record ☐ Photograph Record ☐ Other (List)

* Required information

(Continued from previous page, DPR523A, P3a)

The house has a low-slope built-up roof with a single ridge running front to back. The eaves are moderate, and edged with flat-board rakes at the front and rear gables, and ogee metal gutters along the sides. Positioned low to the ground, the building likely has a concrete slab base, not uncommon for post-World War II houses. The stud walls are clad in stucco which is devoid of detail. The original stucco molding is now hidden by modern window inserts.

The single character-defining feature of the building is a front wall extension at the southeast corner of the building. This wing wall has a sloped top set below the roofline, and an arched opening that leads to the side yard. The arches are mimicked in the front covered stoop, where a stucco-clad three-side framework frames the small concrete-based porch. This alcove has a low-sloped roof that follows the angles of the main roof above.

Fenestration consists of vinyl-clad slider windows retrofit into the existing openings. The front door is of modern origin, and has upper fan-lites.

The site has some minimal residential landscaping adjacent the front façade, but is otherwise devoid of plantings. The driveway if of concrete, but the side drive and parking area in the front setback are graveled. The rear of the site is used for storage and parking of construction equipment.

The front of the site with the house appears in good condition, but the site is mostly unimproved with the rear dominated by portable storage containers and small structures.

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
BUILDING, STRUCTURE, AND OBJECT RECORD

Primary #
HRI #

*NRHP Status Code 6z

*Resource Name or # (Assigned by recorder) 2815 41st Avenue

B1. Historic Name: Lawrence and Ann Smith House
B2. Common Name: None
B3. Original use: Single family residential B4. Present Use: Single family residential / storage
*B5. Architectural Style: Modern
*B6. Construction History: (Construction date, alterations, and date of alterations)
Constructed circa 1948. Renovated date unknown.

*B7. Moved? ☒ No ☐ Yes ☐ Unknown Date: N/a Original Location: N/a
*B8. Related Features:

None

B9a Architect: Unknown b. Builder: Unknown
*B10. Significance: Theme Residential architecture Area Soquel
Period of Significance 1930 Property Type Residential Applicable Criteria None
(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

The property at 2815 41st Avenue in the unincorporated community of Soquel in the County of Santa Cruz is a remainder parcel created out of multiple property transfers that occurred in the 1920s and 1930s by Lloyd and Carrie Satterlee. It had remained vacant as the properties surrounding it developed out of a larger 4.5 acres property that the Satterlees had acquired in 1926. They had developed a tourist camp that was accessed from the then Santa Cruz and Watsonville Road (now Soquel Drive).

In 1926, Lloyd G. and Carrie Satterlee had established a tourist camp within the northwesterly portions of their property and had likely built the house to the north of the subject property. The property to the south of the subject site was created in 1932 and sold, with a house built on that property around that time. The camp continued to operate into the 1940s by a different proprietor, and it is likely that the subject property remained associated with the camp as open space until after the war.

(Continued on next page)

B11. Additional Resource Attributes: (List attributes and codes) None

*B12. References:

R. L. Polk & Company; Santa Cruz city and county directories 1922-1988.

Santa Cruz County Recorder; official records, deeds, and maps (see citations).

United States Census Bureau; Population census of Santa Cruz County, 1900-1940.

B13. Remarks: Proposed demolition

*B14. Evaluator: Franklin Maggi

*Date of Evaluation: December 16, 2016

(This space reserved for official comments.)

(Continued from previous page, DPR523b, B10)

The first identified owners of the house were Lawrence A. and Ann Smith. Lawrence was an electrical contractor. By 1958, the house was owned and occupied by Ann Brookshire, a nurse's aide at Sisters Hospital, who was the occupant for only a few years. It is possible that Ann Smith and Ann Brooksire are the same person, but that was not determined as a part of this investigation. Around 1964, Brookshire moved to Seacliff, and beginning in the mid-1960s, it became a rental, the residence of Clarence Stroup, and then Marie Boyd by the 1970s.

Integrity

The house at 2815 41st Avenue retains substantial integrity to its original design and character per the National Register's seven aspects of historical integrity. It maintains its original location along 41st Avenue among other houses built during the two previous decades in unincorporated Santa Cruz County. The original structure and garage are basically intact and the only changes have been to the windows and front door. The removal of the original windows has not disrupted the residential architecture of the original house from the street, and it maintains its original building type. The construction of the structure is vernacular for the post-World War II period, and the workmanship is unremarkable, but the original design has not been comprised. The building represents its original form and its scale and feeling.

EVALUATION

The immediate area around this property is a mix of residential properties from the first half of the twentieth century and later commercial buildings. The neighborhood is now characterized by mostly contemporary commercial development that has evolved along both the Soquel Drive and 41st Avenue corridors. A visual assessment of the area does not indicate an identifiable district of historic properties in the vicinity, and the early tourist camp uses in the area are no longer evident.

The house was initially been associated with Lawrence and Ann Smith. Investigation into the Smiths and later owners, does not reveal a level of importance that would make their association with the property historically significant. Later occupants of the building appear to have always been renters, and nothing was learned of significance of this chain of occupants.

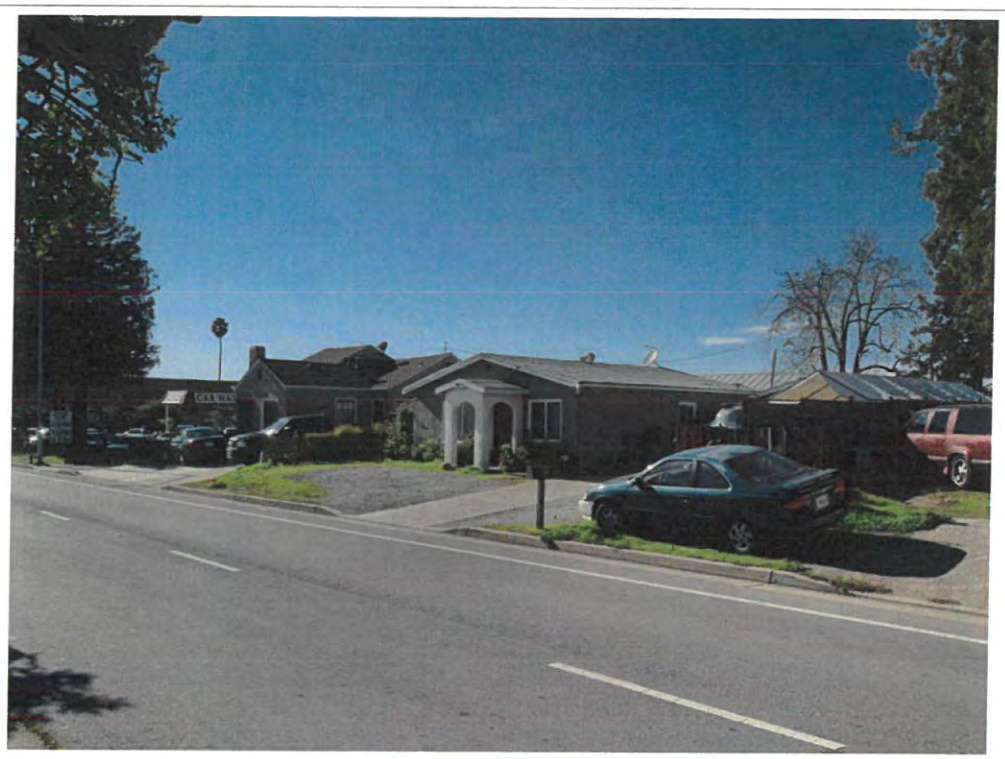
The house itself is a vernacular building. It is not architecturally distinctive within the larger context of vernacular buildings of the period. The building has a fair degree of integrity to its original design, but it does not significantly represent the any style or method of construction of interest.

Because the house is not a distinctive example of its style and type, is not associated with important personages in a primary way, nor is the site of important events or representative of patterns important to the history of the County of Santa, the property does not appear eligible for the National Register of Historic Places under any of the applicable Criteria (A), (B), or (C) or the California Register of Historical Resources under (1), (2), or (3).

When considering the property under the County of Santa Cruz Ordinance No. 4922 (Chapter 16.42 of the County Code relating to historic preservation), a historic resource is defined as *Any structure, object, site, property, or district which has a special historical, archaeological, cultural or aesthetic interest or value as part of the development, heritage, or cultural characteristics of the County, State, or Nation, and which either has been listed in the County General Plan, or has been listed in the Historic Resources Inventory adopted pursuant to Section 16.42.080 of this Chapter and has a rating of significance of NR-1, NR-2, NR-3, NR-4, or NR-5.* In considering and evaluating 2815 41st Avenue under the Santa Cruz County Code, the property does not appear to qualify for listing on the Inventory of Historic Resources under the applicable criteria as required under Section 16.42.080(c).

Front façade, viewed facing southwest.

Front facade, viewed facing northwest.



Front of building in context, viewed facing southwest.

Rear of property at private driveway with access to Soquel Drive, viewed facing northeast.

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # _____
HRI # _____
Trinomial _____
NRHP Status Code _____
Other Listings _____
Review Code _____ Reviewer _____ Date _____

*Resource Name or #: (Assigned by recorder) 2821 41st Avenue

P1. Other Identifier: None

*P2. Location: ☐ Not for Publication ☒ Unrestricted *a. County Santa Cruz
and (P2b and P2c or P2d. Attach a Location Map as necessary.)

*b. USGS 7.5' Quad Soquel Date 1994 T.11S.; R.1W.; Mount Diablo B.M.

c. Address 2821 41st Avenue City Soquel Zip 95073

d. UTM: (Give more than one for large and/or linear resources) Zone 10S; 592095mE/ 4093891mN

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)
Assessor's Parcel Number: 030-121-12,
west side of 41st Avenue south of Soquel Drive.

*P3a Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

The small house along 41st Avenue was likely built around 1926 at a time that it was apparently the only residential building on a large 4.5-acre parcel at the intersection of 41st Avenue and the then Santa Cruz and Watsonville Road. A simple rectangular structure with a roof ridge running front to rear, it is vernacular in design and modest in detail.

The building has large front and rear gables and a steeply pitched roof covered in composition shingles. The eaves are shallow, and the rake trim are flat boards edged with metal flashing. The side eaves are also shallow, edged by metal ogee gutters (presently damaged along the south elevation), and missing completely from the north elevation.

(Continued on page 2, DPR523L)

*P3b. Resource Attributes: (List attributes and codes) HP2. Single family property

*P4 Resources Present: ☒ Building ☐ Structure ☐ Object ☐ Site ☐ District ☐ Element of District ☐ Other (Isolates, etc.)

P5b. Description of Photo: (View, date, accession #)

View facing northwest, December 2016.

*P6. Date Constructed/Age and Sources:
☒ Historic ☐ Prehistoric ☐ Both

Circa 1926, news article and census.

*P7. Owner and Address:

Calcagno et al
PO Box 62
Soquel CA 95073

*P8. Recorded by: (Name, affiliation, and address)

Franklin Maggi
Archives & Architecture LLC
PO Box 1332
San Jose CA 95109-1332

*P9. Date Recorded: Dec. 16, 2016

*P10. Survey Type: (Describe)
Intensive

*P11. Report Citation: (Cite survey report and other sources, or enter "none".)

Archives & Architecture LLC: Historic Report, Nissan of Soquel Dealership Project, 2016.

*Attachments: ☐ NONE ☐ Location Map ☐ Sketch Map ☒ Continuation Sheet ☒ Building, Structure and Object Record ☐ Archaeological Record ☐ District Record ☐ Linear Feature Record ☐ Milling State Record ☐ Rock Art Record ☐ Artifact Record ☐ Photograph Record ☐ Other (List)

(Continued from previous page, DPR523A, P3a)

The house and its related detached garage sit on a rather large lot, with a wide driveway area along the south side of the house that leads to the two-car garage. To the side of the garage at the rear of the house is another detached accessory structure, and the site contains other ancillary building further to the rear where the site opens to a private driveway with access off Soquel Drive.

The house is raised and set on a concrete foundation. The building cladding is beveled tear-drop wood siding, and similar siding can be found on the detached garage. The siding rises unsegmented into the gables, and lacks any other detailing other than small flat board corner trim and wider boards at the window frames.

The front entry is offset to the right on the façade, and a raised porch covers the right half of the front building front. It has a gabled portico angled to match the roof above, and tapered wood framed corner posts. The front gable has matching beveled siding, and the rafter tails are exposed, like the house itself. The porch has a contemporary balustrade consisting of pre-fabricated fencing units and a wood deck.

The rear of the building has an attached open porch, roughly built with wood timbers.

The fenestration is mostly modern replacement double-hung units or sliders set within large flat board trim. The front door is a modern replacement.

The structure appears on a 1931 aerial; the garage was constructed by that time.

The site is mostly unimproved, and contains multiple temporary structures at the rear near the private driveway. The house itself is only in fair condition, and lacks any residential-type landscaping. The site is not fenced except for a small front yard board fence that partially encloses the setback. It presently is in a collapsing state.

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
Primary #
HRI #

BUILDING, STRUCTURE, AND OBJECT RECORD

*NRHP Status Code 6z

*Resource Name or # (Assigned by recorder) 2821 41st Avenue

B1. Historic Name: Charles P. and Marie Christensen House
B2. Common Name: None
B3. Original use: Single family residential B4. Present Use: Single family residential
*B5. Architectural Style: Vernacular / no style
*B6. Construction History: (Construction date, alterations, and date of alterations)
Constructed circa 1926.

*B7. Moved? ☒ No ☐ Yes ☐ Unknown Date: N/a Original Location: N/a
*B8. Related Features:

None

B9a Architect: Unknown b. Builder: Unknown
*B10. Significance: Theme Residential architecture Area Soquel
Period of Significance 1930 Property Type Residential Applicable Criteria None
(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

The house at 2821 41st Avenue appears to be the first residence constructed along this portion of 41st Avenue when built around 1926 after the larger 4.5-acre parcel was purchased by Lloyd and Carrie Satterlee. It was reported in the newspaper at that time that Satterlee, a builder, had sold a house that he had just built for himself and his wife on this property, and he subsequently constructed a second house, which appears to be the vacant building to the north now addressed as 2831 41st Avenue. Although the deed was not located as a part of the current investigation, by the time of the 1930 census, this property appears occupied by Charles P. and Marie Christensen. The Christensens are noted in that census as proprietors of a tourist camp, as were the Satterlees.

In 1926, Lloyd G. and Carrie Satterlee had established a tourist camp within the northwesterly portions of their property. The camp continued to operate into the 1940s by a different proprietor, and it appears that the subject property remained associated with the camp in a tertiary way, as by 1940 it was occupied by the restaurant's cook.

(Continued on next page)

B11. Additional Resource Attributes: (List attributes and codes) None

*B12. References:

R. L. Polk & Company; Santa Cruz city and county directories 1922-1988.

Santa Cruz County Recorder; official records, deeds, and maps.

United States Census Bureau; Population census of Santa Cruz County, 1900-1940.

B13. Remarks: Proposed demolition

*B14. Evaluator: Franklin Maggi

*Date of Evaluation: December 16, 2016

(This space reserved for official comments.)

(Continued from previous page, DPR523b, B10)

No information could be found about the Christensens. By the time of the 1940 census, the building was rented by Albert and Alice Maxwell. They had previously been involved in property transactions with the land locked parcel to the northwest of this house, and Alice was a cook at the restaurant along Soquel Drive.

By 1950, the property had been acquired by Edward Otto and Florence Krause. He had been a house painter, and by 1950 was eighty years old, having immigrated from Germany. He died in 1959, and Florence continued to live at this property until her death in 1973.

Integrity

The house at 2821 41st Avenue retains substantial integrity to its original design and character per the National Register's seven aspects of historical integrity. It maintains its original location along 41st Avenue among other houses in unincorporated Santa Cruz County built during the two following decades. The original structure and garage are basically intact and the only changes have been to the windows and front door. The removal of the original windows has not disrupted the residential architecture of the original house from the street, and it maintains its original building type. The construction of the structure is vernacular for the 1920s period, and the workmanship is unremarkable, but the original design has not been comprised. The building represents its original form and its scale and feeling.

EVALUATION

The immediate area around this property is a mix of residential properties from the first half of the twentieth century and later commercial buildings. The neighborhood is now characterized by mostly contemporary commercial development that has evolved along both the Soquel Drive and 41st Avenue corridors. A visual assessment of the area does not indicate an identifiable district of historic properties in the vicinity, and the early tourist camp uses in the area are no longer evident.

The house appears to have initially been associated with Charles and Marie Christensen. The historic record does not reveal any information about these personages that would bring a level of importance to this property. Later occupants of the building are also not historically significant.

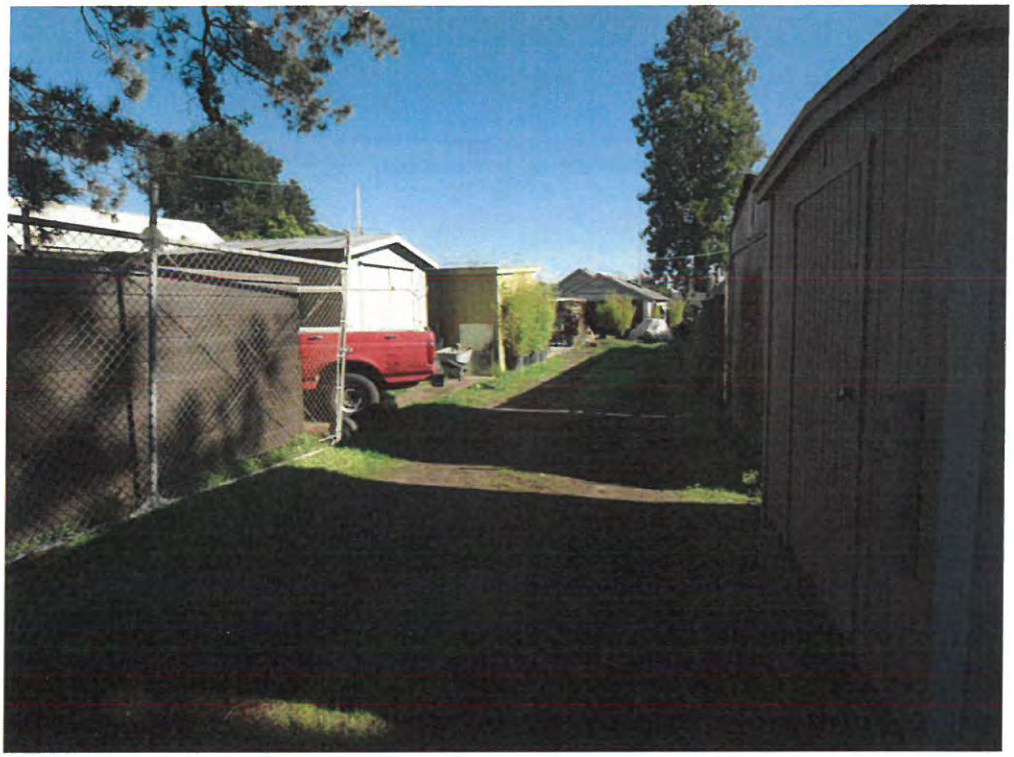
The house itself is vernacular building. It is not architecturally distinctive within the larger context of vernacular buildings of the period. The building has a good level of integrity to its original design, it does not significantly represent the any style or method of construction of interest.

Because the house is not a distinctive example of its style and type, is not associated with important personages in a primary way, nor is the site of important events or representative of patterns important to the history of the County of Santa, the property does not appear eligible for the National Register of Historic Places under any of the applicable Criteria (A), (B), or (C) or the California Register of Historical Resources under (1), (2), or (3).

When considering the property under the County of Santa Cruz Ordinance No. 4922 (Chapter 16.42 of the County Code relating to historic preservation), a historic resource is defined as *Any structure, object, site, property, or district which has a special historical, archaeological, cultural or aesthetic interest or value as part of the development, heritage, or cultural characteristics of the County, State, or Nation, and which either has been listed in the County General Plan, or has been listed in the Historic Resources Inventory adopted pursuant to Section 16.42.080 of this Chapter and has a rating of significance of NR-1, NR-2, NR-3, NR-4, or NR-5.* In considering and evaluating 2821 41st Avenue under the Santa Cruz County Code, the property does not appear to qualify for listing on the Inventory of Historic Resources under the applicable criteria as required under Section 16.42.080(c).

At driveway entry, viewed facing northeast.

From west side of building, viewed facing southeast.



East side of garage, viewed facing southwest.

Property driveway easement and west property line, viewed facing south.

Attachment D

Geotechnical Investigation

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GEOTECHNICAL INVESTIGATION
DESIGN PHASE

FOR
NISSAN OF SOQUEL
SANTA CRUZ COUNTY, CALIFORNIA

PREPARED FOR
BLAME-JADE
PROJECT NO. 16-128-SC

PREPARED BY

BUTANO GEOTECHNICAL ENGINEERING, INC.
JUNE 2016

BUTANO GEOTECHNICAL ENGINEERING, INC.
231 GREEN VALLEY ROAD, SUITE E, FREEDOM, CALIFORNIA 95019
PHONE: 831.724.2612
WWW.BUTANOGEOTECH.COM

June 24, 2016
Project No. 16-128-SC

Blame-Jade
P.O. Box 1431
Visalia, CA 93279

ATTENTION: Don Groppetti

SUBJECT: **GEOTECHNICAL INVESTIGATION - DESIGN PHASE**
Nissan of Soquel - Proposed Automobile Dealership
Soquel Avenue - APN's 030-121-08, 12, 13, 27, 53
Soquel, Santa Cruz County, California

Dear Mr. Groppetti:

In accordance with your authorization, we have completed a geotechnical investigation for the subject project. This report summarizes the findings, conclusions, and recommendations from our field exploration, laboratory testing, and engineering analysis. It is a pleasure being associated with you on this project. If you have any questions, or if we may be of further assistance, please do not hesitate to contact our office.

Sincerely,

BUTANO GEOTECHNICAL ENGINEERING, INC.

Greg Bloom, PE, GE
Principal Engineer
R.C.E. 58819

Philip Edwards, EIT
Staff Engineer
E.I.T. 142203

Appendices:
1. Appendix A Figures and Standard Details
2. Appendix B Field Exploration Program
3. Appendix C Laboratory Testing Program

Distribution: (4) Addressee

1.0 INTRODUCTION

This report presents the results of our geotechnical investigation for the proposed commercial automobile dealership comprised of assessor's parcel numbers 030-121-08, 12, 13, 27, and 53 located in unincorporated Soquel, Santa Cruz County, California.

The purpose of our investigation is to provide preliminary geotechnical design parameters and recommendations for the construction of the proposed multi-use building and associated improvements. Conclusions and recommendations related to site grading, drainage, foundations, and paving are presented herein.

Anticipated construction consists of building an automobile dealership with showroom, auto lot, service department, and associated hardscape and landscape features.

This work included site reconnaissance, subsurface exploration, soil sampling, laboratory testing, engineering analyses, and preparation of this report. The scope of services for this investigation is outlined in our agreement dated April 12, 2016.

The recommendations contained in this report are subject to the limitations presented in Section 8.0 of this report. The Association of Engineering Firms Practicing the Geosciences has produced a pamphlet for your information titled *Important Information About Your Geotechnical Report*. This pamphlet has been included with the copies of your report.

2.0 FIELD EXPLORATION AND LABORATORY TESTING PROGRAMS

Our field exploration program included drilling, logging, and interval sampling of four borings on June 7, 2016 with a 6-inch solid stem truck mounted drill rig. The borings were advanced to depths ranging from 21 ½ feet to 41 feet below existing grade. Details of the field exploration program including the Boring Logs and the Key to the Logs are presented in Appendix B, Figures B-3 through B-7.

Representative samples obtained during the field investigation were taken to the laboratory for testing. Laboratory tests were used to determine physical and engineering properties of the in-situ soils. Details of the laboratory testing program are presented in Appendix C. Test results are presented on the Boring Logs and in Appendix C.

3.0 SITE AND PROJECT DESCRIPTION

3.1 Location

The project site is located east of Highway 1 in unincorporated Soquel, Santa Cruz County, California. The project site is comprised of multiple parcels surrounding the corner of Soquel Avenue and 41st Avenue. The site location is shown on the Site Location Plan, Appendix B, Figure B-1.

3.2 Surface Conditions

The combined parcels total approximately 1.77 acres and are relatively flat. One of the parcels borders Soquel Avenue, three of the parcels border 41st Avenue, and one of the parcels can only be accessed via the other parcels. The parcels do not include the corner lots on Soquel Avenue and 41st Avenue.

APN 030-121-27 borders Soquel Avenue to the north and is relatively undeveloped. There are remains of an old foundation, fencing, pavement, and portable construction trailers on the parcel.

APN's 030-121-12, 13, & 53 border 41st Avenue to the east and are developed with residences and associated hardscape and landscape features.

APN 030-121-08 is surrounded by the other parcels on the western border, southern border, and a portion of the eastern border. This parcel is developed with a residence and associated hardscape and landscape features. The driveway for the residence exits into APN 030-121-27.

3.3 Subsurface Conditions

A total of four borings were advanced for the project in the area of the proposed improvements. The native soil generally encountered at the site consists of two to six feet of sandy lean clay, overlying 36 feet of coastal terrace deposit, overlying Purisima formation sandstone.

The upper two to six feet of sandy lean clay was firm to very stiff.

The coastal terrace deposit consists of interbedded lenses and layers of dense to very dense silty to clayey sand, and very stiff to hard lean clay and sandy lean clay.

The Purisima formation sandstone was very dense.

Approximately two feet of non-engineered fill was encountered in boring B1.

Groundwater was not encountered in any of the borings. Groundwater levels may vary seasonally.

Complete soil profiles are presented on the Boring Logs, Appendix B, Figures B-4a through B-7. The boring locations are shown on the Boring Site Plan, Figure B-2.

4.0 PROJECT DESCRIPTION

Based on our discussions with the client it is our understanding that the project consists of constructing an automobile dealership including a service shop, showroom, offices, inventory lots, and associated improvements.

5.0 GEOTECHNICAL HAZARDS

5.1 General

In our opinion the geotechnical hazards that could potentially affect the proposed project are:

- Fault surface rupture
- Intense seismic shaking
- Collateral seismic hazards

5.1.1 Fault Surface Rupture

The site lies outside of the State of California, Alquist-Priolo Earthquake Fault Zone. It is our opinion that the potential for fault surface rupture to affect the site and/or to damage the proposed improvements is low.

5.1.2 Intense Seismic Shaking

The hazard of intense seismic shaking is present throughout central California. Intense seismic shaking may occur at the site during the design lifetime of the proposed structure from an earthquake along one of the regions many faults. Generally, the intensity of shaking will increase the closer the site is to the epicenter of an earthquake, however, seismic shaking is a complex phenomenon and may be modified by local topography and soil conditions. The transmission of earthquake vibrations from the ground into the structure may cause structural damage.

The County of Santa Cruz has adopted the seismic provisions set forth in the 2013 California Building Code to address seismic shaking. The seismic provisions in the 2013 CBC are minimum load requirements for the seismic design for the proposed structure. The provisions set forth in the 2013 CBC will not prevent structural and nonstructural damage from direct fault ground surface rupture, coseismic ground cracking, liquefaction and lateral spreading, seismically induced differential compaction, seismically induced landsliding, or seismically induced inundation.

Table 1 has been constructed based on the 2013 CBC requirements for the seismic design of the proposed structure. The Site Class has been determined based on our field investigation and laboratory testing.

Table 1. Seismic Design Parameters (ASCE 7-10)

PGA	S_S	S_1	Site Class	F_a	F_v	S_{MS}	S_{M1}	S_{DS}	S_{D1}	Risk Category	Seismic Design Category
0.508	1.500	0.600	C	1.0	1.5	1.500	0.900	1.000	0.600	II	D

Design Coordinates - Latitude: 36.987280 Longitude: -121.965086

5.1.3 Collateral Seismic Hazards

In addition to intense seismic shaking, other seismic hazards that may have an adverse affect to the site and/or the structure are: fault ground surface rupture, coseismic ground cracking, seismically induced liquefaction and lateral spreading, seismically induced differential compaction, seismically induced landsliding, and seismically induced inundation (tsunami and seiche). It is our opinion that the potential for collateral seismic hazards to affect the site and to damage the proposed structure is low except for liquefaction.

6.0 DISCUSSIONS AND CONCLUSIONS

It is our understanding that the project consists of demolishing the existing structures and constructing a new automobile dealership. Two feet of non-engineered fill and debris was encountered in boring B1 and should be anticipated throughout the site from

the demolition of the existing structures. Additionally, historic foundations should be anticipated during the grading process.

Two expansion index tests were performed on representative samples of the on-site clayey soil. The expansion potential is very low (E.I.=10, 4). Based on the results of the expansion index tests the potential for the clay soil to heave at the site is low.

7.0 ANALYSIS

7.1 General

Based on the results of our field investigation, laboratory testing, and engineering analysis it is our opinion that from the geotechnical standpoint, the subject site will be suitable for the proposed construction.

7.2 Site Grading

7.2.1 Site Clearing

The site should be cleared of loose soil, organics, and debris within the project limits. This will include the removal of all demolition debris from existing and historic structures. Non-engineered fill caused by the demolition and removal of structure should be removed and or processed according to section 7.2.2. Typically, demolition of structures similar to this site create two to four feet of debris and or soil improvement needed.

7.2.2 Preparation of On-Site Soils

Areas to receive engineered fill should be excavated through any non-engineered fill, scarified, moisture conditioned and compacted to a minimum of 90 percent relative compaction. The area to receive fill should extend a minimum of 2 feet laterally of the improvements. The on-site soil may be re-used as engineered fill.

Site Grading-General

Imported fill material should be approved by a representative of Butano Geotechnical Engineering, Inc. prior to importing. On-site and imported fill should be primarily granular with no material greater than 2½ inches in diameter and no more than 20 percent of the material passing the #200 sieve. The fines fraction of the fill should not consist of expansive material. The Geotechnical Engineer should be notified not less than 5

working days in advance of placing any fill or base course material proposed for import. Each proposed source of import material should be sampled, tested, and approved by the Geotechnical Engineer prior to delivery of any soils imported for use on the site.

Engineered fill should be mechanically compacted to a minimum of 90 percent relative compaction per ASTM1557. Fill should be placed in thin lifts not to exceed 8 inches.

Any surface or subsurface obstruction, or questionable material encountered during grading, should be brought immediately to the attention of the Geotechnical Engineer for proper processing as required.

Paved Areas

The upper 6 inches of subgrade and all aggregate baserock in paved areas should be compacted to a minimum of **95 percent** relative compaction. This should extend a minimum of 2 feet laterally of all paved areas.

Non-engineered fill shall be removed and replaced as engineered fill in all paved areas.

7.2.3 Cut and Fill Slopes

No permanent cuts or fill slopes are anticipated for this project.

7.2.4 Excavating Conditions

The on-site soil may be excavated with standard earthwork equipment.

7.2.5 Surface Drainage

Positive drainage should be maintained away from the structures at a minimum gradient of 2 percent for 5 feet. Roof and driveway drainage should be collected into solid plastic pipe and released at approved locations to minimize erosion.

Collected drainage should be released into energy dissipaters at appropriate locations.

Drainage patterns approved at the time of construction should be maintained throughout the life of the structures.

7.2.6 Utility Trenches

Bedding material should consist of sand with SE not less than 30 which may then be jetted.

The on-site native soils may be utilized for trench backfill. Imported fill should be free of organic material and rocks over 2.5 inches in diameter.

If sand is used, a 3 foot concrete plug should be placed in each trench where it passes under the exterior footings.

Backfill of all exterior and interior trenches should be placed in thin lifts not to exceed 8 inches and mechanically compacted to achieve a relative compaction of not less than 95 percent in paved areas and 90 percent in other areas. Care should be taken not to damage utility lines.

Utility trenches that are parallel to the sides of a building should be placed so that they do not extend below a line sloping down and away at an inclination of 2:1 H:V from the bottom outside edge of all footings.

Trenches should be capped with 1 1/2 feet of relatively impermeable material. Import material must be approved by the Geotechnical Engineer prior to its use.

Trenches must be shored as required by the local regulatory agency, the State of California Division of Industrial Safety Construction Safety Orders, and Federal OSHA requirements.

7.3 Foundations

7.3.1 Conventional Shallow Foundations

General

Conventional shallow foundations may be used for bearing on in-situ soil, or engineered fill per section 7.2.2.

Footing Dimensions

Footing widths should be based on the allowable bearing value but not less than 15 inches. The minimum recommended depth of embedment is

12 inches. Embedment depths should not be allowed to be affected adversely, such as through erosion, softening, digging, etc. Should local building codes require deeper embedment of the footings or wider footings, the local codes must apply.

Bearing Capacity

The allowable bearing capacity used should not exceed 3,000 psf for footings bearing on in-situ soil or engineered fill. The allowable bearing capacity may be increased by one-third in the case of short duration loads, such as those induced by wind or seismic forces. In the event that footings are founded in structural fill consisting of imported materials, the allowable bearing capacities will depend on the type of these materials and should be re-evaluated.

Lateral Resistance

Friction coefficient - 0.35, between the in-situ soil or engineered fill and rough concrete. A passive resistance of 350 may be assumed below a depth of 12 inches for in-situ soil or engineered fill. Where both friction and the passive resistance are utilized for sliding resistance, either of the values indicated should be reduced by one-third.

Footing excavations must be checked by the Geotechnical Engineer before steel is placed and concrete is poured.

7.3.2 Concrete Slabs-on-Grade

General

We recommend that concrete slab-on-grades be founded on in-situ soil, or engineered fill per section 7.2.2.

The subgrade should be proof-rolled just prior to construction to provide a firm, relatively unyielding surface, especially if the surface has been loosened by the passage of construction traffic.

Capillary Break and Vapor Barrier

The following paragraph outlines the minimum capillary break and vapor barrier that shall be utilized for interior slab-on-grades, or slab-on-grades where moisture sensitive floor coverings are anticipated.

The vapor barrier shall consist of a waterproof membrane (Stegowrap 15 Mil or equivalent) placed directly below the floor slab and in direct contact with the concrete. Sheet overlap for the vapor barrier shall be a minimum of 6 inches. A 4-inch minimum layer of ¾ inch drainrock shall be placed below the waterproof membrane to act as a capillary break. Care must be taken not to rip the vapor barrier. A 6-inch layer of compacted Class II Baserock may be employed to prevent rips or tears in the vapor barrier if desired and to keep the subgrade from becoming saturated prior to pouring concrete.

If the manufacturer's recommendations or the project requirements for the capillary break and vapor barrier are more stringent than the minimum outlined above, the designer should follow those recommendations and requirements. Recommendations by the manufacturer may include but is not limited to specifications for; concrete mix design, puncture resistance of vapor barrier, permeance of vapor barrier, soil flatness, capillary break section, structural section, and testing recommendations.

7.4 Pavement Sections

The design life for the pavement section is 20 years. The flexible pavement section was designed using the Caltrans method. The rigid pavement section was designed using the American Concrete Institute (ACI) publication ACI 330R-01 – "Design and Construction of Concrete Parking Lots". Pavement section thicknesses have been provided based on a range of traffic indexes. The designer or civil engineer shall pick the appropriate value based on the project requirements. Exact pavement performance is difficult to quantify considering the many factors that influence the life of the pavement. Some of these factors include; subgrade soil type and compaction, paving mix design, QA/QC during construction, maintenance, and traffic growth. It is important that Butano Geotechnical Engineering be involved throughout the design process, and during construction for QA/QC to ensure proper implementation of our recommendations and the best chance for the pavement to achieve its intended design life.

One R-Value test was performed on a representative sample of the subgrade material. The R-value test yielded a value of 8 which was used for design.

7.4.1 Hot Mix Asphalt Pavement

The flexible pavement section shall consist of Hot Mix Asphalt (HMA) compacted to a minimum of 95% relative compaction. The HMA shall be

placed in lifts not to exceed 3 inches, with no lift thinner than two times the maximum aggregate size.

The asphalt pavement section shall be in accordance with Table 2.

Table 2:

Traffic Index	Base Rock (in.)	Asphalt (in.)
5	10	3
6	11	4
7	14	4.5

7.4.2 Concrete Pavement Section

A rigid pavement section may be used consisting of concrete with a minimum compressive strength of 4000 psi.

Joint spacing shall be designed by the civil engineer but shall have a maximum longitudinal and transverse spacing of 18 times the concrete thickness.

Construction specifications shall be in accordance with ACI 330.1-03.

The concrete pavement section shall be in accordance with Table 3 and publications ACI 330R-01.

Table 3:

Traffic Category	Base Rock (in.)	Concrete (in.)	Dowels - Diameter-Length (in.)
A	8	5	N/A
A-1	8	7	N/A
B	8	7.5	1-14
C	8	8	1-14
D	8	9	1 1/8-16

** The description of traffic categories can be found in Table 2.3 of publication ACI 330*

7.6 Plan Review

The recommendations presented in this report are based on preliminary design information for the proposed project and on the findings of our geotechnical

investigation. When completed, the Grading Plans, Foundation Plans and design loads should be reviewed by Butano Geotechnical Engineering, Inc. prior to submitting the plans and contract bidding. Additional field exploration and laboratory testing may be required upon review of the final project design plans.

7.7 Observation and Testing

Field observation and testing should be provided by a representative of Butano Geotechnical Engineering, Inc. to enable them to form an opinion regarding the adequacy of the site preparation, the adequacy of fill materials, and the extent to which the earthwork is performed in accordance with the geotechnical conditions present, the requirements of the regulating agencies, the project specifications, and the recommendations presented in this report.

Butano Geotechnical Engineering, Inc. should be notified **at least 5 working days** prior to any site clearing or other earthwork operations on the subject project in order to observe the stripping and disposal of unsuitable materials and to ensure coordination with the grading contractor. During this period, a preconstruction meeting should be held on the site to discuss project specifications, observation and testing requirements and responsibilities, and scheduling.

8.0 LIMITATIONS

The recommendations contained in this report are based on our field explorations, laboratory testing, and our understanding of the proposed construction. The subsurface data used in the preparation of this report was obtained from the borings drilled during our field investigation. Variation in soil, geologic, and groundwater conditions can vary significantly between sample locations. As in most projects, conditions revealed during construction excavation may be at variance with preliminary findings. If this occurs, the changed conditions must be evaluated by the Project Geotechnical Engineer, and revised recommendations be provided as required. In addition, if the scope of the proposed construction changes from the described in this report, our firm should also be notified.

Our investigation was performed in accordance with the usual and current standards of the profession, as they relate to this and similar localities. No other warranty, expressed or implied, is provided as to the conclusions and professional advice presented in this report.

This report is issued with the understanding that it is the responsibility of the Owner, or of his Representative, to ensure that the information and recommendations contained herein are brought to the attention of the Engineer for the project and incorporated into

the plans, and that it is ensured that the Contractor and Subcontractors implement such recommendations in the field. The use of information contained in this report for bidding purposes should be done at the Contractor's option and risk.

This firm does not practice or consult in the field of safety engineering. We do not direct the Contractor's operations, and we are not responsible for other than our own personnel on the site; therefore, the safety of others is the responsibility of the Contractor. The Contractor should notify the Owner if he considers any of the recommended actions presented herein to be unsafe.

The findings of this report are considered valid as of the present date. However, changes in the conditions of a site can occur with the passage of time, whether they are due to natural events or to human activities on this or adjacent sites. In addition, changes in applicable or appropriate codes and standards may occur, whether they result from legislation or the broadening of knowledge. Accordingly, this report may become invalidated wholly or partially by changes outside our control. Therefore, this report is subject to review and revision as changed conditions are identified.

The scope of our services mutually agreed upon did not include any environmental assessment or study for the presence of hazardous to toxic materials in the soil, surface water, or air, on or below or around the site. Butano Geotechnical Engineering, Inc. is not a mold prevention consultant; none of our services performed in connection with the proposed project are for the purpose of mold prevention. Proper implementation of the recommendations conveyed in our reports will not itself be sufficient to prevent mold from growing in or on the structures involved.

REFERENCES

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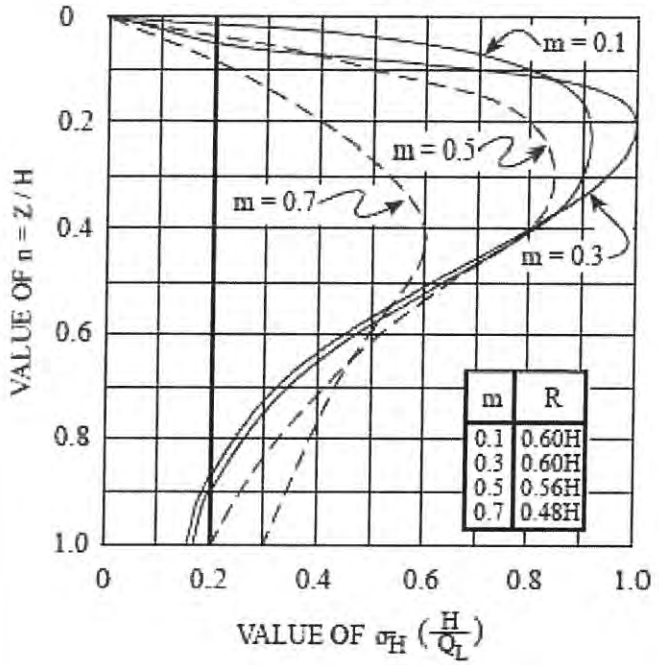
American Concrete Institute (ACI). (2001). *Design for Construction of Concrete Parking Lots,* ACI Publication ACI 330R-01.

American Concrete Institute (ACI). (2003). *Specification for Unreinforced Concrete Parking Lots*, ACI Publication ACI 330.1-03.

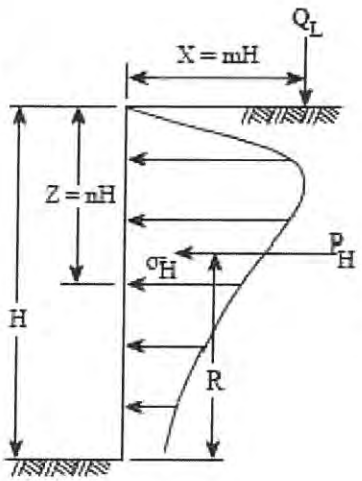
APPENDIX A

FIGURES AND STANDARD DETAILS

LINE LOAD



m	R
0.1	0.60H
0.3	0.60H
0.5	0.56H
0.7	0.48H



FOR m ≦ 0.4:

$$\sigma_H \left(\frac{H}{Q_L}\right) = \frac{0.20\,n}{(0.16+n^2)^2}$$

$$P_H = 0.55\,Q_L$$

FOR m > 0.4:

$$\sigma_H \left(\frac{H}{Q_L}\right) = \frac{1.28\,m^2 n}{(m^2+n^2)^2}$$

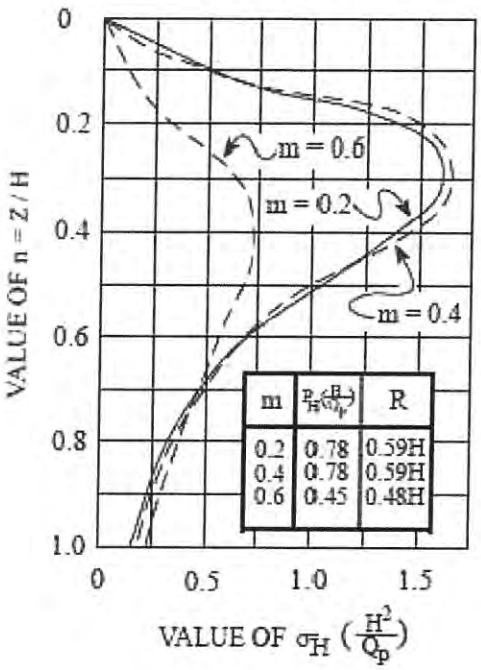
RESULTANT $P_H = \dfrac{0.64\,Q_L}{(m^2+1)}$

PRESSURES FROM LINE LOAD Q_L

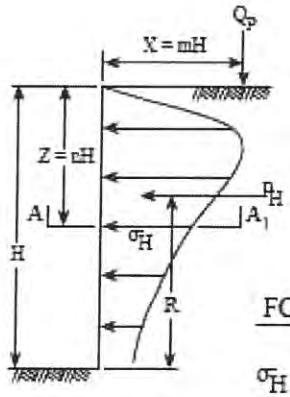
(BOISSINESQ EQUATION MODIFIED BY EXPERMENT)

REFERENCE: Design Manual
NAVFAC DM-7.02
Figure 11
Page 7.2-74

POINT LOAD



m	$P_H\left(\frac{H^2}{Q_p}\right)$	R
0.2	0.78	0.59H
0.4	0.78	0.59H
0.6	0.45	0.48H



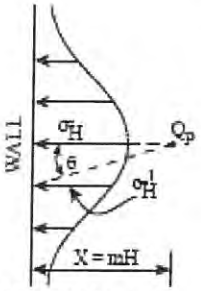
FOR m ≦ 0.4:

$$\sigma_H \left(\frac{H^2}{Q_p}\right) = \frac{0.28\,n^2}{(0.16+n^2)^3}$$

FOR m > 0.4:

$$\sigma_H \left(\frac{H^2}{Q_p}\right) = \frac{1.77\,m^2 n^2}{(m^2+n^2)^3}$$

$$\sigma_H^1 = \sigma_H \cos^2(1.1\,\theta)$$



SECTION $A\text{-}A_1$

PRESSURES FROM POINT LOAD Q_P

(BOISSINESQ EQUATION MODIFIED BY EXPERMENT)

BUTANO GEOTECHNICAL ENGINEERING, INC.	S□□C□A□□E P□ESS□□E □IA□□AM	FIGURE A-1

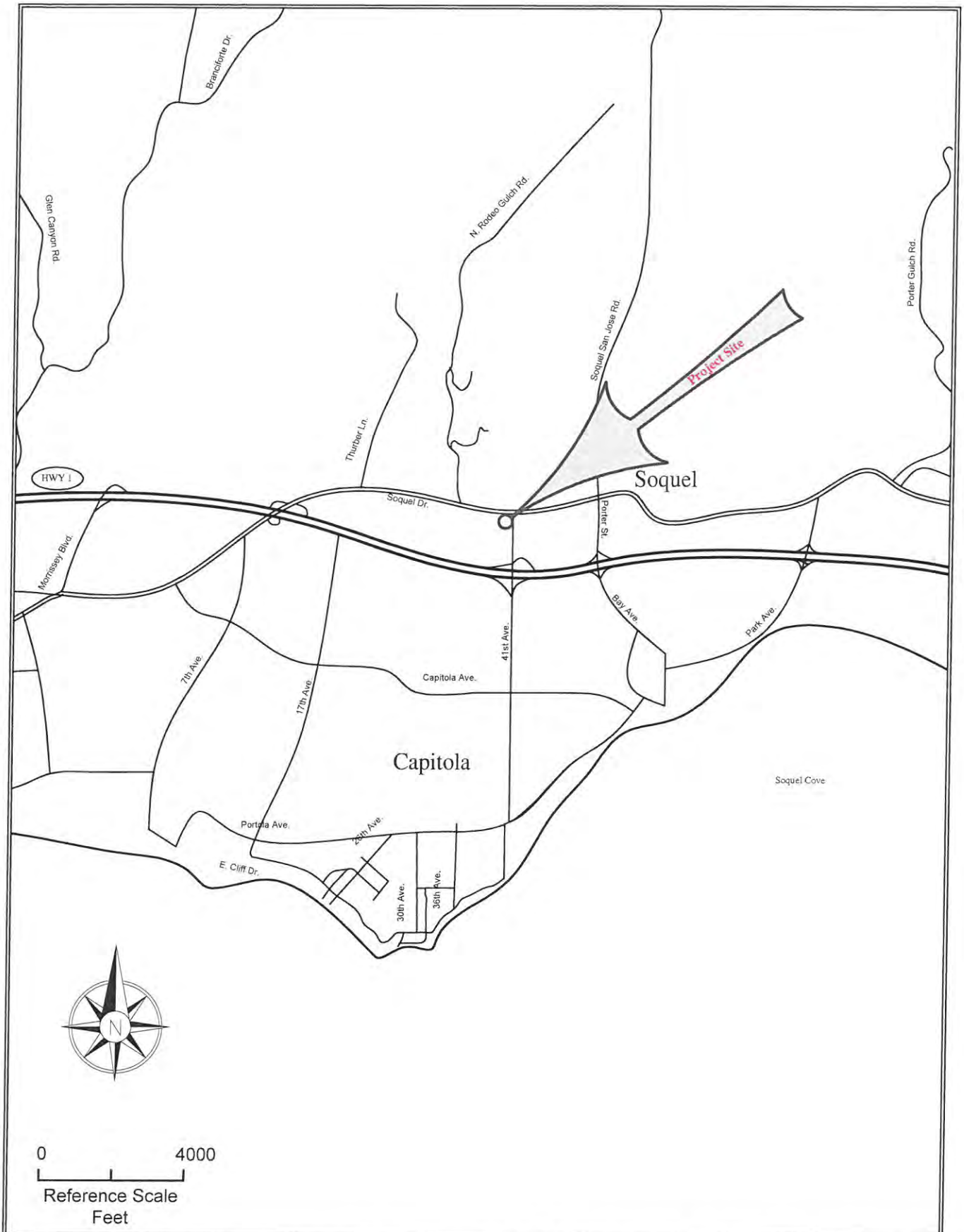
APPENDIX B

FIELD EXPLORATION PROGRAM

FIELD EXPLORATION PROCEDURES

Subsurface conditions were explored by advancing 4 borings below existing grade. The borings were advanced using a six-inch solid stem truck mounted auger. The Key to The Logs and the Logs of the Borings are included in Appendix B, Figures B-3 through B-7. The approximate locations of the borings are shown on the Boring Site Plan, Figure B-2. The boring holes were located in the field by tape measurements from known landmarks. Their locations as shown are therefore within the accuracy of such measurement.

The soils encountered in the borings were continuously logged in the field by a representative of Butano Geotechnical Engineering, Inc. Bulk and relatively undisturbed soil samples for identification and laboratory testing were obtained in the field. These soils were classified based on field observations and laboratory tests. The classifications are accordance with the Unified Soil Classification System (USCS: Figure B-3).



BUTANO GEOTECHNICAL ENGINEERING, INC.	**SITE LOCATION PLAN** Nissan of Soquel	FIGURE B-1

B-X Exploratory Boring

Scale: 1" = 80'

Note: Base map provided by Scott & Associates. Project titled: Nissan of Soquel.
Project Number: 1512 Dated: 1/26/2016

BUTANO	**□O□IN□ SITE PLAN**	FIGURE
GEOTECHNICAL ENGINEERING, INC.	Nissan of Soquel	B-□

KEY TO LOGS

UNIFIED SOIL CLASSIFICATION SYSTEM

PRIMARY DIVISIONS			GROUP SYMBOL	SECONDARY DIVISIONS
COARSE GRAINED SOILS More than half of the material is larger than the No. 4 sieve	GRAVELS More than half of the coarse fraction is larger than the No. 4 sieve	CLEAN GRAVELS (Less than 5% fines)	GW	Well graded gravels, gravel-sand mixtures, little or no fines
			GP	Poorly graded gravels, gravel-sand mixtures, little or no fines
		GRAVEL WITH FINES	GM	Silty gravels, gravel-sand-silt mixtures, non-plastic fines
			GC	Clayey gravels, gravel-sand-clay mixtures, plastic fines
	SANDS More than half of the coarse fraction is smaller than the No. 4 sieve	CLEAN SANDS (Less than 5% fines)	SW	Well graded sands, gravelly sands, little or no fines
			SP	Poorly graded sands, gravelly sands, little or no fines
		SAND WITH FINES	SM	Silty sands, sand-silt mixtures, non-plastic fines
			SC	Clayey sands, sand-clay mixtures, plastic fines
FINE GRAINED SOILS More than half of the material is smaller than the No. 200 sieve	SILTS AND CLAYS Liquid limit less than 50		ML	Inorganic silts and very fine sands, silty or clayey fine sands or clayey silts with slight plasticity
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
			OL	Organic silts and organic silty clays of low plasticity
	SILTS AND CLAYS Liquid limit greater than 50		MH	Inorganic silts, micaceous or diatomacaceous fine sandy or silty soils, elastic silts
			CH	Inorganic clays of high plasticity, fat clays
			OH	Organic clays of medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS			Pt	Peat and other highly organic soils

GRAIN SIZE LIMITS

SILT AND CLAY	SAND			GRAVEL		COBBLES	BOULDERS
	FINE	MEDIUM	COARSE	FINE	COARSE		
No. 200	No. 40	No. 10	No. 4	3/4 in.	3 in.	12 in.	

US STANDARD SIEVE SIZE

RELATIVE DENSITY	
SAND AND GRAVEL	BLOWS/FT*
VERY LOOSE	0 - 4
LOOSE	4 - 10
MEDIUM DENSE	10 - 30
DENSE	30 - 50
VERY DENSE	OVER 50

CONSISTENCY	
SILT AND CLAY	BLOWS/FT*
VERY SOFT	0 - 2
SOFT	2 - 4
FIRM	4 - 8
STIFF	8 - 16
VERY STIFF	16 - 32
HARD	OVER 32

MOISTURE CONDITION	
CLAY	DRY
	MOIST
	SATURATED
SAND	DRY
	DAMP
	WET
	SATURATED

* Number of blows of 140 pound hammer falling 30 inches to drive a 2 inch O.D. (1 3/8 inch I.D.) split spoon (ASTM D-1586).

LOG OF EXPLORATORY BORING

Project No.:	16-128-SC	Boring:	B1 (1 of 2)
Project:	Nissan of Soquel	Location:	
		Elevation:	
Date:	June 7, 2016	Method of Drilling:	6 inch diameter solid stem truck mounted auger
Logged By:	PE		

2" Ring Sample | 2.5" Ring Sample | Bulk Sample | Terzaghi Split Spoon Sample | Static Water Table

Depth (ft.)	Soil Type	Undisturbed	Bulk	Description	Blows / Foot	N_{60}	Dry Density (pcf)	Moisture Content (%)	Expansion Index	Particle Size	Unconfined (psf)	Atterberg Limits L.L.	Atterberg Limits P.I.
	FILL			1' concrete over 1' rubble (FILL).									
	CL			Brown sandy lean CLAY, stiff, moist.	12	7	99.8	22.4			2030		
5	SC/SM			Brown clayey SAND, dense, damp, (Qcl-	38	34		14.0	10				
				Lowest emergent coastal terrace deposit).	42	38		16.2					
				Interbeded lenses of silty SAND from 4-21 feet.									
10				Medium dense.	30	26		20.9					
15				Medium dense.	22	18		28.2					
20													
	SM												
25				Silty SAND with gravel, very dense, damp, (Qcl)	50-6"			13.0					
30													
35													

BUTANO GEOTECHNICAL ENGINEERING, INC.

FIGURE B-4a

LOG OF EXPLORATORY BORING

Project No.:	16-128-SC	Boring:	B1 (1 of 2)
Project:	Nissan of Soquel	Location:	
		Elevation:	
Date:	June 7, 2016	Method of Drilling:	6 inch diameter solid stem truck mounted auger
Logged By:	PE		

2" Ring Sample | 2.5" Ring Sample | Bulk Sample | Terzaghi Split Spoon Sample | Static Water Table

Depth (ft.)	Soil Type	Undisturbed	Bulk	Description	Blows / Foot	N_{60}	Dry Density (pcf)	Moisture Content (%)	Expansion Index	Particle Size	Swell Pressure (psf)	Atterberg Limits L.L.	Atterberg Limits P.I.
	SM												
	BR												
40				Olive brown SANDSTONE, very dense, slightly damp, (Tp-Purisima Formation Sandstone).	50-6"			10.3					
				Boring terminated at a depth of 41 1/2 feet. No groundwater encountered during drilling.									
45													
50													
55													
60													
65													
70													

BUTANO GEOTECHNICAL ENGINEERING, INC.

FIGURE B-4b

LOG OF EXPLORATORY BORING

Project No.:	16-128-SC	Boring:	B2
Project:	Nissan of Soquel	Location:	
		Elevation:	
Date:	June 7, 2016	Method of Drilling:	6 inch diameter solid stem truck mounted auger
Logged By:	PE		

2" Ring Sample | 2.5" Ring Sample | Bulk Sample | Terzaghi Split Spoon Sample | Static Water Table

Depth (ft.)	Soil Type	Undisturbed	Bulk	Description	Blows / Foot	N_{60}	Dry Density (pcf)	Moisture Content (%)	Expansion Index	Particle Size	Unconfined (psf)	Atterberg Limits L.L.	Atterberg Limits P.I.
	CL			Brown sandy lean CLAY, stiff, moist.	15	8	104.2	16.5		✓			
				Very stiff.	26	22		14.9					
5	SM			Light brown silty SAND, very dense, slightly damp, weakly cemented.	50-6"			17.4					
					48	48		20.0					
	SC			Brown clayey SAND, dense, damp, (Qcl-Lowest emergent coastal terrace deposit).									
10				Medium dense.	17	13		27.3					
	SM												
15				Olive brown silty SAND, dense, damp, (Qcl).	40	36		13.2					
20				Very Dense, with gravel.	50-6"			13.1					
				Boring terminated at a depth of 21 1/2 feet. No groundwater encountered during drilling.									
25													
30													
35													

BUTANO GEOTECHNICAL ENGINEERING, INC.

FIGURE B-5

LOG OF EXPLORATORY BORING

Project No.:	16-128-SC	Boring:	B3
Project:	Nissan of Soquel	Location:	
		Elevation:	
Date:	June 7, 2016	Method of Drilling:	6 inch diameter solid stem truck mounted auger
Logged By:	PE		

2" Ring Sample | 2.5" Ring Sample | Bulk Sample | Terzaghi Split Spoon Sample | Static Water Table

Depth (ft.)	Soil Type	Undisturbed	Bulk	Description	Blows / Foot	N_{60}	Dry Density (pcf)	Moisture Content (%)	Expansion Index	Particle Size	Unconfined (psf)	Atterberg Limits L.L.	Atterberg Limits P.I.
	CL			2" AC over 4" Base Rock. Brown sandy lean CLAY, very stiff, moist.	22	12	112.4	13.1	4		6600		
					50-6"			13.8					
	SM			Light brown silty SAND, very dense, slightly damp, weakly cemented									
5	SC			Brown clayey SAND, very dense, damp, (Qcl- Lowest emergent coastal terrace deposit).	50-6"			13.8					
10				Medium dense.	31	28		24.0					
15				Dense.	45	41		19.8					
20	SM			Brown silty SAND with gravel, very dense, damp, (Qcl)	50-6"			8.2					
25				Boring terminated at a depth of 21 1/2 feet. No groundwater encountered during drilling.									
30													
35													

BUTANO GEOTECHNICAL ENGINEERING, INC.

FIGURE B-6

LOG OF EXPLORATORY BORING

Project No.:	16-128-SC	Boring:	B4
Project:	Nissan of Soquel	Location:	
		Elevation:	
Date:	June 7, 2016	Method of Drilling:	6 inch diameter solid stem truck mounted auger
Logged By:	PE		

2" Ring Sample | 2.5" Ring Sample | Bulk Sample | Terzaghi Split Spoon Sample | Static Water Table

Depth (ft.)	Soil Type	Undisturbed	Bulk	Description	Blows / Foot	N_{60}	Dry Density (pcf)	Moisture Content (%)	Expansion Index	Particle Size	Unconfined (psf)	Atterberg Limits L.L.	Atterberg Limits P.I.
	CL			3" AC over 5" Base Rock. Brown sandy lean CLAY, stiff, moist, mottled red.	7	3	105.6	19.4			1800		
	SC			Grey clayey SAND, dense, damp, (Qcl-Lowest emergent coastal terrace deposit).	35	32		16.6					
5					52	47		17.7		✓			
	CL												
10				Tan lean CLAY, very stiff, moist, (Qcl).	22	18		25.4					
				Some sand.									
15				Tan sandy lean CLAY, hard.	63	57		13.9					
	SM												
20				Brown to olive silty SAND with gravel, very dense, (Qcl)	62	56		7.0					
				Boring terminated at a depth of 21 1/2 feet. No groundwater encountered during drilling.									
25													
30													
35													

BUTANO GEOTECHNICAL ENGINEERING, INC.

FIGURE B-7

APPENDIX C

LABORATORY TESTING PROGRAM

LABORATORY TESTING PROCEDURES

Classification

Soils were classified according to the Unified Soil Classification System in accordance with ASTM D 2487 and D 2488. Moisture content and density determinations were made for representative samples in accordance with ASTM D 2216. Results of moisture density determinations, together with classifications, are shown on the Boring Logs, Figures B-4a through B-7.

Expansion Index

Two expansion index tests were performed on representative bulk samples of the foundation zone soil in accordance with ASTM D 4829-03. The results are shown on the Boring Logs, Figures B-4a and B-6.

Unconfined Compression

Three unconfined compression tests were performed in accordance with ASTM D 2166. The results are shown on the boring logs Figures B-4a, B-6 and B-7.

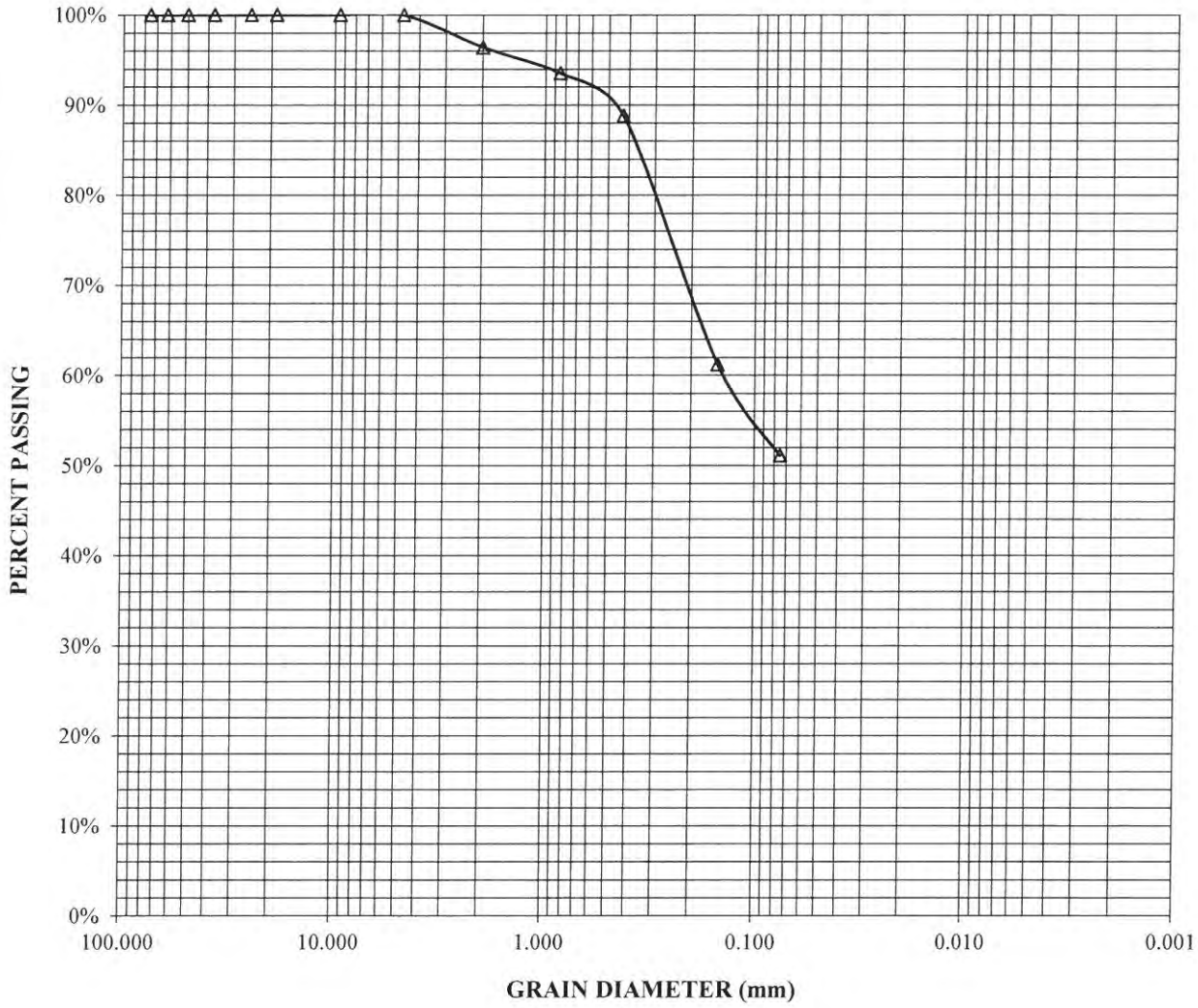
Particle Size Analysis

Two sieves were performed on representative samples in accordance with ASTM D 422. The grain size distributions from the result of the particle size analysis are shown in Figures C-1 and C-2.

R-Value

One R-Value was conducted on a representative sample of the pavement zone subgrade soil according to ASTM D2488 or CTM 301. The result is presented in Figure C-3.

BORING:	B2-1	PERCENT	PERCENT
DEPTH (ft):	1.0	PASSING No. 4	PASSING No. 200
SOIL TYPE (USCS):	CL	100.0%	51.1%



BUTANO	**GRAIN SIZE DISTRIBUTION**	FIGURE
GEOTECHNICAL ENGINEERING, INC.	Nissan of Soquel	C-1

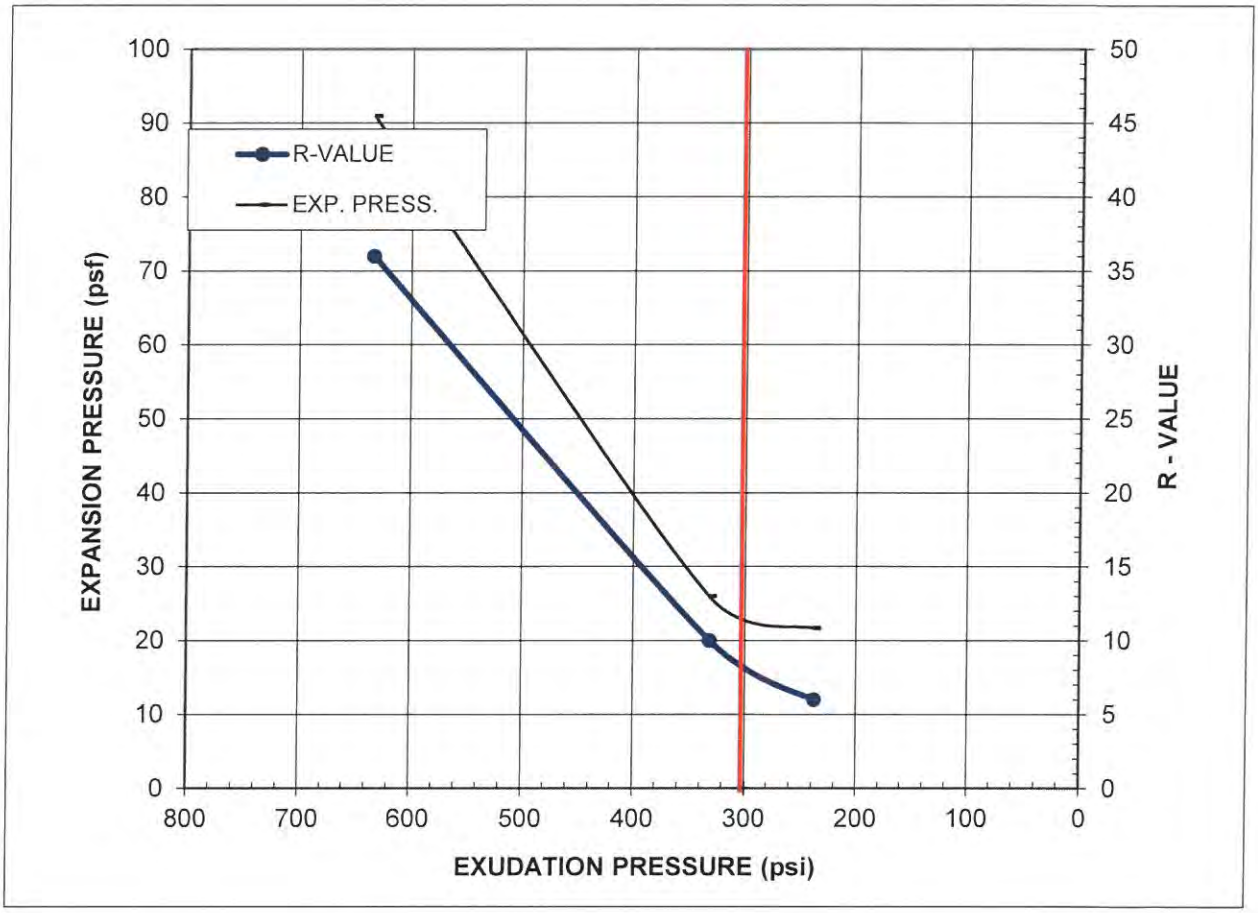
BORING:	B4-3	PERCENT	PERCENT
DEPTH (ft):	Depth	PASSING No. 4	PASSING No. 200
SOIL TYPE (USCS):	SC	99.9%	37.4%

BUTANO	**GRAIN SIZE DISTRIBUTION**	FIGURE
GEOTECHNICAL ENGINEERING, INC.	Nissan of Soquel	C-2

R-VALUE REPORT

Parikh Consultants, Inc. **ASTM D2844 or CTM 301** (408) 452-9000

Project Name:	Nissan Of Soquil			Date:	7/13/16
Client:	Butano Geoechnical Engineering Inc			Project #:	2015-125-TST
Sample #:	B-1	Depth:	1-3'	Lab #:	M965
client project #	16-121-SC	Onsite / Native		Sample Date:	7/12/16 delivered
Material :	Silty Lean Clay			Sampled By:	



Specimen No.	A	B	C
Exudation Pressure, psi	237.8	331.5	633.9
Expansion Pressure, psf	21.65	25.98	90.93
R-Value	6	10	36
Moisture Content at Test, %	18.1	16.2	14.3
Dry Density at Test, pcf	107.9	112.2	118.1

R-Value @ 300 psi Exudation Pressure = **8** Expansion Pressure @300 psi Exudation, psf = **23**

Minimum R-Value Requirement:

Comments:

Reported By : Nasir Ahmad

Figure C-3

Attachment E

Will-Serve Letter from County Sanitation District

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Santa Cruz County Sanitation District

701 OCEAN STREET, SUITE 410, SANTA CRUZ, CA 95060-4073
(831) 454-2160 FAX (831) 454-2089 TDD: (831) 454-2123

JOHN J. PRESLEIGH, DISTRICT ENGINEER

December 22, 2016

BILL WISEMAN
BLAM-JADE
KIMLEY - HORN & ASSOCIATES
824 BAY AVENUE, SUITE 10
CAPITOLA CA 95010

SUBJECT: SEWER AVAILABILITY AND DISTRICT'S CONDITIONS OF SERVICE FOR THE FOLLOWING PROPOSED DEVELOPMENT:

APN: 030-121-08, -12, -13, & -53 APPLICATION NO.: N/A

PARCEL ADDRESS: 2821 41ST AVENUE

PROJECT DESCRIPTION: REMOVAL OF 4 EXISTING SFDs AND CONSTRUCTION OF A NEW ~16,000 CAR DEALERSHIP

Sewer service is available for the proposed development upon completion of the discretionary permit approval process, subject to conditions determined during that review process.

Note that the minimum required slope for private sewer lines is 2% and that the public sewer mains at this location appear to be less than 10 feet below grade. The applicant is encouraged to thoroughly investigate the length and slope of proposed private sewage improvements before committing to a particular design.

Proposed location of on-site sewer lateral(s), clean-out(s), and connection(s) to existing public sewer must be shown on the plot plan of the building permit application.

Existing lateral(s) must be properly abandoned (including inspection by District) prior to issuance of demolition permit or relocation or disconnection of structure. An abandonment permit for disconnection work must be obtained from the District.

A sewer connection can be issued, and final charges determined, after the District and, as needed, other Department of Public Works divisions have reviewed and approved the final engineered sewer improvement plans.

On the improvement plans, show all adjacent or impacted roads and easements, and all on- and off-site sewer improvements needed. These plans must conform to the County's "Design Criteria."

Water use data, and other information as may be required for this project, must be submitted to the District for review and use in fee determination and waste pretreatment requirements before sewer connection permits can be approved.

Please show all existing and proposed plumbing fixtures on floor plans of building application. Completely describe all plumbing fixtures according to table T-702.1 of the California Plumbing Code.

A backflow preventive device may be required.

No downstream capacity problem other than noted above is known at this time. However, downstream sewer requirements will again be studied at time of Planning Permit review, at which time the District reserves the right to add or modify downstream sewer requirements.

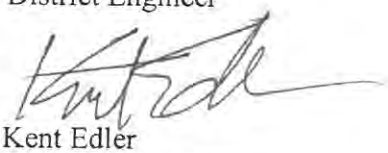
In accordance with Sanitation District Code section 7.04.375 Private Sanitary Sewer System Repair, of Title 7, prior to building permit submittal the applicant/owner is required to televise any existing on-site sewer laterals to be retained and make repairs to any damaged or leaking pipes that might be shown. This includes root intrusion, open joints, cracks or breaks, sags, damaged or defective cleanout, inflow and infiltration of extraneous water, older pipe materials that are known to be inadequate, inadequate lift or pump stations, inadequate alarm systems for overflows, and inadequate maintenance of lift stations. Color video results (DVD), of a sufficient quality to observe interior pipe condition, joints, sags among other items, shall be made available to the District for review, along with District certification form completed by plumber, and the District shall review results within 10 working days of submittal to the District. Repairs, as required by the District, shall be made within 90 working days of receipt of video result review. Applicant/owner shall obtain a sewer repair permit (no charge) from the District and shall have repairs inspected by the District inspector prior to backfilling of pipe or structure.

This notice is effective for one year from the issuance date to allow the applicant the time to receive tentative map, development or other discretionary permit approval. If after this time frame this project has not received approval from the Planning Department, a new sewer service availability letter must be obtained by the applicant. If, for whatever reason, any approval by the Planning Department of a tentative map for this project is withdrawn, is revoked, or has expired, then this determination of availability will be considered to have expired and will be invalid.

If you have any questions regarding this letter, please call Robert Hambelton at (831) 454-2160.

Yours truly,

JOHN J. PRESLEIGH
District Engineer

By: 
Kent Edler
Sanitation Engineer

BH:dls/478
copy: County Planning Department

Attachment F

Will-Serve Letter from City of Santa Cruz Water Department

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CITY OF SANTA CRUZ

WATER DEPARTMENT

212 Locust Street, Suite C Santa Cruz CA 95060 Phone (831) 420-5200 Fax (831) 420-5201

December 8, 2016

Kimley-Horn & Assoc.
Bill Wiseman
824 Bay Ave Ste 10
Capitola, CA 95010

Re: APN 030-121-08 (3906 Soquel Dr), 030-121-12 (2821 41st Ave), 030-121-13 (2815 41st Ave), 030-121-27 (3820 Soquel Dr), and 030-121-53 (2755 41st Ave) – Santa Cruz County, CA
Proposed New Santa Cruz Nissan Dealership

Dear Mr. Wiseman:

This letter is to advise you that the subject parcels are located within the service area of the Santa Cruz Water Department and potable water is currently available for normal domestic use and fire protection. Service will be provided to each and every lot of the development upon payment of the fees and charges in effect at the time of service application and upon completion of the installation, at developer expense, of any water mains, service connections, fire hydrants and other facilities required for the development under the rules and regulations of the Santa Cruz Water Department. The development will also be subject to the City's Landscape Water Conservation requirements.

At the present time:

the required water system improvements are not complete; and
financial arrangements have not been made to the satisfaction of the City to guarantee payment of all unpaid claims.

This letter will remain in effect for a period of two years from the above date. It should be noted, however, that the City Council may elect to declare a moratorium on new service connections due to drought conditions or other water emergency. Such a declaration would supersede this statement of water availability.

If you have any questions regarding service requirements, please call the Engineering Division at (831) 420-5210. If you have questions regarding landscape water conservation requirements, please contact the Water Conservation Office at (831) 420-5230.

Sincerely,

Rosemary Menard

Rosemary Menard
Water Director

RM/js
Cc: SCWD Engineering

Attachment G

California Emissions Estimator Model (CalEEMod) Report

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Santa Cruz Nissan

Santa Cruz County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Automobile Care Center	20.00	1000sqft	1.78	20,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	61
Climate Zone	5			**Operational Year**	2018
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Actual parcel size.

Construction Phase - Estimated construction schedule based on Board of Supervisor's approval.

Demolition -

Mobile Land Use Mitigation -

Area Mitigation -

Energy Mitigation -

Water Mitigation -

Waste Mitigation -

Grading - Entire site will be disturbed.

Road Dust -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	5.00
tblConstructionPhase	NumDays	200.00	100.00
tblConstructionPhase	NumDays	20.00	10.00
tblConstructionPhase	NumDays	4.00	2.00
tblConstructionPhase	NumDays	10.00	5.00
tblConstructionPhase	NumDays	2.00	1.00
tblGrading	AcresOfGrading	0.75	1.78
tblGrading	AcresOfGrading	0.50	1.78
tblLandUse	LotAcreage	0.46	1.78
tblProjectCharacteristics	OperationalYear	2014	2018

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2017	0.1619	1.0995	0.8580	1.2800e-003	0.0155	0.0688	0.0843	5.5900e-003	0.0661	0.0717	0.0000	108.0842	108.0842	0.0223	0.0000	108.5515
2018	0.2404	0.0661	0.0576	9.0000e-005	4.1000e-004	4.0000e-003	4.4100e-003	1.1000e-004	3.8100e-003	3.9200e-003	0.0000	7.7535	7.7535	1.7400e-003	0.0000	7.7899
Total	**0.4023**	**1.1656**	**0.9156**	**1.3700e-003**	**0.0159**	**0.0728**	**0.0888**	**5.7000e-003**	**0.0699**	**0.0756**	**0.0000**	**115.8377**	**115.8377**	**0.0240**	**0.0000**	**116.3414**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2017	0.1619	1.0995	0.8580	1.2800e-003	0.0155	0.0688	0.0843	5.5900e-003	0.0661	0.0717	0.0000	108.0841	108.0841	0.0223	0.0000	108.5513
2018	0.2404	0.0661	0.0576	9.0000e-005	4.1000e-004	4.0000e-003	4.4100e-003	1.1000e-004	3.8100e-003	3.9200e-003	0.0000	7.7535	7.7535	1.7400e-003	0.0000	7.7899
Total	**0.4023**	**1.1656**	**0.9156**	**1.3700e-003**	**0.0159**	**0.0728**	**0.0888**	**5.7000e-003**	**0.0699**	**0.0756**	**0.0000**	**115.8375**	**115.8375**	**0.0240**	**0.0000**	**116.3413**

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

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.1013	0.0000	2.6000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	5.0000e-004	5.0000e-004	0.0000	0.0000	5.2000e-004
Energy	2.7700e-003	0.0252	0.0212	1.5000e-004		1.9100e-003	1.9100e-003		1.9100e-003	1.9100e-003	0.0000	75.5244	75.5244	2.7000e-003	9.5000e-004	75.8764
Mobile	0.6753	0.8429	4.9672	6.8000e-003	0.4582	9.5200e-003	0.4677	0.1227	8.7700e-003	0.1315	0.0000	498.9719	498.9719	0.0306	0.0000	499.6140
Waste						0.0000	0.0000		0.0000	0.0000	15.5085	0.0000	15.5085	0.9165	0.0000	34.7556
Water						0.0000	0.0000		0.0000	0.0000	0.5970	4.1361	4.7331	0.0615	1.4900e-003	6.4854
Total	**0.7794**	**0.8681**	**4.9886**	**6.9500e-003**	**0.4582**	**0.0114**	**0.4696**	**0.1227**	**0.0107**	**0.1334**	**16.1055**	**578.6330**	**594.7384**	**1.0113**	**2.4400e-003**	**616.7319**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.1013	0.0000	2.6000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	5.0000e-004	5.0000e-004	0.0000	0.0000	5.2000e-004
Energy	2.7700e-003	0.0252	0.0212	1.5000e-004		1.9100e-003	1.9100e-003		1.9100e-003	1.9100e-003	0.0000	75.5244	75.5244	2.7000e-003	9.5000e-004	75.8764
Mobile	0.6455	0.6967	4.3346	5.2100e-003	0.3421	7.6000e-003	0.3497	0.0916	7.0100e-003	0.0986	0.0000	381.7304	381.7304	0.0249	0.0000	382.2528
Waste						0.0000	0.0000		0.0000	0.0000	4.6526	0.0000	4.6526	0.2750	0.0000	10.4267
Water						0.0000	0.0000		0.0000	0.0000	0.5232	3.6984	4.2216	0.0539	1.3000e-003	5.7567
Total	**0.7496**	**0.7219**	**4.3560**	**5.3600e-003**	**0.3421**	**9.5100e-003**	**0.3516**	**0.0916**	**8.9200e-003**	**0.1005**	**5.1757**	**460.9537**	**466.1295**	**0.3564**	**2.2500e-003**	**474.3132**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**3.82**	**16.84**	**12.68**	**22.88**	**25.34**	**16.80**	**25.13**	**25.34**	**16.48**	**24.63**	**67.86**	**20.34**	**21.62**	**64.76**	**7.79**	**23.09**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	8/1/2017	8/14/2017	5	10	
2	Site Preparation	Site Preparation	8/15/2017	8/15/2017	5	1	
3	Grading	Grading	8/16/2017	8/17/2017	5	2	
4	Building Construction	Building Construction	8/18/2017	1/4/2018	5	100	
5	Paving	Paving	1/5/2018	1/11/2018	5	5	
6	Architectural Coating	Architectural Coating	1/12/2018	1/18/2018	5	5	

Acres of Grading (Site Preparation Phase): 1.78

Acres of Grading (Grading Phase): 1.78

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 30,000; Non-Residential Outdoor: 10,000 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Rubber Tired Dozers	1	8.00	255	0.40
Demolition	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Site Preparation	Graders	1	8.00	174	0.41
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction	Generator Sets	1	8.00	84	0.74
Grading	Rubber Tired Dozers	1	6.00	255	0.40
Grading	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Building Construction	Cranes	1	6.00	226	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Paving	Cement and Mortar Mixers	1	6.00	9	0.56
Paving	Pavers	1	6.00	125	0.42
Paving	Rollers	1	7.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48
Grading	Graders	1	6.00	174	0.41
Paving	Paving Equipment	1	8.00	130	0.36
Site Preparation	Rubber Tired Dozers	1	7.00	255	0.40
Building Construction	Welders	3	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	5	13.00	0.00	23.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	3	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	7	6.00	3.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	13.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	1.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.4600e-003	0.0000	2.4600e-003	3.7000e-004	0.0000	3.7000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0136	0.1329	0.1044	1.2000e-004		8.0300e-003	8.0300e-003		7.5100e-003	7.5100e-003	0.0000	11.1469	11.1469	2.8300e-003	0.0000	11.2063
Total	**0.0136**	**0.1329**	**0.1044**	**1.2000e-004**	**2.4600e-003**	**8.0300e-003**	**0.0105**	**3.7000e-004**	**7.5100e-003**	**7.8800e-003**	**0.0000**	**11.1469**	**11.1469**	**2.8300e-003**	**0.0000**	**11.2063**

3.2 Demolition - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.4000e-004	2.6900e-003	3.4500e-003	1.0000e-005	1.9000e-004	4.0000e-005	2.3000e-004	5.0000e-005	4.0000e-005	9.0000e-005	0.0000	0.7439	0.7439	1.0000e-005	0.0000	0.7440
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.6000e-004	3.8000e-004	3.4700e-003	1.0000e-005	5.1000e-004	0.0000	5.2000e-004	1.4000e-004	0.0000	1.4000e-004	0.0000	0.4571	0.4571	3.0000e-005	0.0000	0.4577
Total	**5.0000e-004**	**3.0700e-003**	**6.9200e-003**	**2.0000e-005**	**7.0000e-004**	**4.0000e-005**	**7.5000e-004**	**1.9000e-004**	**4.0000e-005**	**2.3000e-004**	**0.0000**	**1.2009**	**1.2009**	**4.0000e-005**	**0.0000**	**1.2017**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.4600e-003	0.0000	2.4600e-003	3.7000e-004	0.0000	3.7000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0136	0.1329	0.1044	1.2000e-004		8.0300e-003	8.0300e-003		7.5100e-003	7.5100e-003	0.0000	11.1469	11.1469	2.8300e-003	0.0000	11.2063
Total	**0.0136**	**0.1329**	**0.1044**	**1.2000e-004**	**2.4600e-003**	**8.0300e-003**	**0.0105**	**3.7000e-004**	**7.5100e-003**	**7.8800e-003**	**0.0000**	**11.1469**	**11.1469**	**2.8300e-003**	**0.0000**	**11.2063**

3.2 Demolition - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.4000e-004	2.6900e-003	3.4500e-003	1.0000e-005	1.9000e-004	4.0000e-005	2.3000e-004	5.0000e-005	4.0000e-005	9.0000e-005	0.0000	0.7439	0.7439	1.0000e-005	0.0000	0.7440
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.6000e-004	3.8000e-004	3.4700e-003	1.0000e-005	5.1000e-004	0.0000	5.2000e-004	1.4000e-004	0.0000	1.4000e-004	0.0000	0.4571	0.4571	3.0000e-005	0.0000	0.4577
Total	**5.0000e-004**	**3.0700e-003**	**6.9200e-003**	**2.0000e-005**	**7.0000e-004**	**4.0000e-005**	**7.5000e-004**	**1.9000e-004**	**4.0000e-005**	**2.3000e-004**	**0.0000**	**1.2009**	**1.2009**	**4.0000e-005**	**0.0000**	**1.2017**

3.3 Site Preparation - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.5800e-003	0.0000	3.5800e-003	1.5500e-003	0.0000	1.5500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.1600e-003	0.0121	7.9600e-003	1.0000e-005		6.5000e-004	6.5000e-004		6.0000e-004	6.0000e-004	0.0000	0.7948	0.7948	2.4000e-004	0.0000	0.7999
Total	**1.1600e-003**	**0.0121**	**7.9600e-003**	**1.0000e-005**	**3.5800e-003**	**6.5000e-004**	**4.2300e-003**	**1.5500e-003**	**6.0000e-004**	**2.1500e-003**	**0.0000**	**0.7948**	**0.7948**	**2.4000e-004**	**0.0000**	**0.7999**

3.3 Site Preparation - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0000e-005	2.0000e-005	2.1000e-004	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0281	0.0281	0.0000	0.0000	0.0282
Total	**2.0000e-005**	**2.0000e-005**	**2.1000e-004**	**0.0000**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0281**	**0.0281**	**0.0000**	**0.0000**	**0.0282**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.5800e-003	0.0000	3.5800e-003	1.5500e-003	0.0000	1.5500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.1600e-003	0.0121	7.9600e-003	1.0000e-005		6.5000e-004	6.5000e-004		6.0000e-004	6.0000e-004	0.0000	0.7948	0.7948	2.4000e-004	0.0000	0.7999
Total	**1.1600e-003**	**0.0121**	**7.9600e-003**	**1.0000e-005**	**3.5800e-003**	**6.5000e-004**	**4.2300e-003**	**1.5500e-003**	**6.0000e-004**	**2.1500e-003**	**0.0000**	**0.7948**	**0.7948**	**2.4000e-004**	**0.0000**	**0.7999**

3.3 Site Preparation - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0000e-005	2.0000e-005	2.1000e-004	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0281	0.0281	0.0000	0.0000	0.0282
Total	**2.0000e-005**	**2.0000e-005**	**2.1000e-004**	**0.0000**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0281**	**0.0281**	**0.0000**	**0.0000**	**0.0282**

3.4 Grading - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.4600e-003	0.0000	5.4600e-003	2.5800e-003	0.0000	2.5800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.8800e-003	0.0198	0.0132	1.0000e-005		1.0700e-003	1.0700e-003		9.8000e-004	9.8000e-004	0.0000	1.3056	1.3056	4.0000e-004	0.0000	1.3140
Total	**1.8800e-003**	**0.0198**	**0.0132**	**1.0000e-005**	**5.4600e-003**	**1.0700e-003**	**6.5300e-003**	**2.5800e-003**	**9.8000e-004**	**3.5600e-003**	**0.0000**	**1.3056**	**1.3056**	**4.0000e-004**	**0.0000**	**1.3140**

3.4 Grading - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-005	5.0000e-005	4.3000e-004	0.0000	6.0000e-005	0.0000	6.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0563	0.0563	0.0000	0.0000	0.0563
Total	**3.0000e-005**	**5.0000e-005**	**4.3000e-004**	**0.0000**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0563**	**0.0563**	**0.0000**	**0.0000**	**0.0563**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.4600e-003	0.0000	5.4600e-003	2.5800e-003	0.0000	2.5800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.8800e-003	0.0198	0.0132	1.0000e-005		1.0700e-003	1.0700e-003		9.8000e-004	9.8000e-004	0.0000	1.3056	1.3056	4.0000e-004	0.0000	1.3140
Total	**1.8800e-003**	**0.0198**	**0.0132**	**1.0000e-005**	**5.4600e-003**	**1.0700e-003**	**6.5300e-003**	**2.5800e-003**	**9.8000e-004**	**3.5600e-003**	**0.0000**	**1.3056**	**1.3056**	**4.0000e-004**	**0.0000**	**1.3140**

3.4 Grading - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-005	5.0000e-005	4.3000e-004	0.0000	6.0000e-005	0.0000	6.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0563	0.0563	0.0000	0.0000	0.0563
Total	**3.0000e-005**	**5.0000e-005**	**4.3000e-004**	**0.0000**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0563**	**0.0563**	**0.0000**	**0.0000**	**0.0563**

3.5 Building Construction - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1418	0.9172	0.6869	1.0500e-003		0.0588	0.0588		0.0568	0.0568	0.0000	88.5827	88.5827	0.0186	0.0000	88.9730
Total	**0.1418**	**0.9172**	**0.6869**	**1.0500e-003**		**0.0588**	**0.0588**		**0.0568**	**0.0568**	**0.0000**	**88.5827**	**88.5827**	**0.0186**	**0.0000**	**88.9730**

3.5 Building Construction - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.7200e-003	0.0126	0.0227	3.0000e-005	9.1000e-004	2.0000e-004	1.1100e-003	2.6000e-004	1.8000e-004	4.4000e-004	0.0000	2.9438	2.9438	2.0000e-005	0.0000	2.9443
Worker	1.1600e-003	1.7000e-003	0.0154	3.0000e-005	2.2800e-003	2.0000e-005	2.3000e-003	6.1000e-004	2.0000e-005	6.3000e-004	0.0000	2.0252	2.0252	1.3000e-004	0.0000	2.0279
Total	**2.8800e-003**	**0.0143**	**0.0380**	**6.0000e-005**	**3.1900e-003**	**2.2000e-004**	**3.4100e-003**	**8.7000e-004**	**2.0000e-004**	**1.0700e-003**	**0.0000**	**4.9689**	**4.9689**	**1.5000e-004**	**0.0000**	**4.9721**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1418	0.9172	0.6869	1.0500e-003		0.0588	0.0588		0.0568	0.0568	0.0000	88.5826	88.5826	0.0186	0.0000	88.9729
Total	**0.1418**	**0.9172**	**0.6869**	**1.0500e-003**		**0.0588**	**0.0588**		**0.0568**	**0.0568**	**0.0000**	**88.5826**	**88.5826**	**0.0186**	**0.0000**	**88.9729**

3.5 Building Construction - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.7200e-003	0.0126	0.0227	3.0000e-005	9.1000e-004	2.0000e-004	1.1100e-003	2.6000e-004	1.8000e-004	4.4000e-004	0.0000	2.9438	2.9438	2.0000e-005	0.0000	2.9443
Worker	1.1600e-003	1.7000e-003	0.0154	3.0000e-005	2.2800e-003	2.0000e-005	2.3000e-003	6.1000e-004	2.0000e-005	6.3000e-004	0.0000	2.0252	2.0252	1.3000e-004	0.0000	2.0279
Total	**2.8800e-003**	**0.0143**	**0.0380**	**6.0000e-005**	**3.1900e-003**	**2.2000e-004**	**3.4100e-003**	**8.7000e-004**	**2.0000e-004**	**1.0700e-003**	**0.0000**	**4.9689**	**4.9689**	**1.5000e-004**	**0.0000**	**4.9721**

3.5 Building Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	5.1700e-003	0.0346	0.0277	4.0000e-005		2.1100e-003	2.1100e-003		2.0300e-003	2.0300e-003	0.0000	3.6676	3.6676	7.4000e-004	0.0000	3.6831
Total	**5.1700e-003**	**0.0346**	**0.0277**	**4.0000e-005**		**2.1100e-003**	**2.1100e-003**		**2.0300e-003**	**2.0300e-003**	**0.0000**	**3.6676**	**3.6676**	**7.4000e-004**	**0.0000**	**3.6831**

3.5 Building Construction - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	7.0000e-005	4.7000e-004	9.0000e-004	0.0000	4.0000e-005	1.0000e-005	5.0000e-005	1.0000e-005	1.0000e-005	2.0000e-005	0.0000	0.1208	0.1208	0.0000	0.0000	0.1208
Worker	4.0000e-005	6.0000e-005	5.6000e-004	0.0000	9.0000e-005	0.0000	1.0000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0812	0.0812	0.0000	0.0000	0.0813
Total	**1.1000e-004**	**5.3000e-004**	**1.4600e-003**	**0.0000**	**1.3000e-004**	**1.0000e-005**	**1.5000e-004**	**4.0000e-005**	**1.0000e-005**	**5.0000e-005**	**0.0000**	**0.2020**	**0.2020**	**0.0000**	**0.0000**	**0.2021**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	5.1700e-003	0.0346	0.0277	4.0000e-005		2.1100e-003	2.1100e-003		2.0300e-003	2.0300e-003	0.0000	3.6676	3.6676	7.4000e-004	0.0000	3.6831
Total	**5.1700e-003**	**0.0346**	**0.0277**	**4.0000e-005**		**2.1100e-003**	**2.1100e-003**		**2.0300e-003**	**2.0300e-003**	**0.0000**	**3.6676**	**3.6676**	**7.4000e-004**	**0.0000**	**3.6831**

3.5 Building Construction - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	7.0000e-005	4.7000e-004	9.0000e-004	0.0000	4.0000e-005	1.0000e-005	5.0000e-005	1.0000e-005	1.0000e-005	2.0000e-005	0.0000	0.1208	0.1208	0.0000	0.0000	0.1208
Worker	4.0000e-005	6.0000e-005	5.6000e-004	0.0000	9.0000e-005	0.0000	1.0000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0812	0.0812	0.0000	0.0000	0.0813
Total	**1.1000e-004**	**5.3000e-004**	**1.4600e-003**	**0.0000**	**1.3000e-004**	**1.0000e-005**	**1.5000e-004**	**4.0000e-005**	**1.0000e-005**	**5.0000e-005**	**0.0000**	**0.2020**	**0.2020**	**0.0000**	**0.0000**	**0.2021**

3.6 Paving - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.5100e-003	0.0258	0.0222	3.0000e-005		1.5100e-003	1.5100e-003		1.3900e-003	1.3900e-003	0.0000	3.0086	3.0086	9.2000e-004	0.0000	3.0279
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**2.5100e-003**	**0.0258**	**0.0222**	**3.0000e-005**		**1.5100e-003**	**1.5100e-003**		**1.3900e-003**	**1.3900e-003**	**0.0000**	**3.0086**	**3.0086**	**9.2000e-004**	**0.0000**	**3.0279**

3.6 Paving - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1000e-004	1.7000e-004	1.5200e-003	0.0000	2.6000e-004	0.0000	2.6000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.2200	0.2200	1.0000e-005	0.0000	0.2203
Total	**1.1000e-004**	**1.7000e-004**	**1.5200e-003**	**0.0000**	**2.6000e-004**	**0.0000**	**2.6000e-004**	**7.0000e-005**	**0.0000**	**7.0000e-005**	**0.0000**	**0.2200**	**0.2200**	**1.0000e-005**	**0.0000**	**0.2203**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.5100e-003	0.0258	0.0222	3.0000e-005		1.5100e-003	1.5100e-003		1.3900e-003	1.3900e-003	0.0000	3.0086	3.0086	9.2000e-004	0.0000	3.0279
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**2.5100e-003**	**0.0258**	**0.0222**	**3.0000e-005**		**1.5100e-003**	**1.5100e-003**		**1.3900e-003**	**1.3900e-003**	**0.0000**	**3.0086**	**3.0086**	**9.2000e-004**	**0.0000**	**3.0279**

3.6 Paving - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1000e-004	1.7000e-004	1.5200e-003	0.0000	2.6000e-004	0.0000	2.6000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.2200	0.2200	1.0000e-005	0.0000	0.2203
Total	**1.1000e-004**	**1.7000e-004**	**1.5200e-003**	**0.0000**	**2.6000e-004**	**0.0000**	**2.6000e-004**	**7.0000e-005**	**0.0000**	**7.0000e-005**	**0.0000**	**0.2200**	**0.2200**	**1.0000e-005**	**0.0000**	**0.2203**

3.7 Architectural Coating - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.2318					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.5000e-004	5.0100e-003	4.6400e-003	1.0000e-005		3.8000e-004	3.8000e-004		3.8000e-004	3.8000e-004	0.0000	0.6383	0.6383	6.0000e-005	0.0000	0.6396
Total	**0.2325**	**5.0100e-003**	**4.6400e-003**	**1.0000e-005**		**3.8000e-004**	**3.8000e-004**		**3.8000e-004**	**3.8000e-004**	**0.0000**	**0.6383**	**0.6383**	**6.0000e-005**	**0.0000**	**0.6396**

3.7 Architectural Coating - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-005	1.0000e-005	1.2000e-004	0.0000	2.0000e-005	0.0000	2.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0169	0.0169	0.0000	0.0000	0.0170
Total	**1.0000e-005**	**1.0000e-005**	**1.2000e-004**	**0.0000**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0169**	**0.0169**	**0.0000**	**0.0000**	**0.0170**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.2318					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.5000e-004	5.0100e-003	4.6400e-003	1.0000e-005		3.8000e-004	3.8000e-004		3.8000e-004	3.8000e-004	0.0000	0.6383	0.6383	6.0000e-005	0.0000	0.6396
Total	**0.2325**	**5.0100e-003**	**4.6400e-003**	**1.0000e-005**		**3.8000e-004**	**3.8000e-004**		**3.8000e-004**	**3.8000e-004**	**0.0000**	**0.6383**	**0.6383**	**6.0000e-005**	**0.0000**	**0.6396**

3.7 Architectural Coating - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-005	1.0000e-005	1.2000e-004	0.0000	2.0000e-005	0.0000	2.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0169	0.0169	0.0000	0.0000	0.0170
Total	**1.0000e-005**	**1.0000e-005**	**1.2000e-004**	**0.0000**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0169**	**0.0169**	**0.0000**	**0.0000**	**0.0170**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Increase Transit Accessibility

Improve Pedestrian Network

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.6455	0.6967	4.3346	5.2100e-003	0.3421	7.6000e-003	0.3497	0.0916	7.0100e-003	0.0986	0.0000	381.7304	381.7304	0.0249	0.0000	382.2528
Unmitigated	0.6753	0.8429	4.9672	6.8000e-003	0.4582	9.5200e-003	0.4677	0.1227	8.7700e-003	0.1315	0.0000	498.9719	498.9719	0.0306	0.0000	499.6140

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Automobile Care Center	1,240.00	1,240.00	1240.00	1,235,271	922,215
Total	1,240.00	1,240.00	1,240.00	1,235,271	922,215

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Automobile Care Center	9.50	7.30	7.30	33.00	48.00	19.00	21	51	28

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.493512	0.037574	0.233760	0.143549	0.049865	0.006906	0.012880	0.004830	0.000942	0.002887	0.009149	0.000702	0.003444

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

Install High Efficiency Lighting

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	48.1168	48.1168	2.1800e-003	4.5000e-004	48.3020
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	48.1168	48.1168	2.1800e-003	4.5000e-004	48.3020
NaturalGas Mitigated	2.7700e-003	0.0252	0.0212	1.5000e-004		1.9100e-003	1.9100e-003		1.9100e-003	1.9100e-003	0.0000	27.4077	27.4077	5.3000e-004	5.0000e-004	27.5745
NaturalGas Unmitigated	2.7700e-003	0.0252	0.0212	1.5000e-004		1.9100e-003	1.9100e-003		1.9100e-003	1.9100e-003	0.0000	27.4077	27.4077	5.3000e-004	5.0000e-004	27.5745

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Automobile Care Center	513600	2.7700e-003	0.0252	0.0212	1.5000e-004		1.9100e-003	1.9100e-003		1.9100e-003	1.9100e-003	0.0000	27.4077	27.4077	5.3000e-004	5.0000e-004	27.5745
Total		**2.7700e-003**	**0.0252**	**0.0212**	**1.5000e-004**		**1.9100e-003**	**1.9100e-003**		**1.9100e-003**	**1.9100e-003**	**0.0000**	**27.4077**	**27.4077**	**5.3000e-004**	**5.0000e-004**	**27.5745**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Automobile Care Center	513600	2.7700e-003	0.0252	0.0212	1.5000e-004		1.9100e-003	1.9100e-003		1.9100e-003	1.9100e-003	0.0000	27.4077	27.4077	5.3000e-004	5.0000e-004	27.5745
Total		**2.7700e-003**	**0.0252**	**0.0212**	**1.5000e-004**		**1.9100e-003**	**1.9100e-003**		**1.9100e-003**	**1.9100e-003**	**0.0000**	**27.4077**	**27.4077**	**5.3000e-004**	**5.0000e-004**	**27.5745**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Automobile Care Center	165400	48.1168	2.1800e-003	4.5000e-004	48.3020
Total		**48.1168**	**2.1800e-003**	**4.5000e-004**	**48.3020**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Automobile Care Center	165400	48.1168	2.1800e-003	4.5000e-004	48.3020
Total		**48.1168**	**2.1800e-003**	**4.5000e-004**	**48.3020**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

No Hearths Installed

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.1013	0.0000	2.6000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	5.0000e-004	5.0000e-004	0.0000	0.0000	5.2000e-004
Unmitigated	0.1013	0.0000	2.6000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	5.0000e-004	5.0000e-004	0.0000	0.0000	5.2000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0232					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0781					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.0000e-005	0.0000	2.6000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	5.0000e-004	5.0000e-004	0.0000	0.0000	5.2000e-004
Total	**0.1013**	**0.0000**	**2.6000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**5.0000e-004**	**5.0000e-004**	**0.0000**	**0.0000**	**5.2000e-004**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0232					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0781					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.0000e-005	0.0000	2.6000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	5.0000e-004	5.0000e-004	0.0000	0.0000	5.2000e-004
Total	**0.1013**	**0.0000**	**2.6000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**5.0000e-004**	**5.0000e-004**	**0.0000**	**0.0000**	**5.2000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Toilet

Use Water Efficient Irrigation System

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	4.2216	0.0539	1.3000e-003	5.7567
Unmitigated	4.7331	0.0615	1.4900e-003	6.4854

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Automobile Care Center	1.88162 / 1.15325	4.7331	0.0615	1.4900e-003	6.4854
Total		**4.7331**	**0.0615**	**1.4900e-003**	**6.4854**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Automobile Care Center	1.64905 / 1.0829	4.2216	0.0539	1.3000e-003	5.7567
Total		**4.2216**	**0.0539**	**1.3000e-003**	**5.7567**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	4.6526	0.2750	0.0000	10.4267
Unmitigated	15.5085	0.9165	0.0000	34.7556

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Automobile Care Center	76.4	15.5085	0.9165	0.0000	34.7556
Total		**15.5085**	**0.9165**	**0.0000**	**34.7556**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Automobile Care Center	22.92	4.6526	0.2750	0.0000	10.4267
Total		**4.6526**	**0.2750**	**0.0000**	**10.4267**

9.0 Operational Offroad

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

10.0 Vegetation

Attachment H

Storm Water Management Plan

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PRELIMINARY STORMWATER MANAGEMENT REPORT

For

NISSAN OF SOQUEL

APN: 030-121-27, -08, -12, -13, & -53
3820 & 3906 Soquel Drive and
2755, 2815 & 2821 41st Ave
Soquel, California

Prepared At the Request of
Don Groppetti

February 22, 2017

B&W Job No. 26488

BASIS OF DESIGN:

1. County of Santa Cruz Design Criteria
2. Improvement Plans by Scott & Associates
3. Drainage Plan by Bowman & Williams
4. Infiltration Tests by Butano Geotechnical Engineers

1.0 INTRODUCTION

This stormwater report has been prepared to analyze the stormwater impact of the proposed development of car dealership on parcel #'s. 030-121-27, -08, -12, -13, & -53 located at 3820 & 3906 Soquel Drive and 2755, 2815 & 2821 41st Ave Soquel, California. The project replaces over 5,000 square feet of impervious area and is considered a large project under the County of Santa Cruz Design Criteria.

2.0 METHOD OF ANALYSIS

- The Rational Formula (shown below) is used to estimate peak runoff rates.

  $$Q = C_a C i_a i A$$

  Where:

  Q= Estimated Peak Runoff from site (cfs)
  C_a= Antecedent Moisture Factor (Unitless)
  C= Runoff Coefficient (Unitless)
  i_a= Rainfall Intensity Adjustment Factor (Unitless)
  i= Rainfall Intensity (in/hr)
  A= Area of Site (Acres)

- Pre development control rates are set at 2 yr – 2 hr and 10 yr – 15 min.

- Precipitation data/runoff coefficients are obtained from the Santa Cruz County Design Criteria Manual. Precipitation intensity is based upon the P60 Isopleth for Santa Cruz County (see attached map).

- The infiltration testing report by Butano found that infiltration rates were 0.00 to 0.01 in/hr at elevations of 9 ft deep and 0.09-0.34 in/hr at 25 ft deep. These rates make retention infeasible.

3.0 SYSTEM EVALUATION

- Source Control Requirements for vehicle and equipment repair and maintenance areas were put in place to prevent pollution.

- The project shall minimize stormwater runoff by constructing hardscapes from permeable asphalt where feasible. Landscaping areas shall be maintained around the perimeter of the site where feasible. The optimum project layout for the car dealership makes other site design and runoff reduction measures infeasible.

- Included in this report are Detention Calculation spreadsheets for the 10 year return period showing the estimated required storage volume for the additional runoff due to development.

- Due to the relatively small drainage area, the time of concentration (tc) used to determine the allowable runoff rate is assumed to be 15 minutes for pre and post development.

- The runoff values shown in the spreadsheets are calculated using the Rational Formula. Values for C are found in The County of Santa Cruz Design Criteria, a copy of these values is attached to this report.

- Antecedent Moisture factors (C_a) for the Rational Formula are found in The County of Santa Cruz Design Criteria, a copy of these values is attached to this report. C_a is 1.0 for the 2, 5, and 10-year events, and C_a is 1.1 for the 25-year event.

- A calculation sketch is included to show that the pervious asphalt pavement reservoir layer can detain the volume as calculated for the 10 year storm event.

- The control boxes for each DMA are equipped with an orifice and weir to allow the 2 yr – 2 hr, 10 yr – 15 min, and 25 yr -15 min predevelopment flow rates. Orifice and weir calculations are included in this report.

- The overflow from the control boxes are treated using biofiltration basins. The biofiltration basin areas were calculated using the 4% method (based on the 5in/hr infiltration capacity of the media and the 0.2 in/hr storm)

- The overflow from the biofiltration basins is routed to the neighboring drainage system located in the drainage easement.

- A gutter spread analysis was conducted for the watershed area for the next downstream drain inlet.

4.0 SUMMARY

The table below shows summaries of estimated peak flows and required storage volumes for the project.

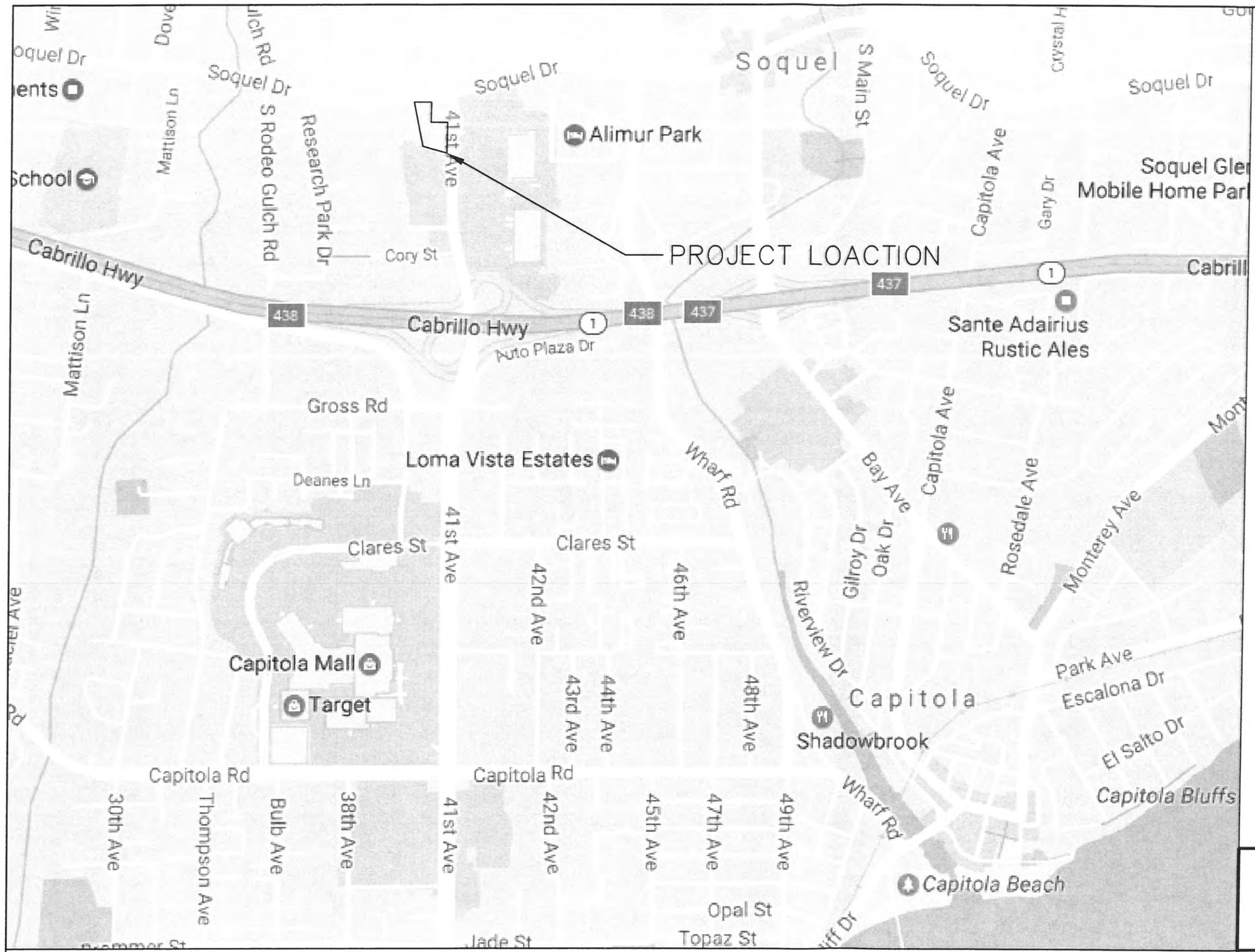
Summary

STORM EVENT	2 YEARS	10 YEARS	25 YEARS
Pre Development Flow (CFS)	0.70	1.97	2.60
Post Development Flow (CFS)	0.68	1.90	2.51
Runoff Increase Due To Development (CFS)	-0.02	-0.07	-0.09
Total Detention Volume 10 yr – 15 min (CF)		872	
Total Biofiltration Area (SF)		1,853	

5.0 CONCLUSIONS

The proposed car dealership reduces the amount impervious area to the project site. This results in an decreased in runoff of 0.07 cfs for a 10 year storm event. To mitigate any localized increase in runoff, detention within the permeable pavement reservoir is proposed for the developed areas to provide storage and minimal infiltration back into the native soil. The reservoirs are sized such that the project site will be able to maintain the project predevelopment flow rates of the 2 yr – 2 hr and 10 yr – 15 min storm events. After leaving the control boxes for the permeable pavement reservoir, the runoff will be treated through a biofiltration basin. Once treated by the biofiltration basin, the runoff overflows to the drainage system in the drainage easement of the abutting property. In the event of clogging, overflow runs off towards 41st Street. It is our opinion that the proposed mitigation for the proposed improvements satisfies County requirements and will not cause adverse downstream effects.

County Design Criteria



VICINITY MAP

SCALE: NTS

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SCALE AS SHOWN	JOB NO. 26488
DATE 2/22/17	DWG NAME DRN
DRAWN KAB	FILE NO.

TYPE OF AREA	10- YEAR RUNOFF COEFFICIENTS
Rural, park, forested; agricultural	0.10 - 0.30
Low residential (Single family dwellings)	0.45 - 0.60
High residential (Multiple family dwellings)	0.65 - 0.75
Business and commercial	0.80
Industrial	0.70
Impervious	0.90

REQUIRED ANTECEDENT MOISTURE FACTORS (Ca) FOR THE RATIONAL METHOD*

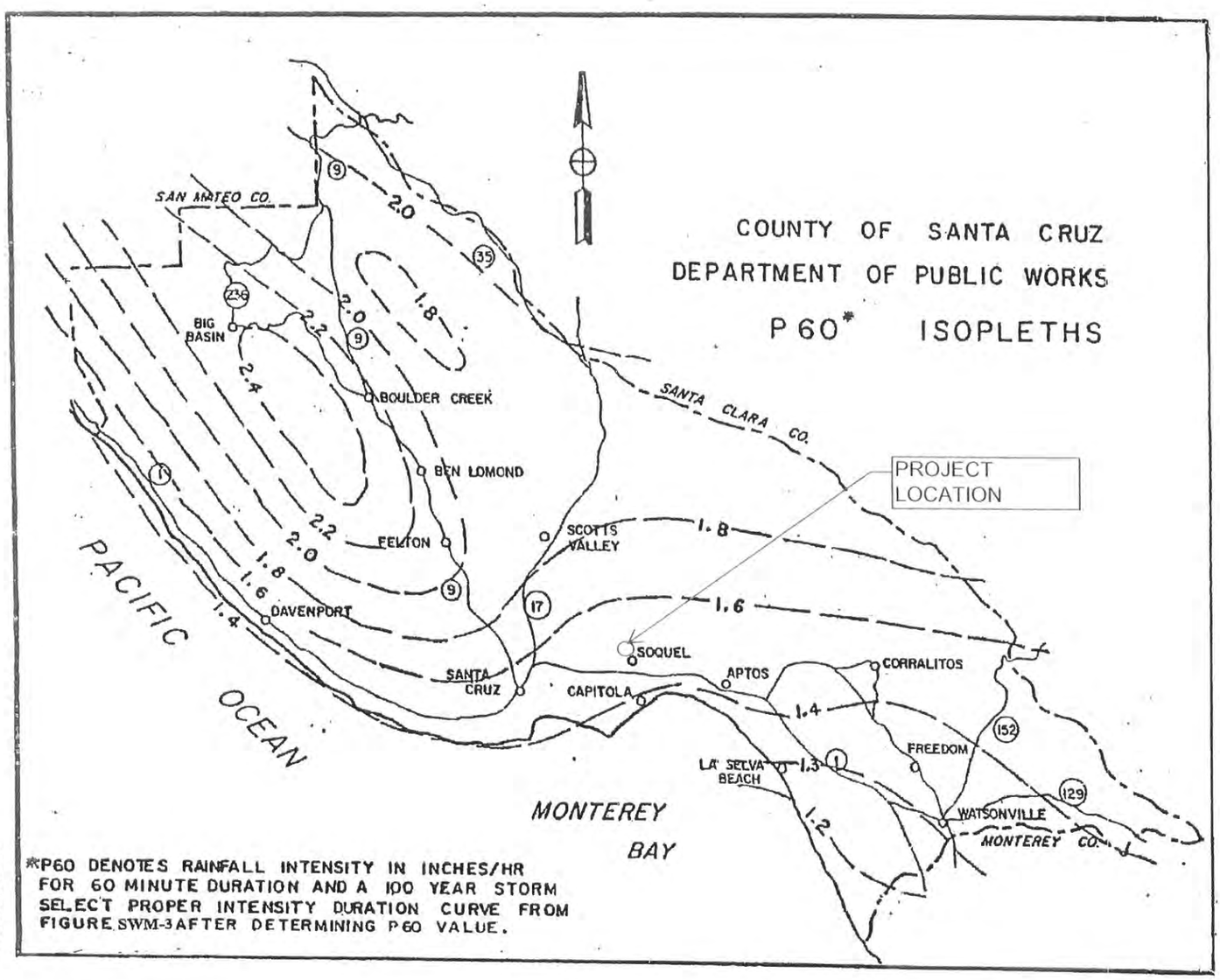
Recurrence Interval (Years)	Ca
2 to 10	1.0
25	1.1
50	1.2
100	1.25

Note: Application of antecedent moisture factors (Ca) should not result in an adjusted runoff coefficient (C) exceeding a value of 1.00

*APWA Publication "Practices in Detention of Stormwater Runoff"

Rev. 11-05

FIG. SWM-1

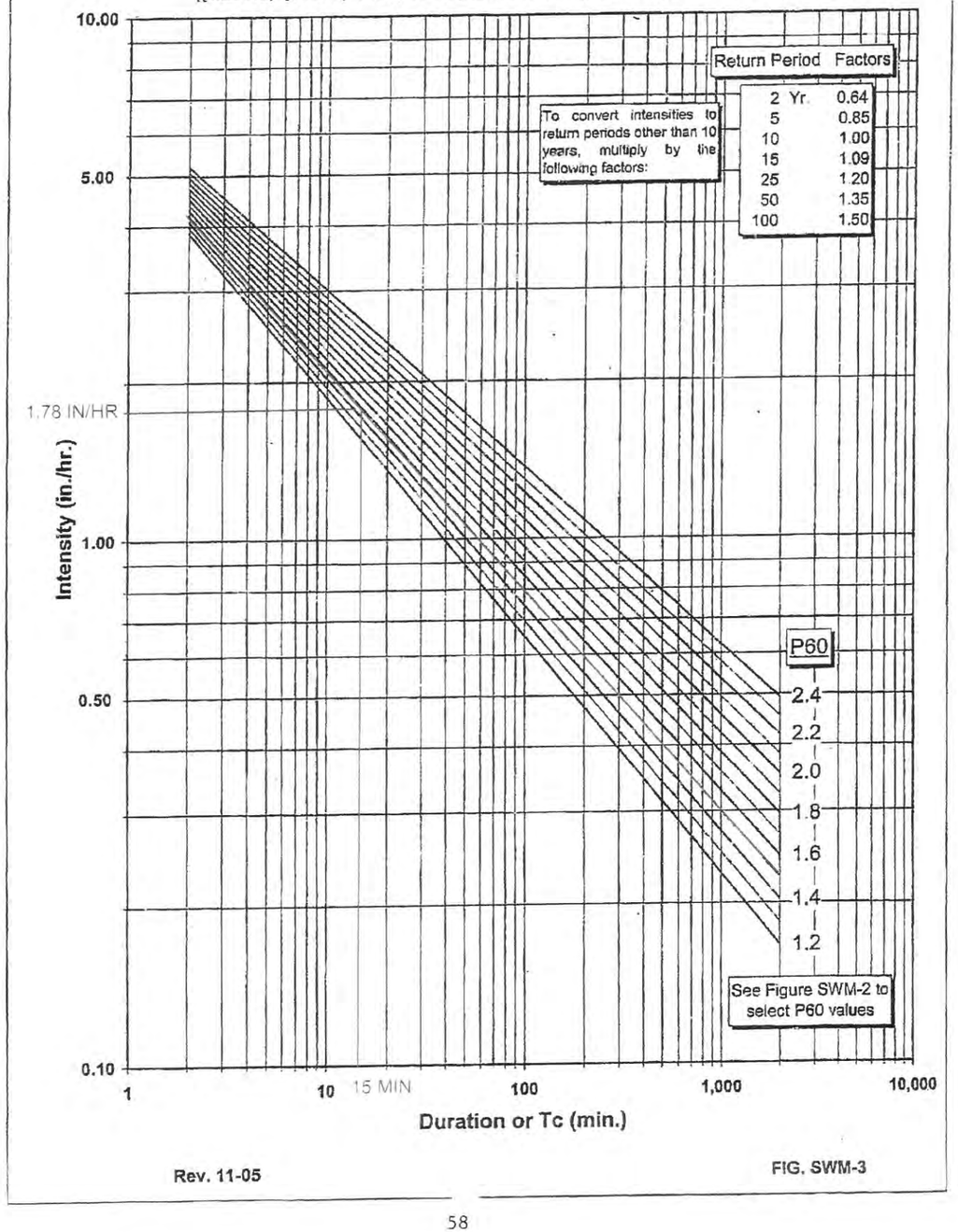


*P60 DENOTES RAINFALL INTENSITY IN INCHES/HR FOR 60 MINUTE DURATION AND A 100 YEAR STORM SELECT PROPER INTENSITY DURATION CURVE FROM FIGURE SWM-3 AFTER DETERMINING P60 VALUE.

FIG. SWM-2

Rainfall Intensity - Duration Curves
10 Yr. Return Period

((4.29112)*(1.1952)^P60_VALUE)/(DURATION^((0.60924)*(0.78522)^P60_VALUE))



Rev. 11-05

FIG. SWM-3

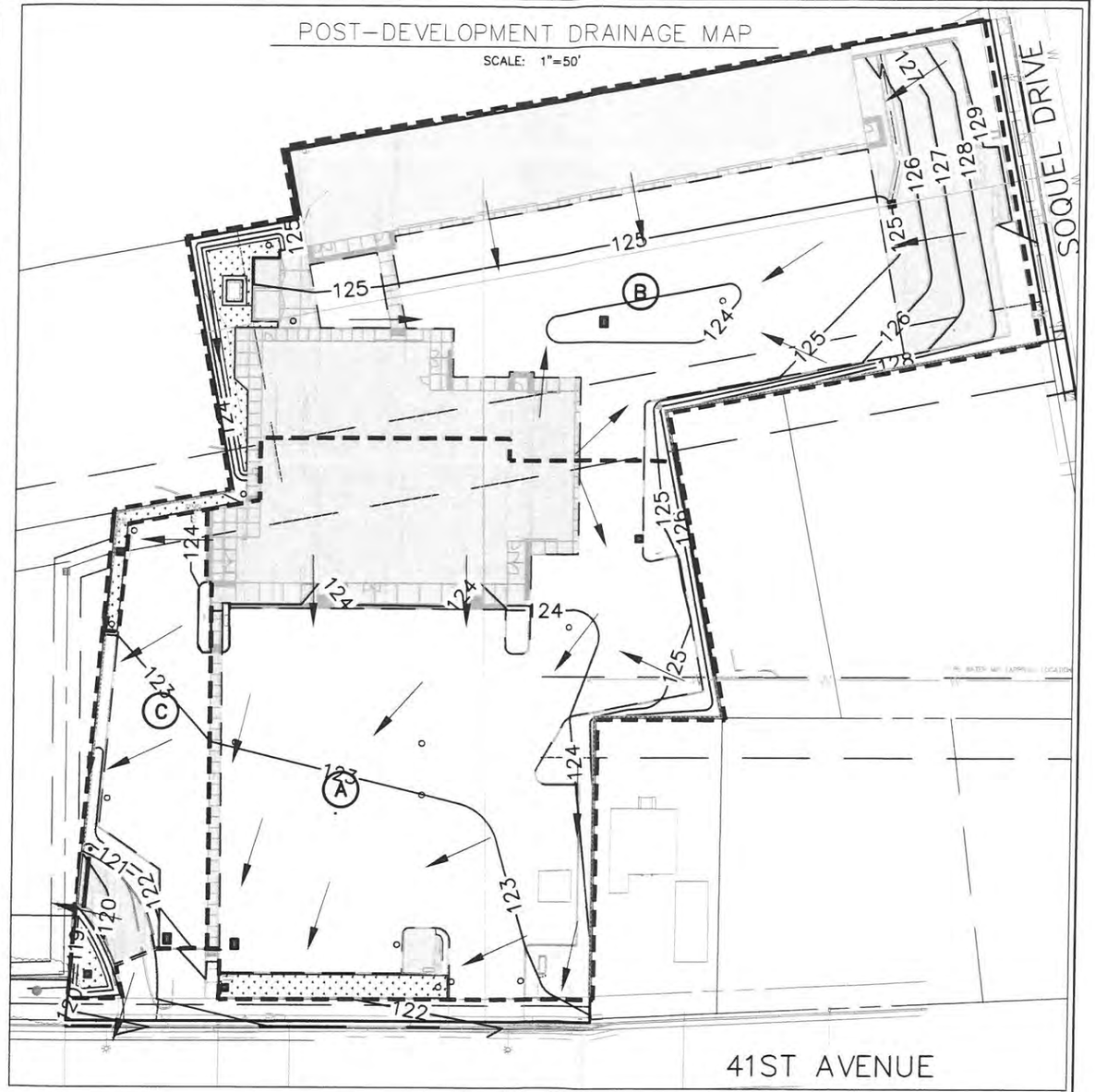
Drainage Maps

PRE-DEVELOPMENT DRAINAGE MAP

SCALE: 1"=50'

POST-DEVELOPMENT DRAINAGE MAP

SCALE: 1"=50'



DRAINAGE MAP LEGEND

SEMI-PERVIOUS	
IMPERVIOUS	
PERVIOUS	

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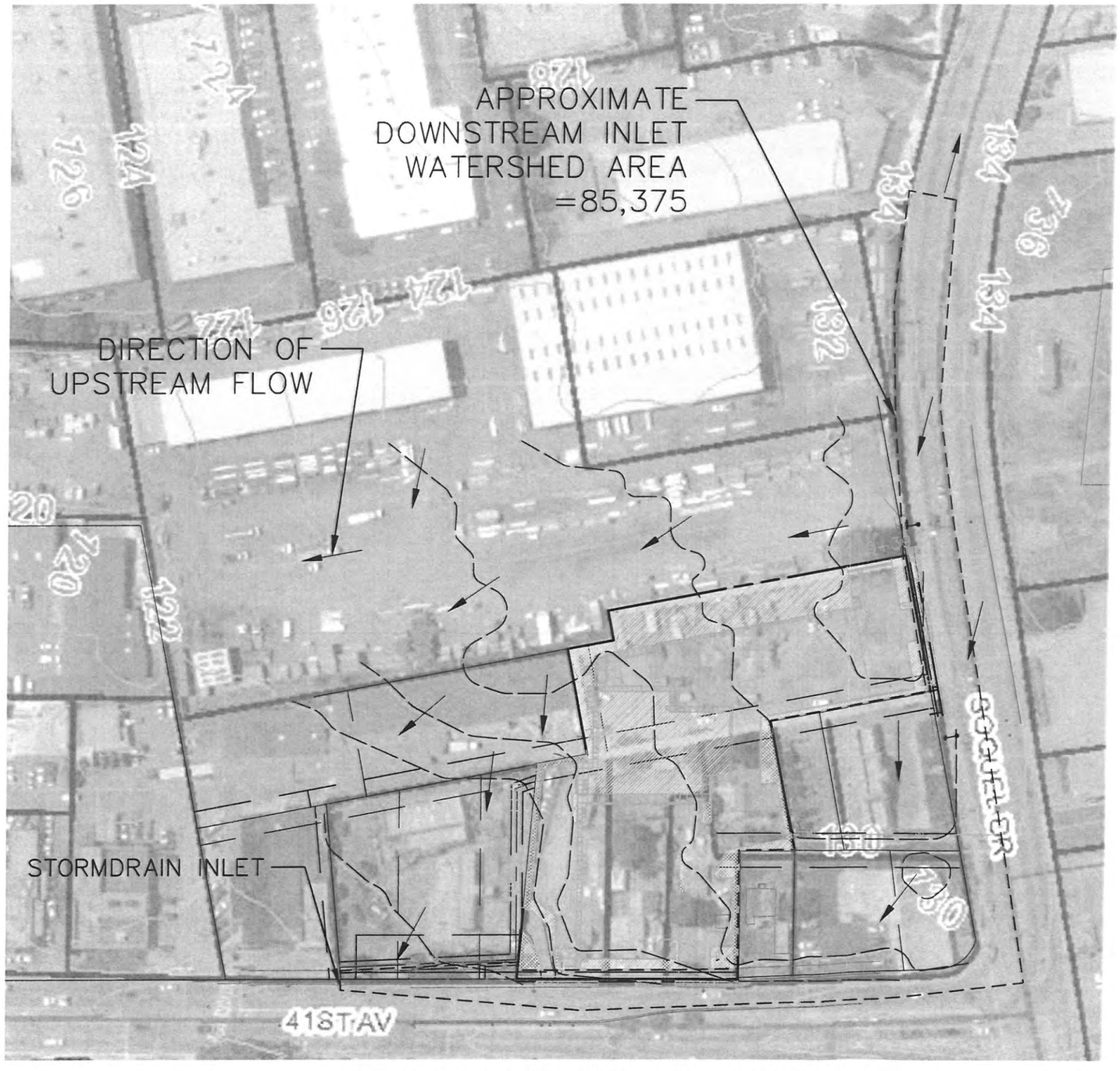
SCALE AS SHOWN	JOB NO. 26488
DATE 2/22/17	DWG NAME DRN
DRAWN KAB	FILE NO.



UPSTREAM AND DOWNSTREAM DRAINAGE MAP

SCALE: 1"=50'

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SCALE 1"= 100'	JOB NO. 26488
DATE 2/22/17	DWG NAME DRN
DRAWN KAB	FILE NO.

Drainage Calculations

DRAINAGE CALCULATIONS FOR :
3820 & 3906 Soquel Drive and 2755, 2815 & 2821 41st Ave
Soquel, CA
BOWMAN & WILLIAMS FILE: 26488
February 22, 2017

Area Calculations

Basin A

Pre Development

Area Description	Area (ft2)	Area (AC)	C	A*C
Pervious	21,006	0.48	0.30	0.14
Semi-Impervious	0	0.00	0.50	0.00
Impervious	10,502	0.24	0.90	0.22
Total:	31,508	0.72		0.36

Weighted C= 0.50

Post Development

Area Description	Area (ft2)	Area (AC)	C	A*C
Pervious	3,579	0.08	0.30	0.02
Semi-Impervious	20,556	0.47	0.50	0.24
Impervious	7,373	0.17	0.90	0.15
Total:	31,508	0.72		0.41

Weighted C= 0.57

Basin B

Pre Development

Area Description	Area (ft2)	Area (AC)	C	A*C
Pervious	6,151	0.14	0.30	0.04
Semi-Impervious	0	0.00	0.50	0.00
Impervious	29,678	0.68	0.90	0.61
Total:	35,829	0.82		0.66

Weighted C= 0.80

Post Development

Area Description	Area (ft2)	Area (AC)	C	A*C
Pervious	5,152	0.12	0.30	0.04
Semi-Impervious	12,282	0.28	0.50	0.14
Impervious	18,395	0.42	0.90	0.38
Total:	35,829	0.82		0.56

Weighted C= 0.68

Basin C

Pre Development

Area Description	Area (ft2)	Area (AC)	C	A*C
Pervious	5,312	0.12	0.30	0.04
Semi-Impervious	0	0.00	0.50	0.00
Impervious	2,685	0.06	0.90	0.06
Total:	7,997	0.18		0.09

Weighted C= 0.50

Post Development

Area Description	Area (ft2)	Area (AC)	C	A*C
Pervious	1,394	0.03	0.30	0.01
Semi-Impervious	4,949	0.11	0.50	0.06
Impervious	1,654	0.04	0.90	0.03
Total:	7,997	0.18		0.10

Weighted C= 0.55

Total

Pre Development

Area Description	Area (ft2)	Area (AC)	C	A*C
Pervious	32,469	0.75	0.30	0.22
Semi-Impervious	0	0.00	0.50	0.00
Impervious	42,865	0.98	0.90	0.89
Total:	75,334	1.73		1.11

Weighted C= 0.64

Post Development

Area Description	Area (ft2)	Area (AC)	C	A*C
Pervious	10,125	0.23	0.30	0.07
Semi-Impervious	37,787	0.87	0.50	0.43
Impervious	27,422	0.63	0.90	0.57
Total:	75,334	1.73		1.07

Weighted C= 0.62

DRAINAGE CALCULATIONS FOR :
3820 & 3906 Soquel Drive and 2755, 2815 & 2821 41st Ave
Soquel, CA
BOWMAN & WILLIAMS FILE: 26488
February 22, 2017

Flow Rate Calculations - Basin A

Pre Development

Area Description	Area (ft2)	Area (AC)	C	A*C
Pervious	21,006	0.48	0.30	0.14
Semi-Impervious	0	0.00	0.50	0.00
Impervious	10,502	0.24	0.90	0.22
Total:	31,508	0.72		0.36

Weighted C= 0.50

Post Development

Area Description	Area (ft2)	Area (AC)	C	A*C
Pervious	3,579	0.08	0.30	0.02
Semi-Impervious	20,556	0.47	0.50	0.24
Impervious	7,373	0.17	0.90	0.15
Total:	31,508	0.72		0.41

Weighted C= 0.57

Notation
Q_{Post} = Post Development Flow Rate For Project Area
Q_{Pre} = Pre Development (Existing) Flow Rate For Project Area

Basis of Calculation
$I = ((4.29112)*(1.1952^{P60}))/(t_c^{((0.60924)*(0.78522^{P60}))} * Ia$
$Q = C*C_a*I*A$

Return Period	I_a
2	0.64
5	0.85
10	1.00
15	1.09
25	1.20
50	1.35
100	1.50

Intensity for Storm: 2 Yr

Return Period =	2	Years
P60 Isopleth =	1.5	**(Based on Location - See County Map)**
I_a =	0.64	(Based on Return Period - See Above Right)

Runoff Flow Calculations						
Description	Area (ac)	C	C_a	T_c (min)	I (in/hr)	Q (cfs)
Pre Development	0.72	0.500	1.00	120	0.472	**0.17**
Post Development	0.72	0.571	1.00	120	0.472	**0.19**
					Δ =	0.02

Intensity for Storm : 10 Yr

Return Period =	10	Years
P60 Isopleth =	1.5	**(Based on Location - See County Map)**
I_a =	1	(Based on Return Period - See Above Right)

Runoff Flow Calculations						
Description	Area (ac)	C	C_a	T_c (min)	I (in/hr)	Q (cfs)
Pre Development	0.72	0.500	1.00	15	1.779	**0.64**
Post Development	0.72	0.571	1.00	15	1.779	**0.73**
					Δ =	0.09

Intensity for Storm : 25 Yr

Return Period =	25	Years
P60 Isopleth =	1.5	**(Based on Location - See County Map)**
I_a =	1.2	(Based on Return Period - See Above Right)

Runoff Flow Calculations						
Description	Area (ac)	C	C_a	T_c (min)	I (in/hr)	Q (cfs)
Pre Development	0.72	0.500	1.10	15	2.135	**0.85**
Post Development	0.72	0.571	1.10	15	2.135	**0.97**
					Δ =	0.12

DRAINAGE CALCULATIONS FOR :
3820 & 3906 Soquel Drive and 2755, 2815 & 2821 41st Ave
Soquel, CA
BOWMAN & WILLIAMS FILE: 26488
February 22, 2017

Flow Rate Calculations - Basin B

Pre Development

Area Description	Area (ft2)	Area (AC)	C	A*C
Pervious	6,151	0.14	0.30	0.04
Semi-Impervious	0	0.00	0.50	0.00
Impervious	29,678	0.68	0.90	0.61
Total:	35,829	0.82		0.66

Weighted C= 0.80

Post Development

Area Description	Area (ft2)	Area (AC)	C	A*C
Pervious	5,152	0.12	0.30	0.04
Semi-Impervious	12,282	0.28	0.50	0.14
Impervious	18,395	0.42	0.90	0.38
Total:	35,829	0.82		0.56

Weighted C= 0.68

Notation
Q_{Post} = Post Development Flow Rate For Project Area
Q_{Pre} = Pre Development (Existing) Flow Rate For Project Area

Basis of Calculation
$I = ((4.29112)*(1.1952^{P60}))/(t_c^{((0.60924)*(0.78522^{P60}))} * Ia$
$Q = C*C_a*I*A$

Return Period	I_a
2	0.64
5	0.85
10	1.00
15	1.09
25	1.20
50	1.35
100	1.50

Intensity for Storm: 2 Yr
Return Period = 2 Years
P60 Isopleth = 1.5 **(Based on Location - See County Map)**
I_a = 0.64 (Based on Return Period - See Above Right)

Runoff Flow Calculations						
Description	Area (ac)	C	C_a	T_c (min)	I (in/hr)	Q (cfs)
Pre Development	0.82	0.797	1.00	120	0.472	**0.31**
Post Development	0.82	0.677	1.00	120	0.472	**0.26**

Δ = -0.05

Intensity for Storm : 10 Yr
Return Period = 10 Years
P60 Isopleth = 1.5 **(Based on Location - See County Map)**
I_a = 1 (Based on Return Period - See Above Right)

Runoff Flow Calculations						
Description	Area (ac)	C	C_a	T_c (min)	I (in/hr)	Q (cfs)
Pre Development	0.82	0.797	1.00	15	1.779	**1.17**
Post Development	0.82	0.677	1.00	15	1.779	**0.99**

Δ = -0.18

Intensity for Storm : 25 Yr
Return Period = 25 Years
P60 Isopleth = 1.5 **(Based on Location - See County Map)**
I_a = 1.2 (Based on Return Period - See Above Right)

Runoff Flow Calculations						
Description	Area (ac)	C	C_a	T_c (min)	I (in/hr)	Q (cfs)
Pre Development	0.82	0.797	1.10	15	2.135	**1.54**
Post Development	0.82	0.677	1.10	15	2.135	**1.31**

Δ = -0.23

DRAINAGE CALCULATIONS FOR :
3820 & 3906 Soquel Drive and 2755, 2815 & 2821 41st Ave
Soquel, CA
BOWMAN & WILLIAMS FILE: 26488
February 22, 2017

Flow Rate Calculations - Basin C

Pre Development

Area Description	Area (ft2)	Area (AC)	C	A*C
Pervious	5,312	0.12	0.30	0.04
Semi-Impervious	0	0.00	0.50	0.00
Impervious	2,685	0.06	0.90	0.06
Total:	7,997	0.18		0.09

Weighted C= 0.50

Post Development

Area Description	Area (ft2)	Area (AC)	C	A*C
Pervious	1,394	0.03	0.30	0.01
Semi-Impervious	4,949	0.11	0.50	0.06
Impervious	1,654	0.04	0.90	0.03
Total:	7,997	0.18		0.10

Weighted C= 0.55

Notation
Q_{Post} = Post Development Flow Rate For Project Area
Q_{Pre} = Pre Development (Existing) Flow Rate For Project Area

Return Period	I_a
2	0.64
5	0.85
10	1.00
15	1.09
25	1.20
50	1.35
100	1.50

Basis of Calculation
$I = ((4.29112)*(1.1952^{P60}))/(t_c^{((0.60924)*(0.78522^{P60}))} * Ia$
$Q = C*C_a*I*A$

Intensity for Storm: 2 Yr
Return Period = 2 Years
P60 Isopleth = 1.5 **(Based on Location - See County Map)**
I_a = 0.64 (Based on Return Period - See Above Right)

Runoff Flow Calculations						
Description	Area (ac)	C	C_a	T_c (min)	I (in/hr)	Q (cfs)
Pre Development	0.18	0.501	1.00	120	0.472	**0.04**
Post Development	0.18	0.548	1.00	120	0.472	**0.05**

Δ = 0.00

Intensity for Storm : 10 Yr
Return Period = 10 Years
P60 Isopleth = 1.5 **(Based on Location - See County Map)**
I_a = 1 (Based on Return Period - See Above Right)

Runoff Flow Calculations						
Description	Area (ac)	C	C_a	T_c (min)	I (in/hr)	Q (cfs)
Pre Development	0.18	0.501	1.00	15	1.779	**0.16**
Post Development	0.18	0.548	1.00	15	1.779	**0.18**

Δ = 0.02

Intensity for Storm : 25 Yr
Return Period = 25 Years
P60 Isopleth = 1.5 **(Based on Location - See County Map)**
I_a = 1.2 (Based on Return Period - See Above Right)

Runoff Flow Calculations						
Description	Area (ac)	C	C_a	T_c (min)	I (in/hr)	Q (cfs)
Pre Development	0.18	0.501	1.10	15	2.135	**0.22**
Post Development	0.18	0.548	1.10	15	2.135	**0.24**

Δ = 0.02

DRAINAGE CALCULATIONS FOR :
3820 & 3906 Soquel Drive and 2755, 2815 & 2821 41st Ave
Soquel, CA
BOWMAN & WILLIAMS FILE: 26488
February 22, 2017

Flow Rate Calculations - Site

Pre Development

Area Description	Area (ft2)	Area (AC)	C	A*C
Pervious	32,469	0.75	0.30	0.22
Semi-Impervious	0	0.00	0.50	0.00
Impervious	42,865	0.98	0.90	0.89
Total:	75,334	1.73		1.11

Weighted C= 0.64

Post Development

Area Description	Area (ft2)	Area (AC)	C	A*C
Pervious	10,125	0.23	0.30	0.07
Semi-Impervious	37,787	0.87	0.50	0.43
Impervious	27,422	0.63	0.90	0.57
Total:	75,334	1.73		1.07

Weighted C= 0.62

Notation
Q_{Post} = Post Development Flow Rate For Project Area
Q_{Pre} = Pre Development (Existing) Flow Rate For Project Area

Basis of Calculation
$I = ((4.29112)*(1.1952^{P60})/(t_c^{((0.60924)*(0.78522^{P60}))} * Ia$
$Q = C*C_a*I*A$

Return Period	I_a
2	0.64
5	0.85
10	1.00
15	1.09
25	1.20
50	1.35
100	1.50

Intensity for Storm: 2 Yr
Return Period = 2 Years
P60 Isopleth = 1.5 **(Based on Location - See County Map)**
I_a = 0.64 (Based on Return Period - See Above Right)

Runoff Flow Calculations						
Description	Area (ac)	C	C_a	T_c (min)	I (in/hr)	Q (cfs)
Pre Development	1.73	0.641	1.00	60	0.633	**0.70**
Post Development	1.73	0.619	1.00	60	0.633	**0.68**

Δ = -0.02

Intensity for Storm : 10 Yr
Return Period = 10 Years
P60 Isopleth = 1.5 **(Based on Location - See County Map)**
I_a = 1 (Based on Return Period - See Above Right)

Runoff Flow Calculations						
Description	Area (ac)	C	C_a	T_c (min)	I (in/hr)	Q (cfs)
Pre Development	1.73	0.641	1.00	15	1.779	**1.97**
Post Development	1.73	0.619	1.00	15	1.779	**1.90**

Δ = -0.07

Intensity for Storm : 25 Yr
Return Period = 25 Years
P60 Isopleth = 1.5 **(Based on Location - See County Map)**
I_a = 1.2 (Based on Return Period - See Above Right)

Runoff Flow Calculations						
Description	Area (ac)	C	C_a	T_c (min)	I (in/hr)	Q (cfs)
Pre Development	1.73	0.641	1.10	15	2.135	**2.60**
Post Development	1.73	0.619	1.10	15	2.135	**2.51**

Δ = -0.09

DRAINAGE CALCULATIONS FOR :
3820 & 3906 Soquel Drive and 2755, 2815 & 2821 41st Ave
Soquel, CA
BOWMAN & WILLIAMS FILE: 26488
February 22, 2017

Treatment Calculations - Basin A

Post Development

Area Description	Area (ft2)	Area (AC)	C	A*C
Pervious	3,579	0.08	0.30	0.02
Semi-Impervious	20,556	0.47	0.50	0.24
Impervious	7,373	0.17	0.90	0.15
Total:	31,508	0.72		0.41

Weighted C= 0.57

Simplified Sizing Approach
Flow Based
Uniform Intensity = 0.2 in/hr
Contributing Flow =Tributary Area * $C_{weighted}$ * 0.2 in/hr
Treatment Medium Infilitration Capacity =5 in/hr
Treatment Flow = Bioretention Area * 5 in/hr
Biofiltration Area = Tributary Area *$C_{weighted}$ * 0.2 in/hr / 5in/hr
Biofiltration Area = Tributary Area *$C_{weighted}$ * 0.04

Treatment Calculations			
Description	**Tributary Area (ft2)**	**$C_{Weighted}$**	**Biofiltration Area**
Biofiltration Area	31508.00	0.571	719.50

DRAINAGE CALCULATIONS FOR :
3820 & 3906 Soquel Drive and 2755, 2815 & 2821 41st Ave
Soquel, CA
BOWMAN & WILLIAMS FILE: 26488
February 22, 2017

Treatment Calculations - Basin B

Post Development

Area Description	Area (ft2)	Area (AC)	C	A*C
Pervious	5,152	0.12	0.30	0.04
Semi-Impervious	12,282	0.28	0.50	0.14
Impervious	18,395	0.42	0.90	0.38
Total:	35,829	0.82		0.56

Weighted C= 0.68

Simplified Sizing Approach
Flow Based
Uniform Intensity = 0.2 in/hr
Contributing Flow =Tributary Area * $C_{weighted}$ * 0.2 in/hr
Treatment Medium Infilitration Capacity =5 in/hr
Treatment Flow = Bioretention Area * 5 in/hr
Biofiltration Area = Tributary Area *$C_{weighted}$ * 0.2 in/hr / 5in/hr
Biofiltration Area = Tributary Area *$C_{weighted}$ * 0.04

Treatment Calculations			
Description	**Tributary Area (ft2)**	**$C_{Weighted}$**	**Biofiltration Area**
Biofiltration Area	35829.00	0.677	969.68

DRAINAGE CALCULATIONS FOR :
3820 & 3906 Soquel Drive and 2755, 2815 & 2821 41st Ave
Soquel, CA
BOWMAN & WILLIAMS FILE: 26488
February 22, 2017

Treatment Calculations - Basin C

Post Development

Area Description	Area (ft2)	Area (AC)	C	A*C
Pervious	1,394	0.03	0.30	0.01
Semi-Impervious	4,949	0.11	0.50	0.06
Impervious	1,654	0.04	0.90	0.03
Total:	7,997	0.18		0.10

Weighted C= 0.55

Simplified Sizing Approach
Flow Based
Uniform Intensity = 0.2 in/hr
Contributing Flow =Tributary Area * $C_{weighted}$ * 0.2 in/hr
Treatment Medium Infilitration Capacity =5 in/hr
Treatment Flow = Bioretention Area * 5 in/hr
Biofiltration Area = Tributary Area *$C_{weighted}$ * 0.2 in/hr / 5in/hr
Biofiltration Area = Tributary Area *$C_{weighted}$ * 0.04

Treatment Calculations			
Description	**Tributary Area (ft2)**	**$C_{Weighted}$**	**Biofiltration Area**
Biofiltration Area	7997.00	0.548	175.25

DRAINAGE CALCULATIONS FOR :
3820 & 3906 Soquel Drive and 2755, 2815 & 2821 41st Ave
Soquel, CA
BOWMAN & WILLIAMS FILE: 26488
February 22, 2017

Orifice & Weir Calculations

Basis of Calculation (Orifice Formula)
Orifice

$Q = C_d * A * (2gh)^{1/2}$

$h = (((Q/(Cd * A))^2)/2g)$

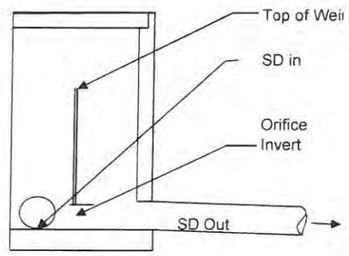
Q = Discharge Rate Through Orifice
C_d = Discharge Coefficient
A = Area of Orifice
g = Acceleration of gravity
h = Water Depth at Orifice
a = 1/2 Orifice Opening Height
h = Hydraulic Head from
Center of orifice to bottom of Weir

Weir

$Q = 3.33\,bh^{3/2}$

h = weir height, ft
b = width of weir, ft

Weir Box Diagram



Control Box A

Orifice Input

$Q_{2\text{-Year}}$ =	0.17	cfs
Orifice Invert =	120.54	
Grate =	122.28	
Low Flow Orifice Diameter (D) =	2.87	in
Orifice Coefficient - (Type A) (Cd) =	0.62	

Orifice Output

Low Flow Orifice Area (A) =	0.04	sf
Head to Discharge Q_{Pre} (h) =	0.58	ft
Bottom of Wier =	121.24	
Freeboard =	1.04	ft

Weir

$Q_{(10year\text{-}15min)}$ =	0.64
$Q_{(weir\ release)} = Q_{(10year\text{-}15min)} - Q_{2\text{-}Year}$ =	0.47
weir height, h (ft) =	0.16
weir width, b (ft)=	1.67
Q_{weir} =	0.47
Top of weir =	121.40
Freeboard (ft)=	0.88

Weir (Overtopping)

$Q_{(25year\text{-}15min)}$ =	0.85
$Q_{(overtopping)} = Q_{(25year\text{-}15min)} - Q_{(Weir\ release)} - Q_{2\text{-}Year}$ =	0.21
weir height, h (ft) =	0.08
weir width, b (ft)=	2.00
Q_{weir} =	0.21
Water Elevation =	121.48
Freeboard (ft)=	0.80

DRAINAGE CALCULATIONS FOR :
3820 & 3906 Soquel Drive and 2755, 2815 & 2821 41st Ave
Soquel, CA
BOWMAN & WILLIAMS FILE: 26488
February 22, 2017

Orifice & Weir Calculations

Basis of Calculation (Orifice Formula)
Orifice

$Q = C_d * A * (2gh)^{1/2}$

$h = (((Q/(Cd * A))^2)/2g)$

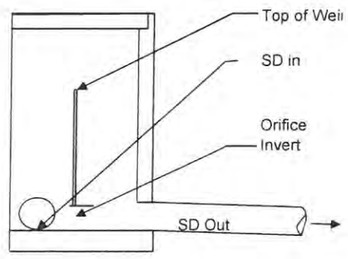
Q = Discharge Rate Through Orifice
C_d = Discharge Coefficient
A = Area of Orifice
g = Acceleration of gravity
h = Water Depth at Orifice
a = 1/2 Orifice Opening Height
h = Hydraulic Head from
Center of orifice to bottom of Weir

Weir

$Q = 3.33\,bh^{3/2}$

h = weir height, ft
b = width of weir, ft

Weir Box Diagram



Control Box B

Orifice Input

$Q_{2\text{-Year}}$ =	0.26	cfs
Orifice Invert =	122.75	
Grate =	123.94	
Low Flow Orifice Diameter (D) =	4.13	in
Orifice Coefficient - (Type A) (Cd) =	0.62	

Orifice Output

Low Flow Orifice Area (A) =	0.09	sf
Head to Discharge Q_{Pre} (h) =	0.32	ft
Bottom of Wier =	123.24	
Freeboard =	0.70	ft

Weir

$Q_{(10year\text{-}15min)}$ =	0.99
$Q_{(weir\ release)} = Q_{(10year\text{-}15min)} - Q_{2\text{-}Year}$ =	0.73
weir height, h (ft) =	0.20
weir width, b (ft)=	1.67
Q_{weir} =	0.64
Top of weir =	123.44
Freeboard (ft)=	0.50

Weir (Overtopping)

$Q_{(25year\text{-}15min)}$ =	1.31
$Q_{(overtopping)} = Q_{(25year\text{-}15min)} - Q_{(Weir\ release)} - Q_{2\text{-}Year}$ =	0.32
weir height, h (ft) =	0.11
weir width, b (ft)=	2.00
Q_{weir} =	0.32
Water Elevation =	123.55
Freeboard (ft)=	0.39

DRAINAGE CALCULATIONS FOR :
3820 & 3906 Soquel Drive and 2755, 2815 & 2821 41st Ave
Soquel, CA
BOWMAN & WILLIAMS FILE: 26488
February 22, 2017

Orifice & Weir Calculations

Basis of Calculation (Orifice Formula)
Orifice

$Q = C_d * A * (2gh)^{1/2}$

$h = (((Q/(Cd * A))^2)/2g)$

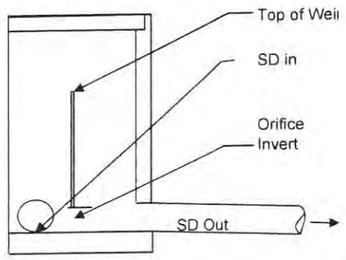
Q = Discharge Rate Through Orifice
C_d = Discharge Coefficient
A = Area of Orifice
g = Acceleration of gravity
h = Water Depth at Orifice
a = 1/2 Orifice Opening Height
h = Hydraulic Head from
Center of orifice to bottom of Weir

Weir

$Q = 3.33\,bh^{3/2}$

h = weir height, ft
b = width of weir, ft

Weir Box Diagram



Control Box C

Orifice Input

$Q_{2\text{-Year}}$ =	0.04	cfs
Orifice Invert =	118.76	
Grate =	121.95	
Low Flow Orifice Diameter (D) =	1.25	in
Orifice Coefficient - (Type A) (Cd) =	0.62	

Orifice Output

Low Flow Orifice Area (A) =	0.01	sf
Head to Discharge Q_{Pre} (h) =	1.05	ft
Bottom of Wier =	119.86	
Freeboard =	2.09	ft

Weir

$Q_{(10year\text{-}15min)}$ =	0.16
$Q_{(weir\ release)} = Q_{(10year\text{-}15min)} - Q_{2\text{-}Year}$ =	0.12
weir height, h (ft) =	0.20
weir width, b (ft)=	0.50
Q_{weir} =	0.11
Top of weir =	120.06
Freeboard (ft)=	1.89

Weir (Overtopping)

$Q_{(25year\text{-}15min)}$ =	0.22
$Q_{(overtopping)} = Q_{(25year\text{-}15min)} - Q_{(Weir\ release)} - Q_{2\text{-}Year}$ =	0.05
weir height, h (ft) =	0.04
weir width, b (ft)=	2.00
Q_{weir} =	0.06
Water Elevation =	120.10
Freeboard (ft)=	1.85

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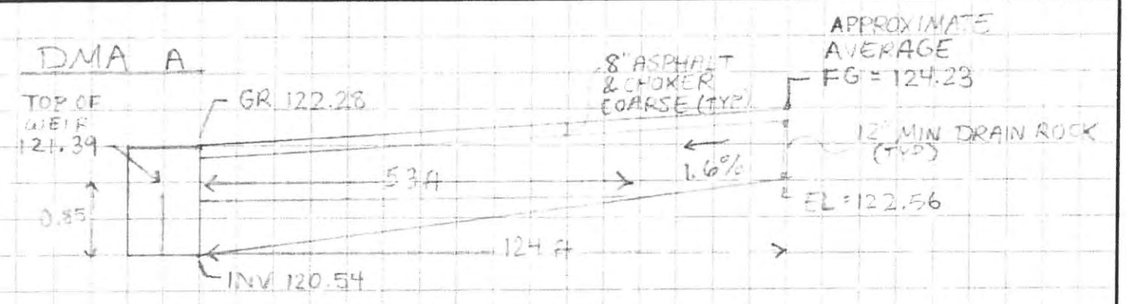
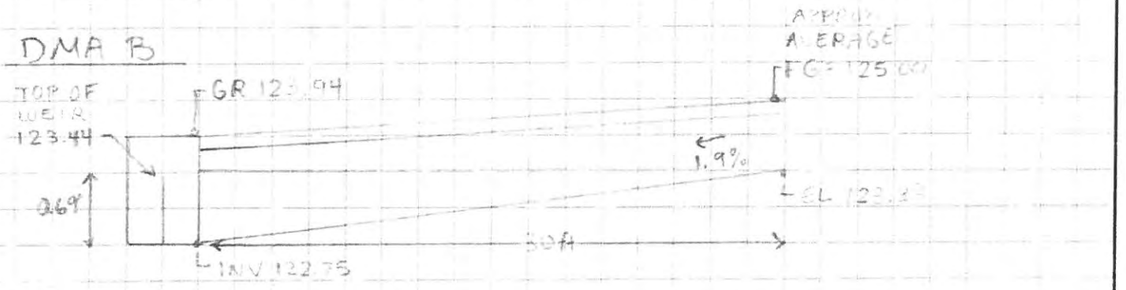
DMA A



Approximated Width = 132 ft

Volume Detained = $\left(\frac{0.85 \text{ ft} \times 53 \text{ ft}}{2}\right) 132 \text{ ft} = 2,980 \text{ ft}^3$

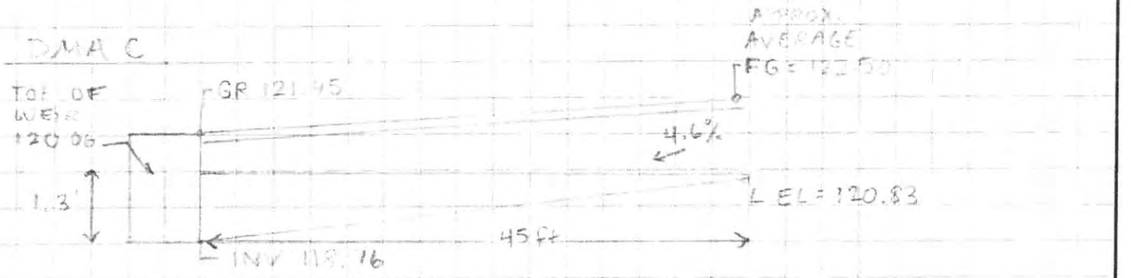
DMA B



Approximate Width = 300 ft

Volume Detained = $\left(\frac{0.69 \text{ ft} \times 30 \text{ ft}}{2}\right) 300 \text{ ft} = 3,105 \text{ ft}^3$

DMA C



Approximate Width = 25 ft

Volume Detained = $\left(\frac{1.3 \text{ ft} \times 45 \text{ ft}}{2}\right) 25 \text{ ft} = 731 \text{ ft}^3$

DRAINAGE CALCULATIONS FOR :
3820 & 3906 Soquel Drive and 2755, 2815 & 2821 41st Ave
Soquel, CA
BOWMAN & WILLIAMS FILE: 26488
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DMA A

Detention Calculations: 10 Yr

Pre Development Development

Area Description	Area (ft2)	Area (AC)	C	A*C
Pervious	21,006	0.48	0.30	0.14
Semi-Impervious	0	0.00	0.50	0.00
Impervious	10,502	0.24	0.90	0.22
Total:	31,508	0.72		0.36

Weighted Post Development C= 0.50

Post Development

Area Description	Area (ft2)	Area (AC)	C	A*C
Pervious	3,579	0.08	0.30	0.02
Semi-Impervious	20,556	0.47	0.90	0.42
Impervious	7,373	0.17	0.90	0.15
Total:	31,508	0.72		0.60

Weighted Post Development C= 0.83

P60 Isopleth =	1.5	(Based on Location - See County Map)
Detention Return Period =	10	Years
Detention Storm I_a =	1	(Based on Return Period)
Detention Storm C_a=	1	(Based on Return Period)
Pre Development C=	0.50	
Pre Development Runoff=	0.643	CFS (Based on 10 Year Storm & 15 minute time of concentration)

Return Period	I_a
2	0.64
5	0.85
10	1.00
15	1.09
25	1.20
50	1.35
100	1.50

1st Step

	Area	Depth, ft	
Trench =	20,556	1	
Raw Volume =	20,556		cf
Available Volume =	2,980		cf (available volume subtracting roadway slopes)

2nd Step

T_c (min)	10-Year Intensity (in/hr)	10-Year Q_{pre} (cfs)	10-Year Q_{post} (cfs)	Detention Rate To Storage (cfs)	Specified Detained Vol (cf)
1440	0.26	0.09	0.15	-0.49	-42223
1200	0.28	0.10	0.17	-0.48	-34292
960	0.31	0.11	0.18	-0.46	-26479
720	0.34	0.12	0.21	-0.44	-18830
480	0.41	0.15	0.25	-0.40	-11433
360	0.46	0.17	0.28	-0.37	-7885
240	0.55	0.20	0.33	-0.31	-4505
180	0.62	0.22	0.37	-0.27	-2916
120	0.74	0.27	0.44	-0.20	-1440
90	0.83	0.30	0.50	-0.14	-769
60	0.99	0.36	0.59	-0.05	-175
45	1.12	0.40	0.67	0.03	77
30	1.33	0.48	0.80	0.15	278
20	1.57	0.57	0.95	0.30	365
15	1.78	0.64	1.07	0.43	384
10	2.11	0.76	1.27	0.63	377
5	2.83	1.02	1.71	1.06	319

Detention Volume w/ 25% F.O.S. = 480

3rd Step: Volume Check with 40% Void

V= 1,192 cf
Check = OK

DRAINAGE CALCULATIONS FOR :
3820 & 3906 Soquel Drive and 2755, 2815 & 2821 41st Ave
Soquel, CA
BOWMAN & WILLIAMS FILE: 26488
February 22, 2017

DMA B

Detention Calculations: 10 Yr

Pre Development Development

Area Description	Area (ft2)	Area (AC)	C	A*C
Pervious	6,151	0.14	0.30	0.04
Semi-Impervious	0	0.00	0.50	0.00
Impervious	29,678	0.68	0.90	0.61
Total:	35,829	0.82		0.66

Weighted Post Development C= 0.80

Post Development

Area Description	Area (ft2)	Area (AC)	C	A*C
Pervious	5,152	0.12	0.30	0.04
Semi-Impervious	12,282	0.28	0.90	0.25
Impervious	18,395	0.42	0.90	0.38
Total:	35,829	0.82		0.67

Weighted Post Development C= 0.81

Return Period	I_a
2	0.64
5	0.85
10	1.00
15	1.09
25	1.20
50	1.35
100	1.50

P60 Isopleth =	1.5	(Based on Location - See County Map)
Detention Return Period =	10	Years
Detention Storm I_a =	1	(Based on Return Period)
Detention Storm C_a=	1	(Based on Return Period)
Pre Development C=	0.80	
Pre Development Runoff=	1.167	CFS (Based on 10 Year Storm & 15 minute time of concentration)

1st Step

	Area	Depth, ft
Trench =	12,282	1
Raw Volume =	12,282	cf
Available Volume =	3,105	cf (available volume subtracting roadway slopes)

2nd Step

T_c (min)	10-Year Intensity (in/hr)	10-Year Q_{pre} (cfs)	10-Year Q_{post} (cfs)	Detention Rate To Storage (cfs)	Specified Detained Vol (cf)
1440	0.26	0.17	0.17	-1.00	-85987
1200	0.28	0.18	0.19	-0.98	-70661
960	0.31	0.20	0.20	-0.96	-55467
720	0.34	0.23	0.23	-0.94	-40456
480	0.41	0.27	0.27	-0.89	-25724
360	0.46	0.30	0.31	-0.86	-18526
240	0.55	0.36	0.37	-0.80	-11514
180	0.62	0.41	0.42	-0.75	-8121
120	0.74	0.48	0.49	-0.67	-4853
90	0.83	0.55	0.56	-0.61	-3295
60	0.99	0.65	0.66	-0.51	-1820
45	1.12	0.73	0.75	-0.42	-1134
30	1.33	0.87	0.89	-0.28	-503
20	1.57	1.03	1.05	-0.11	-136
15	1.78	1.17	1.19	0.02	21
10	2.11	1.39	1.41	0.25	148
5	2.83	1.86	1.90	0.73	219

Detention Volume w/ 25% F.O.S. = 274

3rd Step: Volume Check with 40% Void

V= 1,242 cf
Check = OK

DRAINAGE CALCULATIONS FOR :
3820 & 3906 Soquel Drive and 2755, 2815 & 2821 41st Ave
Soquel, CA
BOWMAN & WILLIAMS FILE: 26488
February 22, 2017

DMA C

Detention Calculations: 10 Yr

Pre Development Development

Area Description	Area (ft2)	Area (AC)	C	A*C
Pervious	5,312	0.12	0.30	0.04
Semi-Impervious	0	0.00	0.50	0.00
Impervious	2,685	0.06	0.90	0.06
Total:	7,997	0.18		0.09

Weighted Post Development C= 0.50

Post Development

Area Description	Area (ft2)	Area (AC)	C	A*C
Pervious	1,394	0.03	0.30	0.01
Semi-Impervious	4,949	0.11	0.90	0.10
Impervious	1,654	0.04	0.90	0.03
Total:	7,997	0.18		0.15

Weighted Post Development C= 0.80

P60 Isopleth =	1.5	(Based on Location - See County Map)
Detention Return Period =	10	Years
Detention Storm I_a =	1	(Based on Return Period)
Detention Storm C_a=	1	(Based on Return Period)
Pre Development C=	0.50	
Pre Development Runoff=	0.163	CFS (Based on 10 Year Storm & 15 minute time of concentration)

Return Period	I_a
2	0.64
5	0.85
10	1.00
15	1.09
25	1.20
50	1.35
100	1.50

1st Step

	Area	Depth, ft
Trench =	4,949	1
Raw Volume =	4,949	cf
Available Volume =	731	cf (available volume subtracting roadway slopes)

2nd Step

T_c (min)	10-Year Intensity (in/hr)	10-Year Q_{pre} (cfs)	10-Year Q_{post} (cfs)	Detention Rate To Storage (cfs)	Specified Detained Vol (cf)
1440	0.26	0.02	0.04	-0.13	-10873
1200	0.28	0.03	0.04	-0.12	-8844
960	0.31	0.03	0.04	-0.12	-6844
720	0.34	0.03	0.05	-0.11	-4883
480	0.41	0.04	0.06	-0.10	-2983
360	0.46	0.04	0.07	-0.10	-2070
240	0.55	0.05	0.08	-0.08	-1198
180	0.62	0.06	0.09	-0.07	-786
120	0.74	0.07	0.11	-0.06	-402
90	0.83	0.08	0.12	-0.04	-226
60	0.99	0.09	0.14	-0.02	-69
45	1.12	0.10	0.16	0.00	-1
30	1.33	0.12	0.19	0.03	54
20	1.57	0.14	0.23	0.07	80
15	1.78	**0.16**	0.26	0.10	87
10	2.11	0.19	0.31	0.15	87
5	2.83	0.26	0.41	0.25	75

Detention Volume w/ 25% F.O.S. = **109**

3rd Step: Volume Check with 40% Void

V= 292 cf
Check = **OK**

DRAINAGE CALCULATIONS FOR :
3820 & 3906 Soquel Drive and 2755, 2815 & 2821 41st Ave
Soquel, CA
BOWMAN & WILLIAMS FILE: 26488

Pipe Size Calculations

Basis of Calculation
r = Radius (ft)
n = Manning's Roughness Coefficient
A = Pipe Area (sf) = π*r2
P = Wetted Perimeter (ft) = 2*π*r
R = Hydraulic Radius (ft) = A/P
S = Slope of Pipe (ft/ft)
Q = Pipe Maximum Flow (cfs) =(1.49*R2/3*S1/2*A)/0.01

Pipe Size Calculations						
Pipe Size, in HDPE	**n (unitless)**	**A (sf)**	**P (ft)**	**R ft**	**S (ft/ft)**	**Qt (cfs)**
3	0.01	0.05	0.79	0.06	0.010	**0.1**
6	0.01	0.20	1.57	0.13	0.008	**0.7**
8	0.01	0.35	2.09	0.17	0.003	**0.9**
8	0.01	0.35	2.09	0.17	0.005	**1.1**
12	0.01	0.79	3.14	0.25	0.002	**2.1**
12	0.01	0.79	3.14	0.25	0.005	**3.3**

DRAINAGE CALCULATIONS FOR :
3820 & 3906 Soquel Drive and 2755, 2815 & 2821 41st Ave
Soquel, CA
BOWMAN & WILLIAMS FILE: 26488
February 22, 2017

Flow Rate Calculations - Watershed

Downstream Inlet Drainage Area

Area Description	Area (ft2)	Area (AC)	C	A*C
Impervious	85,375	1.96	0.90	1.76
Total:		1.96		1.76

Weighted C= 0.90

Notation

Q_{Post} = Post Development Flow Rate For Project Area

Basis of Calculation

$I = ((4.29112)*(1.1952^{P60})/(t_c\text{^}((0.60924)*(0.78522^{P60})) * Ia$

$Q = C*C_a*I*A$

Return Period	I_a
2	0.64
5	0.85
10	1.00
15	1.09
25	1.20
50	1.35
100	1.50

Intensity for Storm : 25 Yr

Return Period = 25 Years
P60 Isopleth = 1.5 **(Based on Location - See County Map)**
I_a = 1.2 (Based on Return Period - See Above Right)

Runoff Flow Calculations						
Description	**Area (ac)**	**C**	**C_a**	**T_c (min)**	**I (in/hr)**	**Q (cfs)**
Upstream	1.96	0.900	1.10	15	2.135	**4.14**
Total						**4.14**

Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Wednesday, Feb 22 2017

Gutter Spread Analysis

Gutter

Cross Sl, Sx (ft/ft)	= 0.033
Cross Sl, Sw (ft/ft)	= 0.050
Gutter Width (ft)	= 2.00
Invert Elev (ft)	= 100.00
Slope (%)	= 1.40
N-Value	= 0.013

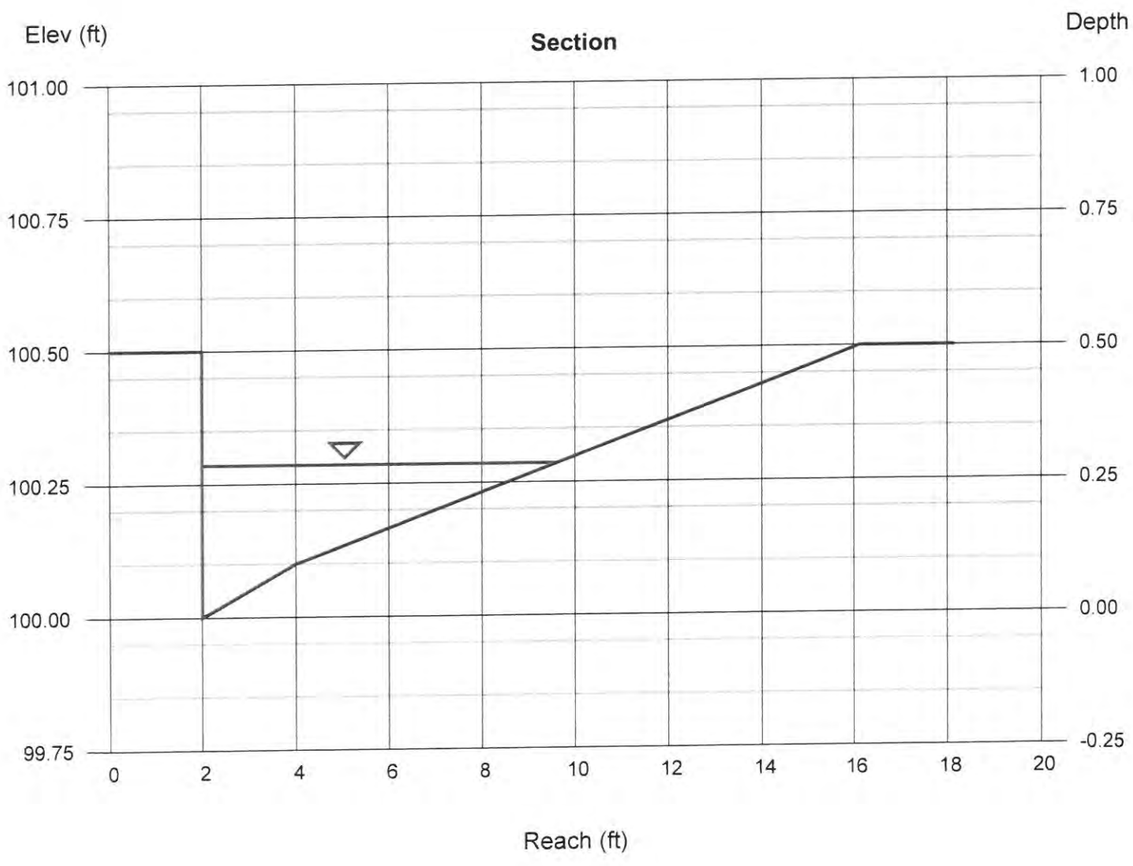
Calculations

Compute by:	Known Q
Known Q (cfs)	= 4.14

Highlighted

Depth (ft)	= 0.28
Q (cfs)	= 4.140
Area (sqft)	= 0.99
Velocity (ft/s)	= 4.19
Wetted Perim (ft)	= 7.90
Crit Depth, Yc (ft)	= 0.38
Spread Width (ft)	= 7.61
EGL (ft)	= 0.56

Section



Supporting Documents

INFILTRATION TESTING

FOR
NISSAN OF SOQUEL
SANTA CRUZ COUNTY, CALIFORNIA

PREPARED FOR
BLAME-JADE
PROJECT NO. 16-128.1-SC

PREPARED BY

BUTANO GEOTECHNICAL ENGINEERING, INC.

November 2016

BUTANO GEOTECHNICAL ENGINEERING, INC.
231 GREEN VALLEY ROAD, SUITE E, FREEDOM, CALIFORNIA 95019
PHONE: 831.724.2612
WWW.BUTANOGEOTECH.COM

November 28, 2016
Project No. 16-128.1-SC

Blame-Jade
P.O. Box 1431
Visalia, CA 93279

ATTENTION: Don Groppetti

SUBJECT: **INFILTRATION TESTING**
Nissan of Soquel - Proposed Automobile Dealership
Soquel Avenue - APN's 030-121-08, 12, 13, 27, 53
Soquel, Santa Cruz County, California

Dear Mr. Groppetti:

In accordance with your authorization, we have completed percolation testing for the subject project. This report summarizes the percolation testing procedures, testing locations, boring profiles, and the test results. It is a pleasure being associated with you on this project. If you have any questions, or if we may be of further assistance, please do not hesitate to contact our office.

Sincerely,

BUTANO GEOTECHNICAL ENGINEERING, INC.

Greg Bloom, PE, GE
Principal Engineer
R.C.E. 58819

Philip Edwards, EIT
Staff Engineer
E.I.T. 142203

Appendices: 1. Appendix A Figures and Standard Details

Distribution: (4) Addressee

1.0 INTRODUCTION

This report presents the results of our infiltration testing for the proposed commercial automobile dealership comprised of assessor's parcel numbers 030-121-08, 12, 13, 27, and 53 located in unincorporated Soquel, Santa Cruz County, California.

The purpose of our infiltration testing was to provide infiltration rates used in the design of Stormwater Control Measures (SCM) for the proposed construction.

This work included site reconnaissance, subsurface exploration, soil sampling, infiltration testing, and preparation of this report. The scope of services for this investigation is outlined in our agreement dated October 10, 2016.

The following documents were provided for infiltration testing methodologies and infiltration rate calculations:

Dennis Shallenberger, PE, GE, and Robert Down, PE, (2013), Native Soil Assessment for Small Infiltration-Based Stormwater Control Measures, Earth Systems Pacific

Orange County Technical Guidance Document, (2011), Appendix VII

For this project the deep quick infiltration method was used as outlined in the Earth Systems Pacific Native Soil Assessment document. A brief description of the testing method has been described below, for full details please reference the Earth Systems Pacific document. The Earth Systems Pacific testing method for the design of storm water control devices measures the permeability of the soil in both the vertical and horizontal directions which is commonly referred to as a percolation rate. The Earth Systems Pacific document recommends a conversion factor to change the percolation rates to infiltration rates. The SCM designer should verify which rates are most suitable for their system. In general a system with a high edge to bottom ratio will be designed with percolation rates, and a shallow system with low horizontal capacity for movement of water will be designed using infiltration rates. Both percolation rates and infiltration rates are given below.

Percolation rates were converted to design infiltration rates using the recommended percolation to infiltration equation, and factor of safety outlined in the Orange County Technical Guidance Document. The factor of safety worksheet and conversion equation can be seen in Appendix A, Figure A-7.

2.0 FIELD EXPLORATION AND TESTING PROCEDURES

Our field exploration included drilling, logging, and sampling of four borings on October 24, 2016 with a 6-inch solid stem track mounted drill rig. The borings were advanced to depths ranging from 9 feet to 26 feet below existing grade. The soils encountered in the borings were continuously logged in the field by a representative of Butano Geotechnical Engineering, Inc. These soils were classified in accordance with the Unified Soil Classification System (USCS: Figure A-2). The Boring Logs, the boring locations, and the Key to the Logs are presented in Appendix A, Figures A-1 through A-6. The locations of the borings were determined using a tape and measured from known landmarks, the accuracy is therefore within such measurements.

The borings were drilled 5 to 10 feet below the bottom of the planned SCM. A three-inch diameter perforated pipe was placed in the borings and the annulus was surrounded with fine gravel. A constant head was kept at the top of the SCM for a period of 30 minutes after which the volume of water was recorded. The water was allowed to fall for 2 hours after the 30-minute constant head period. The elevation of the water was recorded to the nearest 10th of an inch during the 2-hour period. The ground surface elevation was estimated to the nearest foot based on the provided map. The constant head volume and infiltration rates can be seen in Table 1. All elevations are recorded on Table 1.

3.0 TESTING RESULTS

Boring P1			
Ground Surface Elevation = 126 feet			
Elevation of proposed SCM = 107 feet			
Depth of Infiltration Boring = 26 feet			
	Elevation of Water (ft)	Time	Volume (ft^3)
Constant Head	107.02	2:05 PM	0.49
	107.02	2:35 PM	
Falling Head	105.47	2:50 PM	
	104.29	3:15 PM	
	103.59	3:45 PM	
	102.99	4:05 PM	
	102.22	4:35 PM	
Average Head Height (Havg, in)	55.44		
Total Drop (ΔH, in)	57.60		
Ultimate Percolation Rate (in/hr)	28.80		
Design Percolation Rate (in/hr)	13.09		
Ultimate Infiltration Rate (I_t, in/hr)	0.76		
Design Infiltration Rate (I_t, in/hr)	**0.34**		

Boring P2			
Ground Surface Elevation = 127 feet			
Elevation of proposed SCM = 124 feet			
Depth of Infilitration Boring = 9 feet			
	Elevation of Water (ft)	Time	Volume (ft^3)
Constant Head	124.5	1:42 PM	0.00
	124.5	2:12: pm	
Falling Head	124.47	2:50 AM	
	124.45	3:10 PM	
	124.4	3:50 PM	
	124.4	4:12 PM	
Average Head Height (Havg, in)	77.4		
Total Drop (ΔH, in)	1.2		
Ultimate Percolation Rate (in/hr)	0.60		
Design Percolation Rate (in/hr)	0.27		
Ultimate Infiltration Rate (I_t, in/hr)	0.01		
Desingn Infiltration Rate (I_t, in/hr)	**0.01**		

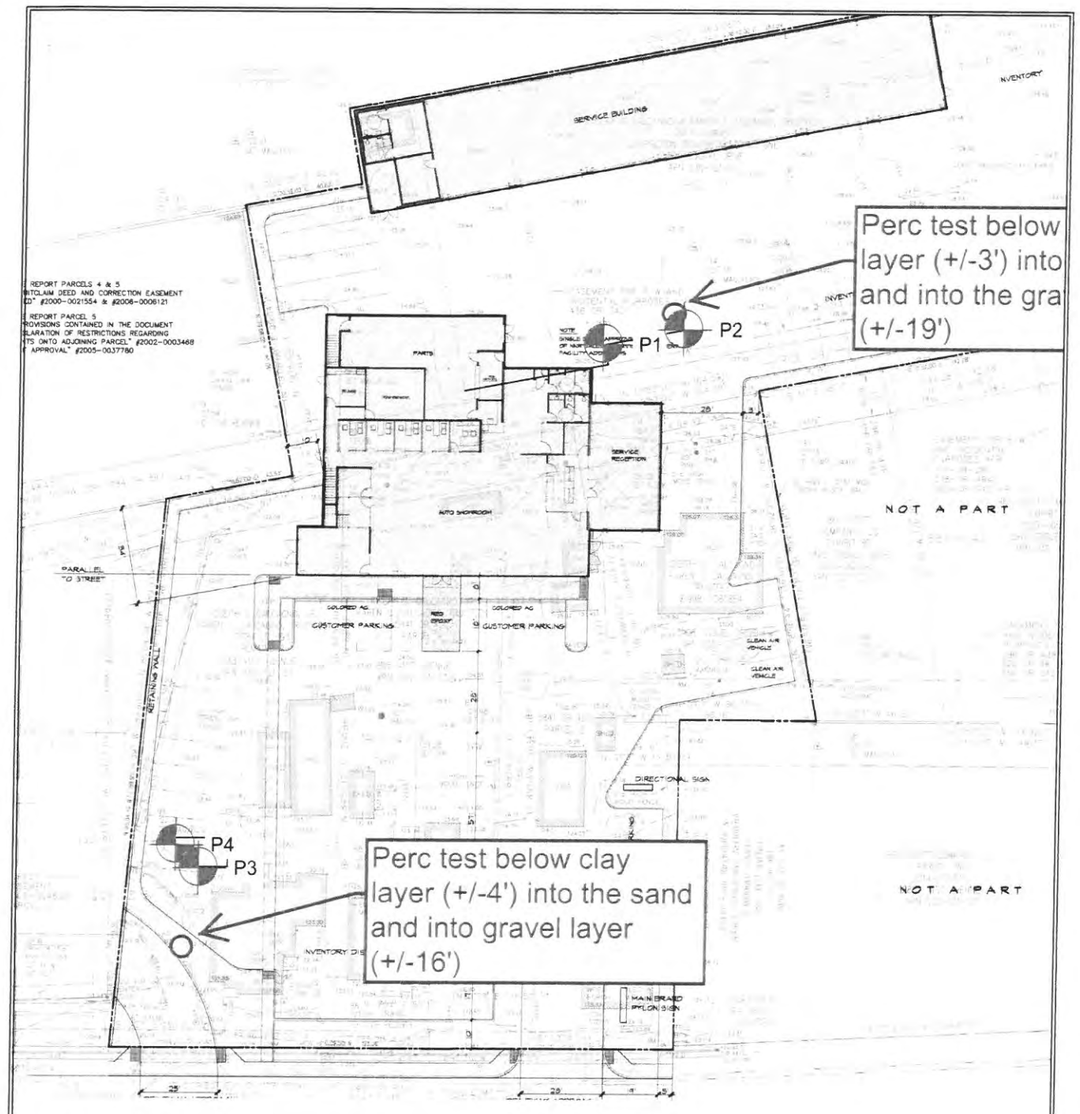
Boring P3			
Ground Surface Elevation = 123 feet			
Elevation of proposed SCM = 119 feet			
Depth of Infilitration Boring = 9 feet			
	Elevation of Water (ft)	Time	Volume (ft^3)
Constant Head	119	12:05 PM	0.00
	119	12:35 PM	
Falling Head	119	1:05 PM	
	119	1:35 PM	
	119	2:05 PM	
	119	2:35 PM	
Average Head Height (Havg, in)	60		
Total Drop (ΔH, in)	0		
Ultimate Percolation Rate (in/hr)	0.00		
Design Percolation Rate (in/hr)	0.00		
Ultimate Infiltration Rate (I_t, in/hr)	0.00		
Ultimate Infiltration Rate (I_t, in/hr)	**0.00**		

Boring P4			
Ground Surface Elevation = 122 feet			
Elevation of proposed SCM = 106 feet			
Depth of Infilitration Boring = 25 feet			
	Elevation of Water (ft)	Time	Volume (ft^3)
Constant Head	108	2:05 PM	0.20
	108	2:35 PM	
RESTARTED MEASUREMENT			
Falling Head	107.58	1:10 PM	
	106.67	1:30 PM	
	105.55	1:52 PM	
	105.56	2:45 PM	
	104.98	3:10 PM	
Average Head Height (Havg, in)	111.36		
Total Drop (ΔH, in)	31.2		
Ultimate Percolation Rate (in/hr)	15.60		
Design Percolation Rate (in/hr)	7.09		
Ultimate Infiltration Rate ($K_{observed}$, in/hr)	0.21		
Design Infiltration Rate (K_{Design}, in/hr)	**0.09**		

APPENDIX A

FIGURES AND STANDARD DETAILS

Testing Location Plan	Figure A-1
Key to the Logs	Figure A-2
Boring Logs	Figures A-3 through A-6
Factor of Safety Calculations	Figure A-7



P2 Infiltration Boring Location

Scale: 1" = 50'

Note: Base map provided by Bowman and Williams

BUTANO	**INFILTRATION BORING LOCATIONS**	FIGURE
GEOTECHNICAL ENGINEERING, INC.	Nissan of Soquel	A-1

KEY TO LOGS

UNIFIED SOIL CLASSIFICATION SYSTEM

PRIMARY DIVISIONS			GROUP SYMBOL	SECONDARY DIVISIONS
COARSE GRAINED SOILS More than half of the material is larger than the No. 200 sieve	GRAVELS More than half of the coarse fraction is larger than the No. 4 sieve	CLEAN GRAVELS (Less than 5% fines)	GW	Well graded gravels, gravel-sand mixtures, little or no fines
			GP	Poorly graded gravels, gravel-sand mixtures, little or no fines
		GRAVEL WITH FINES	GM	Silty gravels, gravel-sand-silt mixtures, non-plastic fines
			GC	Clayey gravels, gravel-sand-clay mixtures, plastic fines
	SANDS More than half of the coarse fraction is smaller than the No. 4 sieve	CLEAN SANDS (Less than 5% fines)	SW	Well graded sands, gravelly sands, little or no fines
			SP	Poorly graded sands, gravelly sands, little or no fines
		SAND WITH FINES	SM	Silty sands, sand-silt mixtures, non-plastic fines
			SC	Clayey sands, sand-clay mixtures, plastic fines
FINE GRAINED SOILS More than half of the material is smaller than the No. 200 sieve	SILTS AND CLAYS Liquid limit less than 50		ML	Inorganic silts and very fine sands, silty or clayey fine sands or clayey silts with slight plasticity
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
			OL	Organic silts and organic silty clays of low plasticity
	SILTS AND CLAYS Liquid limit greater than 50		MH	Inorganic silts, micaceous or diatomacaceous fine sandy or silty soils, elastic silts
			CH	Inorganic clays of high plasticity, fat clays
			OH	Organic clays of medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS			Pt	Peat and other highly organic soils

GRAIN SIZE LIMITS

SILT AND CLAY	SAND			GRAVEL		COBBLES	BOULDERS
	FINE	MEDIUM	COARSE	FINE	COARSE		
No. 200	No. 40	No. 10	No. 4	3/4 in.	3 in.	12 in.	

US STANDARD SIEVE SIZE

RELATIVE DENSITY	
SAND AND GRAVEL	BLOWS/FT*
VERY LOOSE	0 - 4
LOOSE	4 - 10
MEDIUM DENSE	10 - 30
DENSE	30 - 50
VERY DENSE	OVER 50

CONSISTENCY	
SILT AND CLAY	BLOWS/FT*
VERY SOFT	0 - 2
SOFT	2 - 4
FIRM	4 - 8
STIFF	8 - 16
VERY STIFF	16 - 32
HARD	OVER 32

MOISTURE CONDITION	
CLAY	DRY
	MOIST
	SATURATED
SAND	DRY
	DAMP
	WET
	SATURATED

* Number of blows of 140 pound hammer falling 30 inches to drive a 2 inch O.D. (1 3/8 inch I.D.) split spoon (ASTM D-1586).

BUTANO GEOTECHNICAL ENGINEERING, INC. | FIGURE A-2

LOG OF EXPLORATORY BORING

Project No.:	16-128.1-SC	Boring:	P1
Project:	Nissan of Soquel	Location:	
		Elevation:	126
Date:	October 24, 2016	Method of Drilling:	6 inch diameter solid stem track mounted auger
Logged By:	PE		

2" Ring Sample ☐ | 2.5" Ring Sample ☐ | Bulk Sample ☒ | Terzaghi Split Spoon Sample ▯ | Static Water Table ▽

Depth (ft.)	Soil Type	Undisturbed	Bulk	Description	Blows / Foot	N_{60}	Dry Density (pcf)	Moisture Content (%)	Expansion Index	Particle Size	Unconfined - q_u (psf)	Atterberg Limits L.L.	Atterberg Limits P.I.
	CL		☒	Dark brown lean CLAY with sand, moist.									
5	CL		☒	Brown sandy lean CLAY, moist.									
10			☒										
15													
	SM			Silty SAND with gravel, very dense, damp.									
20			▯		56	67							
25													
				Boring terminated at a depth of 26 feet.									
30				No groundwater encountered during drilling.									
35													

BUTANO GEOTECHNICAL ENGINEERING, INC.

FIGURE A-3

LOG OF EXPLORATORY BORING

Project No.:	16-128.1-SC	Boring:	P2
Project:	Nissan of Soquel	Location:	
		Elevation:	127
Date:	October 24, 2016	Method of Drilling:	6 inch diameter solid stem track mounted auger
Logged By:	PE		

2" Ring Sample | 2.5" Ring Sample | Bulk Sample | Terzaghi Split Spoon Sample | Static Water Table

Depth (ft.)	Soil Type	Undisturbed	Bulk	Description	Blows / Foot	N_{60}	Dry Density (pcf)	Moisture Content (%)	Expansion Index	Particle Size	Unconfined - q_u (psf)	Atterberg Limits L.L.	Atterberg Limits P.I.
	CL		X	Dark brown lean CLAY with sand, moist.									
5	CL		X	Brown sandy lean CLAY, moist.									
10				Boring terminated at a depth of 9 feet. No groundwater encountered during drilling.									
15													
20													
25													
30													
35													

BUTANO GEOTECHNICAL ENGINEERING, INC. | FIGURE A-4

LOG OF EXPLORATORY BORING

Project No.:	16-128.1-SC	Boring:	P3
Project:	Nissan of Soquel	Location:	
		Elevation:	123
Date:	October 24, 2016	Method of Drilling:	6 inch diameter solid stem track mounted auger
Logged By:	PE		

2" Ring Sample | 2.5" Ring Sample | Bulk Sample | Terzaghi Split Spoon Sample | Static Water Table

Depth (ft.)	Soil Type	Undisturbed	Bulk	Description	Blows / Foot	N_{60}	Dry Density (pcf)	Moisture Content (%)	Expansion Index	Particle Size	Unconfined - q_u (psf)	Atterberg Limits L.L.	Atterberg Limits P.I.
	CL			Dark brown lean CLAY with sand, moist.									
	CL			Brown sandy lean CLAY, moist.									
5			X										
10				Boring terminated at a depth of 9 feet.									
				No groundwater encountered during drilling.									
15													
20													
25													
30													
35													

BUTANO GEOTECHNICAL ENGINEERING, INC. | FIGURE A-5

LOG OF EXPLORATORY BORING

Project No.:	16-128.1-SC	Boring:	P4
Project:	Nissan of Soquel	Location:	
		Elevation:	122
Date:	October 24, 2016	Method of Drilling:	6 inch diameter solid stem track mounted auger
Logged By:	PE		

2" Ring Sample | 2.5" Ring Sample | Bulk Sample | Terzaghi Split Spoon Sample | Static Water Table

Depth (ft.)	Soil Type	Undisturbed	Bulk	Description	Blows / Foot	N_{60}	Dry Density (pcf)	Moisture Content (%)	Expansion Index	Particle Size	Unconfined - q_u (psf)	Atterberg Limits L.L.	Atterberg Limits P.I.
	CL			Dark brown lean CLAY with sand, moist.									
5	CL		X	Brown sandy lean CLAY, moist.									
10			X										
15													
	SM			Silty SAND with gravel, very dense, damp.									
20			X										
	GC			Brown clayey GRAVEL with sand, damp.									
25													
				Boring terminated at a depth of 26 feet.									
30				No groundwater encountered during drilling.									
35													

BUTANO GEOTECHNICAL ENGINEERING, INC. | FIGURE A-6

Worksheet H: Factor of Safety and Design Infiltration Rate and Worksheet

Factor Category		Factor Description	Assigned Weight (w)	Factor Value (v)	Product (p) p = w x v
A	Suitability Assessment	Soil assessment methods	0.25	1	.25
		Predominant soil texture	0.25	1	.25
		Site soil variability	0.25	1	.25
		Depth to groundwater / impervious layer	0.25	2	.5
		Suitability Assessment Safety Factor, $S_A = \Sigma p$			1.25
B	Design	Tributary area size	0.25	1	.25
		Level of pretreatment/ expected sediment loads	0.25	2	.5
		Redundancy	0.25	2	.5
		Compaction during construction	0.25	2	.5
		Design Safety Factor, $S_B = \Sigma p$			1.75
Combined Safety Factor, $S_{TOT} = S_A \times S_B$					2.2
Measured Infiltration Rate, inch/hr, K_M (corrected for test-specific bias)					See infiltration spreadsheet for boring specific rates.
Design Infiltration Rate, in/hr, $K_{DESIGN} = S_{TOT} \times K_M$					

Supporting Data

Briefly describe infiltration test and provide reference to test forms:

Percolation rates were measured using the Deep Quick Infiltration Method as outlined (2013).

Percolation rates were converted to infiltration rates using the following equation:

$$K_{observed} = \frac{\Delta H(60r)}{\Delta t(r + 2H_{avg})}$$

Note: The minimum combined adjustment factor shall not be less than 2.0 and the maximum combined adjustment factor shall not exceed 9.0.

FIGURE A-7

GEOTECHNICAL INVESTIGATION
DESIGN PHASE

FOR
NISSAN OF SOQUEL
SANTA CRUZ COUNTY, CALIFORNIA

PREPARED FOR
BLAME-JADE
PROJECT NO. 16-128-SC

PREPARED BY

BUTANO GEOTECHNICAL ENGINEERING, INC.
JUNE 2016

BUTANO GEOTECHNICAL ENGINEERING, INC.
231 GREEN VALLEY ROAD, SUITE E, FREEDOM, CALIFORNIA 95019
PHONE: 831.724.2612
WWW.BUTANOGEOTECH.COM

June 24, 2016
Project No. 16-128-SC

Blame-Jade
P.O. Box 1431
Visalia, CA 93279

ATTENTION: Don Groppetti

SUBJECT: **GEOTECHNICAL INVESTIGATION - DESIGN PHASE**
Nissan of Soquel - Proposed Automobile Dealership
Soquel Avenue - APN's 030-121-08, 12, 13, 27, 53
Soquel, Santa Cruz County, California

Dear Mr. Groppetti:

In accordance with your authorization, we have completed a geotechnical investigation for the subject project. This report summarizes the findings, conclusions, and recommendations from our field exploration, laboratory testing, and engineering analysis. It is a pleasure being associated with you on this project. If you have any questions, or if we may be of further assistance, please do not hesitate to contact our office.

Sincerely,

BUTANO GEOTECHNICAL ENGINEERING, INC.

Greg Bloom, PE, GE
Principal Engineer
R.C.E. 58819

Philip Edwards, EIT
Staff Engineer
E.I.T. 142203

Appendices:
1. Appendix A Figures and Standard Details
2. Appendix B Field Exploration Program
3. Appendix C Laboratory Testing Program

Distribution: (4) Addressee

1.0 INTRODUCTION

This report presents the results of our geotechnical investigation for the proposed commercial automobile dealership comprised of assessor's parcel numbers 030-121-08, 12, 13, 27, and 53 located in unincorporated Soquel, Santa Cruz County, California.

The purpose of our investigation is to provide preliminary geotechnical design parameters and recommendations for the construction of the proposed multi-use building and associated improvements. Conclusions and recommendations related to site grading, drainage, foundations, and paving are presented herein.

Anticipated construction consists of building an automobile dealership with showroom, auto lot, service department, and associated hardscape and landscape features.

This work included site reconnaissance, subsurface exploration, soil sampling, laboratory testing, engineering analyses, and preparation of this report. The scope of services for this investigation is outlined in our agreement dated April 12, 2016.

The recommendations contained in this report are subject to the limitations presented in Section 8.0 of this report. The Association of Engineering Firms Practicing the Geosciences has produced a pamphlet for your information titled *Important Information About Your Geotechnical Report*. This pamphlet has been included with the copies of your report.

2.0 FIELD EXPLORATION AND LABORATORY TESTING PROGRAMS

Our field exploration program included drilling, logging, and interval sampling of four borings on June 7, 2016 with a 6-inch solid stem truck mounted drill rig. The borings were advanced to depths ranging from 21 ½ feet to 41 feet below existing grade. Details of the field exploration program including the Boring Logs and the Key to the Logs are presented in Appendix B, Figures B-3 through B-7.

Representative samples obtained during the field investigation were taken to the laboratory for testing. Laboratory tests were used to determine physical and engineering properties of the in-situ soils. Details of the laboratory testing program are presented in Appendix C. Test results are presented on the Boring Logs and in Appendix C.

3.0 SITE AND PROJECT DESCRIPTION

3.1 Location

The project site is located east of Highway 1 in unincorporated Soquel, Santa Cruz County, California. The project site is comprised of multiple parcels surrounding the corner of Soquel Avenue and 41st Avenue. The site location is shown on the Site Location Plan, Appendix B, Figure B-1.

3.2 Surface Conditions

The combined parcels total approximately 1.77 acres and are relatively flat. One of the parcels borders Soquel Avenue, three of the parcels border 41st Avenue, and one of the parcels can only be accessed via the other parcels. The parcels do not include the corner lots on Soquel Avenue and 41st Avenue.

APN 030-121-27 borders Soquel Avenue to the north and is relatively undeveloped. There are remains of an old foundation, fencing, pavement, and portable construction trailers on the parcel.

APN's 030-121-12, 13, & 53 border 41st Avenue to the east and are developed with residences and associated hardscape and landscape features.

APN 030-121-08 is surrounded by the other parcels on the western border, southern border, and a portion of the eastern border. This parcel is developed with a residence and associated hardscape and landscape features. The driveway for the residence exits into APN 030-121-27.

3.3 Subsurface Conditions

A total of four borings were advanced for the project in the area of the proposed improvements. The native soil generally encountered at the site consists of two to six feet of sandy lean clay, overlying 36 feet of coastal terrace deposit, overlying Purisima formation sandstone.

The upper two to six feet of sandy lean clay was firm to very stiff.

The coastal terrace deposit consists of interbedded lenses and layers of dense to very dense silty to clayey sand, and very stiff to hard lean clay and sandy lean clay.

The Purisima formation sandstone was very dense.

Approximately two feet of non-engineered fill was encountered in boring B1.

Groundwater was not encountered in any of the borings. Groundwater levels may vary seasonally.

Complete soil profiles are presented on the Boring Logs, Appendix B, Figures B-4a through B-7. The boring locations are shown on the Boring Site Plan, Figure B-2.

4.0 PROJECT DESCRIPTION

Based on our discussions with the client it is our understanding that the project consists of constructing an automobile dealership including a service shop, showroom, offices, inventory lots, and associated improvements.

5.0 GEOTECHNICAL HAZARDS

5.1 General

In our opinion the geotechnical hazards that could potentially affect the proposed project are:

- Fault surface rupture
- Intense seismic shaking
- Collateral seismic hazards

5.1.1 Fault Surface Rupture

The site lies outside of the State of California, Alquist-Priolo Earthquake Fault Zone. It is our opinion that the potential for fault surface rupture to affect the site and/or to damage the proposed improvements is low.

5.1.2 Intense Seismic Shaking

The hazard of intense seismic shaking is present throughout central California. Intense seismic shaking may occur at the site during the design lifetime of the proposed structure from an earthquake along one of the regions many faults. Generally, the intensity of shaking will increase the closer the site is to the epicenter of an earthquake, however, seismic shaking is a complex phenomenon and may be modified by local topography and soil conditions. The transmission of earthquake vibrations from the ground into the structure may cause structural damage.

The County of Santa Cruz has adopted the seismic provisions set forth in the 2013 California Building Code to address seismic shaking. The seismic provisions in the 2013 CBC are minimum load requirements for the seismic design for the proposed structure. The provisions set forth in the 2013 CBC will not prevent structural and nonstructural damage from direct fault ground surface rupture, coseismic ground cracking, liquefaction and lateral spreading, seismically induced differential compaction, seismically induced landsliding, or seismically induced inundation.

Table 1 has been constructed based on the 2013 CBC requirements for the seismic design of the proposed structure. The Site Class has been determined based on our field investigation and laboratory testing.

Table 1. Seismic Design Parameters (ASCE 7-10)

PGA	S_S	S_1	Site Class	F_a	F_v	S_{MS}	S_{M1}	S_{DS}	S_{D1}	Risk Category	Seismic Design Category
0.508	1.500	0.600	C	1.0	1.5	1.500	0.900	1.000	0.600	II	D

Design Coordinates - Latitude: 36.987280 Longitude: -121.965086

5.1.3 Collateral Seismic Hazards

In addition to intense seismic shaking, other seismic hazards that may have an adverse affect to the site and/or the structure are: fault ground surface rupture, coseismic ground cracking, seismically induced liquefaction and lateral spreading, seismically induced differential compaction, seismically induced landsliding, and seismically induced inundation (tsunami and seiche). It is our opinion that the potential for collateral seismic hazards to affect the site and to damage the proposed structure is low except for liquefaction.

6.0 DISCUSSIONS AND CONCLUSIONS

It is our understanding that the project consists of demolishing the existing structures and constructing a new automobile dealership. Two feet of non-engineered fill and debris was encountered in boring B1 and should be anticipated throughout the site from

the demolition of the existing structures. Additionally, historic foundations should be anticipated during the grading process.

Two expansion index tests were performed on representative samples of the on-site clayey soil. The expansion potential is very low (E.I.=10, 4). Based on the results of the expansion index tests the potential for the clay soil to heave at the site is low.

7.0 ANALYSIS

7.1 General

Based on the results of our field investigation, laboratory testing, and engineering analysis it is our opinion that from the geotechnical standpoint, the subject site will be suitable for the proposed construction.

7.2 Site Grading

7.2.1 Site Clearing

The site should be cleared of loose soil, organics, and debris within the project limits. This will include the removal of all demolition debris from existing and historic structures. Non-engineered fill caused by the demolition and removal of structure should be removed and or processed according to section 7.2.2. Typically, demolition of structures similar to this site create two to four feet of debris and or soil improvement needed.

7.2.2 Preparation of On-Site Soils

Areas to receive engineered fill should be excavated through any non-engineered fill, scarified, moisture conditioned and compacted to a minimum of 90 percent relative compaction. The area to receive fill should extend a minimum of 2 feet laterally of the improvements. The on-site soil may be re-used as engineered fill.

Site Grading-General

Imported fill material should be approved by a representative of Butano Geotechnical Engineering, Inc. prior to importing. On-site and imported fill should be primarily granular with no material greater than 2½ inches in diameter and no more than 20 percent of the material passing the #200 sieve. The fines fraction of the fill should not consist of expansive material. The Geotechnical Engineer should be notified not less than 5

working days in advance of placing any fill or base course material proposed for import. Each proposed source of import material should be sampled, tested, and approved by the Geotechnical Engineer prior to delivery of any soils imported for use on the site.

Engineered fill should be mechanically compacted to a minimum of 90 percent relative compaction per ASTM1557. Fill should be placed in thin lifts not to exceed 8 inches.

Any surface or subsurface obstruction, or questionable material encountered during grading, should be brought immediately to the attention of the Geotechnical Engineer for proper processing as required.

Paved Areas

The upper 6 inches of subgrade and all aggregate baserock in paved areas should be compacted to a minimum of **95 percent** relative compaction. This should extend a minimum of 2 feet laterally of all paved areas.

Non-engineered fill shall be removed and replaced as engineered fill in all paved areas.

7.2.3 Cut and Fill Slopes

No permanent cuts or fill slopes are anticipated for this project.

7.2.4 Excavating Conditions

The on-site soil may be excavated with standard earthwork equipment.

7.2.5 Surface Drainage

Positive drainage should be maintained away from the structures at a minimum gradient of 2 percent for 5 feet. Roof and driveway drainage should be collected into solid plastic pipe and released at approved locations to minimize erosion.

Collected drainage should be released into energy dissipaters at appropriate locations.

Drainage patterns approved at the time of construction should be maintained throughout the life of the structures.

7.2.6 Utility Trenches

Bedding material should consist of sand with SE not less than 30 which may then be jetted.

The on-site native soils may be utilized for trench backfill. Imported fill should be free of organic material and rocks over 2.5 inches in diameter.

If sand is used, a 3 foot concrete plug should be placed in each trench where it passes under the exterior footings.

Backfill of all exterior and interior trenches should be placed in thin lifts not to exceed 8 inches and mechanically compacted to achieve a relative compaction of not less than 95 percent in paved areas and 90 percent in other areas. Care should be taken not to damage utility lines.

Utility trenches that are parallel to the sides of a building should be placed so that they do not extend below a line sloping down and away at an inclination of 2:1 H:V from the bottom outside edge of all footings.

Trenches should be capped with 1 1/2 feet of relatively impermeable material. Import material must be approved by the Geotechnical Engineer prior to its use.

Trenches must be shored as required by the local regulatory agency, the State of California Division of Industrial Safety Construction Safety Orders, and Federal OSHA requirements.

7.3 Foundations

7.3.1 Conventional Shallow Foundations

General

Conventional shallow foundations may be used for bearing on in-situ soil, or engineered fill per section 7.2.2.

Footing Dimensions

Footing widths should be based on the allowable bearing value but not less than 15 inches. The minimum recommended depth of embedment is

12 inches. Embedment depths should not be allowed to be affected adversely, such as through erosion, softening, digging, etc. Should local building codes require deeper embedment of the footings or wider footings, the local codes must apply.

Bearing Capacity

The allowable bearing capacity used should not exceed 3,000 psf for footings bearing on in-situ soil or engineered fill. The allowable bearing capacity may be increased by one-third in the case of short duration loads, such as those induced by wind or seismic forces. In the event that footings are founded in structural fill consisting of imported materials, the allowable bearing capacities will depend on the type of these materials and should be re-evaluated.

Lateral Resistance

Friction coefficient - 0.35, between the in-situ soil or engineered fill and rough concrete. A passive resistance of 350 may be assumed below a depth of 12 inches for in-situ soil or engineered fill. Where both friction and the passive resistance are utilized for sliding resistance, either of the values indicated should be reduced by one-third.

Footing excavations must be checked by the Geotechnical Engineer before steel is placed and concrete is poured.

7.3.2 Concrete Slabs-on-Grade

General

We recommend that concrete slab-on-grades be founded on in-situ soil, or engineered fill per section 7.2.2.

The subgrade should be proof-rolled just prior to construction to provide a firm, relatively unyielding surface, especially if the surface has been loosened by the passage of construction traffic.

Capillary Break and Vapor Barrier

The following paragraph outlines the minimum capillary break and vapor barrier that shall be utilized for interior slab-on-grades, or slab-on-grades where moisture sensitive floor coverings are anticipated.

The vapor barrier shall consist of a waterproof membrane (Stegowrap 15 Mil or equivalent) placed directly below the floor slab and in direct contact with the concrete. Sheet overlap for the vapor barrier shall be a minimum of 6 inches. A 4-inch minimum layer of ¾ inch drainrock shall be placed below the waterproof membrane to act as a capillary break. Care must be taken not to rip the vapor barrier. A 6-inch layer of compacted Class II Baserock may be employed to prevent rips or tears in the vapor barrier if desired and to keep the subgrade from becoming saturated prior to pouring concrete.

If the manufacturer's recommendations or the project requirements for the capillary break and vapor barrier are more stringent than the minimum outlined above, the designer should follow those recommendations and requirements. Recommendations by the manufacturer may include but is not limited to specifications for; concrete mix design, puncture resistance of vapor barrier, permeance of vapor barrier, soil flatness, capillary break section, structural section, and testing recommendations.

7.4 Pavement Sections

The design life for the pavement section is 20 years. The flexible pavement section was designed using the Caltrans method. The rigid pavement section was designed using the American Concrete Institute (ACI) publication ACI 330R-01 – "Design and Construction of Concrete Parking Lots". Pavement section thicknesses have been provided based on a range of traffic indexes. The designer or civil engineer shall pick the appropriate value based on the project requirements. Exact pavement performance is difficult to quantify considering the many factors that influence the life of the pavement. Some of these factors include; subgrade soil type and compaction, paving mix design, QA/QC during construction, maintenance, and traffic growth. It is important that Butano Geotechnical Engineering be involved throughout the design process, and during construction for QA/QC to ensure proper implementation of our recommendations and the best chance for the pavement to achieve its intended design life.

One R-Value test was performed on a representative sample of the subgrade material. The R-value test yielded a value of 8 which was used for design.

7.4.1 Hot Mix Asphalt Pavement

The flexible pavement section shall consist of Hot Mix Asphalt (HMA) compacted to a minimum of 95% relative compaction. The HMA shall be

placed in lifts not to exceed 3 inches, with no lift thinner than two times the maximum aggregate size.

The asphalt pavement section shall be in accordance with Table 2.

Table 2:

Traffic Index	Base Rock (in.)	Asphalt (in.)
5	10	3
6	11	4
7	14	4.5

7.4.2 Concrete Pavement Section

A rigid pavement section may be used consisting of concrete with a minimum compressive strength of 4000 psi.

Joint spacing shall be designed by the civil engineer but shall have a maximum longitudinal and transverse spacing of 18 times the concrete thickness.

Construction specifications shall be in accordance with ACI 330.1-03.

The concrete pavement section shall be in accordance with Table 3 and publications ACI 330R-01.

Table 3:

Traffic Category	Base Rock (in.)	Concrete (in.)	Dowels - Diameter-Length (in.)
A	8	5	N/A
A-1	8	7	N/A
B	8	7.5	1-14
C	8	8	1-14
D	8	9	1 1/8-16

** The description of traffic categories can be found in Table 2.3 of publication ACI 330*

7.6 Plan Review

The recommendations presented in this report are based on preliminary design information for the proposed project and on the findings of our geotechnical

investigation. When completed, the Grading Plans, Foundation Plans and design loads should be reviewed by Butano Geotechnical Engineering, Inc. prior to submitting the plans and contract bidding. Additional field exploration and laboratory testing may be required upon review of the final project design plans.

7.7 Observation and Testing

Field observation and testing should be provided by a representative of Butano Geotechnical Engineering, Inc. to enable them to form an opinion regarding the adequacy of the site preparation, the adequacy of fill materials, and the extent to which the earthwork is performed in accordance with the geotechnical conditions present, the requirements of the regulating agencies, the project specifications, and the recommendations presented in this report.

Butano Geotechnical Engineering, Inc. should be notified **at least 5 working days** prior to any site clearing or other earthwork operations on the subject project in order to observe the stripping and disposal of unsuitable materials and to ensure coordination with the grading contractor. During this period, a preconstruction meeting should be held on the site to discuss project specifications, observation and testing requirements and responsibilities, and scheduling.

8.0 LIMITATIONS

The recommendations contained in this report are based on our field explorations, laboratory testing, and our understanding of the proposed construction. The subsurface data used in the preparation of this report was obtained from the borings drilled during our field investigation. Variation in soil, geologic, and groundwater conditions can vary significantly between sample locations. As in most projects, conditions revealed during construction excavation may be at variance with preliminary findings. If this occurs, the changed conditions must be evaluated by the Project Geotechnical Engineer, and revised recommendations be provided as required. In addition, if the scope of the proposed construction changes from the described in this report, our firm should also be notified.

Our investigation was performed in accordance with the usual and current standards of the profession, as they relate to this and similar localities. No other warranty, expressed or implied, is provided as to the conclusions and professional advice presented in this report.

This report is issued with the understanding that it is the responsibility of the Owner, or of his Representative, to ensure that the information and recommendations contained herein are brought to the attention of the Engineer for the project and incorporated into

the plans, and that it is ensured that the Contractor and Subcontractors implement such recommendations in the field. The use of information contained in this report for bidding purposes should be done at the Contractor's option and risk.

This firm does not practice or consult in the field of safety engineering. We do not direct the Contractor's operations, and we are not responsible for other than our own personnel on the site; therefore, the safety of others is the responsibility of the Contractor. The Contractor should notify the Owner if he considers any of the recommended actions presented herein to be unsafe.

The findings of this report are considered valid as of the present date. However, changes in the conditions of a site can occur with the passage of time, whether they are due to natural events or to human activities on this or adjacent sites. In addition, changes in applicable or appropriate codes and standards may occur, whether they result from legislation or the broadening of knowledge. Accordingly, this report may become invalidated wholly or partially by changes outside our control. Therefore, this report is subject to review and revision as changed conditions are identified.

The scope of our services mutually agreed upon did not include any environmental assessment or study for the presence of hazardous to toxic materials in the soil, surface water, or air, on or below or around the site. Butano Geotechnical Engineering, Inc. is not a mold prevention consultant; none of our services performed in connection with the proposed project are for the purpose of mold prevention. Proper implementation of the recommendations conveyed in our reports will not itself be sufficient to prevent mold from growing in or on the structures involved.

REFERENCES

ASTM International (2015). *Annual Book of ASTM Standards, Section Four, Construction.*Volume 4.08, Soil and Rock (I): D 430 - D 5611.

ASTM International (2015). *Annual Book of ASTM Standards, Section Four, Construction.*Volume 4.09, Soil and Rock (II): D 5714 - Latest.

Brabb, E.E. (1989). *Geologic Map of Santa Cruz County, California*. U.S. Geological Survey Miscellaneous Investigation Series, Map I-1905, scale 1:62500.

California Code of Regulations-Title 24, Part 2, California Building Code (2013).

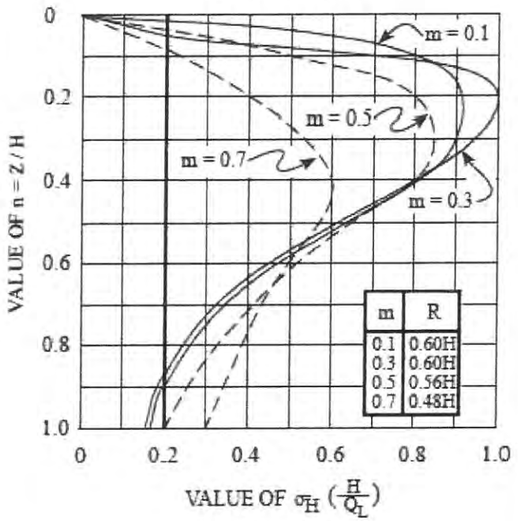
American Concrete Institute (ACI). (2001). *Design for Construction of Concrete Parking Lots,* ACI Publication ACI 330R-01.

American Concrete Institute (ACI). (2003). *Specification for Unreinforced Concrete Parking Lots*, ACI Publication ACI 330.1-03.

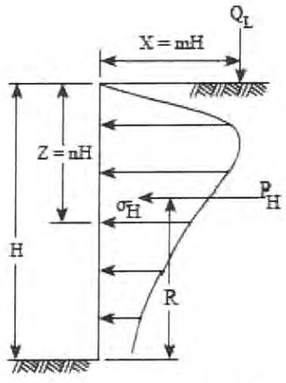
APPENDIX A

FIGURES AND STANDARD DETAILS

LINE LOAD



m	R
0.1	0.60H
0.3	0.60H
0.5	0.56H
0.7	0.48H



FOR m ≦ 0.4:

$$\sigma_H \left(\frac{H}{Q_L}\right) = \frac{0.20\,n}{(0.16+n^2)^2}$$

$$P_H = 0.55\,Q_L$$

FOR m > 0.4:

$$\sigma_H \left(\frac{H}{Q_L}\right) = \frac{1.28\,m^2 n}{(m^2+n^2)^2}$$

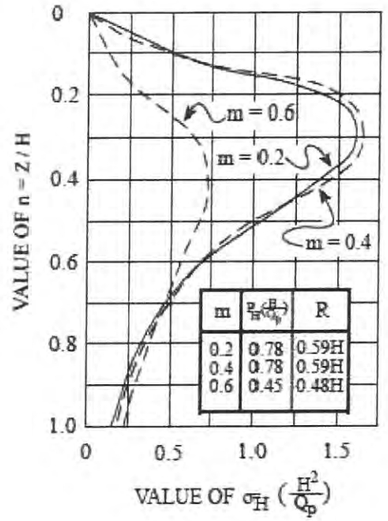
RESULTANT $P_H = \dfrac{0.64\,Q_L}{(m^2+1)}$

PRESSURES FROM LINE LOAD Q_L

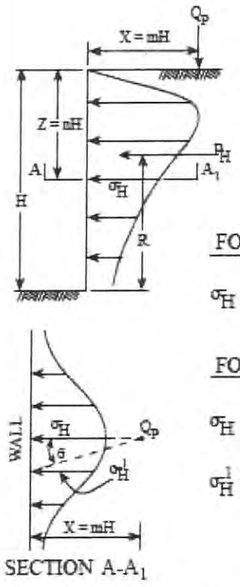
(BOISSINESQ EQUATION MODIFIED BY EXPERMENT)

REFERENCE: Design Manual
NAVFAC DM-7.02
Figure 11
Page 7.2-74

POINT LOAD



m	$\frac{P_H}{H}\left(\frac{H^2}{Q_p}\right)$	R
0.2	0.78	0.59H
0.4	0.78	0.59H
0.6	0.45	0.48H



SECTION A-A_1

FOR m ≦ 0.4:

$$\sigma_H \left(\frac{H^2}{Q_p}\right) = \frac{0.28\,n^2}{(0.16+n^2)^3}$$

FOR m > 0.4:

$$\sigma_H \left(\frac{H^2}{Q_p}\right) = \frac{1.77\,m^2 n^2}{(m^2+n^2)^3}$$

$$\sigma_H^1 = \sigma_H \cos^2(1.1\,\theta)$$

PRESSURES FROM POINT LOAD Q_P

(BOISSINESQ EQUATION MODIFIED BY EXPERMENT)

BUTANO GEOTECHNICAL ENGINEERING, INC.	S□□C□A□□E P□ESS□□E □IA□□AM	FIGURE A-1

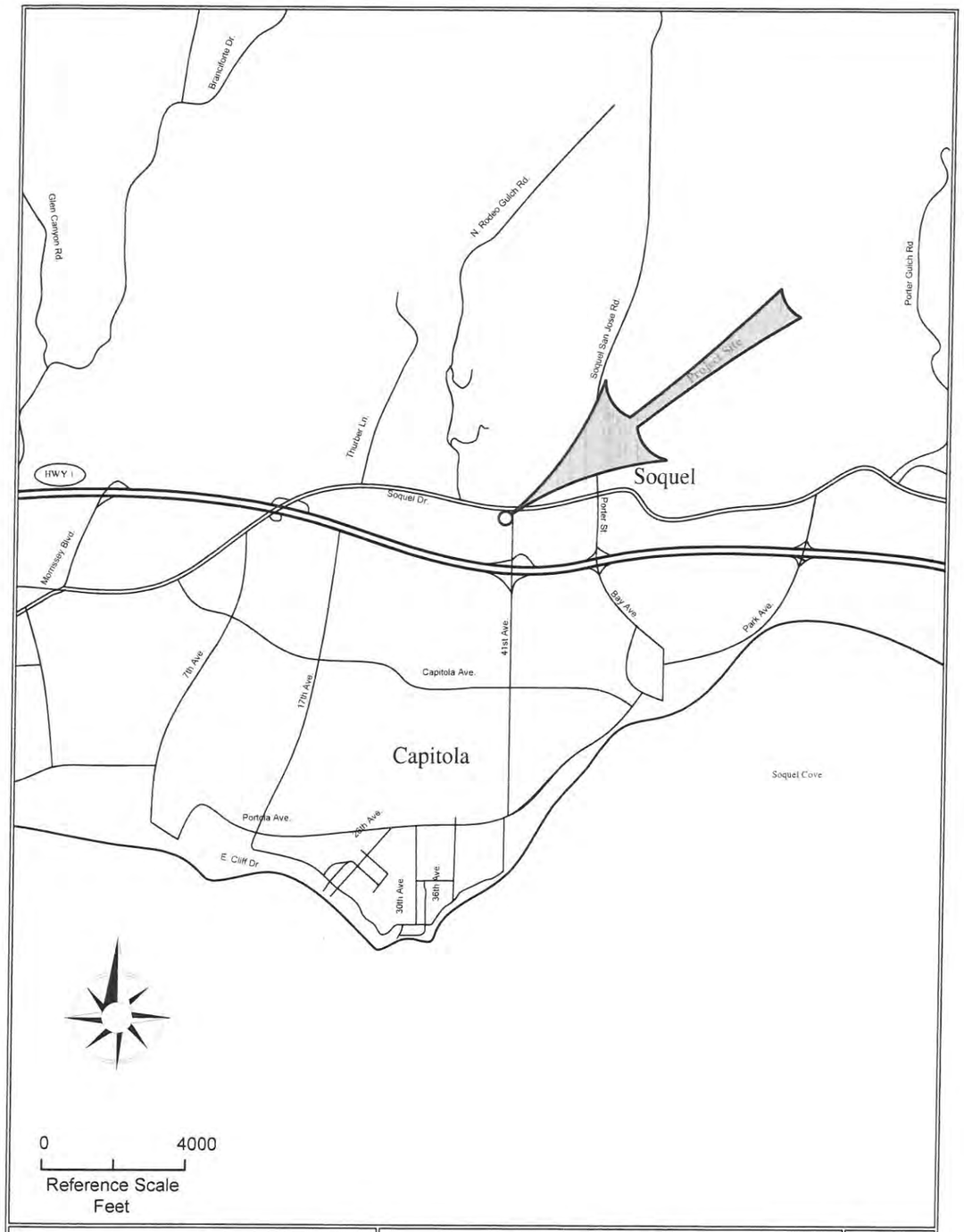
APPENDIX B

FIELD EXPLORATION PROGRAM

FIELD EXPLORATION PROCEDURES

Subsurface conditions were explored by advancing 4 borings below existing grade. The borings were advanced using a six-inch solid stem truck mounted auger. The Key to The Logs and the Logs of the Borings are included in Appendix B, Figures B-3 through B-7. The approximate locations of the borings are shown on the Boring Site Plan, Figure B-2. The boring holes were located in the field by tape measurements from known landmarks. Their locations as shown are therefore within the accuracy of such measurement.

The soils encountered in the borings were continuously logged in the field by a representative of Butano Geotechnical Engineering, Inc. Bulk and relatively undisturbed soil samples for identification and laboratory testing were obtained in the field. These soils were classified based on field observations and laboratory tests. The classifications are accordance with the Unified Soil Classification System (USCS: Figure B-3).



BUTANO GEOTECHNICAL ENGINEERING, INC.	**SITE LOCATION PLAN** Nissan of Soquel	FIGURE B-1

B-X Exploratory Boring

Scale: 1" = 80'

Note: Base map provided by Scott & Associates. Project titled: Nissan of Soquel.
Project Number: 1512 Dated: 1/26/2016

BUTANO	**□O□IN□ SITE PLAN**	FIGURE
GEOTECHNICAL ENGINEERING, INC.	Nissan of Soquel	B-

KEY TO LOGS

UNIFIED SOIL CLASSIFICATION SYSTEM

PRIMARY DIVISIONS			GROUP SYMBOL	SECONDARY DIVISIONS
COARSE GRAINED SOILS More than half of the material is larger than the No. 200 sieve	GRAVELS More than half of the coarse fraction is larger than the No. 4 sieve	CLEAN GRAVELS (Less than 5% fines)	GW	Well graded gravels, gravel-sand mixtures, little or no fines
			GP	Poorly graded gravels, gravel-sand mixtures, little or no fines
		GRAVEL WITH FINES	GM	Silty gravels, gravel-sand-silt mixtures, non-plastic fines
			GC	Clayey gravels, gravel-sand-clay mixtures, plastic fines
	SANDS More than half of the coarse fraction is smaller than the No. 4 sieve	CLEAN SANDS (Less than 5% fines)	SW	Well graded sands, gravelly sands, little or no fines
			SP	Poorly graded sands, gravelly sands, little or no fines
		SAND WITH FINES	SM	Silty sands, sand-silt mixtures, non-plastic fines
			SC	Clayey sands, sand-clay mixtures, plastic fines
FINE GRAINED SOILS More than half of the material is smaller than the No. 200 sieve	SILTS AND CLAYS Liquid limit less than 50		ML	Inorganic silts and very fine sands, silty or clayey fine sands or clayey silts with slight plasticity
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
			OL	Organic silts and organic silty clays of low plasticity
	SILTS AND CLAYS Liquid limit greater than 50		MH	Inorganic silts, micaceous or diatomacaceous fine sandy or silty soils, elastic silts
			CH	Inorganic clays of high plasticity, fat clays
			OH	Organic clays of medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS			Pt	Peat and other highly organic soils

GRAIN SIZE LIMITS

SILT AND CLAY	SAND			GRAVEL		COBBLES	BOULDERS
	FINE	MEDIUM	COARSE	FINE	COARSE		

No. 200 No. 40 No. 10 No. 4 3/4 in. 3 in. 12 in.

US STANDARD SIEVE SIZE

RELATIVE DENSITY	
SAND AND GRAVEL	BLOWS/FT*
VERY LOOSE	0 - 4
LOOSE	4 - 10
MEDIUM DENSE	10 - 30
DENSE	30 - 50
VERY DENSE	OVER 50

CONSISTENCY	
SILT AND CLAY	BLOWS/FT*
VERY SOFT	0 - 2
SOFT	2 - 4
FIRM	4 - 8
STIFF	8 - 16
VERY STIFF	16 - 32
HARD	OVER 32

MOISTURE CONDITION	
CLAY	DRY
	MOIST
	SATURATED
SAND	DRY
	DAMP
	WET
	SATURATED

* Number of blows of 140 pound hammer falling 30 inches to drive a 2 inch O.D. (1 3/8 inch I.D.) split spoon (ASTM D-1586).

BUTANO GEOTECHNICAL ENGINEERING, INC. | FIGURE B-3

LOG OF EXPLORATORY BORING

Project No.:	16-128-SC	Boring:	B1 (1 of 2)
Project:	Nissan of Soquel	Location:	
		Elevation:	
Date:	June 7, 2016	Method of Drilling:	6 inch diameter solid stem truck mounted
Logged By:	PE		auger

2" Ring Sample; 2.5" Ring Sample; Bulk Sample; Terzaghi Split Spoon Sample; Static Water Table

Depth (ft.)	Soil Type	Undisturbed	Bulk	Description	Blows / Foot	N_{60}	Dry Density (pcf)	Moisture Content (%)	Expansion Index	Particle Size	Unconfined (psf)	Atterberg Limits L.L.	Atterberg Limits P.I.
	FILL			1' concrete over 1' rubble (FILL).									
	CL			Brown sandy lean CLAY, stiff, moist.	12	7	99.8	22.4			2030		
5	SC/SM			Brown clayey SAND, dense, damp, (Qcl-	38	34		14.0	10				
				Lowest emergent coastal terrace deposit).	42	38		16.2					
				Interbeded lenses of silty SAND from 4-21 feet.									
10				Medium dense.	30	26		20.9					
15				Medium dense.	22	18		28.2					
20	SM												
25				Silty SAND with gravel, very dense, damp, (Qcl)	50-6"			13.0					
30													
35													

BUTANO GEOTECHNICAL ENGINEERING, INC.

FIGURE B-4a

LOG OF EXPLORATORY BORING

Project No.:	16-128-SC	Boring:	B1 (1 of 2)
Project:	Nissan of Soquel	Location:	
		Elevation:	
Date:	June 7, 2016	Method of Drilling:	6 inch diameter solid stem truck mounted auger
Logged By:	PE		

2" Ring Sample | 2.5" Ring Sample | Bulk Sample | Terzaghi Split Spoon Sample | Static Water Table

Depth (ft.)	Soil Type	Undisturbed	Bulk	Description	Blows / Foot	N_{60}	Dry Density (pcf)	Moisture Content (%)	Expansion Index	Particle Size	Swell Pressure (psf)	Atterberg Limits L.L.	Atterberg Limits P.I.
	SM												
	BR												
40				Olive brown SANDSTONE, very dense, slightly damp, (Tp-Purisima Formation Sandstone).	50-6"			10.3					
				Boring terminated at a depth of 41 1/2 feet. No groundwater encountered during drilling.									
45													
50													
55													
60													
65													
70													

BUTANO GEOTECHNICAL ENGINEERING, INC.

FIGURE B-4b

LOG OF EXPLORATORY BORING

Project No.:	16-128-SC	Boring:	B2
Project:	Nissan of Soquel	Location:	
		Elevation:	
Date:	June 7, 2016	Method of Drilling:	6 inch diameter solid stem truck mounted auger
Logged By:	PE		

2" Ring Sample | 2.5" Ring Sample | Bulk Sample | Terzaghi Split Spoon Sample | Static Water Table

Depth (ft.)	Soil Type	Undisturbed	Bulk	Description	Blows / Foot	N_{60}	Dry Density (pcf)	Moisture Content (%)	Expansion Index	Particle Size	Unconfined (psf)	Atterberg Limits L.L.	Atterberg Limits P.I.
	CL			Brown sandy lean CLAY, stiff, moist.	15	8	104.2	16.5		✓			
				Very stiff.	26	22		14.9					
5	SM			Light brown silty SAND, very dense, slightly damp, weakly cemented.	50-6"			17.4					
					48	48		20.0					
	SC			Brown clayey SAND, dense, damp, (Qcl-Lowest emergent coastal terrace deposit).									
10				Medium dense.	17	13		27.3					
	SM												
15				Olive brown silty SAND, dense, damp, (Qcl).	40	36		13.2					
20				Very Dense, with gravel.	50-6"			13.1					
				Boring terminated at a depth of 21 1/2 feet. No groundwater encountered during drilling.									
25													
30													
35													

BUTANO GEOTECHNICAL ENGINEERING, INC. | FIGURE B-5

LOG OF EXPLORATORY BORING

Project No.:	16-128-SC	Boring:	B3
Project:	Nissan of Soquel	Location:	
		Elevation:	
Date:	June 7, 2016	Method of Drilling:	6 inch diameter solid stem truck mounted auger
Logged By:	PE		

2" Ring Sample | 2.5" Ring Sample | Bulk Sample | Terzaghi Split Spoon Sample | Static Water Table

Depth (ft.)	Soil Type	Undisturbed	Bulk	Description	Blows / Foot	N_{60}	Dry Density (pcf)	Moisture Content (%)	Expansion Index	Particle Size	Unconfined (psf)	Atterberg Limits L.L.	Atterberg Limits P.I.
	CL			2" AC over 4" Base Rock. Brown sandy lean CLAY, very stiff, moist.	22	12	112.4	13.1	4		6600		
					50-6"			13.8					
	SM			Light brown silty SAND, very dense, slightly damp, weakly cemented									
5	SC			Brown clayey SAND, very dense, damp, (Qcl- Lowest emergent coastal terrace deposit).	50-6"			13.8					
10				Medium dense.	31	28		24.0					
15				Dense.	45	41		19.8					
20	SM			Brown silty SAND with gravel, very dense, damp, (Qcl)	50-6"			8.2					
25				Boring terminated at a depth of 21 1/2 feet. No groundwater encountered during drilling.									
30													
35													

BUTANO GEOTECHNICAL ENGINEERING, INC.

FIGURE B-6

LOG OF EXPLORATORY BORING

Project No.:	16-128-SC	Boring:	B4
Project:	Nissan of Soquel	Location:	
		Elevation:	
Date:	June 7, 2016	Method of Drilling:	6 inch diameter solid stem truck mounted auger
Logged By:	PE		

2" Ring Sample | 2.5" Ring Sample | Bulk Sample | Terzaghi Split Spoon Sample | Static Water Table

Depth (ft.)	Soil Type	Undisturbed	Bulk	Description	Blows / Foot	N_{60}	Dry Density (pcf)	Moisture Content (%)	Expansion Index	Particle Size	Unconfined (psf)	Atterberg Limits L.L.	Atterberg Limits P.I.
	CL			3" AC over 5" Base Rock. Brown sandy lean CLAY, stiff, moist, mottled red.	7	3	105.6	19.4			1800		
	SC			Grey clayey SAND, dense, damp, (Qcl-Lowest emergent coastal terrace deposit).	35	32		16.6					
5					52	47		17.7		✓			
	CL			Tan lean CLAY, very stiff, moist, (Qcl).	22	18		25.4					
10				Some sand.									
15				Tan sandy lean CLAY, hard.	63	57		13.9					
	SM												
20				Brown to olive silty SAND with gravel, very dense, (Qcl)	62	56		7.0					
				Boring terminated at a depth of 21 1/2 feet. No groundwater encountered during drilling.									
25													
30													
35													

BUTANO GEOTECHNICAL ENGINEERING, INC.

FIGURE B-7

APPENDIX C

LABORATORY TESTING PROGRAM

LABORATORY TESTING PROCEDURES

Classification

Soils were classified according to the Unified Soil Classification System in accordance with ASTM D 2487 and D 2488. Moisture content and density determinations were made for representative samples in accordance with ASTM D 2216. Results of moisture density determinations, together with classifications, are shown on the Boring Logs, Figures B-4a through B-7.

Expansion Index

Two expansion index tests were performed on representative bulk samples of the foundation zone soil in accordance with ASTM D 4829-03. The results are shown on the Boring Logs, Figures B-4a and B-6.

Unconfined Compression

Three unconfined compression tests were performed in accordance with ASTM D 2166. The results are shown on the boring logs Figures B-4a, B-6 and B-7.

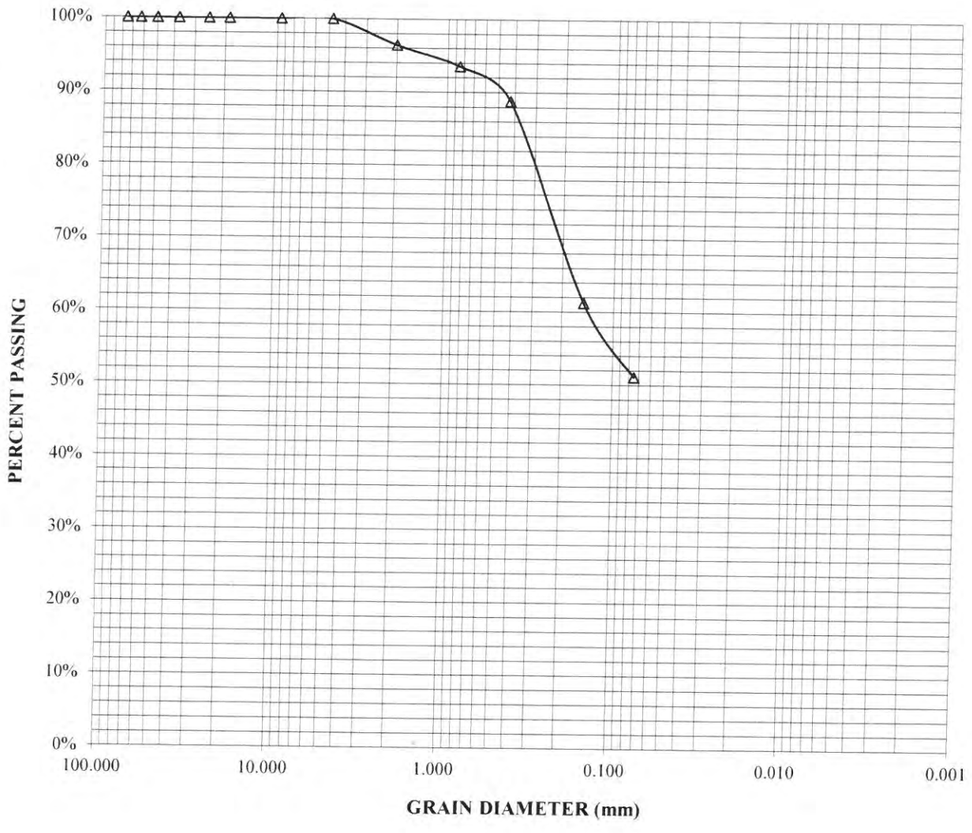
Particle Size Analysis

Two sieves were performed on representative samples in accordance with ASTM D 422. The grain size distributions from the result of the particle size analysis are shown in Figures C-1 and C-2.

R-Value

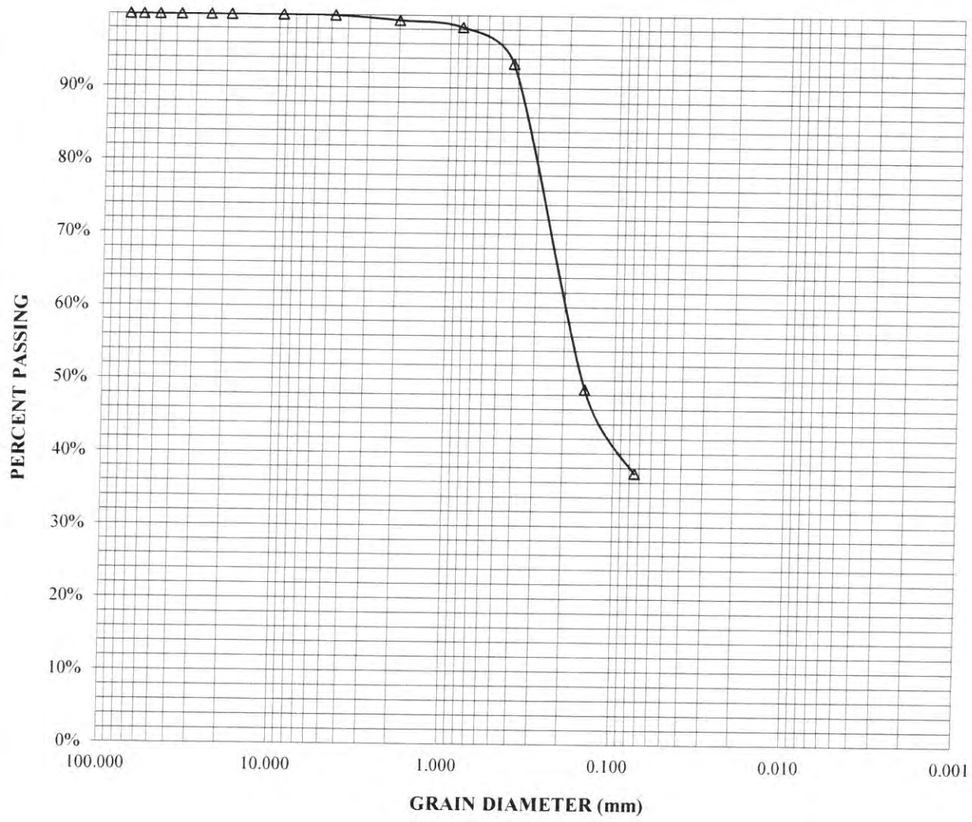
One R-Value was conducted on a representative sample of the pavement zone subgrade soil according to ASTM D2488 or CTM 301. The result is presented in Figure C-3.

BORING:	B2-1	PERCENT PASSING No. 4	PERCENT PASSING No. 200
DEPTH (ft):	1.0		
SOIL TYPE (USCS):	CL	100.0%	51.1%



BUTANO GEOTECHNICAL ENGINEERING, INC.	**GRAIN SIZE DISTRIBUTION** Nissan of Soquel	FIGURE C-1

BORING:	B4-3	PERCENT	PERCENT
DEPTH (ft):	Depth	PASSING No. 4	PASSING No. 200
SOIL TYPE (USCS):	SC	99.9%	37.4%

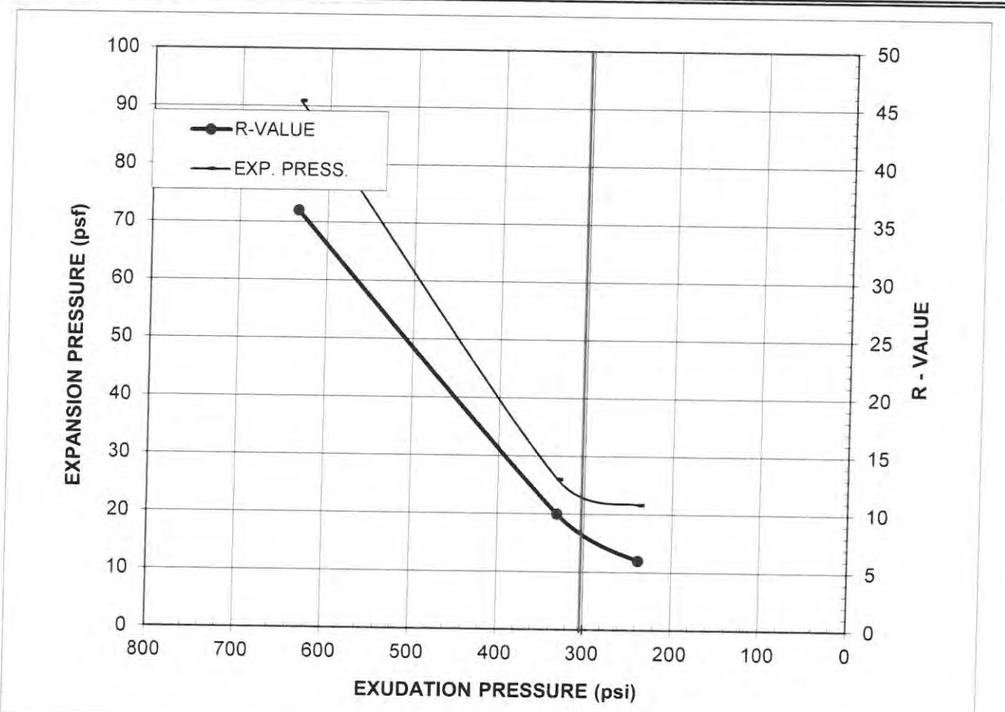


BUTANO	GRAIN SIZE DISTRIBUTION	FIGURE
GEOTECHNICAL ENGINEERING, INC.	Nissan of Soquel	C-2

R-VALUE REPORT

Parikh Consultants, Inc. **ASTM D2844 or CTM 301** (408) 452-9000

Project Name:	Nissan Of Soquil			Date:	7/13/16
Client:	Butano Geoechnical Engineering Inc			Project #:	2015-125-TST
Sample #:	B-1	Depth:	1-3'	Lab #:	M965
client project #	16-121-SC	Onsite / Native		Sample Date:	7/12/16 delivered
Material :	Silty Lean Clay			Sampled By:	



Specimen No.	A	B	C
Exudation Pressure, psi	237.8	331.5	633.9
Expansion Pressure, psf	21.65	25.98	90.93
R-Value	6	10	36
Moisture Content at Test, %	18.1	16.2	14.3
Dry Density at Test, pcf	107.9	112.2	118.1

R-Value @ 300 psi Exudation Pressure = **8**

Expansion Pressure @300 psi Exudation, psf = **23**

Minimum R-Value Requirement:

Comments:

Reported By : Nasir Ahmad

Figure C-3

Maintenance Agreement

Recording requested by:

Upon recording return to:

County of Santa Cruz, DPW
Stormwater Management Section
701 Ocean Street, Room 410
Santa Cruz, CA 95060

(Space above this line for Recorder's use)

AGREEMENT regarding private stormwater management maintenance.

APN: 030-121-27, -08, -12, -13, & -53
Application No. 161443

Don Groppetti, being the owner of the real property located at 3820 & 3906 Soquel Dr. and 2755, 2815, & 2821 41st Ave., Soquel, California, consents and agrees to inspect and maintain annually "prior to the rainy season" and to maintain as necessary for ensuring proper performance of the Pervious Asphalt, Control Boxes, Biofiltration Areas, Drain Inlets and Cleanouts on the subject property as shown on the plans prepared by Bowman & Williams dated _____ per County Code 7.79. I understand that expected maintenance may include sweeping, replanting, and repair and that proper performance requires the following restrictions on system or property use as detailed in CASQA SD-13 & SD-31. I understand that County staff may conduct inspections of the facility and that as the property owner, I may be assessed an annual service charge and/or re-inspection fee to cover the costs of inspection and oversight. I agree to forward a letter to the County Public Works Department, prior to October 15 of every year, stating the date and type of service performed on these facilities.

I have read the above agreement and understand it.

This agreement shall be binding on and shall inure to the benefit of the heirs, executors, administrators, and assigns of owner.

Owner _____

Dated this _____ day of _____, _____

PRIVATE STORMWATER MANAGEMENT MAINTENANCE AGREEMENT

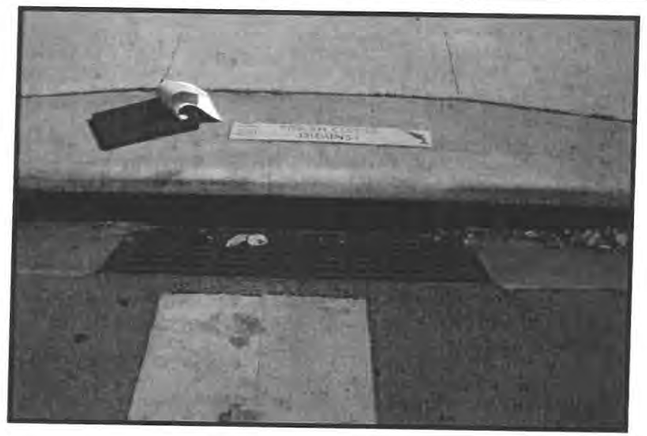
(Note: The signature on this form must be notarized.)

REV 02/12

FIG. SWM-25B

Storm Drain Signage

SD-13



Design Objectives

- Maximize Infiltration
- Provide Retention
- Slow Runoff
- Minimize Impervious Land Coverage
- ☑ Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Waste materials dumped into storm drain inlets can have severe impacts on receiving and ground waters. Posting notices regarding discharge prohibitions at storm drain inlets can prevent waste dumping. Storm drain signs and stencils are highly visible source controls that are typically placed directly adjacent to storm drain inlets.

Approach

The stencil or affixed sign contains a brief statement that prohibits dumping of improper materials into the urban runoff conveyance system. Storm drain messages have become a popular method of alerting the public about the effects of and the prohibitions against waste disposal.

Suitable Applications

Stencils and signs alert the public to the destination of pollutants discharged to the storm drain. Signs are appropriate in residential, commercial, and industrial areas, as well as any other area where contributions or dumping to storm drains is likely.

Design Considerations

Storm drain message markers or placards are recommended at all storm drain inlets within the boundary of a development project. The marker should be placed in clear sight facing toward anyone approaching the inlet from either side. All storm drain inlet locations should be identified on the development site map.

Designing New Installations

The following methods should be considered for inclusion in the project design and show on project plans:

- Provide stenciling or labeling of all storm drain inlets and catch basins, constructed or modified, within the project area with prohibitive language. Examples include "NO DUMPING

– DRAINS TO OCEAN" and/or other graphical icons to discourage illegal dumping.

- Post signs with prohibitive language and/or graphical icons, which prohibit illegal dumping at public access points along channels and creeks within the project area.

Note - Some local agencies have approved specific signage and/or storm drain message placards for use. Consult local agency stormwater staff to determine specific requirements for placard types and methods of application.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. If the project meets the definition of "redevelopment", then the requirements stated under " designing new installations" above should be included in all project design plans.

Additional Information

Maintenance Considerations

- Legibility of markers and signs should be maintained. If required by the agency with jurisdiction over the project, the owner/operator or homeowner's association should enter into a maintenance agreement with the agency or record a deed restriction upon the property title to maintain the legibility of placards or signs.

Placement

- Signage on top of curbs tends to weather and fade.
- Signage on face of curbs tends to be worn by contact with vehicle tires and sweeper brooms.

Supplemental Information

Examples

- Most MS4 programs have storm drain signage programs. Some MS4 programs will provide stencils, or arrange for volunteers to stencil storm drains as part of their outreach program.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Maintenance Bays & Docks SD-31

Design Objectives

- Maximize Infiltration
- Provide Retention
- Slow Runoff
- Minimize Impervious Land Coverage
- ☑ Prohibit Dumping of Improper Materials
- ☑ Contain Pollutants
- Collect and Convey

Description

Several measures can be taken to prevent operations at maintenance bays and loading docks from contributing a variety of toxic compounds, oil and grease, heavy metals, nutrients, suspended solids, and other pollutants to the stormwater conveyance system.

Approach

In designs for maintenance bays and loading docks, containment is encouraged. Preventative measures include overflow containment structures and dead-end sumps. However, in the case of loading docks from grocery stores and warehouse/distribution centers, engineered infiltration systems may be considered.

Suitable Applications

Appropriate applications include commercial and industrial areas planned for development or redevelopment.

Design Considerations

Design requirements for vehicle maintenance and repair are governed by Building and Fire Codes, and by current local agency ordinances, and zoning requirements. The design criteria described in this fact sheet are meant to enhance and be consistent with these code requirements.

Designing New Installations

Designs of maintenance bays should consider the following:

- Repair/maintenance bays and vehicle parts with fluids should be indoors; or designed to preclude urban run-on and runoff.
- Repair/maintenance floor areas should be paved with Portland cement concrete (or equivalent smooth impervious surface).

- Repair/maintenance bays should be designed to capture all wash water leaks and spills. Provide impermeable berms, drop inlets, trench catch basins, or overflow containment structures around repair bays to prevent spilled materials and wash-down waters form entering the storm drain system. Connect drains to a sump for collection and disposal. Direct connection of the repair/maintenance bays to the storm drain system is prohibited. If required by local jurisdiction, obtain an Industrial Waste Discharge Permit.
- Other features may be comparable and equally effective.

The following designs of loading/unloading dock areas should be considered:

- Loading dock areas should be covered, or drainage should be designed to preclude urban run-on and runoff.
- Direct connections into storm drains from depressed loading docks (truck wells) are prohibited.
- Below-grade loading docks from grocery stores and warehouse/distribution centers of fresh food items should drain through water quality inlets, or to an engineered infiltration system, or an equally effective alternative. Pre-treatment may also be required.
- Other features may be comparable and equally effective.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Additional Information

Stormwater and non-stormwater will accumulate in containment areas and sumps with impervious surfaces. Contaminated accumulated water must be disposed of in accordance with applicable laws and cannot be discharged directly to the storm drain or sanitary sewer system without the appropriate permit.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Trash Storage Areas SD-32

Design Objectives

- Maximize Infiltration
- Provide Retention
- Slow Runoff
- Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- ☑ Contain Pollutants
- Collect and Convey

Description

Trash storage areas are areas where a trash receptacle (s) are located for use as a repository for solid wastes. Stormwater runoff from areas where trash is stored or disposed of can be polluted. In addition, loose trash and debris can be easily transported by water or wind into nearby storm drain inlets, channels, and/or creeks. Waste handling operations that may be sources of stormwater pollution include dumpsters, litter control, and waste piles.

Approach

This fact sheet contains details on the specific measures required to prevent or reduce pollutants in stormwater runoff associated with trash storage and handling. Preventative measures including enclosures, containment structures, and impervious pavements to mitigate spills, should be used to reduce the likelihood of contamination.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment. (Detached residential single-family homes are typically excluded from this requirement.)

Design Considerations

Design requirements for waste handling areas are governed by Building and Fire Codes, and by current local agency ordinances and zoning requirements. The design criteria described in this fact sheet are meant to enhance and be consistent with these code and ordinance requirements. Hazardous waste should be handled in accordance with legal requirements established in Title 22, California Code of Regulation.

Wastes from commercial and industrial sites are typically hauled by either public or commercial carriers that may have design or access requirements for waste storage areas. The design criteria in this fact sheet are recommendations and are not intended to be in conflict with requirements established by the waste hauler. The waste hauler should be contacted prior to the design of your site trash collection areas. Conflicts or issues should be discussed with the local agency.

Designing New Installations

Trash storage areas should be designed to consider the following structural or treatment control BMPs:

- Design trash container areas so that drainage from adjoining roofs and pavement is diverted around the area(s) to avoid run-on. This might include berming or grading the waste handling area to prevent run-on of stormwater.
- Make sure trash container areas are screened or walled to prevent off-site transport of trash.

- Use lined bins or dumpsters to reduce leaking of liquid waste.
- Provide roofs, awnings, or attached lids on all trash containers to minimize direct precipitation and prevent rainfall from entering containers.
- Pave trash storage areas with an impervious surface to mitigate spills.
- Do not locate storm drains in immediate vicinity of the trash storage area.
- Post signs on all dumpsters informing users that hazardous materials are not to be disposed of therein.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Additional Information

Maintenance Considerations

The integrity of structural elements that are subject to damage (i.e., screens, covers, and signs) must be maintained by the owner/operator. Maintenance agreements between the local agency and the owner/operator may be required. Some agencies will require maintenance deed restrictions to be recorded of the property title. If required by the local agency, maintenance agreements or deed restrictions must be executed by the owner/operator before improvement plans are approved.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Attachment I

Sign Plan

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NREDI 2.0
Dealer Presentation Package

Architectural Graphics, Inc.
2655 International Pkwy., Virginia Beach, VA 23452
PHONE: (757) 427-1900 · FAX (757) 430-1297
www.AGIarch.com

Santa Cruz Nissan (5596)
Santa Cruz, CA
January 30, 2017

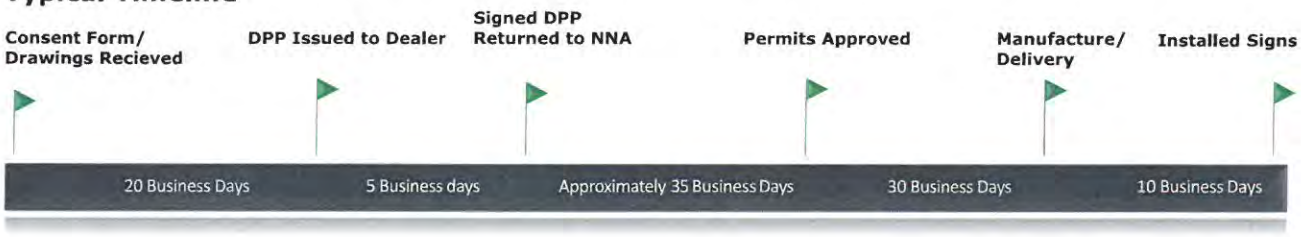
NREDI | 2.0

NISSAN NORTH AMERICA
Dealer Presentation Package

PURPOSE

The Dealer Presentation Package (DPP) is issued to the Dealer Principal. It defines the signage soulution for the Dealership Facility, subject to successful permitting by AGI. Upon receipt of the executed Participation Agreement, Nissan will direct AGI to begin the next phase of the sign installation process.

Typical Timeline



NEXT STEPS

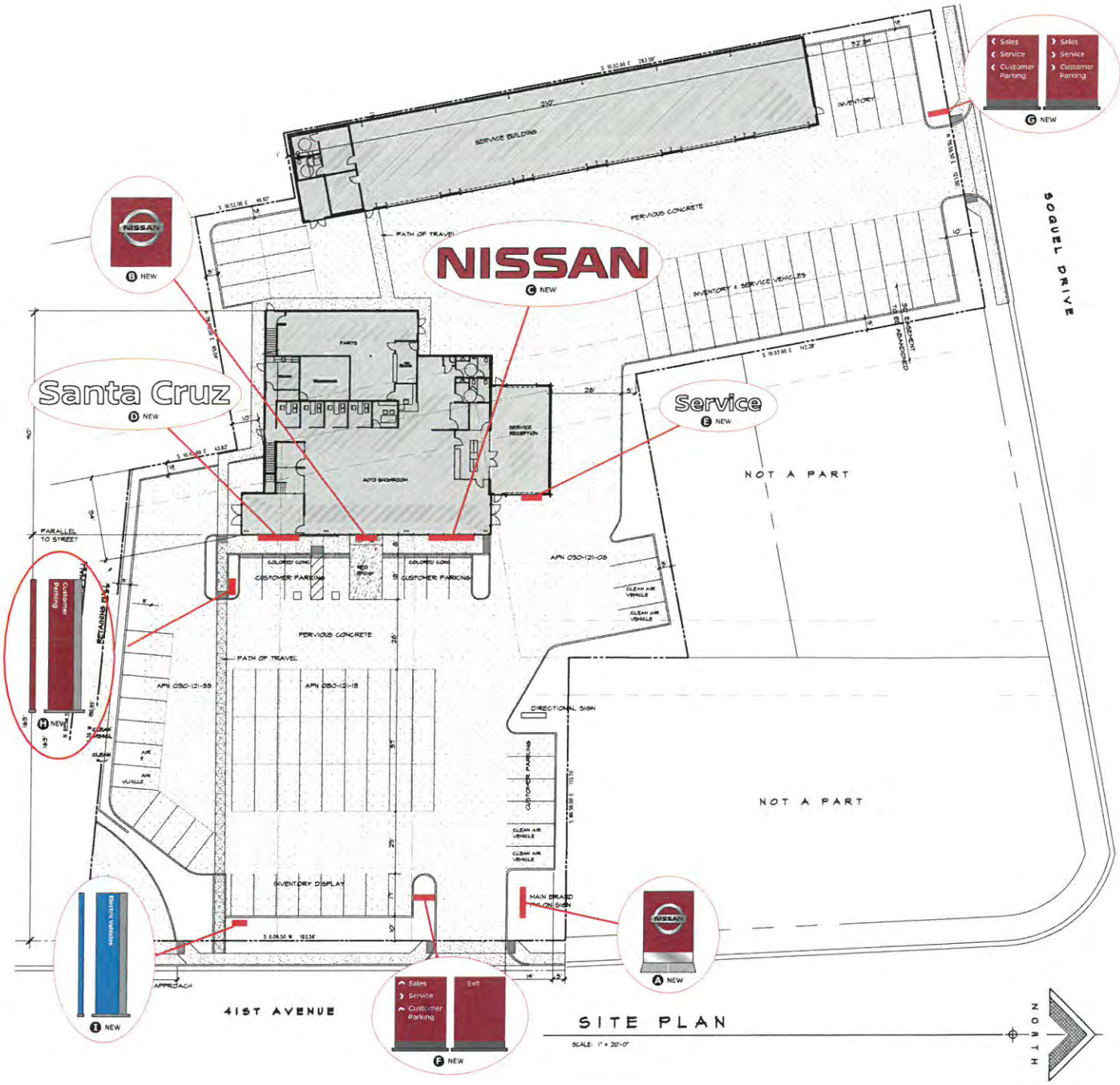
The Dealer Principal should execute the Participation Agreement provided in this proposal and return the original to your Nissan Regional Representative.

CONTENTS

1. Site Plan and Color Renderings
2. Schedule of Signs
3. Dealer Enabling Works
4. Local Municipal information
5. Dealer Participation Agreement, Estimated Lease and Maintenance Payment & Program Rules

NISSAN NORTH AMERICA
Dealer Presentation Package

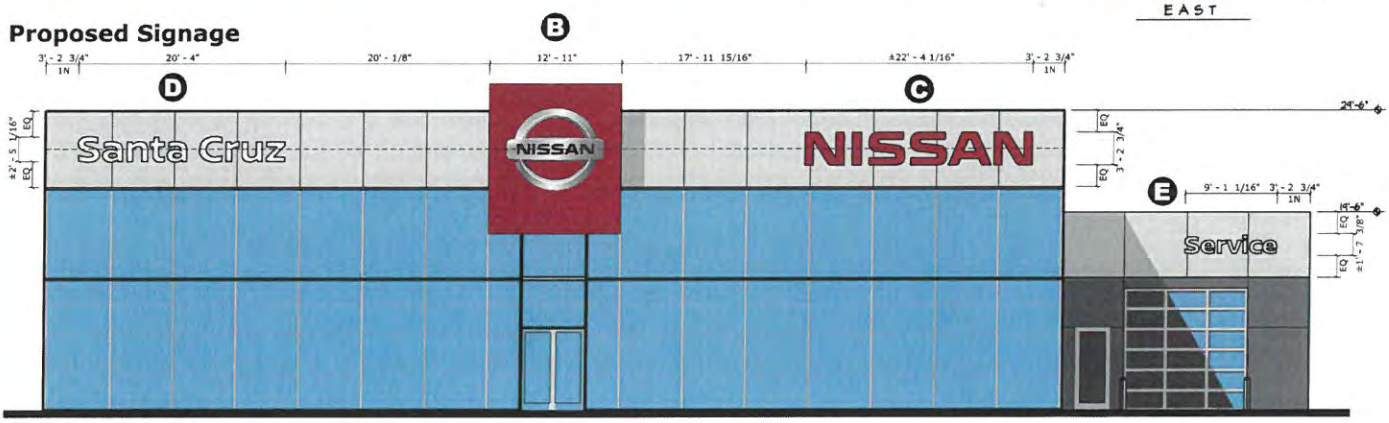
1. SITE PLAN
The following provides a visual representation of the prepared schedule:



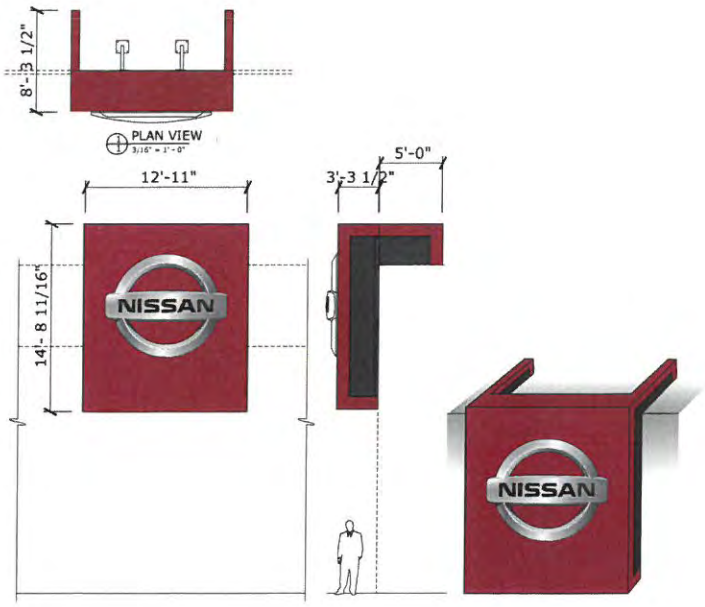
2. SCHEDULE OF SIGNS

Site Before

Proposed Signage



Proposed Signs



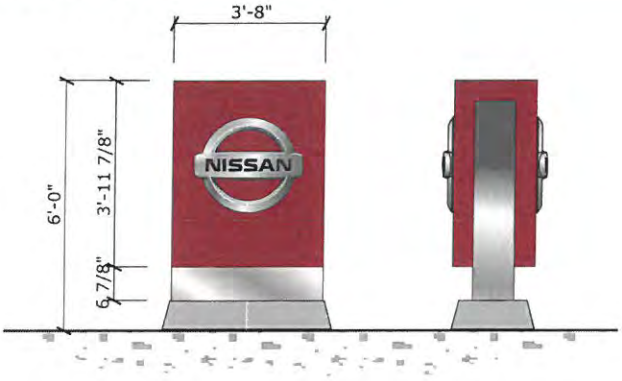
B Large Nissan Tablet
Large Nissan Tablet (Total of 1) 190.18 sq.ft.
NEW

C Large Nissan Word Mark
Large Nissan (Total of 1) 72.13 sq.ft.
NEW

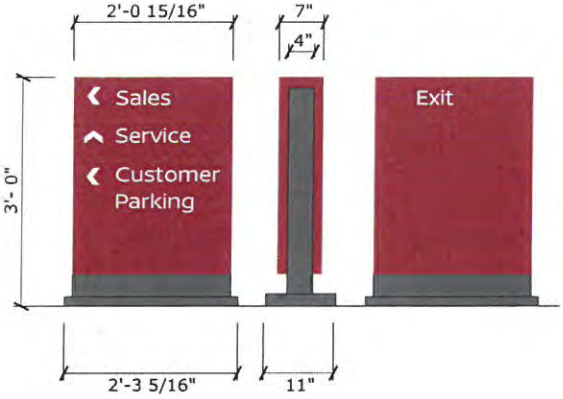
D Large Dealer Name Letters
Large Nissan (Total of 1) 49.24 sq.ft.
NEW

E Large Service Letters
Large Service Letters (Total of 1) 14.67 sq.ft.
NEW

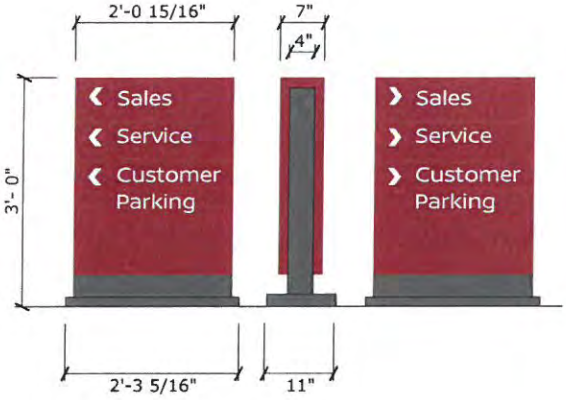
2. SCHEDULE OF SIGNS (CONTINUED)



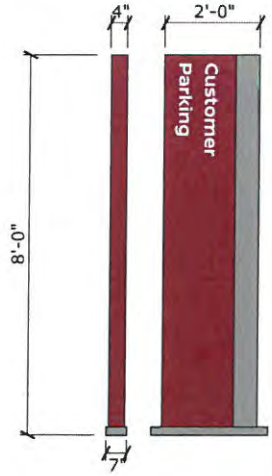
A MNT-14 Monument Sign
14.62 Sq.ft. (Total of 1)
NEW



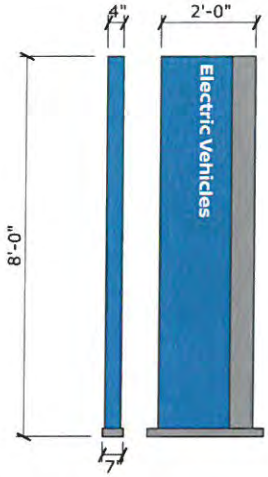
F DG-3 Ground Directional
6.07 sq.ft. (Total of 1)
NEW



G DG-3 Ground Directional
6.07 sq.ft. (Total of 1)
NEW



H CP-8
Customer Parking Sign (Total of 1) 16.0 sq.ft.
NEW



I EV-8
Electric Vehicle Sign (Total of 1) 16.0 sq.ft
NEW

3. DEALER ENABLING WORKS
The following are dealer responsibilities

A. Landscaping

- Dealer to provide all Landscape as needed around ground signage, LCV Front line, and Flag Pole after the signs have been installed.

B. Electrical

- Dealer to provide adequate electrical service to within 10' of all building and ground signs prior to installation.
- All illuminated signage requires 120-volt service and one 20-amp circuit, except for Freeway signs, which require three 20-amp circuits.
- Dealer to advise AGI of any secondary underground utilities (i.e. sprinklers, secondary lot lights) you have on your property.
- Dealer to provide appropriate time clock/photocell for **all** sign circuits. The continuous illumination of signs will greatly reduce the life expectancy and impact the warranty of your new signs.

C. Fascia

- *Careful coordination with AGI on preparations for Tablet installation is critical.*
- AGI will provide tablet weight and size. Dealer will be responsible to determine loading and for providing ample structure and mounting points per AGI's CAD overlay.
- AGI will provide full scope of work outlining critical steps, timing, and requirements to assure that installation is completed as required.

D. Site Access for each sign

- Dealer to ensure there is adequate access and/or access panel behind fascia for final electrical hookup installation and final inspection (See Dealer Enabling Works Manual).
- Dealer to move all vehicles from the installation work area prior to commencement of installation.

E. Sign Removals

- AGI will remove and destroy the existing signage (as noted on the following pages) as part of the scope of the project unless otherwise indicated.

F. Permitting

- The following documents are required for permitting and will need to be provided if not already provided at the time of the survey:
  - Full-sized, scaled site plans and elevations
  - Landlord authorization form (if required by the City)

4. LOCAL MUNICIPAL INFORMATION

Site Information
Total Signage Aggregate: .25sf/lf street frontage

Wall Sign Information
Maximum number of signs allowed: 1 business identification sign per site
Maximum square footage allowed:
Maximum Overall Height:

Ground Sign Information
Maximum number of signs allowed: 1
Maximum square footage allowed:
Maximum Overall Height: 7'
Minimum Setback: 5'
Wind Load: 100mph

Directional Information
Maximum number of directionals allowed per site:
Maximum square footage allowed per sign: 4
Maximum Overall Height: 8'
Minimum Setback: side yard

Flag Pole Information
Permit Required: Not Permitted
Maximum number of flag poles allowed per site:
Maximum Overall Height:
Minimum Setback:

Variance Information
Is variance for signage allowed? Yes
Which sign will require a variance? All wall signs
Do we have to apply for permits first and get denial?
Which documentation is required for a variance? SED. Site Plan, Elevations, Owner Signature
What are the chances of receiving a variance? Not Given

NISSAN NORTH AMERICA

Dealer Presentation Package

5. PARTICIPATION AGREEMENT, ESTIMATED LEASE AND MAINTENANCE PAYMENT & SIGN PROGRAM RULES

DEALER NAME Santa Cruz Nissan			**DEALER CODE** 5596
STREET ADDRESS 1605 Soquel Ave.			**REGION** WR
CITY Santa Cruz	**STATE** CA	**ZIP CODE** 95062	**TELEPHONE NUMBER**
DEALER CONTACT NAME & TITLE Don Groppetti, Dealer Principal			
DEALER CONTACT EMAIL ADDRESS Don@GroppettiAuto.com			**CELL PHONE NUMBER**
NEW DEALER NAME, IF APPLICABLE			
NEW ADDRESS, IF RELOCATION 2755 41st Avenue	**CITY** Soquel	**STATE** CA	**ZIP CODE** 95073

As an Authorized Nissan Dealer ("Dealer"), I hereby agree to participate in the Nissan Retail Environment Design Initiative Sign Program ("Sign Program") administered by Nissan North America, Inc. ("Nissan") for the Dealership Location ("Site") at the above address subject to the following terms and conditions:

1. Dealer has signed the Sign Program Consent Form, commenced with the Program Process, which includes an on-site initial consultation and physical survey of the Site by the Sign Supplier ("Supplier"), and reviewed the Dealership Presentation Package ("Sign Package"), which includes the Scheme Drawings, Estimated Monthly Expenses, Nissan Sign Lease and Maintenance Agreement ("Lease and Maintenance Agreement") to be entered into between Dealer and Nissan Motor Acceptance Corporation ("NMAC"), this Nissan Retail Environmental Design Initiative Sign Program Participation Agreement ("Participation Agreement") and any other documents relating to this Sign Program.
2. Dealer agrees to continue to facilitate the process of the Sign Program as outlined in the Participation Agreement and any other documents relating to the sign program.
3. Dealer agrees to implement the Sign Program in accordance with Section 6.C of the Dealer Sales and Service Agreement, the Standards Manual ("Manual"), Application Rules, Sign Survey, Scheme Drawings, this Participation Agreement and the Sign Lease and Maintenance Agreement. Dealer also agrees to remove all Nissan signs not in compliance with the Sign Program currently on the Site, irrespective of ownership, to sign the Installation Completion Certificate upon the installation of the Signs and proper completion of the Works, and to provide a proof of insurance naming NMAC and Nissan as additional insured.
4. Dealer agrees to be responsible for any and all costs incurred to date under this Sign Program. Any costs deemed to be the responsibility of Dealer shall be paid directly to Supplier or if unpaid, said costs shall be charged to the Dealer's Non-Vehicle Account. Conditions under which the Dealer may incur these costs include, but are not limited to:

- Should Dealer decide not to further participate in this Sign Program and stops Process at any time, Dealer shall have no right to use any drawings, specifications, reports or design information created or produced in connection with this Sign Program.
- In the event Dealer's Nissan Sales & Service Agreement is terminated, voluntarily or involuntarily, or Dealer relocates the Dealership Facilities.
- In the event Dealer elects to transfer any assets or change ownership with the approval of Nissan and provided the buying Dealer is unable to assume all obligations of Dealer under this Participation Agreement. Dealer will disclose to any prospective buying Dealer of the terms of this Participation Agreement.

5. Dealer agrees to be responsible to include the proper value of the Sign on Dealer's annual business personal property tax return and pay the applicable taxes to the proper state and local tax authorities when due.

This Participation Agreement is an exhibit to the Sign Lease and Maintenance Agreement and shall remain in effect until cancelled or terminated under the terms of the Dealer Sales and Service Agreement.

Dealer acknowledges that all Signs installed at the Site under the Sign Program are owned by NMAC and full implementation of this Program will require: a) execution of this Participation Agreement with Nissan; b) execution of the Sign Lease and Maintenance Agreement with NMAC; c) free and easy access to the Site by Nissan, NMAC, Supplier and other designated sub-contractors at all reasonable times; and d) all Nissan signs not in compliance with the Sign Program currently on the Site, irrespective of ownership, will be removed.

The above terms and conditions are acknowledged and agreed to on behalf of the Dealer by its Authorized Officer as of the date set forth below.

DESCRIPTION
Install New Version 2.0 Signs: 6' High 14 SF Monument Sign, Large Tablet with 13.5' Extension, 40" Tall Nissan Word Mark, 30" Tall Dealer Name Letterset, 20" Tall Service Letterset, 3' x 3' Directional Sign (QTY 2), Customer Parking Sign, and Electric Vehicles Display Sign. Above work includes permits **(tablet to be permitted by GC with building permit)**, production, freight and installation. Variance fees are estimated based on historical work with the jurisdiction. This work creates a new sign lease account with a monthly base payment of $1,265.92 plus a monthly maintenance fee of $116.56 for a total monthly sign lease payment of $1,382.48.

The above are inclusive of all state sales taxes (except for the states of IL, ME, NM, NJ, OH) and are subject to final confirmation on completion of the installation.The above terms and conditions are acknowledged and agreed to on behalf of the Dealer by its Authorized Officer as of the date set forth below.

PROGRAM PROCESS

- ***Agreement Approvals.*** Within ten (10) working days upon receipt of this Dealer Presentation Package, Dealer shall sign this Participation Agreement and Sign Lease and Maintenance Agreement and approve the Sign Package if needed. Any amendments to the Sign Package and any other documents relating to this Sign Program. requested by the Dealer or any other interested party(ies) shall be re-submitted to the Dealer for final approval of which said costs for re-draws and revisions shall be the responsibility of the Dealer.

- ***Permit Submission.*** Within ten (10) working days of Dealer's approval of this Participation Agreement and the Sign Lease and Maintenance Agreement, Sign Supplier ("Supplier") shall apply for permit(s) as required by the Civil Codes and Restrictions, licenses, authorizations and/or any other such permissions, statutory or otherwise required to undertake certain works, which includes Signs and any associated ancillary works ("Works"), presented in the DPP and approved by the Dealer, Nissan and Supplier.

- ***Permit Notification.*** Supplier shall inform the Dealer and Nissan on the progress of the application and notification of Permit(s) award (or rejection). Supplier shall be responsible for all costs and expenses for all unsuccessful planning applications, which are not in accordance with local Civil Codes and Restrictions and the Application Rules to the extent that they do not conflict. Dealer shall be responsible to consult with Supplier and discuss with Nissan as to the method and action necessary to complete the Works. Dealer acknowledges that all Signs will be permitted and if local zoning denies permits, Dealer is required to pursue approval of Signs through variance. If variance for required signage is denied, the next most favorable signage allowed as determined by Nissan and Supplier are required.

- ***Sign Manufacture.*** Within twenty (20) working days upon receipt of an acceptable Permit(s), Supplier shall begin to manufacture and assemble the Signs required for the Works provided that the Dealer has completed all enabling works, that consents have been received from any interested party(ies) and that Dealer has provided written confirmation of the same.

- ***Sign Delivery.*** Within five (5) working days of manufacture completion, Supplier shall deliver the complete Signs to the Site. Supplier or its sub-contractors shall remove all existing signs not in compliance with the Program, complete any ancillary works and install Signs within a maximum period of ten (10) consecutive working days from unloading the Signs and/or entering the Site.

- ***Sign Installation.*** Supplier shall make good any identified defects within ten (10) working days at the cost of Supplier. Upon proper completion of the Works, the Dealer shall sign the Installation Completion Certificate at which time the Lease and Maintenance Agreement shall become in effect. Dealer will be provided with the final lease and maintenance monthly payment encompassing all costs, including Seen and Unseen Variations, prevailing rate of interest at invoicing or work relating to this Sign Program. **DEALER SHALL PROVIDE PROOF OF INSURANCE NAMING NMAC AND NISSAN NORTH AMERICA AS AN ADDITIONAL INSURED.**

- ***Sign Maintenance.*** Maintenance on the Signs performed by the Sign Maintenance Supplier shall be conducted between 9 and 15 months from the installation of Signs at the Site and upon each annual anniversary thereafter.

THIS DOCUMENT PROVIDES THE STANDARD TERMS AND CONDITIONS OF THE NISSAN SIGN PROGRAM TO AUTHORIZED NISSAN DEALERS IN GOOD STANDING. THESE TERMS AND CONDITIONS ARE IMPLEMENTED PURSUANT TO AND DO NOT MODIFY, AMEND OR CHANGE THE NISSAN DEALER SALES AND SERVICE AGREEMENT BETWEEN NISSAN AND ITS AUTHORIZED NISSAN DEALERS.

1. Dealer shall be enrolled in the Sign Program by executing the following documents:

- Consent Form. Dealer enrolls in the Sign Program and agrees to commence with the preliminary process of the Sign Program in accordance to its terms and conditions.
- Participation Agreement. Dealer agrees to proceed with the installation of Signs and all Works on the Site in accordance to its terms and conditions.
- Sign Lease and Maintenance Agreement with NMAC. Dealer agrees to lease Signs, which includes maintenance services to be undertaken by the Sign Maintenance Supplier, on all Signs installed and for all Works on the Site in accordance to its terms and conditions with NMAC.
- Installation Completion Certificate. Dealer agrees to accept the installation of the Signs upon proper completion of all Works on the Site in accordance to the terms and conditions of the Sign Program.

2. Dealer further agrees:

- That implementation of the Sign Program shall be in accordance with the Standards Manual, Application Rules, Sign Survey Report, Scheme Drawings, Consent Form, Participation Agreement and Sign Lease and Maintenance Agreement.
- That all Signs and Works installed on the Site shall remain at the location of the initial installation unless moved by Supplier or designated subcontractor with the prior written consent from Nissan and NMAC.
- To provide free and easy access to Nissan, NMAC, Supplier, Sign Maintenance Supplier and its designated subcontractors to the Site at all reasonable times for all purposes relating to the implementation and administration of this Sign Program.
- To the removal of all Nissan signs not in compliance with the Sign Program currently on the Site, irrespective of ownership.

ALL SIGNS SHALL BE THE MOST FAVORABLE SIGNAGE ALLOWED BY CIVIL CODE AND RESTRICTIONS, INCLUDING ALL APPLICABLE STATE STATUTES, REGULATIONS, RULES, STATUTORY INSTRUMENTS, ORDERS, CONSENT, BY-LAWS OR LEGAL REQUIREMENTS, AND APPROVED BY THE DEALER, NISSAN AND SUPPLIER.

IN THE EVENT OF BREACH.

Dealer agrees that material breach includes, but is not limited to, the following conditions:

- Dealer's Nissan Sales & Service Agreement is terminated either voluntarily or involuntarily;
- Dealer vacates the Site or ceases its Dealership Operations;
- Dealer relocates the Nissan Dealership Facilities ("Facilities") and does not agree to move all installed Signs and Works to the new location nor continue Dealer's obligation for the remaining period;
- Dealer enters into a buy/sell agreement to sell its assets and purchaser does not agree to assume Dealer's obligations for the remaining period of the Lease;
- Dealer transfers or sells any portion of the principal assets to owners, who will not agree, in writing, to assume Dealer's obligations for the remaining period of the Lease.

DISPUTE RESOLUTION PROCESS.

The parties acknowledge that at the state and federal level, various courts and agencies are available to them to resolve claims or controversies that might arise between them. The parties agree that it is inconsistent with their relationship for either to use courts or governmental agencies to resolve such claims or controversies. The Parties agree to submit all disputes to Mediation, unless waived by written agreement of the Parties. Mediation is conducted before an independent mediator. The Parties will participate and present their position to each other and the mediator in an effort to resolve their disagreement, in accordance with the commercial rules and procedures of the International Institute for Conflict Prevention and Resolution ("CPR").

If the Dispute is not resolved through Mediation, then consistent with the provisions of the United States Arbitration Act (9 U.S.C. §1 et seq.), the Parties understand that they are free to voluntarily agree upon an alternative dispute resolution process for any dispute that may arise under this Agreement. The Parties hereby agree that any such dispute which might arise among one or more of the Parties will be submitted to and resolved through binding Arbitration conducted in accordance with the commercial rules and procedures of the CPR, with arbitration hearings to be held in Davidson County, Tennessee. There shall be a single Arbitrator appointed to resolve such disputes, and the Arbitrator shall have authority to award all appropriate relief, including but not limited to specific performance and injunctive relief. Arbitration awards shall be binding and non-appealable, except as otherwise provided in the United States Arbitration Act. Judgement upon any such award may be entered and enforced in any court of competent jurisdiction.

INCOME TAX LIABILITY FOR FEDERAL, STATE OR OTHER TAXES. Any income tax liability imposed on the value of support received on this Program will be the sole responsibility of the Dealer and not of Nissan.

FINAL DECISION.

In all matters relating to the interpretation and application of any rule or phase of this Program, the decision of Nissan shall be final. Interpretations must be in writing from the National Brand Integration Department. Any questions regarding interpretations and application of any rule or on the Sign Program must be directed to your Regional Representative.

PARTICIPATION IN ANY PORTION OF THIS SIGN PROGRAM MAY NOT BE ASSIGNED TO ANY THIRD PARTY. NISSAN RESERVES THE RIGHT TO CANCEL, AMEND OR REVOKE THE SIGN PROGRAM AT ANY TIME DUE TO REASONABLE BUSINESS CONSIDERATION OR TO CIRCUMSTANCES BEYOND ITS CONTROL.

DEALER CONCURRENCE

DEALER PRINCIPAL SIGNATURE	
NAME	**DATE**

NNA CONFIRMATION

REGIONAL APPROVAL	**NATIONAL APPROVAL**

Attachment J

Phase I Environmental Site Assessment

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SIERRA DELTA CONSULTANTS LLC

A Full Service Consulting Company

PHASE I ENVIRONMENTAL SITE ASSESSMENT

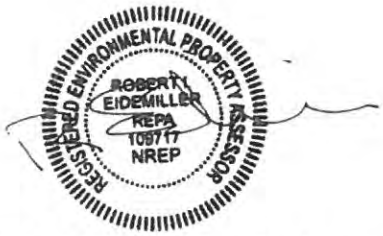
3820 & 3906 Soquel Drive and 2755, 2815 & 2821 41st Avenue
Soquel, CA 95073
APNs: 030-121-08, 12, 13, 27 & 53

Prepared for

BLAM-JADE, LP
P.O. Box 1431
Visalia, CA 93279

SDC Project Number: *BJLP.01* Report Date: *April 21, 2016*

I hereby certify that I am responsible for the services described in this document and for the preparation of this document. The services described in this document have been provided in a manner consistent with the current standards of the profession and to the best of my knowledge comply with all applicable Federal, State and Local Statutes, Regulations and Ordinances. I developed and performed the AAI in conformance with the federal rule.



Robert I. Eidemiller, Environmental Professional
Sierra Delta Consultants

935 Riverside Avenue; Suite 21, Paso Robles, California 93446
Phone: 805-239-9293● Fax: 805-239-9309● Email: proposals@sierradeltallc.com
Tax Identification Number: 26-3979981●Business License Number: 05-2633

EXECUTIVE SUMMARY

SIERRA DELTA CONSULTANTS LLC ("SDC") performed a Phase I Environmental Site Assessment ("ESA") in conformance with the scope and limitations of ASTM Practice E1527-13 for the property identified as Assessor's Parcel Number(s) (APN(s): 030-121-08, 030-121-12, 030-121-13, 030-121-27 and 030-121-53. Any exceptions to, or deletions from, this practice are described in Section 1.4 of this report. The ESA was requested by Mr. Don Groppetti and conducted between April 6, 2016 and April 21, 2016. The addresses associated with the Subject Property are: 3820 and 3906 Soquel Drive and 2755, 2815 and 2821 41st Avenue, Soquel, CA 95073.

Property Description

The Subject Property is comprised of 5 adjoining parcels totaling approximately 1.78 acres. Parcel 030-121-27 is utilized as a storage yard. The remaining parcels are developed with single family dwellings. Available records indicate the structures were built between 1915 and 1948.

Findings

Recognized Environmental Conditions (RECs) are defined by the ASTM Standard Practice E1527-13 as the presence or likely presence of any hazardous substances or petroleum products in, at, or on a property: (1) due to any release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment. De minimis conditions are not recognized environmental conditions.

- ***SDC found that this assessment has revealed no evidence of RECs on or associated with the Subject Property.***

Historical Recognized Environmental Conditions (HRECs) are defined by the ASTM Standard Practice E1527-13 as a past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted use criteria established by a regulatory authority, without subjecting the property to any required controls (for example, property use restrictions, activity and use limitations, institutional controls, or engineering controls.

- ***SDC found that this assessment has revealed no evidence of HRECs on or associated with the Subject Property.***

Controlled Recognized Environmental Conditions (CRECs) are defined by the ASTM Standard Practice E1527-13 as a recognized environmental condition resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority (for example, as evidenced by the issuance of a no further action letter or equivalent, or meeting risk-based criteria established by regulatory authority with hazardous substances or petroleum products allowed to remain in place subject to the

implementation or required controls (for example, property use restrictions, activity and use limitations, institutional controls, or engineering controls).

- ***SDC found that this assessment has revealed no evidence of CRECs on or associated with the Subject Property.***

Business Environmental Risks (BERs) are defined by the ASTM Standard Practice E1527-13 as a risk which can have a material environmental or environmentally-driven impact on the business associated with the current or planned use of a parcel of commercial real estate, not necessarily limited to those environmental issues required to be investigated in the standard ASTM scope. BERs may affect the liabilities and financial obligations of the client, the health and safety of site occupants, and the value and marketability of the Subject Property.

- ***SDC found that this assessment has revealed no evidence of BERs on or associated with the Subject Property.***

It is SDC's opinion that no conditions indicative of releases or threatened releases associated with the Subject Property were identified during the research and development of this report. It is SDC's opinion that the risk for contamination at the Subject Property is minimal and that no further investigation of the Subject Property is warranted at this time.

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FIGURES

TABLES

APPENDICES

1.0 INTRODUCTION

This report contains the results of a Phase I Environmental Site Assessment ("ESA") conducted for the Subject Property. Sierra Delta Consultants LLC ("SDC") was retained by:

BLAM-JADE, LP
P.O. Box 1431
Visalia, CA 93279

Authorization to proceed on the project was granted via email from Mr. Don Groppetti on April 6, 2016. This report of findings completes the agreed upon scope of services.

1.1 Purpose

The purpose of this Phase I ESA was to identify recognized environmental conditions in connection with the Subject Property as defined by ASTM Standard E1527-13 at the time of the site reconnaissance. This practice is intended to permit the user to satisfy one of the requirements to qualify for the innocent landowner, contiguous property owner, or bona fide prospective purchaser limitations on Comprehensive Environmental Response Compensation and Liability Act (CERLCA) liability.

1.2 Detailed Scope of Services

This Phase I ESA was prepared according to the ASTM Standard E1527-13 which complies with the EPA's (AAI) All Appropriate Inquiries federal regulations. SDC utilized a level of care and skill ordinarily practiced by the environmental consulting profession currently providing similar services under similar circumstances. Significant additions, deletions or exceptions to the ASTM Standard E1527-13 are noted below or in the corresponding sections of this report. The scope of this assessment included an evaluation of the following:

- Physical setting characteristics of the Subject Property through a review of referenced sources which may include topographic maps and geologic, soils and hydrologic reports.

- Usage of the Subject Property and surrounding area through a review of referenced historical sources such as land title records, fire insurance maps, city directories, aerial photographs, prior reports and interviews.

- Observations and interviews regarding the Subject Property usage and conditions including: the use, treatment, storage, disposal or generation of hazardous substances, petroleum products, hazardous wastes, nonhazardous solid wastes and wastewater.

- Usage of adjoining and surrounding area properties and the likely impact of known or suspected releases of hazardous substances or petroleum products from those properties on the Subject Property.

- Information in referenced environmental agency databases and local environmental records, within the specified approximate minimum search distances from the Subject Property.

1.3 Significant Assumptions

There is the possibility that even with the proper application of these methodologies there may exist on the Subject Property conditions that could not be identified within the scope of the assessment or which were not reasonably identifiable from the available information. SDC believes that the information obtained from the record review and the interviews concerning the site is reliable. However, SDC cannot and does not warrant or guarantee that the information provided by these other sources is accurate or complete. The methodologies of this assessment are not intended to produce all-inclusive or comprehensive results, but rather to provide the user with information relating to the Subject Property.

1.4 Limitations and Exceptions

SDC has prepared this Phase I ESA report using reasonable efforts to identify recognized environmental conditions associated with hazardous substances or petroleum products at the Subject Property. Findings contained within this report are based on information collected from observations made on the day of the site reconnaissance and from reasonably ascertainable information obtained from certain public agencies and other referenced sources.

The professional services performed do not guarantee compliance with federal, state or local laws, regulations and codes. This report does not warrant against future operations or conditions, nor does it warrant against operations or conditions present of a type or at a location not investigated. Regardless of the findings stated in this report, SDC is not responsible for consequences or conditions arising from facts not fully disclosed to SDC during the assessment.

The scope of this Phase I ESA is limited to: observations made during the site visit; observations made during the off-site reconnaissance; interviews with knowledgeable persons, interviews with public agency personnel, and reviews of readily available published and unpublished reports, literature, and historical sources. As a result, these conclusions are based on information supplied by others, and interpretations by qualified personnel. Any conclusions and/or recommendations made in this report are subject to modification if subsequent information is obtained by SDC.

It is impossible to predict events that may occur after the site visit, such as illegal dumping or disposal, accidental spillage or the inaccuracy of the published or unpublished reports, literature or documents referenced herein. There is no assessment thorough enough to completely exclude the presence of hazardous waste or substances at any site. Therefore, if none are identified as part of a limited scope of work, such a conclusion should not be construed as a guaranteed absence of such materials. It is merely the result of the assessment.

This report provides opinions of SDC concerning recognized environmental conditions at the Subject Property. It is possible, despite the use of reasonable care and interpretation, SDC may have failed to identify regulatory violations or the presence of hazardous substances, underground storage tanks, or other obscured or subsurface areas of potential environmental concern. SDC assumes no responsibility for conditions that were not specifically evaluated or conditions that were not generally recognized as environmentally unacceptable at the time this report was prepared.

This report was prepared according the ASTM Standard E1527-13 which complies with the EPA's (AAI) All Appropriate Inquiries federal regulations; however, SDC elected to diverge from the ASTM Standard E1527-13 Standard Practice for Environmental Site Assessments in the following areas:

- A 50-year Chain of Title report was not requested by the Client; therefore, only the title history available through the sources mentioned in this report were reviewed.
- Aerial photography covered the years 1952, 1968, 1974, 1982, 1993, 2005, 2010 and 2015.
- USGS Topographic maps were reviewed for the years 1965, 1981, 1994 and 2012.

1.5 Special Terms and Conditions

The conclusions and findings set forth in this report are strictly limited in time and scope to the date of the evaluations. The conclusions presented in the report are based solely on the services described herein, and not on scientific tasks or procedures beyond the scope of agreed-upon services or the time and budgeting restraints imposed by the client. No subsurface exploratory drilling or sampling was done under the scope of this work. Unless specifically stated otherwise in the report, no chemical analysis has been performed during the course of this ESA. Section 4.6 of the ASTM Standard Practice for Phase I Environmental Site Assessments (E 1527-13) states that the Phase I ESA shall be valid for up to 180 days from the date of issuance.

1.6 User Reliance

This Report was prepared by Sierra Delta Consultants LLC ("Consultant") for the sole and exclusive use of BLAM-JADE, LP. Nothing under the Agreement between Sierra Delta Consultants LLC and its Client, BLAM-JADE, LP, shall be construed to give any rights or benefits to anyone other than Client and Consultant, and all duties and responsibilities undertaken pursuant to the Agreement will be for the sole and exclusive benefit of Client and Consultant and not for the benefit of any other party. In particular, Consultant does not intend, without its written consent, for this Report to be disseminated to anyone other than Client or to be used or relied upon by anyone other than its Client. Use of the Report by any other person is unauthorized and such use is at the sole risk of the user. Anyone using or relying upon this Report, agrees, by virtue of its use, to indemnify and hold harmless, Consultant from and

against all claims and damages arising out of, or resulting from the performance of the work by Consultant involving this Report or pollution-related activities.

1.7 Non-Scope Considerations

Non-scope issues as per Section 13 of the ASTM E1527-13, which include, but are not limited to, asbestos-containing building materials, biological agents, cultural and historic resources, ecological resources, endangered species, health and safety, indoor air quality unrelated to releases of hazardous substances or petroleum products into the environment, industrial hygiene, lead-based paint, lead in drinking water, mold, radon, regulatory compliance and wetlands were not addressed as they are non-scope issues.

1.8 Data Gaps

The report shall identify and comment on significant data gaps that affect the ability of the environmental professional to identify recognized environmental conditions and identify the sources of information that were consulted to address the data gaps. A data gap is a failure to achieve the historical research by the Environmental Site Assessment despite good faith efforts by the environmental professional to gather such information. Data gaps may result from incompleteness in any of the activities required by the Environmental Site Assessment, including, but not limited to site reconnaissance and interviews. The ASTM standard states that a data gap by itself is not inherently significant, but is only significant if other information and/or professional experience raise reasonable concerns about the data gap.

In the event that data gaps are identified, SDC will endeavor to comment on the significance of those gaps. However, SDC cannot, and does not warrant or guarantee that no significant event, releases, or conditions arose during periods such as data gaps.

Aerial photographs were not available for the site prior to 1940 or at five year intervals, however, because of the availability of other data sources, the absence of earlier aerial photographs or at five year intervals is not considered to comprise a significant data gap.

2.0 SITE DESCRIPTION

The following sections describe the Subject Property.

2.1 Location and Legal Description

The addresses associated with the Subject Property are: 3820 and 3906 Soquel Drive and 2755, 2815 and 2821 41st Avenue, Soquel, CA 95073. The Subject Property identified as Assessor's Parcel Number (APN): 030-121-08, 030-121-12, 030-121-13, 030-121-27 and 030-121-53 is located in Soquel, Santa Cruz County, CA.

A regional map is included herein as Figure 1. A vicinity map is included herein as Figure 2.

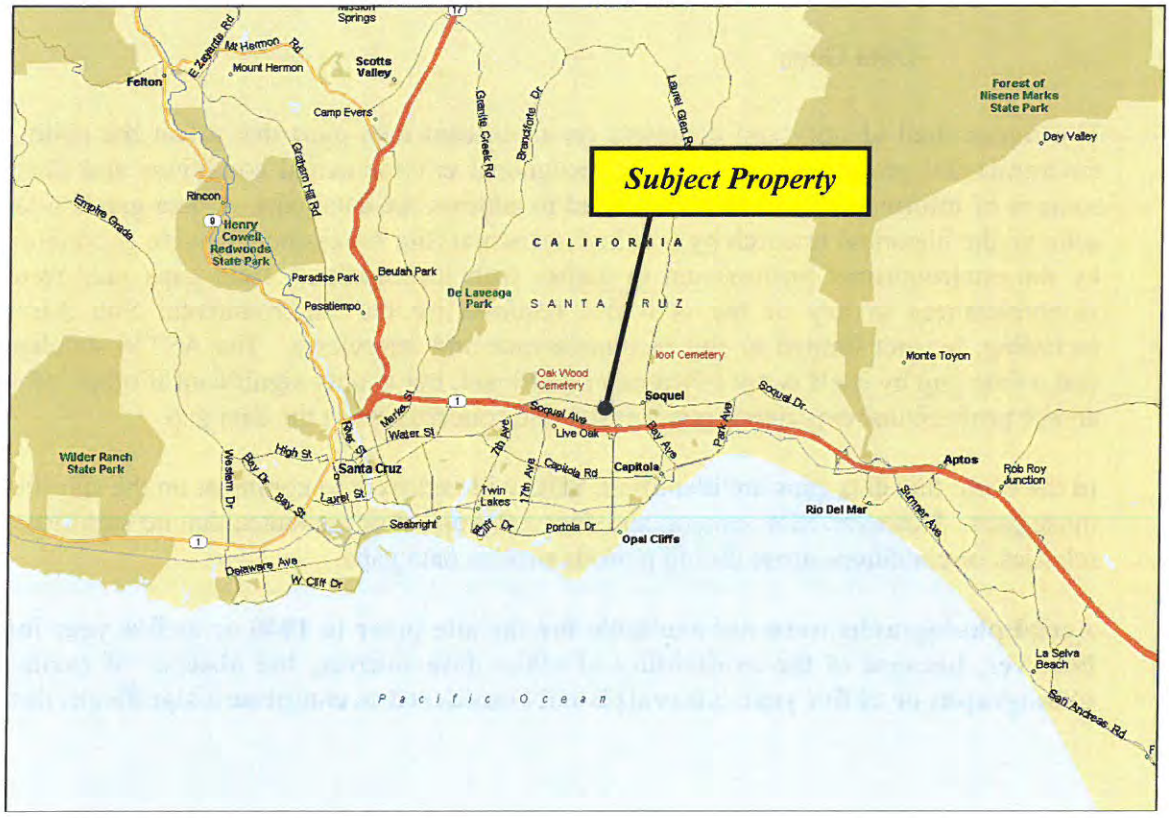
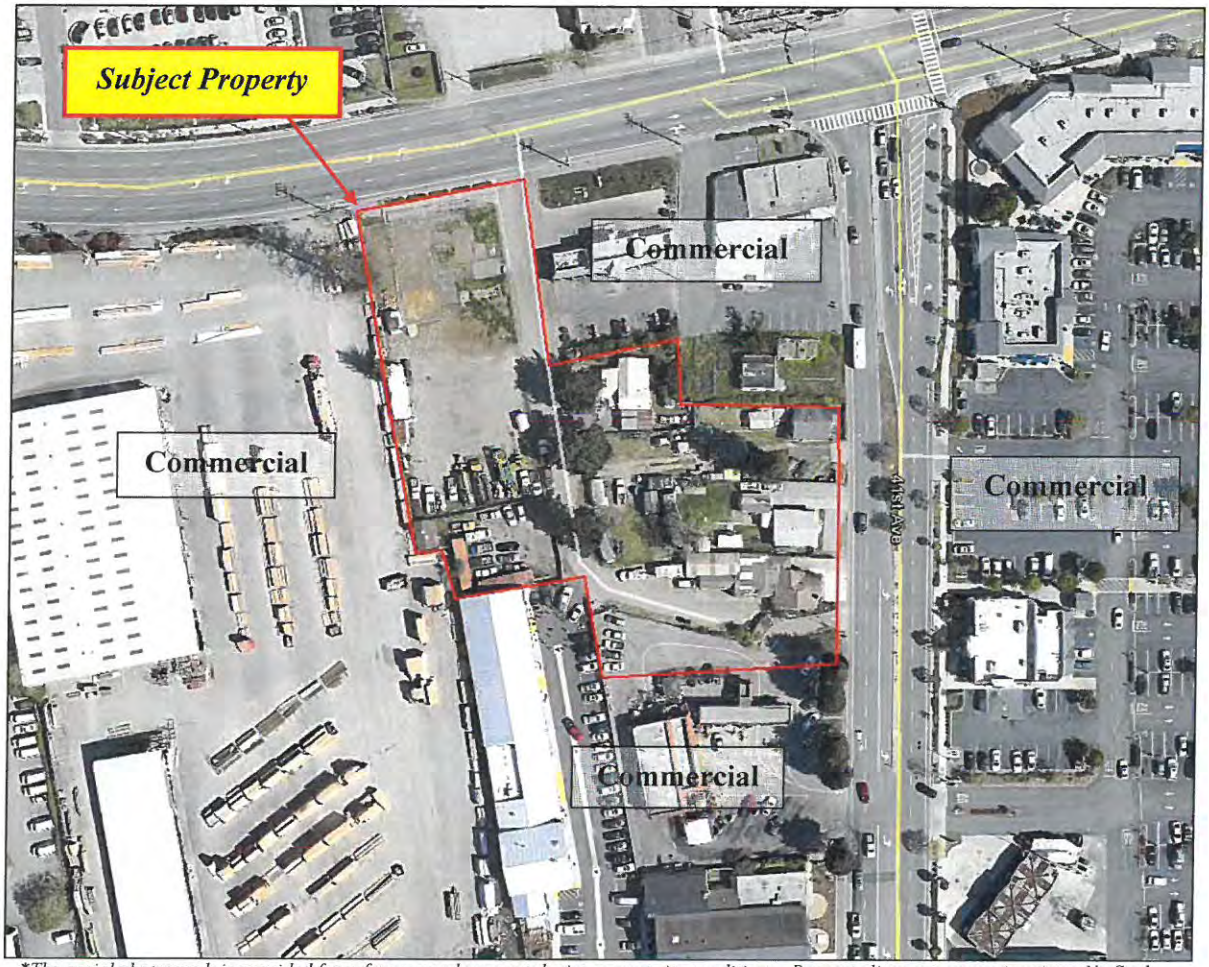


Figure 1: Regional Map (Microsoft, 2013).



**The aerial photograph is provided for reference and may not depict current site conditions. Property lines are approximations. No Scale.*

Figure 2: Vicinity Map (Google Earth, 2015).

2.2 Site and Vicinity General Characteristics

The Subject Property is located on the south side of Soquel Drive and the west side of 41st Avenue in an area of mostly commercial development.

2.3 Current Use of the Subject Property

The Subject Property is comprised of 5 adjoining parcels totaling approximately 1.78 acres. Parcel 030-121-27 is utilized as a storage yard. The remaining parcels are developed with single family dwellings.

2.4 Description of Subject Property Improvements

The following section describes general conditions and features as noted during SDC's inspection of the Subject Property.

2.4.1 Hazardous Materials / Storage

No areas of hazardous materials storage were observed at the time of the site reconnaissance.

2.4.2 Refuse Disposal

A commercial dumpster was observed. No hazardous materials were observed in or around the dumpsters at the time of the site reconnaissance.

2.4.3 Roads

The Subject Property can be accessed from the north via Soquel Drive and from the west via 41st Avenue.

2.4.4 Vegetation

No stressed or diseased vegetation was observed on the Subject Property at the time of the site reconnaissance.

2.4.5 Utilities

The following table lists utility providers for the Subject Property.

Table 1: Utility providers for the Subject Property

Service	Provider
Water	Santa Cruz Municipal Utilities
Sewer	Santa Cruz Municipal Utilities
Power	PG&E
Gas	PG&E

2.5 Current Use of the Adjoining Properties

The current uses for the adjoining properties are listed in Table 2.

Table 2: Current land uses for the adjoining properties

Direction	Land Use
North	Commercial
South	Commercial
East	41st Avenue / Commercial
West	Commercial

3.0 USER PROVIDED INFORMATION

The following section summarizes information provided by the user of this report (BLAM-JADE, LP). In order to qualify for one of the Landowner Liability Protections (LLPs) offered by the Small Business Liability Relief and Brownfields Revitalization Act of 2001, the user must provide the following information (if available) to the environmental professional. Failure to provide this information could result in a determination that "all appropriate inquiry" is not complete.

3.1 Title Records

Title records were provided for review by the user. SDC reviewed title information obtained from First American Title Company and the user. Review of the title information did not identify any environmental liens associated with the Subject Property. For a copy of the property profile the reader is referred to Appendix A.

3.2 Environmental Liens or Activity and Use Limitations

SDC was not informed by the user of any environmental liens or activity and use limitations (AULs). Title documents did not identify any liens or AULs for the Subject Property.

3.3 Specialized Knowledge

SDC was not informed by the user of any specialized knowledge or experience related to the Subject Property or nearby properties.

3.4 Commonly Know or Reasonably Ascertainable Information

The user did not inform SDC of commonly known or reasonably ascertainable information about the Subject Property or nearby properties which aided in identifying recognized environmental conditions.

3.5 Valuation Reduction for Environmental Issues

The user did not indicate to SDC any information to suggest that the valuation of the Subject Property is significantly less than the valuation for comparable properties due to environmental factors.

3.6 Owner, Property Manager, and Occupant Information

A Site Questionnaire was completed by Ms. Karen Calcagno, owner of the Subject Property. No environmental concerns associated with the Subject Property were noted. The Questionnaire is attached herein Appendix C.

3.7 Reasons for Performing Phase I

SDC understands that the findings of this Phase I ESA will be used to evaluate a pending financial transaction associated with the Subject Property.

4.0 RECORDS REVIEW

Information in this section is based solely on the specific references contained within each subsection. Sources of information may include: commercially available and proprietary regulatory databases, regulatory agency files, personal interviews and telephone interviews. In some of the following subsections, the words up gradient, cross gradient, and down gradient refer to the presumed groundwater flow direction in relation to the Subject Property. These determinations are based subjectively on regional hydrogeologic information, topographic maps and local site conditions described in Section 4.4. Using the ASTM definition of migration, SDC considers the migration of hazardous substances or petroleum products in any form onto the Subject Property during the evaluation of each site listed within regulatory databases, which include solid, liquid, and vapor.

4.1 Standard Environmental Record Sources

The following subsections discuss SDC's findings based on a review of standard environmental record sources as listed in section 8.2.1 of the ASTM Standard E1527-13. For a copy of the regulatory database report obtained during the research and development of this Phase I ESA the reader is referred to Appendix D. In addition to reviewing the regulatory database report SDC also cross referenced data generated by the report with information obtained from the federal and state databases listed in Section 8.0. Any discrepancies identified are described below. All records were reviewed between April 6, 2016 and April 20, 2016.

4.1.1 Federal Databases

National Priorities List

The National Priorities List (NPL) is the EPA database of uncontrolled or abandoned hazardous waste sites that have been identified for priority remedial actions under the Superfund Program. In order for a site to be included on the NPL, it must either meet or surpass a pre-determined hazard ranking system score, be chosen as a State's top-priority site, or meet all three of the following criteria: 1) the U.S. Department of Health and Human Services issues a health advisory recommending that people be removed from the site to avoid exposure; 2) the EPA determines that the site represents a significant threat; and 3) the EPA determines that the remedial action is more cost-effective than removal action.

- **The Subject Property was not listed as a Federal NPL or Federal Delisted NPL site, nor were any Federal NPL or Federal Delisted NPL sites located within a distance of one (1) mile of the Subject Property (EPA, 2016).**

CERCLIS List

Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) is the Superfund database which is used to support management in all phases of the Superfund program. The system contains information on all aspects of hazardous waste sites including an inventory of sites, planned and actual site activities and financial information. The federal Superfund was authorized to finance the clean-up of abandoned disposal sites throughout the United States. A computer database of abandoned or inactive facilities, the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS), has been developed to support the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). After a potential site is discovered by the EPA, it is entered into the database and a preliminary site assessment is conducted. If warranted, a site investigation is conducted after which a site can be proposed for remediation and placed on the National Priorities List. CERCLIS sites designated as "No Further Remedial Action Planned" (NFRAP) have been removed from CERCLIS. NFRAP sites may be sites where, following an initial investigation, no contamination was found, contamination was removed quickly without the need for the site to be placed on the NPL, or the contamination was not serious enough to require Federal Superfund Action or NPL consideration.

- **The Subject Property was not listed as a CERCLIS site, nor were any CERCLIS sites or CERCLIS NFRAP sites identified within a distance of one-half (½) mile from the Subject Property (EPA, 2016).**

RCRA CORRACTS List

Resource Conservation and Recovery Information System (RCRIS) is a national information system which supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities which generate, transport, and treat, store or dispose of hazardous waste (RCRA-TSD). RCRIS allows RCRA program staff to track the notification, permit, compliance and corrective action (CORRACTS) activities required under RCRA.

- **The Subject Property was not listed as an RCRA CORRACTS site, nor were there any RCRA CORRACTS sites identified within a distance of one (1) mile from the Subject Property (EPA, 2016).**

RCRA Generators List

The United States Environmental Protection Agency (EPA) regulates hazardous waste under the Resource Conservation and Recovery Act (RCRA). EPA maintains a database of facilities, which generate hazardous waste or treat, store, and/or dispose of hazardous wastes. Small quantity generators (SQGs) generate between 100 kilograms (kg) and 1000 kg of hazardous waste per month. Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

- **The Subject Property was not identified as a RCRA Generator site, nor were any RCRA Generator sites identified adjacent to the Subject Property (EPA, 2016).**

ERNS List

The Emergency Response Notification System (ERNS) is a national computer database used to store information on unauthorized releases of oil and hazardous substances. The program is a cooperative effort of the Environmental Protection Agency, the Department of Transportation Research and Special Program Administration's John Volpe National Transportation System Center and the National Response Center. There are primarily five Federal statutes that require release reporting: the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) section 103; the Superfund Amendments and Reauthorization Act(SARA) Title III Section 304; the Clean Water Act of 1972(CWA) section 311(b)(3); and the Hazardous Material Transportation Act of 1974(HMTA section 1808(b).

- **The Subject Property was not identified as an ERNS site (NRC, 2016).**

Brownfields List

Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties protects the environment, reduces blight, and takes development pressures off greenspaces and working lands. The Assessment, Cleanup and Redevelopment Exchange System (ACRES) is an online database for Brownfields Grantees to electronically submit data directly to The United States Environmental Protection Agency (EPA).

- **The Subject Property was not listed as a Brownfields site, nor were any Brownfields sites identified within a distance of one-half (½) mile from the Subject Property (EPA, 2016).**

Toxic Release Inventory List

The Toxics Release Inventory (TRI) is a publicly available EPA database that contains information on toxic chemical releases and other waste management activities reported annually by certain covered industry groups as well as federal facilities. TRI reporters for all reporting years are provided in the file.

- **The Subject Property was not listed as a TRI site, nor were any TRI sites identified within a distance of one-half (½) mile from the Subject Property (EPA, 2016).**

4.1.2 California State Databases

CA Permitted Underground Storage Tank List

Underground storage tanks containing hazardous or petroleum substances are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA). The State Water Resources Control Board's GeoTracker database provides the list of permitted Underground Storage Tanks (PUST).

- **The Subject Property was not listed as a PUST site. No PUST sites were identified adjacent to the Subject Property (Geotracker, 2016).**

CA Leaking Underground Storage Tanks List

Information on leaking underground storage tank (LUST) site containing hazardous or petroleum substances is maintained in the State Water Resources Control Board's GeoTracker database.

- **The Subject Property was not listed as a LUST site. No open LUST sites were identified within a distance of one-half (½) mile of the Subject Property (Geotracker, 2016).**

CA Hazardous Waste Sites / CA CERCLIS Equivalent Sites

The Department of Toxic Substances Controls (DTSC) Site Mitigation and Brownfields Reuse Program (SMBRP) EnviroStor database identifies Hazardous Waste Sites. These include all hazardous waste facilities subject to corrective action pursuant to Section 25187.5 of the Health and Safety Code. All land designated as hazardous waste property or border zone property pursuant to Article 11 (commencing with Section 25220) of Chapter 6.5 of Division 20 of the Health and Safety Code. All information received by the Department of Toxic Substances Control pursuant to Section 25242 of the Health and Safety Code on hazardous waste disposals on public land. All sites listed pursuant to Section 25356 of the Health and Safety Code. All sites included in the Abandoned Site Assessment Program. The EnviroStor database also identifies state CERCLIS and NPL equivalent sites along with Voluntary Cleanup Sites.

- **The Subject Property was not listed within the EnviroStor database. One (1) closed Hazardous Waste Facility, California Radiographics Inc - 3335 Soquel Drive, was identified within a distance of one-half (½) mile of the Subject Property (DTSC, 2016).**
- **Based on the responsible party being identified and closed status, this site should be considered low risk to the Subject Property.**

CA Hazardous Waste Tracking System (HWTS)

The Department of Toxic Substances Control (DTSC) maintains the HWTS database which lists and tracks hazardous waste from the generator through transporters to a treatment, storage and disposal (TSD) facility.

- **The Subject Property was not listed within the HWTS database (DTSC, 2016).**

CA SLIC Sites

The Spills, Leaks, Investigation & Cleanup (SLIC) Program is responsible for site investigation and corrective action involving sites not overseen by the Underground Tank Program and the Well Investigation Program. This program is not restricted to particular pollutants or environments; rather, the program covers all types of pollutants (such as solvents, petroleum fuels, and heavy metals) and all environments (including surface and water, groundwater, and the vadose zone). Upon confirming that an unauthorized discharge is polluting or threatens to pollute regional water bodies, the Regional Board oversees site investigation and corrective action. Statutory authority for the program is derived from the California Water Code, Division 7, Section 13304. Guidelines for site investigation and remediation are promulgated in State Board Resolution No. 92-49 entitled Policies and Procedures for Investigation and Cleanup and Abatement of Discharges under Water Code Section 13304.

- **The Subject Property was not listed as a SLIC site, nor were any open SLIC sites identified within a distance of one-half (½) mile from the Subject Property (Geotracker, 2016).**

CA Solid Waste Disposal Sites

The Solid Waste Landfill List (SWLF) database is provided by the California Solid Waste Information System (SWIS) and consists of both open as well as closed inactive solid waste disposal facilities and transfer stations pursuant to the Solid Waste Management and Resource Recovery Act of 1972.

- **The Subject Property was not listed as a SWLF site, nor were any SWLF sites identified within a distance of one-half (½) mile from the Subject Property (Integrated Waste Management, 2016).**

CA Oil and Gas Well Sites

The California Department of Conservation, Division of Oil, Gas and Geothermal Resources (DOGGR) was created to serve the needs of the state, local governments, and industry by regulating statewide oil and gas activities with uniform laws and regulations. The DOGGR supervises the drilling, operation, maintenance, and plugging and abandonment of onshore and

offshore oil, gas, and geothermal wells, preventing damage to: (1) life, health, property, and natural resources; (2) underground and surface waters suitable for irrigation or domestic use; and (3) oil, gas and geothermal reservoirs.

- **No operating or abandoned oil or gas wells were identified on or adjacent to the Subject Property (DOGGR, 2016).**

4.2 State and Local Environmental Records Sources

According to the ASTM Standard E1527-13 if the property or any of the adjoining properties is identified on one or more of the standard environmental record sources listed above, pertinent regulatory files and/or records associated with the listing should be reviewed. The purpose of the regulatory file review is to obtain sufficient information to assist the environmental professional in determining if a recognized environmental condition, historical recognized environmental condition, controlled recognized environmental condition, or a de minimis condition exists at the property in connection with the listing. If, in the environmental professional's opinion, such a review is not warranted, the environmental professional must explain within the report the justification for not conducting the regulatory file review.

The following subsections discuss SDC's findings based on a review of various State and local regulatory agencies where applicable.

4.2.1 Environmental Programs

The Santa Cruz County Environmental Health Services (EHS) is the agency that has been designated the Certified Unified Program Agency (CUPA) for the Subject Property.

The Certified Unified Program Agency (CUPA) is responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that; Require Hazardous Materials Business Plans, Require California Accidental Release Prevention plans or Federal Risk Management Plans, Operate Underground Storage Tanks, Operate Aboveground Storage Tanks, Generate Hazardous Waste(s), and Have Onsite Treatment of Hazardous Waste(s)/Tiered Permits.

Compliance is achieved through routine inspections of all regulated facilities, and investigation of citizen based complaints and inquiries regarding improper handling and/or disposal of hazardous materials and/or hazardous wastes. Hazardous waste source reduction is a primary goal of the CUPA. Additionally, the agency provides oversight for the remediation of contaminated sites.

The CUPA identifies facilities that may have to prepare; a Hazardous Materials Business Plan, a Federal Risk Management Plan (RMP), or a California Accidental Release Prevention (CalARP) plan; or any combination of these plans.

- **The EHS online records were searched regarding CUPA files pertaining to the Subject Property. No CUPA files were identified.**

4.2.2 Air Quality

The Monterey Bay Unified Air Pollution Control District (APCD) maintains a database, which contains information on properties (or "sites") where airborne hazardous substances have been released, or where the potential for such a release exists.

- **As per Ms. Cindy Searson, no files were identified for the Subject Property.**

4.2.3 Planning Department

The Subject Property is currently zoned C-2: Community Commercial, according to the Santa Cruz County Planning Department. No institutional controls or engineering controls were associated with the site.

4.3 Physical Setting Sources

4.3.1 Topography

The Subject Property is located within the Soquel Quadrangle of the USGS 7.5-minute topographic map series. The elevation of the Subject Property is approximately 125 feet above mean sea level. A topographic map is included herein as Figure 3.

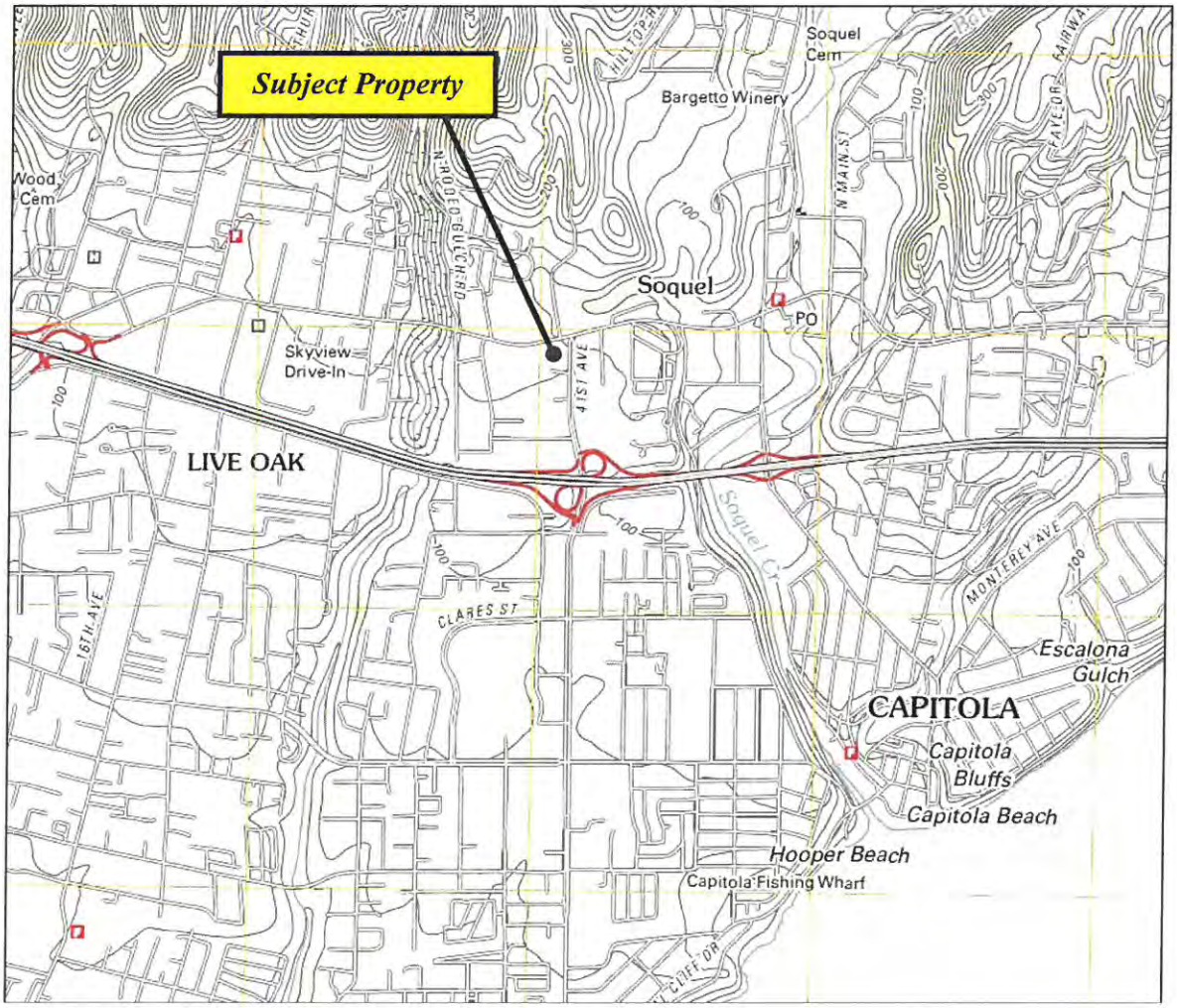


Figure 3: Topographic Map (USGS, 2012).

4.3.2 Regional Geology / Hydrology

The Soquel Valley Groundwater Basin is bounded to the south by Monterey Bay, and to the north by a series of hills that define the contact of Quaternary and Pliocene deposits (Purisima Formation) at or near the Zayante Fault. The western boundary coincides with the western boundary of the Soquel Creek Water District. The eastern boundary is generally the coastward projection of the drainage divide between the Soquel and Aptos Creek watersheds. In addition to the areas of Quaternary deposits, the eastern limit of the Soquel Creek and Central Water District's service area may be considered the basin boundary for the purposes of managing and monitoring groundwater resources in the area. Soquel Creek is the major drainage in the Basin. Average annual precipitation is 25 inches along the coast to 29 inches inland.

Water-bearing sediments consist of the Pliocene Purisima Formation, which is overlain by Quaternary terrace deposits, and the Pleistocene Aromas Red Sands Formation. The Purisima

and Quaternary terrace deposits have been locally incised by streams filled with Quaternary alluvium (California's Groundwater Bulletin 118, 2004).

4.4 Historical Records Review

According to the ASTM Standard E1527-13 all obvious uses of the property shall be identified from the present, back to the property's first developed use, or back to 1940, whichever is earlier. The following sections summarize historical research for the Subject Property and adjoining properties.

4.4.1 Aerial Photographs

SDC reviewed available aerial photographs of the Subject Property and surrounding areas. Aerial photographs were reviewed for the years 1952, 1968, 1974, 1982, 1993, 2005, 2010 and 2015. Aerial photographs were available online at historicaerials.com and U.S.G.S. EarthExplorer. The most recent aerial photograph was viewed on Google Earth. The following is a summary of the observations and interpretations noted during the aerial photograph review:

Date of Photo: **1982 / 1993 / 2005 / 2010 / 2015**

Subject Property: **Appears developed much like today; residential structures along 41st Street, undeveloped lot to the west**

Adjoining properties north: **Commercial**

Adjoining properties south: **Commercial**

Adjoining properties east: **41st Avenue / Commercial**

Adjoining properties west: **Commercial**

Indications of environmental conditions / concerns: **No indications of environmental conditions / concerns were observed.**

Date of Photo: **1952 / 1968 / 1974**

Subject Property: **Appears developed with residential structures**

Adjoining properties north: **Appears residential and commercial**

Adjoining properties south: **Appears residential**

Adjoining properties east: **41st Avenue / Appears mostly undeveloped**

Adjoining properties west: **Commercial**

Indications of environmental conditions / concerns: **No indications of environmental conditions / concerns were observed.**

4.4.2 Sanborn Fire Insurance Maps

In the late nineteenth century, the Sanborn Company began preparing maps of central business districts for use by fire insurance companies. These maps were updated and expanded geographically periodically through the twentieth century. The Sanborn maps often indicate construction materials of specific building structures and the location of fuel storage tanks. The following is a summary of the observations noted during the Sanborn Map review:

- **Sanborn Fire Insurance Maps were unavailable for the area of the Subject Property.**

4.4.3 Historical USGS Topographic Maps

SDC reviewed available historical United States Geological Survey (USGS) Topographic Maps for information regarding past uses of the Subject Property. The USGS Topographic Map(s) were reviewed for the years 1965, 1981, 1994 and 2012.

- **Review of the historical USGS Topographic Maps did not identify past uses indicating recognized environmental conditions at the Subject Property or surrounding area. A copy of the 2012 USGS Topographic Map is provided in the previous Figure 3.**

5.0 SITE RECONNAISSANCE

SDC conducted a site reconnaissance survey of the subject and adjacent properties on April 12, 2016. The following is a summary of the visual and/or physical observations made during the site reconnaissance.

5.1 Methodology and Limiting Conditions

The site reconnaissance consisted of visual and/or physical observations of: the Subject Property and improvements; adjoining sites as viewed from the Subject Property; and, the surrounding area based on visual observations made during the trip to and from the Subject Property. Unimproved portions of the Subject Property (if any) were observed along the perimeter and in a general grid pattern in safely accessible areas. Building exteriors (if any) were observed along the perimeter from the ground, unless described otherwise. Building interiors (if any) were observed as they were made safely accessible, unless described otherwise.

During the site reconnaissance, the interior of the residential structures was not surveyed.

5.2 General Site Settings and Summaries

The following table summarizes the general site settings including interior and exterior observation of structures (if any) along with additional information obtained during the research and development of this report.

Table 3: Subject Property Summary

Report Component	Summary
General Site Settings / Structures:	The Subject Property is comprised of 5 adjoining parcels totaling approximately 1.78 acres. Parcel 030-121-27 is utilized as a storage yard. The remaining parcels are developed with single family dwellings.
Roads:	The Subject Property can be accessed from the north via Soquel Drive and from the west via 41st Avenue.
Topography:	The elevation of the Subject Property is approximately 125 feet above mean sea level.
Hazardous materials storage tanks and storage areas:	No areas of hazardous materials storage were observed at the time of the site reconnaissance.
Refuse disposal:	A commercial dumpster was observed. No hazardous materials were observed in or around the dumpsters at the time of the site reconnaissance.
Stressed vegetation (from other than insufficient water):	No stressed or diseased vegetation was observed on the Subject Property at the time of the site reconnaissance.

Surface water flooding:	Surface water appears to flow to the north and east.
Zoning designation:	The Subject Property is currently zoned C-2: Community Commercial, according to the Santa Cruz County Planning Department. No institutional controls or engineering controls were associated with the site.
Odors:	No unusual odors were identified by SDC personnel during the site reconnaissance.
Pools of liquid:	None noted by SDC during the site reconnaissance.
Electrical or hydraulic equipment know or likely to contain Polychlorinated Biphenyls (PCBs):	None noted by SDC during the site reconnaissance.
Unidentified substance containers (including empty drum storage):	None noted by SDC during the site reconnaissance.
Stained soil and pavement, corrosion, and degradation of floors and walls:	None noted by SDC during the site reconnaissance.
Pits, ponds, lagoons, sumps:	None noted by SDC during the site reconnaissance.
Solid waste and waste water:	None noted by SDC during the site reconnaissance.
Wells (including dry wells, irrigation wells, injection wells, or monitoring wells):	None noted by SDC during the site reconnaissance.
Septic systems:	None noted by SDC during the site reconnaissance.
High voltage electrical lines:	None noted by SDC during the site reconnaissance.
High-pressure gas or fuel transmission lines:	None noted by SDC during the site reconnaissance.
Railroad tracks:	None noted by SDC during the site reconnaissance.
Potential off-site sources:	None noted by SDC during the site reconnaissance.
Inaccessible or Un-surveyed Portions of Subject Property:	During the site reconnaissance, the interior of the residential structures was not surveyed.
Tribal Records:	Tribal records were not searched for the Subject Property due to the property not being located on or near tribal lands.

6.0 INTERVIEWS

6.1 Interview with Owner / Representative

A Site Questionnaire was completed by Ms. Karen Calcagno, owner of the Subject Property. No environmental concerns associated with the Subject Property were noted. The Questionnaire is attached herein Appendix C.

6.2 Interview with Site Manager

A Site Manager was not interviewed.

6.3 Interview with Occupants

Occupants were not interviewed.

6.4 Interview with Local Government Officials

Telephone and/or email interviews were conducted with representatives of the Monterey Bay Unified APCD. The results of the interviews are summarized in Section 4.2.

6.5 Interview with Others

No other interviews were conducted.

7.0 FINDINGS

7.1 Conclusions

The Subject Property is comprised of 5 adjoining parcels totaling approximately 1.78 acres. Parcel 030-121-27 is utilized as a storage yard. The remaining parcels are developed with single family dwellings. Available records indicate the structures were built between 1915 and 1948.

Findings

Recognized Environmental Conditions (RECs) are defined by the ASTM Standard Practice E1527-13 as the presence or likely presence of any hazardous substances or petroleum products in, at, or on a property: (1) due to any release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment. De minimis conditions are not recognized environmental conditions.

- ***SDC found that this assessment has revealed no evidence of RECs on or associated with the Subject Property.***

Historical Recognized Environmental Conditions (HRECs) are defined by the ASTM Standard Practice E1527-13 as a past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted use criteria established by a regulatory authority, without subjecting the property to any required controls (for example, property use restrictions, activity and use limitations, institutional controls, or engineering controls.

- ***SDC found that this assessment has revealed no evidence of HRECs on or associated with the Subject Property.***

Controlled Recognized Environmental Conditions (CRECs) are defined by the ASTM Standard Practice E1527-13 as a recognized environmental condition resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority (for example, as evidenced by the issuance of a no further action letter or equivalent, or meeting risk-based criteria established by regulatory authority with hazardous substances or petroleum products allowed to remain in place subject to the implementation or required controls (for example, property use restrictions, activity and use limitations, institutional controls, or engineering controls).

- ***SDC found that this assessment has revealed no evidence of CRECs on or associated with the Subject Property.***

Business Environmental Risks (BERs) are defined by the ASTM Standard Practice E1527-13 as a risk which can have a material environmental or environmentally-driven impact on the business associated with the current or planned use of a parcel of commercial real estate, not

necessarily limited to those environmental issues required to be investigated in the standard ASTM scope. BERs may affect the liabilities and financial obligations of the client, the health and safety of site occupants, and the value and marketability of the Subject Property.

- ***SDC found that this assessment has revealed no evidence of BERs on or associated with the Subject Property.***

7.2 Recommendations

It is SDC's opinion that no conditions indicative of releases or threatened releases associated with the Subject Property were identified during the research and development of this report. It is SDC's opinion that the risk for contamination at the Subject Property is minimal and that no further investigation of the Subject Property is warranted at this time.

7.3 Deviations

This Phase I ESA was prepared according to the ASTM Standard E1527-13 which complies with the EPA's (AAI) All Appropriate Inquiries federal regulations. Any exceptions to, or deletions from, this practice are described in Section 1.4 of this report.

8.0 REFERENCES

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USGS EarthExplorer, 2016. [Online]. Available at: http://earthexplorer.usgs.gov/

9.0 QUALIFICATIONS OF ENVIRONMENTAL PROFESSIONAL

NAME & TITLE:	Robb Eidemiller Director of Consulting Services Division
PROJECT ASSIGNMENT:	Principal-in-Charge
FIRM ASSOCIATION:	Sierra Delta Consultants LLC
EXPERIENCE WITH FIRM:	30 years
WITH OTHER FIRMS:	15 years
EDUCATION:	M.S./1978/Geomorphology/Environmental Engineering/Louisiana State University
	B.A./1971/Geomorphology/ U.C.L.A.

ENVIRONMENTAL PROFESSIONAL STATEMENT:

I declare that, to the best of my professional knowledge and belief, I meet the definition of Environmental Professional as defined in §312.10 of 40 CFR 312. I have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the Subject Property. I have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

9.1 Experience and Qualifications

Mr. Eidemiller is Director of the Consulting Services Division of Sierra Delta Consultants LLC. He has over 40 years of project experience in the fields of project feasibility studies; environmental impact assessments and reports; baseline inventories; land use planning; permits acquisition; water resources development; project site location analyses; residential, commercial and industrial development plans; surface and subsurface mining reclamation plans; exploratory drilling and seismic exploration; hazardous waste definition and clean-up; and waste management.

Mr. Eidemiller's relevant experience would include being Principal-in-Charge for over 2000 Environmental Site Assessments (ESAs), Environmental Impact Statements (EISs) and Environmental Impact Reports (EIRs). Projects have involved oil and gas facilities, transmission lines, railroads, airports, sand and gravel operations, large and small housing projects, flood drainage projects, agricultural projects, golf courses, hotels, and commercial developments.

9.2 Sierra Delta Consultants LLC Profile

SDC was founded in 1985 and offers numerous environmental consulting services. The following sections provide a brief discussion of environmental services provided by SDC.

9.2.1 Phase I and II Environmental Site Assessments

The SDC Team conducts environmental site assessments for real estate transactions. These audits are an essential part of real estate and corporate transactions because they are the best way to identify environmental liabilities affecting the purchase, sale, lease, and financing of property.

The purpose of the assessment is to facilitate property transactions while providing some protection to the parties involved. Failure to address recent "Superfund" legislation regarding environmental contamination, liability, and clean-up responsibilities can result in property liens, staggering costs for remediation and liability for damages. We often recommend that the investigation be conducted at the request of the client's legal counsel to preserve confidentiality.

A comprehensive site history is conducted to assess current and past operations, and to discover any spills and discharges that may have occurred in the past. Regulatory permits, monitoring programs, and storage and handling procedures for by-products and wastes are reviewed. The site history may include examination of historical aerial photographs, site reconnaissance, and interviews with regulatory agencies and previous owners.

If indicated and warranted by the Phase I Environmental Site Assessment, additional testing may be conducted to delineate the level and extent of contamination (Phase II - Environmental Site Assessment). Sampling might include surface water, groundwater, soils, dust, insulation, and building atmospheres. Drilling may also be required around underground storage tanks. Samples are analyzed by an EPA approved laboratory and results reviewed by our staff. A confidential environmental audit report is presented to the client.

9.2.2 Environmental Studies

The SDC team possesses the technical skill and experience to design and conduct a variety of ecological and environmental investigations. Many of the investigations recently conducted have been, and are, conducted in conjunction with the planning of development projects. Areas of specialization would include:

9.2.2.1 Resources Management

SDC provides resource management services including:

- mitigation planning
- water resources management
- wildlife management

- grazing management
- hazardous waste management
- cultural resources management
- water rights surveys
- visual quality analyses
- floodplain reclamation
- wetland habitat development and restoration

9.2.2.2 Lake Management

SDC provides lake management services including:

- follow-up services
- lake O&M plans
- lake restoration
- leak detection
- odor control
- proper utilization of secondary effluent for golf course irrigation
- water budgets
- water quality analyses

9.2.2.3 Ecological Research

SDC provides ecological research including:

- aquatic and terrestrial ecology
- endangered species studies
- vegetation surveys and studies
- fisheries biology
- riparian habitat studies
- soil science
- wildlife biology
- water quality analysis

9.2.2.4 Wetland Regulation

SDC provides wetland services including:

- wetland boundary determination using the multi-parameter approach
- preliminary assessment of regulatory requirements
- preliminary project design consultation regarding regulatory compliance
- determination of Clean Water Act (wetlands) jurisdiction
- 404(b)(1) alternatives analysis
- preparation of U.S. Army Corps of Engineers 404 permit

- mitigation planning, project re-design and agency negotiation
- public hearing participation
- EIR/EIS contractor liaison and/or management
- water quality certification procurement and other associated permits, certifications, and authorizations as required

9.2.2.5 Environmental Assessments and Impact Statements

SDC provides Impact Assessment services including:

- habitat characterization
- in-field water quality sampling
- inventories including terrestrial vegetation, aquatic vegetation, invertebrates, fishes, large mammals, birds, reptiles and amphibians, bathymetry, hydraulics, background acoustics, visual/aesthetic setting
- statistical analyses/data processing
- laboratory analyses including total alkalinity, nitrogen and phosphorus in H2O and bottom samples, chlorophyll
- Geographic Information Systems (GIS)
- cultural resources surveys
- reports and impact statements
- public participation programs

APPENDIX A

FIRST AMERICAN TITLE / Santa Cruz (CA)

OWNERSHIP INFORMATION

Parcel Number	: 030 121 08
Owner	: Calcagno Joseph S Jr & Karen C Trustees
CoOwner	: Calcagno Living Trus
Site Address	: 3906 Soquel Dr Soquel 95073
Mail Address	: PO Box 62 Soquel Ca 95073

SALES INFORMATION

Transferred	: 12/31/1998	*Vesting Type*	: Trust\trustee
Document #	: 80854	*% Owned*	: 100
Sale Price	:		
Deed Type	: Grant Deed		

ASSESSMENT AND TAX INFORMATION

Land	: $20,540	*Exempt Type*	:
Structure	: $19,346	*Exempt Amount*	:
Other	:	*Tax Rate Area*	: 96103
Total	: $39,886	*15-16 Taxes*	: $1,357.12

PROPERTY DESCRIPTION

Zoning	: C-2	*Map Bk-Pg*	:
Land Use	: 023 Res,Sgl Family Res,Non-Conform Use	*Sub/Plat*	:
Legal	:		
	:		
	:		

PROPERTY CHARACTERISTICS

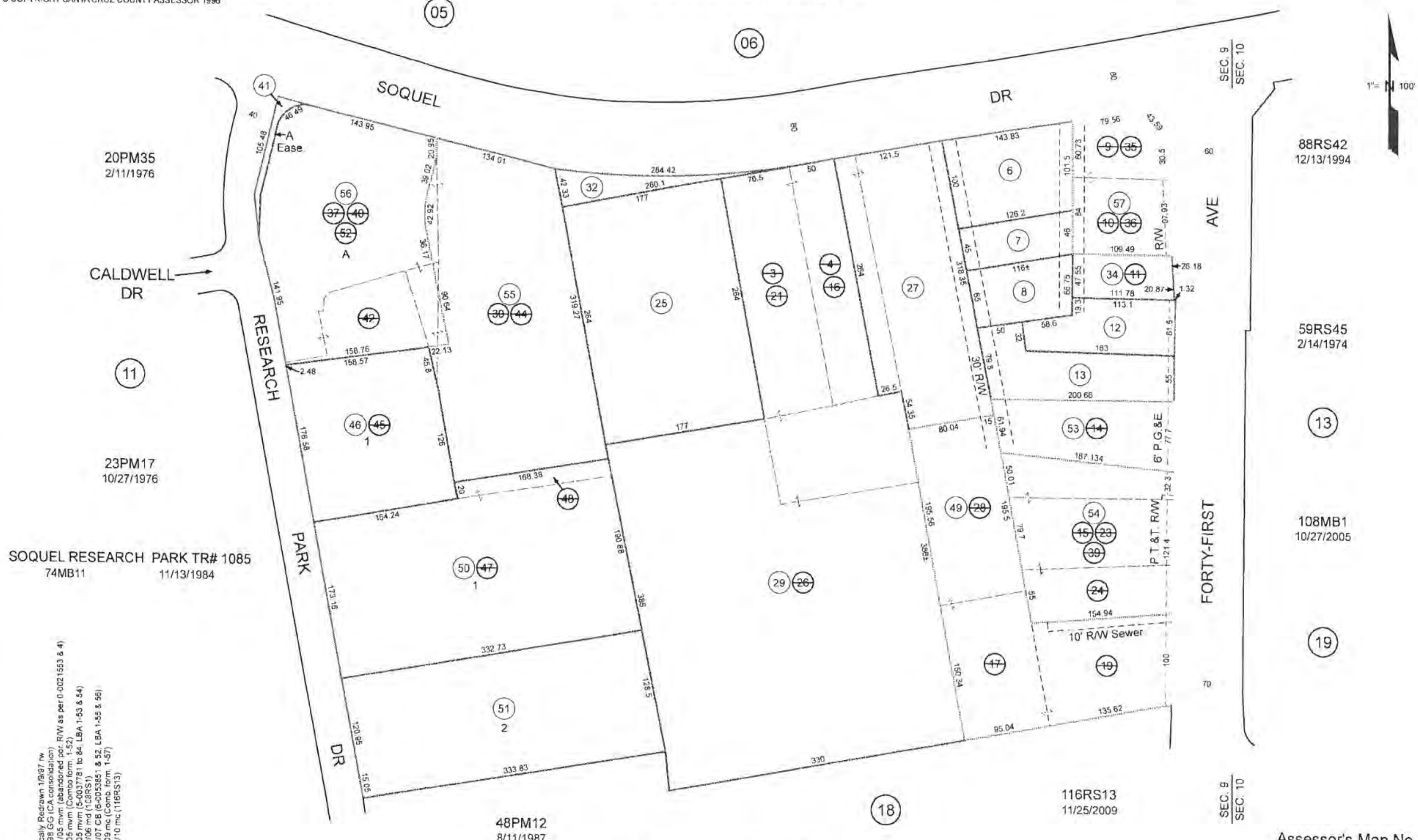
Total Rooms	: 4	*Lot Acres*	: .17	*Appliance*	:
Bedrooms	: 2	*Lot SqFt*	: 7,275	*Spa/HotTub*	:
Bathrooms	: 1.00	*Lot Dimension*	:	*Pool*	:
Dining Room	:	*Bldg SqFt*	: 1,112	*CntlHt/AC*	:
Family Room	:	*Addition SF*	:	*Air Cond*	:
Other Rooms	:	*Bldg Style*	:	*Heat Type*	:
Utility Rooms	:	*1st FlrSF*	:	*Fireplace*	:
Stories	:	*2nd FlrSF*	:	*Foundation*	:
Units	:	*BsmtTotSF*	:	*Year Built*	: 1915
Garage Type	: Yes	*Garage SF*	: 260	*Eff Yr Built*	:
Garage Space	:	*Roof Type*	:		
Patio	:				

FOR TAX PURPOSES ONLY

POR. RANCHO ARROYO DEL RODEO
SEC. 9, T.11S., R.1W. M.D.B. & M.

Tax Area Code
96-103

30-12



Note - Assessor's Parcel & Block Numbers Shown in Circles.

Electronically Redrawn 1/8/97 rw
Rev 5/6/98 GG (CA consolidation)
Rev 3/21/05 mvm (abandoned por. R/W as per 0-0021553 & 4)
Rev 4/4/05 mvm (Combo form 1-52)
Rev 9/2/05 mvm (5-0037781 to 84, LBA 1-53 & 54)
Rev 3/30/06 md (108RS1)
Rev 1/30/07 CB (6-0053851 & 52, LBA 1-55 & 56)
Rev 8/5/09 mc (Comb. form. 1-57)
Rev 1/21/10 mc (116RS13)

Assessor's Map No. 30-12
County of Santa Cruz, Calif.
Aug. 1996

RECORDING REQUESTED BY

Karen C. Calcagno

AND WHEN RECORDED MAIL TO

Name: Mr. and Mrs. Joseph S. Calcagno,Jr.
Street Address: P.O.Box 62
City & State: Soquel, Ca. 95073

BOOK 3784 PAGE 895

058898

RECORDED AT THE REQUEST OF
Calcagno
DEC 14 1984
2:40pm
RICHARD W. BEDAL, Recorder
SANTA CRUZ COUNTY, Official Records

RE	MI	SM	OP
4	1	pd	

SPACE ABOVE THIS LINE FOR RECORDER'S USE

Mail Tax Statements To:
(Same as Above)

No consideration for transfer to Revocable Living Trust.

QUIT CLAIM Deed

WE, JOSEPH S. CALCAGNO,JR. and KAREN C. CALCAGNO, husband and wife as community property, as to an undivided 100% interest,

the first part

QUIT CLAIMS *Hereby Grant* *to* JOSEPH S. CALCAGNO, JR. and KAREN C. CALCAGNO, TRUSTEES, U.D.T., dated December 3, 1984, as to an undivided interest (100%)

the second part

All that Real Property *situated in the* Unincorporated area called Soquel

County of Santa Cruz *, State of* California

bounded and described as follows: Assessor's Parcel Number: 030-121-08

PARCEL ONE:

PART of Rancho Arroyo del Rodeo; beginning at a station on the Eastern boundary of the lands conveyed by L. C. Satteries, et ux., to W. E. Bassett, by Deed dated February 21, 1929 and recorded March 4, 1929 in Volume 147, at page 150, Official Records of Santa Cruz County, from which point the Northeast corner of said lands of Bassett on the Southern side of the Santa Cruz-Watsonville Highway bears North 11° West 145 feet distant; and running thence from said point of beginning along said Eastern boundary of lands of Bassett South 11° East 65 feet to a spike; thence leaving the lands of Bassett, North 79° East 108.6 feet to a spike; thence North 0° 07' West 66.75 feet to a station; thence Westerly 116 feet more or less, to the point of beginning.

PARCEL TWO:

A right of way 15 feet in width, appurtenant to Parcel One, the Easterly boundary of which is the Westerly boundary of the land hereinbefore described as granted in the Deed from Donald H. Epperson, et ux., to Oliver LeRoy Epperson, et ux., recorded November 17, 1945 in Volume 523, Page 435, Official Records of Santa Cruz County.

IN WITNESS WHEREOF the first part s *have executed this conveyance this*

Eleventh *day of* December *,19* 84

Joseph S. Calcagno Jr.

Karen C. Calcagno

BOOK 3784 PAGE 896

State of California,

County of SANTA CRUZ } ss.

On this Eleventh day of December

in the year one thousand nine hundred and Eighty-Four, before me,

Maxine J. Mc Cullough a Notary Public,

State of California, duly commissioned and sworn, personally appeared

Joseph S. Calcagno, Jr. and

Karen C. Calcagno

known to me to be the persons described in and whose names subscribed to the within instrument, and acknowledged to me that they executed the same.

In Witness Whereof I have hereunto set my hand and affixed my official seal in the town of Soquel County of Santa Cruz the day and year in this certificate first above written.

OFFICIAL SEAL
MAXINE J. McCULLOUGH
NOTARY PUBLIC-CALIFORNIA
BOND FILED
IN SANTA CRUZ COUNTY
MY COMMISSION EXPIRES FEB. 20, 1988

Maxine J. McCullough

Notary Public, State of California.

My commission expires February 20, 1988

Recd

TO

Dated, 19

RECORDING REQUESTED BY

Karen C. Calcagno

AND WHEN RECORDED MAIL TO

Name: Mr. and Mrs. Joseph S. Calcagno,Jr.
Street Address: P.O. Box 62
City & State: Soquel,Ca. 95073

BOOK 3784 PAGE 899

058900

RECORDED AT THE REQUEST OF
Calcagno
DEC 11 1984
2:40 Pm
RICHARD W. BEDAL, Recorder
SANTA CRUZ COUNTY, Official Records

RE	MI	SM	OP
5	1		

SPACE ABOVE THIS LINE FOR RECORDER'S USE

Mail Tax Statements To:
(Same as Above)

No consideration for transfer to Revocable Living Trust

~~Quitclaim~~ Deed

WE, JOSEPH S. CALCAGNO,JR. and KAREN C. CALCAGNO, husband and wife.
as joint tenants *the first part*

~~Hereby Grant~~ QUIT CLAIMS to JOSEPH S. CALCAGNO,JR. and KAREN C. CALCAGNO, TRUSTEES,U.D.T., dated December 3, 1984 as to an undivided interest

the second part

All that Real Property *situated in the*

County of Santa Cruz *, State of* California

bounded and described as follows: Assessor's Parcels Nos.: 030-121-12 , 030-121-13

See Exhibit "A" attached hereto and made a part hereof.

IN WITNESS WHEREOF the first part s *ha* ve *executed this conveyance this*

Eleventh *day of* December 1984

Joseph S. Calcagno Jr.

Karen C. Calcagno

This document is only a general form which may be proper for use in simple transactions and in no way purports to be intended to act, as a substitute for the advice of an attorney. The publisher does not make any warranty, either express or implied, as to the legal validity of any provision or the suitability of these forms in any specific transaction.

Cowdery's Form No. 484 - CODE DEED - GRANT, JOINT TENANCY, OR QUIT CLAIM. (C. C. Sec. 1092)

BOOK 3784 PAGE 900

State of California,

County of SANTA CRUZ } ss.

On this Eleventh *day of* December

in the year one thousand nine hundred and Eighty-Four, *before me,*

Maxine J. Mc Cullough *a Notary Public,*

State of California, duly commissioned and sworn, personally appeared

Joseph S. Calcagno, Jr. and

Karen C. Calcagno

known to me to be the persons described in and whose names subscribed to the within instrument, and acknowledged to me that they *executed the same.*

In Witness Whereof *I have hereunto set my hand and affixed my official seal in the* town of Soquel *County of* Santa Cruz *the day and year in this certificate first above written.*

OFFICIAL SEAL
MAXINE J. McCULLOUGH
NOTARY PUBLIC-CALIFORNIA
BOND FILED
IN SANTA CRUZ COUNTY
MY COMMISSION EXPIRES FEB. 20, 1988

Maxine J. McCullough

Notary Public, State of California.

My commission expires February 20, 1988

Recd

To

Dated , 19

County of Santa Cruz, State of California, described as follows:

EXHIBIT "A"

BOOK 3784 PAGE 901

PARCEL ONE:

BEGINNING at a station on the Westerly side of 41st Avenue, from which an iron bolt at the intersection of the center line of said 41st Avenue with the Southerly line of the Santa Cruz-Watsonville Highway bears North 0° 07' West 224.18 feet and North 79° East 30.65 feet distant; thence from said point of beginning and along the Westerly side of said 41st Avenue, South 0° 07' East 116.50 feet; thence leaving 41st Avenue, South 89° 53' West 204.50 feet to a station in the middle of a thirty foot private right of way; thence along the middle of said right of way North 11° West 79.80 feet; thence leaving said right of way North 79° East 108.60 feet to a point in the middle of a thirty foot right of way; thence along the middle of said right of way, North 0° 07' West 19.30 feet; thence leaving the middle of said right of way, North 89° 53' East 113.10 feet to the point of beginning.

EXCEPTING therefrom the land conveyed to L. A. Smith, by Deed dated May 16, 1947 and recorded in Volume 588, page 45, Official Records of Santa Cruz County.

TOGETHER with a right of way 30 feet in width at right angles, the center line of which is described as follows:

BEGINNING at a point on the Southerly line of the Santa Cruz - Watsonville Highway, from which an iron bolt set at the intersection of the center line of 41st Avenue with the Southerly line of said Santa Cruz-Watsonville Highway bears North 79° East 115 feet; North 0° 07' West 10.18 feet and North 79° 30.65 feet; thence from said point of beginning, South 0° 07' East 213.25 feet.

PARCEL TWO:

BEING a part of that parcel of land conveyed by F. A. Lukins and wife to Florence E. Crowe by Deed dated January 24, 1945, recorded February 13, 1945 in Volume 493 page 437, Official Records of Santa Cruz County and being more particularly described as follows:

BEGINNING at a point on the Northern line of said Crowe from which the Northwestern corner of said Crowe bears South 79° West 50 feet distant; thence from said point of beginning South 79° West 50 feet to the Northwest corner of said Crowe in the middle of a 30 foot private Right of Way; thence along the Western boundary of said Crowe along the middle of said Right of Way South 11° East 79.80 feet to the Southwest corner of said Crowe; thence along Crowe's Southern boundary North 89° 53' East 204.50 feet to the Southeast corner of said Crowe on the Westerly side of 41st Avenue; thence along the Eastern line of said Crowe and the Western side of 41st Avenue, North 0° 07' East 55 feet to a point; thence South 89° 53' West 163 feet, more or less, to a point from which the point of beginning bears North 11° West; thence North 11° West 32 feet, more or less, to the point of beginning.

VOL. 5841 PAGE 418

25450

RECORDING REQUESTED BY

AND WHEN RECORDED MAIL TO & SEND ALL TAXES UNLESS OTHERWISE SHOWN BELOW, MAIL TAX STATEMENTS TO

Mr. & Mrs. Joseph S.Calcagno, Jr.
P.O.Box 62
Soquel, CA 95073

RE 6-1
MI 1
SF 2
SM 10
LN
CO
QP

RECORDED
MAY - 6 1996 3:44
RICHARD W. BEDAL, RECORDER
SANTA CRUZ COUNTY Official Records

GRANT DEED

No consideration for trandsfer to Revocable Living Trust. No tax due.

DOCUMENTARY TRANSFER TAX $ 0
[ ] computed on full value of property conveyed, or
[ ] computed on full value less liens and encumbrances remaining at time of sale

Signature of Declarant or Agent determining tax — Firm Name

I(We) JOSEPH S. CALCAGNO, JR. and KAREN C. CALCAGNO, TRUSTEES, UTD 12/03/84 grant to Joseph S. Calcagno, Jr. and Karen C. Calcagno, Trustees of the Calcagno Living Trust dated March 20, 1996

all that real property situated in the City of Soquel (or in an unincorporated area of)
Santa Cruz County of California described as follows (insert legal description)

Attached hereto as Exhibit "A"

Assessor's Parcel No. 30-121-08

Executed on May 6, 1996 at Soquel, CA.

Joseph S. Calcagno, Jr. Trustee
Karen C. Calcagno Trustee

STATE OF CALIFORNIA

COUNTY OF SANTA CRUZ

On 5/6/96 before me, Joan Ortega, Notary

personally appeared Joseph S. Calcagno, Jr. & Karen C. Calcagno

to me proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

WITNESS my hand and official seal.

JOAN ORTEGA
COMM # 1004278
Notary Public — California
SANTA CRUZ COUNTY
My Comm. Expires NOV 6 1999

Joan Ortega

RIGHT THUMBPRINT (Optional)

CAPACITY CLAIMED BY SIGNER(S)
[ ] CORPORATE
PARTNER(S) [ ] LIMITED [ ] GENERAL
[ ] ATTORNEY-IN-FACT
[ ] TRUSTEE(S)
[ ] GUARDIAN/CONSERVATOR
[ ] OTHER

SIGNER IS REPRESENTING

MAIL TAX STATEMENTS TO Mr. & Mrs. Joseph S. Calcagno, Jr
P.O.Box 62; Soquel, CA 95073

07205-ma ds

EXHIBIT "A"

SITUATE in the County of Santa Cruz, State of California.

PARCEL ONE:

PART of Rancho Arroyo del Rodeo; beginning at a station on the Eastern boundary of the lands conveyed by L. C. Satteries, et ux., to W. E. Bassett, by Deed dated February 21, 1929 and recorded March 4, 1929 in Volume 147, at page 150, Official Records of Santa Cruz County, from which point the Northeast corner of said lands of Bassett on the Southern side of the Santa Cruz-Watsonville Highway bears North 11° West 145 feet distant; and running thence from said point of beginning along said Eastern boundary of lands of Bassett South 11° East 55 feet to a spike; thence leaving the lands of Bassett, North 79° East 108.5 feet to a spike; thence North 0° 07' West 66.75 feet to a station; thence Westerly 116 feet more or less, to the point of beginning.

PARCEL TWO:

A right of way 15 feet in width, appurtenant to Parcel One, the Easterly boundary of which is the Westerly boundary of the land hereinbefore described as granted in the Deed from Donald H. Epperson, et ux., to Oliver LeRoy Epperson, et ux., recorded November 17, 1945 in Volume 523, Page 435, Official Records of Santa Cruz County.

RECORDING REQUESTED BY

ORDER #

APN

WHEN RECORDED MAIL TO

Name: Calcatera/Calcagno
Street Address: PO Box 62
City, State, Zip: Soquel, CA 95073

1998-0095610

Recorded
Official Records
County Of
SANTA CRUZ
RICHARD W. BEDAL
Recorder

02:50PM 17-Sep-1998

REC FEE 10.00
SURVEY 10.00

BLS
Page 1 of 2

SPACE ABOVE THIS LINE FOR RECORDER'S USE

Grant Deed

The undersigned grantor(s) declare(s):
Documentary transfer tax is $ Gift
( ) computed on full value of property conveyed, or
( ) computed on full value less value of liens and encumbrances remaining at time of sale.
(X) Unincorporated area: ( ) City of _____
(X) Realty not sold.

In consideration of love and affection received, we, Joseph S. Calcagno, Jr. and Karen C. Calcagno, Trustees of the Calcagno Living Trust dated March 20, 1996 hereby GRANT(S) to

Kristen Calcagno Calcatera, a married woman, Claire Calcagno, a single woman, and Joseph S. Calcagno III, a single man, Tenants in Common

that property in Soquel, County of Santa Cruz, California, APN# 030-121-08

See exhibit "A" attached hereto

Mail Tax Statements to Calcatera/Calcagno, PO Box 62, Soquel, CA 95073

Date September 17, 1998

Joseph S. Calcagno, Jr. Trustee

Karen C. Calcagno, Trustee

STATE OF CALIFORNIA

COUNTY OF Santa Cruz

On September 17, 1998 before me, the undersigned, a Notary Public in and for said State, personally appeared Joseph S. Calcagno, Jr. and Karen C. Calcagno

personally known to me (or proved to me on the basis of satisfactory evidence) to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

WITNESS my hand and official seal.

Signature _____

Name Rita L. Rifesi (typed or printed)

RITA L. RIFESI
Comm. 1165988
NOTARY PUBLIC-CALIFORNIA
SANTA CRUZ COUNTY
My Commission Expires APR 8 2002

(This area for official notarial seal)

FTCS-1(6/94

MAIL TAX STATEMENTS AS DIRECTED ABOVE

EXHIBIT "A"

SITUATE in the County of Santa Cruz, State of California.

PARCEL ONE:

PART of Rancho Arroyo del Rodeo; beginning at a station on the Eastern boundary of the lands conveyed by L. C. Satteries, et ux., to W. E. Bassett, by Deed dated February 21, 1929 and recorded March 4, 1929 in Volume 147, at page 150, Official Records of Santa Cruz County, from which point the Northeast corner of said lands of Bassett on the Southern side of the Santa Cruz-Watsonville Highway bears North 11° West 145 feet distant; and running thence from said point of beginning along said Eastern boundary of lands of Bassett South 11° East 65 feet to a spike; thence leaving the lands of Bassett, North 79° East 108.6 feet to a spike; thence North 0° 07' West 66.75 feet to a station; thence Westerly 116 feet more or less, to the point of beginning.

PARCEL TWO:

A right of way 15 feet in width, appurtenant to Parcel One, the Easterly boundary of which is the Westerly boundary of the land hereinbefore described as granted in the Deed from Donald H. Epperson, et ux., to Oliver LeRoy Epperson, et ux., recorded November 17, 1945 in Volume 573, Page 435, Official Records of Santa Cruz County.

RECORDING REQUESTED BY

ORDER #:

APN:

WHEN RECORDED MAIL TO

Calcagno
P.O.Box 62
Soquel, CA 95073

1998-0080854

Recorded
Official Records
County Of
SANTA CRUZ
RICHARD W. BEDAL
Recorder

10:56AM 31-Dec-1998

REC FEE	13.00
SURVEY	10.00
LPR	
Page 1 of 3	

SPACE ABOVE THIS LINE FOR RECORDER'S USE

Grant Deed

The undersigned grantor(s) declare(s):
Documentary transfer tax is $ gift
( ) computed on full value of property conveyed, or
( ) computed on full value less value of liens and encumbrances remaining at time of sale.
(X) Unincorporated area: ( ) City of _____
(X) Realty not sold.
[redacted]*

In consideration of love and affection received, we Kristen Calcagno Calcatera, Claire Calcagno, and Joseph S. Calcagno III
hereby GRANT to

Joseph S. Calcagno, Jr. and Karen C. Calcagno, Trustees of the Calcagno Living Trust dated March 20, 1996

that property in

Soquel, County of Santa Cruz, CA, APN# 030-121-08

See Exhibit "A" attached hereto

Mail Tax Statements to Joseph S. and Karen C. Calcagno, PO Box 62, Soquel, CA 95073

Date December 31, 1998

Claire Calcagno

Kristen Yvonne Calcatera
AKA Kristen Calcagno Calcatera

STATE OF CALIFORNIA
COUNTY OF MONTEREY

On DEC. 31, 1998 before me, the undersigned, a Notary Public in and for said State, personally appeared KRISTEN YVONNE CALCATERA

personally known to me (or proved to me on the basis of satisfactory evidence) to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

WITNESS my hand and official seal.

Signature _____

Name TERESA E SAKASEGAWA
(Typed or printed)

TERESA E. SAKASEGAWA
COMM. #1114808
NOTARY PUBLIC - CALIFORNIA
MONTEREY COUNTY
My Comm. Expires Dec 13, 2000

(This area for official notarial seal)

MAIL TAX STATEMENTS AS DIRECTED ABOVE

CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT

State of California

County of Santa Cruz

On Dec. 30TH 1998 (DATE) before me, Amy MacDonald Notary Public (NAME, TITLE OF OFFICER - E.G., "JANE DOE, NOTARY PUBLIC")

personally appeared Joseph S. Calcagno and Claire Calcagno (NAME(S) OF SIGNER(S))

☐ personally known to me - OR - ☒ proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that ~~he/she/~~they executed the same in ~~his/her/~~their authorized capacity(ies), and that by ~~his/her/~~their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

AMY MAC DONALD
Commission # 1096164
Notary Public — California
Santa Cruz County
My Comm. Expires Apr 28, 2000

WITNESS my hand and official seal.

SIGNATURE OF NOTARY

OPTIONAL

Though the data below is not required by law, it may prove valuable to persons relying on the document and could prevent fraudulent reattachment of this form.

CAPACITY CLAIMED BY SIGNER

☐ INDIVIDUAL
☐ CORPORATE OFFICER

_____ (TITLE(S))

☐ PARTNER(S) ☐ LIMITED ☐ GENERAL
☐ ATTORNEY-IN-FACT
☐ TRUSTEE(S)
☐ GUARDIAN/CONSERVATOR
☐ OTHER: _____

SIGNER IS REPRESENTING:
(NAME OF PERSON(S) OR ENTITY(IES))

_____

DESCRIPTION OF ATTACHED DOCUMENT

_____ TITLE OR TYPE OF DOCUMENT

_____ NUMBER OF PAGES

_____ DATE OF DOCUMENT

_____ SIGNER(S) OTHER THAN NAMED ABOVE

EXHIBIT "A"

SITUATE in the County of Santa Cruz, State of California.

PARCEL ONE:

PART of Rancho Arroyo del Rodeo: beginning at a station on the Eastern boundary of the lands conveyed by L. C. Satteries, et ux., to W. E. Bassett, by Deed dated February 21, 1929 and recorded March 4, 1929 in Volume 147, at page 150, Official Records of Santa Cruz County, from which point the Northeast corner of said lands of Bassett on the Southern side of the Santa Cruz-Watsonville Highway bears North 11° West 145 feet distant; and running thence from said point of beginning along said Eastern boundary of lands of Bassett South 11° East 65 feet to a spike; thence leaving the lands of Bassett, North 79° East 108.6 feet to a spike; thence North 0° 07' West 66.75 feet to a station; thence Westerly 116 feet more or less, to the point of beginning.

PARCEL TWO:

A right of way 15 feet in width, appurtenant to Parcel One, the Easterly boundary of which is the Westerly boundary of the land hereinbefore described as granted in the Deed from Donald H. Epperson, et ux., to Oliver LeRoy Epperson, et ux., recorded November 17, 1945 in Volume 523, Page 435, Official Records of Santa Cruz County.

FIRST AMERICAN TITLE / Santa Cruz (CA)

OWNERSHIP INFORMATION

Parcel Number	: 030 121 12
Owner	: Calcagno Joseph S Jr & Karen C Trustee
CoOwner	: Calcagno Joseph S Jr
Site Address	: 2821 41st Ave Soquel 95073
Mail Address	: PO Box 62 Soquel Ca 95073

SALES INFORMATION

Transferred	: 05/06/1996	*Vesting Type*	:
Document #	: 5841-0420 Multi-Parcel	*% Owned*	:
Sale Price	:		
Deed Type	: Grant Deed		

ASSESSMENT AND TAX INFORMATION

Land	: $42,714	*Exempt Type*	:
Structure	: $5,960	*Exempt Amount*	:
Other	:	*Tax Rate Area*	: 96103
Total	: $48,674	*15-16 Taxes*	: $1,451.58

PROPERTY DESCRIPTION

Zoning	: C-2	*Map Bk-Pg*	:
Land Use	: 023 Res,Sgl Family Res,Non-Conform Use	*Sub/Plat*	:
Legal	:		
	:		
	:		

PROPERTY CHARACTERISTICS

Total Rooms	: 3	*Lot Acres*	: .20	*Appliance*	:
Bedrooms	: 1	*Lot SqFt*	: 8,799	*Spa/HotTub*	:
Bathrooms	: 1.00	*Lot Dimension*	:	*Pool*	:
Dining Room	:	*Bldg SqFt*	: 672	*CntlHt/AC*	:
Family Room	:	*Addition SF*	:	*Air Cond*	:
Other Rooms	:	*Bldg Style*	:	*Heat Type*	:
Utility Rooms	:	*1st FlrSF*	:	*Fireplace*	:
Stories	:	*2nd FlrSF*	:	*Foundation*	:
Units	:	*BsmtTotSF*	:	*Year Built*	: 1930
Garage Type	: Yes	*Garage SF*	: 416	*Eff Yr Built*	:
Garage Space	:	*Roof Type*	:		
Patio	:				

FIRST AMERICAN TITLE / Santa Cruz (CA)

OWNERSHIP INFORMATION

Parcel Number	: 030 121 13
Owner	: Calcagno Joseph S Jr & Karen C Trustee
CoOwner	: Calcagno Joseph S Jr
Site Address	: 2815 41st Ave Soquel 95073
Mail Address	: PO Box 62 Soquel Ca 95073

SALES INFORMATION

Transferred	: 05/06/1996	*Vesting Type*	:
Document #	: 5841-0420 Multi-Parcel	*% Owned*	:
Sale Price	:		
Deed Type	: Grant Deed		

ASSESSMENT AND TAX INFORMATION

Land	: $48,740	*Exempt Type*	:
Structure	: $5,364	*Exempt Amount*	:
Other	:	*Tax Rate Area*	: 96103
Total	: $54,104	*15-16 Taxes*	: $1,509.96

PROPERTY DESCRIPTION

Zoning	: C-2	*Map Bk-Pg*	:
Land Use	: 023 Res,Sgl Family Res,Non-Conform Use	*Sub/Plat*	:
Legal	:		
	:		
	:		

PROPERTY CHARACTERISTICS

Total Rooms	: 5	*Lot Acres*	: .28	*Appliance*	:
Bedrooms	: 2	*Lot SqFt*	: 12,197	*Spa/HotTub*	:
Bathrooms	: 1.00	*Lot Dimension*	:	*Pool*	:
Dining Room	:	*Bldg SqFt*	: 780	*CntlHt/AC*	:
Family Room	:	*Addition SF*	:	*Air Cond*	:
Other Rooms	:	*Bldg Style*	:	*Heat Type*	: Flr\wall
Utility Rooms	:	*1st FlrSF*	:	*Fireplace*	:
Stories	:	*2nd FlrSF*	:	*Foundation*	:
Units	:	*BsmtTotSF*	:	*Year Built*	: 1948
Garage Type	: Yes	*Garage SF*	: 240	*Eff Yr Built*	:
Garage Space	:	*Roof Type*	:		
Patio	:				

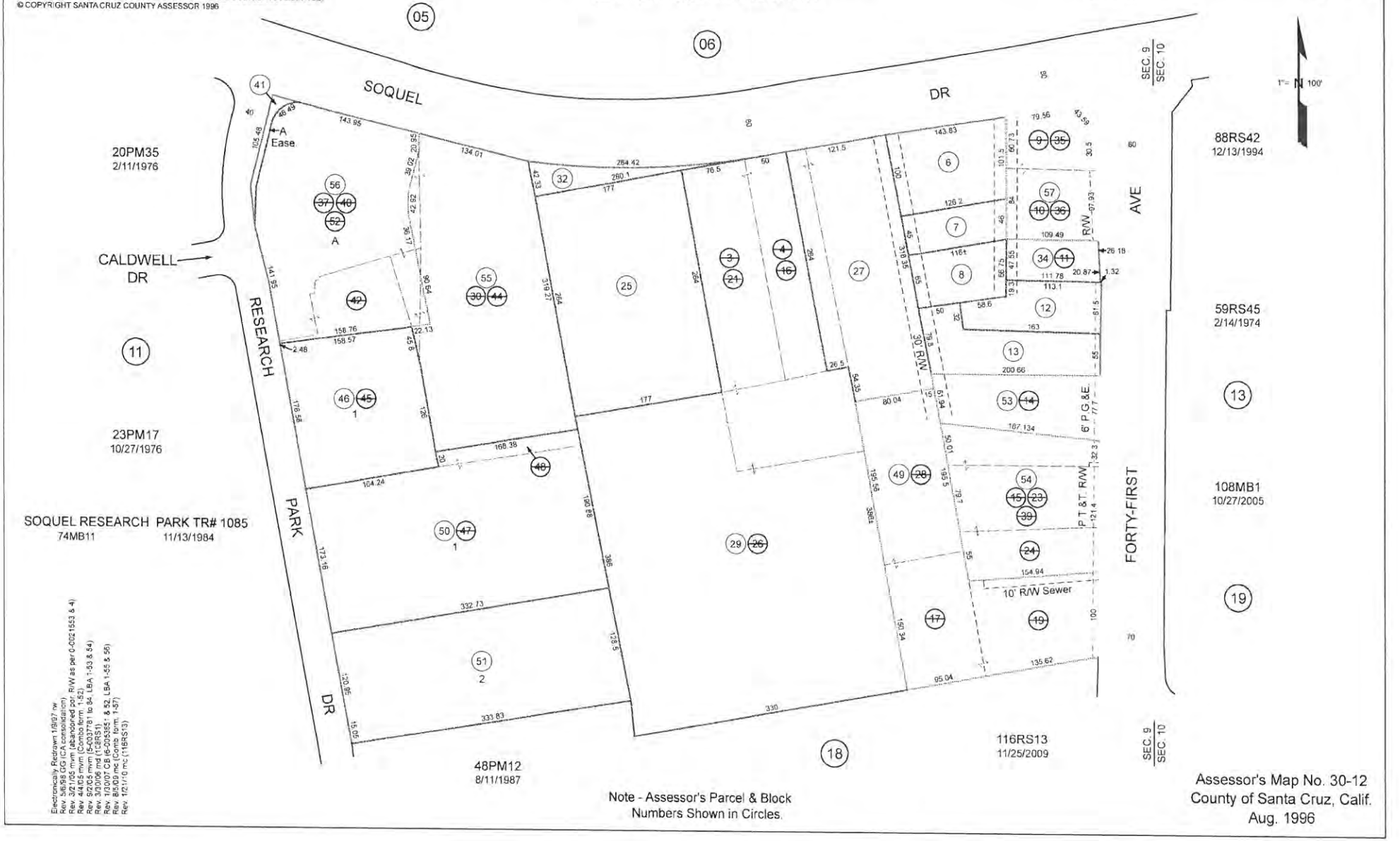
FOR TAX PURPOSES ONLY

POR. RANCHO ARROYO DEL RODEO

SEC. 9, T.11S., R.1W. M.D.B. & M.

Tax Area Code
96-103

30-12



Electronically Redrawn 1/9/97 rw
Rev 5/6/98 CG (Annexation)
Rev 3/21/05 mvm (Abandonment R/W as per 0-0021553 & 4)
Rev 4/4/05 mvm (Combo form 1-52)
Rev 9/2/05 mvm (5-033781 to 84, LBA 1-53 & 54)
Rev 3/30/06 md (1CRS1)
Rev 1/30/07 CB (6-035351 & 52, LBA 1-55 & 56)
Rev 8/5/09 mc (Comb. form. 1-57)
Rev 1/21/10 mc (116RS13)

Note - Assessor's Parcel & Block Numbers Shown in Circles.

Assessor's Map No. 30-12
County of Santa Cruz, Calif.
Aug. 1996

RECORDING REQUESTED BY

Karen C. Calcagno

AND WHEN RECORDED MAIL TO

Name: Mr. and Mrs. Joseph S. Calcagno,Jr.
Street Address: P.O. Box 62
City & State: Soquel,Ca. 95073

BOOK 3784 PAGE 899

058900

RECORDED AT THE REQUEST OF
Calcagno
DEC 11 1984
2:40 Pm
RICHARD W. BEDAL, Recorder
SANTA CRUZ COUNTY, Official Records

RE	MI	SM	OP
5	1		

SPACE ABOVE THIS LINE FOR RECORDER'S USE

Mail Tax Statements To:
(Same as Above)

No consideration for transfer to Revocable Living Trust

QUITCLAIM Deed

WE, JOSEPH S. CALCAGNO,JR. and KAREN C. CALCAGNO, husband and wife.
as joint tenants *the first part*

QUIT CLAIMS
Hereby Grant *to* JOSEPH S. CALCAGNO,JR. and KAREN C. CALCAGNO, TRUSTEES,U.D.T., dated December 3, 1984 as to an undivided interest

the second part

All that Real Property *situated in the*
County of Santa Cruz *, State of* California
bounded and described as follows: Assessor's Parcels Nos.: 030-121-12 , 030-121-13

See Exhibit "A" attached hereto and made a part hereof.

IN WITNESS WHEREOF the first part s *ha* ve *executed this conveyance this*
Eleventh *day of* December 1984

Joseph S. Calcagno Jr.
Karen C. Calcagno

This document is only a general form which may be proper for use in simple transactions and in no way does it purport to act, as a substitute for the advice of an attorney. The publisher does not make any warranty, either express or implied, as to the legal validity of any provision or the suitability of these forms in any specific transaction.

Cowdery's Form No. 484 - CODE DEED - GRANT, JOINT TENANCY, OR QUIT CLAIM. (C. C. Sec. 1092)

BOOK 3784 PAGE 900

State of California,

County of SANTA CRUZ } ss.

On this Eleventh *day of* December

in the year one thousand nine hundred and Eighty-Four, *before me,*

Maxine J. Mc Cullough *a Notary Public,*

State of California, duly commissioned and sworn, personally appeared

Joseph S. Calcagno, Jr. and

Karen C. Calcagno

known to me to be the persons described in and whose names subscribed to the within instrument, and acknowledged to me that they *executed the same.*

In Witness Whereof *I have hereunto set my hand and affixed my official seal in the* town of Soquel *County of* Santa Cruz *the day and year in this certificate first above written.*

OFFICIAL SEAL
MAXINE J. McCULLOUGH
NOTARY PUBLIC-CALIFORNIA
BOND FILED
IN SANTA CRUZ COUNTY
MY COMMISSION EXPIRES FEB. 20, 1988

Maxine J. McCullough

Notary Public, State of California.

My commission expires February 20, 1988

Reed

TO

Dated , 19

County of Santa Cruz, State of California, described as follows:

EXHIBIT "A"

BOOK 3784 PAGE 901

PARCEL ONE:

BEGINNING at a station on the Westerly side of 41st Avenue, from which an iron bolt at the intersection of the center line of said 41st Avenue with the Southerly line of the Santa Cruz-Watsonville Highway bears North 0° 07' West 224.18 feet and North 79° East 30.65 feet distant; thence from said point of beginning and along the Westerly side of said 41st Avenue, South 0° 07' East 116.50 feet; thence leaving 41st Avenue, South 89° 53' West 204.50 feet to a station in the middle of a thirty foot private right of way; thence along the middle of said right of way North 11° West 79.80 feet; thence leaving said right of way North 79° East 108.60 feet to a point in the middle of a thirty foot right of way; thence along the middle of said right of way, North 0° 07' West 19.30 feet; thence leaving the middle of said right of way, North 89° 53' East 113.10 feet to the point of beginning.

EXCEPTING therefrom the land conveyed to L. A. Smith, by Deed dated May 16, 1947 and recorded in Volume 588, page 45, Official Records of Santa Cruz County.

TOGETHER with a right of way 30 feet in width at right angles, the center line of which is described as follows:

BEGINNING at a point on the Southerly line of the Santa Cruz - Watsonville Highway, from which an iron bolt set at the intersection of the center line of 41st Avenue with the Southerly line of said Santa Cruz-Watsonville Highway bears North 79° East 115 feet; North 0° 07' West 10.18 feet and North 79° 30.65 feet; thence from said point of beginning, South 0° 07' East 213.25 feet.

PARCEL TWO:

BEING a part of that parcel of land conveyed by F. A. Lukins and wife to Florence E. Crowe by Deed dated January 24, 1945, recorded February 13, 1945 in Volume 493 page 437, Official Records of Santa Cruz County and being more particularly described as follows:

BEGINNING at a point on the Northern line of said Crowe from which the Northwestern corner of said Crowe bears South 79° West 50 feet distant; thence from said point of beginning South 79° West 50 feet to the Northwest corner of said Crowe in the middle of a 30 foot private Right of Way; thence along the Western boundary of said Crowe along the middle of said Right of Way South 11° East 79.80 feet to the Southwest corner of said Crowe; thence along Crowe's Southern boundary North 89° 53' East 204.50 feet to the Southeast corner of said Crowe on the Westerly side of 41st Avenue; thence along the Eastern line of said Crowe and the Western side of 41st Avenue, North 0° 07' East 55 feet to a point; thence South 89° 53' West 163 feet, more or less, to a point from which the point of beginning bears North 11° West; thence North 11° West 32 feet, more or less, to the point of beginning.

VOL. 5841 PAGE 420

RECORDING REQUESTED BY

25451

AND WHEN RECORDED MAIL THIS DEED AND, UNLESS OTHERWISE SHOWN BELOW, MAIL TAX STATEMENT TO

Name Mr.& Mrs.Joseph S.Calcagno,Jr.
Street Address P.O.Box 62
City State Zip Soquel, CA 95073

RE 4-1
MI 1
SF 2
SH 0
LN
CO
OP

RECORDED
MAY - 6 1996
RICHARD W. BEDAL ...
SANTA CRUZ COUNTY, Chief Recorder

SPACE ABOVE THIS LINE FOR RECORDER'S USE

GRANT DEED

No consideration for transfer to Revocable Living Trust. No tax due.

DOCUMENTARY TRANSFER TAX $ 0
[ ] computed on full value of property conveyed, or
[ ] computed on full value less liens and encumbrances remaining at time of sale.
Signature of Declarant or Agent Determining Tax. Firm Name

We, JOSEPH S. CALCAGNO, JR. and KAREN C. CALCAGNO, TRUSTEES, UTD 12/03/84 grant to Joseph S. Calcagno, Jr. and Karen C. Calcagno, Trustees of the Calcagno Living Trust dated March 20, 1996

all that real property situated in the City of Soquel (or in an unincorporated area of) Santa Cruz County, California described as follows (insert legal description):

See Exhibit "A" attached hereto and made a part of.

Assessor's parcel No. 30-121-12 30-121-13

Executed on May 6, 1996 at Santa Cruz California

Joseph S. Calcagno Jr. Trustee
Karen C. Calcagno Trustee

STATE OF CALIFORNIA

COUNTY OF SANTA CRUZ

On 5/6/96 before me Joan Ortega, Notary personally appeared Joseph S Calcagno Jr & Karen C Calcagno personally known to me (or proved to me on the basis of satisfactory evidence) to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

WITNESS my hand and official seal.

JOAN ORTEGA
COMM. # 1024228
Notary Public — California
SANTA CRUZ COUNTY
My Comm. Expires JUL 9, 1999

RIGHT THUMBPRINT (Optional)

CAPACITY CLAIMED BY SIGNER(S)
[ ] INDIVIDUAL(S)
[ ] CORPORATE OFFICER(S)
[ ] PARTNER(S) [ ] LIMITED [ ] GENERAL
[ ] ATTORNEY IN FACT
[X] TRUSTEE(S)
[ ] GUARDIAN/CONSERVATOR
[ ] OTHER

SIGNER IS REPRESENTING:

MAIL TAX STATEMENTS TO Mr. & Mrs. Joseph S. Calcagno, Jr. P.O.Box 62, Soquel, CA 95073

WOLCOTTS FORM 771 ... GRANT DEED ... 1991 WOLCOTTS FORMS, INC.

7 67775 39778 9

EXHIBIT "A"

The land referred to in this report is situated in the State of California, County of Santa Cruz, and is described as follows:

PARCEL ONE:

BEGINNING at a station on the Westerly side of 41st Avenue, from which an iron bolt at the intersection of the center line of said 41st Avenue with the Southerly line of the Santa Cruz-Watsonville Highway bears North 0° 07' West 224.18 feet and North 79° East 30.65 feet distant; thence from said point of beginning and along the Westerly side of said 41st Avenue, South 0° 07' East 116.50 feet; thence leaving 41st Avenue, South 89° 53' West 204.50 feet to a station in the middle of a thirty foot private right of way; thence along the middle of said right of way North 11° West 79.80 feet; thence leaving said right of way North 79° East 108.60 feet to a point in the middle of a thirty foot right of way; thence along the middle of said right of way, North 0° 07' West 19.30 feet; thence leaving the middle of said right of way, North 89° 53' East 113.10 feet to the point of beginning.

EXCEPTING therefrom the land conveyed to L. A. Smith, by Deed dated May 16, 1947 and recorded in Volume 588, page 45, Official Records of Santa Cruz County.

TOGETHER with a right of way 30 feet in width at right angles, the center line of which is described as follows:

BEGINNING at a point on the Southerly line of the Santa Cruz-Watsonville Highway, from which an iron bolt set at the intersection of the center line of 41st Avenue with the Southerly line of said Santa Cruz-Watsonville Highway bears North 79° East 115 feet; North 0° 07' West 19.18 feet and North 79° 30.65 feet; thence from said point of beginning, South 0° 07' East 213.75 feet.

PARCEL TWO:

BEING a part of that parcel of land conveyed by F. A. Lukins and wife to Florence E. Crowe by Deed dated January 24, 1945, recorded February 13, 1945 in Volume 493 page 437, Official Records of Santa Cruz County and being more particularly described as follows:

BEGINNING at a point on the Northern line of said Crowe from which the Northwestern corner of said Crowe bears South 79° West 50 feet distant; thence from said point of beginning South 79° West 50 feet to the Northwest corner of said Crowe in the middle of a 30 foot private Right of Way; thence along the Western boundary of said Crowe along the middle of said Right of Way South 11° East 79.80 feet to the Southwest corner of said Crowe; thence along Crowe's Southern boundary North 89° 53' East 204.50 feet to the Southeast corner of said Crowe on the Westerly side of 41st Avenue; thence along the Eastern line of said Crowe and the Western side of 41st Avenue, North 0° 07' East 55 feet to a point; thence South 89° 53' West 163 feet, more or less, to a point from which the point of beginning bears North 11° West; thence North 11° West 32 feet, more or less, to the point of beginning.

Recorded
at request of [illegible]

FIRST AMERICAN TITLE / Santa Cruz (CA)

OWNERSHIP INFORMATION

Parcel Number	: 030 121 27
Owner	: Calcagno Joseph S Jr & Karen C
CoOwner	:
Site Address	: 3820 Soquel Dr Soquel 95073
Mail Address	: PO Box 62 Soquel Ca 95073

SALES INFORMATION

Transferred	: 05/01/1998	*Vesting Type*	:
Document #	: 22827	*% Owned*	:
Sale Price	:$560,000 Full		
Deed Type	: Grant Deed		

ASSESSMENT AND TAX INFORMATION

Land	: $606,000	*Exempt Type*	:
Structure	:	*Exempt Amount*	:
Other	:	*Tax Rate Area*	: 96103
Total	: $606,000	*15-16 Taxes*	: $6,598.64

PROPERTY DESCRIPTION

Zoning	: C-2	*Map Bk-Pg*	:
Land Use	: 110 Vacant,Commercial	*Sub/Plat*	:
Legal	:		
	:		
	:		

PROPERTY CHARACTERISTICS

Total Rooms	:	*Lot Acres*	: .82	*Appliance*	:
Bedrooms	:	*Lot SqFt*	: 35,676	*Spa/HotTub*	:
Bathrooms	:	*Lot Dimension*	:	*Pool*	:
Dining Room	:	*Bldg SqFt*	:	*CntlHt/AC*	:
Family Room	:	*Addition SF*	:	*Air Cond*	:
Other Rooms	:	*Bldg Style*	:	*Heat Type*	:
Utility Rooms	:	*1st FlrSF*	:	*Fireplace*	:
Stories	:	*2nd FlrSF*	:	*Foundation*	:
Units	:	*BsmtTotSF*	:	*Year Built*	:
Garage Type	:	*Garage SF*	:	*Eff Yr Built*	:
Garage Space	:	*Roof Type*	:		
Patio	:				

FOR TAX PURPOSES ONLY

POR. RANCHO ARROYO DEL RODEO

SEC. 9, T.11S., R.1W. M.D.B. & M.

Tax Area Code
96-103

30-12

Electronically Redrawn 1/1997 rw
Rev 5/6/98 GG ICA consolidation)
Rev 3/21/05 mvm (abandoned par. R/W as per 0-0021553 & 4)
Rev 4/4/05 mvm (Combo form 1-52)
Rev 9/2/05 mvm (5-003778 1 to 84, LBA 1-53 & 54)
Rev 3/30/06 md (108RS1)
Rev 1/30/07 CB (6-035885 1 & 52, LBA 1-55 & 56)
Rev 8/2/07 mc (Combo form 1-57)
Rev 12/1/10 mc (116RS13)

Note - Assessor's Parcel & Block Numbers Shown in Circles.

Assessor's Map No. 30-12
County of Santa Cruz, Calif.
Aug. 1996

RECORDING REQUESTED BY

Santa Cruz Title Company
Escrow No. 09424664 Order No.

AND WHEN RECORDED MAIL TO

Name Joseph Calcagno and Karen Calcagno
Address P.O. Box 62
City, State, & Zip Soquel, CA 95073

1998-0022827

Recorded
Official Records
County Of
SANTA CRUZ
RICHARD G. BEDAL

12:32PM 01-May-1998

REC FEE	10.00
TAX	616.00
SURVEY	10.00
BLS	
Page 1 of 2	

SPACE ABOVE THIS LINE FOR RECORDER'S USE

INDIVIDUAL GRANT DEED

A.P.N. 030-121-27

The undersigned grantor(s) declare(s):
Documentary transfer tax is $616.00 . City Transfer Tax is $.
x computed on full value of property conveyed, or
computed on full value less value of liens and encumbrances remaining at time of sale.
x Unincorporated area: City of , and

FOR A VALUABLE CONSIDERATION, receipt of which is hereby acknowledged.

Cyrus Kavoosi, Trustee of The Cyrus Kavoosi Trust dated July 14, 1995

hereby GRANT(S) to Joseph S. Calcagno, Jr. and Karen C. Calcagno, Trustees of The Calcagno Living Trust UTD March 20, 1996
the following described real property in the County of SANTA CRUZ, State of California:

See Exhibit "A" attached hereto and made a part hereof...

Dated: March 19, 1998

STATE OF CALIFORNIA
COUNTY OF } ss.

Cyrus Kavoosi, Trustee

On April 30, 1998 before me, Mary Saccullo, personally appeared Cyrus Kavoosi personally known to me (or proved to me on the basis of satisfactory evidence) to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

MARY SACCULLO
Comm. #1156792
NOTARY PUBLIC - CALIFORNIA
SANTA CRUZ COUNTY
Comm. Exp. Oct. 27, 2001

(This area for official notarial seal)

WITNESS my hand and official seal.

Signature Mary Saccullo

MAIL TAX
STATEMENTS TO: SAME AS ABOVE
NAME ADDRESS CITY, STATE & ZIP

ESCROW NO. 9424664 MMS

EXHIBIT "A"

The land referred to herein is described as follows:

SITUATE IN THE COUNTY OF SANTA CRUZ, STATE OF CALIFORNIA AND DESCRIBED AS FOLLOWS:

PARCEL ONE:

BEGINNING AT THE NORTHWESTERLY CORNER OF PARCEL 2 OF SAID LANDS OF GARBINI ON THE SOUTHERLY LINE OF SOQUEL DRIVE; THENCE FROM SAID POINT OF BEGINNING ALONG THE WESTERLY LINE OF SAID PARCEL 2 SOUTH 11° 00' EAST 264.00 FEET TO THE SOUTHWESTERLY CORNER THEREOF ON THE NORTHERLY LINE OF THE LANDS CONVEYED TO P. E. ALBERA, ET UX BY DEED RECORDED IN VOLUME 992, PAGE 321, OFFICIAL RECORDS OF SANTA CRUZ COUNTY; THENCE ALONG THE NORTHERLY AND EASTERLY LINE OF SAID LANDS OF ALBERA NORTH 79° 00' EAST 26.5 FEET TO THE NORTHEASTERLY CORNER THEREOF AND SOUTH 11° 00' EAST 54.35 FEET TO A 1/2" IRON PIPE AT THE SOUTHWESTERLY CORNER OF THE LANDS CONVEYED TO GIULIO GARBINI, ET UX, BY DEED RECORDED IN VOLUME 1149 PAGE 491, OFFICIAL RECORDS OF SANTA CRUZ COUNTY; THENCE ALONG THE SOUTHERLY LINE OF LAST MENTIONED LANDS NORTH 7° 00' EAST 95.00 FEET TO A 1/2" IRON PIPE AT THE SOUTHEASTERLY CORNER THEREOF ON THE CENTER LINE OF A 30.00 FOOT RIGHT OF WAY; THENCE ALONG SAID CENTER LINE NORTH 11° 00' WEST 318.35 FEET TO A POINT ON THE SOUTHERLY LINE OF SAID SOQUEL DRIVE; THENCE ALONG THE SOUTHERLY LINE OF SAID SOQUEL DRIVE SOUTH 79° 00' WEST 121.5 FEET TO THE POINT OF BEGINNING.

PARCEL TWO:

A RIGHT OF WAY 30.00 FEET IN WIDTH, THE CENTERLINE OF WHICH IS THE EASTERLY LINE OF ABOVE DESCRIBED PARCEL OF LAND.

APN 030-121-27

2013-0006057 02/04/2013 01:11:27 PM
OFFICIAL RECORDS OF Santa Cruz County
Sean Saldavia Recorder
RECORDING FEE: $43.00
COUNTY TAX: $0.00
CITY TAX: $0.00
DEED
7 PGS
RCD135

RECORDING REQUESTED BY:
Stewart Title of California

MAIL TAX STATEMENTS AND
WHEN RECORDED MAIL TO:
Karen Calcagno, trustee
P.O. Box 62
Soquel, CA 95073

Order No.:
APN: 030-121-27

SPACE ABOVE THIS LINE IS FOR RECORDER'S USE

GRANT DEED

THE UNDERSIGNED GRANTOR(S) DECLARE(S): DOCUMENTARY TRANSFER TAX IS $___0___clarification deed
_____ Computed on full value of property conveyed, or
_____ Computed on full value less liens and encumbrances remaining at time of sale.
X Unincorporated area _____ City of _____

For valuable consideration, receipt of which is hereby acknowledged,

Joseph S. Calcagno Jr. and Karen C. Calcagno, Trustees of the Calcagno Living Trust UTD March 20, 1996

hereby GRANT(S) to

Joseph S. Calcagno Jr. and Karen C. Calcagno, Trustees of the Calcagno Living Trust UTD March 20, 1996

the real property situated in the County of Santa Cruz, State of California, more particularly described as follows:

See Exhibit "A" attached hereto and made a part hereof

This deed is being recorded to clarify the legal description and confirm the boundaries of the herein described parcel.

Dated: 2/4/2013

Joseph S. Calcagno Jr., Trustee

Joseph S Calcagno Jr., trustee

Karen C. Calcagno, Trustee

Karen C Calcagno, trustee

MAIL TAX STATEMENTS AS DIRECTED ABOVE

STATE OF CALIFORNIA)
) SS.
COUNTY OF Santa Cruz)

On February 4, 2013 before me, Margaret Waruingi, Notary Public, personally appeared Joseph S. Calcagno Jr.,

who proved to me on the basis of satisfactory evidence) to be the person(s) whose name(s) is/~~are~~ subscribed to the within instrument and acknowledged to me that he/~~she/they~~ executed the same in his/~~her/their~~ authorized capacity(i~~es~~), and that by his/~~her/their~~ signature(~~s~~) on the instrument the person(~~s~~), or the entity upon behalf of which the person(~~s~~) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature Margaret Waruingi

MARGARET WARUINGI
Commission # 1941838
Notary Public - California
Santa Cruz County
My Comm. Expires Jun 23, 2015

ILLEGIBLE NOTARY SEAL DECLARATION

(Govt. Code 27361.7)

Name of Notary : Margaret Waruingi

State and County of Commission : CA : Santa Cruz County

Date Commission Expires : June 23, 2015

Commission Number : 1941838

I HEREBY CERTIFY UNDER PENALTY OF PERJURY THAT THE FOREGOING IS A TRUE AND CORRECT COPY OF THE ILLEGIBLE NOTARY SEAL STAMPED ON THE ATTACHED DOCUMENT.

Karen Calcagno
(Signature of Affiant)

February 4, 2013
Date:

Santa Cruz County
Place of Execution:

ACKNOWLEDGMENT

State of California
County of Santa Cruz)

On February 4, 2013 before me, Margaret Waruingi, notary public
(insert name and title of the officer)

personally appeared Karen C. Calcagno,
who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/~~are~~ subscribed to the within instrument and acknowledged to me that ~~he~~/she/~~they~~ executed the same in ~~his~~/her/~~their~~ authorized capacity(~~ies~~), and that by ~~his~~/her/~~their~~ signature(~~s~~) on the instrument the person(~~s~~), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

MARGARET WARUINGI
Commission # 1941838
Notary Public - California
Santa Cruz County
My Comm. Expires Jun 23, 2015

Signature Margaret Waruingi (Seal)

EXHIBIT "A"

CORRECTION DESCRIPTION

Document No. 1998-0022827
Lands of
JOSEPH S. AND KAREN C. CALCAGNO
Trustees of "The Calcagno Living Trust UTD March 20, 1996"

SITUATE in the County of Santa Cruz, State of California; and described as follows:

PART ONE

BEING all of Parcel Two and a Northerly portion of Parcel One of the lands conveyed from Lind to Garbini by Deed recorded July 26, 1951 in Volume 832. at Page 180 of the Official Records of Santa Cruz County, and also

BEING all of that strip of land conveyed by Epperson to Garbini by Deed recorded September 19, 1957 in Volume 1149, at Page 491 of the Official Records of Santa Cruz County, and being more particularly described as follows:

BEGINNING at a found ¾" iron pipe (no tag) at the Northwest corner of said Parcel Two, said corner lying on the Southerly line of Soquel Drive; thence from said point of beginning along the Westerly line of said Parcel Two

1. South 10° 52' 00" East, 263.58 feet, to the Southwest corner of said Parcel Two; thence along the Southerly line of said Parcel Two
2. North 79° 08' 00" East, 26.46 feet, to a found ½" iron pipe (tag illegible) at the Northwest corner of said Parcel One; thence along the Westerly line of said Parcel One and along the Westerly line of said strip of land so conveyed to Garbini by Deed recorded in Volume 1149 at Page 491 of the Official Records
3. South 10° 52' 00" East, 40.60 feet, to a found ½" iron pipe, tagged LS 1225, at the Southwest corner of said last mentioned strip of land so conveyed to Garbini; thence along the Southerly boundary thereof
4. North 79° 08' 00" East, 95.04 feet, to a found ½" iron pipe, tagged RCE 20919, at the Southeast corner of said strip of land, said Southeast corner lying on the centerline of a 30 foot Right of Way; thence along the centerline of said 30 foot Right of Way and along the Easterly line of said Parcels One and Two
5. North 10° 52' 00" West, 304.60 feet to the Northeast corner of said Parcel Two, from which a found ¾" iron pipe, tagged LS 4407 bears South 10° 52' 00" East, 0.08 feet distant, said corner lying on said Southerly line of Soquel Drive; thence along the Northerly line of said Parcel Two and the Southerly line of said Soquel Drive
6. South 78° 55' 50" West, 121.50 feet, to the POINT OF BEGINNING.

Containing 35,909 square feet, a little more or less.

PART TWO

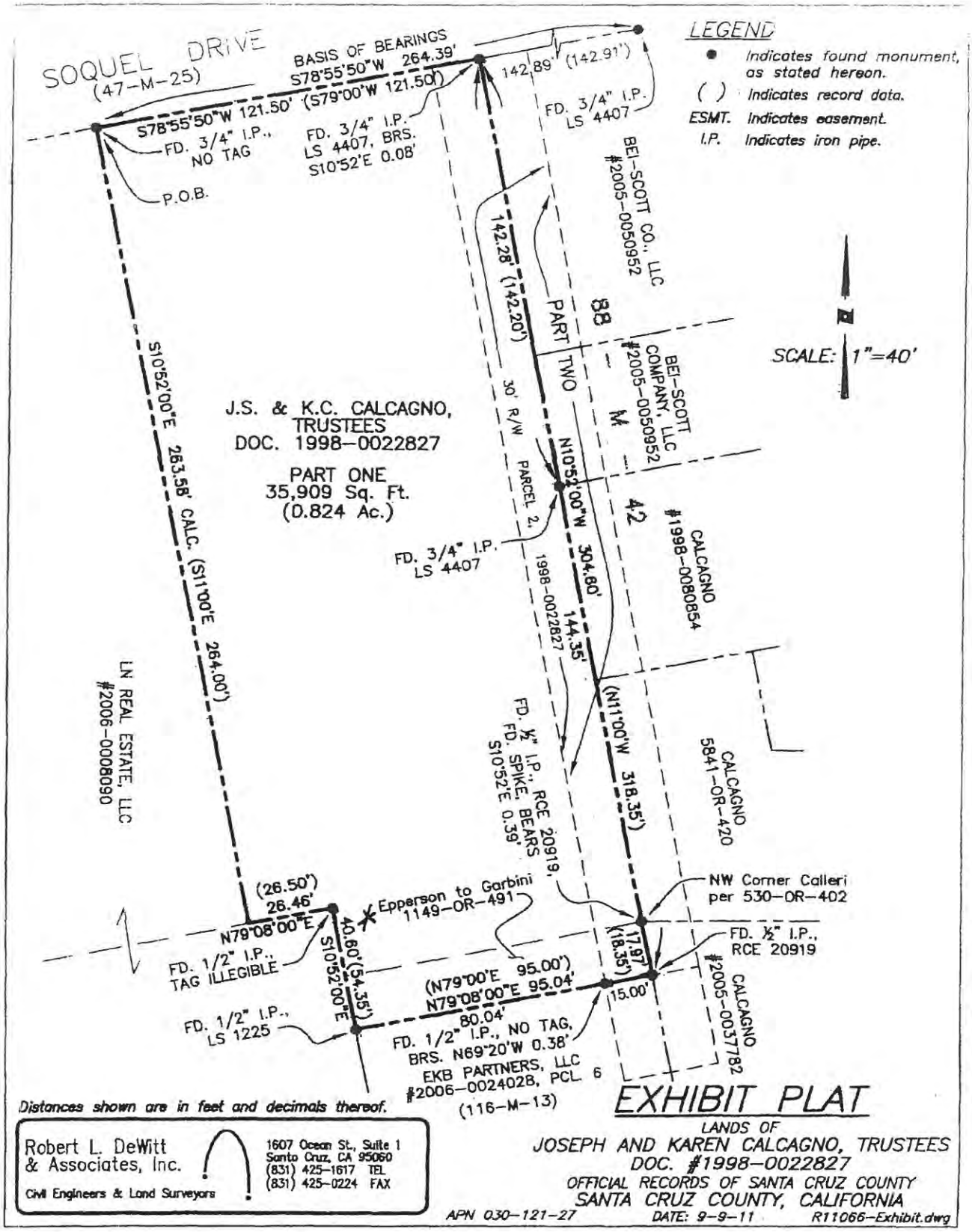
A Right of Way, 30 feet in width, the centerline of which is the Easterly line of the above described parcel of land (PART ONE).

Description prepared by Robert L. DeWitt & Assoc., Inc., Civil Engineers and Land Surveyors, in September, 2011.

APN 030-121-27

R09066 EXHIBIT A 9-9-11

EXHIBIT "B"


SOQUEL DRIVE
(47-M-25)
BASIS OF BEARINGS
S78°55'50"W 264.39'
S78°55'50"W 121.50'
(S79°00'W 121.50')
FD. 3/4" I.P., NO TAG
FD. 3/4" I.P. LS 4407, BRS. S10°52'E 0.08'
P.O.B.
142.89'
(142.91')
FD. 3/4" I.P. LS 4407
BEI-SCOTT CO., LLC #2005-0050952
142.28' (142.20')
PART TWO
88 - M - 42
BEI-SCOTT COMPANY, LLC #2005-0050952
30' R/W
PARCEL 2
N10°52'00"W 304.80'
144.35'
(N11°00'W 318.35')
CALCAGNO #1998-0080854
CALCAGNO 5841-OR-420
J.S. & K.C. CALCAGNO, TRUSTEES
DOC. 1998-0022827
PART ONE
35,909 Sq. Ft.
(0.824 Ac.)
FD. 3/4" I.P. LS 4407
1998-0022827
S10°52'00"E 263.58' CALC. (S11°00'E 264.00')
LN REAL ESTATE, LLC #2006-0008090
FD. ½" I.P., RCE 20919, FD. SPIKE, BEARS S10°52'E 0.39'
NW Corner Calleri per 530-OR-402
(26.50')
26.46'
N79°08'00"E
Epperson to Garbini 1149-OR-491
FD. 1/2" I.P., TAG ILLEGIBLE
40.60' (54.35')
S10°52'00"E
(N79°00'E 95.00')
N79°08'00"E 95.04'
80.04'
17.97'
(18.35')
15.00'
FD. ½" I.P., RCE 20919
CALCAGNO #2005-0037782
FD. 1/2" I.P., LS 1225
FD. 1/2" I.P., NO TAG, BRS. N69°20'W 0.38'
EKB PARTNERS, LLC #2006-0024028, PCL 6
(116-M-13)
LEGEND
● Indicates found monument, as stated hereon.
( ) Indicates record data.
ESMT. Indicates easement.
I.P. Indicates iron pipe.
SCALE: 1"=40'
Distances shown are in feet and decimals thereof.
Robert L. DeWitt & Associates, Inc.
Civil Engineers & Land Surveyors
1607 Ocean St., Suite 1
Santa Cruz, CA 95060
(831) 425-1617 TEL
(831) 425-0224 FAX
EXHIBIT PLAT
LANDS OF
JOSEPH AND KAREN CALCAGNO, TRUSTEES
DOC. #1998-0022827
OFFICIAL RECORDS OF SANTA CRUZ COUNTY
SANTA CRUZ COUNTY, CALIFORNIA
APN 030-121-27
DATE: 9-9-11
R11066-Exhibit.dwg

FIRST AMERICAN TITLE / Santa Cruz (CA)

OWNERSHIP INFORMATION

Parcel Number	: 030 121 53
Owner	: Calcagno Joseph S Jr & Karen C Trustees
CoOwner	: Calcagno Joseph S Jr
Site Address	: 2755 41st Ave Soquel 95073
Mail Address	: PO Box 62 Soquel Ca 95073

SALES INFORMATION

Transferred	: 06/07/2005	*Vesting Type*	:
Document #	:	*% Owned*	: 100
Sale Price	:		
Deed Type	: Misc		

ASSESSMENT AND TAX INFORMATION

Land	: $58,796	*Exempt Type*	:
Structure	: $7,000	*Exempt Amount*	:
Other	:	*Tax Rate Area*	: 96103
Total	: $65,796	*15-16 Taxes*	: $2,553.40

PROPERTY DESCRIPTION

Zoning	: C-2	*Map Bk-Pg*	:
Land Use	: 024 Res,Sgl Family Res,Secondary Use	*Sub/Plat*	:
Legal	:		
	:		
	:		

PROPERTY CHARACTERISTICS

Total Rooms	:	*Lot Acres*	: .31	*Appliance*	:
Bedrooms	:	*Lot SqFt*	: 13,460	*Spa/HotTub*	:
Bathrooms	:	*Lot Dimension*	:	*Pool*	:
Dining Room	:	*Bldg SqFt*	:	*CntlHt/AC*	:
Family Room	:	*Addition SF*	:	*Air Cond*	:
Other Rooms	:	*Bldg Style*	:	*Heat Type*	:
Utility Rooms	:	*1st FlrSF*	:	*Fireplace*	:
Stories	:	*2nd FlrSF*	:	*Foundation*	:
Units	:	*BsmtTotSF*	:	*Year Built*	:
Garage Type	:	*Garage SF*	:	*Eff Yr Built*	:
Garage Space	:	*Roof Type*	:		
Patio	:				

FOR TAX PURPOSES ONLY

POR. RANCHO ARROYO DEL RODEO
SEC. 9, T.11S., R.1W. M.D.B. & M.

Tax Area Code
96-103

30-12

Electronically Redrawn 1/9/97 rw
Rev. 5/6/98 GG (CA consolidation)
Rev. 3/21/05 mvm (abandoned por. R/W as per 0-0021553 & 4)
Rev. 4/4/05 mvm (Combo form. 1-52)
Rev. 9/2/05 mvm (5-0037781 to 84, LBA 1-53 & 54)
Rev. 3/30/06 md (108RS1)
Rev. 1/30/07 CB (6-0053851 & 52, LBA 1-55 & 56)
Rev. 8/5/09 mc (Comb. form. 1-57)
Rev. 1/21/10 mc (116RS13)

Note - Assessor's Parcel & Block Numbers Shown in Circles.

Assessor's Map No. 30-12
County of Santa Cruz, Calif.
Aug. 1996

RECORDING REQUESTED BY

Karen C. Calcagno

AND WHEN RECORDED MAIL TO

Name: Mr. and Mrs. Joseph S. Calcagno,Jr.
Street Address: P.O.Box 62
City & State: Soquel, Ca. 95073

BOOK 3784 PAGE 893

058897

RECORDED AT THE REQUEST OF
Calcagno
DEC 11 1984
2:40 pm
RICHARD W. BEDAL, Recorder
SANTA CRUZ COUNTY, Official Records

RE	MI	SM	OP
4	1		

SPACE ABOVE THIS LINE FOR RECORDER'S USE

Mail Tax Statements To:
(Same as Above)

No consideration for transfer to Revocable Living Trust

QUIT CLAIM Deed

WE, JOSEPH S. CALCAGNO,JR. and KAREN C. CALCAGNO, husband and wife as joint tenants

the first part

QUIT CLAIMS
Hereby Grant *to* JOSEPH S. CALCAGNO,JR. and KAREN C. CALCAGNO, TRUSTEES,U.D.T., dated December 3, 1984 as to an undivided interest

the second part

All that Real Property *situated in the County of* Santa Cruz *, State of* California *bounded and described as follows:*

BEGINNING at a station on the Westerly side of 41st Avenue from which an iron bolt at the intersection of the center line of said 41st Avenue with the Southerly line of the Santa Cruz-Watsonville Highway bears North 0° 07' West 340.68 feet and North 79° East 30.65 feet distant; thence from said point of beginning and along the Westerly side of said 41st Avenue, South 0° 07' East 110.0 feet to a station; thence leaving said side of 41st Avenue, South 89° 53' West 185.3 feet to a station in the middle of a 30 foot private right of way; thence along the middle of said 30 foot private right of way North 11° West 111.5 feet to a station; thence leaving the middle line of said private right of way North 89° 53' East 204.5 feet to the place of beginning.

Assessor's Parcel No. 30-121-14

IN WITNESS WHEREOF the first part ha executed this conveyance this day of , 19

Joseph S. Calcagno

Karen C. Calcagno

BOOK 3784 PAGE 894

State of California,

County of SANTA CRUZ } ss.

On this Eleventh day of December in the year one thousand nine hundred and Eighty-Four, before me, Maxine J. Mc Cullough a Notary Public, State of California, duly commissioned and sworn, personally appeared Joseph S. Calcagno, Jr. and Karen C. Calcagno

known to me to be the persons described in and whose names subscribed to the within instrument, and acknowledged to me that they executed the same.

In Witness Whereof I have hereunto set my hand and affixed my official seal in the town of Soquel County of Santa Cruz the day and year in this certificate first above written.

OFFICIAL SEAL
MAXINE J. McCULLOUGH
NOTARY PUBLIC-CALIFORNIA
BOND FILED
IN SANTA CRUZ COUNTY
MY COMMISSION EXPIRES FEB. 20, 1988

Maxine J. McCullough

Notary Public, State of California.

My commission expires February 20, 1988

Deed

TO

Dated , 19

VOL. 5841 PAGE 415

25448

RECORDING REQUESTED BY

AND WHEN RECORDED MAIL THIS DEED AND UNLESS OTHERWISE SHOWN BELOW MAIL TAX STATEMENTS TO

Mr. & Mrs. Joseph S. Calcagno, Jr
P.O.Box 62
Soquel, CA 95073

RE 6-1
MI 1
SF 2
SM To
LN
CO
OP

RECORDED
MAY - 6 1996 3:48 pm
RICHARD W. BEURE, Recorder
SANTA CRUZ COUNTY, Official Records

SPACE ABOVE THIS LINE FOR RECORDER'S USE

GRANT DEED

No consideration for transfer to Revocable Living Trust. No tax due.

DOCUMENTARY TRANSFER TAX $ 0
[ ] computed on full value of property conveyed, or
[ ] computed on full value less liens and encumbrances remaining at time of sale
Signature of Declarant or Agent Determining Tax — Firm Name

[redacted] (w/e) JOSEPH S. CALCAGNO, JR. and KAREN C. CALCAGNO, TRUSTEES, U/D 12/03/84 grant to Joseph S. Calcagno, Jr. and Karen C. Calcagno, Trustees of the Calcagno Living Trust dated March 20, 1996

all that real property situated in the City of Soquel (or an unincorporated area of) Santa Cruz County, California described as follows (insert legal description)

Attached hereto as Exhibit "A"

Assessor's parcel No. 30-121-11

Executed on May 6 1996 at Santa Cruz, CA

Joseph S. Calcagno Jr. Trustee
Karen C. Calcagno Trustee

STATE OF CALIFORNIA
COUNTY OF SANTA CRUZ

On 5/6/96 before me, [illegible] personally appeared Joseph S. Calcagno Jr. & Karen C. Calcagno personally known to me (or proved to me on the basis of satisfactory evidence) to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

WITNESS my hand and official seal.

[illegible]

OFFICIAL SEAL
[illegible]
NOTARY PUBLIC — California
SANTA CRUZ COUNTY
My Comm. Expires [illegible]

Signer(s) Name(s)

CAPACITY CLAIMED BY SIGNER(S)
[ ] INDIVIDUAL(S)
[ ] CORPORATE OFFICER(S)
[ ] PARTNER(S) [ ] LIMITED [ ] GENERAL
[ ] ATTORNEY-IN-FACT
[ ] TRUSTEE(S)
[ ] GUARDIAN/CONSERVATOR
[ ] OTHER

SIGNER IS REPRESENTING

MAIL TAX STATEMENTS TO: Mr. & Mrs. Joseph S. Calcagno, Jr
P.O.Box 62, Soquel, CA 95073

EXHIBIT "A"

SITUATE in the County of Santa Cruz, State of California, and described as follows:

BEGINNING at a station on the Westerly side of 41st Avenue from which an iron bolt at the intersection of the center line of said 41st Avenue with the Southerly line of the Santa Cruz-Watsonville Highway bears North 0° 07' West 340.68 feet and North 79° East 30.65 feet distant; thence from said point of beginning and along the Westerly side of said 41st Avenue, South 0° 07' East 110.0 feet to a station; thence leaving said side of 41st Avenue, South 89° 53' West 185.3 feet to a station in the middle of a 30 foot private right of way; thence along the middle of said 30 foot private right of way North 11° West 111.5 feet to a station; thence leaving the middle line of said private right of way North 89° 53' East 204.5 feet to the place of beginning.

Assessor's Parcel No. 30-121-14

2005-0037784

Recorded	REC FEE	16.00
Official Records	TAX	.00
County Of	CC CONF	1.00
SANTA CRUZ	CC CONF	1.00
GARY E. HAZELTON		
Recorder		
CAROL D. SUTHERLAND		
Assistant	JRS	
10:43AM 07-Jun-2005	Page 1 of 4	

RECORDING REQUESTED BY

AND WHEN RECORDED MAIL TO:
Mr. and Mrs. J. Calcago, Jr.
Post Office Box 62
Soquel, CA 95073

Space Above This Line for Recorder's Use Only

A.P.N.: 030-121-14 (Portion)

File No.: ()

GRANT DEED

The Undersigned Grantor(s) Declare(s): DOCUMENTARY TRANSFER TAX **$0.00**; CITY TRANSFER TAX **$0.00**;
SURVEY MONUMENT FEE $

[ ] computed on the consideration or full value of property conveyed, OR

[ ] computed on the consideration or full value less value of liens and/or encumbrances remaining at time of sale,

[ ] unincorporated area; [ ] City of , and

FOR A VALUABLE CONSIDERATION, receipt of which is hereby acknowledged, **Joseph S. Calcagno, Jr.. and Karen C. Calcagno, Trustees, under the Deed of Trust, dated December 3, 1984**

hereby GRANTS to **Joseph S. Calcagno Jr. and Karen C. Calcagno, Trustee, under the Deed of the Trust, dated December 3, 1984**

the following described property in the City of **SANTA CRUZ**, County of , State of **California**:

See Exhibit "A" attached hereto

Dated: **06/06/2005**

Joseph S. Calcagno, Jr., Trustee

Karen C. Calcagno, Trustee

Mail Tax Statements To: **SAME AS ABOVE**

A.P.N.:

Grant Deed - continued

Date: **06/06/2005**

STATE OF **CALIFORNIA** }
} ss.
COUNTY OF **SANTA CRUZ** }

On June 6 2005 before me, Shelley Donahue personally appeared Joseph S Calleo & Mrs. Karen C Calleo personally known to me (or proved to me on the basis of satisfactory evidence) to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that ~~he/she~~/they executed the same in ~~his/her~~/their authorized capacity(ies) and that ~~his/her~~/their signature(s) on the instrument the person(s) or the entity upon behalf of which the person(s) acted, executed the instrument.

WITNESS my hand and official seal.

This area for official notarial seal

Signature

My Commission Expires: 4-30-2006

Notary Name: SHELLEY DONAHUE Notary Phone: 831-464-3004
Notary Registration Number: 1354334 County of Principal Place of Business: Santa Cruz

SHELLEY DONAHUE
Comm. 1354334
NOTARY PUBLIC CALIFORNIA
SANTA CRUZ COUNTY
MY COMMISSION EXPIRES APR 30 2006

EGRESS EASEMENT

SITUATE in the unincorporated area of the County of Santa Cruz, State of California, described as follows:

An easement lying within an Easterly portion of the lands described in the QUITCLAIM DEED to Joseph S. Calcagno, Jr., and Karen C. Calcagno, Trustees, under the Deed of Trust, dated December 3, 1984, recorded December 11, 1984, in Book 3784 at Page 893, Official Records of Santa Cruz County, State of California, and more particularly described as follows:

BEGINNING at a point on the Westerly line of 41st Avenue, distant thereon, North 0° 09' 50" West, 53.80 feet, from the Southeast corner of said lands so described in the Quitclaim Deed to Calcagno; thence

1. Southwesterly along a curve to the left of Radius 60 feet, from a tangent which bears South 89° 50' 10" West, through a central angle of 45° 11' 10" an arc length of 47.32 feet to a point on a line which bears South 85° 04' 39" East, 42.73 feet, and South 0° 09' 50" East, measured along the said Westerly line of 41st Avenue, 32.30 feet, from the said Southeast corner of said lands described in the Quitclaim Deed to Calcagno; thence

2. North 85° 04' 39" West, 20.47 feet, to a point; thence

3. Northeasterly along a curve to the right of Radius 42 feet, from a tangent which bears North 20° 26' 23" East, through a central angle of 54° 44' 02" an arc length of 40.12 feet to a point of compound curvature; thence

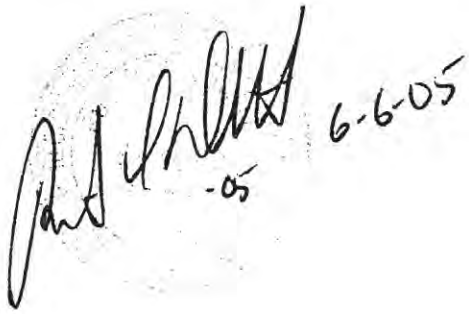
4. Northeasterly and Easterly on a curve to the right of Radius 88 feet, through a central angle of 22° 30' 00" an arc length of 34.56 feet, to a point on the said Westerly line of 41st Avenue; thence along said Westerly line

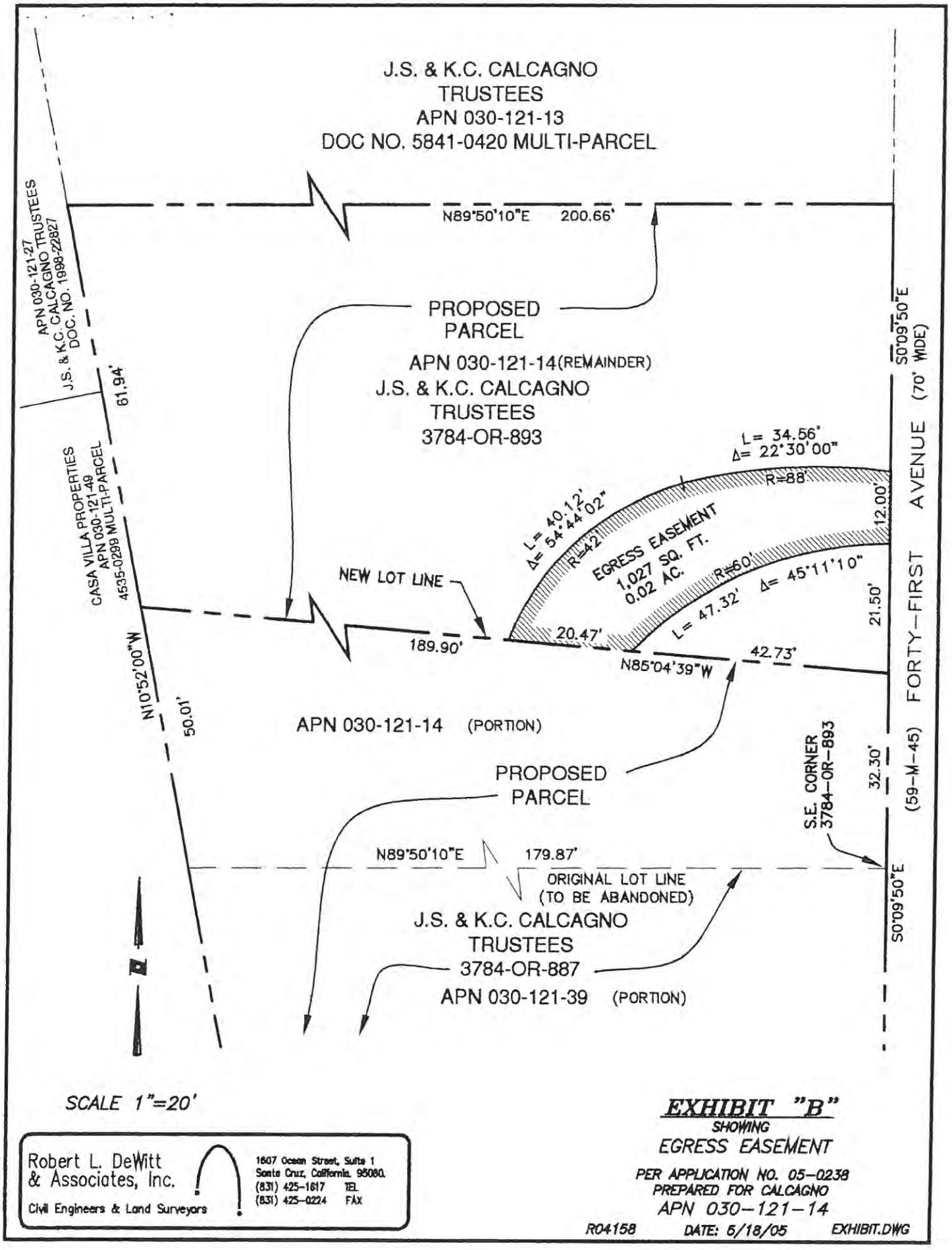
5. South 0° 09' 50" East, 12.00 feet, to the point of beginning.

Containing 1,027 square feet, more or less.

Description prepared from field survey and Official Records by Robert L. DeWitt and Associates, Inc., Civil Engineers and Land Surveyors in May 2005.

APN 030-121-14 (portion)





SCALE 1"=20'

EXHIBIT "B"
SHOWING
EGRESS EASEMENT

PER APPLICATION NO. 05-0238
PREPARED FOR CALCAGNO
APN 030-121-14

R04158 DATE: 6/18/05 EXHIBIT.DWG

Robert L. DeWitt & Associates, Inc.
Civil Engineers & Land Surveyors
1607 Ocean Street, Suite 1
Santa Cruz, California 95060
(831) 425-1617 TEL
(831) 425-0224 FAX

2005-0048212

Recorded
Official Records
County Of
SANTA CRUZ
GARY E. HAZELTON
Recorder
CAROL D. SUTHERLAND
Assistant
12:28PM 14-Jul-2005

REC FEE 10.00
DLA
Page 1 of 2

RECORDWALLACE-WELLS REQUESTED BY:
NEVILLE WALLACE-WELLS
240 Sunset Avenue
Santa Cruz, CA 95060

Mail Recorded Deed & Tax Statements To:
SAME AS ABOVE

A.P.N.#

QUITCLAIM DEED

Documentary Transfer Tax: 0
Exemption(R&T Code): 11930
Explanation: Transfer to a revocable living trust.

FOR VALUABLE CONSIDERATION, receipt of which is hereby acknowledged,

NEVILLE WALLACE-WELLS and MARTA BECKWITH, husband & wife,

HEREBY GRANT(S) TO:

**NEVILLE WALLACE-WELLS AND MARTA BECKWITH
TRUSTEES, AS COMMUNITY PROPERTY, OF THE WALLACE-WELLS FAMILY TRUST, U/A/D 5/18/05**

the real property in the County of SANTA CRUZ, State of California, more particularly described as;

See Attached Exhibit A.

IN WITNESS WHEREOF, I have hereunto set my hand and seal this 18 day of May, 2005.

NEVILLE WALLACE-WELLS

MARTA BECKWITH

ACKNOWLEDGMENT OF NOTARY PUBLIC

STATE OF CALIFORNIA
COUNTY OF SANTA CRUZ

On 5/18/05 before me, LORIE LEIGH ROBERTSON, Notary Public for this State, personally appeared NEVILLE WALLACE-WELLS and MARTA BECKWITH, personally known to me (or proved on the basis of satisfactory evidence) to be the persons whose names are subscribed to the within instrument and acknowledged to me that they executed the same in their authorized capacities, and that by their signatures on the instrument the persons, or the entity upon behalf of which the persons acted, executed the instrument.

WITNESS my hand and official seal.

Notary Public

LORIE LEIGH ROBERTSON
Comm. # 1428310
NOTARY PUBLIC - CALIFORNIA
Santa Cruz County
My Comm. Expires July 19, 2007

MAIL TAX STATEMENTS AS DIRECTED ABOVE.

Exhibit A

SITUATE IN THE CITY OF SANTA CRUZ, COUNTY OF SANTA CRUZ, STATE OF CALIFORNIA, AND DESCRIBED AS FOLLOWS:

PARCEL B AS SHOWN UPON THAT CERTAIN PARCEL MAP FILED FOR RECORD ON APRIL 16, 1980 IN BOOK 35, PAGE 37 OF PARCEL MAPS, RECORDS OF SANTA CRUZ COUNTY.

APN: 003-291-26

2005-0048219

Recorded	REC FEE	16.00
Official Records	TAX	.00
County Of	SURVEY	10.00
SANTA CRUZ		
GARY E. HAZELTON		
Recorder		
CAROL D. SUTHERLAND		
Assistant	JRS	
01:11PM 14-Jul-2005	Page 1 of 4	

RECORDING REQUESTED BY
First American Title Company

AND WHEN RECORDED MAIL TO:

2425 Porter Street, Suite 5
Soquel, CA 95003

Space Above This Line for Recorder's Use Only

A.P.N.: Northerly Portion ofAPN 030-121-14

File No.: 4409-1952490 ()

GRANT DEED

The Undersigned Grantor(s) declare(s): DOCUMENTARY TRANSFER TAX **$0.00 Lot Line Adjustment**; CITY TRANSFER TAX **$0.00**;
This is a conveyance by reason of inter vivos gift or by reason of death of a person, that is outright to, or in trust for the benefit of, a person or entity and is EXEMPT from the imposition of the Documentary Transfer Tax pursuant to ☐ 11930 of the Revenue and Taxation Code.

FOR A VALUABLE CONSIDERATION, receipt of which is hereby acknowledged,
Joseph S. Calcagno Jr., and Karen C. Calcagno, Trustees of the Calcagno Living Trust Dated March 20, 1996

hereby GRANT(s) to **Joseph S. Calcagno Jr., and Karen c. Calcagno, Trustee of the Calcagno Living Trust Dated March, 20, 1996**

the following described property in the City of **Capitola**, County of **Santa Cruiz**, State of :

Attached hereto as Exhibit A.

Dated: **June 1, 2005**

Joseph S. Calcagno, Jr. Trustee

Karen C. Calcagno, Trustee

Mail Tax Statements To: **SAME AS ABOVE**

A.P.N.: Northerly Portion of APN 030-121-14

File No.: 4409-1952490 (SD)

STATE OF **CALIFORNIA** }
} ss.
COUNTY OF **SANTA CRUZ** }

On July 11, 2005, before me, Shelley Donahue, personally appeared Joseph S. Calcagno & Karen C. Calcagno, personally known to me (or proved to me on the basis of satisfactory evidence) to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies) and that his/her/their signature(s) on the instrument the person(s) or the entity upon behalf of which the person(s) acted, executed the instrument.

WITNESS my hand and official seal.

This area for official notarial seal

Signature

SHELLEY DONAHUE
Comm. 1354334
NOTARY PUBLIC-CALIFORNIA
SANTA CRUZ COUNTY
MY COMMISSION EXPIRES APR 30 2006

My Commission Expires: Apr 30, 2006

Notary Name: Shelley Donahue
Notary Registration Number: 1354334
Notary Phone: 831. 464-3004
County of Principal Place of Business: Santa Cruz

EXHIBIT A

REMAINDER PARCEL AFTER TRANSFER

NORTHERLY PORTION OF APN 030-121-14 (0.309 ACRE ± PARCEL)

SITUATE in the unincorporated area of the County of Santa Cruz, State of California, described as follows:

BEING a Northerly portion of the lands described in the QUITCLAIM DEED to Joseph S. Calcagno, Jr., and Karen C. Calcagno, Trustees under the Deed of Trust, dated December 3, 1984, recorded December 11, 1984, in Book 3784 at Page 893, Official Records of Santa Cruz County, California, and more particularly described as follows:

BEGINNING at a point on the Westerly line of 41st Avenue at the Northeast corner of said lands so described in the QUITCLAIM DEED to Calcagno; thence along the said Westerly line of 41st Avenue

1. South 0° 09' 50" East, 77.70 feet, to a point which is distant, North 0° 09' 50" East, 32.30 feet, from the Southeast corner of said lands of Calcagno; thence leaving said Westerly line of 41st Avenue

2. North 85° 04' 39" West, 189.90 feet, to a point on the Westerly line of lands so described in the QUITCLAIM DEED to Calcagno; said point being distant, North 10° 52' 00" West, 50.01 feet, from the Southwest corner of said lands of Calcagno; thence along said last mentioned Westerly line

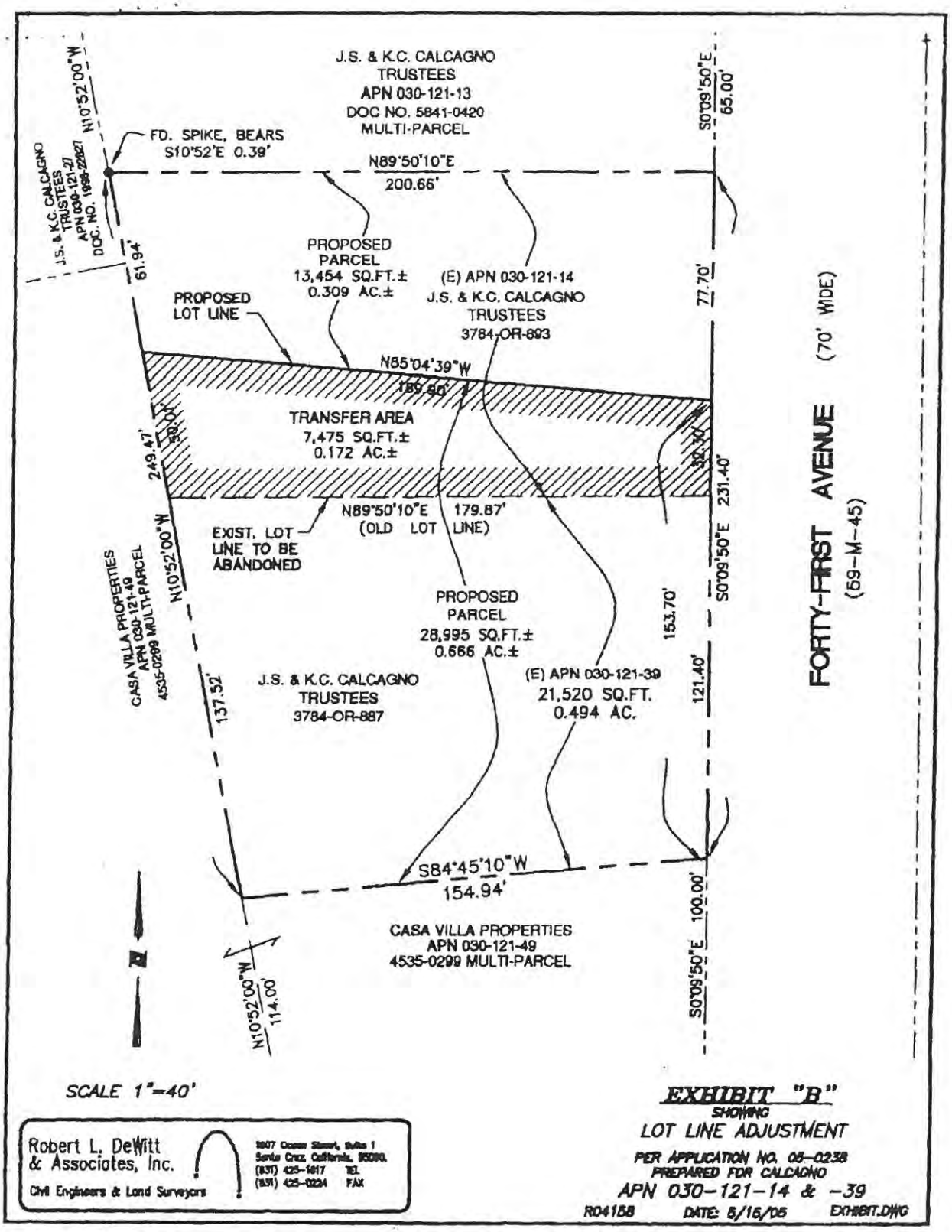
3. North 10° 52' 00" West, 61.94 feet, to the Northeast corner of said lands of Calcagno; thence along the Northerly line of said lands of Calcagno

4. North 89° 50' 10" East, 200.66 feet, to the POINT OF BEGINNING.

Containing 0.309 Acres (13,454 square feet) more or less.

Description prepared from a field survey and Official Records by Robert L. DeWitt and Associates, Inc., Civil Engineers and Land Surveyors, in May, 2005.

APN 030-121-14 (portion)


J.S. & K.C. CALCAGNO
TRUSTEES
APN 030-121-13
DOC NO. 5841-0420
MULTI-PARCEL
FD. SPIKE, BEARS
S10°52'E 0.39'
N10°52'00"W
J.S. & K.C. CALCAGNO
TRUSTEES
APN 030-121-27
DOC. NO. 1998-22827
N89°50'10"E
200.66'
S0°09'50"E
65.00'
61.94'
PROPOSED
PARCEL
13,454 SQ.FT.±
0.309 AC.±
(E) APN 030-121-14
J.S. & K.C. CALCAGNO
TRUSTEES
3784-OR-893
PROPOSED
LOT LINE
77.70'
N85°04'39"W
189.90'
TRANSFER AREA
7,475 SQ.FT.±
0.172 AC.±
50.00'
249.47'
32.30'
231.40'
N89°50'10"E 179.87'
(OLD LOT LINE)
EXIST. LOT
LINE TO BE
ABANDONED
CASA VILLA PROPERTIES
APN 030-121-49
4535-0299 MULTI-PARCEL
N10°52'00"W
PROPOSED
PARCEL
28,995 SQ.FT.±
0.666 AC.±
153.70'
J.S. & K.C. CALCAGNO
TRUSTEES
3784-OR-887
(E) APN 030-121-39
21,520 SQ.FT.
0.494 AC.
121.40'
137.52'
FORTY-FIRST AVENUE
(70' WIDE)
(69-M-45)
S84°45'10"W
154.94'
CASA VILLA PROPERTIES
APN 030-121-49
4535-0299 MULTI-PARCEL
N10°52'00"W
114.00'
S0°09'50"E 100.00'
N
SCALE 1"=40'
EXHIBIT "B"
SHOWING
LOT LINE ADJUSTMENT
PER APPLICATION NO. 05-0238
PREPARED FOR CALCAGNO
APN 030-121-14 & -39
R04158 DATE: 8/16/05 EXHIBIT.DWG
Robert L. DeWitt
& Associates, Inc.
Civil Engineers & Land Surveyors
3907 Ocean Street, Suite 1
Santa Cruz, California, 95060
(831) 425-1417 TEL
(831) 425-0234 FAX

APPENDIX B

Photo 1: Entrance to the storage yard.

Photo 2: North end of storage yard.

Photo 3: View along the east side of the storage yard, looking south.

Photo 4: View north along the east side of the storage yard towards Soquel Drive.

Photo 5: Residential structure along 41st Street.

Photo 6: View south along 41st Street

APPENDIX C

SITE QUESTIONNAIRE

SUBJECT PROPERTY ADDRESS: 3906, 3820 Soquel Dr + 2821, 2815, 2755-41ST Ave

CITY: Soquel STATE: Ca ZIP CODE: 95073

Upon reviewing this questionnaire, if you have any questions, please contact the Sierra Delta Consultants LLC (SDC) Representative: MR. JOHN WALKER - PHONE: (805) 239-4752.

**Please return the completed questionnaire to Sierra Delta Consultants via fax to: (805) 239-9309 or via email to: judy@sierradeltallc.com*

QUESTIONNAIRE COMPLETED BY: Karen Calcagno

I AM THE SUBJECT PROPERTY'S: *(PLEASE CHECK ONE)*

OWNER [✓] PROPERTY MANAGER [ ] LEGAL REPRESENTATIVE [ ] OTHER: _____

ADDRESS: PO BOX 62 SOQUEL, CA 95073

PHONE NUMBER: 831-475-4479 FAX NUMBER 831-475-4442

NAME OF UTILITY PROVIDERS FOR THE SUBJECT PROPERTY:

POWER: PG+E GAS: PG+E

WATER: SCMWC SEWER: County? It is billed on property tax bill

Has an environmental investigation previously been completed for the Subject Property? NO

- *If YES, please provide a copy to SDC for review at your earliest opportunity.*

In the space below please provide information regarding the current use of the Subject Property:

residential + open land storage

In the space below please provide information regarding the historical use of the Subject Property:
(i.e. prior to current use, when the property was first built upon)

farm land - houses first built in 1920+/- then 1930s, 1943, no other knowledge

In the space below please note the current uses of adjacent properties to the north, south, east, and west:

N: vacant lot and U-DOIT Carwash

S: ~~Rainbo~~ CRUZ Carwash + new building owned by EKB (retail space)

E: street - 41ST Ave

W: lumber yard

***Please answer the questions to the best of your knowledge.**

	QUESTIONS	YES	NO	COMMENTS / DETAILS
1.	Is the **Subject Property** currently used for industrial purposes?		✓	
1A.	Did you observe evidence or have prior knowledge the **Subject Property** had been used for industrial purposes **in the past**?		✓	
2.	Is the **Subject Property** *currently* used as a gasoline station, dry cleaner, photo development lab, junkyard, landfill; or a facility used for motor repair, commercial printing waste management, waste storage, waste processing, or recycling **(if applicable, identify which)**?		✓	
2A.	Has the **Subject Property** been utilized as one of the above *in the past*? **(if applicable, identify which)**?		✓	
3.	Are there **currently** any containers (greater than 5 gallons (19L) in volume, 50 gallons (190L) in the aggregate), storing pesticides, paints, gasoline, or other chemicals; or damaged/discarded automotive/industrial batteries, located on the **Subject Property**?		✓	
3A.	Did you observe evidence or have prior knowledge of **past use or storage** of containers storing pesticides, paints, gasoline, or other chemicals; or damaged and/or discarded automotive/industrial batteries; on the **Subject Property**?		✓	
4.	Are there **currently** any industrial drums (typically 55gallons (208L)), or sacks of chemicals located on the **Subject Property**?		✓	
4A.	Did you observe evidence or have prior knowledge, of a **past presence** of industrial drums (typically 55 gallons (208L)), or sacks of chemicals on the **Subject Property**?		✓	
5.	Did you observe evidence or have prior knowledge of the presence of fill dirt, from a **contaminated site**, on the **Subject Property**?		✓	
5A.	Did you observe evidence or have prior knowledge of the presence of fill dirt, **from an unknown origin**, on the **Subject Property**?		✓	
6.	Are there **currently** any pits, ponds, or lagoons located on the **Subject Property** in connection with waste treatment or waste disposal?		✓	
6A.	Did you observe evidence or have prior knowledge of **a past presence** of any pits, ponds, or lagoons used in connection with waste treatment/disposal, located on the **Subject Property**?		✓	
7.	Are there **currently** areas of stained soil on the **Subject Property**?		✓	none known
7A.	Did you observe evidence or have prior knowledge of areas of stained soil on the **Subject Property in the past**?		✓	" "

	QUESTIONS	YES	NO	COMMENTS / DETAILS
8.	Are there **currently** any registered, or unregistered storage tanks, (aboveground or underground), or waste oil clarifiers/separators located on the **Subject Property**? (if yes, please give details)		✓	
8A.	Did you observe evidence or have **prior knowledge** of ***past*** registered, or unregistered storage tanks, (aboveground or underground), or waste oil clarifiers/separators located on the **Subject Property**? (if yes, please give details)		✓	
9.	Are there **currently** any vent-pipes, fill-pipes, or access ways indicating a fill-pipe, protruding from the ground on the Subject Property; or adjacent to any structure located on the **Subject Property**?		✓	
9A	Did you observe evidence or have **prior knowledge** of the existence of ***past*** vent-pipes, fill-pipes, or access ways indicating a fill-pipe, on the Subject Property; or adjacent to any structure on the **Subject Property**?		✓	
10.	Are there **currently** any indications of leaks, spills, foul odors, or staining (from sources other than water), associated with flooring, drains, walls, ceilings, or exposed grounds on the **Subject Property**?		✓	
10A.	Did you observe evidence or have **prior knowledge** of ***past*** leaks, spills, foul odors, or staining (from sources other than water) on the **Subject Property**?		✓	
10B.	Do you have knowledge of any Environmental Clean-ups performed or required to be performed on the **Subject Property**?		✓	
11.	If the **Subject Property** is served by a **private well or non-public water system**; did you observe evidence or have knowledge the well or non-public water system contained contaminants that would have exceeded guidelines applicable to water systems?			N/A
12.	Does the owner/occupant of the **Subject Property** have knowledge of ***environmental liens***, or government notification, relating to past or recurrent violations of environmental laws, pertaining to the Subject Property or to areas adjacent to any structure located on the Subject Property?		✓	
13.	Has the owner/occupant of the **Subject Property** been informed or have knowledge of the ***current*** existence of hazardous substances or petroleum products on the Subject Property or any structure located on the Subject Property?		✓	
13A.	Has the owner/occupant of the **Subject Property** been informed or have knowledge of the ***prior existence*** of hazardous substances or petroleum products, on the Subject Property, or any structure located on the Subject Property?		✓	

	QUESTIONS	YES	NO	COMMENTS / DETAILS
14.	Has the owner/occupant of the **Subject Property** been informed of ***current* environmental violations** regarding the Subject Property or any structure located on the Subject Property?		✓	
14A.	Has the owner/occupant of the **Subject Property** been informed of or have knowledge of ***past* environmental violations** regarding the Subject Property or any structure located on the Subject Property?		✓	
15.	Does the owner/occupant of the **Subject Property** have knowledge of an Environmental Site Assessment of the Subject Property recommending further assessment due to potential contamination from the presence of hazardous substances?		✓	
15A.	Is the owner/occupant of the **Subject Property** aware of past, pending, threatened lawsuits or administrative proceedings by an owner or occupant of the Subject Property concerning the release or threatened release of hazardous substances or petroleum products?		✓	
16.	Does the **Subject Property** discharge wastewater (not including sanitary waste or storm water) onto, or adjacent to the Subject Property; and/or into a **storm water drainage system** and/or into a **sanitary sewer system**?		✓	
17.	Did you observe evidence or have prior knowledge of hazardous substances, petroleum products, unidentified waste materials, tires, automotive/industrial batteries, or any other waste materials have been dumped above grade, buried, and/or burned on the **Subject Property**?		✓	
18.	Is there a transformer, capacitor, or any hydraulic equipment (ie: In-ground hydraulic lifts) located on the **Subject Property**? If In-ground lifts are present, how many_____ and what year were they installed? If In-ground lifts were removed, in what year?		✓	
19.	Are you aware of any activity and use limitations (AULs), such as **engineering controls**, land use restrictions or **institutional controls** that are in place at the site and/or have been filed or recorded in a registry under federal, tribal, state or local law?		✓	
20.	Do you have any specialized knowledge or experience related to the **property** or nearby properties? For example, are you involved in the same line of business as the current or former **occupants** of the **property** or an adjoining **property** so that you would have specialized knowledge of the chemical and processes used by this type of business?	✓		
21.	Based on your knowledge and experience related to the **property** are there any obvious indicators that point to the presence or likely presence of contamination at the property?		✓	

	QUESTIONS	YES	NO	COMMENTS / DETAILS
22.	Based upon your knowledge is there a difference between the purchase price and fair market value of the property? If you conclude there is a difference, have you considered whether the lower purchase price is because contamination is known or believed to be present at the property?		✓	
ADJACENT PROPERTIES **- The following questions pertain to properties contiguous to the Subject Property. Please answer the questions to the best of your knowledge.**				
23.	Are **Adjoining Properties** currently used for industrial purposes? (*if yes, please give details*)	✓		
23A.	Did you observe evidence or have prior knowledge of **past industrial usage** of **Adjoining Properties**? (*if yes, please give details*)	✓		
24.	Are there **currently** any containers / drums (greater than 5 gallons (19L) in volume, 50 gallons (190L) in the aggregate), storing pesticides, paints, gasoline, or other chemicals; or damaged/discarded automotive/industrial batteries, located on the **Adjacent Property**?	✓		yes - possibly @ both Car washes soap - tire cleaner
24A.	Did you observe evidence or have **prior knowledge of past use** or storage of containers storing pesticides, paints, or other chemicals; or damaged and/or discarded automotive/industrial batteries; on the **Adjacent Property**?	✓		
25.	Are there **currently** any industrial drums (typically 55gallons (208L)), or sacks of chemicals located on the **Adjacent Property**?	✓		All above
25A.	Did you observe evidence or have prior knowledge, of a **past presence** of industrial drums (typically 55 gallons (208L)), or sacks of chemicals on the **Adjacent Property**?	✓		"
26.	Did you observe evidence or have prior knowledge of the presence of fill dirt, from a **contaminated site**, on the **Adjacent Property**?		✓	
26A.	Did you observe evidence or have prior knowledge of the presence of fill dirt, **from an unknown origin**, on the **Adjacent Property**?		✓	
27.	Are there **currently** any pits, ponds, or lagoons located on the **Adjacent Property** in connection with waste treatment or waste disposal?		✓	
27A.	Did you observe evidence or have prior knowledge of **a past presence** of any pits, ponds, or lagoons used in connection with waste treatment/disposal, located on the **Adjacent Property**?		✓	
28.	Are there **currently** areas of stained soils on the **Adjacent Property**?			unknown
28A.	Did you observe evidence or have prior knowledge of areas of stained soils on the **Adjacent Property in the past**?			unknown

	QUESTIONS	YES	NO	COMMENTS / DETAILS
29.	Are there **currently** any storage tanks, (aboveground or underground), located on the **Adjacent Property**? *(if yes, please give details)*	✓		
29A.	Did you observe evidence or have **prior knowledge** of ***past*** storage tanks, (aboveground or underground), located on the **Adjacent Property**? *(if yes, please give details)*	✓		
30.	Are there **currently** any vent-pipes, fill-pipes, or access ways indicating a fill-pipe, protruding from the ground on Adjacent Properties; or adjacent to any structure located on the **Adjacent Property**?	✓		
30A.	Did you observe evidence or have **prior knowledge** of the existence of ***past*** vent-pipes, fill-pipes, or access ways indicating a fill-pipe, on the Adjacent Properties; or adjacent to any structure on the **Adjacent Property**?	✓		
31.	Are there **currently** any indications of leaks, spills, foul odors, or staining *(from sources other than water)*, associated with flooring, drains, walls, ceilings, or exposed grounds on the **Adjacent Property**?		✓	
31A.	Did you observe evidence or have **prior knowledge** of ***past*** leaks, spills, foul odors, or staining *(from sources other than water)* on the **Adjacent Property**?		✓	

Acknowledgement

I acknowledge that I have read this questionnaire, and have responded to the issues and questions posed therein to the best of my knowledge.

Name: (Printed) Karen Calcagno

Signature: Karen Calcagno **Date:** 4/11/16

APPENDIX D

3820 SOQUEL DRIVE, 95073
Ref: BJLP.01

Friday, April 08, 2016

Environmental Radius Report

NETR Online

2055 E. Rio Salado Pkwy
Tempe, AZ 85381
480-967-6752

Summary

	< 1/4	1/4 - 1/2	1/2 - 1
National Priorities List (NPL)			
CERCLIS List			
CERCLIS NFRAP			
RCRA CORRACTS Facilities			
RCRA non-CORRACTS TSD Facilities			
Federal Institutional Control / Engineering Control Registry			
Emergency Response Notification System (ERNS)		1	6
US Toxic Release Inventory			
US RCRA Generators (CESQG, SQG, LQG)	7	5	13
US ACRES (Brownfields)			
CA Registered Underground Storage Tanks	1	7	9
CA Leaking Underground Storage Tanks	2	9	19
CA CERCLIS Equivalent			
CA NPL Equivalent			
CA Hazardous Waste Sites			1
CA Activity Use Restrictions			
CA Spills, Leaks, Investigations, and Cleanups	2	9	19
CA Solid Waste Landfills			
CA Oil and Gas Wells			
CA Voluntary Cleanup Sites			1

National Priorities List (NPL)

This database returned no results for your area.

The Superfund Program, administered under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) is an EPA Program to locate, investigate, and clean up the worst hazardous waste sites throughout the United States. The NPL (National Priorities List) is the list of national priorities among the known releases or threatened releases of hazardous substances, pollutants, or contaminants throughout the United States and its territories. The NPL is intended primarily to guide the EPA in determining which sites warrant further investigation. The boundaries of an NPL site are not tied to the boundaries of the property on which a facility is located. The release may be contained with a single property's boundaries or may extend across property boundaries onto other properties. The boundaries can, and often do change as further information on the extent and degree of contamination is obtained.

CERCLIS List

This database returned no results for your area.

The United States Environmental Protection Agency (EPA) investigates known or suspected uncontrolled or abandoned hazardous substance facilities under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). EPA maintains a comprehensive list of these facilities in a database known as the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS). These sites have either been investigated or are currently under investigation by the EPA for release or threatened release of hazardous substances. Once a site is placed in CERCLIS, it may be subjected to several levels of review and evaluation and ultimately placed on the National Priority List (NPL).

CERCLIS sites designated as "No Further Remedial Action Planned" (NFRAP) have been removed from CERCLIS. NFRAP sites may be sites where, following an intitial investigation, no contamination was found, contamination was removed quickly without the need for the site to be placed on the NPL, or the contamination was not serious enough to require Federal Superfund Action or NPL consideration.

CERCLIS NFRAP

This database returned no results for your area.

As of February 1995, CERCLIS sites designated "No Further Remedial Action Planned" NFRAP have been removed from CERCLIS. NFRAP sites may be sites where, following an initial investigation, no contamination was found, contamination was removed quickly without the site being placed on the NPL, or the contamination was not serious enough to require Federal Superfund action or NPL consideration.
EPA has removed these NFRAP sites from CERCLIS to lift unintended barriers to the redevelopment of these properties. This policy change is part of EPA"s Brownfields Redevelopment Program to help cities, states, private investors and affected citizens promote economic redevelopment of unproductive urban sites.

RCRA CORRACTS Facilities

This database returned no results for your area.

The United States Environmental Protection Agency (EPA) regulates hazardous waste under the Resource Conservation and Recovery Act (RCRA). The EPA maintains the Corrective Action Report (CORRACTS) database of Resource Conservation and Recovery Act (RCRA) facilities that are undergoing "corrective action." A "corrective action order" is issued pursuant to RCRA Section 3008(h) when there has been a release of hazardous waste or constituents into the environment from a RCRA facility. Corrective actions may be required beyond the facility"s boundary and can be required regardless of when the release occurred, even if it predated RCRA.

RCRA non-CORRACTS TSD Facilities

This database returned no results for your area.

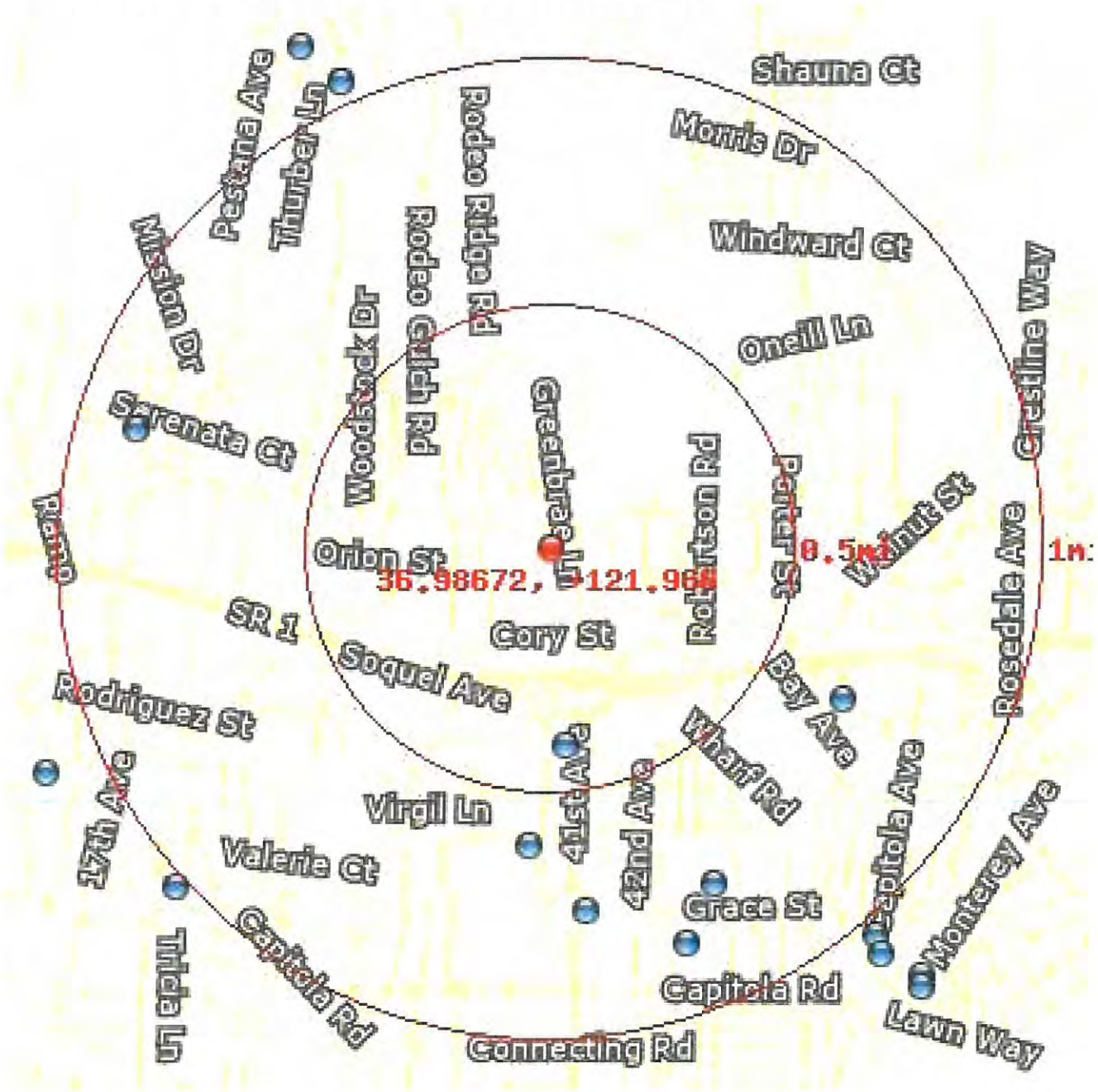
The United States Environmental Protection Agency (EPA) regulates hazardous waste under the Resource Conservation and Recovery Act (RCRA). The EPA"s RCRA Program identifies and tracks hazardous waste from the point of generation to the point of disposal. The RCRA Facilites database is a compilation by the EPA of facilities that report generation, storage, transportation, treatment, or disposal of hazardous waste. RCRA Permitted Treatment, Storage, Disposal Facilities (RCRA-TSD) are facilities which treat, store and/or dispose of hazardous waste.

Federal Institutional Control / Engineering Control Registry

This database returned no results for your area.

Federal Institutional Control / Engineering Control Registry

Emergency Response Notification System (ERNS)



This database returned 7 results for your area.

The Emergency Response Notification System (ERNS) is a national computer database used to store information on unauthorized releases of oil and hazardous substances. The program is a cooperative effort of the Environmental Protection Agency, the Department of Transportation Research and Special Program Administration"s John Volpe National Transportation System Center and the National Response Center. There are primarily five Federal statutes that require release reporting: the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) section 103; the Superfund Amendments and Reauthorization Act(SARA) Title III Section 304; the Clean Water Act of 1972(CWA) section 311(b)(3); and the Hazardous Material Transportation Act of 1974(HMTA section 1808(b).

Emergency Response Notification System (ERNS)

Location	36.98085, -121.9653
Distance to site	2151 ft / 0.41 mi S
Incident	CALLER STATED THERE WAS SPILL OF GASOLINE FROM A TANKER TRUCK DUE TO OPERATOR ERROR. CALLER STATED THE LOCKING MECHANISM ON THE HOSE WAS NOT LOCKED. THE SPILL WENT ONTO THE GROUND AND INTO A STORM DRAIN.
Incident Date	3/26/2013 8:00
Year Reported	2013
Address	2195 41ST AVE
City	CAPITOLA
State	CA
County	SANTA CRUZ

Location	36.97785, -121.9666
Distance to site	3242 ft / 0.61 mi S
Incident	CALLER STATED THAT THERE WAS A RELEASE OF 110 GALLONS OF SEWAGE FROM A PRIVATE CLEAN OUT, THE CAUSE WAS DUE GREASE BLOCKAGE.
Incident Date	7/25/2012 14:30
Year Reported	2012
Address	1955 41ST AVE
City	CAPITOLA
State	CA
County	SANTA CRUZ

Location	36.98217, -121.9552
Distance to site	3577 ft / 0.68 mi SE
Incident	CALLER IS REPORTING A STOPPAGE IN A PRIVATE LATERAL LINE CAUSED A SPILL OF 60 GALLONS OF SEWAGE TO GO INTO A STORM DRAIN.
Incident Date	8/12/2012 21:25
Year Reported	2012
Address	820 BAY AVE
City	CAPITOLA
State	CA
County	SANTA CRUZ

Location	36.97594, -121.9645
Distance to site	3957 ft / 0.75 mi S
Incident	THE CALLER IS REPORTING THAT A SUMP PUMP FAILED CAUSING A RELEASE OF SEWAGE. THE SEWAGE ENTERED A NEARBY STORM DRAIN.
Incident Date	7/18/2012 12:00
Year Reported	2012
Address	1830 41ST AVE
City	CAPITOLA
State	CA
County	SANTA CRUZ

Emergency Response Notification System (ERNS)

Location	36.97679, -121.9598
Distance to site	4054 ft / 0.77 mi SE
Incident	CALLER REPORTED THAT AN INDIVIDUAL WAS WORKING ON A VEHICLE AND DUMPED AN UNKNOWN OIL ONTO THE STREET.
Incident Date	3/31/2013 10:00
Year Reported	2013
Address	1925 46TH AVE
City	CAPITOLA
State	CA
County	SANTA CRUZ

Location	36.97501, -121.9608
Distance to site	4536 ft / 0.86 mi SE
Incident	CALLER STATES THAT 10 GALLONS OF RAW SEWAGE CAME OUT OF A PRIVATE LATERAL AND INTO A STORM DRAIN DUE TO A BLOCKAGE.
Incident Date	3/26/2012 11:50
Year Reported	2012
Address	1800 44TH AVE
City	CAPITOLA
State	CA
County	SANTA CRUZ
Zip Code	95010

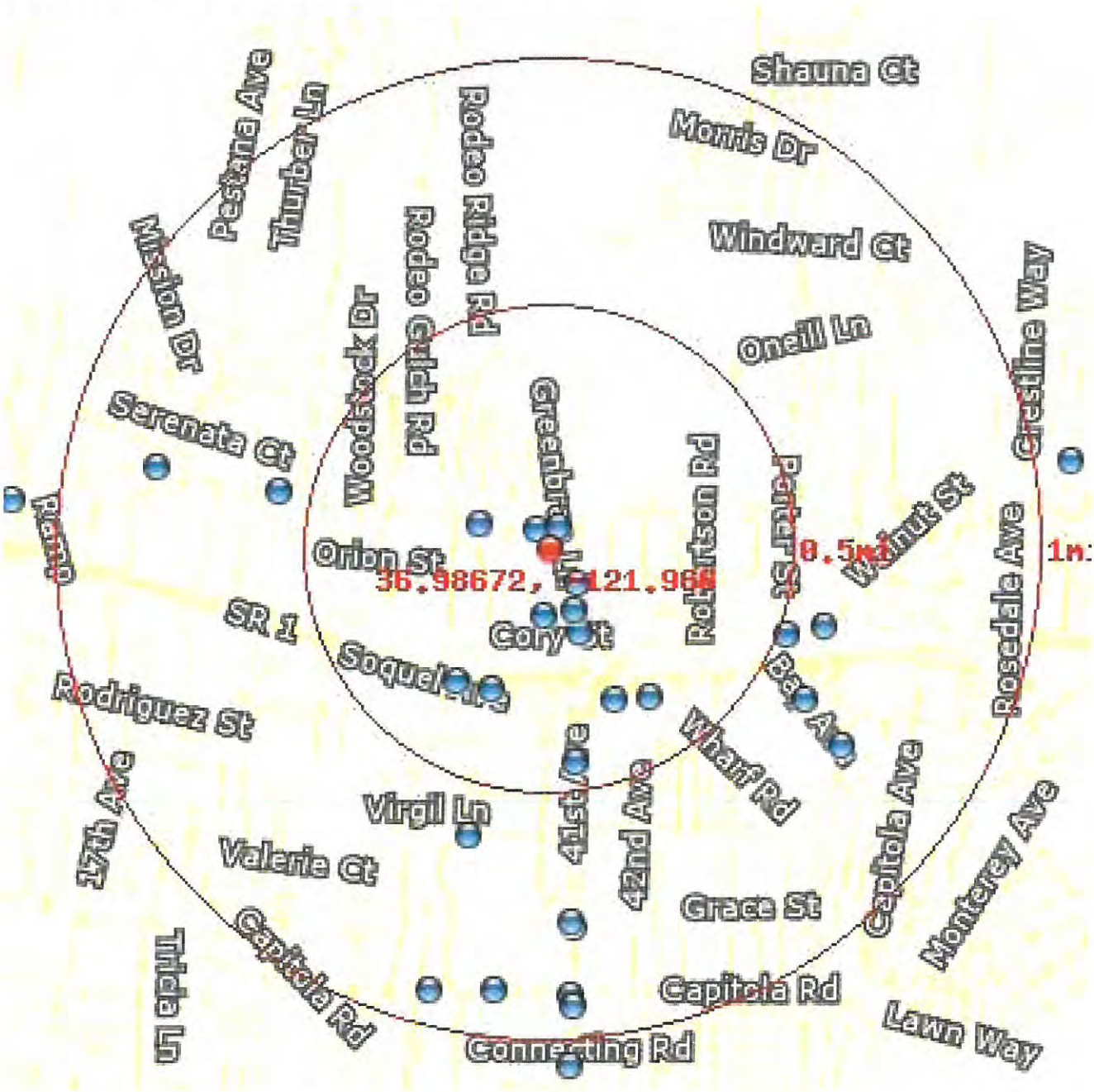
Location	36.99017, -121.9811
Distance to site	4574 ft / 0.87 mi W
Incident	CALLER REPORTED A STOPPAGE IN THE SEWAGE SYSTEM THAT CAUSED A SPILL OF MATERIALS.
Incident Date	12/23/2011 8:20
Year Reported	2011
Address	1668 DOMINICAN WAY AND MISSION DR
City	SANTA CRUZ
State	CA
County	SANTA CRUZ

US Toxic Release Inventory

This database returned no results for your area.

The Toxics Release Inventory (TRI) is a publicly available EPA database that contains information on toxic chemical releases and other waste management activities reported annually by certain covered industry groups as well as federal facilities. TRI reporters for all reporting years are provided in the file.

US RCRA Generators (CESQG, SQG, LQG)



This database returned 25 results for your area.

The United States Environmental Protection Agency (EPA) regulates hazardous waste under the Resource Conservation and Recovery Act (RCRA). EPA maintains a database of facilities, which generate hazardous waste or treat, store, and/or dispose of hazardous wastes.

Conditionally Exempt Small Quantity Generators (CESQG) generate 100 kilograms or less per month of hazardous waste, or 1 kilogram or less per month of acutely hazardous waste.

Small Quantity Generators (SQG) generate more than 100 kilograms, but less than 1,000 kilograms, of hazardous waste per month.

Large Quantity Generators (LQG) generate 1,000 kilograms per month or more of hazardous waste, or more than 1 kilogram per month of acutely hazardous waste.

US RCRA Generators (CESQG, SQG, LQG)

Location	36.98719, -121.9663
Distance to site	196 ft / 0.04 mi NW
Info URL	*http://iaspub.epa.gov/enviro/fii_query_detail.disp_program_facility?p_registry_id=110031363352*
EPA Identifier	110031363352
Primary Name	OCEAN HONDA
Address	3800 SOQUEL DR
City	SANTA CRUZ
County	SANTA CRUZ
State	CA
Zipcode	95062
Programs	RCRAINFO
Program Interests	SQG
Updated On	26-JAN-12
Recorded On	22-OCT-07
Program ID	CAR000174466

Location	36.98731, -121.9656
Distance to site	251 ft / 0.05 mi NE
Info URL	*http://iaspub.epa.gov/enviro/fii_query_detail.disp_program_facility?p_registry_id=110002665278*
EPA Identifier	110002665278
Primary Name	FABIAN'S BODY SHOP
Address	3921 SOQUEL DR AT 41ST AVENUE
City	SOQUEL
County	SANTA CRUZ
State	CA
Zipcode	95073
Programs	RCRAINFO
Program Interests	SQG
Updated On	05-AUG-10
Recorded On	01-MAR-00
Program ID	CAD097019913

US RCRA Generators (CESQG, SQG, LQG)

Location	36.98562, -121.9649
Distance to site	513 ft / 0.1 mi SE
Info URL	*http://iaspub.epa.gov/enviro/fii_query_detail.disp_program_facility?p_registry_id=110032638055*
EPA Identifier	110032638055
Primary Name	TESORO WEST COAST COMPANY LLC NO 68219
Address	2700 41ST ST
City	SOQUEL
County	SANTA CRUZ
State	CA
Zipcode	95073-2111
Programs	RCRAINFO
Program Interests	SQG
Updated On	26-JAN-12
Recorded On	21-NOV-07
Program ID	CAR000143172

Location	36.98469, -121.9661
Distance to site	740 ft / 0.14 mi S
Info URL	*http://iaspub.epa.gov/enviro/fii_query_detail.disp_program_facility?p_registry_id=110002858694*
EPA Identifier	110002858694
Primary Name	STUART AUTOMOTIVE
Address	4003 CORDELIA LN
City	SOQUEL
County	SANTA CRUZ
State	CA
Zipcode	95073
NAICS Codes	811111
Programs	HWTS-DATAMART, RCRAINFO
Program Interests	SQG, STATE MASTER
Updated On	26-JAN-12
Recorded On	01-MAR-00
NAICS Descriptions	GENERAL AUTOMOTIVE REPAIR.
Program ID	CAD983602590

US RCRA Generators (CESQG, SQG, LQG)

Location	36.98737, -121.9685
Distance to site	757 ft / 0.14 mi W
Info URL	*http://iaspub.epa.gov/enviro/fii_query_detail.disp_program_facility?p_registry_id=110002614948*
EPA Identifier	110002614948
Primary Name	CALIFORNIA RADIOGRAPHICS INC
Address	3335 SOQUEL DR
City	SOQUEL
County	SANTA CRUZ
State	CA
Zipcode	95073
SIC Codes	5047
SIC Descriptions	MEDICAL, DENTAL, AND HOSPITAL EQUIPMENT AND SUPPLIES
Programs	BR, CA-CERS, RCRAINFO
Program Interests	HAZARDOUS WASTE BIENNIAL REPORTER, LQG, STATE MASTER, TRANSPORTER
Updated On	28-MAR-14
Recorded On	01-MAR-00
Program ID	CAL000115947

Location	36.98478, -121.965
Distance to site	770 ft / 0.15 mi SE
Info URL	*http://iaspub.epa.gov/enviro/fii_query_detail.disp_program_facility?p_registry_id=110002865908*
EPA Identifier	110002865908
Primary Name	MASTER CLEANERS
Address	2660 41ST AVE
City	SOQUEL
County	SANTA CRUZ
State	CA
Zipcode	95073
NAICS Codes	812320
Programs	EIS, HWTS-DATAMART, RCRAINFO
Program Interests	CRITERIA AND HAZARDOUS AIR POLLUTANT INVENTORY, SQG, STATE MASTER
Updated On	06-APR-14
Recorded On	01-MAR-00
NAICS Descriptions	DRYCLEANING AND LAUNDRY SERVICES (EXCEPT COIN-OPERATED).
Program ID	3399611

US RCRA Generators (CESQG, SQG, LQG)

Location	36.98414, -121.9648
Distance to site	1008 ft / 0.19 mi SE
Info URL	*http://iaspub.epa.gov/enviro/fii_query_detail.disp_program_facility?p_registry_id=110032642273*
EPA Identifier	110032642273
Primary Name	HOME DEPOT USA HD6968
Address	2600 41ST AVE
City	SOQUEL
County	SANTA CRUZ
State	CA
Zipcode	95073
Programs	RCRAINFO
Program Interests	SQG
Updated On	26-JAN-12
Recorded On	21-NOV-07
Program ID	CAR000185751

Location	36.98252, -121.968
Distance to site	1637 ft / 0.31 mi SW
Info URL	*http://iaspub.epa.gov/enviro/fii_query_detail.disp_program_facility?p_registry_id=110002949677*
EPA Identifier	110002949677
Primary Name	PACIFIC BELL
Address	7070 SOQUEL
City	SANTA CRUZ
County	SANTA CRUZ
State	CA
Zipcode	95062-2035
Programs	BR, HWTS-DATAMART, RCRAINFO
Program Interests	HAZARDOUS WASTE BIENNIAL REPORTER, SQG, STATE MASTER
Updated On	26-JAN-12
Recorded On	01-MAR-00
Program ID	CAT080021033

US RCRA Generators (CESQG, SQG, LQG)

Location	36.98272, -121.9693
Distance to site	1744 ft / 0.33 mi SW
Info URL	*http://iaspub.epa.gov/enviro/fii_query_detail.disp_program_facility?p_registry_id=110002662271*
EPA Identifier	110002662271
Primary Name	KRAFT'S BODY SHOP INC
Address	7000 SOQUEL AVENUE
City	SANTA CRUZ
County	SANTA CRUZ
State	CA
Zipcode	95062-2035
NAICS Codes	811121
Programs	RCRAINFO
Program Interests	SQG
Updated On	08-AUG-10
Recorded On	01-MAR-00
NAICS Descriptions	AUTOMOTIVE BODY, PAINT, AND INTERIOR REPAIR AND MAINTENANCE.
Program ID	CAD087003240

Location	36.98217, -121.9635
Distance to site	1819 ft / 0.34 mi SE
Info URL	*http://iaspub.epa.gov/enviro/fii_query_detail.disp_program_facility?p_registry_id=110002709542*
EPA Identifier	110002709542
Primary Name	MARINA PONTIAC BUICK
Address	4100 AUTO PLAZA
City	CAPITOLA
County	SANTA CRUZ
State	CA
Zipcode	95010-2072
Programs	RCRAINFO
Program Interests	SQG
Updated On	08-AUG-10
Recorded On	01-MAR-00
Program ID	CAD981445638

US RCRA Generators (CESQG, SQG, LQG)

Location	36.98227, -121.9622
Distance to site	1961 ft / 0.37 mi SE
Info URL	*http://iaspub.epa.gov/enviro/fii_query_detail.disp_program_facility?p_registry_id=110002759818*
EPA Identifier	110002759818
Primary Name	PERFORMANCE CARS LTD
Address	4200 AUTO PLAZA DR
City	SANTA CRUZ
County	SANTA CRUZ
State	CA
Zipcode	95060
Programs	RCRAINFO
Program Interests	SQG
Updated On	26-JAN-12
Recorded On	01-MAR-00

Location	36.98037, -121.9649
Distance to site	2340 ft / 0.44 mi S
Info URL	*http://iaspub.epa.gov/enviro/fii_query_detail.disp_program_facility?p_registry_id=110002624599*
EPA Identifier	110002624599
Primary Name	TOSCO NORTHWEST CO NO 11240
Address	2178 41ST AVE
City	CAPITOLA
County	SANTA CRUZ
State	CA
Zipcode	95010
Programs	RCRAINFO
Program Interests	SQG
Updated On	26-JAN-12
Recorded On	01-MAR-00
Program ID	CA0001038025

US RCRA Generators (CESQG, SQG, LQG)

Location	36.98412, -121.9572
Distance to site	2742 ft / 0.52 mi E
Info URL	*http://iaspub.epa.gov/enviro/fii_query_detail.disp_program_facility?p_registry_id=110002946929*
EPA Identifier	110002946929
Primary Name	ATLANTIC RICHFIELD CO
Address	2407 S PORTER
City	SOQUEL
County	SANTA CRUZ
State	CA
Zipcode	95073-2470
Programs	RCRAINFO
Program Interests	SQG
Updated On	08-AUG-10
Recorded On	01-MAR-00
Program ID	CAT080014921

Location	36.98829, -121.9759
Distance to site	2934 ft / 0.56 mi W
Info URL	*http://iaspub.epa.gov/enviro/fii_query_detail.disp_program_facility?p_registry_id=110002827479*
EPA Identifier	110002827479
Primary Name	ACC U TUNE & BRAKE
Address	2335 SOQUEL DR
City	SANTA CRUZ
County	SANTA CRUZ
State	CA
Zipcode	95065-1951
Programs	RCRAINFO
Program Interests	SQG
Updated On	08-AUG-10
Recorded On	01-MAR-00
Program ID	CAD982485864

US RCRA Generators (CESQG, SQG, LQG)

Location	36.98436, -121.9559
Distance to site	3085 ft / 0.58 mi E
Info URL	*http://iaspub.epa.gov/enviro/fii_query_detail.disp_program_facility?p_registry_id=110008276926*
EPA Identifier	110008276926
Primary Name	TEXACO REFINING AND MARKETING
Address	2501 S MAIN AND PORTER
City	SOQUEL
County	SANTA CRUZ
State	CA
Zipcode	95073
Programs	RCRAINFO
Program Interests	SQG
Updated On	08-AUG-10
Recorded On	01-MAR-00
Program ID	CAD982372922

Location	36.9822, -121.9566
Distance to site	3211 ft / 0.61 mi SE
Info URL	*http://iaspub.epa.gov/enviro/fii_query_detail.disp_program_facility?p_registry_id=110013898274*
EPA Identifier	110013898274
Primary Name	PIT STOP SERVICE INCORPORATED
Address	836 BAY STREET
City	CAPITOLA
County	SANTA CRUZ
State	CA
Zipcode	95010-2143
NAICS Codes	447110
Programs	EIS, RCRAINFO
Program Interests	CRITERIA AND HAZARDOUS AIR POLLUTANT INVENTORY, SQG
Updated On	19-JUN-14
Recorded On	11-APR-03
NAICS Descriptions	GASOLINE STATIONS WITH CONVENIENCE STORES.
Program ID	2341111

US RCRA Generators (CESQG, SQG, LQG)

Location	36.97819, -121.9688
Distance to site	3213 ft / 0.61 mi S
Info URL	*http://iaspub.epa.gov/enviro/fii_query_detail.disp_program_facility?p_registry_id=110002896670*
EPA Identifier	110002896670
Primary Name	SAMS PHOTO ONE
Address	3555 CLARES ST STE MM
City	CAPITOLA
County	SANTA CRUZ
State	CA
Zipcode	95010
Programs	RCRAINFO
Program Interests	SQG
Updated On	26-JAN-12
Recorded On	01-MAR-00
Program ID	CAD983664731

Location	36.98079, -121.9552
Distance to site	3832 ft / 0.73 mi SE
Info URL	*http://iaspub.epa.gov/enviro/fii_query_detail.disp_program_facility?p_registry_id=110055523189*
EPA Identifier	110055523189
Primary Name	CVS PHARMACY NO 9960
Address	809 BAY AVE
City	CAPITOLA
County	SANTA CRUZ
State	CA
Zipcode	95010
Programs	RCRAINFO
Program Interests	LQG
Recorded On	30-AUG-13
Program ID	CAR000240606

US RCRA Generators (CESQG, SQG, LQG)

Location	36.97568, -121.965
Distance to site	4038 ft / 0.76 mi S
Info URL	*http://iaspub.epa.gov/enviro/fii_query_detail.disp_program_facility?p_registry_id=110009551136*
EPA Identifier	110009551136
Primary Name	EXPRESSLY PORTRAITS INC
Address	1855 41ST AVE
City	CAPITOLA
County	SANTA CRUZ
State	CA
Zipcode	95010
Programs	RCRAINFO
Program Interests	SQG
Updated On	26-JAN-12
Recorded On	01-MAR-00
Program ID	CAD983667122

Location	36.97551, -121.9649
Distance to site	4104 ft / 0.78 mi S
Info URL	*http://iaspub.epa.gov/enviro/fii_query_detail.disp_program_facility?p_registry_id=110002610434*
EPA Identifier	110002610434
Primary Name	KITS CAMERAS INC NO 078
Address	1855 51ST AVE STE D1A
City	CAPITOLA
County	SANTA CRUZ
State	CA
Zipcode	95010
NAICS Codes	452112
Programs	RCRAINFO
Program Interests	SQG, UNSPECIFIED UNIVERSE
Updated On	02-MAR-12
Recorded On	01-MAR-00
NAICS Descriptions	DISCOUNT DEPARTMENT STORES.
Program ID	CAR000003491

US RCRA Generators (CESQG, SQG, LQG)

Location	36.98903, -121.9804
Distance to site	4265 ft / 0.81 mi W
Info URL	*http://iaspub.epa.gov/enviro/fii_query_detail.disp_program_facility?p_registry_id=110002881793*
EPA Identifier	110002881793
Primary Name	A CARHART RENTAL INC
Address	1835 SOQUEL DR
City	SANTA CRUZ
County	SANTA CRUZ
State	CA
Zipcode	95065
Programs	RCRAINFO
Program Interests	SQG
Updated On	26-JAN-12
Recorded On	01-MAR-00
Program ID	CAD983644220

Location	36.97366, -121.9678
Distance to site	4794 ft / 0.91 mi S
Info URL	*http://iaspub.epa.gov/enviro/fii_query_detail.disp_program_facility?p_registry_id=110002731367*
EPA Identifier	110002731367
Primary Name	KINGS CLEANERS-CAPITOLA
Address	3908 CAPITOLA RD
City	CAPITOLA
County	SANTA CRUZ
State	CA
Zipcode	95010
NAICS Codes	812320
Programs	EIS, RCRAINFO
Program Interests	CRITERIA AND HAZARDOUS AIR POLLUTANT INVENTORY, SQG
Updated On	06-APR-14
Recorded On	01-MAR-00
NAICS Descriptions	DRYCLEANING AND LAUNDRY SERVICES (EXCEPT COIN-OPERATED).
Program ID	3145211

US RCRA Generators (CESQG, SQG, LQG)

Location	36.97353, -121.965
Distance to site	4822 ft / 0.91 mi S
Info URL	*http://iaspub.epa.gov/enviro/fii_query_detail.disp_program_facility?p_registry_id=110042271877*
EPA Identifier	110042271877
Primary Name	SERVICE STATION - SAP #135132
Address	1649 41ST AVE
City	CAPITOLA
County	SANTA CRUZ
State	CA
Zipcode	95010
Programs	BR, RCRAINFO
Program Interests	HAZARDOUS WASTE BIENNIAL REPORTER, LQG
Updated On	28-MAR-14
Recorded On	01-NOV-10
Program ID	CAD981400906

Location	36.97365, -121.9702
Distance to site	4922 ft / 0.93 mi S
Info URL	*http://iaspub.epa.gov/enviro/fii_query_detail.disp_program_facility?p_registry_id=110002950566*
EPA Identifier	110002950566
Primary Name	PACIFIC BELL
Address	3640 CAPITOLA ROAD
City	SANTA CRUZ
County	SANTA CRUZ
State	CA
Zipcode	95062-2047
Programs	HWTS-DATAMART, RCRAINFO
Program Interests	SQG, STATE MASTER
Updated On	08-AUG-10
Recorded On	01-MAR-00
Program ID	CAT080022353

US RCRA Generators (CESQG, SQG, LQG)

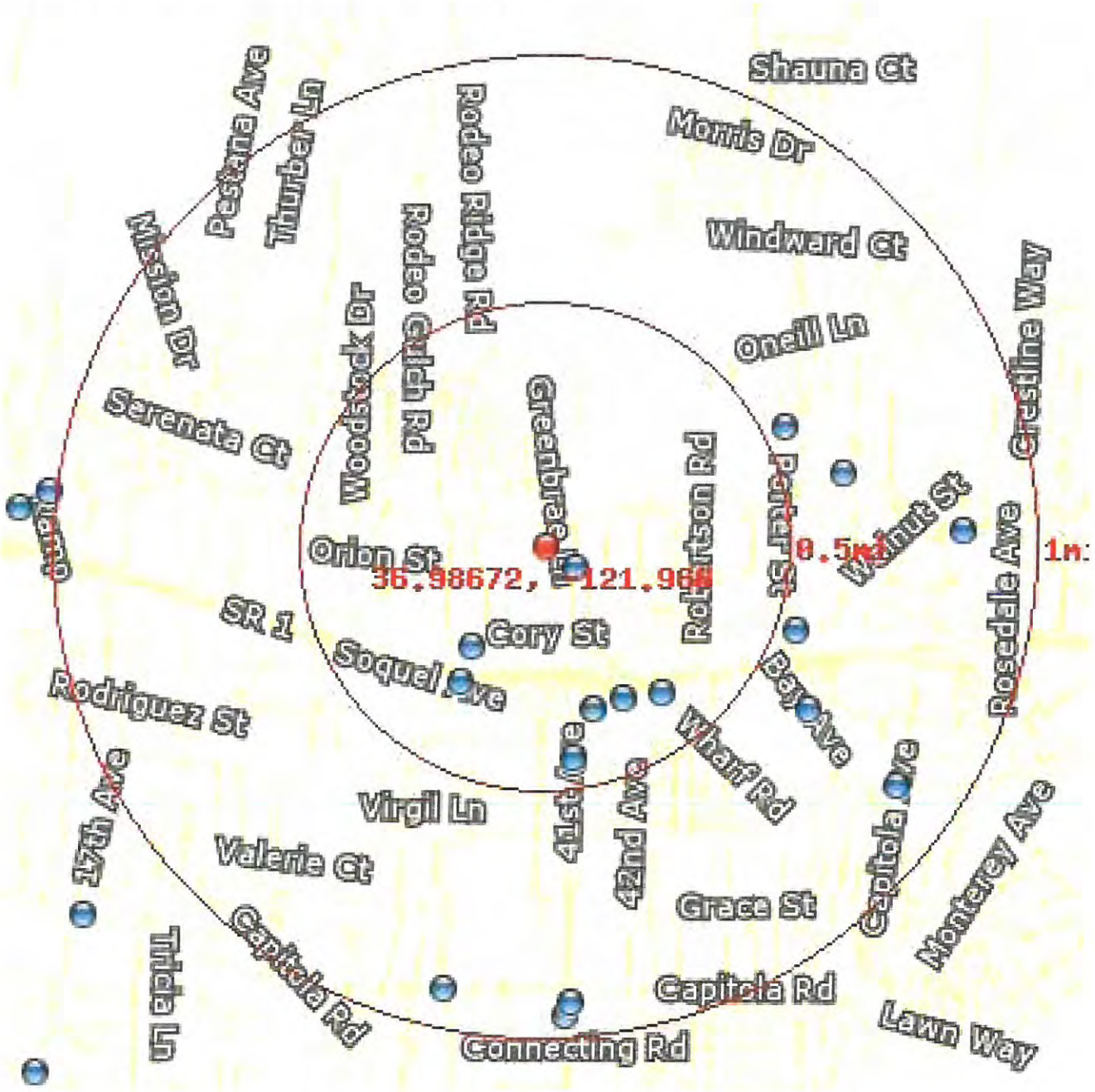
Location	36.97316, -121.9649
Distance to site	4959 ft / 0.94 mi S
Info URL	*http://iaspub.epa.gov/enviro/fii_query_detail.disp_program_facility?p_registry_id=110013310513*
EPA Identifier	110013310513
Primary Name	CHEVRON STATION NO 98958
Address	1650 41ST AVE
City	CAPITOLA
County	SANTA CRUZ
State	CA
Zipcode	950102917
NAICS Codes	447110
SIC Codes	5541
SIC Descriptions	GASOLINE SERVICE STATIONS
Programs	CA-CERS, EIS, HWTS-DATAMART, RCRAINFO
Program Interests	CRITERIA AND HAZARDOUS AIR POLLUTANT INVENTORY, SQG, STATE MASTER
Updated On	10-SEP-14
Recorded On	31-OCT-02
NAICS Descriptions	GASOLINE STATIONS WITH CONVENIENCE STORES.
Program ID	3297111

US ACRES (Brownfields)

This database returned no results for your area.

Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties protects the environment, reduces blight, and takes development pressures off greenspaces and working lands. The Assessment, Cleanup and Redevelopment Exchange System (ACRES) is an online database for Brownfields Grantees to electronically submit data directly to The United States Environmental Protection Agency (EPA)

CA Registered Underground Storage Tanks



This database returned 17 results for your area.

Underground storage tanks containing hazardous or petroleum substances are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA). The State Water Resources Control Board"s GeoTracker database provides the list of permitted Underground Storage Tanks (UST).

CA Registered Underground Storage Tanks

Location	36.986, -121.9648
Distance to site	438 ft / 0.08 mi SE
Site Name	USA GASOLINE #88
Permitting Agency	SANTA CRUZ COUNTY
Address	2700 41ST AVE
City	SOQUEL
Zip	95073
County	Santa Cruz

Location	36.98369, -121.9686
Distance to site	1329 ft / 0.25 mi SW
Site Name	VALLE EUROPEAN AUTO SERVICE
Permitting Agency	SANTA CRUZ COUNTY
Address	2650 RESEARCH PARK DR
City	SOQUEL
Zip	95073
County	Santa Cruz

Location	36.98266, -121.969
Distance to site	1714 ft / 0.32 mi SW
Site Name	PACIFIC BELL NF508
Permitting Agency	SANTA CRUZ COUNTY
Address	7070 SOQUEL AVE
City	SANTA CRUZ
Zip	95062
County	Santa Cruz

Location	36.98189, -121.9641
Distance to site	1852 ft / 0.35 mi S
Site Name	MARINA MOTOR COMPANY
Permitting Agency	SANTA CRUZ COUNTY
Address	4100 AUTO PLAZA DR
City	CAPITOLA
Zip	95010
County	Santa Cruz

Location	36.98222, -121.963
Distance to site	1868 ft / 0.35 mi SE
Site Name	TOYOTA OF SANTA CRUZ INC
Permitting Agency	SANTA CRUZ COUNTY
Address	4200 AUTO PLAZA DR
City	CAPITOLA
Zip	95010
County	Santa Cruz

CA Registered Underground Storage Tanks

Location	36.98233, -121.9616
Distance to site	2049 ft / 0.39 mi SE
Site Name	OCEAN HONDA/CHEVROLET/GEO
Permitting Agency	SANTA CRUZ COUNTY
Address	4400 AUTO PLAZA DR
City	CAPITOLA
Zip	95010
County	Santa Cruz

Location	36.98044, -121.9648
Distance to site	2319 ft / 0.44 mi S
Site Name	41ST AVENUE 76 #4902-30757
Permitting Agency	SANTA CRUZ COUNTY
Address	2195 41ST AVE
City	CAPITOLA
Zip	95010
County	Santa Cruz

Location	36.98025, -121.9648
Distance to site	2387 ft / 0.45 mi S
Site Name	CAPITOLA UNION 76 #11240
Permitting Agency	SANTA CRUZ COUNTY
Address	2178 41ST AVE
City	CAPITOLA
Zip	95010
County	Santa Cruz

Location	36.99013, -121.9572
Distance to site	2853 ft / 0.54 mi E
Site Name	QUIK STOP MARKET #37
Permitting Agency	SANTA CRUZ COUNTY
Address	3204 PORTER ST
City	SOQUEL
Zip	95073
County	Santa Cruz

Location	36.98421, -121.9567
Distance to site	2865 ft / 0.54 mi E
Site Name	SOQUEL TEXACO
Permitting Agency	SANTA CRUZ COUNTY
Address	2501 MAIN ST
City	SOQUEL
Zip	95073
County	Santa Cruz

CA Registered Underground Storage Tanks

Location	36.98882, -121.9551
Distance to site	3287 ft / 0.62 mi E
Site Name	SOQUEL UNOCAL 76 #30441-252452
Permitting Agency	SANTA CRUZ COUNTY
Address	4860 SOQUEL DR
City	SOQUEL
Zip	95073
County	Santa Cruz

Location	36.98188, -121.9562
Distance to site	3365 ft / 0.64 mi SE
Site Name	PIT STOP SERVICE INC
Permitting Agency	SANTA CRUZ COUNTY
Address	836 BAY AVE
City	CAPITOLA
Zip	95010
County	Santa Cruz

Location	36.98713, -121.9507
Distance to site	4470 ft / 0.85 mi E
Site Name	SOQUEL CREEK WATER DISTRICT
Permitting Agency	SANTA CRUZ COUNTY
Address	5180 SOQUEL DR
City	SOQUEL
Zip	95073
County	Santa Cruz

Location	36.97965, -121.9529
Distance to site	4610 ft / 0.87 mi SE
Site Name	NEW BRIGHTON PUMPING STATION
Permitting Agency	SANTA CRUZ COUNTY
Address	NEW BRIGHTON STATE BEACH
City	CAPITOLA
Zip	95010
County	Santa Cruz

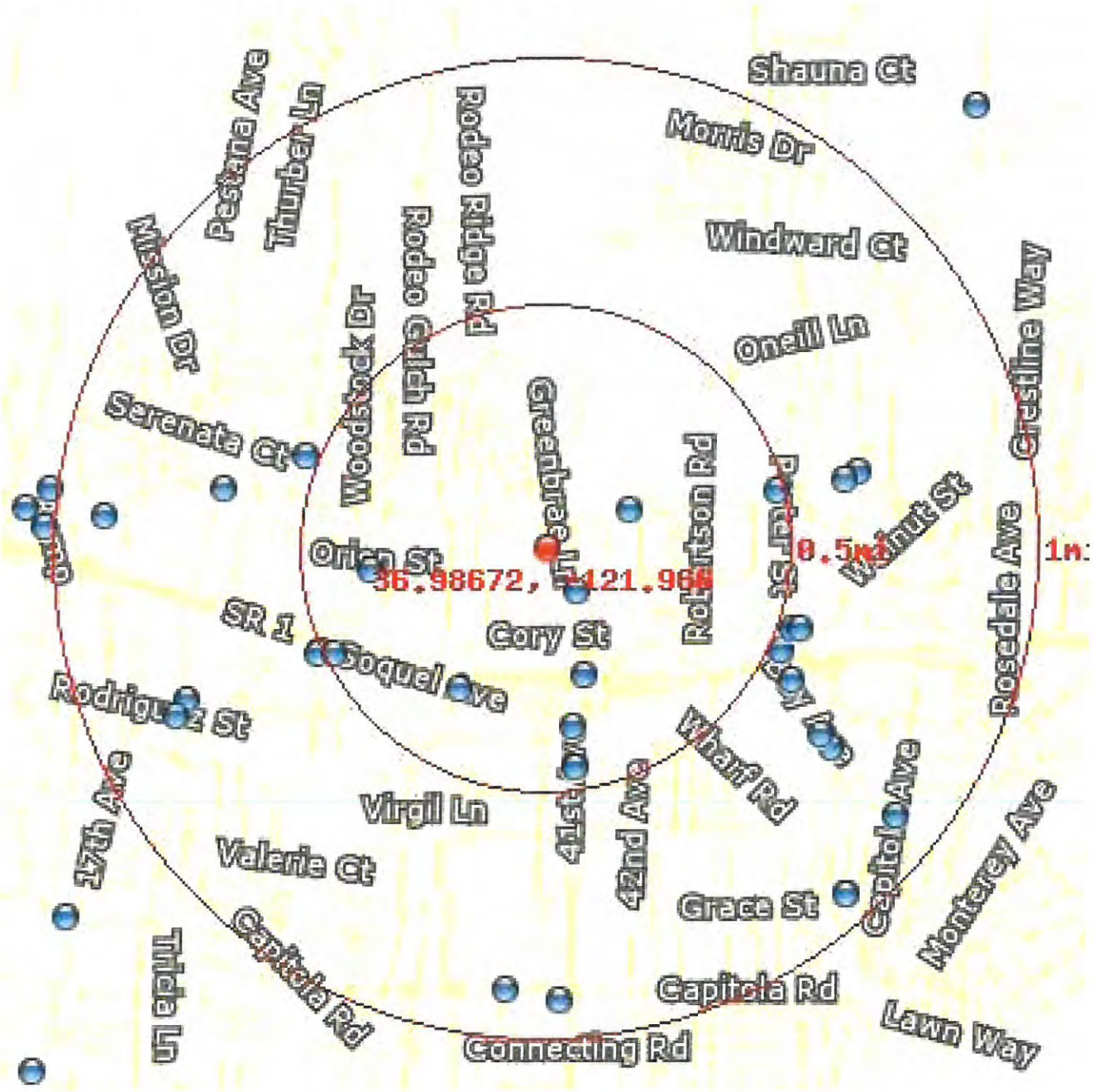
Location	36.97364, -121.9695
Distance to site	4878 ft / 0.92 mi S
Site Name	PACIFIC BELL NF102
Permitting Agency	SANTA CRUZ COUNTY
Address	3640 CAPITOLA RD
City	SANTA CRUZ
Zip	95062
County	Santa Cruz

CA Registered Underground Storage Tanks

Location	36.97323, -121.9648
Distance to site	4935 ft / 0.93 mi S
Site Name	CHEVRON STATION #1707/98958
Permitting Agency	SANTA CRUZ COUNTY
Address	1650 41ST AVE
City	CAPITOLA
Zip	95010
County	Santa Cruz

Location	36.97286, -121.965
Distance to site	5066 ft / 0.96 mi S
Site Name	PLAZA SHELL SERVICE
Permitting Agency	SANTA CRUZ COUNTY
Address	1649 41ST AVE
City	CAPITOLA
Zip	95010
County	Santa Cruz

CA Leaking Underground Storage Tanks



This database returned 30 results for your area.

Information on Leaking underground storage tanks containing hazardous or petroleum substances is maintained in the State Water Resources Control Board"s GeoTracker database.

CA Leaking Underground Storage Tanks

Location	36.98538, -121.9648
Distance to site	611 ft / 0.12 mi SE
Site Name	SERVICE STATION NO 88
Site Street Number	2700
Site Street Name	41ST ST
Site City	SOQUEL
Site State	CA
Site Zip	95073
Site County	Santa Cruz
Status	Completed - Case Closed
Status Date	2002-08-02
Lead Agency	CENTRAL COAST RWQCB (REGION 3)
Local Agency	SANTA CRUZ COUNTY
File Location	State Records Center
Contaminant	Gasoline
Contaminated Medium	Other Groundwater (uses other than drinking water)

Location	36.98774, -121.9629
Distance to site	977 ft / 0.19 mi E
Site Name	4100 SOQUEL DR
Site Street Number	4100
Site Street Name	SOQUEL DR
Site City	SOQUEL
Site State	CA
Site Zip	95073
Site County	Santa Cruz
Status	Completed - Case Closed
Status Date	2005-09-25
Lead Agency	SANTA CRUZ COUNTY
Local Agency	SANTA CRUZ COUNTY
Contaminant	Gasoline
Contaminated Medium	Soil

CA Leaking Underground Storage Tanks

Location	36.9829, -121.9645
Distance to site	1457 ft / 0.28 mi S
Site Name	SAN LORENZO LUMBER CO
Site Street Number	2435
Site Street Name	41ST AVE
Site City	SANTA CRUZ
Site State	CA
Site Zip	95060
Site County	Santa Cruz
Status	Completed - Case Closed
Status Date	1991-11-05
Lead Agency	SANTA CRUZ COUNTY
Local Agency	SANTA CRUZ COUNTY
Contaminant	Gasoline
Contaminated Medium	Soil

Location	36.9825, -121.9691
Distance to site	1780 ft / 0.34 mi SW
Site Name	PACIFIC BELL FLEET OPERATIONS
Site Street Number	7070
Site Street Name	SOQUEL AVENUE
Site City	SANTA CRUZ
Site State	CA
Site Zip	95062
Site County	Santa Cruz
Status	Completed - Case Closed
Status Date	2001-07-09
Lead Agency	SANTA CRUZ COUNTY
Local Agency	SANTA CRUZ COUNTY
Contaminant	Gasoline
Contaminated Medium	Other Groundwater (uses other than drinking water)

CA Leaking Underground Storage Tanks

Location	36.986, -121.9724
Distance to site	1864 ft / 0.35 mi W
Site Name	FRITO LAY
Site Street Number	2825
Site Street Name	MATTISON LN
Site City	SANTA CRUZ
Site State	CA
Site Zip	95060
Site County	Santa Cruz
Status	Completed - Case Closed
Status Date	1989-08-04
Lead Agency	SANTA CRUZ COUNTY
Local Agency	SANTA CRUZ COUNTY
Contaminant	Gasoline
Contaminated Medium	Under Investigation

Location	36.98141, -121.9649
Distance to site	1962 ft / 0.37 mi S
Site Name	TOSCO SERVICE STATION #4902
Site Street Number	2255
Site Street Name	41ST AVE
Site City	CAPITOLA
Site State	CA
Site Zip	95010
Site County	Santa Cruz
Status	Completed - Case Closed
Status Date	2004-07-21
Lead Agency	CENTRAL COAST RWQCB (REGION 3)
Local Agency	SANTA CRUZ COUNTY
File Location	State Records Center
Contaminant	Gasoline, Waste Oil / Motor / Hydraulic / Lubricating
Contaminated Medium	Soil

CA Leaking Underground Storage Tanks

Location	36.9802, -121.9648
Distance to site	2405 ft / 0.46 mi S
Site Name	BP OIL FACILITY NO. 11240
Site Street Number	2178
Site Street Name	41ST AVE
Site City	CAPITOLA
Site State	CA
Site Zip	95010
Site County	Santa Cruz
Status	Completed - Case Closed
Status Date	1989-02-01
Lead Agency	SANTA CRUZ COUNTY
Local Agency	SANTA CRUZ COUNTY
Contaminant	Gasoline
Contaminated Medium	Soil

Location	36.9802, -121.9648
Distance to site	2405 ft / 0.46 mi S
Site Name	BP #11240
Site Street Number	2178
Site Street Name	41ST AVE
Site City	CAPITOLA
Site State	CA
Site Zip	95010
Site County	Santa Cruz
Status	Open - Verification Monitoring
Status Date	2006-07-20
Lead Agency	CENTRAL COAST RWQCB (REGION 3)
Local Agency	SANTA CRUZ COUNTY
File Location	Regional Board
Contaminant	Gasoline
Contaminated Medium	Other Groundwater (uses other than drinking water)

CA Leaking Underground Storage Tanks

Location	36.98351, -121.9737
Distance to site	2513 ft / 0.48 mi SW
Site Name	COCA-COLA ENTERPRISES - WEST
Site Street Number	6100
Site Street Name	SOQUEL AVE
Site City	SANTA CRUZ
Site State	CA
Site Zip	95060
Site County	Santa Cruz
Status	Completed - Case Closed
Status Date	1991-09-12
Lead Agency	SANTA CRUZ COUNTY
Local Agency	SANTA CRUZ COUNTY
Contaminant	Diesel
Contaminated Medium	Soil

Location	36.98835, -121.9575
Distance to site	2557 ft / 0.48 mi E
Site Name	PONZA BROTHERS YARD
Site Street Number	3131
Site Street Name	PORTER ST
Site City	SOQUEL
Site State	CA
Site Zip	95073
Site County	Santa Cruz
Status	Completed - Case Closed
Status Date	1992-10-19
Lead Agency	CENTRAL COAST RWQCB (REGION 3)
Local Agency	SANTA CRUZ COUNTY
Contaminant	Gasoline
Contaminated Medium	Other Groundwater (uses other than drinking water)

CA Leaking Underground Storage Tanks

Location	36.98363, -121.9742
Distance to site	2628 ft / 0.5 mi W
Site Name	CHEVRON STATION
Site Street Number	5998
Site Street Name	SOQUEL DR
Site City	SANTA CRUZ
Site State	CA
Site Zip	95060
Site County	Santa Cruz
Status	Completed - Case Closed
Status Date	1985-08-12
Lead Agency	SANTA CRUZ COUNTY
Local Agency	SANTA CRUZ COUNTY
Contaminant	Gasoline
Contaminated Medium	Soil

Location	36.98357, -121.9743
Distance to site	2668 ft / 0.51 mi W
Site Name	SKILL CENTER INC
Site Street Number	2685
Site Street Name	MATTISON LN
Site City	SANTA CRUZ
Site State	CA
Site Zip	95062
Site County	Santa Cruz
Status	Open - Remediation
Status Date	1989-02-24
Lead Agency	SANTA CRUZ COUNTY
Local Agency	SANTA CRUZ COUNTY
Contaminant	Gasoline
Contaminated Medium	Soil

CA Leaking Underground Storage Tanks

Location	36.98932, -121.9748
Distance to site	2725 ft / 0.52 mi W
Site Name	JIMMY SMITH PLUMBING
Site Street Number	3098
Site Street Name	WINKLE AVE
Site City	SANTA CRUZ
Site State	CA
Site Zip	95065
Site County	Santa Cruz
Status	Open - Site Assessment
Status Date	1990-06-13
Lead Agency	SANTA CRUZ COUNTY
Local Agency	SANTA CRUZ COUNTY
Contaminant	Gasoline
Contaminated Medium	Soil

Location	36.98363, -121.9573
Distance to site	2772 ft / 0.52 mi E
Site Name	ARCO STATION
Site Street Number	2407
Site Street Name	PORTER ST
Site City	SOQUEL
Site State	CA
Site Zip	95062
Site County	Santa Cruz
Status	Completed - Case Closed
Status Date	1997-07-02
Lead Agency	CENTRAL COAST RWQCB (REGION 3)
Local Agency	SANTA CRUZ COUNTY
Contaminant	Gasoline
Contaminated Medium	Other Groundwater (uses other than drinking water)

CA Leaking Underground Storage Tanks

Location	36.98424, -121.9569
Distance to site	2814 ft / 0.53 mi E
Site Name	FORMER EXXON 7-0281
Site Street Number	2501
Site Street Name	MAIN ST S
Site City	SOQUEL
Site State	CA
Site Zip	95073
Site County	Santa Cruz
Status	Open - Verification Monitoring
Status Date	2000-03-01
Lead Agency	CENTRAL COAST RWQCB (REGION 3)
Local Agency	SANTA CRUZ COUNTY
File Location	Regional Board
Contaminant	Gasoline
Contaminated Medium	Other Groundwater (uses other than drinking water)

Location	36.98422, -121.9566
Distance to site	2892 ft / 0.55 mi E
Site Name	EXXON STATION 7-0281 FIRST LEA
Site Street Number	2501
Site Street Name	MAIN ST S
Site City	SOQUEL
Site State	CA
Site Zip	95073
Site County	Santa Cruz
Status	Completed - Case Closed
Status Date	1991-03-27
Lead Agency	SANTA CRUZ COUNTY
Local Agency	SANTA CRUZ COUNTY
Contaminant	Gasoline
Contaminated Medium	Soil

CA Leaking Underground Storage Tanks

Location	36.98275, -121.9569
Distance to site	3029 ft / 0.57 mi SE
Site Name	FORMER EXXON 7-3604
Site Street Number	836
Site Street Name	BAY AVE
Site City	CAPITOLA
Site State	CA
Site Zip	95010
Site County	Santa Cruz
Status	Open - Verification Monitoring
Status Date	2004-04-05
Lead Agency	CENTRAL COAST RWQCB (REGION 3)
Local Agency	SANTA CRUZ COUNTY
File Location	Regional Board
Contaminant	Gasoline
Contaminated Medium	Other Groundwater (uses other than drinking water)

Location	36.98864, -121.955
Distance to site	3285 ft / 0.62 mi E
Site Name	TOSCO - FACILITY #2452
Site Street Number	4860
Site Street Name	SOQUEL DR
Site City	SOQUEL
Site State	CA
Site Zip	93401
Site County	Santa Cruz
Status	Open - Remediation
Status Date	2007-11-29
Lead Agency	CENTRAL COAST RWQCB (REGION 3)
Local Agency	SANTA CRUZ COUNTY
File Location	Regional Board
Contaminant	Gasoline
Contaminated Medium	Other Groundwater (uses other than drinking water)

CA Leaking Underground Storage Tanks

Location	36.98888, -121.9545
Distance to site	3443 ft / 0.65 mi E
Site Name	E-Z SERVE #100981
Site Street Number	4901
Site Street Name	SOQUEL DR
Site City	SOQUEL
Site State	CA
Site Zip	95073
Site County	Santa Cruz
Status	Completed - Case Closed
Status Date	2007-02-02
Lead Agency	CENTRAL COAST RWQCB (REGION 3)
Local Agency	SANTA CRUZ COUNTY
File Location	Regional Board
Contaminant	Gasoline
Contaminated Medium	Other Groundwater (uses other than drinking water)

Location	36.9884, -121.9778
Distance to site	3480 ft / 0.66 mi W
Site Name	ULTRAMAR BEACON
Site Street Number	2210
Site Street Name	SOQUEL DR
Site City	SANTA CRUZ
Site State	CA
Site Zip	95065
Site County	Santa Cruz
Status	Completed - Case Closed
Status Date	1992-02-10
Lead Agency	SANTA CRUZ COUNTY
Local Agency	SANTA CRUZ COUNTY
Contaminant	Gasoline
Contaminated Medium	Soil

CA Leaking Underground Storage Tanks

Location	36.98117, -121.9558
Distance to site	3604 ft / 0.68 mi SE
Site Name	REDTREE PROPERTIES
Site Street Number	819
Site Street Name	BAY AVE
Site City	CAPITOLA
Site State	CA
Site Zip	95010
Site County	Santa Cruz
Status	Open - Site Assessment
Status Date	2007-03-19
Lead Agency	CENTRAL COAST RWQCB (REGION 3)
Local Agency	SANTA CRUZ COUNTY
File Location	Regional Board
Contaminant	Gasoline
Contaminated Medium	Other Groundwater (uses other than drinking water)

Location	36.98074, -121.9554
Distance to site	3788 ft / 0.72 mi SE
Site Name	SOQUEL PUMP STATION
Site Street Number	809
Site Street Name	BAY AVE
Site City	CAPITOLA
Site State	CA
Site Zip	95010
Site County	Santa Cruz
Status	Completed - Case Closed
Status Date	1995-06-01
Lead Agency	CENTRAL COAST RWQCB (REGION 3)
Local Agency	SANTA CRUZ COUNTY
Contaminated Medium	Soil

CA Leaking Underground Storage Tanks

Location	36.98215, -121.9791
Distance to site	4158 ft / 0.79 mi W
Site Name	CENTRAL COUNTY GARBAGE
Site Street Number	2230
Site Street Name	CHANTICLEER ST
Site City	SANTA CRUZ
Site State	CA
Site Zip	95062
Site County	Santa Cruz
Status	Completed - Case Closed
Status Date	1991-05-07
Lead Agency	SANTA CRUZ COUNTY
Local Agency	SANTA CRUZ COUNTY
Contaminant	Gasoline
Contaminated Medium	Soil

Location	36.98169, -121.9794
Distance to site	4314 ft / 0.82 mi W
Site Name	DANCO PROPERTY
Site Street Number	2185
Site Street Name	CHANTICLEER ST
Site City	SANTA CRUZ
Site State	CA
Site Zip	95062
Site County	Santa Cruz
Status	Completed - Case Closed
Status Date	1997-11-07
Lead Agency	SANTA CRUZ COUNTY
Local Agency	SANTA CRUZ COUNTY
Contaminant	Gasoline
Contaminated Medium	Soil

CA Leaking Underground Storage Tanks

Location	36.98761, -121.9822
Distance to site	4719 ft / 0.89 mi W
Site Name	REDTREE PROPERTIES
Site Street Number	1650
Site Street Name	COMMERCIAL WY
Site City	SANTA CRUZ
Site State	CA
Site Zip	95073
Site County	Santa Cruz
Status	Completed - Case Closed
Status Date	1988-02-05
Lead Agency	SANTA CRUZ COUNTY
Local Agency	SANTA CRUZ COUNTY
Contaminant	Gasoline
Contaminated Medium	Soil

Location	36.97873, -121.9531
Distance to site	4768 ft / 0.9 mi SE
Site Name	CHEVRON STATION
Site Street Number	600
Site Street Name	BAY AVE
Site City	CAPITOLA
Site State	CA
Site Zip	95010
Site County	Santa Cruz
Status	Completed - Case Closed
Status Date	2000-02-24
Lead Agency	CENTRAL COAST RWQCB (REGION 3)
Local Agency	SANTA CRUZ COUNTY
File Location	State Records Center
Contaminant	Gasoline
Contaminated Medium	Other Groundwater (uses other than drinking water)

CA Leaking Underground Storage Tanks

Location	36.97365, -121.9673
Distance to site	4784 ft / 0.91 mi S
Site Name	GOODYEAR TIRE AND RUBBER COMPA
Site Street Number	3800
Site Street Name	CAPITOLA RD
Site City	CAPITOLA
Site State	CA
Site Zip	95010
Site County	Santa Cruz
Status	Open - Site Assessment
Status Date	1975-01-01
Lead Agency	SANTA CRUZ COUNTY
Local Agency	SANTA CRUZ COUNTY
File Location	Local Agency
Contaminant	Waste Oil / Motor / Hydraulic / Lubricating
Contaminated Medium	Under Investigation

Location	36.97333, -121.9653
Distance to site	4889 ft / 0.93 mi S
Site Name	SHELL SERVICE STATION
Site Street Number	1649
Site Street Name	41ST AVE
Site City	CAPITOLA
Site State	CA
Site Zip	95010
Site County	Santa Cruz
Status	Open - Site Assessment
Status Date	2006-12-21
Lead Agency	CENTRAL COAST RWQCB (REGION 3)
Local Agency	SANTA CRUZ COUNTY
File Location	Regional Board
Contaminant	Gasoline
Contaminated Medium	Other Groundwater (uses other than drinking water)

CA Leaking Underground Storage Tanks

Location	36.97644, -121.9549
Distance to site	4963 ft / 0.94 mi SE
Site Name	CAPITOLA PUMPING STATION
Site Street Name	END OF ESPLANADE
Site City	CAPITOLA
Site State	CA
Site Zip	95010
Site County	Santa Cruz
Status	Completed - Case Closed
Status Date	1988-10-07
Lead Agency	SANTA CRUZ COUNTY
Local Agency	SANTA CRUZ COUNTY
Contaminant	Diesel
Contaminated Medium	Soil

Location	36.97644, -121.9549
Distance to site	4963 ft / 0.94 mi SE
Site Name	CAPITOLA MALL/BROWN BULB RANCH
Site Street Name	41ST AVE
Site City	CAPITOLA
Site State	CA
Site Zip	95010
Site County	Santa Cruz
Status	Completed - Case Closed
Status Date	1988-01-13
Lead Agency	SANTA CRUZ COUNTY
Local Agency	SANTA CRUZ COUNTY
Contaminant	Gasoline
Contaminated Medium	Soil

CA CERCLIS Equivalent

This database returned no results for your area.

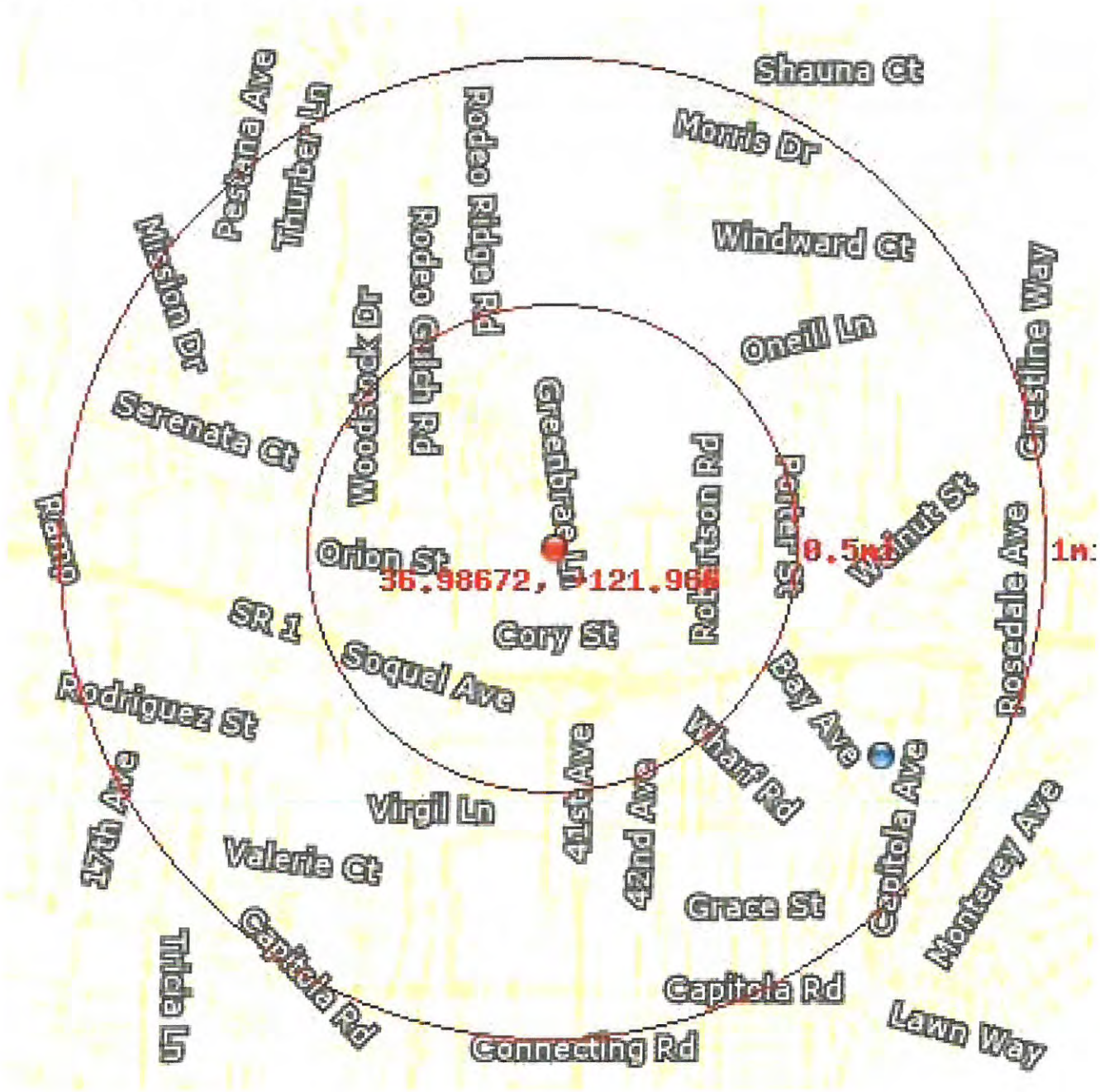
The Department of Toxic Substances Controls (DTSC) Site Mitigation and Brownfields Reuse Program (SMBRP) EnviroStor database identifies CERCLIS equivalent sites as "State Response". These are sites known or suspected to contain uncontrolled or abandoned hazardous substance facilities.

CA NPL Equivalent

This database returned no results for your area.

The Department of Toxic Substances Controls (DTSC) Site Mitigation and Brownfields Reuse Program (SMBRP) EnviroStor database identifies sites on the National Priority List (NPL). This is the equivalent of the Federal NPL identifying facilities and study areas with known contamination that are given priority for remedial action.

CA Hazardous Waste Sites



This database returned 1 results for your area.

The Department of Toxic Substances Controls (DTSC) Site Mitigation and Brownfields Reuse Program (SMBRP) EnviroStor database identifies Hazardous Waste Sites. These include...

All hazardous waste facilities subject to corrective action pursuant to Section 25187.5 of the Health and Safety Code.

All land designated as hazardous waste property or border zone property pursuant to Article 11 (commencing with Section 25220) of Chapter 6.5 of Division 20 of the Health and Safety Code.

All information received by the Department of Toxic Substances Control pursuant to Section 25242 of the Health and Safety Code on hazardous waste disposals on public land.

All sites listed pursuant to Section 25356 of the Health and Safety Code.

All sites included in the Abandoned Site Assessment Program.

CA Hazardous Waste Sites

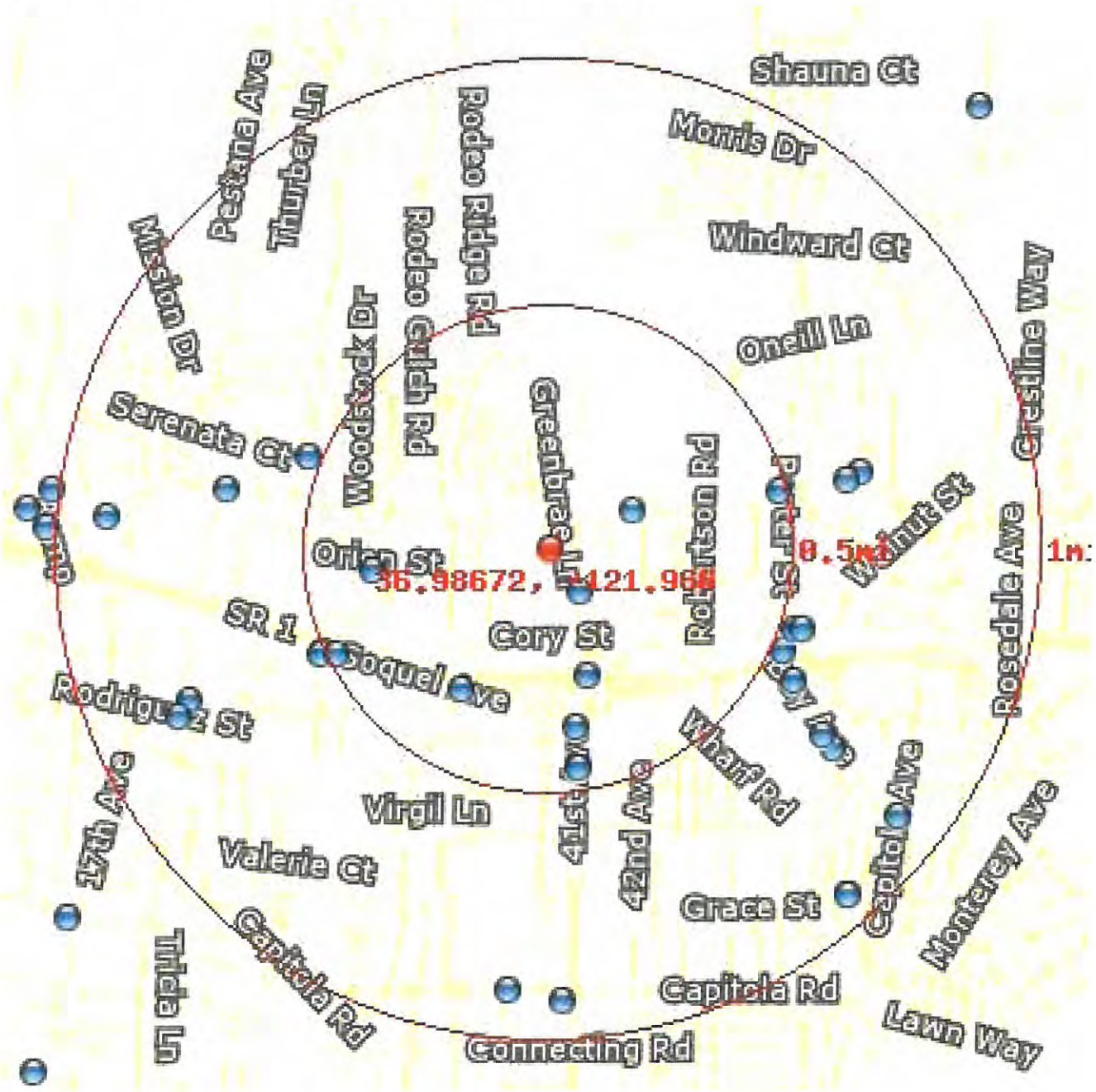
Location	36.98051, -121.9539
Distance to site	4202 ft / 0.8 mi SE
Site Name	Silvercrest Apartments
Site Type	Voluntary Cleanup
Site Type 2	Voluntary Cleanup
Site Area (acres)	4.7
Project Manager	ALLAN FONE
Project Supervisor	Daniel Murphy
Envirostor ID	60000900
Status	Active
Status Date	2008-11-07 00:00:00
Past Uses	AGRICULTURAL - ROW CROPS
Contaminant	SOIL
Funding Source	Responsible Party
Address	750 Bay Avenue
City	Capitola
State	CA
Zip Code	95010
County	SANTA CRUZ

CA Activity Use Restrictions

This database returned no results for your area.

Activity and Use Limitations (AULs), also known as Environmental Land-Use Controls (LUCs) – An AUL is a restriction, covenant or notice concerning the use of real property, which is imposed on real property. AULs and LUCs are further categorized as Institutional Controls (ICs) and Engineering Controls (ECs). An IC is a legal or regulatory restriction on the use of a property, limiting the use of groundwater and excavations or preventing such businesses as day care centers or schools on the property. An EC involves physical means of restricting site access or use in order to prevent the spreading or exposure of a contaminant. Frequently implemented engineering controls include requiring black top on the surface, building of structures to prevent exposure or even notices to the public that are posted on the grounds warning of contaminants.

CA Spills, Leaks, Investigations, and Cleanups



This database returned 30 results for your area.

The Spills, Leaks, Investigation & Cleanup (SLIC) Program is responsible for site investigation and corrective action involving sites not overseen by the Underground Tank Program and the Well Investigation Program. This program is not restricted to particular pollutants or environments; rather, the program covers all types of pollutants (such as solvents, petroleum fuels, and heavy metals) and all environments (including surface and water, groundwater, and the vadose zone). Upon confirming that an unauthorized discharge is polluting or threatens to pollute regional water bodies, the Regional Board oversees site investigation and corrective action. Statutory authority for the program is derived from the California Water Code, Division 7, Section 13304. Guidelines for site investigation and remediation are promulgated in State Board Resolution No. 92-49 entitled Policies and Procedures for Investigation and Cleanup and Abatement of Discharges under Water Code Section 13304.

CA Spills, Leaks, Investigations, and Cleanups

Location	36.98538, -121.9648
Distance to site	611 ft / 0.12 mi SE
Site Name	SERVICE STATION NO 88
Site Street Number	2700
Site Street Name	41ST ST
Site City	SOQUEL
Site State	CA
Site Zip	95073
Site County	Santa Cruz
Status	Completed - Case Closed
Status Date	2002-08-02
Lead Agency	CENTRAL COAST RWQCB (REGION 3)
Local Agency	SANTA CRUZ COUNTY
File Location	State Records Center
Contaminant	Gasoline
Contaminated Medium	Other Groundwater (uses other than drinking water)

Location	36.98774, -121.9629
Distance to site	977 ft / 0.19 mi E
Site Name	4100 SOQUEL DR
Site Street Number	4100
Site Street Name	SOQUEL DR
Site City	SOQUEL
Site State	CA
Site Zip	95073
Site County	Santa Cruz
Status	Completed - Case Closed
Status Date	2005-09-25
Lead Agency	SANTA CRUZ COUNTY
Local Agency	SANTA CRUZ COUNTY
Contaminant	Gasoline
Contaminated Medium	Soil

CA Spills, Leaks, Investigations, and Cleanups

Location	36.9829, -121.9645
Distance to site	1457 ft / 0.28 mi S
Site Name	SAN LORENZO LUMBER CO
Site Street Number	2435
Site Street Name	41ST AVE
Site City	SANTA CRUZ
Site State	CA
Site Zip	95060
Site County	Santa Cruz
Status	Completed - Case Closed
Status Date	1991-11-05
Lead Agency	SANTA CRUZ COUNTY
Local Agency	SANTA CRUZ COUNTY
Contaminant	Gasoline
Contaminated Medium	Soil

Location	36.9825, -121.9691
Distance to site	1780 ft / 0.34 mi SW
Site Name	PACIFIC BELL FLEET OPERATIONS
Site Street Number	7070
Site Street Name	SOQUEL AVENUE
Site City	SANTA CRUZ
Site State	CA
Site Zip	95062
Site County	Santa Cruz
Status	Completed - Case Closed
Status Date	2001-07-09
Lead Agency	SANTA CRUZ COUNTY
Local Agency	SANTA CRUZ COUNTY
Contaminant	Gasoline
Contaminated Medium	Other Groundwater (uses other than drinking water)

CA Spills, Leaks, Investigations, and Cleanups

Location	36.986, -121.9724
Distance to site	1864 ft / 0.35 mi W
Site Name	FRITO LAY
Site Street Number	2825
Site Street Name	MATTISON LN
Site City	SANTA CRUZ
Site State	CA
Site Zip	95060
Site County	Santa Cruz
Status	Completed - Case Closed
Status Date	1989-08-04
Lead Agency	SANTA CRUZ COUNTY
Local Agency	SANTA CRUZ COUNTY
Contaminant	Gasoline
Contaminated Medium	Under Investigation

Location	36.98141, -121.9649
Distance to site	1962 ft / 0.37 mi S
Site Name	TOSCO SERVICE STATION #4902
Site Street Number	2255
Site Street Name	41ST AVE
Site City	CAPITOLA
Site State	CA
Site Zip	95010
Site County	Santa Cruz
Status	Completed - Case Closed
Status Date	2004-07-21
Lead Agency	CENTRAL COAST RWQCB (REGION 3)
Local Agency	SANTA CRUZ COUNTY
File Location	State Records Center
Contaminant	Gasoline, Waste Oil / Motor / Hydraulic / Lubricating
Contaminated Medium	Soil

CA Spills, Leaks, Investigations, and Cleanups

Location	36.9802, -121.9648
Distance to site	2405 ft / 0.46 mi S
Site Name	BP OIL FACILITY NO. 11240
Site Street Number	2178
Site Street Name	41ST AVE
Site City	CAPITOLA
Site State	CA
Site Zip	95010
Site County	Santa Cruz
Status	Completed - Case Closed
Status Date	1989-02-01
Lead Agency	SANTA CRUZ COUNTY
Local Agency	SANTA CRUZ COUNTY
Contaminant	Gasoline
Contaminated Medium	Soil

Location	36.9802, -121.9648
Distance to site	2405 ft / 0.46 mi S
Site Name	BP #11240
Site Street Number	2178
Site Street Name	41ST AVE
Site City	CAPITOLA
Site State	CA
Site Zip	95010
Site County	Santa Cruz
Status	Open - Verification Monitoring
Status Date	2006-07-20
Lead Agency	CENTRAL COAST RWQCB (REGION 3)
Local Agency	SANTA CRUZ COUNTY
File Location	Regional Board
Contaminant	Gasoline
Contaminated Medium	Other Groundwater (uses other than drinking water)

CA Spills, Leaks, Investigations, and Cleanups

Location	36.98351, -121.9737
Distance to site	2513 ft / 0.48 mi SW
Site Name	COCA-COLA ENTERPRISES - WEST
Site Street Number	6100
Site Street Name	SOQUEL AVE
Site City	SANTA CRUZ
Site State	CA
Site Zip	95060
Site County	Santa Cruz
Status	Completed - Case Closed
Status Date	1991-09-12
Lead Agency	SANTA CRUZ COUNTY
Local Agency	SANTA CRUZ COUNTY
Contaminant	Diesel
Contaminated Medium	Soil

Location	36.98835, -121.9575
Distance to site	2557 ft / 0.48 mi E
Site Name	PONZA BROTHERS YARD
Site Street Number	3131
Site Street Name	PORTER ST
Site City	SOQUEL
Site State	CA
Site Zip	95073
Site County	Santa Cruz
Status	Completed - Case Closed
Status Date	1992-10-19
Lead Agency	CENTRAL COAST RWQCB (REGION 3)
Local Agency	SANTA CRUZ COUNTY
Contaminant	Gasoline
Contaminated Medium	Other Groundwater (uses other than drinking water)

CA Spills, Leaks, Investigations, and Cleanups

Location	36.98363, -121.9742
Distance to site	2628 ft / 0.5 mi W
Site Name	CHEVRON STATION
Site Street Number	5998
Site Street Name	SOQUEL DR
Site City	SANTA CRUZ
Site State	CA
Site Zip	95060
Site County	Santa Cruz
Status	Completed - Case Closed
Status Date	1985-08-12
Lead Agency	SANTA CRUZ COUNTY
Local Agency	SANTA CRUZ COUNTY
Contaminant	Gasoline
Contaminated Medium	Soil

Location	36.98357, -121.9743
Distance to site	2668 ft / 0.51 mi W
Site Name	SKILL CENTER INC
Site Street Number	2685
Site Street Name	MATTISON LN
Site City	SANTA CRUZ
Site State	CA
Site Zip	95062
Site County	Santa Cruz
Status	Open - Remediation
Status Date	1989-02-24
Lead Agency	SANTA CRUZ COUNTY
Local Agency	SANTA CRUZ COUNTY
Contaminant	Gasoline
Contaminated Medium	Soil

CA Spills, Leaks, Investigations, and Cleanups

Location	36.98932, -121.9748
Distance to site	2725 ft / 0.52 mi W
Site Name	JIMMY SMITH PLUMBING
Site Street Number	3098
Site Street Name	WINKLE AVE
Site City	SANTA CRUZ
Site State	CA
Site Zip	95065
Site County	Santa Cruz
Status	Open - Site Assessment
Status Date	1990-06-13
Lead Agency	SANTA CRUZ COUNTY
Local Agency	SANTA CRUZ COUNTY
Contaminant	Gasoline
Contaminated Medium	Soil

Location	36.98363, -121.9573
Distance to site	2772 ft / 0.52 mi E
Site Name	ARCO STATION
Site Street Number	2407
Site Street Name	PORTER ST
Site City	SOQUEL
Site State	CA
Site Zip	95062
Site County	Santa Cruz
Status	Completed - Case Closed
Status Date	1997-07-02
Lead Agency	CENTRAL COAST RWQCB (REGION 3)
Local Agency	SANTA CRUZ COUNTY
Contaminant	Gasoline
Contaminated Medium	Other Groundwater (uses other than drinking water)

CA Spills, Leaks, Investigations, and Cleanups

Location	36.98424, -121.9569
Distance to site	2814 ft / 0.53 mi E
Site Name	FORMER EXXON 7-0281
Site Street Number	2501
Site Street Name	MAIN ST S
Site City	SOQUEL
Site State	CA
Site Zip	95073
Site County	Santa Cruz
Status	Open - Verification Monitoring
Status Date	2000-03-01
Lead Agency	CENTRAL COAST RWQCB (REGION 3)
Local Agency	SANTA CRUZ COUNTY
File Location	Regional Board
Contaminant	Gasoline
Contaminated Medium	Other Groundwater (uses other than drinking water)

Location	36.98422, -121.9566
Distance to site	2892 ft / 0.55 mi E
Site Name	EXXON STATION 7-0281 FIRST LEA
Site Street Number	2501
Site Street Name	MAIN ST S
Site City	SOQUEL
Site State	CA
Site Zip	95073
Site County	Santa Cruz
Status	Completed - Case Closed
Status Date	1991-03-27
Lead Agency	SANTA CRUZ COUNTY
Local Agency	SANTA CRUZ COUNTY
Contaminant	Gasoline
Contaminated Medium	Soil

CA Spills, Leaks, Investigations, and Cleanups

Location	36.98275, -121.9569
Distance to site	3029 ft / 0.57 mi SE
Site Name	FORMER EXXON 7-3604
Site Street Number	836
Site Street Name	BAY AVE
Site City	CAPITOLA
Site State	CA
Site Zip	95010
Site County	Santa Cruz
Status	Open - Verification Monitoring
Status Date	2004-04-05
Lead Agency	CENTRAL COAST RWQCB (REGION 3)
Local Agency	SANTA CRUZ COUNTY
File Location	Regional Board
Contaminant	Gasoline
Contaminated Medium	Other Groundwater (uses other than drinking water)

Location	36.98864, -121.955
Distance to site	3285 ft / 0.62 mi E
Site Name	TOSCO - FACILITY #2452
Site Street Number	4860
Site Street Name	SOQUEL DR
Site City	SOQUEL
Site State	CA
Site Zip	93401
Site County	Santa Cruz
Status	Open - Remediation
Status Date	2007-11-29
Lead Agency	CENTRAL COAST RWQCB (REGION 3)
Local Agency	SANTA CRUZ COUNTY
File Location	Regional Board
Contaminant	Gasoline
Contaminated Medium	Other Groundwater (uses other than drinking water)

CA Spills, Leaks, Investigations, and Cleanups

Location	36.98888, -121.9545
Distance to site	3443 ft / 0.65 mi E
Site Name	E-Z SERVE #100981
Site Street Number	4901
Site Street Name	SOQUEL DR
Site City	SOQUEL
Site State	CA
Site Zip	95073
Site County	Santa Cruz
Status	Completed - Case Closed
Status Date	2007-02-02
Lead Agency	CENTRAL COAST RWQCB (REGION 3)
Local Agency	SANTA CRUZ COUNTY
File Location	Regional Board
Contaminant	Gasoline
Contaminated Medium	Other Groundwater (uses other than drinking water)

Location	36.9884, -121.9778
Distance to site	3480 ft / 0.66 mi W
Site Name	ULTRAMAR BEACON
Site Street Number	2210
Site Street Name	SOQUEL DR
Site City	SANTA CRUZ
Site State	CA
Site Zip	95065
Site County	Santa Cruz
Status	Completed - Case Closed
Status Date	1992-02-10
Lead Agency	SANTA CRUZ COUNTY
Local Agency	SANTA CRUZ COUNTY
Contaminant	Gasoline
Contaminated Medium	Soil

CA Spills, Leaks, Investigations, and Cleanups

Location	36.98117, -121.9558
Distance to site	3604 ft / 0.68 mi SE
Site Name	REDTREE PROPERTIES
Site Street Number	819
Site Street Name	BAY AVE
Site City	CAPITOLA
Site State	CA
Site Zip	95010
Site County	Santa Cruz
Status	Open - Site Assessment
Status Date	2007-03-19
Lead Agency	CENTRAL COAST RWQCB (REGION 3)
Local Agency	SANTA CRUZ COUNTY
File Location	Regional Board
Contaminant	Gasoline
Contaminated Medium	Other Groundwater (uses other than drinking water)

Location	36.98074, -121.9554
Distance to site	3788 ft / 0.72 mi SE
Site Name	SOQUEL PUMP STATION
Site Street Number	809
Site Street Name	BAY AVE
Site City	CAPITOLA
Site State	CA
Site Zip	95010
Site County	Santa Cruz
Status	Completed - Case Closed
Status Date	1995-06-01
Lead Agency	CENTRAL COAST RWQCB (REGION 3)
Local Agency	SANTA CRUZ COUNTY
Contaminated Medium	Soil

CA Spills, Leaks, Investigations, and Cleanups

Location	36.98215, -121.9791
Distance to site	4158 ft / 0.79 mi W
Site Name	CENTRAL COUNTY GARBAGE
Site Street Number	2230
Site Street Name	CHANTICLEER ST
Site City	SANTA CRUZ
Site State	CA
Site Zip	95062
Site County	Santa Cruz
Status	Completed - Case Closed
Status Date	1991-05-07
Lead Agency	SANTA CRUZ COUNTY
Local Agency	SANTA CRUZ COUNTY
Contaminant	Gasoline
Contaminated Medium	Soil

Location	36.98169, -121.9794
Distance to site	4314 ft / 0.82 mi W
Site Name	DANCO PROPERTY
Site Street Number	2185
Site Street Name	CHANTICLEER ST
Site City	SANTA CRUZ
Site State	CA
Site Zip	95062
Site County	Santa Cruz
Status	Completed - Case Closed
Status Date	1997-11-07
Lead Agency	SANTA CRUZ COUNTY
Local Agency	SANTA CRUZ COUNTY
Contaminant	Gasoline
Contaminated Medium	Soil

CA Spills, Leaks, Investigations, and Cleanups

Location	36.98761, -121.9822
Distance to site	4719 ft / 0.89 mi W
Site Name	REDTREE PROPERTIES
Site Street Number	1650
Site Street Name	COMMERCIAL WY
Site City	SANTA CRUZ
Site State	CA
Site Zip	95073
Site County	Santa Cruz
Status	Completed - Case Closed
Status Date	1988-02-05
Lead Agency	SANTA CRUZ COUNTY
Local Agency	SANTA CRUZ COUNTY
Contaminant	Gasoline
Contaminated Medium	Soil

Location	36.97873, -121.9531
Distance to site	4768 ft / 0.9 mi SE
Site Name	CHEVRON STATION
Site Street Number	600
Site Street Name	BAY AVE
Site City	CAPITOLA
Site State	CA
Site Zip	95010
Site County	Santa Cruz
Status	Completed - Case Closed
Status Date	2000-02-24
Lead Agency	CENTRAL COAST RWQCB (REGION 3)
Local Agency	SANTA CRUZ COUNTY
File Location	State Records Center
Contaminant	Gasoline
Contaminated Medium	Other Groundwater (uses other than drinking water)

CA Spills, Leaks, Investigations, and Cleanups

Location	36.97365, -121.9673
Distance to site	4784 ft / 0.91 mi S
Site Name	GOODYEAR TIRE AND RUBBER COMPA
Site Street Number	3800
Site Street Name	CAPITOLA RD
Site City	CAPITOLA
Site State	CA
Site Zip	95010
Site County	Santa Cruz
Status	Open - Site Assessment
Status Date	1975-01-01
Lead Agency	SANTA CRUZ COUNTY
Local Agency	SANTA CRUZ COUNTY
File Location	Local Agency
Contaminant	Waste Oil / Motor / Hydraulic / Lubricating
Contaminated Medium	Under Investigation

Location	36.97333, -121.9653
Distance to site	4889 ft / 0.93 mi S
Site Name	SHELL SERVICE STATION
Site Street Number	1649
Site Street Name	41ST AVE
Site City	CAPITOLA
Site State	CA
Site Zip	95010
Site County	Santa Cruz
Status	Open - Site Assessment
Status Date	2006-12-21
Lead Agency	CENTRAL COAST RWQCB (REGION 3)
Local Agency	SANTA CRUZ COUNTY
File Location	Regional Board
Contaminant	Gasoline
Contaminated Medium	Other Groundwater (uses other than drinking water)

CA Spills, Leaks, Investigations, and Cleanups

Location	36.97644, -121.9549
Distance to site	4963 ft / 0.94 mi SE
Site Name	CAPITOLA PUMPING STATION
Site Street Name	END OF ESPLANADE
Site City	CAPITOLA
Site State	CA
Site Zip	95010
Site County	Santa Cruz
Status	Completed - Case Closed
Status Date	1988-10-07
Lead Agency	SANTA CRUZ COUNTY
Local Agency	SANTA CRUZ COUNTY
Contaminant	Diesel
Contaminated Medium	Soil

Location	36.97644, -121.9549
Distance to site	4963 ft / 0.94 mi SE
Site Name	CAPITOLA MALL/BROWN BULB RANCH
Site Street Name	41ST AVE
Site City	CAPITOLA
Site State	CA
Site Zip	95010
Site County	Santa Cruz
Status	Completed - Case Closed
Status Date	1988-01-13
Lead Agency	SANTA CRUZ COUNTY
Local Agency	SANTA CRUZ COUNTY
Contaminant	Gasoline
Contaminated Medium	Soil

CA Solid Waste Landfills

This database returned no results for your area.

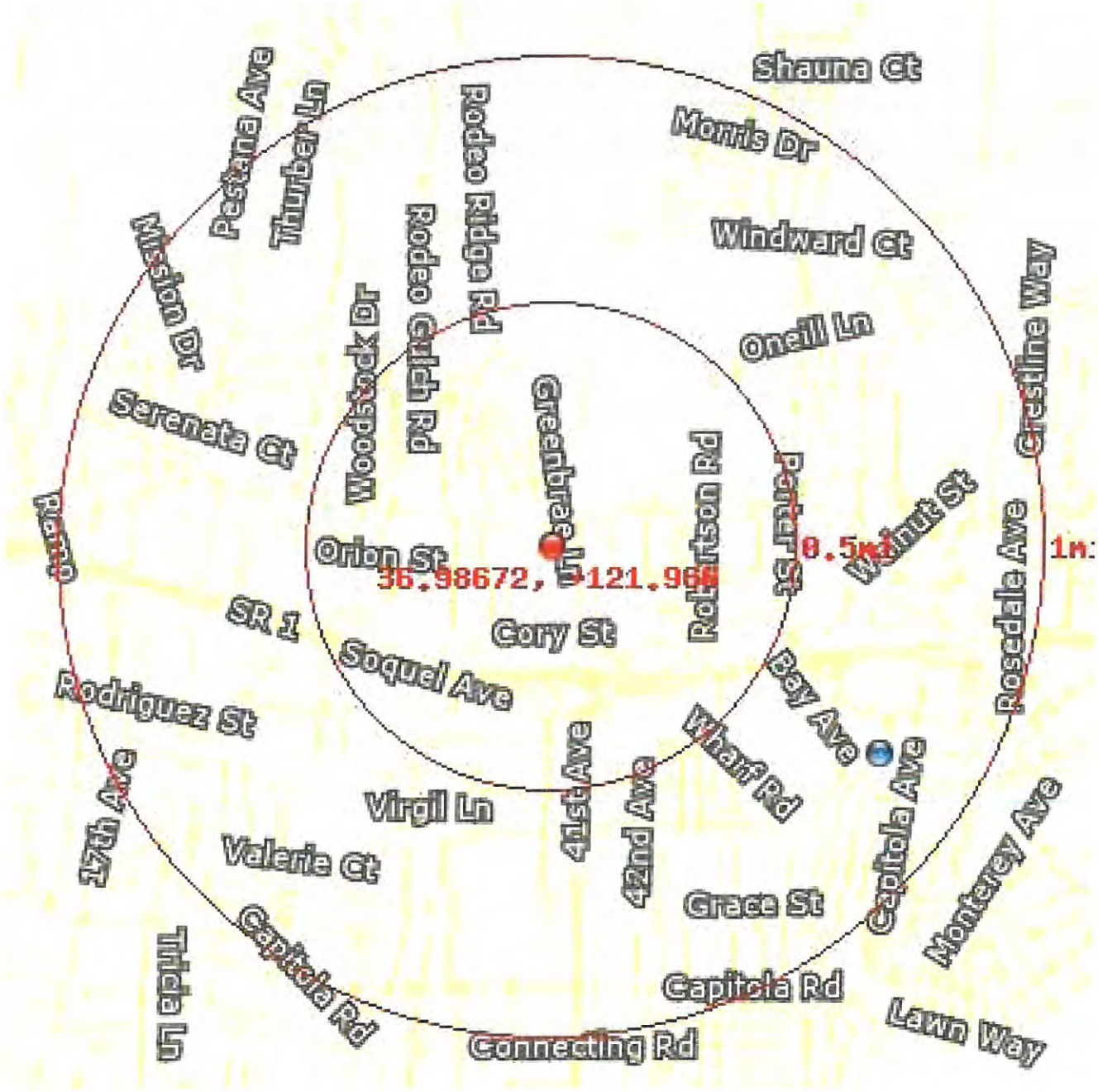
The Solid Waste Landfill List (SWLF) database is provided by the California Solid Waste Information System (SWIS) and consists of both open as well as closed inactive solid waste disposal facilities and transfer stations pursuant to the Solid Waste Management and Resource Recovery Act of 1972.

CA Oil and Gas Wells

This database returned no results for your area.

The California Department of Conservation, Division of Oil, Gas and Thermal Resources (DOGGR) was created to serve the needs of the state, local governments, and industry by regulating statewide oil and gas activities with uniform laws and regulations. The DOGGR supervises the drilling, operation, maintenance, and plugging and abandonment of onshore and offshore oil, gas, and geothermal wells, preventing damage to: (1) life, health, property, and natural resources; (2) underground and surface waters suitable for irrigation or domestic use; and (3) oil, gas and geothermal reservoirs.

CA Voluntary Cleanup Sites



This database returned 1 results for your area.

The Department of Toxic Substances Controls (DTSC) Site Mitigation and Brownfields Reuse Program (SMBRP) EnviroStor database identifies Voluntary Cleanup sites. These sites include low threat level properties with confirmed or unconfirmed releases. The responsible parties have requested that DTSC oversee investigation and/or cleanup activities and agreed to offset DTSC expenses.

CA Voluntary Cleanup Sites

Location	36.98051, -121.9539
Distance to site	4202 ft / 0.8 mi SE
Site Name	Silvercrest Apartments
Site Type	Voluntary Cleanup
Site Type 2	Voluntary Cleanup
Site Area (acres)	4.7
Project Manager	ALLAN FONE
Project Supervisor	Daniel Murphy
Envirostor ID	60000900
Status	Active
Status Date	2008-11-07 00:00:00
Past Uses	AGRICULTURAL - ROW CROPS
Contaminant	SOIL
Funding Source	Responsible Party
Address	750 Bay Avenue
City	Capitola
State	CA
Zip Code	95010
County	SANTA CRUZ

Attachment K

Traffic Impact Analysis

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Santa Cruz Nissan
Transportation Impact Analysis

Prepared For:

BLAME-JADE LP

Prepared By:

Kimley»Horn

824 Bay Avenue, Suite 10
Capitola, CA 95010

April 7, 2017 | Final Report

Contents

Figures

Tables

EXECUTIVE SUMMARY

This report presents the results of the Transportation Impact Analysis (TIA) for the proposed Santa Cruz Nissan Auto Dealership and Repair Shop (Project) located in Santa Cruz County, California. **Figure 1** shows the Project location map, study area, and study intersections. The Project site plan is shown in **Figure 2**.

PROJECT DESCRIPTION

The Project proposes to construct a new auto dealership and repair shop (Santa Cruz Nissan) on the six parcels southwest of the intersection of 41st Avenue and Soquel Drive. There are currently four occupied single family homes located on these parcels.

The Project will accommodate on-site parking for both bicycles and passenger vehicles and have one full access driveway from Soquel Drive and one right-in right-out driveway from 41st Avenue. The auto dealership and repair shop will be open seven days a week from 9:00AM to 8:00PM Monday through Friday, from 9:00AM to 7:00PM on Saturdays, and from 11:00AM to 6:00PM on Sundays. It will have 20,111 square feet of gross floor area, which will include an auto showroom, a reception area, parts storage rooms, offices, a lounge area, bathrooms, and a vehicle service building.

ANALYSIS OVERVIEW

Impacts associated with the proposed Project were evaluated for the weekday AM and PM peak one hour periods. Peak network traffic in the study area was observed to occur between 7:30am-9:00am in the AM and between 4:30pm-6:00pm in the PM. Analysis was conducted for the one hour AM and one hour PM peaks at the following analysis scenarios:

- **Scenario 1: Existing (2016) Conditions**
  Based on current traffic counts taken in October 2016 and existing roadway geometry and traffic control.
- **Scenario 2: Existing (2016) Plus Project Conditions**
  Based on existing traffic volumes, existing roadway geometry and traffic control and traffic generated by the proposed Project.
- **Scenario 3: Near Term (2018) Conditions**
  Based on future year traffic forecasts estimated for developments anticipated to occur at the time the Project is constructed in approximately the year 2018. These forecasts were determined by applying a historic average annual percent growth rate for two years after the year 2016, using Santa Cruz County Regional Transportation Commission (SCCRTC) historic ADT data.
- **Scenario 4: Near Term (2018) Plus Project Conditions**
  Based on Project traffic added to the 2018 base year Near Term (2018) Conditions.
- **Scenario 5: Cumulative (2035) Conditions**
  Based on future traffic forecasted for developments anticipated to occur through the year 2035. These forecasts were calculated by applying an average annual percent growth rate from year 2016 through year 2035, utilizing historic growth rates on 41st Avenue and Soquel Drive.
- **Scenario 6: Cumulative (2035) Plus Project Conditions**
  Based on Project traffic added to the base Cumulative year traffic volumes and conditions.

STUDY INTERSECTIONS

Study intersections were selected in consultation with Santa Cruz County (SCC) staff and are based on trip generation estimates and the assumed trip distribution, which was developed based on SCC ADT volumes, Caltrans AADT volumes, and knowledge of the study area. The following intersections were evaluated in this study:

1. Soquel Drive / Rodeo Gulch Road
2. Soquel Drive / Project Driveway 1 (future intersection)
3. Soquel Drive / 41st Avenue
4. Soquel Drive / Robertson Street
5. Soquel Drive / Daubenbiss Avenue
6. Soquel Drive / Porter Street
7. 41st Avenue / Project Driveway 2 (future intersection)
8. 41st Avenue / Redwood Shopping Center
9. 41st Avenue / Highway 1 Northbound Ramps
10. 41st Avenue / Highway 1 Southbound Ramps

TRIP GENERATION ESTIMATES

The Project is estimated to generate 39 AM peak hour, 53 PM peak hour, and 650 average daily trips on weekdays based on Institute of Transportation Engineers (ITE) Trip Generation 9th Edition data and methodologies. The Project will replace four existing single family homes resulting in a trip credit of 3 AM peak hour, 4 PM peak hour, and 38 average daily trips. Therefore, the LOS analysis will be based on the Project generating 36 AM peak hour, 49 PM peak hour, and 612 average daily net new trips.

IMPACTS AND MITIGATIONS

Based on the analysis below, the Project will trigger impacts at the following intersections. Mitigation has been identified and the Project will pay a proportional fair share towards the improvements.

- **Soquel Drive / Robertson Street (Intersection #4) (AM and PM Peaks) (Existing & Near Term Conditions)**
    - Install traffic signal control and construct left-turn pockets on Soquel Drive.
    - The Project will pay a proportional fair share for improvements at Soquel Drive / Robertson Street of 2.66% based on estimated Project AM and PM peak hour trips traveling through the intersection. The nexus for the fair share is based on all future growth in traffic estimated at the intersection (from Existing to Cumulative conditions). The unfunded planned improvement cost is $500,000 per the County RTP. The Project will pay a fair share fee of $13,300.

- **Soquel Drive / Porter Street (Intersection #6) (AM and PM Peak) (Existing, Near Term, and Cumulative Conditions)**
    - Construct one additional southbound left-turn pocket and optimize cycle length, phasing, and splits.
    - The Project will pay a proportional fair share for improvements at Soquel Drive / Porter Street of 1.75% based on estimated Project AM and PM peak hour trips traveling through the intersection. The nexus for the fair share is based on all future growth in traffic, estimated at the intersection (from Existing to Cumulative conditions). The unfunded planned improvement cost is estimated to be in excess of $1,000,000 and right-of-way

would be required. The Project will pay a fair share fee of $17,500 based on a $1,000,00 improvement cost.

The Santa Cruz County Fee Schedule uses a daily trip rate of 24 trips per 1,000 square feet for the Automobile Sales land use. For fee purposes, the Project rate results in 483 gross average daily trips and 445 average daily net new trips. The Transportation Impact Area fees will be based on the 445 average daily net new trips.

Through payment of TIA fees, the Project will mitigate incremental Cumulative impacts. The Project is responsible to pay a Transportation Improvement Area (TIA) fee to Santa Cruz County based on daily net new trips generated. These fees include a $300 per trip Soquel Transportation Improvement Fee and a $300 per trip Soquel Roadside Improvement Fee. Therefore, based on the estimate of 445 average daily net new trips, the Project will be responsible to pay a total of $267,000 in County improvement fees. These fees are not included in the individual fair share payments calculated above for the intersections of Soquel Drive / Robertson Street and Soquel Drive / Porter Street.

1. INTRODUCTION

This traffic study presents the findings of the traffic analysis for the proposed construction of a new auto dealership (Santa Cruz Nissan), which will be located on six parcels southwest of the intersection of 41st Avenue and Soquel Drive in unincorporated Santa Cruz County. The site currently contains four occupied single family residential units.

The Project will accommodate on-site parking for both bicycles and passenger vehicles and have one full access driveway from Soquel Drive and one right-in right-out driveway from 41st Avenue. It will be open seven days a week from 9:00AM to 8:00PM Monday through Friday, from 9:00AM to 7:00PM on Saturdays, and from 11:00AM to 6:00PM on Sundays. The Project will have 20,111 square feet of gross floor area, which includes the auto showroom, reception area, parts storage rooms, administration and offices, lounge area, bathrooms, and service building.

Figure 1 shows the location of the Project site, study intersections, and the surrounding study area. **Figure 2** illustrates the Project site plan.

This study was prepared based on discussions with Santa Cruz County during the Project kick-off meeting on October 5, 2016,. It also complies with traffic impact study guidelines and criteria set forth by Santa Cruz County.

STUDY METHODOLOGY

DEVELOPMENT CONDITIONS

This transportation impact analysis was based on the following development conditions:

- **Scenario 1: Existing (2016) Conditions**
  Based on current traffic counts taken in October 2016 and existing roadway geometry and traffic control.
- **Scenario 2: Existing (2016) Plus Project Conditions**
  Based on existing traffic volumes, existing roadway geometry and traffic control and traffic generated by the proposed Project.
- **Scenario 3: Near Term (2018) Conditions**
  Based on future year traffic forecasts estimated for developments anticipated to occur at the time the Project is constructed in approximately the year 2018. These forecasts were determined by applying a historic average annual percent growth rate for two years after the year 2016, using Santa Cruz County Regional Transportation Commission (SCCRTC) historic ADT data.
- **Scenario 4: Near Term (2018) Plus Project Conditions**
  Based on Project traffic added to the 2018 base year Near Term (2018) Conditions.
- **Scenario 5: Cumulative (2035) Conditions**
  Based on future traffic forecasted for developments anticipated to occur through the year 2035. These forecasts were calculated by applying an average annual percent growth rate from year 2016 through year 2035, utilizing historic growth rates on 41st Avenue and Soquel Drive.
- **Scenario 6: Cumulative (2035) Plus Project Conditions**
  Based on Project traffic added to the base Cumulative year traffic volumes and conditions.

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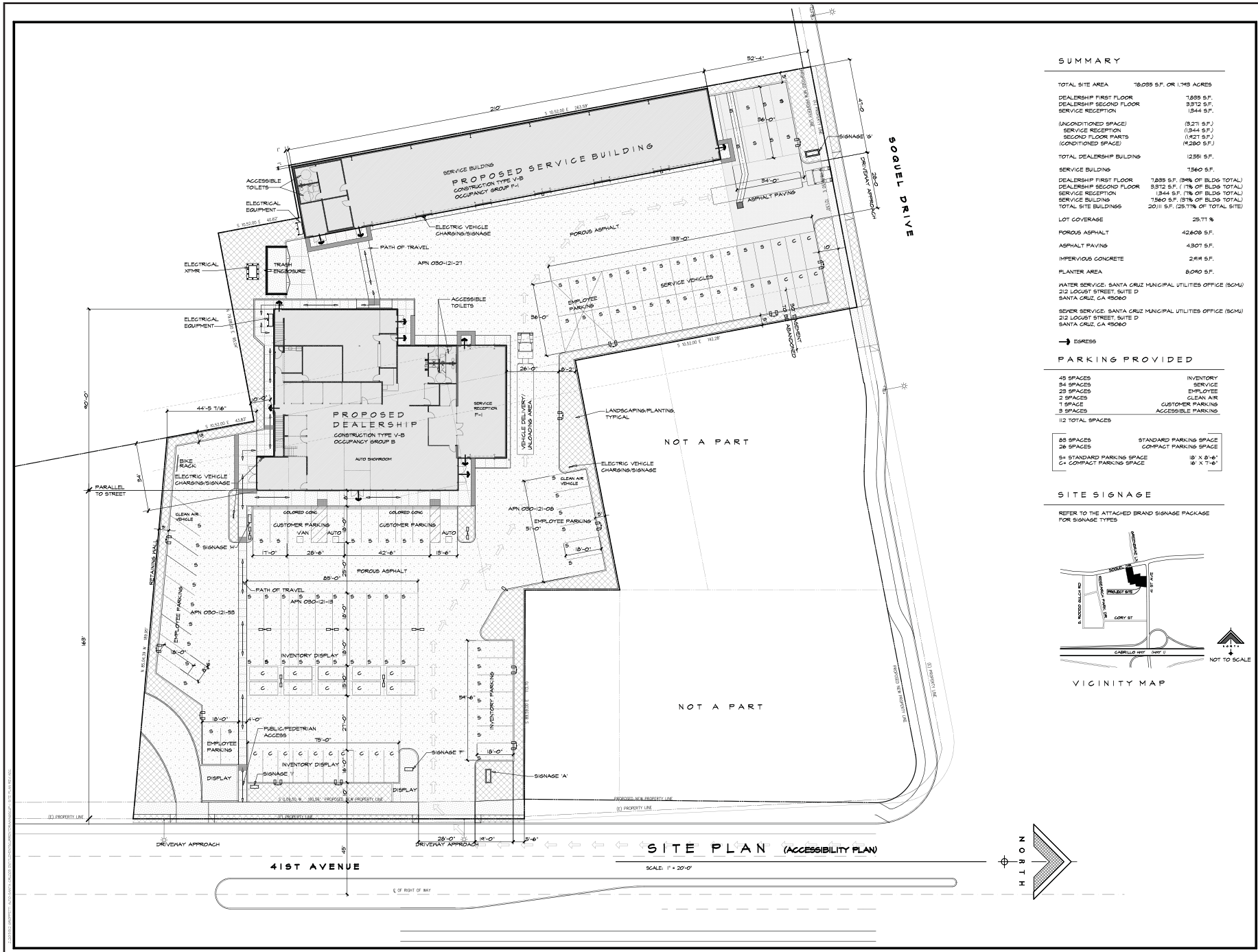
N

Santa Cruz Nissan

Figure 1

Project Location and Study Intersections



SUMMARY

TOTAL SITE AREA	76,035 S.F. OR 1.745 ACRES
DEALERSHIP FIRST FLOOR	7,835 S.F.
DEALERSHIP SECOND FLOOR	3,372 S.F.
SERVICE RECEPTION	1,344 S.F.
(UNCONDITIONED SPACE)	(9,271 S.F.)
SERVICE RECEPTION	(1,344 S.F.)
SECOND FLOOR PARTS	(1,927 S.F.)
(CONDITIONED SPACE)	(9,280 S.F.)
TOTAL DEALERSHIP BUILDING	12,551 S.F.
SERVICE BUILDING	7,560 S.F.
DEALERSHIP FIRST FLOOR	7,835 S.F. (34% OF BLDG TOTAL)
DEALERSHIP SECOND FLOOR	3,372 S.F. (17% OF BLDG TOTAL)
SERVICE RECEPTION	1,344 S.F. (7% OF BLDG TOTAL)
SERVICE BUILDING	7,560 S.F. (37% OF BLDG TOTAL)
TOTAL SITE BUILDINGS	20,111 S.F. (25.77% OF TOTAL SITE)
LOT COVERAGE	25.77 %
POROUS ASPHALT	42,608 S.F.
ASPHALT PAVING	4,307 S.F.
IMPERVIOUS CONCRETE	2,418 S.F.
PLANTER AREA	8,080 S.F.

WATER SERVICE: SANTA CRUZ MUNICIPAL UTILITIES OFFICE (SCMU)
212 LOCUST STREET, SUITE D
SANTA CRUZ, CA 95060

SEWER SERVICE: SANTA CRUZ MUNICIPAL UTILITIES OFFICE (SCMU)
212 LOCUST STREET, SUITE D
SANTA CRUZ, CA 95060

→ EGRESS

PARKING PROVIDED

45 SPACES	INVENTORY
54 SPACES	SERVICE
29 SPACES	EMPLOYEE
2 SPACES	CLEAN AIR
7 SPACE	CUSTOMER PARKING
3 SPACES	ACCESSIBLE PARKING

112 TOTAL SPACES

85 SPACES	STANDARD PARKING SPACE
26 SPACES	COMPACT PARKING SPACE
S= STANDARD PARKING SPACE	18' X 8'-6"
C= COMPACT PARKING SPACE	16' X 7'-6"

SITE SIGNAGE

REFER TO THE ATTACHED BRAND SIGNAGE PACKAGE FOR SIGNAGE TYPES

VICINITY MAP

SCOTT & ASSOCIATES
ARCHITECT
1009 North Demaree
Visalia • California • 93291
Tel 559/627-1851
Fax 559/627-1876
fscott@fscottassociates.com

LICENSED ARCHITECT FREDERICK E. SCOTT C-6276 RENEWAL 08-31-17 STATE OF CALIFORNIA

APN 030-121-27
APN 030-121-08
APN 030-121-12
APN 030-121-18
APN 030-121-55

△ CUP REVISION FOR PARKING 07/01/2017

AUTO SHOWROOM & SERVICE BUILDING
FOR
Santa Cruz NISSAN

NISSAN

SOQUEL, CA

PROGRESS SET
NOT FOR CONSTRUCTION
DATE: 12/22/16

PROJECT No : 1512
DATE : 12/15/2016

SITE PLAN
CUP

SHEET No :
A-1.1

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Santa Cruz Nissan

Figure 2

Project Site Plan

OPERATING CONDITIONS AND CRITERIA FOR INTERSECTIONS

Analysis of potential impacts at roadway intersections is based on the concept of Level of Service (LOS). The LOS of an intersection is a qualitative measure used to describe operational conditions. LOS ranges from A (best), which represents minimal delay, to F (worst), which represents heavy delay and a facility that is operating at or near its functional capacity. Levels of Service for this study were determined using methods defined in the *Highway Capacity Manual (HCM)* and *Synchro 9* traffic analysis software.

HCM methodologies include procedures for analyzing side-street stop-controlled (SSSC), all-way stop-controlled (AWSC), and signalized intersections. The SSSC procedure defines LOS as a function of average control delay for each minor street approach movement. Conversely, the AWSC and signalized intersection procedures define LOS as a function of average control delay for the overall intersection. **Table 1** relates the operational characteristics associated with each LOS category for signalized and unsignalized intersections.

Table 1 – Intersection Level of Service Definitions

Level of Service	Description	Signalized (Avg. control delay per vehicle sec/veh.)	Unsignalized (Avg. control delay per vehicle sec/veh.)
A	Free flow with no delays. Users are virtually unaffected by others in the traffic stream	< 10	≤ 10
B	Stable traffic. Traffic flows smoothly with few delays.	> 10 to 20	> 10 to 15
C	Stable flow but the operation of individual users becomes affected by other vehicles. Modest delays.	> 20 to 35	> 15 to 25
D	Approaching unstable flow. Operation of individual users becomes significantly affected by other vehicles. Delays may be more than one cycle during peak hours.	> 35 to 55	> 25 to 35
E	Unstable flow with operating conditions at or near the capacity level. Long delays and vehicle queuing.	> 55 to 80	> 35 to 50
F	Forced or breakdown flow that causes reduced capacity. Stop and go traffic conditions. Excessive long delays and vehicle queuing.	> 80	> 50
Sources: Transportation Research Board, *Highway Capacity Manual 2010*, National Research Council.			

Project impacts are determined by comparing conditions without the proposed Project to those with the proposed Project. Significant impacts for intersections are created when traffic from the proposed Project causes the LOS to fall below the maintaining agency's LOS threshold or causes deficient intersections to deteriorate further per the criteria indicated below.

Santa Cruz County (SCC)

Consistent with the significant impact criteria documented in the Santa Cruz County General Plan, the County considers LOS C as the objective, but accepts LOS D as the minimum acceptable at both signalized and unsignalized study intersections where costs, right-of-way requirements, or environmental impacts of maintaining LOS under this policy are excessive, capacity enhancement may be considered infeasible. The following conditions would result in a significant impact at a County intersection:

1. If the intersection operates at an acceptable LOS (i.e. LOS A, B, C, or D) without the Project during the weekday peak hour and degrades to an unacceptable LOS (i.e. LOS E or F) with the Project during the weekday peak hour.
2. If the intersection operates at an unacceptable LOS (i.e. LOS E or F) without the Project during the weekday peak hour and the Project adds trips.

California Department of Transportation (Caltrans)

Caltrans has identified a level of service objective of C/D (i.e., on the "cusp" between levels of service C and D) as the acceptable service level for signalized intersections. Intersection impacts are defined to occur when the addition of Project traffic:

1. Causes operations to deteriorate from an acceptable level (LOS C) to an unacceptable level (LOS D or worse).
2. Causes the existing measure of effectiveness (average delay) to deteriorate at a State-operated intersection operating at worse than LOS C.

STUDY INTERSECTIONS

The Project will generate new vehicular trips that will increase traffic volumes on the nearby street network. To assess changes in traffic conditions, the following intersections listed by jurisdiction, were selected in consultation with Santa Cruz County staff for evaluation:

1. Soquel Drive / Rodeo Gulch Road (Signal Controlled) - SCC
2. Soquel Drive / Project Driveway 1 (Side-Street Stop Controlled) - SCC
3. Soquel Drive / 41st Avenue (Signal Controlled) - SCC
4. Soquel Drive / Robertson Street (All-Way Stop Controlled) - SCC
5. Soquel Drive / Daubenbiss Avenue (Signal Controlled) - SCC
6. Soquel Drive / Porter Street (Signal Controlled) - SCC
7. 41st Avenue / Project Driveway 2 (Side-Street Stop Controlled) - SCC
8. 41st Avenue / Redwood Shopping Center (Signal Controlled) - SCC
9. 41st Avenue / Highway 1 Northbound Ramps (Signal Controlled) - Caltrans
10. 41st Avenue / Highway 1 Southbound Ramps (Signal Controlled) - Caltrans

**SCC = Maintained by Santa Cruz County*

***Caltrans = Maintained by California Department of Transportation*

These study intersections are illustrated in **Figure 1**.

REPORT ORGANIZATION

This transportation impact analysis is organized according to the following chapters:

Chapter 2 describes the existing transportation system in the Project vicinity as well as current operating conditions at study intersections.

Chapter 3 discusses the Project's trip generation characteristics as well as methodologies used to estimate Project traffic added to Project roadways. Transportation improvements proposed by the Project are also presented.

Chapter 4 describes Existing Plus Project Conditions and analysis.

Chapter 5 discusses Near Term Conditions with and without the proposed Project.

Chapter 6 discusses Cumulative Conditions with and without the proposed Project.

Chapter 7 presents the Project's potential effects on pedestrian, bicycle, and transit mobility.

Chapter 8 discusses on-site vehicle and bicycle parking, site access points and circulation, Highway 1, and Measure D significance.

Chapter 9 presents the Transportation Impact Area fees and Project responsibilities based on net new daily trips.

A technical appendix is also attached containing traffic count data, traffic growth rate calculations, future Highway 1 improvement details, and intersection level of service analysis output sheets.

2. EXISTING CONDITIONS

EXISTING ROADWAY NETWORK

Below is a description of the principal roadways within the study area:

41st Avenue is a north-south arterial roadway that continues from Soquel Drive in Santa Cruz County in the north to East Cliff Drive in the south, which runs along the coast. 41st Avenue also provides interchange access to Highway 1 and connects many residential, retail, and commercial land uses. North of the Highway 1 ramps and in the Project vicinity, 41st Avenue is a four-lane divided arterial with a 25 mile per hour posted speed limit. South of the Highway 1 ramps, 41st Avenue is a six-lane divided arterial with a 35 mile per hour posted speed limit.

Soquel Drive is an east-west arterial roadway that continues from Downtown Santa Cruz in the east to Aptos in the west, providing access to Highway 1 and connecting residential, retail and commercial land uses in the City of Santa Cruz, Santa Cruz County, Soquel, and Aptos. Soquel Drive is also known as Soquel Avenue west of Highway 1. West of Robertson Street and in the Project vicinity, Soquel Drive has a 35 mile per hour posted speed limit, is a four-lane, undivided arterial and has a two way left-turn lane between Research Park Drive and 41st Avenue. East of Robertson Street, Soquel Drive has a 25 mile per hour posted speed limit, is an undivided arterial, and varies between three and four lanes up to Main Street.

Highway 1 is a four-lane divided freeway in the Project vicinity and extends along the California coast connecting major cities including San Francisco, Santa Cruz, Monterey, San Louis Obispo, and Los Angeles to coastal communities. In the Project vicinity, Highway 1 is a major commuter and tourist route and has a posted speed limit of 65 miles per hour.

Porter Street is a north-south, two-lane undivided roadway in the Project vicinity that becomes Bay Avenue south of the Highway 1 interchange and extends to Monterey Avenue in the south. Porter Street becomes Soquel San Jose Road, north of Soquel Drive and extends north to Summit Road, east of Highway 17. Porter Street provides interchange access to Highway 1 and connects residential, retail, and commercial land uses. North of the Soquel Drive and in the Project vicinity, Porter Street is two-lane undivided roadway with a 25 mile per hour posted speed limit. South of Soquel Drive, Porter Street is a two-lane undivided roadway with a two-way left-turn lane and a 25 mile per hour posted speed limit.

EXISTING STUDY INTERSECTIONS

Soquel Drive / Rodeo Gulch Road is a four-legged, signal controlled intersection with marked crosswalks on all four legs. The intersection has one shared left-turn, thru, and right-turn lane in the northbound direction; one shared left-turn, thru, and right-turn lane in the southbound direction; one shared thru and left-turn lane and one shared thru and right-turn lane in the eastbound direction; and one thru lane, one shared thru and right-turn lane, and one left-turn pocket in the westbound direction.

Soquel Drive / 41st Avenue is a four-legged, signal controlled intersection with marked crosswalks on the south and east legs. The intersection has one shared left-turn, thru, and right-turn lane in the southbound direction (driveway); one left-turn pocket, one shared thru and left-turn lane, and one right-turn pocket in the northbound direction; one left-turn pocket, one thru lane, and one shared right-turn and thru lane in the eastbound direction; and one thru lane, one shared thru and right-turn lane, and one left-turn pocket in the westbound direction.

Soquel Drive / Robertson Street is a four-legged, all-way stop controlled (AWSC) intersection with marked crosswalks on the south and east legs. The southbound leg is a private driveway serving local businesses. The intersection has one shared left-turn, thru, and right-turn lane in the northbound and southbound directions; and one shared left-turn and thru lane and one shared thru and right-turn lane in both the eastbound and westbound directions.

Soquel Drive / Daubenbiss Avenue is a four-legged, signal controlled intersection with marked crosswalks on all four legs. The southbound leg is a private driveway serving the Santa Cruz Hope Church. The intersection has one shared left-turn, thru, and right-turn lane in the northbound and southbound directions; one left-turn pocket, one thru lane, and one shared right-turn and thru lane in the eastbound direction; and one left-turn pocket and one shared right-turn and thru lane in the westbound direction.

Soquel Drive / Porter Street is a four-legged, signal controlled intersection with marked crosswalks on all four legs. The intersection has one left-turn pocket and one shared thru and right-turn lane in the northbound direction; one right-turn pocket, one left-turn pocket, and one thru lane in the southbound direction; one left-turn pocket, one thru lane, and one shared thru and right-turn lane in the eastbound direction; and one left-turn lane, one thru lane, and one channelized right-turn pocket in the westbound direction.

41st Avenue / Redwood Shopping Center is a four-legged, signal controlled intersection with marked crosswalks on the north and east legs. The west leg is a private driveway serving local businesses and the east leg is a driveway serving the Redwood Shopping Center. The intersection has one left-turn pocket, one thru, and one shared thru and right-turn lane in the southbound direction; one left-turn pocket, two thru lanes, and one right-turn pocket in the northbound direction; one shared left-turn, thru, and right-turn lane in the eastbound direction; and one left-turn lane and one shared left-turn, thru, and right-turn lane in the westbound direction.

41st Avenue / Highway 1 Northbound Ramps is a signal controlled intersection with marked crosswalks on the east and west legs. The intersection has one thru lane and one shared thru and right-turn lane in the northbound direction; one thru lane and one shared thru and right-turn lane in the southbound direction; and one left-turn pocket, one left-turn lane, and one right-turn pocket in the westbound direction.

41st Avenue / Highway 1 Southbound Ramps is a signal controlled intersection with marked crosswalks on the east and west legs. The intersection has two thru lanes and one right-turn lane in the northbound direction; three thru lanes and one right-turn pocket in the southbound direction; and one left-turn pocket, one right-turn lane, and one right-turn pocket in the westbound direction.

These intersections were selected for study based on County criteria, Project trip assignment, and potential resultant impacts on the street network. A site visit was conducted while traffic count data was collected to observe operations and oversaturated conditions. Existing lane geometries and traffic control are illustrated in **Figure 3**.

EXISTING PEAK-HOUR TURNING MOVEMENT VOLUMES

Weekday intersection turning movement volumes for the nine existing study intersections, not including the future Project driveways, were collected on Tuesday 18th, October 2016. These counts included vehicles, bicycles, and pedestrians. Volumes for intersections were collected during the AM and PM peak periods of 7:00-9:00 AM and 4:00-6:00 PM, respectively. These traffic counts were taken when local schools were in session and the weather was fair. Existing turning movements are shown in **Figure 4.** Field observations were conducted on the count data collection days and queues were measured in the field. U-turns are analyzed (and illustrated in all figures) as left-turns since the HCM does not provide methodology for u-turn analysis. Intersection volume data sheets for all traffic counts are provided in the **Appendix**.

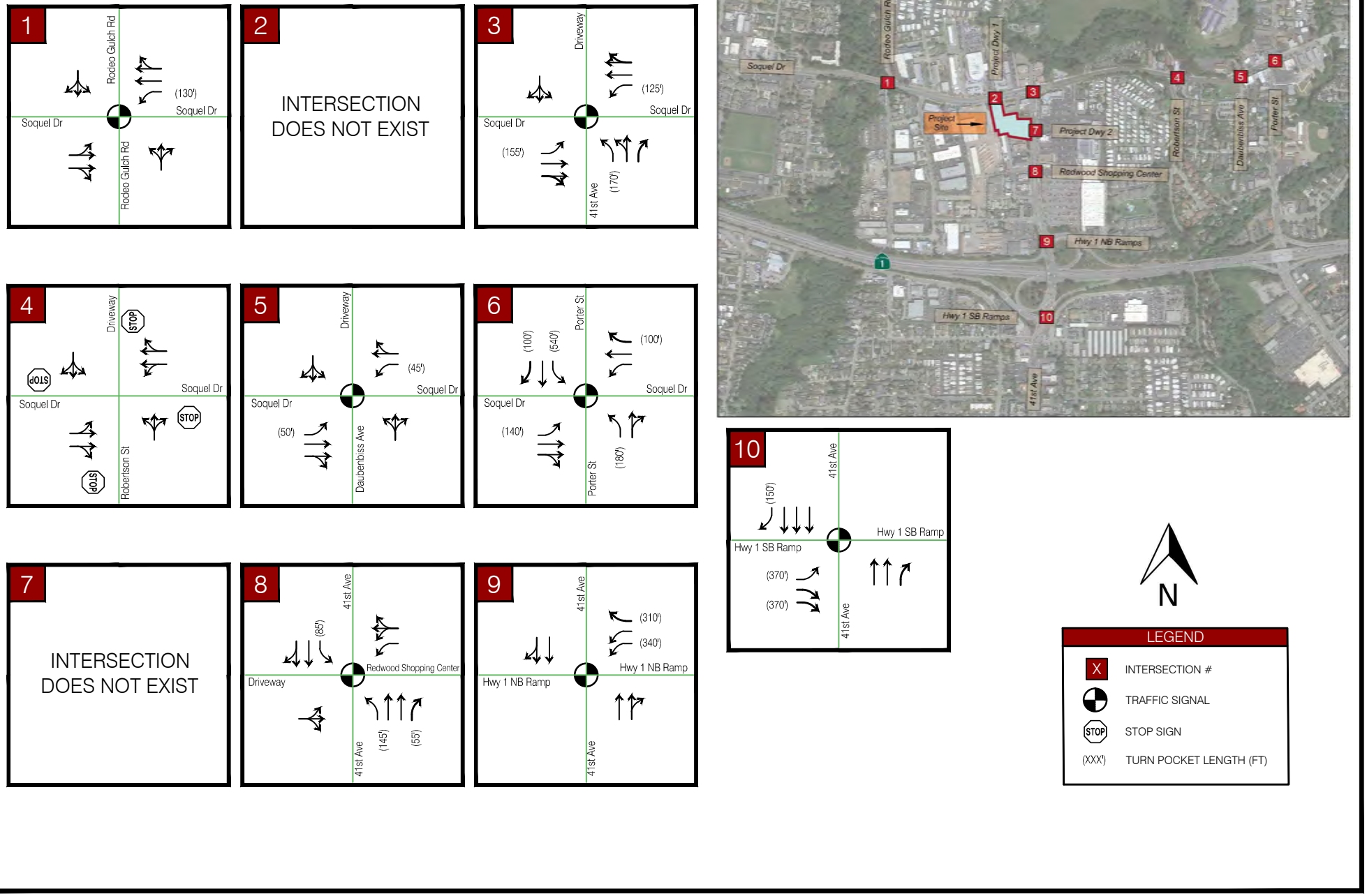

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Figure 3

Existing Lane Geometry and Traffic Control

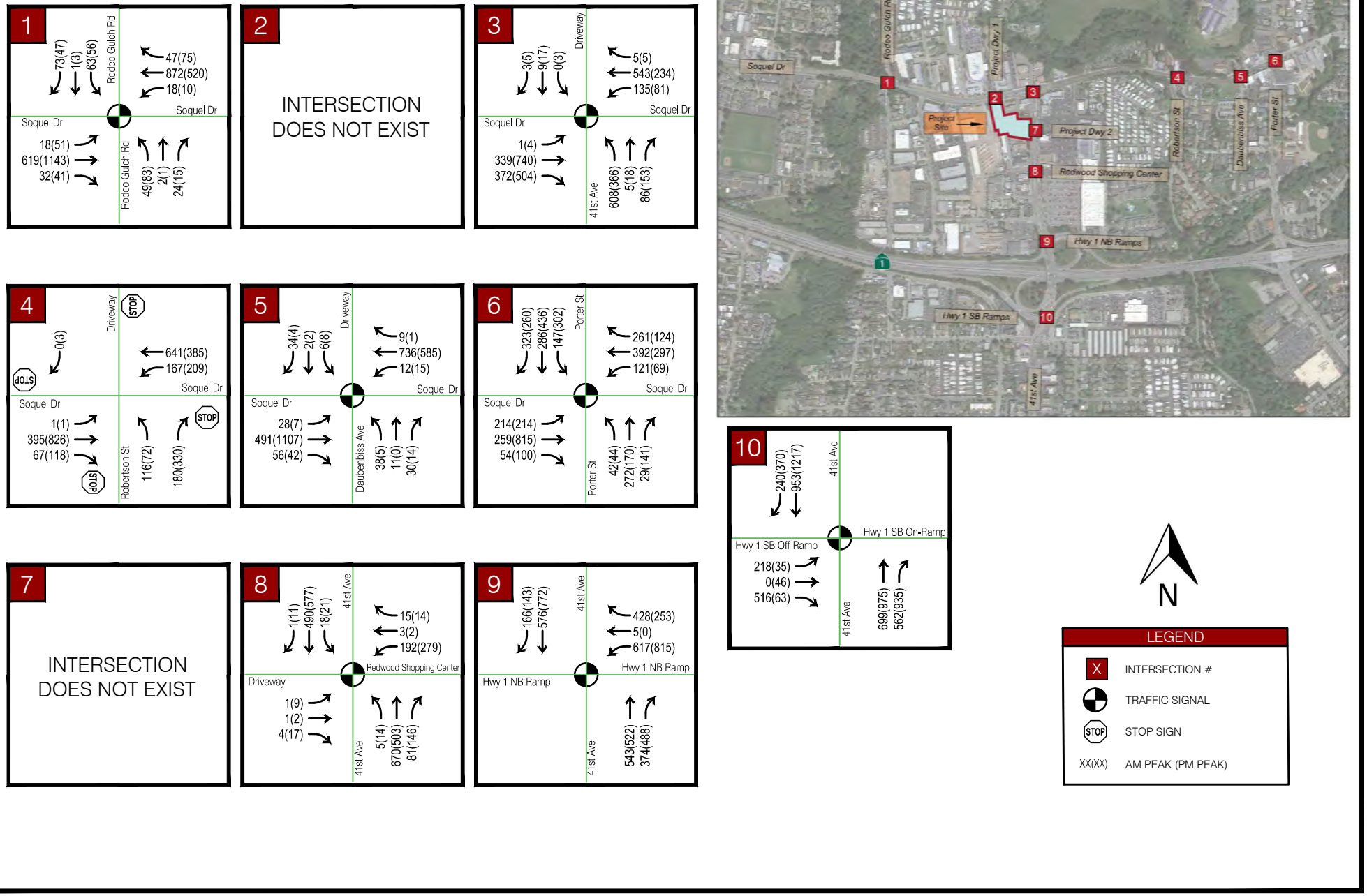

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Figure 4

Existing Peak Hour Turning Movement Volumes

EXISTING TRANSIT FACILITIES

The Santa Cruz Metropolitan Transit District (METRO) provides transit services throughout Santa Cruz County and between the Cities of Santa Cruz, Capitola, Watsonville, and Scotts Valley. The Project lies in the service area for METRO routes 69, 71, and 91X. Descriptions of the four routes as well as nearest stop locations relative to the Project site are described below:

- The ***Capitola Road / Watsonville via Airport B & Capitola Road / Cabrillo / Watsonville Route (Routes 69A & 69W)*** serves south Santa Cruz County and provides public transit to the Cities of Santa Cruz, Capitola and Watsonville. It operates along 41st Avenue and Soquel Drive in the Project vicinity. Stops near the Project Site are located on Soquel Drive less than ¼ mile east of 41st Avenue (and the Project) and on 41st Avenue less than ¼ mile south of Soquel Drive (and the Project).
- The ***Santa Cruz / Watsonville Route (Route 71)*** serves south Santa Cruz County and provides public transit to the Cities of Santa Cruz, Capitola and Watsonville. It operates along Soquel Drive in the Project vicinity. Stops near the Project Site are located near Research Park Drive (less than ¼ mile west of the Project Site) and near 41st Avenue (less than ¼ mile east of the Project Site).
- The ***Commuter Express Santa Cruz / Watsonville Route (Route 91X)*** serves south Santa Cruz County and provides express public transit to the Cities of Santa Cruz, Capitola and Watsonville. It operates along Soquel Drive and 41st Avenue in the Project vicinity. A stop near the Project Site is located in front of the Redwood Shopping Center (less than ¼ mile south of the Project Site).

As illustrated above, multiple bus stops serving commuter routes are located in close proximity to the Project site.

EXISTING PEDESTRIAN AND BICYCLE FACILITIES

PEDESTRIANS

In the immediate Project vicinity and within walking distance (¼ mile), sidewalks currently exist on the north side of Soquel Drive and on the east side of 41st Avenue. A sidewalk does not currently exist along the Project frontage of either Soquel Drive nor 41st Avenue.

BICYCLES

In the immediate Project vicinity and within biking distance (½ mile), Class I, II, and III bikeway facilities are discussed below:

Class I facilities are paved bicycle paths that are physically separated from the vehicular travel lane. No Class I facilities currently exist in the Project vicinity.

Class II facilities, which are striped bike lanes along the street, exist along both sides of Soquel Drive and along both sides 41st Avenue in the Project vicinity.

Class III bicycle facilities are bike routes denoted by signs that are shared with vehicles along the roadway. No Class III bicycle facilities currently exist in the Project vicinity.

EXISTING LEVEL OF SERVICE AT STUDY INTERSECTIONS

Traffic operations were evaluated at the study intersections based existing conditions lane geometry, traffic control, and peak hour traffic volumes. Oversaturated flows were observed when traffic count data was

collected during weekday AM and PM Peak periods. Ideal Saturated Flow Rates in Synchro were therefore adjusted at Soquel Drive / Daubenbiss Avenue (eastbound and westbound approaches) and Soquel Drive / Porter Street (All approaches) to compensate for latent vehicular demand and to more accurately model intersection/roadway conditions. Model calibration was conducted using SimTraffic microsimulation software to stochastically model vehicle arrival and queuing patterns. Simulation runs were verified against field observations.

The following intersections operate at an unacceptable LOS under existing conditions:

- Soquel Drive / Robertson Street (Intersection #4) (AM and PM Peak)
- Soquel Drive / Porter Street (Intersection #6) (AM and PM Peak)

Results of the analysis are presented in **Table 2** and Synchro output sheets are provided in the **Appendix**.

Table 2 – Existing Conditions Intersection Level of Service

#	Intersection	Maintaining Agency	Control Type	Existing Conditions					
				AM Peak Hour			PM Peak Hour		
				Movement	Delay	LOS	Movement	Delay	LOS
1	Soquel Dr / Rodeo Gulch Rd[1]	SCC	Signal	Overall	8.2	A	Overall	8.2	A
2	Soquel Dr / Project Driveway 1[1]	SCC	Does Not Exist						
3	Soquel Dr / 41st Ave[1]	SCC	Signal	Overall	32.7	C	Overall	37.8	D
4	Soquel Dr / Robertson St[1]	SCC	AWSC	Overall	**43.2**	**E**	Overall	**74.8**	**F**
5	Soquel Dr / Daubenbiss Ave[1]	SCC	Signal	Overall	11.2	B	Overall	4.9	A
6	Soquel Dr / Porter St[1]	SCC	Signal	Overall	**57.1**	**E**	Overall	**77.9**	**E**
7	41st Ave / Project Driveway 2[1]	SCC	Does Not Exist						
8	41st Ave / Redwood Shopping Center[1]	SCC	Signal	Overall	12.7	B	Overall	15.8	B
9	41st Ave / Hwy 1 NB Ramps[1]	Caltrans	Signal	Overall	15.8	B	Overall	14.3	B
10	41st Ave / Hwy 1 SB Ramps[2]	Caltrans	Signal	Overall	23.2	C	Overall	7.4	A

Notes:

1. Analysis performed using HCM 2010 methodologies.

2. Intersection #10 controller manages operations for two signalized intersections, therefore, analysis performed using HCM 2000 methodologies.

3. Delay indicated in seconds/vehicle.

4. SCC level of service (LOS) standard is D. Caltrans LOS standard is C.

*5. Intersections that operate below maintaining agency's LOS standard are highlighted and shown in **bold**.*

Source: Kimley Horn and Associates, 2016.

3. PROPOSED PROJECT

PROJECT TRANSPORTATION SYSTEM CHANGES

As part of the Project, frontage improvements will be constructed along Soquel Drive and 41st Avenue. The Project proposes to construct one full access driveway onto Soquel Drive at the north end of the site (Study Intersection #2) and one right-in, right-out driveway onto 41st Avenue at the east end of the site (Study Intersection #7). Both Project driveways will be side-street stop controlled (SSSC). The Project will provide 112 vehicle parking stalls on-site (including 3 Americans with Disabilities Act (ADA) spaces) and 20 bicycle rack spaces. It is anticipated that up to 19 employees will typically work per shift. Vehicular parking will be allocated as follows:

- 45 – Inventory Spaces
- 34 – Service Spaces
- 23 – Employee Spaces
- 2 – Clean Air Spaces
- 7 – Customer Spaces
- 3 – ADA Spaces

The Project will also construct ADA compliant sidewalk along north and east Project frontages (Soquel Drive and 41st Avenue) as illustrated in the site plan shown in **Figure 2**.

TRIP GENERATION ESTIMATES

Trip generation for the Project was selected based on the description above and was calculated using the Institute of Transportation Engineer's publication, *Trip Generation 9th Edition*. *Trip Generation* is a standard reference, which is used by jurisdictions throughout the county for the estimation of trip generation. A trip is defined in *Trip Generation* as a single or one-directional vehicle movement with either the origin or destination at the Project site. In other words, a trip can be either "to" or "from" the site. In addition, a single customer visit to a site is counted as two trips (i.e., one to and one from the site).

For purposes of determining the worst-case impacts of traffic on the surrounding street network, the trips generated by a proposed development are typically estimated between the hours of 7:00-9:00 AM and 4:00-6:00 PM on a weekday. While the Project itself may generate more traffic during some other time of the day such as around noon, the peak of "adjacent street traffic" represents the time period when the uses potentially contribute to the greatest amount of congestion and impacts.

Internal capture reductions are typically considered for mixed use developments and developments with complementary land uses to account for trips made within the development. There is one proposed land use for this development "Automobile Sales", therefore, no internal capture trip reductions were taken for this development. Pass-by trip reductions are typically considered to account for trips that will already be on the road and will likely stop as they pass by the site. No pass-by trip reductions were taken for this development.

Trip generation was developed for this Project using the Institute of Transportation Engineers (ITE) Trip Generation Manual, 9th Edition. Automobile Sales (Land Use #841) average trip rates were used to determine Project trips for the 20,111-square foot proposed dealership. Four single-family detached homes currently exist on the lots that will be developed, therefore trip credits for the existing homes were calculated based on Single-Family Detached Housing (Land Use #210) average trip rates.

The Project is anticipated to generate 650 average daily trips, 39 AM Peak hour trips (29 IN / 10 OUT), and 53 PM Peak hour trips (21 IN / 32 OUT). The existing homes generate 38 daily trips, 3 AM Peak hour trips (1 IN / 2 OUT), and 4 PM Peak hour trips (3 IN / 1 OUT), which will be taken as a trip credit. The net new trip generation for the proposed Project is therefore 612 daily trips, 36 AM Peak hour trips (28 IN / 8 OUT), and 49 PM Peak hour trips (18 IN / 31 OUT). **Table 3** presents the trip generation for the Project.

Table 3 – Project Trip Generation

Land Use	Size	Units	Daily Trip Rate	Daily Trips	AM Peak Hour Rate	AM Peak Hour Trips (IN/OUT)	PM Peak Hour Rate	PM Peak Hour Trips (IN/OUT)
Project								
Automobile Sales (LU 841)	20,111	SF	32.30	650	1.92	39 (29/10)	2.62	53 (21/32)
Existing Conditions (Trip Credit)								
Single-Family Detached Housing (LU 210)	4	DU	-9.52	-38	-0.75	-3 (-1/-2)	-1.00	-4 (-3/-1)
Net Trip Generation	**-**	**-**	**-**	**612**	**-**	**36 (28/8)**	**-**	**49 (18/31)**

Source: Kimley Horn and Associates, 2016.

TRIP DISTRIBUTION AND ASSIGNMENT

The trip distribution was developed based on consultation with Santa Cruz County staff, SCCRTC Average Daily Traffic volumes, Caltrans Average Annual Daily Traffic volumes, and knowledge of the study area.

Due to the nature of the proposed development, Project trips are expected to travel to and from the site via Highway 1, with 33% of Project trips traveling on North Highway 1 and 31% of Project trips traveling south on Highway 1. 10% of Project trips will travel to and from the site south of Highway 1 via 41st Avenue. 14% of Project trips will travel to and from the site via Soquel Drive west of the site and 14% of trips will travel to and from the site via Soquel Drive east of the site, with approximately 1% of the trips traveling on north Porter Street and 2% traveling on south Porter Street. **Figure 5** graphically illustrates the assumed distribution in relation to the Project site and study intersections.

Project Driveway #2 (Intersection #2) is anticipated to be partially accessed via up to ten vehicles (AM Peak) making northbound u-turns at Intersection #3 and then making a southbound right-turn into Project Driveway #2 in the peak hour. Likewise, it is anticipated that up to two vehicles (PM Peak) exiting Project Driveway #2 in the peak hour will make a southbound u-turn at the unsignalized Redwood Mall driveway south of Project Driveway #2 since southbound u-turns are not permitted at the signalized Redwood Mall intersection (Intersection #8). U-turns are analyzed (and illustrated in all figures) as left-turns since the HCM does not provide methodology for u-turn analysis. **Figure 6** shows the Project trip assignment for AM and PM peak hour periods at study intersections.

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Figure 5

Project Trip Distribution

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Figure 6

Project Peak Hour Trip Assignment

4. EXISTING PLUS PROJECT CONDITIONS

Traffic operations were evaluated at the study intersections under existing conditions plus traffic generated. **Figure 6** shows the Existing Plus Project lane geometry and traffic control and **Figure 8** shows the Existing Plus Project peak hour traffic volumes.

The following intersections continue to operate at an unacceptable LOS under Existing Plus Project conditions and are impacted by the Project. Mitigations are identified below:

- **Soquel Drive / Robertson Street (Intersection #4) (AM and PM Peak)**
    - Install signal control and construct one eastbound left-turn and westbound left-turn pockets.
- **Soquel Drive / Porter Street (Intersection #6) (AM and PM Peak)**
    - Construct one additional southbound left-turn pocket and optimize signal phasing, cycle length, and splits.

The Project will pay a fair share to mitigate the impacts, which is discussed further in Section 9. Summary of Impacts and Fees.

Existing Plus Project analysis results are presented in **Table 4** and Mitigated Existing Plus Project analysis results are shown in **Table 5**. Synchro output sheets are provided in the **Appendix**.

Table 4 – Existing Plus Project Conditions Intersection Level of Service

#	Intersection	Maintaining Agency	Control Type	Existing Conditions						Existing Plus Project Conditions					
				AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour		
				Movement	Delay	LOS	Movement	Delay	LOS	Movement	Delay	LOS	Movement	Delay	LOS
1	Soquel Dr / Rodeo Gulch Rd[1]	SCC	Signal	Overall	8.2	A	Overall	8.2	A	Overall	8.2	A	Overall	8.2	A
2	Soquel Dr / Project Driveway 1[1]	SCC	SSSC	Does Not Exist						Overall	0.1	A	Overall	0.3	A
										NB	16.9	C	NB	25.3	D
3	Soquel Dr / 41st Ave[1]	SCC	Signal	Overall	32.7	C	Overall	37.8	D	Overall	34.0	C	Overall	39.7	D
4	Soquel Dr / Robertson St[1]	SCC	AWSC	Overall	**43.2**	**E**	Overall	**74.8**	**F**	Overall	**43.9**	**E**	Overall	**76.0**	**F**
5	Soquel Dr / Daubenbiss Ave[1]	SCC	Signal	Overall	11.2	B	Overall	4.9	A	Overall	11.4	B	Overall	4.9	A
6	Soquel Dr / Porter St[1]	SCC	Signal	Overall	**57.1**	**E**	Overall	**77.9**	**E**	Overall	**57.7**	**E**	Overall	**78.4**	**E**
7	41st Ave / Project Driveway 2[1]	SCC	SSSC	Does Not Exist						Overall	0.1	A	Overall	0.1	A
										EB	10.1	B	EB	10.5	B
8	41st Ave / Redwood Shopping Center[1]	SCC	Signal	Overall	12.7	B	Overall	15.8	B	Overall	12.7	B	Overall	15.8	B
9	41st Ave / Hwy 1 NB Ramps[1]	Caltrans	Signal	Overall	15.8	B	Overall	14.3	B	Overall	16.5	B	Overall	14.4	B
10	41st Ave / Hwy 1 SB Ramps[2]	Caltrans	Signal	Overall	23.2	C	Overall	7.4	A	Overall	24.4	C	Overall	7.5	A

Notes:

1. Analysis performed using HCM 2010 methodologies.

2. Intersection #10 controller manages operations for two signalized intersections, therefore, analysis performed using HCM 2000 methodologies.

3. Delay indicated in seconds/vehicle.

4. SCC level of service (LOS) standard is D. Caltrans LOS standard is C.

*5. Intersections that operate below maintaining agency's LOS standard are highlighted and shown in **bold**.*

Source: Kimley Horn and Associates, 2016.

Table 5 – Mitigated Existing Plus Project Conditions Intersection Level of Service

#	Intersection	Maintaining Agency	Existing Plus Project Conditions						Mitigated Existing Plus Project Conditions					
			AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour		
			Movement	Delay	LOS	Movement	Delay	LOS	Movement	Delay	LOS	Movement	Delay	LOS
4	Soquel Dr / Robertson St[1]	SCC	Overall	**43.9**	**E**	Overall	**76.0**	**F**	Overall	12.0	B	Overall	21.4	C
6	Soquel Dr / Porter St[1]	SCC	Overall	**57.7**	**E**	Overall	**78.4**	**E**	Overall	28.1	C	Overall	30.8	C

Notes:

1. Analysis performed using HCM 2010 methodologies.

2. Delay indicated in seconds/vehicle.

3. SCC level of service (LOS) standard is D. Caltrans LOS standard is C.

*4. Intersections that operate below maintaining agency's LOS standard are highlighted and shown in **bold**.*

Source: Kimley Horn and Associates, 2016.

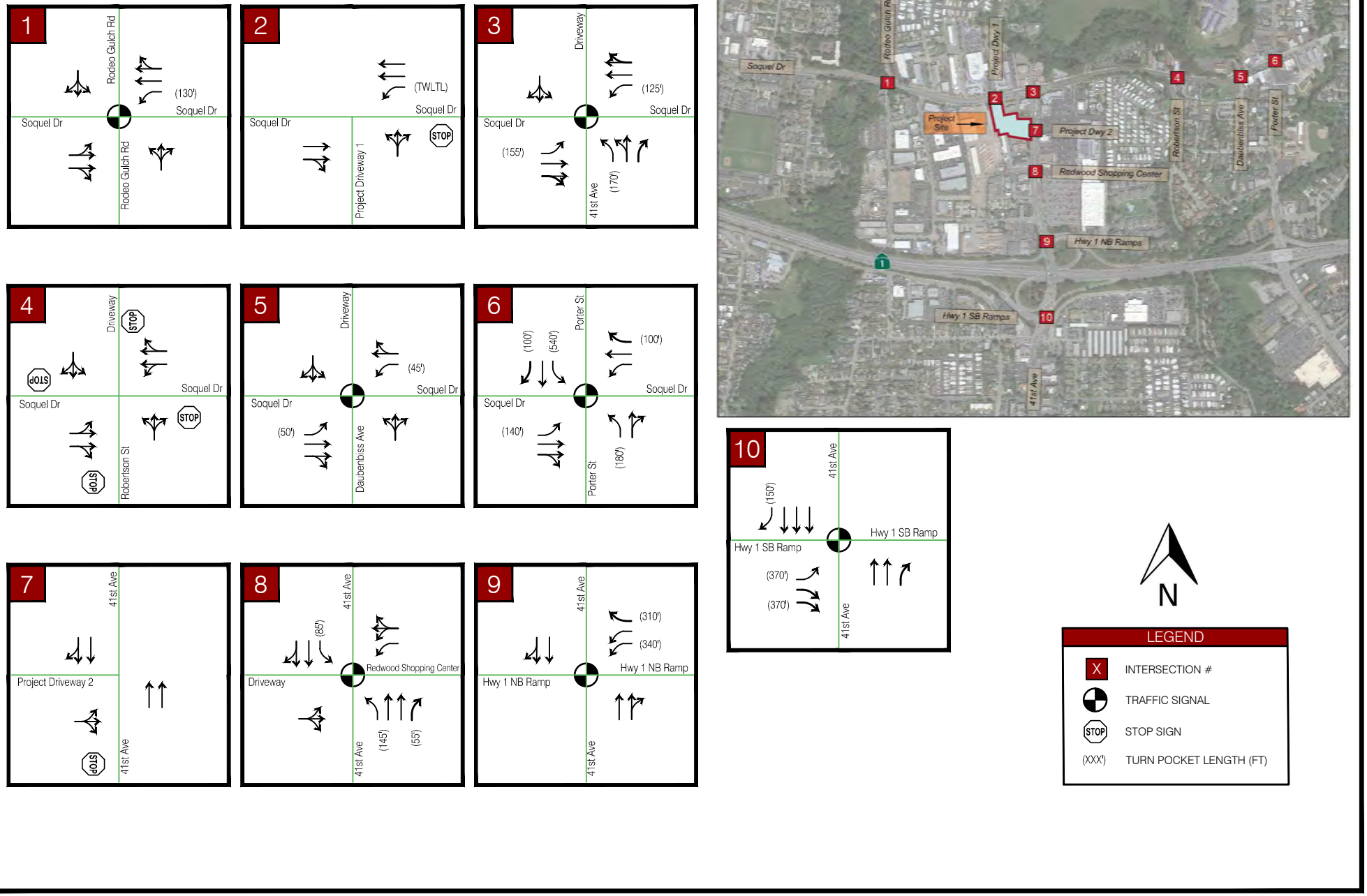

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Figure 7

Existing Plus Project Lane Geometry and Traffic Control

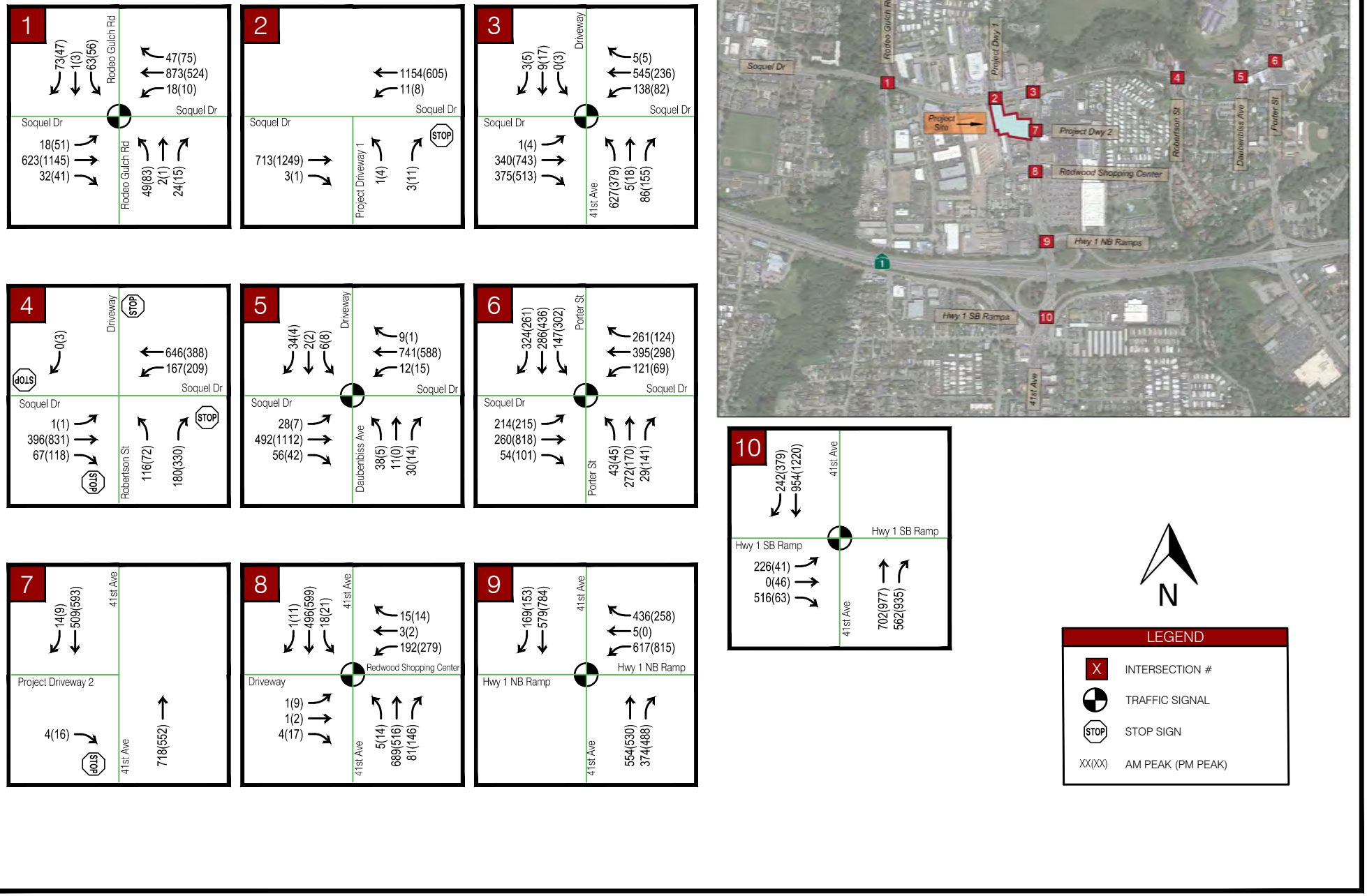

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Figure 8

Existing Plus Project Peak Hour Turning Movement Volumes

5. NEAR TERM CONDITIONS

Traffic operations were evaluated under the following development conditions:

- Near Term (2018) Conditions
- Near Term (2018) plus Project Conditions

NEAR TERM TRANSPORTATION IMPROVEMENTS

Per discussions with the County, and as documented in the County's 2014 Regional Transportation Plan (RTP), there are no programmed network improvements in the Project study area nor are there any intersections expected to be constructed prior to opening the Project that have not already been completed. **Figure 9** illustrates the intersection geometry and traffic control assumed in the Near-Term 2018 analysis, which are the same as existing conditions. Also, no future (near term) signalization is planned for any of the study intersections.

NEAR TERM TRAFFIC VOLUMES

NEAR TERM TRAFFIC VOLUME GROWTH RATES

Near Term describes the conditions when the Project would open its doors to the public. For purposes of this analysis, Near Term is assumed to be in the year 2018. Near Term conditions can be calculated by either identifying the approved, but not yet constructed projects that would add traffic to the road network by 2018 or by estimating traffic growth, based on historical and future projections.

Kimley-Horn coordinated with County staff to determine if there were any development projects in the vicinity of the project site that are in various stages of planning, approval, or development. No specific projects were identified by County Staff that included land uses, project size, date of completion, or operation. Therefore, average daily traffic volumes (ADTs), obtained from the Santa Cruz County Regional Transportation Commission (SCCRTC), were used to estimate the growth from potential projects for the Near-Term 2018 conditions as discussed below.

The most recent bi-directional ADTs, with years varying across roadway segments in the County, were compared against historical ADTs of applicable roadways. Year 2018 turning movement volumes were calculated by adding the growth increment to the current year (2016) traffic count to calculate the final adjusted roadway link forecast volume. It was calculated that volumes along Soquel Drive within the Project vicinity would increase by 0.72% per annum, while volumes along 41st Avenue would increase by 0.53% per annum. The derived growth rates were applied to both main and side street movements on respective corridors. Values and calculations to support this growth rate are shown in **Table 6** below.

Table 6 – Growth Rate Calculations

Roadway Segment		Most Recent		Oldest AADT		Growth Rate (taken over period of time)	Annual Growth Rate
		Year	AADT	Year	AADT		
41st Ave	N/O Clares St (Jul. 2015-Aug. 2006)	2015	40,804	2006	38,891	1.049	0.53%
Soquel Dr	W/O 41st Ave (Jul. 2015-Nov. 2008)	2015	18,532	2008	17,622	1.052	0.72%

NEAR TERM TRAFFIC VOLUME DEVELOPMENT

Near Term (2018) volumes were calculated by using the annual growth rates between the existing volumes and the 2035 volumes calculated from the SCCRTC ADTs. Growth rates were determined based on historical volume data and were applied to main street and minor street movements of respective corridors (Soquel Drive & 41st Avenue). The application of the growth rates to minor street movements assumes that study intersection side-street volumes will grow at the same rate as main street volumes from which the growth rates were derived, which is a conservative estimate. The growth rates were applied to the existing counts in 2016 and grown to 2018 for Near Term analysis scenarios. Peak hour volumes are presented in **Figure 10**.

NEAR TERM INTERSECTION LEVEL OF SERVICE

Near Term (Year 2018) conditions were evaluated at the study intersections based on lane geometry and traffic control illustrated in **Figure 9** and peak hour volumes in **Figure 10**.

The following intersections operate at an unacceptable LOS under Near Term conditions:

- Soquel Drive / Robertson Street (Intersection #4) (AM and PM Peak)
- Soquel Drive / Porter Street (Intersection #6) (AM and PM Peak)

Results of the analysis are presented in **Table 7** and Synchro output sheets are provided in the **Appendix**.

Table 7 – Near Term Conditions Intersection Level of Service

#	Intersection	Maintaining Agency	Control Type	Near Term Conditions					
				AM Peak Hour			PM Peak Hour		
				Movement	Delay	LOS	Movement	Delay	LOS
1	Soquel Dr / Rodeo Gulch Rd[1]	SCC	Signal	Overall	8.3	A	Overall	8.3	A
2	Soquel Dr / Project Driveway 1[1]	SCC	Does Not Exist						
3	Soquel Dr / 41st Ave[1]	SCC	Signal	Overall	33.6	C	Overall	40.2	D
4	Soquel Dr / Robertson St[1]	SCC	AWSC	Overall	**46.5**	**E**	Overall	**80.3**	**F**
5	Soquel Dr / Daubenbiss Ave[1]	SCC	Signal	Overall	11.6	B	Overall	4.9	A
6	Soquel Dr / Porter St[1]	SCC	Signal	Overall	**60.3**	**E**	Overall	**80.9**	**F**
7	41st Ave / Project Driveway 2[1]	SCC	Does Not Exist						
8	41st Ave / Redwood Shopping Center[1]	SCC	Signal	Overall	12.7	B	Overall	15.9	B
9	41st Ave / Hwy 1 NB Ramps[1]	Caltrans	Signal	Overall	16.3	B	Overall	14.5	B
10	41st Ave / Hwy 1 SB Ramps[2]	Caltrans	Signal	Overall	24.6	C	Overall	7.4	A

Notes:

1. Analysis performed using HCM 2010 methodologies.

2. Intersection #10 controller manages operations for two signalized intersections, therefore, analysis performed using HCM 2000 methodologies.

3. Delay indicated in seconds/vehicle.

4. SCC level of service (LOS) standard is D. Caltrans LOS standard is C.

*5. Intersections that operate below maintaining agency's LOS standard are highlighted and shown in **bold**.*

Source: Kimley Horn and Associates, 2016.

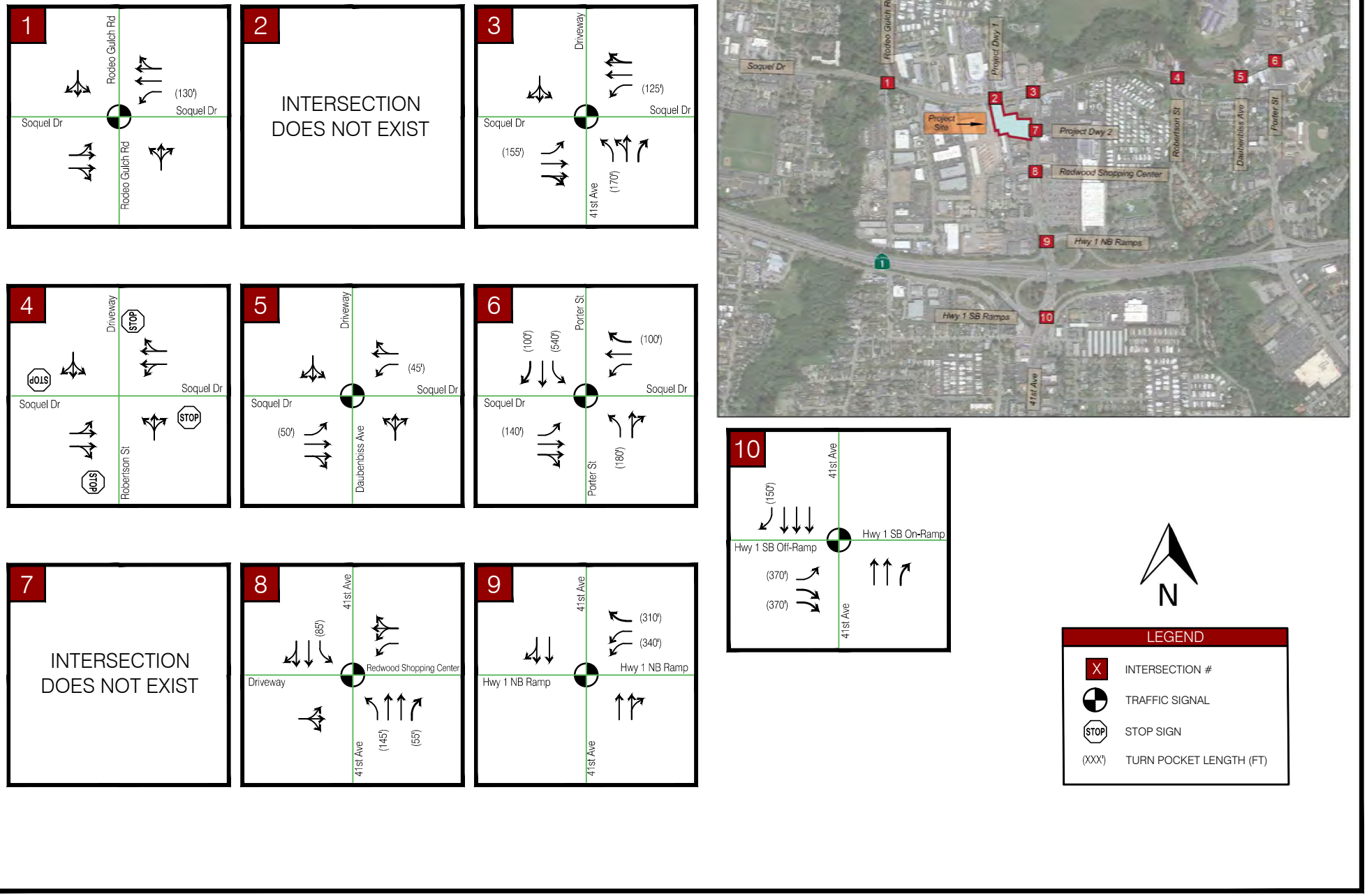

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Figure 9

Near Term Lane Geometry and Traffic Control

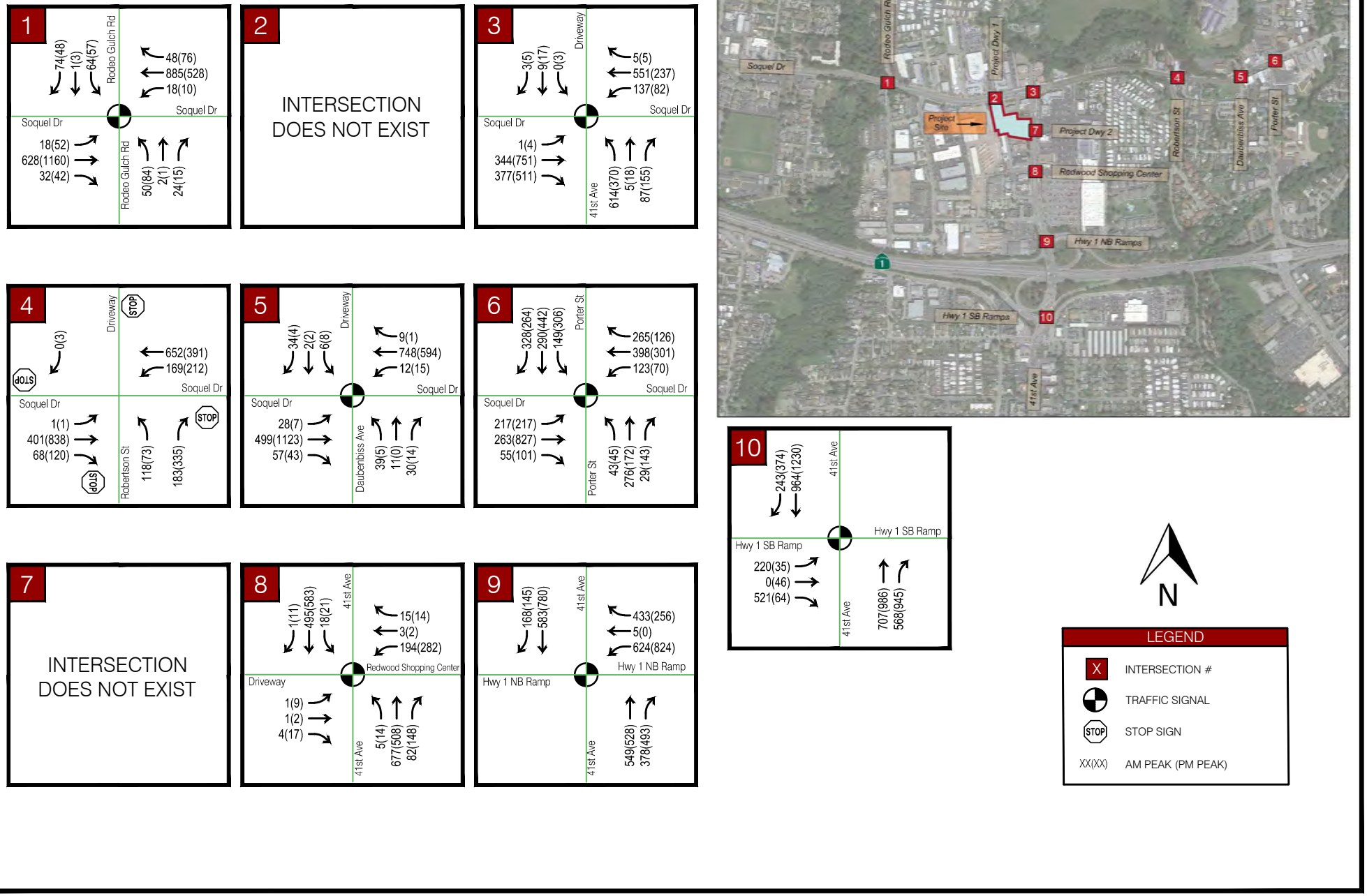

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Figure 10

Near Term Peak Hour Turning Movement Volumes

NEAR TERM PLUS PROJECT INTERSECTION LEVEL OF SERVICE

Traffic operations were evaluated at the study intersections based on Near Term Plus Project conditions. Near Term Plus Project lane geometry and traffic control is shown in **Figure 11** and Near Term Plus Project peak hour traffic volumes are shown in **Figure 12**.

The following intersections continue to operate at an unacceptable LOS under Near Term Plus Project conditions and are impacted by the Project. Mitigations are identified below:

- **Soquel Drive / Robertson Street (Intersection #4) (AM and PM Peak)**
    - Install signal control and construct one eastbound left-turn and westbound left-turn pockets.
- **Soquel Drive / Porter Street (Intersection #6) (AM and PM Peak)**
    - Construct one additional southbound left-turn pocket and optimize signal phasing, cycle length, and splits.

The Project will pay a fair share to mitigate the impacts, which is discussed further in Section 9. Summary of Impacts and Fees.

Near Term Plus Project analysis results are presented in **Table 8** and Mitigated Near Term Plus Project analysis results are shown in **Table 9**. Synchro output sheets are provided in the **Appendix**.

Table 8 – Near Term Plus Project Conditions Intersection Level of Service

#	Intersection	Maintaining Agency	Control Type	Near Term Conditions						Near Term Plus Project Conditions					
				AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour		
				Movement	Delay	LOS	Movement	Delay	LOS	Movement	Delay	LOS	Movement	Delay	LOS
1	Soquel Dr / Rodeo Gulch Rd[1]	SCC	Signal	Overall	8.3	A	Overall	8.3	A	Overall	8.3	A	Overall	8.3	A
2	Soquel Dr / Project Driveway 1[1]	SCC	SSSC	Does Not Exist						Overall	0.1	A	Overall	0.3	A
										NB	17.1	C	NB	26.0	D
3	Soquel Dr / 41st Ave[1]	SCC	Signal	Overall	33.6	C	Overall	40.2	D	Overall	35.1	D	Overall	42.1	D
4	Soquel Dr / Robertson St[1]	SCC	AWSC	Overall	**46.5**	**E**	Overall	**80.3**	**F**	Overall	**47.3**	**E**	Overall	**81.3**	**F**
5	Soquel Dr / Daubenbiss Ave[1]	SCC	Signal	Overall	11.6	B	Overall	4.9	A	Overall	11.8	B	Overall	4.9	A
6	Soquel Dr / Porter St[1]	SCC	Signal	Overall	**60.3**	**E**	Overall	**80.9**	**F**	Overall	**61.2**	**E**	Overall	**81.4**	**F**
7	41st Ave / Project Driveway 2[1]	SCC	SSSC	Does Not Exist						Overall	0.1	A	Overall	0.1	A
										EB	10.2	B	EB	10.6	B
8	41st Ave / Redwood Shopping Center[1]	SCC	Signal	Overall	12.7	B	Overall	15.9	B	Overall	12.7	B	Overall	15.9	B
9	41st Ave / Hwy 1 NB Ramps[1]	Caltrans	Signal	Overall	16.3	B	Overall	14.5	B	Overall	17.0	B	Overall	14.5	B
10	41st Ave / Hwy 1 SB Ramps[2]	Caltrans	Signal	Overall	24.6	C	Overall	7.4	A	Overall	25.6	C	Overall	7.6	A

Notes:

1. Analysis performed using HCM 2010 methodologies.

2. Intersection #10 controller manages operations for two signalized intersections, therefore, analysis performed using HCM 2000 methodologies.

3. Delay indicated in seconds/vehicle.

4. SCC level of service (LOS) standard is D. Caltrans LOS standard is C.

*5. Intersections that operate below maintaining agency's LOS standard are highlighted and shown in **bold**.*

Source: Kimley Horn and Associates, 2016.

Table 9 – Mitigated Near Term Plus Project Conditions Intersection Level of Service

#	Intersection	Maintaining Agency	Near Term Plus Project Conditions						Mitigated Near Term Plus Project Conditions					
			AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour		
			Movement	Delay	LOS	Movement	Delay	LOS	Movement	Delay	LOS	Movement	Delay	LOS
4	Soquel Dr / Robertson St[1]	SCC	Overall	**47.3**	**E**	Overall	**81.3**	**F**	Overall	12.1	B	Overall	22.5	C
6	Soquel Dr / Porter St[1]	SCC	Overall	**61.2**	**E**	Overall	**81.4**	**F**	Overall	29.0	C	Overall	32.8	C

Notes:

1. Analysis performed using HCM 2010 methodologies.

2. Delay indicated in seconds/vehicle.

3. SCC level of service (LOS) standard is D. Caltrans LOS standard is C.

*4. Intersections that operate below maintaining agency's LOS standard are highlighted and shown in **bold**.*

Source: Kimley Horn and Associates, 2016.

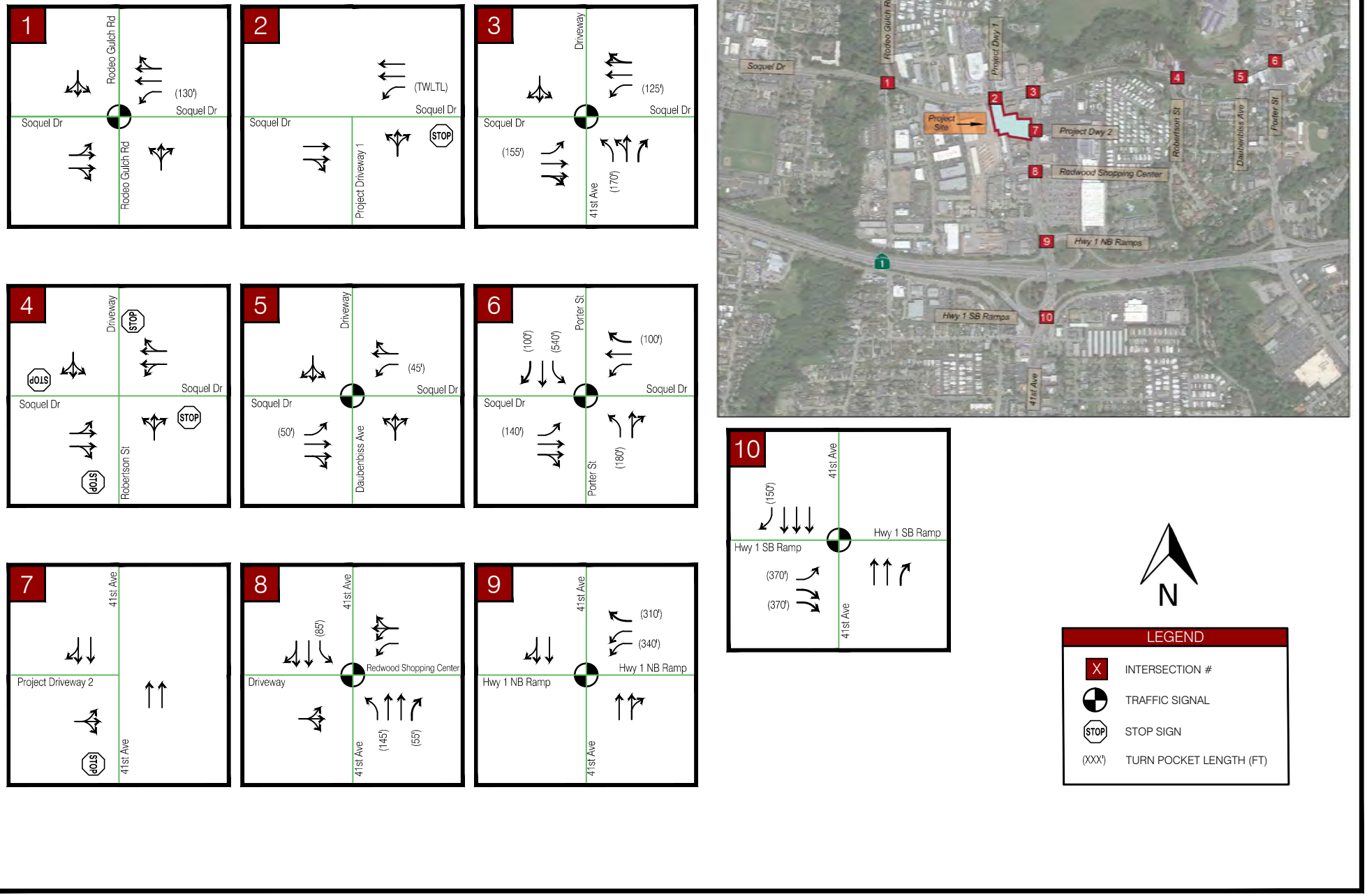

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Figure 11

Near Term Plus Project Lane Geometry and Traffic Control

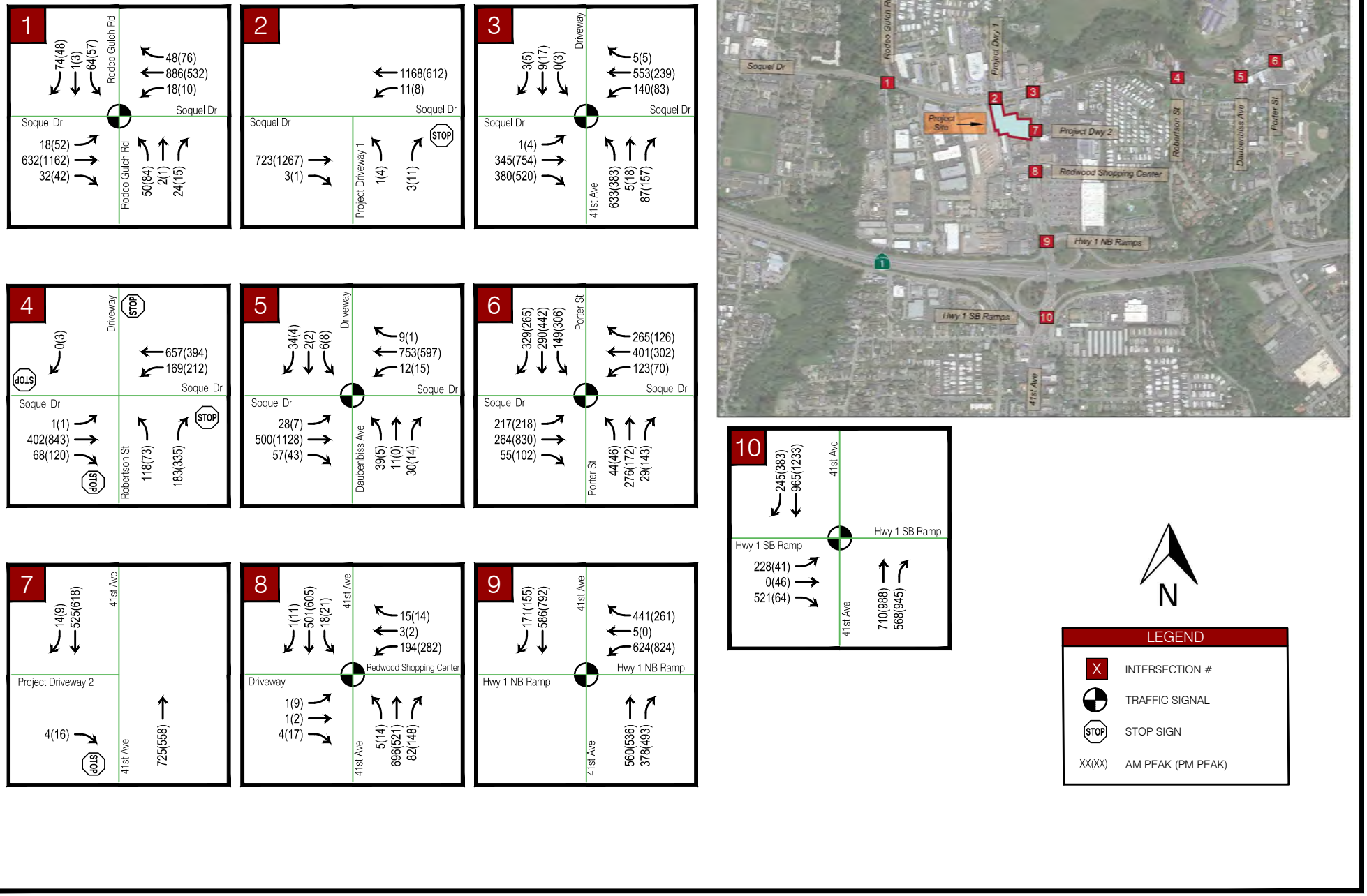

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Figure 12

Near Term Plus Project Peak Hour Turning Movement Volumes

6. CUMULATIVE CONDITIONS

Traffic operations were evaluated under the following cumulative conditions:

- Cumulative (2035) Conditions
- Cumulative (2035) plus Project Conditions

CUMULATIVE TRANSPORTATION IMPROVEMENTS

Per the County's 2014 Regional Transportation Plan (RTP) improvements at two study intersections have been identified. The improvements are as follows:

- **Soquel Drive / 41st Avenue (Intersection #3)** – Construct eastbound right turn pocket.

- **Soquel Drive / Robertson Street (Intersection #4)** – Construct eastbound and westbound left-turn pockets and signalize intersection (all left-turn movements assumed permissive) per 2014 SCCRTP.

Figure 13 illustrates the intersection geometry and traffic control assumed in the Cumulative (2035) condition, which is assumed to remain the same as in Existing and Near Term Conditions except for Intersections #3 and #4.

It is anticipated that, when the intersection of Soquel Drive / Robertson Street is signalized in the future, Soquel Drive / Daubenbiss Avenue and Soquel Drive / Porter Street signal timings and coordination would be updated and optimized. This optimization could improve progression and operations along Soquel Drive, however, this analysis conservatively does not account for that improvement, and signal timings at Soquel Drive / Daubenbiss Avenue and Soquel Drive / Porter Street are the same in Cumulative conditions as they are in Existing and Near Term conditions.

CUMULATIVE VOLUMES

Year 2035 roadway link volumes were calculated in a similar method to the Near-term 2018 volumes.

ADTs were obtained from the Santa Cruz County Regional Transportation Commission (SCCRTC) and were used to estimate the growth from potential projects for the Cumulative 2035 conditions as discussed below. Calculations to support this volume growth estimate can be found in the **Appendix**.

The most recent available bi-directional ADTs, whose years vary across roadway segments in the County, were compared historical ADTs for applicable roadways. Year 2035 turning movement volumes were calculated by adding the growth increment to the existing year (2016) traffic count to calculate the final adjusted forecasted movement volume. Under these methods, it was calculated that volumes along Soquel Drive and 41st Avenue within the Project vicinity would increase by 0.72% per annum, while volumes along 41st Avenue would increase by 0.53% per annum. The derived growth rates were applied to both main and side street movements on respective corridors. Cumulative peak hour traffic volumes are shown in **Figure 14**.

CUMULATIVE INTERSECTION LEVEL OF SERVICE

Traffic operations were evaluated at the study intersections based on Cumulative lane geometry and traffic control as shown in **Figure 13** and Cumulative peak hour traffic volumes as shown in **Figure 14**.

The following intersection operates at an unacceptable LOS under Cumulative Project conditions:

- Soquel Drive / Porter Street (Intersection #6) (AM and PM Peak)

Results of the analysis are presented in **Table 10** and Synchro output sheets are provided in the **Appendix**.

Table 10 – Cumulative Conditions Intersection Level of Service

#	Intersection	Maintaining Agency	Control Type	Cumulative Conditions					
				AM Peak Hour			PM Peak Hour		
				Movement	Delay	LOS	Movement	Delay	LOS
1	Soquel Dr / Rodeo Gulch Rd[1]	SCC	Signal	Overall	9.5	A	Overall	9.7	A
2	Soquel Dr / Project Driveway 1[1]	SCC	Does Not Exist						
3	Soquel Dr / 41st Ave[1]	SCC	Signal	Overall	45.2	D	Overall	30.8	C
4	Soquel Dr / Robertson St[1]	SCC	Signal	Overall	18.4	B	Overall	46.1	D
5	Soquel Dr / Daubenbiss Ave[1]	SCC	Signal	Overall	15.7	B	Overall	5.2	A
6	Soquel Dr / Porter St[1]	SCC	Signal	Overall	**85.7**	**F**	Overall	**114.5**	**F**
7	41st Ave / Project Driveway 2[1]	SCC	Does Not Exist						
8	41st Ave / Redwood Shopping Center[1]	SCC	Signal	Overall	13.2	B	Overall	16.7	B
9	41st Ave / Hwy 1 NB Ramps[1]	Caltrans	Signal	Overall	20.9	C	Overall	16.4	B
10	41st Ave / Hwy 1 SB Ramps[2]	Caltrans	Signal	Overall	40.9	D	Overall	8.4	A

Notes:

1. Analysis performed using HCM 2010 methodologies.

2. Intersection #10 controller manages operations for two signalized intersections, therefore, analysis performed using HCM 2000 methodologies.

3. Delay indicated in seconds/vehicle.

4. SCC level of service (LOS) standard is D. Caltrans LOS standard is C.

*5. Intersections that operate below maintaining agency's LOS standard are highlighted and shown in **bold**.*

Source: Kimley Horn and Associates, 2016.

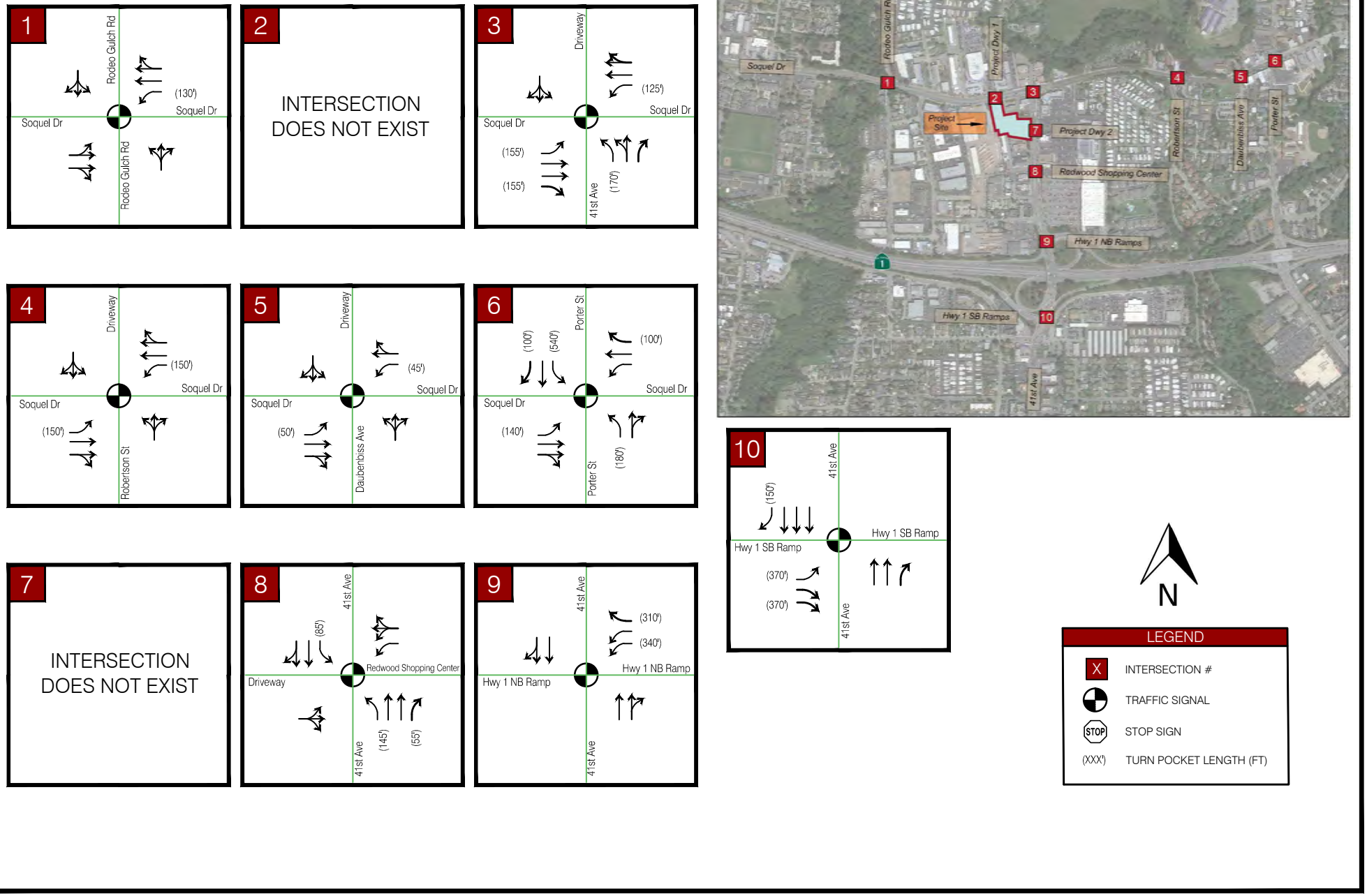

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Figure 13

Cumulative Lane Geometry and Traffic Control

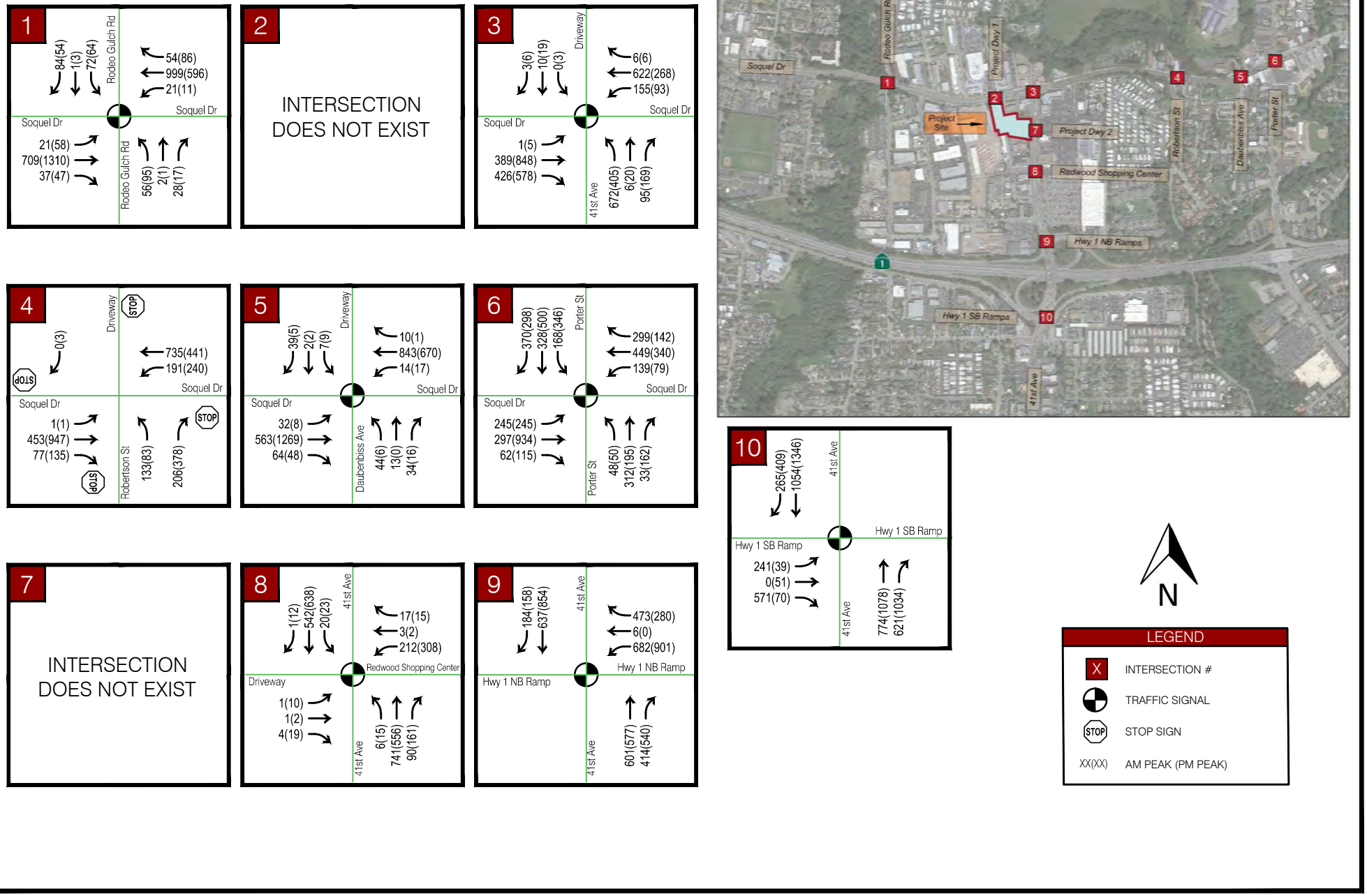

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Figure 14

Cumulative Peak Hour Turning Movement Volumes

CUMULATIVE PLUS PROJECT INTERSECTION LEVEL OF SERVICE

Traffic operations were evaluated at the study intersections based on Cumulative Plus Project conditions. Cumulative Plus Project lane geometry and traffic control is shown in **Figure 15** and Cumulative peak hour traffic volumes are shown in **Figure 16**.

The following intersection continues to operate at an unacceptable LOS under Cumulative Plus Project conditions and is impacted by the Project. Mitigations are identified below:

- **Soquel Drive / Porter Street (Intersection #6) (AM and PM Peak)**
    - Construct one additional southbound left-turn pocket and optimize signal phasing, cycle length, and splits.

The Project will pay a fair share to mitigate the impacts, which is discussed further in Section 9. Summary of Impacts and Fees.

Cumulative Plus Project analysis results are presented in **Table 11** and Mitigated Cumulative Plus Project analysis results are shown in **Table 12**. Synchro output sheets are provided in the **Appendix**.

Table 11 – Cumulative Plus Project Conditions Intersection Level of Service

#	Intersection	Maintaining Agency	Control Type	Cumulative Conditions						Cumulative Plus Project Conditions					
				AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour		
				Movement	Delay	LOS	Movement	Delay	LOS	Movement	Delay	LOS	Movement	Delay	LOS
1	Soquel Dr / Rodeo Gulch Rd[1]	SCC	Signal	Overall	9.5	A	Overall	9.7	A	Overall	9.5	A	Overall	9.8	A
2	Soquel Dr / Project Driveway 1[1]	SCC	SSSC	Does Not Exist						Overall	0.1	A	Overall	0.3	A
										NB	19.8	C	NB	33.2	D
3	Soquel Dr / 41st Ave[1]	SCC	Signal	Overall	45.2	D	Overall	30.8	C	Overall	47.7	D	Overall	32.2	C
4	Soquel Dr / Robertson St[1]	SCC	Signal	Overall	18.4	B	Overall	46.1	D	Overall	17.7	B	Overall	46.3	D
5	Soquel Dr / Daubenbiss Ave[1]	SCC	Signal	Overall	15.7	B	Overall	5.2	A	Overall	15.9	B	Overall	5.2	A
6	Soquel Dr / Porter St[1]	SCC	Signal	Overall	**85.7**	**F**	Overall	**114.5**	**F**	Overall	**86.7**	**F**	Overall	**115.0**	**F**
7	41st Ave / Project Driveway 2[1]	SCC	SSSC	Does Not Exist						Overall	0.1	A	Overall	0.1	A
										EB	10.4	B	EB	11.0	B
8	41st Ave / Redwood Shopping Center[1]	SCC	Signal	Overall	13.2	B	Overall	16.7	B	Overall	13.2	B	Overall	16.8	B
9	41st Ave / Hwy 1 NB Ramps[1]	Caltrans	Signal	Overall	20.9	C	Overall	16.4	B	Overall	21.9	C	Overall	16.5	B
10	41st Ave / Hwy 1 SB Ramps[2]	Caltrans	Signal	Overall	40.9	D	Overall	8.4	A	Overall	42.0	D	Overall	8.6	A

Notes:

1. Analysis performed using HCM 2010 methodologies.

2. Intersection #10 controller manages operations for two signalized intersections, therefore, analysis performed using HCM 2000 methodologies.

3. Delay indicated in seconds/vehicle.

4. SCC level of service (LOS) standard is D. Caltrans LOS standard is C.

*5. Intersections that operate below maintaining agency's LOS standard are highlighted and shown in **bold**.*

Source: Kimley Horn and Associates, 2016.

Table 12 – Mitigated Cumulative Plus Project Conditions Intersection Level of Service

#	Intersection	Maintaining Agency	Cumulative Plus Project Conditions						Mitigated Cumulative Plus Project Conditions					
			AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour		
			Movement	Delay	LOS	Movement	Delay	LOS	Movement	Delay	LOS	Movement	Delay	LOS
6	Soquel Dr / Porter St[1]	SCC	Overall	**86.7**	**F**	Overall	**115.0**	**F**	Overall	40.1	D	Overall	44.3	D

Notes:

1. Analysis performed using HCM 2010 methodologies.

2. Delay indicated in seconds/vehicle.

3. SCC level of service (LOS) standard is D. Caltrans LOS standard is C.

*4. Intersections that operate below maintaining agency's LOS standard are highlighted and shown in **bold**.*

Source: Kimley Horn and Associates, 2016.

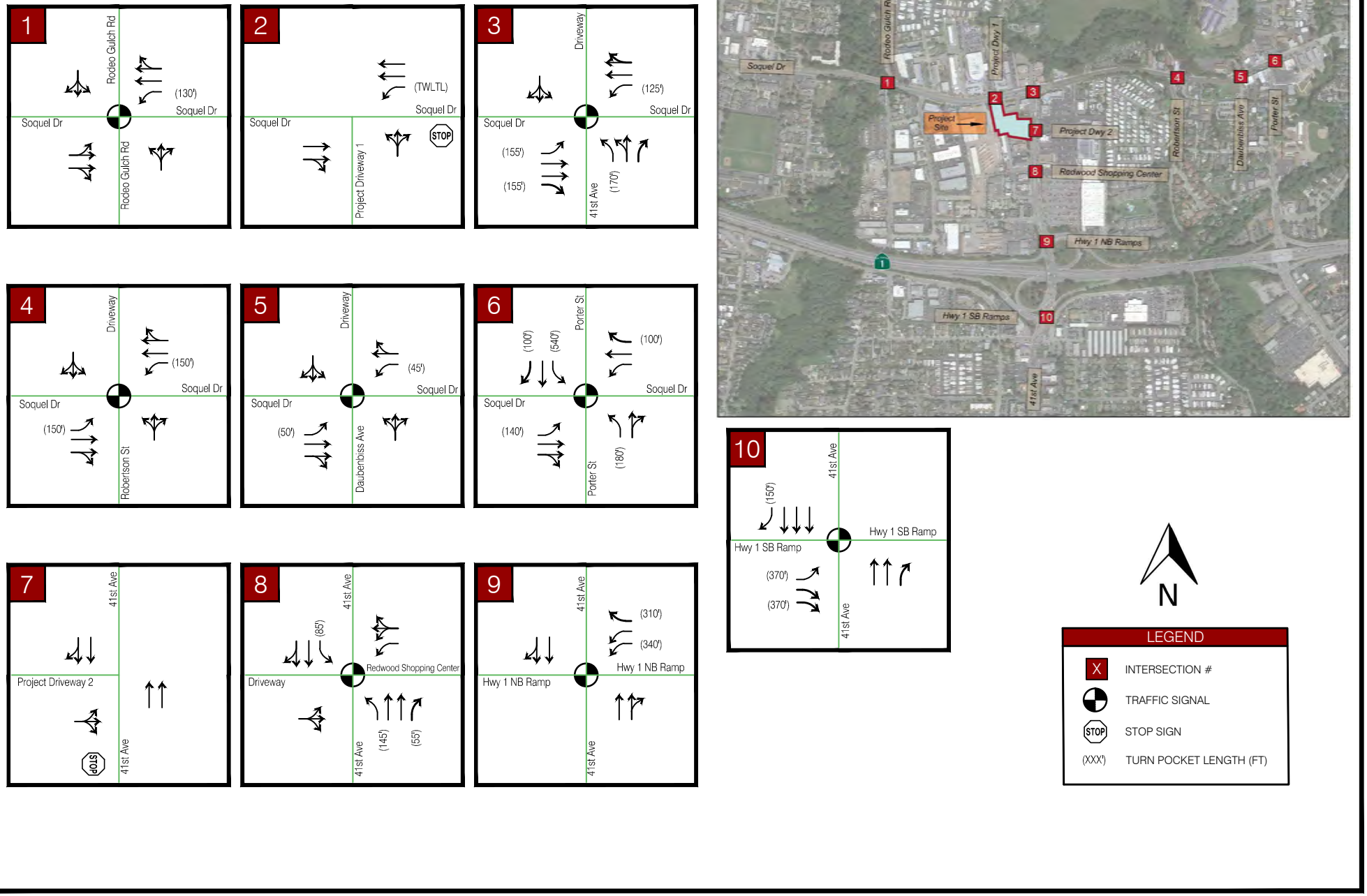

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Figure 15

Cumulative Plus Project Lane Geometry and Traffic Control

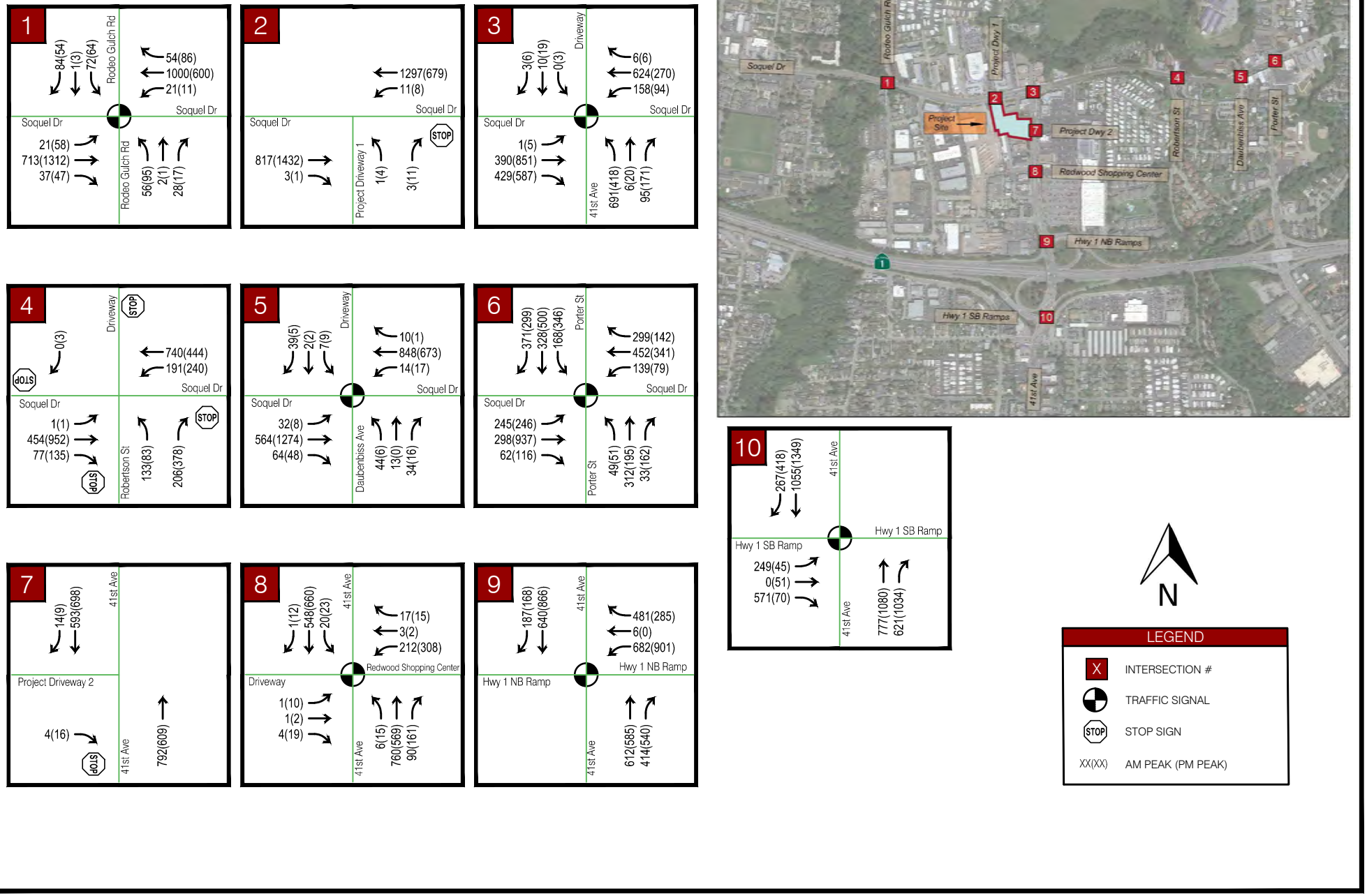

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Figure 16

Cumulative Plus Project Peak Hour Turning Movement Volumes

7. POTENTIAL IMPACTS ON PEDESTRIAN, BICYCLE, AND TRANSIT MOBILITY

The Project was evaluated to determine if it would adversely affect adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks) or generate pedestrian, bicycle, or transit travel demand that would not be accommodated by transit, bicycle, or pedestrian facilities and plans.

PEDESTRIAN MOBILITY

Employees and/or Patrons choosing to walk to the site would not be adversely impacted based on pedestrian mobility, accessibility, or safety at the Project site once frontage improvements are constructed. The Project will provide ADA compliant sidewalk facilities as part of its street frontage improvements. Only a few pedestrian and/or bicycle trips both in the weekday AM peak period and weekday PM peak period are anticipated for the Project. Per the current site plan, sidewalks will be installed along the Soquel Drive Project frontage and the 41st Avenue Project frontage. The proposed frontage improvements include ADA compliant sidewalks, driveways, and landscaping setbacks, as shown in **Figure 2**.

Internal pedestrian connections will link the proposed site's entrance with the parking areas, as well as the Soquel Drive and 41st Avenue frontages.

BICYCLE MOBILITY

Employees and/or patrons choosing to bike to the site from Soquel Drive or 41st Avenue would not be adversely impacted based on bicyclist mobility, accessibility, or safety. Only a few pedestrian and/or bicycle trips both in the weekday AM peak period and weekday PM peak period are anticipated for the Project. Existing Class II bicycle facilities along Soquel Drive and 41st Avenue provide bicycle access to the site. The Soquel Drive/41st Avenue intersection provides marked crossings for pedestrians and bikes on the intersection's south leg and east leg.

TRANSIT MOBILITY

Employees and/or patrons of the development have the option of driving, taking transit, walking, or bicycling. Those that choose to take transit have the option of three transit lines that operate along Soquel Drive and 41st Avenue with bus stops near the Project site. According to 2006-2010 U.S. Census data cited by the SCCRTC's Regional Transportation Plan, approximately 3% of Santa Cruz County residents use transit to travel to work. This typically represents the highest level of transit ridership during the day, with other periods being lower. If it is conservatively assumed (from the standpoint of transit demand) that 3% percent of the employees and patrons of the development use transit during the peak hours of the day, it represents approximately one passenger both in the weekday AM peak period and weekday PM peak period, which has negligible adverse impact on transit mobility, accessibility, or safety at any of the study intersections. Bus stops are located within 500 feet from the Project site. Service routes and stops are discussed in detail in the **Existing Transit Facilities** section of this report.

SUMMARY OF POTENTIAL IMPACTS

Figure 2 identifies sidewalks, walkways, bicycle parking, and other amenities that will be constructed in compliance with adopted County standards; thus, the Project's impact on pedestrian, bicycle, and/or transit facilities is less than significant.

8. OTHER TRANSPORTATION EVALUATIONS

The following sections discuss proposed site access and circulation, on-site parking supply, Measure D relevance to the Project, and existing/future Highway 1 operations.

ON-SITE PARKING

The Project will construct 112 vehicle parking spaces on-site (including 3 ADA stalls) for staff, customers, inventory, and service vehicles, as well as 20 bicycle rack spaces. Vehicular parking spaces are allocated as follows:

- 45 – Inventory Spaces
- 34 – Service Spaces
- 23 – Employee Spaces
- 2 – Clean Air Spaces
- 7 – Customer Spaces
- 3 – ADA Spaces

The Santa Cruz County Municipal Code (13.10.552) requires one vehicle space per 300 square feet of gross floor area and 1 bicycle space per 1,000 square feet of gross floor area. Based on the Project's gross floor area of 20,111 square feet, 67 vehicle parking spaces are required and 20 bicycle parking spaces are required. The County requires a maximum of three ADA spaces for between 51 and 75 total spaces required. Therefore, the Project's proposed vehicle and bicycle parking supply is sufficient.

SITE ACCESS AND CIRCULATION

On site circulation was evaluated at the Project's two driveways, which will be located on Soquel Drive (Intersection #2) and 41st Avenue (Intersection #7).

SOQUEL DRIVE / PROJECT DRIVEWAY #1 (INTERSECTION #2)

The driveway located on Soquel Drive (Intersection #2) will provide full access to the site for patrons, employees, and inventory drop-off. The Project driveway (northbound approach) will be one stop controlled, shared left and right lane. The driveway will have one lane for traffic entering the site via Soquel Drive. A two-way left-turn lane currently exists in front of the proposed driveway, which will provide enough space for vehicles exiting the site (via northbound left-turn) and traveling to the site (available westbound left-turn storage is greater than 50 feet) to leave the flow of traffic and wait for gaps to complete the left-turns. The eastbound approach to the Soquel Drive / 41st Avenue intersection was observed to back up past this proposed driveway. It is anticipated that eastbound motorists (waiting for red light to change) will provide courtesy gaps to vehicles wishing to enter or exit the site.

41ST AVENUE / PROJECT DRIVEWAY #2 (INTERSECTION #7)

The driveway located on 41st Avenue (Intersection #7) will provide right-in and right-out only access to the site for patrons and employees. The Project driveway (eastbound approach) will be one stop controlled, right lane. The driveway will have one lane for traffic entering the site via 41st Avenue. A raised median currently exists in front of the proposed driveway, which restricts access to the driveway to vehicles only traveling southbound on 41st Avenue. Up to ten vehicles (AM Peak) are expected to make northbound u-turns during peak hours when accessing the site via this Project driveway. Likewise, up to two vehicles (PM

Peak) are anticipated to make southbound u-turns during peak hours at the mall driveway south of the Project driveway to travel north on 41st Avenue (southbound u-turns at Intersection #8 are not permitted).

MEASURE D: 2016 TRANSPORTATION IMPROVEMENT PLAN

Measure D was a proposed ½ cent local sales tax increase included on the November 2016 ballot in Santa Cruz County. The Measure, which will focus on transportation safety upgrades, roadway repairs, traffic relief, and transit augmentation, was approved by voters via a super majority (over 67% voting "yes").

The improvement plan will provide steady and direct funding to Santa Cruz County and all City's within the County to improve the transportation network. Transportation improvements will include improvements of local streets, road maintenance, bicycle and pedestrian projects, transit and paratransit service upgrades, as well as implementation of many other projects and programs.

The SCCRTC and local agencies have identified possible future projects in the Project vicinity that will be funded by the new ½ cent local sales tax. The transportation improvement projects could include sidewalk repairs/construction, pothole repairs, class II bike lane striping/restriping, crosswalk striping/restriping, as well as other miscellaneous projects.

HIGHWAY 1 QUALITATIVE ASSESSMENT

The Santa Cruz Nissan Project is anticipated to generate trips that will use sections of Highway 1 facilities. The following sections discuss the existing conditions and planned improvements presented in the Highway 1 Corridor Investment Program DEIR as well as how the Santa Cruz Nissan Project will effect/be effected by existing and future Highway 1 conditions.

HIGHWAY 1 CORRIDOR INVESTMENT PROGRAM

The State of California and the Federal Government required an Environmental Impact Report (EIR) and Environmental Assessment (EA), respectively, to provide an environmental review for planned Tier I and Tier II projects in the Highway 1 corridor. The documents discuss program level environmental analysis for the Highway 1 corridor between Santa Cruz and Aptos (Tier I) and a more detailed project level review of the 41st Avenue-Soquel Drive Auxiliary Lanes with Pedestrian/Bicycle Crossing at Chanticleer project (Tier II).

The Highway 1 EIR/EA was prepared by the Santa Cruz County Regional Transportation Commission (SCCRTC) in cooperation with Caltrans and the Federal Highway Administration (FHWA). The environmental review is defined as follows:

- Tier I – A long term, program level analysis for the future of the Highway 1 corridor between Santa Cruz and Aptos. The Tier I concept for the corridor would be built over time through a series of smaller incremental projects (referred to as Tier II projects).

- Tier II – Project level analysis for auxiliary lanes between 41st Avenue and Soquel Drive, as well as a pedestrian/bicycle overcrossing of Highway 1 at Chanticleer Avenue.

Existing Conditions

Based on summarized morning and evening data from the Caltrans Traffic Operations Report (2012) summarized in the Highway 1 Corridor Investment Program DEIR, baseline measures of effectiveness (MOEs) on Highway 1 in the Santa Cruz Nissan Project vicinity are as follows:

Table 13 – Highway 1 Baseline Measures of Effectiveness

	Northbound		Southbound	
	Morning	Evening	Morning	Evening
Travel Speeds (mph)	30	39	60	26
Travel Time (minutes/vehicle)	23	15	10	27
Vehicle Hours Traveled	1,274	823	507	1,391
Vehicle Miles Traveled	38,517	32,349	30,348	35,661
Delay (minutes/vehicle)	14	6	0	15

Source: Traffic Operations Report, 2012.

This data shows that Highway 1 traffic volumes in the Project vicinity are directional, with high traffic volumes/delay in the northbound direction during morning hours and high traffic volumes/delay in the southbound direction during evening hours.

Future Improvements

Tier I Alternative

The primary elements of the Tier I Corridor Alternative, in the Santa Cruz Nissan Project vicinity, are to construct full interchange improvements, including widening of local roadways and interchange structures and to construct new median high occupancy vehicle (HOV) lanes along the Highway 1 corridor. These high-level improvements are dependent on funding and will be prioritized based on estimated delay, queuing, and vehicle miles traveled along the corridor.

Tier II Alternative

Independent of the Tier I Alternative, auxiliary lanes are proposed to be constructed on Highway 1, between 41st Avenue and Soquel Drive, to reduce morning commute travel times and delay by adding capacity and increasing the distance for merging and weaving near the on and off ramps. A bike and pedestrian overcrossing at Chanticleer Avenue (between 41st Avenue and Soquel Drive) will also be constructed as part of this construction project. The Final EIR for this construction project is scheduled to be completed in Summer 2017 and construction is scheduled to begin in Spring 2020, subject to available funding.

A more detailed discussion of Highway 1 improvements is included in the **Appendix**.

SANTA CRUZ NISSAN PROJECT TRIPS ON HIGHWAY 1

The development of the Project in Santa Cruz County will generate net new Project trips totaling 36 AM peak hour, 49 PM peak hour, and 612 daily trips.

Highway 1 Segment North/West of 41st Avenue

Based on the estimated Project trip generation and trip distribution, approximately three net new trips will travel northbound on Highway 1 in the AM peak hour, eight net new trips will travel southbound on Highway 1 in the AM peak hour. Likewise, approximately ten net new trips will travel northbound on Highway 1 in the PM peak hour, six net new trips will travel southbound on Highway 1 in the PM peak hour.

Highway 1 Segment South/East of 41st Avenue

Based on the estimated Project trip generation and trip distribution, approximately eight net new trips will travel northbound on Highway 1 in the AM peak hour, two net new trips will travel southbound on Highway 1 in the AM peak hour. Likewise, approximately five net new trips will travel northbound on Highway 1 in the PM peak hour, nine net new trips will travel southbound on Highway 1 in the PM peak hour.

Summary

The net new Project trips estimated to travel on Highway 1 segments will be relatively low in comparison to the existing and future capacity as well as the existing and future baseline volumes. Additionally, the anticipated Project trips do not significantly impact the Highway 1 ramps on 41st Avenue. Therefore, the Santa Cruz Nissan Project is not anticipated to have a material or noticeable effect on Highway 1 operations.

9. SUMMARY OF IMPACTS AND FEES

The County's Transportation Improvement Area fees and significant impacts are discussed in the following sections.

TRANSPORTATION IMPROVEMENT AREA FEES

The Santa Cruz County Fee Schedule uses a daily trip rate of 24 trips per 1,000 square feet for the Automobile Sales land use. For fee purposes, the Project rate results in 483 gross average daily trips and 445 average daily net new trips. The Transportation Impact Area fees will be based on the 445 average daily net new trips.

Through payment of TIA fees, the Project will mitigate incremental Cumulative impacts. The Project is responsible to pay a Transportation Improvement Area (TIA) fee to Santa Cruz County based on daily net new trips generated. These fees include a $300 per trip Soquel Transportation Improvement Fee and a $300 per trip Soquel Roadside Improvement Fee. Therefore, based on the estimate of 445 average daily net new trips, the Project will be responsible to pay a total of $267,000 in County improvement fees. These fees are included in the individual fees fair share payments calculated above for the intersections of Soquel Drive / Robertson Street and Soquel Drive / Porter Street.

IMPACT EVALUATION

Based on the analysis above, the Project will trigger impacts at the following intersections. Mitigation has been identified. The Project will pay a proportional fair share towards the improvements.

- **Soquel Drive / Robertson Street (Intersection #4) (AM and PM Peaks) (Existing & Near Term Conditions)**
    - Install traffic signal control and construct left-turn pockets on Soquel Drive.
    - The Project will pay a proportional fair share for improvements at Soquel Drive / Robertson Street of 2.66% based on estimated Project AM and PM peak hour trips traveling through the intersection. The nexus for the fair share is based on all future growth in traffic, estimated at the intersection (from Existing to Cumulative conditions). The unfunded planned improvement cost is $500,000 per the County RTP. The Project will pay a fair share fee of $13,300.

- **Soquel Drive / Porter Street (Intersection #6) (PM Peak) (Existing, Near Term, and Cumulative Conditions)**
    - Construct one additional southbound left-turn pocket and optimize cycle length, phasing, and splits.
    - The Project will pay a proportional fair share for improvements at Soquel Drive / Porter Street of 1.75% based on estimated Project AM and PM peak hour trips traveling through the intersection. The nexus for the fair share is based on all future growth in traffic, estimated at the intersection (from Existing to Cumulative conditions). The unfunded planned improvement cost is estimated to be in excess of $1,000,000 and right-of-way would be required. The Project will pay a fair share fee of $17,500 based on a $1,000,00 improvement cost.

APPENDIX

EXISTING CONDITIONS TRAFFIC COUNTS

EXISTING CONDITIONS SYNCHRO OUTPUT SHEETS

EXISTING PLUS PROJECT CONDITIONS SYNCHRO OUTPUT SHEETS

NEAR TERM CONDITIONS SYNCHRO OUTPUT SHEETS

NEAR TERM PLUS PROJECT CONDITIONS SYNCHRO OUTPUT SHEETS

CUMULATIVE CONDITIONS SYNCHRO OUTPUT SHEETS

CUMULATIVE PLUS PROJECT CONDITIONS SYNCHRO OUTPUT SHEETS

MITIGATED CONDITIONS SYNCHRO OUTPUT SHEETS

HIGHWAY 1 CORRIDOR INVESTMENT PROGRAM PROJECT ALTERNATIVES

EXISTING CONDITIONS

TRAFFIC COUNTS

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: N Rodeo Gulch Rd -- Soquel Dr

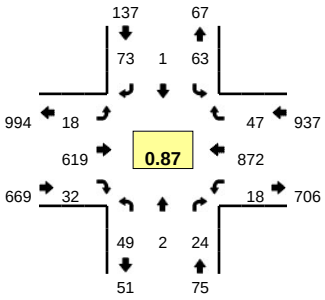
CITY/STATE: Soquel, CA

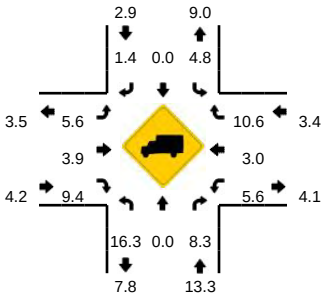
QC JOB #: 13932401

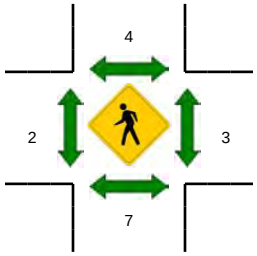
DATE: Tue, Oct 18 2016

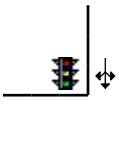
Peak-Hour: 7:35 AM -- 8:35 AM

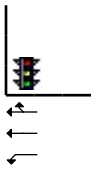
Peak 15-Min: 7:50 AM -- 8:05 AM

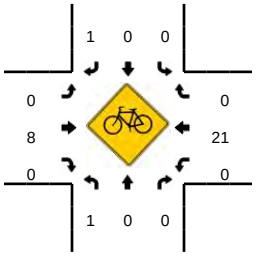


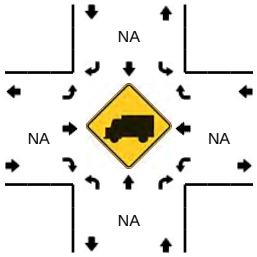


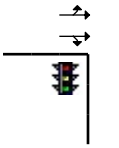


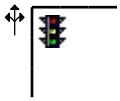


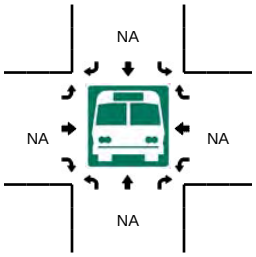












5-Min Count Period Beginning At	N Rodeo Gulch Rd (Northbound)				N Rodeo Gulch Rd (Southbound)				Soquel Dr (Eastbound)				Soquel Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	4	0	0	0	3	0	4	0	1	16	3	0	0	29	1	1	62	
7:05 AM	3	0	0	0	5	0	3	0	0	20	5	0	2	15	3	0	56	
7:10 AM	3	0	0	0	4	0	3	0	0	22	2	0	1	34	0	0	69	
7:15 AM	1	0	0	0	6	0	4	0	1	25	1	0	2	30	3	0	73	
7:20 AM	1	0	1	0	3	0	3	0	0	21	0	0	0	34	2	0	65	
7:25 AM	2	0	1	0	3	0	3	0	0	42	3	0	0	42	0	0	96	
7:30 AM	3	0	0	0	5	0	3	0	0	33	1	0	2	50	0	0	97	
7:35 AM	3	0	2	0	8	0	2	0	1	45	3	0	2	71	5	0	142	
7:40 AM	3	0	0	0	12	0	9	0	1	34	6	0	1	66	2	0	134	
7:45 AM	4	0	1	0	4	0	6	0	1	48	1	0	0	83	3	0	151	
7:50 AM	2	1	0	0	3	0	8	0	1	61	3	0	3	91	3	0	176	
7:55 AM	8	0	4	0	9	0	3	0	2	49	4	0	2	95	4	0	180	1301
8:00 AM	1	0	6	0	6	0	8	0	0	69	0	0	3	68	4	0	165	1404
8:05 AM	8	1	1	0	8	0	8	0	0	69	3	0	1	60	4	0	163	1511
8:10 AM	5	0	0	0	2	0	8	0	1	65	1	0	1	76	4	0	163	1605
8:15 AM	4	0	2	0	3	0	4	0	3	55	4	0	1	48	3	0	127	1659
8:20 AM	3	0	3	0	2	0	5	0	2	47	3	0	1	71	3	0	140	1734
8:25 AM	5	0	1	0	3	0	5	0	2	31	2	0	1	78	7	0	135	1773
8:30 AM	3	0	4	0	3	1	7	0	4	46	2	0	2	65	5	0	142	1818
8:35 AM	6	0	3	0	1	0	3	0	2	54	1	0	3	63	6	0	142	1818
8:40 AM	5	0	1	0	5	1	1	0	2	44	0	0	0	67	3	0	129	1813
8:45 AM	6	0	3	0	7	0	5	0	3	48	1	0	1	72	3	0	149	1811
8:50 AM	2	1	2	0	5	0	6	0	2	44	0	0	1	59	7	0	129	1764
8:55 AM	3	0	2	0	3	0	3	0	1	49	1	0	0	62	6	0	130	1714

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	44	4	40	0	72	0	76	0	12	716	28	0	32	1016	44	0	2084
Heavy Trucks	8	0	4		4	0	0		0	32	0		4	20	8		80
Pedestrians		12				0				8				0			20
Bicycles	0	0	0		0	0	0		0	1	0		0	8	0		9
Railroad																	
Stopped Buses																	

Comments:

Report generated on 10/25/2016 2:14 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: N Rodeo Gulch Rd -- Soquel Dr

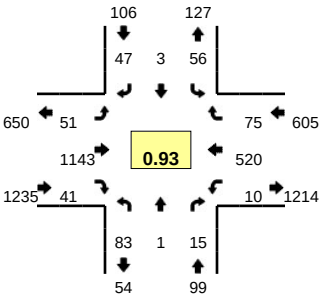
QC JOB #: 13932402

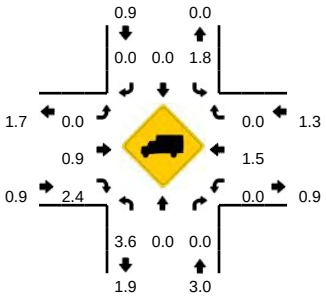
CITY/STATE: Soquel, CA

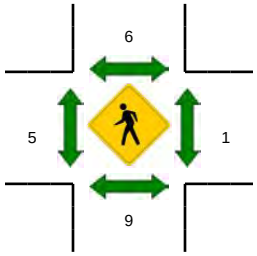
DATE: Tue, Oct 18 2016

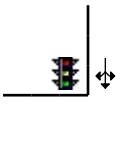
Peak-Hour: 4:55 PM -- 5:55 PM

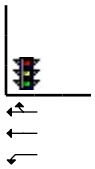
Peak 15-Min: 5:40 PM -- 5:55 PM

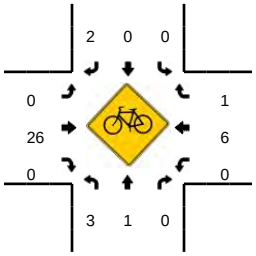


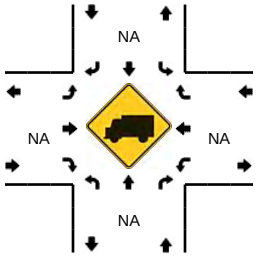


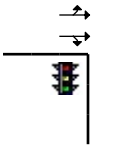


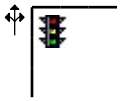


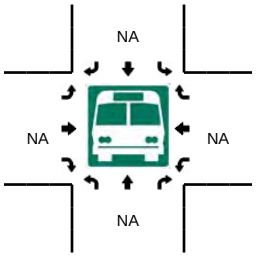












5-Min Count Period Beginning At	N Rodeo Gulch Rd (Northbound)				N Rodeo Gulch Rd (Southbound)				Soquel Dr (Eastbound)				Soquel Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	4	0	3	0	3	0	0	0	2	99	4	0	2	43	6	0	166	
4:05 PM	8	0	7	0	6	0	3	0	4	85	0	0	0	52	10	0	175	
4:10 PM	4	0	3	0	5	0	2	0	5	83	5	0	1	48	11	0	167	
4:15 PM	6	0	2	0	0	0	4	0	2	68	1	0	1	49	11	0	144	
4:20 PM	2	0	1	0	5	0	6	0	0	81	4	0	0	49	3	0	151	
4:25 PM	3	0	1	0	1	0	2	0	4	70	3	0	2	48	5	0	139	
4:30 PM	5	0	2	0	6	0	1	0	2	88	3	0	2	54	9	0	172	
4:35 PM	4	0	2	0	3	0	5	0	3	60	0	0	0	42	5	0	124	
4:40 PM	8	1	1	0	4	0	1	0	3	65	6	0	1	44	4	0	138	
4:45 PM	0	1	2	0	4	0	2	0	5	65	1	0	1	43	2	0	126	
4:50 PM	14	1	3	0	3	0	4	0	4	75	4	0	3	51	5	0	167	
4:55 PM	6	0	1	0	3	0	3	0	4	94	5	0	0	51	7	0	174	1843
5:00 PM	9	0	1	0	2	0	2	0	6	83	2	0	1	30	6	0	142	1819
5:05 PM	8	0	3	0	2	1	2	0	2	95	3	0	0	48	3	0	167	1811
5:10 PM	7	0	2	0	2	0	4	0	8	88	3	0	1	52	6	0	173	1817
5:15 PM	11	0	1	0	8	0	7	0	0	98	1	0	0	39	5	0	170	1843
5:20 PM	5	0	0	0	4	0	5	0	4	103	1	0	0	50	9	0	181	1873
5:25 PM	9	0	3	0	7	0	1	0	5	92	1	0	2	30	2	0	152	1886
5:30 PM	13	0	0	0	5	1	0	0	5	88	5	0	2	54	6	0	179	1893
5:35 PM	5	0	2	0	7	0	4	0	4	94	4	0	2	26	9	0	157	1926
5:40 PM	2	0	0	0	3	1	7	0	6	125	7	0	2	48	4	0	205	1993
5:45 PM	4	0	2	0	6	0	5	0	3	65	3	0	0	46	9	0	143	2010
5:50 PM	4	1	0	0	7	0	7	0	4	118	6	0	0	46	9	0	202	2045
5:55 PM	4	0	0	0	2	0	5	0	3	64	1	0	0	40	2	0	121	1992

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	40	4	8	0	64	4	76	0	52	1232	64	0	8	560	88	0	2200
Heavy Trucks	4	0	0		4	0	0		0	4	0		0	8	0		20
Pedestrians		4				0				4				4			12
Bicycles	1	0	0		0	0	0		0	4	0		0	3	1		9
Railroad																	
Stopped Buses																	

Comments:

Report generated on 10/25/2016 2:14 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: 41st Ave -- Soquel Dr

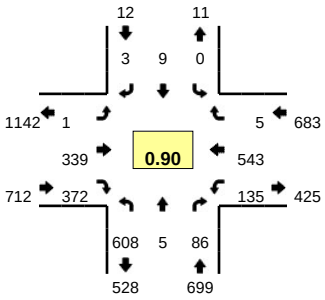
CITY/STATE: Soquel, CA

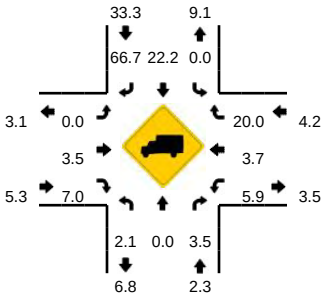
QC JOB #: 13932403

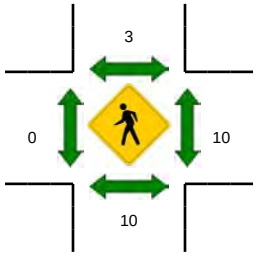
DATE: Tue, Oct 18 2016

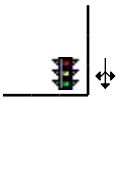
Peak-Hour: 7:35 AM -- 8:35 AM

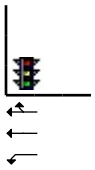
Peak 15-Min: 7:55 AM -- 8:10 AM

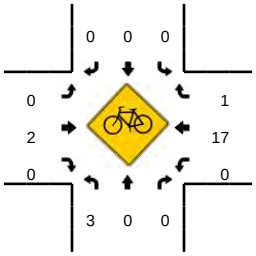


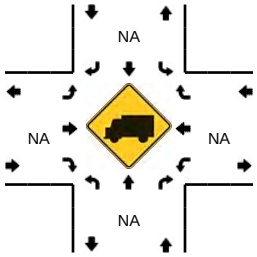


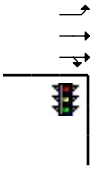


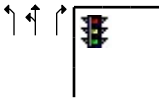


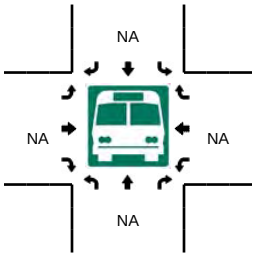












5-Min Count Period Beginning At	41st Ave (Northbound)				41st Ave (Southbound)				Soquel Dr (Eastbound)				Soquel Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	34	0	1	0	0	0	0	0	0	8	15	0	6	12	0	0	76	
7:05 AM	25	1	1	1	0	0	0	0	0	7	14	0	3	12	0	0	64	
7:10 AM	25	3	8	0	0	0	0	0	0	16	11	0	3	21	0	0	87	
7:15 AM	22	1	3	1	0	1	1	0	0	16	8	0	7	24	0	0	84	
7:20 AM	30	1	9	1	0	2	0	0	2	14	15	0	3	19	0	0	96	
7:25 AM	31	1	3	0	0	0	0	0	0	19	13	0	11	31	0	0	109	
7:30 AM	40	2	7	2	1	0	0	0	0	25	11	0	7	33	1	0	129	
7:35 AM	50	0	6	1	0	0	0	0	0	17	33	0	7	43	0	0	157	
7:40 AM	55	1	5	1	0	2	1	0	0	25	28	0	9	32	0	0	159	
7:45 AM	60	0	5	1	0	0	0	0	0	25	28	0	12	44	0	0	175	
7:50 AM	48	1	11	0	0	0	0	0	0	36	30	0	9	59	0	0	194	
7:55 AM	82	0	10	2	0	1	0	0	1	22	25	0	10	50	2	0	205	1535
8:00 AM	27	2	14	0	0	0	0	0	0	43	39	0	10	51	0	0	186	1645
8:05 AM	46	0	9	3	0	1	0	0	0	40	43	0	9	45	0	0	196	1777
8:10 AM	54	0	6	0	0	0	1	0	0	35	42	0	6	37	0	0	181	1871
8:15 AM	28	0	9	0	0	1	1	0	0	26	31	0	15	33	0	0	144	1931
8:20 AM	54	0	3	2	0	1	0	0	0	15	28	0	22	55	0	0	180	2015
8:25 AM	57	0	5	1	0	3	0	0	0	26	24	0	10	46	0	0	172	2078
8:30 AM	35	1	3	1	0	0	0	0	0	29	21	0	16	48	3	0	157	2106
8:35 AM	42	1	5	1	1	0	0	0	0	14	42	0	7	42	2	0	157	2106
8:40 AM	37	1	12	0	0	2	0	0	0	22	27	0	9	44	0	0	154	2101
8:45 AM	39	0	6	1	0	0	0	0	1	39	32	0	5	44	0	0	167	2093
8:50 AM	46	2	3	1	0	0	0	0	1	33	18	0	9	32	0	0	145	2044
8:55 AM	44	3	2	2	1	1	1	0	0	14	26	0	10	39	1	0	144	1983

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	620	8	132	20	0	8	0	0	4	420	428	0	116	584	8	0	2348
Heavy Trucks	4	0	0		0	0	0		0	20	40		4	28	0		96
Pedestrians		0				0				0				4			4
Bicycles	1	0	0		0	0	0		0	0	0		0	2	0		3
Railroad																	
Stopped Buses																	

Comments:

Report generated on 10/25/2016 2:14 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: 41st Ave -- Soquel Dr

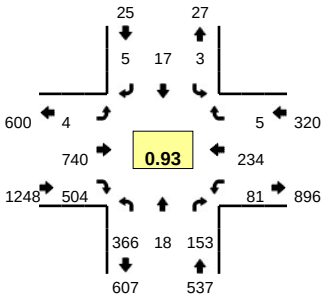
CITY/STATE: Soquel, CA

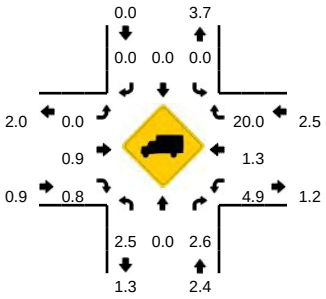
QC JOB #: 13932404

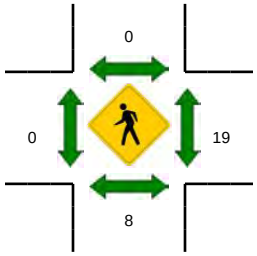
DATE: Tue, Oct 18 2016

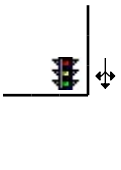
Peak-Hour: 4:55 PM -- 5:55 PM

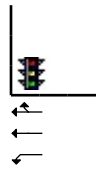
Peak 15-Min: 5:30 PM -- 5:45 PM

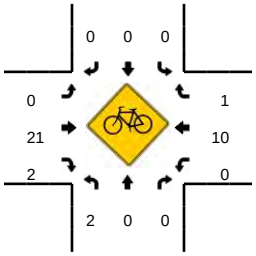


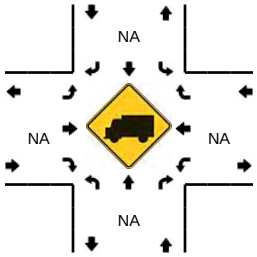


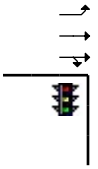


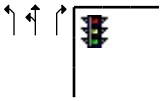


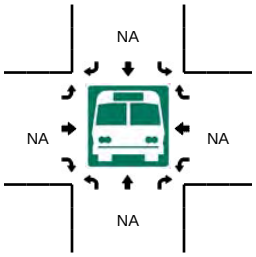












5-Min Count Period Beginning At	41st Ave (Northbound)				41st Ave (Southbound)				Soquel Dr (Eastbound)				Soquel Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	34	0	13	0	3	2	2	0	2	38	25	0	8	21	1	0	149	
4:05 PM	35	1	11	0	1	4	0	0	1	77	31	0	6	27	0	0	194	
4:10 PM	37	0	8	1	0	0	2	0	0	54	42	0	4	20	0	0	168	
4:15 PM	36	0	14	1	0	0	0	0	0	73	33	0	9	33	0	0	199	
4:20 PM	44	0	10	3	0	1	1	0	0	57	30	0	9	18	0	0	173	
4:25 PM	44	4	11	1	0	0	1	0	0	67	31	0	11	29	0	0	199	
4:30 PM	33	0	6	1	0	0	1	0	0	64	55	0	6	26	0	0	192	
4:35 PM	36	1	11	2	0	3	0	0	1	31	28	0	7	19	1	0	140	
4:40 PM	21	1	14	0	1	1	1	0	2	65	39	0	8	28	0	0	181	
4:45 PM	40	1	15	1	1	1	1	0	0	48	28	0	7	23	1	0	167	
4:50 PM	28	0	15	1	1	0	0	0	1	53	35	0	2	32	0	0	168	
4:55 PM	40	4	12	1	0	0	0	0	1	42	28	0	5	8	0	0	141	2071
5:00 PM	18	3	13	0	0	1	2	0	0	68	55	0	2	16	1	0	179	2101
5:05 PM	31	1	15	0	2	6	0	0	0	60	37	0	7	19	0	0	178	2085
5:10 PM	32	1	12	1	0	2	2	0	1	59	44	0	10	29	1	0	194	2111
5:15 PM	25	2	20	0	0	2	0	0	0	41	47	0	12	24	0	0	173	2085
5:20 PM	26	2	9	1	0	0	0	0	1	60	47	0	5	32	0	0	183	2095
5:25 PM	29	1	19	0	0	2	0	0	0	65	32	0	3	9	0	0	160	2056
5:30 PM	37	3	10	1	0	1	0	0	0	66	27	0	12	23	0	0	180	2044
5:35 PM	30	0	10	1	0	0	0	0	1	81	57	0	3	15	0	0	198	2102
5:40 PM	27	1	15	0	1	2	1	0	0	69	51	0	5	19	1	0	192	2113
5:45 PM	32	0	7	0	0	1	0	0	0	59	31	0	10	22	1	0	163	2109
5:50 PM	34	0	11	0	0	0	0	0	0	70	48	0	7	18	1	0	189	2130
5:55 PM	26	4	12	0	0	3	1	0	0	41	22	0	7	19	1	0	136	2125

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	376	16	140	8	4	12	4	0	4	864	540	0	80	228	4	0	2280
Heavy Trucks	8	0	8		0	0	0		0	4	0		4	4	0		28
Pedestrians		0				0				0				12			12
Bicycles	0	0	0		0	0	0		0	5	0		0	4	0		9
Railroad																	
Stopped Buses																	

Comments:

Report generated on 10/25/2016 2:14 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: Robertson St -- Soquel Dr

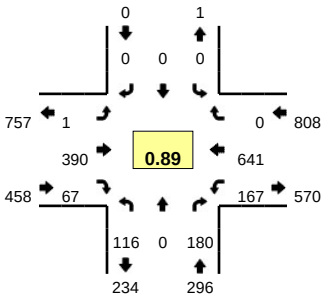
CITY/STATE: Soquel, CA

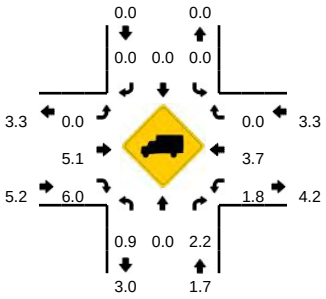
QC JOB #: 13932405

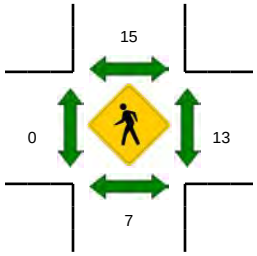
DATE: Tue, Oct 18 2016

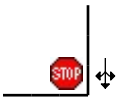
Peak-Hour: 7:50 AM -- 8:50 AM

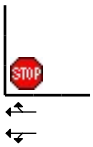
Peak 15-Min: 7:55 AM -- 8:10 AM

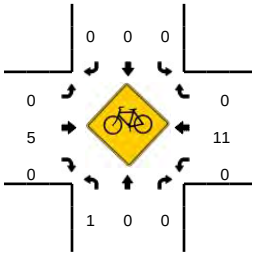


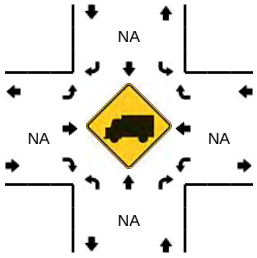


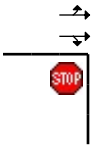


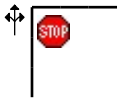


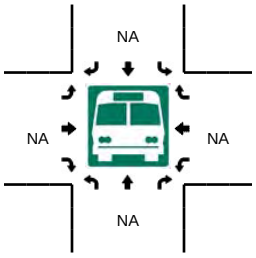












5-Min Count Period Beginning At	Robertson St (Northbound)				Robertson St (Southbound)				Soquel Dr (Eastbound)				Soquel Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	6	0	2	0	0	0	0	0	0	13	2	0	3	24	0	0	50	
7:05 AM	1	0	9	0	0	0	0	0	0	9	3	0	2	14	0	0	38	
7:10 AM	2	0	14	0	0	0	0	0	0	14	1	0	3	22	0	0	56	
7:15 AM	3	0	14	0	0	0	0	0	0	21	4	0	9	33	0	0	84	
7:20 AM	6	0	19	0	0	0	0	0	0	18	4	0	11	25	0	0	83	
7:25 AM	7	0	18	0	0	0	0	0	0	18	2	0	11	39	0	0	95	
7:30 AM	6	0	13	0	0	0	0	0	0	22	5	0	19	41	0	0	106	
7:35 AM	8	0	9	0	0	0	0	0	0	19	7	0	6	47	0	0	96	
7:40 AM	6	0	16	0	0	0	0	0	0	28	9	0	5	47	0	0	111	
7:45 AM	16	0	10	0	0	0	0	0	0	25	6	0	6	39	0	0	102	
7:50 AM	15	0	11	0	0	0	0	0	0	35	3	0	7	61	0	0	132	
7:55 AM	10	0	23	0	0	0	0	0	0	45	3	0	10	63	0	0	154	1107
8:00 AM	10	0	18	0	0	0	0	0	0	47	7	0	8	50	0	0	140	1197
8:05 AM	12	0	27	0	0	0	0	0	0	38	7	0	14	49	0	0	147	1306
8:10 AM	4	0	23	0	0	0	0	0	0	44	4	0	15	43	0	0	133	1383
8:15 AM	7	0	27	0	0	0	0	0	1	27	9	0	22	39	0	0	132	1431
8:20 AM	12	0	12	0	0	0	0	0	0	21	6	0	15	61	0	0	127	1475
8:25 AM	10	0	13	0	0	0	0	0	0	24	7	0	22	57	0	0	133	1513
8:30 AM	13	0	7	0	0	0	0	0	0	24	3	0	17	58	0	0	122	1529
8:35 AM	12	0	5	0	0	0	0	0	0	22	4	0	11	49	0	0	103	1536
8:40 AM	4	0	9	0	0	0	0	0	0	36	4	0	11	61	0	0	125	1550
8:45 AM	7	0	5	0	0	0	0	0	0	27	10	0	15	50	0	0	114	1562
8:50 AM	8	0	14	0	0	0	0	0	0	35	12	0	10	38	0	0	117	1547
8:55 AM	7	0	11	0	0	0	1	0	0	22	5	0	7	50	0	0	103	1496

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	128	0	272	0	0	0	0	0	0	520	68	0	128	648	0	0	1764
Heavy Trucks	0	0	8		0	0	0		0	16	4		0	32	0		60
Pedestrians		16				32				0				24			72
Bicycles	0	0	0		0	0	0		0	1	0		0	2	0		3
Railroad																	
Stopped Buses																	

Comments:

Report generated on 10/25/2016 2:14 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: Robertson St -- Soquel Dr

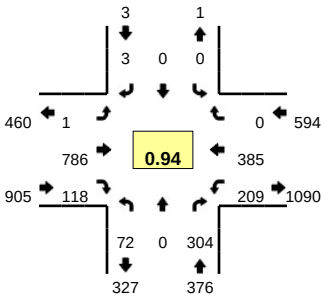
CITY/STATE: Soquel, CA

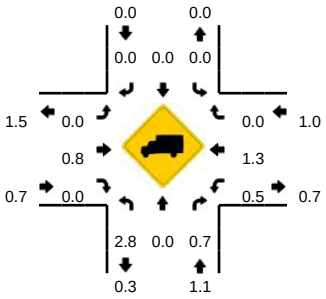
QC JOB #: 13932406

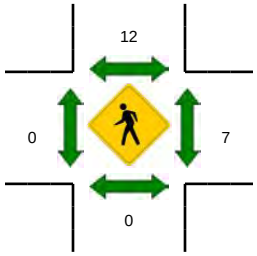
DATE: Tue, Oct 18 2016

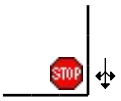
Peak-Hour: 4:00 PM -- 5:00 PM

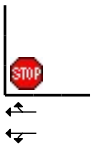
Peak 15-Min: 4:15 PM -- 4:30 PM

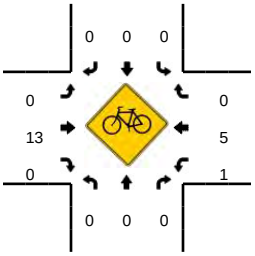


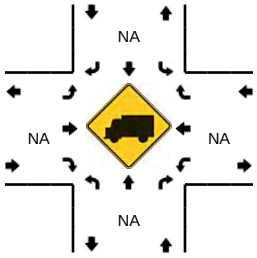


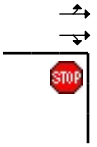


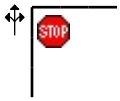


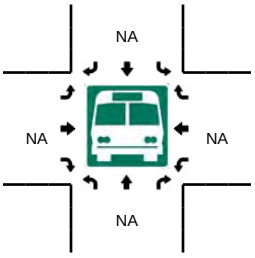












5-Min Count Period Beginning At	Robertson St (Northbound)				Robertson St (Southbound)				Soquel Dr (Eastbound)				Soquel Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	4	0	20	0	0	0	0	0	0	64	7	0	18	37	0	0	150	
4:05 PM	3	0	25	0	0	0	1	0	0	68	14	0	17	27	0	0	155	
4:10 PM	7	0	21	0	0	0	0	0	0	57	10	0	24	33	0	0	152	
4:15 PM	11	0	20	0	0	0	0	0	1	68	13	0	22	36	0	0	171	
4:20 PM	3	0	33	0	0	0	1	0	0	70	12	0	18	32	0	0	169	
4:25 PM	13	0	20	0	0	0	1	0	0	67	9	0	21	26	0	0	157	
4:30 PM	6	0	25	0	0	0	0	0	0	69	12	0	19	31	0	0	162	
4:35 PM	5	0	28	0	0	0	0	0	0	51	9	0	12	30	0	0	135	
4:40 PM	4	0	34	0	0	0	0	0	0	68	3	0	18	51	0	0	178	
4:45 PM	5	0	35	0	0	0	0	0	0	58	11	0	15	25	0	0	149	
4:50 PM	7	0	16	0	0	0	0	0	0	75	8	0	8	28	0	0	142	
4:55 PM	4	0	27	0	0	0	0	0	0	71	10	0	17	29	0	0	158	1878
5:00 PM	2	0	25	0	0	0	0	0	0	53	8	0	17	25	0	0	130	1858
5:05 PM	6	0	36	0	0	0	0	0	0	65	7	0	19	32	0	0	165	1868
5:10 PM	2	0	24	0	0	0	0	0	0	49	7	0	18	46	1	0	147	1863
5:15 PM	10	0	23	0	0	0	0	0	0	54	8	0	11	26	0	0	132	1824
5:20 PM	7	0	19	0	0	0	0	0	0	76	7	0	14	33	0	0	156	1811
5:25 PM	5	0	17	0	0	0	0	0	0	86	6	0	19	18	0	0	151	1805
5:30 PM	3	0	32	0	0	0	0	0	0	67	10	0	18	35	0	0	165	1808
5:35 PM	2	0	19	0	0	0	0	0	0	86	4	0	13	24	0	0	148	1821
5:40 PM	6	0	26	0	0	0	0	0	0	58	6	0	16	32	0	0	144	1787
5:45 PM	8	0	27	0	0	0	0	0	0	58	4	0	13	34	0	0	144	1782
5:50 PM	4	0	22	0	0	0	0	0	0	71	2	0	13	26	0	0	138	1778
5:55 PM	5	0	21	0	0	0	0	0	0	43	1	0	19	40	0	0	129	1749

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	108	0	292	0	0	0	8	0	4	820	136	0	244	376	0	0	1988
Heavy Trucks	8	0	4		0	0	0		0	8	0		0	4	0		24
Pedestrians		0				24				0				16			40
Bicycles	0	0	0		0	0	0		0	3	0		0	1	0		4
Railroad																	
Stopped Buses																	

Comments:

Report generated on 10/25/2016 2:14 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: Daubenbiss Ave -- Soquel Dr

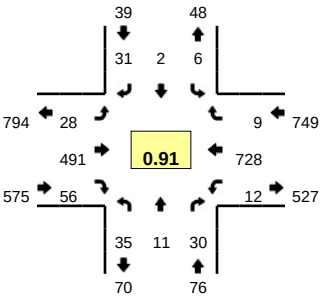
CITY/STATE: Soquel, CA

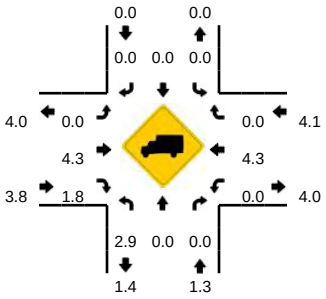
QC JOB #: 13932407

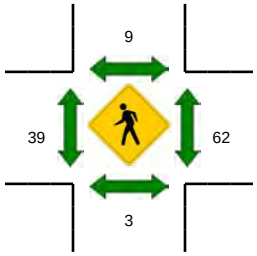
DATE: Tue, Oct 18 2016

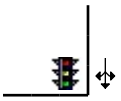
Peak-Hour: 7:45 AM -- 8:45 AM

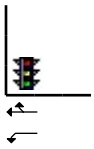
Peak 15-Min: 7:55 AM -- 8:10 AM

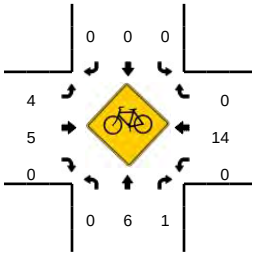


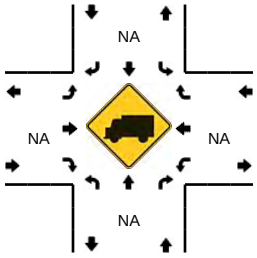


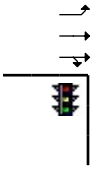


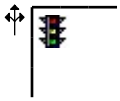


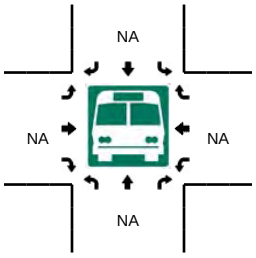












5-Min Count Period Beginning At	Daubenbiss Ave (Northbound)				Daubenbiss Ave (Southbound)				Soquel Dr (Eastbound)				Soquel Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	1	0	0	0	0	0	0	14	0	0	1	28	0	0	44	
7:05 AM	1	0	0	0	0	0	0	0	0	17	1	0	0	19	0	0	38	
7:10 AM	1	0	1	0	1	0	0	0	0	25	1	0	1	32	0	0	62	
7:15 AM	0	1	2	0	2	0	1	0	1	35	0	0	2	37	3	0	84	
7:20 AM	1	0	1	0	0	0	0	0	2	34	0	0	1	37	0	0	76	
7:25 AM	2	2	2	0	2	0	7	0	5	32	1	0	1	38	2	0	94	
7:30 AM	2	1	2	0	1	0	3	0	4	31	0	0	0	56	2	0	102	
7:35 AM	1	0	0	0	3	0	3	0	3	22	2	0	0	41	0	0	75	
7:40 AM	0	0	1	0	0	0	0	0	0	42	2	0	0	55	1	0	101	
7:45 AM	0	0	1	0	1	0	1	0	2	33	2	0	2	58	1	0	101	
7:50 AM	2	1	4	0	0	1	0	0	0	44	3	0	0	50	1	0	106	
7:55 AM	2	0	3	0	0	0	3	0	4	53	3	0	0	70	0	0	138	1021
8:00 AM	2	1	2	0	0	0	6	0	3	56	6	0	0	51	1	0	128	1105
8:05 AM	3	3	1	0	0	0	3	0	5	54	7	0	0	52	0	0	128	1195
8:10 AM	1	0	3	0	0	0	3	0	2	40	10	0	5	57	2	0	123	1256
8:15 AM	5	2	4	0	1	0	8	0	5	28	12	0	0	58	1	0	124	1296
8:20 AM	14	3	7	0	2	1	2	0	0	33	8	0	1	58	2	0	131	1351
8:25 AM	1	1	1	0	2	0	2	0	3	45	2	0	0	77	1	0	135	1392
8:30 AM	2	0	3	0	0	0	1	0	1	34	0	0	1	80	0	0	122	1412
8:35 AM	1	0	1	0	0	0	1	0	2	27	1	0	1	57	0	0	91	1428
8:40 AM	2	0	0	0	0	0	1	0	1	44	2	0	2	60	0	0	112	1439
8:45 AM	1	0	1	0	0	0	0	0	0	35	0	0	0	64	0	0	101	1439
8:50 AM	0	0	0	0	0	0	0	0	1	45	0	0	0	45	0	0	91	1424
8:55 AM	1	0	3	0	0	0	0	0	1	29	3	0	0	56	0	0	93	1379

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	28	16	24	0	0	0	48	0	48	652	64	0	0	692	4	0	1576
Heavy Trucks	4	0	0		0	0	0		0	20	4		0	28	0		56
Pedestrians		12				4				32				72			120
Bicycles	0	0	0		0	0	0		3	1	0		0	3	0		7
Railroad																	
Stopped Buses																	

Comments:

Report generated on 10/25/2016 2:14 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: Daubenbiss Ave -- Soquel Dr

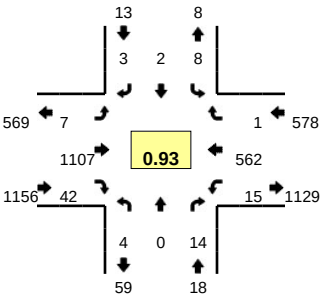
QC JOB #: 13932408

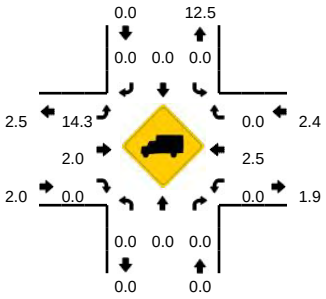
CITY/STATE: Soquel, CA

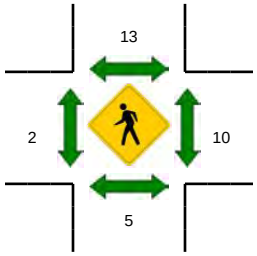
DATE: Tue, Oct 18 2016

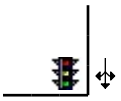
Peak-Hour: 4:35 PM -- 5:35 PM

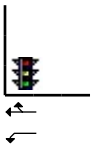
Peak 15-Min: 5:20 PM -- 5:35 PM

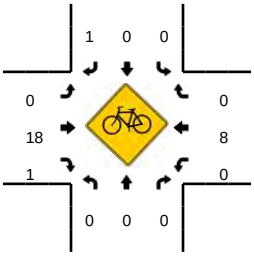


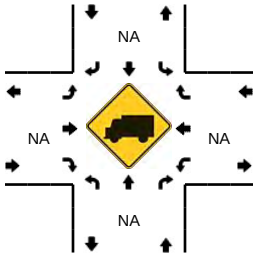


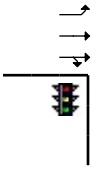


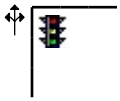


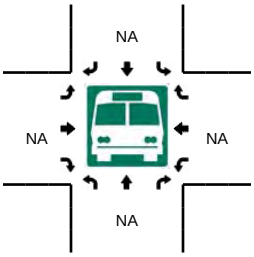












5-Min Count Period Beginning At	Daubenbiss Ave (Northbound)				Daubenbiss Ave (Southbound)				Soquel Dr (Eastbound)				Soquel Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	1	3	0	0	0	1	0	0	98	3	0	1	58	1	0	166	
4:05 PM	1	0	2	0	0	0	2	0	2	76	6	0	0	43	2	0	134	
4:10 PM	2	0	1	0	1	1	4	0	2	79	5	0	1	59	1	0	156	
4:15 PM	3	0	3	0	0	0	0	0	1	85	4	0	0	52	1	0	149	
4:20 PM	2	0	0	0	0	0	3	0	3	88	5	0	1	38	0	0	140	
4:25 PM	2	0	0	0	1	0	2	0	3	98	1	0	0	46	0	0	153	
4:30 PM	2	0	0	0	2	1	1	0	0	71	8	0	2	43	0	0	130	
4:35 PM	1	0	2	0	1	0	0	0	1	102	2	0	1	49	0	0	159	
4:40 PM	0	0	0	0	0	0	0	0	0	81	3	0	2	57	0	0	143	
4:45 PM	0	0	3	0	0	1	0	0	0	99	2	0	1	40	0	0	146	
4:50 PM	0	0	2	0	2	0	0	0	1	98	3	0	0	49	0	0	155	
4:55 PM	0	0	1	0	0	0	1	0	1	80	2	0	2	36	0	0	123	1754
5:00 PM	0	0	2	0	1	1	0	0	0	101	12	0	0	49	0	0	166	1754
5:05 PM	0	0	2	0	2	0	0	0	2	59	3	0	4	52	0	0	124	1744
5:10 PM	0	0	2	0	1	0	0	0	1	87	3	0	0	56	0	0	150	1738
5:15 PM	1	0	0	0	0	0	1	0	0	82	2	0	2	37	0	0	125	1714
5:20 PM	0	0	0	0	1	0	1	0	1	116	5	0	0	46	0	0	170	1744
5:25 PM	2	0	0	0	0	0	0	0	0	98	2	0	2	42	0	0	146	1737
5:30 PM	0	0	0	0	0	0	0	0	0	104	3	0	1	49	1	0	158	1765
5:35 PM	0	0	0	0	0	0	0	0	0	83	2	0	0	31	1	0	117	1723
5:40 PM	1	0	1	0	0	0	0	0	0	84	2	0	0	53	0	0	141	1721
5:45 PM	0	0	1	0	1	0	0	0	1	79	4	0	2	45	0	0	133	1708
5:50 PM	1	0	0	0	0	0	1	0	0	81	5	0	1	39	0	0	128	1681
5:55 PM	2	0	2	0	0	0	0	0	2	96	3	0	0	57	0	0	162	1720

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	8	0	0	0	4	0	4	0	4	1272	40	0	12	548	4	0	1896
Heavy Trucks	0	0	0		0	0	0		0	24	0		0	16	0		40
Pedestrians		4				12				0				8			24
Bicycles	0	0	0		0	0	0		0	3	0		0	5	0		8
Railroad																	
Stopped Buses																	

Comments:

Report generated on 10/25/2016 2:14 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

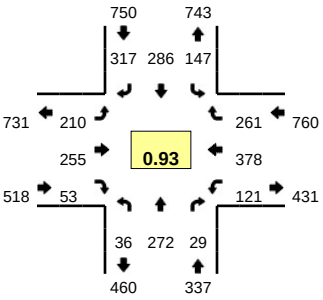
Type of peak hour being reported: Intersection Peak

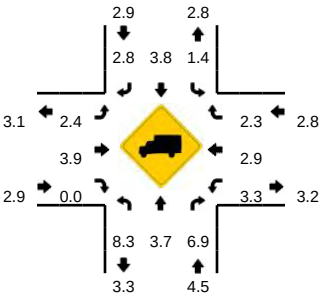
Method for determining peak hour: Total Entering Volume

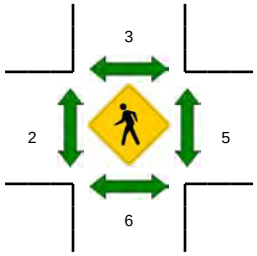
LOCATION: Porter St -- Soquel Dr
CITY/STATE: Soquel, CA

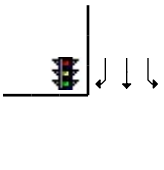
QC JOB #: 13932409
DATE: Tue, Oct 18 2016

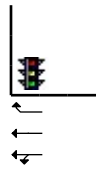
Peak-Hour: 7:45 AM -- 8:45 AM
Peak 15-Min: 8:00 AM -- 8:15 AM

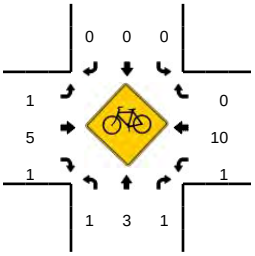


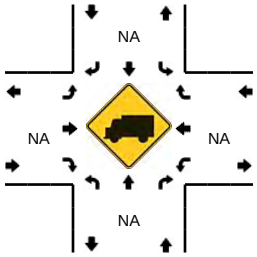


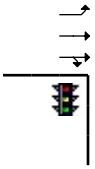


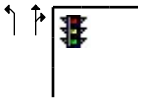


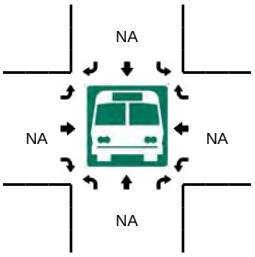












5-Min Count Period Beginning At	Porter St (Northbound)				Porter St (Southbound)				Soquel Dr (Eastbound)				Soquel Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	1	28	0	0	1	11	6	0	10	6	1	0	0	21	10	0	95	
7:05 AM	1	26	2	0	1	17	5	0	9	7	1	0	2	14	8	0	93	
7:10 AM	3	29	0	0	3	15	9	0	13	9	5	0	0	20	7	0	113	
7:15 AM	4	39	3	0	4	20	15	0	21	7	3	0	3	23	20	0	162	
7:20 AM	0	35	2	0	6	23	21	0	30	5	5	0	4	17	38	0	186	
7:25 AM	3	38	3	0	12	28	20	0	24	12	3	0	1	19	13	0	176	
7:30 AM	6	25	2	0	17	33	26	0	11	5	5	0	6	28	20	0	184	
7:35 AM	4	28	1	0	13	22	11	0	13	11	8	0	2	27	17	0	157	
7:40 AM	1	16	0	0	9	27	23	0	18	20	5	0	5	31	11	0	166	
7:45 AM	1	26	2	0	12	25	15	0	17	14	7	0	9	39	4	0	171	
7:50 AM	3	27	3	0	13	28	27	0	15	25	4	0	3	24	27	0	199	
7:55 AM	4	21	1	0	11	23	31	0	15	27	6	0	8	36	26	0	209	1911
8:00 AM	1	22	1	0	9	9	16	0	29	27	3	0	11	36	31	0	195	2011
8:05 AM	0	32	3	0	15	33	31	0	27	20	2	0	9	14	21	0	207	2125
8:10 AM	1	22	1	0	18	33	34	0	15	27	6	0	2	33	44	0	236	2248
8:15 AM	1	15	3	0	10	24	33	0	14	14	4	0	10	28	23	0	179	2265
8:20 AM	4	33	5	0	19	21	35	0	14	19	5	0	9	21	26	0	211	2290
8:25 AM	3	20	1	0	8	16	26	0	21	25	4	0	13	43	22	0	202	2316
8:30 AM	10	28	2	0	11	26	31	0	28	16	8	0	23	29	12	0	224	2356
8:35 AM	3	15	4	0	6	28	20	0	8	15	2	0	13	37	13	0	164	2363
8:40 AM	5	11	3	0	15	20	18	0	7	26	2	0	11	38	12	0	168	2365
8:45 AM	4	15	4	0	5	21	18	0	14	19	5	0	6	40	7	0	158	2352
8:50 AM	3	17	4	0	6	7	15	0	13	14	2	0	3	30	10	0	124	2277
8:55 AM	7	9	5	0	9	10	10	0	14	25	6	0	16	39	13	0	163	2231

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	8	304	20	0	168	300	324	0	284	296	44	0	88	332	384	0	2552
Heavy Trucks	0	8	0		4	8	8		0	12	0		8	16	8		72
Pedestrians		0				4				4				4			12
Bicycles	1	2	0		0	0	0		0	0	0		0	2	0		5
Railroad																	
Stopped Buses																	

Comments:

Report generated on 10/25/2016 2:14 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: Porter St -- Soquel Dr

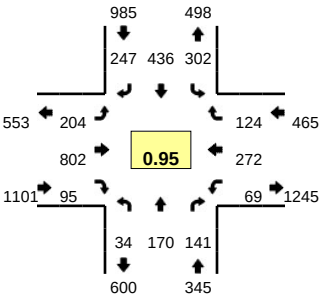
CITY/STATE: Soquel, CA

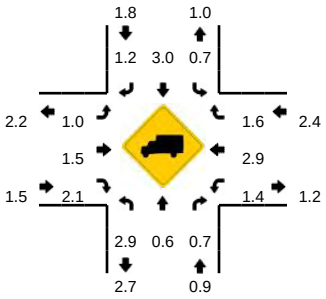
QC JOB #: 13932410

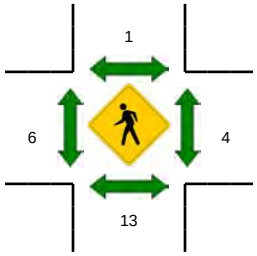
DATE: Tue, Oct 18 2016

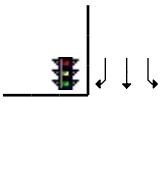
Peak-Hour: 4:40 PM -- 5:40 PM

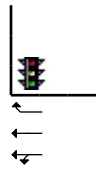
Peak 15-Min: 5:15 PM -- 5:30 PM

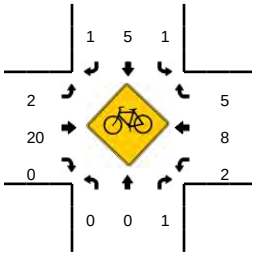


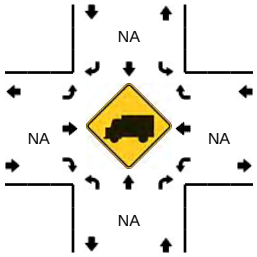


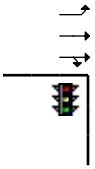


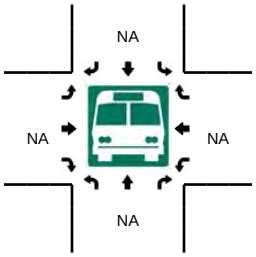












5-Min Count Period Beginning At	Porter St (Northbound)				Porter St (Southbound)				Soquel Dr (Eastbound)				Soquel Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	5	7	7	0	22	20	13	0	23	86	7	0	10	41	5	0	246	
4:05 PM	2	26	9	0	13	45	23	0	23	40	3	0	11	15	10	0	220	
4:10 PM	3	10	3	0	36	31	25	0	16	72	5	0	4	36	14	0	255	
4:15 PM	6	31	10	0	18	45	24	0	26	44	6	0	11	22	8	0	251	
4:20 PM	5	17	10	0	33	32	19	0	19	65	14	0	4	18	7	0	243	
4:25 PM	2	17	14	0	15	36	16	0	18	84	10	0	5	33	7	0	257	
4:30 PM	5	17	14	0	33	40	19	0	8	41	9	0	6	17	6	0	215	
4:35 PM	2	11	16	0	16	29	13	0	20	80	11	0	2	32	6	1	239	
4:40 PM	5	18	10	0	32	38	28	0	14	51	7	0	2	26	14	0	245	
4:45 PM	1	3	10	0	35	41	20	0	24	78	4	0	5	22	7	0	250	
4:50 PM	3	16	19	0	6	25	18	0	19	68	9	0	14	19	6	0	222	
4:55 PM	2	16	15	0	25	41	17	0	12	63	12	0	4	24	12	0	243	2886
5:00 PM	2	12	12	0	12	28	21	0	20	70	10	0	6	27	10	0	230	2870
5:05 PM	3	14	12	0	34	40	31	0	11	43	8	0	2	20	7	0	225	2875
5:10 PM	4	20	7	0	8	21	26	0	25	73	14	0	10	26	11	0	245	2865
5:15 PM	3	21	19	0	40	37	18	0	7	51	5	0	2	16	13	0	232	2846
5:20 PM	2	10	9	0	27	33	17	0	24	98	9	0	7	26	17	0	279	2882
5:25 PM	2	11	10	0	31	46	18	0	12	78	6	0	2	29	7	0	252	2877
5:30 PM	3	14	9	0	17	36	19	0	21	62	3	0	6	25	14	0	229	2891
5:35 PM	4	15	9	0	35	50	14	0	15	67	8	0	9	12	6	0	244	2896
5:40 PM	2	12	11	0	21	24	18	0	13	73	5	0	7	36	14	0	236	2887
5:45 PM	4	22	11	0	38	40	15	0	13	46	5	0	6	21	3	0	224	2861
5:50 PM	1	12	7	0	38	36	22	0	23	62	4	0	4	21	13	0	243	2882
5:55 PM	3	16	10	0	15	27	28	0	11	88	3	0	3	26	11	0	241	2880

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	28	168	152	0	392	464	212	0	172	908	80	0	44	284	148	0	3052
Heavy Trucks	0	4	0		0	0	4		0	16	0		4	8	4		40
Pedestrians		8				0				4				0			12
Bicycles	0	0	0		1	2	0		1	7	0		0	3	1		15
Railroad																	
Stopped Buses																	

Comments:

Report generated on 10/25/2016 2:14 PM

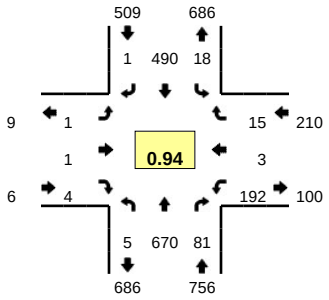
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

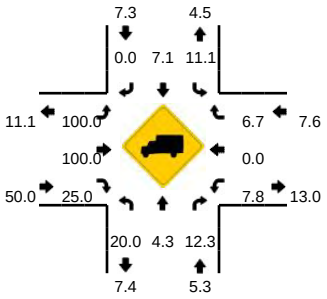
Method for determining peak hour: Total Entering Volume

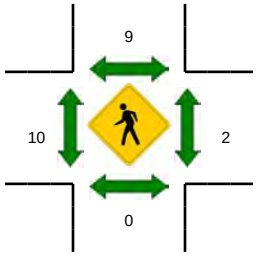
LOCATION: 41st Ave -- Redwood Shopping Center
CITY/STATE: Soquel, CA

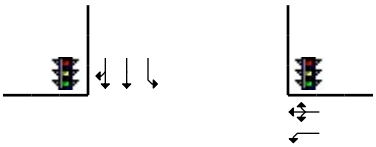
QC JOB #: 13932411
DATE: Tue, Oct 18 2016

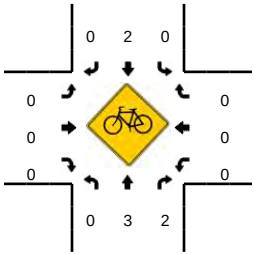


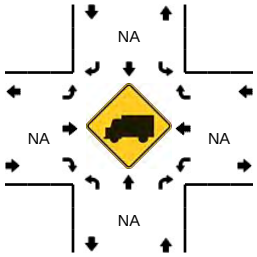
Peak-Hour: 7:45 AM -- 8:45 AM
Peak 15-Min: 7:50 AM -- 8:05 AM

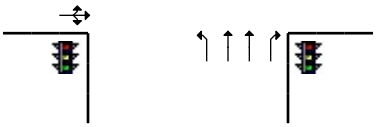


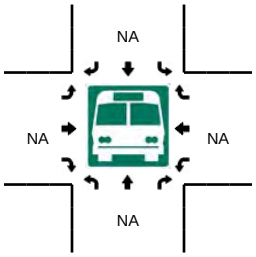












5-Min Count Period Beginning At	41st Ave (Northbound)				41st Ave (Southbound)				Redwood Shopping Center (Eastbound)				Redwood Shopping Center (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	34	7	0	0	24	0	0	0	0	0	0	6	2	1	0	74	
7:05 AM	1	24	5	0	2	17	0	0	0	0	0	0	6	1	0	0	56	
7:10 AM	0	39	7	0	0	16	0	0	0	0	1	0	9	0	0	0	72	
7:15 AM	0	31	10	0	0	12	0	0	0	0	0	0	12	0	0	0	65	
7:20 AM	1	35	2	0	1	21	0	0	0	0	0	0	14	0	1	0	75	
7:25 AM	0	35	7	0	0	20	0	0	0	0	2	0	20	0	0	0	84	
7:30 AM	0	56	8	0	0	18	0	0	1	0	0	0	16	0	1	0	100	
7:35 AM	0	49	12	0	1	40	0	0	2	0	1	0	10	0	1	0	116	
7:40 AM	2	59	6	0	0	45	0	0	0	0	1	0	14	0	0	0	127	
7:45 AM	0	59	4	0	1	38	0	0	0	0	0	0	15	0	2	0	119	
7:50 AM	0	74	8	0	2	42	0	0	0	0	0	0	17	2	2	0	147	
7:55 AM	0	63	4	0	2	31	0	0	0	0	0	0	10	0	2	0	112	1147
8:00 AM	1	57	7	0	2	46	1	0	0	0	0	0	19	1	1	0	135	1208
8:05 AM	0	57	6	0	1	47	0	0	0	0	0	0	8	0	2	0	121	1273
8:10 AM	0	53	13	0	1	46	0	0	0	0	0	0	8	0	1	0	122	1323
8:15 AM	0	53	5	0	2	49	0	0	0	0	1	0	22	0	0	0	132	1390
8:20 AM	1	48	12	0	0	39	0	0	0	0	0	0	18	0	0	0	118	1433
8:25 AM	0	57	4	0	1	38	0	0	0	0	1	0	16	0	1	0	118	1467
8:30 AM	0	41	9	0	2	31	0	0	0	0	1	0	22	0	1	0	107	1474
8:35 AM	2	47	3	0	0	46	0	0	1	1	0	0	21	0	1	0	122	1480
8:40 AM	1	61	6	0	4	37	0	0	0	0	1	0	16	0	2	0	128	1481
8:45 AM	0	41	5	0	1	29	0	0	0	1	0	0	14	0	1	0	92	1454
8:50 AM	1	57	7	0	1	29	0	0	0	0	0	0	15	0	3	0	113	1420
8:55 AM	0	36	14	0	1	40	1	0	0	0	1	0	19	0	1	0	113	1421

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	4	776	76	0	24	476	4	0	0	0	0	0	184	12	20	0	1576
Heavy Trucks	0	20	12		4	32	0		0	0	0		4	0	0		72
Pedestrians		0				12				12				4			28
Bicycles	0	2	1		0	0	0		0	0	0		0	0	0		3
Railroad																	
Stopped Buses																	

Comments:

Report generated on 10/25/2016 2:14 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: 41st Ave -- Redwood Shopping Center

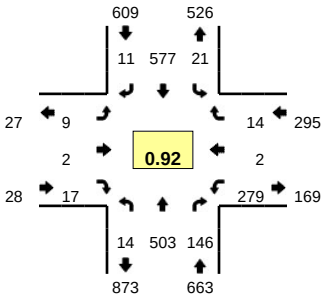
CITY/STATE: Soquel, CA

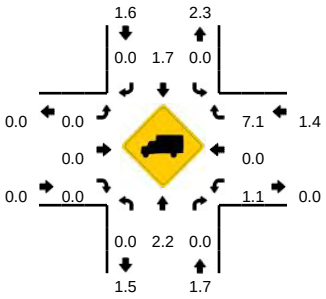
QC JOB #: 13932412

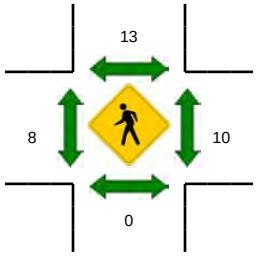
DATE: Tue, Oct 18 2016

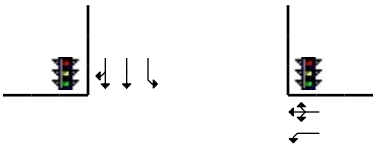
Peak-Hour: 4:55 PM -- 5:55 PM

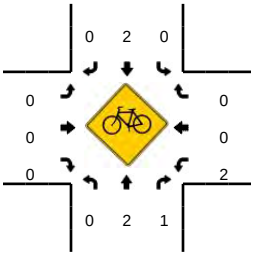
Peak 15-Min: 5:10 PM -- 5:25 PM

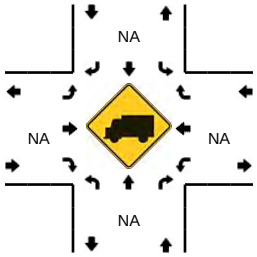


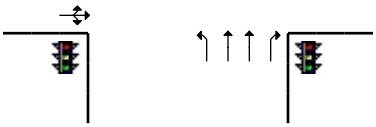


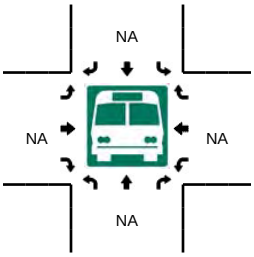












5-Min Count Period Beginning At	41st Ave (Northbound)				41st Ave (Southbound)				Redwood Shopping Center (Eastbound)				Redwood Shopping Center (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	3	45	5	0	4	41	2	0	1	0	1	0	21	0	1	0	124	
4:05 PM	1	44	18	0	0	51	0	0	0	0	2	0	32	0	1	0	149	
4:10 PM	1	36	10	0	2	48	0	0	0	0	0	0	28	0	1	0	126	
4:15 PM	2	44	9	0	1	47	0	0	0	0	4	0	24	0	6	0	137	
4:20 PM	1	57	9	0	4	37	1	0	0	0	0	0	26	0	1	0	136	
4:25 PM	3	40	14	0	0	34	2	0	2	1	4	0	30	0	2	0	132	
4:30 PM	0	51	8	0	4	64	1	0	0	0	1	0	17	0	0	0	146	
4:35 PM	0	35	14	0	1	40	0	0	1	1	2	0	23	1	3	0	121	
4:40 PM	0	39	7	0	0	55	0	0	0	0	0	0	15	1	4	0	121	
4:45 PM	0	47	14	0	2	38	3	0	0	0	2	0	24	0	1	0	131	
4:50 PM	0	44	15	0	0	37	0	0	0	0	1	0	24	0	0	0	121	
4:55 PM	1	47	12	0	2	42	1	0	0	0	2	0	21	0	1	0	129	1573
5:00 PM	0	37	15	0	2	60	1	0	0	1	1	0	11	1	3	0	132	1581
5:05 PM	2	51	7	0	2	34	0	0	2	0	3	0	26	0	2	0	129	1561
5:10 PM	3	48	10	0	0	71	1	0	1	1	1	0	20	0	1	0	157	1592
5:15 PM	2	33	12	0	0	43	0	0	2	0	2	0	31	0	0	0	125	1580
5:20 PM	2	44	14	0	4	62	1	0	1	0	0	0	21	0	1	0	150	1594
5:25 PM	0	39	12	0	1	36	0	0	1	0	2	0	23	0	0	0	114	1576
5:30 PM	0	46	9	0	1	36	0	0	0	0	0	0	15	0	0	0	107	1537
5:35 PM	1	33	13	0	4	47	0	0	2	0	2	0	35	0	3	0	140	1556
5:40 PM	2	43	13	0	2	64	2	0	0	0	2	0	22	1	1	0	152	1587
5:45 PM	1	31	18	0	2	30	0	0	0	0	2	0	38	0	1	0	123	1579
5:50 PM	0	51	11	0	1	52	5	0	0	0	0	0	16	0	1	0	137	1595
5:55 PM	1	39	7	0	0	27	0	0	0	0	4	0	27	0	2	0	107	1573

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	28	500	144	0	16	704	8	0	16	4	12	0	288	0	8	0	1728
Heavy Trucks	0	4	0		0	24	0		0	0	0		4	0	0		32
Pedestrians		0				12				4				24			40
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 10/25/2016 2:14 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

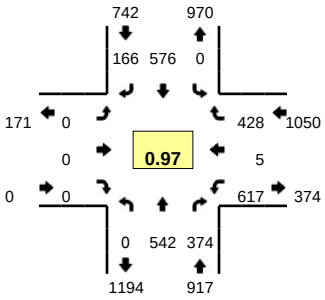
Type of peak hour being reported: Intersection Peak

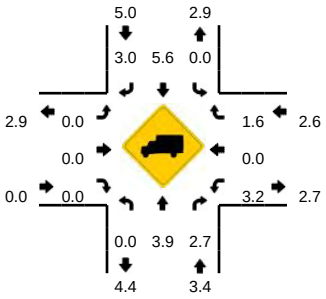
Method for determining peak hour: Total Entering Volume

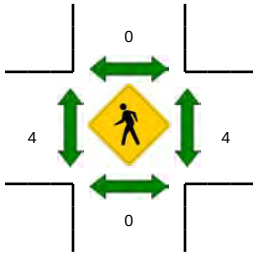
LOCATION: 41st Ave -- Hwy 1 NB Ramps
CITY/STATE: Soquel, CA

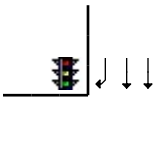
QC JOB #: 13932413
DATE: Tue, Oct 18 2016

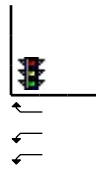
Peak-Hour: 7:45 AM -- 8:45 AM
Peak 15-Min: 8:30 AM -- 8:45 AM

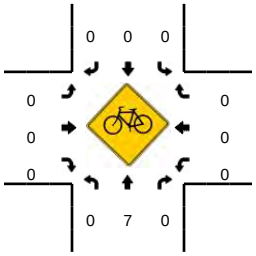


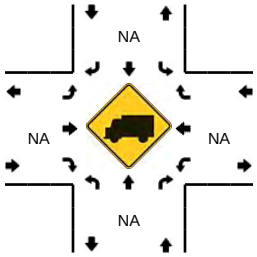


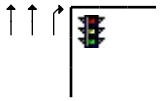


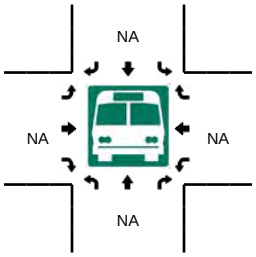












5-Min Count Period Beginning At	41st Ave (Northbound)				41st Ave (Southbound)				Hwy 1 NB Ramps (Eastbound)				Hwy 1 NB Ramps (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	16	13	0	0	26	4	0	0	0	0	0	42	0	28	0	129	
7:05 AM	0	29	29	0	0	19	7	0	0	0	0	0	46	0	18	0	148	
7:10 AM	0	30	42	0	0	18	10	0	0	0	0	0	45	0	28	0	173	
7:15 AM	0	28	31	0	0	19	7	0	0	0	0	0	48	0	31	0	164	
7:20 AM	0	22	19	0	0	27	9	0	0	0	0	0	58	0	25	0	160	
7:25 AM	0	20	23	0	0	26	15	0	0	0	0	0	50	0	37	0	171	
7:30 AM	0	46	31	0	0	21	14	0	0	0	0	0	48	0	31	0	191	
7:35 AM	0	36	41	0	0	39	19	0	0	0	0	0	40	0	44	0	219	
7:40 AM	0	42	32	0	0	48	12	0	0	0	0	0	45	1	35	0	215	
7:45 AM	0	39	40	0	0	45	9	0	0	0	0	0	55	0	39	0	227	
7:50 AM	0	62	27	0	0	40	18	0	0	0	0	0	45	0	48	0	240	
7:55 AM	0	50	29	0	0	37	14	0	0	0	0	0	48	1	31	0	210	2247
8:00 AM	0	38	32	0	0	52	13	0	0	0	0	0	60	0	38	0	233	2351
8:05 AM	0	43	30	0	0	53	7	0	0	0	0	0	41	1	35	0	210	2413
8:10 AM	0	52	24	0	0	52	12	0	0	0	0	0	46	1	34	0	221	2461
8:15 AM	0	47	33	0	0	56	16	0	0	0	0	0	28	0	34	0	214	2511
8:20 AM	0	52	31	0	0	50	12	0	0	0	0	0	51	0	28	0	224	2575
8:25 AM	0	41	26	0	0	41	18	0	0	0	0	0	67	0	42	0	235	2639
8:30 AM	0	29	32	0	0	46	10	0	0	0	0	0	62	0	34	0	213	2661
8:35 AM	0	37	33	0	0	59	21	0	0	0	0	0	56	2	26	0	234	2676
8:40 AM	0	53	37	0	0	45	16	0	0	0	0	0	58	0	39	0	248	2709
8:45 AM	0	33	36	0	0	41	17	0	0	0	0	0	48	0	29	0	204	2686
8:50 AM	0	51	36	0	0	31	11	0	0	0	0	0	53	1	27	0	210	2656
8:55 AM	0	44	32	0	0	42	13	0	0	0	0	0	61	0	30	0	222	2668

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	477	408	0	0	600	188	0	0	0	0	0	704	8	396	0	2780
Heavy Trucks	0	32	12		0	24	8		0	0	0		36	0	12		124
Pedestrians		0				0				4				8			12
Bicycles	0	1	0		0	0	0		0	0	0		0	0	0		1
Railroad																	
Stopped Buses																	

Comments:

Report generated on 10/25/2016 2:14 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: 41st Ave -- Hwy 1 NB Ramps

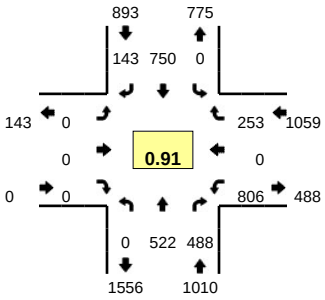
CITY/STATE: Soquel, CA

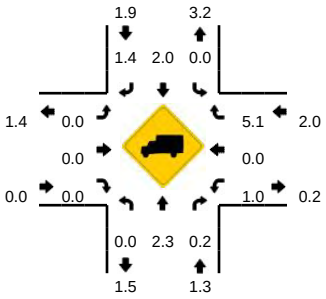
QC JOB #: 13932414

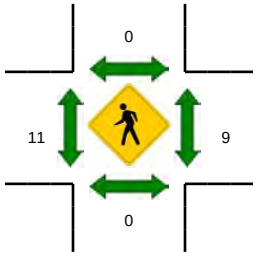
DATE: Tue, Oct 18 2016

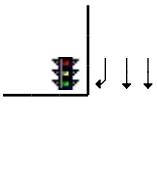
Peak-Hour: 4:40 PM -- 5:40 PM

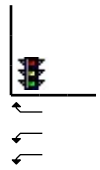
Peak 15-Min: 5:10 PM -- 5:25 PM

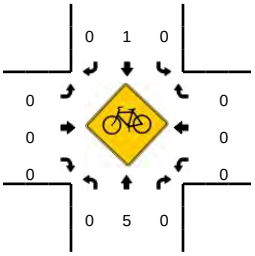


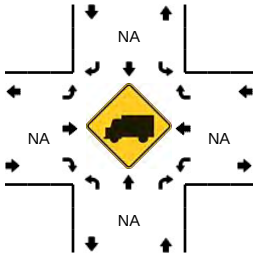


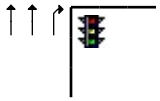


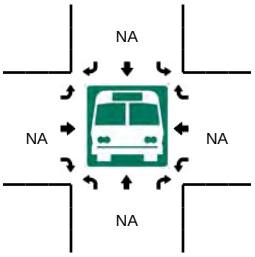












5-Min Count Period Beginning At	41st Ave (Northbound)				41st Ave (Southbound)				Hwy 1 NB Ramps (Eastbound)				Hwy 1 NB Ramps (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	44	35	0	0	71	8	0	0	0	0	0	67	1	14	0	240	
4:05 PM	0	41	39	0	0	66	9	0	0	0	0	0	73	1	33	0	262	
4:10 PM	0	42	37	0	0	66	16	0	0	0	0	0	55	0	23	0	239	
4:15 PM	0	34	46	0	0	55	10	0	0	0	0	0	76	0	19	0	240	
4:20 PM	0	55	28	0	0	57	22	0	0	0	0	0	53	0	24	0	239	
4:25 PM	0	48	35	0	0	41	17	0	0	0	0	0	54	0	25	0	220	
4:30 PM	0	35	20	0	0	63	20	0	0	0	0	0	64	0	18	0	220	
4:35 PM	0	26	32	0	0	65	13	0	0	0	0	0	47	2	10	0	195	
4:40 PM	0	51	43	0	0	55	14	0	0	0	0	0	80	0	25	0	268	
4:45 PM	0	51	44	0	0	60	12	0	0	0	0	0	79	0	25	0	271	
4:50 PM	0	38	45	0	0	46	19	0	0	0	0	0	70	0	20	0	238	
4:55 PM	0	43	32	0	0	57	8	0	0	0	0	0	58	0	25	0	223	2855
5:00 PM	0	37	35	0	0	60	11	0	0	0	0	0	57	0	14	0	214	2829
5:05 PM	0	51	36	0	0	79	6	0	0	0	0	0	57	0	17	0	246	2813
5:10 PM	0	48	63	0	0	74	16	0	0	0	0	0	70	0	24	0	295	2869
5:15 PM	0	51	46	0	0	68	12	0	0	0	0	0	64	0	21	0	262	2891
5:20 PM	0	39	44	0	0	65	18	0	0	0	0	0	76	0	19	0	261	2913
5:25 PM	0	40	25	0	0	65	6	0	0	0	0	0	71	0	18	0	225	2918
5:30 PM	0	31	33	0	0	57	12	0	0	0	0	0	52	0	28	0	213	2911
5:35 PM	0	42	42	0	0	64	9	0	0	0	0	0	72	0	17	0	246	2962
5:40 PM	0	47	36	0	0	84	17	0	0	0	0	0	50	0	22	0	256	2950
5:45 PM	0	41	28	0	0	53	12	0	0	0	0	0	69	0	17	0	220	2899
5:50 PM	0	46	33	0	0	74	8	0	0	0	0	0	44	0	18	0	223	2884
5:55 PM	0	41	32	0	0	41	6	0	0	0	0	0	57	0	16	0	193	2854

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	552	612	0	0	828	184	0	0	0	0	0	840	0	256	0	3272
Heavy Trucks	0	8	0		0	28	4		0	0	0		8	0	0		48
Pedestrians		0				0				8				16			24
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 10/25/2016 2:14 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: 41st Ave -- Hwy 1 SB Ramps

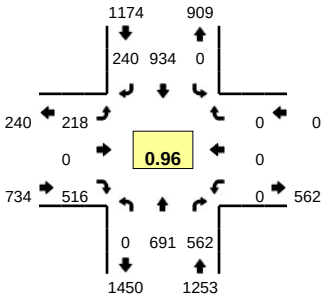
CITY/STATE: Capitola, CA

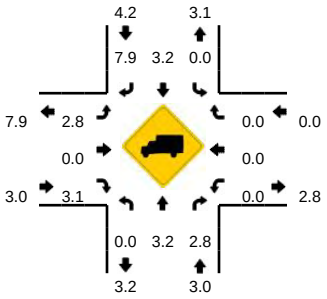
QC JOB #: 13932415

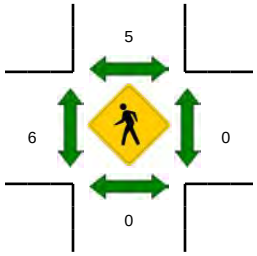
DATE: Tue, Oct 18 2016

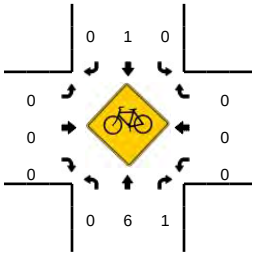
Peak-Hour: 7:55 AM -- 8:55 AM

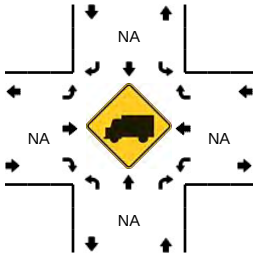
Peak 15-Min: 8:40 AM -- 8:55 AM

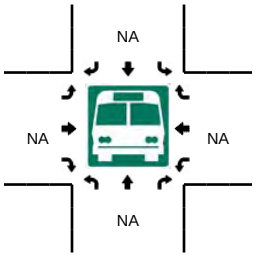












5-Min Count Period Beginning At	41st Ave (Northbound)				41st Ave (Southbound)				Hwy 1 SB Ramps (Eastbound)				Hwy 1 SB Ramps (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	22	27	0	0	52	15	0	6	0	14	0	0	0	0	0	136	
7:05 AM	0	47	40	0	0	54	8	0	13	0	9	0	0	0	0	0	171	
7:10 AM	0	58	44	0	0	61	11	0	13	0	14	0	0	0	0	0	201	
7:15 AM	0	46	31	0	0	56	10	0	13	0	21	0	0	0	0	0	177	
7:20 AM	0	31	41	0	0	66	11	0	11	0	13	0	0	0	0	0	173	
7:25 AM	0	35	39	0	0	56	13	0	11	0	25	0	0	0	0	0	179	
7:30 AM	0	65	50	0	0	58	8	0	6	0	27	0	0	0	0	0	214	
7:35 AM	0	63	32	0	0	66	21	0	15	0	17	0	0	0	0	0	214	
7:40 AM	0	60	59	0	0	72	25	0	16	0	20	0	0	0	0	0	252	
7:45 AM	0	70	54	0	0	74	27	0	8	0	18	0	0	0	0	0	251	
7:50 AM	0	77	50	0	0	65	14	0	18	0	31	0	0	0	0	0	255	
7:55 AM	0	65	60	0	0	69	20	0	16	0	36	0	0	0	0	0	266	2489
8:00 AM	0	62	47	0	0	72	23	0	13	0	36	0	0	0	0	0	253	2606
8:05 AM	0	54	53	0	0	72	24	0	18	0	35	0	0	0	0	0	256	2691
8:10 AM	0	58	54	0	0	76	25	0	24	0	30	0	0	0	0	0	267	2757
8:15 AM	0	59	50	0	0	63	21	0	18	0	45	0	0	0	0	0	256	2836
8:20 AM	0	63	38	0	0	90	19	0	22	0	47	0	0	0	0	0	279	2942
8:25 AM	0	43	37	0	0	80	10	0	18	0	49	0	0	0	0	0	237	3000
8:30 AM	0	45	44	0	0	101	16	0	20	0	47	0	0	0	0	0	273	3059
8:35 AM	0	53	40	0	0	71	26	0	20	0	39	0	0	0	0	0	249	3094
8:40 AM	0	70	49	0	0	100	21	0	12	0	45	0	0	0	0	0	297	3139
8:45 AM	0	51	49	0	0	68	23	0	21	0	51	0	0	0	0	0	263	3151
8:50 AM	0	68	41	0	0	72	12	0	16	0	56	0	0	0	0	0	265	3161
8:55 AM	0	61	38	0	0	74	9	0	16	0	49	0	0	0	0	0	247	3142

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	756	556	0	0	960	224	0	196	0	608	0	0	0	0	0	3300
Heavy Trucks	0	32	20		0	24	20		4	0	24		0	0	0		124
Pedestrians		0				8				12				0			20
Bicycles	0	1	1		0	1	0		0	0	0		0	0	0		3
Railroad																	
Stopped Buses																	

Comments:

Report generated on 10/25/2016 2:14 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: 41st Ave -- Hwy 1 SB Ramps

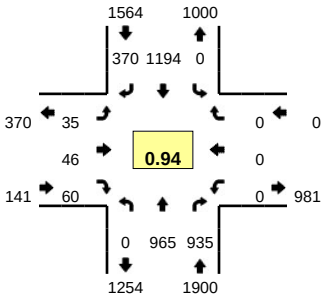
CITY/STATE: Capitola, CA

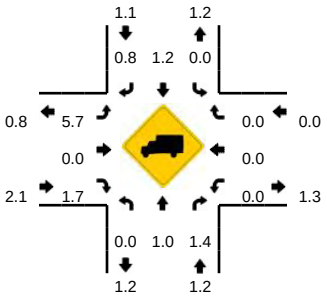
QC JOB #: 13932416

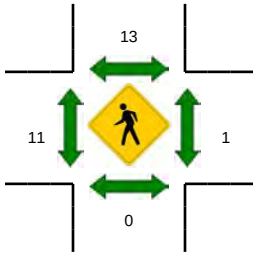
DATE: Tue, Oct 18 2016

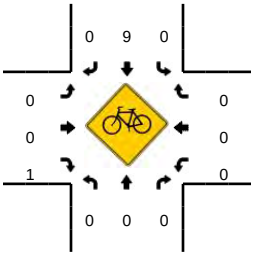
Peak-Hour: 4:45 PM -- 5:45 PM

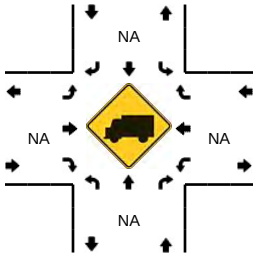
Peak 15-Min: 5:10 PM -- 5:25 PM

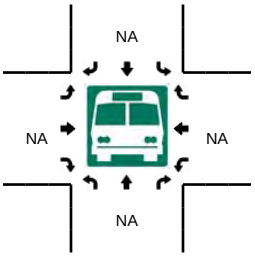












5-Min Count Period Beginning At	41st Ave (Northbound)				41st Ave (Southbound)				Hwy 1 SB Ramps (Eastbound)				Hwy 1 SB Ramps (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	75	71	0	0	109	25	1	4	2	11	0	0	0	0	0	298	
4:05 PM	0	72	79	0	0	91	25	0	11	0	7	0	0	0	0	0	285	
4:10 PM	0	70	86	0	0	104	32	0	3	1	3	0	0	0	0	0	299	
4:15 PM	0	82	81	0	0	106	26	0	3	5	8	0	0	0	0	0	311	
4:20 PM	0	76	78	0	0	91	27	0	4	0	6	0	0	0	0	0	282	
4:25 PM	0	79	89	0	0	80	16	0	8	4	12	0	0	0	0	0	288	
4:30 PM	0	59	87	0	0	95	24	0	2	3	4	0	0	0	0	0	274	
4:35 PM	0	76	69	0	0	85	29	0	4	3	7	0	0	0	0	0	273	
4:40 PM	0	69	52	0	0	104	25	0	2	7	5	0	0	0	0	0	264	
4:45 PM	0	85	85	0	0	100	24	0	5	3	7	0	0	0	0	0	309	
4:50 PM	0	82	87	0	0	115	31	0	2	2	8	0	0	0	0	0	327	
4:55 PM	0	67	78	0	0	95	25	0	4	3	5	0	0	0	0	0	277	3487
5:00 PM	0	74	81	0	0	89	24	0	3	3	3	0	0	0	0	0	277	3466
5:05 PM	0	85	73	0	0	89	39	0	4	5	6	0	0	0	0	0	301	3482
5:10 PM	0	111	70	0	0	107	26	0	2	3	3	0	0	0	0	0	322	3505
5:15 PM	0	88	78	0	0	100	38	0	3	5	4	0	0	0	0	0	316	3510
5:20 PM	0	83	85	0	0	104	30	0	2	6	9	0	0	0	0	0	319	3547
5:25 PM	0	60	69	0	0	106	45	0	5	5	3	0	0	0	0	0	293	3552
5:30 PM	0	66	84	0	0	94	23	0	2	4	6	0	0	0	0	0	279	3557
5:35 PM	0	83	69	0	0	88	28	0	1	2	4	0	0	0	0	0	275	3559
5:40 PM	0	81	76	0	0	107	37	0	2	5	2	0	0	0	0	0	310	3605
5:45 PM	0	77	84	0	0	94	24	0	2	7	7	0	0	0	0	0	295	3591
5:50 PM	0	78	77	0	0	100	27	0	2	8	4	0	0	0	0	0	296	3560
5:55 PM	0	76	76	0	0	89	17	0	4	5	6	0	0	0	0	0	273	3556

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	1128	932	0	0	1244	376	0	28	56	64	0	0	0	0	0	3828
Heavy Trucks	0	4	8		0	28	4		0	0	0		0	0	0		44
Pedestrians		0				12				8				0			20
Bicycles	0	0	0		0	1	0		0	0	0		0	0	0		1
Railroad																	
Stopped Buses																	

Comments:

Report generated on 10/25/2016 2:14 PM

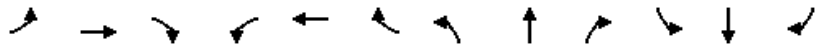
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

EXISTING CONDITIONS SYNCHRO OUTPUT SHEETS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	619	32	18	872	47	49	2	24	63	1	73
Future Volume (veh/h)	18	619	32	18	872	47	49	2	24	63	1	73
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1822	1900	1792	1837	1900	1900	1690	1900	1900	1846	1900
Adj Flow Rate, veh/h	32	814	40	32	1077	60	68	4	44	95	4	96
Adj No. of Lanes	0	2	0	1	2	0	0	1	0	0	1	0
Peak Hour Factor	0.56	0.76	0.80	0.56	0.81	0.78	0.72	0.50	0.55	0.66	0.25	0.76
Percent Heavy Veh, %	4	4	4	6	3	3	0	0	0	0	0	0
Cap, veh/h	103	1900	92	427	2050	114	258	35	113	229	35	158
Arrive On Green	0.61	0.61	0.61	0.61	0.61	0.61	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	50	3109	150	619	3354	187	718	167	541	612	168	756
Grp Volume(v), veh/h	452	0	434	32	560	577	116	0	0	195	0	0
Grp Sat Flow(s),veh/h/ln	1683	0	1626	619	1745	1795	1425	0	0	1536	0	0
Q Serve(g_s), s	0.0	0.0	7.5	1.5	9.7	9.7	0.0	0.0	0.0	2.4	0.0	0.0
Cycle Q Clear(g_c), s	6.8	0.0	7.5	9.0	9.7	9.7	3.3	0.0	0.0	5.7	0.0	0.0
Prop In Lane	0.07		0.09	1.00		0.10	0.59		0.38	0.49		0.49
Lane Grp Cap(c), veh/h	1101	0	994	427	1067	1097	406	0	0	422	0	0
V/C Ratio(X)	0.41	0.00	0.44	0.08	0.53	0.53	0.29	0.00	0.00	0.46	0.00	0.00
Avail Cap(c_a), veh/h	1180	0	1077	459	1156	1190	741	0	0	805	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	5.3	0.0	5.4	7.8	5.9	5.9	17.8	0.0	0.0	18.7	0.0	0.0
Incr Delay (d2), s/veh	0.5	0.0	0.6	0.2	0.9	0.8	0.8	0.0	0.0	1.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	0.0	3.4	0.3	4.8	4.9	1.5	0.0	0.0	2.7	0.0	0.0
LnGrp Delay(d),s/veh	5.8	0.0	6.1	8.0	6.7	6.7	18.7	0.0	0.0	20.4	0.0	0.0
LnGrp LOS	A		A	A	A	A	B			C		
Approach Vol, veh/h		886			1169			116			195	
Approach Delay, s/veh		6.0			6.8			18.7			20.4	
Approach LOS		A			A			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		37.3		15.5		37.3		15.5
Change Period (Y+Rc), s		5.0		4.5		5.0		4.5
Max Green Setting (Gmax), s		35.0		25.0		35.0		25.0
Max Q Clear Time (g_c+I1), s		9.5		5.3		11.7		7.7
Green Ext Time (p_c), s		22.3		3.3		20.6		3.1

Intersection Summary	
HCM 2010 Ctrl Delay	8.2
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	339	372	135	543	5	608	5	86	0	9	3
Future Volume (veh/h)	1	339	372	135	543	5	608	5	86	0	9	3
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.96	1.00		0.99	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1800	1900	1792	1822	1900	1863	1864	1827	1900	1409	1900
Adj Flow Rate, veh/h	4	471	496	193	639	12	788	0	141	0	20	8
Adj No. of Lanes	1	2	0	1	2	0	2	0	1	0	1	0
Peak Hour Factor	0.25	0.72	0.75	0.70	0.85	0.42	0.78	0.42	0.61	0.92	0.45	0.38
Percent Heavy Veh, %	0	4	4	6	4	4	2	0	4	22	22	22
Cap, veh/h	8	607	531	230	1685	32	965	0	418	0	27	11
Arrive On Green	0.00	0.35	0.35	0.13	0.49	0.49	0.27	0.00	0.27	0.00	0.03	0.03
Sat Flow, veh/h	1810	1710	1497	1707	3472	65	3548	0	1536	0	941	377
Grp Volume(v), veh/h	4	471	496	193	318	333	788	0	141	0	0	28
Grp Sat Flow(s),veh/h/ln	1810	1710	1497	1707	1731	1807	1774	0	1536	0	0	1318
Q Serve(g_s), s	0.2	21.6	28.1	9.7	10.2	10.2	18.3	0.0	6.5	0.0	0.0	1.9
Cycle Q Clear(g_c), s	0.2	21.6	28.1	9.7	10.2	10.2	18.3	0.0	6.5	0.0	0.0	1.9
Prop In Lane	1.00		1.00	1.00		0.04	1.00		1.00	0.00		0.29
Lane Grp Cap(c), veh/h	8	607	531	230	840	877	965	0	418	0	0	37
V/C Ratio(X)	0.52	0.78	0.93	0.84	0.38	0.38	0.82	0.00	0.34	0.00	0.00	0.75
Avail Cap(c_a), veh/h	659	623	545	621	840	877	1614	0	699	0	0	300
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	43.7	25.2	27.4	37.1	14.3	14.3	30.0	0.0	25.7	0.0	0.0	42.4
Incr Delay (d2), s/veh	18.9	8.5	24.9	3.2	1.0	1.0	1.8	0.0	0.5	0.0	0.0	30.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	11.6	15.3	4.8	5.1	5.3	9.2	0.0	2.8	0.0	0.0	1.0
LnGrp Delay(d),s/veh	62.6	33.7	52.3	40.3	15.3	15.3	31.7	0.0	26.1	0.0	0.0	72.9
LnGrp LOS	E	C	D	D	B	B	C		C			E
Approach Vol, veh/h		971			844			929			28	
Approach Delay, s/veh		43.3			21.0			30.9			72.9	
Approach LOS		D			C			C			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	16.3	36.2		7.0	4.9	47.7		28.4
Change Period (Y+Rc), s	4.5	5.0		4.5	4.5	5.0		4.5
Max Green Setting (Gmax), s	12.3	32.0		20.0	32.0	31.0		40.0
Max Q Clear Time (g_c+I1), s	11.7	30.1		3.9	2.2	12.2		20.3
Green Ext Time (p_c), s	0.2	1.1		0.1	0.0	16.3		3.6

Intersection Summary	
HCM 2010 Ctrl Delay	32.7
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Intersection Delay, s/veh	43.2
Intersection LOS	E

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations																
Traffic Vol, veh/h	0	1	395	67	0	167	641	0	0	116	0	180	0	0	0	0
Future Vol, veh/h	0	1	395	67	0	167	641	0	0	116	0	180	0	0	0	0
Peak Hour Factor	0.92	0.75	0.75	0.76	0.92	0.71	0.91	0.92	0.92	0.83	0.92	0.58	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	0	5	6	2	2	4	0	2	1	0	2	2	0	0	0
Mvmt Flow	0	1	527	88	0	235	704	0	0	140	0	310	0	0	0	0
Number of Lanes	0	0	2	0	0	0	2	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	2
HCM Control Delay	24.3	59.9	34.3	0
HCM LOS	C	F	D	-

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	39%	1%	0%	44%	0%	0%
Vol Thru, %	0%	99%	75%	56%	100%	100%
Vol Right, %	61%	0%	25%	0%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	296	199	265	381	427	0
LT Vol	116	1	0	167	0	0
Through Vol	0	198	198	214	427	0
RT Vol	180	0	67	0	0	0
Lane Flow Rate	450	265	351	470	470	0
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0.83	0.556	0.729	0.977	0.952	0
Departure Headway (Hd)	6.639	7.566	7.468	7.486	7.295	9.051
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	545	474	482	484	493	0
Service Time	4.68	5.354	5.256	5.281	5.09	7.051
HCM Lane V/C Ratio	0.826	0.559	0.728	0.971	0.953	0
HCM Control Delay	34.3	19.5	28	63.1	56.6	12.1
HCM Lane LOS	D	C	D	F	F	N
HCM 95th-tile Q	8.4	3.3	5.9	12.5	11.8	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	395	67	167	641	0	116	0	180	0	0	0
Future Volume (vph)	1	395	67	167	641	0	116	0	180	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.979						0.907				
Flt Protected					0.988			0.985				
Satd. Flow (prot)	0	3250	0	0	3331	0	0	1614	0	0	1837	0
Flt Permitted					0.988			0.985				
Satd. Flow (perm)	0	3250	0	0	3331	0	0	1614	0	0	1837	0
Link Speed (mph)		35			25			25			25	
Link Distance (ft)		1301			475			1062			833	
Travel Time (s)		25.3			13.0			29.0			22.7	
Confl. Peds. (#/hr)	15		7	7		15			13	13		
Confl. Bikes (#/hr)			5			11						
Peak Hour Factor	0.75	0.75	0.76	0.71	0.91	0.92	0.83	0.92	0.58	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	5%	6%	2%	4%	0%	1%	0%	2%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	1	527	88	235	704	0	140	0	310	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	616	0	0	939	0	0	450	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		2			2			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			35			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 64.1%		ICU Level of Service C	
Analysis Period (min) 15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	395	67	167	641	0	116	0	180	0	0	0
Future Volume (vph)	1	395	67	167	641	0	116	0	180	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.979						0.907				
Flt Protected					0.988			0.985				
Satd. Flow (prot)	0	3250	0	0	3331	0	0	1614	0	0	1837	0
Flt Permitted					0.988			0.985				
Satd. Flow (perm)	0	3250	0	0	3331	0	0	1614	0	0	1837	0
Link Speed (mph)		35			25			25			25	
Link Distance (ft)		1301			475			1062			833	
Travel Time (s)		25.3			13.0			29.0			22.7	
Confl. Peds. (#/hr)	15		7	7		15			13	13		
Confl. Bikes (#/hr)			5			11						
Peak Hour Factor	0.75	0.75	0.76	0.71	0.91	0.92	0.83	0.92	0.58	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	5%	6%	2%	4%	0%	1%	0%	2%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	1	527	88	235	704	0	140	0	310	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	616	0	0	939	0	0	450	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		2			2			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			35			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 64.1%		ICU Level of Service C	
Analysis Period (min) 15			

Lane Group	EBT	WBT	NBT
Sign Control	Stop	Stop	Stop

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization	64.1%	ICU Level of Service C
Analysis Period (min)	15	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		2			2			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			35			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9

Intersection Summary

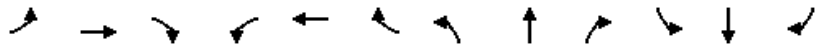
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	395	67	167	641	0	116	0	180	0	0	0
Pedestrians	15		7	7		15			13	13		
Ped Button		Yes			Yes			Yes				
Pedestrian Timing (s)		16.0			16.0			16.0				
Free Right			No			No			No			No
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	0	463	0	0	808	0	0	296	0	0	0	0
Lane Utilization Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.95	0.98	0.85	0.95	0.99	0.85	0.95	0.89	0.85	0.95	1.00	0.85
Saturated Flow (vph)	0	3539	0	0	3580	0	0	1693	0	0	1900	0
Ped Intf Time (s)	0.0	0.1	0.9	0.0	0.0	1.8	0.0	1.0	1.6	0.0	0.0	0.0
Pedestrian Frequency (%)		0.21			0.39			0.35			0.00	
Protected Option Allowed		No			No			No			No	
Reference Time (s)			0.0			0.0			0.0			0.0
Adj Reference Time (s)			0.0			0.0			0.0			0.0
Permitted Option												
Adj Saturation A (vph)	0	1667		0	119		0	1461		0	1900	
Reference Time A (s)	0.0	16.6		0.0	167.9		0.0	25.3		0.0	0.0	
Adj Saturation B (vph	NA	NA		NA	NA		0	0		NA	NA	
Reference Time B (s)	NA	NA		NA	NA		15.7	29.9		NA	NA	
Reference Time (s)		16.6			167.9			25.3			0.0	
Adj Reference Time (s)		20.6			171.9			29.3			8.0	
Split Option												
Ref Time Combined (s)	0.0	15.8		0.0	27.1		0.0	21.9		0.0	0.0	
Ref Time Seperate (s)	0.1	13.5		11.1	21.3		7.7	1.0		0.0	0.0	
Reference Time (s)	15.8	15.8		27.1	27.1		21.9	21.9		0.0	0.0	
Adj Reference Time (s)	19.9	19.9		31.1	31.1		25.9	25.9		0.0	0.0	

Summary	EB WB	NB SB	Combined
Protected Option (s)	NA	NA	
Permitted Option (s)	171.9	29.3	
Split Option (s)	50.9	25.9	
Minimum (s)	50.9	25.9	76.9

Right Turns
Adj Reference Time (s)
Cross Thru Ref Time (s)
Oncoming Left Ref Time (s)
Combined (s)

Intersection Summary			
Intersection Capacity Utilization	64.1%	ICU Level of Service	C

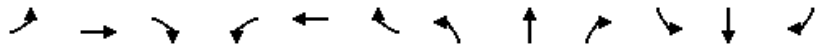
Reference Times and Phasing Options do not represent an optimized timing plan.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	491	56	12	736	9	38	11	30	6	2	34
Future Volume (veh/h)	28	491	56	12	736	9	38	11	30	6	2	34
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	0.89		0.90	0.94		0.87
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1700	1639	1700	1700	1636	1700	1900	1871	1900	1900	1900	1900
Adj Flow Rate, veh/h	48	655	119	24	866	20	86	24	56	20	4	62
Adj No. of Lanes	1	2	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.58	0.75	0.47	0.50	0.85	0.45	0.44	0.46	0.54	0.30	0.50	0.55
Percent Heavy Veh, %	0	4	4	0	4	4	0	0	0	0	0	0
Cap, veh/h	220	1657	301	432	1006	23	227	72	110	115	46	240
Arrive On Green	0.63	0.63	0.63	0.63	0.63	0.63	0.23	0.23	0.23	0.23	0.23	0.23
Sat Flow, veh/h	570	2620	475	632	1591	37	623	312	476	203	200	1041
Grp Volume(v), veh/h	48	389	385	24	0	886	166	0	0	86	0	0
Grp Sat Flow(s),veh/h/ln	570	1557	1538	632	0	1628	1411	0	0	1444	0	0
Q Serve(g_s), s	4.9	8.0	8.0	1.3	0.0	28.7	3.1	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	33.6	8.0	8.0	9.3	0.0	28.7	6.2	0.0	0.0	3.0	0.0	0.0
Prop In Lane	1.00		0.31	1.00		0.02	0.52		0.34	0.23		0.72
Lane Grp Cap(c), veh/h	220	985	973	432	0	1029	408	0	0	400	0	0
V/C Ratio(X)	0.22	0.39	0.40	0.06	0.00	0.86	0.41	0.00	0.00	0.21	0.00	0.00
Avail Cap(c_a), veh/h	382	1428	1410	612	0	1493	611	0	0	610	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	23.3	5.9	5.9	8.2	0.0	9.7	21.6	0.0	0.0	20.6	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.1	0.1	0.0	0.0	2.6	0.2	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	3.4	3.3	0.2	0.0	13.3	2.6	0.0	0.0	1.3	0.0	0.0
LnGrp Delay(d),s/veh	23.5	6.0	6.0	8.2	0.0	12.3	21.8	0.0	0.0	20.7	0.0	0.0
LnGrp LOS	C	A	A	A		B	C			C		
Approach Vol, veh/h		822			910			166			86	
Approach Delay, s/veh		7.0			12.2			21.8			20.7	
Approach LOS		A			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		45.9		19.6		45.9		19.6
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		60.0		25.0		60.0		25.0
Max Q Clear Time (g_c+I1), s		35.6		5.0		30.7		8.2
Green Ext Time (p_c), s		5.8		0.7		5.9		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	11.2
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	214	259	54	121	392	261	42	272	29	147	286	323
Future Volume (veh/h)	214	259	54	121	392	261	42	272	29	147	286	323
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00	1.00		0.98	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1646	1700	1650	1650	1667	1574	1630	1700	1881	1827	1845
Adj Flow Rate, veh/h	289	320	69	195	451	0	84	324	36	188	362	414
Adj No. of Lanes	1	2	0	1	1	1	1	1	0	1	1	1
Peak Hour Factor	0.74	0.81	0.78	0.62	0.87	0.68	0.50	0.84	0.81	0.78	0.79	0.78
Percent Heavy Veh, %	2	4	4	3	3	2	8	4	4	1	4	3
Cap, veh/h	314	945	200	218	514	441	101	386	43	213	584	498
Arrive On Green	0.20	0.37	0.37	0.14	0.31	0.00	0.07	0.27	0.27	0.12	0.32	0.32
Sat Flow, veh/h	1587	2551	541	1572	1650	1417	1499	1438	160	1792	1827	1556
Grp Volume(v), veh/h	289	194	195	195	451	0	84	0	360	188	362	414
Grp Sat Flow(s),veh/h/ln	1587	1564	1529	1572	1650	1417	1499	0	1598	1792	1827	1556
Q Serve(g_s), s	25.9	13.0	13.3	17.7	37.6	0.0	8.0	0.0	30.9	15.0	24.4	35.8
Cycle Q Clear(g_c), s	25.9	13.0	13.3	17.7	37.6	0.0	8.0	0.0	30.9	15.0	24.4	35.8
Prop In Lane	1.00		0.35	1.00		1.00	1.00		0.10	1.00		1.00
Lane Grp Cap(c), veh/h	314	579	566	218	514	441	101	0	429	213	584	498
V/C Ratio(X)	0.92	0.34	0.34	0.89	0.88	0.00	0.83	0.00	0.84	0.88	0.62	0.83
Avail Cap(c_a), veh/h	383	647	632	379	683	586	310	0	551	494	630	536
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.0	32.8	33.0	61.4	47.3	0.0	66.8	0.0	50.1	62.9	41.8	45.7
Incr Delay (d2), s/veh	25.5	0.3	0.4	12.9	9.9	0.0	6.5	0.0	8.9	4.7	1.7	10.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	18.6	5.7	5.7	8.5	18.6	0.0	3.5	0.0	14.7	7.7	12.5	16.8
LnGrp Delay(d),s/veh	82.6	33.2	33.3	74.3	57.3	0.0	73.3	0.0	59.0	67.6	43.5	55.9
LnGrp LOS	F	C	C	E	E		E		E	E	D	E
Approach Vol, veh/h		678			646			444			964	
Approach Delay, s/veh		54.3			62.4			61.7			53.5	
Approach LOS		D			E			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	33.7	57.7	13.3	50.4	32.2	49.2	20.7	42.9
Change Period (Y+Rc), s	3.5	4.0	3.5	4.0	3.5	4.0	3.5	4.0
Max Green Setting (Gmax), s	25.0	60.0	30.0	50.0	35.0	60.0	40.0	50.0
Max Q Clear Time (g_c+I1), s	19.7	15.3	10.0	37.8	27.9	39.6	17.0	32.9
Green Ext Time (p_c), s	0.5	6.7	0.1	5.1	0.8	5.6	0.3	6.1

Intersection Summary	
HCM 2010 Ctrl Delay	57.1
HCM 2010 LOS	E

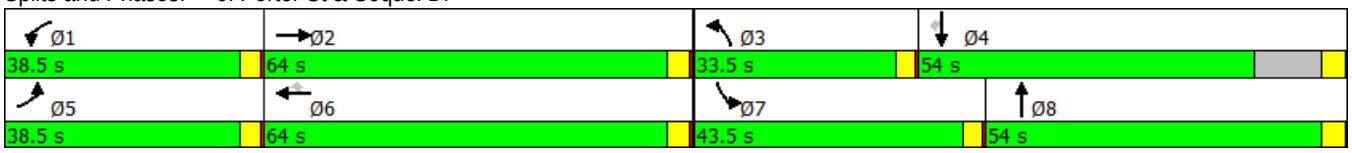
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	214	259	54	121	392	261	42	272	29	147	286	323
Future Volume (vph)	214	259	54	121	392	261	42	272	29	147	286	323
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	140		0	0		100	180		0	540		70
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (ft)	45			25			50			300		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	0.99		0.98		0.95	0.99	1.00		0.99		0.97
Frt		0.973				0.850		0.985				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1531	2907	0	1516	1595	1369	1446	1547	0	1728	1766	1516
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1516	2907	0	1480	1595	1302	1436	1547	0	1708	1766	1470
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13				109		3				112
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		328			1072			1033			1279	
Travel Time (s)		8.9			29.2			28.2			34.9	
Confl. Peds. (#/hr)	3		6	6		3	2		5	5		2
Confl. Bikes (#/hr)			5			10			3			
Peak Hour Factor	0.74	0.81	0.78	0.62	0.87	0.68	0.50	0.84	0.81	0.78	0.79	0.78
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	4%	0%	3%	3%	2%	8%	4%	7%	1%	4%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	289	320	69	195	451	384	84	324	36	188	362	414
Shared Lane Traffic (%)												
Lane Group Flow (vph)	289	389	0	195	451	384	84	360	0	188	362	414
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		20			20			22			14	
Two way Left Turn Lane												
Headway Factor	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		12	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6						4
Detector Phase	5	2		1	6	6	3	8		7	4	4
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	7.0		5.0	7.0	7.0	5.0	8.0		5.0	7.0	7.0
Minimum Split (s)	8.5	19.0		8.5	21.0	21.0	8.5	20.0		8.5	23.0	23.0
Total Split (s)	38.5	64.0		38.5	64.0	64.0	33.5	54.0		43.5	54.0	54.0
Total Split (%)	19.3%	32.0%		19.3%	32.0%	32.0%	16.8%	27.0%		21.8%	27.0%	27.0%
Maximum Green (s)	35.0	60.0		35.0	60.0	60.0	30.0	50.0		40.0	50.0	50.0
Yellow Time (s)	3.0	3.5		3.0	3.5	3.5	3.0	3.5		3.0	3.5	3.5
All-Red Time (s)	0.5	0.5		0.5	0.5	0.5	0.5	0.5		0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	3.5	4.0		3.5	4.0	4.0	3.5	4.0		3.5	4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	4.0	3.0		3.0	3.0	3.0	2.0	3.0		2.0	3.0	3.0
Minimum Gap (s)	4.0	3.0		3.0	3.0	3.0	2.0	3.0		2.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Recall Mode	None	Min		None	Min	Min	None	None		None	None	None
Walk Time (s)		8.0			8.0	8.0		8.0			8.0	8.0
Flash Dont Walk (s)		7.0			9.0	9.0		8.0			11.0	11.0
Pedestrian Calls (#/hr)		3			3	3		2			2	2
Act Effct Green (s)	35.5	63.9		27.4	55.9	55.9	14.8	45.4		23.8	54.4	54.4
Actuated g/C Ratio	0.20	0.36		0.16	0.32	0.32	0.08	0.26		0.14	0.31	0.31
v/c Ratio	0.94	0.37		0.83	0.89	0.79	0.69	0.90		0.81	0.66	0.78
Control Delay	106.4	43.6		100.5	78.3	52.2	109.3	88.3		100.1	60.2	51.5
Queue Delay	47.4	3.1		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	153.8	46.7		100.5	78.3	52.2	109.3	88.3		100.1	60.2	51.5
LOS	F	D		F	E	D	F	F		F	E	D
Approach Delay		92.3			72.8			92.3			64.3	
Approach LOS		F			E			F			E	
90th %ile Green (s)	35.0	60.0		35.0	60.0	60.0	22.2	50.0		33.6	61.4	61.4
90th %ile Term Code	Max	Hold		Max	Max	Max	Gap	Max		Gap	Hold	Hold
70th %ile Green (s)	35.0	62.1		32.9	60.0	60.0	17.8	50.0		28.0	60.2	60.2
70th %ile Term Code	Max	Hold		Gap	Max	Max	Gap	Max		Gap	Hold	Hold
50th %ile Green (s)	35.0	66.2		28.8	60.0	60.0	15.0	50.0		24.3	59.3	59.3
50th %ile Term Code	Max	Hold		Gap	Max	Max	Gap	Max		Gap	Hold	Hold
30th %ile Green (s)	35.0	67.2		24.7	56.9	56.9	12.3	44.3		20.6	52.6	52.6
30th %ile Term Code	Max	Hold		Gap	Gap	Gap	Gap	Gap		Gap	Hold	Hold
10th %ile Green (s)	35.0	60.2		17.6	42.8	42.8	8.1	33.6		14.5	40.0	40.0
10th %ile Term Code	Max	Hold		Gap	Gap	Gap	Gap	Gap		Gap	Hold	Hold
Stops (vph)	182	219		114	349	175	40	269		138	242	221
Fuel Used(gal)	6	4		4	11	6	1	9		5	8	8
CO Emissions (g/hr)	415	314		281	780	407	102	635		358	528	542
NOx Emissions (g/hr)	81	61		55	152	79	20	124		70	103	105
VOC Emissions (g/hr)	96	73		65	181	94	24	147		83	122	126
Dilemma Vehicles (#)	0	0		0	0	0	0	0		0	0	0
Queue Length 50th (ft)	355	177		232	517	314	101	414		226	376	341
Queue Length 95th (ft)	#434	226		219	#729	295	91	#564		272	443	396
Internal Link Dist (ft)		248			992			953			1199	
Turn Bay Length (ft)	140					100	180			540		70
Base Capacity (vph)	308	1064		305	552	521	250	447		398	613	584

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Starvation Cap Reductn	89	556		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	1.32	0.77		0.64	0.82	0.74	0.34	0.81		0.47	0.59	0.71

Intersection Summary			
Area Type:	Other		
Cycle Length: 200			
Actuated Cycle Length: 175.7			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.94			
Intersection Signal Delay: 77.2		Intersection LOS: E	
Intersection Capacity Utilization 75.8%		ICU Level of Service D	
Analysis Period (min) 15			
90th %ile Actuated Cycle: 193.6			
70th %ile Actuated Cycle: 188			
50th %ile Actuated Cycle: 184.3			
30th %ile Actuated Cycle: 171.8			
10th %ile Actuated Cycle: 140.9			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 6: Porter St & Soquel Dr



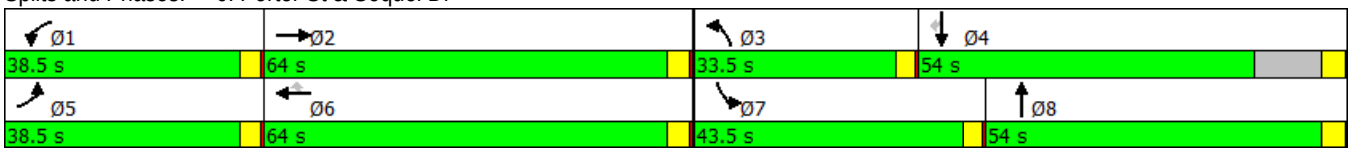
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	214	259	54	121	392	261	42	272	29	147	286	323
Future Volume (vph)	214	259	54	121	392	261	42	272	29	147	286	323
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	140		0	0		100	180		0	540		70
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (ft)	45			25			50			300		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	0.99		0.98		0.95	0.99	1.00		0.99		0.97
Frt		0.973				0.850		0.985				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1531	2907	0	1516	1595	1369	1446	1547	0	1728	1766	1516
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1516	2907	0	1480	1595	1302	1436	1547	0	1708	1766	1470
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13				109		3				112
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		328			1072			1033			1279	
Travel Time (s)		8.9			29.2			28.2			34.9	
Confl. Peds. (#/hr)	3		6	6		3	2		5	5		2
Confl. Bikes (#/hr)			5			10			3			
Peak Hour Factor	0.74	0.81	0.78	0.62	0.87	0.68	0.50	0.84	0.81	0.78	0.79	0.78
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	4%	0%	3%	3%	2%	8%	4%	7%	1%	4%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	289	320	69	195	451	384	84	324	36	188	362	414
Shared Lane Traffic (%)												
Lane Group Flow (vph)	289	389	0	195	451	384	84	360	0	188	362	414
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		20			20			22			14	
Two way Left Turn Lane												
Headway Factor	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		12	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6						4
Detector Phase	5	2		1	6	6	3	8		7	4	4
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	7.0		5.0	7.0	7.0	5.0	8.0		5.0	7.0	7.0
Minimum Split (s)	8.5	19.0		8.5	21.0	21.0	8.5	20.0		8.5	23.0	23.0
Total Split (s)	38.5	64.0		38.5	64.0	64.0	33.5	54.0		43.5	54.0	54.0
Total Split (%)	19.3%	32.0%		19.3%	32.0%	32.0%	16.8%	27.0%		21.8%	27.0%	27.0%
Maximum Green (s)	35.0	60.0		35.0	60.0	60.0	30.0	50.0		40.0	50.0	50.0
Yellow Time (s)	3.0	3.5		3.0	3.5	3.5	3.0	3.5		3.0	3.5	3.5
All-Red Time (s)	0.5	0.5		0.5	0.5	0.5	0.5	0.5		0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	3.5	4.0		3.5	4.0	4.0	3.5	4.0		3.5	4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	4.0	3.0		3.0	3.0	3.0	2.0	3.0		2.0	3.0	3.0
Minimum Gap (s)	4.0	3.0		3.0	3.0	3.0	2.0	3.0		2.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Recall Mode	None	Min		None	Min	Min	None	None		None	None	None
Walk Time (s)		8.0			8.0	8.0		8.0			8.0	8.0
Flash Dont Walk (s)		7.0			9.0	9.0		8.0			11.0	11.0
Pedestrian Calls (#/hr)		3			3	3		2			2	2
Act Effct Green (s)	35.5	63.9		27.4	55.9	55.9	14.8	45.4		23.8	54.4	54.4
Actuated g/C Ratio	0.20	0.36		0.16	0.32	0.32	0.08	0.26		0.14	0.31	0.31
v/c Ratio	0.94	0.37		0.83	0.89	0.79	0.69	0.90		0.81	0.66	0.78
Control Delay	106.4	43.6		100.5	78.3	52.2	109.3	88.3		100.1	60.2	51.5
Queue Delay	47.4	3.1		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	153.8	46.7		100.5	78.3	52.2	109.3	88.3		100.1	60.2	51.5
LOS	F	D		F	E	D	F	F		F	E	D
Approach Delay		92.3			72.8			92.3			64.3	
Approach LOS		F			E			F			E	
90th %ile Green (s)	35.0	60.0		35.0	60.0	60.0	22.2	50.0		33.6	61.4	61.4
90th %ile Term Code	Max	Hold		Max	Max	Max	Gap	Max		Gap	Hold	Hold
70th %ile Green (s)	35.0	62.1		32.9	60.0	60.0	17.8	50.0		28.0	60.2	60.2
70th %ile Term Code	Max	Hold		Gap	Max	Max	Gap	Max		Gap	Hold	Hold
50th %ile Green (s)	35.0	66.2		28.8	60.0	60.0	15.0	50.0		24.3	59.3	59.3
50th %ile Term Code	Max	Hold		Gap	Max	Max	Gap	Max		Gap	Hold	Hold
30th %ile Green (s)	35.0	67.2		24.7	56.9	56.9	12.3	44.3		20.6	52.6	52.6
30th %ile Term Code	Max	Hold		Gap	Gap	Gap	Gap	Gap		Gap	Hold	Hold
10th %ile Green (s)	35.0	60.2		17.6	42.8	42.8	8.1	33.6		14.5	40.0	40.0
10th %ile Term Code	Max	Hold		Gap	Gap	Gap	Gap	Gap		Gap	Hold	Hold
Stops (vph)	182	219		114	349	175	40	269		138	242	221
Fuel Used(gal)	6	4		4	11	6	1	9		5	8	8
CO Emissions (g/hr)	415	314		281	780	407	102	635		358	528	542
NOx Emissions (g/hr)	81	61		55	152	79	20	124		70	103	105
VOC Emissions (g/hr)	96	73		65	181	94	24	147		83	122	126
Dilemma Vehicles (#)	0	0		0	0	0	0	0		0	0	0
Queue Length 50th (ft)	355	177		232	517	314	101	414		226	376	341
Queue Length 95th (ft)	#434	226		219	#729	295	91	#564		272	443	396
Internal Link Dist (ft)		248			992			953			1199	
Turn Bay Length (ft)	140					100	180			540		70
Base Capacity (vph)	308	1064		305	552	521	250	447		398	613	584

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Starvation Cap Reductn	89	556		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	1.32	0.77		0.64	0.82	0.74	0.34	0.81		0.47	0.59	0.71

Intersection Summary			
Area Type:	Other		
Cycle Length: 200			
Actuated Cycle Length: 175.7			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.94			
Intersection Signal Delay: 77.2		Intersection LOS: E	
Intersection Capacity Utilization 75.8%		ICU Level of Service D	
Analysis Period (min) 15			
90th %ile Actuated Cycle: 193.6			
70th %ile Actuated Cycle: 188			
50th %ile Actuated Cycle: 184.3			
30th %ile Actuated Cycle: 171.8			
10th %ile Actuated Cycle: 140.9			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 6: Porter St & Soquel Dr



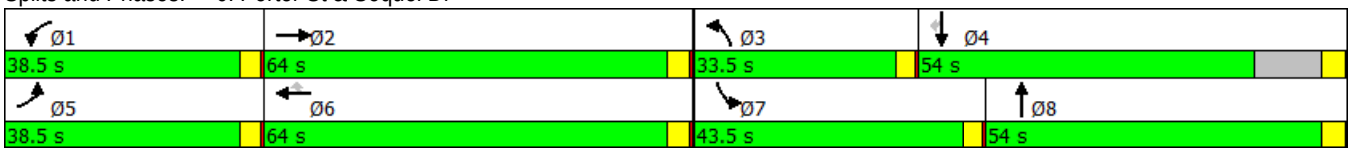
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Act Effct Green (s)	35.5	63.9	27.4	55.9	55.9	14.8	45.4	23.8	54.4	54.4
Actuated g/C Ratio	0.20	0.36	0.16	0.32	0.32	0.08	0.26	0.14	0.31	0.31
v/c Ratio	0.94	0.37	0.83	0.89	0.79	0.69	0.90	0.81	0.66	0.78
Control Delay	106.4	43.6	100.5	78.3	52.2	109.3	88.3	100.1	60.2	51.5
Queue Delay	47.4	3.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	153.8	46.7	100.5	78.3	52.2	109.3	88.3	100.1	60.2	51.5
LOS	F	D	F	E	D	F	F	F	E	D
Approach Delay		92.3		72.8			92.3		64.3	
Approach LOS		F		E			F		E	

Intersection Summary	
Cycle Length: 200	
Actuated Cycle Length: 175.7	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.94	
Intersection Signal Delay: 77.2	Intersection LOS: E
Intersection Capacity Utilization 75.8%	ICU Level of Service D
Analysis Period (min) 15	

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	214	259	121	392	261	42	272	147	286	323
Future Volume (vph)	214	259	121	392	261	42	272	147	286	323
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Prot	NA	Perm
Protected Phases	5	2	1	6		3	8	7	4	
Permitted Phases					6					4
Detector Phase	5	2	1	6	6	3	8	7	4	4
Switch Phase										
Minimum Initial (s)	5.0	7.0	5.0	7.0	7.0	5.0	8.0	5.0	7.0	7.0
Minimum Split (s)	8.5	19.0	8.5	21.0	21.0	8.5	20.0	8.5	23.0	23.0
Total Split (s)	38.5	64.0	38.5	64.0	64.0	33.5	54.0	43.5	54.0	54.0
Total Split (%)	19.3%	32.0%	19.3%	32.0%	32.0%	16.8%	27.0%	21.8%	27.0%	27.0%
Yellow Time (s)	3.0	3.5	3.0	3.5	3.5	3.0	3.5	3.0	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.5	4.0	3.5	4.0	4.0	3.5	4.0	3.5	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min	None	Min	Min	None	None	None	None	None
Act Effct Green (s)	35.5	63.9	27.4	55.9	55.9	14.8	45.4	23.8	54.4	54.4
Actuated g/C Ratio	0.20	0.36	0.16	0.32	0.32	0.08	0.26	0.14	0.31	0.31
v/c Ratio	0.94	0.37	0.83	0.89	0.79	0.69	0.90	0.81	0.66	0.78
Control Delay	106.4	43.6	100.5	78.3	52.2	109.3	88.3	100.1	60.2	51.5
Queue Delay	47.4	3.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	153.8	46.7	100.5	78.3	52.2	109.3	88.3	100.1	60.2	51.5
LOS	F	D	F	E	D	F	F	F	E	D
Approach Delay		92.3		72.8			92.3		64.3	
Approach LOS		F		E			F		E	

Intersection Summary	
Cycle Length: 200	
Actuated Cycle Length: 175.7	
Natural Cycle: 80	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.94	
Intersection Signal Delay: 77.2	Intersection LOS: E
Intersection Capacity Utilization 75.8%	ICU Level of Service D
Analysis Period (min) 15	

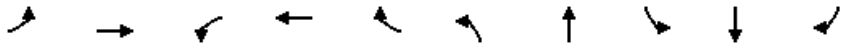
Splits and Phases: 6: Porter St & Soquel Dr



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Protected Phases	5	2	1	6		3	8	7	4	
Permitted Phases					6					4
Minimum Initial (s)	5.0	7.0	5.0	7.0	7.0	5.0	8.0	5.0	7.0	7.0
Minimum Split (s)	8.5	19.0	8.5	21.0	21.0	8.5	20.0	8.5	23.0	23.0
Total Split (s)	38.5	64.0	38.5	64.0	64.0	33.5	54.0	43.5	54.0	54.0
Total Split (%)	19.3%	32.0%	19.3%	32.0%	32.0%	16.8%	27.0%	21.8%	27.0%	27.0%
Maximum Green (s)	35.0	60.0	35.0	60.0	60.0	30.0	50.0	40.0	50.0	50.0
Yellow Time (s)	3.0	3.5	3.0	3.5	3.5	3.0	3.5	3.0	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	3.0	3.0	3.0	3.0	2.0	3.0	2.0	3.0	3.0
Minimum Gap (s)	4.0	3.0	3.0	3.0	3.0	2.0	3.0	2.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	Min	None	Min	Min	None	None	None	None	None
Walk Time (s)		8.0		8.0	8.0		8.0		8.0	8.0
Flash Dont Walk (s)		7.0		9.0	9.0		8.0		11.0	11.0
Pedestrian Calls (#/hr)		3		3	3		2		2	2
Act Effct Green (s)	35.5	63.9	27.4	55.9	55.9	14.8	45.4	23.8	54.4	54.4
Actuated g/C Ratio	0.20	0.36	0.16	0.32	0.32	0.08	0.26	0.14	0.31	0.31
v/c Ratio	0.94	0.37	0.83	0.89	0.79	0.69	0.90	0.81	0.66	0.78
Control Delay	106.4	43.6	100.5	78.3	52.2	109.3	88.3	100.1	60.2	51.5
Queue Delay	47.4	3.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	153.8	46.7	100.5	78.3	52.2	109.3	88.3	100.1	60.2	51.5
LOS	F	D	F	E	D	F	F	F	E	D
Approach Delay		92.3		72.8			92.3		64.3	
Approach LOS		F		E			F		E	
90th %ile Green (s)	35.0	60.0	35.0	60.0	60.0	22.2	50.0	33.6	61.4	61.4
90th %ile Term Code	Max	Hold	Max	Max	Max	Gap	Max	Gap	Hold	Hold
70th %ile Green (s)	35.0	62.1	32.9	60.0	60.0	17.8	50.0	28.0	60.2	60.2
70th %ile Term Code	Max	Hold	Gap	Max	Max	Gap	Max	Gap	Hold	Hold
50th %ile Green (s)	35.0	66.2	28.8	60.0	60.0	15.0	50.0	24.3	59.3	59.3
50th %ile Term Code	Max	Hold	Gap	Max	Max	Gap	Max	Gap	Hold	Hold
30th %ile Green (s)	35.0	67.2	24.7	56.9	56.9	12.3	44.3	20.6	52.6	52.6
30th %ile Term Code	Max	Hold	Gap	Gap	Gap	Gap	Gap	Gap	Hold	Hold
10th %ile Green (s)	35.0	60.2	17.6	42.8	42.8	8.1	33.6	14.5	40.0	40.0
10th %ile Term Code	Max	Hold	Gap	Gap	Gap	Gap	Gap	Gap	Hold	Hold

Intersection Summary	
Cycle Length: 200	
Actuated Cycle Length: 175.7	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.94	
Intersection Signal Delay: 77.2	Intersection LOS: E
Intersection Capacity Utilization 75.8%	ICU Level of Service D
Analysis Period (min) 15	
90th %ile Actuated Cycle: 193.6	
70th %ile Actuated Cycle: 188	
50th %ile Actuated Cycle: 184.3	

30th %ile Actuated Cycle: 171.8
10th %ile Actuated Cycle: 140.9



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	289	389	195	451	384	84	360	188	362	414
v/c Ratio	0.94	0.37	0.83	0.89	0.79	0.69	0.90	0.81	0.66	0.78
Control Delay	106.4	43.6	100.5	78.3	52.2	109.3	88.3	100.1	60.2	51.5
Queue Delay	47.4	3.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	153.8	46.7	100.5	78.3	52.2	109.3	88.3	100.1	60.2	51.5
Queue Length 50th (ft)	355	177	232	517	314	101	414	226	376	341
Queue Length 95th (ft)	#434	226	219	#729	295	91	#564	272	443	396
Internal Link Dist (ft)		248		992			953		1199	
Turn Bay Length (ft)	140				100	180		540		70
Base Capacity (vph)	308	1064	305	552	521	250	447	398	613	584
Starvation Cap Reductn	89	556	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.32	0.77	0.64	0.82	0.74	0.34	0.81	0.47	0.59	0.71

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		20			20			22			14	
Two way Left Turn Lane												
Headway Factor	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		12	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	214	259	54	121	392	261	42	272	29	147	286	323
Pedestrians	3		6	6		3	2		5	5		2
Ped Button		Yes			Yes			Yes			Yes	
Pedestrian Timing (s)		15.0			17.0			16.0			19.0	
Free Right			No			No			No			No
Ideal Flow	1700	1700	1700	1700	1700	1700	1700	1700	1700	1900	1900	1900
Lost Time (s)	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0
Minimum Green (s)	5.0	7.0	4.0	5.0	7.0	7.0	5.0	8.0	4.0	5.0	7.0	7.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	214	313	0	121	392	261	42	301	0	147	286	323
Lane Utilization Factor	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.95	0.97	0.85	0.95	1.00	0.85	0.95	0.99	0.85	0.95	1.00	0.85
Saturated Flow (vph)	1615	3153	0	1615	1700	1445	1615	1675	0	1805	1900	1615
Ped Intf Time (s)	0.0	0.1	0.8	0.0	0.0	0.4	0.0	0.1	0.6	0.0	0.0	0.3
Pedestrian Frequency (%)		0.18			0.10			0.15			0.06	
Protected Option Allowed		Yes			Yes			Yes			Yes	
Reference Time (s)	15.9	12.0	0.0	9.0	27.7	22.1	3.1	21.6	0.0	9.8	18.1	24.3
Adj Reference Time (s)	19.9	16.6	0.0	13.0	31.7	26.1	9.0	25.6	0.0	13.8	22.1	28.3
Permitted Option												
Adj Saturation A (vph)	108	1577		108	1700		108	1675		120	1900	
Reference Time A (s)	238.5	12.0		134.9	27.7		46.8	21.6		146.6	18.1	
Adj Saturation B (vph	NA	NA		NA	NA		NA	NA		NA	NA	
Reference Time B (s)	NA	NA		NA	NA		NA	NA		NA	NA	
Reference Time (s)		238.5			134.9			46.8			146.6	
Adj Reference Time (s)		242.5			138.9			50.8			150.6	
Split Option												
Ref Time Combined (s)	15.9	12.0		9.0	27.7		3.1	21.6		9.8	18.1	
Ref Time Seperate (s)	15.9	10.0		9.0	27.7		3.1	19.5		9.8	18.1	
Reference Time (s)	15.9	15.9		27.7	27.7		21.6	21.6		18.1	18.1	
Adj Reference Time (s)	19.9	19.9		31.7	31.7		25.6	25.6		22.1	22.1	

Summary	EB WB	NB SB	Combined
Protected Option (s)	51.6	39.4	
Permitted Option (s)	242.5	150.6	
Split Option (s)	51.6	47.7	
Minimum (s)	51.6	39.4	91.0

Right Turns	WBR	SBR
Adj Reference Time (s)	26.1	28.3
Cross Thru Ref Time (s)	25.6	31.7
Oncoming Left Ref Time (s)	19.9	9.0
Combined (s)	71.6	68.9

Intersection Summary			
Intersection Capacity Utilization	75.8%	ICU Level of Service	D

Reference Times and Phasing Options do not represent an optimized timing plan.

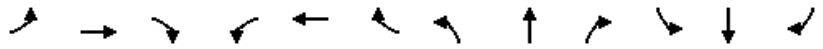
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	1	4	192	3	15	5	670	81	18	490	1
Future Volume (veh/h)	1	1	4	192	3	15	5	670	81	18	490	1
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1169	1900	1759	1774	1900	1583	1827	1696	1712	1777	1900
Adj Flow Rate, veh/h	4	4	8	268	0	0	12	788	119	24	570	4
Adj No. of Lanes	0	1	0	2	1	0	1	2	1	1	2	0
Peak Hour Factor	0.25	0.25	0.50	0.81	0.25	0.63	0.42	0.85	0.68	0.75	0.86	0.25
Percent Heavy Veh, %	100	100	100	8	0	0	20	4	12	11	7	7
Cap, veh/h	6	6	13	538	285	0	19	1460	586	37	1481	10
Arrive On Green	0.02	0.02	0.02	0.16	0.00	0.00	0.01	0.42	0.42	0.02	0.43	0.43
Sat Flow, veh/h	262	262	525	3351	1774	0	1508	3471	1393	1630	3435	24
Grp Volume(v), veh/h	16	0	0	268	0	0	12	788	119	24	280	294
Grp Sat Flow(s),veh/h/ln	1050	0	0	1675	1774	0	1508	1736	1393	1630	1688	1771
Q Serve(g_s), s	0.7	0.0	0.0	3.5	0.0	0.0	0.4	8.2	2.6	0.7	5.5	5.5
Cycle Q Clear(g_c), s	0.7	0.0	0.0	3.5	0.0	0.0	0.4	8.2	2.6	0.7	5.5	5.5
Prop In Lane	0.25		0.50	1.00		0.00	1.00		1.00	1.00		0.01
Lane Grp Cap(c), veh/h	25	0	0	538	285	0	19	1460	586	37	727	763
V/C Ratio(X)	0.64	0.00	0.00	0.50	0.00	0.00	0.65	0.54	0.20	0.65	0.38	0.39
Avail Cap(c_a), veh/h	434	0	0	1732	917	0	624	2153	864	674	1047	1099
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.4	0.0	0.0	18.5	0.0	0.0	23.8	10.5	8.9	23.4	9.4	9.4
Incr Delay (d2), s/veh	23.5	0.0	0.0	1.0	0.0	0.0	31.9	0.3	0.2	17.2	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.0	1.7	0.0	0.0	0.3	4.0	1.0	0.5	2.6	2.7
LnGrp Delay(d),s/veh	46.9	0.0	0.0	19.5	0.0	0.0	55.7	10.8	9.0	40.7	9.7	9.7
LnGrp LOS	D			B			E	B	A	D	A	A
Approach Vol, veh/h		16			268			919			598	
Approach Delay, s/veh		46.9			19.5			11.2			11.0	
Approach LOS		D			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.1	25.3		12.3	4.6	25.8		5.7
Change Period (Y+Rc), s	4.0	5.0		4.5	4.0	5.0		4.5
Max Green Setting (Gmax), s	20.0	30.0		25.0	20.0	30.0		20.0
Max Q Clear Time (g_c+I1), s	2.7	10.2		5.5	2.4	7.5		2.7
Green Ext Time (p_c), s	0.0	10.1		1.4	0.0	10.9		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	12.7
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	617	5	428	0	543	374	0	576	166
Future Volume (veh/h)	0	0	0	617	5	428	0	543	374	0	576	166
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1845	1846	1863	0	1834	1900	0	1804	1900
Adj Flow Rate, veh/h				749	0	470	0	603	0	0	647	195
Adj No. of Lanes				2	0	1	0	2	0	0	2	0
Peak Hour Factor				0.83	0.63	0.91	0.92	0.90	0.92	0.92	0.89	0.85
Percent Heavy Veh, %				3	0	2	0	4	4	0	6	6
Cap, veh/h				1115	0	502	0	1742	0	0	1298	391
Arrive On Green				0.32	0.00	0.32	0.00	1.00	0.00	0.00	0.50	0.50
Sat Flow, veh/h				3514	0	1583	0	3668	0	0	2685	781
Grp Volume(v), veh/h				749	0	470	0	603	0	0	427	415
Grp Sat Flow(s),veh/h/ln				1757	0	1583	0	1742	0	0	1714	1663
Q Serve(g_s), s				9.6	0.0	15.0	0.0	0.0	0.0	0.0	8.6	8.6
Cycle Q Clear(g_c), s				9.6	0.0	15.0	0.0	0.0	0.0	0.0	8.6	8.6
Prop In Lane				1.00		1.00	0.00		0.00	0.00		0.47
Lane Grp Cap(c), veh/h				1115	0	502	0	1742	0	0	857	831
V/C Ratio(X)				0.67	0.00	0.94	0.00	0.35	0.00	0.00	0.50	0.50
Avail Cap(c_a), veh/h				1115	0	502	0	1742	0	0	857	831
HCM Platoon Ratio				1.00	1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.00	0.96	0.00	0.00	0.94	0.94
Uniform Delay (d), s/veh				15.4	0.0	17.2	0.0	0.0	0.0	0.0	8.7	8.7
Incr Delay (d2), s/veh				1.7	0.0	25.2	0.0	0.5	0.0	0.0	1.9	2.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				4.8	0.0	10.0	0.0	0.1	0.0	0.0	4.5	4.4
LnGrp Delay(d),s/veh				17.1	0.0	42.4	0.0	0.5	0.0	0.0	10.6	10.7
LnGrp LOS				B		D		A			B	B
Approach Vol, veh/h					1219			603			842	
Approach Delay, s/veh					26.8			0.5			10.6	
Approach LOS					C			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		31.3				31.3		20.7
Change Period (Y+Rc), s		5.3				5.3		4.2
Max Green Setting (Gmax), s		26.0				26.0		16.5
Max Q Clear Time (g_c+I1), s		2.0				10.6		17.0
Green Ext Time (p_c), s		12.8				9.6		0.0

Intersection Summary		
HCM 2010 Ctrl Delay		15.8
HCM 2010 LOS		B

Notes

User approved volume balancing among the lanes for turning movement.

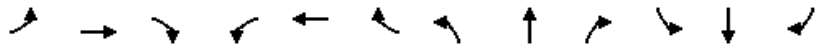
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	218	0	516	0	0	0	0	699	562	0	953	240
Future Volume (vph)	218	0	516	0	0	0	0	699	562	0	953	240
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.6	4.6					4.9	4.9		4.9	4.0
Lane Util. Factor		1.00	0.88					0.95	1.00		0.91	1.00
Frpb, ped/bikes		1.00	1.00					1.00	1.00		1.00	0.98
Flpb, ped/bikes		1.00	1.00					1.00	1.00		1.00	1.00
Frt		1.00	0.85					1.00	0.85		1.00	0.85
Flt Protected		0.95	1.00					1.00	1.00		1.00	1.00
Satd. Flow (prot)		1694	2668					3388	1516		4868	1412
Flt Permitted		0.95	1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)		1694	2668					3388	1516		4868	1412
Peak-hour factor, PHF	0.85	0.92	0.85	0.92	0.92	0.92	0.92	0.91	0.88	0.92	0.86	0.83
Adj. Flow (vph)	256	0	607	0	0	0	0	768	639	0	1108	289
RTOR Reduction (vph)	0	0	236	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	256	371	0	0	0	0	768	639	0	1108	289
Confl. Peds. (#/hr)	5					5	6					6
Confl. Bikes (#/hr)									6			1
Heavy Vehicles (%)	3%	0%	3%	0%	0%	0%	0%	3%	3%	0%	3%	8%
Turn Type	Split	NA	Perm					NA	Prot		NA	Free
Protected Phases	2	2						1 3 4	1 3 4		1 3 4	
Permitted Phases			2									Free
Actuated Green, G (s)		15.4	15.4					79.8	79.8		79.8	104.0
Effective Green, g (s)		15.4	15.4					75.6	75.6		75.6	104.0
Actuated g/C Ratio		0.15	0.15					0.73	0.73		0.73	1.00
Clearance Time (s)		4.6	4.6									
Vehicle Extension (s)		3.0	3.0									
Lane Grp Cap (vph)		250	395					2462	1102		3538	1412
v/s Ratio Prot		c0.15						0.23	c0.42		0.23	
v/s Ratio Perm			0.14									0.20
v/c Ratio		1.02	0.94					0.31	0.58		0.31	0.20
Uniform Delay, d1		44.3	43.8					5.0	6.7		5.0	0.0
Progression Factor		1.00	1.00					0.02	0.69		1.70	1.00
Incremental Delay, d2		63.3	29.9					0.0	0.4		0.0	0.3
Delay (s)		107.6	73.7					0.1	5.0		8.6	0.3
Level of Service		F	E					A	A		A	A
Approach Delay (s)		83.8			0.0			2.4			6.9	
Approach LOS		F			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	23.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	104.0	Sum of lost time (s)	17.9
Intersection Capacity Utilization	54.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	51	1143	41	10	520	75	83	1	15	56	3	47
Future Volume (veh/h)	51	1143	41	10	520	75	83	1	15	56	3	47
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.97	0.99		0.98	0.99		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1900	1900	1868	1900	1900	1842	1900	1900	1882	1900
Adj Flow Rate, veh/h	64	1229	64	24	565	88	108	4	24	76	8	76
Adj No. of Lanes	0	2	0	1	2	0	0	1	0	0	1	0
Peak Hour Factor	0.80	0.93	0.64	0.42	0.92	0.85	0.77	0.25	0.63	0.74	0.38	0.62
Percent Heavy Veh, %	1	1	1	0	2	2	0	0	0	0	0	0
Cap, veh/h	135	1996	103	306	1934	300	337	22	51	213	46	143
Arrive On Green	0.63	0.63	0.63	0.63	0.63	0.63	0.19	0.19	0.19	0.19	0.19	0.19
Sat Flow, veh/h	96	3162	162	433	3065	476	1137	119	269	595	242	758
Grp Volume(v), veh/h	697	0	660	24	326	327	136	0	0	160	0	0
Grp Sat Flow(s),veh/h/ln	1746	0	1675	433	1774	1766	1525	0	0	1595	0	0
Q Serve(g_s), s	0.0	0.0	12.6	1.9	4.4	4.4	0.0	0.0	0.0	0.8	0.0	0.0
Cycle Q Clear(g_c), s	11.4	0.0	12.6	14.5	4.4	4.4	3.6	0.0	0.0	4.4	0.0	0.0
Prop In Lane	0.09		0.10	1.00		0.27	0.79		0.18	0.47		0.47
Lane Grp Cap(c), veh/h	1177	0	1057	306	1120	1115	410	0	0	402	0	0
V/C Ratio(X)	0.59	0.00	0.62	0.08	0.29	0.29	0.33	0.00	0.00	0.40	0.00	0.00
Avail Cap(c_a), veh/h	1232	0	1112	321	1179	1173	792	0	0	829	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	5.7	0.0	5.9	10.3	4.4	4.4	18.8	0.0	0.0	19.1	0.0	0.0
Incr Delay (d2), s/veh	1.2	0.0	1.6	0.2	0.3	0.3	1.0	0.0	0.0	1.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.2	0.0	6.1	0.2	2.2	2.2	1.9	0.0	0.0	2.2	0.0	0.0
LnGrp Delay(d),s/veh	6.9	0.0	7.5	10.6	4.7	4.7	19.8	0.0	0.0	20.5	0.0	0.0
LnGrp LOS	A		A	B	A	A	B			C		
Approach Vol, veh/h		1357			677			136			160	
Approach Delay, s/veh		7.2			4.9			19.8			20.5	
Approach LOS		A			A			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		38.3		14.4		38.3		14.4
Change Period (Y+Rc), s		5.0		4.5		5.0		4.5
Max Green Setting (Gmax), s		35.0		25.0		35.0		25.0
Max Q Clear Time (g_c+I1), s		14.6		5.6		16.5		6.4
Green Ext Time (p_c), s		18.3		3.0		16.7		3.0

Intersection Summary	
HCM 2010 Ctrl Delay	8.2
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	740	504	81	234	5	366	18	153	3	17	5
Future Volume (veh/h)	4	740	504	81	234	5	366	18	153	3	17	5
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.92
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1900	1810	1869	1900	1845	1853	1845	1900	1900	1900
Adj Flow Rate, veh/h	8	860	554	116	339	12	412	0	191	8	40	16
Adj No. of Lanes	1	2	0	1	2	0	2	0	1	0	1	0
Peak Hour Factor	0.50	0.86	0.91	0.70	0.69	0.42	0.94	0.56	0.80	0.38	0.43	0.31
Percent Heavy Veh, %	0	1	1	5	1	1	3	0	3	0	0	0
Cap, veh/h	15	895	562	148	1773	63	656	0	284	11	54	22
Arrive On Green	0.01	0.43	0.43	0.09	0.51	0.51	0.19	0.00	0.19	0.05	0.05	0.05
Sat Flow, veh/h	1810	2085	1308	1723	3495	123	3514	0	1520	220	1102	441
Grp Volume(v), veh/h	8	734	680	116	172	179	412	0	191	64	0	0
Grp Sat Flow(s),veh/h/ln	1810	1787	1606	1723	1776	1842	1757	0	1520	1763	0	0
Q Serve(g_s), s	0.3	29.6	31.2	4.9	3.9	4.0	8.0	0.0	8.7	2.7	0.0	0.0
Cycle Q Clear(g_c), s	0.3	29.6	31.2	4.9	3.9	4.0	8.0	0.0	8.7	2.7	0.0	0.0
Prop In Lane	1.00		0.81	1.00		0.07	1.00		1.00	0.12		0.25
Lane Grp Cap(c), veh/h	15	768	690	148	901	935	656	0	284	87	0	0
V/C Ratio(X)	0.54	0.96	0.99	0.78	0.19	0.19	0.63	0.00	0.67	0.74	0.00	0.00
Avail Cap(c_a), veh/h	777	768	690	740	901	935	1886	0	816	473	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	36.8	20.6	21.0	33.4	10.0	10.0	27.9	0.0	28.2	34.9	0.0	0.0
Incr Delay (d2), s/veh	10.9	23.1	30.9	3.4	0.4	0.4	1.0	0.0	2.8	13.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	19.4	19.7	2.5	2.0	2.1	4.0	0.0	3.9	1.6	0.0	0.0
LnGrp Delay(d),s/veh	47.7	43.7	52.0	36.7	10.4	10.4	28.9	0.0	30.9	48.5	0.0	0.0
LnGrp LOS	D	D	D	D	B	B	C		C	D		
Approach Vol, veh/h		1422			467			603			64	
Approach Delay, s/veh		47.7			16.9			29.5			48.5	
Approach LOS		D			B			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.9	37.0		8.2	5.1	42.8		18.4
Change Period (Y+Rc), s	4.5	5.0		4.5	4.5	5.0		4.5
Max Green Setting (Gmax), s	32.6	32.0		20.0	32.0	31.0		40.0
Max Q Clear Time (g_c+I1), s	6.9	33.2		4.7	2.3	6.0		10.7
Green Ext Time (p_c), s	0.1	0.0		0.3	0.0	22.5		2.3

Intersection Summary	
HCM 2010 Ctrl Delay	37.8
HCM 2010 LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Intersection Delay, s/veh	74.8
Intersection LOS	F

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations																
Traffic Vol, veh/h	0	1	826	118	0	209	385	0	0	72	0	330	0	0	0	3
Future Vol, veh/h	0	1	826	118	0	209	385	0	0	72	0	330	0	0	0	3
Peak Hour Factor	0.92	0.75	0.95	0.80	0.92	0.82	0.86	0.92	0.92	0.67	0.92	0.78	0.92	0.92	0.92	0.38
Heavy Vehicles, %	2	0	1	0	2	1	1	0	2	3	0	1	2	0	0	0
Mvmt Flow	0	1	869	148	0	255	448	0	0	107	0	423	0	0	0	8
Number of Lanes	0	0	2	0	0	0	2	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	2
HCM Control Delay	108.7	40.4	56.2	12.2
HCM LOS	F	E	F	B

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	18%	0%	0%	62%	0%	0%
Vol Thru, %	0%	100%	78%	38%	100%	0%
Vol Right, %	82%	0%	22%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	402	414	531	337	257	3
LT Vol	72	1	0	209	0	0
Through Vol	0	413	413	128	257	0
RT Vol	330	0	118	0	0	3
Lane Flow Rate	531	436	582	404	298	8
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0.964	0.943	1.236	0.909	0.645	0.019
Departure Headway (Hd)	6.721	7.787	7.642	8.338	8.016	9.031
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	541	467	477	436	454	399
Service Time	4.721	5.508	5.363	6.038	5.716	7.031
HCM Lane V/C Ratio	0.982	0.934	1.22	0.927	0.656	0.02
HCM Control Delay	56.2	56.7	147.6	52.4	24.2	12.2
HCM Lane LOS	F	F	F	F	C	B
HCM 95th-tile Q	12.8	11.2	23.2	9.9	4.5	0.1

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	826	118	209	385	0	72	0	330	0	0	3
Future Volume (vph)	1	826	118	209	385	0	72	0	330	0	0	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.978						0.892			0.865	
Flt Protected					0.982			0.990				
Satd. Flow (prot)	0	3384	0	0	3393	0	0	1599	0	0	1589	0
Flt Permitted					0.982			0.990				
Satd. Flow (perm)	0	3384	0	0	3393	0	0	1599	0	0	1589	0
Link Speed (mph)		35			25			25			25	
Link Distance (ft)		1301			475			1062			833	
Travel Time (s)		25.3			13.0			29.0			22.7	
Confl. Peds. (#/hr)	12					12			7	7		
Confl. Bikes (#/hr)			13			5						
Peak Hour Factor	0.75	0.95	0.80	0.82	0.86	0.92	0.67	0.92	0.78	0.92	0.92	0.38
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	1%	0%	1%	1%	0%	3%	0%	1%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	1	869	148	255	448	0	107	0	423	0	0	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1018	0	0	703	0	0	530	0	0	8	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		2			2			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			35			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 85.0%		ICU Level of Service E	
Analysis Period (min) 15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.978						0.892			0.865	
Flt Protected					0.982			0.990				
Satd. Flow (prot)	0	3384	0	0	3393	0	0	1599	0	0	1589	0
Flt Permitted					0.982			0.990				
Satd. Flow (perm)	0	3384	0	0	3393	0	0	1599	0	0	1589	0
Link Speed (mph)		35			25			25			25	
Link Distance (ft)		1301			475			1062			833	
Travel Time (s)		25.3			13.0			29.0			22.7	

Intersection Summary

Area Type: Other

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	1	826	118	209	385	0	72	0	330	0	0	3
Future Volume (vph)	1	826	118	209	385	0	72	0	330	0	0	3
Confl. Peds. (#/hr)	12					12			7	7		
Confl. Bikes (#/hr)			13			5						
Peak Hour Factor	0.75	0.95	0.80	0.82	0.86	0.92	0.67	0.92	0.78	0.92	0.92	0.38
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	1%	0%	1%	1%	0%	3%	0%	1%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	1	869	148	255	448	0	107	0	423	0	0	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1018	0	0	703	0	0	530	0	0	8	0

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		2			2			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			35			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9

Intersection Summary

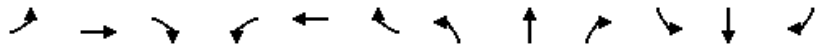
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	826	118	209	385	0	72	0	330	0	0	3
Pedestrians	12					12			7	7		
Ped Button					Yes			Yes				
Pedestrian Timing (s)					16.0			16.0				
Free Right			No			No			No			No
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	0	945	0	0	594	0	0	402	0	0	3	0
Lane Utilization Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.95	0.98	0.85	0.95	0.98	0.85	0.95	0.87	0.85	0.95	0.85	0.85
Saturated Flow (vph)	0	3550	0	0	3554	0	0	1651	0	0	1615	0
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.7	0.9	0.0	0.0	0.0
Pedestrian Frequency (%)		0.00			0.33			0.21			0.00	
Protected Option Allowed		No			No			No			No	
Reference Time (s)			0.0			0.0			0.0			0.0
Adj Reference Time (s)			0.0			0.0			0.0			0.0
Permitted Option												
Adj Saturation A (vph)	0	1723		0	118		0	445		0	1615	
Reference Time A (s)	0.0	32.8		0.0	211.7		0.0	109.1		0.0	0.2	
Adj Saturation B (vph	NA	NA		NA	NA		0	0		NA	NA	
Reference Time B (s)	NA	NA		NA	NA		12.8	37.9		NA	NA	
Reference Time (s)		32.8			211.7			37.9			0.2	
Adj Reference Time (s)		36.8			215.7			41.9			8.0	
Split Option												
Ref Time Combined (s)	0.0	31.9		0.0	20.1		0.0	29.9		0.0	0.2	
Ref Time Seperate (s)	0.1	27.9		13.9	12.8		4.8	0.7		0.0	0.0	
Reference Time (s)	31.9	31.9		20.1	20.1		29.9	29.9		0.2	0.2	
Adj Reference Time (s)	35.9	35.9		24.1	24.1		33.9	33.9		8.0	8.0	

Summary	EB WB	NB SB	Combined
Protected Option (s)	NA	NA	
Permitted Option (s)	215.7	41.9	
Split Option (s)	60.0	41.9	
Minimum (s)	60.0	41.9	101.9

Right Turns
Adj Reference Time (s)
Cross Thru Ref Time (s)
Oncoming Left Ref Time (s)
Combined (s)

Intersection Summary			
Intersection Capacity Utilization	85.0%	ICU Level of Service	E

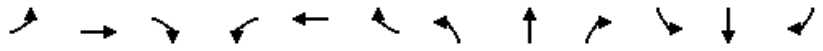
Reference Times and Phasing Options do not represent an optimized timing plan.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	1107	42	15	585	1	5	0	14	8	2	4
Future Volume (veh/h)	7	1107	42	15	585	1	5	0	14	8	2	4
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.96	0.96		0.98	0.98		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1491	1668	1700	1700	1651	1700	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	12	1272	72	24	657	4	15	0	24	16	4	11
Adj No. of Lanes	1	2	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.58	0.87	0.58	0.63	0.89	0.25	0.33	0.92	0.58	0.50	0.50	0.38
Percent Heavy Veh, %	14	2	2	0	3	3	0	0	0	0	0	0
Cap, veh/h	434	1863	105	340	1003	6	199	20	111	231	51	65
Arrive On Green	0.61	0.61	0.61	0.61	0.61	0.61	0.12	0.00	0.12	0.12	0.12	0.12
Sat Flow, veh/h	616	3042	172	369	1639	10	422	172	950	573	434	554
Grp Volume(v), veh/h	12	662	682	24	0	661	39	0	0	31	0	0
Grp Sat Flow(s),veh/h/ln	616	1585	1629	369	0	1649	1544	0	0	1562	0	0
Q Serve(g_s), s	0.4	9.2	9.3	1.5	0.0	8.6	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	9.0	9.2	9.3	10.8	0.0	8.6	0.7	0.0	0.0	0.5	0.0	0.0
Prop In Lane	1.00		0.11	1.00		0.01	0.38		0.62	0.52		0.35
Lane Grp Cap(c), veh/h	434	970	998	340	0	1009	330	0	0	347	0	0
V/C Ratio(X)	0.03	0.68	0.68	0.07	0.00	0.65	0.12	0.00	0.00	0.09	0.00	0.00
Avail Cap(c_a), veh/h	1170	2865	2946	781	0	2980	1280	0	0	1297	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.1	4.3	4.3	7.9	0.0	4.2	13.3	0.0	0.0	13.2	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.3	0.3	0.0	0.0	0.3	0.1	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	3.9	4.1	0.2	0.0	3.7	0.3	0.0	0.0	0.3	0.0	0.0
LnGrp Delay(d),s/veh	7.1	4.6	4.6	7.9	0.0	4.4	13.3	0.0	0.0	13.2	0.0	0.0
LnGrp LOS	A	A	A	A		A	B			B		
Approach Vol, veh/h		1356			685			39			31	
Approach Delay, s/veh		4.6			4.6			13.3			13.2	
Approach LOS		A			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		24.8		8.4		24.8		8.4
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		60.0		25.0		60.0		25.0
Max Q Clear Time (g_c+I1), s		11.3		2.5		12.8		2.7
Green Ext Time (p_c), s		7.5		0.1		7.5		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	4.9
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	214	815	100	69	297	124	44	170	141	302	436	260
Future Volume (veh/h)	214	815	100	69	297	124	44	170	141	302	436	260
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		1.00	1.00		0.99	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1683	1667	1700	1683	1650	1667	1845	1881	1900	1683	1650	1683
Adj Flow Rate, veh/h	240	970	135	96	349	0	52	221	183	392	525	329
Adj No. of Lanes	1	2	0	1	1	1	1	1	0	1	1	1
Peak Hour Factor	0.89	0.84	0.74	0.72	0.85	0.76	0.85	0.77	0.77	0.77	0.83	0.79
Percent Heavy Veh, %	1	2	2	1	3	2	3	1	1	1	3	1
Cap, veh/h	261	987	137	115	437	375	67	236	196	377	736	619
Arrive On Green	0.16	0.36	0.36	0.07	0.26	0.00	0.04	0.25	0.25	0.24	0.45	0.45
Sat Flow, veh/h	1603	2769	385	1603	1650	1417	1757	949	786	1603	1650	1387
Grp Volume(v), veh/h	240	554	551	96	349	0	52	0	404	392	525	329
Grp Sat Flow(s),veh/h/ln	1603	1583	1571	1603	1650	1417	1757	0	1736	1603	1650	1387
Q Serve(g_s), s	25.1	59.0	59.1	10.1	33.5	0.0	5.0	0.0	38.8	40.0	44.0	29.3
Cycle Q Clear(g_c), s	25.1	59.0	59.1	10.1	33.5	0.0	5.0	0.0	38.8	40.0	44.0	29.3
Prop In Lane	1.00		0.25	1.00		1.00	1.00		0.45	1.00		1.00
Lane Grp Cap(c), veh/h	261	564	560	115	437	375	67	0	432	377	736	619
V/C Ratio(X)	0.92	0.98	0.98	0.84	0.80	0.00	0.78	0.00	0.93	1.04	0.71	0.53
Avail Cap(c_a), veh/h	330	564	560	330	582	500	310	0	510	377	736	619
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	70.1	54.2	54.3	78.0	58.3	0.0	81.2	0.0	62.5	65.1	38.3	34.2
Incr Delay (d2), s/veh	27.5	33.4	33.8	14.6	5.7	0.0	7.3	0.0	22.7	57.2	3.3	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.1	31.1	30.9	4.9	16.0	0.0	2.6	0.0	21.4	23.7	20.6	11.3
LnGrp Delay(d),s/veh	97.6	87.6	88.0	92.7	64.1	0.0	88.4	0.0	85.2	122.3	41.5	35.1
LnGrp LOS	F	F	F	F	E		F		F	F	D	D
Approach Vol, veh/h		1345			445			456			1246	
Approach Delay, s/veh		89.6			70.2			85.6			65.2	
Approach LOS		F			E			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.7	64.6	9.9	79.9	31.2	49.0	43.5	46.4
Change Period (Y+Rc), s	3.5	4.0	3.5	4.0	3.5	4.0	3.5	4.0
Max Green Setting (Gmax), s	35.0	60.0	30.0	50.0	35.0	60.0	40.0	50.0
Max Q Clear Time (g_c+I2), s	12.1	61.1	7.0	46.0	27.1	35.5	42.0	40.8
Green Ext Time (p_c), s	0.2	0.0	0.1	2.6	0.7	9.5	0.0	1.6

Intersection Summary	
HCM 2010 Ctrl Delay	77.9
HCM 2010 LOS	E

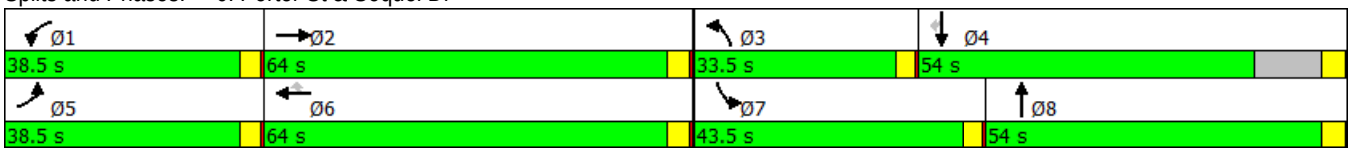
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	214	815	100	69	297	124	44	170	141	302	436	260
Future Volume (vph)	214	815	100	69	297	124	44	170	141	302	436	260
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1900	1900	1900	1700	1700	1700
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	140		0	0		100	180		0	540		70
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (ft)	45			25			50			300		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.98		0.98		0.96	0.98	0.99		0.99		0.94
Frt		0.982				0.850		0.932				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1546	2959	0	1546	1595	1369	1694	1674	0	1546	1595	1383
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1540	2959	0	1517	1595	1321	1668	1674	0	1532	1595	1304
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8				63		20				61
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		328			1072			1033			1279	
Travel Time (s)		8.9			29.2			28.2			34.9	
Confl. Peds. (#/hr)	1		13	13		1	6		4	4		6
Confl. Bikes (#/hr)			20			8						5
Peak Hour Factor	0.89	0.84	0.74	0.72	0.85	0.76	0.85	0.77	0.77	0.77	0.83	0.79
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	2%	2%	1%	3%	2%	3%	1%	1%	1%	3%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	240	970	135	96	349	163	52	221	183	392	525	329
Shared Lane Traffic (%)												
Lane Group Flow (vph)	240	1105	0	96	349	163	52	404	0	392	525	329
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		20			20			22			14	
Two way Left Turn Lane												
Headway Factor	1.20	1.20	1.20	1.20	1.20	1.20	1.04	1.04	1.04	1.20	1.20	1.20
Turning Speed (mph)	15		9	15		12	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6						4
Detector Phase	5	2		1	6	6	3	8		7	4	4
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	7.0		5.0	7.0	7.0	5.0	8.0		5.0	7.0	7.0
Minimum Split (s)	8.5	19.0		8.5	21.0	21.0	8.5	20.0		8.5	23.0	23.0
Total Split (s)	38.5	64.0		38.5	64.0	64.0	33.5	54.0		43.5	54.0	54.0
Total Split (%)	19.3%	32.0%		19.3%	32.0%	32.0%	16.8%	27.0%		21.8%	27.0%	27.0%
Maximum Green (s)	35.0	60.0		35.0	60.0	60.0	30.0	50.0		40.0	50.0	50.0
Yellow Time (s)	3.0	3.5		3.0	3.5	3.5	3.0	3.5		3.0	3.5	3.5
All-Red Time (s)	0.5	0.5		0.5	0.5	0.5	0.5	0.5		0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	3.5	4.0		3.5	4.0	4.0	3.5	4.0		3.5	4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	4.0	3.0		3.0	3.0	3.0	2.0	3.0		2.0	3.0	3.0
Minimum Gap (s)	4.0	3.0		3.0	3.0	3.0	2.0	3.0		2.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Recall Mode	None	Min		None	Min	Min	None	None		None	None	None
Walk Time (s)		8.0			8.0	8.0		8.0			8.0	8.0
Flash Dont Walk (s)		7.0			9.0	9.0		8.0			11.0	11.0
Pedestrian Calls (#/hr)		13			1	1		4			6	6
Act Effct Green (s)	32.3	64.6		16.8	49.1	49.1	10.1	46.0		40.2	78.3	78.3
Actuated g/C Ratio	0.18	0.35		0.09	0.27	0.27	0.06	0.25		0.22	0.43	0.43
v/c Ratio	0.88	1.05		0.68	0.82	0.41	0.56	0.93		1.15	0.77	0.55
Control Delay	104.3	97.6		104.9	79.7	36.8	109.4	91.4		156.5	55.6	38.0
Queue Delay	58.1	22.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	162.4	119.6		104.9	79.7	36.8	109.4	91.4		156.5	55.6	38.0
LOS	F	F		F	E	D	F	F		F	E	D
Approach Delay		127.2			72.2			93.4			82.7	
Approach LOS		F			E			F			F	
90th %ile Green (s)	35.0	70.4		24.6	60.0	60.0	15.1	50.0		40.0	74.9	74.9
90th %ile Term Code	Max	Hold		Gap	Max	Max	Gap	Max		Max	Hold	Hold
70th %ile Green (s)	35.0	67.7		20.0	52.7	52.7	12.1	50.0		40.0	77.9	77.9
70th %ile Term Code	Max	Hold		Gap	Gap	Gap	Gap	Max		Max	Hold	Hold
50th %ile Green (s)	35.0	64.5		16.9	46.4	46.4	10.1	50.0		40.0	79.9	79.9
50th %ile Term Code	Max	Hold		Gap	Gap	Gap	Gap	Max		Max	Hold	Hold
30th %ile Green (s)	32.0	60.0		13.9	41.9	41.9	8.2	44.8		40.0	76.6	76.6
30th %ile Term Code	Gap	Max		Gap	Hold	Hold	Gap	Gap		Max	Hold	Hold
10th %ile Green (s)	25.0	60.0		10.0	45.0	45.0	0.0	35.8		40.0	79.3	79.3
10th %ile Term Code	Gap	Max		Gap	Hold	Hold	Skip	Gap		Max	Hold	Hold
Stops (vph)	194	807		65	274	61	41	271		241	359	162
Fuel Used(gal)	6	24		2	9	2	2	10		14	11	5
CO Emissions (g/hr)	411	1665		165	600	161	107	668		967	773	382
NOx Emissions (g/hr)	80	324		32	117	31	21	130		188	150	74
VOC Emissions (g/hr)	95	386		38	139	37	25	155		224	179	89
Dilemma Vehicles (#)	0	0		0	0	0	0	0		0	0	0
Queue Length 50th (ft)	287	~785		116	416	103	63	457		~573	546	247
Queue Length 95th (ft)	#476	#856		150	509	137	114	531		#690	732	338
Internal Link Dist (ft)		248			992			953			1199	
Turn Bay Length (ft)	140					100	180			540		70
Base Capacity (vph)	297	1051		297	526	478	279	475		340	683	593

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Starvation Cap Reductn	94	417		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	1.18	1.74		0.32	0.66	0.34	0.19	0.85		1.15	0.77	0.55

Intersection Summary			
Area Type:	Other		
Cycle Length: 200			
Actuated Cycle Length: 182.7			
Natural Cycle: 110			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.15			
Intersection Signal Delay: 98.7		Intersection LOS: F	
Intersection Capacity Utilization 82.9%		ICU Level of Service E	
Analysis Period (min) 15			
90th %ile Actuated Cycle: 200			
70th %ile Actuated Cycle: 192.7			
50th %ile Actuated Cycle: 186.4			
30th %ile Actuated Cycle: 173.7			
10th %ile Actuated Cycle: 160.8			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 6: Porter St & Soquel Dr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1900	1900	1900	1700	1700	1700
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	140		0	0		100	180		0	540		70
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (ft)	45			25			50			300		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.98		0.98		0.96	0.98	0.99		0.99		0.94
Frt		0.982				0.850		0.932				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1546	2959	0	1546	1595	1369	1694	1674	0	1546	1595	1383
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1540	2959	0	1517	1595	1321	1668	1674	0	1532	1595	1304
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8				63		20				61
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		328			1072			1033			1279	
Travel Time (s)		8.9			29.2			28.2			34.9	

Intersection Summary	
Area Type:	Other

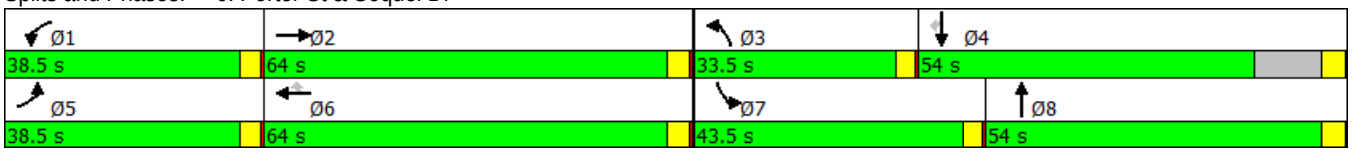
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	214	815	100	69	297	124	44	170	141	302	436	260
Future Volume (vph)	214	815	100	69	297	124	44	170	141	302	436	260
Confl. Peds. (#/hr)	1		13	13		1	6		4	4		6
Confl. Bikes (#/hr)			20			8						5
Peak Hour Factor	0.89	0.84	0.74	0.72	0.85	0.76	0.85	0.77	0.77	0.77	0.83	0.79
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	2%	2%	1%	3%	2%	3%	1%	1%	1%	3%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	240	970	135	96	349	163	52	221	183	392	525	329
Shared Lane Traffic (%)												
Lane Group Flow (vph)	240	1105	0	96	349	163	52	404	0	392	525	329

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	214	815	69	297	124	44	170	302	436	260
Future Volume (vph)	214	815	69	297	124	44	170	302	436	260
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Prot	NA	Perm
Protected Phases	5	2	1	6		3	8	7	4	
Permitted Phases					6					4
Detector Phase	5	2	1	6	6	3	8	7	4	4
Switch Phase										
Minimum Initial (s)	5.0	7.0	5.0	7.0	7.0	5.0	8.0	5.0	7.0	7.0
Minimum Split (s)	8.5	19.0	8.5	21.0	21.0	8.5	20.0	8.5	23.0	23.0
Total Split (s)	38.5	64.0	38.5	64.0	64.0	33.5	54.0	43.5	54.0	54.0
Total Split (%)	19.3%	32.0%	19.3%	32.0%	32.0%	16.8%	27.0%	21.8%	27.0%	27.0%
Yellow Time (s)	3.0	3.5	3.0	3.5	3.5	3.0	3.5	3.0	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.5	4.0	3.5	4.0	4.0	3.5	4.0	3.5	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min	None	Min	Min	None	None	None	None	None
Act Effct Green (s)	32.3	64.6	16.8	49.1	49.1	10.1	46.0	40.2	78.3	78.3
Actuated g/C Ratio	0.18	0.35	0.09	0.27	0.27	0.06	0.25	0.22	0.43	0.43
v/c Ratio	0.88	1.05	0.68	0.82	0.41	0.56	0.93	1.15	0.77	0.55
Control Delay	104.3	97.6	104.9	79.7	36.8	109.4	91.4	156.5	55.6	38.0
Queue Delay	58.1	22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	162.4	119.6	104.9	79.7	36.8	109.4	91.4	156.5	55.6	38.0
LOS	F	F	F	E	D	F	F	F	E	D
Approach Delay		127.2		72.2			93.4		82.7	
Approach LOS		F		E			F		F	

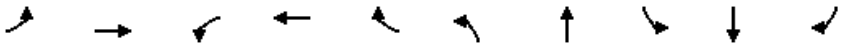
Intersection Summary	
Cycle Length: 200	
Actuated Cycle Length: 182.7	
Natural Cycle: 110	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.15	
Intersection Signal Delay: 98.7	Intersection LOS: F
Intersection Capacity Utilization 82.9%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 6: Porter St & Soquel Dr



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Protected Phases	5	2	1	6		3	8	7	4	
Permitted Phases					6					4
Minimum Initial (s)	5.0	7.0	5.0	7.0	7.0	5.0	8.0	5.0	7.0	7.0
Minimum Split (s)	8.5	19.0	8.5	21.0	21.0	8.5	20.0	8.5	23.0	23.0
Total Split (s)	38.5	64.0	38.5	64.0	64.0	33.5	54.0	43.5	54.0	54.0
Total Split (%)	19.3%	32.0%	19.3%	32.0%	32.0%	16.8%	27.0%	21.8%	27.0%	27.0%
Maximum Green (s)	35.0	60.0	35.0	60.0	60.0	30.0	50.0	40.0	50.0	50.0
Yellow Time (s)	3.0	3.5	3.0	3.5	3.5	3.0	3.5	3.0	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	3.0	3.0	3.0	3.0	2.0	3.0	2.0	3.0	3.0
Minimum Gap (s)	4.0	3.0	3.0	3.0	3.0	2.0	3.0	2.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	Min	None	Min	Min	None	None	None	None	None
Walk Time (s)		8.0		8.0	8.0		8.0		8.0	8.0
Flash Dont Walk (s)		7.0		9.0	9.0		8.0		11.0	11.0
Pedestrian Calls (#/hr)		13		1	1		4		6	6
90th %ile Green (s)	35.0	70.4	24.6	60.0	60.0	15.1	50.0	40.0	74.9	74.9
90th %ile Term Code	Max	Hold	Gap	Max	Max	Gap	Max	Max	Hold	Hold
70th %ile Green (s)	35.0	67.7	20.0	52.7	52.7	12.1	50.0	40.0	77.9	77.9
70th %ile Term Code	Max	Hold	Gap	Gap	Gap	Gap	Max	Max	Hold	Hold
50th %ile Green (s)	35.0	64.5	16.9	46.4	46.4	10.1	50.0	40.0	79.9	79.9
50th %ile Term Code	Max	Hold	Gap	Gap	Gap	Gap	Max	Max	Hold	Hold
30th %ile Green (s)	32.0	60.0	13.9	41.9	41.9	8.2	44.8	40.0	76.6	76.6
30th %ile Term Code	Gap	Max	Gap	Hold	Hold	Gap	Gap	Max	Hold	Hold
10th %ile Green (s)	25.0	60.0	10.0	45.0	45.0	0.0	35.8	40.0	79.3	79.3
10th %ile Term Code	Gap	Max	Gap	Hold	Hold	Skip	Gap	Max	Hold	Hold

Intersection Summary
Cycle Length: 200
Actuated Cycle Length: 182.7
Control Type: Actuated-Uncoordinated
90th %ile Actuated Cycle: 200
70th %ile Actuated Cycle: 192.7
50th %ile Actuated Cycle: 186.4
30th %ile Actuated Cycle: 173.7
10th %ile Actuated Cycle: 160.8



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	240	1105	96	349	163	52	404	392	525	329
v/c Ratio	0.88	1.05	0.68	0.82	0.41	0.56	0.93	1.15	0.77	0.55
Control Delay	104.3	97.6	104.9	79.7	36.8	109.4	91.4	156.5	55.6	38.0
Queue Delay	58.1	22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	162.4	119.6	104.9	79.7	36.8	109.4	91.4	156.5	55.6	38.0
Queue Length 50th (ft)	287	~785	116	416	103	63	457	~573	546	247
Queue Length 95th (ft)	#476	#856	150	509	137	114	531	#690	732	338
Internal Link Dist (ft)		248		992			953		1199	
Turn Bay Length (ft)	140				100	180		540		70
Base Capacity (vph)	297	1051	297	526	478	279	475	340	683	593
Starvation Cap Reductn	94	417	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.18	1.74	0.32	0.66	0.34	0.19	0.85	1.15	0.77	0.55

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		20			20			22			14	
Two way Left Turn Lane												
Headway Factor	1.20	1.20	1.20	1.20	1.20	1.20	1.04	1.04	1.04	1.20	1.20	1.20
Turning Speed (mph)	15		9	15		12	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Intersection Summary

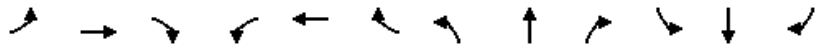
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	214	815	100	69	297	124	44	170	141	302	436	260
Pedestrians	1		13	13		1	6		4	4		6
Ped Button		Yes			Yes			Yes			Yes	
Pedestrian Timing (s)		15.0			17.0			16.0			19.0	
Free Right			No			No			No			No
Ideal Flow	1700	1700	1700	1700	1700	1700	1900	1900	1900	1700	1700	1700
Lost Time (s)	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0
Minimum Green (s)	5.0	7.0	4.0	5.0	7.0	7.0	5.0	8.0	4.0	5.0	7.0	7.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	214	915	0	69	297	124	44	311	0	302	436	260
Lane Utilization Factor	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.95	0.98	0.85	0.95	1.00	0.85	0.95	0.93	0.85	0.95	1.00	0.85
Saturated Flow (vph)	1615	3184	0	1615	1700	1445	1805	1771	0	1615	1700	1445
Ped Intf Time (s)	0.0	0.2	1.6	0.0	0.0	0.1	0.0	0.2	0.5	0.0	0.0	0.8
Pedestrian Frequency (%)		0.35			0.03			0.12			0.18	
Protected Option Allowed		Yes			Yes			Yes			Yes	
Reference Time (s)	15.9	34.7	0.0	5.1	21.0	10.4	2.9	21.3	0.0	22.4	30.8	22.4
Adj Reference Time (s)	19.9	38.7	0.0	9.1	25.0	14.6	9.0	25.3	0.0	26.4	34.8	26.4
Permitted Option												
Adj Saturation A (vph)	108	1592		108	1700		120	1771		108	1700	
Reference Time A (s)	238.5	34.7		76.9	21.0		43.9	21.3		336.6	30.8	
Adj Saturation B (vph	NA	NA		NA	NA		NA	NA		NA	NA	
Reference Time B (s)	NA	NA		NA	NA		NA	NA		NA	NA	
Reference Time (s)		238.5			76.9			43.9			336.6	
Adj Reference Time (s)		242.5			80.9			47.9			340.6	
Split Option												
Ref Time Combined (s)	15.9	34.7		5.1	21.0		2.9	21.3		22.4	30.8	
Ref Time Seperate (s)	15.9	30.9		5.1	21.0		2.9	11.8		22.4	30.8	
Reference Time (s)	34.7	34.7		21.0	21.0		21.3	21.3		30.8	30.8	
Adj Reference Time (s)	38.7	38.7		25.0	25.0		25.3	25.3		34.8	34.8	

Summary	EB WB	NB SB	Combined
Protected Option (s)	47.8	51.7	
Permitted Option (s)	242.5	340.6	
Split Option (s)	63.6	60.1	
Minimum (s)	47.8	51.7	99.5

Right Turns	WBR	SBR
Adj Reference Time (s)	14.6	26.4
Cross Thru Ref Time (s)	25.3	25.0
Oncoming Left Ref Time (s)	19.9	9.0
Combined (s)	59.9	60.3

Intersection Summary			
Intersection Capacity Utilization	82.9%	ICU Level of Service	E

Reference Times and Phasing Options do not represent an optimized timing plan.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	2	17	279	2	14	14	503	146	21	577	11
Future Volume (veh/h)	9	2	17	279	2	14	14	503	146	21	577	11
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00	1.00		0.96	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1881	1868	1900	1900	1863	1900	1900	1864	1900
Adj Flow Rate, veh/h	20	8	24	407	0	0	28	547	176	32	704	28
Adj No. of Lanes	0	1	0	2	1	0	1	2	1	1	2	0
Peak Hour Factor	0.45	0.25	0.71	0.73	0.50	0.58	0.50	0.92	0.83	0.66	0.82	0.39
Percent Heavy Veh, %	0	0	0	1	0	0	0	2	0	0	2	2
Cap, veh/h	39	16	47	731	381	0	46	1314	578	51	1297	52
Arrive On Green	0.06	0.06	0.06	0.20	0.00	0.00	0.03	0.37	0.37	0.03	0.37	0.37
Sat Flow, veh/h	652	261	783	3583	1868	0	1810	3539	1558	1810	3467	138
Grp Volume(v), veh/h	52	0	0	407	0	0	28	547	176	32	359	373
Grp Sat Flow(s),veh/h/ln	1696	0	0	1792	1868	0	1810	1770	1558	1810	1771	1834
Q Serve(g_s), s	1.6	0.0	0.0	5.5	0.0	0.0	0.8	6.2	4.3	0.9	8.5	8.5
Cycle Q Clear(g_c), s	1.6	0.0	0.0	5.5	0.0	0.0	0.8	6.2	4.3	0.9	8.5	8.5
Prop In Lane	0.38		0.46	1.00		0.00	1.00		1.00	1.00		0.08
Lane Grp Cap(c), veh/h	102	0	0	731	381	0	46	1314	578	51	662	686
V/C Ratio(X)	0.51	0.00	0.00	0.56	0.00	0.00	0.61	0.42	0.30	0.63	0.54	0.54
Avail Cap(c_a), veh/h	633	0	0	1672	872	0	676	1982	873	676	992	1027
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.4	0.0	0.0	19.1	0.0	0.0	25.8	12.5	11.9	25.7	13.2	13.2
Incr Delay (d2), s/veh	3.9	0.0	0.0	0.9	0.0	0.0	12.3	0.2	0.3	11.8	0.7	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	0.0	2.8	0.0	0.0	0.6	3.0	1.9	0.6	4.2	4.4
LnGrp Delay(d),s/veh	28.3	0.0	0.0	20.1	0.0	0.0	38.1	12.7	12.2	37.6	13.9	13.8
LnGrp LOS	C			C			D	B	B	D	B	B
Approach Vol, veh/h		52			407			751			764	
Approach Delay, s/veh		28.3			20.1			13.6			14.8	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.5	24.9		15.4	5.4	25.0		7.7
Change Period (Y+Rc), s	4.0	5.0		4.5	4.0	5.0		4.5
Max Green Setting (Gmax), s	20.0	30.0		25.0	20.0	30.0		20.0
Max Q Clear Time (g_c+I1), s	12.9	8.2		7.5	2.8	10.5		3.6
Green Ext Time (p_c), s	0.0	10.1		2.1	0.0	9.5		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	15.8
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	815	0	253	0	522	488	0	772	143
Future Volume (veh/h)	0	0	0	815	0	253	0	522	488	0	772	143
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		0.97
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1881	1881	1810	0	1872	1900	0	1866	1900
Adj Flow Rate, veh/h				926	0	281	0	600	0	0	908	183
Adj No. of Lanes				2	0	1	0	2	0	0	2	0
Peak Hour Factor				0.88	0.92	0.90	0.92	0.87	0.80	0.92	0.85	0.78
Percent Heavy Veh, %				1	0	5	0	2	2	0	2	2
Cap, veh/h				1086	0	466	0	1865	0	0	1533	309
Arrive On Green				0.30	0.00	0.30	0.00	0.88	0.00	0.00	0.52	0.52
Sat Flow, veh/h				3583	0	1538	0	3744	0	0	3017	589
Grp Volume(v), veh/h				926	0	281	0	600	0	0	550	541
Grp Sat Flow(s),veh/h/ln				1792	0	1538	0	1778	0	0	1773	1740
Q Serve(g_s), s				13.4	0.0	8.6	0.0	1.6	0.0	0.0	11.8	11.8
Cycle Q Clear(g_c), s				13.4	0.0	8.6	0.0	1.6	0.0	0.0	11.8	11.8
Prop In Lane				1.00		1.00	0.00		0.00	0.00		0.34
Lane Grp Cap(c), veh/h				1086	0	466	0	1865	0	0	929	912
V/C Ratio(X)				0.85	0.00	0.60	0.00	0.32	0.00	0.00	0.59	0.59
Avail Cap(c_a), veh/h				1140	0	489	0	1865	0	0	929	912
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.67	1.67	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.00	0.91	0.00	0.00	0.82	0.82
Uniform Delay (d), s/veh				18.0	0.0	16.3	0.0	1.7	0.0	0.0	9.0	9.0
Incr Delay (d2), s/veh				6.3	0.0	2.1	0.0	0.4	0.0	0.0	2.3	2.3
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				7.5	0.0	3.9	0.0	0.8	0.0	0.0	6.2	6.1
LnGrp Delay(d),s/veh				24.4	0.0	18.5	0.0	2.1	0.0	0.0	11.3	11.4
LnGrp LOS				C		B		A			B	B
Approach Vol, veh/h					1207			600			1091	
Approach Delay, s/veh					23.0			2.1			11.3	
Approach LOS					C			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		34.1				34.1		20.9
Change Period (Y+Rc), s		5.3				5.3		4.2
Max Green Setting (Gmax), s		28.0				28.0		17.5
Max Q Clear Time (g_c+I1), s		3.6				13.8		15.4
Green Ext Time (p_c), s		15.3				10.3		1.3

Intersection Summary	
HCM 2010 Ctrl Delay	14.3
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	46	63	0	0	0	0	975	935	0	1217	370
Future Volume (vph)	35	46	63	0	0	0	0	975	935	0	1217	370
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.6	4.6					4.9	4.9		4.9	4.0
Lane Util. Factor		1.00	0.88					0.95	1.00		0.91	1.00
Frpb, ped/bikes		1.00	1.00					1.00	1.00		1.00	0.97
Flpb, ped/bikes		1.00	1.00					1.00	1.00		1.00	1.00
Frt		1.00	0.85					1.00	0.85		1.00	0.85
Flt Protected		0.98	1.00					1.00	1.00		1.00	1.00
Satd. Flow (prot)		1757	2694					3455	1546		4964	1501
Flt Permitted		0.98	1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)		1757	2694					3455	1546		4964	1501
Peak-hour factor, PHF	0.80	0.72	0.75	0.92	0.92	0.92	0.92	0.85	0.94	0.92	0.96	0.82
Adj. Flow (vph)	44	64	84	0	0	0	0	1147	995	0	1268	451
RTOR Reduction (vph)	0	0	75	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	108	9	0	0	0	0	1147	995	0	1268	451
Confl. Peds. (#/hr)	13					13	11		1	1		11
Confl. Bikes (#/hr)												9
Heavy Vehicles (%)	6%	0%	2%	0%	0%	0%	0%	1%	1%	0%	1%	1%
Turn Type	Split	NA	Perm					NA	Prot		NA	Free
Protected Phases	2	2						1 3 4	1 3 4		1 3 4	
Permitted Phases			2									Free
Actuated Green, G (s)		12.1	12.1					89.1	89.1		89.1	110.0
Effective Green, g (s)		12.1	12.1					84.9	84.9		84.9	110.0
Actuated g/C Ratio		0.11	0.11					0.77	0.77		0.77	1.00
Clearance Time (s)		4.6	4.6									
Vehicle Extension (s)		3.0	3.0									
Lane Grp Cap (vph)		193	296					2666	1193		3831	1501
v/s Ratio Prot		c0.06						0.33	c0.64		0.26	
v/s Ratio Perm			0.00									c0.30
v/c Ratio		0.56	0.03					0.43	0.83		0.33	0.30
Uniform Delay, d1		46.4	43.7					4.3	8.0		3.8	0.0
Progression Factor		1.00	1.00					0.10	1.50		1.19	1.00
Incremental Delay, d2		3.5	0.0					0.0	2.2		0.0	0.3
Delay (s)		49.9	43.8					0.5	14.2		4.6	0.3
Level of Service		D	D					A	B		A	A
Approach Delay (s)		47.2			0.0			6.9			3.5	
Approach LOS		D			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	7.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	17.9
Intersection Capacity Utilization	70.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

EXISTING PLUS PROJECT CONDITIONS
SYNCHRO OUTPUT SHEETS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	622	32	18	873	47	49	2	24	63	1	73
Future Volume (veh/h)	18	622	32	18	873	47	49	2	24	63	1	73
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1822	1900	1792	1837	1900	1900	1690	1900	1900	1846	1900
Adj Flow Rate, veh/h	32	818	40	32	1078	60	68	4	44	95	4	96
Adj No. of Lanes	0	2	0	1	2	0	0	1	0	0	1	0
Peak Hour Factor	0.56	0.76	0.80	0.56	0.81	0.78	0.72	0.50	0.55	0.66	0.25	0.76
Percent Heavy Veh, %	4	4	4	6	3	3	0	0	0	0	0	0
Cap, veh/h	103	1901	91	425	2050	114	258	35	113	229	35	158
Arrive On Green	0.61	0.61	0.61	0.61	0.61	0.61	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	50	3110	149	616	3354	187	718	167	540	612	168	756
Grp Volume(v), veh/h	454	0	436	32	561	577	116	0	0	195	0	0
Grp Sat Flow(s),veh/h/ln	1683	0	1626	616	1745	1795	1425	0	0	1536	0	0
Q Serve(g_s), s	0.0	0.0	7.5	1.5	9.7	9.7	0.0	0.0	0.0	2.4	0.0	0.0
Cycle Q Clear(g_c), s	6.8	0.0	7.5	9.1	9.7	9.7	3.3	0.0	0.0	5.7	0.0	0.0
Prop In Lane	0.07		0.09	1.00		0.10	0.59		0.38	0.49		0.49
Lane Grp Cap(c), veh/h	1102	0	994	425	1067	1098	406	0	0	422	0	0
V/C Ratio(X)	0.41	0.00	0.44	0.08	0.53	0.53	0.29	0.00	0.00	0.46	0.00	0.00
Avail Cap(c_a), veh/h	1179	0	1077	457	1156	1189	741	0	0	804	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	5.3	0.0	5.5	7.9	5.9	5.9	17.8	0.0	0.0	18.7	0.0	0.0
Incr Delay (d2), s/veh	0.5	0.0	0.7	0.2	0.9	0.8	0.8	0.0	0.0	1.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	0.0	3.5	0.3	4.8	4.9	1.5	0.0	0.0	2.7	0.0	0.0
LnGrp Delay(d),s/veh	5.8	0.0	6.1	8.0	6.7	6.7	18.7	0.0	0.0	20.4	0.0	0.0
LnGrp LOS	A		A	A	A	A	B			C		
Approach Vol, veh/h		890			1170			116			195	
Approach Delay, s/veh		6.0			6.8			18.7			20.4	
Approach LOS		A			A			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		37.3		15.5		37.3		15.5
Change Period (Y+Rc), s		5.0		4.5		5.0		4.5
Max Green Setting (Gmax), s		35.0		25.0		35.0		25.0
Max Q Clear Time (g_c+I1), s		9.5		5.3		11.7		7.7
Green Ext Time (p_c), s		22.3		3.3		20.6		3.1

Intersection Summary	
HCM 2010 Ctrl Delay	8.2
HCM 2010 LOS	A

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	713	2	9	1154	1	2
Future Vol, veh/h	713	2	9	1154	1	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	70	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	775	2	10	1254	1	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	777	0	1423	389
Stage 1	-	-	-	-	776	-
Stage 2	-	-	-	-	647	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	835	-	127	610
Stage 1	-	-	-	-	414	-
Stage 2	-	-	-	-	483	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	835	-	125	610
Mov Cap-2 Maneuver	-	-	-	-	125	-
Stage 1	-	-	-	-	414	-
Stage 2	-	-	-	-	477	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	18.7
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	266	-	-	835	-
HCM Lane V/C Ratio	0.012	-	-	0.012	-
HCM Control Delay (s)	18.7	-	-	9.4	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	340	374	137	545	5	623	5	86	0	9	3
Future Volume (veh/h)	1	340	374	137	545	5	623	5	86	0	9	3
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.96	1.00		0.99	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1800	1900	1792	1822	1900	1863	1864	1827	1900	1409	1900
Adj Flow Rate, veh/h	4	472	499	196	641	12	808	0	141	0	20	8
Adj No. of Lanes	1	2	0	1	2	0	2	0	1	0	1	0
Peak Hour Factor	0.25	0.72	0.75	0.70	0.85	0.42	0.78	0.42	0.61	0.92	0.45	0.38
Percent Heavy Veh, %	0	4	4	6	4	4	2	0	4	22	22	22
Cap, veh/h	8	603	528	232	1682	31	982	0	425	0	26	11
Arrive On Green	0.00	0.35	0.35	0.14	0.48	0.48	0.28	0.00	0.28	0.00	0.03	0.03
Sat Flow, veh/h	1810	1710	1497	1707	3473	65	3548	0	1536	0	941	376
Grp Volume(v), veh/h	4	472	499	196	319	334	808	0	141	0	0	28
Grp Sat Flow(s),veh/h/ln	1810	1710	1497	1707	1731	1807	1774	0	1536	0	0	1317
Q Serve(g_s), s	0.2	22.1	29.0	10.0	10.4	10.5	19.1	0.0	6.5	0.0	0.0	1.9
Cycle Q Clear(g_c), s	0.2	22.1	29.0	10.0	10.4	10.5	19.1	0.0	6.5	0.0	0.0	1.9
Prop In Lane	1.00		1.00	1.00		0.04	1.00		1.00	0.00		0.29
Lane Grp Cap(c), veh/h	8	603	528	232	838	875	982	0	425	0	0	37
V/C Ratio(X)	0.52	0.78	0.95	0.84	0.38	0.38	0.82	0.00	0.33	0.00	0.00	0.76
Avail Cap(c_a), veh/h	647	611	535	610	838	875	1585	0	686	0	0	294
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	44.5	25.9	28.2	37.8	14.6	14.6	30.3	0.0	25.8	0.0	0.0	43.2
Incr Delay (d2), s/veh	19.0	8.9	27.2	3.2	1.0	1.0	1.9	0.0	0.5	0.0	0.0	31.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	11.8	15.9	4.9	5.2	5.4	9.6	0.0	2.8	0.0	0.0	1.0
LnGrp Delay(d),s/veh	63.5	34.8	55.4	41.0	15.6	15.6	32.3	0.0	26.2	0.0	0.0	74.3
LnGrp LOS	E	C	E	D	B	B	C		C			E
Approach Vol, veh/h		975			849			949			28	
Approach Delay, s/veh		45.5			21.5			31.4			74.3	
Approach LOS		D			C			C			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	16.7	36.6		7.0	4.9	48.4		29.3
Change Period (Y+Rc), s	4.5	5.0		4.5	4.5	5.0		4.5
Max Green Setting (Gmax), s	32.0	32.0		20.0	32.0	31.0		40.0
Max Q Clear Time (g_c+I1), s	12.0	31.0		3.9	2.2	12.5		21.1
Green Ext Time (p_c), s	0.2	0.6		0.1	0.0	16.2		3.7

Intersection Summary	
HCM 2010 Ctrl Delay	33.7
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Intersection Delay, s/veh	43.8
Intersection LOS	E

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations																
Traffic Vol, veh/h	0	1	396	67	0	167	645	0	0	116	0	180	0	0	0	0
Future Vol, veh/h	0	1	396	67	0	167	645	0	0	116	0	180	0	0	0	0
Peak Hour Factor	0.92	0.75	0.75	0.76	0.92	0.71	0.91	0.92	0.92	0.83	0.92	0.58	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	0	5	6	2	2	4	0	2	1	0	2	2	0	0	0
Mvmt Flow	0	1	528	88	0	235	709	0	0	140	0	310	0	0	0	0
Number of Lanes	0	0	2	0	0	0	2	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	2
HCM Control Delay	24.5	60.9	34.4	0
HCM LOS	C	F	D	-

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	39%	1%	0%	44%	0%	0%
Vol Thru, %	0%	99%	75%	56%	100%	100%
Vol Right, %	61%	0%	25%	0%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	296	199	265	382	430	0
LT Vol	116	1	0	167	0	0
Through Vol	0	198	198	215	430	0
RT Vol	180	0	67	0	0	0
Lane Flow Rate	450	265	352	471	473	0
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0.83	0.558	0.731	0.981	0.958	0
Departure Headway (Hd)	6.642	7.57	7.473	7.488	7.298	9.055
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	545	475	482	481	496	0
Service Time	4.682	5.358	5.26	5.283	5.093	7.055
HCM Lane V/C Ratio	0.826	0.558	0.73	0.979	0.954	0
HCM Control Delay	34.4	19.6	28.2	64	57.9	12.1
HCM Lane LOS	D	C	D	F	F	N
HCM 95th-tile Q	8.4	3.4	5.9	12.7	12	0

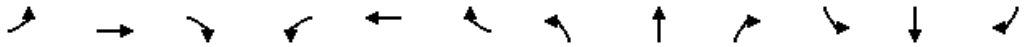
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	396	67	167	646	0	116	0	180	0	0	0
Future Volume (vph)	1	396	67	167	646	0	116	0	180	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.979						0.907				
Flt Protected					0.988			0.985				
Satd. Flow (prot)	0	3250	0	0	3331	0	0	1614	0	0	1837	0
Flt Permitted					0.988			0.985				
Satd. Flow (perm)	0	3250	0	0	3331	0	0	1614	0	0	1837	0
Link Speed (mph)		35			25			25			25	
Link Distance (ft)		1301			475			1062			833	
Travel Time (s)		25.3			13.0			29.0			22.7	
Confl. Peds. (#/hr)	15		7	7		15			13	13		
Confl. Bikes (#/hr)			5			11						
Peak Hour Factor	0.75	0.75	0.76	0.71	0.91	0.92	0.83	0.92	0.58	0.92	0.92	0.92
Heavy Vehicles (%)	0%	5%	6%	2%	4%	0%	1%	0%	2%	0%	0%	0%
Adj. Flow (vph)	1	528	88	235	710	0	140	0	310	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	617	0	0	945	0	0	450	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		2			2			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			35			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 64.2%		ICU Level of Service C	
Analysis Period (min) 15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.979						0.907				
Flt Protected					0.988			0.985				
Satd. Flow (prot)	0	3250	0	0	3331	0	0	1614	0	0	1837	0
Flt Permitted					0.988			0.985				
Satd. Flow (perm)	0	3250	0	0	3331	0	0	1614	0	0	1837	0
Link Speed (mph)		35			25			25			25	
Link Distance (ft)		1301			475			1062			833	
Travel Time (s)		25.3			13.0			29.0			22.7	

Intersection Summary

Area Type: Other



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	1	396	67	167	646	0	116	0	180	0	0	0
Future Volume (vph)	1	396	67	167	646	0	116	0	180	0	0	0
Confl. Peds. (#/hr)	15		7	7		15			13	13		
Confl. Bikes (#/hr)			5			11						
Peak Hour Factor	0.75	0.75	0.76	0.71	0.91	0.92	0.83	0.92	0.58	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	5%	6%	2%	4%	0%	1%	0%	2%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	1	528	88	235	710	0	140	0	310	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	617	0	0	945	0	0	450	0	0	0	0

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		2			2			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			35			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9

Intersection Summary

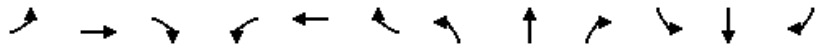
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	396	67	167	646	0	116	0	180	0	0	0
Pedestrians	15		7	7		15			13	13		
Ped Button		Yes			Yes			Yes				
Pedestrian Timing (s)		16.0			16.0			16.0				
Free Right			No			No			No			No
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	0	464	0	0	813	0	0	296	0	0	0	0
Lane Utilization Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.95	0.98	0.85	0.95	0.99	0.85	0.95	0.89	0.85	0.95	1.00	0.85
Saturated Flow (vph)	0	3539	0	0	3580	0	0	1693	0	0	1900	0
Ped Intf Time (s)	0.0	0.1	0.9	0.0	0.0	1.8	0.0	1.0	1.6	0.0	0.0	0.0
Pedestrian Frequency (%)		0.21			0.39			0.35			0.00	
Protected Option Allowed		No			No			No			No	
Reference Time (s)			0.0			0.0			0.0			0.0
Adj Reference Time (s)			0.0			0.0			0.0			0.0
Permitted Option												
Adj Saturation A (vph)	0	1668		0	119		0	1461		0	1900	
Reference Time A (s)	0.0	16.7		0.0	167.9		0.0	25.3		0.0	0.0	
Adj Saturation B (vph	NA	NA		NA	NA		0	0		NA	NA	
Reference Time B (s)	NA	NA		NA	NA		15.7	29.9		NA	NA	
Reference Time (s)		16.7			167.9			25.3			0.0	
Adj Reference Time (s)		20.7			171.9			29.3			8.0	
Split Option												
Ref Time Combined (s)	0.0	15.9		0.0	27.2		0.0	21.9		0.0	0.0	
Ref Time Seperate (s)	0.1	13.6		11.1	21.4		7.7	1.0		0.0	0.0	
Reference Time (s)	15.9	15.9		27.2	27.2		21.9	21.9		0.0	0.0	
Adj Reference Time (s)	19.9	19.9		31.2	31.2		25.9	25.9		0.0	0.0	

Summary	EB WB	NB SB	Combined
Protected Option (s)	NA	NA	
Permitted Option (s)	171.9	29.3	
Split Option (s)	51.1	25.9	
Minimum (s)	51.1	25.9	77.1

Right Turns
Adj Reference Time (s)
Cross Thru Ref Time (s)
Oncoming Left Ref Time (s)
Combined (s)

Intersection Summary			
Intersection Capacity Utilization	64.2%	ICU Level of Service	C

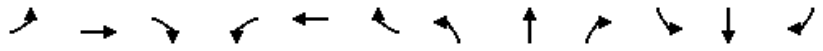
Reference Times and Phasing Options do not represent an optimized timing plan.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	492	56	12	740	9	38	11	30	6	2	34
Future Volume (veh/h)	28	492	56	12	740	9	38	11	30	6	2	34
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	0.89		0.90	0.94		0.86
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1700	1639	1700	1700	1636	1700	1900	1871	1900	1900	1900	1900
Adj Flow Rate, veh/h	48	656	119	24	871	20	86	24	56	20	4	62
Adj No. of Lanes	1	2	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.58	0.75	0.47	0.50	0.85	0.45	0.44	0.46	0.54	0.30	0.50	0.55
Percent Heavy Veh, %	0	4	4	0	4	4	0	0	0	0	0	0
Cap, veh/h	218	1663	301	433	1010	23	226	71	109	114	46	239
Arrive On Green	0.63	0.63	0.63	0.63	0.63	0.63	0.23	0.23	0.23	0.23	0.23	0.23
Sat Flow, veh/h	567	2621	475	632	1591	37	623	312	476	204	200	1042
Grp Volume(v), veh/h	48	389	386	24	0	891	166	0	0	86	0	0
Grp Sat Flow(s),veh/h/ln	567	1557	1538	632	0	1628	1411	0	0	1445	0	0
Q Serve(g_s), s	4.9	8.0	8.1	1.3	0.0	29.2	3.2	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	34.1	8.0	8.1	9.3	0.0	29.2	6.3	0.0	0.0	3.1	0.0	0.0
Prop In Lane	1.00		0.31	1.00		0.02	0.52		0.34	0.23		0.72
Lane Grp Cap(c), veh/h	218	988	976	433	0	1033	406	0	0	398	0	0
V/C Ratio(X)	0.22	0.39	0.40	0.06	0.00	0.86	0.41	0.00	0.00	0.22	0.00	0.00
Avail Cap(c_a), veh/h	374	1416	1399	606	0	1480	606	0	0	605	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	23.5	5.9	5.9	8.2	0.0	9.7	21.9	0.0	0.0	20.8	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.1	0.1	0.0	0.0	2.8	0.2	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	3.4	3.3	0.2	0.0	13.7	2.7	0.0	0.0	1.3	0.0	0.0
LnGrp Delay(d),s/veh	23.7	6.0	6.0	8.2	0.0	12.5	22.1	0.0	0.0	20.9	0.0	0.0
LnGrp LOS	C	A	A	A		B	C			C		
Approach Vol, veh/h		823			915			166			86	
Approach Delay, s/veh		7.0			12.4			22.1			20.9	
Approach LOS		A			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		46.4		19.6		46.4		19.6
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		60.0		25.0		60.0		25.0
Max Q Clear Time (g_c+I1), s		36.1		5.1		31.2		8.3
Green Ext Time (p_c), s		5.8		0.7		6.0		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	11.4
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	214	260	54	121	394	261	43	272	29	147	286	324
Future Volume (veh/h)	214	260	54	121	394	261	43	272	29	147	286	324
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00	1.00		0.98	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1646	1700	1650	1650	1667	1574	1630	1700	1881	1827	1845
Adj Flow Rate, veh/h	289	321	69	195	453	0	86	324	36	188	362	415
Adj No. of Lanes	1	2	0	1	1	1	1	1	0	1	1	1
Peak Hour Factor	0.74	0.81	0.78	0.62	0.87	0.68	0.50	0.84	0.81	0.78	0.79	0.78
Percent Heavy Veh, %	2	4	4	3	3	2	8	4	4	1	4	3
Cap, veh/h	314	947	200	218	515	442	103	386	43	213	581	495
Arrive On Green	0.20	0.37	0.37	0.14	0.31	0.00	0.07	0.27	0.27	0.12	0.32	0.32
Sat Flow, veh/h	1587	2552	540	1572	1650	1417	1499	1438	160	1792	1827	1556
Grp Volume(v), veh/h	289	195	195	195	453	0	86	0	360	188	362	415
Grp Sat Flow(s),veh/h/ln	1587	1564	1529	1572	1650	1417	1499	0	1598	1792	1827	1556
Q Serve(g_s), s	26.0	13.0	13.4	17.8	37.9	0.0	8.3	0.0	31.0	15.1	24.5	36.1
Cycle Q Clear(g_c), s	26.0	13.0	13.4	17.8	37.9	0.0	8.3	0.0	31.0	15.1	24.5	36.1
Prop In Lane	1.00		0.35	1.00		1.00	1.00		0.10	1.00		1.00
Lane Grp Cap(c), veh/h	314	580	568	218	515	442	103	0	429	213	581	495
V/C Ratio(X)	0.92	0.34	0.34	0.89	0.88	0.00	0.83	0.00	0.84	0.88	0.62	0.84
Avail Cap(c_a), veh/h	381	644	630	378	680	583	309	0	548	492	627	534
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.3	32.9	33.0	61.7	47.5	0.0	67.0	0.0	50.4	63.2	42.2	46.2
Incr Delay (d2), s/veh	25.7	0.3	0.4	13.1	10.2	0.0	6.4	0.0	9.0	4.7	1.7	10.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.6	5.7	5.7	8.5	18.7	0.0	3.6	0.0	14.8	7.7	12.6	17.0
LnGrp Delay(d),s/veh	83.0	33.2	33.4	74.8	57.7	0.0	73.4	0.0	59.4	67.9	43.9	56.9
LnGrp LOS	F	C	C	E	E		E		E	E	D	E
Approach Vol, veh/h		679			648			446			965	
Approach Delay, s/veh		54.5			62.8			62.1			54.2	
Approach LOS		D			E			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.7	58.1	13.5	50.3	32.3	49.5	20.8	43.1
Change Period (Y+Rc), s	3.5	4.0	3.5	4.0	3.5	4.0	3.5	4.0
Max Green Setting (Gmax), s	25.0	60.0	30.0	50.0	35.0	60.0	40.0	50.0
Max Q Clear Time (g_c+I1), s	19.8	15.4	10.3	38.1	28.0	39.9	17.1	33.0
Green Ext Time (p_c), s	0.5	6.7	0.1	5.0	0.8	5.6	0.3	6.1

Intersection Summary	
HCM 2010 Ctrl Delay	57.6
HCM 2010 LOS	E

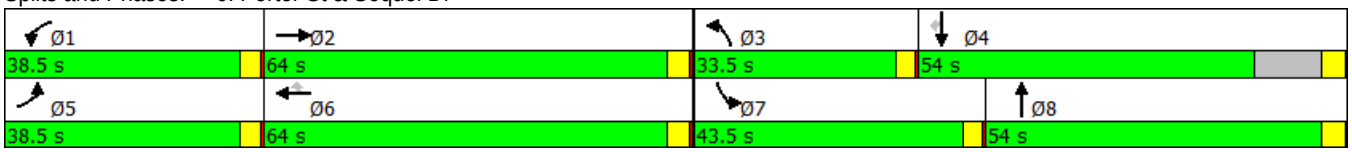
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	214	260	54	121	395	261	43	272	29	147	286	324
Future Volume (vph)	214	260	54	121	395	261	43	272	29	147	286	324
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1900	1900	1900
Storage Length (ft)	140		0	0		100	180		0	540		70
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (ft)	45			25			50			300		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	0.99		0.98		0.95	0.99	1.00		0.99		0.97
Frt		0.973				0.850		0.985				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1531	2907	0	1516	1595	1369	1446	1547	0	1728	1766	1516
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1516	2907	0	1480	1595	1302	1436	1547	0	1708	1766	1470
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13				109		3				112
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		328			1072			1033			1279	
Travel Time (s)		8.9			29.2			28.2			34.9	
Confl. Peds. (#/hr)	3		6	6		3	2		5	5		2
Confl. Bikes (#/hr)			5			10			3			
Peak Hour Factor	0.74	0.81	0.78	0.62	0.87	0.68	0.50	0.84	0.81	0.78	0.79	0.78
Heavy Vehicles (%)	2%	4%	0%	3%	3%	2%	8%	4%	7%	1%	4%	3%
Adj. Flow (vph)	289	321	69	195	454	384	86	324	36	188	362	415
Shared Lane Traffic (%)												
Lane Group Flow (vph)	289	390	0	195	454	384	86	360	0	188	362	415
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		20			20			22			14	
Two way Left Turn Lane												
Headway Factor	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		12	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6						4
Detector Phase	5	2		1	6	6	3	8		7	4	4
Switch Phase												
Minimum Initial (s)	5.0	7.0		5.0	7.0	7.0	5.0	8.0		5.0	7.0	7.0
Minimum Split (s)	8.5	19.0		8.5	21.0	21.0	8.5	20.0		8.5	23.0	23.0
Total Split (s)	38.5	64.0		38.5	64.0	64.0	33.5	54.0		43.5	54.0	54.0
Total Split (%)	19.3%	32.0%		19.3%	32.0%	32.0%	16.8%	27.0%		21.8%	27.0%	27.0%
Maximum Green (s)	35.0	60.0		35.0	60.0	60.0	30.0	50.0		40.0	50.0	50.0
Yellow Time (s)	3.0	3.5		3.0	3.5	3.5	3.0	3.5		3.0	3.5	3.5
All-Red Time (s)	0.5	0.5		0.5	0.5	0.5	0.5	0.5		0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	3.5	4.0		3.5	4.0	4.0	3.5	4.0		3.5	4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	4.0	3.0		3.0	3.0	3.0	2.0	3.0		2.0	3.0	3.0
Recall Mode	None	Min		None	Min	Min	None	None		None	None	None
Walk Time (s)		8.0			8.0	8.0		8.0			8.0	8.0
Flash Dont Walk (s)		7.0			9.0	9.0		8.0			11.0	11.0
Pedestrian Calls (#/hr)		3			3	3		2			2	2
Act Effct Green (s)	35.4	64.3		27.5	56.3	56.3	15.0	45.4		23.8	54.2	54.2
Actuated g/C Ratio	0.20	0.36		0.16	0.32	0.32	0.09	0.26		0.14	0.31	0.31
v/c Ratio	0.94	0.37		0.83	0.89	0.78	0.70	0.90		0.81	0.67	0.78
Control Delay	107.4	43.6		100.9	78.3	51.9	109.3	88.8		100.5	60.8	52.3
Queue Delay	47.0	2.9		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	154.4	46.5		100.9	78.3	51.9	109.3	88.8		100.5	60.8	52.3
LOS	F	D		F	E	D	F	F		F	E	D
Approach Delay		92.4			72.8			92.8			64.9	
Approach LOS		F			E			F			E	
90th %ile Green (s)	35.0	60.0		35.0	60.0	60.0	22.5	50.0		33.6	61.1	61.1
90th %ile Term Code	Max	Hold		Max	Max	Max	Gap	Max		Gap	Hold	Hold
70th %ile Green (s)	35.0	62.1		32.9	60.0	60.0	18.2	50.0		28.0	59.8	59.8
70th %ile Term Code	Max	Hold		Gap	Max	Max	Gap	Max		Gap	Hold	Hold
50th %ile Green (s)	35.0	66.2		28.8	60.0	60.0	15.3	50.0		24.3	59.0	59.0
50th %ile Term Code	Max	Hold		Gap	Max	Max	Gap	Max		Gap	Hold	Hold
30th %ile Green (s)	35.0	68.4		24.7	58.1	58.1	12.4	44.3		20.6	52.5	52.5
30th %ile Term Code	Max	Hold		Gap	Gap	Gap	Gap	Gap		Gap	Hold	Hold
10th %ile Green (s)	35.0	61.1		17.7	43.8	43.8	8.3	33.8		14.6	40.1	40.1
10th %ile Term Code	Max	Hold		Gap	Gap	Gap	Gap	Gap		Gap	Hold	Hold
Stops (vph)	182	219		114	351	174	41	269		139	243	223
Fuel Used(gal)	6	5		4	11	6	1	9		5	8	8
CO Emissions (g/hr)	418	315		282	786	406	104	638		359	530	548
NOx Emissions (g/hr)	81	61		55	153	79	20	124		70	103	107
VOC Emissions (g/hr)	97	73		65	182	94	24	148		83	123	127
Dilemma Vehicles (#)	0	0		0	0	0	0	0		0	0	0
Queue Length 50th (ft)	355	177		232	522	314	104	414		226	378	343
Queue Length 95th (ft)	#434	227		219	#734	295	92	#564		272	444	400

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		248			992			953			1199	
Turn Bay Length (ft)	140					100	180			540		70
Base Capacity (vph)	307	1068		304	549	520	249	446		397	610	581
Starvation Cap Reductn	89	555		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	1.33	0.76		0.64	0.83	0.74	0.35	0.81		0.47	0.59	0.71

Intersection Summary			
Area Type:	Other		
Cycle Length: 200			
Actuated Cycle Length: 176.2			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.94			
Intersection Signal Delay: 77.5		Intersection LOS: E	
Intersection Capacity Utilization 76.0%		ICU Level of Service D	
Analysis Period (min) 15			
90th %ile Actuated Cycle: 193.6			
70th %ile Actuated Cycle: 188			
50th %ile Actuated Cycle: 184.3			
30th %ile Actuated Cycle: 173			
10th %ile Actuated Cycle: 142.2			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 6: Porter St & Soquel Dr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	140		0	0		100	180		0	540		70
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (ft)	45			25			50			300		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	0.99		0.98		0.95	0.99	1.00		0.99		0.97
Frt		0.973				0.850		0.985				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1531	2907	0	1516	1595	1369	1446	1547	0	1728	1766	1516
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1516	2907	0	1480	1595	1302	1436	1547	0	1708	1766	1470
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13				109		3				112
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		328			1072			1033			1279	
Travel Time (s)		8.9			29.2			28.2			34.9	

Intersection Summary	
Area Type:	Other

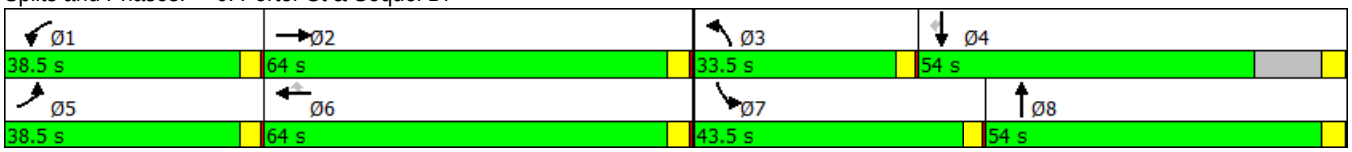
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	214	260	54	121	395	261	43	272	29	147	286	324
Future Volume (vph)	214	260	54	121	395	261	43	272	29	147	286	324
Confl. Peds. (#/hr)	3		6	6		3	2		5	5		2
Confl. Bikes (#/hr)			5			10			3			
Peak Hour Factor	0.74	0.81	0.78	0.62	0.87	0.68	0.50	0.84	0.81	0.78	0.79	0.78
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	4%	0%	3%	3%	2%	8%	4%	7%	1%	4%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	289	321	69	195	454	384	86	324	36	188	362	415
Shared Lane Traffic (%)												
Lane Group Flow (vph)	289	390	0	195	454	384	86	360	0	188	362	415

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	214	260	121	395	261	43	272	147	286	324
Future Volume (vph)	214	260	121	395	261	43	272	147	286	324
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Prot	NA	Perm
Protected Phases	5	2	1	6		3	8	7	4	
Permitted Phases					6					4
Detector Phase	5	2	1	6	6	3	8	7	4	4
Switch Phase										
Minimum Initial (s)	5.0	7.0	5.0	7.0	7.0	5.0	8.0	5.0	7.0	7.0
Minimum Split (s)	8.5	19.0	8.5	21.0	21.0	8.5	20.0	8.5	23.0	23.0
Total Split (s)	38.5	64.0	38.5	64.0	64.0	33.5	54.0	43.5	54.0	54.0
Total Split (%)	19.3%	32.0%	19.3%	32.0%	32.0%	16.8%	27.0%	21.8%	27.0%	27.0%
Yellow Time (s)	3.0	3.5	3.0	3.5	3.5	3.0	3.5	3.0	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.5	4.0	3.5	4.0	4.0	3.5	4.0	3.5	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min	None	Min	Min	None	None	None	None	None
Act Effct Green (s)	35.4	64.3	27.5	56.3	56.3	15.0	45.4	23.8	54.2	54.2
Actuated g/C Ratio	0.20	0.36	0.16	0.32	0.32	0.09	0.26	0.14	0.31	0.31
v/c Ratio	0.94	0.37	0.83	0.89	0.78	0.70	0.90	0.81	0.67	0.78
Control Delay	107.4	43.6	100.9	78.3	51.9	109.3	88.8	100.5	60.8	52.3
Queue Delay	47.0	2.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	154.4	46.5	100.9	78.3	51.9	109.3	88.8	100.5	60.8	52.3
LOS	F	D	F	E	D	F	F	F	E	D
Approach Delay		92.4		72.8			92.8		64.9	
Approach LOS		F		E			F		E	

Intersection Summary	
Cycle Length: 200	
Actuated Cycle Length: 176.2	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.94	
Intersection Signal Delay: 77.5	Intersection LOS: E
Intersection Capacity Utilization 76.0%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 6: Porter St & Soquel Dr



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Protected Phases	5	2	1	6		3	8	7	4	
Permitted Phases					6					4
Minimum Initial (s)	5.0	7.0	5.0	7.0	7.0	5.0	8.0	5.0	7.0	7.0
Minimum Split (s)	8.5	19.0	8.5	21.0	21.0	8.5	20.0	8.5	23.0	23.0
Total Split (s)	38.5	64.0	38.5	64.0	64.0	33.5	54.0	43.5	54.0	54.0
Total Split (%)	19.3%	32.0%	19.3%	32.0%	32.0%	16.8%	27.0%	21.8%	27.0%	27.0%
Maximum Green (s)	35.0	60.0	35.0	60.0	60.0	30.0	50.0	40.0	50.0	50.0
Yellow Time (s)	3.0	3.5	3.0	3.5	3.5	3.0	3.5	3.0	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	3.0	3.0	3.0	3.0	2.0	3.0	2.0	3.0	3.0
Minimum Gap (s)	4.0	3.0	3.0	3.0	3.0	2.0	3.0	2.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	Min	None	Min	Min	None	None	None	None	None
Walk Time (s)		8.0		8.0	8.0		8.0		8.0	8.0
Flash Dont Walk (s)		7.0		9.0	9.0		8.0		11.0	11.0
Pedestrian Calls (#/hr)		3		3	3		2		2	2
90th %ile Green (s)	35.0	60.0	35.0	60.0	60.0	22.5	50.0	33.6	61.1	61.1
90th %ile Term Code	Max	Hold	Max	Max	Max	Gap	Max	Gap	Hold	Hold
70th %ile Green (s)	35.0	62.1	32.9	60.0	60.0	18.2	50.0	28.0	59.8	59.8
70th %ile Term Code	Max	Hold	Gap	Max	Max	Gap	Max	Gap	Hold	Hold
50th %ile Green (s)	35.0	66.2	28.8	60.0	60.0	15.3	50.0	24.3	59.0	59.0
50th %ile Term Code	Max	Hold	Gap	Max	Max	Gap	Max	Gap	Hold	Hold
30th %ile Green (s)	35.0	68.4	24.7	58.1	58.1	12.4	44.3	20.6	52.5	52.5
30th %ile Term Code	Max	Hold	Gap	Gap	Gap	Gap	Gap	Gap	Hold	Hold
10th %ile Green (s)	35.0	61.1	17.7	43.8	43.8	8.3	33.8	14.6	40.1	40.1
10th %ile Term Code	Max	Hold	Gap	Gap	Gap	Gap	Gap	Gap	Hold	Hold

Intersection Summary
Cycle Length: 200
Actuated Cycle Length: 176.2
Control Type: Actuated-Uncoordinated
90th %ile Actuated Cycle: 193.6
70th %ile Actuated Cycle: 188
50th %ile Actuated Cycle: 184.3
30th %ile Actuated Cycle: 173
10th %ile Actuated Cycle: 142.2

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	289	390	195	454	384	86	360	188	362	415
v/c Ratio	0.94	0.37	0.83	0.89	0.78	0.70	0.90	0.81	0.67	0.78
Control Delay	107.4	43.6	100.9	78.3	51.9	109.3	88.8	100.5	60.8	52.3
Queue Delay	47.0	2.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	154.4	46.5	100.9	78.3	51.9	109.3	88.8	100.5	60.8	52.3
Queue Length 50th (ft)	355	177	232	522	314	104	414	226	378	343
Queue Length 95th (ft)	#434	227	219	#734	295	92	#564	272	444	400
Internal Link Dist (ft)		248		992			953		1199	
Turn Bay Length (ft)	140				100	180		540		70
Base Capacity (vph)	307	1068	304	549	520	249	446	397	610	581
Starvation Cap Reductn	89	555	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.33	0.76	0.64	0.83	0.74	0.35	0.81	0.47	0.59	0.71

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		20			20			22			14	
Two way Left Turn Lane												
Headway Factor	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		12	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	214	260	54	121	395	261	43	272	29	147	286	324
Pedestrians	3		6	6		3	2		5	5		2
Ped Button		Yes			Yes			Yes			Yes	
Pedestrian Timing (s)		15.0			17.0			16.0			19.0	
Free Right			No			No			No			No
Ideal Flow	1700	1700	1700	1700	1700	1700	1700	1700	1700	1900	1900	1900
Lost Time (s)	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0
Minimum Green (s)	5.0	7.0	4.0	5.0	7.0	7.0	5.0	8.0	4.0	5.0	7.0	7.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	214	314	0	121	395	261	43	301	0	147	286	324
Lane Utilization Factor	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.95	0.97	0.85	0.95	1.00	0.85	0.95	0.99	0.85	0.95	1.00	0.85
Saturated Flow (vph)	1615	3153	0	1615	1700	1445	1615	1675	0	1805	1900	1615
Ped Intf Time (s)	0.0	0.1	0.8	0.0	0.0	0.4	0.0	0.1	0.6	0.0	0.0	0.3
Pedestrian Frequency (%)		0.18			0.10			0.15			0.06	
Protected Option Allowed		Yes			Yes			Yes			Yes	
Reference Time (s)	15.9	12.1	0.0	9.0	27.9	22.1	3.2	21.6	0.0	9.8	18.1	24.3
Adj Reference Time (s)	19.9	16.6	0.0	13.0	31.9	26.1	9.0	25.6	0.0	13.8	22.1	28.3
Permitted Option												
Adj Saturation A (vph)	108	1577		108	1700		108	1675		120	1900	
Reference Time A (s)	238.5	12.1		134.9	27.9		47.9	21.6		146.6	18.1	
Adj Saturation B (vph	NA	NA		NA	NA		NA	NA		NA	NA	
Reference Time B (s)	NA	NA		NA	NA		NA	NA		NA	NA	
Reference Time (s)		238.5			134.9			47.9			146.6	
Adj Reference Time (s)		242.5			138.9			51.9			150.6	
Split Option												
Ref Time Combined (s)	15.9	12.1		9.0	27.9		3.2	21.6		9.8	18.1	
Ref Time Seperate (s)	15.9	10.0		9.0	27.9		3.2	19.5		9.8	18.1	
Reference Time (s)	15.9	15.9		27.9	27.9		21.6	21.6		18.1	18.1	
Adj Reference Time (s)	19.9	19.9		31.9	31.9		25.6	25.6		22.1	22.1	

Summary	EB WB	NB SB	Combined
Protected Option (s)	51.8	39.4	
Permitted Option (s)	242.5	150.6	
Split Option (s)	51.8	47.7	
Minimum (s)	51.8	39.4	91.2

Right Turns	WBR	SBR
Adj Reference Time (s)	26.1	28.3
Cross Thru Ref Time (s)	25.6	31.9
Oncoming Left Ref Time (s)	19.9	9.0
Combined (s)	71.6	69.2

Intersection Summary			
Intersection Capacity Utilization	76.0%	ICU Level of Service	D

Reference Times and Phasing Options do not represent an optimized timing plan.

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	3	0	714	508	11
Future Vol, veh/h	0	3	0	714	508	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	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	3	0	776	552	12

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	282	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	715	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	715	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.1	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	715	-	-
HCM Lane V/C Ratio	-	0.005	-	-
HCM Control Delay (s)	-	10.1	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0	-	-

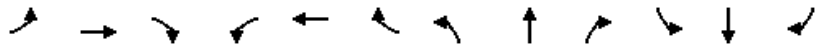
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	1	4	192	3	15	5	685	81	18	494	1
Future Volume (veh/h)	1	1	4	192	3	15	5	685	81	18	494	1
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1169	1900	1759	1774	1900	1583	1827	1696	1712	1777	1900
Adj Flow Rate, veh/h	4	4	8	268	0	0	12	806	119	24	574	4
Adj No. of Lanes	0	1	0	2	1	0	1	2	1	1	2	0
Peak Hour Factor	0.25	0.25	0.50	0.81	0.25	0.63	0.42	0.85	0.68	0.75	0.86	0.25
Percent Heavy Veh, %	100	100	100	8	0	0	20	4	12	11	7	7
Cap, veh/h	6	6	13	536	284	0	19	1473	591	37	1493	10
Arrive On Green	0.02	0.02	0.02	0.16	0.00	0.00	0.01	0.42	0.42	0.02	0.43	0.43
Sat Flow, veh/h	262	262	525	3351	1774	0	1508	3471	1393	1630	3435	24
Grp Volume(v), veh/h	16	0	0	268	0	0	12	806	119	24	282	296
Grp Sat Flow(s),veh/h/ln	1050	0	0	1675	1774	0	1508	1736	1393	1630	1688	1771
Q Serve(g_s), s	0.7	0.0	0.0	3.6	0.0	0.0	0.4	8.5	2.6	0.7	5.5	5.5
Cycle Q Clear(g_c), s	0.7	0.0	0.0	3.6	0.0	0.0	0.4	8.5	2.6	0.7	5.5	5.5
Prop In Lane	0.25		0.50	1.00		0.00	1.00		1.00	1.00		0.01
Lane Grp Cap(c), veh/h	25	0	0	536	284	0	19	1473	591	37	734	770
V/C Ratio(X)	0.64	0.00	0.00	0.50	0.00	0.00	0.65	0.55	0.20	0.65	0.38	0.38
Avail Cap(c_a), veh/h	430	0	0	1718	909	0	618	2135	857	668	1038	1090
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.6	0.0	0.0	18.7	0.0	0.0	24.0	10.5	8.8	23.6	9.4	9.4
Incr Delay (d2), s/veh	23.6	0.0	0.0	1.0	0.0	0.0	31.9	0.3	0.2	17.3	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.0	1.7	0.0	0.0	0.3	4.1	1.0	0.5	2.6	2.7
LnGrp Delay(d),s/veh	47.2	0.0	0.0	19.7	0.0	0.0	55.9	10.8	9.0	40.9	9.7	9.7
LnGrp LOS	D			B			E	B	A	D	A	A
Approach Vol, veh/h		16			268			937			602	
Approach Delay, s/veh		47.2			19.7			11.2			10.9	
Approach LOS		D			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.1	25.7		12.3	4.6	26.2		5.7
Change Period (Y+Rc), s	4.0	5.0		4.5	4.0	5.0		4.5
Max Green Setting (Gmax), s	20.0	30.0		25.0	20.0	30.0		20.0
Max Q Clear Time (g_c+I1), s	2.7	10.5		5.6	2.4	7.5		2.7
Green Ext Time (p_c), s	0.0	10.2		1.4	0.0	11.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	12.7
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	617	5	434	0	552	374	0	578	168
Future Volume (veh/h)	0	0	0	617	5	434	0	552	374	0	578	168
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1845	1846	1863	0	1834	1900	0	1804	1900
Adj Flow Rate, veh/h				749	0	477	0	613	0	0	649	198
Adj No. of Lanes				2	0	1	0	2	0	0	2	0
Peak Hour Factor				0.83	0.63	0.91	0.92	0.90	0.92	0.92	0.89	0.85
Percent Heavy Veh, %				3	0	2	0	4	4	0	6	6
Cap, veh/h				1115	0	502	0	1742	0	0	1294	394
Arrive On Green				0.32	0.00	0.32	0.00	1.00	0.00	0.00	0.50	0.50
Sat Flow, veh/h				3514	0	1583	0	3668	0	0	2677	789
Grp Volume(v), veh/h				749	0	477	0	613	0	0	430	417
Grp Sat Flow(s),veh/h/ln				1757	0	1583	0	1742	0	0	1714	1662
Q Serve(g_s), s				9.6	0.0	15.3	0.0	0.0	0.0	0.0	8.7	8.7
Cycle Q Clear(g_c), s				9.6	0.0	15.3	0.0	0.0	0.0	0.0	8.7	8.7
Prop In Lane				1.00		1.00	0.00		0.00	0.00		0.47
Lane Grp Cap(c), veh/h				1115	0	502	0	1742	0	0	857	831
V/C Ratio(X)				0.67	0.00	0.95	0.00	0.35	0.00	0.00	0.50	0.50
Avail Cap(c_a), veh/h				1115	0	502	0	1742	0	0	857	831
HCM Platoon Ratio				1.00	1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.00	0.96	0.00	0.00	0.94	0.94
Uniform Delay (d), s/veh				15.4	0.0	17.3	0.0	0.0	0.0	0.0	8.7	8.7
Incr Delay (d2), s/veh				1.7	0.0	27.9	0.0	0.5	0.0	0.0	2.0	2.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				4.8	0.0	10.5	0.0	0.1	0.0	0.0	4.5	4.4
LnGrp Delay(d),s/veh				17.1	0.0	45.3	0.0	0.5	0.0	0.0	10.7	10.7
LnGrp LOS				B		D		A			B	B
Approach Vol, veh/h					1226			613			847	
Approach Delay, s/veh					28.1			0.5			10.7	
Approach LOS					C			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		31.3				31.3		20.7
Change Period (Y+Rc), s		5.3				5.3		4.2
Max Green Setting (Gmax), s		26.0				26.0		16.5
Max Q Clear Time (g_c+I1), s		2.0				10.7		17.3
Green Ext Time (p_c), s		12.9				9.7		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	16.3
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	225	0	516	0	0	0	0	701	562	0	954	241
Future Volume (vph)	225	0	516	0	0	0	0	701	562	0	954	241
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.6	4.6					4.9	4.9		4.9	4.0
Lane Util. Factor		1.00	0.88					0.95	1.00		0.91	1.00
Frpb, ped/bikes		1.00	1.00					1.00	1.00		1.00	0.98
Flpb, ped/bikes		1.00	1.00					1.00	1.00		1.00	1.00
Frt		1.00	0.85					1.00	0.85		1.00	0.85
Flt Protected		0.95	1.00					1.00	1.00		1.00	1.00
Satd. Flow (prot)		1694	2668					3388	1516		4868	1412
Flt Permitted		0.95	1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)		1694	2668					3388	1516		4868	1412
Peak-hour factor, PHF	0.85	0.92	0.85	0.92	0.92	0.92	0.92	0.91	0.88	0.92	0.86	0.83
Adj. Flow (vph)	265	0	607	0	0	0	0	770	639	0	1109	290
RTOR Reduction (vph)	0	0	235	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	265	372	0	0	0	0	770	639	0	1109	290
Confl. Peds. (#/hr)	5					5	6					6
Confl. Bikes (#/hr)									6			1
Heavy Vehicles (%)	3%	0%	3%	0%	0%	0%	0%	3%	3%	0%	3%	8%
Turn Type	Split	NA	Perm					NA	Prot		NA	Free
Protected Phases	2	2						1 3 4	1 3 4		1 3 4	
Permitted Phases			2									Free
Actuated Green, G (s)		15.4	15.4					79.8	79.8		79.8	104.0
Effective Green, g (s)		15.4	15.4					75.6	75.6		75.6	104.0
Actuated g/C Ratio		0.15	0.15					0.73	0.73		0.73	1.00
Clearance Time (s)		4.6	4.6									
Vehicle Extension (s)		3.0	3.0									
Lane Grp Cap (vph)		250	395					2462	1102		3538	1412
v/s Ratio Prot		c0.16						0.23	c0.42		0.23	
v/s Ratio Perm			0.14									0.21
v/c Ratio		1.06	0.94					0.31	0.58		0.31	0.21
Uniform Delay, d1		44.3	43.9					5.0	6.7		5.0	0.0
Progression Factor		1.00	1.00					0.02	0.69		1.70	1.00
Incremental Delay, d2		73.6	30.6					0.0	0.4		0.0	0.3
Delay (s)		117.9	74.5					0.1	5.0		8.6	0.3
Level of Service		F	E					A	A		A	A
Approach Delay (s)		87.7			0.0			2.4			6.9	
Approach LOS		F			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	24.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	104.0	Sum of lost time (s)	17.9
Intersection Capacity Utilization	55.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	51	1145	41	10	523	75	83	1	15	56	3	47
Future Volume (veh/h)	51	1145	41	10	523	75	83	1	15	56	3	47
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.97	0.99		0.98	0.99		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1900	1900	1868	1900	1900	1842	1900	1900	1882	1900
Adj Flow Rate, veh/h	64	1231	64	24	568	88	108	4	24	76	8	76
Adj No. of Lanes	0	2	0	1	2	0	0	1	0	0	1	0
Peak Hour Factor	0.80	0.93	0.64	0.42	0.92	0.85	0.77	0.25	0.63	0.74	0.38	0.62
Percent Heavy Veh, %	1	1	1	0	2	2	0	0	0	0	0	0
Cap, veh/h	135	1996	102	306	1936	299	337	22	51	213	46	143
Arrive On Green	0.63	0.63	0.63	0.63	0.63	0.63	0.19	0.19	0.19	0.19	0.19	0.19
Sat Flow, veh/h	96	3162	162	432	3067	474	1137	118	269	596	242	758
Grp Volume(v), veh/h	698	0	661	24	328	328	136	0	0	160	0	0
Grp Sat Flow(s),veh/h/ln	1746	0	1675	432	1774	1767	1525	0	0	1595	0	0
Q Serve(g_s), s	0.0	0.0	12.7	1.9	4.4	4.4	0.0	0.0	0.0	0.8	0.0	0.0
Cycle Q Clear(g_c), s	11.5	0.0	12.7	14.6	4.4	4.4	3.6	0.0	0.0	4.4	0.0	0.0
Prop In Lane	0.09		0.10	1.00		0.27	0.79		0.18	0.47		0.47
Lane Grp Cap(c), veh/h	1176	0	1057	306	1120	1115	410	0	0	401	0	0
V/C Ratio(X)	0.59	0.00	0.63	0.08	0.29	0.29	0.33	0.00	0.00	0.40	0.00	0.00
Avail Cap(c_a), veh/h	1231	0	1112	320	1178	1173	792	0	0	828	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	5.7	0.0	5.9	10.4	4.4	4.4	18.8	0.0	0.0	19.1	0.0	0.0
Incr Delay (d2), s/veh	1.2	0.0	1.6	0.2	0.3	0.3	1.0	0.0	0.0	1.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.2	0.0	6.2	0.2	2.2	2.2	1.9	0.0	0.0	2.2	0.0	0.0
LnGrp Delay(d),s/veh	6.9	0.0	7.5	10.6	4.7	4.7	19.8	0.0	0.0	20.5	0.0	0.0
LnGrp LOS	A		A	B	A	A	B			C		
Approach Vol, veh/h		1359			680			136			160	
Approach Delay, s/veh		7.2			4.9			19.8			20.5	
Approach LOS		A			A			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		38.3		14.4		38.3		14.4
Change Period (Y+Rc), s		5.0		4.5		5.0		4.5
Max Green Setting (Gmax), s		35.0		25.0		35.0		25.0
Max Q Clear Time (g_c+I1), s		14.7		5.6		16.6		6.4
Green Ext Time (p_c), s		18.3		3.0		16.7		3.0

Intersection Summary	
HCM 2010 Ctrl Delay	8.2
HCM 2010 LOS	A

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1249	1	6	605	3	9
Future Vol, veh/h	1249	1	6	605	3	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	70	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1358	1	7	658	3	10

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1359	0	1700	679
Stage 1	-	-	-	-	1358	-
Stage 2	-	-	-	-	342	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	502	-	83	394
Stage 1	-	-	-	-	204	-
Stage 2	-	-	-	-	691	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	502	-	82	394
Mov Cap-2 Maneuver	-	-	-	-	82	-
Stage 1	-	-	-	-	204	-
Stage 2	-	-	-	-	681	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	24
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	202	-	-	502	-
HCM Lane V/C Ratio	0.065	-	-	0.013	-
HCM Control Delay (s)	24	-	-	12.3	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	743	511	82	236	5	375	18	155	3	17	5
Future Volume (veh/h)	4	743	511	82	236	5	375	18	155	3	17	5
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.91
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1900	1810	1869	1900	1845	1853	1845	1900	1900	1900
Adj Flow Rate, veh/h	8	864	562	117	342	12	422	0	194	8	40	16
Adj No. of Lanes	1	2	0	1	2	0	2	0	1	0	1	0
Peak Hour Factor	0.50	0.86	0.91	0.70	0.69	0.42	0.94	0.56	0.80	0.38	0.43	0.31
Percent Heavy Veh, %	0	1	1	5	1	1	3	0	3	0	0	0
Cap, veh/h	15	889	562	150	1771	62	663	0	287	11	54	22
Arrive On Green	0.01	0.43	0.43	0.09	0.51	0.51	0.19	0.00	0.19	0.05	0.05	0.05
Sat Flow, veh/h	1810	2077	1314	1723	3496	122	3514	0	1521	220	1102	441
Grp Volume(v), veh/h	8	740	686	117	173	181	422	0	194	64	0	0
Grp Sat Flow(s),veh/h/ln	1810	1787	1604	1723	1776	1842	1757	0	1521	1763	0	0
Q Serve(g_s), s	0.3	30.2	32.0	5.0	4.0	4.0	8.3	0.0	8.9	2.7	0.0	0.0
Cycle Q Clear(g_c), s	0.3	30.2	32.0	5.0	4.0	4.0	8.3	0.0	8.9	2.7	0.0	0.0
Prop In Lane	1.00		0.82	1.00		0.07	1.00		1.00	0.12		0.25
Lane Grp Cap(c), veh/h	15	765	687	150	900	933	663	0	287	87	0	0
V/C Ratio(X)	0.54	0.97	1.00	0.78	0.19	0.19	0.64	0.00	0.68	0.74	0.00	0.00
Avail Cap(c_a), veh/h	774	765	687	738	900	933	1880	0	814	472	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	36.9	20.9	21.4	33.4	10.1	10.1	28.0	0.0	28.2	35.1	0.0	0.0
Incr Delay (d2), s/veh	10.9	25.3	34.2	3.4	0.4	0.4	1.0	0.0	2.8	13.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	20.2	20.4	2.5	2.0	2.1	4.1	0.0	3.9	1.6	0.0	0.0
LnGrp Delay(d),s/veh	47.8	46.1	55.5	36.8	10.5	10.5	29.0	0.0	31.0	48.8	0.0	0.0
LnGrp LOS	D	D	E	D	B	B	C		C	D		
Approach Vol, veh/h		1434			471			616			64	
Approach Delay, s/veh		50.6			17.0			29.6			48.8	
Approach LOS		D			B			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.0	37.0		8.2	5.1	42.9		18.6
Change Period (Y+Rc), s	4.5	5.0		4.5	4.5	5.0		4.5
Max Green Setting (Gmax), s	32.0	32.0		20.0	32.0	31.0		40.0
Max Q Clear Time (g_c+I1), s	7.0	34.0		4.7	2.3	6.0		10.9
Green Ext Time (p_c), s	0.1	0.0		0.3	0.0	22.5		2.4

Intersection Summary	
HCM 2010 Ctrl Delay	39.5
HCM 2010 LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Intersection Delay, s/veh	76
Intersection LOS	F

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations																
Traffic Vol, veh/h	0	1	831	118	0	209	388	0	0	72	0	330	0	0	0	3
Future Vol, veh/h	0	1	831	118	0	209	388	0	0	72	0	330	0	0	0	3
Peak Hour Factor	0.92	0.75	0.95	0.80	0.92	0.82	0.86	0.92	0.92	0.67	0.92	0.78	0.92	0.92	0.92	0.38
Heavy Vehicles, %	2	0	1	0	2	1	1	0	2	3	0	1	2	0	0	0
Mvmt Flow	0	1	875	148	0	255	451	0	0	107	0	423	0	0	0	8
Number of Lanes	0	0	2	0	0	0	2	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	2
HCM Control Delay	110.8	40.9	56.4	12.2
HCM LOS	F	E	F	B

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	18%	0%	0%	62%	0%	0%
Vol Thru, %	0%	100%	78%	38%	100%	0%
Vol Right, %	82%	0%	22%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	402	417	534	338	259	3
LT Vol	72	1	0	209	0	0
Through Vol	0	416	416	129	259	0
RT Vol	330	0	118	0	0	3
Lane Flow Rate	531	439	585	405	301	8
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0.965	0.95	1.243	0.912	0.651	0.019
Departure Headway (Hd)	6.721	7.793	7.649	8.34	8.02	9.034
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	541	469	480	438	454	399
Service Time	4.721	5.514	5.37	6.04	5.72	7.034
HCM Lane V/C Ratio	0.982	0.936	1.219	0.925	0.663	0.02
HCM Control Delay	56.4	58.1	150.4	53	24.5	12.2
HCM Lane LOS	F	F	F	F	C	B
HCM 95th-tile Q	12.8	11.5	23.5	10	4.5	0.1

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	831	118	209	388	0	72	0	330	0	0	3
Future Volume (vph)	1	831	118	209	388	0	72	0	330	0	0	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.978						0.892			0.865	
Flt Protected					0.982			0.990				
Satd. Flow (prot)	0	3384	0	0	3393	0	0	1599	0	0	1589	0
Flt Permitted					0.982			0.990				
Satd. Flow (perm)	0	3384	0	0	3393	0	0	1599	0	0	1589	0
Link Speed (mph)		35			25			25			25	
Link Distance (ft)		1301			475			1062			833	
Travel Time (s)		25.3			13.0			29.0			22.7	
Confl. Peds. (#/hr)	12					12			7	7		
Confl. Bikes (#/hr)			13			5						
Peak Hour Factor	0.75	0.95	0.80	0.82	0.86	0.92	0.67	0.92	0.78	0.92	0.92	0.38
Heavy Vehicles (%)	0%	1%	0%	1%	1%	0%	3%	0%	1%	0%	0%	0%
Adj. Flow (vph)	1	875	148	255	451	0	107	0	423	0	0	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1024	0	0	706	0	0	530	0	0	8	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		2			2			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			35			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 85.2%		ICU Level of Service E	
Analysis Period (min) 15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.978						0.892			0.865	
Flt Protected					0.982			0.990				
Satd. Flow (prot)	0	3384	0	0	3393	0	0	1599	0	0	1589	0
Flt Permitted					0.982			0.990				
Satd. Flow (perm)	0	3384	0	0	3393	0	0	1599	0	0	1589	0
Link Speed (mph)		35			25			25			25	
Link Distance (ft)		1301			475			1062			833	
Travel Time (s)		25.3			13.0			29.0			22.7	

Intersection Summary

Area Type: Other

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	1	831	118	209	388	0	72	0	330	0	0	3
Future Volume (vph)	1	831	118	209	388	0	72	0	330	0	0	3
Confl. Peds. (#/hr)	12					12			7	7		
Confl. Bikes (#/hr)			13			5						
Peak Hour Factor	0.75	0.95	0.80	0.82	0.86	0.92	0.67	0.92	0.78	0.92	0.92	0.38
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	1%	0%	1%	1%	0%	3%	0%	1%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	1	875	148	255	451	0	107	0	423	0	0	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1024	0	0	706	0	0	530	0	0	8	0

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		2			2			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			35			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9

Intersection Summary

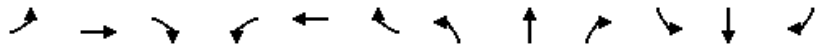
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	831	118	209	388	0	72	0	330	0	0	3
Pedestrians	12					12			7	7		
Ped Button					Yes			Yes				
Pedestrian Timing (s)					16.0			16.0				
Free Right			No			No			No			No
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	0	950	0	0	597	0	0	402	0	0	3	0
Lane Utilization Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.95	0.98	0.85	0.95	0.98	0.85	0.95	0.87	0.85	0.95	0.85	0.85
Saturated Flow (vph)	0	3550	0	0	3554	0	0	1651	0	0	1615	0
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.7	0.9	0.0	0.0	0.0
Pedestrian Frequency (%)		0.00			0.33			0.21			0.00	
Protected Option Allowed		No			No			No			No	
Reference Time (s)			0.0			0.0			0.0			0.0
Adj Reference Time (s)			0.0			0.0			0.0			0.0
Permitted Option												
Adj Saturation A (vph)	0	1724		0	118		0	445		0	1615	
Reference Time A (s)	0.0	32.9		0.0	211.7		0.0	109.1		0.0	0.2	
Adj Saturation B (vph	NA	NA		NA	NA		0	0		NA	NA	
Reference Time B (s)	NA	NA		NA	NA		12.8	37.9		NA	NA	
Reference Time (s)		32.9			211.7			37.9			0.2	
Adj Reference Time (s)		36.9			215.7			41.9			8.0	
Split Option												
Ref Time Combined (s)	0.0	32.1		0.0	20.2		0.0	29.9		0.0	0.2	
Ref Time Seperate (s)	0.1	28.1		13.9	12.9		4.8	0.7		0.0	0.0	
Reference Time (s)	32.1	32.1		20.2	20.2		29.9	29.9		0.2	0.2	
Adj Reference Time (s)	36.1	36.1		24.2	24.2		33.9	33.9		8.0	8.0	

Summary	EB WB	NB SB	Combined
Protected Option (s)	NA	NA	
Permitted Option (s)	215.7	41.9	
Split Option (s)	60.3	41.9	
Minimum (s)	60.3	41.9	102.2

Right Turns
Adj Reference Time (s)
Cross Thru Ref Time (s)
Oncoming Left Ref Time (s)
Combined (s)

Intersection Summary			
Intersection Capacity Utilization	85.2%	ICU Level of Service	E

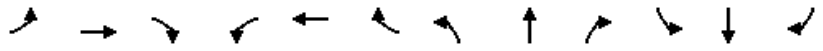
Reference Times and Phasing Options do not represent an optimized timing plan.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	1112	42	15	588	1	5	0	14	8	2	4
Future Volume (veh/h)	7	1112	42	15	588	1	5	0	14	8	2	4
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.96	0.96		0.98	0.98		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1491	1668	1700	1700	1651	1700	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	12	1278	72	24	661	4	15	0	24	16	4	11
Adj No. of Lanes	1	2	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.58	0.87	0.58	0.63	0.89	0.25	0.33	0.92	0.58	0.50	0.50	0.38
Percent Heavy Veh, %	14	2	2	0	3	3	0	0	0	0	0	0
Cap, veh/h	432	1868	105	338	1006	6	198	20	111	230	51	65
Arrive On Green	0.61	0.61	0.61	0.61	0.61	0.61	0.12	0.00	0.12	0.12	0.12	0.12
Sat Flow, veh/h	614	3043	171	367	1639	10	421	173	950	572	436	554
Grp Volume(v), veh/h	12	664	686	24	0	665	39	0	0	31	0	0
Grp Sat Flow(s),veh/h/ln	614	1585	1630	367	0	1649	1544	0	0	1562	0	0
Q Serve(g_s), s	0.4	9.3	9.4	1.6	0.0	8.7	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	9.1	9.3	9.4	10.9	0.0	8.7	0.7	0.0	0.0	0.5	0.0	0.0
Prop In Lane	1.00		0.11	1.00		0.01	0.38		0.62	0.52		0.35
Lane Grp Cap(c), veh/h	432	973	1000	338	0	1012	329	0	0	345	0	0
V/C Ratio(X)	0.03	0.68	0.69	0.07	0.00	0.66	0.12	0.00	0.00	0.09	0.00	0.00
Avail Cap(c_a), veh/h	1159	2849	2930	773	0	2964	1273	0	0	1290	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.1	4.3	4.3	7.9	0.0	4.2	13.3	0.0	0.0	13.3	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.3	0.3	0.0	0.0	0.3	0.1	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	4.0	4.1	0.2	0.0	3.8	0.3	0.0	0.0	0.3	0.0	0.0
LnGrp Delay(d),s/veh	7.1	4.6	4.6	8.0	0.0	4.4	13.4	0.0	0.0	13.3	0.0	0.0
LnGrp LOS	A	A	A	A		A	B			B		
Approach Vol, veh/h		1362			689			39			31	
Approach Delay, s/veh		4.6			4.6			13.4			13.3	
Approach LOS		A			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		25.0		8.4		25.0		8.4
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		60.0		25.0		60.0		25.0
Max Q Clear Time (g_c+I1), s		11.4		2.5		12.9		2.7
Green Ext Time (p_c), s		7.6		0.1		7.6		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	4.9
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	215	818	101	69	298	124	45	170	141	302	436	261
Future Volume (veh/h)	215	818	101	69	298	124	45	170	141	302	436	261
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		1.00	1.00		0.99	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1683	1667	1700	1683	1650	1667	1845	1881	1900	1683	1650	1683
Adj Flow Rate, veh/h	242	974	136	96	351	0	53	221	183	392	525	330
Adj No. of Lanes	1	2	0	1	1	1	1	1	0	1	1	1
Peak Hour Factor	0.89	0.84	0.74	0.72	0.85	0.76	0.85	0.77	0.77	0.77	0.83	0.79
Percent Heavy Veh, %	1	2	2	1	3	2	3	1	1	1	3	1
Cap, veh/h	263	987	138	115	436	374	68	236	196	376	735	617
Arrive On Green	0.16	0.36	0.36	0.07	0.26	0.00	0.04	0.25	0.25	0.23	0.45	0.45
Sat Flow, veh/h	1603	2768	386	1603	1650	1417	1757	949	786	1603	1650	1387
Grp Volume(v), veh/h	242	557	553	96	351	0	53	0	404	392	525	330
Grp Sat Flow(s),veh/h/ln	1603	1583	1570	1603	1650	1417	1757	0	1736	1603	1650	1387
Q Serve(g_s), s	25.3	59.5	59.6	10.1	33.9	0.0	5.1	0.0	38.8	40.0	44.1	29.5
Cycle Q Clear(g_c), s	25.3	59.5	59.6	10.1	33.9	0.0	5.1	0.0	38.8	40.0	44.1	29.5
Prop In Lane	1.00		0.25	1.00		1.00	1.00		0.45	1.00		1.00
Lane Grp Cap(c), veh/h	263	565	560	115	436	374	68	0	432	376	735	617
V/C Ratio(X)	0.92	0.99	0.99	0.84	0.81	0.00	0.78	0.00	0.94	1.04	0.71	0.53
Avail Cap(c_a), veh/h	329	565	560	329	581	499	309	0	510	376	735	617
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	70.1	54.4	54.4	78.1	58.6	0.0	81.2	0.0	62.6	65.2	38.4	34.4
Incr Delay (d2), s/veh	27.9	34.2	34.7	14.6	6.1	0.0	7.2	0.0	22.8	57.5	3.3	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.3	31.4	31.2	4.9	16.2	0.0	2.6	0.0	21.4	23.7	20.8	11.5
LnGrp Delay(d),s/veh	97.9	88.6	89.1	92.7	64.7	0.0	88.3	0.0	85.4	122.7	41.7	35.3
LnGrp LOS	F	F	F	F	E		F		F	F	D	D
Approach Vol, veh/h		1352			447			457			1247	
Approach Delay, s/veh		90.5			70.7			85.7			65.5	
Approach LOS		F			E			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.7	64.7	10.1	79.8	31.5	48.9	43.5	46.4
Change Period (Y+Rc), s	3.5	4.0	3.5	4.0	3.5	4.0	3.5	4.0
Max Green Setting (Gmax), s	35.0	60.0	30.0	50.0	35.0	60.0	40.0	50.0
Max Q Clear Time (g_c+I2), s	12.1	61.6	7.1	46.1	27.3	35.9	42.0	40.8
Green Ext Time (p_c), s	0.2	0.0	0.1	2.5	0.7	9.1	0.0	1.6

Intersection Summary	
HCM 2010 Ctrl Delay	78.4
HCM 2010 LOS	E

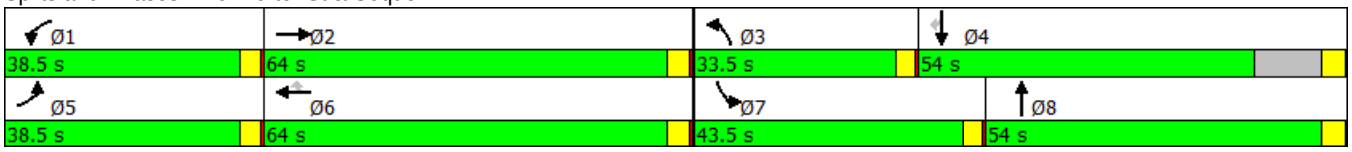
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	215	818	101	69	298	124	45	170	141	302	436	261
Future Volume (vph)	215	818	101	69	298	124	45	170	141	302	436	261
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1900	1900	1900	1700	1700	1700
Storage Length (ft)	140		0	0		100	180		0	540		70
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (ft)	45			25			50			300		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.98		0.98		0.96	0.98	0.99		0.99		0.94
Frt		0.982				0.850		0.932				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1546	2959	0	1546	1595	1369	1694	1674	0	1546	1595	1383
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1540	2959	0	1517	1595	1321	1668	1674	0	1532	1595	1304
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8				63		20				61
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		328			1072			1033			1279	
Travel Time (s)		8.9			29.2			28.2			34.9	
Confl. Peds. (#/hr)	1		13	13		1	6		4	4		6
Confl. Bikes (#/hr)			20			8						5
Peak Hour Factor	0.89	0.84	0.74	0.72	0.85	0.76	0.85	0.77	0.77	0.77	0.83	0.79
Heavy Vehicles (%)	1%	2%	2%	1%	3%	2%	3%	1%	1%	1%	3%	1%
Adj. Flow (vph)	242	974	136	96	351	163	53	221	183	392	525	330
Shared Lane Traffic (%)												
Lane Group Flow (vph)	242	1110	0	96	351	163	53	404	0	392	525	330
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		20			20			22			14	
Two way Left Turn Lane												
Headway Factor	1.20	1.20	1.20	1.20	1.20	1.20	1.04	1.04	1.04	1.20	1.20	1.20
Turning Speed (mph)	15		9	15		12	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6						4
Detector Phase	5	2		1	6	6	3	8		7	4	4
Switch Phase												
Minimum Initial (s)	5.0	7.0		5.0	7.0	7.0	5.0	8.0		5.0	7.0	7.0
Minimum Split (s)	8.5	19.0		8.5	21.0	21.0	8.5	20.0		8.5	23.0	23.0
Total Split (s)	38.5	64.0		38.5	64.0	64.0	33.5	54.0		43.5	54.0	54.0
Total Split (%)	19.3%	32.0%		19.3%	32.0%	32.0%	16.8%	27.0%		21.8%	27.0%	27.0%
Maximum Green (s)	35.0	60.0		35.0	60.0	60.0	30.0	50.0		40.0	50.0	50.0
Yellow Time (s)	3.0	3.5		3.0	3.5	3.5	3.0	3.5		3.0	3.5	3.5
All-Red Time (s)	0.5	0.5		0.5	0.5	0.5	0.5	0.5		0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	3.5	4.0		3.5	4.0	4.0	3.5	4.0		3.5	4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	4.0	3.0		3.0	3.0	3.0	2.0	3.0		2.0	3.0	3.0
Recall Mode	None	Min		None	Min	Min	None	None		None	None	None
Walk Time (s)		8.0			8.0	8.0		8.0			8.0	8.0
Flash Dont Walk (s)		7.0			9.0	9.0		8.0			11.0	11.0
Pedestrian Calls (#/hr)		13			1	1		4			6	6
Act Effct Green (s)	32.5	64.7		16.8	49.1	49.1	10.2	46.0		40.2	78.1	78.1
Actuated g/C Ratio	0.18	0.35		0.09	0.27	0.27	0.06	0.25		0.22	0.43	0.43
v/c Ratio	0.88	1.06		0.68	0.82	0.41	0.56	0.93		1.15	0.77	0.56
Control Delay	104.7	98.6		105.0	80.4	36.9	109.2	91.5		156.8	55.9	38.3
Queue Delay	57.8	20.6		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	162.4	119.2		105.0	80.4	36.9	109.2	91.5		156.8	55.9	38.3
LOS	F	F		F	F	D	F	F		F	E	D
Approach Delay		127.0			72.6			93.6			83.0	
Approach LOS		F			E			F			F	
90th %ile Green (s)	35.0	70.4		24.6	60.0	60.0	15.4	50.0		40.0	74.6	74.6
90th %ile Term Code	Max	Hold		Gap	Max	Max	Gap	Max		Max	Hold	Hold
70th %ile Green (s)	35.0	68.0		20.0	53.0	53.0	12.3	50.0		40.0	77.7	77.7
70th %ile Term Code	Max	Hold		Gap	Gap	Gap	Gap	Max		Max	Hold	Hold
50th %ile Green (s)	35.0	64.8		16.9	46.7	46.7	10.2	50.0		40.0	79.8	79.8
50th %ile Term Code	Max	Hold		Gap	Gap	Gap	Gap	Max		Max	Hold	Hold
30th %ile Green (s)	32.5	60.0		14.0	41.5	41.5	8.4	44.9		40.0	76.5	76.5
30th %ile Term Code	Gap	Max		Gap	Hold	Hold	Gap	Gap		Max	Hold	Hold
10th %ile Green (s)	25.3	60.0		10.0	44.7	44.7	0.0	35.8		40.0	79.3	79.3
10th %ile Term Code	Gap	Max		Gap	Hold	Hold	Skip	Gap		Max	Hold	Hold
Stops (vph)	195	809		65	274	61	42	271		241	358	163
Fuel Used(gal)	6	24		2	9	2	2	10		14	11	6
CO Emissions (g/hr)	415	1686		165	605	161	109	669		969	775	385
NOx Emissions (g/hr)	81	328		32	118	31	21	130		188	151	75
VOC Emissions (g/hr)	96	391		38	140	37	25	155		224	180	89
Dilemma Vehicles (#)	0	0		0	0	0	0	0		0	0	0
Queue Length 50th (ft)	290	~791		116	419	103	65	458		~575	549	249
Queue Length 95th (ft)	#481	#863		150	514	137	115	531		#690	734	340

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		248			992			953			1199	
Turn Bay Length (ft)	140					100	180			540		70
Base Capacity (vph)	297	1052		297	526	478	279	474		340	681	591
Starvation Cap Reductn	93	418		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	1.19	1.75		0.32	0.67	0.34	0.19	0.85		1.15	0.77	0.56

Intersection Summary			
Area Type:	Other		
Cycle Length: 200			
Actuated Cycle Length: 182.9			
Natural Cycle: 110			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.15			
Intersection Signal Delay: 98.8		Intersection LOS: F	
Intersection Capacity Utilization 83.1%		ICU Level of Service E	
Analysis Period (min) 15			
90th %ile Actuated Cycle: 200			
70th %ile Actuated Cycle: 193			
50th %ile Actuated Cycle: 186.7			
30th %ile Actuated Cycle: 173.9			
10th %ile Actuated Cycle: 160.8			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 6: Porter St & Soquel Dr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1900	1900	1900	1700	1700	1700
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	140		0	0		100	180		0	540		70
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (ft)	45			25			50			300		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.98		0.98		0.96	0.98	0.99		0.99		0.94
Frt		0.982				0.850		0.932				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1546	2959	0	1546	1595	1369	1694	1674	0	1546	1595	1383
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1540	2959	0	1517	1595	1321	1668	1674	0	1532	1595	1304
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8				63		20				61
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		328			1072			1033			1279	
Travel Time (s)		8.9			29.2			28.2			34.9	

Intersection Summary	
Area Type:	Other

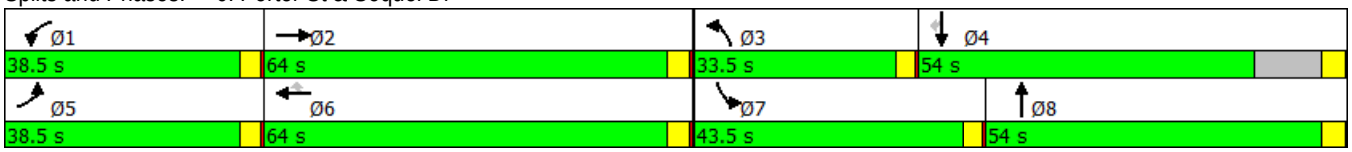
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	215	818	101	69	298	124	45	170	141	302	436	261
Future Volume (vph)	215	818	101	69	298	124	45	170	141	302	436	261
Confl. Peds. (#/hr)	1		13	13		1	6		4	4		6
Confl. Bikes (#/hr)			20			8						5
Peak Hour Factor	0.89	0.84	0.74	0.72	0.85	0.76	0.85	0.77	0.77	0.77	0.83	0.79
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	2%	2%	1%	3%	2%	3%	1%	1%	1%	3%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	242	974	136	96	351	163	53	221	183	392	525	330
Shared Lane Traffic (%)												
Lane Group Flow (vph)	242	1110	0	96	351	163	53	404	0	392	525	330

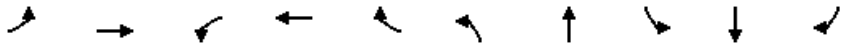
Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	215	818	69	298	124	45	170	302	436	261
Future Volume (vph)	215	818	69	298	124	45	170	302	436	261
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Prot	NA	Perm
Protected Phases	5	2	1	6		3	8	7	4	
Permitted Phases					6					4
Detector Phase	5	2	1	6	6	3	8	7	4	4
Switch Phase										
Minimum Initial (s)	5.0	7.0	5.0	7.0	7.0	5.0	8.0	5.0	7.0	7.0
Minimum Split (s)	8.5	19.0	8.5	21.0	21.0	8.5	20.0	8.5	23.0	23.0
Total Split (s)	38.5	64.0	38.5	64.0	64.0	33.5	54.0	43.5	54.0	54.0
Total Split (%)	19.3%	32.0%	19.3%	32.0%	32.0%	16.8%	27.0%	21.8%	27.0%	27.0%
Yellow Time (s)	3.0	3.5	3.0	3.5	3.5	3.0	3.5	3.0	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.5	4.0	3.5	4.0	4.0	3.5	4.0	3.5	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min	None	Min	Min	None	None	None	None	None
Act Effct Green (s)	32.5	64.7	16.8	49.1	49.1	10.2	46.0	40.2	78.1	78.1
Actuated g/C Ratio	0.18	0.35	0.09	0.27	0.27	0.06	0.25	0.22	0.43	0.43
v/c Ratio	0.88	1.06	0.68	0.82	0.41	0.56	0.93	1.15	0.77	0.56
Control Delay	104.7	98.6	105.0	80.4	36.9	109.2	91.5	156.8	55.9	38.3
Queue Delay	57.8	20.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	162.4	119.2	105.0	80.4	36.9	109.2	91.5	156.8	55.9	38.3
LOS	F	F	F	F	D	F	F	F	E	D
Approach Delay		127.0		72.6			93.6		83.0	
Approach LOS		F		E			F		F	

Intersection Summary	
Cycle Length: 200	
Actuated Cycle Length: 182.9	
Natural Cycle: 110	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.15	
Intersection Signal Delay: 98.8	Intersection LOS: F
Intersection Capacity Utilization 83.1%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 6: Porter St & Soquel Dr





Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Protected Phases	5	2	1	6		3	8	7	4	
Permitted Phases					6					4
Minimum Initial (s)	5.0	7.0	5.0	7.0	7.0	5.0	8.0	5.0	7.0	7.0
Minimum Split (s)	8.5	19.0	8.5	21.0	21.0	8.5	20.0	8.5	23.0	23.0
Total Split (s)	38.5	64.0	38.5	64.0	64.0	33.5	54.0	43.5	54.0	54.0
Total Split (%)	19.3%	32.0%	19.3%	32.0%	32.0%	16.8%	27.0%	21.8%	27.0%	27.0%
Maximum Green (s)	35.0	60.0	35.0	60.0	60.0	30.0	50.0	40.0	50.0	50.0
Yellow Time (s)	3.0	3.5	3.0	3.5	3.5	3.0	3.5	3.0	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	3.0	3.0	3.0	3.0	2.0	3.0	2.0	3.0	3.0
Minimum Gap (s)	4.0	3.0	3.0	3.0	3.0	2.0	3.0	2.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	Min	None	Min	Min	None	None	None	None	None
Walk Time (s)		8.0		8.0	8.0		8.0		8.0	8.0
Flash Dont Walk (s)		7.0		9.0	9.0		8.0		11.0	11.0
Pedestrian Calls (#/hr)		13		1	1		4		6	6
90th %ile Green (s)	35.0	70.4	24.6	60.0	60.0	15.4	50.0	40.0	74.6	74.6
90th %ile Term Code	Max	Hold	Gap	Max	Max	Gap	Max	Max	Hold	Hold
70th %ile Green (s)	35.0	68.0	20.0	53.0	53.0	12.3	50.0	40.0	77.7	77.7
70th %ile Term Code	Max	Hold	Gap	Gap	Gap	Gap	Max	Max	Hold	Hold
50th %ile Green (s)	35.0	64.8	16.9	46.7	46.7	10.2	50.0	40.0	79.8	79.8
50th %ile Term Code	Max	Hold	Gap	Gap	Gap	Gap	Max	Max	Hold	Hold
30th %ile Green (s)	32.5	60.0	14.0	41.5	41.5	8.4	44.9	40.0	76.5	76.5
30th %ile Term Code	Gap	Max	Gap	Hold	Hold	Gap	Gap	Max	Hold	Hold
10th %ile Green (s)	25.3	60.0	10.0	44.7	44.7	0.0	35.8	40.0	79.3	79.3
10th %ile Term Code	Gap	Max	Gap	Hold	Hold	Skip	Gap	Max	Hold	Hold

Intersection Summary
Cycle Length: 200
Actuated Cycle Length: 182.9
Control Type: Actuated-Uncoordinated
90th %ile Actuated Cycle: 200
70th %ile Actuated Cycle: 193
50th %ile Actuated Cycle: 186.7
30th %ile Actuated Cycle: 173.9
10th %ile Actuated Cycle: 160.8

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	242	1110	96	351	163	53	404	392	525	330
v/c Ratio	0.88	1.06	0.68	0.82	0.41	0.56	0.93	1.15	0.77	0.56
Control Delay	104.7	98.6	105.0	80.4	36.9	109.2	91.5	156.8	55.9	38.3
Queue Delay	57.8	20.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	162.4	119.2	105.0	80.4	36.9	109.2	91.5	156.8	55.9	38.3
Queue Length 50th (ft)	290	~791	116	419	103	65	458	~575	549	249
Queue Length 95th (ft)	#481	#863	150	514	137	115	531	#690	734	340
Internal Link Dist (ft)		248		992			953		1199	
Turn Bay Length (ft)	140				100	180		540		70
Base Capacity (vph)	297	1052	297	526	478	279	474	340	681	591
Starvation Cap Reductn	93	418	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.19	1.75	0.32	0.67	0.34	0.19	0.85	1.15	0.77	0.56

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		20			20			22			14	
Two way Left Turn Lane												
Headway Factor	1.20	1.20	1.20	1.20	1.20	1.20	1.04	1.04	1.04	1.20	1.20	1.20
Turning Speed (mph)	15		9	15		12	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	215	818	101	69	298	124	45	170	141	302	436	261
Pedestrians	1		13	13		1	6		4	4		6
Ped Button		Yes			Yes			Yes			Yes	
Pedestrian Timing (s)		15.0			17.0			16.0			19.0	
Free Right			No			No			No			No
Ideal Flow	1700	1700	1700	1700	1700	1700	1900	1900	1900	1700	1700	1700
Lost Time (s)	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0
Minimum Green (s)	5.0	7.0	4.0	5.0	7.0	7.0	5.0	8.0	4.0	5.0	7.0	7.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	215	919	0	69	298	124	45	311	0	302	436	261
Lane Utilization Factor	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.95	0.98	0.85	0.95	1.00	0.85	0.95	0.93	0.85	0.95	1.00	0.85
Saturated Flow (vph)	1615	3183	0	1615	1700	1445	1805	1771	0	1615	1700	1445
Ped Intf Time (s)	0.0	0.2	1.6	0.0	0.0	0.1	0.0	0.2	0.5	0.0	0.0	0.8
Pedestrian Frequency (%)		0.35			0.03			0.12			0.18	
Protected Option Allowed		Yes			Yes			Yes			Yes	
Reference Time (s)	16.0	34.8	0.0	5.1	21.0	10.4	3.0	21.3	0.0	22.4	30.8	22.4
Adj Reference Time (s)	20.0	38.8	0.0	9.1	25.0	14.6	9.0	25.3	0.0	26.4	34.8	26.4
Permitted Option												
Adj Saturation A (vph)	108	1592		108	1700		120	1771		108	1700	
Reference Time A (s)	239.6	34.8		76.9	21.0		44.9	21.3		336.6	30.8	
Adj Saturation B (vph	NA	NA		NA	NA		NA	NA		NA	NA	
Reference Time B (s)	NA	NA		NA	NA		NA	NA		NA	NA	
Reference Time (s)		239.6			76.9			44.9			336.6	
Adj Reference Time (s)		243.6			80.9			48.9			340.6	
Split Option												
Ref Time Combined (s)	16.0	34.8		5.1	21.0		3.0	21.3		22.4	30.8	
Ref Time Seperate (s)	16.0	31.0		5.1	21.0		3.0	11.8		22.4	30.8	
Reference Time (s)	34.8	34.8		21.0	21.0		21.3	21.3		30.8	30.8	
Adj Reference Time (s)	38.8	38.8		25.0	25.0		25.3	25.3		34.8	34.8	

Summary	EB WB	NB SB	Combined
Protected Option (s)	47.9	51.7	
Permitted Option (s)	243.6	340.6	
Split Option (s)	63.9	60.1	
Minimum (s)	47.9	51.7	99.7

Right Turns	WBR	SBR
Adj Reference Time (s)	14.6	26.4
Cross Thru Ref Time (s)	25.3	25.0
Oncoming Left Ref Time (s)	20.0	9.0
Combined (s)	59.9	60.5

Intersection Summary			
Intersection Capacity Utilization	83.1%	ICU Level of Service	E

Reference Times and Phasing Options do not represent an optimized timing plan.

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	13	0	548	591	7
Future Vol, veh/h	0	13	0	548	591	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	14	0	596	642	8

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	325	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	671	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	671	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.5	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	671	-	-
HCM Lane V/C Ratio	-	0.021	-	-
HCM Control Delay (s)	-	10.5	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-

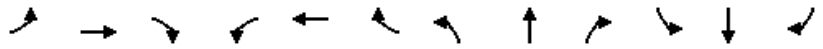
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	2	17	279	2	14	14	512	146	21	594	11
Future Volume (veh/h)	9	2	17	279	2	14	14	512	146	21	594	11
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		1.00	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1881	1868	1900	1900	1863	1900	1900	1864	1900
Adj Flow Rate, veh/h	20	8	24	407	0	0	28	557	176	32	724	28
Adj No. of Lanes	0	1	0	2	1	0	1	2	1	1	2	0
Peak Hour Factor	0.45	0.25	0.71	0.73	0.50	0.58	0.50	0.92	0.83	0.66	0.82	0.39
Percent Heavy Veh, %	0	0	0	1	0	0	0	2	0	0	2	2
Cap, veh/h	39	16	47	729	380	0	46	1330	586	51	1314	51
Arrive On Green	0.06	0.06	0.06	0.20	0.00	0.00	0.03	0.38	0.38	0.03	0.38	0.38
Sat Flow, veh/h	652	261	783	3583	1868	0	1810	3539	1558	1810	3471	134
Grp Volume(v), veh/h	52	0	0	407	0	0	28	557	176	32	369	383
Grp Sat Flow(s),veh/h/ln	1696	0	0	1792	1868	0	1810	1770	1558	1810	1771	1835
Q Serve(g_s), s	1.6	0.0	0.0	5.5	0.0	0.0	0.8	6.3	4.3	0.9	8.9	8.9
Cycle Q Clear(g_c), s	1.6	0.0	0.0	5.5	0.0	0.0	0.8	6.3	4.3	0.9	8.9	8.9
Prop In Lane	0.38		0.46	1.00		0.00	1.00		1.00	1.00		0.07
Lane Grp Cap(c), veh/h	102	0	0	729	380	0	46	1330	586	51	670	695
V/C Ratio(X)	0.51	0.00	0.00	0.56	0.00	0.00	0.61	0.42	0.30	0.63	0.55	0.55
Avail Cap(c_a), veh/h	627	0	0	1655	863	0	669	1962	864	669	982	1017
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.7	0.0	0.0	19.4	0.0	0.0	26.1	12.5	11.9	26.0	13.2	13.2
Incr Delay (d2), s/veh	3.9	0.0	0.0	1.0	0.0	0.0	12.3	0.2	0.3	11.9	0.7	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	0.0	2.8	0.0	0.0	0.6	3.1	1.9	0.6	4.4	4.6
LnGrp Delay(d),s/veh	28.6	0.0	0.0	20.3	0.0	0.0	38.4	12.7	12.2	37.9	13.9	13.9
LnGrp LOS	C			C			D	B	B	D	B	B
Approach Vol, veh/h		52			407			761			784	
Approach Delay, s/veh		28.6			20.3			13.5			14.9	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.5	25.3		15.5	5.4	25.5		7.8
Change Period (Y+Rc), s	4.0	5.0		4.5	4.0	5.0		4.5
Max Green Setting (Gmax), s	20.0	30.0		25.0	20.0	30.0		20.0
Max Q Clear Time (g_c+I1), s	2.9	8.3		7.5	2.8	10.9		3.6
Green Ext Time (p_c), s	0.0	10.3		2.1	0.0	9.6		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	15.8
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	815	0	257	0	527	488	0	781	151
Future Volume (veh/h)	0	0	0	815	0	257	0	527	488	0	781	151
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		0.97
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1881	1881	1810	0	1872	1900	0	1866	1900
Adj Flow Rate, veh/h				926	0	286	0	606	0	0	919	194
Adj No. of Lanes				2	0	1	0	2	0	0	2	0
Peak Hour Factor				0.88	0.92	0.90	0.92	0.87	0.80	0.92	0.85	0.78
Percent Heavy Veh, %				1	0	5	0	2	2	0	2	2
Cap, veh/h				1086	0	466	0	1865	0	0	1519	320
Arrive On Green				0.30	0.00	0.30	0.00	0.88	0.00	0.00	0.52	0.52
Sat Flow, veh/h				3583	0	1538	0	3744	0	0	2990	611
Grp Volume(v), veh/h				926	0	286	0	606	0	0	562	551
Grp Sat Flow(s),veh/h/ln				1792	0	1538	0	1778	0	0	1773	1735
Q Serve(g_s), s				13.4	0.0	8.8	0.0	1.6	0.0	0.0	12.1	12.2
Cycle Q Clear(g_c), s				13.4	0.0	8.8	0.0	1.6	0.0	0.0	12.1	12.2
Prop In Lane				1.00		1.00	0.00		0.00	0.00		0.35
Lane Grp Cap(c), veh/h				1086	0	466	0	1865	0	0	929	910
V/C Ratio(X)				0.85	0.00	0.61	0.00	0.33	0.00	0.00	0.60	0.61
Avail Cap(c_a), veh/h				1140	0	489	0	1865	0	0	929	910
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.67	1.67	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.00	0.91	0.00	0.00	0.82	0.82
Uniform Delay (d), s/veh				18.0	0.0	16.4	0.0	1.7	0.0	0.0	9.1	9.1
Incr Delay (d2), s/veh				6.3	0.0	2.3	0.0	0.4	0.0	0.0	2.4	2.4
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				7.5	0.0	4.0	0.0	0.8	0.0	0.0	6.4	6.3
LnGrp Delay(d),s/veh				24.3	0.0	18.7	0.0	2.2	0.0	0.0	11.5	11.6
LnGrp LOS				C		B		A			B	B
Approach Vol, veh/h					1212			606			1113	
Approach Delay, s/veh					23.0			2.2			11.5	
Approach LOS					C			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		34.1				34.1		20.9
Change Period (Y+Rc), s		5.3				5.3		4.2
Max Green Setting (Gmax), s		28.0				28.0		17.5
Max Q Clear Time (g_c+I1), s		3.6				14.2		15.4
Green Ext Time (p_c), s		15.6				10.2		1.3

Intersection Summary	
HCM 2010 Ctrl Delay	14.3
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	46	63	0	0	0	0	976	935	0	1219	377
Future Volume (vph)	39	46	63	0	0	0	0	976	935	0	1219	377
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.6	4.6					4.9	4.9		4.9	4.0
Lane Util. Factor		1.00	0.88					0.95	1.00		0.91	1.00
Frpb, ped/bikes		1.00	1.00					1.00	1.00		1.00	0.97
Flpb, ped/bikes		1.00	1.00					1.00	1.00		1.00	1.00
Frt		1.00	0.85					1.00	0.85		1.00	0.85
Flt Protected		0.98	1.00					1.00	1.00		1.00	1.00
Satd. Flow (prot)		1752	2694					3455	1546		4964	1501
Flt Permitted		0.98	1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)		1752	2694					3455	1546		4964	1501
Peak-hour factor, PHF	0.80	0.72	0.75	0.92	0.92	0.92	0.92	0.85	0.94	0.92	0.96	0.82
Adj. Flow (vph)	49	64	84	0	0	0	0	1148	995	0	1270	460
RTOR Reduction (vph)	0	0	75	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	113	9	0	0	0	0	1148	995	0	1270	460
Confl. Peds. (#/hr)	13					13	11		1	1		11
Confl. Bikes (#/hr)												9
Heavy Vehicles (%)	6%	0%	2%	0%	0%	0%	0%	1%	1%	0%	1%	1%
Turn Type	Split	NA	Perm					NA	Prot		NA	Free
Protected Phases	2	2						1 3 4	1 3 4		1 3 4	
Permitted Phases			2									Free
Actuated Green, G (s)		12.4	12.4					88.8	88.8		88.8	110.0
Effective Green, g (s)		12.4	12.4					84.6	84.6		84.6	110.0
Actuated g/C Ratio		0.11	0.11					0.77	0.77		0.77	1.00
Clearance Time (s)		4.6	4.6									
Vehicle Extension (s)		3.0	3.0									
Lane Grp Cap (vph)		197	303					2657	1189		3817	1501
v/s Ratio Prot		c0.06						0.33	c0.64		0.26	
v/s Ratio Perm			0.00									c0.31
v/c Ratio		0.57	0.03					0.43	0.84		0.33	0.31
Uniform Delay, d1		46.3	43.5					4.4	8.2		3.9	0.0
Progression Factor		1.00	1.00					0.11	1.48		1.18	1.00
Incremental Delay, d2		4.0	0.0					0.0	2.2		0.0	0.3
Delay (s)		50.3	43.5					0.5	14.4		4.7	0.3
Level of Service		D	D					A	B		A	A
Approach Delay (s)		47.4			0.0			7.0			3.5	
Approach LOS		D			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	7.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	17.9
Intersection Capacity Utilization	70.9%	ICU Level of Service	C
Analysis Period (min)	15		

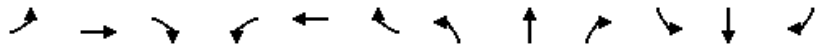
c Critical Lane Group

NEAR TERM CONDITIONS
SYNCHRO OUTPUT SHEETS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	628	32	18	885	48	50	2	24	64	1	74
Future Volume (veh/h)	18	628	32	18	885	48	50	2	24	64	1	74
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1822	1900	1792	1837	1900	1900	1690	1900	1900	1846	1900
Adj Flow Rate, veh/h	32	826	40	32	1093	62	69	4	44	97	4	97
Adj No. of Lanes	0	2	0	1	2	0	0	1	0	0	1	0
Peak Hour Factor	0.56	0.76	0.80	0.56	0.81	0.78	0.72	0.50	0.55	0.66	0.25	0.76
Percent Heavy Veh, %	4	4	4	6	3	3	0	0	0	0	0	0
Cap, veh/h	103	1900	90	421	2046	116	259	34	112	231	35	159
Arrive On Green	0.61	0.61	0.61	0.61	0.61	0.61	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	49	3111	148	612	3350	190	720	164	533	619	165	753
Grp Volume(v), veh/h	458	0	440	32	569	586	117	0	0	198	0	0
Grp Sat Flow(s),veh/h/ln	1681	0	1626	612	1745	1795	1417	0	0	1536	0	0
Q Serve(g_s), s	0.0	0.0	7.7	1.6	10.0	10.0	0.0	0.0	0.0	2.4	0.0	0.0
Cycle Q Clear(g_c), s	6.9	0.0	7.7	9.3	10.0	10.0	3.4	0.0	0.0	5.8	0.0	0.0
Prop In Lane	0.07		0.09	1.00		0.11	0.59		0.38	0.49		0.49
Lane Grp Cap(c), veh/h	1099	0	993	421	1066	1096	406	0	0	424	0	0
V/C Ratio(X)	0.42	0.00	0.44	0.08	0.53	0.53	0.29	0.00	0.00	0.47	0.00	0.00
Avail Cap(c_a), veh/h	1171	0	1070	449	1148	1181	735	0	0	800	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	5.4	0.0	5.5	8.0	6.0	6.0	17.9	0.0	0.0	18.8	0.0	0.0
Incr Delay (d2), s/veh	0.5	0.0	0.7	0.2	0.9	0.9	0.8	0.0	0.0	1.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	0.0	3.6	0.3	5.0	5.1	1.6	0.0	0.0	2.8	0.0	0.0
LnGrp Delay(d),s/veh	5.9	0.0	6.2	8.2	6.9	6.9	18.7	0.0	0.0	20.5	0.0	0.0
LnGrp LOS	A		A	A	A	A	B			C		
Approach Vol, veh/h		898			1187			117			198	
Approach Delay, s/veh		6.1			6.9			18.7			20.5	
Approach LOS		A			A			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		37.5		15.7		37.5		15.7
Change Period (Y+Rc), s		5.0		4.5		5.0		4.5
Max Green Setting (Gmax), s		35.0		25.0		35.0		25.0
Max Q Clear Time (g_c+I1), s		9.7		5.4		12.0		7.8
Green Ext Time (p_c), s		22.3		3.3		20.5		3.1

Intersection Summary	
HCM 2010 Ctrl Delay	8.3
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	344	377	137	551	5	614	5	87	0	9	3
Future Volume (veh/h)	1	344	377	137	551	5	614	5	87	0	9	3
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.96	1.00		0.99	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1800	1900	1792	1822	1900	1863	1864	1827	1900	1409	1900
Adj Flow Rate, veh/h	4	478	503	196	648	12	796	0	143	0	20	8
Adj No. of Lanes	1	2	0	1	2	0	2	0	1	0	1	0
Peak Hour Factor	0.25	0.72	0.75	0.70	0.85	0.42	0.78	0.42	0.61	0.92	0.45	0.38
Percent Heavy Veh, %	0	4	4	6	4	4	2	0	4	22	22	22
Cap, veh/h	8	607	531	232	1690	31	971	0	420	0	26	11
Arrive On Green	0.00	0.35	0.35	0.14	0.49	0.49	0.27	0.00	0.27	0.00	0.03	0.03
Sat Flow, veh/h	1810	1710	1497	1707	3474	64	3548	0	1536	0	941	376
Grp Volume(v), veh/h	4	478	503	196	323	337	796	0	143	0	0	28
Grp Sat Flow(s),veh/h/ln	1810	1710	1497	1707	1731	1807	1774	0	1536	0	0	1317
Q Serve(g_s), s	0.2	22.3	29.1	10.0	10.5	10.5	18.7	0.0	6.6	0.0	0.0	1.9
Cycle Q Clear(g_c), s	0.2	22.3	29.1	10.0	10.5	10.5	18.7	0.0	6.6	0.0	0.0	1.9
Prop In Lane	1.00		1.00	1.00		0.04	1.00		1.00	0.00		0.29
Lane Grp Cap(c), veh/h	8	607	531	232	842	879	971	0	420	0	0	37
V/C Ratio(X)	0.52	0.79	0.95	0.84	0.38	0.38	0.82	0.00	0.34	0.00	0.00	0.76
Avail Cap(c_a), veh/h	649	614	537	613	842	879	1592	0	689	0	0	296
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	44.3	25.8	28.0	37.6	14.4	14.4	30.3	0.0	25.9	0.0	0.0	43.0
Incr Delay (d2), s/veh	19.0	9.1	27.4	3.2	1.0	1.0	1.8	0.0	0.5	0.0	0.0	30.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	12.0	16.1	4.9	5.3	5.5	9.4	0.0	2.9	0.0	0.0	1.0
LnGrp Delay(d),s/veh	63.3	34.9	55.4	40.8	15.5	15.4	32.1	0.0	26.4	0.0	0.0	74.0
LnGrp LOS	E	C	E	D	B	B	C		C			E
Approach Vol, veh/h		985			856			939			28	
Approach Delay, s/veh		45.5			21.3			31.2			74.0	
Approach LOS		D			C			C			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.6	36.6		7.0	4.9	48.4		28.9
Change Period (Y+Rc), s	4.5	5.0		4.5	4.5	5.0		4.5
Max Green Setting (Gmax), s	2.0	32.0		20.0	32.0	31.0		40.0
Max Q Clear Time (g_c+I1), s	2.0	31.1		3.9	2.2	12.5		20.7
Green Ext Time (p_c), s	0.2	0.5		0.1	0.0	16.2		3.7

Intersection Summary	
HCM 2010 Ctrl Delay	33.6
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Intersection Delay, s/veh	46.5
Intersection LOS	E

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations																
Traffic Vol, veh/h	0	1	401	68	0	169	652	0	0	118	0	183	0	0	0	0
Future Vol, veh/h	0	1	401	68	0	169	652	0	0	118	0	183	0	0	0	0
Peak Hour Factor	0.92	0.75	0.75	0.76	0.92	0.71	0.91	0.92	0.92	0.83	0.92	0.58	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	0	5	6	2	2	4	0	2	1	0	2	2	0	0	0
Mvmt Flow	0	1	535	89	0	238	716	0	0	142	0	316	0	0	0	0
Number of Lanes	0	0	2	0	0	0	2	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	2
HCM Control Delay	25.3	65.3	36.3	0
HCM LOS	D	F	E	-

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	39%	0%	0%	44%	0%	0%
Vol Thru, %	0%	100%	75%	56%	100%	100%
Vol Right, %	61%	0%	25%	0%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	301	202	269	386	435	0
LT Vol	118	1	0	169	0	0
Through Vol	0	201	201	217	435	0
RT Vol	183	0	68	0	0	0
Lane Flow Rate	458	269	357	477	478	0
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0.846	0.568	0.745	0.999	0.975	0
Departure Headway (Hd)	6.657	7.615	7.517	7.54	7.35	9.119
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	545	473	478	477	492	0
Service Time	4.695	5.4	5.302	5.335	5.144	7.119
HCM Lane V/C Ratio	0.84	0.569	0.747	1	0.972	0
HCM Control Delay	36.3	20	29.3	68.7	61.9	12.1
HCM Lane LOS	E	C	D	F	F	N
HCM 95th-tile Q	8.9	3.5	6.2	13.3	12.6	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	401	68	169	652	0	118	0	183	0	0	0
Future Volume (vph)	1	401	68	169	652	0	118	0	183	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.979						0.907				
Flt Protected					0.988			0.985				
Satd. Flow (prot)	0	3250	0	0	3331	0	0	1614	0	0	1837	0
Flt Permitted					0.988			0.985				
Satd. Flow (perm)	0	3250	0	0	3331	0	0	1614	0	0	1837	0
Link Speed (mph)		35			25			25			25	
Link Distance (ft)		1301			475			1062			833	
Travel Time (s)		25.3			13.0			29.0			22.7	
Confl. Peds. (#/hr)	15		7	7		15			13	13		
Confl. Bikes (#/hr)			5			11						
Peak Hour Factor	0.75	0.75	0.76	0.71	0.91	0.92	0.83	0.92	0.58	0.92	0.92	0.92
Heavy Vehicles (%)	0%	5%	6%	2%	4%	0%	1%	0%	2%	0%	0%	0%
Adj. Flow (vph)	1	535	89	238	716	0	142	0	316	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	625	0	0	954	0	0	458	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		2			2			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			35			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 64.9%		ICU Level of Service C	
Analysis Period (min) 15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.979						0.907				
Flt Protected					0.988			0.985				
Satd. Flow (prot)	0	3250	0	0	3331	0	0	1614	0	0	1837	0
Flt Permitted					0.988			0.985				
Satd. Flow (perm)	0	3250	0	0	3331	0	0	1614	0	0	1837	0
Link Speed (mph)		35			25			25			25	
Link Distance (ft)		1301			475			1062			833	
Travel Time (s)		25.3			13.0			29.0			22.7	

Intersection Summary

Area Type: Other

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	1	401	68	169	652	0	118	0	183	0	0	0
Future Volume (vph)	1	401	68	169	652	0	118	0	183	0	0	0
Confl. Peds. (#/hr)	15		7	7		15			13	13		
Confl. Bikes (#/hr)			5			11						
Peak Hour Factor	0.75	0.75	0.76	0.71	0.91	0.92	0.83	0.92	0.58	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	5%	6%	2%	4%	0%	1%	0%	2%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	1	535	89	238	716	0	142	0	316	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	625	0	0	954	0	0	458	0	0	0	0

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		2			2			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			35			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9

Intersection Summary

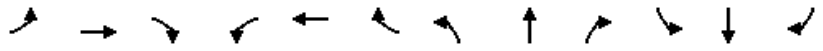
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	401	68	169	652	0	118	0	183	0	0	0
Pedestrians	15		7	7		15			13	13		
Ped Button		Yes			Yes			Yes				
Pedestrian Timing (s)		16.0			16.0			16.0				
Free Right			No			No			No			No
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	0	470	0	0	821	0	0	301	0	0	0	0
Lane Utilization Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.95	0.98	0.85	0.95	0.99	0.85	0.95	0.89	0.85	0.95	1.00	0.85
Saturated Flow (vph)	0	3539	0	0	3580	0	0	1693	0	0	1900	0
Ped Intf Time (s)	0.0	0.1	0.9	0.0	0.0	1.8	0.0	1.0	1.6	0.0	0.0	0.0
Pedestrian Frequency (%)		0.21			0.39			0.35			0.00	
Protected Option Allowed		No			No			No			No	
Reference Time (s)			0.0			0.0			0.0			0.0
Adj Reference Time (s)			0.0			0.0			0.0			0.0
Permitted Option												
Adj Saturation A (vph)	0	1669		0	119		0	1461		0	1900	
Reference Time A (s)	0.0	16.9		0.0	169.9		0.0	25.7		0.0	0.0	
Adj Saturation B (vph	NA	NA		NA	NA		0	0		NA	NA	
Reference Time B (s)	NA	NA		NA	NA		15.8	30.3		NA	NA	
Reference Time (s)		16.9			169.9			25.7			0.0	
Adj Reference Time (s)		20.9			173.9			29.7			8.0	
Split Option												
Ref Time Combined (s)	0.0	16.1		0.0	27.5		0.0	22.3		0.0	0.0	
Ref Time Seperate (s)	0.1	13.7		11.2	21.6		7.8	1.0		0.0	0.0	
Reference Time (s)	16.1	16.1		27.5	27.5		22.3	22.3		0.0	0.0	
Adj Reference Time (s)	20.1	20.1		31.5	31.5		26.3	26.3		0.0	0.0	

Summary	EB WB	NB SB	Combined
Protected Option (s)	NA	NA	
Permitted Option (s)	173.9	29.7	
Split Option (s)	51.6	26.3	
Minimum (s)	51.6	26.3	77.9

Right Turns
Adj Reference Time (s)
Cross Thru Ref Time (s)
Oncoming Left Ref Time (s)
Combined (s)

Intersection Summary			
Intersection Capacity Utilization	64.9%	ICU Level of Service	C

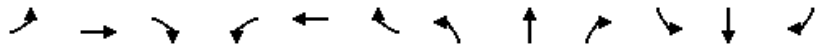
Reference Times and Phasing Options do not represent an optimized timing plan.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	499	57	12	748	9	39	11	30	6	2	34
Future Volume (veh/h)	28	499	57	12	748	9	39	11	30	6	2	34
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	0.89		0.90	0.94		0.86
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1700	1639	1700	1700	1636	1700	1900	1870	1900	1900	1900	1900
Adj Flow Rate, veh/h	48	665	121	24	880	20	89	24	56	20	4	62
Adj No. of Lanes	1	2	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.58	0.75	0.47	0.50	0.85	0.45	0.44	0.46	0.54	0.30	0.50	0.55
Percent Heavy Veh, %	0	4	4	0	4	4	0	0	0	0	0	0
Cap, veh/h	215	1673	304	430	1017	23	227	69	106	113	45	238
Arrive On Green	0.64	0.64	0.64	0.64	0.64	0.64	0.23	0.23	0.23	0.23	0.23	0.23
Sat Flow, veh/h	563	2620	476	625	1592	36	637	305	467	206	199	1046
Grp Volume(v), veh/h	48	395	391	24	0	900	169	0	0	86	0	0
Grp Sat Flow(s),veh/h/ln	563	1557	1538	625	0	1628	1408	0	0	1452	0	0
Q Serve(g_s), s	5.1	8.2	8.3	1.3	0.0	30.0	3.4	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	35.1	8.2	8.3	9.6	0.0	30.0	6.5	0.0	0.0	3.1	0.0	0.0
Prop In Lane	1.00		0.31	1.00		0.02	0.53		0.33	0.23		0.72
Lane Grp Cap(c), veh/h	215	995	983	430	0	1040	402	0	0	396	0	0
V/C Ratio(X)	0.22	0.40	0.40	0.06	0.00	0.87	0.42	0.00	0.00	0.22	0.00	0.00
Avail Cap(c_a), veh/h	358	1391	1374	589	0	1454	595	0	0	596	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	24.0	5.9	5.9	8.2	0.0	9.8	22.4	0.0	0.0	21.3	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.1	0.1	0.0	0.0	3.2	0.3	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	3.5	3.5	0.2	0.0	14.2	2.8	0.0	0.0	1.3	0.0	0.0
LnGrp Delay(d),s/veh	24.2	6.0	6.0	8.2	0.0	13.0	22.7	0.0	0.0	21.4	0.0	0.0
LnGrp LOS	C	A	A	A		B	C			C		
Approach Vol, veh/h		834			924			169			86	
Approach Delay, s/veh		7.0			12.8			22.7			21.4	
Approach LOS		A			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		47.4		19.8		47.4		19.8
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		60.0		25.0		60.0		25.0
Max Q Clear Time (g_c+I1), s		37.1		5.1		32.0		8.5
Green Ext Time (p_c), s		5.8		0.7		6.1		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	11.6
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	217	263	55	123	398	265	43	276	29	149	290	328
Future Volume (veh/h)	217	263	55	123	398	265	43	276	29	149	290	328
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00	1.00		0.98	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1646	1700	1650	1650	1667	1574	1630	1700	1881	1827	1845
Adj Flow Rate, veh/h	293	325	71	198	457	0	86	329	36	191	367	421
Adj No. of Lanes	1	2	0	1	1	1	1	1	0	1	1	1
Peak Hour Factor	0.74	0.81	0.78	0.62	0.87	0.68	0.50	0.84	0.81	0.78	0.79	0.78
Percent Heavy Veh, %	2	4	4	3	3	2	8	4	4	1	4	3
Cap, veh/h	316	945	203	220	516	443	103	387	42	215	585	498
Arrive On Green	0.20	0.37	0.37	0.14	0.31	0.00	0.07	0.27	0.27	0.12	0.32	0.32
Sat Flow, veh/h	1587	2544	547	1572	1650	1417	1499	1441	158	1792	1827	1556
Grp Volume(v), veh/h	293	198	198	198	457	0	86	0	365	191	367	421
Grp Sat Flow(s),veh/h/ln	1587	1564	1528	1572	1650	1417	1499	0	1598	1792	1827	1556
Q Serve(g_s), s	27.3	13.7	14.1	18.7	39.7	0.0	8.5	0.0	32.6	15.8	25.8	38.0
Cycle Q Clear(g_c), s	27.3	13.7	14.1	18.7	39.7	0.0	8.5	0.0	32.6	15.8	25.8	38.0
Prop In Lane	1.00		0.36	1.00		1.00	1.00		0.10	1.00		1.00
Lane Grp Cap(c), veh/h	316	581	568	220	516	443	103	0	429	215	585	498
V/C Ratio(X)	0.93	0.34	0.35	0.90	0.89	0.00	0.84	0.00	0.85	0.89	0.63	0.85
Avail Cap(c_a), veh/h	368	622	608	365	657	564	298	0	530	475	606	516
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	59.3	34.1	34.2	63.8	49.2	0.0	69.4	0.0	52.2	65.3	43.6	47.8
Incr Delay (d2), s/veh	28.0	0.3	0.4	15.3	11.5	0.0	6.6	0.0	10.5	4.9	2.0	12.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	14.4	6.0	6.0	9.1	19.8	0.0	3.7	0.0	15.7	8.1	13.4	18.0
LnGrp Delay(d),s/veh	87.3	34.4	34.6	79.0	60.8	0.0	75.9	0.0	62.8	70.2	45.6	59.8
LnGrp LOS	F	C	C	E	E		E		E	E	D	E
Approach Vol, veh/h		689			655			451			979	
Approach Delay, s/veh		56.9			66.3			65.3			56.5	
Approach LOS		E			E			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	34.6	60.0	13.8	52.2	33.5	51.1	21.6	44.5
Change Period (Y+Rc), s	3.5	4.0	3.5	4.0	3.5	4.0	3.5	4.0
Max Green Setting (Gmax), s	35.0	60.0	30.0	50.0	35.0	60.0	40.0	50.0
Max Q Clear Time (g_c+I1), s	20.7	16.1	10.5	40.0	29.3	41.7	17.8	34.6
Green Ext Time (p_c), s	0.5	6.8	0.1	4.6	0.7	5.5	0.3	5.9

Intersection Summary	
HCM 2010 Ctrl Delay	60.3
HCM 2010 LOS	E

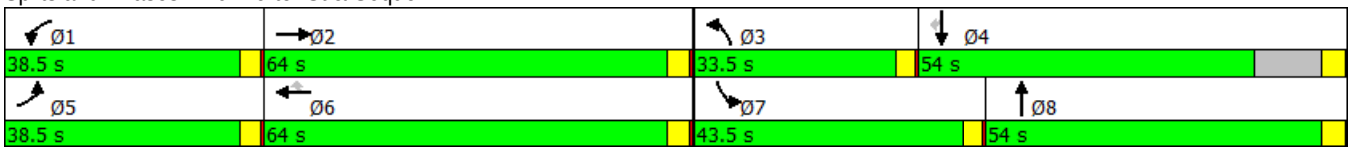
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	217	263	55	123	398	265	43	276	29	149	290	328
Future Volume (vph)	217	263	55	123	398	265	43	276	29	149	290	328
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1900	1900	1900
Storage Length (ft)	140		0	0		100	180		0	540		70
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (ft)	45			25			50			300		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	0.99		0.98		0.95	0.99	1.00		0.99		0.97
Frt		0.973				0.850		0.985				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1531	2907	0	1516	1595	1369	1446	1547	0	1728	1766	1516
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1516	2907	0	1481	1595	1302	1436	1547	0	1708	1766	1470
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13				110		3				112
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		328			1072			1033			1279	
Travel Time (s)		8.9			29.2			28.2			34.9	
Confl. Peds. (#/hr)	3		6	6		3	2		5	5		2
Confl. Bikes (#/hr)			5			10			3			
Peak Hour Factor	0.74	0.81	0.78	0.62	0.87	0.68	0.50	0.84	0.81	0.78	0.79	0.78
Heavy Vehicles (%)	2%	4%	0%	3%	3%	2%	8%	4%	7%	1%	4%	3%
Adj. Flow (vph)	293	325	71	198	457	390	86	329	36	191	367	421
Shared Lane Traffic (%)												
Lane Group Flow (vph)	293	396	0	198	457	390	86	365	0	191	367	421
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		20			20			22			14	
Two way Left Turn Lane												
Headway Factor	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		12	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6						4
Detector Phase	5	2		1	6	6	3	8		7	4	4
Switch Phase												
Minimum Initial (s)	5.0	7.0		5.0	7.0	7.0	5.0	8.0		5.0	7.0	7.0
Minimum Split (s)	8.5	19.0		8.5	21.0	21.0	8.5	20.0		8.5	23.0	23.0
Total Split (s)	38.5	64.0		38.5	64.0	64.0	33.5	54.0		43.5	54.0	54.0
Total Split (%)	19.3%	32.0%		19.3%	32.0%	32.0%	16.8%	27.0%		21.8%	27.0%	27.0%
Maximum Green (s)	35.0	60.0		35.0	60.0	60.0	30.0	50.0		40.0	50.0	50.0
Yellow Time (s)	3.0	3.5		3.0	3.5	3.5	3.0	3.5		3.0	3.5	3.5
All-Red Time (s)	0.5	0.5		0.5	0.5	0.5	0.5	0.5		0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	3.5	4.0		3.5	4.0	4.0	3.5	4.0		3.5	4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	4.0	3.0		3.0	3.0	3.0	2.0	3.0		2.0	3.0	3.0
Recall Mode	None	Min		None	Min	Min	None	None		None	None	None
Walk Time (s)		8.0			8.0	8.0		8.0			8.0	8.0
Flash Dont Walk (s)		7.0			9.0	9.0		8.0			11.0	11.0
Pedestrian Calls (#/hr)		3			3	3		2			2	2
Act Effct Green (s)	35.3	64.4		28.0	57.0	57.0	15.1	46.3		24.3	55.5	55.5
Actuated g/C Ratio	0.20	0.36		0.16	0.32	0.32	0.08	0.26		0.14	0.31	0.31
v/c Ratio	0.97	0.37		0.84	0.90	0.79	0.70	0.90		0.81	0.67	0.79
Control Delay	113.5	44.4		102.0	79.5	53.0	110.5	89.7		101.3	61.0	52.8
Queue Delay	43.0	3.2		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	156.5	47.6		102.0	79.5	53.0	110.5	89.7		101.3	61.0	52.8
LOS	F	D		F	E	D	F	F		F	E	D
Approach Delay		93.9			73.9			93.7			65.3	
Approach LOS		F			E			F			E	
90th %ile Green (s)	35.0	60.0		35.0	60.0	60.0	22.5	50.0		34.0	61.5	61.5
90th %ile Term Code	Max	Hold		Max	Max	Max	Gap	Max		Gap	Hold	Hold
70th %ile Green (s)	35.0	61.4		33.6	60.0	60.0	18.3	50.0		28.4	60.1	60.1
70th %ile Term Code	Max	Hold		Gap	Max	Max	Gap	Max		Gap	Hold	Hold
50th %ile Green (s)	35.0	65.7		29.3	60.0	60.0	15.3	50.0		24.6	59.3	59.3
50th %ile Term Code	Max	Hold		Gap	Max	Max	Gap	Max		Gap	Hold	Hold
30th %ile Green (s)	35.0	69.4		25.2	59.6	59.6	12.5	46.3		21.0	54.8	54.8
30th %ile Term Code	Max	Hold		Gap	Gap	Gap	Gap	Gap		Gap	Hold	Hold
10th %ile Green (s)	35.0	62.3		18.3	45.6	45.6	8.4	35.9		15.2	42.7	42.7
10th %ile Term Code	Max	Hold		Gap	Gap	Gap	Gap	Gap		Gap	Hold	Hold
Stops (vph)	184	226		117	354	178	41	274		141	246	227
Fuel Used(gal)	6	5		4	11	6	2	9		5	8	8
CO Emissions (g/hr)	442	325		288	799	417	105	652		366	538	557
NOx Emissions (g/hr)	86	63		56	155	81	20	127		71	105	108
VOC Emissions (g/hr)	102	75		67	185	97	24	151		85	125	129
Dilemma Vehicles (#)	0	0		0	0	0	0	0		0	0	0
Queue Length 50th (ft)	~366	182		236	528	323	104	423		230	384	352
Queue Length 95th (ft)	#443	232		224	#745	301	92	#577		277	450	406

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		248			992			953			1199	
Turn Bay Length (ft)	140					100	180			540		70
Base Capacity (vph)	303	1059		300	542	515	245	440		391	603	576
Starvation Cap Reductn	89	548		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	1.37	0.77		0.66	0.84	0.76	0.35	0.83		0.49	0.61	0.73

Intersection Summary			
Area Type:	Other		
Cycle Length: 200			
Actuated Cycle Length: 178.1			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.97			
Intersection Signal Delay: 78.4		Intersection LOS: E	
Intersection Capacity Utilization 76.7%		ICU Level of Service D	
Analysis Period (min) 15			
90th %ile Actuated Cycle: 194			
70th %ile Actuated Cycle: 188.4			
50th %ile Actuated Cycle: 184.6			
30th %ile Actuated Cycle: 176.9			
10th %ile Actuated Cycle: 146.7			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 6: Porter St & Soquel Dr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	140		0	0		100	180		0	540		70
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (ft)	45			25			50			300		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	0.99		0.98		0.95	0.99	1.00		0.99		0.97
Frt		0.973				0.850		0.985				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1531	2907	0	1516	1595	1369	1446	1547	0	1728	1766	1516
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1516	2907	0	1481	1595	1302	1436	1547	0	1708	1766	1470
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13				110		3				112
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		328			1072			1033			1279	
Travel Time (s)		8.9			29.2			28.2			34.9	

Intersection Summary	
Area Type:	Other

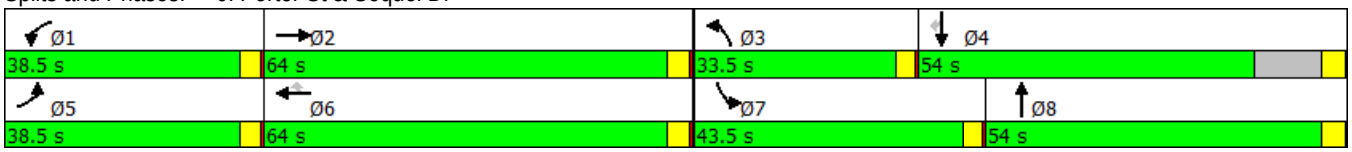
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	217	263	55	123	398	265	43	276	29	149	290	328
Future Volume (vph)	217	263	55	123	398	265	43	276	29	149	290	328
Confl. Peds. (#/hr)	3		6	6		3	2		5	5		2
Confl. Bikes (#/hr)			5			10			3			
Peak Hour Factor	0.74	0.81	0.78	0.62	0.87	0.68	0.50	0.84	0.81	0.78	0.79	0.78
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	4%	0%	3%	3%	2%	8%	4%	7%	1%	4%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	293	325	71	198	457	390	86	329	36	191	367	421
Shared Lane Traffic (%)												
Lane Group Flow (vph)	293	396	0	198	457	390	86	365	0	191	367	421

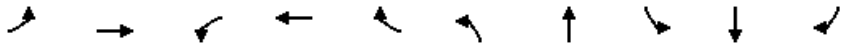
Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	217	263	123	398	265	43	276	149	290	328
Future Volume (vph)	217	263	123	398	265	43	276	149	290	328
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Prot	NA	Perm
Protected Phases	5	2	1	6		3	8	7	4	
Permitted Phases					6					4
Detector Phase	5	2	1	6	6	3	8	7	4	4
Switch Phase										
Minimum Initial (s)	5.0	7.0	5.0	7.0	7.0	5.0	8.0	5.0	7.0	7.0
Minimum Split (s)	8.5	19.0	8.5	21.0	21.0	8.5	20.0	8.5	23.0	23.0
Total Split (s)	38.5	64.0	38.5	64.0	64.0	33.5	54.0	43.5	54.0	54.0
Total Split (%)	19.3%	32.0%	19.3%	32.0%	32.0%	16.8%	27.0%	21.8%	27.0%	27.0%
Yellow Time (s)	3.0	3.5	3.0	3.5	3.5	3.0	3.5	3.0	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.5	4.0	3.5	4.0	4.0	3.5	4.0	3.5	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min	None	Min	Min	None	None	None	None	None
Act Effct Green (s)	35.3	64.4	28.0	57.0	57.0	15.1	46.3	24.3	55.5	55.5
Actuated g/C Ratio	0.20	0.36	0.16	0.32	0.32	0.08	0.26	0.14	0.31	0.31
v/c Ratio	0.97	0.37	0.84	0.90	0.79	0.70	0.90	0.81	0.67	0.79
Control Delay	113.5	44.4	102.0	79.5	53.0	110.5	89.7	101.3	61.0	52.8
Queue Delay	43.0	3.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	156.5	47.6	102.0	79.5	53.0	110.5	89.7	101.3	61.0	52.8
LOS	F	D	F	E	D	F	F	F	E	D
Approach Delay		93.9		73.9			93.7		65.3	
Approach LOS		F		E			F		E	

Intersection Summary	
Cycle Length: 200	
Actuated Cycle Length: 178.1	
Natural Cycle: 80	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.97	
Intersection Signal Delay: 78.4	Intersection LOS: E
Intersection Capacity Utilization 76.7%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 6: Porter St & Soquel Dr





Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Protected Phases	5	2	1	6		3	8	7	4	
Permitted Phases					6					4
Minimum Initial (s)	5.0	7.0	5.0	7.0	7.0	5.0	8.0	5.0	7.0	7.0
Minimum Split (s)	8.5	19.0	8.5	21.0	21.0	8.5	20.0	8.5	23.0	23.0
Total Split (s)	38.5	64.0	38.5	64.0	64.0	33.5	54.0	43.5	54.0	54.0
Total Split (%)	19.3%	32.0%	19.3%	32.0%	32.0%	16.8%	27.0%	21.8%	27.0%	27.0%
Maximum Green (s)	35.0	60.0	35.0	60.0	60.0	30.0	50.0	40.0	50.0	50.0
Yellow Time (s)	3.0	3.5	3.0	3.5	3.5	3.0	3.5	3.0	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	3.0	3.0	3.0	3.0	2.0	3.0	2.0	3.0	3.0
Minimum Gap (s)	4.0	3.0	3.0	3.0	3.0	2.0	3.0	2.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	Min	None	Min	Min	None	None	None	None	None
Walk Time (s)		8.0		8.0	8.0		8.0		8.0	8.0
Flash Dont Walk (s)		7.0		9.0	9.0		8.0		11.0	11.0
Pedestrian Calls (#/hr)		3		3	3		2		2	2
90th %ile Green (s)	35.0	60.0	35.0	60.0	60.0	22.5	50.0	34.0	61.5	61.5
90th %ile Term Code	Max	Hold	Max	Max	Max	Gap	Max	Gap	Hold	Hold
70th %ile Green (s)	35.0	61.4	33.6	60.0	60.0	18.3	50.0	28.4	60.1	60.1
70th %ile Term Code	Max	Hold	Gap	Max	Max	Gap	Max	Gap	Hold	Hold
50th %ile Green (s)	35.0	65.7	29.3	60.0	60.0	15.3	50.0	24.6	59.3	59.3
50th %ile Term Code	Max	Hold	Gap	Max	Max	Gap	Max	Gap	Hold	Hold
30th %ile Green (s)	35.0	69.4	25.2	59.6	59.6	12.5	46.3	21.0	54.8	54.8
30th %ile Term Code	Max	Hold	Gap	Gap	Gap	Gap	Gap	Gap	Hold	Hold
10th %ile Green (s)	35.0	62.3	18.3	45.6	45.6	8.4	35.9	15.2	42.7	42.7
10th %ile Term Code	Max	Hold	Gap	Gap	Gap	Gap	Gap	Gap	Hold	Hold

Intersection Summary
Cycle Length: 200
Actuated Cycle Length: 178.1
Control Type: Actuated-Uncoordinated
90th %ile Actuated Cycle: 194
70th %ile Actuated Cycle: 188.4
50th %ile Actuated Cycle: 184.6
30th %ile Actuated Cycle: 176.9
10th %ile Actuated Cycle: 146.7

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	293	396	198	457	390	86	365	191	367	421
v/c Ratio	0.97	0.37	0.84	0.90	0.79	0.70	0.90	0.81	0.67	0.79
Control Delay	113.5	44.4	102.0	79.5	53.0	110.5	89.7	101.3	61.0	52.8
Queue Delay	43.0	3.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	156.5	47.6	102.0	79.5	53.0	110.5	89.7	101.3	61.0	52.8
Queue Length 50th (ft)	~366	182	236	528	323	104	423	230	384	352
Queue Length 95th (ft)	#443	232	224	#745	301	92	#577	277	450	406
Internal Link Dist (ft)		248		992			953		1199	
Turn Bay Length (ft)	140				100	180		540		70
Base Capacity (vph)	303	1059	300	542	515	245	440	391	603	576
Starvation Cap Reductn	89	548	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.37	0.77	0.66	0.84	0.76	0.35	0.83	0.49	0.61	0.73

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		20			20			22			14	
Two way Left Turn Lane												
Headway Factor	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		12	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Intersection Summary

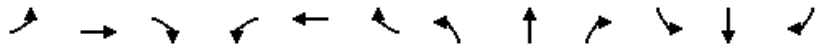
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	217	263	55	123	398	265	43	276	29	149	290	328
Pedestrians	3		6	6		3	2		5	5		2
Ped Button		Yes			Yes			Yes			Yes	
Pedestrian Timing (s)		15.0			17.0			16.0			19.0	
Free Right			No			No			No			No
Ideal Flow	1700	1700	1700	1700	1700	1700	1700	1700	1700	1900	1900	1900
Lost Time (s)	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0
Minimum Green (s)	5.0	7.0	4.0	5.0	7.0	7.0	5.0	8.0	4.0	5.0	7.0	7.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	217	318	0	123	398	265	43	305	0	149	290	328
Lane Utilization Factor	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.95	0.97	0.85	0.95	1.00	0.85	0.95	0.99	0.85	0.95	1.00	0.85
Saturated Flow (vph)	1615	3153	0	1615	1700	1445	1615	1676	0	1805	1900	1615
Ped Intf Time (s)	0.0	0.1	0.8	0.0	0.0	0.4	0.0	0.1	0.6	0.0	0.0	0.3
Pedestrian Frequency (%)		0.18			0.10			0.15			0.06	
Protected Option Allowed		Yes			Yes			Yes			Yes	
Reference Time (s)	16.1	12.2	0.0	9.1	28.1	22.4	3.2	21.9	0.0	9.9	18.3	24.6
Adj Reference Time (s)	20.1	16.7	0.0	13.1	32.1	26.4	9.0	25.9	0.0	13.9	22.4	28.6
Permitted Option												
Adj Saturation A (vph)	108	1576		108	1700		108	1676		120	1900	
Reference Time A (s)	241.9	12.2		137.1	28.1		47.9	21.9		148.6	18.3	
Adj Saturation B (vph	NA	NA		NA	NA		NA	NA		NA	NA	
Reference Time B (s)	NA	NA		NA	NA		NA	NA		NA	NA	
Reference Time (s)		241.9			137.1			47.9			148.6	
Adj Reference Time (s)		245.9			141.1			51.9			152.6	
Split Option												
Ref Time Combined (s)	16.1	12.2		9.1	28.1		3.2	21.9		9.9	18.3	
Ref Time Seperate (s)	16.1	10.1		9.1	28.1		3.2	19.8		9.9	18.3	
Reference Time (s)	16.1	16.1		28.1	28.1		21.9	21.9		18.3	18.3	
Adj Reference Time (s)	20.1	20.1		32.1	32.1		25.9	25.9		22.4	22.4	

Summary	EB WB	NB SB	Combined
Protected Option (s)	52.2	39.8	
Permitted Option (s)	245.9	152.6	
Split Option (s)	52.2	48.3	
Minimum (s)	52.2	39.8	92.0

Right Turns	WBR	SBR
Adj Reference Time (s)	26.4	28.6
Cross Thru Ref Time (s)	25.9	32.1
Oncoming Left Ref Time (s)	20.1	9.0
Combined (s)	72.4	69.7

Intersection Summary			
Intersection Capacity Utilization	76.7%	ICU Level of Service	D

Reference Times and Phasing Options do not represent an optimized timing plan.



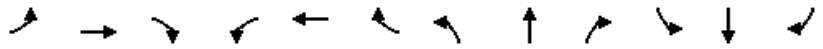
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	1	4	194	3	15	5	677	82	18	495	1
Future Volume (veh/h)	1	1	4	194	3	15	5	677	82	18	495	1
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1169	1900	1759	1774	1900	1583	1827	1696	1712	1777	1900
Adj Flow Rate, veh/h	4	4	8	271	0	0	12	796	121	24	576	4
Adj No. of Lanes	0	1	0	2	1	0	1	2	1	1	2	0
Peak Hour Factor	0.25	0.25	0.50	0.81	0.25	0.63	0.42	0.85	0.68	0.75	0.86	0.25
Percent Heavy Veh, %	100	100	100	8	0	0	20	4	12	11	7	7
Cap, veh/h	6	6	13	540	286	0	19	1465	588	37	1486	10
Arrive On Green	0.02	0.02	0.02	0.16	0.00	0.00	0.01	0.42	0.42	0.02	0.43	0.43
Sat Flow, veh/h	262	262	525	3351	1774	0	1508	3471	1393	1630	3435	24
Grp Volume(v), veh/h	16	0	0	271	0	0	12	796	121	24	283	297
Grp Sat Flow(s),veh/h/ln	1050	0	0	1675	1774	0	1508	1736	1393	1630	1688	1771
Q Serve(g_s), s	0.7	0.0	0.0	3.6	0.0	0.0	0.4	8.4	2.7	0.7	5.6	5.6
Cycle Q Clear(g_c), s	0.7	0.0	0.0	3.6	0.0	0.0	0.4	8.4	2.7	0.7	5.6	5.6
Prop In Lane	0.25		0.50	1.00		0.00	1.00		1.00	1.00		0.01
Lane Grp Cap(c), veh/h	25	0	0	540	286	0	19	1465	588	37	730	766
V/C Ratio(X)	0.64	0.00	0.00	0.50	0.00	0.00	0.65	0.54	0.21	0.65	0.39	0.39
Avail Cap(c_a), veh/h	431	0	0	1721	911	0	620	2140	858	670	1040	1092
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.5	0.0	0.0	18.6	0.0	0.0	23.9	10.5	8.9	23.6	9.4	9.4
Incr Delay (d2), s/veh	23.6	0.0	0.0	1.0	0.0	0.0	31.9	0.3	0.2	17.3	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.0	1.7	0.0	0.0	0.3	4.0	1.0	0.5	2.7	2.8
LnGrp Delay(d),s/veh	47.1	0.0	0.0	19.7	0.0	0.0	55.9	10.9	9.1	40.9	9.7	9.7
LnGrp LOS	D			B			E	B	A	D	A	A
Approach Vol, veh/h		16			271			929			604	
Approach Delay, s/veh		47.1			19.7			11.2			11.0	
Approach LOS		D			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.1	25.5		12.3	4.6	26.1		5.7
Change Period (Y+Rc), s	4.0	5.0		4.5	4.0	5.0		4.5
Max Green Setting (Gmax), s	20.0	30.0		25.0	20.0	30.0		20.0
Max Q Clear Time (g_c+I1), s	2.7	10.4		5.6	2.4	7.6		2.7
Green Ext Time (p_c), s	0.0	10.2		1.4	0.0	11.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	12.7
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	624	5	433	0	549	378	0	583	168
Future Volume (veh/h)	0	0	0	624	5	433	0	549	378	0	583	168
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1845	1846	1863	0	1834	1900	0	1804	1900
Adj Flow Rate, veh/h				758	0	476	0	610	0	0	655	198
Adj No. of Lanes				2	0	1	0	2	0	0	2	0
Peak Hour Factor				0.83	0.63	0.91	0.92	0.90	0.92	0.92	0.89	0.85
Percent Heavy Veh, %				3	0	2	0	4	4	0	6	6
Cap, veh/h				1115	0	502	0	1742	0	0	1297	392
Arrive On Green				0.32	0.00	0.32	0.00	1.00	0.00	0.00	0.50	0.50
Sat Flow, veh/h				3514	0	1583	0	3668	0	0	2683	783
Grp Volume(v), veh/h				758	0	476	0	610	0	0	433	420
Grp Sat Flow(s),veh/h/ln				1757	0	1583	0	1742	0	0	1714	1662
Q Serve(g_s), s				9.8	0.0	15.3	0.0	0.0	0.0	0.0	8.8	8.8
Cycle Q Clear(g_c), s				9.8	0.0	15.3	0.0	0.0	0.0	0.0	8.8	8.8
Prop In Lane				1.00		1.00	0.00		0.00	0.00		0.47
Lane Grp Cap(c), veh/h				1115	0	502	0	1742	0	0	857	831
V/C Ratio(X)				0.68	0.00	0.95	0.00	0.35	0.00	0.00	0.50	0.51
Avail Cap(c_a), veh/h				1115	0	502	0	1742	0	0	857	831
HCM Platoon Ratio				1.00	1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.00	0.96	0.00	0.00	0.94	0.94
Uniform Delay (d), s/veh				15.5	0.0	17.3	0.0	0.0	0.0	0.0	8.7	8.7
Incr Delay (d2), s/veh				1.8	0.0	27.5	0.0	0.5	0.0	0.0	2.0	2.1
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				4.9	0.0	10.5	0.0	0.1	0.0	0.0	4.6	4.4
LnGrp Delay(d),s/veh				17.2	0.0	44.9	0.0	0.5	0.0	0.0	10.7	10.8
LnGrp LOS				B		D		A			B	B
Approach Vol, veh/h					1234			610			853	
Approach Delay, s/veh					27.9			0.5			10.7	
Approach LOS					C			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		31.3				31.3		20.7
Change Period (Y+Rc), s		5.3				5.3		4.2
Max Green Setting (Gmax), s		26.0				26.0		16.5
Max Q Clear Time (g_c+I1), s		2.0				10.8		17.3
Green Ext Time (p_c), s		13.0				9.6		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	16.3
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	220	0	521	0	0	0	0	707	568	0	964	243
Future Volume (vph)	220	0	521	0	0	0	0	707	568	0	964	243
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.6	4.6					4.9	4.9		4.9	4.0
Lane Util. Factor		1.00	0.88					0.95	1.00		0.91	1.00
Frpb, ped/bikes		1.00	1.00					1.00	1.00		1.00	0.98
Flpb, ped/bikes		1.00	1.00					1.00	1.00		1.00	1.00
Frt		1.00	0.85					1.00	0.85		1.00	0.85
Flt Protected		0.95	1.00					1.00	1.00		1.00	1.00
Satd. Flow (prot)		1694	2668					3388	1516		4868	1412
Flt Permitted		0.95	1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)		1694	2668					3388	1516		4868	1412
Peak-hour factor, PHF	0.85	0.92	0.85	0.92	0.92	0.92	0.92	0.91	0.88	0.92	0.86	0.83
Adj. Flow (vph)	259	0	613	0	0	0	0	777	645	0	1121	293
RTOR Reduction (vph)	0	0	231	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	259	382	0	0	0	0	777	645	0	1121	293
Confl. Peds. (#/hr)	5					5	6					6
Confl. Bikes (#/hr)									6			1
Heavy Vehicles (%)	3%	0%	3%	0%	0%	0%	0%	3%	3%	0%	3%	8%
Turn Type	Split	NA	Perm					NA	Prot		NA	Free
Protected Phases	2	2						1 3 4	1 3 4		1 3 4	
Permitted Phases			2									Free
Actuated Green, G (s)		15.4	15.4					79.8	79.8		79.8	104.0
Effective Green, g (s)		15.4	15.4					75.6	75.6		75.6	104.0
Actuated g/C Ratio		0.15	0.15					0.73	0.73		0.73	1.00
Clearance Time (s)		4.6	4.6									
Vehicle Extension (s)		3.0	3.0									
Lane Grp Cap (vph)		250	395					2462	1102		3538	1412
v/s Ratio Prot		c0.15						0.23	c0.43		0.23	
v/s Ratio Perm			0.14									0.21
v/c Ratio		1.04	0.97					0.32	0.59		0.32	0.21
Uniform Delay, d1		44.3	44.1					5.0	6.7		5.0	0.0
Progression Factor		1.00	1.00					0.02	0.70		1.70	1.00
Incremental Delay, d2		66.6	36.4					0.0	0.5		0.0	0.3
Delay (s)		110.9	80.4					0.1	5.2		8.6	0.3
Level of Service		F	F					A	A		A	A
Approach Delay (s)		89.5			0.0			2.4			6.9	
Approach LOS		F			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	24.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	104.0	Sum of lost time (s)	17.9
Intersection Capacity Utilization	55.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	52	1160	42	10	528	76	84	1	15	57	3	48
Future Volume (veh/h)	52	1160	42	10	528	76	84	1	15	57	3	48
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.97	0.99		0.98	0.99		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1900	1900	1868	1900	1900	1841	1900	1900	1882	1900
Adj Flow Rate, veh/h	65	1247	66	24	574	89	109	4	24	77	8	77
Adj No. of Lanes	0	2	0	1	2	0	0	1	0	0	1	0
Peak Hour Factor	0.80	0.93	0.64	0.42	0.92	0.85	0.77	0.25	0.63	0.74	0.38	0.62
Percent Heavy Veh, %	1	1	1	0	2	2	0	0	0	0	0	0
Cap, veh/h	135	1991	104	300	1935	299	337	22	50	214	45	144
Arrive On Green	0.63	0.63	0.63	0.63	0.63	0.63	0.19	0.19	0.19	0.19	0.19	0.19
Sat Flow, veh/h	97	3155	165	425	3067	474	1135	117	266	598	239	759
Grp Volume(v), veh/h	708	0	670	24	331	332	137	0	0	162	0	0
Grp Sat Flow(s),veh/h/ln	1743	0	1674	425	1774	1766	1518	0	0	1597	0	0
Q Serve(g_s), s	0.0	0.0	13.0	1.9	4.5	4.5	0.0	0.0	0.0	0.8	0.0	0.0
Cycle Q Clear(g_c), s	11.8	0.0	13.0	15.0	4.5	4.5	3.6	0.0	0.0	4.4	0.0	0.0
Prop In Lane	0.09		0.10	1.00		0.27	0.80		0.18	0.48		0.48
Lane Grp Cap(c), veh/h	1174	0	1057	300	1120	1115	410	0	0	403	0	0
V/C Ratio(X)	0.60	0.00	0.63	0.08	0.30	0.30	0.33	0.00	0.00	0.40	0.00	0.00
Avail Cap(c_a), veh/h	1223	0	1106	312	1172	1167	787	0	0	825	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	5.8	0.0	6.0	10.6	4.4	4.4	18.9	0.0	0.0	19.2	0.0	0.0
Incr Delay (d2), s/veh	1.3	0.0	1.7	0.2	0.3	0.3	1.0	0.0	0.0	1.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.3	0.0	6.5	0.2	2.2	2.2	1.9	0.0	0.0	2.3	0.0	0.0
LnGrp Delay(d),s/veh	7.0	0.0	7.7	10.9	4.7	4.8	19.9	0.0	0.0	20.6	0.0	0.0
LnGrp LOS	A		A	B	A	A	B			C		
Approach Vol, veh/h		1378			687			137			162	
Approach Delay, s/veh		7.4			5.0			19.9			20.6	
Approach LOS		A			A			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		38.4		14.5		38.4		14.5
Change Period (Y+Rc), s		5.0		4.5		5.0		4.5
Max Green Setting (Gmax), s		35.0		25.0		35.0		25.0
Max Q Clear Time (g_c+I1), s		15.0		5.6		17.0		6.4
Green Ext Time (p_c), s		18.1		3.1		16.4		3.0

Intersection Summary	
HCM 2010 Ctrl Delay	8.3
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	751	511	82	237	5	370	18	155	3	17	5
Future Volume (veh/h)	4	751	511	82	237	5	370	18	155	3	17	5
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.91
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1900	1810	1869	1900	1845	1853	1845	1900	1900	1900
Adj Flow Rate, veh/h	8	873	562	117	343	12	417	0	194	8	40	16
Adj No. of Lanes	1	2	0	1	2	0	2	0	1	0	1	0
Peak Hour Factor	0.50	0.86	0.91	0.70	0.69	0.42	0.94	0.56	0.80	0.38	0.43	0.31
Percent Heavy Veh, %	0	1	1	5	1	1	3	0	3	0	0	0
Cap, veh/h	15	894	559	150	1772	62	662	0	287	11	54	22
Arrive On Green	0.01	0.43	0.43	0.09	0.51	0.51	0.19	0.00	0.19	0.05	0.05	0.05
Sat Flow, veh/h	1810	2087	1306	1723	3496	122	3514	0	1521	220	1102	441
Grp Volume(v), veh/h	8	744	691	117	174	181	417	0	194	64	0	0
Grp Sat Flow(s),veh/h/ln	1810	1787	1606	1723	1776	1843	1757	0	1521	1763	0	0
Q Serve(g_s), s	0.3	30.5	32.0	5.0	4.0	4.0	8.2	0.0	8.9	2.7	0.0	0.0
Cycle Q Clear(g_c), s	0.3	30.5	32.0	5.0	4.0	4.0	8.2	0.0	8.9	2.7	0.0	0.0
Prop In Lane	1.00		0.81	1.00		0.07	1.00		1.00	0.12		0.25
Lane Grp Cap(c), veh/h	15	765	688	150	900	934	662	0	287	87	0	0
V/C Ratio(X)	0.54	0.97	1.01	0.78	0.19	0.19	0.63	0.00	0.68	0.74	0.00	0.00
Avail Cap(c_a), veh/h	775	765	688	738	900	934	1880	0	814	472	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	36.9	20.9	21.4	33.4	10.1	10.1	27.9	0.0	28.2	35.1	0.0	0.0
Incr Delay (d2), s/veh	10.9	26.2	35.6	3.4	0.4	0.4	1.0	0.0	2.8	13.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	20.5	20.7	2.5	2.0	2.1	4.0	0.0	3.9	1.6	0.0	0.0
LnGrp Delay(d),s/veh	47.8	47.2	57.0	36.8	10.5	10.5	28.9	0.0	31.0	48.7	0.0	0.0
LnGrp LOS	D	D	F	D	B	B	C		C	D		
Approach Vol, veh/h		1443			472			611			64	
Approach Delay, s/veh		51.9			17.0			29.6			48.7	
Approach LOS		D			B			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.0	37.0		8.2	5.1	42.9		18.6
Change Period (Y+Rc), s	4.5	5.0		4.5	4.5	5.0		4.5
Max Green Setting (Gmax), s	32.0	32.0		20.0	32.0	31.0		40.0
Max Q Clear Time (g_c+I1), s	7.0	34.0		4.7	2.3	6.0		10.9
Green Ext Time (p_c), s	0.1	0.0		0.3	0.0	22.6		2.3

Intersection Summary	
HCM 2010 Ctrl Delay	40.2
HCM 2010 LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Intersection Delay, s/veh	80.3
Intersection LOS	F

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations																
Traffic Vol, veh/h	0	1	838	120	0	212	391	0	0	73	0	335	0	0	0	3
Future Vol, veh/h	0	1	838	120	0	212	391	0	0	73	0	335	0	0	0	3
Peak Hour Factor	0.92	0.75	0.95	0.80	0.92	0.82	0.86	0.92	0.92	0.67	0.92	0.78	0.92	0.92	0.92	0.38
Heavy Vehicles, %	2	0	1	0	2	1	1	0	2	3	0	1	2	0	0	0
Mvmt Flow	0	1	882	150	0	259	455	0	0	109	0	429	0	0	0	8
Number of Lanes	0	0	2	0	0	0	2	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	2
HCM Control Delay	117.1	42.8	60.3	12.3
HCM LOS	F	E	F	B

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	18%	0%	0%	62%	0%	0%
Vol Thru, %	0%	100%	78%	38%	100%	0%
Vol Right, %	82%	0%	22%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	408	420	539	342	261	3
LT Vol	73	1	0	212	0	0
Through Vol	0	419	419	130	261	0
RT Vol	335	0	120	0	0	3
Lane Flow Rate	538	442	591	410	303	8
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0.982	0.964	1.264	0.927	0.659	0.019
Departure Headway (Hd)	6.725	7.843	7.698	8.373	8.052	9.088
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	544	465	473	435	452	396
Service Time	4.725	5.561	5.416	6.073	5.752	7.088
HCM Lane V/C Ratio	0.989	0.951	1.249	0.943	0.67	0.02
HCM Control Delay	60.3	61.4	158.8	56	25	12.3
HCM Lane LOS	F	F	F	F	C	B
HCM 95th-tile Q	13.5	11.9	24.4	10.4	4.7	0.1

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	838	120	212	391	0	73	0	335	0	0	3
Future Volume (vph)	1	838	120	212	391	0	73	0	335	0	0	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.978						0.892			0.865	
Flt Protected					0.982			0.990				
Satd. Flow (prot)	0	3384	0	0	3393	0	0	1599	0	0	1589	0
Flt Permitted					0.982			0.990				
Satd. Flow (perm)	0	3384	0	0	3393	0	0	1599	0	0	1589	0
Link Speed (mph)		35			25			25			25	
Link Distance (ft)		1301			475			1062			833	
Travel Time (s)		25.3			13.0			29.0			22.7	
Confl. Peds. (#/hr)	12					12			7	7		
Confl. Bikes (#/hr)			13			5						
Peak Hour Factor	0.75	0.95	0.80	0.82	0.86	0.92	0.67	0.92	0.78	0.92	0.92	0.38
Heavy Vehicles (%)	0%	1%	0%	1%	1%	0%	3%	0%	1%	0%	0%	0%
Adj. Flow (vph)	1	882	150	259	455	0	109	0	429	0	0	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1033	0	0	714	0	0	538	0	0	8	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		2			2			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			35			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	86.0%	ICU Level of Service	E
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.978						0.892			0.865	
Flt Protected					0.982			0.990				
Satd. Flow (prot)	0	3384	0	0	3393	0	0	1599	0	0	1589	0
Flt Permitted					0.982			0.990				
Satd. Flow (perm)	0	3384	0	0	3393	0	0	1599	0	0	1589	0
Link Speed (mph)		35			25			25			25	
Link Distance (ft)		1301			475			1062			833	
Travel Time (s)		25.3			13.0			29.0			22.7	

Intersection Summary

Area Type: Other

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	1	838	120	212	391	0	73	0	335	0	0	3
Future Volume (vph)	1	838	120	212	391	0	73	0	335	0	0	3
Confl. Peds. (#/hr)	12					12			7	7		
Confl. Bikes (#/hr)			13			5						
Peak Hour Factor	0.75	0.95	0.80	0.82	0.86	0.92	0.67	0.92	0.78	0.92	0.92	0.38
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	1%	0%	1%	1%	0%	3%	0%	1%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	1	882	150	259	455	0	109	0	429	0	0	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1033	0	0	714	0	0	538	0	0	8	0

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		2			2			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			35			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	838	120	212	391	0	73	0	335	0	0	3
Pedestrians	12					12			7	7		
Ped Button					Yes			Yes				
Pedestrian Timing (s)					16.0			16.0				
Free Right			No			No			No			No
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	0	959	0	0	603	0	0	408	0	0	3	0
Lane Utilization Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.95	0.98	0.85	0.95	0.98	0.85	0.95	0.87	0.85	0.95	0.85	0.85
Saturated Flow (vph)	0	3550	0	0	3554	0	0	1651	0	0	1615	0
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.7	0.9	0.0	0.0	0.0
Pedestrian Frequency (%)		0.00			0.33			0.21			0.00	
Protected Option Allowed		No			No			No			No	
Reference Time (s)			0.0			0.0			0.0			0.0
Adj Reference Time (s)			0.0			0.0			0.0			0.0
Permitted Option												
Adj Saturation A (vph)	0	1724		0	118		0	446		0	1615	
Reference Time A (s)	0.0	33.2		0.0	214.7		0.0	110.6		0.0	0.2	
Adj Saturation B (vph	NA	NA		NA	NA		0	0		NA	NA	
Reference Time B (s)	NA	NA		NA	NA		12.9	38.4		NA	NA	
Reference Time (s)		33.2			214.7			38.4			0.2	
Adj Reference Time (s)		37.2			218.7			42.4			8.0	
Split Option												
Ref Time Combined (s)	0.0	32.4		0.0	20.4		0.0	30.4		0.0	0.2	
Ref Time Seperate (s)	0.1	28.3		14.1	13.0		4.9	0.7		0.0	0.0	
Reference Time (s)	32.4	32.4		20.4	20.4		30.4	30.4		0.2	0.2	
Adj Reference Time (s)	36.4	36.4		24.4	24.4		34.4	34.4		8.0	8.0	

Summary	EB WB	NB SB	Combined
Protected Option (s)	NA	NA	
Permitted Option (s)	218.7	42.4	
Split Option (s)	60.8	42.4	
Minimum (s)	60.8	42.4	103.2

Right Turns
Adj Reference Time (s)
Cross Thru Ref Time (s)
Oncoming Left Ref Time (s)
Combined (s)

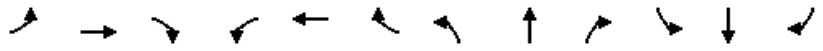
Intersection Summary			
Intersection Capacity Utilization	86.0%	ICU Level of Service	E

Reference Times and Phasing Options do not represent an optimized timing plan.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	1123	43	15	594	1	5	0	14	8	2	4
Future Volume (veh/h)	7	1123	43	15	594	1	5	0	14	8	2	4
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.96	0.96		0.98	0.98		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1491	1668	1700	1700	1651	1700	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	12	1291	74	24	667	4	15	0	24	16	4	11
Adj No. of Lanes	1	2	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.58	0.87	0.58	0.63	0.89	0.25	0.33	0.92	0.58	0.50	0.50	0.38
Percent Heavy Veh, %	14	2	2	0	3	3	0	0	0	0	0	0
Cap, veh/h	430	1878	107	334	1013	6	196	20	110	227	51	64
Arrive On Green	0.62	0.62	0.62	0.62	0.62	0.62	0.12	0.00	0.12	0.12	0.12	0.12
Sat Flow, veh/h	610	3040	174	362	1639	10	419	175	951	569	439	555
Grp Volume(v), veh/h	12	672	693	24	0	671	39	0	0	31	0	0
Grp Sat Flow(s),veh/h/ln	610	1585	1629	362	0	1649	1545	0	0	1563	0	0
Q Serve(g_s), s	0.4	9.5	9.6	1.6	0.0	8.9	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	9.3	9.5	9.6	11.2	0.0	8.9	0.7	0.0	0.0	0.5	0.0	0.0
Prop In Lane	1.00		0.11	1.00		0.01	0.38		0.62	0.52		0.35
Lane Grp Cap(c), veh/h	430	979	1006	334	0	1019	327	0	0	343	0	0
V/C Ratio(X)	0.03	0.69	0.69	0.07	0.00	0.66	0.12	0.00	0.00	0.09	0.00	0.00
Avail Cap(c_a), veh/h	1135	2812	2890	752	0	2924	1255	0	0	1272	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.2	4.3	4.3	8.0	0.0	4.2	13.5	0.0	0.0	13.5	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.3	0.3	0.0	0.0	0.3	0.1	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	4.0	4.1	0.2	0.0	4.0	0.3	0.0	0.0	0.3	0.0	0.0
LnGrp Delay(d),s/veh	7.2	4.6	4.6	8.0	0.0	4.4	13.6	0.0	0.0	13.5	0.0	0.0
LnGrp LOS	A	A	A	A		A	B			B		
Approach Vol, veh/h		1377			695			39			31	
Approach Delay, s/veh		4.6			4.6			13.6			13.5	
Approach LOS		A			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		25.4		8.4		25.4		8.4
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		60.0		25.0		60.0		25.0
Max Q Clear Time (g_c+I1), s		11.6		2.5		13.2		2.7
Green Ext Time (p_c), s		7.7		0.1		7.7		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	4.9
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	217	827	101	70	301	126	45	172	143	306	442	264
Future Volume (veh/h)	217	827	101	70	301	126	45	172	143	306	442	264
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		1.00	1.00		0.99	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1683	1667	1700	1683	1650	1667	1845	1881	1900	1683	1650	1683
Adj Flow Rate, veh/h	244	985	136	97	354	0	53	223	186	397	533	334
Adj No. of Lanes	1	2	0	1	1	1	1	1	0	1	1	1
Peak Hour Factor	0.89	0.84	0.74	0.72	0.85	0.76	0.85	0.77	0.77	0.77	0.83	0.79
Percent Heavy Veh, %	1	2	2	1	3	2	3	1	1	1	3	1
Cap, veh/h	265	986	136	115	433	372	68	238	198	374	737	619
Arrive On Green	0.17	0.36	0.36	0.07	0.26	0.00	0.04	0.25	0.25	0.23	0.45	0.45
Sat Flow, veh/h	1603	2772	382	1603	1650	1417	1757	946	789	1603	1650	1387
Grp Volume(v), veh/h	244	562	559	97	354	0	53	0	409	397	533	334
Grp Sat Flow(s),veh/h/ln	1603	1583	1571	1603	1650	1417	1757	0	1735	1603	1650	1387
Q Serve(g_s), s	25.7	60.8	60.9	10.2	34.5	0.0	5.1	0.0	39.6	40.0	45.3	30.1
Cycle Q Clear(g_c), s	25.7	60.8	60.9	10.2	34.5	0.0	5.1	0.0	39.6	40.0	45.3	30.1
Prop In Lane	1.00		0.24	1.00		1.00	1.00		0.45	1.00		1.00
Lane Grp Cap(c), veh/h	265	563	559	115	433	372	68	0	436	374	737	619
V/C Ratio(X)	0.92	1.00	1.00	0.84	0.82	0.00	0.78	0.00	0.94	1.06	0.72	0.54
Avail Cap(c_a), veh/h	327	563	559	327	578	496	308	0	506	374	737	619
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	70.4	55.2	55.2	78.5	59.3	0.0	81.7	0.0	62.8	65.7	38.8	34.6
Incr Delay (d2), s/veh	28.4	37.6	38.1	14.7	6.8	0.0	7.2	0.0	23.6	63.5	3.5	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.5	32.4	32.3	5.0	16.5	0.0	2.6	0.0	21.8	24.3	21.3	11.7
LnGrp Delay(d),s/veh	98.8	92.7	93.3	93.2	66.1	0.0	88.8	0.0	86.4	129.2	42.3	35.5
LnGrp LOS	F	F	F	F	E		F		F	F	D	D
Approach Vol, veh/h		1365			451			462			1264	
Approach Delay, s/veh		94.0			71.9			86.7			67.8	
Approach LOS		F			E			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.8	64.9	10.1	80.5	31.8	48.9	43.5	47.1
Change Period (Y+Rc), s	3.5	4.0	3.5	4.0	3.5	4.0	3.5	4.0
Max Green Setting (Gmax), s	35.0	60.0	30.0	50.0	35.0	60.0	40.0	50.0
Max Q Clear Time (g_c+I1), s	12.2	62.9	7.1	47.3	27.7	36.5	42.0	41.6
Green Ext Time (p_c), s	0.2	0.0	0.1	1.9	0.6	8.4	0.0	1.5

Intersection Summary	
HCM 2010 Ctrl Delay	80.9
HCM 2010 LOS	F

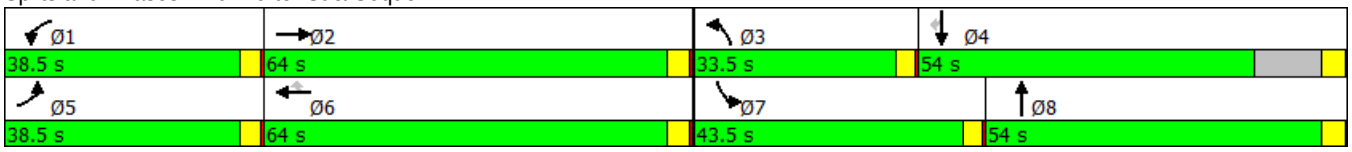
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	217	827	101	70	301	126	45	172	143	306	442	264
Future Volume (vph)	217	827	101	70	301	126	45	172	143	306	442	264
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1900	1900	1900	1700	1700	1700
Storage Length (ft)	140		0	0		100	180		0	540		70
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (ft)	45			25			50			300		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.98		0.98		0.96	0.98	0.99		0.99		0.94
Frt		0.982				0.850		0.932				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1546	2960	0	1546	1595	1369	1694	1674	0	1546	1595	1383
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1540	2960	0	1517	1595	1321	1668	1674	0	1533	1595	1304
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8				63		20				61
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		328			1072			1033			1279	
Travel Time (s)		8.9			29.2			28.2			34.9	
Confl. Peds. (#/hr)	1		13	13		1	6		4	4		6
Confl. Bikes (#/hr)			20			8						5
Peak Hour Factor	0.89	0.84	0.74	0.72	0.85	0.76	0.85	0.77	0.77	0.77	0.83	0.79
Heavy Vehicles (%)	1%	2%	2%	1%	3%	2%	3%	1%	1%	1%	3%	1%
Adj. Flow (vph)	244	985	136	97	354	166	53	223	186	397	533	334
Shared Lane Traffic (%)												
Lane Group Flow (vph)	244	1121	0	97	354	166	53	409	0	397	533	334
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		20			20			22			14	
Two way Left Turn Lane												
Headway Factor	1.20	1.20	1.20	1.20	1.20	1.20	1.04	1.04	1.04	1.20	1.20	1.20
Turning Speed (mph)	15		9	15		12	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6						4
Detector Phase	5	2		1	6	6	3	8		7	4	4
Switch Phase												
Minimum Initial (s)	5.0	7.0		5.0	7.0	7.0	5.0	8.0		5.0	7.0	7.0
Minimum Split (s)	8.5	19.0		8.5	21.0	21.0	8.5	20.0		8.5	23.0	23.0
Total Split (s)	38.5	64.0		38.5	64.0	64.0	33.5	54.0		43.5	54.0	54.0
Total Split (%)	19.3%	32.0%		19.3%	32.0%	32.0%	16.8%	27.0%		21.8%	27.0%	27.0%
Maximum Green (s)	35.0	60.0		35.0	60.0	60.0	30.0	50.0		40.0	50.0	50.0
Yellow Time (s)	3.0	3.5		3.0	3.5	3.5	3.0	3.5		3.0	3.5	3.5
All-Red Time (s)	0.5	0.5		0.5	0.5	0.5	0.5	0.5		0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	3.5	4.0		3.5	4.0	4.0	3.5	4.0		3.5	4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	4.0	3.0		3.0	3.0	3.0	2.0	3.0		2.0	3.0	3.0
Recall Mode	None	Min		None	Min	Min	None	None		None	None	None
Walk Time (s)		8.0			8.0	8.0		8.0			8.0	8.0
Flash Dont Walk (s)		7.0			9.0	9.0		8.0			11.0	11.0
Pedestrian Calls (#/hr)		13			1	1		4			6	6
Act Effct Green (s)	32.7	65.0		17.0	49.2	49.2	10.2	46.8		40.2	78.8	78.8
Actuated g/C Ratio	0.18	0.35		0.09	0.27	0.27	0.06	0.25		0.22	0.43	0.43
v/c Ratio	0.89	1.07		0.68	0.83	0.42	0.56	0.93		1.18	0.78	0.56
Control Delay	105.8	102.6		105.9	81.7	37.5	109.7	91.8		164.8	56.7	38.7
Queue Delay	57.3	15.9		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	163.2	118.5		105.9	81.7	37.5	109.7	91.8		164.8	56.7	38.7
LOS	F	F		F	F	D	F	F		F	E	D
Approach Delay		126.4			73.6			93.8			85.9	
Approach LOS		F			E			F			F	
90th %ile Green (s)	35.0	70.2		24.8	60.0	60.0	15.4	50.0		40.0	74.6	74.6
90th %ile Term Code	Max	Hold		Gap	Max	Max	Gap	Max		Max	Hold	Hold
70th %ile Green (s)	35.0	69.2		20.3	54.5	54.5	12.3	50.0		40.0	77.7	77.7
70th %ile Term Code	Max	Hold		Gap	Gap	Gap	Gap	Max		Max	Hold	Hold
50th %ile Green (s)	35.0	65.1		17.0	47.1	47.1	10.3	50.0		40.0	79.7	79.7
50th %ile Term Code	Max	Hold		Gap	Gap	Gap	Gap	Max		Max	Hold	Hold
30th %ile Green (s)	33.1	60.1		14.1	41.1	41.1	8.4	46.9		40.0	78.5	78.5
30th %ile Term Code	Gap	Hold		Gap	Gap	Gap	Gap	Gap		Max	Hold	Hold
10th %ile Green (s)	25.9	60.0		10.0	44.1	44.1	0.0	37.4		40.0	80.9	80.9
10th %ile Term Code	Gap	Max		Gap	Hold	Hold	Skip	Gap		Max	Hold	Hold
Stops (vph)	197	813		66	278	64	42	272		244	363	167
Fuel Used(gal)	6	25		2	9	2	2	10		15	11	6
CO Emissions (g/hr)	422	1754		168	617	165	109	678		1016	790	391
NOx Emissions (g/hr)	82	341		33	120	32	21	132		198	154	76
VOC Emissions (g/hr)	98	407		39	143	38	25	157		235	183	91
Dilemma Vehicles (#)	0	0		0	0	0	0	0		0	0	0
Queue Length 50th (ft)	294	~805		118	424	107	65	468		~589	564	255
Queue Length 95th (ft)	#487	#880		153	517	141	115	540		#704	747	346

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		248			992			953			1199	
Turn Bay Length (ft)	140					100	180			540		70
Base Capacity (vph)	295	1050		295	523	475	277	472		337	683	593
Starvation Cap Reductn	93	416		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	1.21	1.77		0.33	0.68	0.35	0.19	0.87		1.18	0.78	0.56

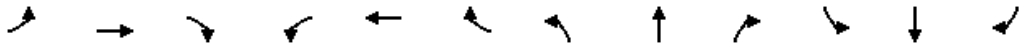
Intersection Summary			
Area Type:	Other		
Cycle Length: 200			
Actuated Cycle Length: 184			
Natural Cycle: 100			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.18			
Intersection Signal Delay: 99.8		Intersection LOS: F	
Intersection Capacity Utilization 83.9%		ICU Level of Service E	
Analysis Period (min) 15			
90th %ile Actuated Cycle: 200			
70th %ile Actuated Cycle: 194.5			
50th %ile Actuated Cycle: 187.1			
30th %ile Actuated Cycle: 176.1			
10th %ile Actuated Cycle: 162.4			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 6: Porter St & Soquel Dr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1900	1900	1900	1700	1700	1700
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	140		0	0		100	180		0	540		70
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (ft)	45			25			50			300		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.98		0.98		0.96	0.98	0.99		0.99		0.94
Frt		0.982				0.850		0.932				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1546	2960	0	1546	1595	1369	1694	1674	0	1546	1595	1383
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1540	2960	0	1517	1595	1321	1668	1674	0	1533	1595	1304
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8				63		20				61
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		328			1072			1033			1279	
Travel Time (s)		8.9			29.2			28.2			34.9	

Intersection Summary	
Area Type:	Other



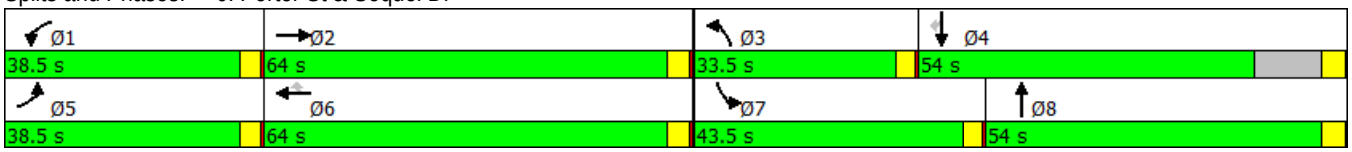
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	217	827	101	70	301	126	45	172	143	306	442	264
Future Volume (vph)	217	827	101	70	301	126	45	172	143	306	442	264
Confl. Peds. (#/hr)	1		13	13		1	6		4	4		6
Confl. Bikes (#/hr)			20			8						5
Peak Hour Factor	0.89	0.84	0.74	0.72	0.85	0.76	0.85	0.77	0.77	0.77	0.83	0.79
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	2%	2%	1%	3%	2%	3%	1%	1%	1%	3%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	244	985	136	97	354	166	53	223	186	397	533	334
Shared Lane Traffic (%)												
Lane Group Flow (vph)	244	1121	0	97	354	166	53	409	0	397	533	334

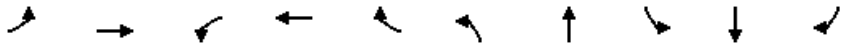
Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	217	827	70	301	126	45	172	306	442	264
Future Volume (vph)	217	827	70	301	126	45	172	306	442	264
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Prot	NA	Perm
Protected Phases	5	2	1	6		3	8	7	4	
Permitted Phases					6					4
Detector Phase	5	2	1	6	6	3	8	7	4	4
Switch Phase										
Minimum Initial (s)	5.0	7.0	5.0	7.0	7.0	5.0	8.0	5.0	7.0	7.0
Minimum Split (s)	8.5	19.0	8.5	21.0	21.0	8.5	20.0	8.5	23.0	23.0
Total Split (s)	38.5	64.0	38.5	64.0	64.0	33.5	54.0	43.5	54.0	54.0
Total Split (%)	19.3%	32.0%	19.3%	32.0%	32.0%	16.8%	27.0%	21.8%	27.0%	27.0%
Yellow Time (s)	3.0	3.5	3.0	3.5	3.5	3.0	3.5	3.0	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.5	4.0	3.5	4.0	4.0	3.5	4.0	3.5	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min	None	Min	Min	None	None	None	None	None
Act Effct Green (s)	32.7	65.0	17.0	49.2	49.2	10.2	46.8	40.2	78.8	78.8
Actuated g/C Ratio	0.18	0.35	0.09	0.27	0.27	0.06	0.25	0.22	0.43	0.43
v/c Ratio	0.89	1.07	0.68	0.83	0.42	0.56	0.93	1.18	0.78	0.56
Control Delay	105.8	102.6	105.9	81.7	37.5	109.7	91.8	164.8	56.7	38.7
Queue Delay	57.3	15.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	163.2	118.5	105.9	81.7	37.5	109.7	91.8	164.8	56.7	38.7
LOS	F	F	F	F	D	F	F	F	E	D
Approach Delay		126.4		73.6			93.8		85.9	
Approach LOS		F		E			F		F	

Intersection Summary	
Cycle Length: 200	
Actuated Cycle Length: 184	
Natural Cycle: 100	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.18	
Intersection Signal Delay: 99.8	Intersection LOS: F
Intersection Capacity Utilization 83.9%	ICU Level of Service E
Analysis Period (min) 15	

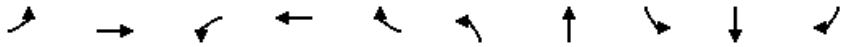
Splits and Phases: 6: Porter St & Soquel Dr





Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Protected Phases	5	2	1	6		3	8	7	4	
Permitted Phases					6					4
Minimum Initial (s)	5.0	7.0	5.0	7.0	7.0	5.0	8.0	5.0	7.0	7.0
Minimum Split (s)	8.5	19.0	8.5	21.0	21.0	8.5	20.0	8.5	23.0	23.0
Total Split (s)	38.5	64.0	38.5	64.0	64.0	33.5	54.0	43.5	54.0	54.0
Total Split (%)	19.3%	32.0%	19.3%	32.0%	32.0%	16.8%	27.0%	21.8%	27.0%	27.0%
Maximum Green (s)	35.0	60.0	35.0	60.0	60.0	30.0	50.0	40.0	50.0	50.0
Yellow Time (s)	3.0	3.5	3.0	3.5	3.5	3.0	3.5	3.0	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	3.0	3.0	3.0	3.0	2.0	3.0	2.0	3.0	3.0
Minimum Gap (s)	4.0	3.0	3.0	3.0	3.0	2.0	3.0	2.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	Min	None	Min	Min	None	None	None	None	None
Walk Time (s)		8.0		8.0	8.0		8.0		8.0	8.0
Flash Dont Walk (s)		7.0		9.0	9.0		8.0		11.0	11.0
Pedestrian Calls (#/hr)		13		1	1		4		6	6
90th %ile Green (s)	35.0	70.2	24.8	60.0	60.0	15.4	50.0	40.0	74.6	74.6
90th %ile Term Code	Max	Hold	Gap	Max	Max	Gap	Max	Max	Hold	Hold
70th %ile Green (s)	35.0	69.2	20.3	54.5	54.5	12.3	50.0	40.0	77.7	77.7
70th %ile Term Code	Max	Hold	Gap	Gap	Gap	Gap	Max	Max	Hold	Hold
50th %ile Green (s)	35.0	65.1	17.0	47.1	47.1	10.3	50.0	40.0	79.7	79.7
50th %ile Term Code	Max	Hold	Gap	Gap	Gap	Gap	Max	Max	Hold	Hold
30th %ile Green (s)	33.1	60.1	14.1	41.1	41.1	8.4	46.9	40.0	78.5	78.5
30th %ile Term Code	Gap	Hold	Gap	Gap	Gap	Gap	Gap	Max	Hold	Hold
10th %ile Green (s)	25.9	60.0	10.0	44.1	44.1	0.0	37.4	40.0	80.9	80.9
10th %ile Term Code	Gap	Max	Gap	Hold	Hold	Skip	Gap	Max	Hold	Hold

Intersection Summary
Cycle Length: 200
Actuated Cycle Length: 184
Control Type: Actuated-Uncoordinated
90th %ile Actuated Cycle: 200
70th %ile Actuated Cycle: 194.5
50th %ile Actuated Cycle: 187.1
30th %ile Actuated Cycle: 176.1
10th %ile Actuated Cycle: 162.4



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	244	1121	97	354	166	53	409	397	533	334
v/c Ratio	0.89	1.07	0.68	0.83	0.42	0.56	0.93	1.18	0.78	0.56
Control Delay	105.8	102.6	105.9	81.7	37.5	109.7	91.8	164.8	56.7	38.7
Queue Delay	57.3	15.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	163.2	118.5	105.9	81.7	37.5	109.7	91.8	164.8	56.7	38.7
Queue Length 50th (ft)	294	~805	118	424	107	65	468	~589	564	255
Queue Length 95th (ft)	#487	#880	153	517	141	115	540	#704	747	346
Internal Link Dist (ft)		248		992			953		1199	
Turn Bay Length (ft)	140				100	180		540		70
Base Capacity (vph)	295	1050	295	523	475	277	472	337	683	593
Starvation Cap Reductn	93	416	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.21	1.77	0.33	0.68	0.35	0.19	0.87	1.18	0.78	0.56

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		20			20			22			14	
Two way Left Turn Lane												
Headway Factor	1.20	1.20	1.20	1.20	1.20	1.20	1.04	1.04	1.04	1.20	1.20	1.20
Turning Speed (mph)	15		9	15		12	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Intersection Summary

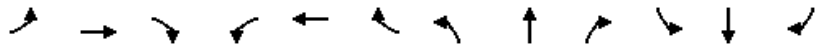
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	217	827	101	70	301	126	45	172	143	306	442	264
Pedestrians	1		13	13		1	6		4	4		6
Ped Button		Yes			Yes			Yes			Yes	
Pedestrian Timing (s)		15.0			17.0			16.0			19.0	
Free Right			No			No			No			No
Ideal Flow	1700	1700	1700	1700	1700	1700	1900	1900	1900	1700	1700	1700
Lost Time (s)	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0
Minimum Green (s)	5.0	7.0	4.0	5.0	7.0	7.0	5.0	8.0	4.0	5.0	7.0	7.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	217	928	0	70	301	126	45	315	0	306	442	264
Lane Utilization Factor	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.95	0.98	0.85	0.95	1.00	0.85	0.95	0.93	0.85	0.95	1.00	0.85
Saturated Flow (vph)	1615	3184	0	1615	1700	1445	1805	1771	0	1615	1700	1445
Ped Intf Time (s)	0.0	0.2	1.6	0.0	0.0	0.1	0.0	0.2	0.5	0.0	0.0	0.8
Pedestrian Frequency (%)		0.35			0.03			0.12			0.18	
Protected Option Allowed		Yes			Yes			Yes			Yes	
Reference Time (s)	16.1	35.1	0.0	5.2	21.2	10.6	3.0	21.6	0.0	22.7	31.2	22.7
Adj Reference Time (s)	20.1	39.1	0.0	9.2	25.2	14.8	9.0	25.6	0.0	26.7	35.2	26.7
Permitted Option												
Adj Saturation A (vph)	108	1592		108	1700		120	1771		108	1700	
Reference Time A (s)	241.9	35.1		78.0	21.2		44.9	21.6		341.1	31.2	
Adj Saturation B (vph	NA	NA		NA	NA		NA	NA		NA	NA	
Reference Time B (s)	NA	NA		NA	NA		NA	NA		NA	NA	
Reference Time (s)		241.9			78.0			44.9			341.1	
Adj Reference Time (s)		245.9			82.0			48.9			345.1	
Split Option												
Ref Time Combined (s)	16.1	35.1		5.2	21.2		3.0	21.6		22.7	31.2	
Ref Time Seperate (s)	16.1	31.3		5.2	21.2		3.0	11.9		22.7	31.2	
Reference Time (s)	35.1	35.1		21.2	21.2		21.6	21.6		31.2	31.2	
Adj Reference Time (s)	39.1	39.1		25.2	25.2		25.6	25.6		35.2	35.2	

Summary	EB WB	NB SB	Combined
Protected Option (s)	48.3	52.3	
Permitted Option (s)	245.9	345.1	
Split Option (s)	64.4	60.8	
Minimum (s)	48.3	52.3	100.7

Right Turns	WBR	SBR
Adj Reference Time (s)	14.8	26.7
Cross Thru Ref Time (s)	25.6	25.2
Oncoming Left Ref Time (s)	20.1	9.0
Combined (s)	60.5	60.9

Intersection Summary			
Intersection Capacity Utilization	83.9%	ICU Level of Service	E

Reference Times and Phasing Options do not represent an optimized timing plan.



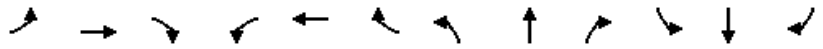
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	2	17	282	2	14	14	508	148	21	583	11
Future Volume (veh/h)	9	2	17	282	2	14	14	508	148	21	583	11
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		1.00	1.00		0.96	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1881	1869	1900	1900	1863	1900	1900	1864	1900
Adj Flow Rate, veh/h	20	8	24	411	0	0	28	552	178	32	711	28
Adj No. of Lanes	0	1	0	2	1	0	1	2	1	1	2	0
Peak Hour Factor	0.45	0.25	0.71	0.73	0.50	0.58	0.50	0.92	0.83	0.66	0.82	0.39
Percent Heavy Veh, %	0	0	0	1	0	0	0	2	0	0	2	2
Cap, veh/h	39	16	47	734	383	0	46	1319	581	51	1302	51
Arrive On Green	0.06	0.06	0.06	0.20	0.00	0.00	0.03	0.37	0.37	0.03	0.38	0.38
Sat Flow, veh/h	652	261	783	3583	1869	0	1810	3539	1558	1810	3469	137
Grp Volume(v), veh/h	52	0	0	411	0	0	28	552	178	32	363	376
Grp Sat Flow(s),veh/h/ln	1696	0	0	1792	1869	0	1810	1770	1558	1810	1771	1834
Q Serve(g_s), s	1.6	0.0	0.0	5.6	0.0	0.0	0.8	6.2	4.4	0.9	8.7	8.7
Cycle Q Clear(g_c), s	1.6	0.0	0.0	5.6	0.0	0.0	0.8	6.2	4.4	0.9	8.7	8.7
Prop In Lane	0.38		0.46	1.00		0.00	1.00		1.00	1.00		0.07
Lane Grp Cap(c), veh/h	102	0	0	734	383	0	46	1319	581	51	665	689
V/C Ratio(X)	0.51	0.00	0.00	0.56	0.00	0.00	0.61	0.42	0.31	0.63	0.55	0.55
Avail Cap(c_a), veh/h	629	0	0	1662	867	0	672	1970	868	672	986	1021
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.5	0.0	0.0	19.2	0.0	0.0	26.0	12.6	12.0	25.9	13.2	13.2
Incr Delay (d2), s/veh	3.9	0.0	0.0	1.0	0.0	0.0	12.3	0.2	0.3	11.9	0.7	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	0.0	2.8	0.0	0.0	0.6	3.0	1.9	0.6	4.4	4.5
LnGrp Delay(d),s/veh	28.4	0.0	0.0	20.2	0.0	0.0	38.3	12.8	12.3	37.8	13.9	13.9
LnGrp LOS	C			C			D	B	B	D	B	B
Approach Vol, veh/h		52			411			758			771	
Approach Delay, s/veh		28.4			20.2			13.6			14.9	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.5	25.1		15.5	5.4	25.2		7.7
Change Period (Y+Rc), s	4.0	5.0		4.5	4.0	5.0		4.5
Max Green Setting (Gmax), s	20.0	30.0		25.0	20.0	30.0		20.0
Max Q Clear Time (g_c+I1), s	2.9	8.2		7.6	2.8	10.7		3.6
Green Ext Time (p_c), s	0.0	10.2		2.2	0.0	9.5		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	15.9
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	824	0	256	0	528	493	0	780	145
Future Volume (veh/h)	0	0	0	824	0	256	0	528	493	0	780	145
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		0.97
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1881	1881	1810	0	1872	1900	0	1866	1900
Adj Flow Rate, veh/h				936	0	284	0	607	0	0	918	186
Adj No. of Lanes				2	0	1	0	2	0	0	2	0
Peak Hour Factor				0.88	0.92	0.90	0.92	0.87	0.80	0.92	0.85	0.78
Percent Heavy Veh, %				1	0	5	0	2	2	0	2	2
Cap, veh/h				1091	0	468	0	1859	0	0	1527	309
Arrive On Green				0.30	0.00	0.30	0.00	0.87	0.00	0.00	0.52	0.52
Sat Flow, veh/h				3583	0	1538	0	3744	0	0	3014	591
Grp Volume(v), veh/h				936	0	284	0	607	0	0	557	547
Grp Sat Flow(s),veh/h/ln				1792	0	1538	0	1778	0	0	1773	1739
Q Serve(g_s), s				13.5	0.0	8.7	0.0	1.7	0.0	0.0	12.0	12.0
Cycle Q Clear(g_c), s				13.5	0.0	8.7	0.0	1.7	0.0	0.0	12.0	12.0
Prop In Lane				1.00		1.00	0.00		0.00	0.00		0.34
Lane Grp Cap(c), veh/h				1091	0	468	0	1859	0	0	927	909
V/C Ratio(X)				0.86	0.00	0.61	0.00	0.33	0.00	0.00	0.60	0.60
Avail Cap(c_a), veh/h				1140	0	489	0	1859	0	0	927	909
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.67	1.67	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.00	0.91	0.00	0.00	0.82	0.82
Uniform Delay (d), s/veh				18.0	0.0	16.3	0.0	1.8	0.0	0.0	9.1	9.1
Incr Delay (d2), s/veh				6.6	0.0	2.2	0.0	0.4	0.0	0.0	2.4	2.4
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				7.6	0.0	3.9	0.0	0.8	0.0	0.0	6.3	6.2
LnGrp Delay(d),s/veh				24.6	0.0	18.5	0.0	2.2	0.0	0.0	11.5	11.6
LnGrp LOS				C		B		A			B	B
Approach Vol, veh/h					1220			607			1104	
Approach Delay, s/veh					23.2			2.2			11.5	
Approach LOS					C			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		34.1				34.1		20.9
Change Period (Y+Rc), s		5.3				5.3		4.2
Max Green Setting (Gmax), s		28.0				28.0		17.5
Max Q Clear Time (g_c+I1), s		3.7				14.0		15.5
Green Ext Time (p_c), s		15.5				10.3		1.2

Intersection Summary		
HCM 2010 Ctrl Delay		14.5
HCM 2010 LOS		B

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	46	64	0	0	0	0	986	945	0	1230	374
Future Volume (vph)	35	46	64	0	0	0	0	986	945	0	1230	374
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.6	4.6					4.9	4.9		4.9	4.0
Lane Util. Factor		1.00	0.88					0.95	1.00		0.91	1.00
Frpb, ped/bikes		1.00	1.00					1.00	1.00		1.00	0.97
Flpb, ped/bikes		1.00	1.00					1.00	1.00		1.00	1.00
Frt		1.00	0.85					1.00	0.85		1.00	0.85
Flt Protected		0.98	1.00					1.00	1.00		1.00	1.00
Satd. Flow (prot)		1757	2694					3455	1546		4964	1501
Flt Permitted		0.98	1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)		1757	2694					3455	1546		4964	1501
Peak-hour factor, PHF	0.80	0.72	0.75	0.92	0.92	0.92	0.92	0.85	0.94	0.92	0.96	0.82
Adj. Flow (vph)	44	64	85	0	0	0	0	1160	1005	0	1281	456
RTOR Reduction (vph)	0	0	76	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	108	9	0	0	0	0	1160	1005	0	1281	456
Confl. Peds. (#/hr)	13					13	11		1	1		11
Confl. Bikes (#/hr)												9
Heavy Vehicles (%)	6%	0%	2%	0%	0%	0%	0%	1%	1%	0%	1%	1%
Turn Type	Split	NA	Perm					NA	Prot		NA	Free
Protected Phases	2	2						1 3 4	1 3 4		1 3 4	
Permitted Phases			2									Free
Actuated Green, G (s)		12.1	12.1					89.1	89.1		89.1	110.0
Effective Green, g (s)		12.1	12.1					84.9	84.9		84.9	110.0
Actuated g/C Ratio		0.11	0.11					0.77	0.77		0.77	1.00
Clearance Time (s)		4.6	4.6									
Vehicle Extension (s)		3.0	3.0									
Lane Grp Cap (vph)		193	296					2666	1193		3831	1501
v/s Ratio Prot		c0.06						0.34	c0.65		0.26	
v/s Ratio Perm			0.00									c0.30
v/c Ratio		0.56	0.03					0.44	0.84		0.33	0.30
Uniform Delay, d1		46.4	43.7					4.3	8.2		3.9	0.0
Progression Factor		1.00	1.00					0.11	1.50		1.19	1.00
Incremental Delay, d2		3.5	0.0					0.0	2.3		0.0	0.3
Delay (s)		49.9	43.8					0.5	14.6		4.6	0.3
Level of Service		D	D					A	B		A	A
Approach Delay (s)		47.2			0.0			7.1			3.5	
Approach LOS		D			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	7.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	17.9
Intersection Capacity Utilization	71.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

NEAR TERM PLUS PROJECT CONDITIONS
SYNCHRO OUTPUT SHEETS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	631	32	18	886	48	50	2	24	64	1	74
Future Volume (veh/h)	18	631	32	18	886	48	50	2	24	64	1	74
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1822	1900	1792	1837	1900	1900	1690	1900	1900	1846	1900
Adj Flow Rate, veh/h	32	830	40	32	1094	62	69	4	44	97	4	97
Adj No. of Lanes	0	2	0	1	2	0	0	1	0	0	1	0
Peak Hour Factor	0.56	0.76	0.80	0.56	0.81	0.78	0.72	0.50	0.55	0.66	0.25	0.76
Percent Heavy Veh, %	4	4	4	6	3	3	0	0	0	0	0	0
Cap, veh/h	102	1901	90	419	2047	116	259	34	112	231	35	159
Arrive On Green	0.61	0.61	0.61	0.61	0.61	0.61	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	49	3112	147	609	3350	190	720	163	533	619	165	753
Grp Volume(v), veh/h	460	0	442	32	570	586	117	0	0	198	0	0
Grp Sat Flow(s),veh/h/ln	1682	0	1626	609	1745	1795	1417	0	0	1537	0	0
Q Serve(g_s), s	0.0	0.0	7.7	1.6	10.0	10.0	0.0	0.0	0.0	2.4	0.0	0.0
Cycle Q Clear(g_c), s	7.0	0.0	7.7	9.3	10.0	10.0	3.4	0.0	0.0	5.9	0.0	0.0
Prop In Lane	0.07		0.09	1.00		0.11	0.59		0.38	0.49		0.49
Lane Grp Cap(c), veh/h	1100	0	994	419	1066	1096	406	0	0	424	0	0
V/C Ratio(X)	0.42	0.00	0.45	0.08	0.53	0.53	0.29	0.00	0.00	0.47	0.00	0.00
Avail Cap(c_a), veh/h	1171	0	1070	448	1148	1180	734	0	0	799	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	5.4	0.0	5.5	8.0	6.0	6.0	17.9	0.0	0.0	18.8	0.0	0.0
Incr Delay (d2), s/veh	0.5	0.0	0.7	0.2	0.9	0.9	0.8	0.0	0.0	1.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	0.0	3.6	0.3	5.0	5.2	1.6	0.0	0.0	2.8	0.0	0.0
LnGrp Delay(d),s/veh	5.9	0.0	6.2	8.2	6.9	6.9	18.7	0.0	0.0	20.5	0.0	0.0
LnGrp LOS	A		A	A	A	A	B			C		
Approach Vol, veh/h		902			1188			117			198	
Approach Delay, s/veh		6.1			6.9			18.7			20.5	
Approach LOS		A			A			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		37.5		15.7		37.5		15.7
Change Period (Y+Rc), s		5.0		4.5		5.0		4.5
Max Green Setting (Gmax), s		35.0		25.0		35.0		25.0
Max Q Clear Time (g_c+I1), s		9.7		5.4		12.0		7.9
Green Ext Time (p_c), s		22.3		3.3		20.5		3.1

Intersection Summary	
HCM 2010 Ctrl Delay	8.3
HCM 2010 LOS	A

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	723	2	9	1168	1	2
Future Vol, veh/h	723	2	9	1168	1	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	70	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	786	2	10	1270	1	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	788	0	1441	394
Stage 1	-	-	-	-	787	-
Stage 2	-	-	-	-	654	-
Critical Hdwy	-	-	4.14	-	7.54	6.94
Critical Hdwy Stg 1	-	-	-	-	6.54	-
Critical Hdwy Stg 2	-	-	-	-	6.54	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	827	-	93	605
Stage 1	-	-	-	-	351	-
Stage 2	-	-	-	-	422	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	827	-	92	605
Mov Cap-2 Maneuver	-	-	-	-	92	-
Stage 1	-	-	-	-	351	-
Stage 2	-	-	-	-	417	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	22.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	212	-	-	827	-
HCM Lane V/C Ratio	0.015	-	-	0.012	-
HCM Control Delay (s)	22.2	-	-	9.4	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	345	379	139	553	5	629	5	87	0	9	3
Future Volume (veh/h)	1	345	379	139	553	5	629	5	87	0	9	3
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.96	1.00		0.99	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1800	1900	1792	1822	1900	1863	1864	1827	1900	1409	1900
Adj Flow Rate, veh/h	4	479	505	199	651	12	815	0	143	0	20	8
Adj No. of Lanes	1	2	0	1	2	0	2	0	1	0	1	0
Peak Hour Factor	0.25	0.72	0.75	0.70	0.85	0.42	0.78	0.42	0.61	0.92	0.45	0.38
Percent Heavy Veh, %	0	4	4	6	4	4	2	0	4	22	22	22
Cap, veh/h	8	603	527	235	1687	31	987	0	427	0	26	10
Arrive On Green	0.00	0.35	0.35	0.14	0.49	0.49	0.28	0.00	0.28	0.00	0.03	0.03
Sat Flow, veh/h	1810	1710	1497	1707	3474	64	3548	0	1536	0	941	376
Grp Volume(v), veh/h	4	479	505	199	324	339	815	0	143	0	0	28
Grp Sat Flow(s),veh/h/ln	1810	1710	1497	1707	1731	1807	1774	0	1536	0	0	1317
Q Serve(g_s), s	0.2	22.9	29.9	10.3	10.8	10.8	19.5	0.0	6.7	0.0	0.0	1.9
Cycle Q Clear(g_c), s	0.2	22.9	29.9	10.3	10.8	10.8	19.5	0.0	6.7	0.0	0.0	1.9
Prop In Lane	1.00		1.00	1.00		0.04	1.00		1.00	0.00		0.29
Lane Grp Cap(c), veh/h	8	603	527	235	841	878	987	0	427	0	0	37
V/C Ratio(X)	0.52	0.79	0.96	0.85	0.39	0.39	0.83	0.00	0.33	0.00	0.00	0.76
Avail Cap(c_a), veh/h	638	603	528	602	841	878	1565	0	677	0	0	290
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	45.1	26.4	28.7	38.2	14.8	14.8	30.7	0.0	26.1	0.0	0.0	43.8
Incr Delay (d2), s/veh	19.0	9.6	29.6	3.2	1.1	1.0	2.1	0.0	0.5	0.0	0.0	31.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	12.4	16.7	5.1	5.4	5.6	9.8	0.0	2.9	0.0	0.0	1.0
LnGrp Delay(d),s/veh	64.1	36.0	58.3	41.4	15.8	15.8	32.8	0.0	26.5	0.0	0.0	75.4
LnGrp LOS	E	D	E	D	B	B	C		C			E
Approach Vol, veh/h		988			862			958			28	
Approach Delay, s/veh		47.5			21.7			31.8			75.4	
Approach LOS		D			C			C			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	17.0	37.0		7.0	4.9	49.1		29.7
Change Period (Y+Rc), s	4.5	5.0		4.5	4.5	5.0		4.5
Max Green Setting (Gmax), s	32.0	32.0		20.0	32.0	31.0		40.0
Max Q Clear Time (g_c+I1), s	12.3	31.9		3.9	2.2	12.8		21.5
Green Ext Time (p_c), s	0.2	0.1		0.1	0.0	16.0		3.7

Intersection Summary	
HCM 2010 Ctrl Delay	34.6
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Intersection Delay, s/veh	47.2
Intersection LOS	E

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations																
Traffic Vol, veh/h	0	1	402	68	0	169	656	0	0	118	0	183	0	0	0	0
Future Vol, veh/h	0	1	402	68	0	169	656	0	0	118	0	183	0	0	0	0
Peak Hour Factor	0.92	0.75	0.75	0.76	0.92	0.71	0.91	0.92	0.92	0.83	0.92	0.58	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	0	5	6	2	2	4	0	2	1	0	2	2	0	0	0
Mvmt Flow	0	1	536	89	0	238	721	0	0	142	0	316	0	0	0	0
Number of Lanes	0	0	2	0	0	0	2	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	2
HCM Control Delay	25.5	66.5	36.4	0
HCM LOS	D	F	E	-

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	39%	0%	0%	44%	0%	0%
Vol Thru, %	0%	100%	75%	56%	100%	100%
Vol Right, %	61%	0%	25%	0%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	301	202	269	388	437	0
LT Vol	118	1	0	169	0	0
Through Vol	0	201	201	219	437	0
RT Vol	183	0	68	0	0	0
Lane Flow Rate	458	269	357	478	481	0
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0.847	0.57	0.747	1.002	0.982	0
Departure Headway (Hd)	6.66	7.621	7.524	7.545	7.355	9.125
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	545	471	479	478	490	0
Service Time	4.696	5.405	5.307	5.339	5.149	7.125
HCM Lane V/C Ratio	0.84	0.571	0.745	1	0.982	0
HCM Control Delay	36.4	20.1	29.5	69.5	63.6	12.1
HCM Lane LOS	E	C	D	F	F	N
HCM 95th-tile Q	8.9	3.5	6.2	13.4	12.8	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	402	68	169	657	0	118	0	183	0	0	0
Future Volume (vph)	1	402	68	169	657	0	118	0	183	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.979						0.907				
Flt Protected					0.988			0.985				
Satd. Flow (prot)	0	3250	0	0	3331	0	0	1614	0	0	1837	0
Flt Permitted					0.988			0.985				
Satd. Flow (perm)	0	3250	0	0	3331	0	0	1614	0	0	1837	0
Link Speed (mph)		35			25			25			25	
Link Distance (ft)		1301			475			1062			833	
Travel Time (s)		25.3			13.0			29.0			22.7	
Confl. Peds. (#/hr)	15		7	7		15			13	13		
Confl. Bikes (#/hr)			5			11						
Peak Hour Factor	0.75	0.75	0.76	0.71	0.91	0.92	0.83	0.92	0.58	0.92	0.92	0.92
Heavy Vehicles (%)	0%	5%	6%	2%	4%	0%	1%	0%	2%	0%	0%	0%
Adj. Flow (vph)	1	536	89	238	722	0	142	0	316	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	626	0	0	960	0	0	458	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		2			2			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			35			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 65.1%		ICU Level of Service C	
Analysis Period (min) 15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.979						0.907				
Flt Protected					0.988			0.985				
Satd. Flow (prot)	0	3250	0	0	3331	0	0	1614	0	0	1837	0
Flt Permitted					0.988			0.985				
Satd. Flow (perm)	0	3250	0	0	3331	0	0	1614	0	0	1837	0
Link Speed (mph)		35			25			25			25	
Link Distance (ft)		1301			475			1062			833	
Travel Time (s)		25.3			13.0			29.0			22.7	

Intersection Summary

Area Type: Other

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	1	402	68	169	657	0	118	0	183	0	0	0
Future Volume (vph)	1	402	68	169	657	0	118	0	183	0	0	0
Confl. Peds. (#/hr)	15		7	7		15			13	13		
Confl. Bikes (#/hr)			5			11						
Peak Hour Factor	0.75	0.75	0.76	0.71	0.91	0.92	0.83	0.92	0.58	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	5%	6%	2%	4%	0%	1%	0%	2%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	1	536	89	238	722	0	142	0	316	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	626	0	0	960	0	0	458	0	0	0	0

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		2			2			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			35			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9

Intersection Summary

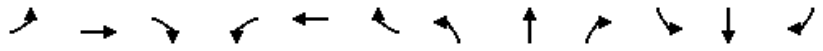
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	402	68	169	657	0	118	0	183	0	0	0
Pedestrians	15		7	7		15			13	13		
Ped Button		Yes			Yes			Yes				
Pedestrian Timing (s)		16.0			16.0			16.0				
Free Right			No			No			No			No
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	0	471	0	0	826	0	0	301	0	0	0	0
Lane Utilization Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.95	0.98	0.85	0.95	0.99	0.85	0.95	0.89	0.85	0.95	1.00	0.85
Saturated Flow (vph)	0	3539	0	0	3581	0	0	1693	0	0	1900	0
Ped Intf Time (s)	0.0	0.1	0.9	0.0	0.0	1.8	0.0	1.0	1.6	0.0	0.0	0.0
Pedestrian Frequency (%)		0.21			0.39			0.35			0.00	
Protected Option Allowed		No			No			No			No	
Reference Time (s)			0.0			0.0			0.0			0.0
Adj Reference Time (s)			0.0			0.0			0.0			0.0
Permitted Option												
Adj Saturation A (vph)	0	1669		0	119		0	1461		0	1900	
Reference Time A (s)	0.0	16.9		0.0	169.9		0.0	25.7		0.0	0.0	
Adj Saturation B (vph	NA	NA		NA	NA		0	0		NA	NA	
Reference Time B (s)	NA	NA		NA	NA		15.8	30.3		NA	NA	
Reference Time (s)		16.9			169.9			25.7			0.0	
Adj Reference Time (s)		20.9			173.9			29.7			8.0	
Split Option												
Ref Time Combined (s)	0.0	16.1		0.0	27.7		0.0	22.3		0.0	0.0	
Ref Time Seperate (s)	0.1	13.8		11.2	21.8		7.8	1.0		0.0	0.0	
Reference Time (s)	16.1	16.1		27.7	27.7		22.3	22.3		0.0	0.0	
Adj Reference Time (s)	20.1	20.1		31.7	31.7		26.3	26.3		0.0	0.0	

Summary	EB WB	NB SB	Combined
Protected Option (s)	NA	NA	
Permitted Option (s)	173.9	29.7	
Split Option (s)	51.8	26.3	
Minimum (s)	51.8	26.3	78.1

Right Turns
Adj Reference Time (s)
Cross Thru Ref Time (s)
Oncoming Left Ref Time (s)
Combined (s)

Intersection Summary			
Intersection Capacity Utilization	65.1%	ICU Level of Service	C

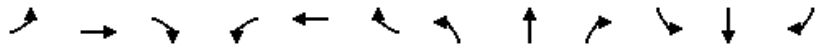
Reference Times and Phasing Options do not represent an optimized timing plan.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	500	57	12	752	9	39	11	30	6	2	34
Future Volume (veh/h)	28	500	57	12	752	9	39	11	30	6	2	34
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	0.89		0.90	0.94		0.86
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1700	1639	1700	1700	1636	1700	1900	1870	1900	1900	1900	1900
Adj Flow Rate, veh/h	48	667	121	24	885	20	89	24	56	20	4	62
Adj No. of Lanes	1	2	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.58	0.75	0.47	0.50	0.85	0.45	0.44	0.46	0.54	0.30	0.50	0.55
Percent Heavy Veh, %	0	4	4	0	4	4	0	0	0	0	0	0
Cap, veh/h	214	1680	304	430	1021	23	225	69	106	112	45	237
Arrive On Green	0.64	0.64	0.64	0.64	0.64	0.64	0.23	0.23	0.23	0.23	0.23	0.23
Sat Flow, veh/h	560	2621	475	624	1592	36	637	305	467	207	199	1047
Grp Volume(v), veh/h	48	396	392	24	0	905	169	0	0	86	0	0
Grp Sat Flow(s),veh/h/ln	560	1557	1539	624	0	1628	1408	0	0	1452	0	0
Q Serve(g_s), s	5.1	8.3	8.3	1.3	0.0	30.4	3.4	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	35.6	8.3	8.3	9.6	0.0	30.4	6.6	0.0	0.0	3.2	0.0	0.0
Prop In Lane	1.00		0.31	1.00		0.02	0.53		0.33	0.23		0.72
Lane Grp Cap(c), veh/h	214	998	986	430	0	1044	400	0	0	394	0	0
V/C Ratio(X)	0.22	0.40	0.40	0.06	0.00	0.87	0.42	0.00	0.00	0.22	0.00	0.00
Avail Cap(c_a), veh/h	351	1379	1362	583	0	1442	590	0	0	591	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	24.2	5.9	5.9	8.2	0.0	9.8	22.7	0.0	0.0	21.5	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.1	0.1	0.0	0.0	3.4	0.3	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	3.5	3.5	0.2	0.0	14.3	2.8	0.0	0.0	1.3	0.0	0.0
LnGrp Delay(d),s/veh	24.4	5.9	6.0	8.2	0.0	13.2	22.9	0.0	0.0	21.6	0.0	0.0
LnGrp LOS	C	A	A	A		B	C			C		
Approach Vol, veh/h		836			929			169			86	
Approach Delay, s/veh		7.0			13.1			22.9			21.6	
Approach LOS		A			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		47.9		19.8		47.9		19.8
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		60.0		25.0		60.0		25.0
Max Q Clear Time (g_c+I1), s		37.6		5.2		32.4		8.6
Green Ext Time (p_c), s		5.9		0.7		6.1		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	11.7
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	217	264	55	123	400	265	44	276	29	149	290	329
Future Volume (veh/h)	217	264	55	123	400	265	44	276	29	149	290	329
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00	1.00		0.98	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1646	1700	1650	1650	1667	1574	1630	1700	1881	1827	1845
Adj Flow Rate, veh/h	293	326	71	198	460	0	88	329	36	191	367	422
Adj No. of Lanes	1	2	0	1	1	1	1	1	0	1	1	1
Peak Hour Factor	0.74	0.81	0.78	0.62	0.87	0.68	0.50	0.84	0.81	0.78	0.79	0.78
Percent Heavy Veh, %	2	4	4	3	3	2	8	4	4	1	4	3
Cap, veh/h	316	949	204	220	518	445	105	386	42	215	581	495
Arrive On Green	0.20	0.37	0.37	0.14	0.31	0.00	0.07	0.27	0.27	0.12	0.32	0.32
Sat Flow, veh/h	1587	2546	546	1572	1650	1417	1499	1441	158	1792	1827	1556
Grp Volume(v), veh/h	293	198	199	198	460	0	88	0	365	191	367	422
Grp Sat Flow(s),veh/h/ln	1587	1564	1528	1572	1650	1417	1499	0	1598	1792	1827	1556
Q Serve(g_s), s	27.5	13.8	14.2	18.8	40.2	0.0	8.8	0.0	32.9	15.9	26.0	38.5
Cycle Q Clear(g_c), s	27.5	13.8	14.2	18.8	40.2	0.0	8.8	0.0	32.9	15.9	26.0	38.5
Prop In Lane	1.00		0.36	1.00		1.00	1.00		0.10	1.00		1.00
Lane Grp Cap(c), veh/h	316	583	570	220	518	445	105	0	429	215	581	495
V/C Ratio(X)	0.93	0.34	0.35	0.90	0.89	0.00	0.84	0.00	0.85	0.89	0.63	0.85
Avail Cap(c_a), veh/h	366	618	604	363	653	560	296	0	527	472	602	513
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	59.7	34.2	34.3	64.2	49.5	0.0	69.7	0.0	52.6	65.8	44.1	48.4
Incr Delay (d2), s/veh	28.3	0.3	0.4	15.6	11.9	0.0	6.5	0.0	10.7	4.9	2.0	12.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	14.5	6.0	6.1	9.1	20.0	0.0	3.8	0.0	15.8	8.2	13.5	18.3
LnGrp Delay(d),s/veh	88.0	34.5	34.7	79.7	61.4	0.0	76.2	0.0	63.4	70.7	46.2	61.2
LnGrp LOS	F	C	C	E	E		E		E	E	D	E
Approach Vol, veh/h		690			658			453			980	
Approach Delay, s/veh		57.3			66.9			65.9			57.4	
Approach LOS		E			E			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	34.8	60.6	14.1	52.2	33.7	51.6	21.7	44.7
Change Period (Y+Rc), s	3.5	4.0	3.5	4.0	3.5	4.0	3.5	4.0
Max Green Setting (Gmax), s	35.0	60.0	30.0	50.0	35.0	60.0	40.0	50.0
Max Q Clear Time (g_c+I1), s	20.8	16.2	10.8	40.5	29.5	42.2	17.9	34.9
Green Ext Time (p_c), s	0.5	6.8	0.1	4.4	0.7	5.4	0.3	5.8

Intersection Summary	
HCM 2010 Ctrl Delay	61.0
HCM 2010 LOS	E

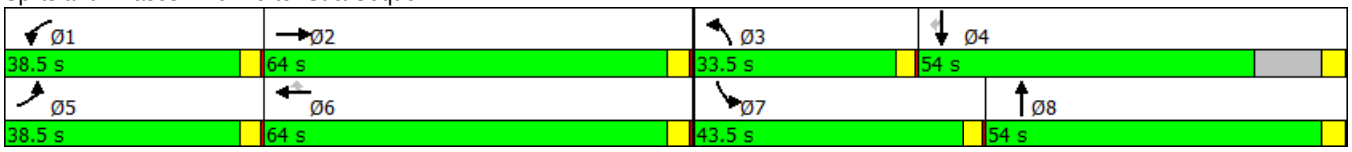
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	217	264	55	123	401	265	44	276	29	149	290	329
Future Volume (vph)	217	264	55	123	401	265	44	276	29	149	290	329
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1900	1900	1900
Storage Length (ft)	140		0	0		100	180		0	540		70
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (ft)	45			25			50			300		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	0.99		0.98		0.95	0.99	1.00		0.99		0.97
Frt		0.973				0.850		0.985				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1531	2907	0	1516	1595	1369	1446	1547	0	1728	1766	1516
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1516	2907	0	1481	1595	1302	1436	1547	0	1708	1766	1470
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13				109		3				112
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		328			1072			1033			1279	
Travel Time (s)		8.9			29.2			28.2			34.9	
Confl. Peds. (#/hr)	3		6	6		3	2		5	5		2
Confl. Bikes (#/hr)			5			10			3			
Peak Hour Factor	0.74	0.81	0.78	0.62	0.87	0.68	0.50	0.84	0.81	0.78	0.79	0.78
Heavy Vehicles (%)	2%	4%	0%	3%	3%	2%	8%	4%	7%	1%	4%	3%
Adj. Flow (vph)	293	326	71	198	461	390	88	329	36	191	367	422
Shared Lane Traffic (%)												
Lane Group Flow (vph)	293	397	0	198	461	390	88	365	0	191	367	422
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		20			20			22			14	
Two way Left Turn Lane												
Headway Factor	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		12	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6						4
Detector Phase	5	2		1	6	6	3	8		7	4	4
Switch Phase												
Minimum Initial (s)	5.0	7.0		5.0	7.0	7.0	5.0	8.0		5.0	7.0	7.0
Minimum Split (s)	8.5	19.0		8.5	21.0	21.0	8.5	20.0		8.5	23.0	23.0
Total Split (s)	38.5	64.0		38.5	64.0	64.0	33.5	54.0		43.5	54.0	54.0
Total Split (%)	19.3%	32.0%		19.3%	32.0%	32.0%	16.8%	27.0%		21.8%	27.0%	27.0%
Maximum Green (s)	35.0	60.0		35.0	60.0	60.0	30.0	50.0		40.0	50.0	50.0
Yellow Time (s)	3.0	3.5		3.0	3.5	3.5	3.0	3.5		3.0	3.5	3.5
All-Red Time (s)	0.5	0.5		0.5	0.5	0.5	0.5	0.5		0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	3.5	4.0		3.5	4.0	4.0	3.5	4.0		3.5	4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	4.0	3.0		3.0	3.0	3.0	2.0	3.0		2.0	3.0	3.0
Recall Mode	None	Min		None	Min	Min	None	None		None	None	None
Walk Time (s)		8.0			8.0	8.0		8.0			8.0	8.0
Flash Dont Walk (s)		7.0			9.0	9.0		8.0			11.0	11.0
Pedestrian Calls (#/hr)		3			3	3		2			2	2
Act Effct Green (s)	35.3	64.7		28.0	57.4	57.4	15.4	46.4		24.3	55.3	55.3
Actuated g/C Ratio	0.20	0.36		0.16	0.32	0.32	0.09	0.26		0.14	0.31	0.31
v/c Ratio	0.97	0.37		0.84	0.90	0.79	0.71	0.90		0.81	0.67	0.79
Control Delay	114.3	44.4		102.2	79.9	53.0	110.7	90.0		101.6	61.5	53.5
Queue Delay	43.0	3.2		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	157.3	47.6		102.2	79.9	53.0	110.7	90.0		101.6	61.5	53.5
LOS	F	D		F	E	D	F	F		F	E	D
Approach Delay		94.2			74.1			94.0			65.9	
Approach LOS		F			E			F			E	
90th %ile Green (s)	35.0	60.0		35.0	60.0	60.0	22.9	50.0		34.0	61.1	61.1
90th %ile Term Code	Max	Hold		Max	Max	Max	Gap	Max		Gap	Hold	Hold
70th %ile Green (s)	35.0	61.4		33.6	60.0	60.0	18.5	50.0		28.4	59.9	59.9
70th %ile Term Code	Max	Hold		Gap	Max	Max	Gap	Max		Gap	Hold	Hold
50th %ile Green (s)	35.0	65.7		29.3	60.0	60.0	15.6	50.0		24.6	59.0	59.0
50th %ile Term Code	Max	Hold		Gap	Max	Max	Gap	Max		Gap	Hold	Hold
30th %ile Green (s)	35.0	69.8		25.2	60.0	60.0	12.7	46.3		21.0	54.6	54.6
30th %ile Term Code	Max	Hold		Gap	Max	Max	Gap	Gap		Gap	Hold	Hold
10th %ile Green (s)	35.0	63.4		18.5	46.9	46.9	8.6	36.2		15.3	42.9	42.9
10th %ile Term Code	Max	Hold		Gap	Gap	Gap	Gap	Gap		Gap	Hold	Hold
Stops (vph)	184	225		117	355	178	42	274		141	248	229
Fuel Used(gal)	6	5		4	12	6	2	9		5	8	8
CO Emissions (g/hr)	445	324		289	807	417	108	654		367	541	562
NOx Emissions (g/hr)	87	63		56	157	81	21	127		71	105	109
VOC Emissions (g/hr)	103	75		67	187	97	25	151		85	125	130
Dilemma Vehicles (#)	0	0		0	0	0	0	0		0	0	0
Queue Length 50th (ft)	~366	183		236	534	324	106	423		230	385	355
Queue Length 95th (ft)	#443	232		224	#756	302	93	#577		277	451	411

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		248			992			953			1199	
Turn Bay Length (ft)	140					100	180			540		70
Base Capacity (vph)	303	1061		299	540	513	245	439		390	600	574
Starvation Cap Reductn	89	548		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	1.37	0.77		0.66	0.85	0.76	0.36	0.83		0.49	0.61	0.74

Intersection Summary			
Area Type:	Other		
Cycle Length: 200			
Actuated Cycle Length: 178.5			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.97			
Intersection Signal Delay: 78.8		Intersection LOS: E	
Intersection Capacity Utilization 76.9%		ICU Level of Service D	
Analysis Period (min) 15			
90th %ile Actuated Cycle: 194			
70th %ile Actuated Cycle: 188.4			
50th %ile Actuated Cycle: 184.6			
30th %ile Actuated Cycle: 177.3			
10th %ile Actuated Cycle: 148.4			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 6: Porter St & Soquel Dr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	140		0	0		100	180		0	540		70
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (ft)	45			25			50			300		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	0.99		0.98		0.95	0.99	1.00		0.99		0.97
Frt		0.973				0.850		0.985				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1531	2907	0	1516	1595	1369	1446	1547	0	1728	1766	1516
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1516	2907	0	1481	1595	1302	1436	1547	0	1708	1766	1470
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13				109		3				112
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		328			1072			1033			1279	
Travel Time (s)		8.9			29.2			28.2			34.9	

Intersection Summary	
Area Type:	Other

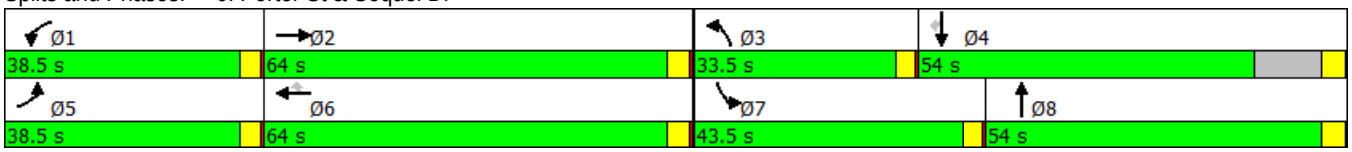
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	217	264	55	123	401	265	44	276	29	149	290	329
Future Volume (vph)	217	264	55	123	401	265	44	276	29	149	290	329
Confl. Peds. (#/hr)	3		6	6		3	2		5	5		2
Confl. Bikes (#/hr)			5			10			3			
Peak Hour Factor	0.74	0.81	0.78	0.62	0.87	0.68	0.50	0.84	0.81	0.78	0.79	0.78
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	4%	0%	3%	3%	2%	8%	4%	7%	1%	4%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	293	326	71	198	461	390	88	329	36	191	367	422
Shared Lane Traffic (%)												
Lane Group Flow (vph)	293	397	0	198	461	390	88	365	0	191	367	422

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	217	264	123	401	265	44	276	149	290	329
Future Volume (vph)	217	264	123	401	265	44	276	149	290	329
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Prot	NA	Perm
Protected Phases	5	2	1	6		3	8	7	4	
Permitted Phases					6					4
Detector Phase	5	2	1	6	6	3	8	7	4	4
Switch Phase										
Minimum Initial (s)	5.0	7.0	5.0	7.0	7.0	5.0	8.0	5.0	7.0	7.0
Minimum Split (s)	8.5	19.0	8.5	21.0	21.0	8.5	20.0	8.5	23.0	23.0
Total Split (s)	38.5	64.0	38.5	64.0	64.0	33.5	54.0	43.5	54.0	54.0
Total Split (%)	19.3%	32.0%	19.3%	32.0%	32.0%	16.8%	27.0%	21.8%	27.0%	27.0%
Yellow Time (s)	3.0	3.5	3.0	3.5	3.5	3.0	3.5	3.0	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.5	4.0	3.5	4.0	4.0	3.5	4.0	3.5	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min	None	Min	Min	None	None	None	None	None
Act Effct Green (s)	35.3	64.7	28.0	57.4	57.4	15.4	46.4	24.3	55.3	55.3
Actuated g/C Ratio	0.20	0.36	0.16	0.32	0.32	0.09	0.26	0.14	0.31	0.31
v/c Ratio	0.97	0.37	0.84	0.90	0.79	0.71	0.90	0.81	0.67	0.79
Control Delay	114.3	44.4	102.2	79.9	53.0	110.7	90.0	101.6	61.5	53.5
Queue Delay	43.0	3.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	157.3	47.6	102.2	79.9	53.0	110.7	90.0	101.6	61.5	53.5
LOS	F	D	F	E	D	F	F	F	E	D
Approach Delay		94.2		74.1			94.0		65.9	
Approach LOS		F		E			F		E	

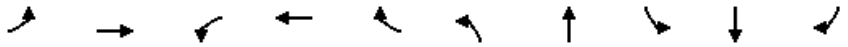
Intersection Summary	
Cycle Length: 200	
Actuated Cycle Length: 178.5	
Natural Cycle: 80	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.97	
Intersection Signal Delay: 78.8	Intersection LOS: E
Intersection Capacity Utilization 76.9%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 6: Porter St & Soquel Dr



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Protected Phases	5	2	1	6		3	8	7	4	
Permitted Phases					6					4
Minimum Initial (s)	5.0	7.0	5.0	7.0	7.0	5.0	8.0	5.0	7.0	7.0
Minimum Split (s)	8.5	19.0	8.5	21.0	21.0	8.5	20.0	8.5	23.0	23.0
Total Split (s)	38.5	64.0	38.5	64.0	64.0	33.5	54.0	43.5	54.0	54.0
Total Split (%)	19.3%	32.0%	19.3%	32.0%	32.0%	16.8%	27.0%	21.8%	27.0%	27.0%
Maximum Green (s)	35.0	60.0	35.0	60.0	60.0	30.0	50.0	40.0	50.0	50.0
Yellow Time (s)	3.0	3.5	3.0	3.5	3.5	3.0	3.5	3.0	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	3.0	3.0	3.0	3.0	2.0	3.0	2.0	3.0	3.0
Minimum Gap (s)	4.0	3.0	3.0	3.0	3.0	2.0	3.0	2.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	Min	None	Min	Min	None	None	None	None	None
Walk Time (s)		8.0		8.0	8.0		8.0		8.0	8.0
Flash Dont Walk (s)		7.0		9.0	9.0		8.0		11.0	11.0
Pedestrian Calls (#/hr)		3		3	3		2		2	2
90th %ile Green (s)	35.0	60.0	35.0	60.0	60.0	22.9	50.0	34.0	61.1	61.1
90th %ile Term Code	Max	Hold	Max	Max	Max	Gap	Max	Gap	Hold	Hold
70th %ile Green (s)	35.0	61.4	33.6	60.0	60.0	18.5	50.0	28.4	59.9	59.9
70th %ile Term Code	Max	Hold	Gap	Max	Max	Gap	Max	Gap	Hold	Hold
50th %ile Green (s)	35.0	65.7	29.3	60.0	60.0	15.6	50.0	24.6	59.0	59.0
50th %ile Term Code	Max	Hold	Gap	Max	Max	Gap	Max	Gap	Hold	Hold
30th %ile Green (s)	35.0	69.8	25.2	60.0	60.0	12.7	46.3	21.0	54.6	54.6
30th %ile Term Code	Max	Hold	Gap	Max	Max	Gap	Gap	Gap	Hold	Hold
10th %ile Green (s)	35.0	63.4	18.5	46.9	46.9	8.6	36.2	15.3	42.9	42.9
10th %ile Term Code	Max	Hold	Gap	Gap	Gap	Gap	Gap	Gap	Hold	Hold

Intersection Summary
Cycle Length: 200
Actuated Cycle Length: 178.5
Control Type: Actuated-Uncoordinated
90th %ile Actuated Cycle: 194
70th %ile Actuated Cycle: 188.4
50th %ile Actuated Cycle: 184.6
30th %ile Actuated Cycle: 177.3
10th %ile Actuated Cycle: 148.4



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	293	397	198	461	390	88	365	191	367	422
v/c Ratio	0.97	0.37	0.84	0.90	0.79	0.71	0.90	0.81	0.67	0.79
Control Delay	114.3	44.4	102.2	79.9	53.0	110.7	90.0	101.6	61.5	53.5
Queue Delay	43.0	3.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	157.3	47.6	102.2	79.9	53.0	110.7	90.0	101.6	61.5	53.5
Queue Length 50th (ft)	~366	183	236	534	324	106	423	230	385	355
Queue Length 95th (ft)	#443	232	224	#756	302	93	#577	277	451	411
Internal Link Dist (ft)		248		992			953		1199	
Turn Bay Length (ft)	140				100	180		540		70
Base Capacity (vph)	303	1061	299	540	513	245	439	390	600	574
Starvation Cap Reductn	89	548	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.37	0.77	0.66	0.85	0.76	0.36	0.83	0.49	0.61	0.74

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		20			20			22			14	
Two way Left Turn Lane												
Headway Factor	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		12	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	217	264	55	123	401	265	44	276	29	149	290	329
Pedestrians	3		6	6		3	2		5	5		2
Ped Button		Yes			Yes			Yes			Yes	
Pedestrian Timing (s)		15.0			17.0			16.0			19.0	
Free Right			No			No			No			No
Ideal Flow	1700	1700	1700	1700	1700	1700	1700	1700	1700	1900	1900	1900
Lost Time (s)	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0
Minimum Green (s)	5.0	7.0	4.0	5.0	7.0	7.0	5.0	8.0	4.0	5.0	7.0	7.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	217	319	0	123	401	265	44	305	0	149	290	329
Lane Utilization Factor	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.95	0.97	0.85	0.95	1.00	0.85	0.95	0.99	0.85	0.95	1.00	0.85
Saturated Flow (vph)	1615	3153	0	1615	1700	1445	1615	1676	0	1805	1900	1615
Ped Intf Time (s)	0.0	0.1	0.8	0.0	0.0	0.4	0.0	0.1	0.6	0.0	0.0	0.3
Pedestrian Frequency (%)		0.18			0.10			0.15			0.06	
Protected Option Allowed		Yes			Yes			Yes			Yes	
Reference Time (s)	16.1	12.3	0.0	9.1	28.3	22.4	3.3	21.9	0.0	9.9	18.3	24.7
Adj Reference Time (s)	20.1	16.8	0.0	13.1	32.3	26.4	9.0	25.9	0.0	13.9	22.4	28.7
Permitted Option												
Adj Saturation A (vph)	108	1577		108	1700		108	1676		120	1900	
Reference Time A (s)	241.9	12.3		137.1	28.3		49.0	21.9		148.6	18.3	
Adj Saturation B (vph	NA	NA		NA	NA		NA	NA		NA	NA	
Reference Time B (s)	NA	NA		NA	NA		NA	NA		NA	NA	
Reference Time (s)		241.9			137.1			49.0			148.6	
Adj Reference Time (s)		245.9			141.1			53.0			152.6	
Split Option												
Ref Time Combined (s)	16.1	12.3		9.1	28.3		3.3	21.9		9.9	18.3	
Ref Time Seperate (s)	16.1	10.2		9.1	28.3		3.3	19.8		9.9	18.3	
Reference Time (s)	16.1	16.1		28.3	28.3		21.9	21.9		18.3	18.3	
Adj Reference Time (s)	20.1	20.1		32.3	32.3		25.9	25.9		22.4	22.4	

Summary	EB WB	NB SB	Combined
Protected Option (s)	52.4	39.8	
Permitted Option (s)	245.9	152.6	
Split Option (s)	52.4	48.3	
Minimum (s)	52.4	39.8	92.2

Right Turns	WBR	SBR
Adj Reference Time (s)	26.4	28.7
Cross Thru Ref Time (s)	25.9	32.3
Oncoming Left Ref Time (s)	20.1	9.0
Combined (s)	72.4	70.0

Intersection Summary			
Intersection Capacity Utilization	76.9%	ICU Level of Service	D

Reference Times and Phasing Options do not represent an optimized timing plan.

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	3	0	721	524	11
Future Vol, veh/h	0	3	0	721	524	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	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	3	0	784	570	12

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	291	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	706	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	706	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.1	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	706	-	-
HCM Lane V/C Ratio	-	0.005	-	-
HCM Control Delay (s)	-	10.1	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0	-	-

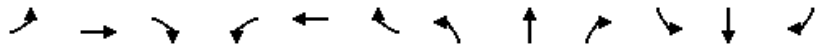
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	1	4	194	3	15	5	692	82	18	499	1
Future Volume (veh/h)	1	1	4	194	3	15	5	692	82	18	499	1
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1169	1900	1759	1774	1900	1583	1827	1696	1712	1776	1900
Adj Flow Rate, veh/h	4	4	8	271	0	0	12	814	121	24	580	4
Adj No. of Lanes	0	1	0	2	1	0	1	2	1	1	2	0
Peak Hour Factor	0.25	0.25	0.50	0.81	0.25	0.63	0.42	0.85	0.68	0.75	0.86	0.25
Percent Heavy Veh, %	100	100	100	8	0	0	20	4	12	11	7	7
Cap, veh/h	6	6	13	539	285	0	19	1478	593	37	1499	10
Arrive On Green	0.02	0.02	0.02	0.16	0.00	0.00	0.01	0.43	0.43	0.02	0.44	0.44
Sat Flow, veh/h	262	262	525	3351	1774	0	1508	3471	1393	1630	3435	24
Grp Volume(v), veh/h	16	0	0	271	0	0	12	814	121	24	285	299
Grp Sat Flow(s),veh/h/ln	1050	0	0	1675	1774	0	1508	1736	1393	1630	1688	1771
Q Serve(g_s), s	0.7	0.0	0.0	3.6	0.0	0.0	0.4	8.6	2.7	0.7	5.6	5.6
Cycle Q Clear(g_c), s	0.7	0.0	0.0	3.6	0.0	0.0	0.4	8.6	2.7	0.7	5.6	5.6
Prop In Lane	0.25		0.50	1.00		0.00	1.00		1.00	1.00		0.01
Lane Grp Cap(c), veh/h	25	0	0	539	285	0	19	1478	593	37	736	773
V/C Ratio(X)	0.64	0.00	0.00	0.50	0.00	0.00	0.65	0.55	0.20	0.65	0.39	0.39
Avail Cap(c_a), veh/h	428	0	0	1707	903	0	614	2122	851	664	1032	1083
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.7	0.0	0.0	18.8	0.0	0.0	24.1	10.6	8.9	23.8	9.4	9.4
Incr Delay (d2), s/veh	23.6	0.0	0.0	1.0	0.0	0.0	32.0	0.3	0.2	17.4	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.0	1.7	0.0	0.0	0.3	4.1	1.0	0.5	2.7	2.8
LnGrp Delay(d),s/veh	47.4	0.0	0.0	19.8	0.0	0.0	56.1	10.9	9.0	41.1	9.7	9.7
LnGrp LOS	D			B			E	B	A	D	A	A
Approach Vol, veh/h		16			271			947			608	
Approach Delay, s/veh		47.4			19.8			11.2			10.9	
Approach LOS		D			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.1	25.9		12.4	4.6	26.4		5.7
Change Period (Y+Rc), s	4.0	5.0		4.5	4.0	5.0		4.5
Max Green Setting (Gmax), s	20.0	30.0		25.0	20.0	30.0		20.0
Max Q Clear Time (g_c+I1), s	2.7	10.6		5.6	2.4	7.6		2.7
Green Ext Time (p_c), s	0.0	10.3		1.4	0.0	11.1		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	12.7
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	624	5	439	0	558	378	0	585	170
Future Volume (veh/h)	0	0	0	624	5	439	0	558	378	0	585	170
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1845	1846	1863	0	1834	1900	0	1804	1900
Adj Flow Rate, veh/h				758	0	482	0	620	0	0	657	200
Adj No. of Lanes				2	0	1	0	2	0	0	2	0
Peak Hour Factor				0.83	0.63	0.91	0.92	0.90	0.92	0.92	0.89	0.85
Percent Heavy Veh, %				3	0	2	0	4	4	0	6	6
Cap, veh/h				1115	0	502	0	1742	0	0	1294	394
Arrive On Green				0.32	0.00	0.32	0.00	1.00	0.00	0.00	0.50	0.50
Sat Flow, veh/h				3514	0	1583	0	3668	0	0	2679	787
Grp Volume(v), veh/h				758	0	482	0	620	0	0	435	422
Grp Sat Flow(s),veh/h/ln				1757	0	1583	0	1742	0	0	1714	1662
Q Serve(g_s), s				9.8	0.0	15.5	0.0	0.0	0.0	0.0	8.8	8.9
Cycle Q Clear(g_c), s				9.8	0.0	15.5	0.0	0.0	0.0	0.0	8.8	8.9
Prop In Lane				1.00		1.00	0.00		0.00	0.00		0.47
Lane Grp Cap(c), veh/h				1115	0	502	0	1742	0	0	857	831
V/C Ratio(X)				0.68	0.00	0.96	0.00	0.36	0.00	0.00	0.51	0.51
Avail Cap(c_a), veh/h				1115	0	502	0	1742	0	0	857	831
HCM Platoon Ratio				1.00	1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.00	0.96	0.00	0.00	0.94	0.94
Uniform Delay (d), s/veh				15.5	0.0	17.4	0.0	0.0	0.0	0.0	8.7	8.7
Incr Delay (d2), s/veh				1.8	0.0	30.1	0.0	0.5	0.0	0.0	2.0	2.1
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				4.9	0.0	10.9	0.0	0.1	0.0	0.0	4.6	4.5
LnGrp Delay(d),s/veh				17.2	0.0	47.5	0.0	0.5	0.0	0.0	10.7	10.8
LnGrp LOS				B		D		A			B	B
Approach Vol, veh/h					1240			620			857	
Approach Delay, s/veh					29.0			0.5			10.8	
Approach LOS					C			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		31.3				31.3		20.7
Change Period (Y+Rc), s		5.3				5.3		4.2
Max Green Setting (Gmax), s		26.0				26.0		16.5
Max Q Clear Time (g_c+I1), s		2.0				10.9		17.5
Green Ext Time (p_c), s		13.1				9.7		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	16.8
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	227	0	521	0	0	0	0	709	568	0	965	244
Future Volume (vph)	227	0	521	0	0	0	0	709	568	0	965	244
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.6	4.6					4.9	4.9		4.9	4.0
Lane Util. Factor		1.00	0.88					0.95	1.00		0.91	1.00
Frpb, ped/bikes		1.00	1.00					1.00	1.00		1.00	0.98
Flpb, ped/bikes		1.00	1.00					1.00	1.00		1.00	1.00
Frt		1.00	0.85					1.00	0.85		1.00	0.85
Flt Protected		0.95	1.00					1.00	1.00		1.00	1.00
Satd. Flow (prot)		1694	2668					3388	1516		4868	1412
Flt Permitted		0.95	1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)		1694	2668					3388	1516		4868	1412
Peak-hour factor, PHF	0.85	0.92	0.85	0.92	0.92	0.92	0.92	0.91	0.88	0.92	0.86	0.83
Adj. Flow (vph)	267	0	613	0	0	0	0	779	645	0	1122	294
RTOR Reduction (vph)	0	0	230	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	267	383	0	0	0	0	779	645	0	1122	294
Confl. Peds. (#/hr)	5					5	6					6
Confl. Bikes (#/hr)									6			1
Heavy Vehicles (%)	3%	0%	3%	0%	0%	0%	0%	3%	3%	0%	3%	8%
Turn Type	Split	NA	Perm					NA	Prot		NA	Free
Protected Phases	2	2						1 3 4	1 3 4		1 3 4	
Permitted Phases			2									Free
Actuated Green, G (s)		15.4	15.4					79.8	79.8		79.8	104.0
Effective Green, g (s)		15.4	15.4					75.6	75.6		75.6	104.0
Actuated g/C Ratio		0.15	0.15					0.73	0.73		0.73	1.00
Clearance Time (s)		4.6	4.6									
Vehicle Extension (s)		3.0	3.0									
Lane Grp Cap (vph)		250	395					2462	1102		3538	1412
v/s Ratio Prot		c0.16						0.23	c0.43		0.23	
v/s Ratio Perm			0.14									0.21
v/c Ratio		1.07	0.97					0.32	0.59		0.32	0.21
Uniform Delay, d1		44.3	44.1					5.0	6.7		5.0	0.0
Progression Factor		1.00	1.00					0.02	0.70		1.69	1.00
Incremental Delay, d2		76.1	36.8					0.0	0.5		0.0	0.3
Delay (s)		120.4	80.9					0.1	5.2		8.6	0.3
Level of Service		F	F					A	A		A	A
Approach Delay (s)		92.9			0.0			2.4			6.8	
Approach LOS		F			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	25.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	104.0	Sum of lost time (s)	17.9
Intersection Capacity Utilization	55.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	52	1162	42	10	531	76	84	1	15	57	3	48
Future Volume (veh/h)	52	1162	42	10	531	76	84	1	15	57	3	48
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.97	0.99		0.98	0.99		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1900	1900	1868	1900	1900	1841	1900	1900	1882	1900
Adj Flow Rate, veh/h	65	1249	66	24	577	89	109	4	24	77	8	77
Adj No. of Lanes	0	2	0	1	2	0	0	1	0	0	1	0
Peak Hour Factor	0.80	0.93	0.64	0.42	0.92	0.85	0.77	0.25	0.63	0.74	0.38	0.62
Percent Heavy Veh, %	1	1	1	0	2	2	0	0	0	0	0	0
Cap, veh/h	135	1992	104	299	1937	298	337	22	50	214	45	144
Arrive On Green	0.63	0.63	0.63	0.63	0.63	0.63	0.19	0.19	0.19	0.19	0.19	0.19
Sat Flow, veh/h	97	3155	165	424	3069	472	1135	117	266	598	239	759
Grp Volume(v), veh/h	709	0	671	24	333	333	137	0	0	162	0	0
Grp Sat Flow(s),veh/h/ln	1742	0	1674	424	1774	1767	1518	0	0	1597	0	0
Q Serve(g_s), s	0.0	0.0	13.1	2.0	4.5	4.5	0.0	0.0	0.0	0.8	0.0	0.0
Cycle Q Clear(g_c), s	11.8	0.0	13.1	15.0	4.5	4.5	3.7	0.0	0.0	4.4	0.0	0.0
Prop In Lane	0.09		0.10	1.00		0.27	0.80		0.18	0.48		0.48
Lane Grp Cap(c), veh/h	1174	0	1057	299	1120	1115	410	0	0	403	0	0
V/C Ratio(X)	0.60	0.00	0.64	0.08	0.30	0.30	0.33	0.00	0.00	0.40	0.00	0.00
Avail Cap(c_a), veh/h	1223	0	1106	311	1172	1167	786	0	0	824	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	5.8	0.0	6.0	10.6	4.4	4.4	18.9	0.0	0.0	19.2	0.0	0.0
Incr Delay (d2), s/veh	1.3	0.0	1.7	0.2	0.3	0.3	1.0	0.0	0.0	1.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.3	0.0	6.5	0.2	2.2	2.2	1.9	0.0	0.0	2.3	0.0	0.0
LnGrp Delay(d),s/veh	7.1	0.0	7.7	10.9	4.7	4.8	19.9	0.0	0.0	20.6	0.0	0.0
LnGrp LOS	A		A	B	A	A	B			C		
Approach Vol, veh/h		1380			690			137			162	
Approach Delay, s/veh		7.4			5.0			19.9			20.6	
Approach LOS		A			A			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		38.5		14.5		38.5		14.5
Change Period (Y+Rc), s		5.0		4.5		5.0		4.5
Max Green Setting (Gmax), s		35.0		25.0		35.0		25.0
Max Q Clear Time (g_c+I1), s		15.1		5.7		17.0		6.4
Green Ext Time (p_c), s		18.1		3.1		16.4		3.0

Intersection Summary	
HCM 2010 Ctrl Delay	8.3
HCM 2010 LOS	A

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1267	1	6	612	3	9
Future Vol, veh/h	1267	1	6	612	3	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	70	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1377	1	7	665	3	10

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1378	0	1724	689
Stage 1	-	-	-	-	1378	-
Stage 2	-	-	-	-	346	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	493	-	80	388
Stage 1	-	-	-	-	199	-
Stage 2	-	-	-	-	688	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	493	-	79	388
Mov Cap-2 Maneuver	-	-	-	-	79	-
Stage 1	-	-	-	-	199	-
Stage 2	-	-	-	-	678	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	24.7
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	196	-	-	493	-
HCM Lane V/C Ratio	0.067	-	-	0.013	-
HCM Control Delay (s)	24.7	-	-	12.4	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	754	518	83	239	5	379	18	157	3	17	5
Future Volume (veh/h)	4	754	518	83	239	5	379	18	157	3	17	5
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.91
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1900	1810	1869	1900	1845	1853	1845	1900	1900	1900
Adj Flow Rate, veh/h	8	877	569	119	346	12	426	0	196	8	40	16
Adj No. of Lanes	1	2	0	1	2	0	2	0	1	0	1	0
Peak Hour Factor	0.50	0.86	0.91	0.70	0.69	0.42	0.94	0.56	0.80	0.38	0.43	0.31
Percent Heavy Veh, %	0	1	1	5	1	1	3	0	3	0	0	0
Cap, veh/h	15	888	559	152	1772	61	666	0	288	11	54	22
Arrive On Green	0.01	0.43	0.43	0.09	0.51	0.51	0.19	0.00	0.19	0.05	0.05	0.05
Sat Flow, veh/h	1810	2082	1310	1723	3498	121	3514	0	1521	220	1102	441
Grp Volume(v), veh/h	8	749	697	119	175	183	426	0	196	64	0	0
Grp Sat Flow(s),veh/h/ln	1810	1787	1605	1723	1776	1843	1757	0	1521	1763	0	0
Q Serve(g_s), s	0.3	31.0	32.0	5.1	4.1	4.1	8.4	0.0	9.0	2.7	0.0	0.0
Cycle Q Clear(g_c), s	0.3	31.0	32.0	5.1	4.1	4.1	8.4	0.0	9.0	2.7	0.0	0.0
Prop In Lane	1.00		0.82	1.00		0.07	1.00		1.00	0.12		0.25
Lane Grp Cap(c), veh/h	15	762	685	152	900	933	666	0	288	87	0	0
V/C Ratio(X)	0.54	0.98	1.02	0.78	0.19	0.20	0.64	0.00	0.68	0.74	0.00	0.00
Avail Cap(c_a), veh/h	772	762	685	735	900	933	1873	0	811	470	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	37.1	21.2	21.5	33.5	10.1	10.1	28.0	0.0	28.3	35.2	0.0	0.0
Incr Delay (d2), s/veh	10.9	28.5	39.0	3.3	0.4	0.4	1.0	0.0	2.8	13.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	21.2	21.5	2.6	2.1	2.2	4.2	0.0	4.0	1.6	0.0	0.0
LnGrp Delay(d),s/veh	47.9	49.8	60.5	36.8	10.5	10.5	29.1	0.0	31.1	49.0	0.0	0.0
LnGrp LOS	D	D	F	D	B	B	C		C	D		
Approach Vol, veh/h		1454			477			622			64	
Approach Delay, s/veh		54.9			17.1			29.7			49.0	
Approach LOS		D			B			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.1	37.0		8.2	5.1	43.0		18.7
Change Period (Y+Rc), s	4.5	5.0		4.5	4.5	5.0		4.5
Max Green Setting (Gmax), s	32.0	32.0		20.0	32.0	31.0		40.0
Max Q Clear Time (g_c+I1), s	7.1	34.0		4.7	2.3	6.1		11.0
Green Ext Time (p_c), s	0.1	0.0		0.3	0.0	22.6		2.4

Intersection Summary	
HCM 2010 Ctrl Delay	41.9
HCM 2010 LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Intersection Delay, s/veh	81.3
Intersection LOS	F

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations																
Traffic Vol, veh/h	0	1	843	120	0	212	394	0	0	73	0	335	0	0	0	3
Future Vol, veh/h	0	1	843	120	0	212	394	0	0	73	0	335	0	0	0	3
Peak Hour Factor	0.92	0.75	0.95	0.80	0.92	0.82	0.86	0.92	0.92	0.67	0.92	0.78	0.92	0.92	0.92	0.38
Heavy Vehicles, %	2	0	1	0	2	1	1	0	2	3	0	1	2	0	0	0
Mvmt Flow	0	1	887	150	0	259	458	0	0	109	0	429	0	0	0	8
Number of Lanes	0	0	2	0	0	0	2	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	2
HCM Control Delay	119	43.1	60.3	12.3
HCM LOS	F	E	F	B

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	18%	0%	0%	62%	0%	0%
Vol Thru, %	0%	100%	78%	38%	100%	0%
Vol Right, %	82%	0%	22%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	408	423	542	343	263	3
LT Vol	73	1	0	212	0	0
Through Vol	0	422	422	131	263	0
RT Vol	335	0	120	0	0	3
Lane Flow Rate	538	445	594	411	305	8
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0.982	0.97	1.27	0.929	0.664	0.019
Departure Headway (Hd)	6.724	7.847	7.703	8.373	8.053	9.087
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	544	463	475	436	452	396
Service Time	4.724	5.563	5.419	6.073	5.753	7.087
HCM Lane V/C Ratio	0.989	0.961	1.251	0.943	0.675	0.02
HCM Control Delay	60.3	62.8	161.2	56.4	25.3	12.3
HCM Lane LOS	F	F	F	F	D	B
HCM 95th-tile Q	13.5	12.1	24.7	10.5	4.7	0.1

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	843	120	212	394	0	73	0	335	0	0	3
Future Volume (vph)	1	843	120	212	394	0	73	0	335	0	0	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.978						0.892			0.865	
Flt Protected					0.982			0.990				
Satd. Flow (prot)	0	3384	0	0	3393	0	0	1599	0	0	1589	0
Flt Permitted					0.982			0.990				
Satd. Flow (perm)	0	3384	0	0	3393	0	0	1599	0	0	1589	0
Link Speed (mph)		35			25			25			25	
Link Distance (ft)		1301			475			1062			833	
Travel Time (s)		25.3			13.0			29.0			22.7	
Confl. Peds. (#/hr)	12					12			7	7		
Confl. Bikes (#/hr)			13			5						
Peak Hour Factor	0.75	0.95	0.80	0.82	0.86	0.92	0.67	0.92	0.78	0.92	0.92	0.38
Heavy Vehicles (%)	0%	1%	0%	1%	1%	0%	3%	0%	1%	0%	0%	0%
Adj. Flow (vph)	1	887	150	259	458	0	109	0	429	0	0	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1038	0	0	717	0	0	538	0	0	8	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		2			2			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			35			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 86.2%		ICU Level of Service E	
Analysis Period (min) 15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.978						0.892			0.865	
Flt Protected					0.982			0.990				
Satd. Flow (prot)	0	3384	0	0	3393	0	0	1599	0	0	1589	0
Flt Permitted					0.982			0.990				
Satd. Flow (perm)	0	3384	0	0	3393	0	0	1599	0	0	1589	0
Link Speed (mph)		35			25			25			25	
Link Distance (ft)		1301			475			1062			833	
Travel Time (s)		25.3			13.0			29.0			22.7	

Intersection Summary

Area Type: Other

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	1	843	120	212	394	0	73	0	335	0	0	3
Future Volume (vph)	1	843	120	212	394	0	73	0	335	0	0	3
Confl. Peds. (#/hr)	12					12			7	7		
Confl. Bikes (#/hr)			13			5						
Peak Hour Factor	0.75	0.95	0.80	0.82	0.86	0.92	0.67	0.92	0.78	0.92	0.92	0.38
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	1%	0%	1%	1%	0%	3%	0%	1%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	1	887	150	259	458	0	109	0	429	0	0	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1038	0	0	717	0	0	538	0	0	8	0

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		2			2			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			35			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9

Intersection Summary

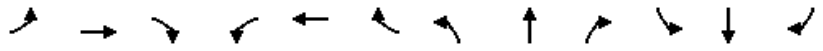
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	843	120	212	394	0	73	0	335	0	0	3
Pedestrians	12					12			7	7		
Ped Button					Yes			Yes				
Pedestrian Timing (s)					16.0			16.0				
Free Right			No			No			No			No
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	0	964	0	0	606	0	0	408	0	0	3	0
Lane Utilization Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.95	0.98	0.85	0.95	0.98	0.85	0.95	0.87	0.85	0.95	0.85	0.85
Saturated Flow (vph)	0	3550	0	0	3554	0	0	1651	0	0	1615	0
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.7	0.9	0.0	0.0	0.0
Pedestrian Frequency (%)		0.00			0.33			0.21			0.00	
Protected Option Allowed		No			No			No			No	
Reference Time (s)			0.0			0.0			0.0			0.0
Adj Reference Time (s)			0.0			0.0			0.0			0.0
Permitted Option												
Adj Saturation A (vph)	0	1725		0	118		0	446		0	1615	
Reference Time A (s)	0.0	33.4		0.0	214.7		0.0	110.6		0.0	0.2	
Adj Saturation B (vph	NA	NA		NA	NA		0	0		NA	NA	
Reference Time B (s)	NA	NA		NA	NA		12.9	38.4		NA	NA	
Reference Time (s)		33.4			214.7			38.4			0.2	
Adj Reference Time (s)		37.4			218.7			42.4			8.0	
Split Option												
Ref Time Combined (s)	0.0	32.6		0.0	20.5		0.0	30.4		0.0	0.2	
Ref Time Seperate (s)	0.1	28.5		14.1	13.1		4.9	0.7		0.0	0.0	
Reference Time (s)	32.6	32.6		20.5	20.5		30.4	30.4		0.2	0.2	
Adj Reference Time (s)	36.6	36.6		24.5	24.5		34.4	34.4		8.0	8.0	

Summary	EB WB	NB SB	Combined
Protected Option (s)	NA	NA	
Permitted Option (s)	218.7	42.4	
Split Option (s)	61.0	42.4	
Minimum (s)	61.0	42.4	103.4

Right Turns	
Adj Reference Time (s)	
Cross Thru Ref Time (s)	
Oncoming Left Ref Time (s)	
Combined (s)	

Intersection Summary			
Intersection Capacity Utilization	86.2%	ICU Level of Service	E

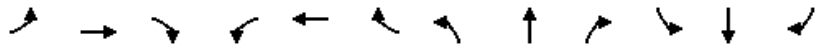
Reference Times and Phasing Options do not represent an optimized timing plan.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	1128	43	15	597	1	5	0	14	8	2	4
Future Volume (veh/h)	7	1128	43	15	597	1	5	0	14	8	2	4
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.96	0.96		0.98	0.98		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1491	1668	1700	1700	1651	1700	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	12	1297	74	24	671	4	15	0	24	16	4	11
Adj No. of Lanes	1	2	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.58	0.87	0.58	0.63	0.89	0.25	0.33	0.92	0.58	0.50	0.50	0.38
Percent Heavy Veh, %	14	2	2	0	3	3	0	0	0	0	0	0
Cap, veh/h	428	1884	107	332	1015	6	195	20	110	226	51	64
Arrive On Green	0.62	0.62	0.62	0.62	0.62	0.62	0.12	0.00	0.12	0.12	0.12	0.12
Sat Flow, veh/h	608	3041	173	360	1639	10	418	176	951	568	440	555
Grp Volume(v), veh/h	12	675	696	24	0	675	39	0	0	31	0	0
Grp Sat Flow(s),veh/h/ln	608	1585	1629	360	0	1649	1545	0	0	1563	0	0
Q Serve(g_s), s	0.4	9.6	9.7	1.6	0.0	9.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	9.4	9.6	9.7	11.3	0.0	9.0	0.7	0.0	0.0	0.5	0.0	0.0
Prop In Lane	1.00		0.11	1.00		0.01	0.38		0.62	0.52		0.35
Lane Grp Cap(c), veh/h	428	982	1009	332	0	1021	326	0	0	342	0	0
V/C Ratio(X)	0.03	0.69	0.69	0.07	0.00	0.66	0.12	0.00	0.00	0.09	0.00	0.00
Avail Cap(c_a), veh/h	1124	2796	2874	744	0	2908	1248	0	0	1265	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.2	4.3	4.3	8.0	0.0	4.2	13.6	0.0	0.0	13.5	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.3	0.3	0.0	0.0	0.3	0.1	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	4.0	4.2	0.2	0.0	4.0	0.3	0.0	0.0	0.3	0.0	0.0
LnGrp Delay(d),s/veh	7.2	4.6	4.6	8.1	0.0	4.4	13.7	0.0	0.0	13.6	0.0	0.0
LnGrp LOS	A	A	A	A		A	B			B		
Approach Vol, veh/h		1383			699			39			31	
Approach Delay, s/veh		4.6			4.6			13.7			13.6	
Approach LOS		A			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		25.6		8.4		25.6		8.4
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		60.0		25.0		60.0		25.0
Max Q Clear Time (g_c+I1), s		11.7		2.5		13.3		2.7
Green Ext Time (p_c), s		7.8		0.1		7.8		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	4.9
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	218	830	102	70	302	126	46	172	143	306	442	265
Future Volume (veh/h)	218	830	102	70	302	126	46	172	143	306	442	265
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		1.00	1.00		0.99	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1683	1667	1700	1683	1650	1667	1845	1881	1900	1683	1650	1683
Adj Flow Rate, veh/h	245	988	138	97	355	0	54	223	186	397	533	335
Adj No. of Lanes	1	2	0	1	1	1	1	1	0	1	1	1
Peak Hour Factor	0.89	0.84	0.74	0.72	0.85	0.76	0.85	0.77	0.77	0.77	0.83	0.79
Percent Heavy Veh, %	1	2	2	1	3	2	3	1	1	1	3	1
Cap, veh/h	266	985	137	115	432	371	69	238	198	374	735	618
Arrive On Green	0.17	0.36	0.36	0.07	0.26	0.00	0.04	0.25	0.25	0.23	0.45	0.45
Sat Flow, veh/h	1603	2767	386	1603	1650	1417	1757	946	789	1603	1650	1387
Grp Volume(v), veh/h	245	565	561	97	355	0	54	0	409	397	533	335
Grp Sat Flow(s),veh/h/ln	1603	1583	1570	1603	1650	1417	1757	0	1735	1603	1650	1387
Q Serve(g_s), s	25.8	61.0	61.0	10.2	34.7	0.0	5.2	0.0	39.6	40.0	45.3	30.3
Cycle Q Clear(g_c), s	25.8	61.0	61.0	10.2	34.7	0.0	5.2	0.0	39.6	40.0	45.3	30.3
Prop In Lane	1.00		0.25	1.00		1.00	1.00		0.45	1.00		1.00
Lane Grp Cap(c), veh/h	266	563	559	115	432	371	69	0	436	374	735	618
V/C Ratio(X)	0.92	1.00	1.00	0.84	0.82	0.00	0.78	0.00	0.94	1.06	0.72	0.54
Avail Cap(c_a), veh/h	327	563	559	327	578	496	307	0	506	374	735	618
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	70.4	55.2	55.2	78.6	59.5	0.0	81.6	0.0	62.9	65.7	38.9	34.8
Incr Delay (d2), s/veh	28.6	38.6	39.1	14.7	7.0	0.0	7.1	0.0	23.6	63.7	3.6	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.5	32.6	32.5	5.0	16.7	0.0	2.7	0.0	21.8	24.3	21.3	11.7
LnGrp Delay(d),s/veh	99.0	93.8	94.4	93.2	66.5	0.0	88.7	0.0	86.5	129.4	42.5	35.7
LnGrp LOS	F	F	F	F	E		F		F	F	D	D
Approach Vol, veh/h		1371			452			463			1265	
Approach Delay, s/veh		95.0			72.2			86.7			68.0	
Approach LOS		F			E			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.9	65.0	10.2	80.4	31.9	48.9	43.5	47.1
Change Period (Y+Rc), s	3.5	4.0	3.5	4.0	3.5	4.0	3.5	4.0
Max Green Setting (Gmax), s	35.0	60.0	30.0	50.0	35.0	60.0	40.0	50.0
Max Q Clear Time (g_c+I1), s	12.2	63.0	7.2	47.3	27.8	36.7	42.0	41.6
Green Ext Time (p_c), s	0.2	0.0	0.1	1.8	0.6	8.2	0.0	1.5

Intersection Summary	
HCM 2010 Ctrl Delay	81.4
HCM 2010 LOS	F

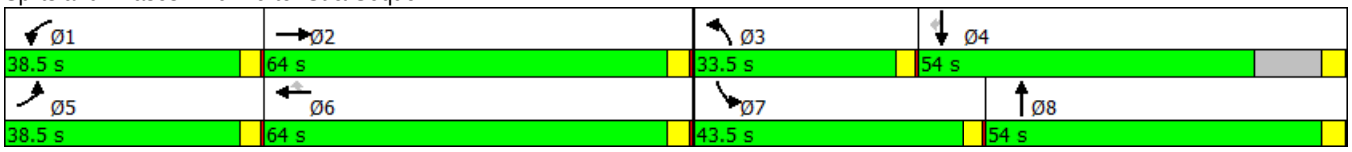
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	218	830	102	70	302	126	46	172	143	306	442	265
Future Volume (vph)	218	830	102	70	302	126	46	172	143	306	442	265
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1900	1900	1900	1700	1700	1700
Storage Length (ft)	140		0	0		100	180		0	540		70
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (ft)	45			25			50			300		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.98		0.98		0.96	0.98	0.99		0.99		0.94
Frt		0.982				0.850		0.932				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1546	2959	0	1546	1595	1369	1694	1674	0	1546	1595	1383
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1540	2959	0	1518	1595	1321	1668	1674	0	1533	1595	1304
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8				63		20				61
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		328			1072			1033			1279	
Travel Time (s)		8.9			29.2			28.2			34.9	
Confl. Peds. (#/hr)	1		13	13		1	6		4	4		6
Confl. Bikes (#/hr)			20			8						5
Peak Hour Factor	0.89	0.84	0.74	0.72	0.85	0.76	0.85	0.77	0.77	0.77	0.83	0.79
Heavy Vehicles (%)	1%	2%	2%	1%	3%	2%	3%	1%	1%	1%	3%	1%
Adj. Flow (vph)	245	988	138	97	355	166	54	223	186	397	533	335
Shared Lane Traffic (%)												
Lane Group Flow (vph)	245	1126	0	97	355	166	54	409	0	397	533	335
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		20			20			22			14	
Two way Left Turn Lane												
Headway Factor	1.20	1.20	1.20	1.20	1.20	1.20	1.04	1.04	1.04	1.20	1.20	1.20
Turning Speed (mph)	15		9	15		12	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6						4
Detector Phase	5	2		1	6	6	3	8		7	4	4
Switch Phase												
Minimum Initial (s)	5.0	7.0		5.0	7.0	7.0	5.0	8.0		5.0	7.0	7.0
Minimum Split (s)	8.5	19.0		8.5	21.0	21.0	8.5	20.0		8.5	23.0	23.0
Total Split (s)	38.5	64.0		38.5	64.0	64.0	33.5	54.0		43.5	54.0	54.0
Total Split (%)	19.3%	32.0%		19.3%	32.0%	32.0%	16.8%	27.0%		21.8%	27.0%	27.0%
Maximum Green (s)	35.0	60.0		35.0	60.0	60.0	30.0	50.0		40.0	50.0	50.0
Yellow Time (s)	3.0	3.5		3.0	3.5	3.5	3.0	3.5		3.0	3.5	3.5
All-Red Time (s)	0.5	0.5		0.5	0.5	0.5	0.5	0.5		0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	3.5	4.0		3.5	4.0	4.0	3.5	4.0		3.5	4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	4.0	3.0		3.0	3.0	3.0	2.0	3.0		2.0	3.0	3.0
Recall Mode	None	Min		None	Min	Min	None	None		None	None	None
Walk Time (s)		8.0			8.0	8.0		8.0			8.0	8.0
Flash Dont Walk (s)		7.0			9.0	9.0		8.0			11.0	11.0
Pedestrian Calls (#/hr)		13			1	1		4			6	6
Act Effct Green (s)	32.8	65.1		17.0	49.2	49.2	10.3	46.8		40.2	78.8	78.8
Actuated g/C Ratio	0.18	0.35		0.09	0.27	0.27	0.06	0.25		0.22	0.43	0.43
v/c Ratio	0.89	1.07		0.68	0.83	0.42	0.57	0.93		1.18	0.78	0.57
Control Delay	106.1	103.8		105.9	82.0	37.5	110.0	92.1		165.1	56.9	39.0
Queue Delay	57.2	14.4		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	163.3	118.2		105.9	82.0	37.5	110.0	92.1		165.1	56.9	39.0
LOS	F	F		F	F	D	F	F		F	E	D
Approach Delay		126.3			73.8			94.1			86.1	
Approach LOS		F			E			F			F	
90th %ile Green (s)	35.0	70.2		24.8	60.0	60.0	15.5	50.0		40.0	74.5	74.5
90th %ile Term Code	Max	Hold		Gap	Max	Max	Gap	Max		Max	Hold	Hold
70th %ile Green (s)	35.0	69.4		20.3	54.7	54.7	12.4	50.0		40.0	77.6	77.6
70th %ile Term Code	Max	Hold		Gap	Gap	Gap	Gap	Max		Max	Hold	Hold
50th %ile Green (s)	35.0	65.2		17.0	47.2	47.2	10.4	50.0		40.0	79.6	79.6
50th %ile Term Code	Max	Hold		Gap	Gap	Gap	Gap	Max		Max	Hold	Hold
30th %ile Green (s)	33.3	60.4		14.1	41.2	41.2	8.5	46.9		40.0	78.4	78.4
30th %ile Term Code	Gap	Hold		Gap	Gap	Gap	Gap	Gap		Max	Hold	Hold
10th %ile Green (s)	26.1	60.0		10.0	43.9	43.9	0.0	37.4		40.0	80.9	80.9
10th %ile Term Code	Gap	Max		Gap	Hold	Hold	Skip	Gap		Max	Hold	Hold
Stops (vph)	196	814		66	280	64	43	272		244	365	168
Fuel Used(gal)	6	25		2	9	2	2	10		15	11	6
CO Emissions (g/hr)	424	1777		168	620	165	112	679		1017	792	394
NOx Emissions (g/hr)	83	346		33	121	32	22	132		198	154	77
VOC Emissions (g/hr)	98	412		39	144	38	26	157		236	184	91
Dilemma Vehicles (#)	0	0		0	0	0	0	0		0	0	0
Queue Length 50th (ft)	296	~812		118	425	107	66	468		~590	565	257
Queue Length 95th (ft)	#489	#886		153	519	141	117	540		#704	748	349

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		248			992			953			1199	
Turn Bay Length (ft)	140					100	180			540		70
Base Capacity (vph)	295	1051		295	522	475	277	471		337	682	592
Starvation Cap Reductn	93	415		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	1.21	1.77		0.33	0.68	0.35	0.19	0.87		1.18	0.78	0.57

Intersection Summary			
Area Type:	Other		
Cycle Length: 200			
Actuated Cycle Length: 184.1			
Natural Cycle: 100			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.18			
Intersection Signal Delay: 99.9		Intersection LOS: F	
Intersection Capacity Utilization 84.0%		ICU Level of Service E	
Analysis Period (min) 15			
90th %ile Actuated Cycle: 200			
70th %ile Actuated Cycle: 194.7			
50th %ile Actuated Cycle: 187.2			
30th %ile Actuated Cycle: 176.4			
10th %ile Actuated Cycle: 162.4			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 6: Porter St & Soquel Dr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1900	1900	1900	1700	1700	1700
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	140		0	0		100	180		0	540		70
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (ft)	45			25			50			300		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.98		0.98		0.96	0.98	0.99		0.99		0.94
Frt		0.982				0.850		0.932				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1546	2959	0	1546	1595	1369	1694	1674	0	1546	1595	1383
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1540	2959	0	1518	1595	1321	1668	1674	0	1533	1595	1304
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8				63		20				61
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		328			1072			1033			1279	
Travel Time (s)		8.9			29.2			28.2			34.9	

Intersection Summary	
Area Type:	Other

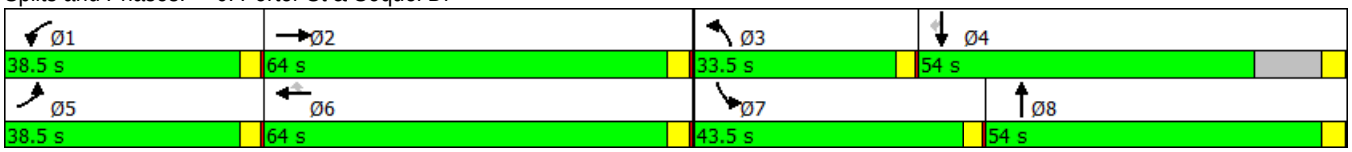
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	218	830	102	70	302	126	46	172	143	306	442	265
Future Volume (vph)	218	830	102	70	302	126	46	172	143	306	442	265
Confl. Peds. (#/hr)	1		13	13		1	6		4	4		6
Confl. Bikes (#/hr)			20			8						5
Peak Hour Factor	0.89	0.84	0.74	0.72	0.85	0.76	0.85	0.77	0.77	0.77	0.83	0.79
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	2%	2%	1%	3%	2%	3%	1%	1%	1%	3%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	245	988	138	97	355	166	54	223	186	397	533	335
Shared Lane Traffic (%)												
Lane Group Flow (vph)	245	1126	0	97	355	166	54	409	0	397	533	335

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	218	830	70	302	126	46	172	306	442	265
Future Volume (vph)	218	830	70	302	126	46	172	306	442	265
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Prot	NA	Perm
Protected Phases	5	2	1	6		3	8	7	4	
Permitted Phases					6					4
Detector Phase	5	2	1	6	6	3	8	7	4	4
Switch Phase										
Minimum Initial (s)	5.0	7.0	5.0	7.0	7.0	5.0	8.0	5.0	7.0	7.0
Minimum Split (s)	8.5	19.0	8.5	21.0	21.0	8.5	20.0	8.5	23.0	23.0
Total Split (s)	38.5	64.0	38.5	64.0	64.0	33.5	54.0	43.5	54.0	54.0
Total Split (%)	19.3%	32.0%	19.3%	32.0%	32.0%	16.8%	27.0%	21.8%	27.0%	27.0%
Yellow Time (s)	3.0	3.5	3.0	3.5	3.5	3.0	3.5	3.0	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.5	4.0	3.5	4.0	4.0	3.5	4.0	3.5	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min	None	Min	Min	None	None	None	None	None
Act Effct Green (s)	32.8	65.1	17.0	49.2	49.2	10.3	46.8	40.2	78.8	78.8
Actuated g/C Ratio	0.18	0.35	0.09	0.27	0.27	0.06	0.25	0.22	0.43	0.43
v/c Ratio	0.89	1.07	0.68	0.83	0.42	0.57	0.93	1.18	0.78	0.57
Control Delay	106.1	103.8	105.9	82.0	37.5	110.0	92.1	165.1	56.9	39.0
Queue Delay	57.2	14.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	163.3	118.2	105.9	82.0	37.5	110.0	92.1	165.1	56.9	39.0
LOS	F	F	F	F	D	F	F	F	E	D
Approach Delay		126.3		73.8			94.1		86.1	
Approach LOS		F		E			F		F	

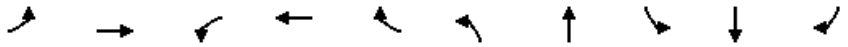
Intersection Summary	
Cycle Length: 200	
Actuated Cycle Length: 184.1	
Natural Cycle: 100	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.18	
Intersection Signal Delay: 99.9	Intersection LOS: F
Intersection Capacity Utilization 84.0%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 6: Porter St & Soquel Dr



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Protected Phases	5	2	1	6		3	8	7	4	
Permitted Phases					6					4
Minimum Initial (s)	5.0	7.0	5.0	7.0	7.0	5.0	8.0	5.0	7.0	7.0
Minimum Split (s)	8.5	19.0	8.5	21.0	21.0	8.5	20.0	8.5	23.0	23.0
Total Split (s)	38.5	64.0	38.5	64.0	64.0	33.5	54.0	43.5	54.0	54.0
Total Split (%)	19.3%	32.0%	19.3%	32.0%	32.0%	16.8%	27.0%	21.8%	27.0%	27.0%
Maximum Green (s)	35.0	60.0	35.0	60.0	60.0	30.0	50.0	40.0	50.0	50.0
Yellow Time (s)	3.0	3.5	3.0	3.5	3.5	3.0	3.5	3.0	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	3.0	3.0	3.0	3.0	2.0	3.0	2.0	3.0	3.0
Minimum Gap (s)	4.0	3.0	3.0	3.0	3.0	2.0	3.0	2.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	Min	None	Min	Min	None	None	None	None	None
Walk Time (s)		8.0		8.0	8.0		8.0		8.0	8.0
Flash Dont Walk (s)		7.0		9.0	9.0		8.0		11.0	11.0
Pedestrian Calls (#/hr)		13		1	1		4		6	6
90th %ile Green (s)	35.0	70.2	24.8	60.0	60.0	15.5	50.0	40.0	74.5	74.5
90th %ile Term Code	Max	Hold	Gap	Max	Max	Gap	Max	Max	Hold	Hold
70th %ile Green (s)	35.0	69.4	20.3	54.7	54.7	12.4	50.0	40.0	77.6	77.6
70th %ile Term Code	Max	Hold	Gap	Gap	Gap	Gap	Max	Max	Hold	Hold
50th %ile Green (s)	35.0	65.2	17.0	47.2	47.2	10.4	50.0	40.0	79.6	79.6
50th %ile Term Code	Max	Hold	Gap	Gap	Gap	Gap	Max	Max	Hold	Hold
30th %ile Green (s)	33.3	60.4	14.1	41.2	41.2	8.5	46.9	40.0	78.4	78.4
30th %ile Term Code	Gap	Hold	Gap	Gap	Gap	Gap	Gap	Max	Hold	Hold
10th %ile Green (s)	26.1	60.0	10.0	43.9	43.9	0.0	37.4	40.0	80.9	80.9
10th %ile Term Code	Gap	Max	Gap	Hold	Hold	Skip	Gap	Max	Hold	Hold

Intersection Summary
Cycle Length: 200
Actuated Cycle Length: 184.1
Control Type: Actuated-Uncoordinated
90th %ile Actuated Cycle: 200
70th %ile Actuated Cycle: 194.7
50th %ile Actuated Cycle: 187.2
30th %ile Actuated Cycle: 176.4
10th %ile Actuated Cycle: 162.4



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	245	1126	97	355	166	54	409	397	533	335
v/c Ratio	0.89	1.07	0.68	0.83	0.42	0.57	0.93	1.18	0.78	0.57
Control Delay	106.1	103.8	105.9	82.0	37.5	110.0	92.1	165.1	56.9	39.0
Queue Delay	57.2	14.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	163.3	118.2	105.9	82.0	37.5	110.0	92.1	165.1	56.9	39.0
Queue Length 50th (ft)	296	~812	118	425	107	66	468	~590	565	257
Queue Length 95th (ft)	#489	#886	153	519	141	117	540	#704	748	349
Internal Link Dist (ft)		248		992			953		1199	
Turn Bay Length (ft)	140				100	180		540		70
Base Capacity (vph)	295	1051	295	522	475	277	471	337	682	592
Starvation Cap Reductn	93	415	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.21	1.77	0.33	0.68	0.35	0.19	0.87	1.18	0.78	0.57

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		20			20			22			14	
Two way Left Turn Lane												
Headway Factor	1.20	1.20	1.20	1.20	1.20	1.20	1.04	1.04	1.04	1.20	1.20	1.20
Turning Speed (mph)	15		9	15		12	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	218	830	102	70	302	126	46	172	143	306	442	265
Pedestrians	1		13	13		1	6		4	4		6
Ped Button		Yes			Yes			Yes			Yes	
Pedestrian Timing (s)		15.0			17.0			16.0			19.0	
Free Right			No			No			No			No
Ideal Flow	1700	1700	1700	1700	1700	1700	1900	1900	1900	1700	1700	1700
Lost Time (s)	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0
Minimum Green (s)	5.0	7.0	4.0	5.0	7.0	7.0	5.0	8.0	4.0	5.0	7.0	7.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	218	932	0	70	302	126	46	315	0	306	442	265
Lane Utilization Factor	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.95	0.98	0.85	0.95	1.00	0.85	0.95	0.93	0.85	0.95	1.00	0.85
Saturated Flow (vph)	1615	3184	0	1615	1700	1445	1805	1771	0	1615	1700	1445
Ped Intf Time (s)	0.0	0.2	1.6	0.0	0.0	0.1	0.0	0.2	0.5	0.0	0.0	0.8
Pedestrian Frequency (%)		0.35			0.03			0.12			0.18	
Protected Option Allowed		Yes			Yes			Yes			Yes	
Reference Time (s)	16.2	35.3	0.0	5.2	21.3	10.6	3.1	21.6	0.0	22.7	31.2	22.8
Adj Reference Time (s)	20.2	39.3	0.0	9.2	25.3	14.8	9.0	25.6	0.0	26.7	35.2	26.8
Permitted Option												
Adj Saturation A (vph)	108	1592		108	1700		120	1771		108	1700	
Reference Time A (s)	243.0	35.3		78.0	21.3		45.9	21.6		341.1	31.2	
Adj Saturation B (vph	NA	NA		NA	NA		NA	NA		NA	NA	
Reference Time B (s)	NA	NA		NA	NA		NA	NA		NA	NA	
Reference Time (s)		243.0			78.0			45.9			341.1	
Adj Reference Time (s)		247.0			82.0			49.9			345.1	
Split Option												
Ref Time Combined (s)	16.2	35.3		5.2	21.3		3.1	21.6		22.7	31.2	
Ref Time Seperate (s)	16.2	31.5		5.2	21.3		3.1	11.9		22.7	31.2	
Reference Time (s)	35.3	35.3		21.3	21.3		21.6	21.6		31.2	31.2	
Adj Reference Time (s)	39.3	39.3		25.3	25.3		25.6	25.6		35.2	35.2	

Summary	EB WB	NB SB	Combined
Protected Option (s)	48.5	52.3	
Permitted Option (s)	247.0	345.1	
Split Option (s)	64.6	60.8	
Minimum (s)	48.5	52.3	100.8

Right Turns	WBR	SBR
Adj Reference Time (s)	14.8	26.8
Cross Thru Ref Time (s)	25.6	25.3
Oncoming Left Ref Time (s)	20.2	9.0
Combined (s)	60.6	61.1

Intersection Summary			
Intersection Capacity Utilization	84.0%	ICU Level of Service	E

Reference Times and Phasing Options do not represent an optimized timing plan.

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	13	0	554	616	7
Future Vol, veh/h	0	13	0	554	616	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	14	0	602	670	8

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	339	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	657	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	657	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.6	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	657	-	-
HCM Lane V/C Ratio	-	0.022	-	-
HCM Control Delay (s)	-	10.6	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-

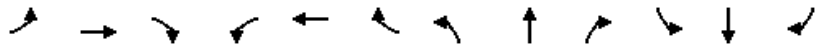
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	2	17	282	2	14	14	517	148	21	600	11
Future Volume (veh/h)	9	2	17	282	2	14	14	517	148	21	600	11
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		1.00	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1881	1869	1900	1900	1863	1900	1900	1864	1900
Adj Flow Rate, veh/h	20	8	24	411	0	0	28	562	178	32	732	28
Adj No. of Lanes	0	1	0	2	1	0	1	2	1	1	2	0
Peak Hour Factor	0.45	0.25	0.71	0.73	0.50	0.58	0.50	0.92	0.83	0.66	0.82	0.39
Percent Heavy Veh, %	0	0	0	1	0	0	0	2	0	0	2	2
Cap, veh/h	39	16	47	731	381	0	46	1335	588	51	1320	50
Arrive On Green	0.06	0.06	0.06	0.20	0.00	0.00	0.03	0.38	0.38	0.03	0.38	0.38
Sat Flow, veh/h	652	261	783	3583	1869	0	1810	3539	1559	1810	3473	133
Grp Volume(v), veh/h	52	0	0	411	0	0	28	562	178	32	373	387
Grp Sat Flow(s),veh/h/ln	1696	0	0	1792	1869	0	1810	1770	1559	1810	1771	1835
Q Serve(g_s), s	1.6	0.0	0.0	5.6	0.0	0.0	0.8	6.4	4.4	1.0	9.0	9.0
Cycle Q Clear(g_c), s	1.6	0.0	0.0	5.6	0.0	0.0	0.8	6.4	4.4	1.0	9.0	9.0
Prop In Lane	0.38		0.46	1.00		0.00	1.00		1.00	1.00		0.07
Lane Grp Cap(c), veh/h	102	0	0	731	381	0	46	1335	588	51	673	697
V/C Ratio(X)	0.51	0.00	0.00	0.56	0.00	0.00	0.61	0.42	0.30	0.63	0.55	0.55
Avail Cap(c_a), veh/h	623	0	0	1645	858	0	665	1950	859	665	976	1011
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.8	0.0	0.0	19.5	0.0	0.0	26.3	12.6	11.9	26.2	13.3	13.3
Incr Delay (d2), s/veh	3.9	0.0	0.0	1.0	0.0	0.0	12.4	0.2	0.3	12.0	0.7	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	0.0	2.8	0.0	0.0	0.6	3.2	1.9	0.6	4.5	4.6
LnGrp Delay(d),s/veh	28.7	0.0	0.0	20.5	0.0	0.0	38.7	12.8	12.2	38.2	14.0	14.0
LnGrp LOS	C			C			D	B	B	D	B	B
Approach Vol, veh/h		52			411			768			792	
Approach Delay, s/veh		28.7			20.5			13.6			14.9	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.5	25.5		15.6	5.4	25.7		7.8
Change Period (Y+Rc), s	4.0	5.0		4.5	4.0	5.0		4.5
Max Green Setting (Gmax), s	20.0	30.0		25.0	20.0	30.0		20.0
Max Q Clear Time (g_c+I1), s	3.0	8.4		7.6	2.8	11.0		3.6
Green Ext Time (p_c), s	0.0	10.4		2.2	0.0	9.7		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	15.9
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	824	0	260	0	533	493	0	789	153
Future Volume (veh/h)	0	0	0	824	0	260	0	533	493	0	789	153
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		0.97
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1881	1881	1810	0	1872	1900	0	1866	1900
Adj Flow Rate, veh/h				936	0	289	0	613	0	0	928	196
Adj No. of Lanes				2	0	1	0	2	0	0	2	0
Peak Hour Factor				0.88	0.92	0.90	0.92	0.87	0.80	0.92	0.85	0.78
Percent Heavy Veh, %				1	0	5	0	2	2	0	2	2
Cap, veh/h				1091	0	468	0	1859	0	0	1514	319
Arrive On Green				0.30	0.00	0.30	0.00	0.87	0.00	0.00	0.52	0.52
Sat Flow, veh/h				3583	0	1538	0	3744	0	0	2990	611
Grp Volume(v), veh/h				936	0	289	0	613	0	0	568	556
Grp Sat Flow(s),veh/h/ln				1792	0	1538	0	1778	0	0	1773	1735
Q Serve(g_s), s				13.5	0.0	8.8	0.0	1.7	0.0	0.0	12.4	12.4
Cycle Q Clear(g_c), s				13.5	0.0	8.8	0.0	1.7	0.0	0.0	12.4	12.4
Prop In Lane				1.00		1.00	0.00		0.00	0.00		0.35
Lane Grp Cap(c), veh/h				1091	0	468	0	1859	0	0	927	907
V/C Ratio(X)				0.86	0.00	0.62	0.00	0.33	0.00	0.00	0.61	0.61
Avail Cap(c_a), veh/h				1140	0	489	0	1859	0	0	927	907
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.67	1.67	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.00	0.91	0.00	0.00	0.81	0.81
Uniform Delay (d), s/veh				18.0	0.0	16.4	0.0	1.8	0.0	0.0	9.2	9.2
Incr Delay (d2), s/veh				6.6	0.0	2.4	0.0	0.4	0.0	0.0	2.5	2.5
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				7.6	0.0	4.0	0.0	0.8	0.0	0.0	6.6	6.5
LnGrp Delay(d),s/veh				24.6	0.0	18.8	0.0	2.2	0.0	0.0	11.7	11.7
LnGrp LOS				C		B		A			B	B
Approach Vol, veh/h					1225			613			1124	
Approach Delay, s/veh					23.2			2.2			11.7	
Approach LOS					C			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		34.0				34.0		21.0
Change Period (Y+Rc), s		5.3				5.3		4.2
Max Green Setting (Gmax), s		28.0				28.0		17.5
Max Q Clear Time (g_c+I1), s		3.7				14.4		15.5
Green Ext Time (p_c), s		15.7				10.2		1.2

Intersection Summary	
HCM 2010 Ctrl Delay	14.5
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	46	64	0	0	0	0	987	945	0	1232	381
Future Volume (vph)	39	46	64	0	0	0	0	987	945	0	1232	381
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.6	4.6					4.9	4.9		4.9	4.0
Lane Util. Factor		1.00	0.88					0.95	1.00		0.91	1.00
Frpb, ped/bikes		1.00	1.00					1.00	1.00		1.00	0.97
Flpb, ped/bikes		1.00	1.00					1.00	1.00		1.00	1.00
Frt		1.00	0.85					1.00	0.85		1.00	0.85
Flt Protected		0.98	1.00					1.00	1.00		1.00	1.00
Satd. Flow (prot)		1752	2694					3455	1546		4964	1501
Flt Permitted		0.98	1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)		1752	2694					3455	1546		4964	1501
Peak-hour factor, PHF	0.80	0.72	0.75	0.92	0.92	0.92	0.92	0.85	0.94	0.92	0.96	0.82
Adj. Flow (vph)	49	64	85	0	0	0	0	1161	1005	0	1283	465
RTOR Reduction (vph)	0	0	75	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	113	10	0	0	0	0	1161	1005	0	1283	465
Confl. Peds. (#/hr)	13					13	11		1	1		11
Confl. Bikes (#/hr)												9
Heavy Vehicles (%)	6%	0%	2%	0%	0%	0%	0%	1%	1%	0%	1%	1%
Turn Type	Split	NA	Perm					NA	Prot		NA	Free
Protected Phases	2	2						1 3 4	1 3 4		1 3 4	
Permitted Phases			2									Free
Actuated Green, G (s)		12.4	12.4					88.8	88.8		88.8	110.0
Effective Green, g (s)		12.4	12.4					84.6	84.6		84.6	110.0
Actuated g/C Ratio		0.11	0.11					0.77	0.77		0.77	1.00
Clearance Time (s)		4.6	4.6									
Vehicle Extension (s)		3.0	3.0									
Lane Grp Cap (vph)		197	303					2657	1189		3817	1501
v/s Ratio Prot		c0.06						0.34	c0.65		0.26	
v/s Ratio Perm			0.00									c0.31
v/c Ratio		0.57	0.03					0.44	0.85		0.34	0.31
Uniform Delay, d1		46.3	43.5					4.4	8.4		4.0	0.0
Progression Factor		1.00	1.00					0.12	1.49		1.18	1.00
Incremental Delay, d2		4.0	0.0					0.0	2.3		0.0	0.3
Delay (s)		50.3	43.5					0.6	14.8		4.7	0.3
Level of Service		D	D					A	B		A	A
Approach Delay (s)		47.4			0.0			7.2			3.5	
Approach LOS		D			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	7.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	17.9
Intersection Capacity Utilization	71.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

CUMULATIVE CONDITIONS SYNCHRO OUTPUT SHEETS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	709	37	21	999	54	56	2	28	72	1	84
Future Volume (veh/h)	21	709	37	21	999	54	56	2	28	72	1	84
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1822	1900	1792	1837	1900	1900	1690	1900	1900	1846	1900
Adj Flow Rate, veh/h	38	933	46	38	1233	69	78	4	51	109	4	111
Adj No. of Lanes	0	2	0	1	2	0	0	1	0	0	1	0
Peak Hour Factor	0.56	0.76	0.80	0.56	0.81	0.78	0.72	0.50	0.55	0.66	0.25	0.76
Percent Heavy Veh, %	4	4	4	6	3	3	0	0	0	0	0	0
Cap, veh/h	103	1848	89	363	2028	113	259	33	118	239	33	173
Arrive On Green	0.60	0.60	0.60	0.60	0.60	0.60	0.23	0.23	0.23	0.23	0.23	0.23
Sat Flow, veh/h	55	3055	148	550	3353	187	699	144	524	636	146	767
Grp Volume(v), veh/h	511	0	506	38	641	661	133	0	0	224	0	0
Grp Sat Flow(s),veh/h/ln	1632	0	1626	550	1745	1795	1368	0	0	1548	0	0
Q Serve(g_s), s	0.0	0.0	10.0	2.4	12.8	12.9	0.0	0.0	0.0	2.6	0.0	0.0
Cycle Q Clear(g_c), s	8.6	0.0	10.0	12.4	12.8	12.9	4.3	0.0	0.0	6.9	0.0	0.0
Prop In Lane	0.07		0.09	1.00		0.10	0.59		0.38	0.49		0.50
Lane Grp Cap(c), veh/h	1056	0	984	363	1056	1086	410	0	0	444	0	0
V/C Ratio(X)	0.48	0.00	0.51	0.10	0.61	0.61	0.32	0.00	0.00	0.50	0.00	0.00
Avail Cap(c_a), veh/h	1087	0	1018	375	1092	1123	689	0	0	764	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.1	0.0	6.3	9.9	6.9	6.9	18.4	0.0	0.0	19.3	0.0	0.0
Incr Delay (d2), s/veh	0.7	0.0	0.9	0.3	1.5	1.4	1.0	0.0	0.0	1.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	0.0	4.6	0.4	6.5	6.7	1.8	0.0	0.0	3.3	0.0	0.0
LnGrp Delay(d),s/veh	6.8	0.0	7.2	10.2	8.4	8.3	19.4	0.0	0.0	21.2	0.0	0.0
LnGrp LOS	A		A	B	A	A	B			C		
Approach Vol, veh/h		1017			1340			133			224	
Approach Delay, s/veh		7.0			8.4			19.4			21.2	
Approach LOS		A			A			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		38.8		17.1		38.8		17.1
Change Period (Y+Rc), s		5.0		4.5		5.0		4.5
Max Green Setting (Gmax), s		35.0		25.0		35.0		25.0
Max Q Clear Time (g_c+I1), s		12.0		6.3		14.9		8.9
Green Ext Time (p_c), s		21.5		3.7		19.0		3.5

Intersection Summary	
HCM 2010 Ctrl Delay	9.5
HCM 2010 LOS	A

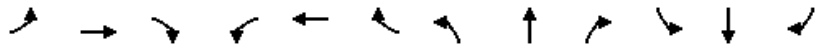
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	389	426	155	622	6	672	6	95	0	10	3
Future Volume (veh/h)	1	389	426	155	622	6	672	6	95	0	10	3
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.96	1.00		0.99	1.00		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1827	1776	1792	1822	1900	1863	1864	1827	1900	1418	1900
Adj Flow Rate, veh/h	4	540	568	221	732	14	872	0	156	0	22	8
Adj No. of Lanes	1	2	1	1	2	0	2	0	1	0	1	0
Peak Hour Factor	0.25	0.72	0.75	0.70	0.85	0.42	0.78	0.42	0.61	0.92	0.45	0.38
Percent Heavy Veh, %	0	4	7	6	4	4	2	0	4	22	22	22
Cap, veh/h	8	1164	495	256	1670	32	1036	0	449	0	28	10
Arrive On Green	0.00	0.34	0.34	0.15	0.48	0.48	0.29	0.00	0.29	0.00	0.03	0.03
Sat Flow, veh/h	1810	3471	1476	1707	3471	66	3548	0	1537	0	975	355
Grp Volume(v), veh/h	4	540	568	221	365	381	872	0	156	0	0	30
Grp Sat Flow(s),veh/h/ln	1810	1736	1476	1707	1731	1806	1774	0	1537	0	0	1330
Q Serve(g_s), s	0.2	11.7	32.0	12.1	13.2	13.2	22.0	0.0	7.6	0.0	0.0	2.1
Cycle Q Clear(g_c), s	0.2	11.7	32.0	12.1	13.2	13.2	22.0	0.0	7.6	0.0	0.0	2.1
Prop In Lane	1.00		1.00	1.00		0.04	1.00		1.00	0.00		0.27
Lane Grp Cap(c), veh/h	8	1164	495	256	832	869	1036	0	449	0	0	38
V/C Ratio(X)	0.52	0.46	1.15	0.86	0.44	0.44	0.84	0.00	0.35	0.00	0.00	0.78
Avail Cap(c_a), veh/h	607	1164	495	573	832	869	1488	0	644	0	0	279
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	47.4	25.0	31.7	39.6	16.3	16.3	31.7	0.0	26.6	0.0	0.0	46.0
Incr Delay (d2), s/veh	19.1	1.0	87.7	3.4	1.3	1.3	3.1	0.0	0.5	0.0	0.0	33.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	5.8	25.0	6.0	6.6	6.9	11.2	0.0	3.3	0.0	0.0	1.1
LnGrp Delay(d),s/veh	66.5	26.0	119.4	43.0	17.6	17.5	34.8	0.0	27.1	0.0	0.0	79.4
LnGrp LOS	E	C	F	D	B	B	C		C			E
Approach Vol, veh/h		1112			967			1028			30	
Approach Delay, s/veh		73.9			23.4			33.6			79.4	
Approach LOS		E			C			C			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	18.8	37.0		7.2	4.9	50.9		32.4
Change Period (Y+Rc), s	4.5	5.0		4.5	4.5	5.0		4.5
Max Green Setting (Gmax), s	32.3	32.0		20.0	32.0	31.0		40.0
Max Q Clear Time (g_c+I1), s	14.1	34.0		4.1	2.2	15.2		24.0
Green Ext Time (p_c), s	0.3	0.0		0.1	0.0	14.3		3.9

Intersection Summary	
HCM 2010 Ctrl Delay	45.2
HCM 2010 LOS	D

Notes

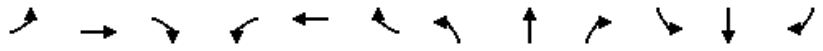
User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	453	77	191	735	0	133	0	206	0	0	0
Future Volume (veh/h)	1	453	77	191	735	0	133	0	206	0	0	0
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		1.00	0.99		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1807	1900	1863	1827	1900	1900	1868	1900	1900	1900	1900
Adj Flow Rate, veh/h	1	604	101	269	808	0	160	0	355	0	0	0
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	0
Peak Hour Factor	0.75	0.75	0.76	0.71	0.91	0.92	0.83	0.92	0.58	0.92	0.92	0.92
Percent Heavy Veh, %	0	5	5	2	4	4	0	0	0	0	0	0
Cap, veh/h	376	1601	267	413	1898	0	207	14	350	0	633	0
Arrive On Green	0.55	0.55	0.55	0.55	0.55	0.00	0.33	0.00	0.33	0.00	0.00	0.00
Sat Flow, veh/h	685	2927	488	739	3563	0	432	41	1050	0	1900	0
Grp Volume(v), veh/h	1	354	351	269	808	0	515	0	0	0	0	0
Grp Sat Flow(s),veh/h/ln	685	1717	1699	739	1736	0	1524	0	0	0	1900	0
Q Serve(g_s), s	0.1	8.8	8.9	24.6	10.3	0.0	23.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	10.4	8.8	8.9	33.4	10.3	0.0	25.0	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		0.29	1.00		0.00	0.31		0.69	0.00		0.00
Lane Grp Cap(c), veh/h	376	939	929	413	1898	0	571	0	0	0	633	0
V/C Ratio(X)	0.00	0.38	0.38	0.65	0.43	0.00	0.90	0.00	0.00	0.00	0.00	0.00
Avail Cap(c_a), veh/h	549	1373	1359	599	2776	0	571	0	0	0	633	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	13.1	9.7	9.7	19.3	10.0	0.0	25.1	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.1	0.1	0.7	0.1	0.0	17.2	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	4.1	4.1	5.0	5.0	0.0	13.3	0.0	0.0	0.0	0.0	0.0
LnGrp Delay(d),s/veh	13.1	9.8	9.8	19.9	10.1	0.0	42.3	0.0	0.0	0.0	0.0	0.0
LnGrp LOS	B	A	A	B	B		D					
Approach Vol, veh/h		706			1077			515			0	
Approach Delay, s/veh		9.8			12.5			42.3			0.0	
Approach LOS		A			B			D				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		45.5		29.5		45.5		29.5
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		60.0		25.0		60.0		25.0
Max Q Clear Time (g_c+I1), s		12.4		0.0		35.4		27.0
Green Ext Time (p_c), s		5.9		0.0		5.6		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	18.4
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	32	563	64	14	843	10	44	13	34	7	2	39
Future Volume (veh/h)	32	563	64	14	843	10	44	13	34	7	2	39
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	0.88		0.89	0.94		0.85
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1700	1639	1700	1700	1636	1700	1900	1871	1900	1900	1900	1900
Adj Flow Rate, veh/h	55	751	136	28	992	22	100	28	63	23	4	71
Adj No. of Lanes	1	2	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.58	0.75	0.47	0.50	0.85	0.45	0.44	0.46	0.54	0.30	0.50	0.55
Percent Heavy Veh, %	0	4	4	0	4	4	0	0	0	0	0	0
Cap, veh/h	176	1806	327	408	1097	24	198	62	95	101	37	221
Arrive On Green	0.69	0.69	0.69	0.69	0.69	0.69	0.20	0.20	0.20	0.20	0.20	0.20
Sat Flow, veh/h	505	2622	475	569	1593	35	648	305	469	233	183	1094
Grp Volume(v), veh/h	55	446	441	28	0	1014	191	0	0	98	0	0
Grp Sat Flow(s),veh/h/ln	505	1557	1539	569	0	1628	1423	0	0	1510	0	0
Q Serve(g_s), s	8.3	10.3	10.3	1.9	0.0	42.4	4.9	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	50.7	10.3	10.3	12.2	0.0	42.4	9.6	0.0	0.0	4.7	0.0	0.0
Prop In Lane	1.00		0.31	1.00		0.02	0.52		0.33	0.23		0.72
Lane Grp Cap(c), veh/h	176	1073	1060	408	0	1121	354	0	0	359	0	0
V/C Ratio(X)	0.31	0.42	0.42	0.07	0.00	0.90	0.54	0.00	0.00	0.27	0.00	0.00
Avail Cap(c_a), veh/h	196	1134	1120	431	0	1186	488	0	0	496	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	31.5	5.6	5.6	8.3	0.0	10.6	29.8	0.0	0.0	28.1	0.0	0.0
Incr Delay (d2), s/veh	0.4	0.1	0.1	0.0	0.0	9.2	0.5	0.0	0.0	0.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	4.4	4.3	0.3	0.0	21.4	4.0	0.0	0.0	1.9	0.0	0.0
LnGrp Delay(d),s/veh	31.9	5.7	5.7	8.3	0.0	19.8	30.3	0.0	0.0	28.2	0.0	0.0
LnGrp LOS	C	A	A	A		B	C			C		
Approach Vol, veh/h		942			1042			191			98	
Approach Delay, s/veh		7.2			19.5			30.3			28.2	
Approach LOS		A			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		61.3		21.2		61.3		21.2
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		60.0		25.0		60.0		25.0
Max Q Clear Time (g_c+I1), s		52.7		6.7		44.4		11.6
Green Ext Time (p_c), s		4.1		0.8		6.3		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	15.7
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	245	297	62	139	449	299	48	312	33	168	328	370
Future Volume (veh/h)	245	297	62	139	449	299	48	312	33	168	328	370
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00	1.00		0.98	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1646	1700	1650	1650	1667	1574	1630	1700	1881	1827	1845
Adj Flow Rate, veh/h	331	367	79	224	516	0	96	371	41	215	415	474
Adj No. of Lanes	1	2	0	1	1	1	1	1	0	1	1	1
Peak Hour Factor	0.74	0.81	0.78	0.62	0.87	0.68	0.50	0.84	0.81	0.78	0.79	0.78
Percent Heavy Veh, %	2	4	4	3	3	2	8	4	4	1	4	3
Cap, veh/h	308	928	197	242	534	458	111	386	43	235	593	505
Arrive On Green	0.19	0.36	0.36	0.15	0.32	0.00	0.07	0.27	0.27	0.13	0.32	0.32
Sat Flow, veh/h	1587	2550	542	1572	1650	1417	1499	1439	159	1792	1827	1556
Grp Volume(v), veh/h	331	223	223	224	516	0	96	0	412	215	415	474
Grp Sat Flow(s),veh/h/ln	1587	1564	1528	1572	1650	1417	1499	0	1598	1792	1827	1556
Q Serve(g_s), s	35.0	19.1	19.6	25.3	55.4	0.0	11.4	0.0	45.8	21.3	35.8	53.3
Cycle Q Clear(g_c), s	35.0	19.1	19.6	25.3	55.4	0.0	11.4	0.0	45.8	21.3	35.8	53.3
Prop In Lane	1.00		0.35	1.00		1.00	1.00		0.10	1.00		1.00
Lane Grp Cap(c), veh/h	308	569	556	242	534	458	111	0	428	235	593	505
V/C Ratio(X)	1.07	0.39	0.40	0.93	0.97	0.00	0.86	0.00	0.96	0.92	0.70	0.94
Avail Cap(c_a), veh/h	308	569	556	305	550	472	250	0	443	398	593	505
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	72.6	42.5	42.7	75.2	60.0	0.0	82.5	0.0	65.0	77.3	53.2	59.1
Incr Delay (d2), s/veh	72.2	0.4	0.5	29.0	29.7	0.0	7.2	0.0	32.6	10.1	3.6	25.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	21.5	8.3	8.4	13.0	29.8	0.0	5.0	0.0	24.1	11.2	18.7	26.4
LnGrp Delay(d),s/veh	144.8	43.0	43.2	104.2	89.7	0.0	89.7	0.0	97.6	87.4	56.8	84.6
LnGrp LOS	F	D	D	F	F		F		F	F	E	F
Approach Vol, veh/h		777			740			508			1104	
Approach Delay, s/veh		86.4			94.1			96.1			74.7	
Approach LOS		F			F			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	31.2	69.6	16.9	62.5	38.5	62.3	27.1	52.3
Change Period (Y+Rc), s	3.5	4.0	3.5	4.0	3.5	4.0	3.5	4.0
Max Green Setting (Gmax), s	25.6	60.0	30.0	50.0	35.0	60.0	40.0	50.0
Max Q Clear Time (g_c+I1), s	27.3	21.6	13.4	55.3	37.0	57.4	23.3	47.8
Green Ext Time (p_c), s	0.4	7.9	0.1	0.0	0.0	0.8	0.3	0.5

Intersection Summary	
HCM 2010 Ctrl Delay	85.7
HCM 2010 LOS	F

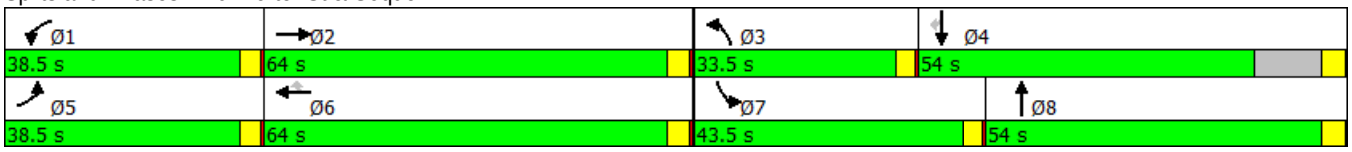
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	245	297	62	139	449	299	48	312	33	168	328	370
Future Volume (vph)	245	297	62	139	449	299	48	312	33	168	328	370
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1900	1900	1900
Storage Length (ft)	140		0	0		100	180		0	540		70
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (ft)	45			25			50			300		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	0.99		0.98		0.95	0.99	1.00		0.99		0.97
Frt		0.973				0.850		0.985				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1531	2907	0	1516	1595	1369	1446	1547	0	1728	1766	1516
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1517	2907	0	1483	1595	1302	1437	1547	0	1709	1766	1470
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13				110		3				112
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		328			1072			1033			1279	
Travel Time (s)		8.9			29.2			28.2			34.9	
Confl. Peds. (#/hr)	3		6	6		3	2		5	5		2
Confl. Bikes (#/hr)			5			10			3			
Peak Hour Factor	0.74	0.81	0.78	0.62	0.87	0.68	0.50	0.84	0.81	0.78	0.79	0.78
Heavy Vehicles (%)	2%	4%	0%	3%	3%	2%	8%	4%	7%	1%	4%	3%
Adj. Flow (vph)	331	367	79	224	516	440	96	371	41	215	415	474
Shared Lane Traffic (%)												
Lane Group Flow (vph)	331	446	0	224	516	440	96	412	0	215	415	474
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		20			20			22			14	
Two way Left Turn Lane												
Headway Factor	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		12	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6						4
Detector Phase	5	2		1	6	6	3	8		7	4	4
Switch Phase												
Minimum Initial (s)	5.0	7.0		5.0	7.0	7.0	5.0	8.0		5.0	7.0	7.0
Minimum Split (s)	8.5	19.0		8.5	21.0	21.0	8.5	20.0		8.5	23.0	23.0
Total Split (s)	38.5	64.0		38.5	64.0	64.0	33.5	54.0		43.5	54.0	54.0
Total Split (%)	19.3%	32.0%		19.3%	32.0%	32.0%	16.8%	27.0%		21.8%	27.0%	27.0%
Maximum Green (s)	35.0	60.0		35.0	60.0	60.0	30.0	50.0		40.0	50.0	50.0
Yellow Time (s)	3.0	3.5		3.0	3.5	3.5	3.0	3.5		3.0	3.5	3.5
All-Red Time (s)	0.5	0.5		0.5	0.5	0.5	0.5	0.5		0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	3.5	4.0		3.5	4.0	4.0	3.5	4.0		3.5	4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	4.0	3.0		3.0	3.0	3.0	2.0	3.0		2.0	3.0	3.0
Recall Mode	None	Min		None	Min	Min	None	None		None	None	None
Walk Time (s)		8.0			8.0	8.0		8.0			8.0	8.0
Flash Dont Walk (s)		7.0			9.0	9.0		8.0			11.0	11.0
Pedestrian Calls (#/hr)		3			3	3		2			2	2
Act Effct Green (s)	35.0	63.9		31.2	60.1	60.1	16.8	50.1		27.6	60.8	60.8
Actuated g/C Ratio	0.19	0.34		0.17	0.32	0.32	0.09	0.27		0.15	0.32	0.32
v/c Ratio	1.16	0.45		0.89	1.01	0.90	0.74	1.00		0.85	0.73	0.86
Control Delay	167.0	50.1		110.3	104.1	67.1	115.6	109.1		106.2	65.3	61.5
Queue Delay	4.8	6.2		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	171.9	56.3		110.3	104.1	67.1	115.6	109.1		106.2	65.3	61.5
LOS	F	E		F	F	E	F	F		F	E	E
Approach Delay		105.5			91.5			110.3			71.6	
Approach LOS		F			F			F			E	
90th %ile Green (s)	35.0	60.0		35.0	60.0	60.0	24.7	50.0		37.9	63.2	63.2
90th %ile Term Code	Max	Hold		Max	Max	Max	Gap	Max		Gap	Hold	Hold
70th %ile Green (s)	35.0	60.0		35.0	60.0	60.0	19.9	50.0		31.7	61.8	61.8
70th %ile Term Code	Max	Hold		Max	Max	Max	Gap	Max		Gap	Hold	Hold
50th %ile Green (s)	35.0	61.0		34.0	60.0	60.0	16.8	50.0		27.5	60.7	60.7
50th %ile Term Code	Max	Hold		Gap	Max	Max	Gap	Max		Gap	Hold	Hold
30th %ile Green (s)	35.0	65.6		29.4	60.0	60.0	13.7	50.0		23.6	59.9	59.9
30th %ile Term Code	Max	Hold		Gap	Max	Max	Gap	Max		Gap	Hold	Hold
10th %ile Green (s)	35.0	71.7		23.3	60.0	60.0	9.7	50.0		18.2	58.5	58.5
10th %ile Term Code	Max	Hold		Gap	Max	Max	Gap	Max		Gap	Hold	Hold
Stops (vph)	201	270		130	392	211	47	300		160	288	269
Fuel Used(gal)	10	6		5	15	8	2	12		6	9	10
CO Emissions (g/hr)	684	399		342	1057	533	121	828		425	632	678
NOx Emissions (g/hr)	133	78		66	206	104	24	161		83	123	132
VOC Emissions (g/hr)	159	92		79	245	124	28	192		98	146	157
Dilemma Vehicles (#)	0	0		0	0	0	0	0		0	0	0
Queue Length 50th (ft)	~480	224		269	~654	414	118	509		263	455	441
Queue Length 95th (ft)	#551	270		257	#930	375	102	#722		310	525	498

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		248			992			953			1199	
Turn Bay Length (ft)	140					100	180			540		70
Base Capacity (vph)	285	997		282	510	491	231	414		368	575	554
Starvation Cap Reductn	84	487		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	1.65	0.87		0.79	1.01	0.90	0.42	1.00		0.58	0.72	0.86

Intersection Summary			
Area Type:	Other		
Cycle Length: 200			
Actuated Cycle Length: 187.8			
Natural Cycle: 110			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.16			
Intersection Signal Delay: 91.1		Intersection LOS: F	
Intersection Capacity Utilization 84.9%		ICU Level of Service E	
Analysis Period (min) 15			
90th %ile Actuated Cycle: 197.9			
70th %ile Actuated Cycle: 191.7			
50th %ile Actuated Cycle: 187.5			
30th %ile Actuated Cycle: 183.6			
10th %ile Actuated Cycle: 178.2			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 6: Porter St & Soquel Dr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	140		0	0		100	180		0	540		70
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (ft)	45			25			50			300		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	0.99		0.98		0.95	0.99	1.00		0.99		0.97
Frt		0.973				0.850		0.985				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1531	2907	0	1516	1595	1369	1446	1547	0	1728	1766	1516
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1517	2907	0	1483	1595	1302	1437	1547	0	1709	1766	1470
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13				110		3				112
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		328			1072			1033			1279	
Travel Time (s)		8.9			29.2			28.2			34.9	

Intersection Summary	
Area Type:	Other

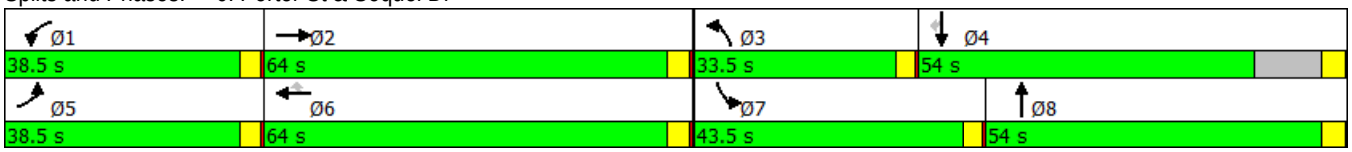
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	245	297	62	139	449	299	48	312	33	168	328	370
Future Volume (vph)	245	297	62	139	449	299	48	312	33	168	328	370
Confl. Peds. (#/hr)	3		6	6		3	2		5	5		2
Confl. Bikes (#/hr)			5			10			3			
Peak Hour Factor	0.74	0.81	0.78	0.62	0.87	0.68	0.50	0.84	0.81	0.78	0.79	0.78
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	4%	0%	3%	3%	2%	8%	4%	7%	1%	4%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	331	367	79	224	516	440	96	371	41	215	415	474
Shared Lane Traffic (%)												
Lane Group Flow (vph)	331	446	0	224	516	440	96	412	0	215	415	474

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	245	297	139	449	299	48	312	168	328	370
Future Volume (vph)	245	297	139	449	299	48	312	168	328	370
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Prot	NA	Perm
Protected Phases	5	2	1	6		3	8	7	4	
Permitted Phases					6					4
Detector Phase	5	2	1	6	6	3	8	7	4	4
Switch Phase										
Minimum Initial (s)	5.0	7.0	5.0	7.0	7.0	5.0	8.0	5.0	7.0	7.0
Minimum Split (s)	8.5	19.0	8.5	21.0	21.0	8.5	20.0	8.5	23.0	23.0
Total Split (s)	38.5	64.0	38.5	64.0	64.0	33.5	54.0	43.5	54.0	54.0
Total Split (%)	19.3%	32.0%	19.3%	32.0%	32.0%	16.8%	27.0%	21.8%	27.0%	27.0%
Yellow Time (s)	3.0	3.5	3.0	3.5	3.5	3.0	3.5	3.0	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.5	4.0	3.5	4.0	4.0	3.5	4.0	3.5	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min	None	Min	Min	None	None	None	None	None
Act Effct Green (s)	35.0	63.9	31.2	60.1	60.1	16.8	50.1	27.6	60.8	60.8
Actuated g/C Ratio	0.19	0.34	0.17	0.32	0.32	0.09	0.27	0.15	0.32	0.32
v/c Ratio	1.16	0.45	0.89	1.01	0.90	0.74	1.00	0.85	0.73	0.86
Control Delay	167.0	50.1	110.3	104.1	67.1	115.6	109.1	106.2	65.3	61.5
Queue Delay	4.8	6.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	171.9	56.3	110.3	104.1	67.1	115.6	109.1	106.2	65.3	61.5
LOS	F	E	F	F	E	F	F	F	E	E
Approach Delay		105.5		91.5			110.3		71.6	
Approach LOS		F		F			F		E	

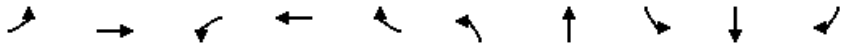
Intersection Summary	
Cycle Length: 200	
Actuated Cycle Length: 187.8	
Natural Cycle: 110	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.16	
Intersection Signal Delay: 91.1	Intersection LOS: F
Intersection Capacity Utilization 84.9%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 6: Porter St & Soquel Dr



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Protected Phases	5	2	1	6		3	8	7	4	
Permitted Phases					6					4
Minimum Initial (s)	5.0	7.0	5.0	7.0	7.0	5.0	8.0	5.0	7.0	7.0
Minimum Split (s)	8.5	19.0	8.5	21.0	21.0	8.5	20.0	8.5	23.0	23.0
Total Split (s)	38.5	64.0	38.5	64.0	64.0	33.5	54.0	43.5	54.0	54.0
Total Split (%)	19.3%	32.0%	19.3%	32.0%	32.0%	16.8%	27.0%	21.8%	27.0%	27.0%
Maximum Green (s)	35.0	60.0	35.0	60.0	60.0	30.0	50.0	40.0	50.0	50.0
Yellow Time (s)	3.0	3.5	3.0	3.5	3.5	3.0	3.5	3.0	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	3.0	3.0	3.0	3.0	2.0	3.0	2.0	3.0	3.0
Minimum Gap (s)	4.0	3.0	3.0	3.0	3.0	2.0	3.0	2.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	Min	None	Min	Min	None	None	None	None	None
Walk Time (s)		8.0		8.0	8.0		8.0		8.0	8.0
Flash Dont Walk (s)		7.0		9.0	9.0		8.0		11.0	11.0
Pedestrian Calls (#/hr)		3		3	3		2		2	2
90th %ile Green (s)	35.0	60.0	35.0	60.0	60.0	24.7	50.0	37.9	63.2	63.2
90th %ile Term Code	Max	Hold	Max	Max	Max	Gap	Max	Gap	Hold	Hold
70th %ile Green (s)	35.0	60.0	35.0	60.0	60.0	19.9	50.0	31.7	61.8	61.8
70th %ile Term Code	Max	Hold	Max	Max	Max	Gap	Max	Gap	Hold	Hold
50th %ile Green (s)	35.0	61.0	34.0	60.0	60.0	16.8	50.0	27.5	60.7	60.7
50th %ile Term Code	Max	Hold	Gap	Max	Max	Gap	Max	Gap	Hold	Hold
30th %ile Green (s)	35.0	65.6	29.4	60.0	60.0	13.7	50.0	23.6	59.9	59.9
30th %ile Term Code	Max	Hold	Gap	Max	Max	Gap	Max	Gap	Hold	Hold
10th %ile Green (s)	35.0	71.7	23.3	60.0	60.0	9.7	50.0	18.2	58.5	58.5
10th %ile Term Code	Max	Hold	Gap	Max	Max	Gap	Max	Gap	Hold	Hold

Intersection Summary
Cycle Length: 200
Actuated Cycle Length: 187.8
Control Type: Actuated-Uncoordinated
90th %ile Actuated Cycle: 197.9
70th %ile Actuated Cycle: 191.7
50th %ile Actuated Cycle: 187.5
30th %ile Actuated Cycle: 183.6
10th %ile Actuated Cycle: 178.2



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	331	446	224	516	440	96	412	215	415	474
v/c Ratio	1.16	0.45	0.89	1.01	0.90	0.74	1.00	0.85	0.73	0.86
Control Delay	167.0	50.1	110.3	104.1	67.1	115.6	109.1	106.2	65.3	61.5
Queue Delay	4.8	6.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	171.9	56.3	110.3	104.1	67.1	115.6	109.1	106.2	65.3	61.5
Queue Length 50th (ft)	~480	224	269	~654	414	118	509	263	455	441
Queue Length 95th (ft)	#551	270	257	#930	375	102	#722	310	525	498
Internal Link Dist (ft)		248		992			953		1199	
Turn Bay Length (ft)	140				100	180		540		70
Base Capacity (vph)	285	997	282	510	491	231	414	368	575	554
Starvation Cap Reductn	84	487	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.65	0.87	0.79	1.01	0.90	0.42	1.00	0.58	0.72	0.86

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		20			20			22			14	
Two way Left Turn Lane												
Headway Factor	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		12	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	245	297	62	139	449	299	48	312	33	168	328	370
Pedestrians	3		6	6		3	2		5	5		2
Ped Button		Yes			Yes			Yes			Yes	
Pedestrian Timing (s)		15.0			17.0			16.0			19.0	
Free Right			No			No			No			No
Ideal Flow	1700	1700	1700	1700	1700	1700	1700	1700	1700	1900	1900	1900
Lost Time (s)	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0
Minimum Green (s)	5.0	7.0	4.0	5.0	7.0	7.0	5.0	8.0	4.0	5.0	7.0	7.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	245	359	0	139	449	299	48	345	0	168	328	370
Lane Utilization Factor	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.95	0.97	0.85	0.95	1.00	0.85	0.95	0.99	0.85	0.95	1.00	0.85
Saturated Flow (vph)	1615	3153	0	1615	1700	1445	1615	1676	0	1805	1900	1615
Ped Intf Time (s)	0.0	0.1	0.8	0.0	0.0	0.4	0.0	0.1	0.6	0.0	0.0	0.3
Pedestrian Frequency (%)		0.18			0.10			0.15			0.06	
Protected Option Allowed		Yes			Yes			Yes			Yes	
Reference Time (s)	18.2	13.8	0.0	10.3	31.7	25.2	3.6	24.8	0.0	11.2	20.7	27.8
Adj Reference Time (s)	22.2	18.0	0.0	14.3	35.7	29.2	9.0	28.8	0.0	15.2	24.7	31.8
Permitted Option												
Adj Saturation A (vph)	108	1576		108	1700		108	1676		120	1900	
Reference Time A (s)	273.1	13.8		154.9	31.7		53.5	24.8		167.5	20.7	
Adj Saturation B (vph	NA	NA		NA	NA		NA	NA		NA	NA	
Reference Time B (s)	NA	NA		NA	NA		NA	NA		NA	NA	
Reference Time (s)		273.1			154.9			53.5			167.5	
Adj Reference Time (s)		277.1			158.9			57.5			171.5	
Split Option												
Ref Time Combined (s)	18.2	13.8		10.3	31.7		3.6	24.8		11.2	20.7	
Ref Time Seperate (s)	18.2	11.4		10.3	31.7		3.6	22.4		11.2	20.7	
Reference Time (s)	18.2	18.2		31.7	31.7		24.8	24.8		20.7	20.7	
Adj Reference Time (s)	22.2	22.2		35.7	35.7		28.8	28.8		24.7	24.7	

Summary	EB WB	NB SB	Combined
Protected Option (s)	57.9	43.9	
Permitted Option (s)	277.1	171.5	
Split Option (s)	57.9	53.5	
Minimum (s)	57.9	43.9	101.8

Right Turns	WBR	SBR
Adj Reference Time (s)	29.2	31.8
Cross Thru Ref Time (s)	28.8	35.7
Oncoming Left Ref Time (s)	22.2	9.0
Combined (s)	80.2	76.4

Intersection Summary			
Intersection Capacity Utilization	84.9%	ICU Level of Service	E

Reference Times and Phasing Options do not represent an optimized timing plan.

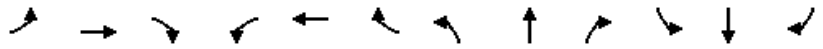
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	1	4	212	3	17	6	741	90	20	542	1
Future Volume (veh/h)	1	1	4	212	3	17	6	741	90	20	542	1
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1169	1900	1759	1773	1900	1583	1827	1696	1712	1776	1900
Adj Flow Rate, veh/h	4	4	8	296	0	0	14	872	132	27	630	4
Adj No. of Lanes	0	1	0	2	1	0	1	2	1	1	2	0
Peak Hour Factor	0.25	0.25	0.50	0.81	0.25	0.63	0.42	0.85	0.68	0.75	0.86	0.25
Percent Heavy Veh, %	100	100	100	8	0	0	20	4	12	11	7	7
Cap, veh/h	6	6	12	561	297	0	21	1510	606	41	1533	10
Arrive On Green	0.02	0.02	0.02	0.17	0.00	0.00	0.01	0.44	0.44	0.02	0.45	0.45
Sat Flow, veh/h	262	262	524	3351	1773	0	1508	3471	1393	1630	3438	22
Grp Volume(v), veh/h	16	0	0	296	0	0	14	872	132	27	309	325
Grp Sat Flow(s),veh/h/ln	1049	0	0	1675	1773	0	1508	1736	1393	1630	1688	1772
Q Serve(g_s), s	0.8	0.0	0.0	4.2	0.0	0.0	0.5	9.8	3.1	0.8	6.4	6.4
Cycle Q Clear(g_c), s	0.8	0.0	0.0	4.2	0.0	0.0	0.5	9.8	3.1	0.8	6.4	6.4
Prop In Lane	0.25		0.50	1.00		0.00	1.00		1.00	1.00		0.01
Lane Grp Cap(c), veh/h	25	0	0	561	297	0	21	1510	606	41	752	790
V/C Ratio(X)	0.64	0.00	0.00	0.53	0.00	0.00	0.66	0.58	0.22	0.67	0.41	0.41
Avail Cap(c_a), veh/h	407	0	0	1624	859	0	585	2018	810	632	981	1030
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.0	0.0	0.0	19.6	0.0	0.0	25.3	11.0	9.1	24.9	9.7	9.7
Incr Delay (d2), s/veh	24.1	0.0	0.0	1.1	0.0	0.0	29.6	0.4	0.2	17.1	0.4	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.0	2.0	0.0	0.0	0.4	4.7	1.2	0.6	3.0	3.1
LnGrp Delay(d),s/veh	49.1	0.0	0.0	20.7	0.0	0.0	54.9	11.3	9.3	42.1	10.1	10.0
LnGrp LOS	D			C			D	B	A	D	B	B
Approach Vol, veh/h		16			296			1018			661	
Approach Delay, s/veh		49.1			20.7			11.7			11.4	
Approach LOS		D			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.3	27.4		13.1	4.7	28.0		5.7
Change Period (Y+Rc), s	4.0	5.0		4.5	4.0	5.0		4.5
Max Green Setting (Gmax), s	20.0	30.0		25.0	20.0	30.0		20.0
Max Q Clear Time (g_c+I1), s	2.8	11.8		6.2	2.5	8.4		2.8
Green Ext Time (p_c), s	0.0	10.7		1.5	0.0	11.8		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	13.2
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	682	6	473	0	601	414	0	637	184
Future Volume (veh/h)	0	0	0	682	6	473	0	601	414	0	637	184
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1845	1846	1863	0	1834	1900	0	1804	1900
Adj Flow Rate, veh/h				829	0	520	0	668	0	0	716	216
Adj No. of Lanes				2	0	1	0	2	0	0	2	0
Peak Hour Factor				0.83	0.63	0.91	0.92	0.90	0.92	0.92	0.89	0.85
Percent Heavy Veh, %				3	0	2	0	4	4	0	6	6
Cap, veh/h				1115	0	502	0	1742	0	0	1297	391
Arrive On Green				0.32	0.00	0.32	0.00	1.00	0.00	0.00	0.50	0.50
Sat Flow, veh/h				3514	0	1583	0	3668	0	0	2684	782
Grp Volume(v), veh/h				829	0	520	0	668	0	0	473	459
Grp Sat Flow(s),veh/h/ln				1757	0	1583	0	1742	0	0	1714	1663
Q Serve(g_s), s				11.0	0.0	16.5	0.0	0.0	0.0	0.0	9.9	9.9
Cycle Q Clear(g_c), s				11.0	0.0	16.5	0.0	0.0	0.0	0.0	9.9	9.9
Prop In Lane				1.00		1.00	0.00		0.00	0.00		0.47
Lane Grp Cap(c), veh/h				1115	0	502	0	1742	0	0	857	831
V/C Ratio(X)				0.74	0.00	1.04	0.00	0.38	0.00	0.00	0.55	0.55
Avail Cap(c_a), veh/h				1115	0	502	0	1742	0	0	857	831
HCM Platoon Ratio				1.00	1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.00	0.95	0.00	0.00	0.93	0.93
Uniform Delay (d), s/veh				15.9	0.0	17.8	0.0	0.0	0.0	0.0	9.0	9.0
Incr Delay (d2), s/veh				2.8	0.0	49.5	0.0	0.6	0.0	0.0	2.4	2.5
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				5.7	0.0	14.0	0.0	0.1	0.0	0.0	5.2	5.0
LnGrp Delay(d),s/veh				18.7	0.0	67.2	0.0	0.6	0.0	0.0	11.4	11.4
LnGrp LOS				B		F		A			B	B
Approach Vol, veh/h					1349			668			932	
Approach Delay, s/veh					37.4			0.6			11.4	
Approach LOS					D			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		31.3				31.3		20.7
Change Period (Y+Rc), s		5.3				5.3		4.2
Max Green Setting (Gmax), s		26.0				26.0		16.5
Max Q Clear Time (g_c+I1), s		2.0				11.9		18.5
Green Ext Time (p_c), s		14.3				9.8		0.0

Intersection Summary		
HCM 2010 Ctrl Delay		20.9
HCM 2010 LOS		C

Notes

User approved volume balancing among the lanes for turning movement.

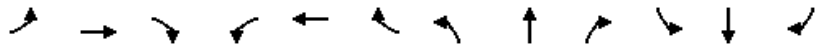
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	241	0	571	0	0	0	0	774	621	0	1054	265
Future Volume (vph)	241	0	571	0	0	0	0	774	621	0	1054	265
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.6	4.6					4.9	4.9		4.9	4.0
Lane Util. Factor		1.00	0.88					0.95	1.00		0.91	1.00
Frpb, ped/bikes		1.00	1.00					1.00	1.00		1.00	0.98
Flpb, ped/bikes		1.00	1.00					1.00	1.00		1.00	1.00
Frt		1.00	0.85					1.00	0.85		1.00	0.85
Flt Protected		0.95	1.00					1.00	1.00		1.00	1.00
Satd. Flow (prot)		1694	2668					3388	1516		4868	1412
Flt Permitted		0.95	1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)		1694	2668					3388	1516		4868	1412
Peak-hour factor, PHF	0.85	0.92	0.85	0.92	0.92	0.92	0.92	0.91	0.88	0.92	0.86	0.83
Adj. Flow (vph)	284	0	672	0	0	0	0	851	706	0	1226	319
RTOR Reduction (vph)	0	0	191	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	284	481	0	0	0	0	851	706	0	1226	319
Confl. Peds. (#/hr)	5					5	6					6
Confl. Bikes (#/hr)									6			1
Heavy Vehicles (%)	3%	0%	3%	0%	0%	0%	0%	3%	3%	0%	3%	8%
Turn Type	Split	NA	Perm					NA	Prot		NA	Free
Protected Phases	2	2						1 3 4	1 3 4		1 3 4	
Permitted Phases			2									Free
Actuated Green, G (s)		15.4	15.4					79.8	79.8		79.8	104.0
Effective Green, g (s)		15.4	15.4					75.6	75.6		75.6	104.0
Actuated g/C Ratio		0.15	0.15					0.73	0.73		0.73	1.00
Clearance Time (s)		4.6	4.6									
Vehicle Extension (s)		3.0	3.0									
Lane Grp Cap (vph)		250	395					2462	1102		3538	1412
v/s Ratio Prot		0.17						0.25	c0.47		0.25	
v/s Ratio Perm			c0.18									0.23
v/c Ratio		1.14	1.22					0.35	0.64		0.35	0.23
Uniform Delay, d1		44.3	44.3					5.2	7.3		5.2	0.0
Progression Factor		1.00	1.00					0.02	0.86		1.65	1.00
Incremental Delay, d2		98.5	119.1					0.0	0.6		0.0	0.3
Delay (s)		142.8	163.4					0.1	6.8		8.6	0.3
Level of Service		F	F					A	A		A	A
Approach Delay (s)		157.3			0.0			3.2			6.9	
Approach LOS		F			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	40.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	104.0	Sum of lost time (s)	17.9
Intersection Capacity Utilization	59.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	58	1310	47	11	596	86	95	1	17	64	3	54
Future Volume (veh/h)	58	1310	47	11	596	86	95	1	17	64	3	54
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.97	0.99		0.98	0.99		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1900	1900	1868	1900	1900	1841	1900	1900	1882	1900
Adj Flow Rate, veh/h	72	1409	73	26	648	101	123	4	27	86	8	87
Adj No. of Lanes	0	2	0	1	2	0	0	1	0	0	1	0
Peak Hour Factor	0.80	0.93	0.64	0.42	0.92	0.85	0.77	0.25	0.63	0.74	0.38	0.62
Percent Heavy Veh, %	1	1	1	0	2	2	0	0	0	0	0	0
Cap, veh/h	133	1965	101	247	1921	299	339	21	51	221	44	155
Arrive On Green	0.63	0.63	0.63	0.63	0.63	0.63	0.20	0.20	0.20	0.20	0.20	0.20
Sat Flow, veh/h	99	3134	162	362	3063	477	1105	103	257	621	218	776
Grp Volume(v), veh/h	798	0	756	26	375	374	154	0	0	181	0	0
Grp Sat Flow(s),veh/h/ln	1720	0	1675	362	1774	1766	1464	0	0	1615	0	0
Q Serve(g_s), s	4.8	0.0	16.9	2.9	5.5	5.5	0.0	0.0	0.0	0.5	0.0	0.0
Cycle Q Clear(g_c), s	16.2	0.0	16.9	19.8	5.5	5.5	4.6	0.0	0.0	5.0	0.0	0.0
Prop In Lane	0.09		0.10	1.00		0.27	0.80		0.18	0.48		0.48
Lane Grp Cap(c), veh/h	1150	0	1050	247	1113	1107	411	0	0	420	0	0
V/C Ratio(X)	0.69	0.00	0.72	0.11	0.34	0.34	0.37	0.00	0.00	0.43	0.00	0.00
Avail Cap(c_a), veh/h	1166	0	1066	250	1130	1124	748	0	0	799	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.7	0.0	7.0	13.7	4.8	4.9	19.4	0.0	0.0	19.6	0.0	0.0
Incr Delay (d2), s/veh	2.3	0.0	3.0	0.4	0.4	0.4	1.2	0.0	0.0	1.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.5	0.0	8.4	0.3	2.7	2.7	2.2	0.0	0.0	2.6	0.0	0.0
LnGrp Delay(d),s/veh	9.0	0.0	9.9	14.1	5.2	5.2	20.6	0.0	0.0	21.1	0.0	0.0
LnGrp LOS	A		A	B	A	A	C			C		
Approach Vol, veh/h		1554			775			154			181	
Approach Delay, s/veh		9.4			5.5			20.6			21.1	
Approach LOS		A			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		39.5		15.5		39.5		15.5
Change Period (Y+Rc), s		5.0		4.5		5.0		4.5
Max Green Setting (Gmax), s		35.0		25.0		35.0		25.0
Max Q Clear Time (g_c+I1), s		18.9		6.6		21.8		7.0
Green Ext Time (p_c), s		15.4		3.4		12.7		3.4

Intersection Summary	
HCM 2010 Ctrl Delay	9.7
HCM 2010 LOS	A



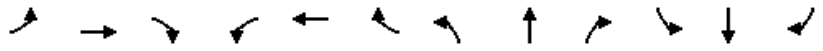
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	848	578	93	268	6	405	20	169	3	19	6
Future Volume (veh/h)	5	848	578	93	268	6	405	20	169	3	19	6
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	1.00		0.97	1.00		0.91
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1881	1810	1869	1900	1845	1853	1845	1900	1900	1900
Adj Flow Rate, veh/h	10	986	635	133	388	14	457	0	211	8	44	19
Adj No. of Lanes	1	2	1	1	2	0	2	0	1	0	1	0
Peak Hour Factor	0.50	0.86	0.91	0.70	0.69	0.42	0.94	0.56	0.80	0.38	0.43	0.31
Percent Heavy Veh, %	0	1	1	5	1	1	3	0	3	0	0	0
Cap, veh/h	18	1476	641	168	1747	63	691	0	299	11	59	26
Arrive On Green	0.01	0.41	0.41	0.10	0.50	0.50	0.20	0.00	0.20	0.05	0.05	0.05
Sat Flow, veh/h	1810	3574	1553	1723	3491	126	3514	0	1523	198	1087	469
Grp Volume(v), veh/h	10	986	635	133	197	205	457	0	211	71	0	0
Grp Sat Flow(s),veh/h/ln	1810	1787	1553	1723	1775	1841	1757	0	1523	1754	0	0
Q Serve(g_s), s	0.4	17.3	31.5	5.9	4.8	4.9	9.3	0.0	10.0	3.1	0.0	0.0
Cycle Q Clear(g_c), s	0.4	17.3	31.5	5.9	4.8	4.9	9.3	0.0	10.0	3.1	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.07	1.00		1.00	0.11		0.27
Lane Grp Cap(c), veh/h	18	1476	641	168	888	921	691	0	299	95	0	0
V/C Ratio(X)	0.55	0.67	0.99	0.79	0.22	0.22	0.66	0.00	0.70	0.74	0.00	0.00
Avail Cap(c_a), veh/h	747	1476	641	711	888	921	1813	0	786	453	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	38.2	18.5	22.6	34.2	10.9	10.9	28.8	0.0	29.0	36.1	0.0	0.0
Incr Delay (d2), s/veh	9.4	2.1	33.2	3.2	0.5	0.4	1.1	0.0	3.0	12.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	8.9	19.3	2.9	2.5	2.6	4.6	0.0	4.4	1.8	0.0	0.0
LnGrp Delay(d),s/veh	47.6	20.5	55.8	37.4	11.3	11.3	29.8	0.0	32.1	49.0	0.0	0.0
LnGrp LOS	D	C	E	D	B	B	C		C	D		
Approach Vol, veh/h		1631			535			668			71	
Approach Delay, s/veh		34.4			17.8			30.5			49.0	
Approach LOS		C			B			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	12.1	37.0		8.7	5.3	43.8		19.7
Change Period (Y+Rc), s	4.5	5.0		4.5	4.5	5.0		4.5
Max Green Setting (Gmax), s	32.6	32.0		20.0	32.0	31.0		40.0
Max Q Clear Time (g_c+I1), s	7.9	33.5		5.1	2.4	6.9		12.0
Green Ext Time (p_c), s	0.2	0.0		0.3	0.0	22.0		2.6

Intersection Summary	
HCM 2010 Ctrl Delay	30.8
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	947	135	240	441	0	83	0	378	0	0	3
Future Volume (veh/h)	1	947	135	240	441	0	83	0	378	0	0	3
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		1.00	0.99		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1884	1900	1881	1881	1900	1900	1874	1900	1900	1900	1900
Adj Flow Rate, veh/h	1	997	169	293	513	0	124	0	485	0	0	8
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	0
Peak Hour Factor	0.75	0.95	0.80	0.82	0.86	0.92	0.67	0.92	0.78	0.92	0.92	0.38
Percent Heavy Veh, %	0	1	1	1	1	1	0	0	0	0	0	0
Cap, veh/h	512	1700	288	243	1996	0	143	12	427	0	0	555
Arrive On Green	0.56	0.56	0.56	0.56	0.56	0.00	0.35	0.00	0.35	0.00	0.00	0.35
Sat Flow, veh/h	900	3043	515	484	3668	0	281	34	1236	0	0	1605
Grp Volume(v), veh/h	1	586	580	293	513	0	609	0	0	0	0	8
Grp Sat Flow(s),veh/h/ln	900	1790	1768	484	1787	0	1552	0	0	0	0	1605
Q Serve(g_s), s	0.1	20.2	20.3	32.2	7.0	0.0	29.1	0.0	0.0	0.0	0.0	0.3
Cycle Q Clear(g_c), s	7.0	20.2	20.3	52.5	7.0	0.0	32.5	0.0	0.0	0.0	0.0	0.3
Prop In Lane	1.00		0.29	1.00		0.00	0.20		0.80	0.00		1.00
Lane Grp Cap(c), veh/h	512	1000	988	243	1996	0	583	0	0	0	0	555
V/C Ratio(X)	0.00	0.59	0.59	1.21	0.26	0.00	1.05	0.00	0.00	0.00	0.00	0.01
Avail Cap(c_a), veh/h	512	1000	988	243	1996	0	583	0	0	0	0	555
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	12.5	13.6	13.6	36.0	10.7	0.0	32.0	0.0	0.0	0.0	0.0	20.2
Incr Delay (d2), s/veh	0.0	0.6	0.6	125.5	0.0	0.0	49.6	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	10.1	10.0	14.7	3.4	0.0	23.1	0.0	0.0	0.0	0.0	0.1
LnGrp Delay(d),s/veh	12.5	14.2	14.3	161.4	10.7	0.0	81.6	0.0	0.0	0.0	0.0	20.2
LnGrp LOS	B	B	B	F	B		F					C
Approach Vol, veh/h		1167			806			609			8	
Approach Delay, s/veh		14.2			65.5			81.6			20.2	
Approach LOS		B			E			F			C	

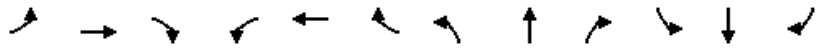
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		57.0		37.0		57.0		37.0
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		52.5		32.5		52.5		32.5
Max Q Clear Time (g_c+I1), s		22.3		2.3		54.5		34.5
Green Ext Time (p_c), s		8.2		2.0		0.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	46.1
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	1269	48	17	670	1	6	0	16	9	2	5
Future Volume (veh/h)	8	1269	48	17	670	1	6	0	16	9	2	5
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.97	0.96		0.98	0.98		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1491	1668	1700	1700	1651	1700	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	14	1459	83	27	753	4	18	0	28	18	4	13
Adj No. of Lanes	1	2	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.58	0.87	0.58	0.63	0.89	0.25	0.33	0.92	0.58	0.50	0.50	0.38
Percent Heavy Veh, %	14	2	2	0	3	3	0	0	0	0	0	0
Cap, veh/h	390	2022	115	283	1090	6	169	24	109	194	53	68
Arrive On Green	0.66	0.66	0.66	0.66	0.66	0.66	0.12	0.00	0.12	0.12	0.12	0.12
Sat Flow, veh/h	564	3042	172	305	1640	9	402	204	942	527	457	582
Grp Volume(v), veh/h	14	757	785	27	0	757	46	0	0	35	0	0
Grp Sat Flow(s),veh/h/ln	564	1585	1630	305	0	1649	1548	0	0	1566	0	0
Q Serve(g_s), s	0.6	12.6	12.8	2.6	0.0	11.7	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	12.3	12.6	12.8	15.4	0.0	11.7	1.0	0.0	0.0	0.7	0.0	0.0
Prop In Lane	1.00		0.11	1.00		0.01	0.39		0.61	0.51		0.37
Lane Grp Cap(c), veh/h	390	1053	1083	283	0	1096	302	0	0	315	0	0
V/C Ratio(X)	0.04	0.72	0.72	0.10	0.00	0.69	0.15	0.00	0.00	0.11	0.00	0.00
Avail Cap(c_a), veh/h	839	2317	2382	527	0	2410	1034	0	0	1045	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	8.1	4.4	4.5	9.4	0.0	4.3	16.5	0.0	0.0	16.4	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.3	0.3	0.1	0.0	0.3	0.1	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	5.4	5.6	0.2	0.0	5.1	0.5	0.0	0.0	0.4	0.0	0.0
LnGrp Delay(d),s/veh	8.1	4.8	4.8	9.5	0.0	4.6	16.6	0.0	0.0	16.4	0.0	0.0
LnGrp LOS	A	A	A	A		A	B			B		
Approach Vol, veh/h		1556			784			46			35	
Approach Delay, s/veh		4.8			4.7			16.6			16.4	
Approach LOS		A			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		31.8		9.3		31.8		9.3
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		60.0		25.0		60.0		25.0
Max Q Clear Time (g_c+I1), s		14.8		2.7		17.4		3.0
Green Ext Time (p_c), s		10.0		0.2		9.9		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	5.2
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	245	934	115	79	340	142	50	195	162	346	500	298
Future Volume (veh/h)	245	934	115	79	340	142	50	195	162	346	500	298
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		1.00	1.00		0.99	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1683	1667	1700	1683	1650	1667	1845	1881	1900	1683	1650	1683
Adj Flow Rate, veh/h	275	1112	155	110	400	0	59	253	210	449	602	377
Adj No. of Lanes	1	2	0	1	1	1	1	1	0	1	1	1
Peak Hour Factor	0.89	0.84	0.74	0.72	0.85	0.76	0.85	0.77	0.77	0.77	0.83	0.79
Percent Heavy Veh, %	1	2	2	1	3	2	3	1	1	1	3	1
Cap, veh/h	290	998	139	128	427	367	74	253	210	342	723	607
Arrive On Green	0.18	0.36	0.36	0.08	0.26	0.00	0.04	0.27	0.27	0.21	0.44	0.44
Sat Flow, veh/h	1603	2769	385	1603	1650	1417	1757	949	787	1603	1650	1386
Grp Volume(v), veh/h	275	634	633	110	400	0	59	0	463	449	602	377
Grp Sat Flow(s),veh/h/ln	1603	1583	1571	1603	1650	1417	1757	0	1736	1603	1650	1386
Q Serve(g_s), s	31.8	67.6	67.6	12.7	44.4	0.0	6.2	0.0	50.0	40.0	60.5	39.4
Cycle Q Clear(g_c), s	31.8	67.6	67.6	12.7	44.4	0.0	6.2	0.0	50.0	40.0	60.5	39.4
Prop In Lane	1.00		0.24	1.00		1.00	1.00		0.45	1.00		1.00
Lane Grp Cap(c), veh/h	290	571	566	128	427	367	74	0	463	342	723	607
V/C Ratio(X)	0.95	1.11	1.12	0.86	0.94	0.00	0.80	0.00	1.00	1.31	0.83	0.62
Avail Cap(c_a), veh/h	299	571	566	299	528	453	281	0	463	342	723	607
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	75.9	60.0	60.0	85.3	68.0	0.0	89.0	0.0	68.8	73.8	46.7	40.7
Incr Delay (d2), s/veh	38.0	72.1	74.3	15.3	21.8	0.0	7.0	0.0	41.9	160.3	8.3	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	17.2	40.9	40.9	6.2	22.9	0.0	3.2	0.0	29.3	32.9	29.3	15.3
LnGrp Delay(d),s/veh	113.9	132.0	134.3	100.6	89.7	0.0	96.0	0.0	110.6	234.0	54.9	42.7
LnGrp LOS	F	F	F	F	F		F		F	F	D	D
Approach Vol, veh/h		1542			510			522			1428	
Approach Delay, s/veh		129.7			92.1			109.0			108.0	
Approach LOS		F			F			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.4	71.6	11.4	86.1	37.5	52.5	43.5	54.0
Change Period (Y+Rc), s	3.5	4.0	3.5	4.0	3.5	4.0	3.5	4.0
Max Green Setting (Gmax), s	15.0	60.0	30.0	50.0	35.0	60.0	40.0	50.0
Max Q Clear Time (g_c+I1), s	14.7	69.6	8.2	62.5	33.8	46.4	42.0	52.0
Green Ext Time (p_c), s	0.3	0.0	0.1	0.0	0.2	2.1	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	114.5
HCM 2010 LOS	F

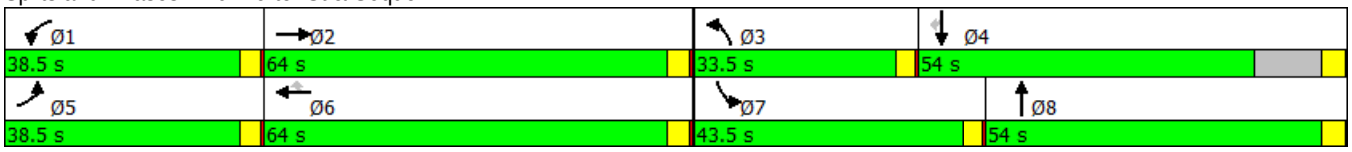
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	245	934	115	79	340	142	50	195	162	346	500	298
Future Volume (vph)	245	934	115	79	340	142	50	195	162	346	500	298
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1900	1900	1900	1700	1700	1700
Storage Length (ft)	140		0	0		100	180		0	540		70
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (ft)	45			25			50			300		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.98		0.99		0.96	0.99	0.99		0.99		0.94
Frt		0.982				0.850		0.932				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1546	2959	0	1546	1595	1369	1694	1674	0	1546	1595	1383
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1540	2959	0	1523	1595	1321	1671	1674	0	1534	1595	1304
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8				63		20				61
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		328			1072			1033			1279	
Travel Time (s)		8.9			29.2			28.2			34.9	
Confl. Peds. (#/hr)	1		13	13		1	6		4	4		6
Confl. Bikes (#/hr)			20			8						5
Peak Hour Factor	0.89	0.84	0.74	0.72	0.85	0.76	0.85	0.77	0.77	0.77	0.83	0.79
Heavy Vehicles (%)	1%	2%	2%	1%	3%	2%	3%	1%	1%	1%	3%	1%
Adj. Flow (vph)	275	1112	155	110	400	187	59	253	210	449	602	377
Shared Lane Traffic (%)												
Lane Group Flow (vph)	275	1267	0	110	400	187	59	463	0	449	602	377
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		20			20			22			14	
Two way Left Turn Lane												
Headway Factor	1.20	1.20	1.20	1.20	1.20	1.20	1.04	1.04	1.04	1.20	1.20	1.20
Turning Speed (mph)	15		9	15		12	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6						4
Detector Phase	5	2		1	6	6	3	8		7	4	4
Switch Phase												
Minimum Initial (s)	5.0	7.0		5.0	7.0	7.0	5.0	8.0		5.0	7.0	7.0
Minimum Split (s)	8.5	19.0		8.5	21.0	21.0	8.5	20.0		8.5	23.0	23.0
Total Split (s)	38.5	64.0		38.5	64.0	64.0	33.5	54.0		43.5	54.0	54.0
Total Split (%)	19.3%	32.0%		19.3%	32.0%	32.0%	16.8%	27.0%		21.8%	27.0%	27.0%
Maximum Green (s)	35.0	60.0		35.0	60.0	60.0	30.0	50.0		40.0	50.0	50.0
Yellow Time (s)	3.0	3.5		3.0	3.5	3.5	3.0	3.5		3.0	3.5	3.5
All-Red Time (s)	0.5	0.5		0.5	0.5	0.5	0.5	0.5		0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	3.5	4.0		3.5	4.0	4.0	3.5	4.0		3.5	4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	4.0	3.0		3.0	3.0	3.0	2.0	3.0		2.0	3.0	3.0
Recall Mode	None	Min		None	Min	Min	None	None		None	None	None
Walk Time (s)		8.0			8.0	8.0		8.0			8.0	8.0
Flash Dont Walk (s)		7.0			9.0	9.0		8.0			11.0	11.0
Pedestrian Calls (#/hr)		13			1	1		4			6	6
Act Effct Green (s)	35.1	68.4		19.0	52.4	52.4	11.1	50.1		40.1	79.1	79.1
Actuated g/C Ratio	0.18	0.35		0.10	0.27	0.27	0.06	0.26		0.21	0.41	0.41
v/c Ratio	0.98	1.20		0.72	0.92	0.46	0.61	1.03		1.40	0.92	0.66
Control Delay	124.6	150.6		110.2	95.3	41.2	114.6	114.3		248.0	74.4	46.6
Queue Delay	41.3	2.7		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	165.9	153.3		110.2	95.3	41.2	114.6	114.3		248.0	74.4	46.6
LOS	F	F		F	F	D	F	F		F	E	D
Approach Delay		155.5			83.2			114.4			121.6	
Approach LOS		F			F			F			F	
90th %ile Green (s)	35.0	68.1		26.9	60.0	60.0	16.3	50.0		40.0	73.7	73.7
90th %ile Term Code	Max	Hold		Gap	Max	Max	Gap	Max		Max	Hold	Hold
70th %ile Green (s)	35.0	72.5		22.5	60.0	60.0	13.4	50.0		40.0	76.6	76.6
70th %ile Term Code	Max	Hold		Gap	Max	Max	Gap	Max		Max	Hold	Hold
50th %ile Green (s)	35.0	72.1		19.3	56.4	56.4	11.2	50.0		40.0	78.8	78.8
50th %ile Term Code	Max	Hold		Gap	Gap	Gap	Gap	Max		Max	Hold	Hold
30th %ile Green (s)	35.0	67.6		15.9	48.5	48.5	9.1	50.0		40.0	80.9	80.9
30th %ile Term Code	Max	Hold		Gap	Gap	Gap	Gap	Max		Max	Hold	Hold
10th %ile Green (s)	35.0	61.9		11.5	38.4	38.4	6.2	50.0		40.0	83.8	83.8
10th %ile Term Code	Max	Hold		Gap	Gap	Gap	Gap	Max		Max	Hold	Hold
Stops (vph)	214	873		75	320	77	47	295		256	423	209
Fuel Used(gal)	8	38		3	11	3	2	13		22	15	7
CO Emissions (g/hr)	540	2687		194	764	194	125	879		1553	1023	481
NOx Emissions (g/hr)	105	523		38	149	38	24	171		302	199	94
VOC Emissions (g/hr)	125	623		45	177	45	29	204		360	237	111
Dilemma Vehicles (#)	0	0		0	0	0	0	0		0	0	0
Queue Length 50th (ft)	361	~1013		141	497	131	76	~628		~779	749	341
Queue Length 95th (ft)	#579	#1098		167	600	165	126	#675		#832	#948	413

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		248			992			953			1199	
Turn Bay Length (ft)	140					100	180			540		70
Base Capacity (vph)	281	1055		281	497	455	264	450		321	654	571
Starvation Cap Reductn	88	404		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	1.42	1.95		0.39	0.80	0.41	0.22	1.03		1.40	0.92	0.66

Intersection Summary			
Area Type:	Other		
Cycle Length: 200			
Actuated Cycle Length: 192.7			
Natural Cycle: 140			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.40			
Intersection Signal Delay: 126.8		Intersection LOS: F	
Intersection Capacity Utilization 93.1%		ICU Level of Service F	
Analysis Period (min) 15			
90th %ile Actuated Cycle: 200			
70th %ile Actuated Cycle: 200			
50th %ile Actuated Cycle: 196.4			
30th %ile Actuated Cycle: 188.5			
10th %ile Actuated Cycle: 178.4			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 6: Porter St & Soquel Dr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1900	1900	1900	1700	1700	1700
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	140		0	0		100	180		0	540		70
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (ft)	45			25			50			300		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.98		0.99		0.96	0.99	0.99		0.99		0.94
Frt		0.982				0.850		0.932				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1546	2959	0	1546	1595	1369	1694	1674	0	1546	1595	1383
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1540	2959	0	1523	1595	1321	1671	1674	0	1534	1595	1304
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8				63		20				61
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		328			1072			1033			1279	
Travel Time (s)		8.9			29.2			28.2			34.9	

Intersection Summary	
Area Type:	Other

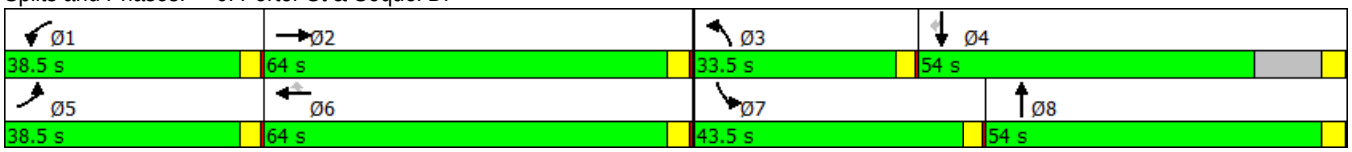
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	245	934	115	79	340	142	50	195	162	346	500	298
Future Volume (vph)	245	934	115	79	340	142	50	195	162	346	500	298
Confl. Peds. (#/hr)	1		13	13		1	6		4	4		6
Confl. Bikes (#/hr)			20			8						5
Peak Hour Factor	0.89	0.84	0.74	0.72	0.85	0.76	0.85	0.77	0.77	0.77	0.83	0.79
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	2%	2%	1%	3%	2%	3%	1%	1%	1%	3%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	275	1112	155	110	400	187	59	253	210	449	602	377
Shared Lane Traffic (%)												
Lane Group Flow (vph)	275	1267	0	110	400	187	59	463	0	449	602	377

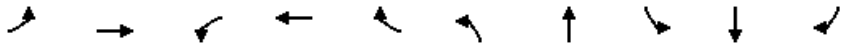
Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	245	934	79	340	142	50	195	346	500	298
Future Volume (vph)	245	934	79	340	142	50	195	346	500	298
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Prot	NA	Perm
Protected Phases	5	2	1	6		3	8	7	4	
Permitted Phases					6					4
Detector Phase	5	2	1	6	6	3	8	7	4	4
Switch Phase										
Minimum Initial (s)	5.0	7.0	5.0	7.0	7.0	5.0	8.0	5.0	7.0	7.0
Minimum Split (s)	8.5	19.0	8.5	21.0	21.0	8.5	20.0	8.5	23.0	23.0
Total Split (s)	38.5	64.0	38.5	64.0	64.0	33.5	54.0	43.5	54.0	54.0
Total Split (%)	19.3%	32.0%	19.3%	32.0%	32.0%	16.8%	27.0%	21.8%	27.0%	27.0%
Yellow Time (s)	3.0	3.5	3.0	3.5	3.5	3.0	3.5	3.0	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.5	4.0	3.5	4.0	4.0	3.5	4.0	3.5	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min	None	Min	Min	None	None	None	None	None
Act Effct Green (s)	35.1	68.4	19.0	52.4	52.4	11.1	50.1	40.1	79.1	79.1
Actuated g/C Ratio	0.18	0.35	0.10	0.27	0.27	0.06	0.26	0.21	0.41	0.41
v/c Ratio	0.98	1.20	0.72	0.92	0.46	0.61	1.03	1.40	0.92	0.66
Control Delay	124.6	150.6	110.2	95.3	41.2	114.6	114.3	248.0	74.4	46.6
Queue Delay	41.3	2.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	165.9	153.3	110.2	95.3	41.2	114.6	114.3	248.0	74.4	46.6
LOS	F	F	F	F	D	F	F	F	E	D
Approach Delay		155.5		83.2			114.4		121.6	
Approach LOS		F		F			F		F	

Intersection Summary	
Cycle Length: 200	
Actuated Cycle Length: 192.7	
Natural Cycle: 140	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.40	
Intersection Signal Delay: 126.8	Intersection LOS: F
Intersection Capacity Utilization 93.1%	ICU Level of Service F
Analysis Period (min) 15	

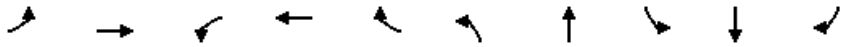
Splits and Phases: 6: Porter St & Soquel Dr





Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Protected Phases	5	2	1	6		3	8	7	4	
Permitted Phases					6					4
Minimum Initial (s)	5.0	7.0	5.0	7.0	7.0	5.0	8.0	5.0	7.0	7.0
Minimum Split (s)	8.5	19.0	8.5	21.0	21.0	8.5	20.0	8.5	23.0	23.0
Total Split (s)	38.5	64.0	38.5	64.0	64.0	33.5	54.0	43.5	54.0	54.0
Total Split (%)	19.3%	32.0%	19.3%	32.0%	32.0%	16.8%	27.0%	21.8%	27.0%	27.0%
Maximum Green (s)	35.0	60.0	35.0	60.0	60.0	30.0	50.0	40.0	50.0	50.0
Yellow Time (s)	3.0	3.5	3.0	3.5	3.5	3.0	3.5	3.0	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	3.0	3.0	3.0	3.0	2.0	3.0	2.0	3.0	3.0
Minimum Gap (s)	4.0	3.0	3.0	3.0	3.0	2.0	3.0	2.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	Min	None	Min	Min	None	None	None	None	None
Walk Time (s)		8.0		8.0	8.0		8.0		8.0	8.0
Flash Dont Walk (s)		7.0		9.0	9.0		8.0		11.0	11.0
Pedestrian Calls (#/hr)		13		1	1		4		6	6
90th %ile Green (s)	35.0	68.1	26.9	60.0	60.0	16.3	50.0	40.0	73.7	73.7
90th %ile Term Code	Max	Hold	Gap	Max	Max	Gap	Max	Max	Hold	Hold
70th %ile Green (s)	35.0	72.5	22.5	60.0	60.0	13.4	50.0	40.0	76.6	76.6
70th %ile Term Code	Max	Hold	Gap	Max	Max	Gap	Max	Max	Hold	Hold
50th %ile Green (s)	35.0	72.1	19.3	56.4	56.4	11.2	50.0	40.0	78.8	78.8
50th %ile Term Code	Max	Hold	Gap	Gap	Gap	Gap	Max	Max	Hold	Hold
30th %ile Green (s)	35.0	67.6	15.9	48.5	48.5	9.1	50.0	40.0	80.9	80.9
30th %ile Term Code	Max	Hold	Gap	Gap	Gap	Gap	Max	Max	Hold	Hold
10th %ile Green (s)	35.0	61.9	11.5	38.4	38.4	6.2	50.0	40.0	83.8	83.8
10th %ile Term Code	Max	Hold	Gap	Gap	Gap	Gap	Max	Max	Hold	Hold

Intersection Summary
Cycle Length: 200
Actuated Cycle Length: 192.7
Control Type: Actuated-Uncoordinated
90th %ile Actuated Cycle: 200
70th %ile Actuated Cycle: 200
50th %ile Actuated Cycle: 196.4
30th %ile Actuated Cycle: 188.5
10th %ile Actuated Cycle: 178.4



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	275	1267	110	400	187	59	463	449	602	377
v/c Ratio	0.98	1.20	0.72	0.92	0.46	0.61	1.03	1.40	0.92	0.66
Control Delay	124.6	150.6	110.2	95.3	41.2	114.6	114.3	248.0	74.4	46.6
Queue Delay	41.3	2.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	165.9	153.3	110.2	95.3	41.2	114.6	114.3	248.0	74.4	46.6
Queue Length 50th (ft)	361	~1013	141	497	131	76	~628	~779	749	341
Queue Length 95th (ft)	#579	#1098	167	600	165	126	#675	#832	#948	413
Internal Link Dist (ft)		248		992			953		1199	
Turn Bay Length (ft)	140				100	180		540		70
Base Capacity (vph)	281	1055	281	497	455	264	450	321	654	571
Starvation Cap Reductn	88	404	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.42	1.95	0.39	0.80	0.41	0.22	1.03	1.40	0.92	0.66

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		20			20			22			14	
Two way Left Turn Lane												
Headway Factor	1.20	1.20	1.20	1.20	1.20	1.20	1.04	1.04	1.04	1.20	1.20	1.20
Turning Speed (mph)	15		9	15		12	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Intersection Summary

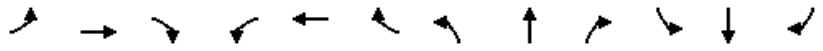
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	245	934	115	79	340	142	50	195	162	346	500	298
Pedestrians	1		13	13		1	6		4	4		6
Ped Button		Yes			Yes			Yes			Yes	
Pedestrian Timing (s)		15.0			17.0			16.0			19.0	
Free Right			No			No			No			No
Ideal Flow	1700	1700	1700	1700	1700	1700	1900	1900	1900	1700	1700	1700
Lost Time (s)	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0
Minimum Green (s)	5.0	7.0	4.0	5.0	7.0	7.0	5.0	8.0	4.0	5.0	7.0	7.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	245	1049	0	79	340	142	50	357	0	346	500	298
Lane Utilization Factor	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.95	0.98	0.85	0.95	1.00	0.85	0.95	0.93	0.85	0.95	1.00	0.85
Saturated Flow (vph)	1615	3184	0	1615	1700	1445	1805	1771	0	1615	1700	1445
Ped Intf Time (s)	0.0	0.2	1.6	0.0	0.0	0.1	0.0	0.2	0.5	0.0	0.0	0.8
Pedestrian Frequency (%)		0.35			0.03			0.12			0.18	
Protected Option Allowed		Yes			Yes			Yes			Yes	
Reference Time (s)	18.2	39.7	0.0	5.9	24.0	11.9	3.3	24.4	0.0	25.7	35.3	25.5
Adj Reference Time (s)	22.2	43.7	0.0	9.9	28.0	16.1	9.0	28.4	0.0	29.7	39.3	29.5
Permitted Option												
Adj Saturation A (vph)	108	1592		108	1700		120	1771		108	1700	
Reference Time A (s)	273.1	39.7		88.0	24.0		49.9	24.4		385.6	35.3	
Adj Saturation B (vph	NA	NA		NA	NA		NA	NA		NA	NA	
Reference Time B (s)	NA	NA		NA	NA		NA	NA		NA	NA	
Reference Time (s)		273.1			88.0			49.9			385.6	
Adj Reference Time (s)		277.1			92.0			53.9			389.6	
Split Option												
Ref Time Combined (s)	18.2	39.7		5.9	24.0		3.3	24.4		25.7	35.3	
Ref Time Seperate (s)	18.2	35.4		5.9	24.0		3.3	13.5		25.7	35.3	
Reference Time (s)	39.7	39.7		24.0	24.0		24.4	24.4		35.3	35.3	
Adj Reference Time (s)	43.7	43.7		28.0	28.0		28.4	28.4		39.3	39.3	

Summary	EB WB	NB SB	Combined
Protected Option (s)	53.6	58.1	
Permitted Option (s)	277.1	389.6	
Split Option (s)	71.7	67.7	
Minimum (s)	53.6	58.1	111.7

Right Turns	WBR	SBR
Adj Reference Time (s)	16.1	29.5
Cross Thru Ref Time (s)	28.4	28.0
Oncoming Left Ref Time (s)	22.2	9.0
Combined (s)	66.7	66.5

Intersection Summary			
Intersection Capacity Utilization	93.1%	ICU Level of Service	F

Reference Times and Phasing Options do not represent an optimized timing plan.



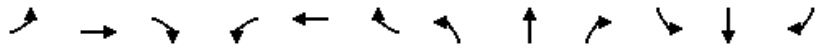
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	2	19	308	2	15	15	556	161	23	638	12
Future Volume (veh/h)	10	2	19	308	2	15	15	556	161	23	638	12
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		1.00	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1881	1869	1900	1900	1863	1900	1900	1864	1900
Adj Flow Rate, veh/h	22	8	27	449	0	0	30	604	194	35	778	31
Adj No. of Lanes	0	1	0	2	1	0	1	2	1	1	2	0
Peak Hour Factor	0.45	0.25	0.71	0.73	0.50	0.58	0.50	0.92	0.83	0.66	0.82	0.39
Percent Heavy Veh, %	0	0	0	1	0	0	0	2	0	0	2	2
Cap, veh/h	41	15	50	758	395	0	48	1356	597	54	1339	53
Arrive On Green	0.06	0.06	0.06	0.21	0.00	0.00	0.03	0.38	0.38	0.03	0.39	0.39
Sat Flow, veh/h	652	237	800	3583	1869	0	1810	3539	1559	1810	3467	138
Grp Volume(v), veh/h	57	0	0	449	0	0	30	604	194	35	397	412
Grp Sat Flow(s),veh/h/ln	1690	0	0	1792	1869	0	1810	1770	1559	1810	1771	1834
Q Serve(g_s), s	1.9	0.0	0.0	6.5	0.0	0.0	0.9	7.3	5.0	1.1	10.2	10.2
Cycle Q Clear(g_c), s	1.9	0.0	0.0	6.5	0.0	0.0	0.9	7.3	5.0	1.1	10.2	10.2
Prop In Lane	0.39		0.47	1.00		0.00	1.00		1.00	1.00		0.08
Lane Grp Cap(c), veh/h	105	0	0	758	395	0	48	1356	597	54	684	709
V/C Ratio(X)	0.54	0.00	0.00	0.59	0.00	0.00	0.63	0.45	0.32	0.65	0.58	0.58
Avail Cap(c_a), veh/h	588	0	0	1559	813	0	630	1848	814	630	925	958
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.1	0.0	0.0	20.4	0.0	0.0	27.7	13.2	12.5	27.6	13.9	13.9
Incr Delay (d2), s/veh	4.3	0.0	0.0	1.1	0.0	0.0	12.6	0.2	0.3	12.4	0.8	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	0.0	3.3	0.0	0.0	0.6	3.6	2.2	0.7	5.1	5.3
LnGrp Delay(d),s/veh	30.4	0.0	0.0	21.5	0.0	0.0	40.3	13.4	12.8	39.9	14.7	14.7
LnGrp LOS	C			C			D	B	B	D	B	B
Approach Vol, veh/h		57			449			828			844	
Approach Delay, s/veh		30.4			21.5			14.2			15.8	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.7	27.0		16.6	5.5	27.2		8.1
Change Period (Y+Rc), s	4.0	5.0		4.5	4.0	5.0		4.5
Max Green Setting (Gmax), s	20.0	30.0		25.0	20.0	30.0		20.0
Max Q Clear Time (g_c+I1), s	3.1	9.3		8.5	2.9	12.2		3.9
Green Ext Time (p_c), s	0.0	10.9		2.3	0.0	10.0		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	16.7
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	901	0	280	0	577	540	0	854	158
Future Volume (veh/h)	0	0	0	901	0	280	0	577	540	0	854	158
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		0.97
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1881	1881	1810	0	1872	1900	0	1866	1900
Adj Flow Rate, veh/h				1024	0	311	0	663	0	0	1005	203
Adj No. of Lanes				2	0	1	0	2	0	0	2	0
Peak Hour Factor				0.88	0.92	0.90	0.92	0.87	0.80	0.92	0.85	0.78
Percent Heavy Veh, %				1	0	5	0	2	2	0	2	2
Cap, veh/h				1132	0	486	0	1819	0	0	1495	301
Arrive On Green				0.32	0.00	0.32	0.00	0.85	0.00	0.00	0.51	0.51
Sat Flow, veh/h				3583	0	1538	0	3744	0	0	3016	589
Grp Volume(v), veh/h				1024	0	311	0	663	0	0	608	600
Grp Sat Flow(s),veh/h/ln				1792	0	1538	0	1778	0	0	1773	1740
Q Serve(g_s), s				15.1	0.0	9.5	0.0	2.2	0.0	0.0	14.0	14.1
Cycle Q Clear(g_c), s				15.1	0.0	9.5	0.0	2.2	0.0	0.0	14.0	14.1
Prop In Lane				1.00		1.00	0.00		0.00	0.00		0.34
Lane Grp Cap(c), veh/h				1132	0	486	0	1819	0	0	907	890
V/C Ratio(X)				0.90	0.00	0.64	0.00	0.36	0.00	0.00	0.67	0.67
Avail Cap(c_a), veh/h				1140	0	489	0	1819	0	0	907	890
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.67	1.67	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.00	0.89	0.00	0.00	0.80	0.80
Uniform Delay (d), s/veh				18.0	0.0	16.1	0.0	2.1	0.0	0.0	10.0	10.0
Incr Delay (d2), s/veh				10.4	0.0	3.0	0.0	0.5	0.0	0.0	3.2	3.3
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				9.0	0.0	4.5	0.0	1.0	0.0	0.0	7.6	7.5
LnGrp Delay(d),s/veh				28.4	0.0	19.1	0.0	2.6	0.0	0.0	13.2	13.3
LnGrp LOS				C		B		A			B	B
Approach Vol, veh/h					1335			663			1208	
Approach Delay, s/veh					26.2			2.6			13.2	
Approach LOS					C			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		33.4				33.4		21.6
Change Period (Y+Rc), s		5.3				5.3		4.2
Max Green Setting (Gmax), s		28.0				28.0		17.5
Max Q Clear Time (g_c+I1), s		4.2				16.1		17.1
Green Ext Time (p_c), s		16.7				9.5		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	16.4
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	51	70	0	0	0	0	1078	1034	0	1346	409
Future Volume (vph)	39	51	70	0	0	0	0	1078	1034	0	1346	409
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.6	4.6					4.9	4.9		4.9	4.0
Lane Util. Factor		1.00	0.88					0.95	1.00		0.91	1.00
Frpb, ped/bikes		1.00	1.00					1.00	1.00		1.00	0.97
Flpb, ped/bikes		1.00	1.00					1.00	1.00		1.00	1.00
Frt		1.00	0.85					1.00	0.85		1.00	0.85
Flt Protected		0.98	1.00					1.00	1.00		1.00	1.00
Satd. Flow (prot)		1757	2694					3455	1546		4964	1501
Flt Permitted		0.98	1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)		1757	2694					3455	1546		4964	1501
Peak-hour factor, PHF	0.80	0.72	0.75	0.92	0.92	0.92	0.92	0.85	0.94	0.92	0.96	0.82
Adj. Flow (vph)	49	71	93	0	0	0	0	1268	1100	0	1402	499
RTOR Reduction (vph)	0	0	82	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	120	11	0	0	0	0	1268	1100	0	1402	499
Confl. Peds. (#/hr)	13					13	11		1	1		11
Confl. Bikes (#/hr)												9
Heavy Vehicles (%)	6%	0%	2%	0%	0%	0%	0%	1%	1%	0%	1%	1%
Turn Type	Split	NA	Perm					NA	Prot		NA	Free
Protected Phases	2	2						1 3 4	1 3 4		1 3 4	
Permitted Phases			2									Free
Actuated Green, G (s)		12.8	12.8					88.4	88.4		88.4	110.0
Effective Green, g (s)		12.8	12.8					84.2	84.2		84.2	110.0
Actuated g/C Ratio		0.12	0.12					0.77	0.77		0.77	1.00
Clearance Time (s)		4.6	4.6									
Vehicle Extension (s)		3.0	3.0									
Lane Grp Cap (vph)		204	313					2644	1183		3799	1501
v/s Ratio Prot		c0.07						0.37	c0.71		0.28	
v/s Ratio Perm			0.00									c0.33
v/c Ratio		0.59	0.03					0.48	0.93		0.37	0.33
Uniform Delay, d1		46.1	43.1					4.8	10.5		4.2	0.0
Progression Factor		1.00	1.00					0.20	1.52		1.16	1.00
Incremental Delay, d2		4.3	0.0					0.0	1.5		0.0	0.3
Delay (s)		50.4	43.2					1.0	17.5		4.9	0.3
Level of Service		D	D					A	B		A	A
Approach Delay (s)		47.2			0.0			8.6			3.7	
Approach LOS		D			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	17.9
Intersection Capacity Utilization	77.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

CUMULATIVE PLUS PROJECT CONDITIONS SYNCHRO OUTPUT SHEETS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	712	37	21	1000	54	56	2	28	72	1	84
Future Volume (veh/h)	21	712	37	21	1000	54	56	2	28	72	1	84
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1822	1900	1792	1837	1900	1900	1690	1900	1900	1846	1900
Adj Flow Rate, veh/h	38	937	46	38	1235	69	78	4	51	109	4	111
Adj No. of Lanes	0	2	0	1	2	0	0	1	0	0	1	0
Peak Hour Factor	0.56	0.76	0.80	0.56	0.81	0.78	0.72	0.50	0.55	0.66	0.25	0.76
Percent Heavy Veh, %	4	4	4	6	3	3	0	0	0	0	0	0
Cap, veh/h	103	1849	89	362	2029	113	259	33	118	239	33	173
Arrive On Green	0.61	0.61	0.61	0.61	0.61	0.61	0.23	0.23	0.23	0.23	0.23	0.23
Sat Flow, veh/h	55	3056	147	548	3353	187	699	144	524	636	146	767
Grp Volume(v), veh/h	513	0	508	38	642	662	133	0	0	224	0	0
Grp Sat Flow(s),veh/h/ln	1632	0	1626	548	1745	1795	1368	0	0	1549	0	0
Q Serve(g_s), s	0.0	0.0	10.0	2.4	12.9	12.9	0.0	0.0	0.0	2.6	0.0	0.0
Cycle Q Clear(g_c), s	8.7	0.0	10.0	12.4	12.9	12.9	4.3	0.0	0.0	6.9	0.0	0.0
Prop In Lane	0.07		0.09	1.00		0.10	0.59		0.38	0.49		0.50
Lane Grp Cap(c), veh/h	1057	0	984	362	1056	1086	410	0	0	444	0	0
V/C Ratio(X)	0.49	0.00	0.52	0.10	0.61	0.61	0.32	0.00	0.00	0.50	0.00	0.00
Avail Cap(c_a), veh/h	1086	0	1017	373	1092	1123	689	0	0	764	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.1	0.0	6.3	9.9	6.9	6.9	18.4	0.0	0.0	19.3	0.0	0.0
Incr Delay (d2), s/veh	0.7	0.0	0.9	0.3	1.5	1.4	1.0	0.0	0.0	1.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	0.0	4.6	0.4	6.5	6.7	1.8	0.0	0.0	3.3	0.0	0.0
LnGrp Delay(d),s/veh	6.8	0.0	7.2	10.2	8.4	8.3	19.4	0.0	0.0	21.2	0.0	0.0
LnGrp LOS	A		A	B	A	A	B			C		
Approach Vol, veh/h		1021			1342			133			224	
Approach Delay, s/veh		7.0			8.4			19.4			21.2	
Approach LOS		A			A			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		38.9		17.1		38.9		17.1
Change Period (Y+Rc), s		5.0		4.5		5.0		4.5
Max Green Setting (Gmax), s		35.0		25.0		35.0		25.0
Max Q Clear Time (g_c+I1), s		12.0		6.3		14.9		8.9
Green Ext Time (p_c), s		21.5		3.7		18.9		3.5

Intersection Summary	
HCM 2010 Ctrl Delay	9.5
HCM 2010 LOS	A

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	817	2	9	1297	1	2
Future Vol, veh/h	817	2	9	1297	1	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	70	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	888	2	10	1410	1	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	890	0	1613	445
Stage 1	-	-	-	-	889	-
Stage 2	-	-	-	-	724	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	757	-	95	561
Stage 1	-	-	-	-	362	-
Stage 2	-	-	-	-	441	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	757	-	94	561
Mov Cap-2 Maneuver	-	-	-	-	94	-
Stage 1	-	-	-	-	362	-
Stage 2	-	-	-	-	435	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	22.3
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	211	-	-	757	-
HCM Lane V/C Ratio	0.015	-	-	0.013	-
HCM Control Delay (s)	22.3	-	-	9.8	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

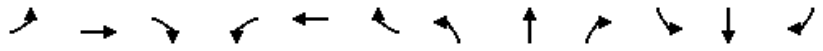
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	390	428	157	624	6	687	6	95	0	10	3
Future Volume (veh/h)	1	390	428	157	624	6	687	6	95	0	10	3
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.96	1.00		0.99	1.00		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1827	1776	1792	1822	1900	1863	1864	1827	1900	1418	1900
Adj Flow Rate, veh/h	4	542	571	224	734	14	891	0	156	0	22	8
Adj No. of Lanes	1	2	1	1	2	0	2	0	1	0	1	0
Peak Hour Factor	0.25	0.72	0.75	0.70	0.85	0.42	0.78	0.42	0.61	0.92	0.45	0.38
Percent Heavy Veh, %	0	4	7	6	4	4	2	0	4	22	22	22
Cap, veh/h	8	1151	489	258	1662	32	1053	0	456	0	28	10
Arrive On Green	0.00	0.33	0.33	0.15	0.48	0.48	0.30	0.00	0.30	0.00	0.03	0.03
Sat Flow, veh/h	1810	3471	1476	1707	3471	66	3548	0	1537	0	975	355
Grp Volume(v), veh/h	4	542	571	224	366	382	891	0	156	0	0	30
Grp Sat Flow(s),veh/h/ln	1810	1736	1476	1707	1731	1806	1774	0	1537	0	0	1330
Q Serve(g_s), s	0.2	11.9	32.0	12.4	13.5	13.5	22.8	0.0	7.7	0.0	0.0	2.2
Cycle Q Clear(g_c), s	0.2	11.9	32.0	12.4	13.5	13.5	22.8	0.0	7.7	0.0	0.0	2.2
Prop In Lane	1.00		1.00	1.00		0.04	1.00		1.00	0.00		0.27
Lane Grp Cap(c), veh/h	8	1151	489	258	828	865	1053	0	456	0	0	38
V/C Ratio(X)	0.52	0.47	1.17	0.87	0.44	0.44	0.85	0.00	0.34	0.00	0.00	0.79
Avail Cap(c_a), veh/h	600	1151	489	566	828	865	1470	0	637	0	0	276
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	48.0	25.6	32.3	40.0	16.6	16.6	31.9	0.0	26.6	0.0	0.0	46.6
Incr Delay (d2), s/veh	19.2	1.1	95.4	3.4	1.3	1.3	3.4	0.0	0.4	0.0	0.0	33.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	5.9	25.9	6.1	6.7	7.0	11.6	0.0	3.3	0.0	0.0	1.1
LnGrp Delay(d),s/veh	67.1	26.6	127.6	43.4	18.0	17.9	35.3	0.0	27.0	0.0	0.0	80.4
LnGrp LOS	E	C	F	D	B	B	D		C			F
Approach Vol, veh/h		1117			972			1047			30	
Approach Delay, s/veh		78.4			23.8			34.1			80.4	
Approach LOS		E			C			C			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	19.1	37.0		7.3	4.9	51.2		33.1
Change Period (Y+Rc), s	4.5	5.0		4.5	4.5	5.0		4.5
Max Green Setting (Gmax), s	32.0	32.0		20.0	32.0	31.0		40.0
Max Q Clear Time (g_c+I1), s	14.4	34.0		4.2	2.2	15.5		24.8
Green Ext Time (p_c), s	0.3	0.0		0.1	0.0	14.1		3.9

Intersection Summary	
HCM 2010 Ctrl Delay	47.0
HCM 2010 LOS	D

Notes

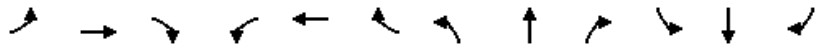
User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	454	77	191	739	0	133	0	206	0	0	0
Future Volume (veh/h)	1	454	77	191	739	0	133	0	206	0	0	0
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		1.00	0.99		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1807	1900	1863	1827	1900	1900	1868	1900	1900	1900	1900
Adj Flow Rate, veh/h	1	605	101	269	812	0	160	0	355	0	0	0
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	0
Peak Hour Factor	0.75	0.75	0.76	0.71	0.91	0.92	0.83	0.92	0.58	0.92	0.92	0.92
Percent Heavy Veh, %	0	5	5	2	4	4	0	0	0	0	0	0
Cap, veh/h	349	1569	261	386	1861	0	212	12	382	0	691	0
Arrive On Green	0.54	0.54	0.54	0.54	0.54	0.00	0.36	0.00	0.36	0.00	0.00	0.00
Sat Flow, veh/h	683	2928	488	738	3563	0	439	34	1050	0	1900	0
Grp Volume(v), veh/h	1	354	352	269	812	0	515	0	0	0	0	0
Grp Sat Flow(s),veh/h/ln	683	1717	1699	738	1736	0	1523	0	0	0	1900	0
Q Serve(g_s), s	0.1	10.8	10.9	30.2	12.7	0.0	27.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	12.8	10.8	10.9	41.1	12.7	0.0	29.2	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		0.29	1.00		0.00	0.31		0.69	0.00		0.00
Lane Grp Cap(c), veh/h	349	920	911	386	1861	0	607	0	0	0	691	0
V/C Ratio(X)	0.00	0.38	0.39	0.70	0.44	0.00	0.85	0.00	0.00	0.00	0.00	0.00
Avail Cap(c_a), veh/h	439	1145	1133	483	2316	0	1066	0	0	0	1268	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	16.5	12.2	12.2	24.2	12.6	0.0	27.4	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.1	0.1	1.9	0.1	0.0	1.3	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	5.1	5.1	6.3	6.1	0.0	12.5	0.0	0.0	0.0	0.0	0.0
LnGrp Delay(d),s/veh	16.5	12.3	12.3	26.2	12.7	0.0	28.7	0.0	0.0	0.0	0.0	0.0
LnGrp LOS	B	B	B	C	B		C					
Approach Vol, veh/h		707			1081			515			0	
Approach Delay, s/veh		12.3			16.0			28.7			0.0	
Approach LOS		B			B			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		52.7		37.2		52.7		37.2
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		60.0		60.0		60.0		60.0
Max Q Clear Time (g_c+I1), s		14.8		0.0		43.1		31.2
Green Ext Time (p_c), s		5.9		0.0		5.1		1.5

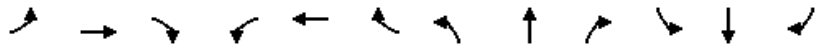
Intersection Summary	
HCM 2010 Ctrl Delay	17.7
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	32	564	64	14	847	10	44	13	34	7	2	39
Future Volume (veh/h)	32	564	64	14	847	10	44	13	34	7	2	39
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	0.88		0.89	0.94		0.85
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1700	1639	1700	1700	1636	1700	1900	1871	1900	1900	1900	1900
Adj Flow Rate, veh/h	55	752	136	28	996	22	100	28	63	23	4	71
Adj No. of Lanes	1	2	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.58	0.75	0.47	0.50	0.85	0.45	0.44	0.46	0.54	0.30	0.50	0.55
Percent Heavy Veh, %	0	4	4	0	4	4	0	0	0	0	0	0
Cap, veh/h	174	1809	327	408	1099	24	197	61	95	101	37	221
Arrive On Green	0.69	0.69	0.69	0.69	0.69	0.69	0.20	0.20	0.20	0.20	0.20	0.20
Sat Flow, veh/h	503	2622	474	569	1593	35	649	305	469	233	183	1095
Grp Volume(v), veh/h	55	447	441	28	0	1018	191	0	0	98	0	0
Grp Sat Flow(s),veh/h/ln	503	1557	1539	569	0	1628	1423	0	0	1511	0	0
Q Serve(g_s), s	8.4	10.3	10.3	1.9	0.0	42.8	5.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	51.2	10.3	10.3	12.2	0.0	42.8	9.6	0.0	0.0	4.7	0.0	0.0
Prop In Lane	1.00		0.31	1.00		0.02	0.52		0.33	0.23		0.72
Lane Grp Cap(c), veh/h	174	1074	1062	408	0	1123	353	0	0	358	0	0
V/C Ratio(X)	0.32	0.42	0.42	0.07	0.00	0.91	0.54	0.00	0.00	0.27	0.00	0.00
Avail Cap(c_a), veh/h	191	1129	1115	428	0	1180	485	0	0	494	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	31.8	5.6	5.6	8.2	0.0	10.6	30.0	0.0	0.0	28.3	0.0	0.0
Incr Delay (d2), s/veh	0.4	0.1	0.1	0.0	0.0	9.5	0.5	0.0	0.0	0.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	4.4	4.3	0.3	0.0	21.6	4.0	0.0	0.0	1.9	0.0	0.0
LnGrp Delay(d),s/veh	32.2	5.7	5.7	8.3	0.0	20.1	30.4	0.0	0.0	28.4	0.0	0.0
LnGrp LOS	C	A	A	A		C	C			C		
Approach Vol, veh/h		943			1046			191			98	
Approach Delay, s/veh		7.2			19.8			30.4			28.4	
Approach LOS		A			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		61.6		21.2		61.6		21.2
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		60.0		25.0		60.0		25.0
Max Q Clear Time (g_c+I1), s		53.2		6.7		44.8		11.6
Green Ext Time (p_c), s		3.9		0.8		6.3		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	15.8
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	245	298	62	139	451	299	49	312	33	168	328	371
Future Volume (veh/h)	245	298	62	139	451	299	49	312	33	168	328	371
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00	1.00		0.98	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1646	1700	1650	1650	1667	1574	1630	1700	1881	1827	1845
Adj Flow Rate, veh/h	331	368	79	224	518	0	98	371	41	215	415	476
Adj No. of Lanes	1	2	0	1	1	1	1	1	0	1	1	1
Peak Hour Factor	0.74	0.81	0.78	0.62	0.87	0.68	0.50	0.84	0.81	0.78	0.79	0.78
Percent Heavy Veh, %	2	4	4	3	3	2	8	4	4	1	4	3
Cap, veh/h	308	929	197	242	535	459	114	385	43	235	590	503
Arrive On Green	0.19	0.36	0.36	0.15	0.32	0.00	0.08	0.27	0.27	0.13	0.32	0.32
Sat Flow, veh/h	1587	2551	541	1572	1650	1417	1499	1439	159	1792	1827	1556
Grp Volume(v), veh/h	331	224	223	224	518	0	98	0	412	215	415	476
Grp Sat Flow(s),veh/h/ln	1587	1564	1529	1572	1650	1417	1499	0	1598	1792	1827	1556
Q Serve(g_s), s	35.0	19.2	19.6	25.4	55.8	0.0	11.7	0.0	45.9	21.4	35.9	53.9
Cycle Q Clear(g_c), s	35.0	19.2	19.6	25.4	55.8	0.0	11.7	0.0	45.9	21.4	35.9	53.9
Prop In Lane	1.00		0.35	1.00		1.00	1.00		0.10	1.00		1.00
Lane Grp Cap(c), veh/h	308	569	557	242	535	459	114	0	428	235	590	503
V/C Ratio(X)	1.08	0.39	0.40	0.93	0.97	0.00	0.86	0.00	0.96	0.92	0.70	0.95
Avail Cap(c_a), veh/h	308	569	557	305	548	471	249	0	442	397	590	503
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	72.8	42.6	42.7	75.4	60.1	0.0	82.5	0.0	65.2	77.5	53.5	59.6
Incr Delay (d2), s/veh	73.0	0.4	0.5	29.1	30.1	0.0	7.2	0.0	32.7	10.3	3.7	27.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	21.5	8.3	8.4	13.0	29.9	0.0	5.1	0.0	24.1	11.3	18.7	27.0
LnGrp Delay(d),s/veh	145.8	43.0	43.2	104.5	90.2	0.0	89.7	0.0	98.0	87.7	57.3	86.8
LnGrp LOS	F	D	D	F	F		F		F	F	E	F
Approach Vol, veh/h		778			742			510			1106	
Approach Delay, s/veh		86.8			94.5			96.4			75.9	
Approach LOS		F			F			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	31.3	69.8	17.2	62.4	38.5	62.5	27.2	52.4
Change Period (Y+Rc), s	3.5	4.0	3.5	4.0	3.5	4.0	3.5	4.0
Max Green Setting (Gmax), s	25.8	60.0	30.0	50.0	35.0	60.0	40.0	50.0
Max Q Clear Time (g_c+I1), s	27.4	21.6	13.7	55.9	37.0	57.8	23.4	47.9
Green Ext Time (p_c), s	0.4	7.9	0.1	0.0	0.0	0.7	0.3	0.4

Intersection Summary	
HCM 2010 Ctrl Delay	86.3
HCM 2010 LOS	F

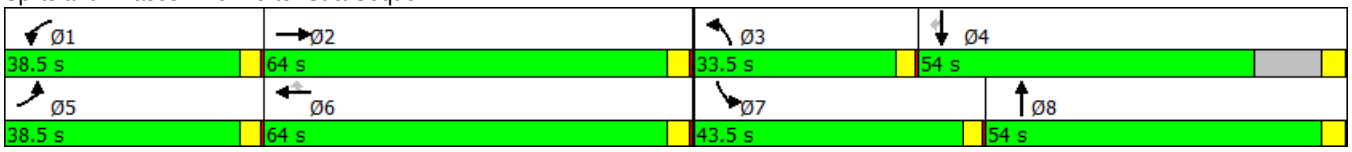
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	245	298	62	139	452	299	49	312	33	168	328	371
Future Volume (vph)	245	298	62	139	452	299	49	312	33	168	328	371
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1900	1900	1900
Storage Length (ft)	140		0	0		100	180		0	540		70
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (ft)	45			25			50			300		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	0.99		0.98		0.95	0.99	1.00		0.99		0.97
Frt		0.973				0.850		0.985				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1531	2907	0	1516	1595	1369	1446	1547	0	1728	1766	1516
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1517	2907	0	1483	1595	1302	1437	1547	0	1709	1766	1470
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13				109		3				112
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		328			1072			1033			1279	
Travel Time (s)		8.9			29.2			28.2			34.9	
Confl. Peds. (#/hr)	3		6	6		3	2		5	5		2
Confl. Bikes (#/hr)			5			10			3			
Peak Hour Factor	0.74	0.81	0.78	0.62	0.87	0.68	0.50	0.84	0.81	0.78	0.79	0.78
Heavy Vehicles (%)	2%	4%	0%	3%	3%	2%	8%	4%	7%	1%	4%	3%
Adj. Flow (vph)	331	368	79	224	520	440	98	371	41	215	415	476
Shared Lane Traffic (%)												
Lane Group Flow (vph)	331	447	0	224	520	440	98	412	0	215	415	476
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		20			20			22			14	
Two way Left Turn Lane												
Headway Factor	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		12	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6						4
Detector Phase	5	2		1	6	6	3	8		7	4	4
Switch Phase												
Minimum Initial (s)	5.0	7.0		5.0	7.0	7.0	5.0	8.0		5.0	7.0	7.0
Minimum Split (s)	8.5	19.0		8.5	21.0	21.0	8.5	20.0		8.5	23.0	23.0
Total Split (s)	38.5	64.0		38.5	64.0	64.0	33.5	54.0		43.5	54.0	54.0
Total Split (%)	19.3%	32.0%		19.3%	32.0%	32.0%	16.8%	27.0%		21.8%	27.0%	27.0%
Maximum Green (s)	35.0	60.0		35.0	60.0	60.0	30.0	50.0		40.0	50.0	50.0
Yellow Time (s)	3.0	3.5		3.0	3.5	3.5	3.0	3.5		3.0	3.5	3.5
All-Red Time (s)	0.5	0.5		0.5	0.5	0.5	0.5	0.5		0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	3.5	4.0		3.5	4.0	4.0	3.5	4.0		3.5	4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	4.0	3.0		3.0	3.0	3.0	2.0	3.0		2.0	3.0	3.0
Recall Mode	None	Min		None	Min	Min	None	None		None	None	None
Walk Time (s)		8.0			8.0	8.0		8.0			8.0	8.0
Flash Dont Walk (s)		7.0			9.0	9.0		8.0			11.0	11.0
Pedestrian Calls (#/hr)		3			3	3		2			2	2
Act Effct Green (s)	35.0	63.9		31.2	60.1	60.1	17.1	50.1		27.6	60.6	60.6
Actuated g/C Ratio	0.19	0.34		0.17	0.32	0.32	0.09	0.27		0.15	0.32	0.32
v/c Ratio	1.16	0.45		0.89	1.02	0.90	0.75	1.00		0.85	0.73	0.87
Control Delay	167.0	50.2		110.3	105.8	67.5	115.3	109.1		106.2	65.7	62.4
Queue Delay	4.8	6.2		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	171.9	56.3		110.3	105.8	67.5	115.3	109.1		106.2	65.7	62.4
LOS	F	E		F	F	E	F	F		F	E	E
Approach Delay		105.5			92.4			110.3			72.1	
Approach LOS		F			F			F			E	
90th %ile Green (s)	35.0	60.0		35.0	60.0	60.0	25.1	50.0		37.9	62.8	62.8
90th %ile Term Code	Max	Hold		Max	Max	Max	Gap	Max		Gap	Hold	Hold
70th %ile Green (s)	35.0	60.0		35.0	60.0	60.0	20.2	50.0		31.7	61.5	61.5
70th %ile Term Code	Max	Hold		Max	Max	Max	Gap	Max		Gap	Hold	Hold
50th %ile Green (s)	35.0	61.0		34.0	60.0	60.0	17.0	50.0		27.5	60.5	60.5
50th %ile Term Code	Max	Hold		Gap	Max	Max	Gap	Max		Gap	Hold	Hold
30th %ile Green (s)	35.0	65.6		29.4	60.0	60.0	14.0	50.0		23.6	59.6	59.6
30th %ile Term Code	Max	Hold		Gap	Max	Max	Gap	Max		Gap	Hold	Hold
10th %ile Green (s)	35.0	71.7		23.3	60.0	60.0	9.8	50.0		18.2	58.4	58.4
10th %ile Term Code	Max	Hold		Gap	Max	Max	Gap	Max		Gap	Hold	Hold
Stops (vph)	201	271		130	394	212	47	300		160	288	270
Fuel Used(gal)	10	6		5	15	8	2	12		6	9	10
CO Emissions (g/hr)	684	400		342	1074	535	123	828		425	634	684
NOx Emissions (g/hr)	133	78		66	209	104	24	161		83	123	133
VOC Emissions (g/hr)	159	93		79	249	124	29	192		98	147	159
Dilemma Vehicles (#)	0	0		0	0	0	0	0		0	0	0
Queue Length 50th (ft)	~480	225		269	~675	415	120	509		263	456	446
Queue Length 95th (ft)	#551	270		257	#943	376	103	#722		310	527	503

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		248			992			953			1199	
Turn Bay Length (ft)	140					100	180			540		70
Base Capacity (vph)	285	997		282	510	490	231	414		368	573	553
Starvation Cap Reductn	84	486		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	1.65	0.87		0.79	1.02	0.90	0.42	1.00		0.58	0.72	0.86

Intersection Summary			
Area Type:	Other		
Cycle Length: 200			
Actuated Cycle Length: 187.8			
Natural Cycle: 110			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.16			
Intersection Signal Delay: 91.5		Intersection LOS: F	
Intersection Capacity Utilization 85.0%		ICU Level of Service E	
Analysis Period (min) 15			
90th %ile Actuated Cycle: 197.9			
70th %ile Actuated Cycle: 191.7			
50th %ile Actuated Cycle: 187.5			
30th %ile Actuated Cycle: 183.6			
10th %ile Actuated Cycle: 178.2			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 6: Porter St & Soquel Dr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1700	1700	1700	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	140		0	0		100	180		0	540		70
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (ft)	45			25			50			300		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	0.99		0.98		0.95	0.99	1.00		0.99		0.97
Frt		0.973				0.850		0.985				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1531	2907	0	1516	1595	1369	1446	1547	0	1728	1766	1516
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1517	2907	0	1483	1595	1302	1437	1547	0	1709	1766	1470
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13				109		3				112
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		328			1072			1033			1279	
Travel Time (s)		8.9			29.2			28.2			34.9	

Intersection Summary	
Area Type:	Other

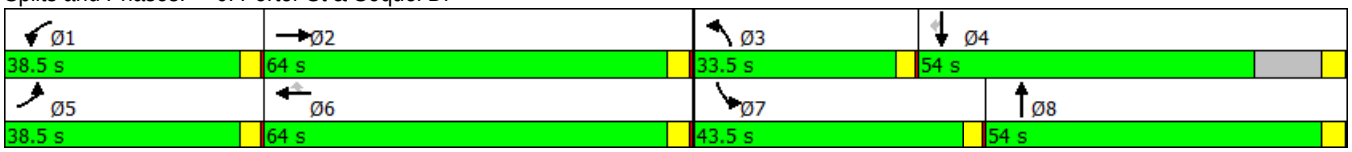
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	245	298	62	139	452	299	49	312	33	168	328	371
Future Volume (vph)	245	298	62	139	452	299	49	312	33	168	328	371
Confl. Peds. (#/hr)	3		6	6		3	2		5	5		2
Confl. Bikes (#/hr)			5			10			3			
Peak Hour Factor	0.74	0.81	0.78	0.62	0.87	0.68	0.50	0.84	0.81	0.78	0.79	0.78
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	4%	0%	3%	3%	2%	8%	4%	7%	1%	4%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	331	368	79	224	520	440	98	371	41	215	415	476
Shared Lane Traffic (%)												
Lane Group Flow (vph)	331	447	0	224	520	440	98	412	0	215	415	476

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	245	298	139	452	299	49	312	168	328	371
Future Volume (vph)	245	298	139	452	299	49	312	168	328	371
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Prot	NA	Perm
Protected Phases	5	2	1	6		3	8	7	4	
Permitted Phases					6					4
Detector Phase	5	2	1	6	6	3	8	7	4	4
Switch Phase										
Minimum Initial (s)	5.0	7.0	5.0	7.0	7.0	5.0	8.0	5.0	7.0	7.0
Minimum Split (s)	8.5	19.0	8.5	21.0	21.0	8.5	20.0	8.5	23.0	23.0
Total Split (s)	38.5	64.0	38.5	64.0	64.0	33.5	54.0	43.5	54.0	54.0
Total Split (%)	19.3%	32.0%	19.3%	32.0%	32.0%	16.8%	27.0%	21.8%	27.0%	27.0%
Yellow Time (s)	3.0	3.5	3.0	3.5	3.5	3.0	3.5	3.0	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.5	4.0	3.5	4.0	4.0	3.5	4.0	3.5	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min	None	Min	Min	None	None	None	None	None
Act Effct Green (s)	35.0	63.9	31.2	60.1	60.1	17.1	50.1	27.6	60.6	60.6
Actuated g/C Ratio	0.19	0.34	0.17	0.32	0.32	0.09	0.27	0.15	0.32	0.32
v/c Ratio	1.16	0.45	0.89	1.02	0.90	0.75	1.00	0.85	0.73	0.87
Control Delay	167.0	50.2	110.3	105.8	67.5	115.3	109.1	106.2	65.7	62.4
Queue Delay	4.8	6.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	171.9	56.3	110.3	105.8	67.5	115.3	109.1	106.2	65.7	62.4
LOS	F	E	F	F	E	F	F	F	E	E
Approach Delay		105.5		92.4			110.3		72.1	
Approach LOS		F		F			F		E	

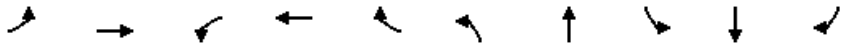
Intersection Summary	
Cycle Length: 200	
Actuated Cycle Length: 187.8	
Natural Cycle: 110	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.16	
Intersection Signal Delay: 91.5	Intersection LOS: F
Intersection Capacity Utilization 85.0%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 6: Porter St & Soquel Dr



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Protected Phases	5	2	1	6		3	8	7	4	
Permitted Phases					6					4
Minimum Initial (s)	5.0	7.0	5.0	7.0	7.0	5.0	8.0	5.0	7.0	7.0
Minimum Split (s)	8.5	19.0	8.5	21.0	21.0	8.5	20.0	8.5	23.0	23.0
Total Split (s)	38.5	64.0	38.5	64.0	64.0	33.5	54.0	43.5	54.0	54.0
Total Split (%)	19.3%	32.0%	19.3%	32.0%	32.0%	16.8%	27.0%	21.8%	27.0%	27.0%
Maximum Green (s)	35.0	60.0	35.0	60.0	60.0	30.0	50.0	40.0	50.0	50.0
Yellow Time (s)	3.0	3.5	3.0	3.5	3.5	3.0	3.5	3.0	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	3.0	3.0	3.0	3.0	2.0	3.0	2.0	3.0	3.0
Minimum Gap (s)	4.0	3.0	3.0	3.0	3.0	2.0	3.0	2.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	Min	None	Min	Min	None	None	None	None	None
Walk Time (s)		8.0		8.0	8.0		8.0		8.0	8.0
Flash Dont Walk (s)		7.0		9.0	9.0		8.0		11.0	11.0
Pedestrian Calls (#/hr)		3		3	3		2		2	2
90th %ile Green (s)	35.0	60.0	35.0	60.0	60.0	25.1	50.0	37.9	62.8	62.8
90th %ile Term Code	Max	Hold	Max	Max	Max	Gap	Max	Gap	Hold	Hold
70th %ile Green (s)	35.0	60.0	35.0	60.0	60.0	20.2	50.0	31.7	61.5	61.5
70th %ile Term Code	Max	Hold	Max	Max	Max	Gap	Max	Gap	Hold	Hold
50th %ile Green (s)	35.0	61.0	34.0	60.0	60.0	17.0	50.0	27.5	60.5	60.5
50th %ile Term Code	Max	Hold	Gap	Max	Max	Gap	Max	Gap	Hold	Hold
30th %ile Green (s)	35.0	65.6	29.4	60.0	60.0	14.0	50.0	23.6	59.6	59.6
30th %ile Term Code	Max	Hold	Gap	Max	Max	Gap	Max	Gap	Hold	Hold
10th %ile Green (s)	35.0	71.7	23.3	60.0	60.0	9.8	50.0	18.2	58.4	58.4
10th %ile Term Code	Max	Hold	Gap	Max	Max	Gap	Max	Gap	Hold	Hold

Intersection Summary
Cycle Length: 200
Actuated Cycle Length: 187.8
Control Type: Actuated-Uncoordinated
90th %ile Actuated Cycle: 197.9
70th %ile Actuated Cycle: 191.7
50th %ile Actuated Cycle: 187.5
30th %ile Actuated Cycle: 183.6
10th %ile Actuated Cycle: 178.2



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	331	447	224	520	440	98	412	215	415	476
v/c Ratio	1.16	0.45	0.89	1.02	0.90	0.75	1.00	0.85	0.73	0.87
Control Delay	167.0	50.2	110.3	105.8	67.5	115.3	109.1	106.2	65.7	62.4
Queue Delay	4.8	6.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	171.9	56.3	110.3	105.8	67.5	115.3	109.1	106.2	65.7	62.4
Queue Length 50th (ft)	~480	225	269	~675	415	120	509	263	456	446
Queue Length 95th (ft)	#551	270	257	#943	376	103	#722	310	527	503
Internal Link Dist (ft)		248		992			953		1199	
Turn Bay Length (ft)	140				100	180		540		70
Base Capacity (vph)	285	997	282	510	490	231	414	368	573	553
Starvation Cap Reductn	84	486	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.65	0.87	0.79	1.02	0.90	0.42	1.00	0.58	0.72	0.86

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		20			20			22			14	
Two way Left Turn Lane												
Headway Factor	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		12	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	245	298	62	139	452	299	49	312	33	168	328	371
Pedestrians	3		6	6		3	2		5	5		2
Ped Button		Yes			Yes			Yes			Yes	
Pedestrian Timing (s)		15.0			17.0			16.0			19.0	
Free Right			No			No			No			No
Ideal Flow	1700	1700	1700	1700	1700	1700	1700	1700	1700	1900	1900	1900
Lost Time (s)	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0
Minimum Green (s)	5.0	7.0	4.0	5.0	7.0	7.0	5.0	8.0	4.0	5.0	7.0	7.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	245	360	0	139	452	299	49	345	0	168	328	371
Lane Utilization Factor	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.95	0.97	0.85	0.95	1.00	0.85	0.95	0.99	0.85	0.95	1.00	0.85
Saturated Flow (vph)	1615	3153	0	1615	1700	1445	1615	1676	0	1805	1900	1615
Ped Intf Time (s)	0.0	0.1	0.8	0.0	0.0	0.4	0.0	0.1	0.6	0.0	0.0	0.3
Pedestrian Frequency (%)		0.18			0.10			0.15			0.06	
Protected Option Allowed		Yes			Yes			Yes			Yes	
Reference Time (s)	18.2	13.8	0.0	10.3	31.9	25.2	3.6	24.8	0.0	11.2	20.7	27.8
Adj Reference Time (s)	22.2	18.0	0.0	14.3	35.9	29.2	9.0	28.8	0.0	15.2	24.7	31.8
Permitted Option												
Adj Saturation A (vph)	108	1577		108	1700		108	1676		120	1900	
Reference Time A (s)	273.1	13.8		154.9	31.9		54.6	24.8		167.5	20.7	
Adj Saturation B (vph	NA	NA		NA	NA		NA	NA		NA	NA	
Reference Time B (s)	NA	NA		NA	NA		NA	NA		NA	NA	
Reference Time (s)		273.1			154.9			54.6			167.5	
Adj Reference Time (s)		277.1			158.9			58.6			171.5	
Split Option												
Ref Time Combined (s)	18.2	13.8		10.3	31.9		3.6	24.8		11.2	20.7	
Ref Time Seperate (s)	18.2	11.5		10.3	31.9		3.6	22.4		11.2	20.7	
Reference Time (s)	18.2	18.2		31.9	31.9		24.8	24.8		20.7	20.7	
Adj Reference Time (s)	22.2	22.2		35.9	35.9		28.8	28.8		24.7	24.7	

Summary	EB WB	NB SB	Combined
Protected Option (s)	58.1	43.9	
Permitted Option (s)	277.1	171.5	
Split Option (s)	58.1	53.5	
Minimum (s)	58.1	43.9	102.0

Right Turns	WBR	SBR
Adj Reference Time (s)	29.2	31.8
Cross Thru Ref Time (s)	28.8	35.9
Oncoming Left Ref Time (s)	22.2	9.0
Combined (s)	80.2	76.7

Intersection Summary			
Intersection Capacity Utilization	85.0%	ICU Level of Service	E

Reference Times and Phasing Options do not represent an optimized timing plan.

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	3	0	788	592	11
Future Vol, veh/h	0	3	0	788	592	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	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	3	0	857	643	12

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	328	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	668	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	668	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.4	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	668	-	-
HCM Lane V/C Ratio	-	0.005	-	-
HCM Control Delay (s)	-	10.4	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0	-	-

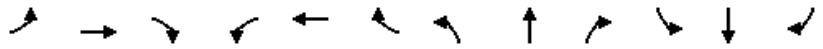
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	1	4	212	3	17	6	756	90	20	546	1
Future Volume (veh/h)	1	1	4	212	3	17	6	756	90	20	546	1
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1169	1900	1759	1773	1900	1583	1827	1696	1712	1776	1900
Adj Flow Rate, veh/h	4	4	8	296	0	0	14	889	132	27	635	4
Adj No. of Lanes	0	1	0	2	1	0	1	2	1	1	2	0
Peak Hour Factor	0.25	0.25	0.50	0.81	0.25	0.63	0.42	0.85	0.68	0.75	0.86	0.25
Percent Heavy Veh, %	100	100	100	8	0	0	20	4	12	11	7	7
Cap, veh/h	6	6	12	559	296	0	21	1521	610	41	1543	10
Arrive On Green	0.02	0.02	0.02	0.17	0.00	0.00	0.01	0.44	0.44	0.02	0.45	0.45
Sat Flow, veh/h	262	262	524	3351	1773	0	1508	3471	1393	1630	3438	22
Grp Volume(v), veh/h	16	0	0	296	0	0	14	889	132	27	312	327
Grp Sat Flow(s),veh/h/ln	1049	0	0	1675	1773	0	1508	1736	1393	1630	1688	1772
Q Serve(g_s), s	0.8	0.0	0.0	4.2	0.0	0.0	0.5	10.1	3.1	0.9	6.5	6.5
Cycle Q Clear(g_c), s	0.8	0.0	0.0	4.2	0.0	0.0	0.5	10.1	3.1	0.9	6.5	6.5
Prop In Lane	0.25		0.50	1.00		0.00	1.00		1.00	1.00		0.01
Lane Grp Cap(c), veh/h	25	0	0	559	296	0	21	1521	610	41	757	795
V/C Ratio(X)	0.64	0.00	0.00	0.53	0.00	0.00	0.66	0.58	0.22	0.67	0.41	0.41
Avail Cap(c_a), veh/h	404	0	0	1612	853	0	580	2004	804	627	974	1023
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.1	0.0	0.0	19.8	0.0	0.0	25.5	11.0	9.1	25.1	9.7	9.7
Incr Delay (d2), s/veh	24.2	0.0	0.0	1.1	0.0	0.0	29.7	0.4	0.2	17.2	0.4	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.0	2.0	0.0	0.0	0.4	4.9	1.2	0.6	3.0	3.2
LnGrp Delay(d),s/veh	49.3	0.0	0.0	20.9	0.0	0.0	55.2	11.4	9.2	42.3	10.0	10.0
LnGrp LOS	D			C			E	B	A	D	B	B
Approach Vol, veh/h		16			296			1035			666	
Approach Delay, s/veh		49.3			20.9			11.7			11.3	
Approach LOS		D			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.3	27.8		13.2	4.7	28.3		5.7
Change Period (Y+Rc), s	4.0	5.0		4.5	4.0	5.0		4.5
Max Green Setting (Gmax), s	20.0	30.0		25.0	20.0	30.0		20.0
Max Q Clear Time (g_c+I1), s	2.9	12.1		6.2	2.5	8.5		2.8
Green Ext Time (p_c), s	0.0	10.7		1.5	0.0	12.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	13.2
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	682	6	479	0	610	414	0	639	186
Future Volume (veh/h)	0	0	0	682	6	479	0	610	414	0	639	186
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1845	1846	1863	0	1834	1900	0	1804	1900
Adj Flow Rate, veh/h				829	0	526	0	678	0	0	718	219
Adj No. of Lanes				2	0	1	0	2	0	0	2	0
Peak Hour Factor				0.83	0.63	0.91	0.92	0.90	0.92	0.92	0.89	0.85
Percent Heavy Veh, %				3	0	2	0	4	4	0	6	6
Cap, veh/h				1115	0	502	0	1742	0	0	1293	394
Arrive On Green				0.32	0.00	0.32	0.00	1.00	0.00	0.00	0.50	0.50
Sat Flow, veh/h				3514	0	1583	0	3668	0	0	2677	789
Grp Volume(v), veh/h				829	0	526	0	678	0	0	476	461
Grp Sat Flow(s),veh/h/ln				1757	0	1583	0	1742	0	0	1714	1661
Q Serve(g_s), s				11.0	0.0	16.5	0.0	0.0	0.0	0.0	10.0	10.0
Cycle Q Clear(g_c), s				11.0	0.0	16.5	0.0	0.0	0.0	0.0	10.0	10.0
Prop In Lane				1.00		1.00	0.00		0.00	0.00		0.47
Lane Grp Cap(c), veh/h				1115	0	502	0	1742	0	0	857	831
V/C Ratio(X)				0.74	0.00	1.05	0.00	0.39	0.00	0.00	0.56	0.56
Avail Cap(c_a), veh/h				1115	0	502	0	1742	0	0	857	831
HCM Platoon Ratio				1.00	1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.00	0.95	0.00	0.00	0.93	0.93
Uniform Delay (d), s/veh				15.9	0.0	17.8	0.0	0.0	0.0	0.0	9.0	9.0
Incr Delay (d2), s/veh				2.8	0.0	53.0	0.0	0.6	0.0	0.0	2.4	2.5
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				5.7	0.0	14.5	0.0	0.2	0.0	0.0	5.2	5.1
LnGrp Delay(d),s/veh				18.7	0.0	70.7	0.0	0.6	0.0	0.0	11.4	11.5
LnGrp LOS				B		F		A			B	B
Approach Vol, veh/h					1355			678			937	
Approach Delay, s/veh					38.9			0.6			11.5	
Approach LOS					D			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		31.3				31.3		20.7
Change Period (Y+Rc), s		5.3				5.3		4.2
Max Green Setting (Gmax), s		26.0				26.0		16.5
Max Q Clear Time (g_c+I1), s		2.0				12.0		18.5
Green Ext Time (p_c), s		14.4				9.8		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	21.5
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	248	0	571	0	0	0	0	776	621	0	1055	266
Future Volume (vph)	248	0	571	0	0	0	0	776	621	0	1055	266
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.6	4.6					4.9	4.9		4.9	4.0
Lane Util. Factor		1.00	0.88					0.95	1.00		0.91	1.00
Frpb, ped/bikes		1.00	1.00					1.00	1.00		1.00	0.98
Flpb, ped/bikes		1.00	1.00					1.00	1.00		1.00	1.00
Frt		1.00	0.85					1.00	0.85		1.00	0.85
Flt Protected		0.95	1.00					1.00	1.00		1.00	1.00
Satd. Flow (prot)		1694	2668					3388	1516		4868	1412
Flt Permitted		0.95	1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)		1694	2668					3388	1516		4868	1412
Peak-hour factor, PHF	0.85	0.92	0.85	0.92	0.92	0.92	0.92	0.91	0.88	0.92	0.86	0.83
Adj. Flow (vph)	292	0	672	0	0	0	0	853	706	0	1227	320
RTOR Reduction (vph)	0	0	191	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	292	481	0	0	0	0	853	706	0	1227	320
Confl. Peds. (#/hr)	5					5	6					6
Confl. Bikes (#/hr)									6			1
Heavy Vehicles (%)	3%	0%	3%	0%	0%	0%	0%	3%	3%	0%	3%	8%
Turn Type	Split	NA	Perm					NA	Prot		NA	Free
Protected Phases	2	2						1 3 4	1 3 4		1 3 4	
Permitted Phases			2									Free
Actuated Green, G (s)		15.4	15.4					79.8	79.8		79.8	104.0
Effective Green, g (s)		15.4	15.4					75.6	75.6		75.6	104.0
Actuated g/C Ratio		0.15	0.15					0.73	0.73		0.73	1.00
Clearance Time (s)		4.6	4.6									
Vehicle Extension (s)		3.0	3.0									
Lane Grp Cap (vph)		250	395					2462	1102		3538	1412
v/s Ratio Prot		0.17						0.25	c0.47		0.25	
v/s Ratio Perm			c0.18									0.23
v/c Ratio		1.17	1.22					0.35	0.64		0.35	0.23
Uniform Delay, d1		44.3	44.3					5.2	7.3		5.2	0.0
Progression Factor		1.00	1.00					0.02	0.86		1.65	1.00
Incremental Delay, d2		110.0	119.1					0.0	0.6		0.0	0.3
Delay (s)		154.3	163.4					0.1	6.8		8.6	0.3
Level of Service		F	F					A	A		A	A
Approach Delay (s)		160.7			0.0			3.2			6.9	
Approach LOS		F			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	41.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	104.0	Sum of lost time (s)	17.9
Intersection Capacity Utilization	60.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	58	1312	47	11	599	86	95	1	17	64	3	54
Future Volume (veh/h)	58	1312	47	11	599	86	95	1	17	64	3	54
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.97	0.99		0.98	0.99		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1900	1900	1868	1900	1900	1841	1900	1900	1882	1900
Adj Flow Rate, veh/h	72	1411	73	26	651	101	123	4	27	86	8	87
Adj No. of Lanes	0	2	0	1	2	0	0	1	0	0	1	0
Peak Hour Factor	0.80	0.93	0.64	0.42	0.92	0.85	0.77	0.25	0.63	0.74	0.38	0.62
Percent Heavy Veh, %	1	1	1	0	2	2	0	0	0	0	0	0
Cap, veh/h	133	1965	101	246	1922	298	339	21	51	221	44	155
Arrive On Green	0.63	0.63	0.63	0.63	0.63	0.63	0.20	0.20	0.20	0.20	0.20	0.20
Sat Flow, veh/h	99	3134	162	361	3066	475	1104	103	257	621	218	776
Grp Volume(v), veh/h	799	0	757	26	376	376	154	0	0	181	0	0
Grp Sat Flow(s),veh/h/ln	1719	0	1675	361	1774	1766	1464	0	0	1615	0	0
Q Serve(g_s), s	4.8	0.0	16.9	2.9	5.5	5.5	0.0	0.0	0.0	0.5	0.0	0.0
Cycle Q Clear(g_c), s	16.2	0.0	16.9	19.8	5.5	5.5	4.6	0.0	0.0	5.0	0.0	0.0
Prop In Lane	0.09		0.10	1.00		0.27	0.80		0.18	0.48		0.48
Lane Grp Cap(c), veh/h	1150	0	1050	246	1113	1108	411	0	0	420	0	0
V/C Ratio(X)	0.70	0.00	0.72	0.11	0.34	0.34	0.37	0.00	0.00	0.43	0.00	0.00
Avail Cap(c_a), veh/h	1165	0	1066	250	1129	1124	748	0	0	799	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.7	0.0	7.0	13.7	4.9	4.9	19.4	0.0	0.0	19.6	0.0	0.0
Incr Delay (d2), s/veh	2.3	0.0	3.0	0.4	0.4	0.4	1.2	0.0	0.0	1.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.5	0.0	8.4	0.3	2.7	2.7	2.2	0.0	0.0	2.6	0.0	0.0
LnGrp Delay(d),s/veh	9.0	0.0	9.9	14.1	5.2	5.2	20.6	0.0	0.0	21.1	0.0	0.0
LnGrp LOS	A		A	B	A	A	C			C		
Approach Vol, veh/h		1556			778			154			181	
Approach Delay, s/veh		9.5			5.5			20.6			21.1	
Approach LOS		A			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		39.5		15.5		39.5		15.5
Change Period (Y+Rc), s		5.0		4.5		5.0		4.5
Max Green Setting (Gmax), s		35.0		25.0		35.0		25.0
Max Q Clear Time (g_c+I1), s		18.9		6.6		21.8		7.0
Green Ext Time (p_c), s		15.4		3.4		12.7		3.4

Intersection Summary	
HCM 2010 Ctrl Delay	9.8
HCM 2010 LOS	A

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1432	1	6	679	3	9
Future Vol, veh/h	1432	1	6	679	3	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	70	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1557	1	7	738	3	10

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1558	0	1939	779
Stage 1	-	-	-	-	1557	-
Stage 2	-	-	-	-	382	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	421	-	57	339
Stage 1	-	-	-	-	159	-
Stage 2	-	-	-	-	660	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	421	-	56	339
Mov Cap-2 Maneuver	-	-	-	-	56	-
Stage 1	-	-	-	-	159	-
Stage 2	-	-	-	-	649	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	31.3
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	150	-	-	421	-
HCM Lane V/C Ratio	0.087	-	-	0.015	-
HCM Control Delay (s)	31.3	-	-	13.7	-
HCM Lane LOS	D	-	-	B	-
HCM 95th %tile Q(veh)	0.3	-	-	0	-

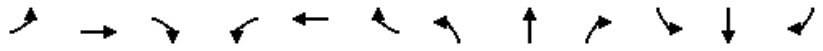
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	851	585	94	270	6	414	20	171	3	19	6
Future Volume (veh/h)	5	851	585	94	270	6	414	20	171	3	19	6
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	1.00		0.97	1.00		0.91
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1881	1810	1869	1900	1845	1853	1845	1900	1900	1900
Adj Flow Rate, veh/h	10	990	643	134	391	14	466	0	214	8	44	19
Adj No. of Lanes	1	2	1	1	2	0	2	0	1	0	1	0
Peak Hour Factor	0.50	0.86	0.91	0.70	0.69	0.42	0.94	0.56	0.80	0.38	0.43	0.31
Percent Heavy Veh, %	0	1	1	5	1	1	3	0	3	0	0	0
Cap, veh/h	18	1470	639	169	1744	62	697	0	302	11	59	26
Arrive On Green	0.01	0.41	0.41	0.10	0.50	0.50	0.20	0.00	0.20	0.05	0.05	0.05
Sat Flow, veh/h	1810	3574	1553	1723	3493	125	3514	0	1523	198	1087	469
Grp Volume(v), veh/h	10	990	643	134	198	207	466	0	214	71	0	0
Grp Sat Flow(s),veh/h/ln	1810	1787	1553	1723	1776	1842	1757	0	1523	1754	0	0
Q Serve(g_s), s	0.4	17.5	32.0	5.9	4.9	4.9	9.5	0.0	10.2	3.1	0.0	0.0
Cycle Q Clear(g_c), s	0.4	17.5	32.0	5.9	4.9	4.9	9.5	0.0	10.2	3.1	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.07	1.00		1.00	0.11		0.27
Lane Grp Cap(c), veh/h	18	1470	639	169	887	920	697	0	302	95	0	0
V/C Ratio(X)	0.55	0.67	1.01	0.79	0.22	0.22	0.67	0.00	0.71	0.74	0.00	0.00
Avail Cap(c_a), veh/h	744	1470	639	709	887	920	1807	0	783	451	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	38.3	18.6	22.9	34.3	11.0	11.0	28.8	0.0	29.1	36.2	0.0	0.0
Incr Delay (d2), s/veh	9.4	2.1	37.3	3.2	0.5	0.4	1.1	0.0	3.1	12.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	9.0	20.1	3.0	2.5	2.6	4.7	0.0	4.6	1.8	0.0	0.0
LnGrp Delay(d),s/veh	47.8	20.8	60.2	37.5	11.4	11.4	29.9	0.0	32.1	49.1	0.0	0.0
LnGrp LOS	D	C	F	D	B	B	C		C	D		
Approach Vol, veh/h		1643			539			680			71	
Approach Delay, s/veh		36.4			17.9			30.6			49.1	
Approach LOS		D			B			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	12.1	37.0		8.7	5.3	43.9		19.9
Change Period (Y+Rc), s	4.5	5.0		4.5	4.5	5.0		4.5
Max Green Setting (Gmax), s	32.0	32.0		20.0	32.0	31.0		40.0
Max Q Clear Time (g_c+I1), s	7.9	34.0		5.1	2.4	6.9		12.2
Green Ext Time (p_c), s	0.2	0.0		0.3	0.0	22.0		2.6

Intersection Summary	
HCM 2010 Ctrl Delay	32.0
HCM 2010 LOS	C

Notes

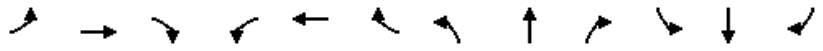
User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	952	135	240	444	0	83	0	378	0	0	3
Future Volume (veh/h)	1	952	135	240	444	0	83	0	378	0	0	3
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		1.00	0.99		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1884	1900	1881	1881	1900	1900	1874	1900	1900	1900	1900
Adj Flow Rate, veh/h	1	1002	169	293	516	0	124	0	485	0	0	8
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	0
Peak Hour Factor	0.75	0.95	0.80	0.82	0.86	0.92	0.67	0.92	0.78	0.92	0.92	0.38
Percent Heavy Veh, %	0	1	1	1	1	1	0	0	0	0	0	0
Cap, veh/h	511	1701	286	241	1996	0	143	12	427	0	0	555
Arrive On Green	0.56	0.56	0.56	0.56	0.56	0.00	0.35	0.00	0.35	0.00	0.00	0.35
Sat Flow, veh/h	897	3046	513	482	3668	0	281	34	1236	0	0	1605
Grp Volume(v), veh/h	1	588	583	293	516	0	609	0	0	0	0	8
Grp Sat Flow(s),veh/h/ln	897	1790	1769	482	1787	0	1552	0	0	0	0	1605
Q Serve(g_s), s	0.1	20.3	20.4	32.1	7.0	0.0	29.1	0.0	0.0	0.0	0.0	0.3
Cycle Q Clear(g_c), s	7.1	20.3	20.4	52.5	7.0	0.0	32.5	0.0	0.0	0.0	0.0	0.3
Prop In Lane	1.00		0.29	1.00		0.00	0.20		0.80	0.00		1.00
Lane Grp Cap(c), veh/h	511	1000	988	241	1996	0	583	0	0	0	0	555
V/C Ratio(X)	0.00	0.59	0.59	1.21	0.26	0.00	1.05	0.00	0.00	0.00	0.00	0.01
Avail Cap(c_a), veh/h	511	1000	988	241	1996	0	583	0	0	0	0	555
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	12.5	13.6	13.7	36.0	10.7	0.0	32.0	0.0	0.0	0.0	0.0	20.2
Incr Delay (d2), s/veh	0.0	0.6	0.6	128.4	0.0	0.0	49.6	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	10.1	10.1	14.8	3.4	0.0	23.1	0.0	0.0	0.0	0.0	0.1
LnGrp Delay(d),s/veh	12.5	14.3	14.3	164.4	10.7	0.0	81.6	0.0	0.0	0.0	0.0	20.2
LnGrp LOS	B	B	B	F	B		F					C
Approach Vol, veh/h		1172			809			609			8	
Approach Delay, s/veh		14.3			66.4			81.6			20.2	
Approach LOS		B			E			F			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		57.0		37.0		57.0		37.0
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		52.5		32.5		52.5		32.5
Max Q Clear Time (g_c+I1), s		22.4		2.3		54.5		34.5
Green Ext Time (p_c), s		8.2		2.0		0.0		0.0

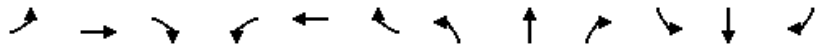
Intersection Summary	
HCM 2010 Ctrl Delay	46.3
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	1274	48	17	673	1	6	0	16	9	2	5
Future Volume (veh/h)	8	1274	48	17	673	1	6	0	16	9	2	5
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.97	0.96		0.98	0.98		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1491	1668	1700	1700	1651	1700	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	14	1464	83	27	756	4	18	0	28	18	4	13
Adj No. of Lanes	1	2	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.58	0.87	0.58	0.63	0.89	0.25	0.33	0.92	0.58	0.50	0.50	0.38
Percent Heavy Veh, %	14	2	2	0	3	3	0	0	0	0	0	0
Cap, veh/h	388	2026	114	282	1092	6	168	24	109	193	53	67
Arrive On Green	0.67	0.67	0.67	0.67	0.67	0.67	0.12	0.00	0.12	0.12	0.12	0.12
Sat Flow, veh/h	562	3043	172	304	1640	9	401	204	942	527	458	582
Grp Volume(v), veh/h	14	760	787	27	0	760	46	0	0	35	0	0
Grp Sat Flow(s),veh/h/ln	562	1585	1630	304	0	1649	1548	0	0	1566	0	0
Q Serve(g_s), s	0.7	12.7	12.9	2.6	0.0	11.8	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	12.4	12.7	12.9	15.5	0.0	11.8	1.0	0.0	0.0	0.7	0.0	0.0
Prop In Lane	1.00		0.11	1.00		0.01	0.39		0.61	0.51		0.37
Lane Grp Cap(c), veh/h	388	1055	1085	282	0	1098	301	0	0	314	0	0
V/C Ratio(X)	0.04	0.72	0.73	0.10	0.00	0.69	0.15	0.00	0.00	0.11	0.00	0.00
Avail Cap(c_a), veh/h	832	2305	2371	522	0	2398	1028	0	0	1040	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	8.1	4.4	4.5	9.5	0.0	4.3	16.6	0.0	0.0	16.4	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.3	0.3	0.1	0.0	0.3	0.1	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	5.4	5.6	0.2	0.0	5.2	0.5	0.0	0.0	0.4	0.0	0.0
LnGrp Delay(d),s/veh	8.1	4.8	4.8	9.5	0.0	4.6	16.7	0.0	0.0	16.5	0.0	0.0
LnGrp LOS	A	A	A	A		A	B			B		
Approach Vol, veh/h		1561			787			46			35	
Approach Delay, s/veh		4.8			4.7			16.7			16.5	
Approach LOS		A			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		32.0		9.3		32.0		9.3
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		60.0		25.0		60.0		25.0
Max Q Clear Time (g_c+I1), s		14.9		2.7		17.5		3.0
Green Ext Time (p_c), s		10.0		0.2		10.0		0.2

Intersection Summary		
HCM 2010 Ctrl Delay		5.2
HCM 2010 LOS		A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	246	937	116	79	341	142	51	195	162	346	500	299
Future Volume (veh/h)	246	937	116	79	341	142	51	195	162	346	500	299
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		1.00	1.00		0.99	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1683	1667	1700	1683	1650	1667	1845	1881	1900	1683	1650	1683
Adj Flow Rate, veh/h	276	1115	157	110	401	0	60	253	210	449	602	378
Adj No. of Lanes	1	2	0	1	1	1	1	1	0	1	1	1
Peak Hour Factor	0.89	0.84	0.74	0.72	0.85	0.76	0.85	0.77	0.77	0.77	0.83	0.79
Percent Heavy Veh, %	1	2	2	1	3	2	3	1	1	1	3	1
Cap, veh/h	291	1000	140	128	428	367	75	252	210	341	720	605
Arrive On Green	0.18	0.36	0.36	0.08	0.26	0.00	0.04	0.27	0.27	0.21	0.44	0.44
Sat Flow, veh/h	1603	2765	388	1603	1650	1417	1757	949	787	1603	1650	1386
Grp Volume(v), veh/h	276	637	635	110	401	0	60	0	463	449	602	378
Grp Sat Flow(s),veh/h/ln	1603	1583	1570	1603	1650	1417	1757	0	1736	1603	1650	1386
Q Serve(g_s), s	32.0	67.9	67.9	12.7	44.6	0.0	6.4	0.0	50.0	40.0	60.8	39.7
Cycle Q Clear(g_c), s	32.0	67.9	67.9	12.7	44.6	0.0	6.4	0.0	50.0	40.0	60.8	39.7
Prop In Lane	1.00		0.25	1.00		1.00	1.00		0.45	1.00		1.00
Lane Grp Cap(c), veh/h	291	572	568	128	428	367	75	0	462	341	720	605
V/C Ratio(X)	0.95	1.11	1.12	0.86	0.94	0.00	0.80	0.00	1.00	1.32	0.84	0.62
Avail Cap(c_a), veh/h	299	572	568	299	527	453	281	0	462	341	720	605
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	76.0	60.0	60.0	85.4	68.0	0.0	89.1	0.0	68.9	73.9	47.0	41.0
Incr Delay (d2), s/veh	38.3	72.5	74.9	15.3	21.9	0.0	7.0	0.0	42.4	161.2	8.5	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	17.3	41.1	41.1	6.2	23.0	0.0	3.2	0.0	29.3	32.9	29.5	15.6
LnGrp Delay(d),s/veh	114.3	132.5	134.9	100.8	90.0	0.0	96.1	0.0	111.3	235.2	55.5	43.1
LnGrp LOS	F	F	F	F	F		F		F	F	E	D
Approach Vol, veh/h		1548			511			523			1429	
Approach Delay, s/veh		130.2			92.3			109.5			108.6	
Approach LOS		F			F			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.4	71.9	11.5	86.0	37.6	52.7	43.5	54.0
Change Period (Y+Rc), s	3.5	4.0	3.5	4.0	3.5	4.0	3.5	4.0
Max Green Setting (Gmax), s	15.0	60.0	30.0	50.0	35.0	60.0	40.0	50.0
Max Q Clear Time (g_c+I1), s	14.7	69.9	8.4	62.8	34.0	46.6	42.0	52.0
Green Ext Time (p_c), s	0.3	0.0	0.1	0.0	0.1	2.1	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	115.0
HCM 2010 LOS	F

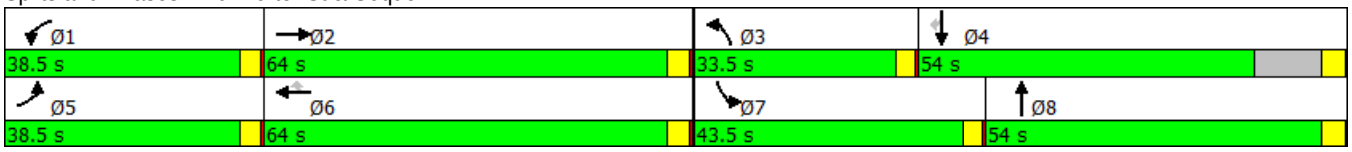
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	246	937	116	79	341	142	51	195	162	346	500	299
Future Volume (vph)	246	937	116	79	341	142	51	195	162	346	500	299
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1900	1900	1900	1700	1700	1700
Storage Length (ft)	140		0	0		100	180		0	540		70
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (ft)	45			25			50			300		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.98		0.99		0.96	0.99	0.99		0.99		0.94
Frt		0.981				0.850		0.932				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1546	2956	0	1546	1595	1369	1694	1674	0	1546	1595	1383
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1541	2956	0	1523	1595	1321	1671	1674	0	1534	1595	1304
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8				63		20				61
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		328			1072			1033			1279	
Travel Time (s)		8.9			29.2			28.2			34.9	
Confl. Peds. (#/hr)	1		13	13		1	6		4	4		6
Confl. Bikes (#/hr)			20			8						5
Peak Hour Factor	0.89	0.84	0.74	0.72	0.85	0.76	0.85	0.77	0.77	0.77	0.83	0.79
Heavy Vehicles (%)	1%	2%	2%	1%	3%	2%	3%	1%	1%	1%	3%	1%
Adj. Flow (vph)	276	1115	157	110	401	187	60	253	210	449	602	378
Shared Lane Traffic (%)												
Lane Group Flow (vph)	276	1272	0	110	401	187	60	463	0	449	602	378
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		20			20			22			14	
Two way Left Turn Lane												
Headway Factor	1.20	1.20	1.20	1.20	1.20	1.20	1.04	1.04	1.04	1.20	1.20	1.20
Turning Speed (mph)	15		9	15		12	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6						4
Detector Phase	5	2		1	6	6	3	8		7	4	4
Switch Phase												
Minimum Initial (s)	5.0	7.0		5.0	7.0	7.0	5.0	8.0		5.0	7.0	7.0
Minimum Split (s)	8.5	19.0		8.5	21.0	21.0	8.5	20.0		8.5	23.0	23.0
Total Split (s)	38.5	64.0		38.5	64.0	64.0	33.5	54.0		43.5	54.0	54.0
Total Split (%)	19.3%	32.0%		19.3%	32.0%	32.0%	16.8%	27.0%		21.8%	27.0%	27.0%
Maximum Green (s)	35.0	60.0		35.0	60.0	60.0	30.0	50.0		40.0	50.0	50.0
Yellow Time (s)	3.0	3.5		3.0	3.5	3.5	3.0	3.5		3.0	3.5	3.5
All-Red Time (s)	0.5	0.5		0.5	0.5	0.5	0.5	0.5		0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	3.5	4.0		3.5	4.0	4.0	3.5	4.0		3.5	4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	4.0	3.0		3.0	3.0	3.0	2.0	3.0		2.0	3.0	3.0
Recall Mode	None	Min		None	Min	Min	None	None		None	None	None
Walk Time (s)		8.0			8.0	8.0		8.0			8.0	8.0
Flash Dont Walk (s)		7.0			9.0	9.0		8.0			11.0	11.0
Pedestrian Calls (#/hr)		13			1	1		4			6	6
Act Effct Green (s)	35.1	68.6		19.0	52.5	52.5	11.2	50.1		40.1	78.9	78.9
Actuated g/C Ratio	0.18	0.36		0.10	0.27	0.27	0.06	0.26		0.21	0.41	0.41
v/c Ratio	0.98	1.20		0.72	0.92	0.46	0.61	1.03		1.40	0.92	0.66
Control Delay	125.8	152.2		110.3	95.5	41.1	114.7	114.5		248.3	74.8	46.9
Queue Delay	40.6	2.7		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	166.4	154.9		110.3	95.5	41.1	114.7	114.5		248.3	74.8	46.9
LOS	F	F		F	F	D	F	F		F	E	D
Approach Delay		156.9			83.3			114.5			122.0	
Approach LOS		F			F			F			F	
90th %ile Green (s)	35.0	68.1		26.9	60.0	60.0	16.4	50.0		40.0	73.6	73.6
90th %ile Term Code	Max	Hold		Gap	Max	Max	Gap	Max		Max	Hold	Hold
70th %ile Green (s)	35.0	72.5		22.5	60.0	60.0	13.5	50.0		40.0	76.5	76.5
70th %ile Term Code	Max	Hold		Gap	Max	Max	Gap	Max		Max	Hold	Hold
50th %ile Green (s)	35.0	72.3		19.3	56.6	56.6	11.4	50.0		40.0	78.6	78.6
50th %ile Term Code	Max	Hold		Gap	Gap	Gap	Gap	Max		Max	Hold	Hold
30th %ile Green (s)	35.0	67.8		15.9	48.7	48.7	9.2	50.0		40.0	80.8	80.8
30th %ile Term Code	Max	Hold		Gap	Gap	Gap	Gap	Max		Max	Hold	Hold
10th %ile Green (s)	35.0	62.1		11.5	38.6	38.6	6.3	50.0		40.0	83.7	83.7
10th %ile Term Code	Max	Hold		Gap	Gap	Gap	Gap	Max		Max	Hold	Hold
Stops (vph)	214	873		75	320	77	49	295		256	423	210
Fuel Used(gal)	8	39		3	11	3	2	13		22	15	7
CO Emissions (g/hr)	546	2720		195	767	194	128	880		1555	1027	483
NOx Emissions (g/hr)	106	529		38	149	38	25	171		303	200	94
VOC Emissions (g/hr)	127	630		45	178	45	30	204		360	238	112
Dilemma Vehicles (#)	0	0		0	0	0	0	0		0	0	0
Queue Length 50th (ft)	~364	~1021		141	499	131	78	~630		~781	752	344
Queue Length 95th (ft)	#582	#1106		167	602	165	127	#675		#832	#949	415

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		248			992			953			1199	
Turn Bay Length (ft)	140					100	180			540		70
Base Capacity (vph)	281	1056		281	497	455	264	449		321	652	569
Starvation Cap Reductn	88	402		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	1.43	1.94		0.39	0.81	0.41	0.23	1.03		1.40	0.92	0.66

Intersection Summary			
Area Type:	Other		
Cycle Length: 200			
Actuated Cycle Length: 192.8			
Natural Cycle: 140			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.40			
Intersection Signal Delay: 127.5		Intersection LOS: F	
Intersection Capacity Utilization 93.2%		ICU Level of Service F	
Analysis Period (min) 15			
90th %ile Actuated Cycle: 200			
70th %ile Actuated Cycle: 200			
50th %ile Actuated Cycle: 196.6			
30th %ile Actuated Cycle: 188.7			
10th %ile Actuated Cycle: 178.6			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 6: Porter St & Soquel Dr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700	1900	1900	1900	1700	1700	1700
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	140		0	0		100	180		0	540		70
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (ft)	45			25			50			300		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.98		0.99		0.96	0.99	0.99		0.99		0.94
Frt		0.981				0.850		0.932				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1546	2956	0	1546	1595	1369	1694	1674	0	1546	1595	1383
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1541	2956	0	1523	1595	1321	1671	1674	0	1534	1595	1304
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8				63		20				61
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		328			1072			1033			1279	
Travel Time (s)		8.9			29.2			28.2			34.9	

Intersection Summary	
Area Type:	Other

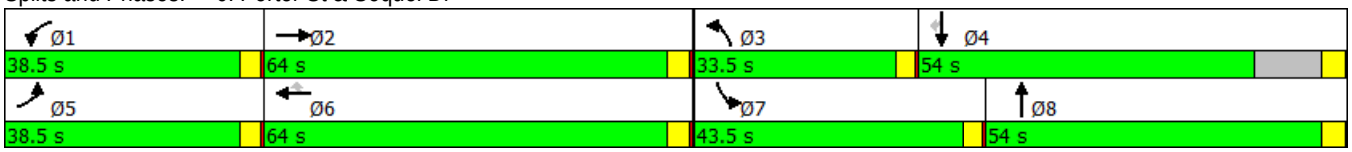
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	246	937	116	79	341	142	51	195	162	346	500	299
Future Volume (vph)	246	937	116	79	341	142	51	195	162	346	500	299
Confl. Peds. (#/hr)	1		13	13		1	6		4	4		6
Confl. Bikes (#/hr)			20			8						5
Peak Hour Factor	0.89	0.84	0.74	0.72	0.85	0.76	0.85	0.77	0.77	0.77	0.83	0.79
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	2%	2%	1%	3%	2%	3%	1%	1%	1%	3%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	276	1115	157	110	401	187	60	253	210	449	602	378
Shared Lane Traffic (%)												
Lane Group Flow (vph)	276	1272	0	110	401	187	60	463	0	449	602	378

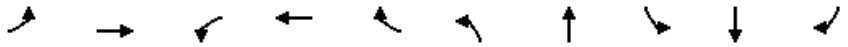
Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	246	937	79	341	142	51	195	346	500	299
Future Volume (vph)	246	937	79	341	142	51	195	346	500	299
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Prot	NA	Perm
Protected Phases	5	2	1	6		3	8	7	4	
Permitted Phases					6					4
Detector Phase	5	2	1	6	6	3	8	7	4	4
Switch Phase										
Minimum Initial (s)	5.0	7.0	5.0	7.0	7.0	5.0	8.0	5.0	7.0	7.0
Minimum Split (s)	8.5	19.0	8.5	21.0	21.0	8.5	20.0	8.5	23.0	23.0
Total Split (s)	38.5	64.0	38.5	64.0	64.0	33.5	54.0	43.5	54.0	54.0
Total Split (%)	19.3%	32.0%	19.3%	32.0%	32.0%	16.8%	27.0%	21.8%	27.0%	27.0%
Yellow Time (s)	3.0	3.5	3.0	3.5	3.5	3.0	3.5	3.0	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.5	4.0	3.5	4.0	4.0	3.5	4.0	3.5	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min	None	Min	Min	None	None	None	None	None
Act Effct Green (s)	35.1	68.6	19.0	52.5	52.5	11.2	50.1	40.1	78.9	78.9
Actuated g/C Ratio	0.18	0.36	0.10	0.27	0.27	0.06	0.26	0.21	0.41	0.41
v/c Ratio	0.98	1.20	0.72	0.92	0.46	0.61	1.03	1.40	0.92	0.66
Control Delay	125.8	152.2	110.3	95.5	41.1	114.7	114.5	248.3	74.8	46.9
Queue Delay	40.6	2.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	166.4	154.9	110.3	95.5	41.1	114.7	114.5	248.3	74.8	46.9
LOS	F	F	F	F	D	F	F	F	E	D
Approach Delay		156.9		83.3			114.5		122.0	
Approach LOS		F		F			F		F	

Intersection Summary	
Cycle Length: 200	
Actuated Cycle Length: 192.8	
Natural Cycle: 140	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.40	
Intersection Signal Delay: 127.5	Intersection LOS: F
Intersection Capacity Utilization 93.2%	ICU Level of Service F
Analysis Period (min) 15	

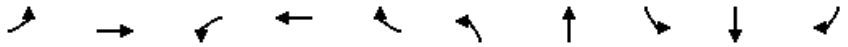
Splits and Phases: 6: Porter St & Soquel Dr





Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Protected Phases	5	2	1	6		3	8	7	4	
Permitted Phases					6					4
Minimum Initial (s)	5.0	7.0	5.0	7.0	7.0	5.0	8.0	5.0	7.0	7.0
Minimum Split (s)	8.5	19.0	8.5	21.0	21.0	8.5	20.0	8.5	23.0	23.0
Total Split (s)	38.5	64.0	38.5	64.0	64.0	33.5	54.0	43.5	54.0	54.0
Total Split (%)	19.3%	32.0%	19.3%	32.0%	32.0%	16.8%	27.0%	21.8%	27.0%	27.0%
Maximum Green (s)	35.0	60.0	35.0	60.0	60.0	30.0	50.0	40.0	50.0	50.0
Yellow Time (s)	3.0	3.5	3.0	3.5	3.5	3.0	3.5	3.0	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	3.0	3.0	3.0	3.0	2.0	3.0	2.0	3.0	3.0
Minimum Gap (s)	4.0	3.0	3.0	3.0	3.0	2.0	3.0	2.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	Min	None	Min	Min	None	None	None	None	None
Walk Time (s)		8.0		8.0	8.0		8.0		8.0	8.0
Flash Dont Walk (s)		7.0		9.0	9.0		8.0		11.0	11.0
Pedestrian Calls (#/hr)		13		1	1		4		6	6
90th %ile Green (s)	35.0	68.1	26.9	60.0	60.0	16.4	50.0	40.0	73.6	73.6
90th %ile Term Code	Max	Hold	Gap	Max	Max	Gap	Max	Max	Hold	Hold
70th %ile Green (s)	35.0	72.5	22.5	60.0	60.0	13.5	50.0	40.0	76.5	76.5
70th %ile Term Code	Max	Hold	Gap	Max	Max	Gap	Max	Max	Hold	Hold
50th %ile Green (s)	35.0	72.3	19.3	56.6	56.6	11.4	50.0	40.0	78.6	78.6
50th %ile Term Code	Max	Hold	Gap	Gap	Gap	Gap	Max	Max	Hold	Hold
30th %ile Green (s)	35.0	67.8	15.9	48.7	48.7	9.2	50.0	40.0	80.8	80.8
30th %ile Term Code	Max	Hold	Gap	Gap	Gap	Gap	Max	Max	Hold	Hold
10th %ile Green (s)	35.0	62.1	11.5	38.6	38.6	6.3	50.0	40.0	83.7	83.7
10th %ile Term Code	Max	Hold	Gap	Gap	Gap	Gap	Max	Max	Hold	Hold

Intersection Summary
Cycle Length: 200
Actuated Cycle Length: 192.8
Control Type: Actuated-Uncoordinated
90th %ile Actuated Cycle: 200
70th %ile Actuated Cycle: 200
50th %ile Actuated Cycle: 196.6
30th %ile Actuated Cycle: 188.7
10th %ile Actuated Cycle: 178.6



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	276	1272	110	401	187	60	463	449	602	378
v/c Ratio	0.98	1.20	0.72	0.92	0.46	0.61	1.03	1.40	0.92	0.66
Control Delay	125.8	152.2	110.3	95.5	41.1	114.7	114.5	248.3	74.8	46.9
Queue Delay	40.6	2.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	166.4	154.9	110.3	95.5	41.1	114.7	114.5	248.3	74.8	46.9
Queue Length 50th (ft)	~364	~1021	141	499	131	78	~630	~781	752	344
Queue Length 95th (ft)	#582	#1106	167	602	165	127	#675	#832	#949	415
Internal Link Dist (ft)		248		992			953		1199	
Turn Bay Length (ft)	140				100	180		540		70
Base Capacity (vph)	281	1056	281	497	455	264	449	321	652	569
Starvation Cap Reductn	88	402	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.43	1.94	0.39	0.81	0.41	0.23	1.03	1.40	0.92	0.66

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		20			20			22			14	
Two way Left Turn Lane												
Headway Factor	1.20	1.20	1.20	1.20	1.20	1.20	1.04	1.04	1.04	1.20	1.20	1.20
Turning Speed (mph)	15		9	15		12	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	246	937	116	79	341	142	51	195	162	346	500	299
Pedestrians	1		13	13		1	6		4	4		6
Ped Button		Yes			Yes			Yes			Yes	
Pedestrian Timing (s)		15.0			17.0			16.0			19.0	
Free Right			No			No			No			No
Ideal Flow	1700	1700	1700	1700	1700	1700	1900	1900	1900	1700	1700	1700
Lost Time (s)	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0
Minimum Green (s)	5.0	7.0	4.0	5.0	7.0	7.0	5.0	8.0	4.0	5.0	7.0	7.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	246	1053	0	79	341	142	51	357	0	346	500	299
Lane Utilization Factor	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.95	0.98	0.85	0.95	1.00	0.85	0.95	0.93	0.85	0.95	1.00	0.85
Saturated Flow (vph)	1615	3183	0	1615	1700	1445	1805	1771	0	1615	1700	1445
Ped Intf Time (s)	0.0	0.2	1.6	0.0	0.0	0.1	0.0	0.2	0.5	0.0	0.0	0.8
Pedestrian Frequency (%)		0.35			0.03			0.12			0.18	
Protected Option Allowed		Yes			Yes			Yes			Yes	
Reference Time (s)	18.3	39.9	0.0	5.9	24.1	11.9	3.4	24.4	0.0	25.7	35.3	25.6
Adj Reference Time (s)	22.3	43.9	0.0	9.9	28.1	16.1	9.0	28.4	0.0	29.7	39.3	29.6
Permitted Option												
Adj Saturation A (vph)	108	1592		108	1700		120	1771		108	1700	
Reference Time A (s)	274.2	39.9		88.0	24.1		50.9	24.4		385.6	35.3	
Adj Saturation B (vph	NA	NA		NA	NA		NA	NA		NA	NA	
Reference Time B (s)	NA	NA		NA	NA		NA	NA		NA	NA	
Reference Time (s)		274.2			88.0			50.9			385.6	
Adj Reference Time (s)		278.2			92.0			54.9			389.6	
Split Option												
Ref Time Combined (s)	18.3	39.9		5.9	24.1		3.4	24.4		25.7	35.3	
Ref Time Seperate (s)	18.3	35.5		5.9	24.1		3.4	13.5		25.7	35.3	
Reference Time (s)	39.9	39.9		24.1	24.1		24.4	24.4		35.3	35.3	
Adj Reference Time (s)	43.9	43.9		28.1	28.1		28.4	28.4		39.3	39.3	

Summary	EB WB	NB SB	Combined
Protected Option (s)	53.7	58.1	
Permitted Option (s)	278.2	389.6	
Split Option (s)	71.9	67.7	
Minimum (s)	53.7	58.1	111.9

Right Turns	WBR	SBR
Adj Reference Time (s)	16.1	29.6
Cross Thru Ref Time (s)	28.4	28.1
Oncoming Left Ref Time (s)	22.3	9.0
Combined (s)	66.8	66.7

Intersection Summary			
Intersection Capacity Utilization	93.2%	ICU Level of Service	F

Reference Times and Phasing Options do not represent an optimized timing plan.

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	13	0	605	696	7
Future Vol, veh/h	0	13	0	605	696	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	14	0	658	757	8

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	382	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	616	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	616	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	616	-	-
HCM Lane V/C Ratio	-	0.023	-	-
HCM Control Delay (s)	-	11	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-

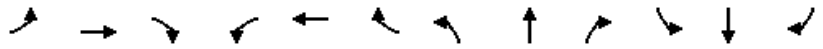
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	2	19	308	2	15	15	565	161	23	655	12
Future Volume (veh/h)	10	2	19	308	2	15	15	565	161	23	655	12
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		1.00	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1881	1869	1900	1900	1863	1900	1900	1864	1900
Adj Flow Rate, veh/h	22	8	27	449	0	0	30	614	194	35	799	31
Adj No. of Lanes	0	1	0	2	1	0	1	2	1	1	2	0
Peak Hour Factor	0.45	0.25	0.71	0.73	0.50	0.58	0.50	0.92	0.83	0.66	0.82	0.39
Percent Heavy Veh, %	0	0	0	1	0	0	0	2	0	0	2	2
Cap, veh/h	41	15	50	755	394	0	48	1370	603	54	1355	53
Arrive On Green	0.06	0.06	0.06	0.21	0.00	0.00	0.03	0.39	0.39	0.03	0.39	0.39
Sat Flow, veh/h	652	237	800	3583	1869	0	1810	3539	1559	1810	3471	135
Grp Volume(v), veh/h	57	0	0	449	0	0	30	614	194	35	408	422
Grp Sat Flow(s),veh/h/ln	1689	0	0	1792	1869	0	1810	1770	1559	1810	1771	1835
Q Serve(g_s), s	1.9	0.0	0.0	6.6	0.0	0.0	1.0	7.5	5.1	1.1	10.6	10.6
Cycle Q Clear(g_c), s	1.9	0.0	0.0	6.6	0.0	0.0	1.0	7.5	5.1	1.1	10.6	10.6
Prop In Lane	0.39		0.47	1.00		0.00	1.00		1.00	1.00		0.07
Lane Grp Cap(c), veh/h	105	0	0	755	394	0	48	1370	603	54	691	716
V/C Ratio(X)	0.54	0.00	0.00	0.59	0.00	0.00	0.63	0.45	0.32	0.65	0.59	0.59
Avail Cap(c_a), veh/h	583	0	0	1545	806	0	624	1831	807	624	916	949
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.4	0.0	0.0	20.7	0.0	0.0	27.9	13.2	12.4	27.8	14.0	14.0
Incr Delay (d2), s/veh	4.3	0.0	0.0	1.1	0.0	0.0	12.7	0.2	0.3	12.5	0.8	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	0.0	3.4	0.0	0.0	0.6	3.6	2.2	0.7	5.2	5.4
LnGrp Delay(d),s/veh	30.7	0.0	0.0	21.7	0.0	0.0	40.7	13.4	12.7	40.3	14.8	14.8
LnGrp LOS	C			C			D	B	B	D	B	B
Approach Vol, veh/h		57			449			838			865	
Approach Delay, s/veh		30.7			21.7			14.2			15.8	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.7	27.4		16.7	5.5	27.6		8.1
Change Period (Y+Rc), s	4.0	5.0		4.5	4.0	5.0		4.5
Max Green Setting (Gmax), s	20.0	30.0		25.0	20.0	30.0		20.0
Max Q Clear Time (g_c+I1), s	3.1	9.5		8.6	3.0	12.6		3.9
Green Ext Time (p_c), s	0.0	11.1		2.3	0.0	10.1		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	16.8
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	901	0	284	0	582	540	0	863	166
Future Volume (veh/h)	0	0	0	901	0	284	0	582	540	0	863	166
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		0.97
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1881	1881	1810	0	1872	1900	0	1866	1900
Adj Flow Rate, veh/h				1024	0	316	0	669	0	0	1015	213
Adj No. of Lanes				2	0	1	0	2	0	0	2	0
Peak Hour Factor				0.88	0.92	0.90	0.92	0.87	0.80	0.92	0.85	0.78
Percent Heavy Veh, %				1	0	5	0	2	2	0	2	2
Cap, veh/h				1132	0	486	0	1819	0	0	1484	310
Arrive On Green				0.32	0.00	0.32	0.00	0.85	0.00	0.00	0.51	0.51
Sat Flow, veh/h				3583	0	1538	0	3744	0	0	2995	607
Grp Volume(v), veh/h				1024	0	316	0	669	0	0	619	609
Grp Sat Flow(s),veh/h/ln				1792	0	1538	0	1778	0	0	1773	1736
Q Serve(g_s), s				15.1	0.0	9.7	0.0	2.2	0.0	0.0	14.4	14.5
Cycle Q Clear(g_c), s				15.1	0.0	9.7	0.0	2.2	0.0	0.0	14.4	14.5
Prop In Lane				1.00		1.00	0.00		0.00	0.00		0.35
Lane Grp Cap(c), veh/h				1132	0	486	0	1819	0	0	907	888
V/C Ratio(X)				0.90	0.00	0.65	0.00	0.37	0.00	0.00	0.68	0.69
Avail Cap(c_a), veh/h				1140	0	489	0	1819	0	0	907	888
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.67	1.67	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.00	0.88	0.00	0.00	0.79	0.79
Uniform Delay (d), s/veh				18.0	0.0	16.2	0.0	2.1	0.0	0.0	10.1	10.1
Incr Delay (d2), s/veh				10.4	0.0	3.2	0.0	0.5	0.0	0.0	3.3	3.4
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				9.0	0.0	4.6	0.0	1.0	0.0	0.0	7.7	7.6
LnGrp Delay(d),s/veh				28.4	0.0	19.4	0.0	2.6	0.0	0.0	13.4	13.5
LnGrp LOS				C		B		A			B	B
Approach Vol, veh/h					1340			669			1228	
Approach Delay, s/veh					26.3			2.6			13.5	
Approach LOS					C			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		33.4				33.4		21.6
Change Period (Y+Rc), s		5.3				5.3		4.2
Max Green Setting (Gmax), s		28.0				28.0		17.5
Max Q Clear Time (g_c+I1), s		4.2				16.5		17.1
Green Ext Time (p_c), s		16.9				9.4		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	16.5
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	51	70	0	0	0	0	1079	1034	0	1348	416
Future Volume (vph)	43	51	70	0	0	0	0	1079	1034	0	1348	416
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.6	4.6					4.9	4.9		4.9	4.0
Lane Util. Factor		1.00	0.88					0.95	1.00		0.91	1.00
Frpb, ped/bikes		1.00	1.00					1.00	1.00		1.00	0.97
Flpb, ped/bikes		1.00	1.00					1.00	1.00		1.00	1.00
Frt		1.00	0.85					1.00	0.85		1.00	0.85
Flt Protected		0.98	1.00					1.00	1.00		1.00	1.00
Satd. Flow (prot)		1752	2694					3455	1546		4964	1501
Flt Permitted		0.98	1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)		1752	2694					3455	1546		4964	1501
Peak-hour factor, PHF	0.80	0.72	0.75	0.92	0.92	0.92	0.92	0.85	0.94	0.92	0.96	0.82
Adj. Flow (vph)	54	71	93	0	0	0	0	1269	1100	0	1404	507
RTOR Reduction (vph)	0	0	82	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	125	11	0	0	0	0	1269	1100	0	1404	507
Confl. Peds. (#/hr)	13					13	11		1	1		11
Confl. Bikes (#/hr)												9
Heavy Vehicles (%)	6%	0%	2%	0%	0%	0%	0%	1%	1%	0%	1%	1%
Turn Type	Split	NA	Perm					NA	Prot		NA	Free
Protected Phases	2	2						1 3 4	1 3 4		1 3 4	
Permitted Phases			2									Free
Actuated Green, G (s)		13.1	13.1					88.1	88.1		88.1	110.0
Effective Green, g (s)		13.1	13.1					83.9	83.9		83.9	110.0
Actuated g/C Ratio		0.12	0.12					0.76	0.76		0.76	1.00
Clearance Time (s)		4.6	4.6									
Vehicle Extension (s)		3.0	3.0									
Lane Grp Cap (vph)		208	320					2635	1179		3786	1501
v/s Ratio Prot		c0.07						0.37	c0.71		0.28	
v/s Ratio Perm			0.00									c0.34
v/c Ratio		0.60	0.03					0.48	0.93		0.37	0.34
Uniform Delay, d1		46.0	42.9					4.9	10.7		4.3	0.0
Progression Factor		1.00	1.00					0.21	1.51		1.15	1.00
Incremental Delay, d2		4.8	0.0					0.0	1.6		0.0	0.3
Delay (s)		50.8	42.9					1.0	17.8		5.0	0.3
Level of Service		D	D					A	B		A	A
Approach Delay (s)		47.4			0.0			8.8			3.7	
Approach LOS		D			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	17.9
Intersection Capacity Utilization	77.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

MITIGATED CONDITIONS SYNCHRO OUTPUT SHEETS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	396	67	167	646	0	116	0	180	0	0	0
Future Volume (veh/h)	1	396	67	167	646	0	116	0	180	0	0	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.95	0.99		1.00	0.99		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1807	1900	1863	1827	1900	1900	1870	1900	1900	1900	1900
Adj Flow Rate, veh/h	1	445	75	188	726	0	130	0	202	0	0	0
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	0
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	0	5	5	2	4	4	0	0	0	0	0	0
Cap, veh/h	350	903	151	499	1418	0	254	30	268	0	549	0
Arrive On Green	0.00	0.31	0.31	0.10	0.41	0.00	0.29	0.00	0.29	0.00	0.00	0.00
Sat Flow, veh/h	1810	2920	488	1774	3563	0	494	103	928	0	1900	0
Grp Volume(v), veh/h	1	260	260	188	726	0	332	0	0	0	0	0
Grp Sat Flow(s),veh/h/ln	1810	1717	1691	1774	1736	0	1525	0	0	0	1900	0
Q Serve(g_s), s	0.0	5.5	5.6	2.9	7.0	0.0	6.7	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	5.5	5.6	2.9	7.0	0.0	8.8	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		0.29	1.00		0.00	0.39		0.61	0.00		0.00
Lane Grp Cap(c), veh/h	350	531	523	499	1418	0	552	0	0	0	549	0
V/C Ratio(X)	0.00	0.49	0.50	0.38	0.51	0.00	0.60	0.00	0.00	0.00	0.00	0.00
Avail Cap(c_a), veh/h	547	689	679	522	1418	0	734	0	0	0	779	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	10.7	12.6	12.6	8.3	9.9	0.0	14.4	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.7	0.7	0.5	0.3	0.0	1.1	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.7	2.7	1.5	3.4	0.0	3.9	0.0	0.0	0.0	0.0	0.0
LnGrp Delay(d),s/veh	10.7	13.3	13.4	8.8	10.2	0.0	15.4	0.0	0.0	0.0	0.0	0.0
LnGrp LOS	B	B	B	A	B		B					
Approach Vol, veh/h		521			914			332			0	
Approach Delay, s/veh		13.3			9.9			15.4			0.0	
Approach LOS		B			A			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		17.5	9.0	18.4		17.5	4.6	22.8
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		18.4	5.1	18.0		18.4	5.0	18.1
Max Q Clear Time (g_c+I1), s		10.8	4.9	7.6		0.0	2.0	9.0
Green Ext Time (p_c), s		1.3	0.0	5.4		0.0	0.0	5.2

Intersection Summary	
HCM 2010 Ctrl Delay	12.0
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	831	118	209	388	0	72	0	330	0	0	3
Future Volume (veh/h)	1	831	118	209	388	0	72	0	330	0	0	3
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.95	1.00		1.00	0.99		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1884	1900	1881	1881	1900	1900	1875	1900	1900	1900	1900
Adj Flow Rate, veh/h	1	884	126	222	413	0	77	0	351	0	0	3
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	1	1	1	1	1	0	0	0	0	0	0
Cap, veh/h	459	1033	147	364	1567	0	141	25	403	0	0	502
Arrive On Green	0.00	0.33	0.33	0.11	0.44	0.00	0.31	0.00	0.31	0.00	0.00	0.31
Sat Flow, veh/h	1810	3121	445	1792	3668	0	203	79	1287	0	0	1604
Grp Volume(v), veh/h	1	507	503	222	413	0	428	0	0	0	0	3
Grp Sat Flow(s),veh/h/ln	1810	1789	1776	1792	1787	0	1570	0	0	0	0	1604
Q Serve(g_s), s	0.0	14.4	14.4	4.0	4.0	0.0	9.4	0.0	0.0	0.0	0.0	0.1
Cycle Q Clear(g_c), s	0.0	14.4	14.4	4.0	4.0	0.0	14.0	0.0	0.0	0.0	0.0	0.1
Prop In Lane	1.00		0.25	1.00		0.00	0.18		0.82	0.00		1.00
Lane Grp Cap(c), veh/h	459	593	588	364	1567	0	569	0	0	0	0	502
V/C Ratio(X)	0.00	0.86	0.86	0.61	0.26	0.00	0.75	0.00	0.00	0.00	0.00	0.01
Avail Cap(c_a), veh/h	622	639	635	416	1567	0	638	0	0	0	0	573
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	12.2	17.0	17.0	11.9	9.7	0.0	17.6	0.0	0.0	0.0	0.0	12.9
Incr Delay (d2), s/veh	0.0	10.5	10.5	2.1	0.1	0.0	4.5	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	8.8	8.7	2.1	2.0	0.0	6.8	0.0	0.0	0.0	0.0	0.0
LnGrp Delay(d),s/veh	12.2	27.5	27.6	14.0	9.8	0.0	22.1	0.0	0.0	0.0	0.0	12.9
LnGrp LOS	B	C	C	B	A		C					B
Approach Vol, veh/h		1011			635			428			3	
Approach Delay, s/veh		27.5			11.3			22.1			12.9	
Approach LOS		C			B			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		21.6	10.4	22.6		21.6	4.6	28.4
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		19.5	7.5	19.5		19.5	5.0	22.0
Max Q Clear Time (g_c+I1), s		16.0	6.0	16.4		2.1	2.0	6.0
Green Ext Time (p_c), s		1.0	0.1	1.6		2.9	0.0	8.4

Intersection Summary	
HCM 2010 Ctrl Delay	21.4
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	214	260	54	121	395	261	43	272	29	147	286	324
Future Volume (veh/h)	214	260	54	121	395	261	43	272	29	147	286	324
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00	1.00		0.98	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1645	1700	1650	1650	1667	1574	1630	1700	1881	1827	1845
Adj Flow Rate, veh/h	230	280	58	130	425	0	46	292	31	158	308	348
Adj No. of Lanes	1	2	0	1	1	1	1	1	0	2	1	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	4	4	3	3	2	8	4	4	1	4	3
Cap, veh/h	270	931	189	162	486	418	126	340	36	249	407	613
Arrive On Green	0.17	0.36	0.36	0.10	0.29	0.00	0.08	0.24	0.24	0.07	0.22	0.22
Sat Flow, veh/h	1587	2572	523	1572	1650	1417	1499	1446	153	3476	1827	1550
Grp Volume(v), veh/h	230	168	170	130	425	0	46	0	323	158	308	348
Grp Sat Flow(s),veh/h/ln	1587	1563	1532	1572	1650	1417	1499	0	1599	1738	1827	1550
Q Serve(g_s), s	9.3	5.1	5.2	5.3	16.1	0.0	1.9	0.0	12.7	2.9	10.4	6.8
Cycle Q Clear(g_c), s	9.3	5.1	5.2	5.3	16.1	0.0	1.9	0.0	12.7	2.9	10.4	6.8
Prop In Lane	1.00		0.34	1.00		1.00	1.00		0.10	1.00		1.00
Lane Grp Cap(c), veh/h	270	566	555	162	486	418	126	0	376	249	407	613
V/C Ratio(X)	0.85	0.30	0.31	0.80	0.87	0.00	0.36	0.00	0.86	0.63	0.76	0.57
Avail Cap(c_a), veh/h	301	566	555	332	589	506	126	0	454	280	527	715
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.5	15.0	15.1	28.9	22.1	0.0	28.5	0.0	24.1	29.7	23.9	6.2
Incr Delay (d2), s/veh	19.7	0.3	0.3	8.8	11.9	0.0	0.7	0.0	13.1	2.5	4.6	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.5	2.2	2.3	2.7	8.9	0.0	0.8	0.0	6.9	1.5	5.7	3.0
LnGrp Delay(d),s/veh	46.2	15.3	15.4	37.7	34.0	0.0	29.1	0.0	37.2	32.2	28.5	7.0
LnGrp LOS	D	B	B	D	C		C		D	C	C	A
Approach Vol, veh/h		568			555			369			814	
Approach Delay, s/veh		27.8			34.8			36.2			20.0	
Approach LOS		C			C			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.3	27.8	9.1	18.7	14.7	23.4	8.2	19.5
Change Period (Y+Rc), s	3.5	4.0	3.5	4.0	3.5	4.0	3.5	4.0
Max Green Setting (Gmax), s	13.9	22.1	5.0	19.0	12.5	23.5	5.3	18.7
Max Q Clear Time (g_c+I1), s	7.3	7.2	3.9	12.4	11.3	18.1	4.9	14.7
Green Ext Time (p_c), s	0.2	4.4	0.0	1.9	0.1	1.3	0.0	0.7

Intersection Summary	
HCM 2010 Ctrl Delay	28.1
HCM 2010 LOS	C

Notes

User approved changes to right turn type.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	215	818	101	69	298	124	45	170	141	302	436	261
Future Volume (veh/h)	215	818	101	69	298	124	45	170	141	302	436	261
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		1.00	1.00		0.99	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1683	1667	1700	1683	1650	1667	1845	1881	1900	1683	1650	1683
Adj Flow Rate, veh/h	226	861	106	73	314	0	47	179	148	318	459	275
Adj No. of Lanes	1	2	0	1	1	1	1	1	0	2	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	2	2	1	3	2	3	1	1	1	3	1
Cap, veh/h	302	1011	124	90	374	321	75	231	191	404	545	725
Arrive On Green	0.19	0.36	0.36	0.06	0.23	0.00	0.04	0.24	0.24	0.13	0.33	0.33
Sat Flow, veh/h	1603	2817	347	1603	1650	1417	1757	950	786	3110	1650	1381
Grp Volume(v), veh/h	226	484	483	73	314	0	47	0	327	318	459	275
Grp Sat Flow(s),veh/h/ln	1603	1583	1580	1603	1650	1417	1757	0	1736	1555	1650	1381
Q Serve(g_s), s	9.4	19.9	19.9	3.2	12.8	0.0	1.9	0.0	12.4	7.0	18.2	1.6
Cycle Q Clear(g_c), s	9.4	19.9	19.9	3.2	12.8	0.0	1.9	0.0	12.4	7.0	18.2	1.6
Prop In Lane	1.00		0.22	1.00		1.00	1.00		0.45	1.00		1.00
Lane Grp Cap(c), veh/h	302	568	567	90	374	321	75	0	421	404	545	725
V/C Ratio(X)	0.75	0.85	0.85	0.81	0.84	0.00	0.63	0.00	0.78	0.79	0.84	0.38
Avail Cap(c_a), veh/h	306	639	638	125	479	411	124	0	479	506	608	778
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.1	20.9	20.9	33.0	26.1	0.0	33.3	0.0	25.0	29.8	22.0	3.9
Incr Delay (d2), s/veh	10.4	9.9	9.9	23.2	10.1	0.0	3.2	0.0	7.0	5.0	9.6	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.0	10.2	10.1	2.0	6.9	0.0	1.0	0.0	6.7	3.3	9.7	1.8
LnGrp Delay(d),s/veh	37.5	30.8	30.8	56.1	36.2	0.0	36.4	0.0	31.9	34.8	31.6	4.2
LnGrp LOS	D	C	C	E	D		D		C	C	C	A
Approach Vol, veh/h		1193			387			374			1052	
Approach Delay, s/veh		32.0			39.9			32.5			25.4	
Approach LOS		C			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.5	29.3	6.5	27.3	16.8	20.0	12.7	21.2
Change Period (Y+Rc), s	3.5	4.0	3.5	4.0	3.5	4.0	3.5	4.0
Max Green Setting (Gmax), s	5.5	28.5	5.0	26.0	13.5	20.5	11.5	19.5
Max Q Clear Time (g_c+I1), s	5.2	21.9	3.9	20.2	11.4	14.8	9.0	14.4
Green Ext Time (p_c), s	0.0	3.4	0.0	3.0	0.3	0.9	0.2	2.7

Intersection Summary	
HCM 2010 Ctrl Delay	30.8
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	402	68	169	657	0	118	0	183	0	0	0
Future Volume (veh/h)	1	402	68	169	657	0	118	0	183	0	0	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.95	0.99		1.00	0.99		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1807	1900	1863	1827	1900	1900	1870	1900	1900	1900	1900
Adj Flow Rate, veh/h	1	452	76	190	738	0	133	0	206	0	0	0
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	0
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	0	5	5	2	4	4	0	0	0	0	0	0
Cap, veh/h	343	900	150	494	1414	0	256	30	271	0	555	0
Arrive On Green	0.00	0.31	0.31	0.10	0.41	0.00	0.29	0.00	0.29	0.00	0.00	0.00
Sat Flow, veh/h	1810	2921	487	1774	3563	0	497	101	926	0	1900	0
Grp Volume(v), veh/h	1	264	264	190	738	0	339	0	0	0	0	0
Grp Sat Flow(s),veh/h/ln	1810	1717	1691	1774	1736	0	1524	0	0	0	1900	0
Q Serve(g_s), s	0.0	5.7	5.8	3.0	7.2	0.0	7.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	5.7	5.8	3.0	7.2	0.0	9.0	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		0.29	1.00		0.00	0.39		0.61	0.00		0.00
Lane Grp Cap(c), veh/h	343	529	521	494	1414	0	557	0	0	0	555	0
V/C Ratio(X)	0.00	0.50	0.51	0.38	0.52	0.00	0.61	0.00	0.00	0.00	0.00	0.00
Avail Cap(c_a), veh/h	539	684	674	516	1414	0	729	0	0	0	774	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	10.8	12.8	12.8	8.4	10.1	0.0	14.4	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.7	0.8	0.5	0.3	0.0	1.1	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.7	2.7	1.5	3.5	0.0	3.9	0.0	0.0	0.0	0.0	0.0
LnGrp Delay(d),s/veh	10.8	13.5	13.6	8.9	10.4	0.0	15.5	0.0	0.0	0.0	0.0	0.0
LnGrp LOS	B	B	B	A	B		B					
Approach Vol, veh/h		529			928			339			0	
Approach Delay, s/veh		13.5			10.1			15.5			0.0	
Approach LOS		B			B			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		17.7	9.0	18.4		17.7	4.6	22.9
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		18.4	5.1	18.0		18.4	5.0	18.1
Max Q Clear Time (g_c+I1), s		11.0	5.0	7.8		0.0	2.0	9.2
Green Ext Time (p_c), s		1.3	0.0	5.4		0.0	0.0	5.2

Intersection Summary	
HCM 2010 Ctrl Delay	12.1
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	843	120	212	394	0	73	0	335	0	0	3
Future Volume (veh/h)	1	843	120	212	394	0	73	0	335	0	0	3
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.95	1.00		1.00	0.99		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1884	1900	1881	1881	1900	1900	1875	1900	1900	1900	1900
Adj Flow Rate, veh/h	1	897	128	226	419	0	78	0	356	0	0	3
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	1	1	1	1	1	0	0	0	0	0	0
Cap, veh/h	455	1033	147	358	1567	0	141	25	408	0	0	508
Arrive On Green	0.00	0.33	0.33	0.11	0.44	0.00	0.32	0.00	0.32	0.00	0.00	0.32
Sat Flow, veh/h	1810	3120	445	1792	3668	0	204	78	1287	0	0	1604
Grp Volume(v), veh/h	1	514	511	226	419	0	434	0	0	0	0	3
Grp Sat Flow(s),veh/h/ln	1810	1789	1776	1792	1787	0	1570	0	0	0	0	1604
Q Serve(g_s), s	0.0	15.0	15.0	4.2	4.1	0.0	9.7	0.0	0.0	0.0	0.0	0.1
Cycle Q Clear(g_c), s	0.0	15.0	15.0	4.2	4.1	0.0	14.4	0.0	0.0	0.0	0.0	0.1
Prop In Lane	1.00		0.25	1.00		0.00	0.18		0.82	0.00		1.00
Lane Grp Cap(c), veh/h	455	592	588	358	1567	0	574	0	0	0	0	508
V/C Ratio(X)	0.00	0.87	0.87	0.63	0.27	0.00	0.76	0.00	0.00	0.00	0.00	0.01
Avail Cap(c_a), veh/h	615	629	624	374	1567	0	656	0	0	0	0	593
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	12.4	17.4	17.4	12.2	9.9	0.0	17.8	0.0	0.0	0.0	0.0	13.0
Incr Delay (d2), s/veh	0.0	11.9	12.0	3.2	0.1	0.0	4.4	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	9.2	9.2	2.3	2.1	0.0	6.8	0.0	0.0	0.0	0.0	0.0
LnGrp Delay(d),s/veh	12.4	29.3	29.4	15.4	10.0	0.0	22.2	0.0	0.0	0.0	0.0	13.0
LnGrp LOS	B	C	C	B	B		C					B
Approach Vol, veh/h		1026			645			434			3	
Approach Delay, s/veh		29.4			11.9			22.2			13.0	
Approach LOS		C			B			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		22.1	10.5	22.9		22.1	4.6	28.8
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		20.5	6.5	19.5		20.5	5.0	21.0
Max Q Clear Time (g_c+I1), s		16.4	6.2	17.0		2.1	2.0	6.1
Green Ext Time (p_c), s		1.1	0.0	1.4		3.0	0.0	8.2

Intersection Summary	
HCM 2010 Ctrl Delay	22.5
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	217	264	55	123	401	265	44	276	29	149	290	329
Future Volume (veh/h)	217	264	55	123	401	265	44	276	29	149	290	329
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00	1.00		0.98	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1646	1700	1650	1650	1667	1574	1630	1700	1881	1827	1845
Adj Flow Rate, veh/h	233	284	59	132	431	0	47	297	31	160	312	354
Adj No. of Lanes	1	2	0	1	1	1	1	1	0	2	1	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	4	4	3	3	2	8	4	4	1	4	3
Cap, veh/h	275	932	190	164	486	417	127	344	36	247	408	618
Arrive On Green	0.17	0.36	0.36	0.10	0.29	0.00	0.08	0.24	0.24	0.07	0.22	0.22
Sat Flow, veh/h	1587	2570	525	1572	1650	1417	1499	1448	151	3476	1827	1550
Grp Volume(v), veh/h	233	171	172	132	431	0	47	0	328	160	312	354
Grp Sat Flow(s),veh/h/ln	1587	1563	1532	1572	1650	1417	1499	0	1600	1738	1827	1550
Q Serve(g_s), s	9.5	5.2	5.4	5.5	16.7	0.0	2.0	0.0	13.1	3.0	10.7	7.0
Cycle Q Clear(g_c), s	9.5	5.2	5.4	5.5	16.7	0.0	2.0	0.0	13.1	3.0	10.7	7.0
Prop In Lane	1.00		0.34	1.00		1.00	1.00		0.09	1.00		1.00
Lane Grp Cap(c), veh/h	275	567	556	164	486	417	127	0	379	247	408	618
V/C Ratio(X)	0.85	0.30	0.31	0.80	0.89	0.00	0.37	0.00	0.86	0.65	0.76	0.57
Avail Cap(c_a), veh/h	321	567	556	329	556	477	127	0	452	265	519	712
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.8	15.2	15.3	29.2	22.5	0.0	28.9	0.0	24.5	30.2	24.3	6.2
Incr Delay (d2), s/veh	18.0	0.3	0.3	8.8	14.7	0.0	0.7	0.0	14.0	3.6	5.1	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.5	2.3	2.3	2.8	9.5	0.0	0.8	0.0	7.2	1.6	6.0	3.1
LnGrp Delay(d),s/veh	44.8	15.5	15.6	38.0	37.2	0.0	29.6	0.0	38.4	33.8	29.4	7.1
LnGrp LOS	D	B	B	D	D		C		D	C	C	A
Approach Vol, veh/h		576			563			375			826	
Approach Delay, s/veh		27.4			37.4			37.3			20.7	
Approach LOS		C			D			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.5	28.2	9.2	18.9	15.1	23.7	8.2	19.9
Change Period (Y+Rc), s	3.5	4.0	3.5	4.0	3.5	4.0	3.5	4.0
Max Green Setting (Gmax), s	14.0	22.0	5.0	19.0	13.5	22.5	5.1	18.9
Max Q Clear Time (g_c+I1), s	7.5	7.4	4.0	12.7	11.5	18.7	5.0	15.1
Green Ext Time (p_c), s	0.2	4.4	0.0	1.8	0.2	1.0	0.0	0.7

Intersection Summary	
HCM 2010 Ctrl Delay	29.0
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	218	830	102	70	302	126	46	172	143	306	442	265
Future Volume (veh/h)	218	830	102	70	302	126	46	172	143	306	442	265
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		1.00	1.00		0.99	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1683	1667	1700	1683	1650	1667	1845	1881	1900	1683	1650	1683
Adj Flow Rate, veh/h	229	874	107	74	318	0	48	181	151	322	465	279
Adj No. of Lanes	1	2	0	1	1	1	1	1	0	2	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	2	2	1	3	2	3	1	1	1	3	1
Cap, veh/h	266	1072	131	91	447	384	73	231	192	399	546	695
Arrive On Green	0.17	0.38	0.38	0.06	0.27	0.00	0.04	0.24	0.24	0.13	0.33	0.33
Sat Flow, veh/h	1603	2820	345	1603	1650	1417	1757	946	789	3110	1650	1381
Grp Volume(v), veh/h	229	491	490	74	318	0	48	0	332	322	465	279
Grp Sat Flow(s),veh/h/ln	1603	1583	1582	1603	1650	1417	1757	0	1735	1555	1650	1381
Q Serve(g_s), s	10.9	21.9	21.9	3.6	13.7	0.0	2.1	0.0	14.1	7.9	20.7	10.0
Cycle Q Clear(g_c), s	10.9	21.9	21.9	3.6	13.7	0.0	2.1	0.0	14.1	7.9	20.7	10.0
Prop In Lane	1.00		0.22	1.00		1.00	1.00		0.45	1.00		1.00
Lane Grp Cap(c), veh/h	266	602	601	91	447	384	73	0	423	399	546	695
V/C Ratio(X)	0.86	0.82	0.82	0.81	0.71	0.00	0.66	0.00	0.78	0.81	0.85	0.40
Avail Cap(c_a), veh/h	311	683	683	132	528	453	123	0	485	493	608	746
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.9	21.9	21.9	36.7	25.9	0.0	37.2	0.0	27.8	33.4	24.5	12.5
Incr Delay (d2), s/veh	19.9	6.8	6.8	20.7	3.6	0.0	3.8	0.0	7.3	6.3	10.3	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.3	10.7	10.7	2.1	6.6	0.0	1.1	0.0	7.6	3.7	10.9	3.8
LnGrp Delay(d),s/veh	51.9	28.7	28.7	57.5	29.5	0.0	41.0	0.0	35.1	39.7	34.9	12.9
LnGrp LOS	D	C	C	E	C		D		D	D	C	B
Approach Vol, veh/h		1210			392			380			1066	
Approach Delay, s/veh		33.1			34.8			35.9			30.6	
Approach LOS		C			C			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.0	34.0	6.8	30.1	16.6	25.4	13.6	23.2
Change Period (Y+Rc), s	3.5	4.0	3.5	4.0	3.5	4.0	3.5	4.0
Max Green Setting (Gmax), s	6.5	34.0	5.5	29.0	15.3	25.2	12.5	22.0
Max Q Clear Time (g_c+I1), s	5.6	23.9	4.1	22.7	12.9	15.7	9.9	16.1
Green Ext Time (p_c), s	0.0	5.9	0.0	3.3	0.2	5.7	0.2	3.1

Intersection Summary	
HCM 2010 Ctrl Delay	32.8
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	245	298	62	139	452	299	49	312	33	168	328	371
Future Volume (veh/h)	245	298	62	139	452	299	49	312	33	168	328	371
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00	1.00		0.98	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1646	1700	1650	1650	1667	1574	1630	1700	1881	1827	1845
Adj Flow Rate, veh/h	263	320	67	149	486	0	53	335	35	181	353	399
Adj No. of Lanes	1	2	0	1	1	1	1	1	0	2	1	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	4	4	3	3	2	8	4	4	1	4	3
Cap, veh/h	300	976	201	183	508	436	66	351	37	240	490	713
Arrive On Green	0.19	0.38	0.38	0.12	0.31	0.00	0.04	0.24	0.24	0.07	0.27	0.27
Sat Flow, veh/h	1587	2566	529	1572	1650	1417	1499	1448	151	3476	1827	1553
Grp Volume(v), veh/h	263	193	194	149	486	0	53	0	370	181	353	399
Grp Sat Flow(s),veh/h/ln	1587	1563	1531	1572	1650	1417	1499	0	1600	1738	1827	1553
Q Serve(g_s), s	12.6	6.8	7.0	7.2	22.6	0.0	2.7	0.0	17.8	4.0	13.7	14.7
Cycle Q Clear(g_c), s	12.6	6.8	7.0	7.2	22.6	0.0	2.7	0.0	17.8	4.0	13.7	14.7
Prop In Lane	1.00		0.35	1.00		1.00	1.00		0.09	1.00		1.00
Lane Grp Cap(c), veh/h	300	595	583	183	508	436	66	0	388	240	490	713
V/C Ratio(X)	0.88	0.32	0.33	0.82	0.96	0.00	0.81	0.00	0.95	0.76	0.72	0.56
Avail Cap(c_a), veh/h	335	595	583	351	508	436	101	0	388	240	490	713
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.9	17.1	17.2	33.8	26.6	0.0	37.1	0.0	29.2	35.8	26.0	15.5
Incr Delay (d2), s/veh	21.6	0.3	0.3	8.5	29.2	0.0	12.3	0.0	33.7	11.5	5.1	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.4	3.0	3.0	3.6	14.4	0.0	1.4	0.0	11.4	2.3	7.6	6.5
LnGrp Delay(d),s/veh	52.5	17.5	17.5	42.3	55.8	0.0	49.5	0.0	62.9	47.3	31.1	16.5
LnGrp LOS	D	B	B	D	E		D		E	D	C	B
Approach Vol, veh/h		650			635			423			933	
Approach Delay, s/veh		31.7			52.6			61.2			28.0	
Approach LOS		C			D			E			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.6	33.8	6.9	25.0	18.3	28.1	8.9	23.0
Change Period (Y+Rc), s	3.5	4.0	3.5	4.0	3.5	4.0	3.5	4.0
Max Green Setting (Gmax), s	17.5	23.1	5.3	19.1	16.5	24.1	5.4	19.0
Max Q Clear Time (g_c+I1), s	9.2	9.0	4.7	16.7	14.6	24.6	6.0	19.8
Green Ext Time (p_c), s	0.2	5.0	0.0	1.4	0.2	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	40.1
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	246	937	116	79	341	142	51	195	162	346	500	299
Future Volume (veh/h)	246	937	116	79	341	142	51	195	162	346	500	299
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		1.00	1.00		0.99	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1683	1667	1700	1683	1650	1667	1845	1881	1900	1683	1650	1683
Adj Flow Rate, veh/h	259	986	122	83	359	0	54	205	171	364	526	315
Adj No. of Lanes	1	2	0	1	1	1	1	1	0	2	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	2	2	1	3	2	3	1	1	1	3	1
Cap, veh/h	326	1077	133	103	401	344	74	227	189	430	555	755
Arrive On Green	0.20	0.38	0.38	0.06	0.24	0.00	0.04	0.24	0.24	0.14	0.34	0.34
Sat Flow, veh/h	1603	2816	348	1603	1650	1417	1757	946	789	3110	1650	1382
Grp Volume(v), veh/h	259	554	554	83	359	0	54	0	376	364	526	315
Grp Sat Flow(s),veh/h/ln	1603	1583	1581	1603	1650	1417	1757	0	1735	1555	1650	1382
Q Serve(g_s), s	13.1	28.4	28.5	4.4	18.0	0.0	2.6	0.0	18.0	9.8	26.6	2.1
Cycle Q Clear(g_c), s	13.1	28.4	28.5	4.4	18.0	0.0	2.6	0.0	18.0	9.8	26.6	2.1
Prop In Lane	1.00		0.22	1.00		1.00	1.00		0.45	1.00		1.00
Lane Grp Cap(c), veh/h	326	605	604	103	401	344	74	0	416	430	555	755
V/C Ratio(X)	0.79	0.92	0.92	0.81	0.89	0.00	0.73	0.00	0.90	0.85	0.95	0.42
Avail Cap(c_a), veh/h	326	627	627	114	461	396	195	0	460	447	555	755
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.4	25.1	25.1	39.5	31.3	0.0	40.5	0.0	31.5	36.0	27.7	5.0
Incr Delay (d2), s/veh	13.3	17.9	18.0	30.9	18.1	0.0	5.0	0.0	19.7	12.8	25.9	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.0	15.3	15.3	2.8	10.2	0.0	1.4	0.0	10.8	5.0	16.1	2.8
LnGrp Delay(d),s/veh	45.7	43.0	43.2	70.4	49.4	0.0	45.5	0.0	51.3	48.8	53.6	5.4
LnGrp LOS	D	D	D	E	D		D		D	D	D	A
Approach Vol, veh/h		1367			442			430			1205	
Approach Delay, s/veh		43.6			53.3			50.6			39.6	
Approach LOS		D			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.0	36.7	7.1	32.7	20.9	24.8	15.3	24.5
Change Period (Y+Rc), s	3.5	4.0	3.5	4.0	3.5	4.0	3.5	4.0
Max Green Setting (Gmax), s	6.1	33.9	9.5	25.5	16.1	23.9	12.3	22.7
Max Q Clear Time (g_c+I1), s	6.4	30.5	4.6	28.6	15.1	20.0	11.8	20.0
Green Ext Time (p_c), s	0.0	2.2	0.0	0.0	0.2	0.8	0.1	0.5

Intersection Summary	
HCM 2010 Ctrl Delay	44.3
HCM 2010 LOS	D

HIGHWAY 1 CORRIDOR INVESTMENT PROGRAM PROJECT ALTERNATIVES

Highway 1 Project Alternatives (Morrissey to San Andreas)

The three alternatives currently under consideration are the HOV Lane Alternative, the Transportation Systems Management Alternative, and the No-Build Alternative, as described below.

Build Alternatives

HOV Lane Alternative

The HOV Lane Alternative would widen the existing four-lane highway to a six-lane facility by adding an HOV lane next to the median in both the northbound and southbound directions. Along the southern portion of the project, the existing median generally is wide enough to add the new HOV lanes within the existing right-of-way. A mandatory standard median width (6.6 m or 21.7 ft.) would be used through most of the corridor, north of Freedom Boulevard. Where existing frontage roads would be impacted, non-standard inside shoulder widths of 1.5 m (5 ft) are proposed to reduce right-of-way requirements and impacts. Such non-standard design features would require design exceptions, which are currently under review. In some locations as identified herein, widening would extend outside the existing State right-of-way.

The HOV Lane Alternative would modify or reconstruct all nine interchanges within the project limits to improve merging operations and ramp geometrics, lengthen acceleration and deceleration lanes, and improve sight distances. The Bay Avenue/Porter Street and 41st Avenue interchanges would be modified to operate as one interchange. Where feasible, design deficiencies on existing ramps would be corrected. Ramp metering and HOV lanes would be provided on all Highway 1 on-ramps. The HOV Lane Alternative would include auxiliary lanes between interchange ramps and Transportation Operations System electronic equipment, such as changeable message signs, highway advisory radio, closed-circuit television, microwave detection systems and vehicle detection systems as described also under the Transportation Systems Management Alternative—with the exception that an auxiliary lane would not be constructed northbound between State Park Drive and Park Avenue (see Section 1.3.1.3, Common Design Features of the Build Alternatives).

Bridge structures and the Capitola Avenue Overcrossing would be modified or replaced to accommodate the new HOV lanes. New and widened highway crossing structures would include shoulder and sidewalk facilities to accommodate pedestrians and bicycles. The HOV Lane Alternative would include three new pedestrian/bicycle overcrossings of Highway 1, as described also under the Transportation Systems Management Alternative and detailed in Section 1.3.1.3. The existing UPPR structures would be replaced, not relocated or lowered, to

minimize environmental impacts. The Highway 1 bridge over Aptos Creek would be widened on the outsides to accommodate the new HOV lanes.

Bus pads with pedestrian access to local streets would be constructed at some highway ramps to facilitate highway access and improve travel times for buses, and locations for future Park and Ride lots would be considered.

Retaining walls would be constructed to minimize right-of-way acquisition and reduce or avoid environmental impacts. At locations where frontage roads are adjacent to Highway 1, concrete barriers will be constructed to separate the two facilities and minimize right-of-way acquisition. The project also would include demolition and disposal, excavation, borrow and fill, sound walls, right-of-way acquisition, and temporary easements.

Mainline Improvements with the HOV Lane Alternative

- Highway 1 would be widened to allow for two standard width (3.6 m [12 ft]) mixed-flow lanes, one standard width (3.6 m [12 ft]) HOV lane and standard outside (3m [10 ft]) shoulders.
- The proposed widening will be constructed into the median where the existing median width is over 13.8 meters (45 feet). Where the existing median width is less than 45 feet, the required widening will be both into the median and at the outside shoulder, but generally within the existing Highway 1 right-of-way.
- Where auxiliary lanes are proposed, widening to the outside would be increased by 3.76m (12 ft).
- A mandatory standard median width of 6.6 m (21.7 ft) is proposed through most of the corridor.
- The highway centerline would be shifted northward in the vicinity of the Union Pacific Railroad crossings to reduce impacts to wetlands. The bridge over Aptos Creek would be widened.
- Highway 1 would be lowered to obtain vertical clearance at the Union Pacific Railroad crossings in Aptos. A mandatory standard median width of .6 m (21.7 ft) is proposed to minimize impacts to the Union Pacific Railroad.
- Median and inside shoulder width would be non-standard to reduce impacts to adjacent streets at three segments on Highway 1 between State Park Drive and Bay Avenue, and one segment south of Soquel Drive. At these four constrained locations, the inside shoulder would be a non-standard 1.5 m (5 ft) and the median a non-standard 5.2 m (17 ft).

Auxiliary Lane Improvements with the HOV Lane Alternative

Auxiliary lanes would be added in at the following locations:

- Northbound and southbound between Freedom Boulevard and Rio Del Mar Boulevard – outside widening of up to 6.8 m (22.3 ft) is proposed.
- Northbound and southbound between Rio Del Mar Boulevard and State Park Drive – outside widening of up to 10m (32.8 ft) is proposed.
- Southbound along Highway 1 between State Park Drive and Park Avenue – outside widening of up to 5.8 m (19 ft) is proposed.
- Northbound and southbound along Highway 1 from Park Avenue to Bay Avenue/Porter Street – outside widening up to 14.9 m (49 ft) is proposed, and
- Northbound and southbound from 41st Street to Soquel Drive/Soquel Avenue – outside widening of up to 6.4 m (21 ft) is proposed.

Interchange Improvements with the HOV Lane Alternative

All interchanges within the project limits would be modified to improve merging operations and ramp geometrics, and to improve accessibility and safety for pedestrians and bicyclists.

Interchange improvements would generally include the following:

- HOV lanes and ramp metering would be provided on all on-ramps.
- Ramps would be widened and their geometrics improved where feasible.
- CHP enforcement areas would be provided at all on-ramps except Park Avenue, southbound.
- Intersections of freeway ramps with local roads would be modified to provide less skewed intersections with crosswalks for pedestrians and bicycles; free-right turns would be eliminated where feasible and traffic signals installed.
- Local roadways would be widened at the interchanges to serve anticipated travel demand.
- Retaining walls would be constructed to minimize impacts to local roadways, development, and wetlands and waterways.
- Drainage facilities would be provided for adequate drainage and treatment of storm water runoff.

Other specific improvements are identified by interchange area.

- **Changes at San Andreas/Larkin Valley Roads Interchange**
  - The existing northbound cloverleaf off-ramp merge onto Larkin Valley Road would be eliminated in favor of a signalized tee intersection.

- A signalized intersection would be provided at the San Andreas Road ramps and the free-right turns eliminated.
- The southbound Highway 1 bridge over San Andreas/Larkin Valley Road would be widened approximately 5m (16.4 ft) into the median to accommodate the HOV lanes.
- On ramps would be widened to add HOV lane.
- New sidewalks would be added along San Andreas/Larkin Valley Roads.

- **Changes at Freedom Boulevard Interchange**
  - The existing ramp termini at Freedom Boulevard would be modified to provide less skewed intersections with Freedom Boulevard. These intersections would be signalized, and free-right turns eliminated.
  - The Freedom Boulevard / Bonita Drive intersection would be improved.
  - The Freedom Boulevard Bridge would be replaced with a wider structure with standard vertical clearance over Highway 1.
  - New sidewalks would be added along Freedom Boulevard.
- **Changes at Rio Del Mar Boulevard Interchange**
  - The northbound on-ramp would be realigned to form a four-way intersection with Rio Del Mar Boulevard. This intersection would be signalized, and free right turns eliminated.
  - Soquel Drive would be shifted northward to accommodate the roadway widening along the northbound off ramp.
  - The ramp configuration on the south side would be retained, but ramps would be widened and the intersection with Rio Del Mar Boulevard would be signalized, and free-right turns eliminated.
  - The Rio Del Mar Boulevard bridge over Highway 1 would be replaced and widened to accommodate four through lanes and left turn pockets.
  - Sidewalk would be added along eastbound Rio Del Mar Boulevard; sidewalk on westbound is existing.
- **Changes at State Park Drive Interchange**
  - The State Park Drive bridge over Highway 1 would be replaced with a longer, wider bridge, to accommodate four vehicle lanes, bike lanes, and sidewalk, and to span the proposed width of Highway 1.
  - The existing on-ramps would be widened to accommodate an HOV lane.
  - Sidewalk would be added along eastbound Rio Del Mar Boulevard; sidewalk along westbound is existing.
  - The existing northbound cloverleaf on-ramp free-right is changed to a signalized right turn.
  - State Park drive is widened to four lanes.

- **Changes at Park Avenue Interchange**
  - The existing diamond interchange ramps would be retained and widened.
  - Park Avenue would be widened between Cabrillo College Drive and McGregor Drive. Widening would include shoulders and sidewalks for bicycle/pedestrian movements.
  - The two Highway 1 bridges over Park Avenue would be replaced with one structure to accommodate the HOV lanes, and a wider Park Avenue.
  - Sidewalk would be added along westbound Park Avenue; sidewalk along eastbound is existing.
- **Changes at Bay Avenue/Porter Street and 41st Avenue Interchanges** - Improvements at the Bay Avenue/Porter Street and 41st Avenue interchanges are designed so that these two interchanges work as a single interchange.
  - The ramps at Bay Avenue/Porter Street would be reconstructed to form less skewed intersections with Bay Avenue/Porter Street.
  - The existing southbound Highway 1 off-ramp to Bay Avenue/Porter Street would be eliminated. Southbound traffic bound for Bay Avenue/Porter Street would exit at 41st Street and continue on a new southbound collector road to Bay Avenue/Porter Street.
  - The existing on-ramp from westbound Porter Street to northbound Highway 1 would be modified to become a northbound frontage road.
  - The new collector from 41st Avenue would require a new structure over wetlands at Soquel Wharf.
  - Northbound traffic exiting Highway 1 would bear right to access Bay Avenue/Porter Street, or stay left and continue on a new structure over Bay Avenue/Porter Street, join the northbound collector, and end at a new signalized intersection at 41st Avenue.
  - At 41st Avenue, southbound on and off ramps would be eliminated and replaced with diagonal ramps forming signalized tee intersections with 41st Avenue.
  - At 41st Avenue, the northbound on ramps would include a realigned loop on and a new collector.
  - The 41st Avenue bridge over Highway 1 would be replaced and widened; the new bridge would provide bike lanes and sidewalks for pedestrians and bicycles, and accommodate the widening of Highway 1.
- **Changes at Soquel Drive/Soquel Avenue Interchange**
  - The northbound Highway 1 off-ramp to Soquel Drive would be realigned to a signalized tee intersection with Soquel Drive. The existing access to Commercial Way would be eliminated.
  - The Soquel Drive to northbound Highway 1 free-right turn would be eliminated.

- The geometrics of two existing northbound on-ramps from Soquel Avenue would be improved, HOV lanes added, and free-right entrance to the loop ramp would become a signalized tee.
- The existing northbound off-ramp from Highway 1 to Soquel Drive would be eliminated and replaced with a diagonal ramp forming a signalized intersection with Soquel Drive.
- A new southbound diagonal off-ramp and a loop on-ramp would be controlled by a signalized intersection at Soquel Avenue. The existing southbound hook on-ramp would be widened to accommodate an HOV lane.
- The Soquel Drive/Soquel Avenue bridge over Highway 1 would be reconstructed to accommodate HOV lanes. The new bridge would have sidewalks and bike lanes for pedestrians and bicycles,
- The culvert at Arana Gulch would be extended underneath the widened Highway 1 and new southbound off-ramp.
- Sidewalk would be added along eastbound Soquel Drive/Soquel Avenue; sidewalk along westbound is existing.

- **Improvements at Morrissey Boulevard interchange**
  - The southbound exit from Highway 1 to Morrissey Boulevard would be realigned to terminate at a new signalized intersection with Morrissey Boulevard.
  - Morrissey Boulevard between Highway 1 and Fairmont Avenue would be widened and realigned.
  - The existing Morrissey Boulevard on-ramp to southbound Highway 1 would be eliminated and replaced with a new three-lane on-ramp from Morrissey Boulevard.
  - The existing southbound exit and on-ramp at Elk Street would be eliminated.
  - Sidewalk would be added along eastbound Morrissey Boulevard; sidewalk along westbound is existing.
  - The Morrissey Boulevard Bridge would be replaced to accommodate the new HOV lanes on Highway 1, and sidewalks and bike lanes on Morrissey Boulevard.
  - The existing northbound access from Rooney Street would be eliminated.
  - The existing northbound loop from Morrissey Boulevard would be eliminated, as would access to Rooney Street from this northbound loop.
  - A new northbound diagonal on-ramp with an HOV lane would be constructed. Entrance to the new diagonal would be at a signalized intersection with Morrissey Boulevard.

Transit-Related Facilities

In addition to the HOV lanes on the freeway ramps and mainline, the HOV Lane Alternative would include the following features to facilitate freeway-oriented transit services and operations:

- Both on-ramps and both off-ramps at the reconfigured Park Avenue interchange include options for bus pads and bus shelters.
- Ramps and collectors at the Bay Avenue/Porter Street and 41st Avenue interchange include options for bus pads and shelters.
- A future Park and Ride lot is under consideration at the 41st Avenue interchange, to be coordinated with the bus facilities
- Feasibility for a Park and Ride lot in the Bay Avenue/Porter Street interchange area would be determined during final design.

New Bicycle/Pedestrian Overcrossings

The HOV Lane Alternative would construct new bicycle/pedestrian overcrossings of Highway 1 at the following locations:

- Mar Vista Drive – the crossing would start on the north side of Highway 1 and parallel the highway eastward for about 200 m (600 ft), doubling back westward as it climbs before crossing the highway at a right angle and then descending by switchbacks to and along Mar Vista Drive for about 180m (550 ft); multiple configurations are under consideration.
- Chanticleer Avenue – the crossing would start at the Chanticleer cul-de-sac on the north side of Highway 1 and parallel the highway for about 180m (550 ft) to the west before crossing it on a curved or perpendicular alignment, returning to terminate just west of Chanticleer on the south side of the highway.
- Trevethan Avenue – the crossing would start on the north side of Highway 1 at Trevethan Avenue and parallel the highway about 200m (600 ft) before crossing on an angle and continuing along the banks of the western tributary to Arana Gulch to terminate close to Harbor High School.

Transportation Systems Management Alternative

The Transportation Systems Management Alternative was formulated to identify Highway 1 improvements that would partially address the project purpose and need, and could be achieved at lower cost or with lesser impacts than the HOV Lane Alternative. Transportation Systems Management strategies typically consist of improvements that can benefit the operations of existing facilities without increasing the number of through lanes. Examples of

Transportation Systems Management strategies include ramp metering, auxiliary lanes, turning lanes, and traffic signal coordination.

General Description

The Transportation Systems Management Alternative proposes to add ramp metering and construct HOV bypass lanes on existing interchange on-ramps, improve existing nonstandard geometric elements at various ramps, and add auxiliary lanes along the mainline between major interchange pairs within the project limits, as described below and summarized in Section 1.3.1.3, Common Design Features of the Build Alternatives. Auxiliary lanes are designed to reduce conflicts between traffic entering and exiting the highway by connecting from the on-ramp of one interchange to the off-ramp of the next; they are not designed to serve through traffic.

The Transportation Systems Management Alternative also would include Transportation Operations System electronic equipment as described for the HOV Lane Alternative. It would include HOV bypass lanes on interchange on-ramps, but would not construct HOV lanes or any additional through lanes on the mainline.

The Transportation Systems Management alternative would reconstruct the north and south Aptos railroad underpasses and the State Park Drive, Capitola Avenue, and 41st Avenue overcrossings, widen the Aptos Creek and Soquel Creek bridges, and construct new pedestrian/bicycle overcrossings over Highway 1, features it shares with the HOV Lane Alternative, as described in Section 1.3.1.3.

Auxiliary Lanes

Auxiliary lanes to be constructed on Highway 1 with the Transportation Systems Management Alternative consist of the following:

- Northbound and southbound between Freedom Boulevard and Rio Del Mar Boulevard – outside widening up to 5 m (16.7 ft) on each side is proposed.
- Northbound and southbound between Rio Del Mar Boulevard and State Park Drive – outside widening up to 6.5 m (21.7 ft) on each side is proposed.
- Northbound and southbound between State Park Drive and Park Avenue – northbound, up to 5 m (16.7 ft) of outside widening; southbound, up to 5 m (16.7 ft) of outside widening is proposed.
- Northbound and southbound between Park Avenue and Bay Avenue/Porter Street – northbound, outside widening of about 5.5 m (18.3 ft) would occur; southbound, outside widening of about 5 m (16.7 ft) is proposed; and

- Northbound and southbound from 41st Avenue to Soquel Drive/Soquel Avenue – northbound, there would be outside widening of about 5.5 m (18.3 ft) and southbound, widening would be about 5 m (16.7 ft).

New Bicycle/Pedestrian Overcrossings

The Transportation Systems Management Alternative would construct new bicycle/pedestrian overcrossings of Highway 1 at Mar Vista Drive, Chanticleer Avenue and Trevethan Avenue as described under the HOV Lane Alternative.

Other Improvements

Additional improvements that would be constructed under the Transportation Systems Management Alternative include:

- CHP enforcement areas at on-ramps.
- The Highway 1 bridge over Aptos Creek would be widened to accommodate the auxiliary lanes.
- The Capitola Avenue bridge would be replaced over the widened Highway 1.
- The Soquel Avenue southbound off-ramp from Highway 1 would be widened for two exit lanes, leading to the existing two left turns and one free right-turn at Soquel Avenue.

1.3.1.1 Common Design Features of the Build Alternatives

The HOV Lane Alternative shares three primary sets of features with the Transportation Systems Management Alternative: new auxiliary lanes, new pedestrian/bicycle overcrossings of Highway 1, and Transportation Operations System electronic equipment. These common design features are highlighted here but the auxiliary lanes are discussed in detail within the separate description of each alternative, since specifics vary.

Auxiliary Lanes

Auxiliary lanes would be constructed in the following locations under either the HOV Lane or Transportation Systems Management Alternative:

- Freedom Boulevard and Rio Del Mar Boulevard – northbound and southbound.
- Rio Del Mar Boulevard and State Park Drive – northbound and southbound
- State Park Drive and Park Avenue – both directions in the TSM alternative; southbound only in the HOV alternative.
- Park Avenue and Bay Avenue/Porter Street – northbound and southbound.
- 41st Avenue and Soquel Avenue/Soquel Drive – northbound and southbound.

New Bicycle/Pedestrian Overcrossings

Both build alternatives would construct new bicycle/pedestrian overcrossings of Highway 1 at Mar Vista Drive, Chanticleer Avenue and Trevethan Avenue, as described under the HOV Lane Alternative.

Other Common Features of the Build Alternatives

Both the HOV Lane and Transportation Systems Management Alternatives would construct HOV lanes and install ramp metering on the Highway 1 on-ramps within the project limits. Under the Transportation Systems Management Alternative, however, no new HOV lanes would be incorporated into the freeway mainline.

Both build alternatives would include reconstruction of the north and south Aptos railroad underpasses and the State Park Drive, Capitola Avenue, and 41st Avenue overcrossings. Also, under both alternatives, the Aptos Creek and Soquel Creek bridges would be widened.

Both the HOV Lane and Transportation Systems Management Alternatives also would include Transportation Operations System: equipment such as changeable message signs, highway advisory radio, closed-circuit television, microwave detection systems and vehicle detection systems.