Board Meeting Date: July 21, 2020
Special Notice / Hearing: None
Vote Required: Majority

To: Honorable Board of Supervisors

From: Steve Monowitz, Community Development Director

Subject: EXECUTIVE SUMMARY: Consideration of a Local Coastal Program (LCP) Amendment to rezone a vacant parcel at the corner of Carlos and Sierra Streets in Moss Beach from "PUD-124/CD" to "PUD-140/CD". The amendment proposes to revise the site plan and reduce the density of the previously approved Planned Unit Development (PUD) from 148 dwelling units to 71 affordable dwelling units, and to revise LCP Policy 3.15(d) to require that all units be affordable.

County File Number: PLN 2018-00264

RECOMMENDATION:

That the Board of Supervisors adopt a resolution directing staff to submit the Local Coastal Program (LCP) Amendments for California Coastal Commission certification.

BACKGROUND:

Mid-Pen Housing Corporation, with the assistance of the San Mateo County Housing Department, is pursuing the approvals necessary to develop 71 affordable housing units on an approximately 11-acre parcel within Moss Beach that is designated for this purpose by the Local Coastal Program (LCP). The first step in the process, which is the subject of this report, is to make clarifying amendments to the County's LCP to allow a smaller and less impactful project than the one previously envisioned for the site. Upon certification of these amendments, the applicant will apply for a coastal development permit to construct the project.

DISCUSSION:

The proposed amendments have been requested because Mid-Pen Housing desires to build a project that differs from that which is specified by the existing zoning (PUD-124/CD, Attachment D), which allows 148 dwelling units (a density of 13.6 dwelling units per acre) with a mix of 96 market rate units and 52 affordable units. The amendments propose to reduce the total number of dwelling units from 148 to 71, resulting in a density of 6.5 dwelling units per acre, which is consistent with the Local Coastal Program (LCP) land use designation of Medium Density Residential that applies to adjacent parcels. The proposed PUD clusters development within a 5.39-acre area near the center of the parcel and preserves the remainder of the site as open space.

The proposed reduction in the number of units also necessitates amendments to the LCP Land Use Designation for the site, and associated LCP maps. Specifically, the amendments propose to change the current LCP designation of Medium High Density Residential to Medium Density Residential. In addition, the proposed amendments include a revision to LCP Policy 3.15(d) that requires all units, other than the manager's unit, to be affordable. Currently, this policy requires that 35 percent of the dwelling units be reserved for low- and moderate- income households.

County Counsel has reviewed the report as to form.

FISCAL IMPACT:
No fiscal impact.

MJS:cmc – MJSEE0266_WCU.DOCX

County of San Mateo

Inter-Departmental Correspondence

Department: PLANNING AND BUILDING
File #: TMP-4940

Board Meeting Date: 7/21/2020

Special Notice / Hearing: None
Vote Required: Majority

To: Honorable Board of Supervisors

From: Steve Monowitz, Community Development Director

Subject: Consideration of a Local Coastal Program (LCP) Amendment to rezone a vacant parcel located at the corner of Carlos and Sierra Streets in Moss Beach from "PUD-124/CD" to "PUD-140/CD". The amendment proposes to revise the site plan and reduce the density of the previously approved Planned Unit Development (PUD) zoning from 148 dwelling units to 71 dwelling units, and to revise Policy 3.15(d) of the LCP to require that all units be affordable.

County File Number: PLN2018-00264

RECOMMENDATION:

Public Hearing for consideration of a Local Coastal Program (LCP) amendment to rezone a vacant parcel located at the corner of Carlos and Sierra Streets in Moss Beach from "PUD-124/CD" to "PUD-140/CD":

A) Open Public hearing

B) Close Public hearing

C) Recommendation to adopt a resolution directing staff to submit the Local Coastal Program (LCP) Amendments for California Coastal Commission review and certification.

BACKGROUND:

Mid-Pen Housing Corporation, with the assistance of the San Mateo County Housing Department, is pursuing the approvals necessary to develop 71 affordable housing units on an approximately 11-acre parcel within Moss Beach that is designated for this purpose by the Local Coastal Program (LCP). The first step in the process, which is the subject of this report, is to make clarifying amendments to the County's LCP, and the particular Zoning Regulations that implement the LCP to allow a smaller and less impactful project than the one previously envisioned for the site. Upon certification of these amendments, the applicant will be able to apply for a coastal development permit to construct the project.

The proposed amendments have been requested because the existing zoning (PUD-124/CD)

authorizes a specific number of dwelling units with a specific layout and design (Attachment D). The current zoning on the project parcel was adopted in 1986 and allows 148 dwelling units (a density of 13.6 dwelling units per acre), with a mix of 96 market rate units and 52 affordable units. Approximately 54 percent of the parcel would remain as open space under this existing zoning. Because of the nature of the Planned Unit Development zoning regulations, only the specific site design of the adopted PUD can be built without a zoning amendment.

The proposed zoning amendment will reduce the total number of dwelling units from 148 to 71, resulting in a density of 6.5 dwelling units per acre, a density consistent with the Local Coastal Program (LCP) land use designation of Medium Density Residential that applies to adjacent parcels. The proposed PUD clusters development within a 5.39-acre area near the center of the parcel and preserves the remainder of the site as open space. The proposed PUD site plan consist of 18 two-story buildings containing two to four units in each building, and a single building that will house a general office, manager's office, community room, kitchen, computer room, laundry, and maintenance and storage areas. The site plan also includes a community garden; a children's play area; an upper and a lower green; BBQ areas; and a public walking trail (Attachment E).

The reduction in the number of units that may be constructed on the site also necessitates an amendment to the LCP Land Use Designation for the site, and associated LCP maps. Specifically, the proposed amendments will change the current LCP designation of Medium High Density Residential to Medium Density Residential. In addition, the proposed amendments include a revision to LCP Policy 3.15(d) that increases the required percentage of affordable units that must be provided by a future development project. Currently, this policy requires that 35 percent of the dwelling units constructed at the project site be reserved for low and moderate income households (21 percent for low income households and 14 percent for moderate income households). This ratio was based on the 1986 PUD zoning for the site, which envisioned a mix of market rate and affordable units. The proposed amendment requires that 100 percent of the units be affordable.

STANDARDS AND PROCEDURES

The matter currently before the Board of Supervisors is whether to direct staff to submit the proposed LCP amendments to the California Coastal Commission (CCC) for certification. In order to certify the LCP amendments, the CCC will need to determine that the proposed changes to the LCP Land Use Plan are consistent with the Chapter 3 policies of the California Coastal Act. The LCP Land Use Plan amendments consist of the change in the land use designation from High Density Residential to Medium Density Residential, and the revision to LCP Policy 3.15 to increase the required percentage of affordable units. The CCC will also need to find that the proposed amendment to the LCP Implementation Program (i.e., the Zoning Amendment) is consistent with, and adequate to carry out, the LCP Land Use Plan, including all applicable LCP Policies.

In the event that the CCC determines that the proposed amendments do not meet the relevant standards, it may suggest modifications to the amendment that, if agreed to by the County, will achieve conformity and thereby enable amendment certification. The CCC's decision to certify the amendments as submitted or modified will then be transmitted back to the County. The amendments will then take effect after the Board of Supervisors acknowledges the CCC's certification and takes action to accept any modifications suggested by the California Coastal Commission.

In order to construct the project that is the subject of these amendments, the owner of the property will need to apply for, and obtain, a Coastal Development Permit from San Mateo County. That permit application will be subject to the review and approval of the Planning Commission, based on the project's conformity to the County's LCP, including LCP Policies. At that time, the Planning

Commission can determine what conditions of approval may be required to achieve LCP consistency.

Planning Commission Action: On June 10, 2020, the Planning Commission voted to recommend that the Board of Supervisors direct staff to submit the Local Coastal Program (LCP) Amendments to the California Coastal Commission for certification.

Report Prepared By: Michael Schaller, Senior Planner

Owner/Applicant: Mid-Pen Housing Corporation

Location: Carlos Street, Moss Beach

APN(s): 037-022-070

Size: 10.875 acres

Existing Zoning: PUD-124/CD

General Plan Designation: Medium High Density Residential (8.8-17.4 d.u./acre)

Local Coastal Plan Designation: Medium High Density Residential (8.1-16 d.u./acre)

Sphere-of-Influence: Half Moon Bay

Existing Land Use: Vacant

Water Supply: Montara Water and Sanitary District. LCP Policy 2.24 and Table 2.17 of the LCP identify the provision of affordable housing at the subject site as a priority land use for which sufficient water supplies must be reserved.

Sewage Disposal: Montara Water and Sanitary District. LCP Policy 2.16 and Table 2.7 of the LCP identify the provision of affordable housing at the subject site as a priority land use for which sufficient sewage treatment capacity must be reserved.

Flood Zone: Zone X (Areas of minimal flooding), FEMA Panel Number 06081C0117F, effective date August 2, 2017.

Environmental Evaluation: Section 21080.9 of the California Public Resources Code (California Environmental Quality Act (CEQA)), exempts a local government from the requirements of CEQA in connection with its activities and approvals necessary for the preparation and adoption of a Local Coastal Program. Certification of an LCP by the Coastal Commission is subject to CEQA, and the Commission's LCP review and approval program has been found by the Resources Agency to be the functional equivalent of the environmental review required by CEQA, pursuant to CEQA Section 21080.5.

Setting: The site that is the subject of the proposed amendments is located in a low-density residential neighborhood within the unincorporated urban community of Moss Beach. The site is on the inland side of Highway One, and slopes from east to west, with elevations ranging from approximately 77 feet above mean sea level (MSL) at the northwest corner to 189 feet MSL along the easterly boundary. Montara Creek, a perennial stream, is located approximately 250 feet to the

northeast of the site, and runs parallel to the site's northern border. The creek sits approximately 100 feet lower in elevation from the area designated for residential development.

Vegetative communities on the project site consist primarily of grasslands, coastal scrub, and invasive species. Forest lands comprised predominantly of Monterey cypress, and Monterey pine are located along the northern boundary of the site. Remnant concrete building foundations associated with the previous use of the site for military purposes, abandoned long ago, are present on the site.

Chronology:

Date	Action
1979	-Publication of the Public Hearing Draft of the County's LCP Land Use Plan, which proposes to designate four sites in the Mid-Coast, including the subject site, for affordable housing.
1980	-The CCC certifies the County's LCP, including affordable housing site designations.
October 9, 1985	-The Planning Commission approves a CDP, Tentative Subdivision Map, Use Permit, and Rezoning Application (PUD-124) to allow for the development of 148-unit housing development on the site known as the "Farallon Vista" project.
March 11, 1986	-Board of Supervisors denies an appeal and approves the CDP, Tentative Map, Use Permit, and Rezoning Application for the Farallon Vista project.
May 26, 1986	-CCC certifies the Rezoning Application, establishing the PUD-124 Zoning District that is specific to the Farallon Vista project.
September 10, 1987	-CCC certifies LCP amendments regarding the provision of sewer service for the subject site.
February 12, 1988	-Time extension to record final subdivision map requested by Farallon Vista developer due to Public Utility Commission moratorium on new water connections. One-year extensions granted by County on March 3, 1988, and January 27, 1989.
March 23, 1988	-Planning Commission approves a CDP, Planned Agricultural District Permit, and Use Permit to allow for the construction of an off-site water supply and storage system to serve the Farallon Vista project.
June 28, 1988	-Board of Supervisors denies appeal and approves permits for off-site water system to serve Farallon Vista.
July 8, 1988	-Appeal of CDP for Farallon Vista off-site water system filed with CCC.
January 12, 1989	-CCC staff issues staff report recommending that the CCC determine that the appeal of the CDP for the off-site water system raises a substantial

	issue with regard to LCP consistency.
March 11, 1991	-Tentative Map for Farallon Vista Project expires.
April 17, 2009	-CCC certifies Montara Water and Sanitary District Public Works Plan (PWP). The PWP and subsequent amendments effectively end the moratorium on new water connections subject to specific requirements.
September 30, 2017	-Pre-application public workshop for currently proposed amendments.
July 2018	-LCP Amendment application submitted.
April 2019	-Revised application submitted.
January 22, 2020	-First Planning Commission hearing held in Half Moon Bay.
June 10, 2020	-Second Planning Commission hearing. Planning Commission recommends that the Board of Supervisors direct staff to submit the amendment for CCC certification.

DISCUSSION

A. KEY ISSUES

1. Consistency of Land Use Plan Amendments with the California Coastal Act

As described above, amendments to the County's LCP Land Use Plan (LUP) must be consistent with the requirements of the California Coastal Act.

Specifically, pursuant to Section 30512.2 of the Public Resources Code (*California Coastal Act*), the Commission's review of an LCP amendment is limited to a determination that the amendment is or is not consistent with the Coastal Zone values cited in Section 30001 of the Act, as well as its conformance with the requirements of Chapter 3 (commencing with Section 30200) of the Coastal Act. In this case, the proposed changes to the LUP are limited to re-designation of the site from Medium High Density Residential to Medium Density Residential, and the revision to Policy 3.15 that increases the percentage of affordable dwelling units that must be provided by any proposed development of the site.

The proposed LUP amendments are consistent with the Coastal Act (CA) because the reduction in density ensures the protection of coastal resources, and because it increases the number of affordable units with increased coastal access opportunities, as detailed below.

CA Section 30001(d) (*Legislative Findings and Declarations*) states that existing developed uses, and future developments that are carefully planned and developed consistent with the policies of this division, are essential to the economic and social well-being of the people of this state and especially to working persons employed within the Coastal Zone.

The proposed LUP amendments are consistent with this finding because the

reduction in density enables a carefully planned development that will protect coastal resources, will be compatible with the intensity of residential development in the surrounding neighborhood and increases the ability of lower income residents to access and enjoy the coast. The proposed increase in the required percentage of affordable housing units will enhance the well-being of working persons employed within the Coastal Zone by increasing the number of housing units that will be affordable to such workers, within a community that has a significant shortfall of affordable rental opportunities.

CA Section 30240 (*Environmentally Sensitive Habitat Areas; Adjacent Developments*) states:

> a. *Environmentally sensitive habitat areas (ESHAs) shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas; and,*
>
> b. *Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.*

No environmentally sensitive habitat areas (ESHA) have been identified on the project parcel. The closest ESHA is Montara Creek, which lies to the north of the project parcel. The proposed reduction in density will help ensure that future development of the parcel will not threaten or degrade this adjacent habitat area. There is no evidence to indicate that future residential development, at the reduced density allowed by the LUP amendments, will have adverse impacts on any known ESHAs in the project vicinity.

CA Section 30244 (*Archaeological or Paleontological Resources*) requires that where development would adversely impact archaeological or paleontological resources as identified by the State Historic Preservation Officer, reasonable mitigation measures shall be required.

The applicant has submitted a cultural resources assessment that describes the site as highly disturbed and identifies the presence of imported soils. However, the assessment also states that there is the potential for subsurface cultural materials to occur on undisturbed portions of the site, and identifies a potential midden site composed of mussel shell fragments. Therefore, the assessment recommends the implementation of mitigation measures, including monitoring during ground-disturbing activities, within these areas. The County's review of any future CDP application required to construct the project will provide the opportunity to require these and other mitigation measures. There is no evidence to suggest that the proposed reduction in density will impede the County's ability to effectively mitigate any potential impacts to these areas.

CA Section 30250 (*Location; Existing Developed Area*) states that new residential, commercial, or industrial development, except as otherwise provided in this division, shall be located within, contiguous with, or in close proximity to, existing developed areas able to accommodate it or, where such areas are not able to accommodate it, in other areas with adequate public services and where it will not have significant adverse effects, either individually or cumulatively, on coastal resources.

The parcel that is the subject of these LUP amendments has been designated for affordable housing since 1980. Public facilities (road access, sewer, water and power lines) are available at the site, which is within an existing residential neighborhood. Because the project is designated a priority use under the County's LCP, sewer and water capacity has been reserved for it. The proposed reduction in density, and the requirement to demonstrate LCP consistency at the permitting stage, will ensure that future development will not have significant adverse impacts on coastal resources, as further discussed in Section A.2 of this report.

CA Section 30251 (*Scenic and Visual Qualities*) states that the scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance. Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural land forms, to be visually compatible with the character of surrounding areas, and, where feasible, to restore and enhance visual quality in visually degraded areas.

The applicant has submitted a Visual Resources assessment confirming that the reduced density of development proposed by the LUP amendments can be accommodated on the site without being visible from Cabrillo Highway, and will not block views of the ocean available from public viewing points. Accommodating the proposed density of development will not require significant alteration of landforms, nor impact highly scenic areas, and will enable the preservation of significant open space areas that can be used to provide visual screening for any future development proposal.

CA Section 30252 (*Maintenance and Enhancement of Public Access*) requires that the location and amount of new development maintain and enhance public access to the coast by (1) facilitating the provision or extension of transit service, (2) providing commercial facilities within or adjoining residential development or in other areas that will minimize the use of coastal access roads, (3) providing non-automobile circulation within the development, (4) providing adequate parking facilities or providing substitute means of serving the development with public transportation, (5) assuring the potential for public transit for high intensity uses such as high-rise office buildings, and by (6) assuring that the recreational needs of new residents will not overload nearby coastal recreation areas by correlating the amount of development with local park acquisition and development plans with the provision of onsite recreational facilities to serve the new development.

The subject site is within walking distance of Moss Beach's commercial district, and the proposed LUP amendments reduce the total number of residential units that have been previously approved for the project site, thereby reducing potential adverse impacts to coastal access attributable to future development. As discussed in section A.2 of this report, the proposed PUD includes walking trails to allow for easy pedestrian circulation within the development, as well as for adjacent residents; requires an amount of on-site parking that exceeds existing requirements; and, includes on-site recreation facilities (e.g., barbeque facilities, open space areas, and a community room) that will serve future residents.

With regard to the provision of public transit facilities, the County is in the initial stages of working with SamTrans to evaluate, and if feasible pursue,

improvements to existing bus services that will facilitate transit use by future residents. Additional trail and roadway improvements that will enhance circulation to and

from the subject site, and within the greater Midcoast area, are being pursued as part of "Connect the Coastside", a Comprehensive Transportation Management Plan for the area. The specific transit and roadway improvements that will be required in conjunction with the development of the site will be determined at the time the County considers a CDP application, as necessary to ensure compliance with the above CA requirements and associated LUP Policies.

CA Section 30253(a) (*Minimization of Adverse Impacts*) states that new development shall minimize risks to life and property in areas of high geologic, flood, and fire hazard.

The subject site does not contain any known geologic hazards, such as fault lines, landslide zones, or areas that are susceptible to floods. The project site is not within a designated Hazardous Fire Area, but is located within a Community at Risk zone according to the County's Wildland Urban Interface Fire Threatened Communities Map. New residential structures that may be constructed in the future will be required to conform to modern fire and building codes, include fire detection and extinguishing systems, and provide adequate access for emergency responders. In addition, the landscaping areas identified by the proposed PUD will replace fire susceptible vegetation that currently exists on the site with fire resistant landscape materials. Finally, the proposed reduction in density, and the circulation improvements that will be required in conjunction with any future development approvals, will improve the ability to evacuate the area in the event of a wildfire.

CA Section 30253(b) requires new development to assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs.

The proposed reduction in density does not present any new potential erosion impacts. Nor will it contribute to geologic instability, cause the destruction of the site or surrounding area, or necessitate the construction of protective devices that would alter natural landforms.

CA Section 30253(c) requires new development to be consistent with requirements imposed by an air pollution control district or the State Air Resources Board as to each particular development.

The proposed reduction in density does not present any conflicts with air quality protection requirements. Dust control measures and other measures to prevent air pollution from future development will be addressed at the time the County considers a CDP application.

CA Section 30253(d) requires new development to minimize energy consumption and vehicle miles traveled.

The proposed reduction in density will reduce the amount of energy consumed, and the number of vehicle miles traveled, by future residents. Future development of the site will be required to meet energy efficiency standards. In order to further minimize vehicle miles traveled, MidPeninsula (MidPen) Housing has stated that they will give preference to renters who are currently employed on the coast, to the extent allowed by federal and

state law.

2. Consistency of Zoning Amendments with the San Mateo County Local Coastal Program Land Use Plan

The LCP Land Use Plan consists of the Land Use Plans, Maps, and Policies adopted by the County and certified by the CCC as being consistent with the Coastal Act. Among other things, the Land Use Plan establishes the policy basis for regulating the type, intensity, and location of land uses within specific geographic areas of the Coastal Zone.

The ordinances, regulations, and zoning maps that implement the Land Use Plan, and that have been certified by the CCC as being adequate to do so, comprise the LCP Implementation Program. Proposed amendments to the LCP Implementation Plan must also be consistent with, and adequate to carry out, the LCP Land Use Plan.

In this case, the proposed amendment to the LCP Implementation Plan is the replacement of the existing PUD Zoning District with a new PUD Zoning District that reduces the maximum number of housing units that may be permitted on the site (subject to CDP approval), and that adjusts the site plan to ensure the protection of coastal resources and provide an effective means of carrying out long standing LCP Land Use Plan provisions that designate the site for housing affordable to people and families with low to moderate incomes.

Staff's analysis of the proposed Implementation Program amendment's consistency with, and ability to adequately to carry out the components of the LCP Land Use Plan is provided below.

Locating and Planning New Development Component

Policy 1.5 (*Land Uses and Development Densities in Urban Areas*) limits the type of land uses allowed by the LCP Land Use Plan Map, and restricts the maximum density of development to that which is specified in Table 1.2.

The LCP Land Use Map designates the subject site as "Medium High Density Residential", with a corresponding density of 8.1 - 16.0 dwelling units per acre. The proposed revision to the PUD results in a density of 6.5 dwelling units per acre, which is below the minimum densities permitted in the Medium High-Density Residential land use designation. The proposed amendment to the LCP Land Use Plan, which re-designates the site as Medium Density Residential and is discussed in section A.1 of this report, resolves this conflict.

Policy 1.18.c (*Location of New Development*) allows some future growth to develop at relatively high densities for affordable housing in areas where public facilities and services are or will be adequate and where coastal resources will not be endangered.

The proposed PUD amendment reduces the number of housing units that may be constructed on the site under the existing zoning, and preserves more of the site's open space. This will minimize the demands that future development will place on public facilities and services, and avoid impacts to coastal resources. The site is within an area

served by public facilities and services, including water, sewer, gas, and electricity, fire, sheriff, hospitals, and schools. The affordable housing units planned for the project site are identified as a priority use by the LCP, and the water supply and wastewater treatment capacity required to serve this use have been reserved by the local service provider. Thus, the proposed rezoning is consistent with this policy.

Policy 1.19 (*Ensure Adequate Public Services and Infrastructure for New Development in Urban Areas*) states that no permit for development in the urban area shall be approved unless it can be demonstrated that it will be served with adequate water supplies and wastewater treatment facilities.

The subject site is within the service area of the Montara Water and Sanitary District (MWSD). In 2013, the Coastal Commission considered and certified an amendment to MWSD's Public Works Plan (PWP) that was predicated, in part, on the confirmation that "the PWP would protect all LCP-enumerated priority uses," including affordable housing. Per LCP Policy 3.12, the affordable housing units planned for the project site qualify as a priority land use, and therefore, the water demand and sewer capacity must be supplied by MWSD's priority use reserves. The project site is specifically listed in the LCP as "North Moss Beach Site (11 acres)" in *Table 2.7: Sewage Treatment Capacity to be Reserved for Priority Land Uses-Montara Sanitary District, and Table 2.17: Amount of Water Capacity to be Reserved for Priority Land Uses-Montara*

Water and Sewer District. The proposed rezoning therefore complies with this policy.

Policy 1.25 (*Protection of Archaeological/Paleontological Resources*) requires investigation of development sites for potential archaeological/paleontological resources. If it is determined that there is a high potential to uncover resources during construction, then a mitigation plan, prepared by a qualified professional must be implemented as part of the project.

MidPen Housing contracted with an outside consulting firm to survey the project site and prepare a Cultural Resources Report (Attachment F) which found that the project site contains one potential archaeological resource. The consulting archaeologist noted that: "A small area of prehistoric shell midden was noted during surface reconnaissance. The midden was sparse, and surface elements consisted of a scatter of Mussel shell fragments. Subsequently, an archaeological testing program was conducted at the midden site that concluded that this deposit is highly disturbed and possibly imported from outside the proposed project area during modern dumping activities. The midden material is not significant enough to warrant preservation, however it may contain significant isolated artifacts/remains and any construction activities carried out within the vicinity of the site should be monitored by an archaeologist." The report concluded that a mitigation plan is necessary to ensure that any potential impact to resources is reduced to a less than significant level. The recommended measures that should be included as conditions of approval for future development on the site include:

- Conducting additional testing of the midden site to collect data on any resources present at the site, and cataloging and storing all resources obtained from the site;

- Conduct monitoring of construction on the project site;

- Specify actions to be taken to protect resources if any are identified during construction;

- Prepare a paleontological resource monitoring plan and conduct pedestrian surveys for paleontological resources on the project site; and,

- Implement procedures for handling any human remains that may be discovered during project construction.

It is anticipated that these mitigation measures will be included in the project description contained in a future CDP application. If they are not, the decision-making authority will have the ability to require them as conditions of CDP approval pursuant to the requirements of LCP Policy 1.25. The proposed PUD amendment is therefore consistent with this Policy.

Public Works Component

Policy 2.8 (*Reservation of Capacity for Priority Land Uses*) requires the reservation of public works capacity for land uses given priority by the LCP, as shown on Table 2.7 and Table 2.17 of the LCP, and states that all priority land uses shall exclusively rely on public sewer and water services.

This policy mirrors Policy 1.19, discussed above. As previously described, the project will rely upon water and sewer service provided by Montara Water and Sanitary District. The approved Public Works Plan for MWSD requires the district to reserve capacity specifically for this site. The amount of sewer and water capacity that is to be reserved is based on the current zoning which allows 148 dwelling units. The proposed PUD amendment would reduce that dwelling unit count down to 71 units, thus freeing up a corresponding amount of sewer and water capacity for other uses within the MWSD service area. The Sewer Authority Mid-Coastside has indicated that the wastewater treatment system has adequate capacity for growth anticipated in the region, including the development of 71 residential units on the subject site. The proposed PUD amendment is therefore consistent with this LCP policy.

Policy 2.42 (*Roadway Capacity Limits*) limits the expansion of roadways (i.e., - additional lanes) to a capacity which does not exceed that needed to accommodate commuter peak period traffic when buildout of the Land Use Plan occurs, and which does not exceed existing and probable future capacity of water and sewage treatment and transmission capacity or otherwise conflict with other policies of the LCP.

The proposed PUD amendment reduces the intensity of residential development that may be permitted on the site, and will thereby diminish the potential need to add additional lanes to exiting roadways in the future. Based on the modeling conducted to prepare the Connect the Coastside Transportation Management Plan, the development of 71 residential units on the subject site, when combined with other development that could occur within Half Moon Bay and the unincorporated Midcoast, will not require additional lanes on Highway One other than limited passing and turning lanes. What will be required are intersection controls at certain locations, such as at California Avenue and

Highway One in Moss Beach.

There are a range of options available to provide the necessary intersection controls, including the installation of traffic signals or roundabouts. Connect the Coastside, which is currently in draft form and will be the subject of public hearings prior to the consideration of the CDP required to develop the subject site, describes these options, and provides a forum to identify the preferred method of needed intersection controls. The selected form of intersection controls, and the timing of their installation, will be decided prior to or concurrently with the County's consideration of a CDP for development of the subject site.

Irrespective of the type and timing of these intersection improvements the PUD amendment is consistent with this LCP policy because it does not propose or necessitate the expansion of roadways.

Policy 2.52 (*Traffic Mitigation for all Development in the Urban Midcoast*) requires applicants for new development that generates any net increase in vehicle trips on Highways 1 and/or 92…to develop and implement a traffic impact analysis and mitigation plan (TIMP), and to submit the TIMP and associated analyses and implementation measures prior to the approval of any CDP application that triggers this requirement.

The proposed PUD amendment will reduce potential new vehicle trips on Highways 1 or 92 by reducing the maximum density of development allowed on the site. As required by policy 2.52, a TIMP will need to be submitted in conjunction with any future permit application, at which time a full analysis of necessary mitigation measures, and a plan for their implementation, must be provided.

The traffic analysis performed by MidPen to date (Attachment G) shows that, under current conditions, the Etheldore Street and California Avenue intersections with Highway One operate at Level of Service (LOS) E or F during the morning and/or evening commute periods. The project will incrementally exacerbate these delays at the two intersections by approximately 1.4% percent. The traffic report identifies several potential mitigation measures, which have been considered during the development of Connect the Coastside. These measures will be refined and presented to the Planning Commission and Board of Supervisors after public feedback on the Connect the Coastside draft is obtained, and prior to the consideration of a CDP application to develop the subject site. During its consideration of a future CDP application, the Planning Commission (and Board of Supervisors upon appeal) will have the opportunity to evaluate the effectiveness of the specific mitigations measures selected by Connect the Coastside, determine the project's appropriate fair share contribution to the necessary improvements, and establish timelines for their implementation in relation to project construction and occupancy. This approach is consistent with this policy, which requires that mitigation for traffic impacts be determined prior to the approval of a CDP.

Housing Component

Policy 3.1 (*Sufficient Housing Opportunities*) states: *"Through both public and private efforts, protect, encourage and, where feasible, provide housing opportunities for persons of low and moderate income who reside, work or can be expected to work in the Coastal Zone."*

The proposed PUD Amendment is intended to enable the future construction of 71 affordable rental housing units that are reserved for low- and moderate-income households. Although there may be legal limits on the ability to restrict the rental of the future units to just those people who live or work in the Coastal Zone, MidPen Housing is working with the County Department of Housing, to explore the possibility of giving priority to qualifying renters who already live and/or work in the Midcoast area. Irrespective of MidPen's ability to establish such priorities, it is reasonable to assume that many of the future occupants will be existing Coastside residents and/or workers. The proposed amendment is therefore consistent with this LCP policy.

Policy 3.2 - *Non-Discrimination: "Strive to ensure that decent housing is available for low- and moderate-income persons regardless of age, race, sex, marital status or other arbitrary factors."*

The proposed amendment will allow for the future development of housing units for low- and moderate-income households, at a lower density than that which is currently allowed. If permits for the construction of these units are granted in the future, the owners of the units will not be allowed to discriminate based upon age, race, sex, marital status or any other protected category. The proposed PUD site plan includes multiple unit types (one, two, and three-bedroom units), in order to provide housing for a broad range of potential renters. Additionally, some of the units will include mobility and/or communications features to assist people with mobility, vision and hearing impairments. The proposed amendment is consistent with this LCP policy.

Policy 3.3 (*Balanced Developments*) states: *"Strive to provide such housing in balanced residential environments that combine access to employment, community facilities and adequate services."*

The purpose of this policy is to integrate affordable housing into the County's existing coastal communities. The site that is the subject of the PUD amendment is located in an area with existing infrastructure and services, and that avoids the conversion of agricultural lands. The project site is within 1/2-mile of the Coastside Market grocery store and Moss Beach Park. It is within 1.4 miles of Farallone View Elementary School, and 0.8 miles of the Seton Coastside Medical Center. The existing PUD for the site has already been determined to be consistent with this policy, and the proposed amendments maintain this consistency.

Policy 3.4 (*Diverse Housing Opportunities*) states*: "Strive to improve the range of housing choices, by location, type, price and tenure, available to persons of low and moderate income."*

At the present time, there are no income-restricted affordable housing units in the Montara - Moss Beach - El Granada area. The proposed PUD zones the site for 71 housing units that will be restricted to low- and moderate-income households. The PUD includes a mix of 1, 2, and 3-bedroom units designed to accommodate a range of housing needs that is not currently being met by the for-profit housing market. The proposed project is therefore consistent with this LCP policy.

Policy 3.13 (*Maintenance of Community Character*) requires new development that

provides significant housing opportunities for low- and moderate-income persons to contribute to maintaining a sense of community character by being of compatible scale, size and design. Accordingly, this policy limits the height of such development to two stories, and requires negative traffic impacts to be assessed and mitigated as much as possible.

As discussed above, the PUD Amendment provides for the potential future development of the parcel at a density of 6.5 dwelling units per acre, which is consistent with the land use designation of the adjacent residential neighborhood. Because of the relatively large size of the subject parcel, in comparison to adjacent parcels, the proposed PUD calls for future development to be concentrated in the center of the parcel, preserving a significant portion of the parcel as open space. The PUD limits all proposed buildings to two stories, consistent with this policy. Please see the discussion of Policy 2.53, above, for an explanation of how traffic impacts of future development will be addressed. In summary, the height, density, and location of the residential development envisioned by the PUD is compatible with the surrounding neighborhood, and options for mitigating traffic impacts have been identified and will be required at the time that the County considers a CDP for development of the site. Thus, the PUD Amendment is consistent with this policy.

Policy 3.15.d (*Designated Affordable Housing Sites*) calls for the proposed development of the subject site to be evaluated according to the following criteria:

a. *Twenty-one percent (21%) of the total units constructed on the site are to be reserved for low income households.*

b. *In addition to the required low-income units, fourteen percent (14%) of the total units constructed are to be reserved for moderate income households.*

As discussed in Section A.1., the applicant is proposing to amend this policy in a manner that requires all of the units to be affordable. This is consistent with MidPen Housing's intent to restrict occupancy of the units to persons and families with low and moderate incomes (defined as households earning up to 80 percent of the Average Median Income). This amendment will further the LCP and Coastal Act goal of providing affordable housing options for all San Mateo County residents and greater coastal access opportunities for all income levels, and is therefore consistent with the LUP Land Use Plan.

c. *Development must comply with all of the regulations established for Structural and Community Features (Urban), as established in the Visual Resources Component.*

The consistency of the proposed PUD with the policies contained in the Visual Resources Component of the LCP is discussed below.

d. *Require the provision of amenities including, but not limited to, landscaping and recreation facilities.*

The proposed PUD site plan includes landscaping areas, a community garden, a children's play area, BBQ areas, and a public trail through a portion of the site. The

applicant has stated that the trail will be open to both project residents and the general public. The proposed project is consistent with this LCP policy.

e. *Encourage the provision of community services, such as day care centers.*

The proposed PUD includes a community room and other common areas that will be used for after-school programs for children, adult education and training opportunities, and programs to connect residents to a variety of social service providers in the area. The proposed PUD is therefore consistent with this LCP policy.

Policy 3.16 (*Phasing the Development of Designated Housing Sites*) limits the number of building permits that can be issued for the construction of affordable housing on designated sites to 60 during any 12-month period, in order to allow the development to be assimilated into the community a few at a time. However, it also allows the Board of Supervisors to increase the number of affordable housing units permitted if they make the finding that the above phasing requirement threatens the implementation of affordable housing on a designated site by prohibiting the developer(s) from building when circumstances are uniquely favorable for a limited period of time (i.e., low interest rate financing or public subsidies are available).

MidPen Housing is requesting that, in conjunction with its approval of the requested amendments, the Board of Supervisors allow all of the proposed units to be constructed in one phase. The materials submitted in this regard state that: "The significant challenges of financing and constructing affordable housing, which include continued escalation of construction costs in the Bay Area, increases in interest rates over time, a shifting financial environment, and limited income from rental units, means that requiring the project to be approved and built over two years would significantly increase costs and jeopardize feasibility. Also, tight project deadlines and high competition for tax credit financing would not allow the project to be developed in two phases."

Staff recommends that the Board of Supervisors grant the requested waiver when it considers the proposed amendments. Providing the Board with this discretion is consistent with LCP Policy 3.16.

<u>Sensitive Habitats Component</u>

Policy 7.3.a (*Protection of Sensitive Habitats*) prohibits any land use or development which would have a significant adverse impact on sensitive habitat areas.

A biological resources report prepared by the De Novo Planning Group (Attachment H) identifies the potential for eight rare plant species and ten special status wildlife species to occur on the project site. However, detailed investigation by the project biologist found no evidence of these rare and special status species occurring on the project site:

"There has been no documented evidence that any special status species are currently occupying the project site or have occupied it in recent history. The proposed project would result in redevelopment of a largely disturbed urban site that has been naturalized to some extent. The ground-disturbing activities on the site will consist of demolishing the existing

foundations and grading the site. Subsequently, new construction will result in new buildings, infrastructure, ancillary facilities (e.g., parking areas), and landscaping on the areas that are currently developed and those that are naturalized as grassland and coastal scrub. The parcel does not contain special status species or their habitat and is currently exposed to on-going human presence including some vehicle and pedestrian traffic (hiking/jogging)."

With regard to the potential presence of raptors on the project site, the project biologist found:

"There were no active or remnant nests observed within the project site. Additionally, there were no individuals or pairs observed overhead in the immediate vicinity of the project site during the field surveys. Although no raptors or raptor nests have been identified on the project site, the forested areas in the northern portion of the site could become occupied by raptors in the future prior to the initiation of project construction."

To mitigate potential impacts, the biologist recommended pre-construction surveys and the placement of tree protection fencing prior to and during construction to prevent intrusion into the forested north portion of the project site.

The biological information provided to date demonstrates that there are no sensitive habitats on the site, and that potential construction impacts to raptors can be avoided. The proposed PUD is therefore consistent with Policy 7.3.a.

Section b of Policy 7.3 requires development in areas adjacent to sensitive habitats to be sited and designed to prevent impacts that could significantly degrade the sensitive habitats. All uses must be compatible with the maintenance of biologic productivity of the habitats.

As discussed above and in greater detail in the biological report, the subject site does not contain any wetlands, riparian or other sensitive habitats. Montara Creek is approximately 330 feet north of the proposed areas of development on the project site. Existing residential development and the paved portion of 16th Street lie between the project parcel and the banks of Montara Creek. There is no evidence to suggest that the PUD Amendment will degrade sensitive habitats or reduce their biological productivity. The project is therefore consistent with LCP Policy 7.3.b.

Visual Resources Component

Policy 8.5 (*Location of Development*) states: *"On rural lands and urban parcels larger than 20,000 sq. ft.*:

a. *Require that new development be located on a portion of a parcel where the development: (1) is least visible from State and County Scenic Roads; (2) is least likely to significantly impact views from public viewpoints; and (3) is consistent with all other LCP requirements, best preserves the visual and open space qualities of the parcel overall. Where conflicts in complying with this requirement occur, resolve them in a manner which, on balance, most protects significant coastal resources on the parcel, consistent with Coastal Act Section 30007.5."*

A Scenic Resources Analysis (Attachment I) of the proposed PUD found that the project will generate only minor visual impacts that are consistent with the general urban residential character of the surrounding neighborhood. The proposal to reduce the number of units allowed by the existing PUD minimizes the visual impact that future development will have, and the location of the development proposed by the PUD is not visible from the nearest County Scenic Road (Cabrillo Highway) due to intervening topography and vegetation. The proposed site plan also locates development in an area that will not obstruct existing views of the ocean available to the public along Stetson or Carlos Streets. The proposed PUD site plan locates development in areas that would be partially visible from Lincoln and Buena Vista Streets, which are the two streets closest to the east side of the project site. Westerly scenic vistas from these two roads are currently dominated by the numerous trees surrounding the periphery of the site.

The PUD site plan identifies that the building pads nearest to Lincoln Street will range from 183 feet above mean sea level (MSL) to 186 feet MSL. All other building pad elevations on the site will be lower. Buildings nearest Lincoln Street and Buena Vista Street will be set back approximately 230 feet from the nearest neighboring residences on Lincoln Street or Buena Vista Street. Within this setback area, existing trees will be retained, as will trees along the northerly portion of the project site. As a result, the roofs of project buildings will be only partially visible from Lincoln Street and from the base of Buena Vista Street.

They will appear similar in height and mass to the existing water storage tanks, and lower in height than the background vegetation. All other proposed buildings will be located at lower elevations and more distant from Lincoln and Buena Vista Street. Because of the change in elevation between onsite building pads, the distance of the buildings from public viewing points (Lincoln and Buena Vista Streets), and intervening vegetation that will not be affected by the project, vistas of the Pacific Ocean would not be blocked. The proposed location of development therefore complies with this policy.

Policy 8.9 (*Trees*) states:

a. *Locate and design new development to minimize tree removal.*

d. *Protect trees specifically selected for their visual prominence and their important scenic or scientific qualities.*

The proposed PUD amendment reduces the amount of the development that may be permitted on the site, thereby reducing the need for tree removal, and improving the ability to protect any trees that have important scenic qualities.

Major vegetation on the subject site consists of a scattering of Monterey Pine and Cypress trees, with a larger concentration of trees along the northern property line and dropping down slope from there to 16th Street. The proposed location of future residential buildings is clustered near the center of the parcel; in an area that was previously occupied by military barrack buildings. Clustering the buildings in this location will minimize their visibility from surrounding areas and reduce the potential need for tree removal. The proposed PUD amendment is therefore consistent with this policy.

<u>Hazards Component</u>

Policy 9.1 (*Definition of Hazard Areas*) defines hazardous areas as *"fault zones and land subject to dangers from liquefaction and other severe seismic impacts, unstable slopes, landslides, coastal cliff instability, flooding, tsunamis, fire, and steep slopes (over 30%)."*

The subject site is not within or immediately adjacent to a known fault zone, nor does it have steep or unstable slopes or soils subject to liquefaction. The subject site is not adjacent or within a flood hazard zone or an area of coastal cliff instability. Therefore, the policies of the Hazards Component are not applicable to this PUD Amendment.

3. Compliance with Planned Unit Development (PUD) Findings

Section 6191 of the Zoning Regulations states that no PUD District shall be enacted for any area unless and until the Board of Supervisors has first:

"*Reviewed a precise plan of the subject area and its environs, and found that the proposed zoning of the area would be in harmony with said plan, and would not be in conflict with the County Master Plan (i.e., 1986 General Plan), or with any current land use plan for a sub-area of the County previously adopted by the Commission*."

Based on the previous discussion in the LCP Compliance Section of this report (Section A.2), the proposed PUD Zoning District regulations, for this parcel, are in harmony with applicable LCP policies.

Additional required findings listed below (italicized), stipulate that the Board of Supervisors must find that the specific PUD District:

a. *Is a desirable guide for the future growth of the subject area of the County.*

As discussed in the sections above, the project site has been designated as an affordable housing site since 1980. The proposed PUD reduces the density of the existing PUD to a level comparable to the surrounding neighborhood and clusters future development in a manner that provides more open space on the parcel than the current, adopted zoning would provide The PUD Amendment establishes zoning standards that will enable the County to fulfill the long term objective of providing affordable housing on the Coastside, in a manner that is compatible with its surroundings, protects natural resources, and is consistent with LCP policies. The PUD therefore addresses the pressing need for affordable housing growth in a desirable way.

b. *Will not be detrimental to the character, social and economic stability of the subject area and its environs, and will assure the orderly and beneficial development of such areas.*

The proposed PUD amendment reduces the amount of development allowed by the existing zoning in a manner that is consistent with the density of the surrounding neighborhood. The proposed amendment will reduce and cluster the footprint of future development allowed by the existing zoning, thereby providing more open space and diminishing demands on infrastructure and public services. It will provide trails and recreation areas that will benefit existing and future residents, and be accompanied by

transit and circulation improvements that will benefit the greater community. The protection of the character, social and economic stability of the Coastside requires the provision of housing opportunities for all income levels, with the people and families of lowest incomes having the greatest need. The proposed amendment provides a way to help meet these needs, in an orderly and beneficial manner.

c. *Will be in harmony with the zoning in adjoining unincorporated areas.*

The adjacent neighborhood to the south and east of the subject parcel is zoned R-1/S-17 (Single Family Residential/5,000 sq. ft. minimum parcel size). The proposed reduction in density will result in the same dwelling units per acre as the adjacent S-17 district. Clustering of the apartment units closer to the center of the project parcel will provide a significant open space transition between the new residences and existing nearby houses. Accordingly, the PUD sets standards for future development that is in harmony with the zoning of adjacent areas.

d. *Will obviate the menace to the public safety resulting from land uses proposed adjacent to highways in the County, and will not cause undue interference with existing or prospective traffic movements on said highways.*

Highway intersections within Moss Beach are currently constrained during peak commute times and recreational periods, and in need of improvement. By lowering the number of units that may be constructed on the site, the PUD amendment reduces the impacts that future development of the site will have on Highways 1 and 92. At the time a CDP application for development of the site is being considered, the specific actions that will be taken to address the project's impact on traffic, safety, and circulation will be identified. Connect the Coastside provides a forum to address these needs, and will inform future decisions on a development application for this site, in order to ensure that the development is accompanied by measures that protect public safety and minimize traffic congestion.

e. *Will provide adequate light, air, privacy and convenience of access to the subject property and further that said property shall not be made subject to unusual or undue risk from fire, inundation, or other dangers.*

The proposed PUD amendment increases the amount of open space that will be preserved in conjunction with future development. The site plan provides safe and convenient access, and clusters future development near the center of the site thereby providing adequate light, air, and privacy to neighboring uses. The subject site is not in an area prone to flooding, and future construction must comply with building and fire code requirements. The PUD amendment therefore does not present any unusual or undue risks.

f. *Will not result in overcrowding of the land or undue congestion of population.*

As discussed previously, the proposed project will reduce the number of residential units on the project parcel from what is currently allowed under the existing PUD zoning. The resulting density matches that of the adjacent single-family neighborhood and will provide an appropriate number of residential units for a parcel of this size, in an area with available water and sewer services.

B. REVIEW BY THE MIDCOAST COMMUNITY COUNCIL

The Midcoast Community Council (MCC) submitted comment letters on the proposed amendments on several occasions. There were four main issues that the Council expressed concerns on:

Height of Buildings

As originally proposed, the amendments would have restricted the proposed apartment buildings to two stories, but height would have been measured as average grade to average roof height. This method of calculation could have resulted in buildings that were greater than 28 feet tall. The Council requested that this particular language in the amendments be revised so that all buildings constructed on the project parcel are limited to 28 feet in height, which will be measured as the vertical distance from any point on the finished grade to the topmost point of the building directly above. The applicant agrees with the Council in this regard and has modified their proposal. This requested language is reflected in the draft Ordinance included as Attachment C of your report.

Setback of Buildings

Planned Unit Development (PUD) Zoning Districts are unique from other zoning districts in that they establish a specific site plan for future development on a parcel that may be different from the adjacent zoning district with respect to setbacks, height, and other requirements. The original site plan as proposed by the applicant included two apartment buildings within 20-feet of the Carlos Street property line, which is less than the minimum setback required in the adjacent single-family zoning district. In response to the Council's comments, the applicant has revised the site plan so that no buildings will be closer than 20-feet from the Carlos Street property line.

Preference for Local Residents and Workers
The Council commented, as did many speakers at the January 22, 2020 Planning Commission meeting, that reserving all (or as many as possible) of the dwelling units in the complex for people who already live or work on the Coastside would greatly alleviate community concerns about population and traffic increase in the area. When this topic was discussed at the January 22, 2020 Planning Commission meeting, the number of units proposed for the local live/work preference was at 50% of the total. In response to these comments, the applicant worked with the Department of Housing, who is contributing County housing funds to the future development of the site, to determine if this preference ratio could be increased. It has been concluded that a 75 percent local preference is the largest preference ratio that can be supported without violating the Department's responsibility to distribute these funds in a manner that is equitable to all County residents.

Traffic and Circulation

A considerable number of comments were made regarding existing traffic issues in the area as well as concerns regarding the additional vehicle trips that the Cypress Point project could generate in the future. Complicating the discussion is the overlap between the processing of these proposed amendments and the County's current efforts to draft a traffic circulation improvement plan (known as Connect the Coastside) for the Coastside. Separating those improvements which will be necessary for occupancy of Cypress Point versus the larger scale improvements that will come out of the Connect the Coastside effort has been difficult during the public hearings for these amendments. At the June 10, 2020 Planning Commission meeting, Staff presented a list of viable circulation improvements that will be more thoroughly analyzed and potentially augmented when the CEQA

review for the future Cypress Point CDP is conducted. These improvements are not expressly required for adoption of the proposed amendments, but were presented at the hearing to illustrate the larger neighborhood improvements that could result from construction and occupancy of Cypress Point.

C. MAJOR DEVELOPMENT PRE-APPLICATION WORKSHOP

Section 6415.4 of the Zoning Regulations requires a public workshop to be held for residential development involving ten (10) or more new dwelling units. The intent of the public workshop is to allow community members and public agency representatives the opportunity to provide the applicant with project input before the preparation of final development plans. The County held a public workshop for this project on September 20, 2017, at the El Granada Elementary School. Comments received during this phase of the project are discussed in the Workshop's summary letter, which is included as Attachment J.

D. ENVIRONMENTAL REVIEW

Per Section 21080.9 of the California Public Resources Code, environmental review of the proposed LCP amendment is the responsibility of the California Coastal Commission. The Commission's LCP review and approval program has been found by the Resources Agency to be the functional equivalent of the environmental review required by CEQA, pursuant to CEQA Section 21080.5. Therefore, Coastal Commission documents prepared during its review of an LCP submission act in lieu of traditional CEQA documents such as an EIR.

County Counsel has reviewed the report as to form.

FISCAL IMPACT:
No fiscal impact.

REVIEWING AGENCIES

County Building Inspection Section
County Department of Public Works
County Environmental Health Services
Coastside Fire Protection District
Montara Water and Sanitary District
Midcoast Community Council
California Department of Fish and Game
Caltrans, District 4
California Coastal Commission
California Historical Resources Information System (CHRIS) Northwest Info Center

ATTACHMENTS:
A. Board of Supervisors Recommendations
B. Proposed Resolution
C. Proposed Zoning Amendment Ordinance
D. Site Plan and Text - PUD-124
E. Proposed Plans - PUD-140

Due to the size of Attachments F - I, copies of these documents will be available at the following

locations:

1. Electronic version on the Planning Department's website at: <https://planning.smcgov.org/cypress-point-affordable-housing-community-project>

2. Print copy (UPON REQUEST) at the County Planning Department, 455 County Center, Second Floor, Redwood City, California. For print copies, please contact the Planning Commission Secretary, Janneth Lujan, at 650/363-1859 or jlujan@smcgov.org <mailto:jlujan@smcgov.org>

F. Cultural Resources Report
G. Traffic Impact Analysis
H. Biological Resources Assessment
I. Aesthetics and Visual Resources Report
J. September 20, 2017 Pre-Application Workshop Summery letter

Attachment A

County of San Mateo
Planning and Building Department

RECOMMENDED FINDINGS

Permit or Project File Number: PLN 2018-00264 Hearing Date: July 21, 2020

Prepared By: Michael Schaller For Adoption By: Board of Supervisors

Regarding the Local Coastal Plan Land Use Map Amendment:

1. Direct staff to submit the attached resolution proposing to amend the San Mateo County Local Coastal Plan Land Use Map to change the subject parcel's Local Coastal Plan Map designation from "Medium High Density Residential" to "Medium Density Residential" for California Coastal Commission certification.

Regarding the Local Coastal Program Land Use Plan Amendment:

2. Direct staff to submit the attached resolution proposing to amend San Mateo County Local Coastal Plan Policy 3.15(d) to read: 100% of the total units constructed on the site (with the exception of the manager's apartment) are reserved for low-income households (defined as households earning up to 80% of the Average Median Income") for California Coastal Commission certification.

Regarding the Zoning Amendments:

3. Direct staff to include Exhibit A to the attached Resolution, to be submitted for Coastal Commission certification. Exhibit A proposes to amend the San Mateo County Zoning Regulations by repealing the exiting PUD-124 designation and regulations, adopting the proposed PUD-140 designation and regulations, and adding the Design Review Zoning Overlay to the parcel designated PUD-140.

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Attachment B

RESOLUTION NO. _____

BOARD OF SUPERVISORS, COUNTY OF SAN MATEO, STATE OF CALIFORNIA

* * * * * *

RESOLUTION DIRECTING STAFF TO SUBMIT THE PROPOSED LOCAL COASTAL PROGRAM (LCP) AMENDMENTS FOR CALIFORNIA COASTAL COMMISSION REVIEW AND CERTIFICATION

RESOLVED, by the Board of Supervisors of the County of San Mateo, State of California, that

* * * * * *

WHEREAS, in 1980, the San Mateo County Board of Supervisors (Board of Supervisors) approved and the California Coastal Commission certified the San Mateo County Local Coastal Program (LCP), establishing policies, consistent with the Coastal Act, to guide development within the County's Coastal Zone while protecting coastal resources and providing coastal access for all; and

WHEREAS, for a development permit to be issued in the Coastal Zone, proposed development must comply with the policies of the LCP and those ordinances adopted to implement the LCP; and

WHEREAS, in 1980, the Board of Supervisors recognized an existing and anticipated shortage of affordable housing for the Midcoast area and designated the subject parcel (APN 037-022-070) as an "affordable housing" site; and

WHEREAS, in 1986, the Board of Supervisors approved, and the California Coastal Commission certified the rezoning of the subject parcel to Planned Unit Development ("PUD") to enable the construction of a mixed market rate/affordable housing development (known as Farallone Vista) consisting of 148 dwelling units; and

WHEREAS, due to various issues including a State imposed moratorium on new service connections by the Citizens Utility Water Company (the private water supplier to Montara/Moss Beach at that time), the Farallone Vista project was not constructed, however, the PUD zoning (which allows 148 dwelling units) remains in effect; and

WHEREAS, the Mid-Peninsula Housing Corporation, on July 17, 2018 submitted an application (revised on April 15, 2019) to change the PUD zoning on the subject parcel, to allow only 71 affordable dwelling units with no market rate housing component, thus reducing the potential impacts that the existing zoning could generate while providing additional affordable housing units at a time when the State has declared a "housing crisis" and passed several laws that encourage housing development and, in some cases, limit local control over new housing development; and

WHEREAS, in order to fully implement the LCP's Land Use Plan, the subject property's zoning must be amended to reflect the reduced scope of the project; and

WHEREAS, the proposed rezoning is consistent with the County's LCP; and

WHEREAS, the proposed rezoning will be a desirable guide for the future growth of this area of the County, will not be detrimental to the character, social, and economic stability of this area and its environs, will assure the orderly and beneficial development of this area, and will be in harmony with the zoning in adjoining unincorporated areas; and

WHEREAS, the proposed rezoning will obviate the menace to the public safety resulting from land uses proposed adjacent to Cabrillo Highway, the highway in the County adjacent to the proposed development, and will not cause undue interference with existing or prospective traffic movements on said highways; and

WHEREAS, the proposed rezoning has been designed to cluster development near the center of the parcel and preserve approximately half the site as open space and will provide adequate light, air, privacy, and convenience of access to the subject property, and said property will not be made subject to unusual or undue risk from fire, inundation, or other dangers, and will not result in overcrowding of the land or undue congestion of population; and

WHEREAS, on June 10, 2020, after consideration of the entire record, including public comments, the Planning Commission recommended that the Board of Supervisors transmit the proposed amendments to the County's Local Coastal Plan and Zoning Regulations to the California Coastal Commission for certification; and

WHEREAS, it is the intent of San Mateo County to carry out the proposed amendments in a manner that is in full conformity with the Coastal Act.

NOW THEREFORE, BE IT RESOLVED that the San Mateo County Board of Supervisors:

1) Amends, subject to California Coastal Commission certification, the San Mateo County Local Coastal Plan Land Use Designation of one property, Assessor's Parcel Number 037-022-070, from Medium High Density Residential to Medium Density Residential.

2) Amends, subject to California Coastal Commission certification, the San Mateo County Local Coastal Plan Land Use Plan to change the text of Policy 3.15(d) as follows:

a. *Evaluate proposals to develop the designated or other appropriate sites according to the following criteria:*

(1) *For the total 11-acre North Moss Beach site, development must help meet LCP housing objectives by meeting the following criteria:*

(a) ~~*Twenty-one percent (21%) of the total units constructed on the site are reserved for low income households.*~~

(b) ~~*In addition to the required low-income units, fourteen percent (14%) of the total units constructed are reserved for moderate income households.*~~

100% of the total units constructed on the site (with the exception of a manager's apartment) are reserved for low-income households (defined as households earning up to 80% of the AMI).

3) Amends, subject to California Coastal Commission certification, the San Mateo County Ordinance Code, Division VI, Part One (Zoning Regulations), Chapter 2 (Districts), Section 6115 (Sectional District Maps), and Appendix A (Special

Districts and Planned Unit Developments) which are components of the LCP Implementation Plan. The proposed Ordinance, attached as Exhibit A, changes the zoning designation of one property, Assessor's Parcel Number 037-022-070 to Planned Unit Development No. 140 (PUD-140), adds the Design Review Zoning Overlay to this property, and replaces the regulations applicable to the former PUD to regulations that apply to PUD-140.

AND, BE IT FURTHER RESOLVED, that the San Mateo County Board of Supervisors directs staff to submit the Local Coastal Program (LCP) amendments to the California Coastal Commission for certification that the amendments conform to California Coastal Act standards of review. The LCP amendments submitted to the Coastal Commission include the Land Use Plan changes that are a part of this Resolution as well as the attached Ordinance amendments.

AND, BE IT FURTHER RESOLVED, that the Local Coastal Program amendments shall not have the force of law until thirty (30) days after the California Coastal Commission has confirmed that the County's action acknowledging the Commission's certification, and accepting any modifications required as a condition of certification, is legally adequate.

Attachment C

ORDINANCE NO. _____
BOARD OF SUPERVISORS, COUNTY OF SAN MATEO,
STATE OF CALIFORNIA

*** * * * * ***

AN ORDINANCE (1) AMENDING CHAPTER 2 (ZONING DISTRICTS) OF DIVISION VI OF THE COUNTY ORDINANCE CODE (ZONING REGULATIONS) TO REVISE THE ZONING MAPS TO CHANGE THE ZONING OF THE SUBJECT PARCEL TO PLANNED UNIT DEVELOPMENT NO. 140 (PUD-140); (2) AMENDING CHAPTER 2 (ZONING DISTRICTS) OF DIVISION VI OF THE COUNTY ORDINANCE CODE (ZONING REGULATIONS) TO REVISE THE ZONING MAPS TO ADD THE DESIGN REVIEW ZONING OVERLAY TO THE SUBJECT PARCEL, AND (3) AMENDING DIVISION VI OF THE COUNTY ORDINANCE CODE (ZONING REGULATIONS), APPENDIX A (PLANNED UNIT DEVELOPMENTS), TO ENACT THE FOLLOWING PLANNED UNIT DEVELOPMENT NO. 140 (PUD-140) ZONING DISTRICT REGULATIONS

The Board of Supervisors of the County of San Mateo, State of California, **ORDAINS** as follows

* * * * * *

SECTION 1. The San Mateo County Ordinance Code, Division VI, Part One (Zoning Regulations), Chapter 2 (Districts), Section 6115 (Sectional District Maps) and Appendix A (Special Districts and Planned Unit Developments), which are components of the LCP Implementation Plan, are hereby amended to change the zoning designation of one property, Assessor's Parcel Number 037-022-070 to Planned Unit Development No. 140 (PUD-140).

SECTION 2. The San Mateo County Ordinance Code, Division VI, Part One (Zoning Regulations), Chapter 2 (Districts), Section 6115 (Sectional District Maps) and Appendix

A (Special Districts and Planned Unit Developments), which are components of the LCP Implementation Plan, are hereby amended to add the Design Review Zoning Overlay to one property, Assessor's Parcel Number 037-022-070.

SECTION 3. The San Mateo County Ordinance Code, Division VI, Part One (Zoning Regulations), Appendix A (Special Districts and Planned Unit Developments), which is a component of the LCP Implementation Plan, is hereby amended to add Planned Unit Development No. 140 (PUD-140) as follows:

PUD-140. SECTIONS.

A. PURPOSE

B. DEVELOPMENT PLAN

C. PERMITTED USES

D. DENSITY

E. HEIGHT

F. SETBACKS

G. LOT COVERAGE

H. FLOOR AREA

I. MAINTENANCE OF LANDSCAPING

J. RESTRICTION OF OUTDOOR LIGHTING

K. MAINTENANCE OF MINIMUM PARKING PROVISIONS

SECTION A. PURPOSE.

The following regulations shall govern the development of the residential affordable housing project described below on Assessor's Parcel Number 037-022-070 (project parcel), located at the north-easterly corner of Carlos and Sierra Streets in the unincorporated Moss Beach area of San Mateo County. To the extent that the regulations contained herein conflict with other provisions of Part One, Division VI (Zoning Regulations) of the San Mateo County Ordinance Code, the regulations contained herein shall govern.

SECTION B. DEVELOPMENT PLAN.

All development shall substantially conform to the plans presented to the San Mateo County Planning Commission on January 22, 2020. Those plans include the following elements:

1. Grading of the site (including removal of remnant foundations from previously demolished buildings) for new buildings, roads and other infrastructure improvements as shown on the Conceptual Grading Plan.

2. Construction of 18 two-story residential apartment buildings to be restricted to low income households (defined as households earning up to 80 percent of the Area Median Income (AMI)), with the exception of the manager's apartment.

3. Construction of a community building.

4. Construction of a minimum of 142 uncovered surface parking spaces.

5. A driveway from Carlos Street into the project parcel.

6. Construction of sidewalks and pathways to provide pedestrian access into and within the project parcel.

7. Planting and maintenance of landscaping.

8. The provision and maintenance of all access driveways and road surface materials and drainage elements.

9. Installation of all new utilities (water, sewer, electrical, telephone, cable, etc.) underground.

No site disturbance associated with construction of the PUD shall occur unless and until Design Review, Grading, and Coastal Development Permits have been approved and issued, along with any other necessary County permit.

SECTION C. PERMITTED USES.

1. Multi-family housing for low income households.

2. A Community building that will house a community room, property management/resident services offices, and such amenities as computer lab, laundry room and after-school program space.

3. Outdoor recreational uses for residents of the housing complex, such as tot lots, community garden, barbecue and play areas.

4. Publicly accessible open space with amenities such as trail, benches, and an exercise course.

SECTION D. DENSITY.

The total number of dwelling units shall not exceed 71 dwelling units.

SECTION E. HEIGHT.

The maximum building height shall be 28 feet, not to exceed two habitable stories. Building height shall be measured as the vertical distance from any point on the finished grade to the topmost point of the building immediately above.

SECTION F. SETBACKS.

The minimum setbacks of the proposed buildings shall conform to those shown on the plans reviewed by the Board of Supervisors on July 21, 2020, or as modified by Coastal Development Permit conditions of approval.

SECTION G. LOT COVERAGE.

The maximum lot coverage on the project site shall comply with that shown on the plans reviewed by the Board of Supervisors on July 21, 2020, or as modified by Coastal Development Permit conditions of approval.

SECTION H. FLOOR AREA.

The maximum floor area for all floors of all proposed buildings shall comply with that shown on the plans reviewed by the Board of Supervisors on July 21, 2020, or as modified by Coastal Development Permit conditions of approval.

SECTION I. MAINTENANCE OF LANDSCAPING.

The final landscape plan shall be subject to the County's Water Efficient Landscape Ordinance (WELO). Once approved and installed, the landscape plan shall be maintained in a healthy condition. Any dead or dying landscaping elements shall be replaced in kind as soon as possible.

SECTION J. RESTRICTION OF OUTDOOR LIGHTING.

All outdoor lighting (i.e., number, location, and type of fixtures) shall be subject to review by the Coastside Design Review Committee as part of the consideration of a Coastal Development Permit. All light and glare shall be contained to the project site.

SECTION K. MAINTENANCE OF MINIMUM PARKING PROVISIONS.

A minimum of 142 un-covered parking spaces shall be provided and maintained as shown on the conceptual plans. No parking space shall be used in such a manner as to

prevent its use for parking (e.g., storage, etc.). All internal access roads shall be kept free of any permanently parked vehicles and shall be reserved for vehicle circulation and temporary deliveries.

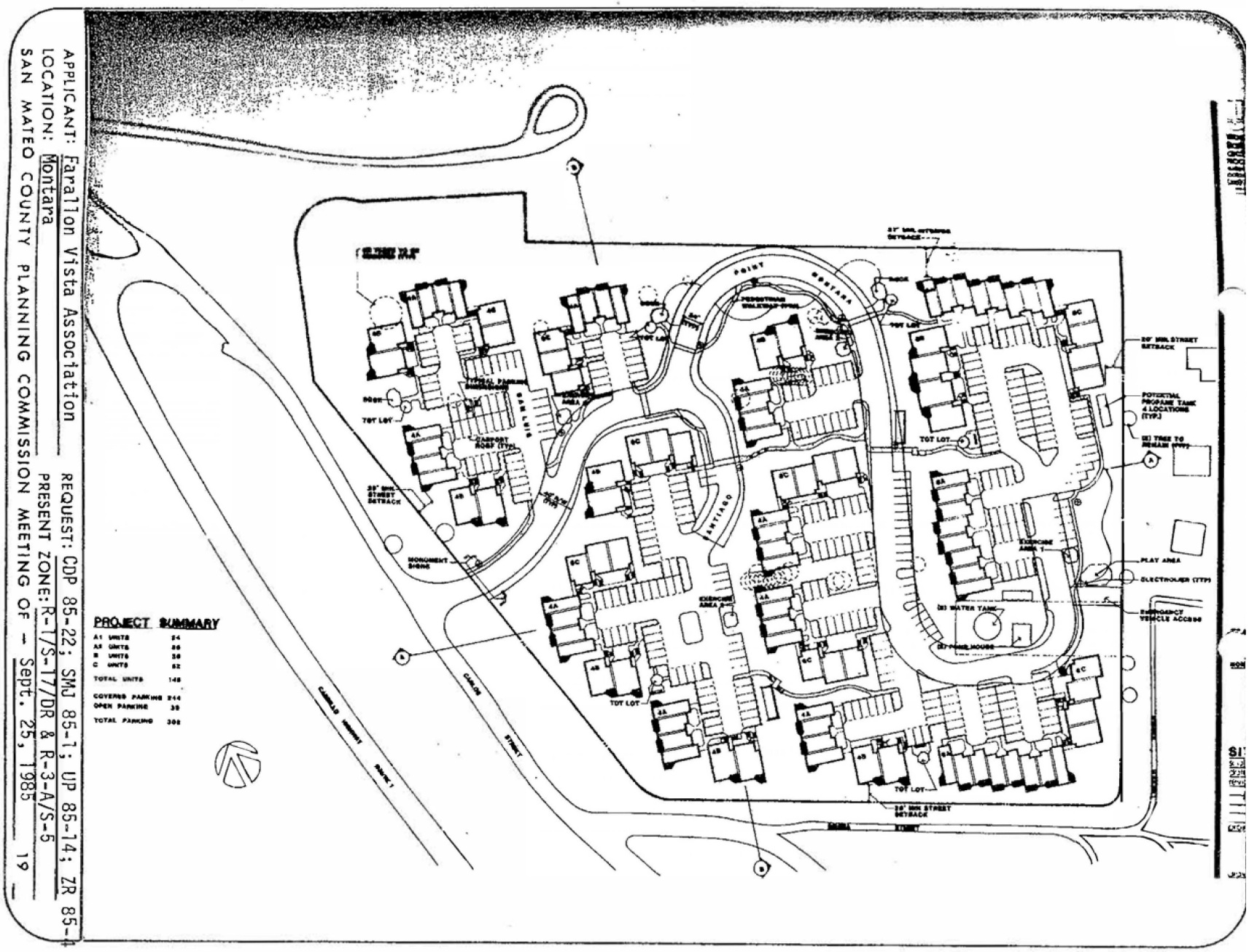
SECTION 4. This Ordinance shall not be effective until (30) days after the California Coastal Commission has confirmed that the County's action acknowledging the Commission's certification, and accepting any modifications required as a condition of certification, is legally adequate.

* * * * * *

MJS:cmc - MJSEE0270_O_WCQ.DOCX

County of San Mateo - Planning and Building Department

ATTACHMENT D



San Mateo County Board of Supervisors Meeting

Owner/Applicant: **MidPen Housing Corporation** Attachment: **D**

File Numbers: **PLN 2018-00264**

APPENDIX A

Special District and Planned Unit Development Regulations

Planned Unit Development District | **Regulations**

PUD-124

Ordinance No. 3089 - March 11, 1986

The following regulations shall govern use and development of a portion of the property commonly known as Farallon Heights in Moss Beach; Assessor's Parcel Number 037-022-040:

1. Purpose

   The following PUD-124 regulations shall govern the land use and development of Farallon Vista, a residential complex for affordable and market rate housing, sited on an 11.02 acre parcel located east of Carlos Street and north of Sierra Street in Moss Beach.

2. Development Plan

   All development shall conform to the development plans for the property as approved by the Planning Commission on October 9, 1985, and by the Board of Supervisors on March 11, 1986, and on file in the Office of the County Planning Division. Determination of conformity with the plan shall be made by the County Planning Director.

3. Use

   The following uses only shall be allowed:

   a. Residential development and related parking facilities for affordable and market rate housing as defined in Policies 3.19, 3.28 and 3.29 of the County Local Coastal Program.

   b. Recreational uses for residents of the housing complex, i.e., exercise course, play area, tot lots, barbecue areas, etc.

4. Density

   The total number of dwelling units shall not exceed 148; 52 dwelling units shall be for affordable housing and 96 units shall be for market rate housing.

5. Height

   No structure shall exceed two stories or an average height of 28 ft.

6. Lot Coverage and Open Space

   Development coverage shall conform to the following standards:

Residential Units	16%
Carports	9%
Private Roads and Open Parking	21%
Common Open Space	54%
Total	100%

7. Parking

Off-street parking shall be provided as shown on the approved plan and shall not be less than two parking spaces per dwelling unit.

8. Landscaping

Areas shown for landscaping on the site plan shall be landscaped in accordance with plans approved by the Planning Director.

9. Design Review

All development shall be subject to design review, pursuant to Chapter 28.1 of the County Ordinance Code and Policy 8.13a of the County Local Coastal Program.

10. Alterations or Additions

The Planning Director may approve reasonable alterations or additions to the approved development plan, provided he finds they are consistent with the purpose and intent of this regulation.

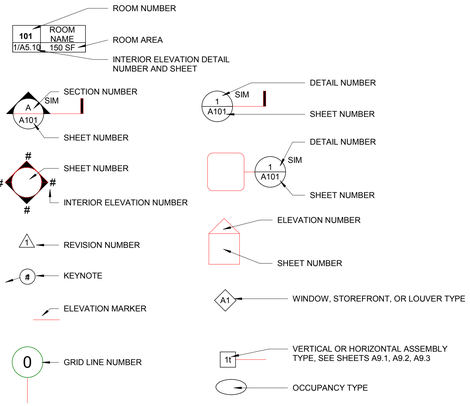
County of San Mateo - Planning and Building Department

ATTACHMENT E

CYPRESS POINT FAMILY COMMUNITY

CARLOS STREET, MOSS BEACH, SAN MATEO COUNTY, CA
COUNTY PLANNING DEPARTMENT SUBMITTAL, MARCH 25, 2019

GRAPHIC SYMBOLS



ABBREVIATIONS

&	AND	KIT.	KITCHEN
<	ANGLE	LAU.	LAUNDRY
@	AT	LAND'G	LANDING
A.B.	ANCHOR BOLT	LAV.	LAVATORY
ABV	ABOVE	LT.	LIGHT
A.C.	ASPHALTIC CONC	MAX.	MAXIMUM
ACC	ACCESSIBLE	M.C.	MEDICINE CABINET
ACOUS.	ACOUSTICAL	MECH.	MECHANICAL
A.D.	AREA DRAIN	MTL.	METAL
ADJ.	ADJACENT	MFR.	MANUFACTURER
ALUM.	ALUMINIUM	MIN.	MINIMUM
APL	ASSUMED PROPERTY LINE	MTD.	MOUNTED
AUTO.	AUTOMATIC	MULL.	MULLION
BALC.	BALCONY	N/A	NOT APPLICABLE
BD.	BOARD	N.I.C.	NOT IN CONTRACT
BLDG.	BUILDING	N.T.S.	NOT TO SCALE
BLKG.	BLOCKING	O/	OVER
BM.	BEAM	O.C.	ON CENTER
B.O.C.	BOTTOM OF CURB	OFF.	OFFICE
BTM.	BOTTOM	O.H.	OVERHANG
B.S.W.	BACK OF SIDEWALK	OPNG.	OPENING
BTWN.	BETWEEN	PERF.	PERFORATED
CABT.	CABINET	PL.	PLATE
CEM.PLAS.	CEMENT PLASTER		PROPERTY LINE
C.J.	CONTROL JOINT	PLAS. LAM.	PLASTIC LAMINATE
C.L.	CENTERLINE	P.O.	PARTIALLY OPERABLE
CLG.	CEILING	P.T.	PRESSURE TREATED
CLKG.	CAULKING		OR POST TENSIONED
CL.	CLOSET	PTD.	PAINTED
CLR.	CLEAR	PLYWD.	PLYWOOD
C.M.U.	CONCRETE MASONRY UNIT	R	RISER
COL.	COLUMN	REC.	RECESSED
CONC.	CONCRETE	REF.	REFRIGERATOR
CONN.	CONNECTION	REINF.	REINFORCED
CONT.	CONTINUOUS	REQ'D	REQUIRED
CONST.	CONSTRUCTION	RM.	ROOM
CNTR.	COUNTER	R.O.	ROUGH OPENING
CSMT.	CASEMENT	R.W.L.	RAINWATER LEADER
D	DRYER	S.A.D.	SEE ARCHITECTURAL DRAWINGS
DBL.	DOUBLE	S.C.	SOLID CORE
DET.	DETAIL	S.C.D	SEE CIVIL DRAWINGS
DIA.	DIAMETER	S.S.D	SEE STRUCTURAL DRAWINGS
DIM.	DIMENSION	SCH.	SCHEDULE
DR.	DOOR	SEC.	SECTION
D.S.	DOWNSPOUT	S.E.D.	SEE ELECTRICAL DRAWINGS
DWG.	DRAWING	S.F.	SUBFLOOR
EA.	EACH	S.G.	SAFETY GLAZING
E.J.	EXPANSION JOINT	SH.	SHELF
ELEV.	ELEVATION	SHLVS.	SHELVES
ELEC.	ELECTRIC	SHT.	SHEET
ENCL.	ENCLOSURE	SIM.	SIMILAR
E.P.	ELECTRIC PANEL	S.L.D.	SEE LANDSCAPE DRAWINGS
EQ.	EQUAL	S.M.	SHEET METAL
EQPT.	EQUIPMENT	S.M.D.	SEE MECHANICAL DRAWINGS
EXT.	EXTERIOR	S.P.	STANDPIPE
F.A.I.	FRESH AIR INTAKE	S.P.D.	SEE PLUMBING DRAWINGS
F.D.	FLOOR DRAIN	SPECS.	SPECIFICATIONS
FDN.	FOUNDATION	SQ.	SQUARE
F.E.	FIRE EXTINGUISHER	S.S.	STAINLESS STEEL
F.E.C.	FIRE EXTINGUISHER CABINET	STD.	STANDARD
F.F.	FINISHED FLOOR	STL.	STEEL
FIN.	FINISH OR FINISHED	STOR.	STORAGE
FLASH'G	FLASHING	STRUCT.	STRUCTURAL
FLEX	FLEXIBLE	SV	SHEET VINYL
FLR.	FLOOR	T.B.	TOWEL BAR
F.O.B.	FACE OF BEAM	T&G	TONGUE AND GROOVE
F.O.C.	FACE OF CONCRETE	TEL.	TELEPHONE
F.O.F.	FACE OF FINISH	TEMP.GL.	TEMPERED GLASS
F.O.S.	FACE OF STUD	THRESH.	THRESHOLD
F.O.W.	FACE OF WALL	T.O.	TOP OF
FT. , '	FOOT	T.O.C.	TOP OF CURB
FTG.	FOOTING	T.O.PL.	TOP OF PLATE
GA.	GAUGE	T.O.S.	TOP OF SLAB
GAR.	GARAGE	T.O.W.	TOP OF WALL
G.B.	GRAB BAR	TPH	TOILET PAPER HOLDER
GL.	GLASS	T	TREAD (OR TEMPERED)
GLAZ.	GLAZING	T.S.	TUBE STEEL
G.S.M.	GALVINIZED SHEET METAL	TYP.	TYPICAL
G.W.B.	GYPSUM WALL BOARD	U.O.N.	UNLESS OTHERWISE NOTED
GYP.	GYPSUM	VCT	VINYL COMPOSITION TILE
H.B.	HOSE BIB	VERT.	VERTICAL
HDWR.	HARDWARE	VEST.	VESTIBULE
H.M.	HOLLOW METAL	V.G.D.F.	VERTICAL GRAIN DOUG. FIR
HORIZ.	HORIZONTAL	V.I.F.	VERIFY IN FIELD
HPR.	HOPPER	W	WASHER
HR.	HOUR	W/	WITH
H.R.	HANDRAIL	W.C.	WATER CLOSET
HT.	HEIGHT	WD.	WOOD
IN. , "	INCHES	WDW.	WINDOW
INSUL.	INSULATION	W.H.	WATER HEATER
INT.	INTERIOR	W/O	WITHOUT
INTERM.	INTERMEDIATE	W.O.	WHERE OCCURS
JT.	JOINT	W.P.	WATERPROOF
		W.S.	WHEELSTOP

DRAWING SHEET INDEX

SHEET NUMBER	SHEET NAME
00 - GENERAL	
G0.00	TITLE SHEET
G0.01	AERIAL PERSPECTIVES
G0.02	RENDERED SITE VIEWS
G0.03	RENDERED SITE VIEWS
01 - CIVIL	
1 of 1	TOPOGRAPHIC SURVEY
C1.0	CONCEPTUAL GRADING PLAN
C2.0	CONCEPTUAL UTILITY PLAN
C3.0	PRELIMINARY STORMWATER MANAGEMENT PLAN
02 - LANDSCAPE	
L1.0	CONCEPTUAL LANDSCAPE PLAN
04 - ARCHITECTURAL	
A1.01	SITE PLAN + SITE SECTION
A3.01	BUILDING TYPE A, TYPICAL PLANS + ELEVATIONS
A3.02	BUILDING TYPE B, TYPICAL PLANS + ELEVATIONS
A3.03	BUILDING TYPE C, TYPICAL PLANS + ELEVATIONS
A3.04	BUILDING TYPE D, TYPICAL PLANS
A3.05	BUILDING TYPE D, TYPICAL ELEVATIONS
A3.06	COMMUNITY BUILDING, PLANS + ELEVATIONS

ACCESSIBILITY SUMMARY

THIS PROJECT IS A PUBLICLY FUNDED PROJECT COMPLYING WITH CHAPTER 11B OF THE 2016 CALIFORNIA BUILDING CODE (CBC).

RESIDENTIAL BUILDINGS:
BUILDING TYPE A: MULTI-FAMILY, NON-ELEVATOR-SERVED BUILDINGS COMPRISED OF MULTI-STORY TOWNHOMES WITH GROUND-LEVEL ENTRIES. 10% OF UNITS MUST COMPLY WITH 11B-233.3.1.2.4, AND PROVIDE AN ACCESSIBLE ROUTE.

BUILDINGS TYPE B,C,D: MULTI-FAMILY, STACKED FLATS WITH STAIR-ONLY ACCESS TO LEVEL 2 UNITS. DWELLING UNITS WITH REQUIRED MOBILITY OR HEARING/VISUALLY IMPAIRED FEATURES ARE ALSO LOCATED ON THE GROUND-LEVEL, AND SHALL COMPLY WITH CHAPTER 11B OF THE 2016 CBC. ALL REMAINING GROUND-FLOOR UNITS COMPLY WITH CHAPTER 11A, DIVISION IV PER SECTION 233.1.2 OF THE 2016 CBC.

COMMUNITY BUILDING:
THE COMMUNITY BUILDING IS A LEASING OFFICE, RESIDENTIAL SERVICES AND COMMUNITY CENTER AND COMPLIES WITH CHAPTER 11B OF THE 2016 CBC.

BUILDING CODES

THIS PROJECT SHALL COMPLY WITH THE 2016 CALIFORNIA BUILDING CODE, WHICH ADOPTS THE 2015 IBC, 2015 UMC, 2015 UPC AND THE 2014 NEC.

PROJECT TEAM

OWNER / APPLICANT
MIDPEN HOUSING CORP.
303 VINTAGE PARK DRIVE, SUITE 250
FOSTER CITY, CA 94404
650.235.7675
CONTACT: ANDREW BIELAK

ARCHITECT
PYATOK ARCHITECTS
1611 TELEGRAPH AVENUE, SUITE 200
OAKLAND, CA 94612
510.465.7010
CONTACT: PETER WALLER

CIVIL ENGINEER
BKF ENGINEERS
255 SHORELINE DRIVE, SUITE 200
REDWOOD CITY, CA 94065
650.482.6300
CONTACT: LAUREN BOYLE BERMAN

LANDSCAPE ARCHITECT
JONI L. JANECKI & ASSOCIATES, INC.
515 SWIFT STREET, SANTA CRUZ, CA 95060
831.423.6040
CONTACT: GEORGIA LEUNG

PROJECT SUMMARY

THE PROPOSED PROJECT CONSISTS OF 71 UNITS OF NEW AFFORDABLE MULTIFAMILY RESIDENTIAL UNITS IN 18 BUILDINGS, AND A COMMUNITY BUILDING FOR RESIDENT SERVICES AND LEASING.

PROJECT ADDRESS: CARLOS STREET, MOSS BEACH, SAN MATEO COUNTY, CA

SITE AREA: 10.875 ACRES
TOTAL UNITS: 71 UNITS
SITE DENSITY: 6.5 UNITS / ACRE

	RESIDENTIAL BUILDINGS	COMMUNITY BUILDING
CONSTRUCTION TYPE:	TYPE VB	TYPE VB
OCCUPANCY TYPE:	R2	A3

DEVELOPMENT STANDARDS

	PROVIDED
BLDG. SETBACK WEST	11 FT
BLDG. SETBACK SOUTH	156 FT
BLDG. SETBACK EAST	182 FT
BLDG. SETBACK NORTH	135 FT
DENSITY	6.5 UNITS/ACRE
LOT COVERAGE	0.94 ACRES
USABLE OPEN SPACE	APPROX. 6 ACRES
BUILDING HEIGHT	2 STORIES
PARKING SPACES	142 SPACES

BUILDING GROSS AREAS

BUILDING TYPE A	[8 BLDGS]	2,620 SF
BUILDING TYPE B	[8 BLDGS]	4,120 SF
BUILDING TYPE C	[1 BLDG]	7,733 SF
BUILDING TYPE D	[1 BLDG]	11,288 SF
TOTAL SF OF RESIDENTIAL BLDGS.		72,941 SF
COMMUNITY BUILDING		3,460 SF
TOTAL SF OF BUILDINGS		**76,401 SF**

UNIT TYPE SUMMARY

UNIT TYPE	DESCRIPTION	# UNITS	UNIT AREA (SF)
A	3-BR TH	16	1200 SF
B	2-BR FLAT	32	815 SF
C1	2-BR FLAT	5	880 SF
C2	3-BR FLAT	2	1100 SF
D	1-BR FLAT	16	550 SF

AERIAL CONTEXT

PYATOK
1611 TELEGRAPH AVE. SUITE 200
OAKLAND, CA 94612

510.465.7010 p | 510.465.8575 f
www.pyatok.com

MIDPEN HOUSING
303 Vintage Park Drive, Suite 250
Foster City, CA 94404

CYPRESS POINT FAMILY COMMUNITY
Carlos Street, Moss Beach

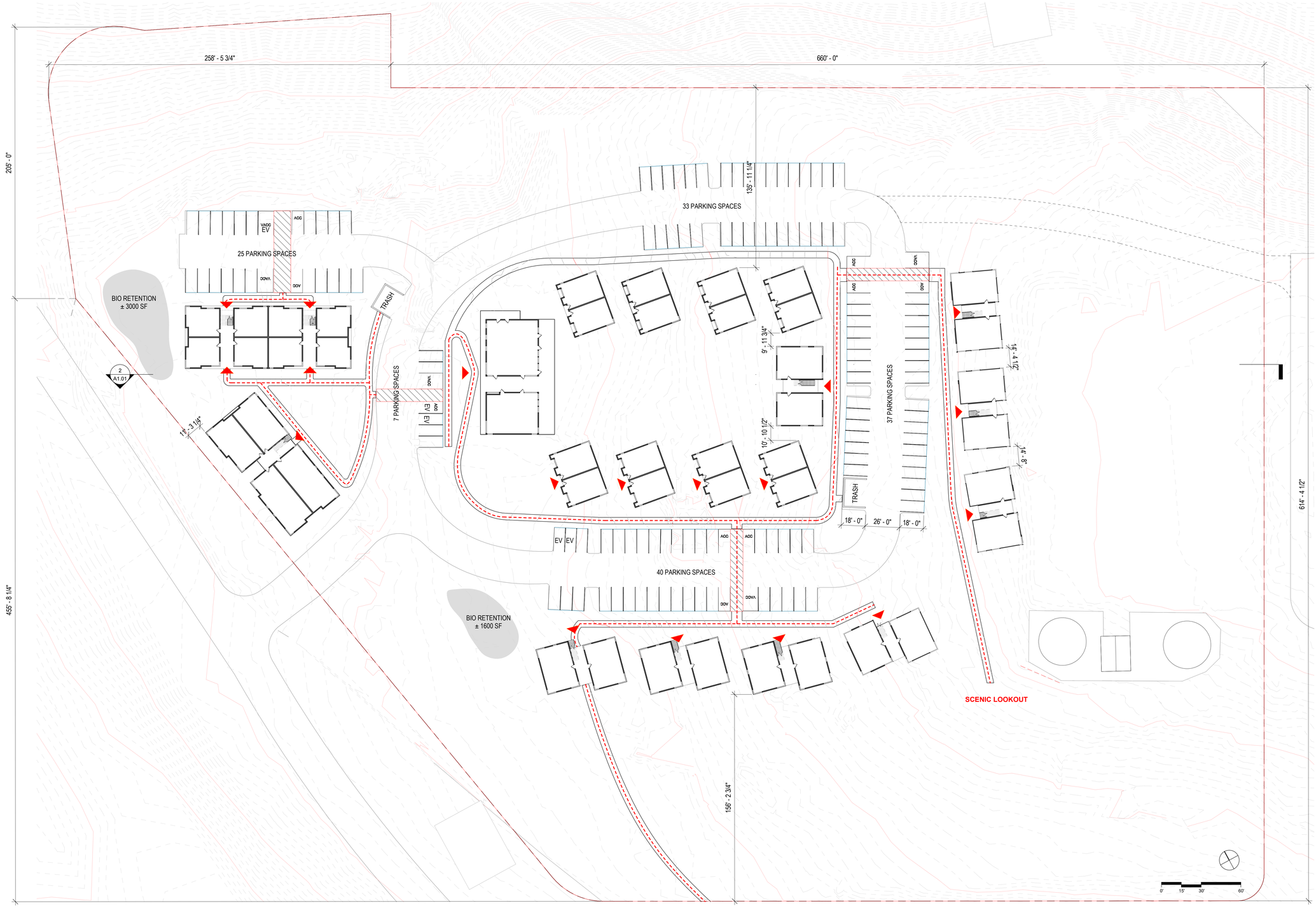
STAMP:

REVISION SCHEDULE

NO.	ISSUE	DATE
1	Planning Resubmittal	03/25/19

JOB NUMBER:	1603
DRAWN BY:	Author
CHECKED BY:	Checker
DATE:	March 25, 2019
SCALE:	12" = 1'-0"
TITLE:	**TITLE SHEET**
SHEET:	**G0.00**

NOT FOR CONSTRUCTION



SITE PLAN
1" = 30'-0" 1

PYATOK
1611 TELEGRAPH AVE. SUITE 200
OAKLAND, CA 94612

510.465.7010 p | 510.465.8575 f
www.pyatok.com

MIDPEN HOUSING

303 Vintage Park Drive, Suite 250

Foster City, CA 94404

CYPRESS POINT FAMILY COMMUNITY

Carlos Street, Moss Beach

STAMP:

REVISION SCHEDULE

NO.	ISSUE	DATE
1	Planning Resubmittal	03/29/19

JOB NUMBER:	1603
DRAWN BY:	Author
CHECKED BY:	Checker
DATE:	March 25, 2019
SCALE:	1" = 30'-0"

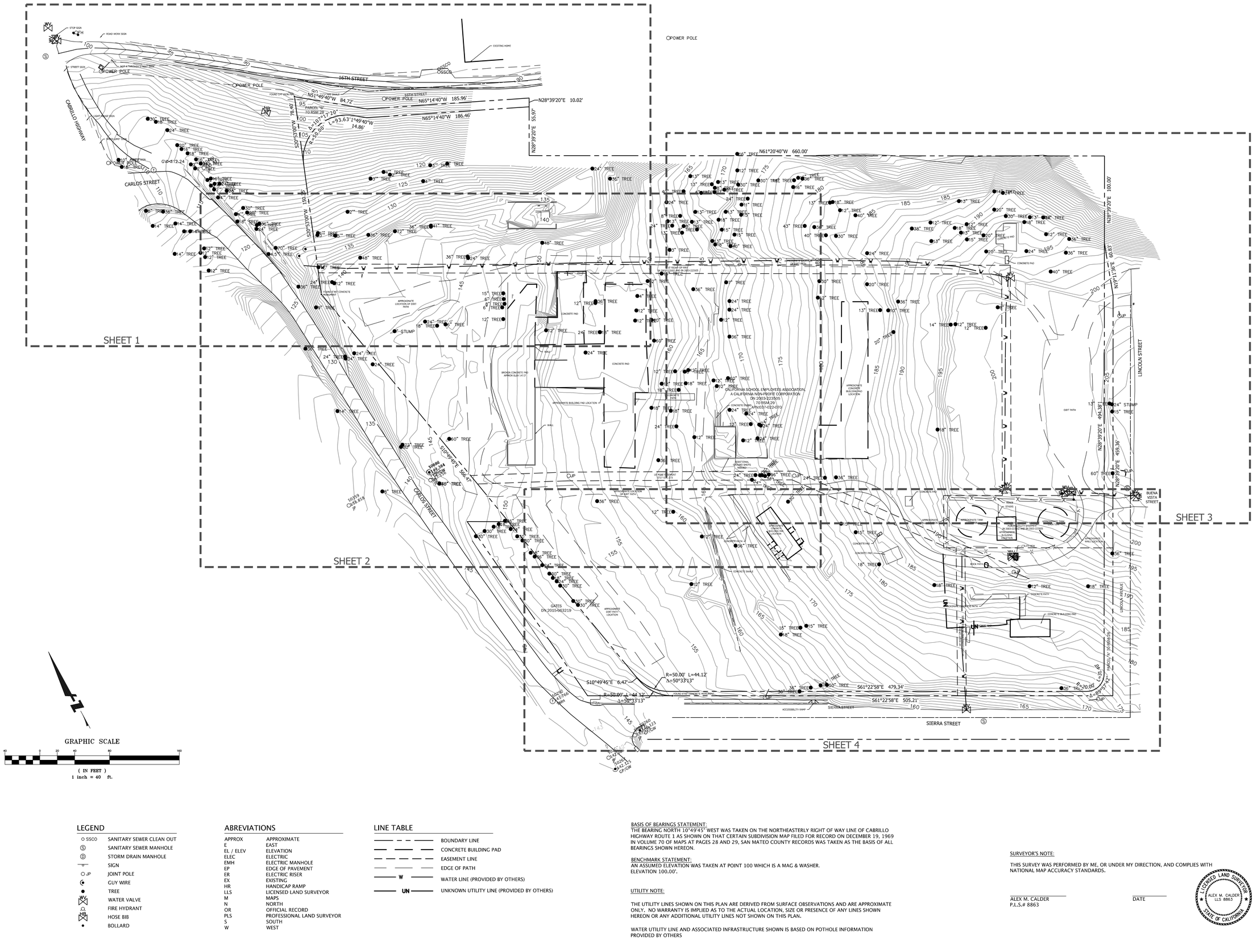
TITLE:

SITE PLAN + SECTION

SHEET:

A1.01

©BKF ENGINEERS


SHEET 1
SHEET 2
SHEET 3
SHEET 4
CARRILLO HIGHWAY
CARLOS STREET
16TH STREET
LINCOLN STREET
BUENA VISTA STREET
SIERRA STREET
LINCOLN AVENUE
POWER POLE
N51°49'40"W 84.72'
N65°14'40"W 185.96'
N65°14'40"W 186.46'
N28°39'20"E 10.02'
N28°39'20"E 55.97'
S10°49'40"E 586.47'
N61°20'40"W 660.00'
N28°39'20"E 100.00'
N19°41'15"E 60.83'
N28°39'20"E 494.38'
N28°39'20"E 459.36'
R=50.00' L=44.12' Δ=50°33'13"
S10°49'45"E 6.47'
S61°22'58"E 479.34'
S61°22'58"E 505.21'
R=20.00' Δ=89°57'42"
APPROXIMATE LOCATION OF DIRT PATH
APPROXIMATE BUILDING PAD LOCATION
CONCRETE PAD
CONCRETE BUILDING PAD
CONCRETE PATH
GATES DN 2015-063219
GMUSD/NSA SCHOOL EMPLOYEES ASSOCIATION, A CALIFORNIA NON-PROFIT CORPORATION DN 2003-223610 70 RSM 29 APN 037-022-070
PARCEL "A" 70 RSM 28
PARCEL "B" 70 RSM 28
PARCEL "C" 70 RSM 28
PARCEL "A" 10,660± S.F.
APPROXIMATE CONCRETE BUILDING PAD LOCATION
APPROXIMATE SPACE SEPARATION
APPROXIMATE TANK LOCATION
APPROXIMATE UTILITY EQUIPMENT DN 2003-223610 AND DN 2003-223609
APPROXIMATE LOCATION OF ACCESSIBILITY RAMP
ACCESSIBILITY RAMP
ADJACENT BUILDING
ADJACENT BUILDING (DETACHED)
ADJACENT BUILDING (ATTACHED)
ADDITIONAL DEFINED SPOTS FOR TOPO
UP POWER POLE WITH GUY WIRE
UP POWER POLE
FOUND 3/4" IRON PIPE
FOUND 3/4" CONCRETE MONUMENT
FOUND 1/2" REBAR
FOUND 1/2" REBAR WITH PLASTIC CAP "LS 6525"
FOUND 1/2" REBAR WITH PLASTIC CAP "LS 8863"
FOUND 1/2" REBAR WITH PLASTIC CAP "LS 6525" OPTION
FOUND 1/2" REBAR WITH PLASTIC CAP "LS 8863" OPTION
FOUND 3/4" IRON PIPE WITH PLASTIC CAP "LS 6525" OPTION
FOUND 3/4" IRON PIPE WITH PLASTIC CAP "LS 8863" OPTION
FOUND 1" IRON PIPE
FOUND 1" IRON PIPE WITH PLASTIC CAP "LS 6525"
FOUND 1" IRON PIPE WITH PLASTIC CAP "LS 8863"
FOUND 1" IRON PIPE WITH PLASTIC CAP "LS 6525" OPTION
FOUND 1" IRON PIPE WITH PLASTIC CAP "LS 8863" OPTION
FOUND 1" IRON PIPE WITH PLASTIC CAP "LS 8863" OPTION
FOUND 1" IRON PIPE WITH PLASTIC CAP "LS 6525

* SUBMITTAL - NOT FOR CONSTRUCTION

CYPRESS POINT
MIDPEN HOUSING CORPORATION
CONCEPTUAL GRADING PLAN

CITY OF MOSS BEACH | COUNTY OF SAN MATEO | CALIFORNIA

No.	Revisions

Date 06/01/18
Scale AS SHOWN
Design OJS
Drawn OJS
Approved JMB
Job No 2016074
Drawing Number: C1.0
1 OF 3

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255 SHORELINE DR., SUITE 200
REDWOOD CITY, CA 94065
(650) 482-6300
www.bkf.com

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16TH STREET

CARLOS STREET

SIERRA ST

SCENIC LOOKOUT

BIO RETENTION ± 3000 SF

BIO RETENTION ± 161 SF

BIO RETENTION ± 161 SF

ABBREVIATIONS

APPROX	APPROXIMATE
BW	BOTTOM OF WALL
EL / ELEV	ELEVATION
FF	FINISHED FLOOR
PVI	POINT OF VERTICAL INTERSECTION
TC	TOP OF CURB
TP	TOP OF PAVEMENT
VC	VERTICAL CURVE

GRAPHIC SCALE
30 0 30 60

DRAWING NAME: K:\2016\160074_Moss Beach Housing\ENG\PLANNING\Pre-Application Planning\Plotted Sheets\C1.0 GRAD.dwg
PLOT DATE: 06-04-18 PLOTTED BY: boya

TREE LEGEND

- EXISTING HEALTHY TREES TO BE LEFT IN PLACE WHERE FEASIBLE.

(E) EXISTING TREE

- FINAL PROPOSED TREE COUNT WILL FOLLOW COUNTY REQUIREMENTS FOR REPLACEMENT.

ENTRY TREE

LARGE CANOPY TREE

PARKING LOT SHADE TREE

BUILDING ENTRY TREE

OAK TREE

FLOWERING TREE

EVERGREEN SCREENING

BIORETENTION TREE

FRUIT TREE

KEY NOTES

1. CYPRESS POINT ENTRY DRIVE
2. BIORETENTION AREA
3. PLAY STRUCTURE (AGES 2-5 YEARS) ON RUBBER PLAY SURFACE
4. LAWN AREA
5. TRELLIS, SEATING, AND BBQ AREA
6. BOULDER RETAINING WALL (LESS THAN 30" HIGH)
7. CONCRETE RETAINING WALL (HEIGHT VARIES)
8. GATHERING AREA WITH SEATING, PING PONG TABLE, AND BIKE RACKS
9. LOW MAINTENANCE PLANTING ON SLOPE - NATIVE TREES, SHRUBS, AND GRASSES
10. STAIRS WITH HANDRAILS
11. COMMUNITY GARDEN WITH DEER FENCE, RAISED BEDS, COMPOST AREA, TOOL SHED, AND FRUIT TREES
12. WASTE ENCLOSURE (2 TOTAL)
13. SCENIC OVERLOOK WITH PICNIC TABLES, BOULDER WALLS, AND GRAVEL PAVING
14. EXISTING GRAVEL ACCESS ROAD
15. EXISTING WATER TANKS
16. TRAIL - CLEARED FOOT PATH AROUND SITE
17. PARKING LOT - ASPHALT PAVING
18. ACCESSIBLE CROSSING
19. PATH TO SIERRA STREET
20. EMERGENCY VEHICLE ROUTE (GRAVEL)
21. SEATING AREA

MidPen HOUSING

PYATOK

CYPRESS POINT AFFORDABLE HOUSING

MOSS BEACH, CA

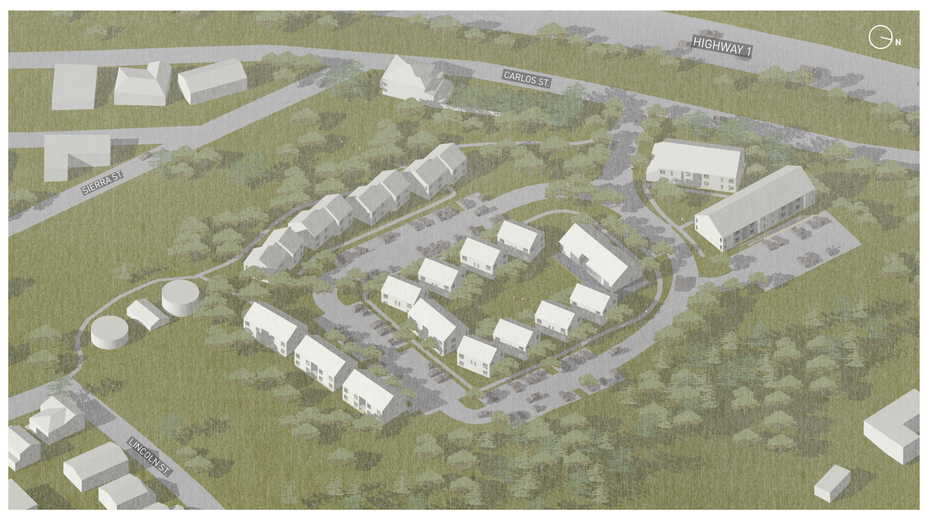
CONCEPTUAL LANDSCAPE PLAN

JUNE 18, 2018

JONI L. JANECKI & ASSOCIATES

CONTEXT AERIAL VIEW

SITE AERIAL VIEW



SITE AERIAL VIEW

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Foster City, CA 94404

CYPRESS POINT FAMILY COMMUNITY

Carlos Street, Moss Beach

STAMP:

REVISION SCHEDULE

NO.	ISSUE	DATE
1	Planning Resubmittal	02/25/19

JOB NUMBER: 1603
DRAWN BY: Author
CHECKED BY: Checker
DATE: March 25, 2019
SCALE:

TITLE:
AERIAL PERSPECTIVES

SHEET:
G0.01

VIEW CONTEXT KEY

NOTE: IMAGES DO NOT DEPICT FINAL MATERIALS / DESIGN PROPOSAL. FOR STUDY PURPOSES ONLY.

[VIEW 1] WEST SITE VIEW

[VIEW 2] SIERRA STREET VIEW

[VIEW 3] LINCOLN STREET VIEW

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JOB NUMBER: 1603
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DATE: March 25, 2019
SCALE:
TITLE: **RENDERED SITE VIEWS**

SHEET: **G0.02**

VIEW CONTEXT KEY

[VIEW A] SITE ENTRANCE LOOKING NORTHEAST

[VIEW B] COMMUNITY CENTER LOOKING NORTHWEST

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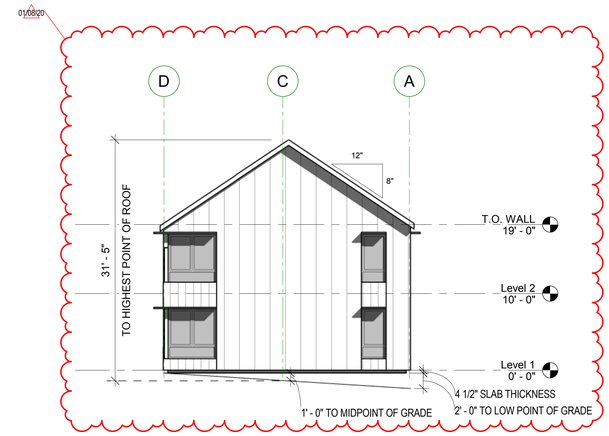
SCALE:

TITLE:

RENDERED SITE VIEWS

SHEET:

G0.03



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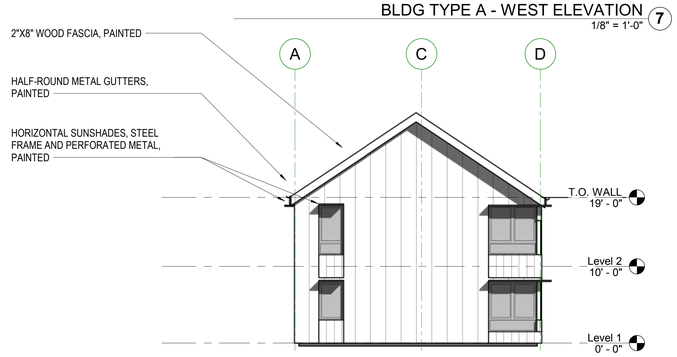
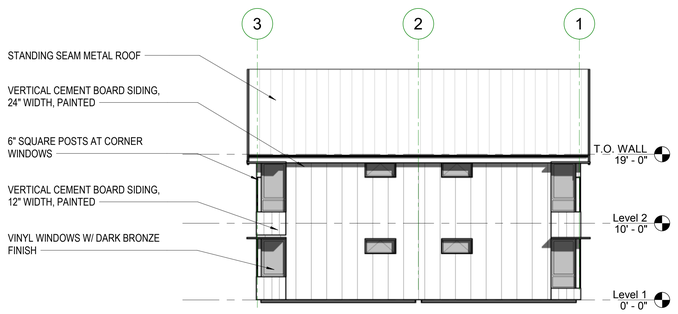
1/8" = 1'-0"



BLDG TYPE A - EAST ELEVATION 6
1/8" = 1'-0"

BLDG TYPE A - SOUTH ELEVATION 5
1/8" = 1'-0"



BLDG TYPE A - NORTH ELEVATION 4
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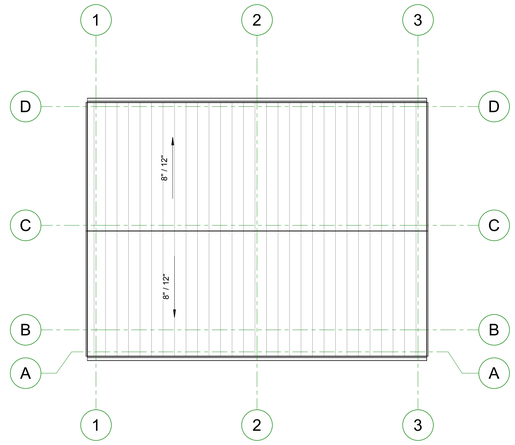

BLDG TYPE A - ROOF PLAN 3
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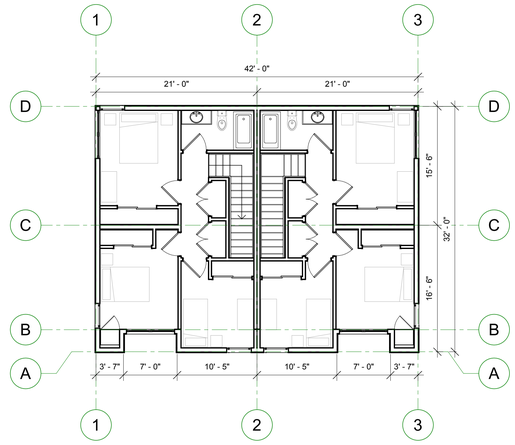

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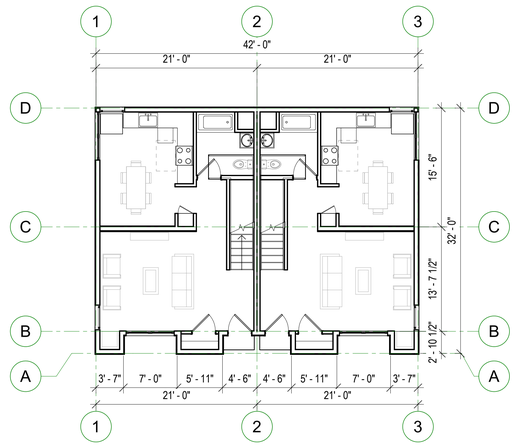

BLDG TYPE A - LEVEL 1 PLAN 1
1/8" = 1'-0"

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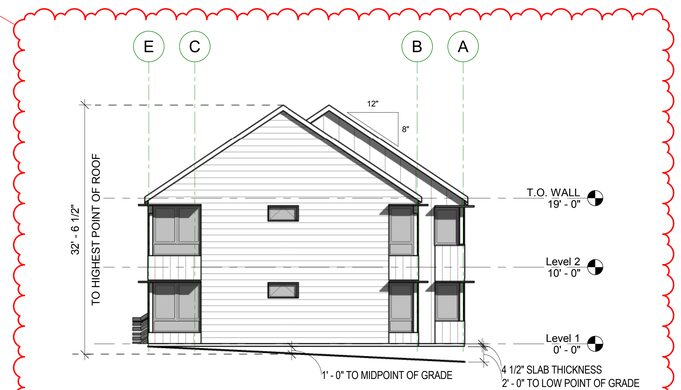
DRAWN BY: GP
CHECKED BY: TB
DATE: January 8, 2020
SCALE: 1/8" = 1'-0"

TITLE:
BUILDING TYPE A

SHEET:
A3.01

01/09/20



BLDG TYPE B - WEST ELEVATION 7
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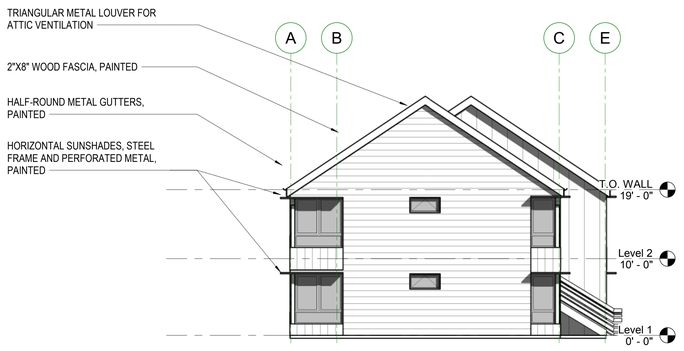

BLDG TYPE B - EAST ELEVATION 6
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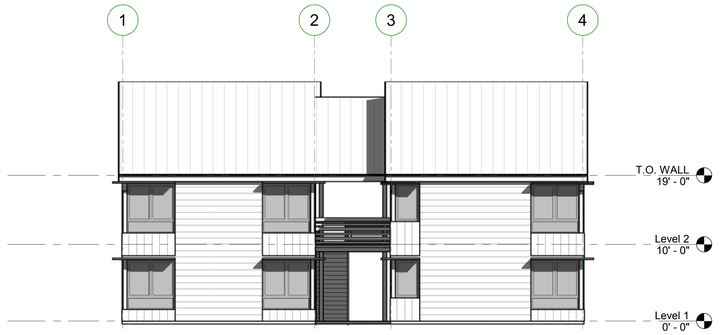
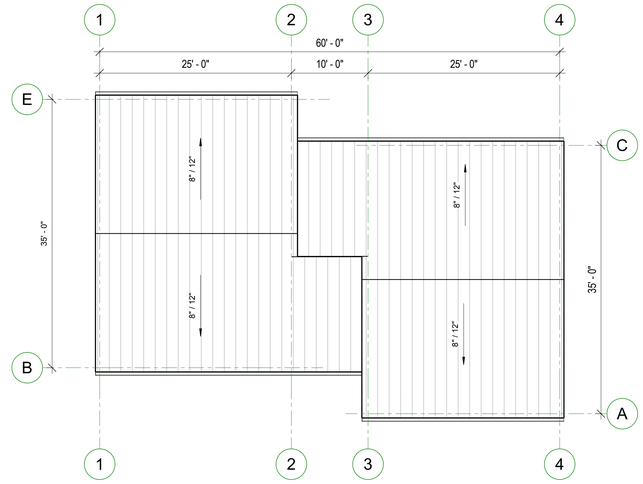
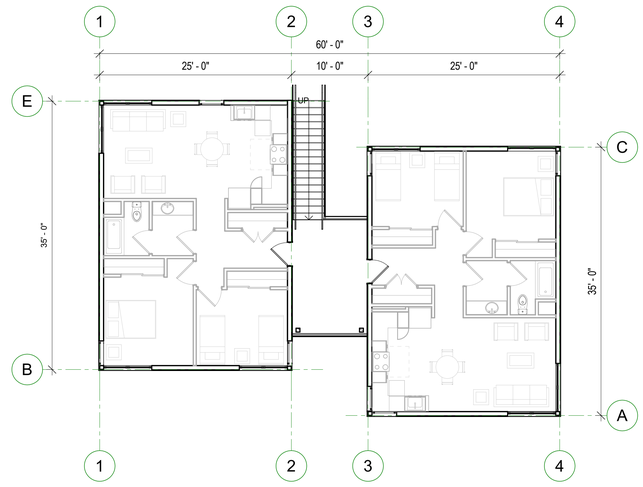


BLDG TYPE B - SOUTH ELEVATION 5
1/8" = 1'-0"

BLDG TYPE B - NORTH ELEVATION 4
1/8" = 1'-0"



BLDG TYPE B - ROOF PLAN 3
1/8" = 1'-0"



BLDG TYPE B - LEVEL 2 PLAN 2
1/8" = 1'-0"

BLDG TYPE B - LEVEL 1 PLAN 1
1/8" = 1'-0"

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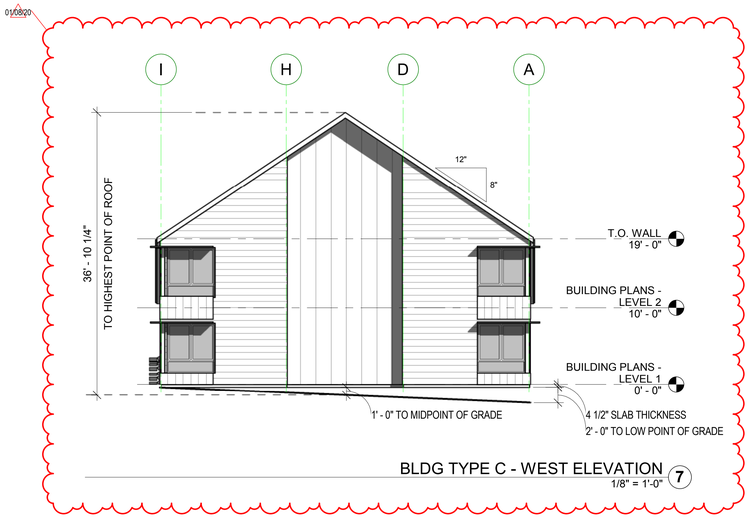
DRAWN BY:	GP
CHECKED BY:	TB
DATE:	January 8, 2020
SCALE:	1/8" = 1'-0"

TITLE:

BUILDING TYPE B

SHEET:

A3.02



BLDG TYPE C - WEST ELEVATION 7
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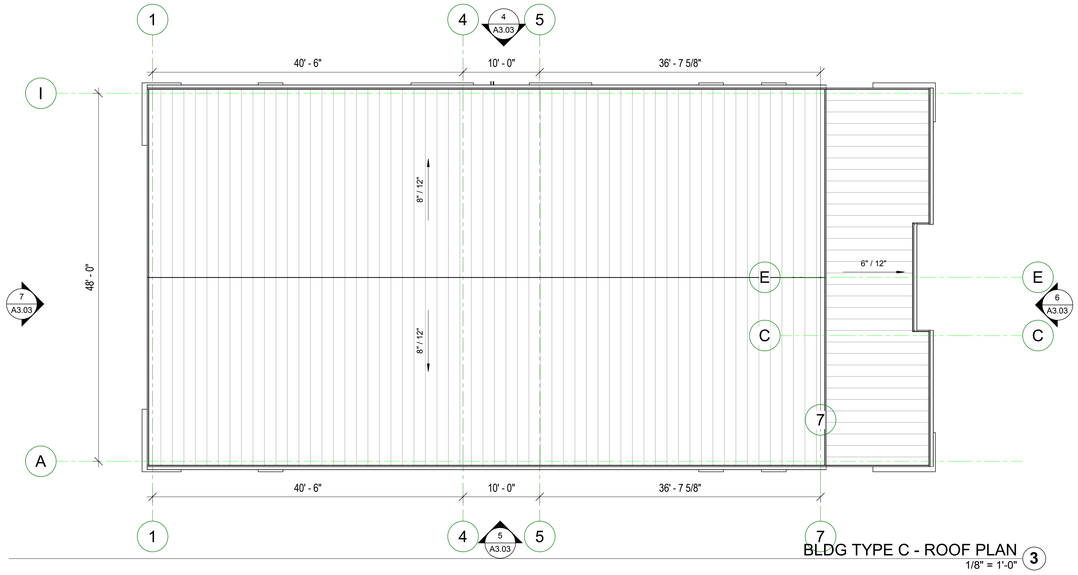
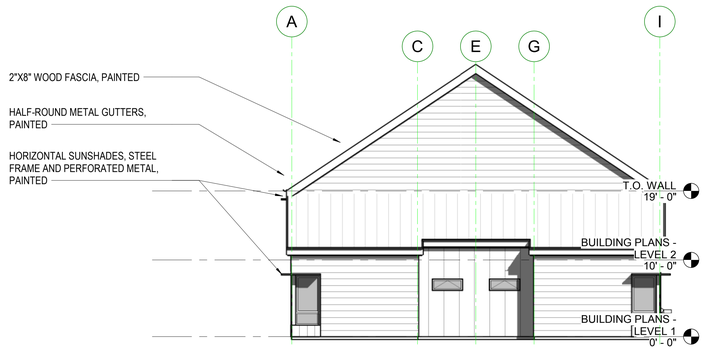


BLDG TYPE C - ROOF PLAN 3
1/8" = 1'-0"



BLDG TYPE C - EAST ELEVATION 6
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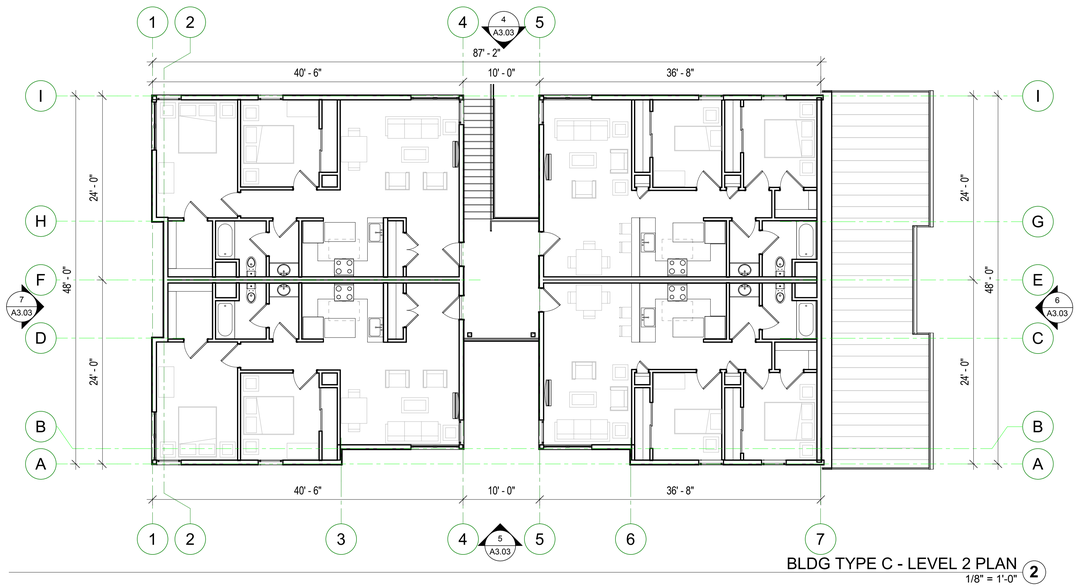
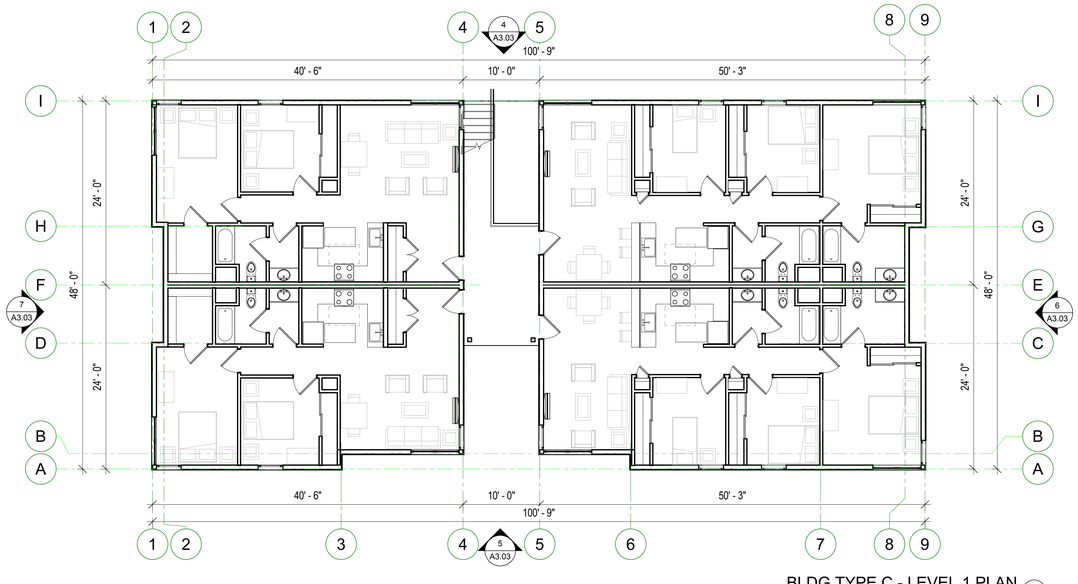


BLDG TYPE C - LEVEL 2 PLAN 2
1/8" = 1'-0"

BLDG TYPE C - SOUTH ELEVATION 5
1/8" = 1'-0"



BLDG TYPE C - LEVEL 1 PLAN 1
1/8" = 1'-0"

BLDG TYPE C - NORTH ELEVATION 4
1/8" = 1'-0"

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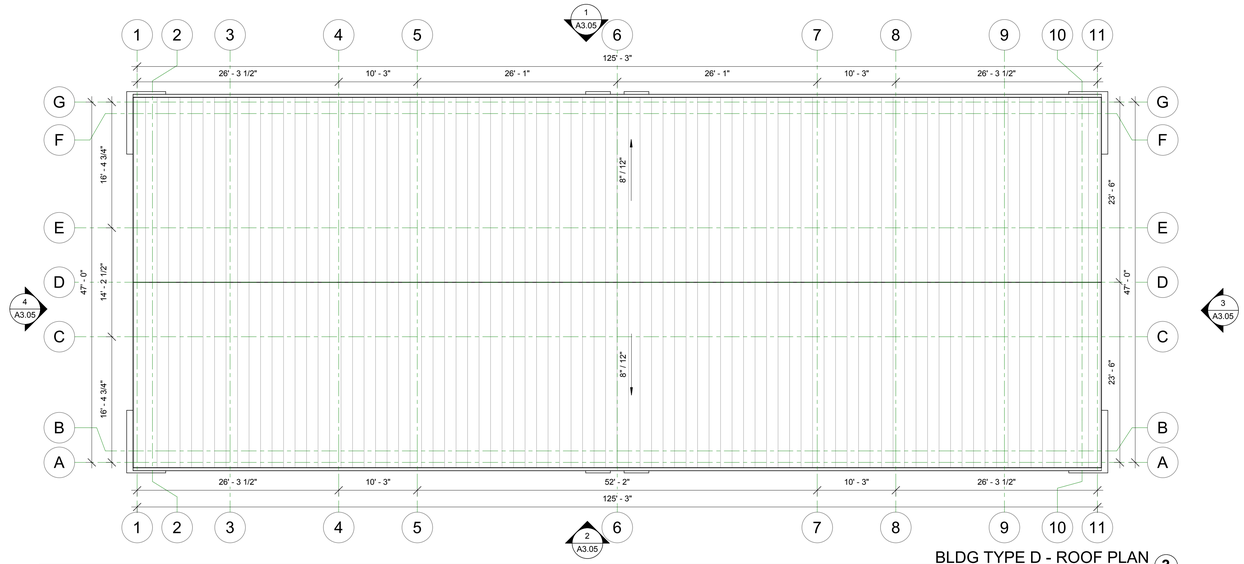
SCALE:	1/8" = 1'-0"

TITLE:

BUILDING TYPE C

SHEET:

A3.03



BLDG TYPE D - ROOF PLAN (3)
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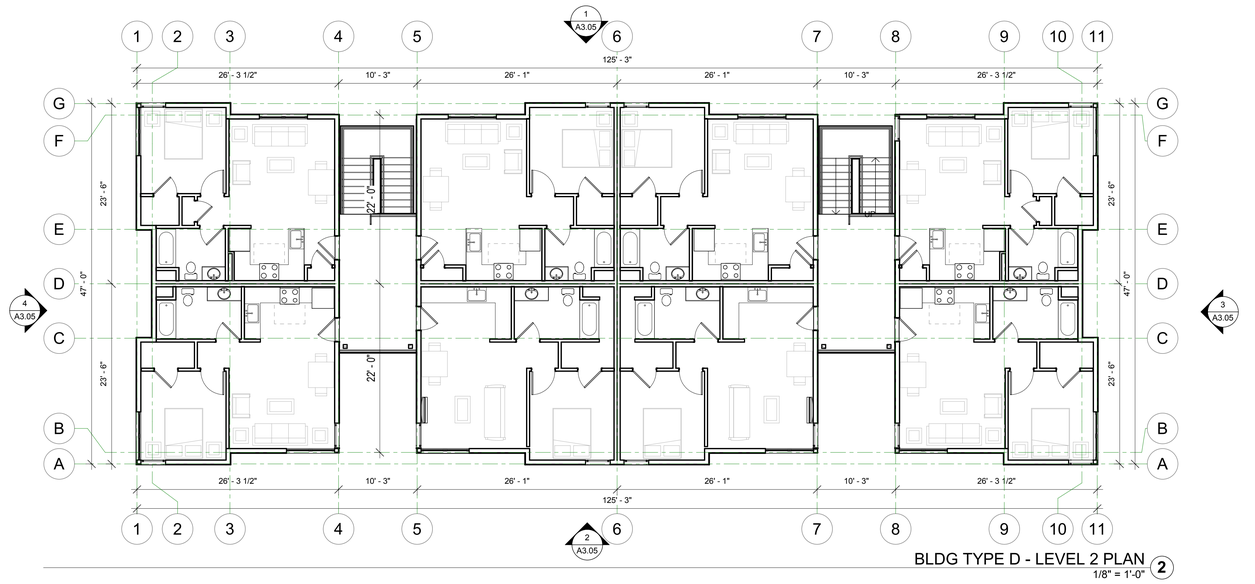

BLDG TYPE D - LEVEL 2 PLAN (2)
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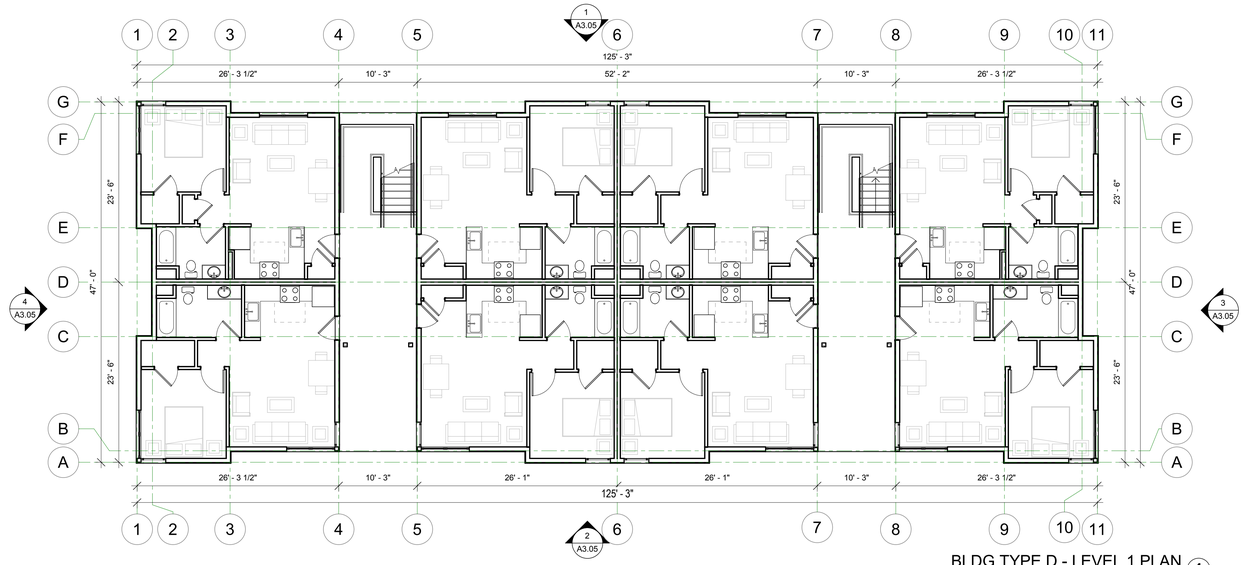

BLDG TYPE D - LEVEL 1 PLAN (1)
1/8" = 1'-0"

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

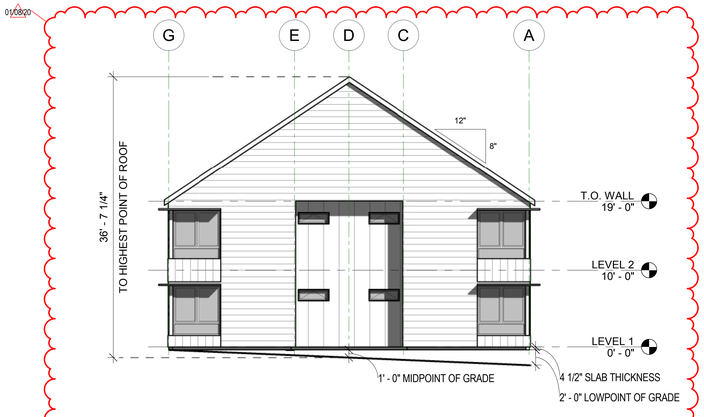
TITLE:

BUILDING TYPE D - FLOOR PLANS

SHEET:

A3.04

01/08/20



BLDG TYPE D - WEST ELEVATION 4
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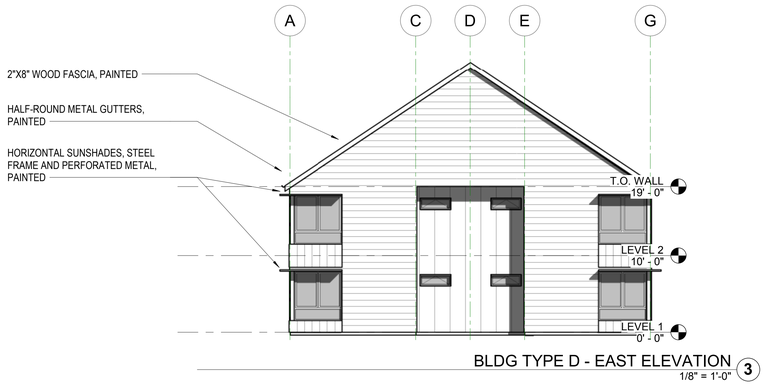

BLDG TYPE D - EAST ELEVATION 3
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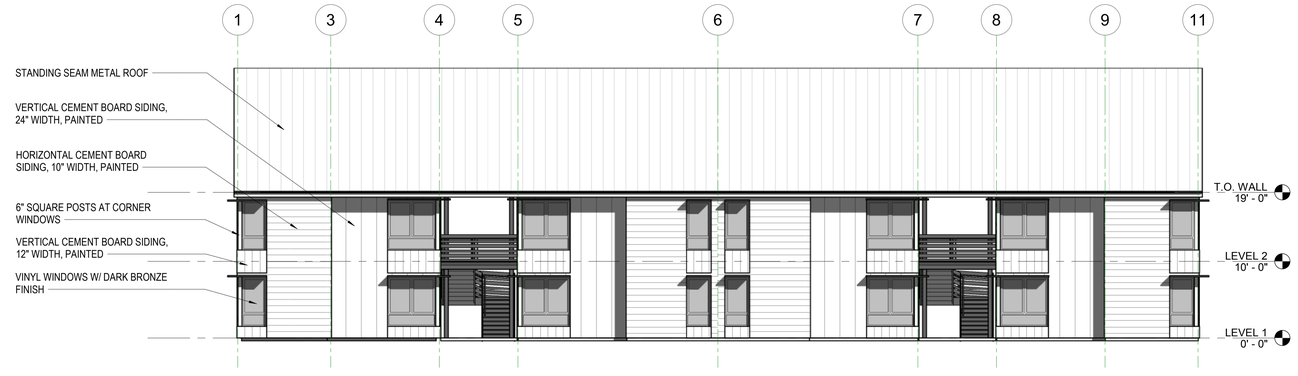

BLDG TYPE D - SOUTH ELEVATION 2
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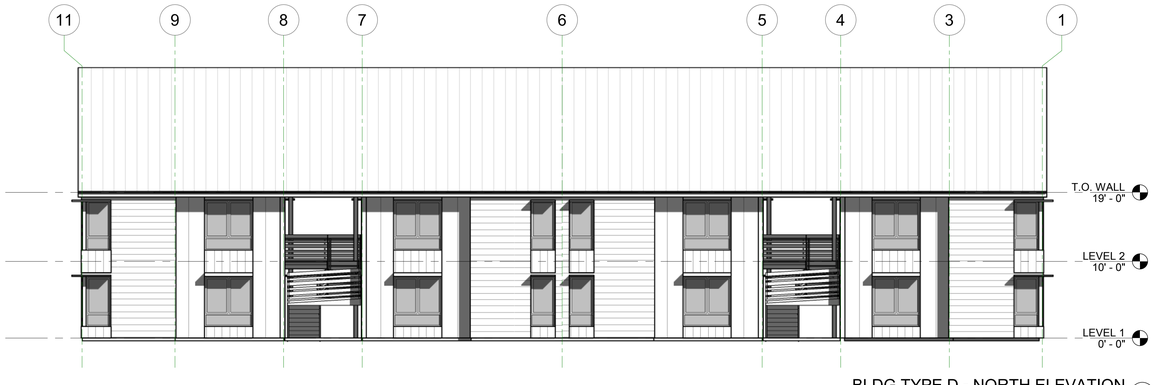

BLDG TYPE D - NORTH ELEVATION 1
1/8" = 1'-0"

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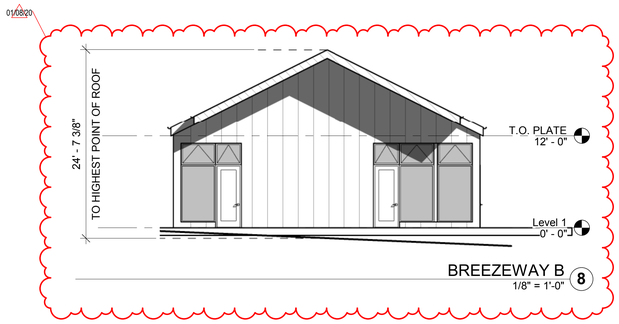
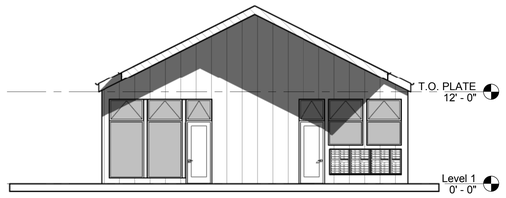
TITLE:
BUILDING TYPE D - ELEVATIONS

SHEET:
A3.05



BREEZEWAY B 8
1/8" = 1'-0"



BREEZEWAY A 7
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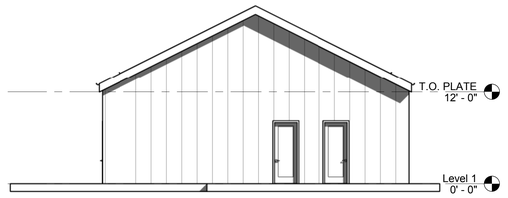
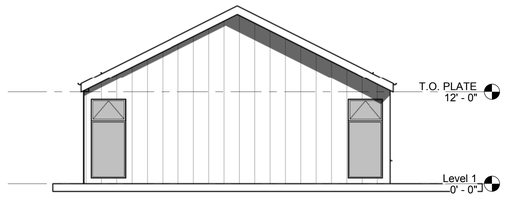
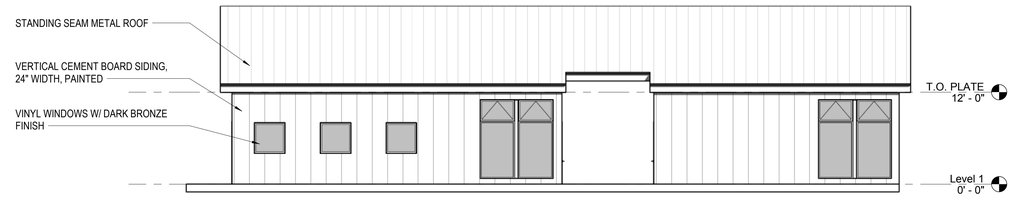


COMMUNITY BLDG - SOUTH ELEVATION 6
1/8" = 1'-0"

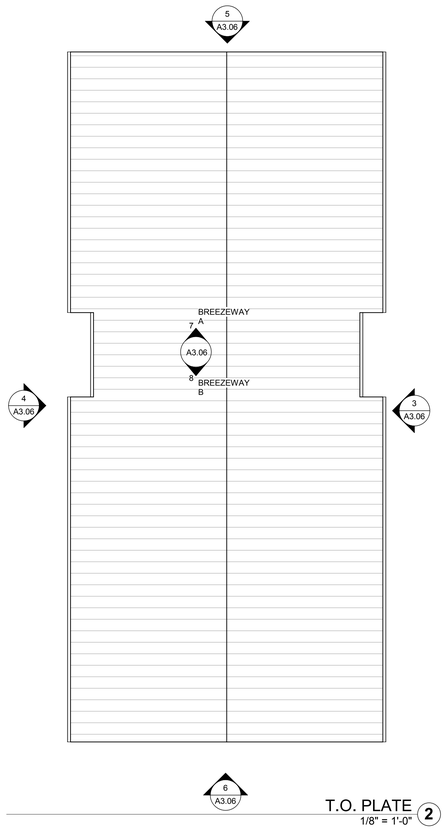


COMMUNITY BLDG - NORTH ELEVATION 5
1/8" = 1'-0"

COMMUNITY BLDG - WEST ELEVATION 4
1/8" = 1'-0"



COMMUNITY BLDG - EAST ELEVATION 3
1/8" = 1'-0"



T.O. PLATE 2
1/8" = 1'-0"

COMMUNITY BLDG - FLOOR PLAN 1
1/8" = 1'-0"

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COMMUNITY BUILDING

SHEET:

A3.06

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16TH STREET

CARLOS STREET

SIERRA ST

OUTFALL

CONNECT TO EX WL w/ WM AND BFP

CONNECT TO EX WL w/ RPDA

12" SD

8" SS

6" SS

4" DW

8" FW

15" SD

21" SD

SDDI

SDCO (TYP)

OVERFLOW

FH (TYP)

VAOG

AOG

DOV

DOVA

ABBREVIATIONS

BFP	BACKFLOW PREVENTOR
CO	CLEAN OUT
DW	DOMESTIC WATER
EX	EXISTING
FH	FIRE HYDRANT
FW	FIRE WATER
RPDA	REDUCED PRESSURE DETECTOR ASSEMBLY
SD	STORM DRAIN
SDCO	STORM DRAIN CLEAN OUT
SDDI	STORM DRAIN DROP INLET
SS	SANITARY SEWER
w/	WITH
WL	WATER LINE
WM	WATER METER

NOTES

1. GEOTECHNICAL ENGINEER TO ADVISE ON UTILITY TRENCHING DESIGN
2. GEOTECHNICAL ENGINEER TO ADVISE ON SOIL CONDITIONS AND FEASIBLE STORMWATER TREATMENT AREA LOCATIONS
3. FINAL UTILITY LAYOUT TO BE COORDINATED WITH MONTARA WATER (MWSD) AND SANITARY DISTRICT.
4. EXISTING WATER LINE AND ASSOCIATED INFRASTRUCTURE ON-SITE MAY REQUIRE RELOCATION FURTHER COORDINATION AND DIRECTION REQUIRED FROM MONTARA WATER AND SANITARY DISTRICT.
5. TRASH ENCLOSURES ARE ASSUMED TO BE COVERED.
6. PROPOSED UTILITY LINE SIZES TO BE FINALIZED ONCE BUILDING AND SITE UNIT DEMANDS ARE PROVIDED.
7. FIINAL WATER LINE LOCATION AND SIZES TO BE COORDINATED WITH MWSD.
8. FIRE WATER AND DOMESTIC WATER SERVICES TO BUILDINGS REQUIRE BACKFLOW PREVENTION DEVICE OR CHECK VALVE.

GRAPHIC SCALE

30 0 30 60

DRAWING NAME: \\BKF-RC\DATA\2016\160074_Moss Beach Housing\ENG\PLANNING\Pre-Application Planning\Plotted Sheets\C2.0 UTIL.dwg
PLOT DATE: 06-04-18
PLOTTED BY: teli

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CYPRESS POINT
MIDPEN HOUSING CORPORATION
CONCEPTUAL UTILITY PLAN

CITY OF MOSS BEACH
COUNTY OF SAN MATEO
CALIFORNIA

Revisions | No.

Date 06/01/18
Scale AS SHOWN
Design OJS
Drawn OJS
Approved JWD
Job No 20160074

Drawing Number:
C2.0
2 OF 3

% SUBMITTAL – NOT FOR CONSTRUCTION

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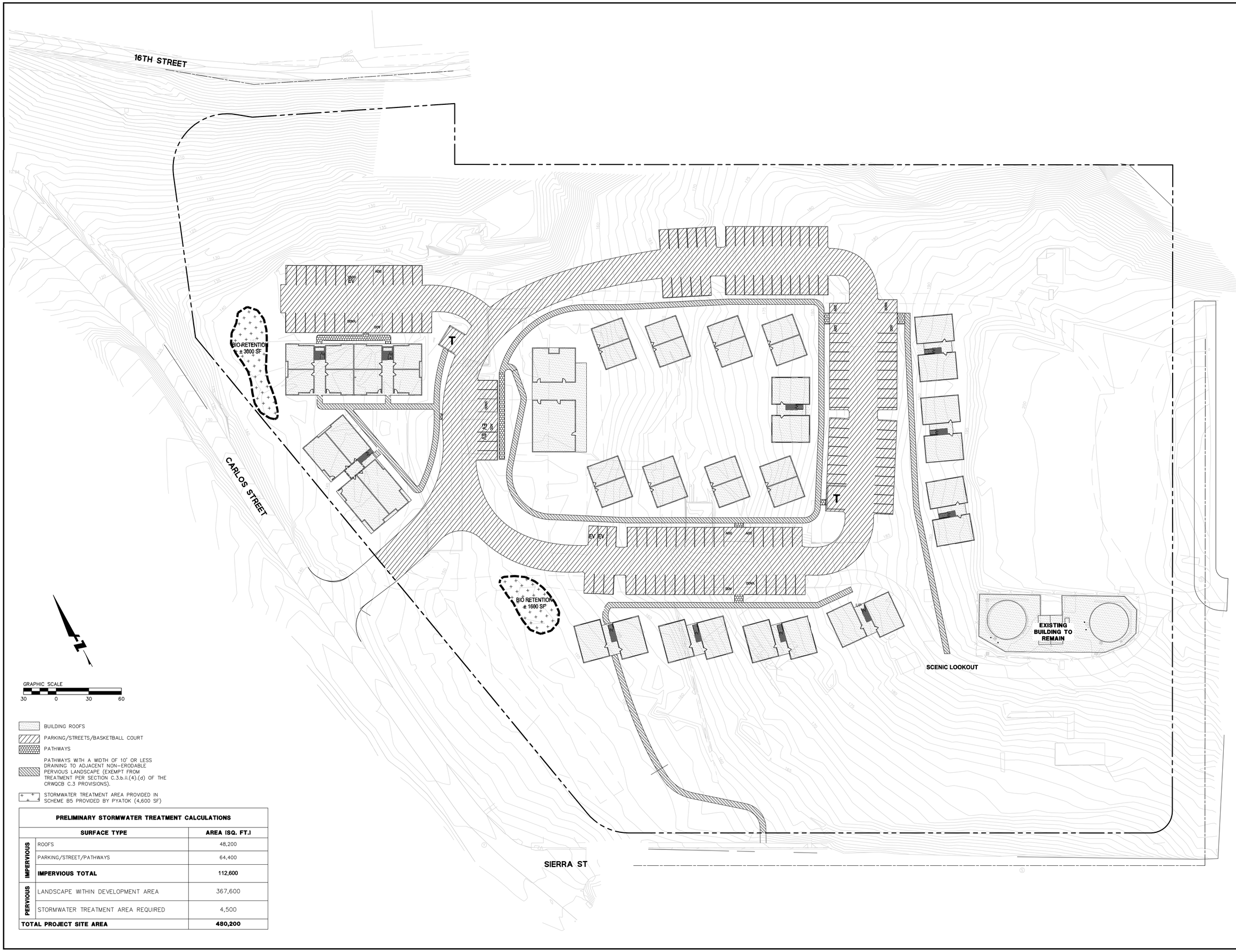
16TH STREET
CARLOS STREET
SIERRA ST
BIO-RETENTION
± 3000 SF
BIO RETENTION
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County of San Mateo - Planning and Building Department

ATTACHMENT F

1. INTRODUCTION

The information contained in this report summarizes the information contained in the following four technical studies prepared for the MidPen Housing Cypress Point affordable housing project:

- Cultural Resource Evaluation of the Cypress Point Project in Half Moon Bay (ARM 2018a, Appendix A)
- Paleontological Review-MidPen Cypress Point Affordable Housing Community Project, San Mateo County, California (FirstCarbon Solutions 2017, Appendix B)
- Archaeological Testing Program for CA-SMA-431 at the Cypress Point Project in Moss Beach, County of San Mateo (ARM 2018b, Appendix C)
- Archaeological Treatment Plan for the Proposed Cypress Point Project, in Moss Beach, County Of San Mateo (ARM 2018c, Appendix D)

These appendices are not attached because they contain confidential maps and site records. They are available for review by qualified researchers at the California Historical Resources Information System (CHRIS) Northwest Information Center, California State University Sonoma.

2. ENVIRONMENTAL SETTING

2.1 LOCATION OF THE PROPOSED PROJECT

The subject area consists of approximately 10.88 acres of land near the corner of Carlos and Sierra streets in Moss Beach, County of San Mateo (see Figures 1 and 2). The elevation of the project site ranges from approximately 100 to 150 feet mean sea level. The nearest source of fresh water is Montara Denniston Creek, located approximately 300 feet north of the proposed project area.

2.2 PROJECT DESCRIPTION

The proposed project consists of the construction of 71 affordable housing units consisting of approximately 22 two-story buildings holding 2-4 units each. The project will also include the general office, the manager's office, a community room, kitchen, computer room, laundry, and maintenance and storage areas. The project plan also includes several outdoor amenities, including: landscaping; a community garden; a children's play area; an upper and a lower green; BBQ areas; and a public walking trail. Approximately one-half of the site will be developed, and the remainder will remain undeveloped.

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Base Map Source: ESRI, 2017
Map Date: 10/05/2017

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Figure 1
Project Location
San Mateo County, CA

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Aerial Source: NAIP (2016)

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Figure 2
Project Vicinity
San Mateo County, CA

2.3 ETHNOGRAPHIC BACKGROUND

The Ohlone, or Costanoan, Indians inhabited the San Francisco Bay regions from the Golden Gate south to Monterey. Derived from a Spanish word, Costanoan means "people of the coast," and is an older term. Descendants of these people prefer to refer to themselves as "Ohlone," and it is now the generally accepted term. The research area is located in the Salson linguistic area, which shared many cultural traits with other linguistic groups in the Ohlone region. It is believed that the Ohlone Indians have inhabited the area since A.D. 500, and that speakers of the Hokan language previously inhabited at least part of the region. Archaeological data documents Native American coastal activity in the Central Coast area over the past 10,000 years, with some indications of occupation as early as 12,000 to 13,000 years ago (Jones et. al. 2007).

The Ohlone were gatherers and hunters who utilized only the native flora and fauna with the exception of one domesticate, the dog. Yet, the abundance and high quality of natural resources allowed them to settle in semi-sedentary villages. The Ohlone were typically organized in basic political units called "tribelets" that consisted of 100 to 250 members. The "tribelet" was an autonomous social unit consisting of one or more permanent villages with smaller villages in a relatively close proximity (Kroeber 1962). Parties went out from the major villages to locations within the tribal territory to obtain various resources.

The proximity of both mountainous and waterfront regions in the local environment made a diversity of resources available during different seasons to the native inhabitants. During the winter months, the low-lying flats near the San Francisco Bay have abundant marine and waterfowl resources, while the surrounding mountainous areas are best in the summer months for their nut, seed, and mammalian resources (King and Hickman 1973). A primary food source was acorns, abundant in autumn and easily stored for the remainder of the year. According to Gifford, the acorn industry of California was probably the most characteristic feature of its domestic economy (Gifford 1951). An elaborate process of grinding and leaching acorns is necessary to render them palatable. The acorn industry first became a major source of food in the Middle Period as is indicated by the appearance of mortars and pestles in the archaeological record (King and Hickman 1973). Other important resources include various plant foods, land animals, and the marine resources of the San Francisco Bay and the ocean. Both large and small land mammals were typically hunted, trapped or poisoned. Many items, including shell beads and ornaments, were extensively traded with other groups as far away as the Great Basin of Nevada (Davis 1974).

More information regarding the ethnographic background of the project area is provided in Attachment A.

2.4 HISTORIC BACKGROUND

The proposed project area formerly made up a portion of the Point Montara Artillery Training Facility, a World War II era military complex in use between 1943 and 1945. Several structures within this complex were located within the current proposed project area, including barracks, offices, a mess hall, a library, a garage, a boiler room, an incinerator, a "TDD" hanger, and a drill field.

The Point Montara Artillery Training Facility was a top secret military installation operated by the U.S. Navy during World War II, containing 48 permanent structures, and housing over 1500 personnel. The facility was notable for its extensive use of Women Air Service Pilots (known as WASPs) who flew planes towing targets for the artillery firing from the coast along Point Montara. The facility also heavily utilized some of the earliest drone aircraft for target practice.

In the late 1960's the proposed project area was in use as a training facility for firefighters. During this period, the structures within the proposed project area were razed by a controlled burn, leaving only exposed concrete foundations. The property has been vacant since 1970. The project area currently contains concrete foundations, as well as well as a fenced area containing Montara Water and Sanitary District infrastructure. Some structures and features associated with the military training facility remain standing outside the current proposed project area, along the coast of Point Montara west of SR 1.

Additional information about the history of the project site and the Point Montara Artillery Training Facility is provided in Attachment A.

2.5 PALEONTOLOGICAL SETTING

The proposed project lies within the Coastal Ranges Physiographic Province, specifically at the north end of the South Coastal Ranges.

3. REGULATORY SETTING

3.1 NATIONAL REGISTER OF HISTORIC RESOURCES

The National Register of Historic Places was first established in 1966, with major revisions in 1976. The register is set forth in 36 CFR 60 which establishes the responsibilities of the State Historic Preservation Officers (SHPO), standards for their staffs and review boards, and describes the statewide survey and planning process for historic preservation. Within this regulation guidelines are set forth concerning the National Register of Historic Places (36 CFR 60.6). In addition, further regulations are found in 36 CFR 63-66 and 800, which define procedures for determination of eligibility, identification of historic properties, recovery, reporting, and protection procedures.

The National Register of Historic Places was established to recognize resources associated with the accomplishments of all peoples who have contributed to the country's history and heritage. Guidelines were designed for Federal and State agencies in nominating cultural resources to the

National Register. These guidelines are based upon integrity and significance of the resource. Integrity applies to specific items such as location, design, setting, materials, workmanship, feeling, and association. Quality of significance in American history, architecture, archaeology, engineering and culture is present in resources that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and meet at least one of the following criteria:

a. Are associated with events that have made a significant contribution to broad patterns of our history;

b. Are associated with the lives of persons significant in our past;

c. Embody distinctive characteristics of type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction;

d. Have yielded, or are likely to yield, information important in prehistory or history.

Ordinarily, properties that have achieved significance within the last 50 years are not considered eligible for the National Register. However, such properties will qualify if they are integral parts of districts that do meet the criteria of the NRHP listed above, or if they fall within the following categories:

a. A religious property deriving primary significance from architectural significance or artistic distinction or historic importance; or

b. A building or structure removed from its original location but which is significant primarily for architectural value, or which is the surviving structure most importantly associated with an historic person or event; or

c. A birthplace or grave of a historical figure of outstanding importance if there is no other appropriate site or building directly associated with his (or her) productive life; or

d. A cemetery which derives its primary significance from graves of persons of transcendent importance, from age, from distinctive design features, or from association with historic events; or

e. A reconstructed building when accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and when no other building or structure with the same association has survived; or

f. A property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own historical significance; or

g. A property achieving significance within the past 50 years if it is of exceptional importance.

3.2 California Register of Historic Resources

A cultural resource is considered "significant" if it qualifies as eligible for listing in the California Register of Historic Resources (CRHR). Properties that are eligible for listing in the CRHR must meet one or more of the following criteria:

a. Association 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;

b. Association with the lives of persons important to local, California, or national history;

c. Embodying the distinctive characteristics of a type, period, region, or method of construction, or representing the work of a master, or possessing high artistic values; or

d. Has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California, or the nation.

The CRHR interprets the integrity of a cultural resource based upon its physical authenticity. An historic cultural resource must retain its historic character or appearance and thus be recognizable as an historic resource. Integrity is evaluated by examining the subject's location, design, setting, materials, workmanship, feeling, and association. If the subject has retained these qualities, it may be said to have integrity. It is possible that a cultural resource may not retain sufficient integrity to be listed in the National Register of Historic Places yet still be eligible for listing in the CRHR. If a cultural resource retains the potential to convey significant historical/scientific data, it may be said to retain sufficient integrity for potential listing in the CRHR.

3.3 California Coastal Act

Article 5; Land Resources, Section 30244 of the California Coastal Act states that:

> "Where development would adversely impact archaeological or paleontological resources as identified by the State Historic Preservation Officer, reasonable mitigation measures shall be required."

3.4 CEQA

3.4.1 Archaeological and Historic Resources

The California Environmental Quality Act (CEQA) requires public or private projects financed or approved by public agencies to assess the impacts of the project on historical resources. Historical resources are defined as buildings, sites, structures, objects, or districts, each of which may have historical, architectural, archaeological, cultural, or scientific significance. CEQA requires that, if the project would result in an impact that may cause a substantial adverse change in the significance of a historical resource, alternative plans or measures to mitigate the impact must be considered; however, only significant historical resources need to be addressed. Therefore, the significance of cultural resources must be determined. The following steps are normally taken in a cultural resources investigation for CEQA compliance.

- Identify cultural resources.
- Evaluate the significance of the resources.
- Evaluate the impacts of the project on significant resources.
- Develop and implement measures to mitigate the impacts of the project on significant resources.

The State CEQA Guidelines define three ways that a property may qualify as a significant historical resource for the purposes of CEQA review.

- The resource is listed in or determined eligible for listing in the CRHR.
- The resource is included in a local register of historical resources, as defined in Section 5020.1(k) of the Public Resources Code (PRC), or identified as significant in a historical resource survey meeting the requirements of Section 5024.1(g) of the PRC, unless the preponderance of evidence demonstrates that it is not historically or culturally significant.
- The lead agency determines the resource to be significant as supported by substantial evidence in light of the whole record (California Code of Regulations, Title 14, Division 6, Chapter 3, Section 15064.5[a]).

Each of these ways of qualifying as a significant historical resource for the purposes of CEQA is related to the eligibility criteria for inclusion in the CRHR, as described above.

In addition, California Health and Safety Code Section 7050.5, requires that if human remains are discovered during construction activities, no further disturbance shall occur until the following steps have been completed:

- The County Coroner has made the necessary findings as to origin and disposition pursuant to PRC Section 5097.98.
- If the remains are determined by the County Coroner to be Native American, the Coroner shall notify the NAHC within 24 hours. The NAHC shall assign the Most Likely Descendant (MLD) for the remains at the site. The MLD shall have 48 hours to provide recommendations for treatment of the remains.

3.4.2 Paleontological Resources

CEQA provides protection for paleontological resources through environmental legislation. Direction regarding significant impacts on paleontological resources is found under Appendix G (part V) of the CEQA Guidelines. The Guidelines state, “A project will normally result in a significant impact on the environment if it will . . . disrupt or adversely affect a paleontological resource or site or unique geologic feature, except as part of a scientific study.” As stated in Section 5097.5 of the Public Resource Code, it is unlawful to remove paleontological remains without authorization, and violation of this provision can result in a misdemeanor. In addition, Section 622.5 of the California Penal Code sets the penalties for damage or removal of paleontological resources.

The CEQA Guidelines (Title 14, Section 15000, et seq. of the California Code of Regulations provide guidance for compliance with CEQA. Appendix G of the CEQA Guidelines provides a checklist of questions to be answered in environmental compliance documents. Question V.d. states "Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?"

3.4.3 Tribal Cultural Resources under Assembly Bill 52

California Assembly Bill 52 (AB 52), enacted July 1, 2015, expands CEQA by defining a new resource category, "tribal cultural resources." Assembly Bill 52 establishes that "A project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment" (PRC Section 21084.2). It further states that the lead agency shall establish measures to avoid impacts that would alter the significant characteristics of a tribal cultural resource, when feasible (PRC Section 21084.3).

PRC Sections 21074 (a)(1)(A) and (B) define tribal cultural resources as "sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe" and that meet either of the following criteria:

a. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public 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 Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

AB 52 also establishes a formal consultation process for California tribes regarding those resources. The consultation process must be completed before a CEQA document can be certified. AB 52 requires that lead agencies "begin consultation with a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project." Native American tribes to be included in the process are those that have requested notice of projects proposed within the jurisdiction of the lead agency.

3.5 San Mateo County General Plan Policies

The San Mateo County General Plan contains the following policy with regard to the protection of paleontological resources:

5.20. Site Survey

Determine if sites proposed for new development contain archaeological/ paleontological resources. Prior to approval of a development for these sites, require that a mitigation plan, adequate to protect the resource and prepared by a qualified professional, be reviewed and implemented as a part of the project.

3.6 SAN MATEO COUNTY MIDCOAST LOCAL COASTAL PROGRAM

The MidCoast Local Coast Program is the vehicle by which the County of San Mateo assumes responsibility for implementing the California Coastal Act. In late 1980, the County Board of Supervisors and the California Coastal Commission approved the San Mateo County Local Coastal Program (LCP), and in April 1981, the County assumed responsibility for implementing the California Coastal Act in the unincorporated area of San Mateo County, including issuance of Coastal Development Permits. The LCP was last updated in 2013.

Four policies outlined within the Local Coastal Program have a bearing on cultural resources for the proposed project. These policies are discussed below.

1.25 Protection of Archaeological/Paleontological Resources

Based on County Archaeological/Paleontological Sensitivity Maps, determine whether or not sites proposed for new development are located within areas containing potential archaeological/paleontological resources. Prior to approval of development proposed in sensitive areas, require that a mitigation plan, adequate to protect the resource and prepared by a qualified archaeologist/paleontologist be submitted for review and approved and implemented as part of the project.

8.26 Structural Features

Employ the regulations of the Historical and Cultural Preservation Ordinance to protect any structure or site listed as an Official County or State Historic Landmark or is listed in the National Register of Historic Sites.

8.27 Natural Features

Prohibit the destruction or significant alteration of special natural features through implementation of Landform Policies and Vegetative Form Policies of the LCP.

10.24 Definition of Fragile Resources

Define fragile resource as (1) exposed rocky cliff faces, steep slopes as defined in the Hazard Component and hilly coastal terraces, (2) all sensitive habitats defined in the Sensitive Habitats component, and archaeological/paleontological resources.

a. Conduct studies by a qualified person agreed by the County and the applicant during the planning and design phases of facilities located within or near sensitive habitats and archaeological/paleontological resources to determine the least disruptive locations for improvements and the methods of construction. These studies should consider the appropriate intensity of use, improvement and management to protect the resources and reduce or mitigate impacts.

b. Provide improvements and management adequate to protect sensitive habitats. These may include, but are not limited to, the following: (1) informative displays, brochures, and signs to minimize public intrusion and impact, (2) organized tours of sensitive areas, (3) landscaped buffers or fences, and (4) staff to maintain improvements and manage the use of sensitive habitats.

4. METHODOLOGY

The methodology used in this investigation consisted of conducting archival research and surface reconnaissance surveys of the project site for archaeological and paleontological resources. In addition, prior to conducting the reconnaissance surveys, the County of San Mateo completed outreach to Native American Tribes. Detail regarding the methods used is presented below, and in more detail in Attachments A, B, C, and D.

4.1 ARCHIVAL RESEARCH

4.1.1 ARCHAEOLOGICAL RESOURCES

Prior to surface reconnaissance of the subject area, a study of the maps and records at the Northwest Information Center of the California Archaeological Site Inventory was conducted and given the file number NWIC# 17-0815. The archival research was conducted by transferring the study location to a state archaeological office that maintains all records of archaeological investigations in order to determine whether any archaeological sites or surveys have been recorded within a half mile of the project site. The purpose of this research was to determine if any known archaeological resources had previously been reported in or around the subject area.

PREVIOUS STUDIES

Four previous studies have been carried out within or adjacent to the proposed project area. These studies are described below:

S-3082. This study was carried out by S. Dietz and T. Jackson in 1970 and entitled "An Archaeological and Historical Reconnaissance of a Portion of the San Mateo County Coastside." This was a broad survey with included the entirety of the current proposed project area within its scope.

S-5389. Carried out by M. Melandry in 1977, this study is entitled "Archaeological Survey Report on Excess Parcels 6695-01-01, 6696-01-01, 7091-01-091-02-01, on Route 1 in San Mateo County P.M. 35.5/35.8." This study extends southwards from the southwest corner of the proposed project area.

S-25083. This study was carried out by J. Holson in 2002 and entitled "Archaeological Survey for Highway 1/ Montara, 8211.38 (PL 1004-07) (letter report)." Archival maps for this study indicate its location as a small circular area located within the eastern central portion of the proposed project area.

S-31887. Carried out by C. Busby in 2005, this study is entitled "Archaeological Assessment - Montara Water and Sanitary District EIR, Vicinity of Montara and Moss Beach and Within Half Moon Bay Airport, San Mateo County (letter report)." This study is located within the eastern central portion of the proposed project area.

A total of 26 additional previous studies have been carried out within a one quarter mile radius of the proposed project area. None of these studies identified any significant cultural resources within the project site.

PREVIOUSLY RECORDED ARCHAEOLOGICAL SITES

No previously recorded archaeological sites are located within the project area. However, four previously recorded resources are located within one quarter mile of the proposed project area. These resources are briefly described below:

CA-SMA-55. This prehistoric site, originally designated Nelson 405, was a shell mound originally documented by Nels Nelson in 1908. Nelson documented and investigated numerous shell mounds along the Central California Coast in the early years of the 20th Century, many of which have been significantly damaged or completely destroyed.

CA-SMA-171H. This historic district was originally recorded by H. Casper in 1973 and is described as containing the Point Montara Artillery Training Station and the Point Montara Light Station. None of the recorded elements are located within the proposed project area.

P-41-2108. This historic structure was recorded by D. Painter and C. Losee in 2003. It is described as the Montara Cottage.

P-41-2154. This historic resource was recorded in 2005 by D. Edwards. It is described as the Montara Water and Sanitary District Office at Point Montara Training Station.

None of these sites is located on the project site, and the proposed project would neither directly nor indirectly adversely impact any of these sites.

4.1.2 PALEONTOLOGICAL RESOURCES

On September 13, 2017, a paleontological records search was requested from the University of California Museum of Paleontology (UCMP), where paleontological site records are maintained. The records search included the examination of current geologic maps and paleontological locality maps to determine if any paleontological resources have been recovered within and around the project site, and to establish a foundation for gauging the sensitivity of the project site for additional and buried paleontological resources.

In addition, published reports concerning pertinent geologic and paleontological topics were investigated, which revealed no paleontological resources on the project site. The geologic mappings of Brabb et al. (1988) and of Pampeyan (1994) show the Project to lie on the Pleistocene marine terrace deposits and Cretaceous granitic rocks.

The UCMP reported that the project site contains Pleistocene marine terrace deposits underlain by Cretaceous granitic rocks. The granitic rocks will not produce paleontological resources, but Pleistocene terrace deposits have produced them. The database also reported records for nine localities in unnamed late Pleistocene deposits in San Mateo County, with the closest being a

Bison specimen located approximately 3 miles south of the project site. The existence of Bison in the marine terrace deposits demonstrates that the fauna is from the Rancholabrean North American Land Mammal Age.

The County of San Mateo Planning Department was contacted to obtain copies of sensitivity maps for archaeological and paleontological resources, as required by Local Coastal Program Policy 1.25. However, the County did not have copies of these maps.

4.2 NATIVE AMERICAN CONSULTATION

No Native American tribes have registered with San Mateo County under AB 52. Nevertheless, on December 21, 2017, the County of San Mateo Planning and Building Department sent letters to the following tribes notifying them of the proposed project requesting information regarding any Native American prehistoric resources in the area (Appendix E):

- Amah Mutsun Tribal band of Mission San Juan Bautista
- Costanoan Rumsen Carmel Tribe
- Indian Canyon Mutsun Band of Costanoan
- Muwekma Ohlone Indian Tribe of the San Francisco Bay Area
- Ohlone Indian Tribe

No responses have been received to any of these letters.

Later, as part of the archaeological testing program (see below under Section *4.3 Surface Reconnaissance*), Ms. Irene Zwierlein was contacted as a representative of the Amah Mutsun Tribal Band. Ms. Zwierlein provided a Native American monitor for the archaeological testing within CA-SMA-431 (see *Surface Reconnaissance* below for more information about this site). This monitor was present during hand excavation within the deposit.

4.3 SURFACE RECONNAISSANCE

4.3.1 ARCHAEOLOGICAL RESOURCES

INITIAL INVESTIGATION

The surface reconnaissance survey, conducted by a field archaeologist who examines exposed soils for cultural material, was done to determine if traces of historic or prehistoric materials exist within the study area. The archaeologist looked for early ceramics, Native American cooking debris, and artifacts of stone, bone, and shell. For historic cultural resources, the field evaluation also searched for older structures, distinctive architecture, and subsurface historic trash deposits of potentially significant antiquity.

A "general surface reconnaissance" was conducted by a field archaeologist on all open land surfaces in the subject area in October 2017. A "controlled intuitive reconnaissance" was performed in places where burrowing animals, exposed banks and inclines, and other activities had revealed subsurface stratigraphy and soil contents. The majority of the proposed project

area was accessible, however some areas were blocked by dense vegetation and steep slopes. Soil visibility was fair to poor; the majority of the surface area was obscured by vegetation. However, sporadic soil exposures provided an understanding of soil characteristics. In addition, portions of the surface were obscured by imported or disturbed soils, particularly in those areas modified for mountain bike recreational activities. Where visible, native soils consisted of a tan sandy loam and clay. Rock types noted included native siltstone gravel as well as imported gravel. Foundations, as well as other concrete features (culverts, other infrastructure) dating from World War II era military activities on the site were noted.

A small area of prehistoric shell midden was noted during surface reconnaissance. The midden was sparse, and surface elements consisted of a scatter of Mytilus (Mussel) shell fragments. The soil itself was light brown in color, potentially indicating an older deposit, largely leached of organic materials. This midden soil was observed alongside an informal footpath northwest of the existing water tanks on the property. This site was given the trinomial designation CA-SMA-431.

FURTHER TESTING OF CA-SMA-431

The process of archaeological research conducted for the Cypress Point project was aimed at answering a number of questions regarding the prehistoric use of the study area and in producing an accurate model of the sensitivity and deposition of cultural resources within the project area. Trenching and hand excavation were completed within the project area to determine the nature, extent, and significance of any possible prehistoric resources within the archaeological deposit, and to produce a chronology, determined by a radiocarbon sample obtained from the excavation.

As the original site boundaries were determined through surface observation, one research goal was to more systematically define the boundaries of the site. Mechanical testing trenches were excavated around the outside of the known area of the deposit in order to determine if a subsurface deposit extended beyond the site's visible surface boundaries. Another goal was to more precisely determine the depth of the site and the nature of the contents. For this, hand excavation of two testing units was undertaken. An understanding of these characteristics of the site was needed to allow an analysis of the uniqueness of the site, as well as a determination of site's significance under the criteria for the CRHR and the NRHP. Further detail regarding the methods used is provided below.

Field Methods

The first phase of the fieldwork involved mechanical test trenching. The test trenching was carried out on February 21, 2018. During trenching, seven mechanically excavated test trenches were placed outside the visible boundaries of the archaeological site in order to determine if subsurface elements of the site extended beyond those boundaries. The trenches were used to help identify the presence or absence of subsurface cultural resources. During trenching, the following information was recorded: soil type, color, and rock type. None of the mechanically excavated trenches contained any cultural materials.

The second phase of the fieldwork involved hand excavation of two 1 x 1 meter test units. Excavation of the test units was carried out on February 22, 2018. Placement of the units was determined based upon the defined boundaries of the archaeological deposit. Hand excavation was conducted using standard archaeological techniques with flat-nosed shovels, round-nosed shovels, picks, and trowels at arbitrary levels and dry screened through 1/4 inch mesh. All identified artifactual material was collected from each level.

Collected material was curated in level bags and each level recorded as to artifacts present, soil type, color, stratigraphy, and features present. All artifactual material from this process was then placed within its appropriate level bag from the field screening process. Hand excavation of the test units was carried out to a depth of 40 cm at which point sterile soil was encountered. A hand auger boring was then conducted to a depth of 100cm in each unit.

Laboratory Methods

In the laboratory, all materials were washed and cataloged. All artifacts were washed in cool water and allowed to dry. Then, each item was examined, weighed, categorized, and entered into an artifact database. Categories used included shells, fire cracked rock (FCR), metal, and glass. All cultural materials were catalogued and weighed; shell materials were catalogued, weighed, and speciated. In addition, two shell samples were submitted to Beta Analytic, Inc. for radiocarbon dating analysis to provide a general chronology for the site.

Results

No cultural materials were observed in soils outside the recorded boundaries of the archaeological site. Attachment A contains more information regarding the results of the trenching conducted at the project site.

The hand excavation yielded both prehistoric dietary shell remains and recent historic materials. These data were then synthesized to produce an interpretation of deposition and a chronology of the test area. A summary of the findings is presented below. More detail regarding the findings is provided in Attachment A.

Hand Excavation Unit #1

The soil of Unit #1 consisted of a medium brown silty loam to a depth of approximately 27cm, at which point a reddish brown silty clay was encountered to a depth of 40 cm. The surface level of this unit contained mussel (Mytilus) and barnacle (Balanus) shell fragments, as well as terrestrial snail shell. The 0-20 cm level included mussel (Mytilus) and barnacle (Balanus) shell fragments, FCR, as well as historic materials including glass and plastic fragments, and a wire nail. The 20-40 cm level contained mussel (Mytilus) and barnacle (Balanus) shell fragments as well as one brown bottle glass fragment. This material was almost entirely concentrated in the upped 7 cm of the level; the reddish silty clay from 27-40 cm appeared sterile. A hand auger boring was conducted at the base of the 20-40 cm level, to a depth of 100 cm. Soils in this auger boring consisted of a reddish brown silty clay gradually shifting to an orange clay and sand. No cultural materials were noted in the auger boring.

Hand Excavation Unit #2

The soil of Unit #2 consisted of a medium brown silty loam to a depth of approximately 40cm, at which point a reddish brown silty clay was encountered. The surface level of this unit contained mussel (Mytilus) and barnacle (Balanus) shell fragments. The 0-20 cm level included mussel (Mytilus), barnacle (Balanus), turban shell, and chiton (Cryptochiton) shell fragments, terrestrial snail shell, and FCR, as well as historic materials including one fragment of clear glass. The 20-40 cm level contained mussel (Mytilus) and barnacle (Balanus) shell fragments as well as terrestrial snail shell. Dense reddish brown silty clay was encountered at approximately 40 cm. A hand auger boring was conducted at the base of the 20-40 cm level, to a depth of 100 cm. Soils in this auger boring consisted of a reddish brown silty clay gradually shifting to an orange clay and sand. No cultural materials were noted in the auger boring.

Summary of Faunal Shell Finds

Shell remains comprised a majority of the cultural material in both the hand excavated units. The shell recovered was comprised of multiple species. Recovered shell included mussel (Mytilus), which was the most abundant species, as well as smaller amounts of barnacle (Balanus) shell, Turban shell (Turbinidae), and chiton (Cryptochiton). The Ohlone used these species as a food resource.

Fire-Cracked Rock

Fire-cracked rock (FCR) is often used as a surface indicator of a prehistoric archaeological deposit. Prehistoric inhabitants of the region often used rock in their cooking activities. Heated rocks were placed in baskets in order to boil water and cook foods. Rocks were also used in the construction of hearths, and may have become firecracked from repeated fire burning. Although rocks may be affected by fires which burn naturally across the land, rocks which are fire-cracked and heavily damaged appear to have been repeatedly exposed to high temperature fires and rapid cooling, potentially related to human activity. Fire-cracked rock is characterized by sharp foliations and cracks in the surface that contrasts with the worn natural exterior of the rock. There is often a pinkish discoloration on the cracked surface.

Historic Artifacts

Small amounts of historic material were encountered in both hand excavated units. These historic artifacts were mixed with the prehistoric deposit and may be the result of previous construction activities or rodent burrowing at this location. Historic materials including glass and metal were noted down to 40 centimeters in both units, indicating that the deposit had been disturbed. In general, the historic artifacts recovered appear to date from the mid- to late-20th Century to the present.

Radiocarbon Dating

The most reliable of the absolute dating techniques available to archaeologists involves the analysis of carbon 14 (C14), an unstable isotope of carbon. This dating technique relies on three characteristics of C14:

- All living things contain a set percentage of C14 in their bodies while they are alive;
- C14 has a characteristic half-life (the time needed for half the original number of unstable atoms to change to stable ones) of 5,730 years.
- Although the levels of C14 atoms in the environment have fluctuated through geological time, scientists have been able to document these changes using ice cores, dendrochronology, and other cross checks.

After the fieldwork was completed, two samples were selected and submitted to Beta Analytic Laboratories, Inc., in Miami, Florida. Sample #1 was taken from the 0-20cm level of Unit #1. Sample #2 was taken from the 20-40cm level of Unit #2. Sample #1 was given a conventional radiocarbon age of 1000 +/- 30 BP (Before Present) and a calendar calibration date of 1501 to 1683 Cal AD (449-267 Cal BP). Sample #2 was given a conventional radiocarbon age of 1520 +/- 30 BP, and a calendar calibration date of 1068 to 1276 Cal AD (882-674 Cal BP).

Occupation of Central California is divided into three periods:

- Early Period (3000 to 500 Before the Common Era (BCE));
- Middle Period (500 BCE to 900 of the Common Era (CE))
- Late Period (900 CE to 1700 CE).

The carbon date suggests that the site was occupied during the Late Period.

4.3.2 Paleontological Resources

No surface reconnaissance surveys were conducted for paleontological resources.

4.4 Significance Criteria

4.4.1 Cultural Resources

As set forth in Appendix G, Question V of the State CEQA Guidelines, the following criteria have been established to quantify the level of significance of an adverse effect to historical and cultural resources evaluated pursuant to CEQA. An impact would exceed an impact threshold if it would:

1. Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5.
2. Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5.
3. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.
4. Disturb any human remains, including those interred outside of dedicated cemeteries.

4.4.2 Tribal Cultural Resources

As established by AB 52 and set forth in Appendix G, Question XVII of the State CEQA Guidelines, the following criteria have been established to quantify the level of significance of an adverse effect to tribal cultural resources evaluated pursuant to CEQA. An impact would exceed an impact threshold under these circumstances:

> If the project would 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 historical resources as defined in Public 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.

5. Impacts and Mitigation Measures

5.1 Archaeological and Historic Resources

Impact CUL-1: *Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?* **Less than significant Impact.**

The project site contains the concrete foundations of structures from the Point Montara Anti-Aircraft Training Center, which operated during WWII. The structures themselves were destroyed during subsequent use of the site for the training of fire personnel. None of the structures within the proposed project area are currently listed on the County, State, or National Registers as historic resources.

These remnants do not appear to adequately convey the character of the original structures or the activities that took place during this period, and are not eligible for listing in the NRHP or the CRHR. The project site also contains Montara Water and Sanitary District infrastructure including tanks, culverts, and other fixtures. However, these structures are utilitarian in character and do not appear historically significant, and in any case, would not be affected by the proposed project. Therefore, this impact would be less than significant, and no mitigation is required.

Impact CUL-2: *Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?* **Less than significant with Mitigation Incorporated.**

The archaeological deposit at CA-SMA-431 is contained within a small, well-defined area (approximately 80 feet by 30 feet in size). Based upon the surface dimensions and depth of the deposit (approximately 40 cm or 1 foot), as observed during this testing program, it is estimated that the entire deposit contains approximately 90 cubic yards of soil.

The deposit is identifiable as Native American in origin due to multiple factors, including:

- The presence of dietary shell not generally consumed during the historic period in this area (such as barnacles, turban shells, and chiton).
- The very weathered and fragmentary nature of the shells
- The presence of fire cracked rock (FCR), which is characteristic of Native American food preparation activities in this area of California.

Radiocarbon analysis of two shell samples returned calibrated dates of 1501 to 1683 AD and 1068 to 1276 Cal AD. However, historic artifacts in the form of materials such as glass, plastic, and metal were present at all levels of the deposit, which indicates that the deposit has been heavily disturbed.

The property as a whole was extensively developed by the military during WWII, and the archaeological deposit at CA-SMA-431 is located within a small terrace a short distance from a large concrete foundation, which is a remnant of this era. Hummocks of soil material spread throughout the larger subject property also indicate that more recent importations of soil have taken place. Earthmoving activities by the Montara Water and Sanitary District within the proposed project area have occurred, but were largely restricted to pipeline construction (Martinez 2018).

The proposed project area has frequently been used as a dumping site for a variety of materials, including garbage, rocks, and spoils dirt (Oswein 2018). The presence of relatively modern plastic fragments within the deposit indicate disturbance after military ownership of the property, either during its use as a firefighter training facility in the 1960's, or as a result of more recent dumping activities. Thus the historic patterns of grading and construction on this property point to the possibility that the deposit itself was imported from a nearby archaeological site, such as CA-SMA-55, located on Point Montara approximately 150 feet from the northwest corner of the proposed project boundaries. Alternatively, the deposit may represent the heavily disturbed basal layer of a deeper site removed during historic earthmoving on the property. Thus the deposit may contain isolated intact features.

Based upon the results of the archaeological testing and historic background study, as documented in *Archaeological Treatment Plan For The Proposed Cypress Point Project In Moss Beach, County Of San Mateo* (Attachment D), the project area as a whole should be considered sensitive for both prehistoric and historic archaeological materials. The proposed project, as currently designed, calls for construction of three structures (labeled B4 on the proposed site

plan) within and in the immediate vicinity of the identified boundaries of the CA-SMA-431 deposit. Thus excavation and grading for these structures will necessitate the removal of the majority or all of the archaeological deposit. Preservation in place was determined not to be feasible as the proposed project could not feasibly be modified to avoid the deposit. Relocating these structures is not feasible in light of the project objectives because the project was designed to: a) be feasible from a construction standpoint by avoiding significant slopes that cover portions of the site, b) be consistent with the character of the surrounding neighborhood in the design and location of buildings; c) minimize aesthetics impacts on neighboring properties; and d) preserve portions of the project site as undeveloped. These objectives require limiting development on portions of the site. On the other hand, removing these structures from the proposed project would negatively impact the key project objective of providing a significant number of affordable housing units in the MidCoast region.

Thus, this is considered a significant impact. To reduce the impact of the proposed project to a less-than-significant level, implement mitigation measures CUL-1, CUL-2, and CUL-3.

Mitigation Measure CUL-1: Additional Site Excavation

An archaeological salvage program, consisting of four hand excavated 1x1 meter mitigation units, will take place prior to the commencement of construction earthmoving activities. Placement of the units will be based on available archival background data, field observations, and proposed project plans. Hand excavation will be conducted using standard archaeological techniques with trowels, picks, and shovels at arbitrary levels and dry screened through ¼ inch mesh. All identified artifactual material will be collected from each level. Collected material will be placed in level bags and each level will be recorded using level forms. Artifacts, soil type, color and stratigraphy, and features present will be recorded. All artifactual material from this process will then be placed within its appropriate level bag during the field process.

Mitigation Measure CUL-2: Archaeological Monitoring

Considering that cultural resources frequently exist below the surface, their location is often not visible. Field archaeologists therefore monitor earthmoving activities to observe whether artifactual remains, soil changes indicating cultural use, and/or other indicators of human activity are present within a project area. Monitoring consists of a qualified archaeological field technician present and observing ground-disturbing activities in native soil.

Archaeological monitoring will be conducted during all earthmoving activities involved with the project in accordance with the schedule coordinated between the general contractor and project Archaeologist. This will consist of full time monitoring during all earth moving activities within 50 feet of CA-SMA-341. Archaeological spot check monitoring, consisting of periodic monitoring of the project site during ground disturbing activities, including during demolition of the existing concrete foundations, will take place for the remainder of the project. The timing and frequency of these spot checks will be determined throughout the course of earthmoving activities for the

proposed project based upon the construction schedule and the nature of any cultural materials encountered. The archeologist will inspect the site per the approved schedule and will subsequently provide an archaeological monitoring report. This report will document all cultural materials encountered, and will be submitted to project representatives within 40 working days of the completion of earth moving activities for the project.

Mitigation Measure CUL-3: Unanticipated Findings during Construction

If any individual artifacts (prehistoric or historic), features, potential midden soils, or other indicators of cultural use are noted by the archaeological monitor during the course of earthmoving activities, work within 50 feet of the find will be stopped until appropriate measures are formulated by the Project Archaeologist and accepted by the County and the project representative. If the project archaeologist is not present on the site, the County, Owner and Project Archaeologist shall be notified by telephone and the project archaeologist will examine the materials encountered within 24 hours. Any archaeological materials found at the site will be collected and stored for further analysis.

In the event of the discovery of an intact archaeological deposit during the course of archaeological mitigation/monitoring, construction activities shall be halted within 50 feet of the find for the purpose of identifying and mapping the deposit, and further mitigation recommendations will be formulated by the Project Archaeologist and discussed with the project representative. It these materials are determined to be significant, a preservation plan or recovery program will be prepared, submitted to San Mateo County for approval, then implemented.

For any cultural materials discovered, preservation in place is the preferred treatment of an archeological resource (CEQA Section 21083.2(b); CEQA Guidelines Section 15126.4(b)(3)(a)). If preservation in place of an archeological resource is not feasible, data recovery, in accord with the approved data recovery plan will be implemented, prior to any further soil disturbance within 50 feet of the discovered materials (or other appropriate boundary approved by the Project Archaeologist and the County) (CEQA Guidelines Section 15126.4(b)(3)(C)). The recovery plan shall include controlled excavation of the entirety, or a representative sample, of the cultural materials, analysis of the recovered material, and written documentation. The data recovery program shall specify the methods to be used for curation of scientifically significant data in an appropriate curation facility that is compliant with the OHP's Guidelines for the Curation of Archaeological Collections (1993).

Scientific analysis will be performed on the resources recovered from the archaeological monitoring for this project, following basic laboratory operations. Any artifacts and archaeological features found during construction shall be removed, cleaned, stabilized/conserved, and catalogued in accordance with professional curation and archaeological practice. Native American burials, if discovered, will be analyzed in

accordance with recommendations from the MLD designated by the NAHC and Mitigation Measure CUL-4.

Recovered materials will be documented in a written report prepared by the Project Archaeologist. The report and recovered material will be submitted to the Owner for storage, curation, or onsite interpretive display. The final report shall be produced documenting and synthesizing all data collected from the above-mentioned measures. The report will include recording and analysis of materials recovered, conclusions, and any additional recommendations. Copies of the archaeological report prepared in conjunction with this project will be filed with the California Historical Resources File System, Northwest Information Center (CHRIS/NWIC) at Sonoma State University, as well as with the County of San Mateo.

With implementation of Mitigation Measures CUL-1, CUL-2, and CUL-3, the potential impacts to site CA-SMA-341 would be reduced to less than significant, because the site will excavated to obtain all available data about the site and all cultural materials will be preserved, because ground-disturbing activities will be monitored, and methods are provided to protect an unanticipated cultural materials discovered during project construction.

Impact CUL-3: *Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?* **Less than significant with Mitigation Incorporated.**

The sources consulted indicate that the Pleistocene marine terrace deposits, which are underlain by Cretaceous granitic rocks, have a high sensitivity for significant paleontological resources. Therefore, earthmoving of previously undisturbed sediments during construction of the proposed project could have a significant impact on paleontological resources. This would be a significant impact. To reduce this impact to a less-than-significant level, implement Mitigation Measure CUL-4.

Mitigation Measure CUL-4: Pedestrian Paleontological Surveys

Prior to initiating any earth-moving activities associated with the proposed project, the project proponent shall retain the services of a paleontologist with the qualifications listed by the Society of Vertebrate Paleontology (SVP 2010).

The paleontologist shall be provided with construction plans and design a paleontological resource monitoring plan to be approved by the County of San Mateo. This plan will address monitoring of all disturbance of previously undisturbed sediments during demolition and construction, sediment sampling and testing, specimen preparation, identification, reporting, and curation. Once the plan has been approved, the paleontologist shall execute a pedestrian survey of the project footprint for paleontological resources and geologic indicators pertinent to these resources. Should any resources be discovered, the paleontologist will follow the procedures in the plan.

With implementation of Mitigation Measure CUL-4, the potential impact on paleontological resources will be reduced to less than significant, because pre-construction paleontological

surveys will evaluate the likely for any resources to be on the project site, and procedures in the paleontological resource monitoring plan will protect any resources identified during project construction.

Impact CUL-4: *Disturb any human remains, including those interred outside of formal cemeteries?* **Less than significant with Mitigation Incorporated.**

Although no evidence of human remains on the project site has been found, it is possible that earth-moving activities associated with construction of the proposed project would reveal previously unidentified remains. This impact would be significant. To reduce it to a less-than-significant level, implement Mitigation Measure CUL-5.

Mitigation Measure CUL-5: Procedures for Discovery and Treatment of Human Remains

If human remains are found during excavation or construction, work will be halted at a minimum of 50 feet from the find, the area will be staked off, and the Owner, the County of San Mateo, and Project Archaeologist will be notified. The owner shall contact the San Mateo County Coroner, and no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains until the coroner determines that no investigation of the cause of death is required.

If the coroner determines the remains to be Native American, the coroner shall contact the Native American Heritage Commission within 24 hours of this determination. The Native American Heritage Commission (NAHC) shall identify the person or persons it believes to be the Most Likely Descendent (MLD) of the deceased Native American. The MLD may then make recommendations to the Owner and execute an agreement for the means of treating or disposing of, with appropriate dignity, the human remains and associated grave goods, as provided in Public Resources Code Section 5097.98.

If required, reinterment of human remains will be performed according to California law for Native American burials (Chapter 1492, Statutes of 1982). The intent of the California state law is to protect Native American burials, isolated and disarticulated human remains, and associated cultural materials found during the course of an undertaking. It also serves to insure proper analysis prior to their final disposition. The location and procedures of this undertaking will be recorded by the project archaeologist. Reinterment will take place with all due speed upon completion of all necessary analysis. This information will be included in the final report prepared by the Project Archaeologist, or if necessary, as an addendum to the report.

The Owner shall rebury the Native American human remains and associated grave goods with the appropriate dignity on the property in a location not subject to further disturbance if:

a. The NAHC is unable to identify a MLD or the MLD failed to make a recommendation within 24 hours after being notified by the commission.

b. The descendent identified by the NAHC fails to make a recommendation for burial and the mediation by the Native American Heritage Commission fails to provide measures acceptable to the Owner.

   Any associated grave goods and soil samples from the burial site will be analyzed per the agreement between the Owner and the MLD. Dependent upon the nature of this agreement, diagnostic artifacts such as projectile points, shell beads and ground stone artifacts may be studied and illustrated in the final report to be prepared by the Project Archaeologist Radiocarbon dating and obsidian hydration and sourcing may be undertaken in order to provide a chronology for newly identified features.

With implementation of Mitigation Measure CUL-5, any human remains and grave goods discovered during construction of the proposed project will be protected, treated with due respect, and preserved or reinterred according to state law and the wishes of the MLD.

5.2 TRIBAL CULTURAL RESOURCES

Impact TCR-1: *Cause a substantial adverse change in the significance of a tribal cultural resource that is listed or eligible for listing in the CRHR or in a local register of historic resources, as defined in Public Resources Code Section 5020.1(k)?* **Less than significant Impact.**

No Tribal Cultural Resources were identified on or near the project site either in any of the cultural resource reports prepared for the proposed project, through the AB 52 consultation process, or through subsequent outreach by the County of San Mateo to Native American tribes. Therefore, the proposed project would not impact any known Tribal Cultural Resources. This impact is less than significant, and no mitigation is required.

Impact TCR-2: *Cause a substantial adverse change in the significance of a tribal cultural resource that is a resource determined by the lead agency to be significant pursuant to criteria set forth in subdivision (c) of Public resources Code Section 5024.1?* **Less than significant Impact.**

No Tribal Cultural Resources have been identified on or near the project site by the County of San Mateo. Therefore, the proposed project would not impact any known Tribal Cultural Resources. This impact is less than significant, and no mitigation is required.

6. REFERENCES

Archaeological Resources Management (ARM). 2018a. Cultural Resource Evaluation of the Cypress Point Project. Prepared for Stevens Consulting. June 4, 2018.

_____, 2018b. Archaeological Testing Program for CA-SMA-431 At The Cypress Point Project in Moss Beach, County Of San Mateo. Prepared for Stevens Consulting. June 4, 2018.

_____, 2018c. Archaeological Treatment Plan For The Proposed Cypress Point Project in Moss Beach, County Of San Mateo. Prepared for Stevens Consulting. June 4, 2018.

Brabb, E.E., R.W. Graymer, and D.L. Jones. 1988. Geology of the onshore part of San Mateo County, California: a digital database. U.S. Geological Survey Open-File Report pp. 98–137. Scale 1:62,500.

Davis, E. L. 1974. Paleo-Indian Land Use Patterns at China Lake, California. Costa Mesa: Pacific Coast Archaeological Society Quarterly 10(2):1-16.

FirstCarbon Solutions. 2017. Paleontological Review MidPen Cypress Point Affordable Housing Community Project San Mateo County, California. Prepared for Archaeological Resource Management. October 17, 2017.

Gifford, E. 1951. California Balanophagy, in The California Indians, edited by R. Heizer and M. Whipple, University of California Press, Berkeley, California.

Jones, T. L., N. Stevens, D. Jones, R. Fitzgerald, and M. Hylkema. 2007. Chapter 9: The Central Coast: A Midlatitude Milieu, Pages 125-146 in Terry L. Jones and Kathryn A. Klar, (eds.), California Prehistory: Colonization, Culture, and Complexity, Altamira Press, New York.

King, T.P., and P.P. Hickman. 1973. Archaeological Impact Evaluaqtion: San Felipe Division, Central Valley Project. Part I The Southern Santa Clara Valley, California: A general Plan for Archaeology. For U.S. Department of Interior, National Park Service, and the Frederick Burk Foundation, California State University, San Francisco. MS on file, California Archaeological Site Inventory, Rohnert Park.

Kroeber, A.L. 1962. Two Papers on the Aboriginal Ethnography of California. The Nature of Land Holding groups in Aboriginal California. Berkeley: University of California Archaeological Survey Reports 56:21-58.

Oeswein, J. Q. 2016. A Top Secret Military Base on the Coastside? Point Montara Anti-aircraft Training Center U.S. Navy (1942-1945). Powerpoint presentation.

Pampeyan, E. H. 1994. Geology of the Montara Mountain and San Mateo 7-1/2’ Quadrangles, San Mateo, California. U. S. Geological Survey Miscellaneous Investigations series, Map I-2390. Scale 1:24,000.

Society of Vertebrate Paleontology. 2010. Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources. Website: <http://vertpaleo.org/The- Society/Governance-Documents/SVP_Impact_Mitigation_Guidelines.aspx.

APPENDIX A

Cultural Resource Evaluation of the Cypress Point Project in Moss Beach, County of San Mateo

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County Review Draft

CULTURAL RESOURCE EVALUATION OF THE CYPRESS POINT PROJECT IN MOSS BEACH, COUNTY OF SAN MATEO

FOR

ATTN: MR. CRAIG STEVENS
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BY

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JUNE 1, 2018

County Review Draft

ADMONITION

Certain information contained in this report is not intended for general public distribution. Portions of this report locate significant archaeological sites in the region of the project area, and indiscriminate distribution of these data could result in the desecration and destruction of invaluable cultural resources. In order to ensure the security of the critical data in this report, certain maps and passages may be deleted in copies not delivered directly into the hands of environmental personnel and qualified archaeologists.

ABSTRACT

This cultural resource evaluation was carried out for the proposed Cypress Point Project in Moss Beach, County of San Mateo. This evaluation included archival research and a surface survey of the project area. The archival research revealed that there are no recorded cultural resources located within the study area. However, four previously recorded resources are located within a one quarter mile radius of the proposed project area. The closest of these is CA-SMA-55, a prehistoric shell mound site originally recorded by N. Nelson in the early 20th Century and located approximately 150 feet away from the northwest corner of the proposed project area. Midden soils, containing fragments of mussel shell were noted in the central portion of the subject property during surface reconnaissance (see Midden Location Map). Historic foundations, associated with WWII era military activities on the site were also noted in the field. Based on the presence of midden soils within the project area, it is recommended that a subsurface testing program be carried out in this portion of the proposed project area to ascertain the boundaries, depth, and constituents of this archaeological deposit. It is further recommended that the archaeological monitoring and other mitigation measures presented in the Archaeological Treatment Plan for the project (Cartier 2018) be carried out for the proposed project.

REQUEST FOR CULTURAL RESOURCE EVALUATION

The cultural resource evaluation was carried out to determine the presence or absence of any significant cultural resources. Cultural resource services were requested in September of 2017 in order to provide a cultural resource report of the project. This report meets the requirements of CEQA (California Environmental Quality Act).

QUALIFICATIONS OF ARCHAEOLOGICAL RESOURCE MANAGEMENT

Archaeological Resource Management has been specifically engaged in cultural resource management projects in central California since 1977. The firm is owned and supervised by Dr. Robert Cartier. Dr. Cartier is the Principal Investigator, with additional personnel hired to satisfy the needs for specific investigations. ARM's offices are located in downtown San Jose which provides a centrally located headquarters for the majority of the work contracted in the Central California area. These studies have included archival overviews, surface surveys, extensive excavations, and National Register evaluations for both prehistoric and historic resources that meet requirements of CEQA, NHPA, and NEPA (National Environmental Policy Act). Dr. Cartier has a Ph.D. in anthropology, and is certified by the Register of Professional Archaeologists (ROPA) for conducting cultural resource investigations as well as other specialized work in archaeology and history. He also fulfills the standards set forth by the Secretary of the Interior for inclusion as a historian and architectural historian and is certified as such on the State of California referral lists.

Dr. Cartier completed his undergraduate work in anthropology at San Jose State University and earned his M.A. and Ph.D. in anthropology from Rice University in 1975. He is

certified by the Register of Professional Archaeologists (ROPA) in the categories of teaching, field work, and cultural resource management. Cartier organized the firm of Archaeological Resource Management in 1977. Since that time he has been directing archaeological and historical investigations in Santa Clara County and the central California area. The firm has completed projects for private individuals, local cities and counties, the Santa Clara Valley Water District, the State of California (CALTRANS), and the Federal Government (Army Corps of Engineers), as well as purely academic investigations.

LOCATION AND DESCRIPTION OF THE SUBJECT AREA

The subject area consists of approximately 10.66 acres of land off of Sierra Street in Moss Beach, County of San Mateo. On the USGS 7.5 minute quadrangle of Montara Mountain OE W, CA, the Universal Transverse Mercator Grid (UTMG) centerpoint of the project area is 10S 5 42 699mE,41 54 262mN. The elevation ranges from approximately 100 to 150 feet MSL, and the nearest source of fresh water is the Montara Denniston Creek which is located approximately 300 feet north of the proposed project area.

The proposed project consists of the construction of 71 affordable housing units consisting of approximately 25 two-story buildings holding 3-4 units each. This project will involve the necessary excavation, grading, trenching, and other earthmoving activities.

METHODOLOGY

The methodology used in this investigation consists of an archival search, a surface reconnaissance, an evaluation of the potential significance of the property according to the California Register of Historic Resources (CRHR), and a written report of the findings with appropriate recommendations. The archival research is conducted by transferring the study location to a state archaeological office which maintains all records of archaeological investigations. This is done in order to learn if any archaeological sites or surveys have been recorded within a half mile of the subject area. Each archival search with the State is given a file number for verification. The surface reconnaissance portion of the evaluation is done to determine if traces of historic or prehistoric materials exist within the study area. This survey is conducted by a field archaeologist who examines exposed soils for cultural material. The archaeologist is looking for early ceramics, Native American cooking debris, and artifacts of stone, bone, and shell. For historic cultural resources, the field evaluation also considers older structures, distinctive architecture, and subsurface historic trash deposits of potentially significant antiquity. A report is written containing the archival information, record search number, the survey findings, and appropriate recommendations. A copy of this evaluation is sent to the State archaeological office by requirements of State procedure.

Regulatory Framework

California Register Criteria

A cultural resource is considered "significant" if it qualifies as eligible for listing in the California Register of Historic Resources (CRHR). Properties that are eligible for listing in the CRHR must meet one or more of the following criteria:

1. Association 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. Association with the lives of persons important to local, California, or national history;
3. Embodying the distinctive characteristics of a type, period, region, or method of construction, or representing the work of a master, or possessing high artistic values; or
4. Has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California, or the nation.

Most Native American prehistoric sites are eligible due to their age, scientific potential, and/or burial remains.

The CRHR interprets the integrity of a cultural resource based upon its physical authenticity. An historic cultural resource must retain its historic character or appearance and thus be recognizable as an historic resource. Integrity is evaluated by examining the subject's location, design, setting, materials, workmanship, feeling, and association. If the subject has retained these qualities, it may be said to have integrity. It is possible that a cultural resource may not retain sufficient integrity to be listed in the National Register of Historic Places yet still be eligible for listing in the CRHR. If a cultural resource retains the potential to convey significant historical/scientific data, it may be said to retain sufficient integrity for potential listing in the CRHR.

National Register Criteria

The National Register of Historic Places was first established in 1966, with major revisions in 1976. The register is set forth in 36 CFR 60 which establishes the responsibilities of the State Historic Preservation Officers (SHPO), standards for their staffs and review boards, and describes the statewide survey and planning process for historic preservation. Within this regulation guidelines are set forth concerning the National Register of Historic Places (36 CFR 60.6). In addition, further regulations are found in 36 CFR 63-66 and 800 which define procedures for determination of eligibility, identification of historic properties, recovery, reporting, and protection procedures.

The National Register of Historic Places was established to recognize resources associated with the accomplishments of all peoples who have contributed to the country's history and heritage. Guidelines were designed for Federal and State agencies in nominating cultural resources to the National Register. These guidelines are based upon integrity and significance of the resource. Integrity applies to specific items such as location, design, setting, materials, workmanship, feeling, and association. Quality of significance in

American history, architecture, archaeology, engineering and culture is present in resources that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and meet at least one of the following criteria:

a. that are associated with events that have made a significant contribution to broad patterns of our history;
b. that are associated with the lives of persons significant in our past;
c. that embody distinctive characteristics of type, period, or method of construction, or that represent the work of master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction;
d. that have yielded, or are likely to yield, information important in prehistory or history.

Ordinarily, properties that have achieved significance within the last 50 years are not considered eligible for the National Register. However, such properties will qualify if they are integral parts of districts that do meet the criteria of the NRHP listed above or if they fall within the following categories:

a. a religious property deriving primary significance from architectural significance or artistic distinction or historic importance; or
b. a building or structure removed from its original location but which is significant primarily for architectural value, or which is the surviving structure most importantly associated with an historic person or event; or
c. a birthplace or grave of a historical figure of outstanding importance if there is no other appropriate site or building directly associated with his (or her) productive life; or
d. a cemetery which derives its primary significance from graves of persons of transcendent importance, from age, from distinctive design features, or from association with historic events; or
e. a reconstructed building when accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and when no other building or structure with the same association has survived; or
f. a property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own historical significance; or
g. a property achieving significance within the past 50 years if it is of exceptional importance.

Section 30244 of the California Coastal Act

Article 5; Land Resources, Section 30244 of the California Coastal Act states that:

> "Where development would adversely impact archaeological or paleontological resources as identified by the State Historic Preservation Officer, reasonable mitigation measures shall be required."

This cultural resource evaluation identifies a portion of the proposed project area as containing a potentially significant archaeological resource, and recommends archaeological testing for the purpose of determining the boundaries, depth, and constituents of the archaeological deposit within the proposed project area. The results of

this testing will be used to determine reasonable mitigation measures for the proposed project. Sensitivity for paleontological resources is being addressed in a separate report.

San Mateo County Midcoast Local Coastal Program Policies

In late 1980, the County Board of Supervisors and the California Coastal Commission approved the San Mateo County's Local Coastal Program. In April 1981, the County assumed responsibility for implementing the State Coastal Act in the unincorporated area of San Mateo County, including issuance of Coastal Development Permits. Three policies outlined within the Local Coastal Program have a bearing on cultural resources for the proposed project. These policies are discussed below.

1.25 Protection of Archaeological/Paleontological Resources

> "Based on County Archaeology/Paleontology Sensitivity Maps, determine whether or not sites proposed for new development are located within areas containing potential archaeological/paleontological resources. Prior to approval of development proposed in sensitive areas, require that a mitigation plan, adequate to protect the resource and prepared by a qualified archaeologist/paleontologist be submitted for review and approval and implemented as part of the project."

This cultural resource evaluation identifies a portion of the proposed project area as archaeologically sensitive, and recommends archaeological testing for the purpose of determining the boundaries, depth, and constituents of the archaeological deposit within the proposed project area. The results of this testing will be used to determine appropriate mitigation plan for the proposed project. Sensitivity for paleontological resources is being addressed in a separate report.

8.26 Structural Features

> "Employ the regulations of the Historical and Cultural Preservation Ordinance to protect any structure or site listed as an Official County or State Historic Landmark or is listed in the National Register of Historic Sites."

None of the structures within the proposed project area are currently listed on the County, State, or National Registers as historic resources. In addition, they do not appear to be eligible for listing in any of these registers. Although the proposed project area contains the concrete foundations of structures from the Point Montara Anti-Aircraft Training Center which operated during WWII, these remnants do not appear to adequately convey the character of the original structures or the activities which took place during this period for listing in these registers. Montara Water and Sanitary District infrastructure including tanks, culverts, and other fixtures are also present on the property. These structures are utilitarian in character and do not appear historically significant.

8.27 Natural Features

> "Prohibit the destruction or significant alteration of special natural features through implementation of Landform Policies and Vegetative Form Policies of the LCP."

No special natural features appear to be present within the proposed project area, thus no special natural features will be destroyed or altered by the proposed project.

ETHNOGRAPHIC BACKGROUND

Early ethnographic accounts of local Native American cultures provide a cultural context for archaeological studies. The Ohlone, or Costanoan, Indians inhabited the San Francisco Bay regions from the Golden Gate south to Monterey. Derived from a Spanish word, Costanoan means "people of the coast," and is an older term. Descendants of these people prefer to refer to themselves as "Ohlone," and it is now the generally accepted term. The research area is located in the Salson linguistic area, which shared many cultural traits with other linguistic groups in the Ohlone region. It is believed that the Ohlone Indians inhabited the area since A.D. 500, and that speakers of the Hokan language previously inhabited at least part of the region (Levy 1978). However, it is unclear when the Hokan or even earlier Paleo-Indians first came to the area. Archaeological data documents Native American coastal activity in the Central Coast area over the past 10,000 years, with some indications of occupation as early as 12,000 to 13,000 years ago (Jones et al, 2007). The earliest radiocarbon dates that are available for the area to which the Ohlone came to live are 12,000 B.P. (years before present) at SCR-177 in Scotts Valley (Cartier 1993), 3,200 B.P. at the University Village Site (SMA-77) (Gerow 1968), 6,349 B.P. at Palm Canyon (SCL-106) near Gilroy (Cartier 1980), 6,628 B.P. at Camden Avenue (SCL-64) (Winter 1978), CA-SCR-38 on the Santa Cruz coast, dated to ca. 8850 B.P., CA-SCR-7 dated to ca. 6050 B.P. (Jones and Hilderbrandt 1990), and CA-SCR-239 in Scotts Valley, dated to ca. 4950 B.P. (Cartier 1992).

The Ohlone were gatherers and hunters who utilized only the native flora and fauna with the exception of one domesticate, the dog. Yet, the abundance and high quality of natural resources allowed them to settle in semi-sedentary villages. The Ohlone were typically organized in basic political units called "tribelets" that consisted of 100 to 250 members (Kroeber 1954). The "tribelet" was an autonomous social unit consisting of one or more permanent villages with smaller villages in a relatively close proximity (Kroeber 1962). Parties went out from the major villages to locations within the tribal territory to obtain various resources.

The proximity of both mountainous and bay regions in the local environment made a diversity of resources available during different seasons to the native inhabitants. During the winter months, the low-lying flats near the San Francisco Bay have abundant marine and waterfowl resources, while the surrounding mountainous areas are best in the summer months for their nut, seed, and mammalian resources (King and Hickman 1973). A primary food source was acorns, abundant in autumn and easily stored for the remainder of the year. According to Gifford, the acorn industry of California was probably the most characteristic feature of its domestic economy (Gifford 1951). An

elaborate process of grinding and leaching acorns is necessary to render them palatable. The acorn industry first became a major source of food in the Middle Period as is indicated by the appearance of mortars and pestles in the archaeological record (King and Hickman 1973). Other important resources include various plant foods, land animals, and the marine resources of the San Francisco Bay. Both large and small land mammals were typically hunted, trapped or poisoned. Many items, including shell beads and ornaments, were extensively traded with other groups as far away as the Great Basin of Nevada (Davis 1974).

It is argued that contrary to usual conceptions of hunters and gatherers, native Californian groups, including the Ohlone, practiced a form of resource management that was close to agriculture. Bean and Lawton (1976) consider this pattern a "semi-agricultural" stage which included quasi-agricultural harvesting activity and proto-agricultural techniques. Some plants were pruned and reseeded seasonally for optimal production. Foods such as acorns were stored for many months at a time. Ethnographic accounts also report the repeated burning of woodlands grassbelt to increase animal and plant resources. It is likely to have made hunting conditions better by reducing scrubby growth and encouraging the growth of grasses and other plants that are appealing to grazers such as deer and elk. The plant growth succession after a burning is also rich in grains and legumes that were major food sources for Native Californians.

Bean and Lawton also claim that the abundance of plant and animal resources in California and the development of ingenious technological processes allowed Native Californians to develop social structures beyond the normal parameters of hunting and gathering. These include extensive political systems, controlled production and redistribution of goods, and alliances and trade with other groups.

ARCHIVAL BACKGROUND

Prior to surface reconnaissance of the subject area, a study of the maps and records at the Northwest Information Center of the California Archaeological Site Inventory was conducted and given the file number NWIC# 17-0815. The purpose of this research was to determine if any known archaeological resources had previously been reported in or around the subject area. No previously recorded archaeological sites are located within the project area. However, four previously recorded resources are located within one quarter mile of the proposed project area. These resources are briefly described below:

CA-SMA-55

This prehistoric site, originally designated Nelson 405, was a shell mound originally documented by N. Nelson in 1908. Nels Nelson documented and investigated numerous shell mounds along the Central California Coast in the early years of the 20th Century, many of which have been significantly damaged or completely destroyed.

CA-SMA-171H

This historic district was originally recorded by H. Casper in 1973 and is described as containing the Point Montara Artillery Training Station and the Point Montara Light Station. None of the recorded elements are located within the proposed project area.

P-41-2108

This historic structure was recorded by D. Painter and C. Losee in 2003. It is described as the Montara Cottage.

P-41-2154

This historic resource was recorded in 2005 by D. Edwards. It is described as the Montara Water and Sanitary District Office at Point Montara Training Station.

Four previous studies have been carried out within or adjacent to the proposed project area. These studies are described below:

S-3082

This study was carried out by S. Dietz and T. Jackson in 1970 and entitled "An Archaeological and Historical Reconnaissance of a Portion of the San Mateo County Coastside." This was a broad survey with included the entirety of the current proposed project area within its scope.

S-5389

Carried out by M. Melandry in 1977, this study is entitled "Archaeological Survey Report on Excess Parcels 6695-01-01, 6696-01-01, 7091-01-091-02-01, on Route 1 in San Mateo County P.M. 35.5/35.8." This study extends southwards from the southwest corner of the proposed project area.

S-25083

This study was carried out by J. Holson in 2002 and entitled "Archaeological Survey for Highway 1/ Montara, 8211.38 (PL 1004-07) (letter report)." Archival maps for this study indicate its location as a small circular area located within the eastern central portion of the proposed project area.

S-31887

Carried out by C. Busby in 2005, this study is entitled "Archaeological Assessment - Montara Water and Sanitary District EIR, Vicinity of Montara and Moss Beach and Within Half Moon Bay Airport, San Mateo County (letter report)." This study is located within the eastern central portion of the proposed project area.

A total of 26 additional previous studies have been carried out within a one quarter mile radius of the proposed project area.

AB52: NATIVE AMERICAN CONSULTATION

AB 52 Native American Consultation will be completed by County of San Mateo as the lead agency for the project. This consultation will be presented in a separate document.

HISTORIC BACKGROUND

The proposed project area formerly made up a portion of the Point Montara Artillery Training Facility, a World War II era military complex in use between 1943 and 1945. Several structures within this complex were located within the current proposed project area, including barracks, offices, a mess hall, a library, a garage, a boiler room, an incinerator, a "TDD" hanger, and a drill field.

The Point Montara Artillery Training Facility was a top secret military installation operated by the U.S. Navy during World War II, containing 48 permanent structures, and housing over 1500 personnel. Throughout the course of its operation, about 320,000 Navy sailors and merchant marines were trained on what was then the latest technology in anti-aircraft weapons, including the 20mm "Oerlokin", the 40mm "Bofers" and 3 inch/50 caliber anti-aircraft guns.

The facility was notable for its extensive use of Women Air Service Pilots (known as WASPs) who flew planes towing targets for the artillery firing from the coast along Point Montara.

The facility also heavily utilized some of the earliest drone aircraft for target practice. These radio controlled planes were pioneered by Reginald Denny, a Hollywood film star and remote control hobbyist. He realized the potential of the planes for target practice, and entered contracts with the U.S. Army and the U.S. Navy which eventually became a multi-million dollar industry through the course of WWII. These planes were named Target Drone Dennys (TDD's) by the Navy after their inventor (Oeswein 2016).

In the late 1960's the proposed project area was in use as a training facility for firefighters. During this period, the structures within the proposed project area were razed by a controlled burn, leaving only exposed concrete foundations. The property has been vacant since 1970. The project area currently contains concrete foundations, as well as well as a fenced area containing the Montara Water and Sanitary District infrastructure. Some structures and features associated with the military training facility remain standing outside the current proposed project area, along the coast of Point Montara.

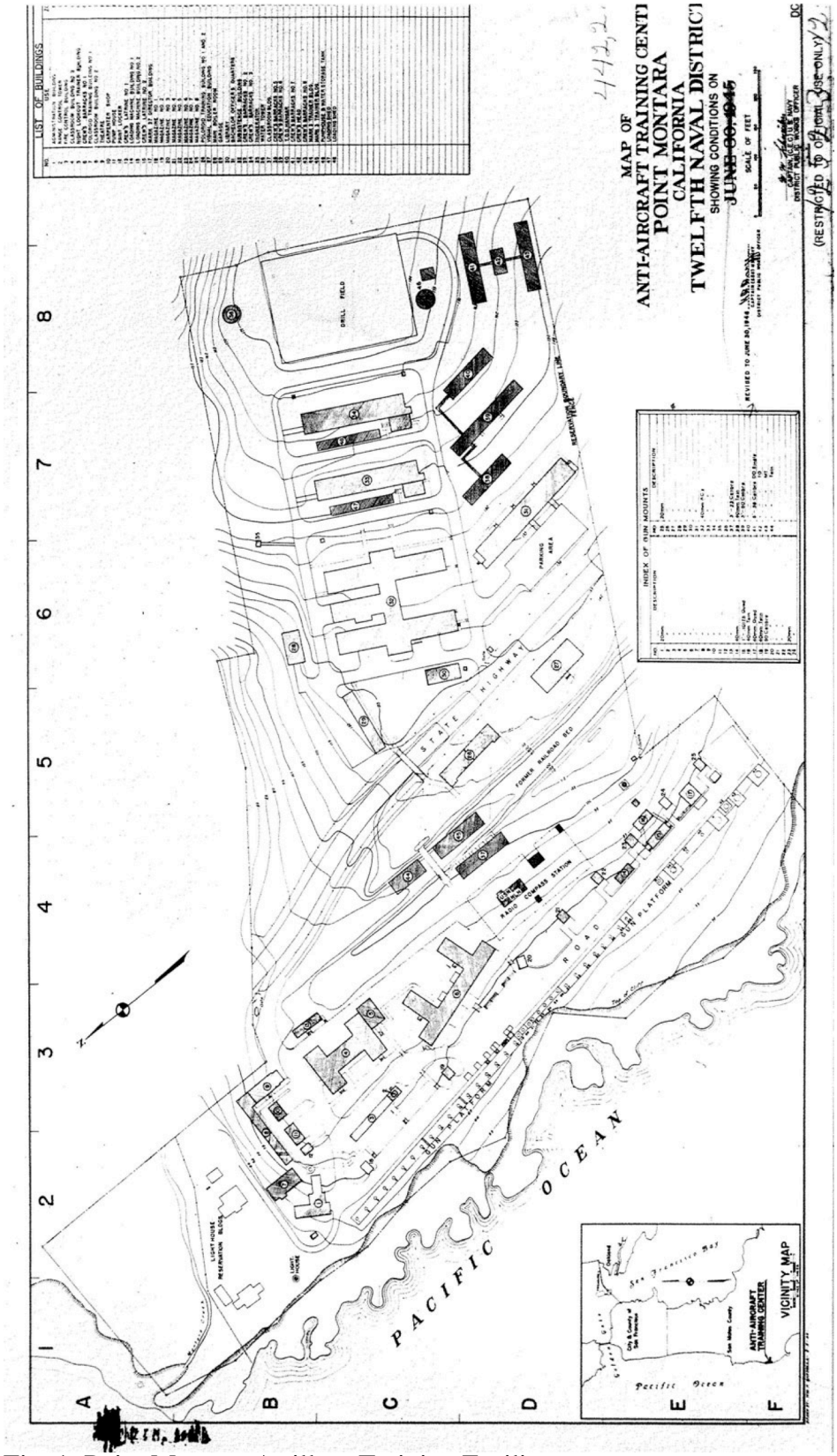


Fig. 1: Point Montara Artillery Training Facility.

Figure 2: Training on the 20mm Oerlikon anti-aircraft gun at Point Montara, 1943.

SURFACE RECONNAISSANCE

A "general surface reconnaissance" was conducted by a field archaeologist on all open land surfaces in the subject area. A "controlled intuitive reconnaissance" was performed in places where burrowing animals, exposed banks and inclines, and other activities had revealed subsurface stratigraphy and soil contents. The boundaries of the proposed project area were well defined in the field by Sierra Street to the South, Carlos Street to the West, Lincoln Street to the East, and 16th Street along the northern boundary. Accessibility to the property was good to fair; the majority of the proposed project area was accessible, however some areas were blocked by dense vegetation and steep slopes. Soil visibility was fair to poor; the majority of the surface area was obscured by vegetation, however sporadic soil exposures provided an understanding of soil characteristics. In addition, portions of the surface were obscured by imported or disturbed soils, particularly in those areas modified for mountain bike recreational activities. Where visible, native soils consisted of a tan sandy loam and clay. Rock types noted included native siltstone gravel as well as imported gravel. Foundations, as well as other concrete features (culverts, other infrastructure) dating from WWII era military activities on the site were noted. A small area of prehistoric shell midden was noted during surface reconnaissance. The midden was sparse, and surface elements consisted of a scatter of *Mytilus* (Mussel) shell fragments. The soil itself was light brown in color,

potentially indicating an older deposit, largely leached of organic materials. This midden soil was observed alongside an informal footpath northwest of the existing water tanks on the property (see Midden Location Map).

CONCLUSION AND RECOMMENDATIONS

The archival research revealed that there are no recorded cultural resources located within the study area. However, four previously recorded resources are located within a one quarter mile radius of the proposed project area. The closest of these is CA-SMA-55, a prehistoric shell mound site originally recorded by N. Nelson in the early 20th Century and located approximately 150 feet away from the northwest corner of the proposed project area. Midden soils, containing fragments of mussel shell were noted in the central portion of the subject property during surface reconnaissance (see Midden Location Map). Historic foundations, associated with WWII era military activities on the site were also noted in the field. Based on the presence of midden soils within the project area, it is recommended that a subsurface testing program be carried out in this portion of the proposed project area to ascertain the boundaries, depth, and constituents of this archaeological deposit. It is further recommended that the archaeological monitoring and other mitigation measures presented in the Archaeological Treatment Plan for the project (Cartier 2018) be carried out for the proposed project.

LITERATURE CITED AND CONSULTED

Bartley, K.
2016 Montara Bluffs Reveal WWII Allied Secrets; Moss Beach Resident Maps former Military Base. Article in the Half Moon Bay Review. November 30, 2016.

Bean, L. J., and H. Lawton
1976 Some Explanations for the Rise of Cultural Complexity in native California with Comments on Proto-Agriculture and Agriculture, in *Native Californians: A Theoretical Retrospective*, edited by L. J. Bean and T. C. Blackburn. Menlo Park, CA.: Ballena Press.

California Historical Resources Information System
2017 Record search number NWIC# 17-0815, on file at the Northwest Information Center, Department of Anthropology, Sonoma State University, Rohnert Park.

Cartier, R. editor
1993 The Scotts Valley Site: CA-SCR-177. The Santa Cruz Archaeological Society.

Cartier, R.
1980 Early Cultures & Rock Features of the Santa Teresa Hills. Report to the Santa Clara Valley Water District. 2018 Archaeological Treatment Plan

for the proposed Cypress Point project in Moss Beach, County of San Mateo. Report on file at Archaeological Resource Management.

Cartier, R., J. Bass, and S. Ortman
1993 The Archaeology of the Guadalupe Corridor. The Santa ClaraArchaeological Society.

Davis, E. L.
1974 *Paleo-Indian Land Use Patterns at China Lake, California*. Costa Mesa: Pacific Coast Archaeological Society Quarterly 10(2):1-16.

Gerow, B. A. with R. W. Force
1968 Analysis of the University Village Complex with a Reappraisal of Central California Archaeology. Stanford University Press, Stanford.

Gifford, E.
1951 California Balanophagy, in *The California Indians,* edited by R. Heizer and M. Whipple, University of California Press, Berkeley, California.

King, T. F., M. J. Moratto, and N. N. Leonard III
1976 "The Recommended Procedures for Archaeological Impact Evaluation" in *Recommended Procedures for Archaeological Impact Evaluation,* a report on a study by the Society for California Archaeology in cooperation with the Archaeological Survey, University of California, Los Angeles.

Kroeber, A. L.
1954 The Nature of Land-Holding Groups in Aboriginal California. Berkeley: U*niversity of California Archaeological Survey Reports* 56:19-58.

1962 Two Papers on the Aboriginal Ethnography of California. The Nature of Land Holding groups in Aboriginal California. Berkeley: *University of California Archaeological Survey Reports* 56:21-58.

Levy, R. S.
1978 Costanoan. In *California*, edited by R. F. Heizer, Volume 8. Handbook of North American Indians, W. G. Sturtevant, general editor, pp. 485-497. Smithsonian Institution, Washington D.C.

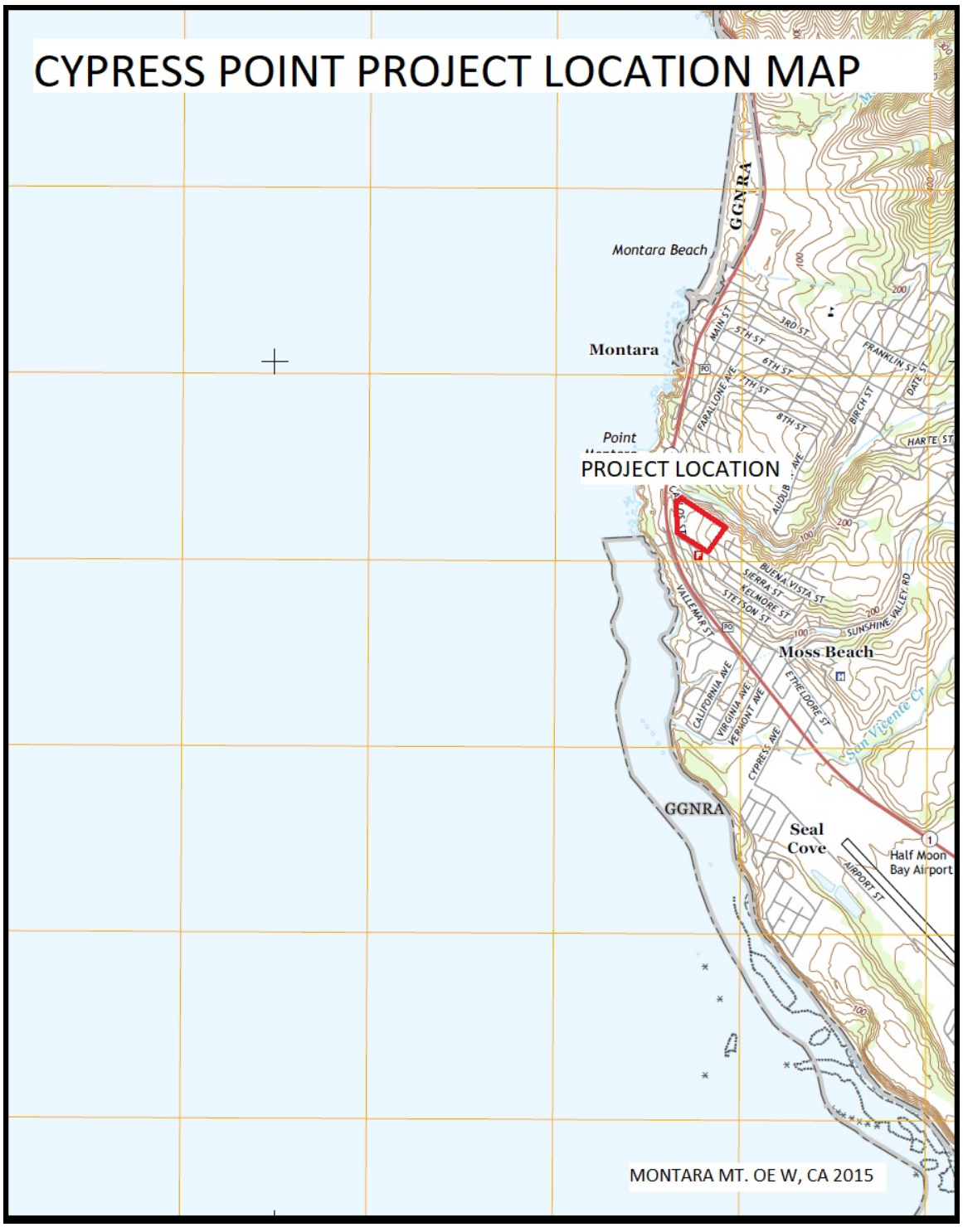
Lotchin, R.
n.d. Mobilization for the Duration; The Bay Area in the Good War. National Park Service. www.nps.gov/nr/travel/wwiibayarea/mobilization.htm Accessed October 3, 2017.

Nelson, N.
n.d. Recordation of shell mound site originally identified as Nelson 405.

1909 Shell Mounds of the San Francisco Bay Region. University of California Publications in American Archaeology and Ethnology, Volume 7, No. 4.

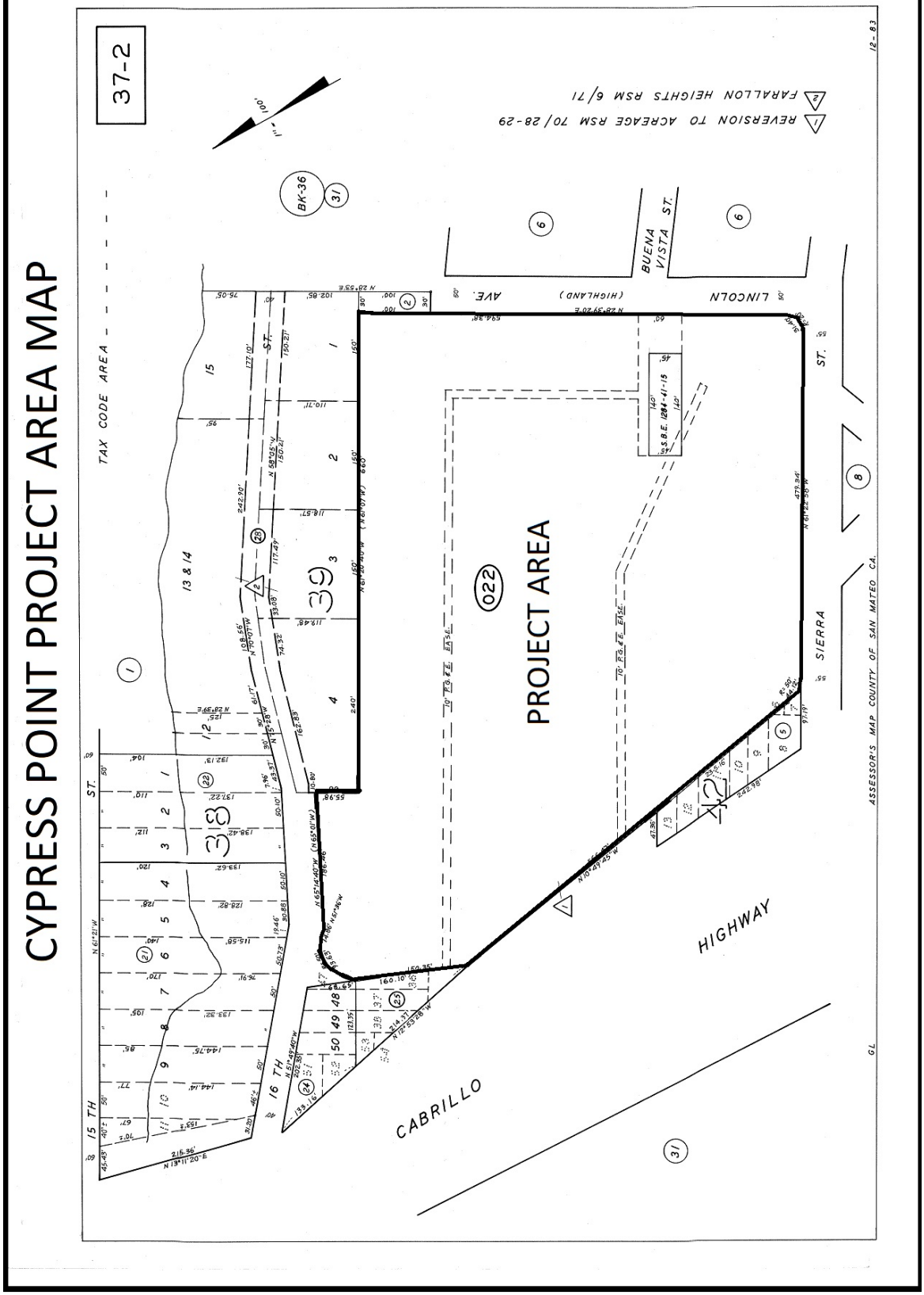
Oeswein, J. Q.
2016 A Top Secret Military Base on the Coastside? Point Montara Anti-aircraft Training Center U.S. Navy (1942-1945). Powerpoint presentation.

Winter, J. C., editor
1978 *Archeological Investigations at CA-SCL-128, the Holiday Inn Site*. Report on file at the California Archaeological Site Inventory, Sonoma State University, Rohnert Park, CA.

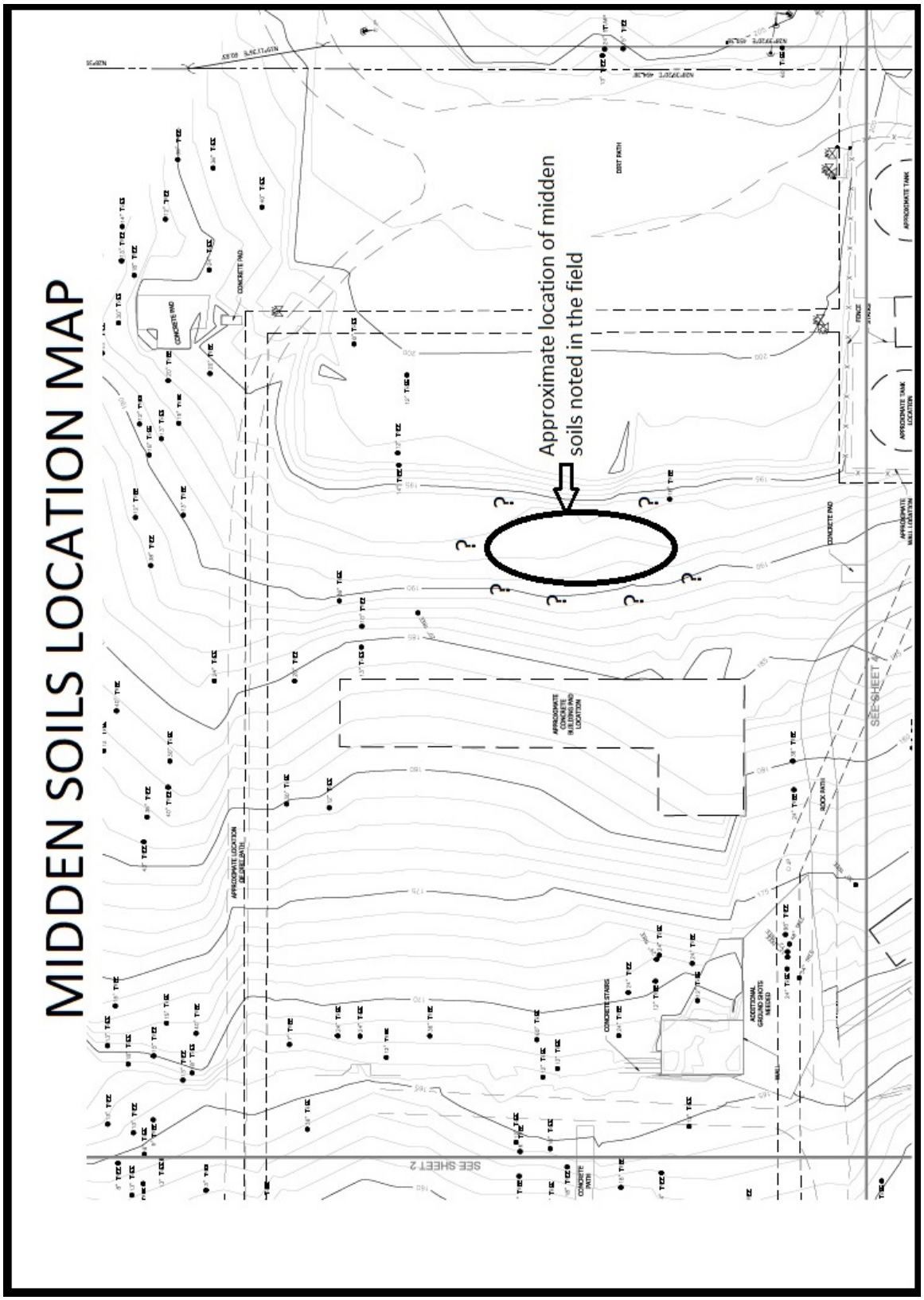

CYPRESS POINT PROJECT LOCATION MAP
GGNRA
Montara Beach
Montara
Point
PROJECT LOCATION
Moss Beach
GGNRA
Seal Cove
Half Moon Bay Airport
MONTARA MT. OE W, CA 2015

County Review Draft

CYPRESS POINT PROJECT AREA MAP



County Review Draft



APPENDIX B

Paleontological Review
MidPen Cypress Point Affordable Housing Community Project
San Mateo County, California

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County Review Draft

FIRSTCARBONSOLUTIONS™

Paleontological Review
MidPen Cypress Point Affordable Housing Community Project
San Mateo County, California

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INTRODUCTION

Project Undertaking and Location

MidPen Housing (MidPen) is developing an affordable housing project located to the north northeast of the intersection of Carlos Street and Sierra Street in Moss Beach, an unincorporated area in San Mateo County (Attachment A: Exhibits 1 through 3). The proposed Project, MidPen Cypress Point Affordable Housing Community Project (Project), is located within the Montara Mountain 7.5-minute U.S. Geological Survey Quadrangle. The Project does not have a legal description, as it lies within an area that has not been so divided. The elevation of the Project ranges between 100 and 200 feet above mean sea level (amsl), based on the National Geodetic Datum of 1929.

The UTM coordinates near the center of the parcel are as follows: 4154197 meters north and 542770 meters east.

The Project is bounded by residential properties along 16th Street and vacant land to the north; residential properties along Carlos, Sierra, and Stetson Streets to the south; residential properties along Lincoln and Buena Vista Street to the east; and one residential property and vacant land along Carlos Street to the west.

On August 15, 2017, the California Coastal Commission asked the Project proponents to provide the following information:

- Include an evaluation of paleontological resources at the project site.
- Include an evaluation of the consistency of the proposed project with California Coastal Act Section 30244, which states "**Archaeological or paleontological resources**. Where development would adversely impact archaeological or paleontological resources as identified by State Historic Preservation Officer, reasonable mitigation measures shall be required."
- Include an evaluation of the consistency of the proposed project with the San Mateo County MidCoast Local Coast Program.

This report is in response to those requests.

Scope of Study and Personnel

The scope of work of this paleontological assessment included a paleontological resource records search at the University of California Museum of Paleontology (UCMP) and a search of published and unpublished literature pertinent to the Project, in conformance with the guidelines established by the Society of Vertebrate Paleontology (SVP 2010). No field survey of the project site has been conducted. Within this report are the conclusions of the comprehensive paleontological resources assessment, with

the intention of satisfying the cultural resource requirements of the California Environmental Quality Act (CEQA) and the County of San Mateo.

Dr. Joe Stewart of FirstCarbon Solutions served as the professional paleontologist. His qualifications are provided in Attachment B.

ENVIRONMENTAL SETTING

The proposed Project lies within the Coastal Ranges Physiographic Province, specifically at the north end of the South Coastal Ranges. The Project is located in the neighborhood of City of Moss Beach in unincorporated San Mateo County, California.

REGULATORY SETTING

CEQA provides regulations concerning significant impacts to paleontological resources. The following is concise description of state and local laws and regulations.

State Level

CEQA provides protection for paleontological resources through environmental legislation. Direction regarding significant impacts on paleontological resources is found under Appendix G (part V) of the CEQA Guidelines. The Guidelines state, "A project will normally result in a significant impact on the environment if it will . . . disrupt or adversely affect a paleontological resource or site or unique geologic feature, except as part of a scientific study." As stated in Section 5097.5 of the Public Resource Code, it is unlawful to remove paleontological remains without authorization and can result in a misdemeanor. In addition, Section 622.5 of the California Penal Code sets the penalties for damage or removal of paleontological resources.

The procedures, types of activities, persons, and public agencies required to comply with the CEQA are defined in the Guidelines for Implementation of CEQA (CEQA Guidelines), as amended on March 18, 2010 (Title 14, Section 15000, et seq. of the California Code of Regulations [i.e., 14 CCR Section 15000, et seq.]) and further amended January 4, 2013. One of the questions listed in the CEQA Environmental Checklist is: "Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?" (CEQA Guidelines Section 15064.5 and Appendix G, Section V, Part C).

Local Level

The San Mateo County General Plan has policies that fall into 15 groups. The fifth of these groupings is the County Historical and Archaeological Resources Policies. These historical and archaeological policies contain 27 policies (5.1 through 5.27) to which the County is committed. Policy 5.20 reads as follows:

5.20. Site Survey
Determine if sites proposed for new development contain archaeological/paleontological resources. Prior to approval of a development for these sites, require that a mitigation plan, adequate to protect the resource and prepared by a qualified professional, be reviewed and implemented as a part of the project.

The MidCoast Local Coast Program is the vehicle by which the County of San Mateo assumes responsibility for implementing the State Coastal Act. The project site falls within the Midcoast Land Use Plan area on the map provided by the County. Thus, the Project is subject to the MidCoast Local Coast Program. The program requirements are set forth in the document entitled Local Coastal Program Policies.

There are twelve components to these policies. Within the Locating and Planning New Development Component is this sub-policy:

1.25. Protection of Archaeological/Paleontological Resources
Based on County Archaeological/Paleontological Sensitivity Maps, determine whether or not sites proposed for new development are located within areas containing potential archaeological/paleontological resources. Prior to approval of development proposed in sensitive areas, require that a mitigation plan, adequate to protect the resource and prepared by a qualified archaeologist/paleontologist be submitted for review and approved and implemented as part of the project.

Within the Shoreline Access Component is this sub-policy:

10.24. Definition of Fragile Resources
Define fragile resource as (1) exposed rocky cliff faces, steep slopes as defined in the Hazard Component and hilly coastal terraces, (2) all sensitive habitats defined in the Sensitive Habitats component, and archaeological/paleontological resources.

Within the Sensitive Habitats Component is this sub-policy:

a. Conduct studies by a qualified person agreed by the County and the applicant during the planning and design phases of facilities located within or near sensitive habitats and archaeological/paleontological resources to determine the least disruptive locations for improvements and the methods of construction. These studies should consider the appropriate intensity of use, improvement and management to protect the resources and reduce or mitigate impacts.

b. Provide improvements and management adequate to protect sensitive habitats. These may include, but are not limited to, the following: (1) informative displays, brochures, and signs to minimize public intrusion and impact, (2) organized tours of sensitive areas, (3) landscaped buffers or fences, and (4) staff to maintain improvements and manage the use of sensitive habitats.

Professional Standards

The Society of Vertebrate Paleontology (2010) has provided Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources. These guidelines are recognized throughout the paleontological resource management community.

METHODS

Paleontological Resources Records Search

On September 13, 2017, FirstCarbon Solutions requested a paleontological records search of the UCMP through Dr. Kenneth Finger. Site records with supporting maps and documents are maintained at this facility. The records search included the examination of current geologic maps and paleontological locality maps. The records search is used to determine if any paleontological resources have been recovered within and around the project site, and establish a foundation for gauging the sensitivity of the project site for additional and buried paleontological resources.

Paleontological Resources Literature Search

Published reports concerning pertinent geologic and paleontological topics were investigated.

Pedestrian Survey

No pedestrian survey was performed for this study.

RESULTS

Paleontological Resources Records Search

Dr. Kenneth Finger's report, based on the UCMP paleontology collection, reported that the Project has Pleistocene marine terrace deposits underlain by Cretaceous granitic rocks (Attachment C). The granitic rocks will not produce paleontological resources, but Pleistocene terrace deposits have produced them. A search of the UCMP database records nine localities in unnamed late Pleistocene deposits in San Mateo County. The closest locality in its records is a site at El Granada Beach that is approximately 3 miles to the south of the Area of Potential Effect. Their composite assemblage includes *Uria algae* (guillemot or murre), *Mammuthus columbi* (Columbian mammoth), *Mammut americanum* (American mastodon), *Equus* (horse), *Glossotherium halani* (Harlan's ground sloth), *Camelops hesternus* (extinct large camel), and *Bison latifrons* (giant North American bison). Of these localities, the *Bison* specimen found at V92009 (El Granada Beach), at approximately 3 miles to the south, is the closest to the project site. The existence of *Bison* in the marine terrace deposits demonstrates that the fauna is from the Rancholabrean North American Land Mammal Age.

The report recommended a preconstruction survey of the site for paleontological resources, as well as a paleontological monitoring program for the parts of the Project having Pleistocene marine terrace deposits. Such a program should also involve reporting and curation of any fossils recovered.

The author contacted the County of San Mateo Planning Department in response to its Local Coastal Program Policy 1.25 requirement that County archaeology/paleontology sensitivity maps be consulted. The reality is that the County has no such maps. Any questions concerning archaeological sites are referred to the Northwest Information Center (NWIC) at Sonoma State University. A separate cultural resources assessment was done for this project, and the NWIC was contacted. The NWIC does not specialize in paleontological records, and the records search done for this report through the UCMP is standard and fulfills the intent of this requirement. It showed no known localities within 1 mile of the Project site.

Literature Search

The survey of published literature revealed no paleontological resources within the project footprint. The geologic mappings of Brabb et al. (1988) and of Pampeyan (1994) show the Project to lie on the Pleistocene marine terrace deposits and Cretaceous granitic rocks. The marine terrace deposits are potentially fossiliferous, but the granitic rocks are not. The thickness of the Pleistocene terrace deposits in the Montara area is given as 75 feet (Jack 1969).

Both of the compendia of California Pleistocene vertebrate fossil localities (Jefferson 1991a, b) list localities in coastal Pleistocene deposits of San Mateo County. UCMP localities are discussed, but the collections of the U.S. Geological Survey also contain remains of *Equus* and *Cervus nanodes* (tule elk) from Laguna Alta, and *Smilodon* (sabertooth) and *Mammut americanum* from Montara Beach (Jefferson 1991b).

RECOMMENDATIONS

The sources consulted indicate that the Pleistocene marine terrace deposits, which are underlain by Cretaceous granitic rocks, have a high sensitivity for significant paleontological resources. Therefore, earthmoving of previously undisturbed sediments for the Project could have a significant impact on paleontological resources. The paleontological resources records search from the UCMP recommends a pedestrian survey of the site prior to construction, and paleontological monitoring of construction activities.

MM PAL-1 The project proponent shall retain the services of a paleontologist with the qualifications listed by the Society of Vertebrate Paleontology (SVP 2010). The paleontologist shall be provided with construction plans and shall execute a pedestrian survey of the project footprint for paleontological resources and geologic indicators pertinent to these resources.

MM PAL-2 The paleontologist shall be provided with construction plans and design a paleontological resource monitoring program to be approved by the County of San Mateo. It will address monitoring of all disturbance of previously undisturbed sediments during demolition and construction, sediment sampling and testing, specimen preparation, identification, reporting, and curation.

REFERFENCES

Brabb, E.E., R.W. Graymer, and D.L. Jones. 1988. Geology of the onshore part of San Mateo County, California: a digital database. U.S. Geological Survey Open-File Report pp. 98–137. Scale 1:62,500.

Harden, Deborah R. 2004. California Geology. 2nd Edition. Pearson Education, Inc. New Jersey. 552 pp.

Jack, R. N. 1969. Quaternary sediments at Montara, San Mateo County, California, California University, Berkeley. M. A. thesis, 131 pp.

Jefferson, G.T. 1991a. A catalogue of Late Quaternary vertebrates from California, Part One, nonmarine lower vertebrate and avian taxa. Natural History Museum of Los Angeles County Technical Reports no. 5, 60 pp.

Jefferson, G.T. 1991b. A catalogue of Late Quaternary vertebrates from California, Part Two, mammals. Natural History Museum of Los Angeles County Technical Reports, no. 7, 129 pp.

Norris, R.M., and R.W. Webb. 1990. Geology of California. John Wiley and Sons, Inc. New York. 541 pp.

Pampeyan, E. H. 1994. Geology of the Montara Mountain and San Mateo 7-1/2' Quadrangles, San Mateo, California. U. S. Geological Survey Miscellaneous Investigations series, Map I-2390. Scale 1:24,000.

Society of Vertebrate Paleontology. 1996. Conditions of receivership for paleontological salvage collections. Society of Vertebrate Paleontology News Bulletin. 166: 31–32.

Society of Vertebrate Paleontology. 2010. Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources. Website: http://vertpaleo.org/The-Society/Governance-Documents/SVP_Impact_Mitigation_Guidelines.aspx.

County Review Draft

Attachment A:
Exhibits 1–3

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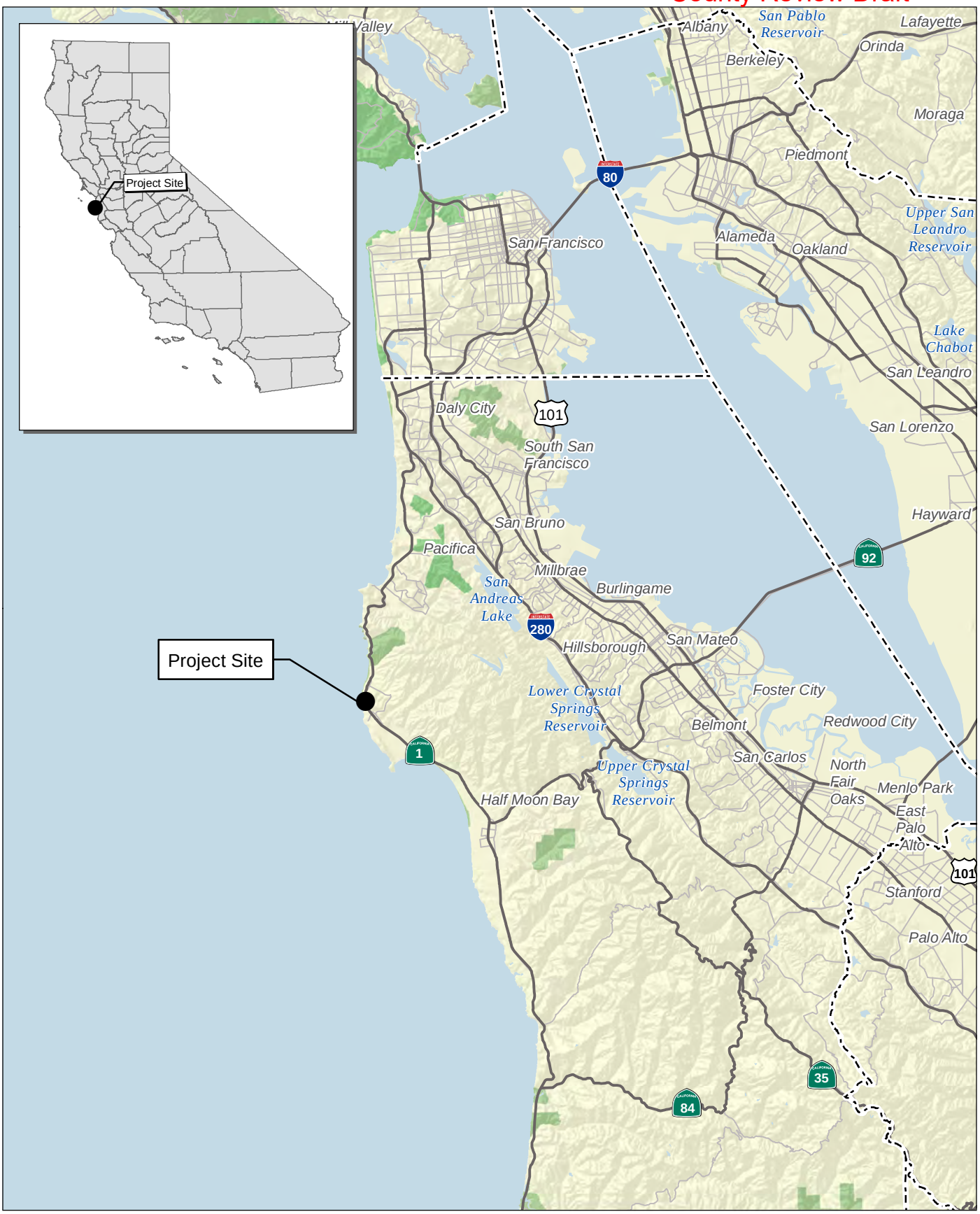
County Review Draft



Source: Census 2000 Data, The CaSIL, FCS GIS 2016.

FIRSTCARBON SOLUTIONS™

5 2.5 0 5 Miles

Exhibit 1
Regional Location Map

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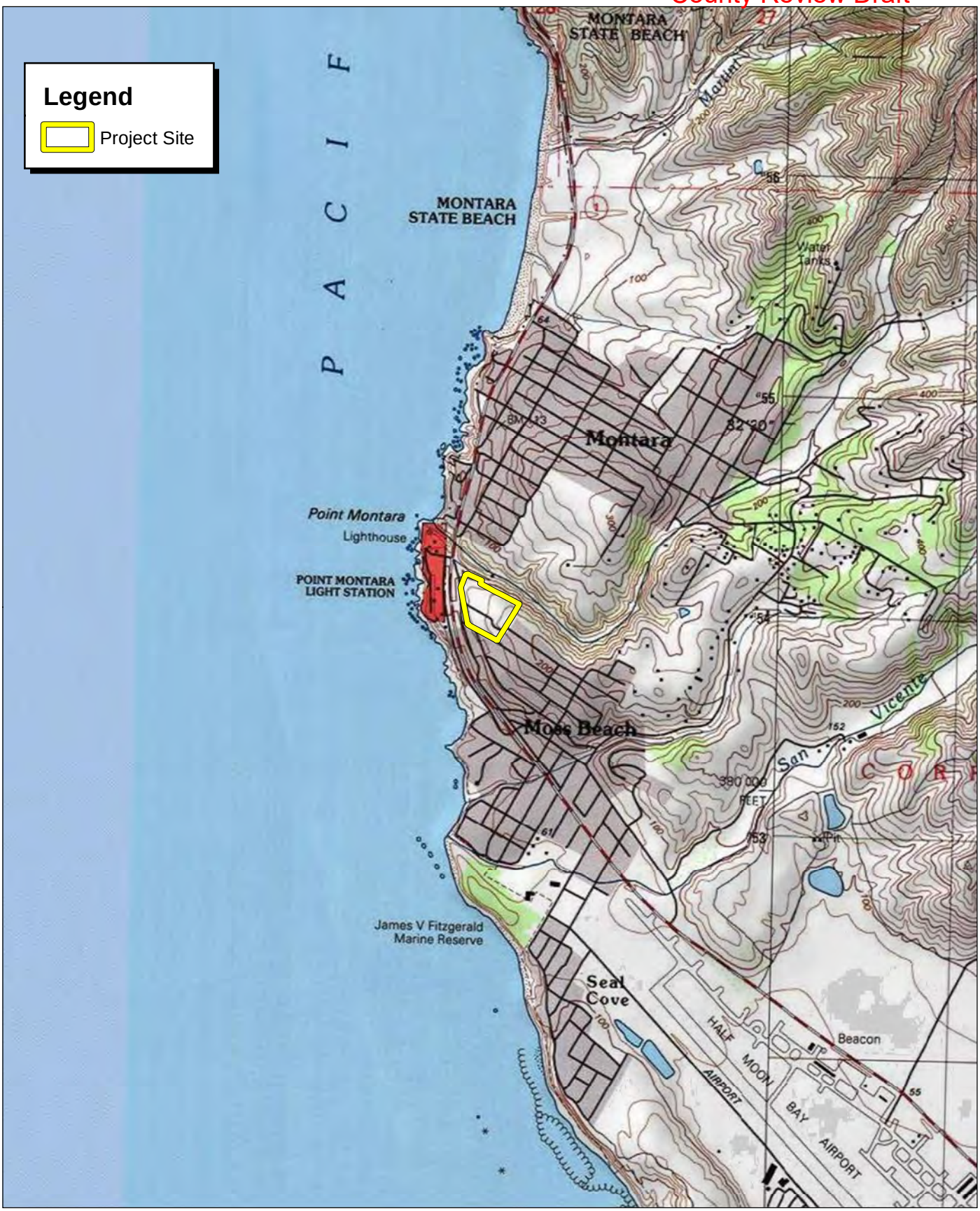

Source: USGS Montara Mountain (1980) 7.5' Quadrangle / Rancho Corral de Tierra (Palomares) Mexican Land Grant

FIRSTCARBON SOLUTIONS™

2,000 1,000 0 2,000 Feet

Exhibit 2
Local Vicinity Map
Topographic Base

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Source: ESRI Imagery

FIRSTCARBON SOLUTIONS™

750 375 0 750
Feet

Exhibit 3
Local Vicinity Map
Aerial Base

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County Review Draft

Attachment B:
Resume

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J. D. STEWART, PH.D.—ON-CALL PRINCIPAL PALEONTOLOGIST

OVERVIEW

- 39 years of experience

Education

- Doctor of Philosophy, Systematics & Ecology, University of Kansas, 1984
- Master of Arts, Systematics & Ecology, University of Kansas, 1979

Training and Certifications

- Certified Paleontologist, Orange and Riverside counties, California
- Hazardous Waste Operations and Emergency Response 40 Hr.
- General Site Worker

Professional Affiliations

- Society of Vertebrate Paleontology

J.D. Stewart, PhD, is a vertebrate paleontologist with 40 years of experience in paleontology and 30 years of experience in the geology and paleontology of California. He has been involved in the permitting or construction of more than ten power plants and has directed the paleontological monitoring and mitigation program for Path 15, a major transmission line project. His publications include more than 40 peer-reviewed articles in books and journals. His research specialties are fossil fishes and Pleistocene vertebrate faunas.

RELATED EXPERIENCE AND CLIENT SUMMARY

Tenaska Imperial Solar Energy Center (ISEC) West Project, Imperial Valley, CA

For the ISEC West Solar Project, Dr. Stewart supervised paleontological monitoring activities on private lands.

BrightSource Sonoran West Solar Project, Blythe, CA

Dr. Stewart supervised paleontological surveys on U.S. Bureau of Land Management (BLM) and private lands. He worked on the Application for Certification (AFC) and wrote the final report when the project was terminated.

TerraGen Project

Dr. Stewart performed pedestrian paleontological surveys of the TerraGen Project site and wrote the Paleontological Resources section for the AFC.

BrightSource Rio Mesa Solar Project, Blythe, CA

Dr. Stewart supervised paleontological surveys on BLM and private lands and prepared the Paleontological Resources section for the AFC.

J. D. STEWART, PH.D.—ON-CALL PRINCIPAL PALEONTOLOGIST

Pio Pico Energy Center, Otay Mesa, CA

The Pio Pico Energy Center (PPEC) is a 300 MW simple-cycle electrical generating facility that is contracted under a 25-year power purchase agreement (PPA) with San Diego Gas & Electric (SDG&E). Pio Pico is located on a ten-acre site in Otay Mesa, an unincorporated area of San Diego County, California, approximately 15 miles southeast of downtown San Diego. Dr. Stewart supervised paleontological surveys and wrote the Paleontological Resources section for the AFC for this project.

Mesquite Nevada Replacement General Aviation Airport, Clark County, NV

Dr. Stewart prepared the Paleontological Resource Assessment for the Federal Aviation Administration (FAA).

Marsh Landing Generating Station Application for Certification, Contra Costa County

Dr. Stewart performed a paleontological pedestrian survey of a project area in Contra Costa County and wrote the Paleontological Resources section of the AFC. He also served as the Paleontological Resource Specialist during construction and prepared the final report.

Imperial Valley Solar Application for Certification, Imperial Valley, CA

Dr. Stewart directed paleontological pedestrian surveys within a project area in San Bernardino County and wrote the Paleontological Resources section of the AFC.

Calico Solar Application for Certification, San Bernardino County, CA

Dr. Stewart participated in paleontological pedestrian surveys of the Calico Solar project area, edited the Paleontology section of the AFC, and served as the Paleontological Resource Specialist.

Starwood Power-Midway, LLC Peaking Project Construction

Dr. Stewart wrote a mitigation plan for paleontological resources, oversaw paleontological monitoring during project construction, and wrote the final report.

Calnev Pipeline Project, San Bernardino County, CA and Clark County, NV

Dr. Stewart directed paleontological surveys of a 234-mile-long project area in San Bernardino County, California, and Clark County, Nevada. He also prepared the paleontological assessment.

Willow Pass Generating Station Application for Certification, Contra Costa County, CA

Dr. Stewart participated in paleontological pedestrian surveys of a project area in Contra Costa County and wrote the Paleontological Resources section of the AFC.

San Joaquin One and Two Application for Certification, Fresno County, CA

Dr. Stewart directed paleontological pedestrian surveys of a project area in Fresno County and prepared the Paleontological Resources section of the AFC.

J. D. STEWART, PH.D.—ON-CALL PRINCIPAL PALEONTOLOGIST

Carrizo Energy Solar Farm (Ausra) Application for Certification, Simmler, CA

Dr. Stewart participated in paleontological pedestrian surveys of the Carrizo Energy Solar Farm project area and edited the Paleontology section of the AFC.

Starwood Power-Midway, LLC Peaking Project Application for Certification

Dr. Stewart participated in the responses to the CEC Provisional Staff Assessments for Starwood Power-Midway, LLC's Peaking Project AFC.

Path 15 500-kV Power Transmission Line between Los Banos and Gates Substations, Los Banos, CA

Dr. Stewart supervised paleontological resource monitoring, excavations, specimen preparation, specimen identification, and report writing for this 80-mile-long power line.

Publications

Stewart, J. D., and M. E. Hakel. 2017. First record of vertebrate fossils in the Searles Basin: in another desert paleosol. California State University Desert Symposium Proceedings 2017:341.

Pleistocene paleosol developed on ancestral Mojave River sediments near Hinkley, California. Paleobios 33 Supplement: 15.

Stewart, J. D., and M. E. Hakel. 2016. Pleistocene paleosol developed on ancestral Mojave River sediments near Hinkley, California. Paleobios 33 Supplement: 15.

Stewart, J. D., and M. E. Hakel. 2015. Remanié *Desmostylus* fossils in the Tulare Formation. PaleoBios 32: 15–16.

Stewart, J. D., and Marjorie E. Hakel. 2013. New observations on *Pachyrhizodus* species of North America. Abstracts, 6th International Meeting on Mesozoic Fishes, Diversification and Diversity Patterns, Vienna, Austria, August 4th–10th, 2013, p. 62.

Smith, G. R., J. D. Stewart, and N. E. Carpenter. 2013. Fossil and Recent mountain suckers, *Pantosteus*, and significance of introgression in catostomine fishes of western United States. Occasional Papers of the Museum of Zoology, University of Michigan 743:1–39.

Smith, G. R., R. E. Reynolds, and J. D. Stewart. 2013. Hydrographic significance of fishes from the Early Pliocene White Narrows Beds, Clark County, Nevada. California State University Desert Symposium Proceedings 2013:171–180.

Friedman, M., K. Shimada, M. J. Everhart, K. J. Irwin, B. S. Grandstaff, and J. D. Stewart. 2013. Geographic and stratigraphic distribution of the late Cretaceous suspension feeding bony fish *Bonnerichthys gladius* (Teleostei, Pachycormiformes). Journal of Vertebrate Paleontology 33:35–47.

Stewart, J. D., M. Williams, M. Hakel, and S. Musick. 2012. Was it washed in? New evidence for the genesis of Pleistocene fossil vertebrate remains in the Mojave Desert of southern California. California State University Desert Symposium Proceedings 2012:140–143.

J. D. STEWART, PH.D.—ON-CALL PRINCIPAL PALEONTOLOGIST

Bell, M. A., J. D. Stewart, and J. Park. 2009. The world's oldest fossil threespine stickleback. Copeia 2009:256–265.

Tseng, J.Z., X. Wang, and J.D. Stewart. 2009. A new otter-like immigrant mustelid (Carnivora, Mammamlia) from the middle Miocene Temblor Formation of Central California. PaleoBios 29:13–23.

Kelly, T. S., and J. D. Stewart. 2008. New records of Middle and Late Miocene Perissodactyla and Artiodactyla from the western border of the San Joaquin Valley, Diablo Range, Fresno County, California. Los Angeles County Museum of Natural History Contributions in Science 516:1–29.

Tseng, Z., X. Wang, and J. D. Stewart. 2007. Tough New World. Discovery of an unusual immigrant mustelid with crushing dentition from the middle Miocene of coastal California. Journal of Vertebrate Paleontology 27:160A.

Stewart, J. D. and M. Hakel. 2006. Ichthyofauna of the Mowry Shale (Early Cenomanian) of Wyoming. New Mexico Museum of Natural History & Science Bulletin 35:161–163.

Stewart, J. D., E. Zaborsky, and M. Hakel. 2006. A new Middle Miocene terrestrial fauna from the Temblor Formation of Central California. New Mexico Museum of Natural History & Science Bulletin 34:40.

Stewart, J. D. 2003. Quantifiable change in the *Isurus hastalis* populations in Middle and Late Miocene rocks of California. Journal of Vertebrate Paleontology 23:101A.

Stewart, J. D., and F. Perry. 2002. The first paleomagnetic framework for the Isurus hastalis—Carcharodon transition in the Pacific Basin: the Purisima Formation, Central California. Journal of Vertebrate Paleontology 22:111A.

Hakel, M., and J. D. Stewart. 2002. First fossil Molidae (Actinopterygii: Tetraodontiformes) in western North America. Journal of Vertebrate Paleontology 22:62A.

Geist, N. R., S. Carpenter, and J. D. Stewart. 2002. Chemical and morphological analysis of soft tissue preservation in a mosasaur. Journal of Vertebrate Paleontology 22:75A.

Stewart, J. D., and V. Friedman. 2001, Oldest American records of Saurodontidae (Teleostei: Ichthyodectiformes). Journal of Vertebrate Paleontology 21:104A.

Stewart, J. D. 2000. Late Miocene ontogenetic series of true Carcharodon teeth. Journal of Vertebrate Paleontology 20:71A.

Martin, L. D., and J. D. Stewart. 1999. Implantation and replacement of bird teeth. Smithsonian Contributions to Paleobiology 89:295-300.

Stewart, J. D., and R. Raschke. 1999. Correlation of stratigraphic position with Isurus-Carcharodon tooth serration size in the Capistrano Formation and its implication for the ancestry of Carcharodon carcharias. Journal of Vertebrate Paleontology 19:78A.

J. D. STEWART, PH.D.—ON-CALL PRINCIPAL PALEONTOLOGIST

Stewart, J. D. 1999. A new genus of Saurodontidae (Teleostei: Ichthyodectiformes) from the Upper Cretaceous rocks of the Western Interior of North America. P. 335-360 in: G. Arratia (ed.) Mesozoic Fishes—Systematics and the Fossil Record. Verlag Dr. Friedrich Pfeil, Munich. 576 p.

Fielitz, C., J. D. Stewart, and J. Wiffern. 1999. Aethocephalichthys hyrainarhinos n. gen. and n. sp., a new and enigmatic Late Cretaceous actinopterygian from North America and New Zealand. P. 95–106 in: G. Arratia (ed.) Mesozoic Fishes—Systematics and the Fossil Record.

Barnes, L. G., M. Berkhoff, D. P. Domning, S. K. Jarvis, S. A. McLeod, E. D. Mitchell, R. E. Raschke, J. D. Stewart, C. C. Swift, and H. W. Thomas. 1999. The Middle Miocene Sharktooth Hill local fauna and paleoecology of the Sharktooth Hill Bonebed, Kern County, California. Paleobios 19:2A.

Stewart, J. D., and F. Govean. 1998. The first Cenozoic record of Symphurus (Pleuronectiformes: Cynoglossidae) and the first North American Cenozoic cynoglossid fosils. Journal of Vertebrate Paleontology 18:79A–80A.

Stewart, J. D., and S. B. Hunter. 1997. Deprandus lestes Jordan is a synonym of Thyrsocles velox (Jordan) (Teleostei: Perciformes) and is not an eel. Journal of Vertebrate Paleontology 17:79A.

Cumbaa, S. L., T. T. Tokaryk, C. Collom, J. D. Stewart, T. S. Ercit, and R. G. Day. 1997. A Cenomanian age bond bed of marine origin, Saskatchewan, Canada. Journal of Vertebrate Paleontology 17:40A.

Schwimmer, D. R., J. D. Stewart, and G. D. Williams. 1997. Xiphactinus vetus and the distribution of Xiphactinus species in the eastern United States. Journal of Vertebrate Paleontology 17:610–615.

Stewart, J. D. 1997. Nuevos peces del Miocene Tario de la Formación Almejas de Isla Cedros, Baja California, México. [New late Miocene fishes from the Almejas Formation of Cedros Island, Baja California, Mexico.] Abstract, Memorias de la IV Réunion Intermational sobre Geologia de la Peninsula de Baja California, Ensenada, Baja California, México, 6–9 April, 1997.

Schwimmer, D. R., J. D. Stewart, and G. D. Williams. 1997. Scavenging by sharks of the genus Squalicorax in the late Cretaceous of North America. Palaios 12:71–83.

Stewart, J. D. 1996. Cretaceous acanthomorphs of North America. P. 383-394 in: Arratia, G., and G. Viohl (eds,), Mesozoic Fishes—Systematics and Palaeoecology, Verlag Dr. Friedrich Pfeil, Munich. 576 p. 382–294.

Stewart, J. D. 1996. The validity of Saurodon pygmaeus Loomis 1900 (Teleostei: Ichthyodectiformes) and its relationship to other Ichthyodectiformes. Journal of Vertebrate Paleontology 16(3):67A.

Feige, S. F., and J. D. Stewart. 1996. Preliminary findings concerning increase in size through time of the clupeiform teleost, Xyne grex. San Bernardino County Museum Association Quarterly 43:149.

Stewart, J. D., and J. E. Martin. 1996. Osteichthyes of the Turonian deposits in the Ortonville-Milbank Granite Quarries, Grant County, South Dakota. Geological Society of America Abstracts With Programs 28(4):39.

Schwimmer, D. R., J. D. Stewart, and G. D. Williams. 1995. Evidences of scavenging by selachian genus Squalicorax in the Late Cretaceous of North America. Geological Society of America Abstracts with Programs 2:A368.

Stewart, J. D. 1995. Confirmation of pomatomid affinities of Pseudoseriola David (Teleostei: Percifrormes). Journal of Vertebrate Paleontology 15:54A–55A.

Everhart, M. J., P. A. Everhart, and J. D. Stewart. 1995. Notes on the biostratigraphy of a small coelacanth from the Smoky Hill Member of the Niobrara Chalk (Upper Cretaceous) of western Kansas. Abstracts, Kansas Academy of Science 14:18.

Alexander, C. K., S. Feige, D. Foley, E. Topping, D. K. Valdez, and J. D. Stewart. 1995. Temporal trends in fossil guitarfish Rhinobatos teeth from Upper Cretaceous rocks of the U. S. Western Interior. Journal of Student Research 1:99.

Stewart, J. D, S. A. Bilbey, D. J. Chure, and S. K. Madsen. 1994. Vertebrate fauna of the Mowry Shale (Cenomanian) in northeastern Utah. Journal of Vertebrate Paleontology 14:47A.

Schwimmer, D. R., J. D. Stewart, and D. Williams. 1994. Giant fossil coelacanths from the Late Cretaceous in the Eastern United States. Geology 22:503-506. Stewart, J. D., and G. L. Bell, Jr. 1994. North America's oldest mosasaurs are teleosts. Los Angeles County Museum of Natural History Contributions in Science 441:1–9.

Hunter, S. B., and J. D. Stewart. 1994. Resurrection of Sarda stocki David, 1943. Paleobios 16:9.

Stewart, J. D., and J. E. Martin. 1993. Late Cretaceous selachians and associated marine vertebrates from the Dakota Rose Granite Quarry, Grant County, South Dakota. Proceedings of the South Dakota Academy of Sciences 72:241–248.

Stewart, J. D., and J. E. Martin. 1993. A snowshoe hare, Lepus americanus, from the Lange Ferguson Clovis Kill Site, Shannon County, South Dakota. Current Research in the Pleistocene 10:110–112.

Stewart, J. D. 1993. A skeleton of Platecarpus sp. (Lacertilia: Mosasauridae) with stomach contents and extensive integument. Journal of Vertebrate Paleontology 13:58A–59A.

Stewart, J. D. 1993. The case of the sword-swallowing shark. Terra 31:42–43.

Stewart, J. D., and M. Roeder. 1993. Razorback sucker (Xyrauchen) fossils from the Anza Borrego Desert and the Ancestral Colorado River. Special Publication of the San Bernardino County Museum Association 93:94–96.

Stewart, J. D., and F. J. Aranda-Manteca. 1993. Nuevos teleosteos del Miembro Los Indios de la Formacion Rosarito Beach, Baja California (new teleosts from the Los Indios member of the Rosarito Beach Formation, Baja California). ll Reunion Internacional de Geologia de la Peninsula de Baja California, p. 79.

Barradas, H., and J. D. Stewart. 1993. Posible contenido estomacal de un pinipedo del Mioceno Medio de la Mision, Baja California, México (Possible Middle Miocene pinniped gut contents from La

Mision, Baja California, Mexico). II Reunion Internacional de Geologia de la Peninsula de Baja California, p. 24–25.

Stewart, J. D. 1992. First Mississippi records of Holocentrites ovalis (Beryciformes: Holocentridae), and confirmation of its myripristin affinities. Journal of Vertebrate Paleontology 12:53A.

Schwimmer, D. R., J. D. Stewart, and D. Williams. 1992. Late Cretaceous Xiphactinus fossils in eastern United States are not necessarily X. audax. Journal of Vertebrate Paleontology 12:51A.

Stewart, J. D., and J. M. Harris. 1992. Acquisitions. Terra 30:44–45.

Schwimmer, D. R., J. D. Stewart, and D. Williams. 1991. Upper Cretaceous coelacanths in eastern Alabama: suggestion of a Gondwanan-Eastern Gulf lineage. Abstract, Geological Society of America Abstracts with Programs 23:A169.

Stewart, J. D., P. A. Everhart, and M. J. Everhart. 1991. Small coelacanths from Upper Cretaceous rocks of Kansas. Abstract, Journal of Vertebrate Paleontology 11:56A.

Stewart, J. D. 1991. Fossil teeth tell part of the story. Terra 30:34–35.

Espinosa-Arrubarena, L. G. Barnes, S. P. Applegate, S. A. McLeod, F. J. Aranda-Manteca, and J. D. Stewart. 1991. Depredadores y mamiferos marinos: la evidencia del registro fosil. Programa y Resumenes, Abstracts, XVI Reunion Internacional para el Estudio de los Mamiferos Marinos, Nuevo Vallarta, Nayarit, México, p. 5.

Stewart, J. D. 1990. Niobrara Formation symbiotic fish in inoceramid bivalves, p. 31–41 in: S. C. Bennett (ed.), Niobrara Chalk Excursion Guidebook. Kansas Geological Survey, Lawrence.

Stewart, J. D. 1990. Niobrara Formation vertebrate stratigraphy. P. 19–30 in: S. C. Bennett (ed.), Niobrara Chalk Excursion Guidebook. Kansas Geological Survey, Lawrence.

Stewart, J. D., C. Bennett, and R. J. Zakrzewski. 1990. Road log from Lawrence to the type area of the Niobrara Chalk, October 9–10, 1990. p. 3–12 in: S. C. Bennt (ed), Niobrara Chalk Excursion Guidebook. Kansas Geological Survey, Lawrence.

Stewart, J. D. 1990. Niobrara Formation vertebrate biostratigraphy. Journal of Vertebrate Paleontology 10:44A.

Stewart, J. D. 1990. Niobrara Formation symbiotic fish in inoceramid bivalves. Journal of Vertebrate Paleontology 10:44–44A.

Stearley, R. F., and J. D. Stewart. 1990. Phylogenetic significance of Onchorhynchus rastrosus. Journal of Vertebrate Paleontology 10:43A.

Schwimmer, D., J. D. Stewart, and G. D. Williams. 1990. A giant Upper Cretaceous coelacanth form eastern Alabama. Journal of Vertebrate Paleontology 10:41A.

J. D. STEWART, PH.D.—ON-CALL PRINCIPAL PALEONTOLOGIST

Stewart, J. D., and K. Carpenter. 1990. Examples of vertebrate predation on cephalopods in the Late Cretaceous of the Western Interior. p. 203–207 in: A. J. Boucot (ed.), Evolutionary paleobiology of behavior and evolution. Elsevier.

Stewart, J. D. 1990. Examples of Late Cretaceous commensalism from Kansas. p. 51–57 in: A. J. Boucot (ed.), Evolutionary paleobiology of behavior and evolution. Elsevier.

Stewart, J. D. 1989. Paleontology and paleoecology of the 1987 excavation of the North Cove Site, 25HN164. p. 63-106 in: M. J. Adair (ed.), Archaeological investigations at the North Cove Site, Harlan County Lake, Harlan County Nebraska. Report submitted to U. S. Army Corps of Engineers, Kansas City District, CACW41-86-0167, Modification P00003.

Stewart, J. D., and G. Bell, Jr. 1989. The earliest North American mosasaur records are not mosasaurs. Journal of Vertebrate Paleontology 9:39A.Coney, C. C., and J. D. Stewart. 1989. Comparative shell morphometrics in some related species of fossil and Recent Gastrocopta (Pulmonata: Pupillidae). The Western Society of Malacologists Annual Report 22:10.

Anonymous. 1989. The fossil fish that almost got away. Terra 27(5-6):48.

Whistler. D. W., and J. D. Stewart. 1989. A Late Pleistocene (Rancholabrean) assemblage from the northwestern Mojave Desert. San Bernardino County Museum Quarterly 36:67–68.

Stewart, J. D. 1988. Paleoecology and the first North American West Coast record of the shark genus Ptychodus. Journal of Vertebrate Paleontology 8:27.

Stewart, J. D. 1988. Stratigraphic distribution of Cretaceous Protosphyraena in Kansas and Alabama. Fort Hays Studies, third series, Science series, no 10:80–94.

Stewart, J. D. 1987. Paleontology and paleoecology of the North Cove Site, 25HN164. p. 298-335 in: M. J. Adair and K. L. Brown (eds.), Prehistoric and Historic Cultural Resources of Selected Sites at Harlan County Lake, Harlan County, Nebraska. Report submitted to U. S. Army Corps of Engineers, Kansas City District.

Stewart, J. D. 1987. Late Cretaceous fish-pelecypod symbiosis. Ningxia Geology 1:14–17.

Stewart, J. D. 1987. Late Wisconsinan biota and artifacts from the Kansas-Nebraska border. Journal of Vertebrate Paleontology 7:27A.

Wells, P. V., and J. D. Stewart. 1987. Cordilleran-boreal taiga and fauna on the Central Great Plains of North America, 14,000–18,000 years ago. American Midland Naturalist 118:94–106.

Stewart, J. D. 1987. Latitudinal effects in Wisconsinan mammalian faunas of the Plains. p. 153–158 in: W. C. Johnson (ed.), Quaternary environments of Kansas. Kansas Geological Guidebook Series 5.

Wells, P. V., and J. D. Stewart. 1987. Spruce charcoal, conifer macrofossils, and landsnail and small-vertebrate faunas in Wisconsinan sediments on the High Plains of Kansas. p. 129–140 in: W. C. Johnson (ed.), Quaternary environments of Kansas. Kansas Geological Guidebook Series 5.

J. D. STEWART, PH.D.—ON-CALL PRINCIPAL PALEONTOLOGIST

Martin, L. D., W. V. Koenigswald, and J. D. Stewart. 1986. Pleistocene Phenacomys from Kansas and the fossil history of the genus. Transactions of the Nebraska Academy of Science 14:35–39.

Johnson, W. C., G. G. Fredlund, P. V. Wells, J. D. Stewart, and W. Dort Jr. 1986. Late Wiconsinan biogeography of south central Nebraska: the North Cove site. American Quaternary Association—Program and Abstract of the ninth biennial meeting, p. 89.

Cross, F. B., R. L. Mayden, and J. D. Stewart. 1986. Fishes in the western Mississippi drainage. P. 363-412 in: C. H. Hocutt and E. O. Wiley, (eds.), Zoogeography of North American Freshwater Fishes. Wiley and Sons, New York.

Dort, W. Jr., W. C. Johnson, G. G. Fredlund, R. A. Rogers, L. D. Martin, J. D. Stewart, and P. V. Wells. 1985. Evidence for an open conifer woodland in the Central Great Plains during the Late Wisconsin glacial maximum. Abstract, Canadian Quaternary Association Abstracts, p. 23. Lethbridge.

Johnson, W. C., L. D. Martin, W. Dort, Jr., C. J. Sorensen, R. A. Rogers, and J. D. Stewart. Evidence for a pine parkland in Central and Western Kansas and adjacent Nebraska during Mid- and Late-Wisconsinan time. TER-QUA Symposium Series 1:197.

Martin, L. D., and J. D. Stewart. 1985. Homologies in the avian tarsus. Nature 315:159.

Stewart, J. D. 1984. The montane vole in the Late Pleistocene of the Plains. Annual Plains Conference, Programs and Abstracts p.41-42.

Stewart, J. D. 1984. Taxonomy, paleoecology, and stratigraphy of the halecostsome-inoceramid associations of the North American Upper Cretaceous epicontinental seaways. Ph.D. dissertation, University of Kansas, Lawrence, 201 p.

Stewart, J. D., and L. D. Martin. 1984. Bird teeth and avian origins. One hundred second stated meeting of the American Ornithologists' Union: Abstracts no. 95.

Martin, L. D., and J. D. Stewart. 1984. The avian pretibial bone and the relationship between ratites and carinates. One hundred second stated meeting of the American Ornithologists' Union: Abstracts no. 13.

Stewart, J. D. 1984. Snowshoe hare, Lepus americanus, from the Peoria Loess of Kansas. Abstracts, Kansas Academy of Science 3:39.

Stewart, J. D., and R. A. Rogers. 1984. Analysis of pollen from the Trapshoot local fauna quarry (Rancholabrean) of Kansas. American Midland Naturalis 112:198–200.

Schultze, H.-P., J. D. Stewart, A. M. Neuner, and P. M. Coldiron. 1982. Type and figured specimens of fossil vertebrates in the collection of the University of Kansas Museum of Natural History. Part I. Fossil Fishes. Miscellaneous Publications of the University of Kansas Museum of Natural History No. 73, 53 p.

Martin, L. D., and J. D. Stewart. 1982. An ichthyornithiform bird from the Campanian of Canada. Canadian Journal of Earth Sciences 19:324–327.

J. D. STEWART, PH.D.—ON-CALL PRINCIPAL PALEONTOLOGIST

Stewart, J. D. 1982. Actinopterygian—pelecypod commensalism in Kansas Cretaceous deposits. Abstracts, Kansas Academy of Science 1:52–53.

Wiley, E. O., and J. D. Stewart. 1981. Urenchelys abditus, the first undoubted eel from the Cretaceous of North America (Teleostei: Anguilliformes). Journal of Vertebrate Paleontology 1:43–47.

Stewart, J. D. 1980. Reevaluation of the phylogenetic position of the Ptychodontidae. Transactions of the Kansas Academy of Science 83:154.

Martin, L. D., J. D. Stewart, and K. N. Whetstone. 1980. The origin of birds: structure of the tarsus and teeth. The Auk 97:86–93.

Stewart. J. D. 1979. Paleontology and paleoecology of the Trapshoot local fauna, Rooks County, Kansas. M.A. thesis, University of Kansas, Lawrence. 146 p.

Stewart, J. D. 1979. A new Late Blancan local fauna from Rooks County, Kansas. Transactions of the Kansas Academy of Science 82:100.

Stewart, J. D. 1979. Biostratigraphic distribution of species of Protosphyraena (Osteichthyes: Actinopterygii) in the Niobrara and Pierre formations of Kansas. Proceedings of the Nebraska Academy of Sciences and Affiliated Societies 1979:51–52.

Stewart, J. D. 1978. Mammals of the Trapshoot local fauna, Late Pleistocene of Rooks County, Kansas. Proceedings of the Nebraska Academy of Sciences and Affiliated Societies 1978:45–46.

Stewart, J. D. 1978. Earliest record of the Toxochelyidae. Transactions of the Kansas Academy of Sciences 81:9–16.

Stewart, J. D. 1978. Enterospirae (fossil intestines) from the Upper Cretaceous Niobrara Fromation of western Kansas. Kansas University, Paleonotlogical Contributions paper 89:9–16.

Wiley, E. O., and J. D. Stewart. 1977. A gar (Lepisosteus sp.) from the marine Cretaceous Niobrara Formation of western Kansas. Copeia 1977:761–762.

Martin, L. D., and J. D. Stewart. 1977. Oldest (Turonian) mosasaurs from Kansas Journal of Paleontology 51:973–975.

Martin, L. D., and J. D. Stewart. 1977. Teeth in Ichthyornis (Class: Aves). Science 195:1331–1332.

Stewart, J. D. 1976. Teuthids of the North American Late Cretaceous. Transactions of the Kansas Academy of Science 79:94.

Articles Submitted for Publication

Stewart, J. D., and M. Triebold. The oldest triakid shark (Carchariniformes) from North America. Journal of Paleontology.

J. D. STEWART, PH.D.—ON-CALL PRINCIPAL PALEONTOLOGIST

Stewart, J. D., and S. B. Hunter. The supposed Miocene eel, Deprandus lestes Jordan and Gilbert 1921, is a scombroid teleost (Teleostei: Perciformes). Natural History Museum of Los Angeles County Contributions in Science.

Stewart, J. D., and M. Hakel. First records of fossil Molidae on the Pacific Coast of North America. Journal of Vertebrate Paleontology.

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County Review Draft

Attachment C:
Paleontological Records Search

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County Review Draft

Kenneth L. Finger, Ph.D.
Consulting Paleontologist

18208 Judy St., Castro Valley, CA 94546-2306 510.305.1080 klfpaleo@comcast.net

September 18, 2017

Dr. Dana Pietro
FirstCarbon Solutions
1350 Treat Boulevard, Suite 380
Walnut Creek, CA 94597

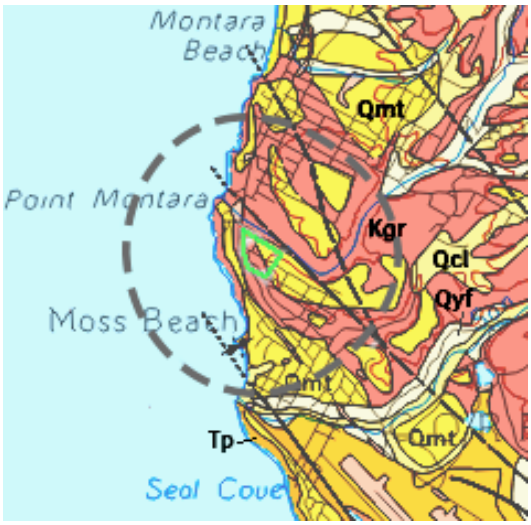
Re: **Paleontological Records Search for MidPen Affordable Housing Project (PN 50450001), Moss Beach, San Mateo County**

Dear Dr. Pietro,

As per your request, I have conducted a records search of the University of California Museum of Paleontology (UCMP) database for the proposed MidPen Affordable Housing Project in Moss Beach. The project is located in the Montara Mountain quadrangle (1980 USGS 7.5' topographic map). Google Earth imagery reveals that most of this parcel appears to be undeveloped.

Geologic Units

On the part geologic map of Brabb et al. (1998) shown here, the project site (center, outlined in green) includes Pleistocene marine terrace deposits (Qmt) and granitic rocks (Kgr). The marine terrace deposits are potentially fossiliferous. Granitic rocks crystallize from magma at great depth and therefore cannot contain fossils, and the map pattern suggest that they are subjacent to the Pleistocene terrace. None of the other three geologic units in this area are within the half-mile search radius (dashed outline). Of those, two are Holocene, which is too young to contain fossils, while the Tertiary Purisima Formation (Tp) is known to yield significant paleontological resources; however, it is restricted to the coast and is unlikely to be present in the subsurface of the project site.



Key to mapped geologic units

Qcl	Colluvium (Holocene)
Qyf	Younger alluvial fan deposits (Holocene)
Qmt	Marine terrace (Pleistocene)
Tp	Purisima Formation (Pliocene and upper Miocene)
Kgr	Granitic rocks of Montara Mountain (Cretaceous)

County Review Draft

Paleontological Records Search

The University of California Museum of Paleontology (UCMP) database was searched for Pleistocene vertebrate localities in San Mateo County. The database records 9 localities in unnamed late Pleistocene deposits in San Mateo County. Their composite assemblage includes *Uria algae* (guillemot or murre), *Mammuthus columbi* (Columbian Mammoth), *Mammut americanum* (American Mastodon), *Equus* (horse), *Glossotherium harlani* (Harlan's Ground Sloth), *Camelops hesternus* (Extinct Western Camel), and *Bison latifrons* (Giant North American Bison). The latter was the specimen found at V792009 (Grenada Beach) that, at approximately three miles to the south, is the locality closest to the project site. These species represent the Rancholabrean fauna of the late Pleistocene.

Conclusions and Recommendations

Part of the MidPen Affordable Housing Project site is located on Pleistocene marine terrace deposits that have the potential to yield terrestrial or marine vertebrate fossils. Considering that most of the site appears to be undeveloped and has geologic ezpoaures, a preconstruction paleontological survey of the site is warranted. Paleontological monitoring is also recommended for excavations into the Pleistocene terrace. Should any significant paleontological resources be discovered during construction activities, CEQA guidelines stipulate that onsite construction activities are to be diverted away from the discovery until a professional paleontologist can inspect and evaluate the find and, if deemed appropriate, salvage it in a timely manner. Collected fossils should be offered to an appropriate repository, such as the California Academy of Sciences or the UCMP, for the benefit of science and future generations.

If I can be of further assistance on this project, please do not hesitate to contact me.

Sincerely,

Reference Cited

Brabb, E.E., Graymer, R.W., and Jones, D.L., 1998, Geology of the onshore part of San Mateo County, California: a digital database. U.S. Geological Survey Open-File Report 98-137.

APPENDIX C

Archaeological Testing Program
for CA-SMA-431
at the Cypress Point Project
in Moss Beach, County of San Mateo

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County Review Draft

ARCHAEOLOGICAL TESTING PROGRAM FOR CA-SMA-431 AT THE CYPRESS POINT PROJECT IN MOSS BEACH, COUNTY OF SAN MATEO

FOR

ATTN: MR. CRAIG STEVENS
AEM CONSULTING
1241 LARKIN WAY
SACRAMENTO, CA 95818
NWIC# 17-0815

BY

Archaeological Resource Management
Dr. Robert Cartier, Principal Investigator
496 North Fifth Street
San Jose, CA 95112
(408) 295-1373
FAX: (408) 286-2040

JUNE 1, 2018

County Review Draft

ADMONITION

Certain information contained in this report is not intended for general public distribution. Portions of this report locate significant archaeological sites in the region of the project area, and indiscriminate distribution of these data could result in the desecration and destruction of invaluable cultural resources. In order to ensure the security of the critical data in this report, certain maps and passages may be deleted in copies not delivered directly into the hands of environmental personnel and qualified archaeologists.

THE PRINCIPAL INVESTIGATOR

INTRODUCTION

This report contains the results of a subsurface testing program at archaeological site CA-SMA-431, within the Cypress Point project in Moss Beach, California. A testing program was designed based upon the requirements of the County of San Mateo. The program was undertaken to determine the extent, depth, and constituents of the prehistoric archaeological deposit. The proposed project consists of a residential development. Associated construction activities that may impact the site include grading, trenching, excavation and other earthmoving activities.

Seven mechanical test trenches and two hand excavated 1 x 1 meter testing units were utilized as part of this testing program. The mechanical test trenches were excavated outside the observable surface boundaries of the archaeological site in order to confirm that the site did not extend beyond the visible boundaries. The 1x1 meter units were excavated down to a depth of 40 cm, at which point sterile clay soil was encountered. The mechanical testing trenches were excavated to a depth of 120 cm. No cultural materials were noted in any of the mechanical test trenches. The hand excavated archaeological testing units within the deposit recovered prehistoric materials including marine shell, primarily *Mytilus* (mussel) species, and fire cracked rock. The presence of shell fragments and fire cracked rock (FCR) are typical indicators of a prehistoric archaeological site (shell midden). Recent historic materials were also found in the hand excavated units, indicating historic disturbance.

After the fieldwork was completed, two shell samples were selected and submitted to Beta Analytic Laboratories, Inc., in Miami, Florida for radiocarbon analysis. Sample #1 was given a calibrated date of 1501 to 1683 Cal AD (449-267 Cal BP). Sample #2 was given a calibrated date of 1068 to 1276 Cal AD (882-674 Cal BP).

A set of Department of Parks and Recreation (DPR) forms (see Appendix D attached) was completed for the identified archaeological site and submitted to the Northwest Information Center of the California Historic Resources Information System (CHRIS). The archaeological site within the proposed project area was given the trinomial designation of CA-SMA-431.

Due to the presence of a small area of disturbed shell midden in the proposed project area, construction activity could potentially impact cultural resources. Recommendations to mitigate the project impact are outlined in the Summary and Conclusion section of this report.

QUALIFICATIONS OF ARCHAEOLOGICAL RESOURCE MANAGEMENT

Archaeological Resource Management has been specifically engaged in cultural resource management projects in central California since 1977. The firm is owned and supervised by Dr. Robert Cartier, the Principal Investigator. Dr. Cartier has a Ph.D. in anthropology, and is certified by the Register of Professional Archaeologists (RPA) for conducting cultural resource investigations as well as other specialized work in archaeology. Specific segments of this project were carried out by the following personnel:

Robert Cartier:	Principal Investigator and Report Editor
Douglas Jones:	Field Technician, Report Preparation, and Map Production
Pete Johnson:	Field Technician
Christopher Zimmer:	Native American Monitor

Radiometric Analysis was performed by Beta Analytic, Inc. in Miami, Florida.

PROJECT LOCATION AND SETTING

The subject area consists of approximately 10.66 acres of land off of Sierra Street in Moss Beach, County of San Mateo. On the USGS 7.5 minute quadrangle of Montara Mountain OE W, CA, the Universal Transverse Mercator Grid (UTMG) centerpoint of the project area is 10S 5 42 699mE,41 54 262mN. The elevation ranges from approximately 100 to 150 feet MSL, and the nearest source of fresh water is the Montara Denniston Creek which is located approximately 300 feet north of the proposed project area.

The proposed project consists of the construction of 71 affordable housing units consisting of approximately 25 two-story buildings holding 3-4 units each. This project will involve the necessary excavation, grading, trenching, and other earthmoving activities.

ETHNOGRAPHIC BACKGROUND

Early ethnographic accounts of local Native American cultures provide a cultural context for archaeological studies. The Ohlone, or Costanoan, Indians inhabited the San Francisco Bay regions from the Golden Gate south to Monterey. Derived from a Spanish word, Costanoan means "people of the coast," and is an older term. Descendants of these people prefer to refer to themselves as "Ohlone," and it is now the generally accepted term. The research area is located in the Salson linguistic area, which shared many cultural traits with other linguistic groups in the Ohlone region. It is believed that the Ohlone Indians inhabited the area since A.D. 500, and that speakers of the Hokan language previously inhabited at least part of the region (Levy 1978). However, it is unclear when the Hokan or even earlier Paleo-Indians first came to the area. Archaeological data documents Native American coastal activity in the Central Coast area over the past 10,000 years, with some indications of occupation as early as 12,000 to 13,000 years ago (Jones et al, 2007). The earliest radiocarbon dates that are available for the area to which the Ohlone came to live are 12,000 B.P. (years before present) at SCR-177 in Scotts Valley (Cartier 1993), 3,200 B.P. at the University Village Site (SMA-77) (Gerow 1968), 6,349 B.P. at Palm Canyon (SCL-106) near Gilroy (Cartier 1980), 6,628

B.P. at Camden Avenue (SCL-64) (Winter 1978), CA-SCR-38 on the Santa Cruz coast, dated to ca. 8850 B.P., CA-SCR-7 dated to ca. 6050 B.P. (Jones and Hilderbrandt 1990), and CA-SCR-239 in Scotts Valley, dated to ca. 4950 B.P. (Cartier 1992).

The Ohlone were gatherers and hunters who utilized only the native flora and fauna with the exception of one domesticate, the dog. Yet, the abundance and high quality of natural resources allowed them to settle in semi-sedentary villages. The Ohlone were typically organized in basic political units called "tribelets" that consisted of 100 to 250 members (Kroeber 1954). The "tribelet" was an autonomous social unit consisting of one or more permanent villages with smaller villages in a relatively close proximity (Kroeber 1962). Parties went out from the major villages to locations within the tribal territory to obtain various resources.

The proximity of mountainous, open coast, and bay regions in the local environment made a diversity of resources available during different seasons to the native inhabitants. During the winter months, the low-lying flats near the San Francisco Bay have abundant marine and waterfowl resources, while the surrounding mountainous areas are best in the summer months for their nut, seed, and mammalian resources (King and Hickman 1973). A primary food source was acorns, abundant in autumn and easily stored for the remainder of the year. According to Gifford, the acorn industry of California was probably the most characteristic feature of its domestic economy (Gifford 1951). An elaborate process of grinding and leaching acorns is necessary to render them palatable. The acorn industry first became a major source of food in the Middle Period as is indicated by the appearance of mortars and pestles in the archaeological record (King and Hickman 1973). Other important resources include various plant foods, land animals, and the marine resources of the San Francisco Bay. Both large and small land mammals were typically hunted, trapped or poisoned. Many items, including shell beads and ornaments, were extensively traded with other groups as far away as the Great Basin of Nevada (Davis 1974).

It is argued that contrary to usual conceptions of hunters and gatherers, native Californian groups, including the Ohlone, practiced a form of resource management that was close to agriculture. Bean and Lawton (1976) consider this pattern a "semi-agricultural" stage which included quasi-agricultural harvesting activity and proto-agricultural techniques. Some plants were pruned and reseeded seasonally for optimal production. Foods such as acorns were stored for many months at a time. Ethnographic accounts also report the repeated burning of woodlands grassbelt to increase animal and plant resources. It is likely to have made hunting conditions better by reducing scrubby growth and encouraging the growth of grasses and other plants that are appealing to grazers such as deer and elk. The plant growth succession after a burning is also rich in grains and legumes that were major food sources for Native Californians.

Bean and Lawton also claim that the abundance of plant and animal resources in California and the development of ingenious technological processes allowed Native Californians to develop social structures beyond the normal parameters of hunting and gathering. These include extensive political systems, controlled production and redistribution of goods, and alliances and trade with other groups.

Historic Background

The proposed project area formerly made up a portion of the Point Montara Artillery Training Facility, a World War II era military complex in use between 1943 and 1945. Several structures within this complex were located within the current proposed project area, including barracks, offices, a mess hall, a library, a garage, a boiler room, an incinerator, a "TDD" hanger, and a drill field.

The Point Montara Artillery Training Facility was a top secret military installation operated by the U.S. Navy during World War II, containing 48 permanent structures, and housing over 1500 personnel. Throughout the course of its operation, about 320,000 Navy sailors and merchant marines were trained on what was then the latest technology in anti-aircraft weapons, including the 20mm "Oerlokin", the 40mm "Bofers" and 3 inch/50 caliber anti-aircraft guns.

The facility was notable for its extensive use of Women Air Service Pilots (known as WASPs) who flew planes towing targets for the artillery firing from the coast along Point Montara.

The facility also heavily utilized some of the earliest drone aircraft for target practice. These radio controlled planes were pioneered by Reginald Denny, a Hollywood film star and remote control hobbyist. He realized the potential of the planes for target practice, and entered contracts with the U.S. Army and the U.S. Navy which eventually became a multi-million dollar industry through the course of WWII. These planes were named Target Drone Dennys (TDD's) by the Navy after their inventor (Oeswein 2016).

In the late 1960's the proposed project area was in use as a training facility for firefighters. During this period, the structures within the proposed project area were razed by a controlled burn, leaving only exposed concrete foundations. The property has been vacant since 1970. The project area currently contains concrete foundations, as well as well as a fenced area containing the Montara Water and Sanitary District infrastructure. Some structures and features associated with the military training facility remain standing outside the current proposed project area, along the coast of Point Montara.

ARCHIVAL BACKGROUND

Prior to surface reconnaissance of the subject area, a study of the maps and records at the Northwest Information Center of the California Archaeological Site Inventory was conducted and given the file number NWIC# 17-0815. The purpose of this research was to determine if any known archaeological resources had previously been reported in or around the subject area. No previously recorded archaeological sites are located within the project area. However, four previously recorded resources are located within one quarter mile of the proposed project area. These resources are briefly described below:

CA-SMA-55

This prehistoric site, originally designated Nelson 405, was a shell mound documented by N. Nelson in 1908. Nels Nelson documented and investigated numerous shell mounds along the Central California Coast in the early years of the 20th Century, many of which have been significantly damaged or completely destroyed. This site is located on Point Montara approximately 150 feet from the northwest corner of the proposed project boundaries.

CA-SMA-171H

This historic district was recorded by H. Casper in 1973 and is described as containing the Point Montara Artillery Training Station and the Point Montara Light Station. None of the recorded elements are located within the proposed project area.

P-41-2108

This historic structure was recorded by D. Painter and C. Losee in 2003. It is described as the Montara Cottage.

P-41-2154

This historic resource was recorded in 2005 by D. Edwards. It is described as the Montara Water and Sanitary District Office at Point Montara Training Station.

Four previous studies have been carried out within or adjacent to the proposed project area. These studies are described below:

S-3082

This study was carried out by S. Dietz and T. Jackson in 1970 and entitled "An Archaeological and Historical Reconnaissance of a Portion of the San Mateo County Coastside." This was a broad survey with included the entirety of the current proposed project area within its scope.

S-5389

Carried out by M. Melandry in 1977, this study is entitled "Archaeological Survey Report on Excess Parcels 6695-01-01, 6696-01-01, 7091-01-091-02-01, on Route 1 in San Mateo County P.M. 35.5/35.8." This study extends southwards from the southwest corner of the proposed project area.

S-25083

This study was carried out by J. Holson in 2002 and entitled "Archaeological Survey for Highway 1/ Montara, 8211.38 (PL 1004-07) (letter report)." Archival maps for this study indicate its location as a small circular area located within the eastern central portion of the proposed project area.

S-31887

Carried out by C. Busby in 2005, this study is entitled "Archaeological Assessment - Montara Water and Sanitary District EIR, Vicinity of Montara and Moss Beach and Within Half Moon Bay Airport, San Mateo County (letter report)." This study is located within the eastern central portion of the proposed project area.

A total of 26 additional previous studies have been carried out within a one quarter mile radius of the proposed project area.

AB52: NATIVE AMERICAN CONSULTATION

AB 52 Native American Consultation was completed by County of San Mateo as the lead agency for the project. All identified individuals were contacted, and no responses were received. As part of the archaeological testing program, Ms. Irene Zwierlein was contacted as a representative of the Amah Mutsun Tribal Band. Ms. Zwierlein provided a Native American monitor for the archaeological testing within CA-SMA-431. This monitor was present during hand excavation within the deposit.

RESEARCH GOALS / METHODOLOGY

Research Goals

The process of archaeological research conducted for the Cypress Point project was aimed at answering a number of questions regarding the prehistoric use of the study area and in producing an accurate model of the sensitivity and deposition of cultural resources within the project area. Specifically, the purpose of trenching and hand excavation within the project area was to determine the nature, extent, and significance of any possible prehistoric resources within the archaeological deposit, and to produce a chronology, determined by a radiocarbon sample obtained from the excavation.

As the original site boundaries were determined through surface observation, one research goal was to more systematically define the boundaries of the site. The mechanical testing trenches were excavated around the outside of the known area of the deposit in order to determine if a subsurface deposit extended beyond the site's visible surface boundaries.

The constituents and depth of the site were also unknown. Thus the hand excavated testing units were designed to determine the depth of the site, as well as provided detailed information on the cultural materials present.

An understanding of these characteristics of the site will allow for an analysis of its uniqueness, as well as a determination of its significance under the criteria of the CRHR and the NRHP. Based upon the site's significance, appropriate mitigation measures will be developed to address the impact of the proposed project on this resources.

Two shell samples were forwarded to Beta Analytic, Inc. for chronological assessment through radiocarbon analysis. In addition, questions including the contents and function of the site, the temporal period of the site, and the role the site played in the settlement and subsistence patterns of the region may be addressed.

Regulatory Framework

California Register Criteria

A cultural resource is considered "significant" if it qualifies as eligible for listing in the California Register of Historic Resources (CRHR). Properties that are eligible for listing in the CRHR must meet one or more of the following criteria:

1. Association 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. Association with the lives of persons important to local, California, or national history;
3. Embodying the distinctive characteristics of a type, period, region, or method of construction, or representing the work of a master, or possessing high artistic values; or
4. Has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California, or the nation.

Most Native American prehistoric sites are eligible due to their age, scientific potential, and/or burial remains.

The CRHR interprets the integrity of a cultural resource based upon its physical authenticity. An historic cultural resource must retain its historic character or appearance and thus be recognizable as an historic resource. Integrity is evaluated by examining the subject's location, design, setting, materials, workmanship, feeling, and association. If the subject has retained these qualities, it may be said to have integrity. It is possible that a cultural resource may not retain sufficient integrity to be listed in the National Register of Historic Places yet still be eligible for listing in the CRHR. If a cultural resource retains the potential to convey significant historical/scientific data, it may be said to retain sufficient integrity for potential listing in the CRHR.

National Register Criteria

The National Register of Historic Places was first established in 1966, with major revisions in 1976. The register is set forth in 36 CFR 60 which establishes the responsibilities of the State Historic Preservation Officers (SHPO), standards for their staffs and review boards, and describes the statewide survey and planning process for historic preservation. Within this regulation guidelines are set forth concerning the National Register of Historic Places (36 CFR 60.6). In addition, further regulations are found in 36 CFR 63-66 and 800 which define procedures for determination of eligibility, identification of historic properties, recovery, reporting, and protection procedures.

The National Register of Historic Places was established to recognize resources associated with the accomplishments of all peoples who have contributed to the country's history and heritage. Guidelines were designed for Federal and State agencies in nominating cultural resources to the National Register. These guidelines are based upon integrity and significance of the resource. Integrity applies to specific items such as location, design, setting, materials, workmanship, feeling, and association. Quality of

significance in American history, architecture, archaeology, engineering and culture is present in resources that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and meet at least one of the following criteria:

a. that are associated with events that have made a significant contribution to broad patterns of our history;
b. that are associated with the lives of persons significant in our past;
c. that embody distinctive characteristics of type, period, or method of construction, or that represent the work of master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction;
d. that have yielded, or are likely to yield, information important in prehistory or history.

Ordinarily, properties that have achieved significance within the last 50 years are not considered eligible for the National Register. However, such properties will qualify if they are integral parts of districts that do meet the criteria of the NRHP listed above or if they fall within the following categories:

a. a religious property deriving primary significance from architectural significance or artistic distinction or historic importance; or
b. a building or structure removed from its original location but which is significant primarily for architectural value, or which is the surviving structure most importantly associated with an historic person or event; or
c. a birthplace or grave of a historical figure of outstanding importance if there is no other appropriate site or building directly associated with his (or her) productive life; or
d. a cemetery which derives its primary significance from graves of persons of transcendent importance, from age, from distinctive design features, or from association with historic events; or
e. a reconstructed building when accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and when no other building or structure with the same association has survived; or
f. a property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own historical significance; or
g. a property achieving significance within the past 50 years if it is of exceptional importance.

Section 30244 of the California Coastal Act

Article 5; Land Resources, Section 30244 of the California Coastal Act states that:

"Where development would adversely impact archaeological or paleontological resources as identified by the State Historic Preservation Officer, reasonable mitigation measures shall be required."

The completed cultural resource evaluation identified a portion of the proposed project area as containing a potentially significant archaeological resource, and recommended archaeological testing for the purpose of determining the boundaries, depth, and

constituents of the archaeological deposit within the proposed project area. The results of this testing will be used to determine reasonable mitigation measures for the proposed project.

San Mateo County Midcoast Local Coastal Program Policies

In late 1980, the County Board of Supervisors and the California Coastal Commission approved the San Mateo County's Local Coastal Program. In April 1981, the County assumed responsibility for implementing the State Coastal Act in the unincorporated area of San Mateo County, including issuance of Coastal Development Permits. Three policies outlined within the Local Coastal Program have a bearing on cultural resources for the proposed project. These policies are discussed below.

1.25 Protection of Archaeological/Paleontological Resources

"Based on County Archaeology/Paleontology Sensitivity Maps, determine whether or not sites proposed for new development are located within areas containing potential archaeological/ paleontological resources. Prior to approval of development proposed in sensitive areas, require that a mitigation plan, adequate to protect the resource and prepared by a qualified archaeologist/paleontologist be submitted for review and approval and implemented as part of the project."

This cultural resource evaluation identifies a portion of the proposed project area as archaeologically sensitive, and recommends archaeological testing for the purpose of determining the boundaries, depth, and constituents of the archaeological deposit within the proposed project area. The results of this testing will be used to determine appropriate mitigation plan for the proposed project. Sensitivity for paleontological resources is being addressed in a separate report.

8.26 Structural Features

"Employ the regulations of the Historical and Cultural Preservation Ordinance to protect any structure or site listed as an Official County or State Historic Landmark or is listed in the National Register of Historic Sites."

None of the structures within the proposed project area are currently listed on the County, State, or National Registers as historic resources. In addition, they do not appear to be eligible for listing in any of these registers. Although the proposed project area contains the concrete foundations of structures from the Point Montara Anti-Aircraft Training Center which operated during WWII, these remnants do not appear to adequately convey the character of the original structures or the activities which took place during this period for listing in these registers. Montara Water and Sanitary District infrastructure including tanks, culverts, and other fixtures are also present on the property. These structures are utilitarian in character and do not appear historically significant.

8.27 Natural Features

"Prohibit the destruction or significant alteration of special natural features through implementation of Landform Policies and Vegetative Form Policies of the LCP."

No special natural features appear to be present within the proposed project area, thus no special natural features will be destroyed or altered by the proposed project.

Field Methods

The first phase of the fieldwork involved mechanical test trenching. The test trenching was carried out on February 21, 2018. During trenching, seven mechanically excavated test trenches were placed outside the visible boundaries of the archaeological site in order to determine if subsurface elements of the site extended beyond those boundaries. The trenches were used to help identify the presence or absence of subsurface cultural resources. Trenching records (refer to Appendix B) include information on soil type, color, and rock type. None of the mechanically excavated trenches contained any cultural materials.

The second phase of the fieldwork involved hand excavation of two 1 x 1 meter test units. Excavation of the test units was carried out on February 22, 2018. Placement of the units was determined based upon the defined boundaries of the archaeological deposit. Hand excavation was conducted using standard archaeological techniques with flat-nosed shovels, round-nosed shovels, picks, and trowels in arbitrary levels and dry screened through 1/4 inch mesh. All identified artifactual material was collected from each level. Collected material was curated in level bags and each level recorded as to artifacts present, soil type, color, stratigraphy, and features present. All artifactual material from this process was then placed within its appropriate level bag from the field screening process. Hand excavation of the test units was carried out to a depth of 40 cm at which point sterile soil was encountered. A hand auger boring was then conducted to a depth of 100cm in each unit.

Laboratory Methods

In the laboratory, all materials were washed and cataloged (see Appendix B). All artifacts were washed in cool water and allowed to dry. Then, each item was examined, weighed, and entered into an artifact database.

Specific classes of cultural materials include shell, fire cracked rock (FCR), metal, and glass. All cultural materials were catalogued and weighed; shell was catalogued, weighed, and speciated. In addition, two shell samples were submitted to Beta Analytic, Inc. for radiocarbon dating analysis. The radiocarbon dating was conducted in order to provide a general chronology for the site.

RESULTS

Results of the mechanical test trenching were negative; no cultural materials were observed in soils outside the recorded boundaries of the archaeological site. The hand excavation yielded both prehistoric dietary shell remains and recent historic materials. These data were then synthesized to produce an interpretation of deposition and a chronology of the test area. A discussion of these findings follows in the order of: Mechanical Test Trenches, Unit Summary by Level, Faunal Shell, and Historic/Recent Artifacts.

Mechanical Test Trenching Results

Trench #1

The soil in this trench consisted of a medium brown silty loam for the first 20cm. Below this, a reddish brown silty clay extended to 120cm. Very little rock was present. No cultural materials, prehistoric or historic, were noted in this trench.

Trench #2

The soil in this trench consisted of a medium brown silty loam for the first 40cm. Below this, a reddish brown silty clay extended to 120cm. Very little rock was present. No cultural materials, prehistoric or historic, were noted in this trench.

Trench #3

The soil in this trench consisted of a medium brown silty loam for the first 40cm. Below this, a reddish brown silty clay extended to 120cm. Very little rock was present. No cultural materials, prehistoric or historic, were noted in this trench.

Trench #4

The soil in this trench consisted of a medium brown silty loam for the first 40cm. Below this, a reddish brown silty clay extended to 120cm. Very little rock was present. No cultural materials, prehistoric or historic, were noted in this trench.

Trench #5

The soil in this trench consisted of a medium brown silty loam for the first 80cm. Below this, a reddish brown silty clay extended to 120cm. Very little rock was present. No cultural materials, prehistoric or historic, were noted in this trench.

Trench #6

The soil in this trench consisted of a medium brown silty loam for the first 70cm. Below this, a reddish brown silty clay extended to 120cm. Very little rock was present. No cultural materials, prehistoric or historic, were noted in this trench.

Trench #7

The soil in this trench consisted of a medium brown silty loam for the first 50cm. Below this, a reddish brown silty clay extended to 120cm. Very little rock was present. No cultural materials, prehistoric or historic, were noted in this trench.

Hand Excavated Unit Results

Unit #1

The soil of Unit #1 consisted of a medium brown silty loam to a depth of approximately 27cm, at which point a reddish brown silty clay was encountered to a depth of 40cm. The surface level of this unit contained mussel (*Mytilus)* and barnacle (*Balanus)* shell fragments, as well as terrestrial snail shell. The 0-20cm level included mussel (*Mytilus)* and barnacle (*Balanus)* shell fragments, FCR, as well as historic materials including glass and plastic fragments, and a wire nail. The 20-40cm level contained mussel (*Mytilus)* and barnacle (*Balanus)* shell fragments as well as one brown bottle glass fragment. This material was almost entirely concentrated in the upped 7cm of the level; the reddish silty clay from 27-40cm appeared sterile. A hand auger boring was conducted at the base of the 20-40cm level, to a depth of 100cm. Soils in this auger boring consisted of a reddish brown silty clay gradually shifting to an orange clay and sand. No cultural materials were noted in the auger boring.

Unit #2

The soil of Unit #2 consisted of a medium brown silty loam to a depth of approximately 40cm, at which point a reddish brown silty clay was encountered. The surface level of this unit contained mussel (*Mytilus)* and barnacle (*Balanus)* shell fragments. The 0-20cm level included mussel (*Mytilus),* barnacle (*Balanus),* turban shell, and chiton (*Cryptochiton*) shell fragments, terrestrial snail shell, and FCR, as well as historic materials including one fragment of clear glass. The 20-40cm level contained mussel (*Mytilus)* and barnacle (*Balanus)* shell fragments as well as terrestrial snail shell. Dense reddish brown silty clay was encountered at approximately 40cm. A hand auger boring was conducted at the base of the 20-40cm level, to a depth of 100cm. Soils in this auger boring consisted of a reddish brown silty clay gradually shifting to an orange clay and sand. No cultural materials were noted in the auger boring.

Faunal Shell

Shell remains comprised a majority of the cultural material in both the hand excavated units. The shell recovered was comprised of multiple species. Recovered shell included mussel (*Mytilus*), which was the most abundant species, as well as smaller amounts of barnacle (*Balanus)* shell, Turban shell (*Turbinidae*), and chiton (*Cryptochiton*). These shell species are discussed briefly below.

Mytilus californianus (California mussel) is a large mussel that can grow to a length of 80-130 mm. This shell is considerably elongated with a straight, narrow anterior margin and a curved, posterior margin. Its ribs are prominent, especially near its base, but they are not high in number. Its usual color is a bluish-black; however, younger mussels often display brown and white streaks. This bivalve can be found on the rocky open coast between tide lines where it is exposed to the surf. It attaches itself to rock by byssal threads. This species of shell was used by the Ohlone as a food resource.

Balanus glandula (Acorn barnacle)
This small barnacle is a filter feeder usually about one inch in height with a rough tube for a shell, closed at its basal end and open at its feeding aperture. It attaches itself to the shells of other animals, such as mussels. Consequently, its appearance in a midden is not neccessarily the result of intentional harvest. This species occurs in great numbers on rocks in the high zone but they also occur in lower zones.

Tegula funebralis (black top) is a snail with a bluntly pyramidal robust shell, with 4-5 wrinkled whorls. It is found on rocky shorelines in the intertidal zone and was used by the Ohlone as a food resource (Morris 1966).

Cryptochiton stelleri (Chiton) is a large (usually 6-8 inches), oblong mollusk with shell plates completely hidden under a leathery girdle when alive. They are found in moderately deep water, and the plates are usually found separate. The Ohlone used them as a food resource.

As noted, these shellfish varieties were used primarily as dietary resources. Mytilus shell could be collected from shallow water or the shoreline at low tide. The species of shell identified at CA-SMA-431 were all locally available to its prehistoric residents. Of the total of 934.5 grams of shell recovered from the test units, 801.2g (approximately 86%) were *Mytilus* (mussel shell).

Fire-Cracked Rock

Fire-cracked rock (FCR) is often used as a surface indicator of a prehistoric archaeological deposit. Prehistoric inhabitants of the region often used rock in their cooking activities. Heated rocks were placed in baskets in order to boil water and cook foods. Rocks were also used in the construction of hearths, and may have become fire-cracked from repeated fire burning. Although rocks may be affected by fires which burn naturally across the land, rocks which are fire-cracked and heavily damaged appear to have been repeatedly exposed to high temperature fires and rapid cooling, potentially related to human activity. Fire-cracked rock is characterized by sharp foliations and cracks in the surface that contrasts with the worn natural exterior of the rock. There is often a pinkish discoloration on the cracked surface.

Historic Artifacts

Small amounts of historic material were encountered in both hand excavated units. These historic artifacts were mixed with the prehistoric deposit and may be the result of previous construction activities or rodent burrowing at this location. Historic materials including glass and metal were noted down to 40 centimeters in both units, indicating that the deposit is disturbed. In general, the historic artifacts recovered appear to date from the mid to late 20th Century to the present.

Radiometric Analysis (C-14)

The most reliable of the absolute dating techniques available to archaeologists involves the analysis of carbon 14 (C14), an unstable isotope of carbon. This dating technique relies on three characteristics of C14. The first is that all living things contain a set percentage of C14 in their bodies while they are alive. The second is that C14 has a characteristic half-life (the time needed for half the original number of unstable atoms to change to stable ones) of 5,730 years. Third, although the levels of C14 atoms in the environment have fluctuated through geological time, scientists have been able to document these changes using ice cores, dendrochronology, and other cross checks. Radiocarbon dates are calibrated to compensate for the varying levels of C14. Once an organism dies, it no longer exchanges carbon with its environment, and the amount of C14 that was originally in the organism begins to decay into stable N14, while the amount of stable C12 remains the same. The C14 decays by ejecting electrons from its nucleus, a process known as beta decay. By measuring the amount of C14 that remains

in the organism, it is possible to determine the time elapsed since the organism's death (Fagan, 1994).

The amount of C14 remaining is measured by one of two methods. In the AMS (accelerator mass spectrometric) method, only a few milligrams of organic material are needed as a sample, the C14 and the C12 atoms are counted using a laser enabled instrument called a mass spectrometer. In the second and more common method, larger samples are used and the radiation from these samples is measured directly. It should be noted that the C14 measurement refers to the date of the organism's death, not necessarily the use of the dated item (Cartier, 1993b).

It is also important to note that the age of any given radiocarbon sample can be expressed in several different ways, resulting in a potentially confusing suite of dates for any given sample. The Measured or Conventional Radiocarbon Age represents the original raw date obtained from the dating process, and is expressed as a date with a range (i.e., 8700 $\pm$ 60 BP.). This date is then calibrated, using climatic, tree-ring, and coral cross checks, in an effort to arrive at a more accurate calendric date. Calibrated dates are expressed as ranges with varying degrees of probability (i.e., 9730 to 9555 BP.), or simply as a single date (i.e., 9665 BP). Ranges are provided for 1 Sigma Calibrated Results (68% probability), and for 2 Sigma Calibrated Results (95% probability). The Calibrated Radiocarbon Age represents the intercept of the Conventional Radiocarbon Age with the given calibration curve. The dates for the current study will be specified as either "conventional" or "calibrated," and calibrated dates will be in the 2 Sigma range for the greatest accuracy possible.

After the fieldwork was completed, two samples were selected and submitted to Beta Analytic Laboratories, Inc., in Miami, Florida. Sample #1 was taken from the 0-20cm level of Unit #1. Sample #2 was taken from the 20-40cm level of Unit #2. Sample #1 was given a conventional radiocarbon age of 1000 +/- 30 BP (Before Present) and a calendar calibration date of 1501 to 1683 Cal AD (449-267 Cal BP). Sample #2 was given a conventional radiocarbon age of 1520 +/- 30 BP, and a calendar calibration date of 1068 to 1276 Cal AD (882-674 Cal BP).

The carbon date suggests that the site was occupied during the Late Period. A short description of each of the major cultural periods in the central California chronological sequence is given below.

Early Period (3000 to 500 B.C)

Early Period sites are rare, and little information is known about this period. Early period sites are often characterized by general cultural patterns such as the practice of burying the dead in a fully extended position and the common use of red ochre in graves. Hunting during the Early Period primarily made use of spear throwers, the bow and arrow were not introduced to California until much later. Shell beads were used as a medium of exchange, and in early period sites the most commonly occurring style of bead is known as the L Type (Bennyhoff and Hughes, 1987). L type beads were made of abalone (*Haliotis*) shell, and are distinguished by a thick, rectangular shape.

Middle Period (500 B.C. to 900 A.D.)

Variation, in a multiplicity of dimensions, is the pervasive characteristic of the Middle Period. This variation is found both spatially and temporally. The duration of period is

marked by change and transition in almost every cultural element studied by archaeologists. Initial portions of the Middle Period share many traits of the Early Period, whereas the closing of the Middle Period is marked in many ways by characteristics of the Late Period. In this sense, the Middle Period was very aptly referred to by Lilliard et al. as the "Transitional" (1939). There are also synchronic variations within the period between geographic regions. Assemblages reported at the same point in time, but with some spatial distance from one another, show wide contrasts in artifactual make up. The Middle Period is marked by a massive growth of population. This can been seen in the archaeological record as the higher proportion of sites dating to the Middle Period then any other prehistoric time frame. Perhaps due to this increase in population, violence seems to have been common during the Middle Period. Many of the burials excavated from this period have projectile points penetrating into their bones or exhibit other signs of violent death. A specific form of shell bead, known as an F Type bead, is closely associated with this period. The Middle Period also exhibited a marked change in the economy of the native peoples of the area. This included such things as the use of the acorn as a staple food and the use of heated groundstones to prepare it. These stones are referred to as fire cracked rock, or FCR, and are most abundant in Middle Period sites.

Late Period (900 A.D. to 1700 A.D.)

The Late Period in the local chronological sequence is characterized by several broad cultural characteristics. Burials from this period are predominantly flexed, and their orientation is indiscriminate. An increase in the frequency and elaboration of grave goods is also noted. Burials may contain bone whistles and other bone artifacts with incised design, as well as ceremonially "killed" artifacts (artifacts which are punctured or broken to release their spirit before burial), as well as shell beads. Beads frequently found in Late Period sites include types M, S.1, B.1. and C.1.a (Bennyhoff and Hughes 1987). During the Late Period, the primary staple used by the Native Americans was the acorn, leached and ground into meal. Mortars and pestles of granite or sandstone, used for grinding the acorns, are frequently associated with Late Period sites, and the bow-and-arrow was introduced. Population apparently was lower than during the Middle Period as evidenced by a decline in the number of sites dating from the late period.

Discussion

The archaeological deposit at CA-SMA-431 is contained within a small, well defined area (approximately 80 feet by 30 feet). Based upon the surface dimensions and depth of the deposit as observed during this testing program (approximately 1 foot), it is estimated that the entire deposit contains approximately 90 cubic yards of soil.

As the deposit consists primarily of mussel shell, which has been consumed throughout the historic period up until today, a question arises as to whether the deposit may represent historic activities, such as a mussel bake by military personnel during the WWII occupation of the site. However, the deposit is identifiable as Native American in origin due to multiple factors. These include the presence of dietary shell not generally consumed during the historic period in this area (such as barnacles, turban shells, and chiton). In addition, the very weathered and fragmentary nature of the shell points to a prehistoric origin. The deposit also contained fire cracked rock (FCR), which is characteristic of Native American food preparation activities in this area of California. Radiocarbon analysis of two shell samples returned calibrated dates of 1501 to 1683 Cal AD (449-267 Cal BP) and 1068 to 1276 Cal AD (882-674 Cal BP).

However, historic artifacts in the form of materials such as glass, plastic, and metal were present at all levels of the deposit. This indicates that the deposit is heavily disturbed. The property as a whole was extensively developed by the military during WWII, and the archaeological deposit at CA-SMA-431 is located within a small terrace a short distance from a large concrete foundation which is a remnant of this era. Hummocks of soil material spread throughout the larger subject property also indicate that more recent importations of soil have taken place. Earthmoving activities by the Montara Water and Sanitary District within the proposed project area have been largely restricted to pipeline construction (Martinez 2018).

Local historian J.Q. Oswein has written extensively about the history of the Point Montara Artillery Training Facility and has visited the project area many time. He notes that the proposed project area has frequently been used as a dumping site for a variety of materials, including garbage, rocks, and spoils dirt (Oswein 2018).

The presence of relatively modern plastic fragments within the deposit indicate disturbance after military ownership of the property, either during its use as a firefighter training facility in the 1960's, or as a result of more recent dumping activities. Thus the historic patterns of grading and construction on this property point to the possibility that the deposit itself was imported from a nearby archaeological site, such as CA-SMA-55, located on Point Montara approximately 150 feet from the northwest corner of the proposed project boundaries. Alternatively, the deposit may represent the heavily disturbed basal layer of a deeper site removed during historic earthmoving on the property. Thus the deposit may contain isolated intact features.

Based upon the lack of diagnostic artifactual material within the deposit, and its heavily disturbed nature, CA-SMA-431 does not appear to have the potential to yield important prehistoric or historic information, and thus does not appear eligible for either the CRHR or the NRHP. However there is the possibility that isolated artifacts/remains are present within the deposit.

SUMMARY AND CONCLUSION

This archaeological testing program was undertaken to determine the extent, depth, and constituents of the prehistoric archaeological deposit. The proposed project consists of a residential development. Associated construction activities that may impact the site include grading, trenching, excavation and other earthmoving activities.

Seven mechanical test trenches and two hand excavated 1 x 1 meter testing units were utilized as part of this testing program. The mechanical test trenching was excavated outside the observable surface boundaries of the deposit in order to confirm that buried portion of the site did not extend beyond the visible boundaries. No cultural materials were noted in any of the mechanical test trenches. The hand excavated archaeological testing units within the deposit recovered prehistoric materials including marine shell, primarily *Mytilus* (mussel) species, and fire cracked rock. The presence of shell fragments is a typical indicator of a prehistoric archaeological site (shell midden) in this region. Traces of historic materials were also found in the hand excavated units.

A set of Department of Parks and Recreation (DPR) forms (see Appendix D attached) was completed for the identified archaeological site and submitted to the Northwest Information Center of the California Historic Resources Information System (CHRIS). The archaeological site within the proposed project area was given the trinomial designation of CA-SMA-431.

The 1x1 meter units were excavated down to a depth of 40 cm, at which point sterile clay soil was encountered. The mechanical testing trenches were excavated to a depth of 120 cm.

A small area of disturbed prehistoric shell midden deposit was found within the proposed project area. Based upon the results of the hand excavation, it appears that this deposit is highly disturbed and possibly imported from outside the proposed project area during modern dumping activities. The midden material is not significant enough to warrant preservation, however it may contain significant isolated artifacts/remains and any construction activities carried out within the vicinity of the site should be monitored by an archaeologist. Realizing that imported soils may have brought in/buried archaeological materials on the property, it is also recommended that archaeological monitoring take place during subsurface demolition/construction throughout the project area as a whole. This archaeological monitoring should be carried out as per the measures presented in the Archaeological Treatment Plan for the project (Cartier 2018b).

LITERATURE CITED AND CONSULTED

Bartley, K.
2016 Montara Bluffs Reveal WWII Allied Secrets; Moss Beach Resident Maps former Military Base. Article in the Half Moon Bay Review. November 30, 2016.

Bean, L. J., and H. Lawton
1976 Some Explanations for the Rise of Cultural Complexity in native California with Comments on Proto-Agriculture and Agriculture, in *Native Californians: A Theoretical Retrospective*, edited by L. J. Bean and T. C. Blackburn. Menlo Park, CA.: Ballena Press.

California Historical Resources Information System
2017 Record search number NWIC# 17-0815, on file at the Northwest Information Center, Department of Anthropology, Sonoma State University, Rohnert Park.

Cartier, R. editor
1993 The Scotts Valley Site: CA-SCR-177. The Santa Cruz Archaeological Society.

Cartier, R.
1980 Early Cultures & Rock Features of the Santa Teresa Hills. Report to THe Santa Clara Valley Water District.

2018a Cultural Resource Evaluation of the Cypress Point Project in Moss Beach, County of San Mateo. Report on file at Archaeological Resource Management.

2018b Archaeological Treatment Plan for the proposed Cypress Point project in Moss Beach, County of San Mateo. Report on file at Archaeological Resource Management.

Cartier, R., J. Bass, and S. Ortman
1993 *The Archaeology of the Guadalupe Corridor.* The Santa Clara Archaeological Society.

Davis, E. L.
1974 Paleo-Indian Land Use Patterns at China Lake, California. Costa Mesa: Pacific Coast Archaeological Society Quarterly 10(2):1-16.

Gerow, B. A. with R. W. Force
1968 Analysis of the University Village Complex with a Reappraisal of Central California Archaeology. Stanford University Press, Stanford.

Gifford, E.
1951 California Balanophagy, in *The California Indians,* edited by R. Heizer and M. Whipple, University of California Press, Berkeley, California.

King, T. F., M. J. Moratto, and N. N. Leonard III
1976 "The Recommended Procedures for Archaeological Impact Evaluation" in *Recommended Procedures for Archaeological Impact Evaluation,* a report On a study by the Society for California Archaeology in cooperation with the Archaeological Survey, University of California, Los Angeles.

Kroeber, A. L.
1954 The Nature of Land-Holding Groups in Aboriginal California. Berkeley: *University of California Archaeological Survey Reports* 56:19-58.

1962 Two Papers on the Aboriginal Ethnography of California. The Nature of Land Holding groups in Aboriginal California. Berkeley: *University of California Archaeological Survey Reports* 56:21-58.

Levy, R. S.
1978 Costanoan. In *California*, edited by R. F. Heizer, Volume 8. Handbook of North American Indians, W. G. Sturtevant, general editor, pp. 485-497. Smithsonian Institution, Washington D.C.

Lotchin, R.
n.d. Mobilization for the Duration; The Bay Area in the Good War. National Park Service. www.nps.gov/nr/travel/wwiibayarea/mobilization.htm Accessed October 3, 2017.

Martinez, J.
2018 Personal communication with Julian Martinez as a representative of the Montara Water and Sanitary District regarding earthmoving on the subject property, March 15, 2018.

Nelson, N.
n.d. Recordation of shell mound site originally identified as Nelson 405.

1909 Shell Mounds of the San Francisco Bay Region. University of California Publications in American Archaeology and Ethnology, Volume 7, No. 4.

Oeswein, J. Q.
2016 A Top Secret Military Base on the Coastside? Point Montara Anti-aircraft Training Center U.S. Navy (1942-1945). Powerpoint presentation.

2018 Personal communication with J.Q. Oswein regarding dumping of soils and other materials within the Cypress Point project area.

Winter, J. C., editor
1978 *Archeological Investigations at CA-SCL-128, the Holiday Inn Site*. Report on file at the California Archaeological Site Inventory, Sonoma State University, Rohnert Park, CA.

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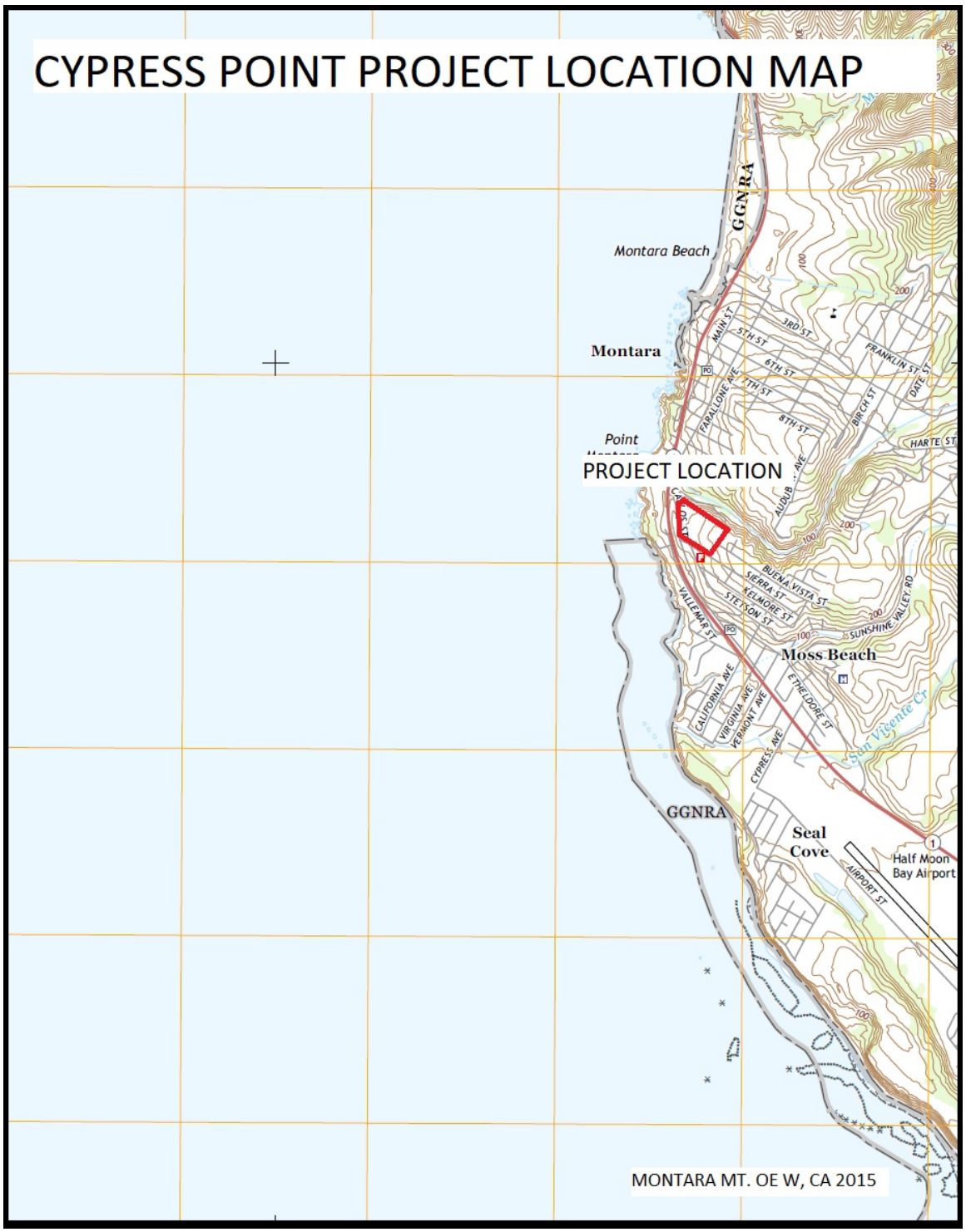
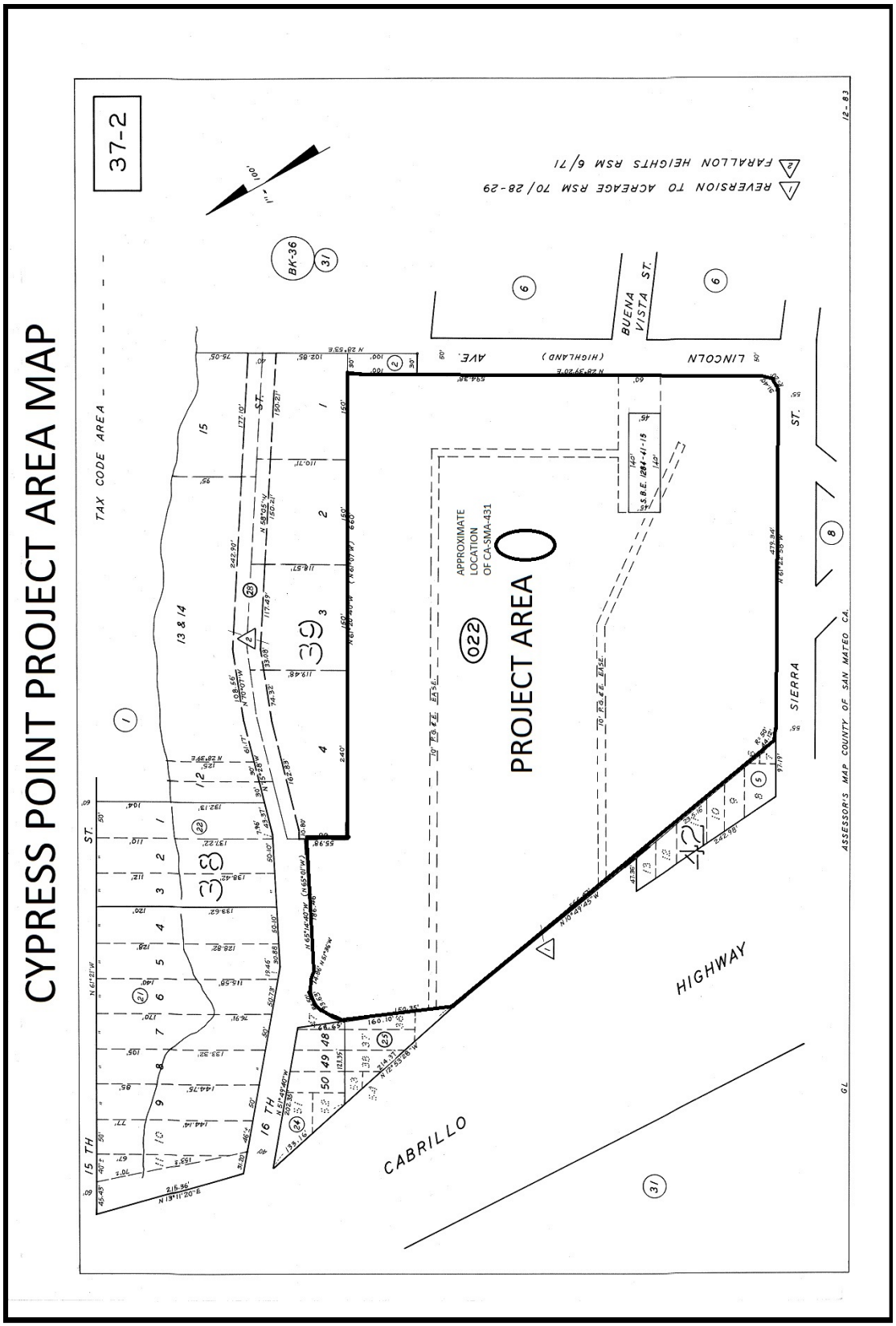
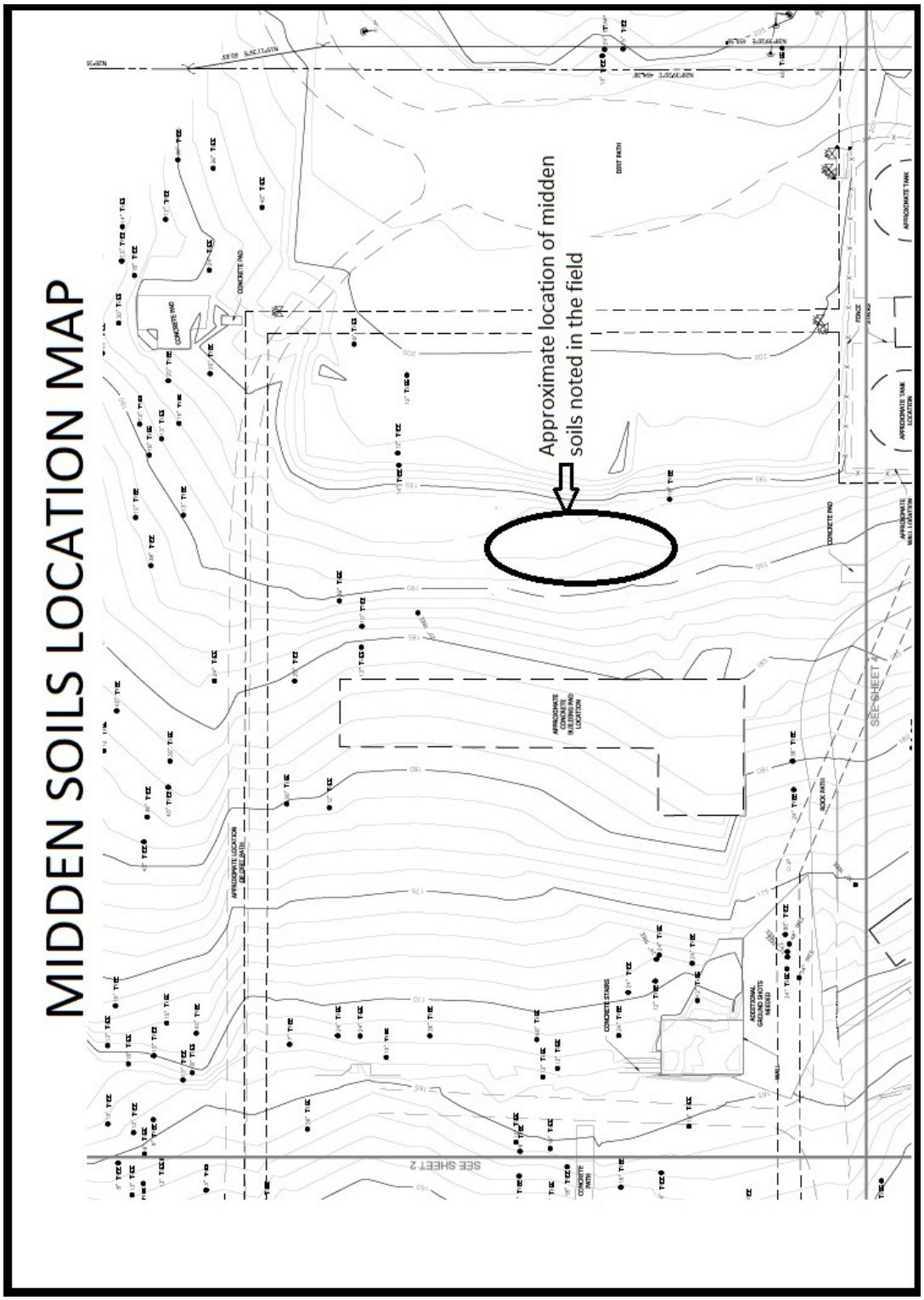
APPENDIX A:
Project Maps

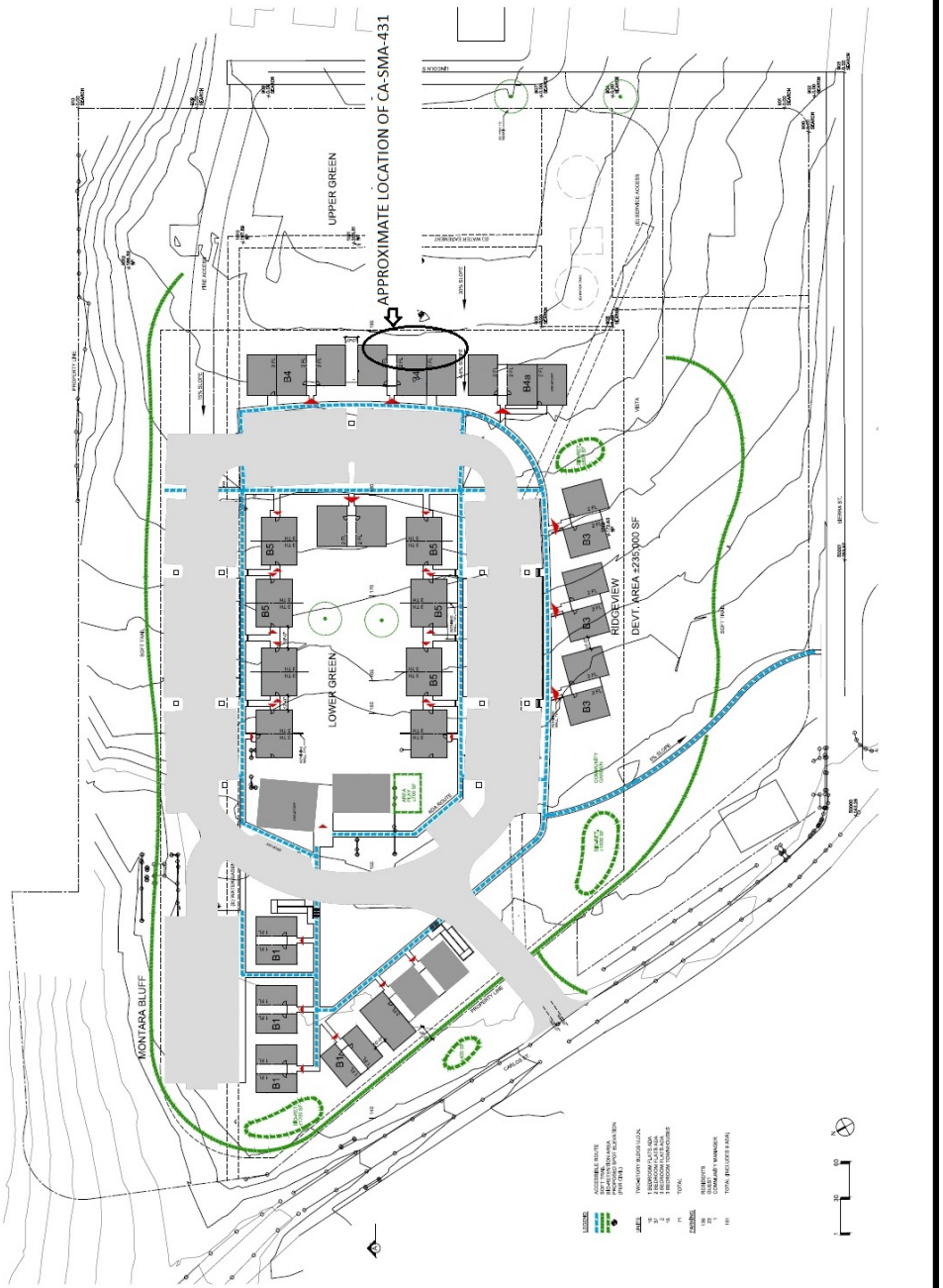

CYPRESS POINT PROJECT LOCATION MAP
GGNRA
Montara Beach
Montara
Point
PROJECT LOCATION
Moss Beach
GGNRA
Seal
Cove
Half Moon
Bay Airport
MONTARA MT. OE W, CA 2015

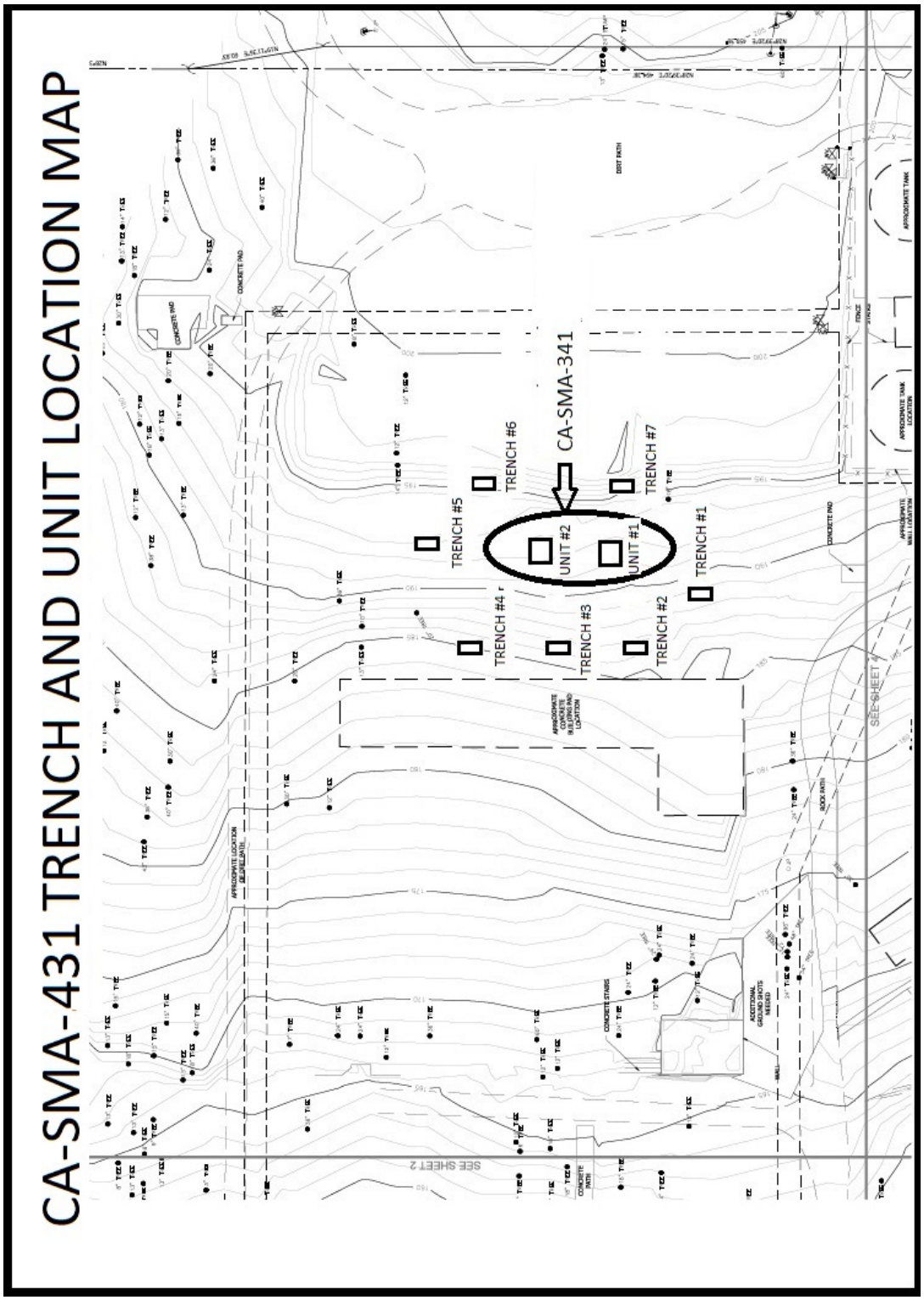
CYPRESS POINT PROJECT AREA MAP




MIDDEN SOILS LOCATION MAP
Approximate location of midden soils noted in the field
SEE SHEET 2
SEE SHEET 4

CA-SMA-431 SITE LOCATION IN RELATION TO PROPOSED DEVELOPMENT




CA-SMA-431 TRENCH AND UNIT LOCATION MAP
CA-SMA-341
TRENCH #1
TRENCH #2
TRENCH #3
TRENCH #4
TRENCH #5
TRENCH #6
TRENCH #7
UNIT #1
UNIT #2
SEE SHEET 2
SEE SHEET 4

APPENDIX B:
Artifact Catalog

County Review Draft

CYPRESS POINT TESTING CATALOG

Ref. #	Unit	Depth(cm)	Material	Artifact Type	Count	Wt. (gms.)	Description
1	1	0-20	C14 Sample 1	*Mytilus*		123	mussel shell C14 sample
2	2	20-40	C14 Sample 2	*Mytilus*		69	mussel shell C14 sample
3	1	Surface	marine shell	*Mytilus*	133	75	mussel shell fragments
4	1	Surface	marine shell	*Balanus*	13	6.9	barnacle shell fragments
5	1	Surface	terrestrial shell	snail	4	0.2	terrestrial snail shell fragments
6	1	0-20	stone	FCR	23	662.1	fire cracked rock
7	1	0-20	glass	clear glass	4	4.9	thin glass fragments
8	1	0-20	plastic	clear plastic	2	0.8	thin plastic fragments
9	1	0-20	iron	wire nail	1	7.5	heavily rusted
10	1	0-20	marine shell	*Mytilus*	531	234.9	mussel shell fragments
11	1	0-20	marine shell	*Balanus*	55	59.9	barnacle shell fragments
12	1	20-40	stone	FCR	1	32.6	fire cracked rock
13	1	20-40	glass	brown glass	1	0.8	brown bottle glass
14	1	20-40	marine shell	*Mytilus*	171	83.3	mussel shell fragments
15	1	20-40	marine shell	*Balanus*	10	3.9	barnacle shell fragments
16	2	Surface	marine shell	*Mytilus*	66	57.2	mussel shell fragments
17	2	Surface	marine shell	*Balanus*	11	12.8	barnacle shell fragments
18	2	0-20	stone	FCR	3	156.2	fire cracked rock
19	2	0-20	glass	clear glass	1	0.6	clear bottle glass fragment
20	2	0-20	marine shell	*Mytilus*	177	152.8	mussel shell fragments
21	2	0-20	marine shell	*Balanus*	29	28.8	barnacle shell fragments
22	2	0-20	marine shell	*Cryptochiton*	2	7.5	Chiton shell fragmenrs
23	2	0-20	marine shell	Turban shell	6	2.8	turban shells and fragments
24	2	0-20	terrestrial shell	snail	2	2.5	terrestrial snail shell fragments
25	2	20-40	glass	clear glass	1	5.7	clear bottle glass fragment
26	2	20-40	marine shell	*Mytilus*	27	6	mussel shell fragments
27	2	20-40	marine shell	*Balanus*	9	10.7	barnacle shell fragments
28	2	20-40	terrestrial shell	snail	2	7.3	terrestrial snail shells

APPENDIX C:
Trenching Records

County Review Draft

TEST TRENCH RECORD

LOGGED BY: D. Jones
DATE: 2/21/2018
JOB NAME: CA-SMA-431
TRENCH #: 1
DEPTH: 120cm

SOIL COLOR									reddish brown										medium brown		SURFACE ELEVATION
SOIL TYPE									silty clay										silty loam		
ROCK									none noted										traces of gravel		
MOISTURE									slightly moist										slightly moist		
FIRED ROCK/ FIRED CLAY									none noted										none noted		
DEPTH (DECIMETERS)	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
MATERIALS/ SYMBOL									A Horizon										topsoil		
CULTURAL CONTENTS									none noted										none noted		
COMMENTS																					

County Review Draft

TEST TRENCH RECORD

LOGGED BY: D. Jones
DATE: 2/21/2018
JOB NAME: CA-SMA-431
TRENCH #: 2
DEPTH: 120cm

SOIL COLOR									reddish brown									medium brown				
SOIL TYPE									silty clay									silty loam				
ROCK									none noted									traces of gravel				SURFACE ELEVATION
MOISTURE									slightly moist									slightly moist				
FIRED ROCK/ FIRED CLAY									none noted									none noted				
DEPTH (DECIMETERS)	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1		
MATERIALS/ SYMBOL									A Horizon									topsoil				
CULTURAL CONTENTS									none noted									none noted				
COMMENTS																						

County Review Draft

TEST TRENCH RECORD

LOGGED BY: D. Jones
DATE: 2/21/2018
JOB NAME: CA-SMA-431
TRENCH #: 3
DEPTH: 120cm

SOIL COLOR									reddish brown									medium brown				
SOIL TYPE									silty clay									silty loam				
ROCK									none noted									traces of gravel				SURFACE ELEVATION
MOISTURE									moist									moist				
FIRED ROCK/ FIRED CLAY									none noted									none noted				
DEPTH (DECIMETERS)	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1		
MATERIALS/ SYMBOL									A Horizon									topsoil				
CULTURAL CONTENTS									none noted									none noted				
COMMENTS																						

County Review Draft

TEST TRENCH RECORD

LOGGED BY: D. Jones
DATE: 2/21/2018
JOB NAME: CA-SMA-431
TRENCH #: 4
DEPTH: 120cm

SOIL COLOR									reddish brown								medium brown				
SOIL TYPE									silty clay								silty loam				
ROCK									none noted								none noted				SURFACE ELEVATION
MOISTURE									moist								somewhat moist				
FIRED ROCK/ FIRED CLAY									none noted								none noted				
DEPTH (DECIMETERS)	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
MATERIALS/ SYMBOL									A Horizon								topsoil				
CULTURAL CONTENTS									none noted								none noted				
COMMENTS									roots												

County Review Draft

TEST TRENCH RECORD

LOGGED BY: D. Jones
DATE: 2/21/2018
JOB NAME: CA-SMA-431
TRENCH #: 5
DEPTH: 120cm

SOIL COLOR									reddish brown				medium brown												SURFACE ELEVATION
SOIL TYPE									silty clay				silty loam												
ROCK									none noted				traces of gravel												
MOISTURE									slightly moist				slightly moist												
FIRED ROCK/ FIRED CLAY									none noted				none noted												
DEPTH (DECIMETERS)	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1					
MATERIALS/ SYMBOL									A Horizon				topsoil												
CULTURAL CONTENTS									none noted				none noted												
COMMENTS													lighter w/depth												

County Review Draft

TEST TRENCH RECORD

LOGGED BY: D. Jones
DATE: 2/21/2018
JOB NAME: CA-SMA-431
TRENCH #: 6
DEPTH: 120cm

SOIL COLOR									reddish brown					medium brown											
SOIL TYPE									silty clay					silty loam											
ROCK									none noted					very little gravel											SURFACE ELEVATION
MOISTURE									slightly moist					slightly moist											
FIRED ROCK/ FIRED CLAY									none noted					none noted											
DEPTH (DECIMETERS)	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1					
MATERIALS/ SYMBOL									A Horizon					topsoil											
CULTURAL CONTENTS									none noted					none noted											
COMMENTS																									

County Review Draft

TEST TRENCH RECORD

LOGGED BY: D. Jones
DATE: 2/21/2018
JOB NAME: CA-SMA-431
TRENCH #: 7
DEPTH: 120cm

SOIL COLOR												reddish brown								medium brown		SURFACE ELEVATION
SOIL TYPE												loam & clay								silty loam		
ROCK												none noted								traces of gravel		
MOISTURE												slightly moist								slightly moist		
FIRED ROCK/ FIRED CLAY												none noted								none noted		
DEPTH (DECIMETERS)	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1		
MATERIALS/ SYMBOL												A Horizon								topsoil		
CULTURAL CONTENTS												none noted								none noted		
COMMENTS																				some roots		

APPENDIX D:
Site Record Forms

County Review Draft

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** _4_ **Resource Name or #** ____Cypress Point Site_____

P1. Other Identifier: _____

P2. Location: _x_ **Not for Publication** ____ **Unrestricted** ***a. County** __San Mateo_____
and (P2b and P2c or P2d. Attach a Location Map as necessary.)

***b. USGS 7.5' Quad:** Montara Mt.OEW **Date:** 2015 **T** ; **R** ; **1/4 of** **1/4 of Sec** ; **BM**

c. Address: N/A **City:** Moss Beach **Zip:**94038

d. UTM: 10S 5 42 699mE,41 54 262mN

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)
APN 37-02-022

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries.)
This site consists of a dietary shell midden, primarily *Mytilus sp.* (mussel). No artifactual materials were noted during preliminary reconnaissance. The boundaries, depth, and constituents of this site are currently very poorly defined.

***P3b. Resource Attributes:** AP15 – Habitation Debris

***P4. Resources Present:** __Building __Structure __Object __District __Element of District x Site __Other

P5a. Photo or drawing (Photo required for buildings, structures, objects.)

P5b. Description of Photo:
View of shell scatter in midden soil

***P6. Date Constructed/Age and Sources**
Historic Prehistoric x Both
Prehistoric; undated

***P7. Owner and Address:**
MidPen Housing
303 Vintage Park Dr #250,
Foster City, CA 94404

***P8. Recorded by:**
Robert Cartier
Archaeological Resource Management
496 North 5th Street
San Jose, CA 95112

***P9. Date Recorded:** 10/20/17

***P10. Survey Type:** Intensive

***P11. Report Citation:** (Cite Survey Report and other sources, or enter "none.")
Cartier, R. 2017: Cultural Resource Evaluation of the Cypress Point Project in Moss Beach, County of San Mateo

* Attachments: __None x_Location Map x_Sketch Map __Continuation Sheet __Building, Structure, and Object Record x_Archaeological Record __District Record __Linear Feature Record __Milling Station Record __Rock Art Record __Artifact Record __Photographic Record __Other (List):

State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

Primary # _____
Trinomial _____

ARCHAEOLOGICAL SITE RECORD

Page 2__ **of** _4 **Resource Name or #** ___Cypress Point Site_____

***A1. Dimensions: a. Length:** 80 **(ft) b. Width:** 30 **(ft)**

Method of Measurement: ___ paced ____taped _x_visual estimate ____other:

Method of Determination (Check any that apply)**:** ____Artifact ____Features x_Soil ____Vegetation _x_Topography
____Cut bank ____Animal burrow ____Excavation ____Property boundary ____Other (Explain):

Reliability of Determination: ___High ___Medium _x_Low Explain: extensive vegetation limited visibility

Limitations (Check any that apply): ___Restricted access __Paved/built over x_Site limits incompletely defined
x_Disturbances _x_Vegetation ___Other (Explain):

A2. Depth: _____ None___ Unknown_x_ Method of Determination: _____

***A3. Human Remains:** ___Present ___Absent __Possible x_Unknown (Explain):

***A4. Features** (Number, briefly describe, indicate size, list associated cultural constituents, and show location of each feature on sketch map.):
None

***A5. Cultural Constituents** (Describe and quantify artifacts, ecofacts, cultural residues, etc., not associated with features):
The site consists of midden soils containing *Mytilus* (mussel) shell fragments. The boundaries, depth, and constituents are currently incompletely defined.

***A6. Were specimens collected?** _x_No __Yes (If yes, attach Artifact Record or Catalog and identify where specimens are curated.)

***A7. Site Condition:** ___Good _x_Fair __Poor (Describe disturbances):
The prehistoric site appears to have been disturbed by WWII era development on the property.

***A8. Nearest Water** (Type, distance, and direction): Montara Denniston Creek, ~ 400 feet north

***A9. Elevation:** Approximately 140 feet MSL

A10. Environmental Setting (Describe culturally relevant variables such as fauna, soils, geology, landform, slope, aspect, exposure, etc.): The site is located within a coastal woodland environment.

A11. Historical Information:
The surrounding property was developed during WWII as an artillery training facility.

***A12. Age:** _x_Prehistoric ___Protohistoric ___1542-1769 ___1769-1848 ___1848-1880 ___1880-1914 ___1914-1945 ___Post 1945 ___Undetermined **Describe position in regional chronology or factual historic dates if known.**

A13. Interpretations (Discuss data potential, function(s), ethnic affiliation, and other interpretations):
The boundaries, depth and constituents of the site are currently unknown. The site has the potential to yield significant information regarding local prehistory.

A14. Remarks:

A15. References (Documents, informants, maps, and other references)**:**

A16. Photographs (List subjects, direction of view, accession numbers, or attach a Photograph Record.)**:**

Original Media/Negatives Kept at:

***A17. Form Prepared by:** Robert Cartier
Affiliation and Address:
A.R.M.
496 North 5th Street
San Jose, CA 95112

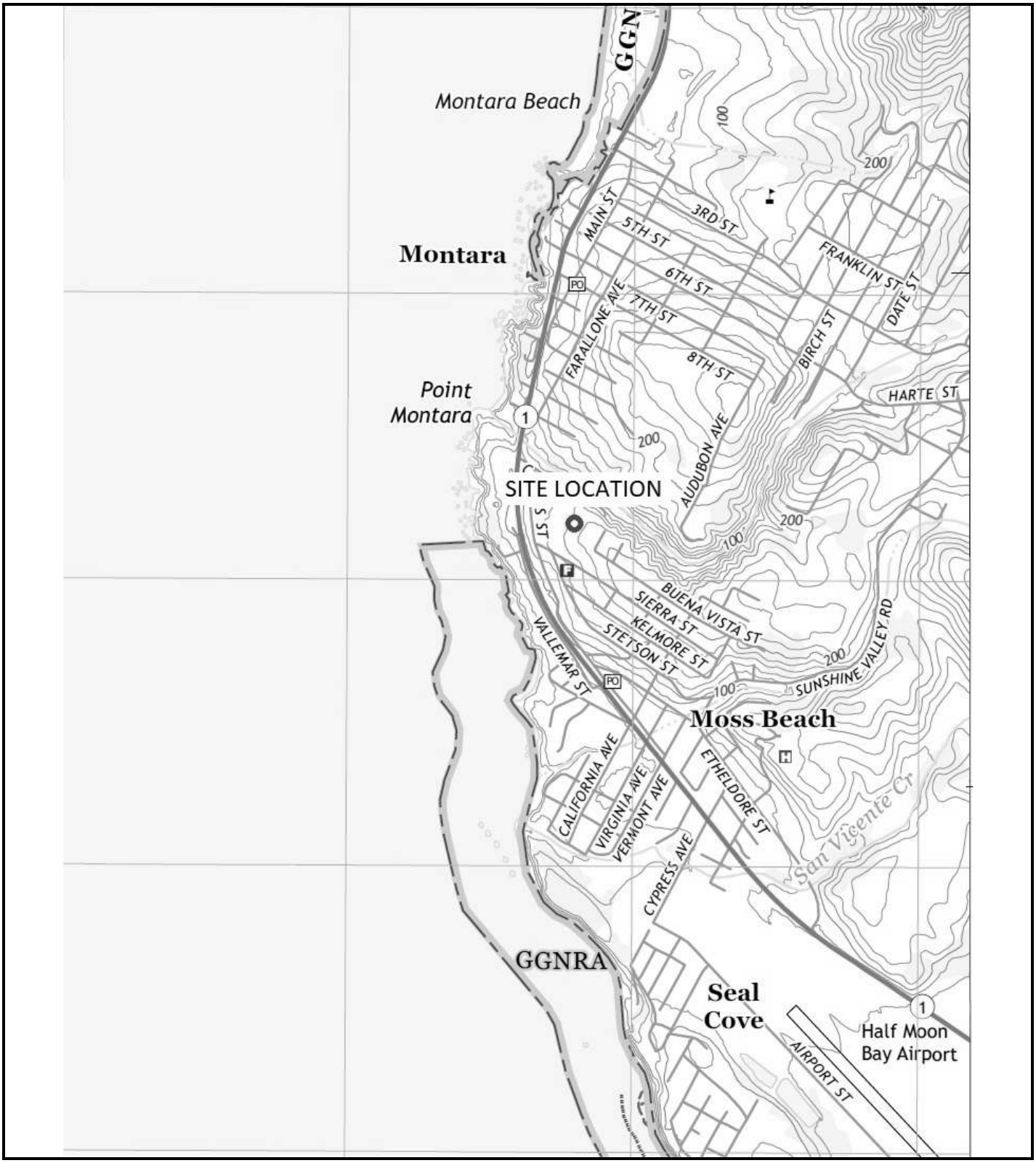
Date: 10/20/2017

State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

Primary # _____
HRI # _____
Trinomial _____

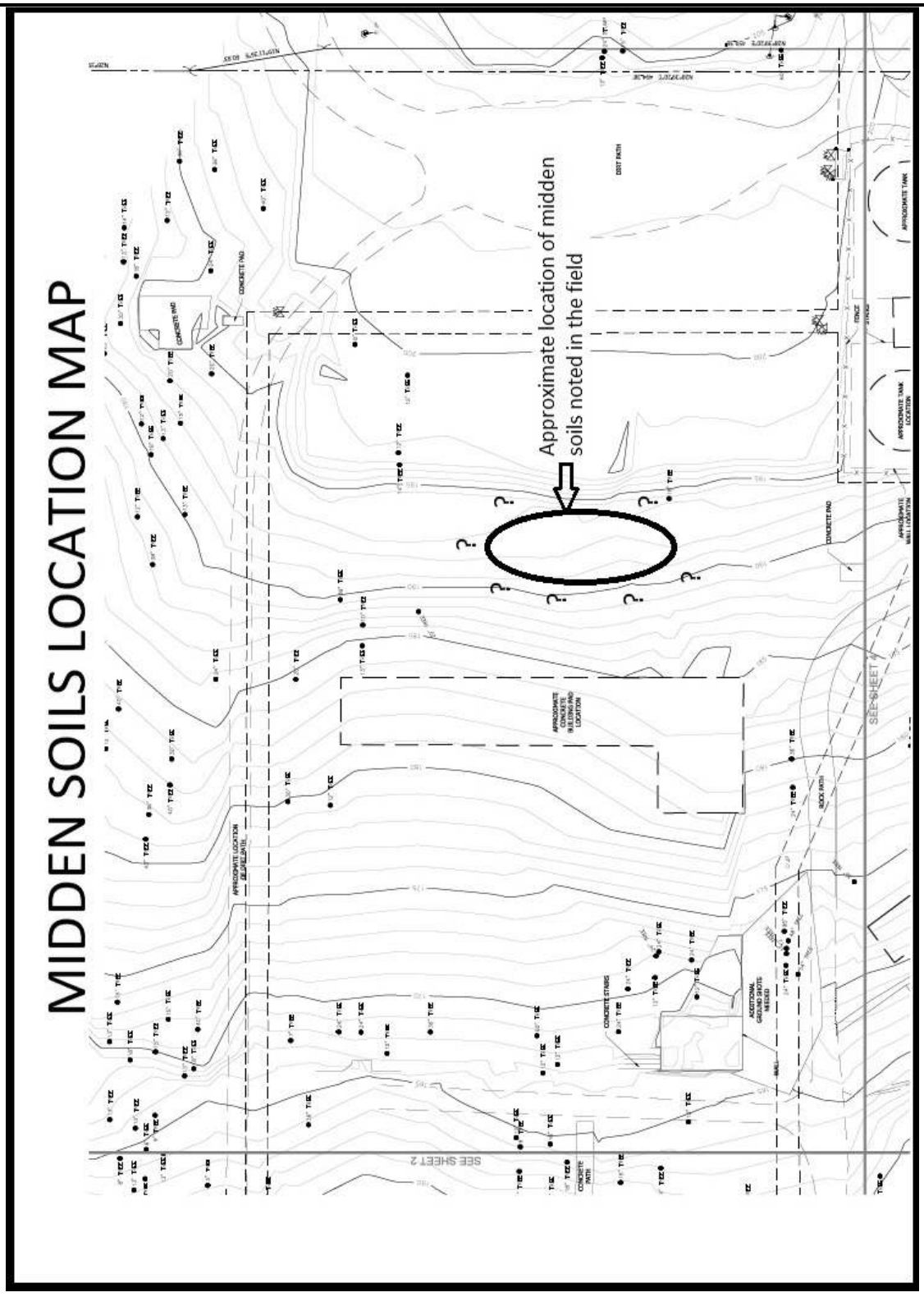
Page _3_ **of** _4_ **Resource Name or #** (Assigned by recorder) Cypress Point Site
***Map Name:** Montara Mt. OE W ***Scale:** 7.5 Minute ***Date of Map:** 2015



State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
CONTINUATION SHEET

Primary # _____
HRI # _____
Trinomial _____

Page _4_ **of** _4_ ***Resource Name or #** (Assigned by recorder) Cypress Point Site
***Recorded by** Archaeological Resource Management **Date** 10/20/17 **Continuation** x **Update**



APPENDIX E:
Radiocarbon Analysis

Beta Analytic Inc
4985 SW 74 Court
Miami, Florida 33155
Tel: 305-667-5167
Fax: 305-663-0964
beta@radiocarbon.com

County Review Draft

Mr. Darden Hood
President

Mr. Ronald Hatfield
Mr. Christopher Patrick
Deputy Directors

ISO/IEC 2005:17025-Accredited Testing Laboratory

REPORT OF RADIOCARBON DATING ANALYSES

Robert R. Cartier

Archeological Resource Management

Report Date: March 19, 2018

Material Received: March 02, 2018

Laboratory Number	Sample Code Number	Conventional Radiocarbon Age (BP) or Percent Modern Carbon (pMC) & Stable Isotopes Calendar Calibrated Results: 95.4 % Probability High Probability Density Range Method (HPD)	
Beta - 488906	**CypressPt#1**	**1000 +/- 30 BP**	IRMS δ13C: 0.0 o/oo IRMS δ18O: +1.1 o/oo

(95.4%) 1501 - 1683 cal AD (449 - 267 cal BP)

Submitter Material:	Shell (Marine)
Pretreatment:	(shell) acid etch
Analyzed Material:	Shell
Analysis Service:	RadiometricPLUS-Standard delivery
Percent Modern Carbon:	88.29 +/- 0.33 pMC
Fraction Modern Carbon:	0.8829 +/- 0.0033
D14C:	-117.05 +/- 3.30 o/oo
Δ14C:	-124.18 +/- 3.30 o/oo(1950:2017)
Measured Radiocarbon Age:	(without d13C correction): 590 +/- 30 BP
Calibration:	BetaCal3.21: HPD method: MARINE13
DeltaR:	297 +/- 35

Results are ISO/IEC-17025:2005 accredited. No sub-contracting or student labor was used in the analyses. All work was done at Beta in 4 in-house NEC accelerator mass spectrometers and 4 Thermo IRMSs. The "Conventional Radiocarbon Age" was calculated using the Libby half-life (5568 years), is corrected for total isotopic fraction and was used for calendar calibration where applicable. The Age is rounded to the nearest 10 years and is reported as radiocarbon years before present (BP), "present" = AD 1950. Results greater than the modern reference are reported as percent modern carbon (pMC). The modern reference standard was 95% the 14C signature of NIST SRM-4990C (oxalic acid). Quoted errors are 1 sigma counting statistics. Calculated sigmas less than 30 BP on the Conventional Radiocarbon Age are conservatively rounded up to 30. d13C values are on the material itself (not the AMS d13C). d13C and d15N values are relative to VPDB-1. References for calendar calibrations are cited at the bottom of calibration graph pages.

Beta Analytic Inc
4985 SW 74 Court
Miami, Florida 33155
Tel: 305-667-5167
Fax: 305-663-0964
beta@radiocarbon.com

County Review Draft

Mr. Darden Hood
President

Mr. Ronald Hatfield
Mr. Christopher Patrick
Deputy Directors

ISO/IEC 2005:17025-Accredited Testing Laboratory

REPORT OF RADIOCARBON DATING ANALYSES

Robert R. Cartier

Archeological Resource Management

Report Date: March 19, 2018

Material Received: March 02, 2018

Laboratory Number	Sample Code Number	Conventional Radiocarbon Age (BP) or Percent Modern Carbon (pMC) & Stable Isotopes Calendar Calibrated Results: 95.4 % Probability High Probability Density Range Method (HPD)	
Beta - 488907	**CypressPt#2**	**1520 +/- 30 BP**	IRMS δ13C: +0.7 o/oo IRMS δ18O: +1.3 o/oo

(95.4%) 1068 - 1276 cal AD (882 - 674 cal BP)

Submitter Material:	Shell (Marine)
Pretreatment:	(shell) acid etch
Analyzed Material:	Shell
Analysis Service:	RadiometricPLUS-Standard delivery
Percent Modern Carbon:	82.76 +/- 0.31 pMC
Fraction Modern Carbon:	0.8276 +/- 0.0031
D14C:	-172.40 +/- 3.09 o/oo
Δ14C:	-179.08 +/- 3.09 o/oo(1950:2017)
Measured Radiocarbon Age:	(without d13C correction): 1100 +/- 30 BP
Calibration:	BetaCal3.21: HPD method: MARINE13
DeltaR:	297 +/- 35

Results are ISO/IEC-17025:2005 accredited. No sub-contracting or student labor was used in the analyses. All work was done at Beta in 4 in-house NEC accelerator mass spectrometers and 4 Thermo IRMSs. The "Conventional Radiocarbon Age" was calculated using the Libby half-life (5568 years), is corrected for total isotopic fraction and was used for calendar calibration where applicable. The Age is rounded to the nearest 10 years and is reported as radiocarbon years before present (BP), "present" = AD 1950. Results greater than the modern reference are reported as percent modern carbon (pMC). The modern reference standard was 95% the 14C signature of NIST SRM-4990C (oxalic acid). Quoted errors are 1 sigma counting statistics. Calculated sigmas less than 30 BP on the Conventional Radiocarbon Age are conservatively rounded up to 30. d13C values are on the material itself (not the AMS d13C). d13C and d15N values are relative to VPDB-1. References for calendar calibrations are cited at the bottom of calibration graph pages.

County Review Draft

Calibration of Radiocarbon Age to Calendar Years

(High Probability Density Range Method (HPD): MARINE13)

(Variables: d13C = 0.0 o/oo : Delta-R = 297 ± 35 : Glob res = -200 to 500)

Laboratory number **Beta-488906**

Conventional radiocarbon age **1000 ± 30 BP**

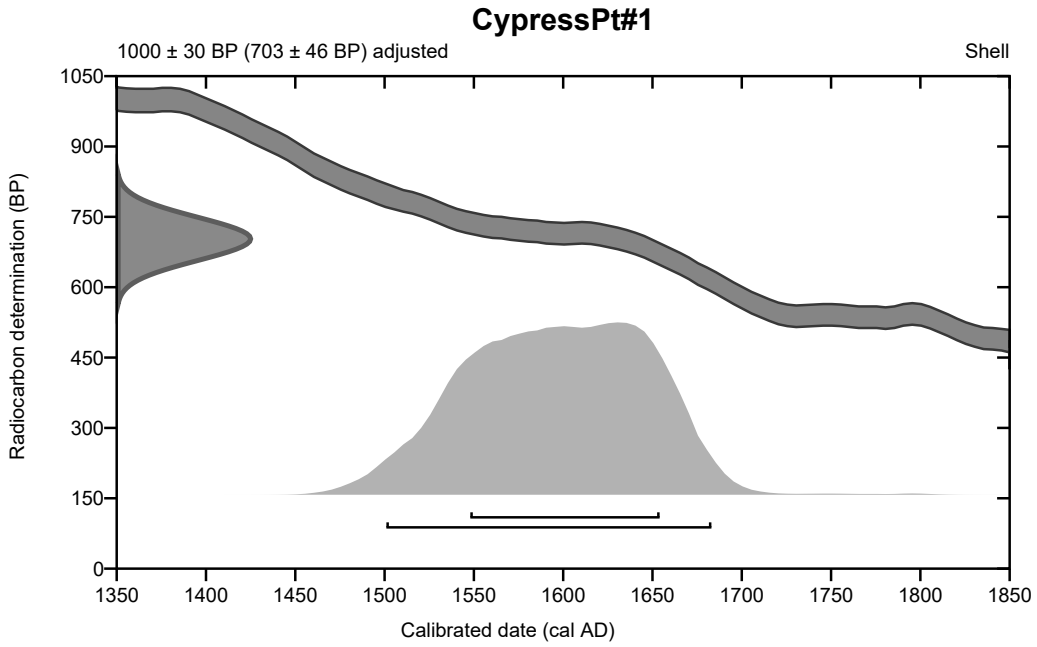
703 ± 46 Adjusted for local reservoir correction

95.4% probability

(95.4%) 1501 - 1683 cal AD (449 - 267 cal BP)

68.2% probability

(68.2%) 1548 - 1654 cal AD (402 - 296 cal BP)



Database used

MARINE13

References

References to Probability Method

Bronk Ramsey, C. (2009). Bayesian analysis of radiocarbon dates. Radiocarbon, 51(1), 337-360.

References to Database MARINE13

Reimer, et.al., 2013, Radiocarbon 55(4).

County Review Draft

Calibration of Radiocarbon Age to Calendar Years

(High Probability Density Range Method (HPD): MARINE13)

(Variables: d13C = +0.7 o/oo : Delta-R = 297 ± 35 : Glob res = -200 to 500)

Laboratory number **Beta-488907**

Conventional radiocarbon age **1520 ± 30 BP**

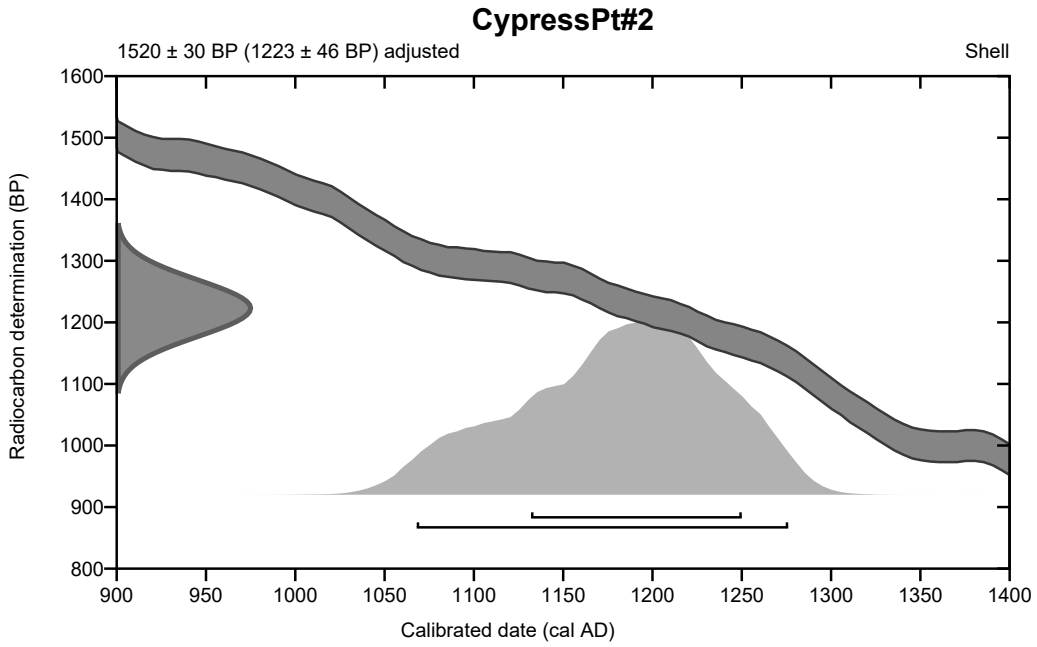
1223 ± 46 Adjusted for local reservoir correction

95.4% probability

(95.4%) 1068 - 1276 cal AD (882 - 674 cal BP)

68.2% probability

(68.2%) 1132 - 1250 cal AD (818 - 700 cal BP)



Database used

MARINE13

References

References to Probability Method

Bronk Ramsey, C. (2009). Bayesian analysis of radiocarbon dates. Radiocarbon, 51(1), 337-360.

References to Database MARINE13

Reimer, et.al., 2013, Radiocarbon 55(4).

Beta Analytic
RADIOCARBON DATING

Beta Analytic Inc
4985 SW 74 Court
Miami, Florida 33155
Tel: 305-667-5167
Fax: 305-663-0964
beta@radiocarbon.com

County Review Draft

Mr. Darden Hood
President

Mr. Ronald Hatfield
Mr. Christopher Patrick
Deputy Directors

ISO/IEC 2005:17025-Accredited Testing Laboratory

Quality Assurance Report

This report provides the results of reference materials used to validate radiocarbon analyses prior to reporting. Known-value reference materials were analyzed quasi-simultaneously with the unknowns. Results are reported as expected values vs measured values. Reported values are calculated relative to NIST SRM-4990B and corrected for isotopic fractionation. Results are reported using the direct analytical measure percent modern carbon (pMC) with one relative standard deviation. Agreement between expected and measured values is taken as being within 2 sigma agreement (error x 2) to account for total laboratory error.

Report Date: March 19, 2018
Submitter: Dr. Robert R. Cartier

QA MEASUREMENTS

Reference 1	
Expected Value:	0.44 +/- 0.10 pMC
Measured Value:	0.44 +/- 0.03 pMC
Agreement:	Accepted
Reference 2	
Expected Value:	129.41 +/- 0.06 pMC
Measured Value:	129.43 +/- 0.37 pMC
Agreement:	Accepted
Reference 3	
Expected Value:	96.69 +/- 0.50 pMC
Measured Value:	96.78 +/- 0.29 pMC
Agreement:	Accepted

COMMENT: All measurements passed acceptance tests.

Validation: Darden Hood Date: March 19, 2018

APPENDIX D

Archaeological Treatment Program for the Proposed Cypress Point Project in Moss Beach, County of San Mateo

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County Review Draft

ARCHAEOLOGICAL TREATMENT PLAN FOR THE PROPOSED CYPRESS POINT PROJECT IN MOSS BEACH, COUNTY OF SAN MATEO

FOR

ATTN: MR. CRAIG STEVENS
STEVENS CONSULTING
1241 LARKIN WAY
SACRAMENTO, CA 95818

BY

Archaeological Resource Management
Dr. Robert Cartier, Principal Investigator
496 North Fifth Street
San Jose, CA 95112
(408) 295-1373
FAX: (408) 286-2040

MAY 31, 2018

County Review Draft

ADMONITION

Certain information contained in this report is not intended for general public distribution. Portions of this report locate significant archaeological sites in the region of the project area, and indiscriminate distribution of these data could result in the desecration and destruction of invaluable cultural resources. In order to ensure the security of the critical data in this report, certain maps and passages may be deleted in copies not delivered directly into the hands of environmental personnel and qualified archaeologists.

THE PRINCIPAL INVESTIGATOR

INTRODUCTION

This archaeological treatment plan is designed to mitigate the possible impact to prehistoric or historic cultural resources that may be unearthed as part of the proposed Cypress Point Project in the County of San Mateo. During surface reconnaissance in 2017, a prehistoric deposit was noted within the proposed project area. This prehistoric deposit was recorded on Department of Parks and Recreation (DPR) forms and given the trinomial CA-SMA-431. An archaeological testing excavation was carried out within this deposit in February 2018.

Seven mechanical test trenches and two hand excavated 1 x 1 meter testing units were utilized as part of this testing program. The mechanical test trenches were excavated outside the observable surface boundaries of the archaeological site in order to confirm that the site did not extend beyond the visible boundaries. The 1x1 meter units were excavated down to a depth of 40 cm, at which point sterile clay soil was encountered. The mechanical testing trenches were excavated to a depth of 120 cm. No cultural materials were noted in any of the mechanical test trenches. The hand excavated archaeological testing units within the deposit recovered prehistoric materials including marine shell, primarily *Mytilus* (mussel) species, and fire cracked rock.

Thus it has been determined that the proposed earthmoving activities at the project site have the potential to impact cultural materials. In accordance with the California Environmental Quality Act (CEQA) it is required that potential impacts to cultural resources be addressed prior to proceeding with project implementation.

The treatment plan is designed to mitigate the specific impacts to these potential resources resulting from earthmoving activities associated with the Cypress Point project. The treatment plan includes archival background information for the proposed project area, discussing the potential for both prehistoric and historic subsurface archaeological materials to occur on the property. It outlines the methods to be employed for data recovery within the project area during construction in order to reduce impacts to these resources to a less-than-significant level. In addition, this archaeological treatment plan outlines the methods for archaeological monitoring during earthmoving activities and treatment of additional cultural materials that may be uncovered during the excavations.

QUALIFICATIONS OF ARCHAEOLOGICAL RESOURCE MANAGEMENT

Archaeological Resource Management has been specifically engaged in cultural resource management projects in Santa Clara County since 1977. The firm is owned and supervised by Dr. Robert Cartier. Dr. Cartier is the Principal Investigator, with additional personnel hired to satisfy the needs for specific investigations. ARM's offices are located in downtown San Jose which provides a centrally located headquarters for the majority of the work contracted in the Central California area. These studies have included archival overviews, surface surveys, extensive excavations, and National Register evaluations for both prehistoric and historic resources that meet requirements of CEQA, NHPA and NEPA (National Environmental Policy Act).

PROJECT PERSONNEL

Specific segments of this project will be carried out by the following personnel:

Robert Cartier: Principal Investigator, Field Director, and Report Editor

Dr. Cartier completed his undergraduate work in anthropology at San Jose State University and earned his M.A. and Ph.D. in anthropology from Rice University in 1975. He is certified by the Register of Professional Archaeologists (RPA) in the categories of teaching, field work, and cultural resource management. Cartier organized the firm of Archaeological Resource Management in 1977. Since that time he has been directing archaeological and historical investigations in Santa Clara County and the central California area. The firm has completed projects for private individuals, local cities and counties, the Santa Clara Valley Water District, the State of California (CALTRANS), and the Federal Government (Army Corps of Engineers), as well as purely academic investigations. He also fulfills the standards set forth by the Secretary of the Interior for inclusion as a Historian and architectural historian and is certified as such on the State of California referral lists.

Doug Jones: Field Monitor, Report Preparation, Graphics Production

Doug Jones joined ARM in February 2000, working full-time. Mr. Jones completed his Masters in Applied Anthropology from San Jose State University in 2016. He has written cultural and historic evaluations in both CEQA and NEPA formats, and has experience with bone identification, prehistoric, and historic remains. He assists office staff in the preparation of graphics for report production and in laboratory analysis for catalog production. He also acts as an excavator and as a monitor in the field under the direction of Dr. Cartier.

LOCATION AND DESCRIPTION OF THE SUBJECT AREA

The subject area consists of approximately 10.88 acres of land adjacent to Carlos Street and Sierra Street in Moss Beach, County of San Mateo. On the USGS 7.5 minute quadrangle of Montara Mountain OE W, CA, the Universal Transverse Mercator Grid (UTMG) center point of the project area is 10S 5 42 699mE,41 54 262mN. The elevation ranges from approximately 100 to 150 feet MSL, and the nearest source of fresh water is the Montara Denniston Creek which is located approximately 300 feet north of the proposed project area.

The proposed project consists of the construction of 71 affordable housing units consisting of approximately 22 two-story buildings holding 2-4 units each. This project will involve excavation, grading, trenching, and other earthmoving activities.

CALIFORNIA REGISTER CRITERIA

A cultural resource is considered "significant" if it qualifies as eligible for listing in the California Register of Historic Resources (CRHR). Properties that are eligible for listing in the CRHR must meet one or more of the following criteria, as well as have integrity as described below:

1. Association 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. Association with the lives of persons important to local, California, or national history;
3. Embodying the distinctive characteristics of a type, period, region, or method of construction, or representing the work of a master, or possessing high artistic values; or
4. Has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California, or the nation.

Most Native American prehistoric sites are eligible due to their age, scientific potential, and/or burial remains.

The CRHR interprets the integrity of a cultural resource based upon its physical authenticity. An historic cultural resource must retain its historic character or appearance and thus be recognizable as an historic resource. Integrity is evaluated by examining the subject's location, design, setting, materials, workmanship, feeling, and association. If the subject has retained these qualities, it may be said to have integrity. Cultural resources may be listed as significant at the level of the National Register of Historic Places (NRHP), the CRHR, or local jurisdictions. It is possible that a cultural resource may not retain sufficient integrity to be listed in the NRHP yet still be eligible for listing in the CRHR. If a cultural resource retains the potential to convey significant historical/scientific data, it may be said to retain sufficient integrity for potential listing in the CRHR.

ETHNOGRAPHIC BACKGROUND

Early ethnographic accounts of local Native American cultures provide a cultural context for archaeological studies. The Ohlone, or Costanoan, Indians inhabited the San Francisco Bay regions from the Golden Gate south to Monterey. Derived from a Spanish word, Costanoan means "people of the coast," and is an older term. Descendants of these people prefer to refer to themselves as "Ohlone," and it is now the generally accepted term. The research area is located in the Salson linguistic area, which shared many cultural traits with other linguistic groups in the Ohlone region. It is believed that the Ohlone Indians inhabited the area since A.D. 500, and that speakers of the Hokan language previously inhabited at least part of the region (Levy 1978). However, it is unclear when the Hokan or even earlier Paleo-Indians first came to the area. Archaeological data documents Native American coastal activity in the Central Coast area over the past 10,000 years, with some indications of occupation as early as 12,000 to 13,000 years ago (Jones et al, 2007). The earliest radiocarbon dates that are available for the area to which the Ohlone came to live are 12,000 B.P. (years before present) at SCR-177 in Scotts Valley (Cartier 1993), 3,200 B.P. at the University Village Site (SMA-77) (Gerow 1968), 6,349 B.P. at Palm Canyon (SCL-106) near Gilroy (Cartier 1980), 6,628 B.P. at Camden Avenue (SCL-64) (Winter 1978), CA-SCR-38 on the Santa Cruz coast, dated to ca. 8850 B.P., CA-SCR-7 dated to ca. 6050 B.P. (Jones and Hilderbrandt 1990), and CA-SCR-239 in Scotts Valley, dated to ca. 4950 B.P. (Cartier 1992).

The Ohlone were gatherers and hunters who utilized only the native flora and fauna with the exception of one domesticate, the dog. Yet, the abundance and high quality of natural resources allowed them to settle in semi-sedentary villages. The Ohlone were typically organized in basic political units called "tribelets" that consisted of 100 to 250 members (Kroeber 1954). The "tribelet" was an autonomous social unit consisting of one or more permanent villages with smaller villages in a relatively close proximity (Kroeber 1962). Parties went out from the major villages to locations within the tribal territory to obtain various resources.

The proximity of mountainous, open coast, and bay regions in the local environment made a diversity of resources available during different seasons to the native inhabitants. During the winter months, the low-lying flats near the San Francisco Bay have abundant marine and waterfowl resources, while the surrounding mountainous areas are best in the summer months for their nut, seed, and mammalian resources (King and Hickman 1973). A primary food source was acorns, abundant in autumn and easily stored for the remainder of the year. According to Gifford, the acorn industry of California was probably the most characteristic feature of its domestic economy (Gifford 1951). An elaborate process of grinding and leaching acorns is necessary to render them palatable. The acorn industry first became a major source of food in the Middle Period as is indicated by the appearance of mortars and pestles in the archaeological record (King and Hickman 1973). Other important resources include various plant foods, land animals, and the marine resources of the San Francisco Bay. Both large and small land mammals were typically hunted, trapped or poisoned. Many items, including shell beads and ornaments, were extensively traded with other groups as far away as the Great Basin of Nevada (Davis 1974).

It is argued that contrary to usual conceptions of hunters and gatherers, native Californian groups, including the Ohlone, practiced a form of resource management that was close to agriculture. Bean and Lawton (1976) consider this pattern a "semi-agricultural" stage which included quasi-agricultural harvesting activity and proto-agricultural techniques. Some plants were pruned and reseeded seasonally for optimal production. Foods such as acorns were stored for many months at a time. Ethnographic accounts also report the repeated burning of woodlands grassbelt to increase animal and plant resources. It is likely to have made hunting conditions better by reducing scrubby growth and encouraging the growth of grasses and other plants that are appealing to grazers such as deer and elk. The plant growth succession after a burning is also rich in grains and legumes that were major food sources for Native Californians.

Bean and Lawton also claim that the abundance of plant and animal resources in California and the development of ingenious technological processes allowed Native Californians to develop social structures beyond the normal parameters of hunting and gathering. These include extensive political systems, controlled production and redistribution of goods, and alliances and trade with other groups.

HISTORIC BACKGROUND

The proposed project area formerly made up a portion of the Point Montara Artillery Training Facility, a World War II era military complex in use between 1943 and 1945. Several structures within this complex were located within the current proposed project area, including barracks, offices, a mess hall, a library, a garage, a boiler room, an incinerator, a "TDD" hanger, and a drill field.

The Point Montara Artillery Training Facility was a top secret military installation operated by the U.S. Navy during World War II, containing 48 permanent structures, and housing over 1500 personnel. Throughout the course of its operation, about 320,000 Navy sailors and merchant marines were trained on what was then the latest technology in anti-aircraft weapons, including the 20mm "Oerlokin", the 40mm "Bofers" and 3 inch/50 caliber anti-aircraft guns.

The facility was notable for its extensive use of Women Air Service Pilots (known as WASPs) who flew planes towing targets for the artillery firing from the coast along Point Montara.

The facility also heavily utilized some of the earliest drone aircraft for target practice. These radio controlled planes were pioneered by Reginald Denny, a Hollywood film star and remote control hobbyist. He realized the potential of the planes for target practice, and entered contracts with the U.S. Army and the U.S. Navy which eventually became a multi-million dollar industry through the course of WWII. These planes were named Target Drone Dennys (TDD's) by the Navy after their inventor (Oeswein 2016).

In the late 1960's the proposed project area was in use as a training facility for firefighters. During this period, the structures within the proposed project area were razed by a controlled burn, leaving only exposed concrete foundations. The property has been vacant since 1970. The project area currently contains concrete foundations, as well as well as a fenced area containing the Montara Water and Sanitary District infrastructure. Some structures and features associated with the military training facility remain standing outside the current proposed project area, along the coast of Point Montara.

ARCHIVAL BACKGROUND

Prior to surface reconnaissance of the subject area in 2017, a study of the maps and records at the Northwest Information Center of the California Archaeological Site Inventory was conducted and given the file number NWIC# 17-0815. The purpose of this research was to determine if any known archaeological resources had previously been reported in or around the subject area. No previously recorded archaeological sites are located within the project area. However, four previously recorded resources are located within one quarter mile of the proposed project area. These resources are briefly described below:

CA-SMA-55

This prehistoric site, originally designated Nelson 405, was a shell mound documented by N. Nelson in 1908. Nels Nelson documented and investigated numerous shell mounds along the Central California Coast in the early years of the 20th Century, many of which have been

significantly damaged or completely destroyed. This site is located on Point Montara approximately 150 feet from the northwest corner of the proposed project boundaries. The project as currently proposed does not appear to pose either a direct or indirect impact to this resource.

CA-SMA-171H

This historic district was recorded by H. Casper in 1973 and is described as containing the Point Montara Artillery Training Station and the Point Montara Light Station. The recorded boundaries of this site lie entirely outside the current proposed project area, approximately 150 feet to the west of the project boundary. The project as currently proposed does not appear to pose either a direct or indirect impact to this resource.

P-41-2108

This historic structure was recorded by D. Painter and C. Losee in 2003. It is described as the Montara Cottage. This resource is located at 361 14th Street in Montara, approximately 800 feet north of the proposed project area. The project as currently proposed does not appear to pose either a direct or indirect impact to this resource.

P-41-2154

This historic resource was recorded in 2005 by D. Edwards. It is described as the Montara Water and Sanitary District Office at Point Montara Training Station. This resource is located approximately 200 feet west of the proposed project area. The project as currently proposed does not appear to pose either a direct or indirect impact to this resource.

Four previous studies have been carried out within or adjacent to the proposed project area. These studies are described below:

S-3082

This study was carried out by S. Dietz and T. Jackson in 1970 and entitled "An Archaeological and Historical Reconnaissance of a Portion of the San Mateo County Coastside." This was a broad survey with included the entirety of the current proposed project area within its scope. No significant cultural resources were noted within the proposed project area as part of this study.

S-5389

Carried out by M. Melandry in 1977, this study is entitled "Archaeological Survey Report on Excess Parcels 6695-01-01, 6696-01-01, 7091-01-091-02-01, on Route 1 in San
Mateo County P.M. 35.5/35.8." This study extends southwards from the southwest corner of the proposed project area. No significant cultural resources were noted within the proposed project area as part of this study.

S-25083

This study was carried out by J. Holson in 2002 and entitled "Archaeological Survey for Highway 1/ Montara, 8211.38 (PL 1004-07) (letter report)." Archival maps for this study indicate its location as a small circular area located within the eastern central portion of the

proposed project area. No significant cultural resources were noted within the proposed project area as part of this study.

S-31887

Carried out by C. Busby in 2005, this study is entitled "Archaeological Assessment - Montara Water and Sanitary District EIR, Vicinity of Montara and Moss Beach and Within Half Moon Bay Airport, San Mateo County (letter report)." A portion of this study is located within the eastern central portion of the proposed project area. No significant cultural resources were noted within the proposed project area as part of this study.

A total of 26 additional previous studies have been carried out within a one quarter mile radius of the proposed project area.

AB52: NATIVE AMERICAN CONSULTATION

AB 52 Native American Consultation was completed by County of San Mateo as the lead agency for the project. All identified individuals were contacted, and no responses were received. As part of the archaeological testing program, Ms. Irene Zwierlein was contacted as a representative of the Amah Mutsun Tribal Band. Ms. Zwierlein provided a Native American monitor for the archaeological testing within CA-SMA-431. This monitor was present during hand excavation within the deposit.

ARCHAEOLOGICAL TESTING PROGRAM

An archaeological testing program was carried out for CA-SMA-431 in February of 2018 (see CA-SMA-431 Trench and Unit Location Map, Appendix A). The first phase of the fieldwork involved mechanical test trenching. The test trenching was carried out on February 21, 2018. During trenching, seven mechanically excavated test trenches were placed outside the visible boundaries of the archaeological site in order to determine if subsurface elements of the site extended beyond those boundaries. The trenches were used to help identify the presence or absence of subsurface cultural resources. Trenching records (refer to Appendix B) include information on soil type, color, and rock type. None of the mechanically excavated trenches contained any cultural materials.

The second phase of the fieldwork involved hand excavation of two 1 x 1 meter test units. Excavation of the test units was carried out on February 22, 2018. Placement of the units was determined based upon the defined boundaries of the archaeological deposit. Hand excavation was conducted using standard archaeological techniques with flat-nosed shovels, round-nosed shovels, picks, and trowels in arbitrary levels and dry screened through 1/4 inch mesh. All identified artifactual material was collected from each level. Collected material was curated in level bags and each level recorded as to artifacts present, soil type, color, stratigraphy, and features present. All artifactual material from this process was then placed within its appropriate level bag from the field screening process. Hand excavation of the test units was carried out to a depth of 40 cm at which point sterile soil was encountered. A hand auger boring was then conducted to a depth of 100cm in each unit.

Hand Excavated Unit Results

Unit #1

The soil of Unit #1 consisted of a medium brown silty loam to a depth of approximately 27cm, at which point a reddish brown silty clay was encountered to a depth of 40cm. The surface level of this unit contained mussel (*Mytilus)* and barnacle (*Balanus)* shell fragments, as well as terrestrial snail shell. The 0-20cm level included mussel (*Mytilus)* and barnacle (*Balanus)* shell fragments, FCR, as well as historic materials including glass and plastic fragments, and a wire nail. The 20-40cm level contained mussel (*Mytilus)* and barnacle (*Balanus)* shell fragments as well as one brown bottle glass fragment. This material was almost entirely concentrated in the upped 7cm of the level; the reddish silty clay from 27-40cm appeared sterile. A hand auger boring was conducted at the base of the 20-40cm level, to a depth of 100cm. Soils in this auger boring consisted of a reddish brown silty clay gradually shifting to an orange clay and sand. No cultural materials were noted in the auger boring.

Unit #2

The soil of Unit #2 consisted of a medium brown silty loam to a depth of approximately 40cm, at which point a reddish brown silty clay was encountered. The surface level of this unit contained mussel (*Mytilus)* and barnacle (*Balanus)* shell fragments. The 0-20cm level included mussel (*Mytilus),* barnacle (*Balanus),* turban shell, and chiton (*Cryptochiton*) shell fragments, terrestrial snail shell, and FCR, as well as historic materials including one fragment of clear glass. The 20-40cm level contained mussel (*Mytilus)* and barnacle (*Balanus)* shell fragments as well as terrestrial snail shell. Dense reddish brown silty clay was encountered at approximately 40cm. A hand auger boring was conducted at the base of the 20-40cm level, to a depth of 100cm. Soils in this auger boring consisted of a reddish brown silty clay gradually shifting to an orange clay and sand. No cultural materials were noted in the auger boring.

Summary

The hand excavations identified a large number of shell fragments in the top 40 cm of each unit, but no materials below 40 cm. It could not be conclusively determined whether the shell fragments were a natural deposit, a deposit from the occupation of the site by the U.S. military, a deposit from a prehistoric Native American settlement on the site, or whether the soil was moved to this location from another location as part of previous earth-moving activities at the site.

This analysis conservatively assumes that the project's impacts on this resource would be potential significant impacts under CEQA.

ARCHAEOLOGICAL MITIGATION PROGRAM

Based upon the results of the archaeological testing and historic background study, as documented in *Cultural Resource Evaluation Of The Cypress Point Project In Half Moon Bay* (ARM 2018x), the project area as a whole should be considered sensitive for both prehistoric and historic archaeological materials. The proposed project, as currently designed, calls for construction of three structures (labeled B4 on the proposed site plan) within and in the immediate vicinity of the identified boundaries of the CA-SMA-431 deposit, which was determined to be a potentially significant environmental impact. Thus excavation and grading for these structures will necessitate the removal of the majority or all of the archaeological deposit. Preservation in place was determined not to be feasible as the proposed project could not feasibly

be modified to avoid the deposit. Relocating these structures is not feasible in light of the project objectives because the project was designed to: a) be feasible from a construction standpoint by avoiding significant slopes that cover portions of the site, b) be consistent with the character of the surrounding neighborhood in the design and location of buildings; c) minimize impact on neighboring properties; and d) preserve open space, which requires limiting development on portions of the site. Eliminating these structures would negatively impact the key project objective of providing a significant number of affordable housing units in the MidCoast region. As mitigation for this impact, the following mitigation measures are recommended to reduce the impact of the proposed project to a less-than-significant level. Salvage excavation and monitoring procedures are described below.

Mitigation Measure CUL-1: Additional Site Excavation

An archaeological salvage program will take place prior to the commencement of construction earthmoving activities and will consist of four hand excavated 1x1 meter mitigation units. Placement of the units will be based on available archival background data, field observations, and proposed project plans. Hand excavation will be conducted using standard archaeological techniques with trowels, picks, and shovels at arbitrary levels and dry screened through 1/4 inch mesh. All identified artifactual material will be collected from each level. Collected material will be placed in level bags and each level will be recorded using level forms. Artifacts, soil type, color and stratigraphy, and features present will be recorded. All artifactual material from this process will then be placed within its appropriate level bag during the field process.

Mitigation Measure CUL-2: Archaeological Monitoring

Archaeological monitoring will be conducted during all earthmoving activities involved with the project in accordance with the schedule coordinated between the general contractor and project Archaeologist. This will consist of full time monitoring during all earth moving activities within 50 feet of CA-SMA-341. Archaeological spot check monitoring, consisting of periodic monitoring of the project site during ground disturbing activities, including during demolition of the existing concrete foundations, will take place for the remainder of the project. The timing and frequency of these spot checks will be determined throughout the course of earthmoving activities for the proposed project based upon the construction schedule and the nature of any cultural materials encountered. Per the schedule, the archeologist will inspect the site and will subsequently provide an archaeological monitoring report. This report will document all cultural materials encountered, and will be submitted to project representatives within 40 working days of the completion of earth moving activities for the project.

Considering that cultural resources frequently exist below the surface, their location is often not visible. Field archaeologists therefore monitor earthmoving activities to observe whether artifactual remains, soil changes indicating cultural use, and/or other indicators of human activity are present within a project area. Monitoring consists of a qualified archaeological field technician present and observing ground-disturbing activities in native soil.

Mitigation Measure CUL-3: Unanticipated Findings during Construction

If any individual artifacts (prehistoric or historic), features, potential midden soils, or other indicators of cultural use are noted by the archaeological monitor during the course of earthmoving activities, work within 50 feet of the find will be stopped until appropriate measures are formulated by the Project Archaeologist and accepted by the County and the project representative. If the project archaeologist is not present on the site, the County, Owner and Project Archaeologist shall be notified by telephone and the project archaeologist will examine the materials encountered within 24 hours. Any archaeological materials found at the site will be collected and stored for further analysis.

In the event of the discovery of an intact archaeological deposit during the course of archaeological mitigation/monitoring, construction activities shall be halted within 50 feet of the find for the purpose of identifying and mapping the deposit, and further mitigation recommendations will be formulated by the Project Archaeologist and discussed with the project representative. It these materials are determined to be significant, a preservation plan or recovery program will be prepared, submitted to San Mateo County for approval, then implemented.

For any cultural materials discovered, preservation in place is the preferred treatment of an archeological resource (CEQA Section 21083.2(b); CEQA Guidelines Section 15126.4(b)(3)(a)). If preservation in place of an archeological resource is not feasible, data recovery, in accord with the approved data recovery plan will be implemented, prior to any further soil disturbance within 50 feet of the discovered materials (or other appropriate boundary approved by the Project Archaeologist and the County) (CEQA Guidelines Section 15126.4(b)(3)(C)). The recovery plan shall include controlled excavation of the entirety, or a representative sample, of the cultural materials, analysis of the recovered material, and written documentation. The data recovery program shall specify the methods to be used for curation of scientifically significant data in an appropriate curation facility that is compliant with the OHP's Guidelines for the Curation of Archaeological Collections (1993).

Scientific analysis will be performed on the resources recovered from the archaeological monitoring for this project, following basic laboratory operations. Any artifacts and archaeological features found during construction shall be removed, cleaned, stabilized/conserved, and catalogued in accordance with professional curation and archaeological practice. Native American burials, if discovered, will be analyzed in accordance with recommendations from the MLD designated by the NAHC and Mitigation Measure CUL-4.

Recovered materials will be documented in a written report prepared by the Project Archaeologist. The report and recovered material will be submitted to the Owner for storage, curation, or onsite interpretive display. The final report shall be produced documenting and synthesizing all data collected from the above mentioned measures. The report will include recording and analysis of materials recovered, conclusions, and any additional recommendations. Copies of the archaeological report prepared in conjunction with this project will be filed with the California Historical Resources File System, Northwest Information Center (CHRIS/NWIC) at Sonoma State University, as well as the County of San Mateo.

Mitigation Measure CUL-4: Procedures for Discovery and Treatment of Human Remains

If human remains are found during excavation or construction, work will be halted at a minimum of 50 feet from the find, the area will be staked off, and the Owner and Project Archaeologist notified. The owner shall contact the San Mateo County Coroner, and no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains until the coroner determines that no investigation of the cause of death is required.

If the coroner determines the remains to be Native American, the coroner shall contact the Native American Heritage Commission within 24 hours of this determination. The Native American Heritage Commission (NAHC) shall identify the person or persons it believes to be the Most Likely Descendent (MLD) of the deceased Native American. The MLD may then make recommendations to the Owner and execute an agreement for the means of treating or disposing of, with appropriate dignity, the human remains and associated grave goods, as provided in Public Resources Code Section 5097.98.

If required, reinternment of human remains will be performed according to California law for Native American burials (Chapter 1492, Statutes of 1982). The intent of the California state law is to protect Native American burials, isolated and disarticulated human remains, and associated cultural materials found during the course of an undertaking. It also serves to insure proper analysis prior to their final disposition. The location and procedures of this undertaking will be recorded by the project archaeologist. Reinternment will take place with all due speed upon completion of all necessary analysis. This information will be included in the final report prepared by the Project Archaeologist, or if necessary, as an addendum to the report.

The Owner shall rebury the Native American human remains and associated grave goods with the appropriate dignity on the property in a location not subject to further disturbance if:

1. The NAHC is unable to identify a MLD or the MLD failed to make a recommendation within 24 hours after being notified by the commission.

2. The descendent identified by the NAHC fails to make a recommendation for burial and the mediation by the Native American Heritage Commission fails to provide measures acceptable to the Owner.

Any associated grave goods and soil samples from the burial site will be analyzed per the agreement between the Owner and the MLD. Dependent upon the nature of this agreement, diagnostic artifacts such as projectile points, shell beads and ground stone artifacts may be studied and illustrated in the final report to be prepared by the Project Archaeologist Radiocarbon dating and obsidian hydration and sourcing may be undertaken in order to provide a chronology for newly identified features.

CONCLUSIONS

This archaeological treatment plan for the Cypress Point project in the County of San Mateo has been designed to meet the requirements of the California Environmental Quality Act (CEQA). The archaeological program presented in this treatment plan will reduce the impact of the proposed project on cultural materials to a less-than-significant level by providing procedures for monitoring ground-disturbing activities during project construction, and for the orderly removal, preservation, evaluation, and storage of any cultural materials that are discovered. A table illustrating appropriate actions by project personnel in the event of unexpected archaeological discoveries is provided below:

Materials Encountered	Stop Work	Radius	Contact
Individual Artifact	Yes	50 feet	Project Archaeologist
Archaeological Deposit	Yes	50 feet	Project Archaeologist
Possible Human Remains	Yes	50 feet	Project Archaeologist; Owner; San Mateo County Coroner's Office

LITERATURE CITED AND CONSULTED

Bartley, K.
2016 Montara Bluffs Reveal WWII Allied Secrets; Moss Beach Resident Maps former Military Base. Article in the Half Moon Bay Review. November 30, 2016.

Bean, L. J., and H. Lawton
1976 Some Explanations for the Rise of Cultural Complexity in native California with Comments on Proto-Agriculture and Agriculture, in *Native Californians: A Theoretical Retrospective*, edited by L. J. Bean and T. C. Blackburn. Menlo Park, CA.: Ballena Press.

California Historical Resources Information System
2017 Record search number NWIC# 17-0815, on file at the Northwest Information Center, Department of Anthropology, Sonoma State University, Rohnert Park.

Cartier, R. editor
1993 The Scotts Valley Site: CA-SCR-177. The Santa Cruz Archaeological Society.

Cartier, R.
1980 Early Cultures & Rock Features of the Santa Teresa Hills. Report to The Santa Clara Valley Water District.

2018 Cultural Resource Evaluation of the Cypress Point Project in Moss Beach, County of San Mateo. Report on file at Archaeological Resource Management.

Cartier, R, J. Bass, and S. Ortman
1993 *The Archaeology of the Guadalupe Corridor.* The Santa Clara Archaeological Society.

Davis, E. L.
1974 Paleo-Indian Land Use Patterns at China Lake, California. Costa Mesa: Pacific Coast Archaeological Society Quarterly 10(2):1-16.

Gerow, B. A. with R. W. Force
1968 Analysis of the University Village Complex with a Reappraisal of Central California Archaeology. Stanford University Press, Stanford.

Gifford, E.
1951 California Balanophagy, in *The California Indians,* edited by R. Heizer and M. Whipple, University of California Press, Berkeley, California.

King, T. F., M. J. Moratto, and N. N. Leonard III
1976 "The Recommended Procedures for Archaeological Impact Evaluation" in *Recommended Procedures for Archaeological Impact Evaluation,* a report on a study by the Society for California Archaeology in cooperation with the Archaeological Survey, University of California, Los Angeles.

Kroeber, A. L.
1954 The Nature of Land-Holding Groups in Aboriginal California. Berkeley: *University of California Archaeological Survey Reports* 56:19-58.

1962 Two Papers on the Aboriginal Ethnography of California. The Nature of Land Holding groups in Aboriginal California. Berkeley: *University of California Archaeological Survey Reports* 56:21-58.

Levy, R. S.
1978 Costanoan. In *California*, edited by R. F. Heizer, Volume 8. Handbook of North American Indians, W. G. Sturtevant, general editor, pp. 485-497. Smithsonian Institution, Washington D.C.

Lotchin, R.
n.d. Mobilization for the Duration; The Bay Area in the Good War. National Park Service. www.nps.gov/nr/travel/wwiibayarea/mobilization.htm Accessed October 3, 2017.

Martinez, J.
2018 Personal communication with Julian Martinez as a representative of the Montara Water and Sanitary District regarding earthmoving on the subject property, March 15, 2018.

Nelson, N.
n.d. Recordation of shell mound site originally identified as Nelson 405.

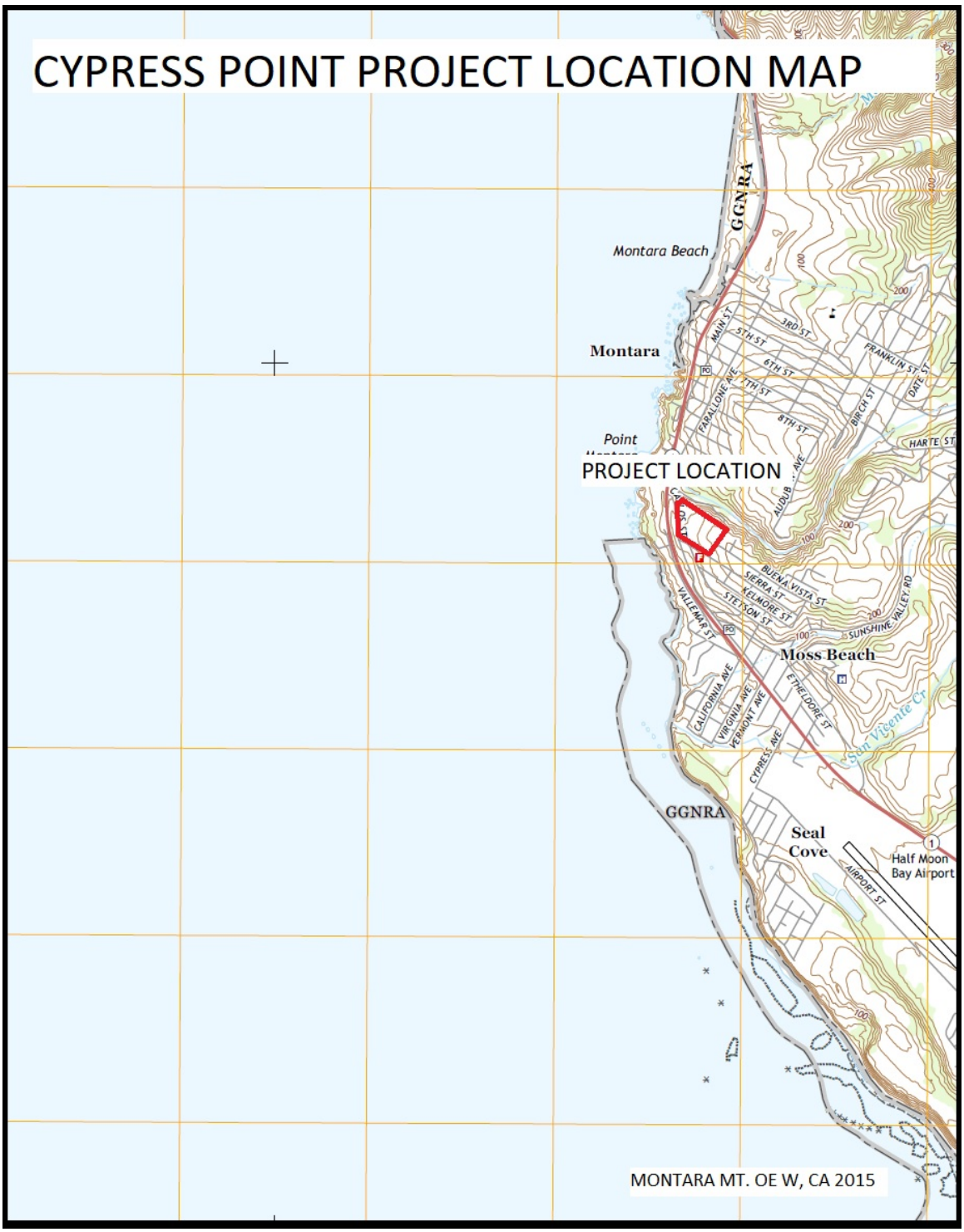
1909 Shell Mounds of the San Francisco Bay Region. University of California Publications in American Archaeology and Ethnology, Volume 7, No. 4.

Oeswein, J. Q.
2016 A Top Secret Military Base on the Coastside? Point Montara Anti-aircraft Training Center U.S. Navy (1942-1945). Powerpoint presentation.

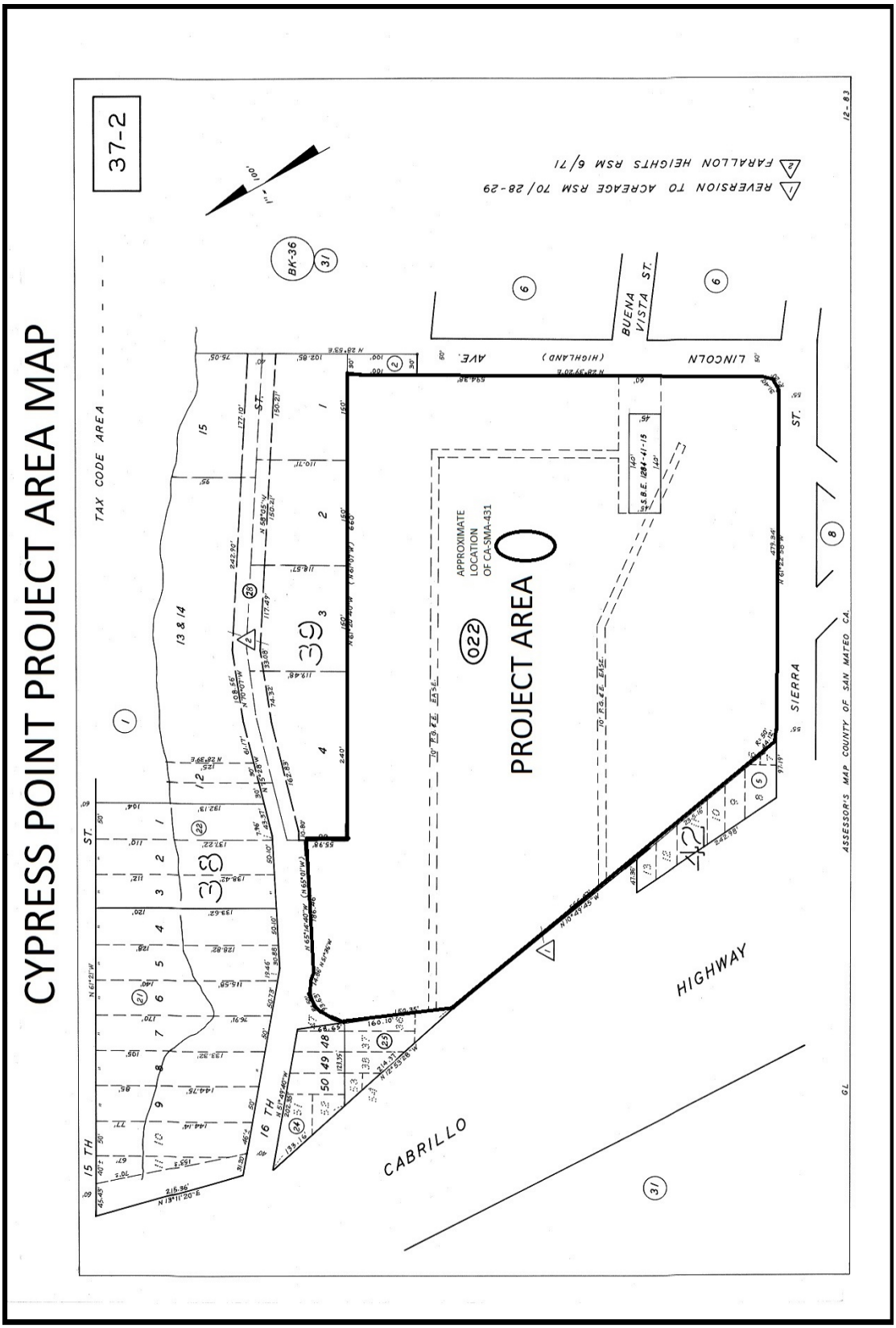
2018 Personal communication with J.Q. Oswein regarding dumping of soils and other materials within the Cypress Point project area.

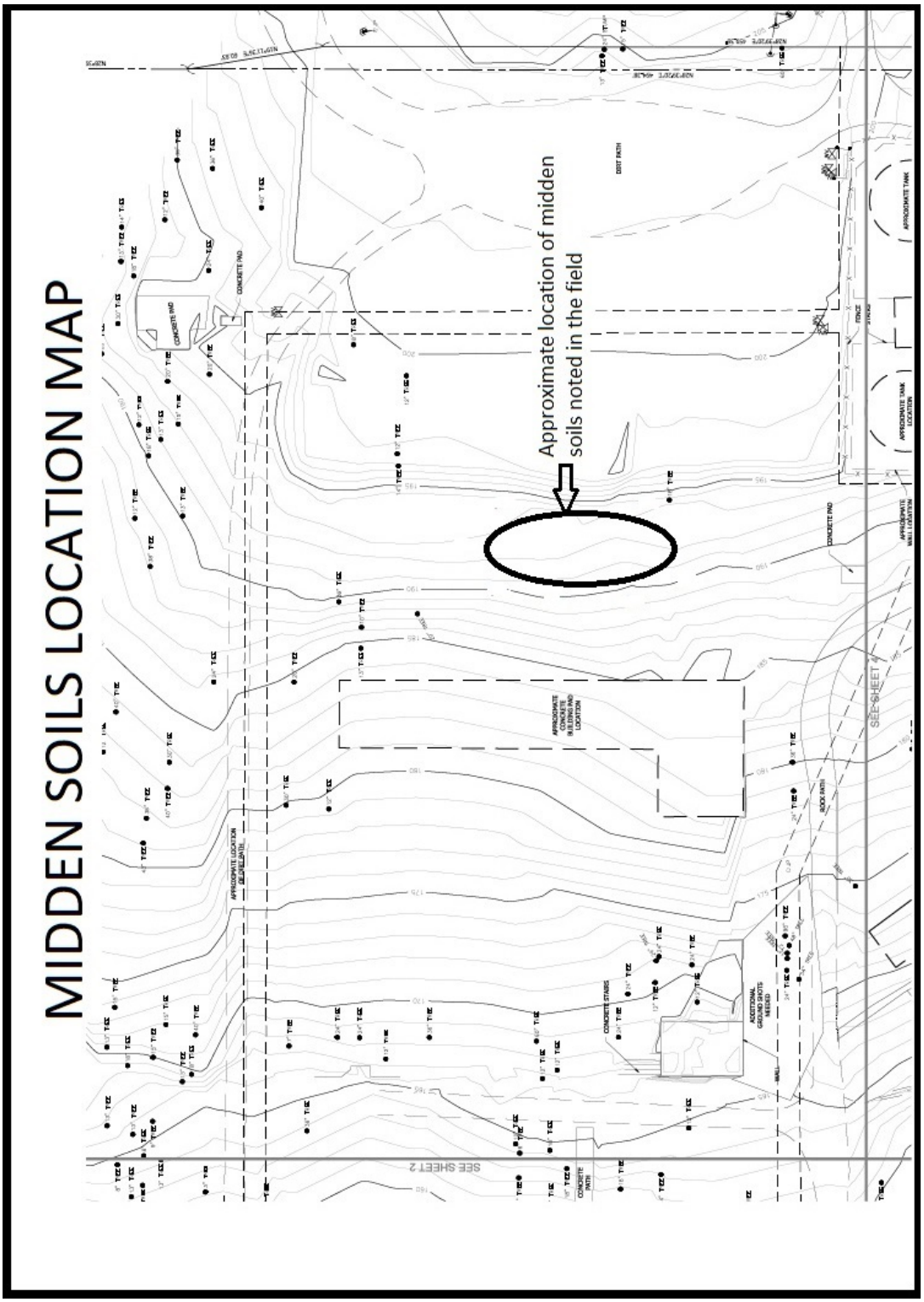
Winter, J. C., editor
1978 *Archeological Investigations at CA-SCL-128, the Holiday Inn Site*. Report on file at the California Archaeological Site Inventory, Sonoma State University, Rohnert Park, CA.

APPENDIX A:
Project Maps

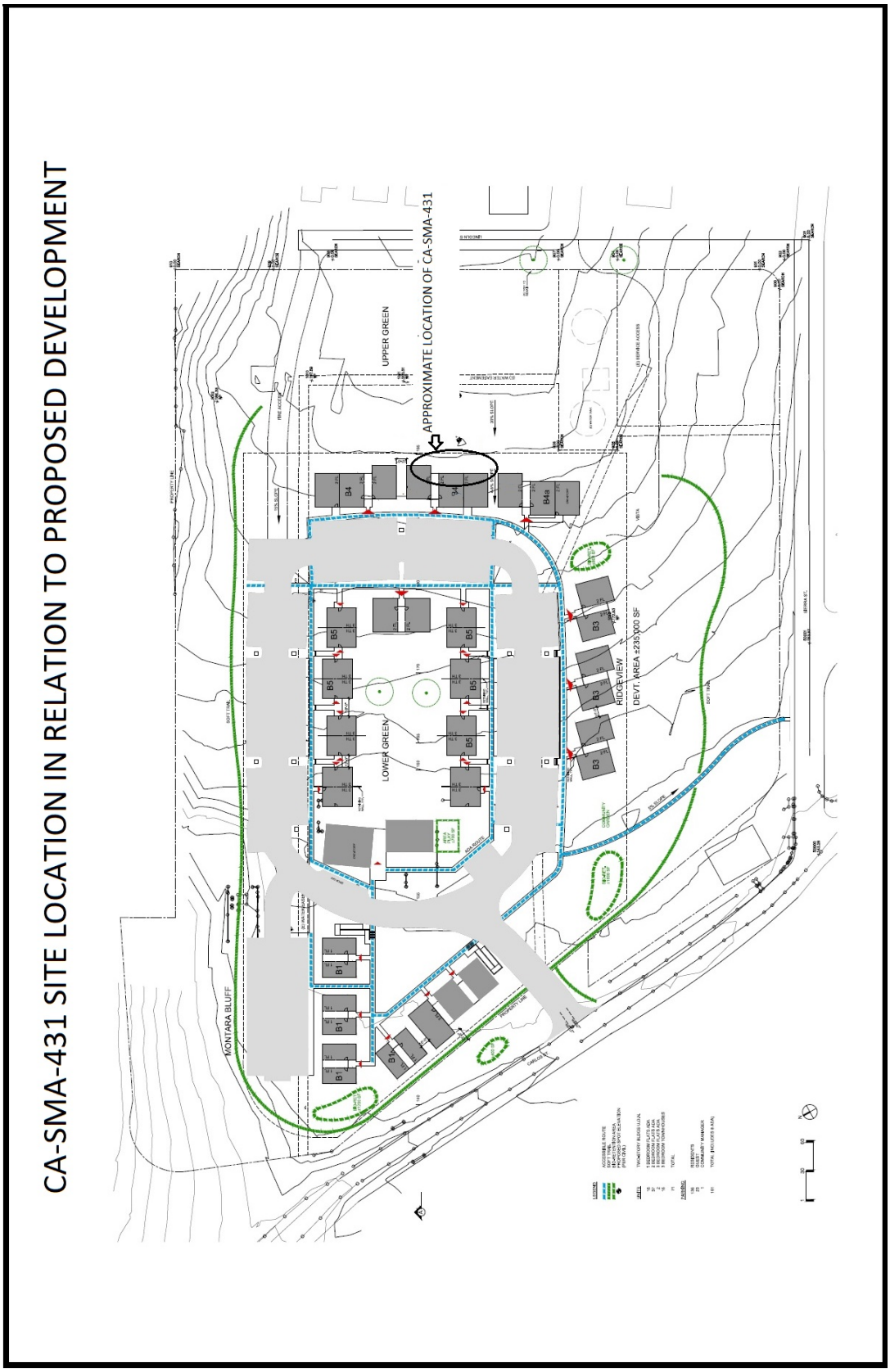

CYPRESS POINT PROJECT LOCATION MAP
PROJECT LOCATION
Montara Beach
Montara
Point
Moss Beach
GGNRA
Seal Cove
Half Moon Bay Airport
MONTARA MT. OE W, CA 2015

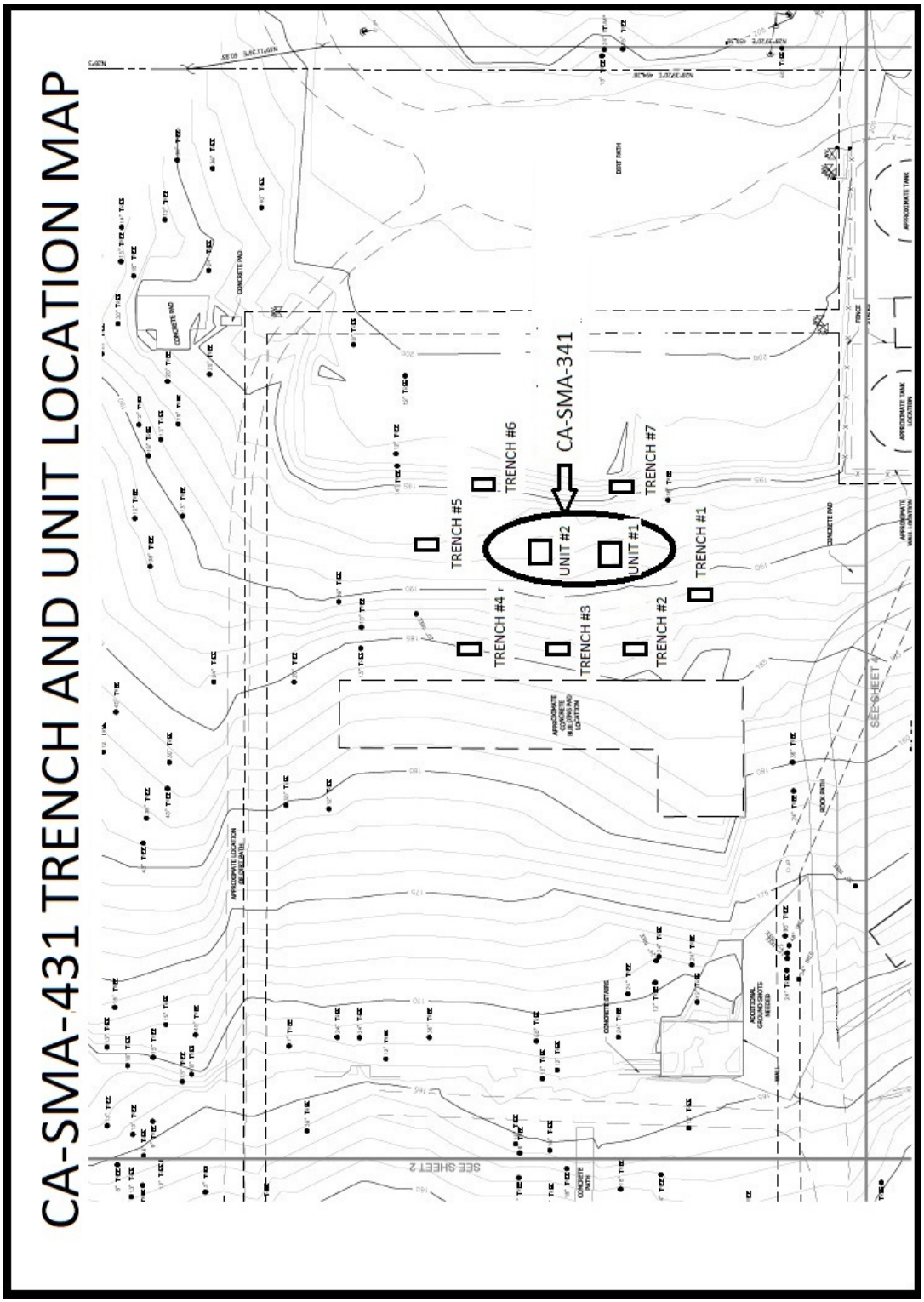
CYPRESS POINT PROJECT AREA MAP




MIDDEN SOILS LOCATION MAP
Approximate location of midden soils noted in the field
SEE SHEET 2
SEE SHEET 4

CA-SMA-431 SITE LOCATION IN RELATION TO PROPOSED DEVELOPMENT




CA-SMA-431 TRENCH AND UNIT LOCATION MAP
CA-SMA-341
TRENCH #1
TRENCH #2
TRENCH #3
TRENCH #4
TRENCH #5
TRENCH #6
TRENCH #7
UNIT #1
UNIT #2
SEE SHEET 2
SEE SHEET 4

APPENDIX E

Letters to Native American Tribes

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County Review Draft

COUNTY OF SAN MATEO
PLANNING AND BUILDING

County Government Center
455 County Center, 2nd Floor
Redwood City, CA 94063
650-363-4161 T
650-363-4849 F
www.planning.smcgov.org

December 21, 2017

Amah Mutsun Tribal Band of Mission San Juan Bautista
Irenne Zwierlein, Chairperson
789 Canada Road
Woodside, CA 94062

RE: SACRED LANDS ENHANCED CONSULTATION CHECK CONCERNING THE CYPRESS POINT PROJECT IN SAN MATEO COUNTY

Dear Ms. Zwierlein:

We want to provide you with notification that the County of San Mateo intends to issue a public notice for the Cypress Point Project in Moss Beach, San Mateo County. This project is proposed to include 71 units of affordable housing and retain approximately half the project area in its current undeveloped state. Although your tribe has not requested notification under Assembly Bill 52, as part of an enhanced consultation check, we are reaching out to your tribe, as a voluntary measure. We would be pleased to initiate consultation, if appropriate, regarding the proposed project.

We requested a Sacred Lands file check from the Native American Heritage Commission (NAHC) for the project area. **The file check did not indicate the presence of Native American cultural resources within the immediate project area.**

We have also completed surface reconnaissance surveys of the project site, which revealed a surface scatter of faunal shells within a limited area of the proposed project site. A description of the findings was documented on a Department of Parks & Recreation form and given the designation P-41-00259 (see site record attached).

On the recommendation of the NAHC, we are contacting you and other tribes they indicated may have an interest in the project site. We would like to obtain any information you may have regarding sacred lands or Native American prehistoric resources within this area.

Should you determine that you have an interest in this site, we will provide you with a copy of the cultural resources report, including the site record.

We have included a project location map showing the project area for your reference. If you have any questions or would like to initiate consultation, please contact our office at (650) 363-4161 within 30 days of the date of this letter.

Thank you.

Sincerely,

Steve Monowitz
Community Development Director

Attachments: Project Location Map
Project Description
Site Record Forms

SAM:aow – SAMBB0772_WAN.DOCX

County Review Draft

COUNTY OF SAN MATEO
PLANNING AND BUILDING

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www.planning.smcgov.org

December 21, 2017

Coastanoan Rumsen Carmel Tribe
Tony Cera, Chairperson
244 E. 1st Street
Ponoma, CA 91766

RE: SACRED LANDS ENHANCED CONSULTATION CHECK CONCERNING THE CYPRESS POINT PROJECT IN SAN MATEO COUNTY

Dear Mr. Cerda:

We want to provide you with notification that the County of San Mateo intends to issue a public notice for the Cypress Point Project in Moss Beach, San Mateo County. This project is proposed to include 71 units of affordable housing and retain approximately half the project area in its current undeveloped state. Although your tribe has not requested notification under Assembly Bill 52, as part of an enhanced consultation check, we are reaching out to your tribe, as a voluntary measure. We would be pleased to initiate consultation, if appropriate, regarding the proposed project.

We requested a Sacred Lands file check from the Native American Heritage Commission (NAHC) for the project area. **The file check did not indicate the presence of Native American cultural resources within the immediate project area.**

We have also completed surface reconnaissance surveys of the project site, which revealed a surface scatter of faunal shells within a limited area of the proposed project site. A description of the findings was documented on a Department of Parks & Recreation form and given the designation P-41-00259 (see site record attached).

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Should you determine that you have an interest in this site, we will provide you with a copy of the cultural resources report, including the site record.

We have included a project location map showing the project area for your reference. If you have any questions or would like to initiate consultation, please contact our office at (650) 363-4161 within 30 days of the date of this letter.

Thank you.

Sincerely,

Steve Monowitz
Community Development Director

Attachments: Project Location Map
Project Description
Site Record Forms

SAM:aow – SAMBB0771_WAN.DOCX

County Review Draft

COUNTY OF SAN MATEO
PLANNING AND BUILDING

County Government Center
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www.planning.smcgov.org

December 21, 2017

Indian Canvon Mutsun Band of Costanoan
Ann Marie Savers, Chairperson
P.O. Box 28
Hollister, CA 95024

RE: SACRED LANDS ENHANCED CONSULTATION CHECK CONCERNING THE CYPRESS POINT PROJECT IN SAN MATEO COUNTY

Dear Ms. Savers:

We want to provide you with notification that the County of San Mateo intends to issue a public notice for the Cypress Point Project in Moss Beach, San Mateo County. This project is proposed to include 71 units of affordable housing and retain approximately half the project area in its current undeveloped state. Although your tribe has not requested notification under Assembly Bill 52, as part of an enhanced consultation check, we are reaching out to your tribe, as a voluntary measure. We would be pleased to initiate consultation, if appropriate, regarding the proposed project.

We requested a Sacred Lands file check from the Native American Heritage Commission (NAHC) for the project area. **The file check did not indicate the presence of Native American cultural resources within the immediate project area.**

We have also completed surface reconnaissance surveys of the project site, which revealed a surface scatter of faunal shells within a limited area of the proposed project site. A description of the findings was documented on a Department of Parks & Recreation form and given the designation P-41-00259 (see site record attached).

On the recommendation of the NAHC, we are contacting you and other tribes they indicated may have an interest in the project site. We would like to obtain any information you may have regarding sacred lands or Native American prehistoric resources within this area.

Should you determine that you have an interest in this site, we will provide you with a copy of the cultural resources report, including the site record.

We have included a project location map showing the project area for your reference. If you have any questions or would like to initiate consultation, please contact our office at (650) 363-4161 within 30 days of the date of this letter.

Thank you.

Sincerely,

Steve Monowitz
Community Development Director

Attachments: Project Location Map
Project Description
Site Record Forms

SAM:aow – SAMBB0775_WAN.DOCX

County Review Draft

COUNTY OF SAN MATEO
PLANNING AND BUILDING

County Government Center
455 County Center, 2nd Floor
Redwood City, CA 94063
650-363-4161 T
650-363-4849 F
www.planning.smcgov.org

December 21, 2017

Muwekma Ohlone Indian Tribe of the SF Bay Area
Rosemary Cambra, Chairperson
P.O. Box 360791
Milpitas, CA 95036

RE: SACRED LANDS ENHANCED CONSULTATION CHECK CONCERNING THE CYPRESS POINT PROJECT IN SAN MATEO COUNTY

Dear Ms. Cambra:

We want to provide you with notification that the County of San Mateo intends to issue a public notice for the Cypress Point Project in Moss Beach, San Mateo County. This project is proposed to include 71 units of affordable housing and retain approximately half the project area in its current undeveloped state. Although your tribe has not requested notification under Assembly Bill 52, as part of an enhanced consultation check, we are reaching out to your tribe, as a voluntary measure. We would be pleased to initiate consultation, if appropriate, regarding the proposed project.

We requested a Sacred Lands file check from the Native American Heritage Commission (NAHC) for the project area. **The file check did not indicate the presence of Native American cultural resources within the immediate project area.**

We have also completed surface reconnaissance surveys of the project site, which revealed a surface scatter of faunal shells within a limited area of the proposed project site. A description of the findings was documented on a Department of Parks & Recreation form and given the designation P-41-00259 (see site record attached).

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Thank you.

Sincerely,

Steve Monowitz
Community Development Director

Attachments: Project Location Map
Project Description
Site Record Forms

SAM:aow – SAMBB0773_WAN.DOCX

County Review Draft

COUNTY OF SAN MATEO
PLANNING AND BUILDING

County Government Center
455 County Center, 2nd Floor
Redwood City, CA 94063
650-363-4161 T
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December 21, 2017

The Ohlone Indian Tribe
Andrew Galvan
P.O. Box 3152
Fremont, CA 94539

RE: SACRED LANDS ENHANCED CONSULTATION CHECK CONCERNING THE CYPRESS POINT PROJECT IN SAN MATEO COUNTY

Dear Mr. Galvan:

We want to provide you with notification that the County of San Mateo intends to issue a public notice for the Cypress Point Project in Moss Beach, San Mateo County. This project is proposed to include 71 units of affordable housing and retain approximately half the project area in its current undeveloped state. Although your tribe has not requested notification under Assembly Bill 52, as part of an enhanced consultation check, we are reaching out to your tribe, as a voluntary measure. We would be pleased to initiate consultation, if appropriate, regarding the proposed project.

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Thank you.

Sincerely,

Steve Monowitz
Community Development Director

Attachments: Project Location Map
Project Description
Site Record Forms

SAM:aow – SAMBB0774_WAN.DOCX

County of San Mateo - Planning and Building Department

ATTACHMENT G

Traffic Impact Analysis

Cypress Point Traffic Impact Analysis

Moss Beach, California

April 2019

Traffic Impact Analysis

Cypress Point Traffic Impact Analysis

Moss Beach, California

Prepared For:
MidPen Housing Corp.
303 Vintage Park Drive, Suite 250
Foster City, CA 94404
650.235.7675

Prepared By:
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155 Grand Avenue, Suite 900
Oakland, California 94612
(510) 839-1742

Project Manager: Aaron Elias, Senior Engineer, P.E.
Project Principal: Damian Stefanakis, Principal Planner

Project No. 20616

April 2019

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EXECUTIVE SUMMARY

This report presents the results of the traffic study for the proposed Cypress Point Project, located on the northeast corner of Carlos Street and Sierra Street in the unincorporated community of Moss Beach, San Mateo County, California (Figure 1). The 10.875-acre parcel is currently vacant. The proposed Project includes 71 affordable housing units. Access to the Project site would be provided by a driveway on Carlos Street, near the intersection with Sierra Street.

PROJECT TRIP ESTIMATES

Trip generation of the Project is based on information compiled in the 9th Edition of the Institute of Transportation Engineers (ITE) *Trip Generation* manual[1]. The Apartment land use (ITE 220) was used for this study.

As summarized in Table 3, the Project would generate 37 weekday AM peak hour trips, 45 weekday PM peak hour trips, and 37 weekend Saturday midday peak hour trips. Trip generation estimates are presented in Table ES 1. San Mateo County traffic impact guidelines generally only require a traffic report if the project generates over 100 trips during the peak hour. While this project only generates a maximum of 45 peak hour trips, this project is providing a traffic report in the interest of full disclosure.

Table ES 1: Project Trip Generation

Land Use	ITE Code	Unit	Size	AM Peak Hour			PM Peak Hour			Saturday Peak Hour		
				Total	In	Out	Total	In	Out	Total	In	Out
Apartment	220	Dwelling Units	71	37	8	29	45	29	16	37	19	18

Source: ITE *Trip Generation* manual, 9th Edition; Kittelson & Associates, 2018

PROJECT IMPACTS

Table ES 2 presents the results of weekday AM, weekday PM, and Saturday peak hour intersection level of service analysis for the Existing, Existing with Project, Background, Background with Project, Cumulative, and Cumulative with Project conditions—as well as mitigated scenarios for all conditions. Intersection operations results for all scenarios are presented in Table ES 2.

The results of the analysis show significant impacts to the following intersections based on the County's intersection operations standards:

- **State Route 1 & California Avenue/Wienke Way** in Existing with Project PM and Saturday peak hour conditions and in PM and Saturday Background with Project conditions;

[1] Institute of Transportation Engineers. *Trip Generation, 9th Edition*, Washington, D.C. 2012

- **State Route 1 & Carlos Street** in the Background with Project Saturday peak hour conditions and in Cumulative with Project AM, PM, and Saturday peak hour conditions;
- **State Route 1 & 16th Street** in Cumulative with Project PM peak hour conditions; and,
- **State Route 1 & Vallemar Street / Etheldore Street** in Cumulative with Project PM peak hour conditions.

Additionally, this report identifies the following significant impacts:

- The existing corner sight distance at the intersection of State Route 1 and Carlos Street is restricted and the addition of Project traffic will substantially increase the hazard at this intersection.
- The Project will increase pedestrian activity with no existing sidewalks along the Project frontage.
- There is an additional pedestrian impact related to the ability of transit passengers to access the nearest bus stop. The nearest SamTrans bus stop would require pedestrians to cross State Route 1 at a location without a marked pedestrian crossing and inadequate sight distance.

RECOMMENDED IMPROVEMENTS

Change the intersection control at State Route 1 & California Avenue / Wienke Way

The operational analysis shows that a change of intersection control at this intersection would ensure Level of Service (LOS) B or better in all conditions assuming signalization as recommended in San Mateo County's draft *Connect the Coastside* report. A preliminary analysis of changing the intersection control to a roundabout showed a single-lane roundabout option would meet the LOS standard established by the County. However, any change of control at this intersection would be subject to an intersection control evaluation (ICE) report as part of Caltrans procedures; the ICE would compare signal-control and roundabout alternatives to make a final determination on the appropriate intersection control.

Provide Sidewalks along Carlos Street

Providing sidewalks on Carlos Street would connect the project entrance to the existing sidewalk on Sierra Street.

Provide Transit Information to Residents

The Project sponsor should distribute informational literature to tenants upon move-in detailing available transit service and bus stop locations. The informational literature should discourage the use of the southbound bus stop at Carlos Street and State Route 1 because of the inadequate corner sight distance provided at the intersection and the lack of marked crossing across the highway. Residents should be redirected to use the bus stop at Etheldore Street and California Street instead which is approximately a ten-minute walk from the Project entrance.

Table ES 2: Intersection Operations at Study Intersections for all Conditions Analyzed

#	Location	Control	Peak Hour	Existing		Existing + Project		Existing + Project, Mitigated (Signal at SR1 & California Ave)		Background		Background + Project		Background + Project, Mitigated (Signal at SR1 & California Ave)		Cumulative		Cumulative + Project	
				Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1	State Route 1 & 14th Street	TWSC	AM	24.4	C	25.1	D	25.1	D	25.4	D	26.1	D	26.1	D	**58.2**	**F**	**60.6**	**F**
			PM	32.6	D	33.7	D	33.7	D	**38.5**	**E**	**39.8**	**E**	**39.8**	**E**	**88.6**	**F**	**92.5**	**F**
			Sat.	**38.1**	**E**	**39.4**	**E**	**39.4**	**E**	**39.7**	**E**	**41.1**	**E**	**41.1**	**E**	**59.8**	**F**	**60.6**	**F**
2	State Route 1 & 16th Street	TWSC	AM	31.0	D	31.7	D	31.7	D	32.3	D	33.2	D	33.2	D	**74.7**	**F**	**77.5**	**F**
			PM	**37.6**	**E**	**39.1**	**E**	**39.1**	**E**	**45.2**	**E**	**47.6**	**E**	**47.6**	**E**	**105.3**	**F**	**114.2**	**F**
			Sat.	**38.4**	**E**	**39.3**	**E**	**39.3**	**E**	**40.3**	**E**	**41.0**	**E**	**41.0**	**E**	**59.7**	**F**	**61.4**	**F**
3	State Route 1 & Carlos Street	TWSC	AM	13.8	B	19.9	C	19.9	C	14.0	B	20.7	C	20.7	C	16.2	C	**36.7**	**E**
			PM	13.3	B	27.5	D	27.5	D	14.1	B	32.2	D	32.2	D	18.8	C	**64.2**	**F**
			Sat.	14.8	B	32.0	D	32.0	D	15.0	C	**45.7**	**E**	**45.7**	**E**	19.5	C	**72.4**	**F**
4	Carlos Street & Sierra Street	TWSC	AM	8.4	A	8.4	A	8.4	A	8.4	A	8.4	A	8.4	A	8.5	A	8.5	A
			PM	8.7	A	8.7	A	8.7	A	8.7	A	8.7	A	8.7	A	8.8	A	8.8	A
			Sat.	8.6	A	8.6	A	8.6	A	8.6	A	8.6	A	8.6	A	8.6	A	8.6	A
5	Stetson Street & Sierra Street	TWSC	AM	8.6	A	8.6	A	8.6	A	8.6	A	8.6	A	8.6	A	8.7	A	8.7	A
			PM	9.0	A	9.0	A	9.0	A	9.0	A	9.0	A	9.0	A	9.1	A	9.1	A
			Sat.	8.7	A	8.7	A	8.7	A	8.7	A	8.7	A	8.7	A	8.8	A	8.8	A
6	State Route 1 & Vallemar Street / Etheldore Street	TWSC	AM	22.3	C	22.7	C	22.7	C	23.2	C	23.6	C	23.6	C	**52.3**	**F**	**53.6**	**F**
			PM	**37.0**	**E**	**38.2**	**E**	**38.2**	**E**	**44.3**	**E**	**46.1**	**E**	**46.1**	**E**	**106.3**	**F**	**112.0**	F
			Sat.	31.0	D	31.7	D	31.7	D	32.3	D	33.4	D	33.4	D	34.1	D	**35.1**	**E**
7	State Route 1 & California Avenue / Wienke Way	TWSC/Signal	AM	**43.5**	**E**	**45.6**	**E**	9.9	A	**47.4**	**E**	**49.9**	**E**	9.9	A	10.3	B	12.2	B
			PM	**78.2**	**F**	**84.1**	**F**	8.5	A	**112.6**	**F**	**124.2**	**F**	9.7	A	10.9	B	11.1	B
			Sat.	**87.1**	**F**	**92.3**	**F**	11.1	B	**96.1**	**F**	**102.4**	**F**	11.6	B	10.4	B	10.3	B
8	Carlos Street & California Avenue	TWSC	AM	9.8	A	9.8	A	9.8	A	9.8	A	9.8	A	9.8	A	10.0	B	10.0	B
			PM	9.4	A	9.4	A	9.4	A	9.4	A	9.4	A	9.4	A	9.7	A	9.7	A
			Sat.	9.9	A	9.9	A	9.9	A	9.9	A	9.9	A	9.9	A	10.2	B	10.2	B
9	Etheldore Street & California Avenue	TWSC	AM	9.5	A	9.5	A	9.5	A	9.5	A	9.5	A	9.5	A	9.7	A	9.7	A
			PM	9.7	A	9.7	A	9.7	A	9.7	A	9.7	A	9.7	A	9.9	A	9.9	A
			Sat.	9.7	A	9.7	A	9.7	A	9.7	A	9.7	A	9.7	A	10.0	B	10.0	B
10	Stetson Street & California Avenue	AWSC	PM	7.2	A	7.2	A	7.2	A	7.2	A	7.2	A	7.2	A	7.3	A	7.3	A
			PM	7.3	A	7.3	A	7.3	A	7.3	A	7.3	A	7.3	A	7.4	A	7.4	A
			Sat.	7.2	A	7.2	A	7.2	A	7.2	A	7.2	A	7.2	A	7.2	A	7.2	A

Note: **Bold lettering** indicates an intersection that does not meet the County's minimum acceptable design level of service (LOS C, and LOS D for critical movements). Shaded cells represent a significant impact.
AWSC: All-Way Stop Control, TWSC: Two-Way Stop Control. LOS and delay reported for TWSC intersections is for the worst approach or movement; complete intersection operations are provided in Appendixes 4 through 12.
[1]"Mitigated" refers to the closure of Carlos Street and associated rerouting of existing and project trips through other intersections within Moss Beach, and (in Existing and Background scenarios) the addition of a traffic signal at State Route 1 & California Avenue/Wienke Way
Source: Highway Capacity Manual 2010; Kittelson & Associates, 2018

INTRODUCTION

This report documents the transportation impact analysis associated with MidPen Housing's affordable housing project located at the corner of Carlos Street and Sierra Street in Moss Beach, San Mateo County, California.

PROJECT DESCRIPTION

The proposed project ("Project") is an affordable housing project located in the coastal zone on a 10.875-acre parcel adjacent to the northeast corner of Carlos Street and Sierra Street in the unincorporated community of Moss Beach, San Mateo County, California (Figure 1 and Figure 3). The property is bounded by vacant land to the southwest (towards State Route 1), residential properties along 16th Street to the northwest (in the community of Montara), and residential properties along Carlos, Sierra, and Lincoln Streets on the other two sides. Individual houses along Stetson Street and Buena Vista Street also border the property.

MidPen proposes the development of 71 affordable housing units on this lot, consisting of approximately 22 two-story buildings holding 2-4 units each (Figure 2). The project would provide a mixture of 1, 2, and 3-bedroom units, including a combination of two-story townhouses and ADA-accessible 1-story flats. All the units, except for the manager's apartment, will be affordable to households earning less than 80% of the Area Median Income (AMI). It is expected that the Cypress Point project will provide housing for approximately 213 people, including adults and children.

In addition to the housing units, the development will include an approximately 3,200 square foot community building, that will include the general office, the manager's office, a community room, kitchen, computer room, laundry, and maintenance and storage areas (Figure 2). The project plan also includes several outdoor amenities, including:

- Landscaping;
- A community garden;
- A children's play area;
- An upper and a lower green;
- BBQ areas; and
- A publicly accessible walking trail.

Project Vicinity
Moss Beach, California

Figure
1

Coordinate System: NAD 1983 StatePlane California III FIPS 0403 Feet
Data Source: ESRI, 2017

KITTELSON & ASSOCIATES

KITTELSON & ASSOCIATES

Cypress Point
Tentative Site Plan
San Mateo County, CA

Figure
2

H:\20\20616 - Moss Beach Housing TIA\report\TIA\draft 2 - 2017\221\figures\site plan.mxd - malston - 10:30 AM 1/10/2018

PROJECT LOCATION AND STUDY AREA

Existing and Proposed Uses

The General Plan designation of the proposed site is Medium-High Density Residential. This allows for development at densities of between 8.8 to 17.4 housing units per acre. The zoning designation of PUD-124/CD traces back to 1986 and was assigned to a proposed Planned Unit Development (PUD) on the site called Farallon Heights. This zoning allows for a total of 148 units on the site, with a density of 13.6 units per acre. The site is designated as Medium-High Density Residential in the San Mateo County Mid-Coast Local Coastal Program (LCP), which allows for development at densities from 8.1 to 16.0 units per acre. The site is defined as infill in the LCP and designated as a priority development site for affordable housing in the San Mateo County Local Coastal Program Policies document (San Mateo County Planning and Building Department 2013). The site is also designated as an affordable housing opportunity site under the San Mateo County Housing Element. (San Mateo County Planning and Building Department 2015)

SCOPE OF STUDY

The purpose of the traffic analysis is to determine whether the Project would have transportation impacts as defined by the San Mateo County transportation study guidelines. The County does not normally require a traffic report for projects that generate fewer than 100 trips during the peak hour but in the interest of full disclosure, this traffic study has been prepared. [2] The guidelines specify intersection analyses are be conducted but do not require roadway segment analyses. Since a roadway segment's capacity is generally controlled by the downstream intersection, an intersection analysis is sufficient for assessing a Project's impacts. Based on discussions with County staff, the following ten intersections were identified to be studied (Figure 1):

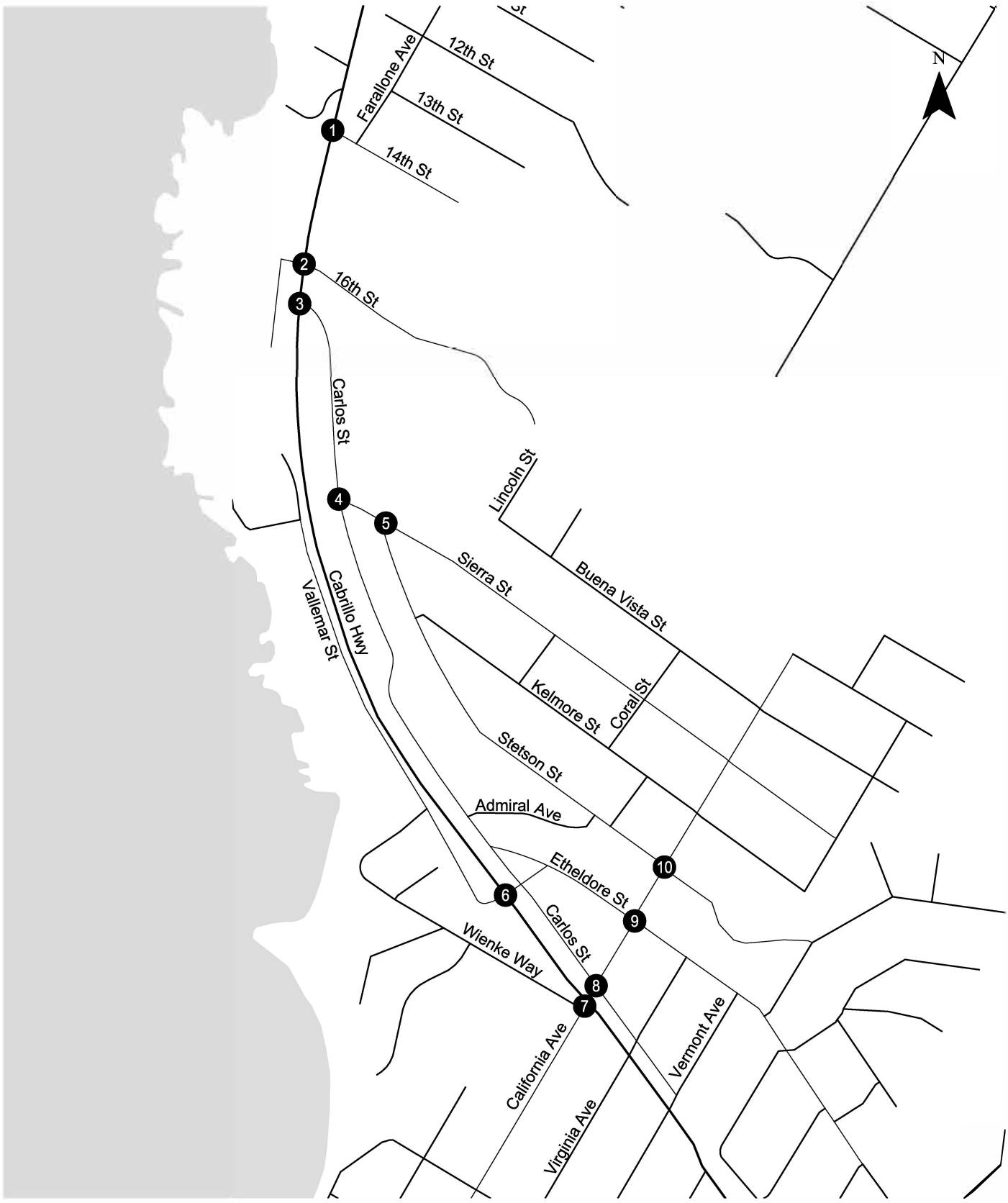
1. State Route 1 & 14th Street;
2. State Route 1 & 16th Street;
3. State Route 1 & Carlos Street;
4. Carlos Street & Sierra Street;
5. Sierra Street & Stetson Street;
6. State Route 1 & Etheldore Street / Vallemar Street;
7. State Route 1 & California Avenue;
8. Carlos Street & California Avenue;
9. California Avenue & Etheldore Street; and,
10. California Avenue & Stetson Street.

[2] Page 2, County of San Mateo Traffic Impact Study Requirements (December 9, 2014)

Turning movement counts were collected during the weekday AM and PM peak periods as well as the Saturday midday peak period at the ten study intersections. The counts were conducted on Thursday, April 20, 2017, and Saturday April 22, 2017 in good weather during the school year. Seasonal adjustments were applied to the observed counts to represent higher-volume summer months.

Traffic conditions were evaluated for the following scenarios:

- Existing Conditions;
- Existing with Project Conditions;
- Background Conditions (Existing conditions plus foreseeable projects that were not built or occupied during existing counts);
- Background with Project Conditions;
- Cumulative Conditions (Existing conditions plus the assumed growth in traffic between the existing year and 2040); and,
- Cumulative with Project Conditions.



Study Area and Study Intersections
Moss Beach, California

(##) - Study Intersections

Figure
3

H:\2012\20616 - Moss Beach Housing TIA\dwgs\Figs\20616_Fig01_revised_for_report.dwg Jan 10, 2018 - 2:19pm - malston Layout Tab: Fig 3 - Study Area

EXISTING CONDITIONS

ROADWAY NETWORK

Access to the Project site is provided off Carlos Street north of Sierra Street. Carlos Street can either be directly accessed from State Route 1 to the north of the Project or via State Route 1 south of the Project via either Etheldore Street or California Avenue.

State Route 1 in the vicinity is a two-lane highway running north-south. State Route 1 provides the only access to Moss Beach, connecting it to destinations in the north such as San Francisco and to destinations to the south such as Half Moon Bay.

Carlos Street is a narrow two-way local street that runs through Moss Beach parallel to State Route 1. Near the Project site, Carlos Street has no pavement markings, on-street parking, sidewalks, or bicycle accommodations. Further south in the commercial area of Moss Beach near California Avenue, Carlos Street includes bicycle pavement markings, on-street parking and sidewalks on one side.

Etheldore Street is a two-lane, two-way local street that connects Moss Beach to State Route 1. It extends from the study intersection with State Route 1 and Vallemar Street, through Moss Beach, to State Route 1 further south. Etheldore Street includes intermittent paved sidewalks on its south side and no sidewalks on its north side.

California Avenue is a two-lane, two-way local street that crosses State Route 1 south of the Project site, providing State Route 1 access to much of the residential area of Moss Beach. California Avenue in the study area includes paved sidewalks on its west side and no sidewalks on its east side.

Stetson Street is a two-lane, two-way local street that extends from Sierra Street near the Project site to Sunshine Valley Road and provides access across Moss Beach. Stetson Street in the study area includes paved sidewalks on its north side and no sidewalks on its south side.

Sierra Street is a two-lane, two-way local street that extends from Carlos Street to Vermont Street and provides residential access across Moss Beach. In the study area, Sierra Street features paved sidewalks on its north side between Coral Street and California Avenue but no paved sidewalks on any other segments.

The 2011 San Mateo County Comprehensive Bicycle and Pedestrian Plan identified planned bikeways through Moss Beach including along Carlos Street, but cites no existing bicycle facilities in the study area.

TRANSIT SERVICE

The Project site is served by two bus routes (Routes 17 and 18) operated by SamTrans transit service. A description of each route, with the closest stops to the project site, is provided below. All route variations are shown in Figure 4. More detail on SamTrans service through Moss Beach, and the school access provided by this service, is provided in Appendix 1.

Route 17

SamTrans Route 17 follows two different northbound routes and two southbound routes.

Northbound

The weekday morning and weekend all-day northbound route include stops at California Avenue / Etheldore Street (0.47 miles from the project) and State Route 1 / 14th Street (0.23 miles from the project). The weekday afternoon/evening northbound route includes a stop at Etheldore Street / Sunshine Valley Road (0.62 miles from the project).

Collectively, these routes operate hourly from 5:30 a.m. to 9:00 p.m. on weekdays and every other hour from 5:13 a.m. to 7:58 p.m. on weekends.

Southbound

The weekday morning southbound route includes a stop at Etheldore Street / Sunshine Valley Road (0.62 miles from the project). The weekday afternoon/evening southbound route stops at State Route 1 / 16th Street (0.11 miles from the project) and California Avenue / Etheldore Street (0.47 miles from the project). Collectively, these routes operate hourly from 6:18 a.m. to 9:50 p.m. on weekdays and every other hour from 6:16 a.m. to 9:28 p.m. on weekends.

Route 18

SamTrans route 18 operates between Main Street / 7th Street in Montara and Moonridge Apartments near Half Moon Bay. The route travels north-south along Sunshine Valley Road and includes stops (in both directions) at Sunshine Valley Road / Etheldore Street (0.47 miles from the project). Route 18 operates two northbound buses in the morning, two northbound buses in the afternoon, three southbound buses in the morning, and two southbound buses in the afternoon.[3]

[3] There are some exceptions to this generalization of Route 18 service. More information (including some routes which only operate on specific days) can be found at http://www.samtrans.com/schedulesandmaps/timetables/18.html .

Transit service to schools

SamTrans service would accommodate project students traveling to and from the project to either Manuel F. Cunha Intermediate School via Routes 17 and 18, or Half Moon Bay High School via Route 18. More information is available in the memo provided in Appendix 1.

TRAFFIC VOLUMES

Multimodal turning movement counts were conducted at the ten study intersections shown in Figure 1 for the weekday AM, weekday PM, and Saturday midday peak periods. These peak periods included the following time periods:

- AM peak hour: 7:00 to 9:00 AM;
- PM peak hour: 4:00 to 6:00 PM; and
- Saturday peak hour: 11:00 AM to 1:00 PM.

The hour with the highest vehicle volumes from each of these periods was used in the transportation analysis.

The collected multimodal turning movement counts are attached in Appendix 2. Because State Route 1 is a seasonal route, the peak hour traffic volumes collected in April were adjusted to be consistent with the typically busier summer months. The method used to increase the counts to be representative of summer traffic, and documentation of the California Department of Transportation's agreement with this methodology, is provided in Appendix 3. The existing intersection geometries and seasonally-adjusted existing volumes are shown in Figure 5 and Figure 6.

SamTrans Service through Moss Beach
Routes 17 and 18

Figure **4**

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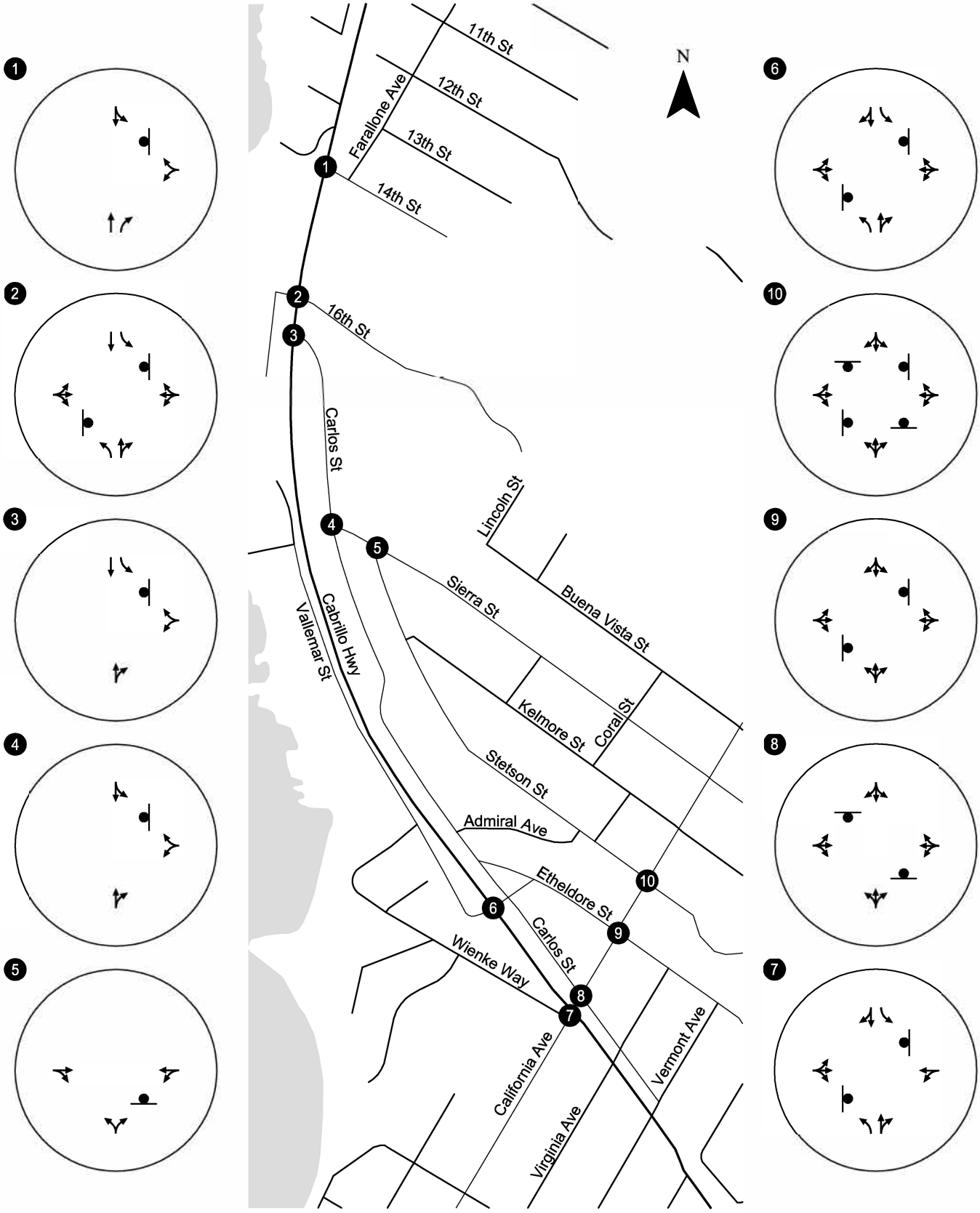
Coordinate System: NAD 1983 StatePlane California III FIPS 0403 Feet



- STOP SIGN
- TRAFFIC SIGNAL

Existing Lane Configurations and Traffic Control Devices
Moss Beach, California

Figure 5

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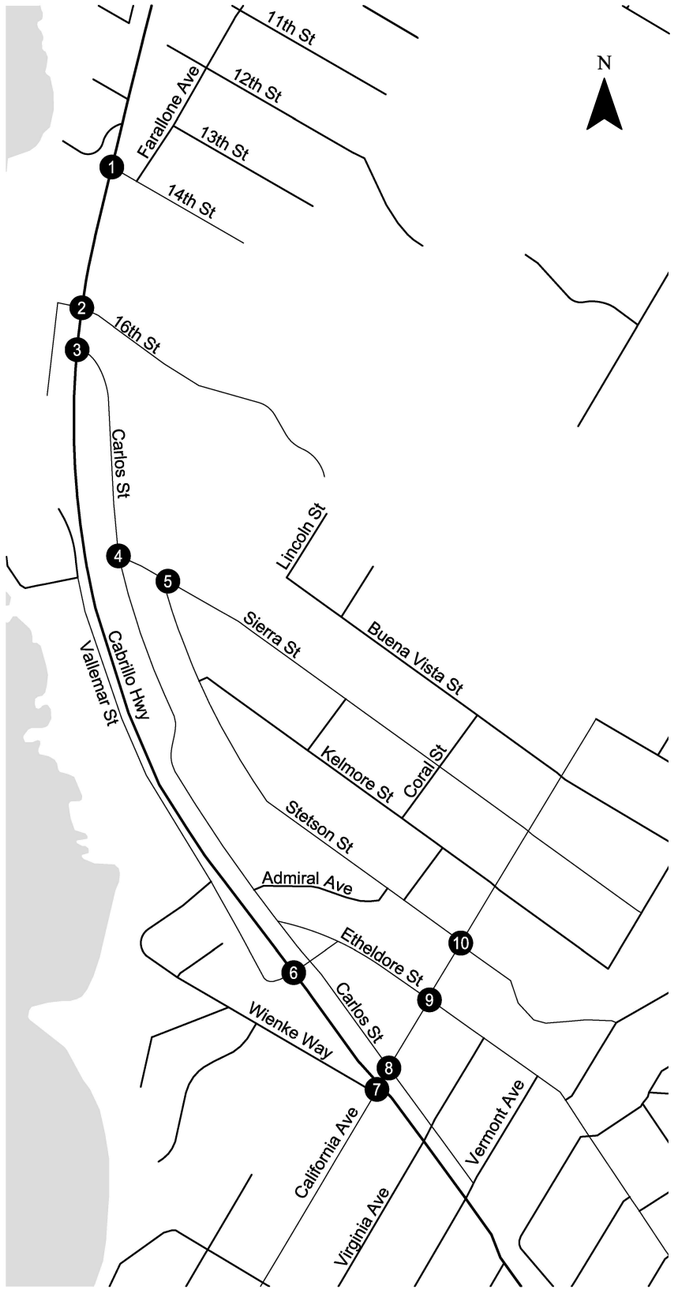

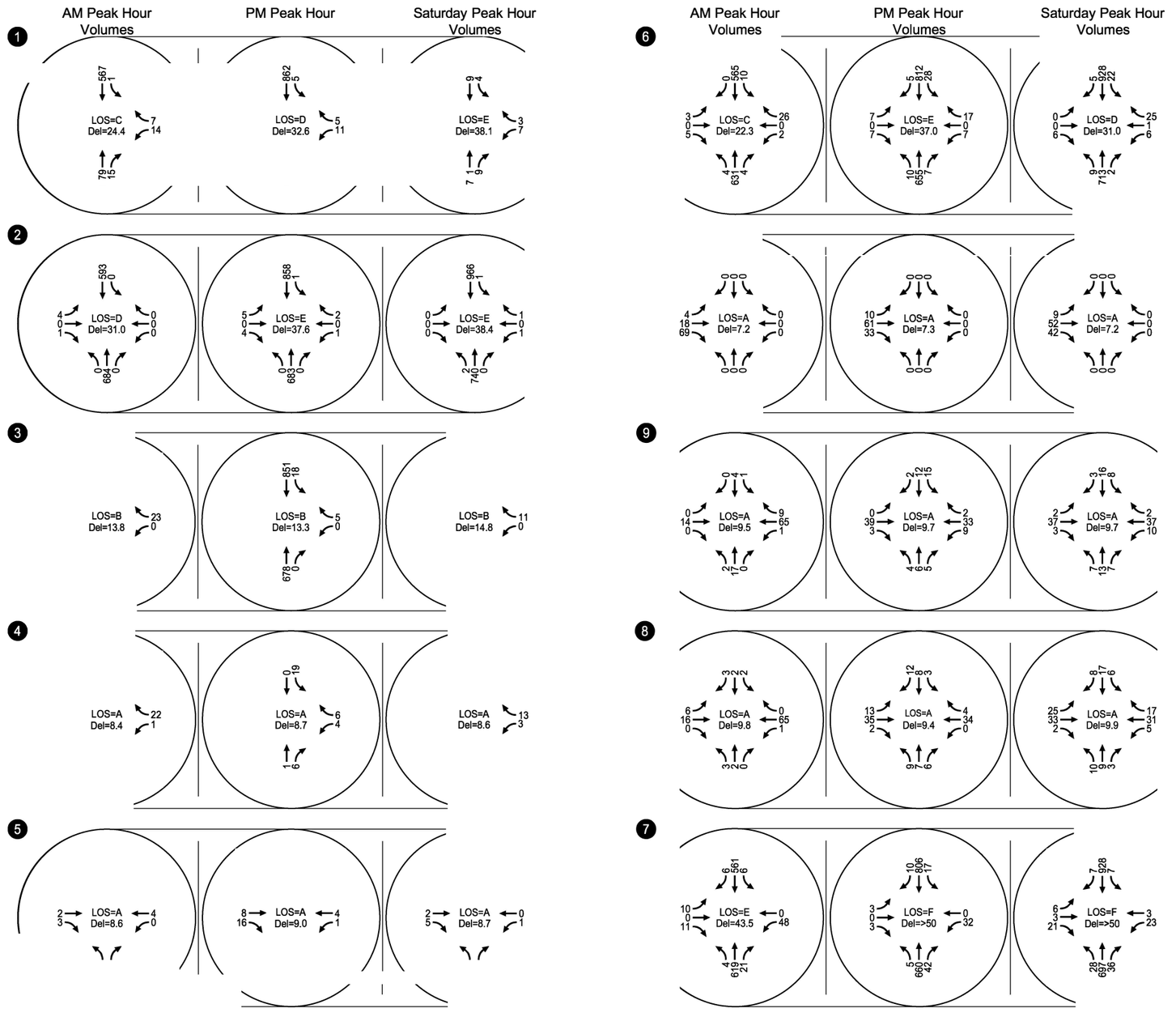

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = CRITICAL MOVEMENT LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL CRITICAL VOLUME-TO-CAPACITY RATIO

Existing Peak Hour Turning Movement Volumes and Operations
AM, PM, and Saturday Peak Hour
Moss Beach, California

Figure
6

KITTELSON & ASSOCIATES

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INTERSECTION OPERATIONS

Level of service (LOS) describes the operating conditions experienced by motorists. LOS is a qualitative measure of the effect of a number of factors, including speed and travel time, traffic interruptions and delay, freedom to maneuver, driving comfort, and convenience. LOS A through LOS F covers the entire range of traffic operations that might occur. Motorists using a facility that operates at LOS A experience very little delay, while those using a facility that operates at LOS F will experience long delays. Intersection analyses for the ten study intersections were conducted using the operational methodologies outlined in the 2010 Highway Capacity Manual (HCM) (Transportation Research Board, Washington, D.C., 2010).

Signalized intersection. The HCM procedure calculates a weighted average control delay in seconds per vehicle at a signalized intersection and assigns a level of service designation based upon the delay.

Unsignalized intersection. The HCM methodology calculates a weighted average control delay in seconds per vehicle for each controlled intersection leg and for the intersection. A level of service designation for all-way stop-controlled intersections is based upon the weighted average control delay for all intersection legs, similar to the level of service designation for signalized intersections. For two-way stop-controlled intersections, the LOS for the worst approach is used as the LOS performance measure.

Table 1 presents the relationship of average delay to level of service for both signalized and unsignalized intersections.

Table 1: Level of Service Definition for Intersections

Signalized Intersection			Unsignalized Intersection
Average Delay Per Vehicle (Seconds)	LOS	Description of Traffic Conditions	Average Delay Per Vehicle (Seconds)
≤10.0	A	Free flowing. Most vehicles do not have to stop.	≤10.0
>10.0 and ≤20.0	B	Minimal delays. Some vehicles have to stop, although waits are not bothersome.	>10.0 and ≤15.0
>20.0 and ≤35.0	C	Acceptable delays. Significant numbers of vehicles have to stop because of steady, high traffic volumes. Still, many pass without stopping.	>15.0 and ≤25.0
>35.0 and ≤55.0	D	Tolerable delays. Many vehicles have to stop. Drivers are aware of heavier traffic. Cars may have to wait through more than one red light. Queues begin to form, often on more than one approach.	>25.0 and ≤35.0
>55.0 and ≤80.0	E	Significant delays. Cars may have to wait through more than one red light. Long queues form, sometimes on several approaches.	>35.0 and ≤50.0
>80.0	F	Excessive delays. Intersection is jammed. Many cars have to wait through more than one red light, or more than 60 seconds. Traffic may back up into “up-stream” intersections.	>50.0

Source: Transportation Research Board, *Highway Capacity Manual*, Washington, D.C., 2010.

The seasonally-adjusted volumes, lane configurations, and traffic controls for each study intersection were used to assess the Existing conditions LOS and delay. Table 2 shows the findings of this analysis for the AM, PM, and Saturday peak hours. Detailed calculation worksheets showing operations for all intersection movements for the Existing conditions are provided in Appendix 4. These delay and LOS values can be compared to San Mateo County's standards and thresholds, discussed in the next section.

Table 2: Existing Conditions Intersection Operations Results

No	Location	Control	Existing AM		Existing PM		Existing Saturday	
			Delay	LOS	Delay	LOS	Delay	LOS
1	State Route 1 & 14th Street	TWSC	24.4	C	32.6	D	**38.1**	**E**
2	State Route 1 & 16th Street	TWSC	31.0	D	**37.6**	**E**	**38.4**	**E**
3	State Route 1 & Carlos Street	TWSC	13.8	B	13.3	B	14.8	B
4	Carlos Street & Sierra Street	TWSC	8.4	A	8.7	A	8.6	A
5	Stetson Street & Sierra Street	TWSC	8.6	A	9.0	A	8.7	A
6	State Route 1 & Vallemar Street / Etheldore Street	TWSC	22.3	C	**37.0**	**E**	31.0	D
7	State Route 1 & California Avenue / Wienke Way	TWSC	**43.5**	**E**	**78.2**	**F**	**87.1**	**F**
8	Carlos Street & California Avenue	TWSC	9.8	A	9.4	A	9.9	A
9	Etheldore Street & California Avenue	TWSC	9.5	A	9.7	A	9.7	A
10	Stetson Street & California Avenue	AWSC	7.2	A	7.3	A	7.2	A

Note: **Bold lettering** indicates an intersection that does not meet the County's minimum acceptable design level of service (LOS C overall, and LOS D for critical movements).
AWSC: All-Way Stop Control, TWSC: Two-Way Stop Control. LOS and delay reported for TWSC intersections is for the worst approach or movement; complete intersection operations are provided in Appendix 4.
Source: Highway Capacity Manual 2010; Kittelson & Associates, 2018

TRANSPORTATION IMPACT ANALYSIS

THRESHOLDS OF SIGNIFICANCE

The assessment of the Project is based on transportation impact criteria per the County of San Mateo's Traffic Impact Study Requirements[4]. The County requirements define the LOS standard as follows:

> *The minimum acceptable design level of service (LOS) in the County is 'C'. At intersections, analyses should show an overall LOS of 'C' with no individual movement operating at less than 'D' to be considered acceptable and not require mitigation measures. On occasion,*

[4] County of San Mateo. *Traffic Impact Study Requirements*. December 9, 2014

level of service 'D' may be allowed for peak periods in dense urban condition per County's discretion.

The Local Coastal Program (LCP) has a different LOS standard that is less stringent than the County's as presented. Thus, this report uses the County's standards for analysis. The Project's impact is not considered to be significant unless it would:

a. Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit.

   For the purposes of this analysis, the following measures of effectiveness were applied:

   Intersection Operations: San Mateo County has established the following performance benchmarks for intersections and roadway segments within its jurisdiction:

   - A project will be considered to have a significant impact if the project will cause an intersection to operate at a level of service that violates the overall standard LOS 'C' or where an individual critical movement would operate at worse than LOS 'D'.
   - A project will be considered to have a significant impact if an intersection is operating below the LOS standard without the project, but the project's trips increase the average control delay at any critical movement by four seconds or more.

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

   For this study the Project would "substantially increase hazards due to a design feature or incompatible use" if it would:

   - Increase traffic volumes for movements that have restricted sight distance for existing posted speeds per Caltrans *Highway Design Manual* standards.

PROJECT ANALYSIS

Trip Generation

Trip generation of the Project is based on information compiled in the 9th Edition of the Institute of Transportation Engineers (ITE) *Trip Generation* manual.[5] The *Trip Generation* manual does not have trip generation data specific to affordable housing but does have several related uses including: apartment, low-rise apartment, mid-rise apartment, and high-rise apartment. Of these land uses, the Apartment land use (ITE 220) was used for this study because this land use had a larger sample size than the other related uses and had the higher trip generation rates, resulting in a more conservative estimation of trip generation.[6]

The trip generation rates used in this study and presented in the *Trip Generation* manual represent suburban or exurban land use contexts with minimal transit service and ridership. In this sense, these rates are suitable for the Moss Beach context. There are a number of transportation demand strategies that could be employed at this site that may reduce the number of trips associated with the project. For example, the project site plan may be designed to promote walking and bicycling, which would help to reduce short vehicle trips. However, some typical strategies may be limited in effectiveness given the land use context and the relatively small size of the project relative to larger employer-based TDM programs. For example, an on-site shuttle would not likely have an obvious nearby destination or route schedule.

As summarized in Table 3, the Project would generate 37 weekday AM peak hour trips, 45 weekday PM peak hour trips, and 37 weekend Saturday midday peak hour trips.

Table 3: Project Trip Generation

Land Use	ITE Code	Unit	Size	AM Peak Hour			PM Peak Hour			Saturday Peak Hour		
				Total	In	Out	Total	In	Out	Total	In	Out
Apartment	220	Dwelling Units	71	37	8	29	45	29	16	37	19	18

Source: ITE *Trip Generation* manual, 9th Edition; Kittelson & Associates, 2018

[5] Institute of Transportation Engineers. *Trip Generation, 9th Edition*, Washington, D.C. 2012

[6] The manual lists Land an average rate of 6.65 weekday trips per dwelling unit for land use ITE 220 (Apartment), 6.59 for ITE 221 (low-rise apartment), 4.20 for ITE 222 (High-Rise Apartment), and no reported daily rate for ITE 223 (Mid-Rise Apartment).

Although the community center onsite may occasionally be used for public events, it will primarily be used by project residents. Therefore, for the purposes of this analysis, the community center onsite is expected only to generate internal trips, not additional trips from outside the Project.

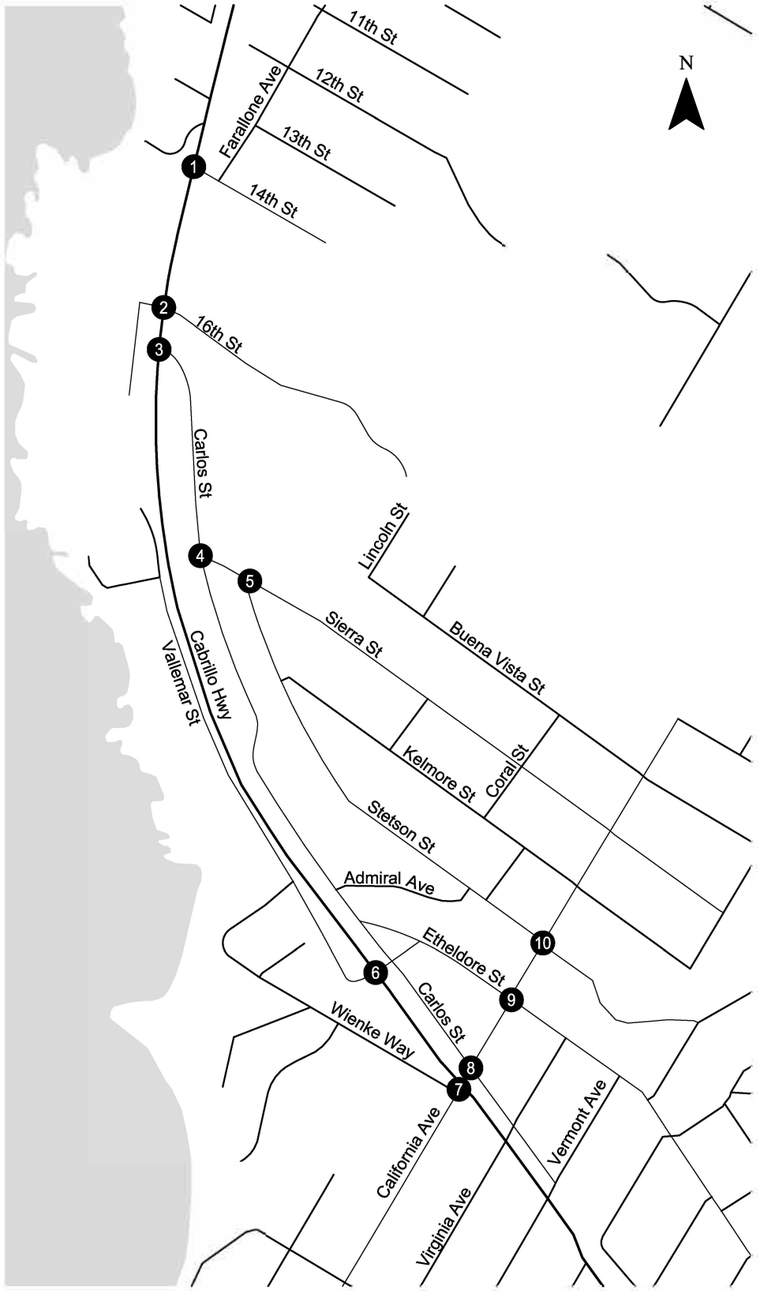
Trip Distribution and Assignment

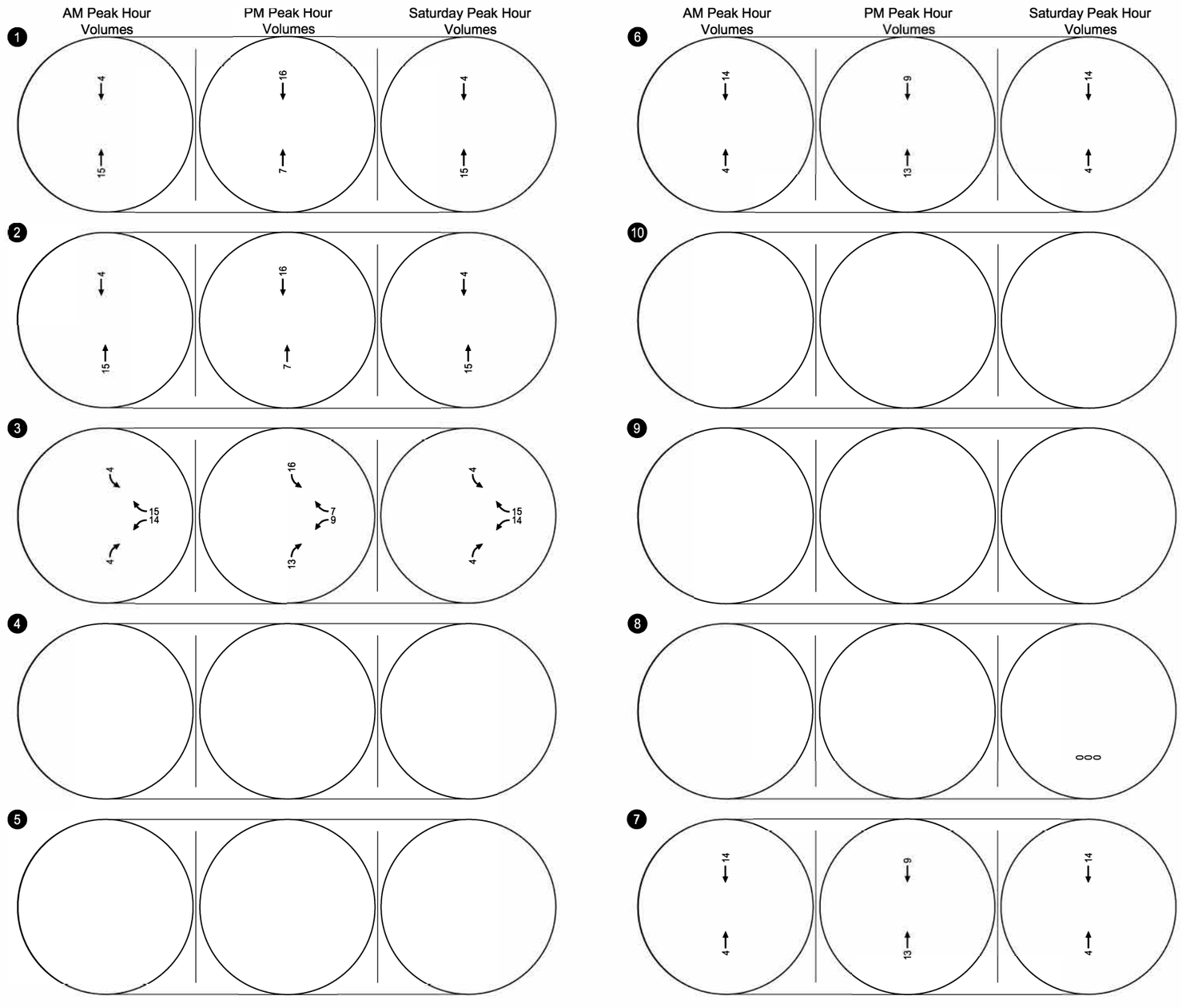
The distribution of Project trips was derived from existing travel volume data and from knowledge of local travel times. The recorded north/south distribution of traffic along State Route 1 was used to inform the direction that Project traffic would be going to or coming from in order to access the Project site. Access to State Route 1 from the Project was assumed to be via the Carlos Street and State Route 1 intersections. The trip distribution is shown in Table 4. Project only trips are shown in Figure 7.

Table 4: Project Trip Distribution along State Route 1

To/From Project	Direction Along State Route 1	AM Peak Hour	PM Peak Hour	Saturday Peak Hour
Outgoing (from Project)	Northbound	52%	44%	44%
	Southbound	48%	56%	56%
Incoming (to Project)	Northbound (from South)	50%	55%	58%
	Southbound (from North)	50%	45%	42%

Note that outgoing and incoming trips from each time period sum to 100%.
Source: Kittelson & Associates, 2018





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V/C = CRITICAL CRITICAL VOLUME-TO-CAPACITY RATIO

Project Turning Movement Volumes
AM, PM, and Saturday Peak Hour
Moss Beach, California

Figure
7

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EXISTING WITH PROJECT OPERATIONS

This section discusses changes to traffic operations at the study intersections upon implementation of the Project.

Intersection Operations

Traffic volumes for the Existing with Project conditions were developed by combining the seasonally-adjusted existing traffic volumes with the Project only volumes. The resulting Existing with Project turning movement volumes are shown in Figure 8. Table 5, Table 6, and Table 7 show the Existing with Project intersection operations for the AM, PM, and Saturday peak hours, respectively. Detailed calculation worksheets for the Existing with Project conditions are provided in Appendix 5. Based on the significance criteria previously described, the Project would cause significant impacts at the following location:

- **Intersection #7 State Route 1 and California Avenue/Wienke Way** – The Project causes the delay for the critical movement to increase by more than 4 seconds during the PM and Saturday peak hours for an intersection already operating below the County's LOS standard (LOS C).

Proposed mitigations for these impacted intersections are listed in the *CEQA Project Impacts and Proposed Mitigations* section of this report.

Table 5: Existing with Project AM Peak Hour Intersection Operations

No	Location	Control	Existing AM		Existing + Project AM	
			Delay	LOS	Delay	LOS
1	State Route 1 & 14th Street	TWSC	24.4	C	25.1	D
2	State Route 1 & 16th Street	TWSC	31.0	D	31.7	D
3	State Route 1 & Carlos Street	TWSC	13.8	B	19.9	C
4	Carlos Street & Sierra Street	TWSC	8.4	A	8.4	A
5	Stetson Street & Sierra Street	TWSC	8.6	A	8.6	A
6	State Route 1 & Vallemar Street / Etheldore Street	TWSC	22.3	C	22.7	C
7	State Route 1 & California Avenue / Wienke Way	TWSC	**43.5**	**E**	**45.6**	**E**
8	Carlos Street & California Avenue	TWSC	9.8	A	9.8	A
9	Etheldore Street & California Avenue	TWSC	9.5	A	9.5	A
10	Stetson Street & California Avenue	AWSC	7.2	A	7.2	A

Note: **Bold lettering** indicates an intersection that does not meet the County's minimum acceptable design level of service (LOS C, and LOS D for critical movements). Shaded cells indicate a significant impact.
AWSC: All-Way Stop Control, TWSC: Two-Way Stop Control. LOS and delay reported for TWSC intersections is for the worst approach or movement; complete intersection operations are provided in Appendix 5.
Source: Highway Capacity Manual 2010; Kittelson & Associates, 2018

Table 6: Existing with Project PM Peak Hour Intersection Operations

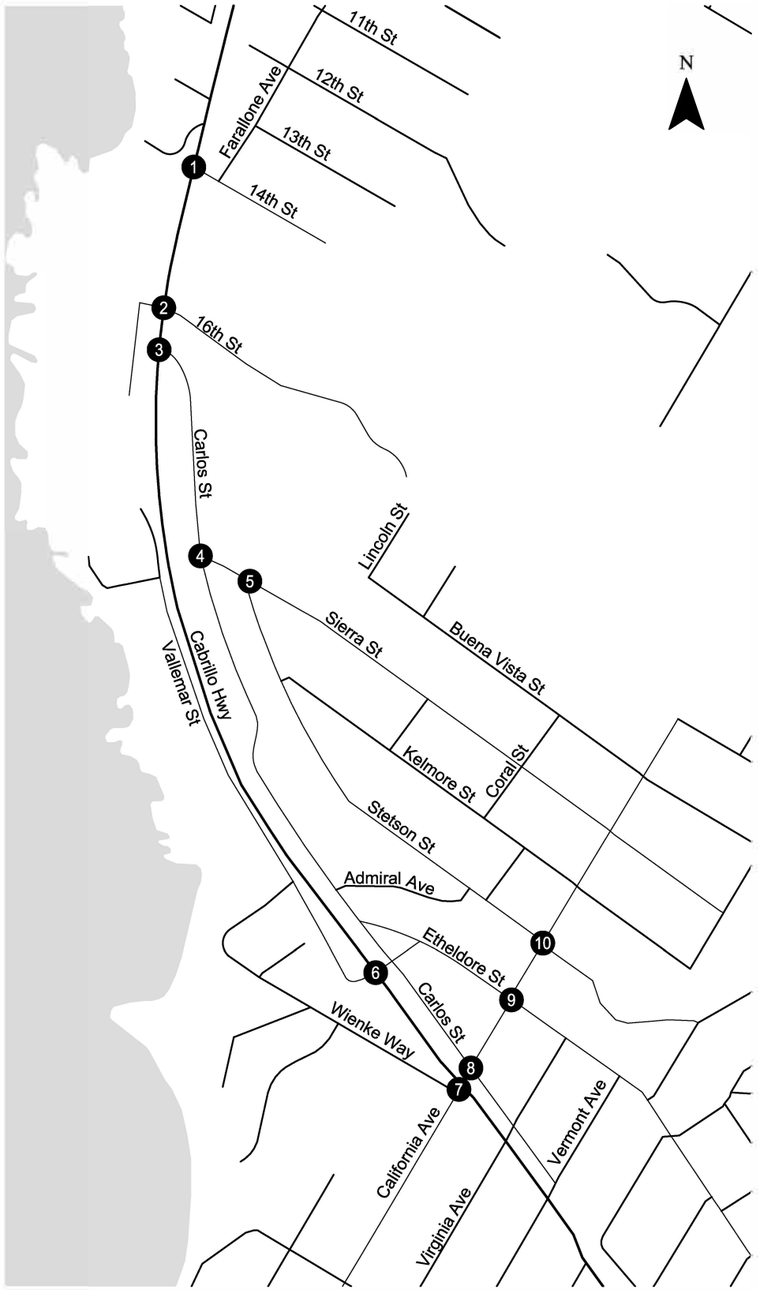
No	Location	Control	Existing PM		Existing + Project PM	
			Delay	LOS	Delay	LOS
1	State Route 1 & 14th Street	TWSC	32.6	D	33.7	D
2	State Route 1 & 16th Street	TWSC	**37.6**	**E**	**39.1**	**E**
3	State Route 1 & Carlos Street	TWSC	13.3	B	27.5	D
4	Carlos Street & Sierra Street	TWSC	8.7	A	8.7	A
5	Stetson Street & Sierra Street	TWSC	9.0	A	9.0	A
6	State Route 1 & Vallemar Street / Etheldore Street	TWSC	**37.0**	**E**	**38.2**	**E**
7	State Route 1 & California Avenue / Wienke Way	TWSC	**78.2**	**F**	**84.1**	**F**
8	Carlos Street & California Avenue	TWSC	9.4	A	9.4	A
9	Etheldore Street & California Avenue	TWSC	9.7	A	9.7	A
10	Stetson Street & California Avenue	AWSC	7.3	A	7.3	A

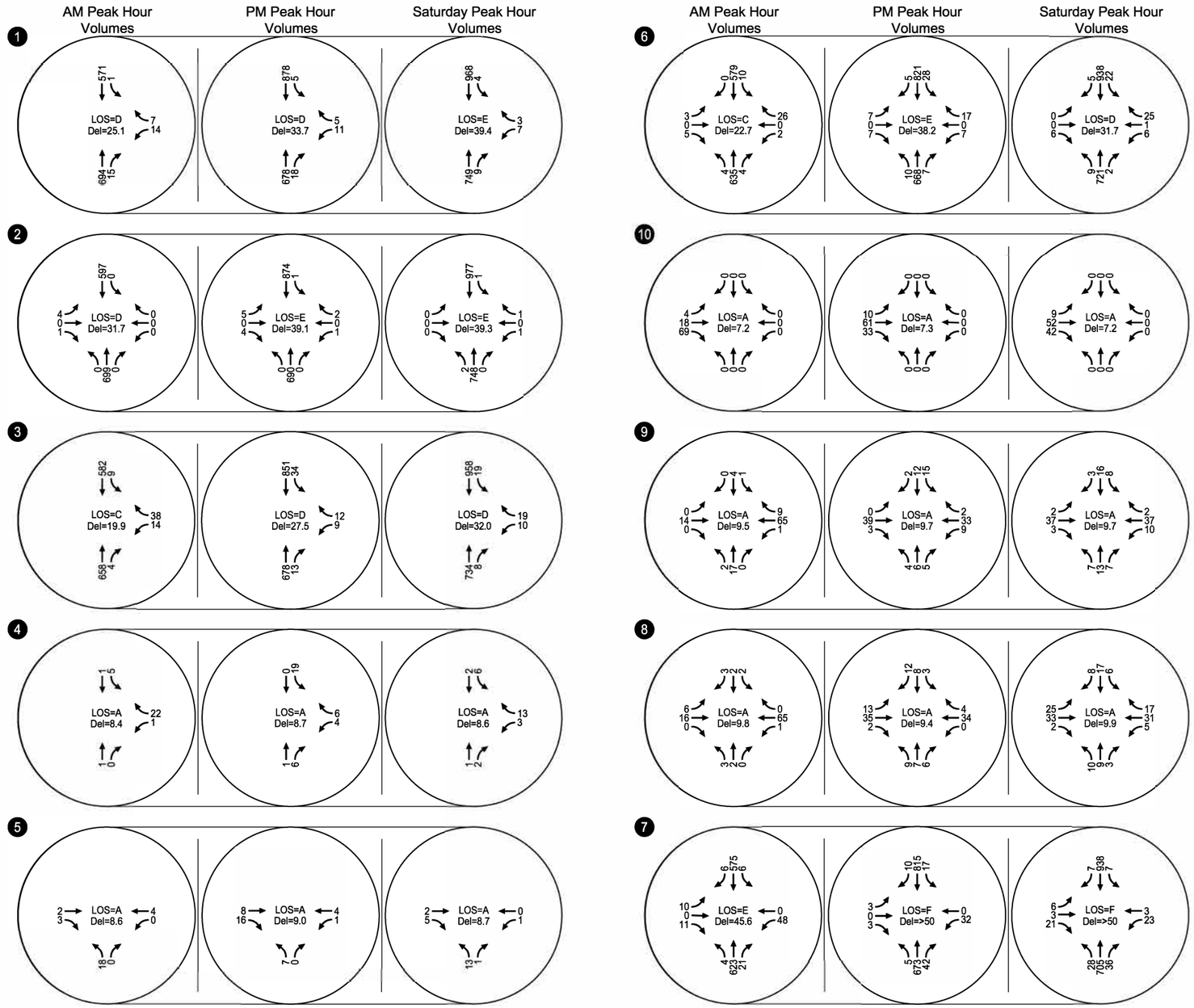
Note: **Bold lettering** indicates an intersection that does not meet the County's minimum acceptable design level of service (LOS C, and LOS D for critical movements). Shaded cells indicate a significant impact.
AWSC: All-Way Stop Control, TWSC: Two-Way Stop Control. LOS and delay reported for TWSC intersections is for the worst approach or movement; complete intersection operations are provided in Appendix 5.
Source: Highway Capacity Manual 2010; Kittelson & Associates, 2018

Table 7: Existing with Project Saturday Peak Hour Intersection Operations

No	Location	Control	Existing Saturday		Existing + Project Saturday	
			Delay	LOS	Delay	LOS
1	State Route 1 & 14th Street	TWSC	**38.1**	**E**	**39.4**	**E**
2	State Route 1 & 16th Street	TWSC	**38.4**	**E**	**39.3**	**E**
3	State Route 1 & Carlos Street	TWSC	14.8	B	32.0	D
4	Carlos Street & Sierra Street	TWSC	8.6	A	8.6	A
5	Stetson Street & Sierra Street	TWSC	8.7	A	8.7	A
6	State Route 1 & Vallemar Street / Etheldore Street	TWSC	31.0	D	31.7	D
7	State Route 1 & California Avenue / Wienke Way	TWSC	**87.1**	**F**	**92.3**	**F**
8	Carlos Street & California Avenue	TWSC	9.9	A	9.9	A
9	Etheldore Street & California Avenue	TWSC	9.7	A	9.7	A
10	Stetson Street & California Avenue	AWSC	7.2	A	7.2	A

Note: **Bold lettering** indicates an intersection that does not meet the County's minimum acceptable design level of service (LOS C, and LOS D for critical movements). Shaded cells indicate a significant impact.
AWSC: All-Way Stop Control, TWSC: Two-Way Stop Control. LOS and delay reported for TWSC intersections is for the worst approach or movement; complete intersection operations are provided in Appendix 5.
Source: Highway Capacity Manual 2010; Kittelson & Associates, 2018





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Existing with Project Turning Movement Volumes and Operations
AM, PM, and Saturday Peak Hour
Moss Beach, California

Figure
8

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BACKGROUND CONDITIONS

This section describes near-term traffic conditions representing conditions when the Project is anticipated to be complete. The Background conditions represent Existing conditions turning movement volumes plus other projects that have been approved or are in the entitlement process but not yet constructed at the time of the traffic counts.

Background No Project Conditions

Based on discussions with the San Mateo County Planning and Building Department, the following projects were identified for inclusion in the background traffic volume. These projects have either been approved but not constructed or are in the entitlement process. Additionally, these projects are of a sufficient size that their traffic may have more than a negligible effect on existing traffic operations.

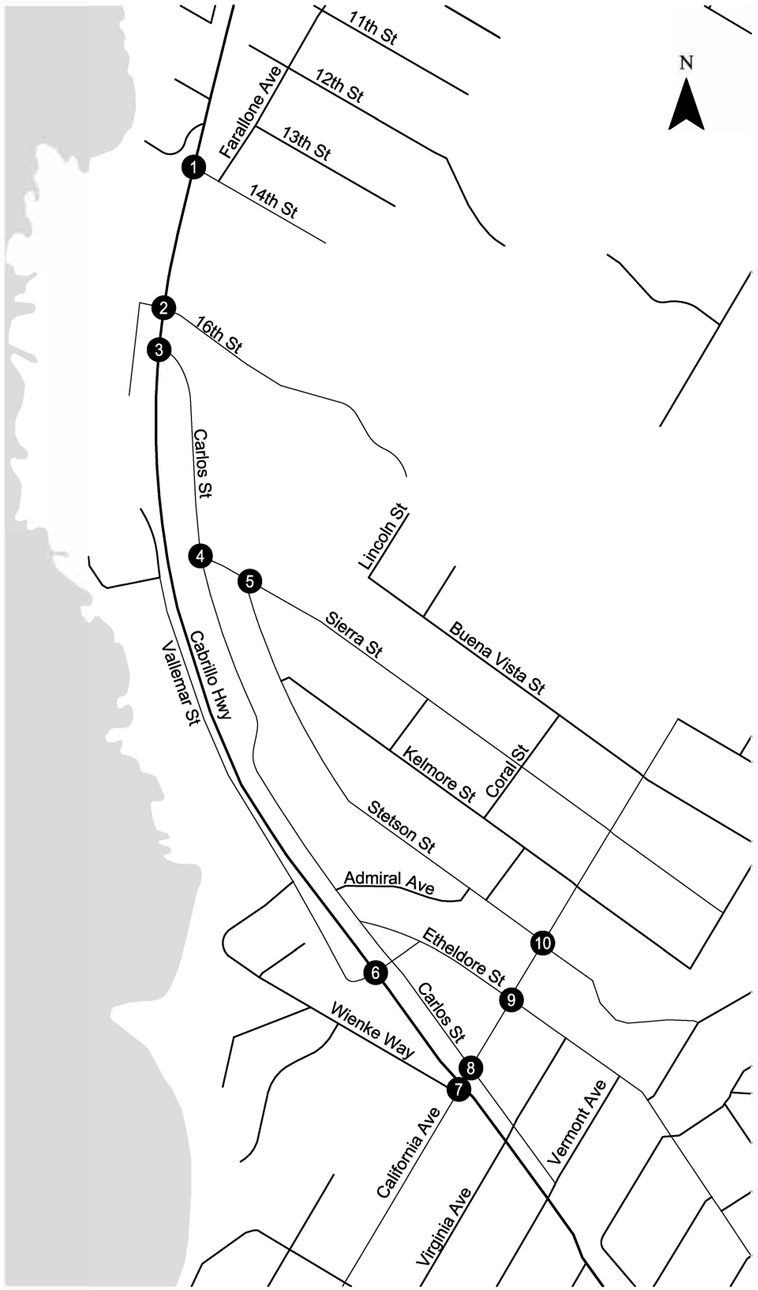
- An RV park with 50 spaces and seven tent camping spaces, a single-story 832 square foot laundry and restroom facility, landscape, and drainage improvements; located at the corner of State Route 1 and Capistrano Road in Princeton (PLN2017-00320, associated with PRE2015-00019).
- Big Wave, a project that includes a 70,500 square-foot Wellness Center with housing for developmentally disabled adults and their aides, 161,263 square feet of office/industrial park, and free public parking for beach access and a gated boat storage yard. This project is located on Airport Street north of the Princeton/Pillar Point Harbor area in unincorporated San Mateo County. It has been approved but not constructed.

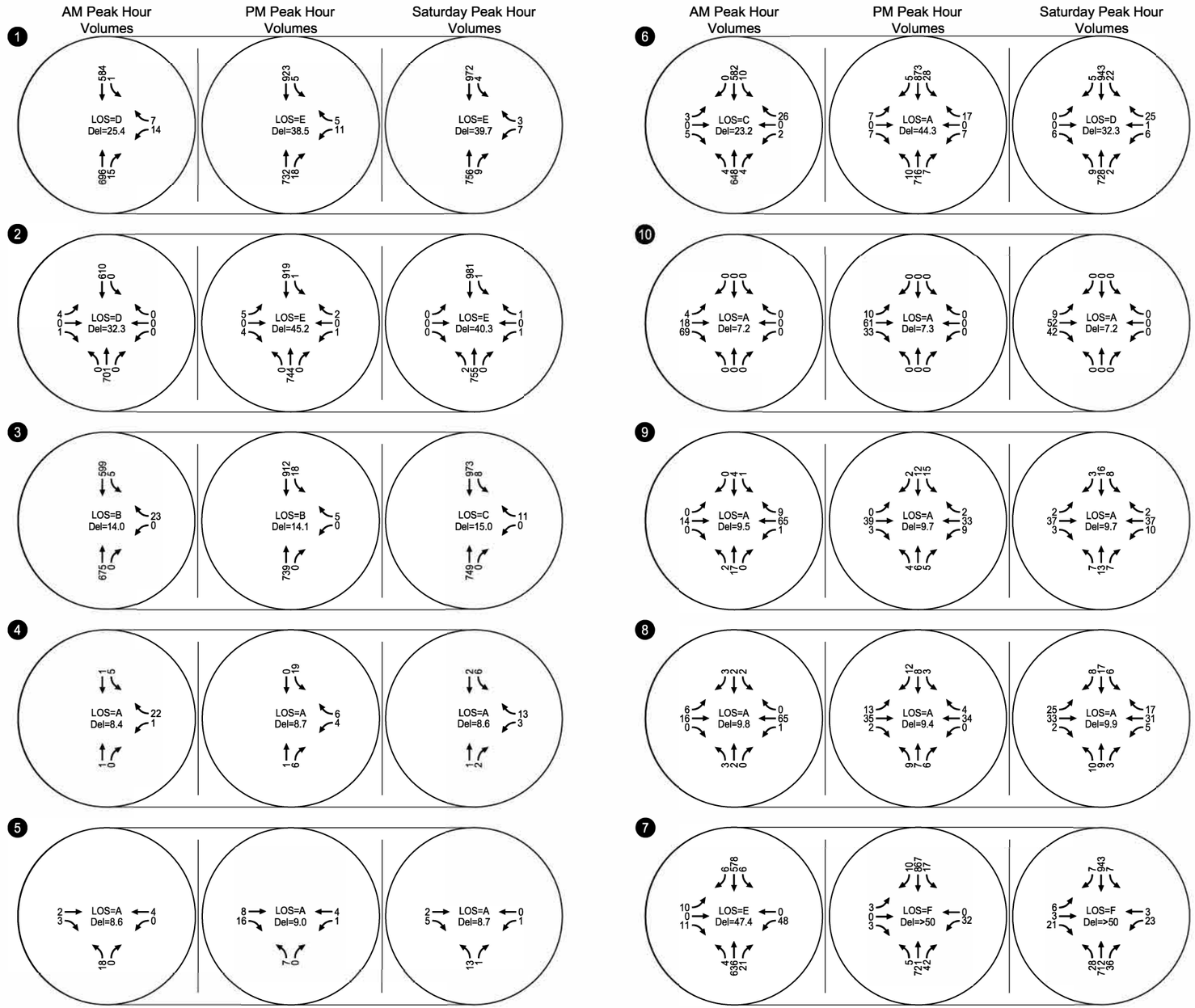
The anticipated trip generation for these two projects was added to the existing seasonally adjusted traffic volumes. The resulting Background conditions turning movement volumes are shown in Figure 9. The Background operations at the study intersections are shown in Table 8. Detailed calculation worksheets for the Background Conditions are provided in Appendix 6.

Table 8: Background Conditions Intersection Operations Results

No	Location	Control	Background AM		Background PM		Background Saturday	
			Delay	LOS	Delay	LOS	Delay	LOS
1	State Route 1 & 14th Street	TWSC	25.4	D	**38.5**	**E**	**39.7**	**E**
2	State Route 1 & 16th Street	TWSC	32.3	D	**45.2**	**E**	**40.3**	**E**
3	State Route 1 & Carlos Street	TWSC	14.0	B	14.1	B	15.0	C
4	Carlos Street & Sierra Street	TWSC	8.4	A	8.7	A	8.6	A
5	Stetson Street & Sierra Street	TWSC	8.6	A	9.0	A	8.7	A
6	State Route 1 & Vallemar Street / Etheldore Street	TWSC	23.2	C	**44.3**	**E**	32.3	D
7	State Route 1 & California Avenue / Wienke Way	TWSC	**47.4**	**E**	**112.6**	**F**	**96.1**	**F**
8	Carlos Street & California Avenue	TWSC	9.8	A	9.4	A	9.9	A
9	Etheldore Street & California Avenue	TWSC	9.5	A	9.7	A	9.7	A
10	Stetson Street & California Avenue	AWSC	7.2	A	7.3	A	7.2	A

Note: **Bold lettering** indicates an intersection that does not meet the County's minimum acceptable design level of service (LOS C, and LOS D for critical movements).
AWSC: All-Way Stop Control, TWSC: Two-Way Stop Control. LOS and delay reported for TWSC intersections is for the worst approach or movement; complete intersection operations are provided in Appendix 6.
Source: Highway Capacity Manual 2010; Kittelson & Associates, 2018





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V/C = CRITICAL CRITICAL VOLUME-TO-CAPACITY RATIO

Background Conditions Turning Movement Volumes and Operations
AM, PM, and Saturday Peak Hour
Moss Beach, California

Figure
9

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Background with Project Conditions

This section discusses changes to traffic operations at the study intersections upon implementation of the Project. Traffic volumes for the Background with Project conditions were developed by combining Background conditions volumes with the Project only volumes. The resulting Background with Project turning movement volumes are shown in Figure 10.

Table 9, Table 10, and Table 11 show the Background with Project intersection operations for the AM, PM, and Saturday peak hours, respectively. Detailed calculation worksheets for the Background with Project conditions are provided in Appendix 7. Based on the significance criteria previously described, the Project would cause significant impacts at the following locations:

- **Intersection #3: State Route 1 and Carlos Street** – The addition of Project trips causes the critical movement at the intersection to degrade below the LOS 'D' standard during the Saturday peak hour.
- **Intersection #7: State Route 1 and California Avenue/Wienke Way** – The addition of Project trips increases delay for the critical movement at the intersection already exceeding the LOS standard by at least 4 seconds per vehicle during the PM and Saturday peak hours.

Proposed mitigations for these impacted intersections are listed in the *CEQA Project Impacts and Proposed Mitigations* section of this report.

Table 9: Background with Project Conditions AM Intersection Operations Results

No	Location	Control	Background AM		Background + Project AM	
			Delay	LOS	Delay	LOS
1	State Route 1 & 14th Street	TWSC	25.4	D	26.1	D
2	State Route 1 & 16th Street	TWSC	32.3	D	33.2	D
3	State Route 1 & Carlos Street	TWSC	14	B	20.7	C
4	Carlos Street & Sierra Street	TWSC	8.4	A	8.4	A
5	Stetson Street & Sierra Street	TWSC	8.6	A	8.6	A
6	State Route 1 & Vallemar Street / Etheldore Street	TWSC	23.2	C	23.6	C
7	State Route 1 & California Avenue / Wienke Way	TWSC	**47.4**	**E**	**49.9**	**E**
8	Carlos Street & California Avenue	TWSC	9.8	A	9.8	A
9	Etheldore Street & California Avenue	TWSC	9.5	A	9.5	A
10	Stetson Street & California Avenue	AWSC	7.2	A	7.2	A

Note: **Bold lettering** indicates an intersection that does not meet the County's minimum acceptable design level of service (LOS C, and LOS D for critical movements). Shaded cells indicate a significant impact.
AWSC: All-Way Stop Control, TWSC: Two-Way Stop Control. LOS and delay reported for TWSC intersections is for the worst approach or movement; complete intersection operations are provided in Appendix 7.
Source: Highway Capacity Manual 2010; Kittelson & Associates, 2018

Table 10: Background with Project Conditions PM Intersection Operations Results

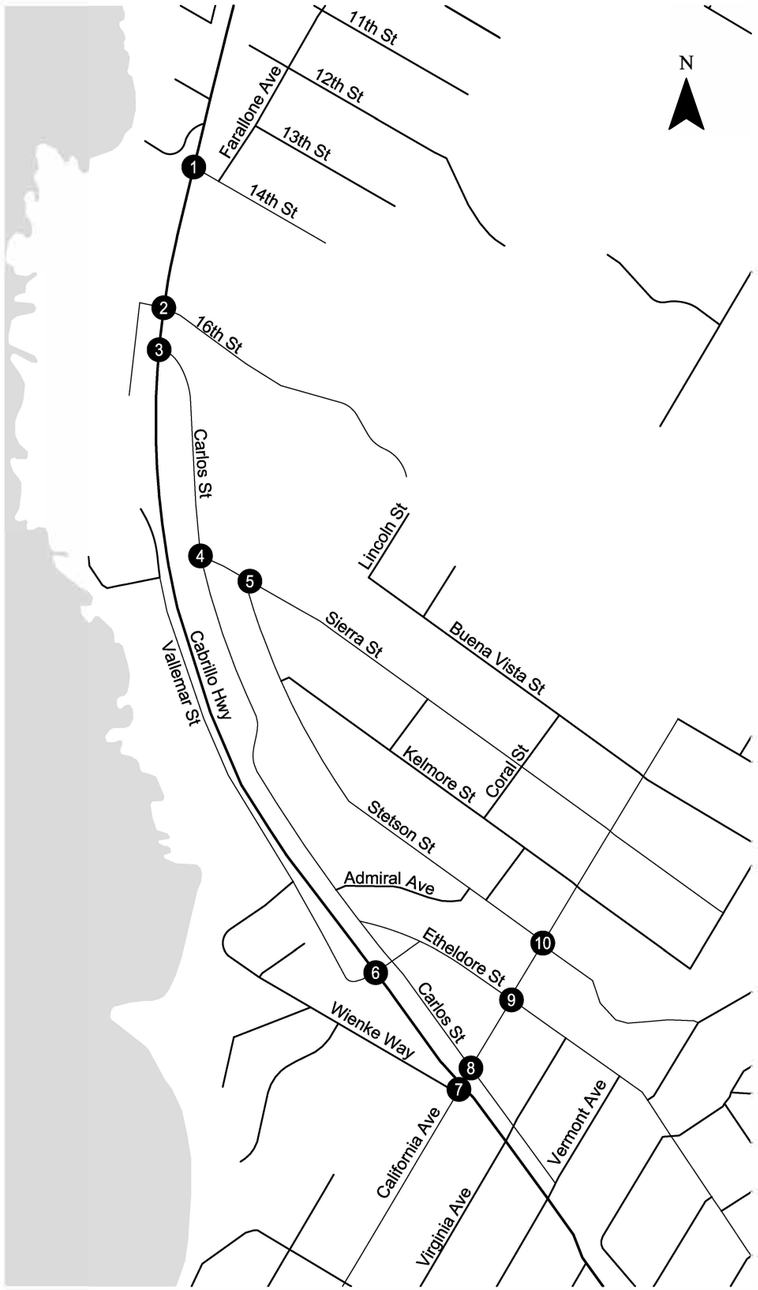
No	Location	Control	Background PM		Background + Project PM	
			Delay	LOS	Delay	LOS
1	State Route 1 & 14th Street	TWSC	**38.5**	**E**	**39.8**	**E**
2	State Route 1 & 16th Street	TWSC	**45.2**	**E**	**47.6**	**E**
3	State Route 1 & Carlos Street	TWSC	14.1	B	32.2	D
4	Carlos Street & Sierra Street	TWSC	8.7	A	8.7	A
5	Stetson Street & Sierra Street	TWSC	9.0	A	9.0	A
6	State Route 1 & Vallemar Street / Etheldore Street	TWSC	**44.3**	**E**	**46.1**	**E**
7	State Route 1 & California Avenue / Wienke Way	TWSC	**112.6**	**F**	**124.2**	**F**
8	Carlos Street & California Avenue	TWSC	9.4	A	9.4	A
9	Etheldore Street & California Avenue	TWSC	9.7	A	9.7	A
10	Stetson Street & California Avenue	AWSC	7.3	A	7.3	A

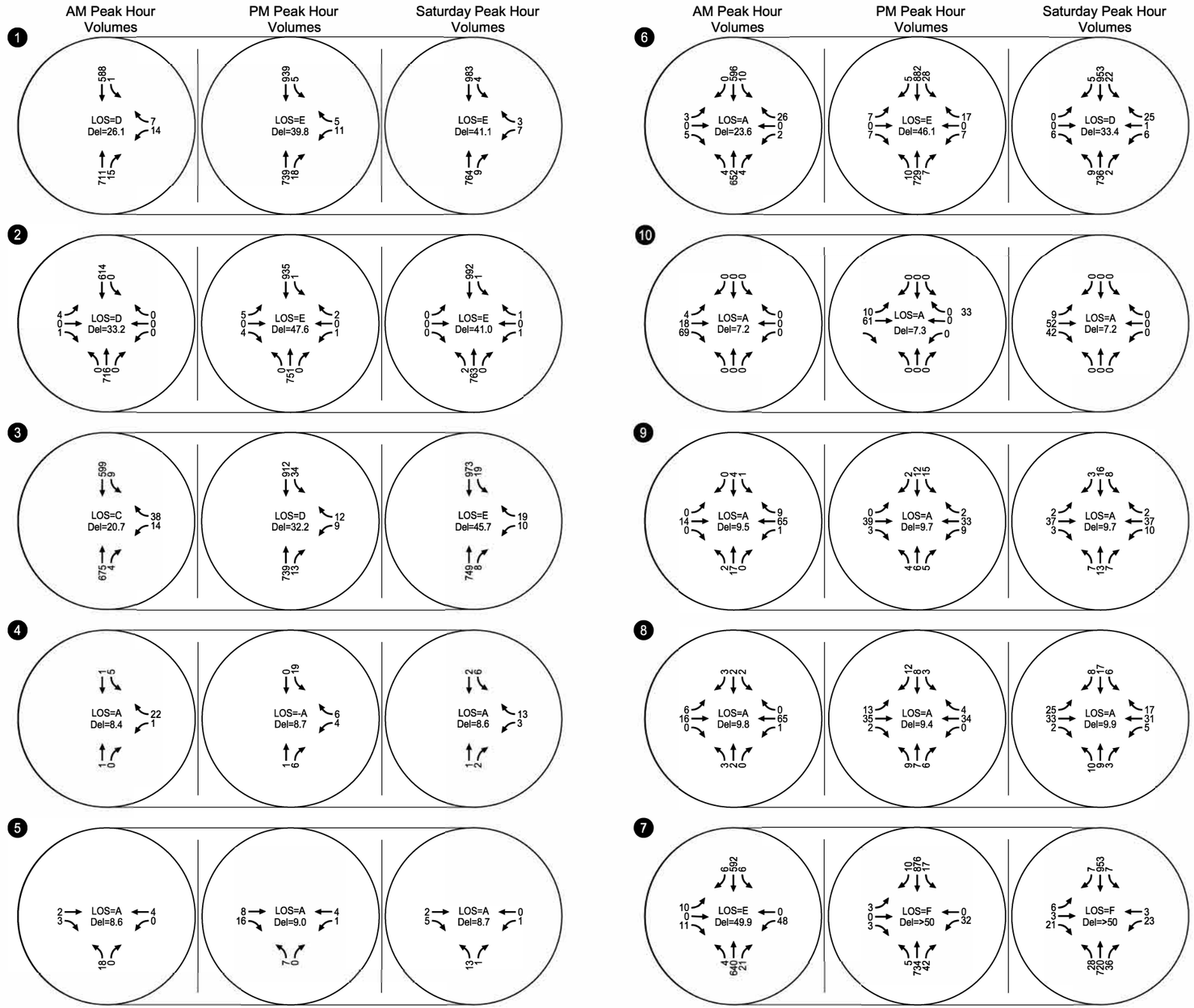
Note: **Bold lettering** indicates an intersection that does not meet the County's minimum acceptable design level of service (LOS C, and LOS D for critical movements). Shaded cells indicate a significant impact.
AWSC: All-Way Stop Control, TWSC: Two-Way Stop Control. LOS and delay reported for TWSC intersections is for the worst approach or movement; complete intersection operations are provided in Appendix 7.
Source: Highway Capacity Manual 2010; Kittelson & Associates, 2018

Table 11: Background with Project Conditions Saturday Intersection Operations Results

No	Location	Control	Background Saturday		Background + Project Saturday	
			Delay	LOS	Delay	LOS
1	State Route 1 & 14th Street	TWSC	**39.7**	**E**	**41.1**	**E**
2	State Route 1 & 16th Street	TWSC	**40.3**	**E**	**41.0**	**E**
3	State Route 1 & Carlos Street	TWSC	15.0	C	**45.7**	**E**
4	Carlos Street & Sierra Street	TWSC	8.6	A	8.6	A
5	Stetson Street & Sierra Street	TWSC	8.7	A	8.7	A
6	State Route 1 & Vallemar Street / Etheldore Street	TWSC	32.3	D	33.4	D
7	State Route 1 & California Avenue / Wienke Way	TWSC	**96.1**	**F**	**102.4**	**F**
8	Carlos Street & California Avenue	TWSC	9.9	A	9.9	A
9	Etheldore Street & California Avenue	TWSC	9.7	A	9.7	A
10	Stetson Street & California Avenue	AWSC	7.2	A	7.2	A

Note: **Bold lettering** indicates an intersection that does not meet the County's minimum acceptable design level of service (LOS C, and LOS D for critical movements). Shaded cells indicate a significant impact.
AWSC: All-Way Stop Control, TWSC: Two-Way Stop Control. LOS and delay reported for TWSC intersections is for the worst approach or movement; complete intersection operations are provided in Appendix 7.
Source: Highway Capacity Manual 2010; Kittelson & Associates, 2018





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V/C = CRITICAL CRITICAL VOLUME-TO-CAPACITY RATIO

Background with Project Turning Movement Volumes and Operations
AM, PM, and Saturday Peak Hour
Moss Beach, California

Figure **10**

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CUMULATIVE CONDITIONS

This section presents the anticipated Cumulative conditions for the study intersections for the year 2040 and the effect the addition of the Project trips would have on them.

The C/CAG-VTA San Mateo County Travel Demand Model was used to develop the future volume forecast for Cumulative Conditions. The model includes future development throughout the region. The 2040 cumulative forecasts are consistent with regional growth totals projected by the Association of Bay Area Governments (ABAG) Plan Bay Area.[7] Therefore, the traffic forecasts reflect both growth in Moss Beach and increases in traffic volumes on State Route 1 due to regional growth. Base year (Year 2013) and future year (Year 2040) forecasts were extracted from the model and linearly interpolated to develop growth between the traffic count year (2017) and the current model horizon year (2040).

The cumulative conditions analysis assumes the intersection of State Route 1 and California Avenue/Wienke Way will be converted from a stop-controlled intersection to a signalized one based on the *Connect the Coastside* draft report. County staff agreed that this was a reasonably foreseeable project by the year 2040 and should therefore be considered in this analysis. Money to implement this signal, while not currently allocated, may be available from Measure W, which is a half-cent sales tax measure to fund transportation projects in San Mateo County. While this intersection was analyzed in this traffic study as a signalized intersection based on existing plans, the final control (signal, roundabout, etc.) will be determined during an intersection control evaluation (ICE) that will be completed for Caltrans during the design phase. The assumed traffic control devices and lane configurations under Cumulative conditions for all study intersections are shown in Figure 11.

Cumulative No Project Conditions

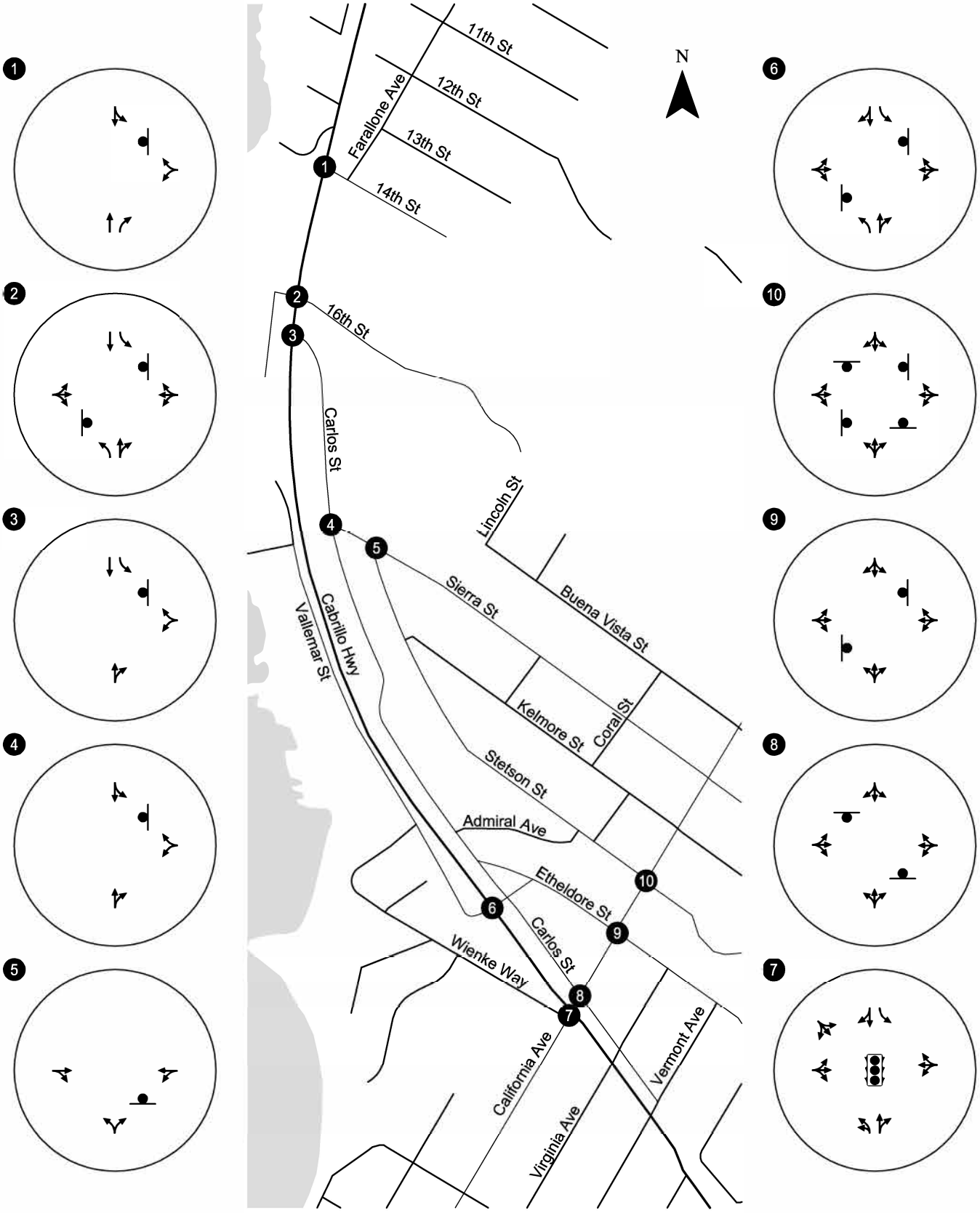
The projected turning movement volumes for each peak hour under Cumulative conditions are provided in Figure 12. Based on these volumes and lane configurations, the Cumulative operations at the study intersections are shown in Table 12. Detailed calculation worksheets for the Cumulative conditions are provided in Appendix 8.

[7] https://mtc.ca.gov/our-work/plans-projects/plan-bay-area-2040

Table 12: Cumulative Conditions Intersection Operations Results

No	Location	Control	Cumulative AM		Cumulative PM		Cumulative Saturday	
			Delay	LOS	Delay	LOS	Delay	LOS
1	State Route 1 & 14th Street	TWSC	**58.2**	**F**	**88.6**	**F**	**59.8**	**F**
2	State Route 1 & 16th Street	TWSC	**74.7**	**F**	**105.3**	**F**	**59.7**	**F**
3	State Route 1 & Carlos Street	TWSC	16.2	C	18.8	C	19.5	C
4	Carlos Street & Sierra Street	TWSC	8.5	A	8.8	A	8.6	A
5	Stetson Street & Sierra Street	TWSC	8.7	A	9.1	A	8.8	A
6	State Route 1 & Vallemar Street / Etheldore Street	TWSC	**52.3**	**F**	**106.3**	**F**	34.1	D
7	State Route 1 & California Avenue / Wienke Way	Signal	10.3	B	10.9	B	10.4	B
8	Carlos Street & California Avenue	TWSC	10.0	B	9.7	A	10.2	B
9	Etheldore Street & California Avenue	TWSC	9.7	A	9.9	A	10.0	B
10	Stetson Street & California Avenue	AWSC	7.3	A	7.4	A	7.2	A

Note: **Bold lettering** indicates an intersection that does not meet the County's minimum acceptable design level of service (LOS C, and LOS D for critical movements).
AWSC: All-Way Stop Control, TWSC: Two-Way Stop Control. LOS and delay reported for TWSC intersections is for the worst approach or movement; complete intersection operations are provided in Appendix 8.
Source: Highway Capacity Manual 2010; Kittelson & Associates, 2018



- STOP SIGN
- TRAFFIC SIGNAL

Cumulative Lane Configurations and Traffic Control Devices
Moss Beach, California

Figure 11

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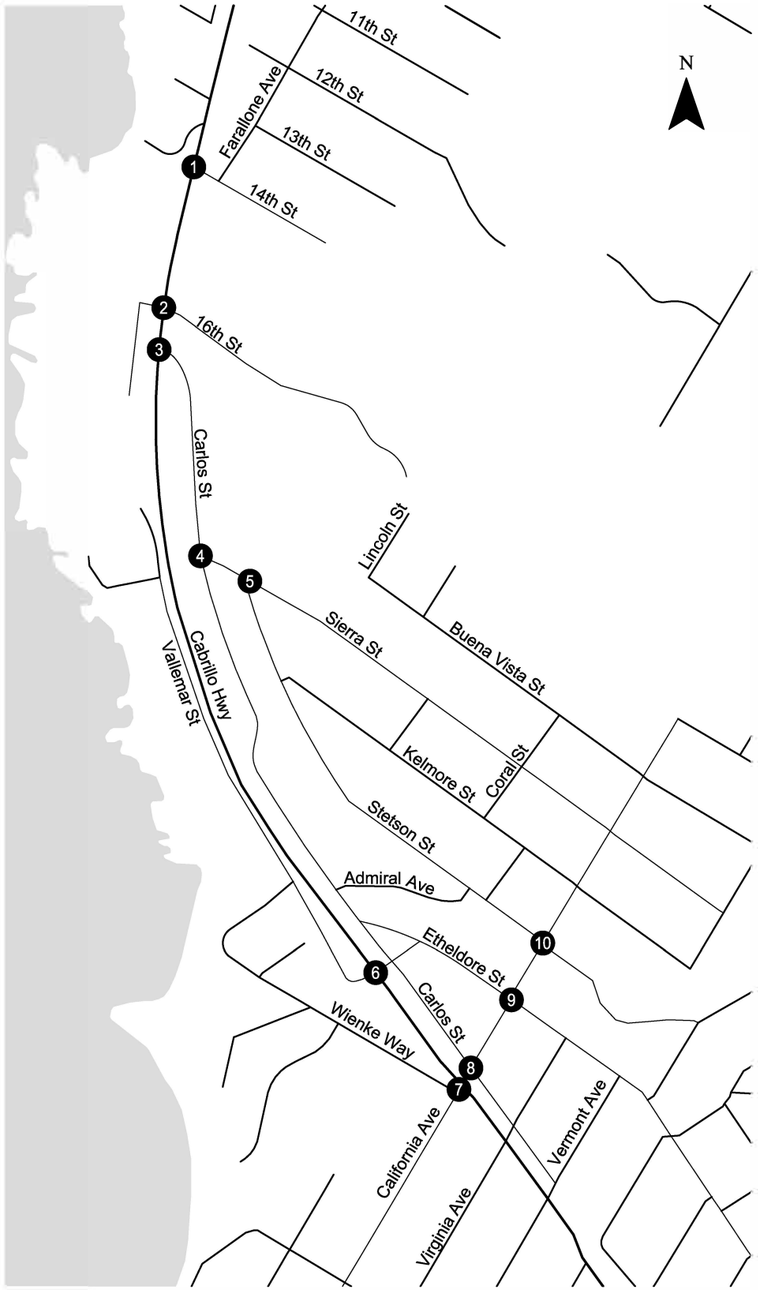

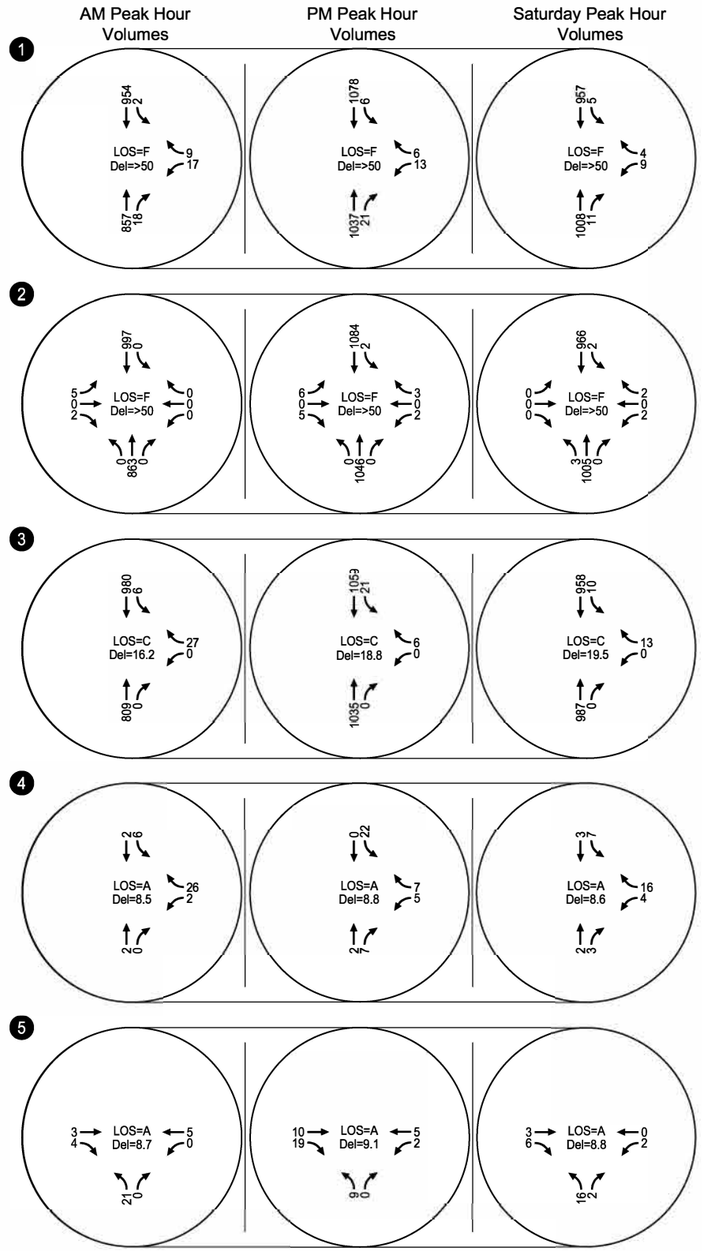

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V/C = CRITICAL CRITICAL VOLUME-TO-CAPACITY RATIO

Cumulative Turning Movement Volumes and Operations
AM, PM, and Saturday Peak Hour
Moss Beach, California

Figure
12

KITTELSON & ASSOCIATES

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Cumulative with Project Conditions

This section discusses the effect of the Project on traffic operations under Cumulative conditions. Traffic volumes for the Cumulative with Project condition were developed using the same additive approach used for the Existing with Project and Background with Project volumes. The turning movement volumes resulting from adding the Project trips to the Cumulative conditions volumes are shown in Figure 13.

Table 13, Table 14, and Table 15 show the Cumulative with Project intersection operations for the AM, PM, and Saturday peak hours, respectively. Detailed calculation worksheets for the Cumulative with Project conditions are provided in Appendix 9. Based on the significance criteria previously described, the Project would cause significant impacts at the following locations:

- **Intersection #2: State Route 1 and 16th Street** – The addition of project trips increases delay for the critical movement at the intersection already exceeding the LOS standard by at least 4 seconds per vehicle during the PM peak hour.
- **Intersection #3: State Route 1 and Carlos Street** – The addition of project trips causes the critical movement at the intersection to degrade below the LOS D standard during the AM, PM, and Saturday peak hours.
- **Intersection #6: State Route 1 and Vallemar Street/Etheldore Street** – The addition of project trips increases delay for the critical movement at the intersection already exceeding the LOS standard to increase by at least 4 seconds per vehicle during the PM and Saturday peak hours. During the Saturday peak, the addition of project trips also causes the LOS to increase to 'E,' exceeding the LOS D standard.

Table 13: Cumulative with Project AM Peak Hour Intersection Operations

No	Location	Control	Cumulative AM		Cumulative AM + Project	
			Delay	LOS	Delay	LOS
1	State Route 1 & 14th Street	TWSC	**58.2**	**F**	**60.6**	**F**
2	State Route 1 & 16th Street	TWSC	**74.7**	**F**	**77.5**	**F**
3	State Route 1 & Carlos Street	TWSC	16.2	C	**36.7**	**E**
4	Carlos Street & Sierra Street	TWSC	8.5	A	8.5	A
5	Stetson Street & Sierra Street	TWSC	8.7	A	8.7	A
6	State Route 1 & Vallemar Street / Etheldore Street	TWSC	**52.3**	**F**	**53.6**	**F**
7	State Route 1 & California Avenue / Wienke Way	Signal	10.3	B	12.2	B
8	Carlos Street & California Avenue	TWSC	10.0	B	10.0	B
9	Etheldore Street & California Avenue	TWSC	9.7	A	9.7	A
10	Stetson Street & California Avenue	AWSC	7.3	A	7.3	A

Note: **Bold lettering** indicates an intersection that does not meet the County's minimum acceptable design level of service (LOS C, and LOS D for critical movements). Shaded cells indicate a significant impact.
AWSC: All-Way Stop Control, TWSC: Two-Way Stop Control. LOS and delay reported for TWSC intersections is for the worst approach or movement; complete intersection operations are provided in Appendix 9.
Source: Highway Capacity Manual 2010; Kittelson & Associates, 2018

Table 14: Cumulative with Project PM Peak Hour Intersection Operations

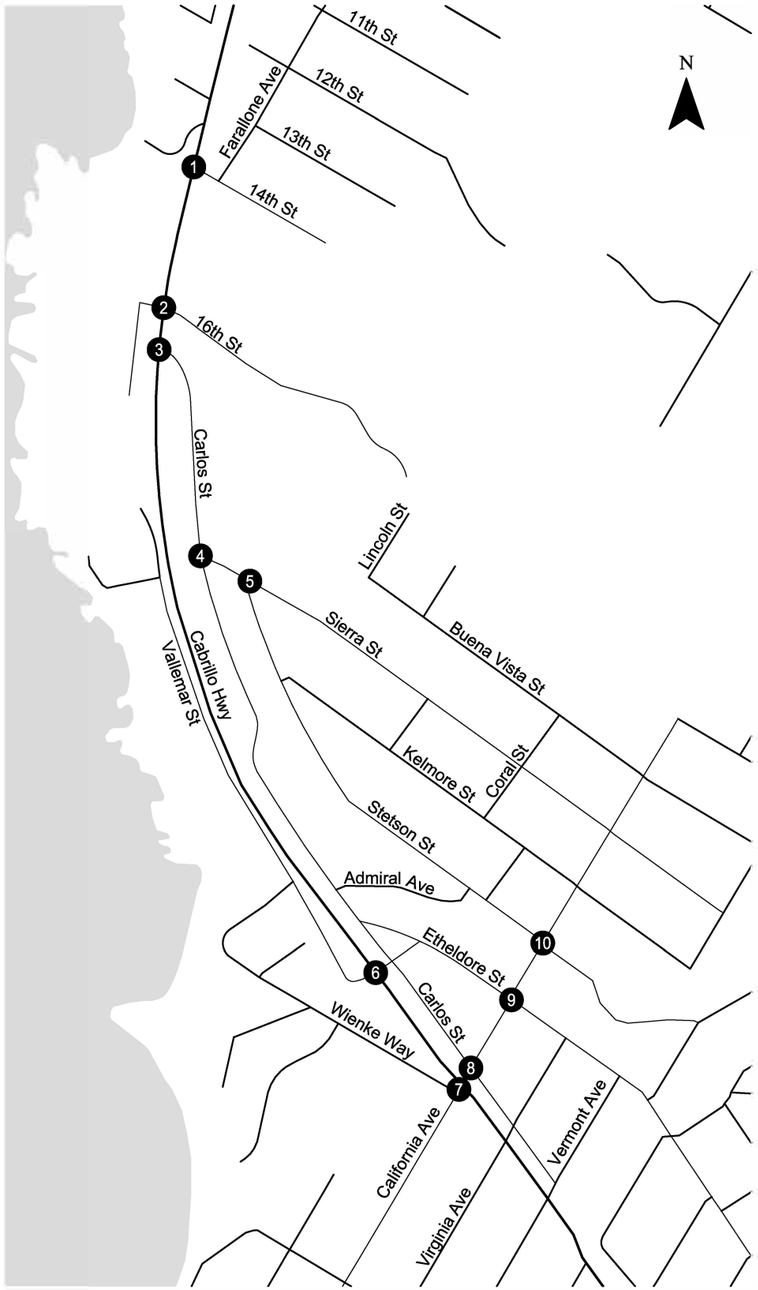
No	Location	Control	Cumulative PM		Cumulative PM + Project	
			Delay	LOS	Delay	LOS
1	State Route 1 & 14th Street	TWSC	**88.6**	**F**	**92.5**	**F**
2	State Route 1 & 16th Street	TWSC	**105.3**	**F**	**114.2**	**F**
3	State Route 1 & Carlos Street	TWSC	18.8	C	**64.2**	**F**
4	Carlos Street & Sierra Street	TWSC	8.8	A	8.8	A
5	Stetson Street & Sierra Street	TWSC	9.1	A	9.1	A
6	State Route 1 & Vallemar Street / Etheldore Street	TWSC	**106.3**	**F**	**112.0**	**F**
7	State Route 1 & California Avenue / Wienke Way	Signal	10.9	B	11.1	B
8	Carlos Street & California Avenue	TWSC	9.7	A	9.7	A
9	Etheldore Street & California Avenue	TWSC	9.9	A	9.9	A
10	Stetson Street & California Avenue	AWSC	7.4	A	7.4	A

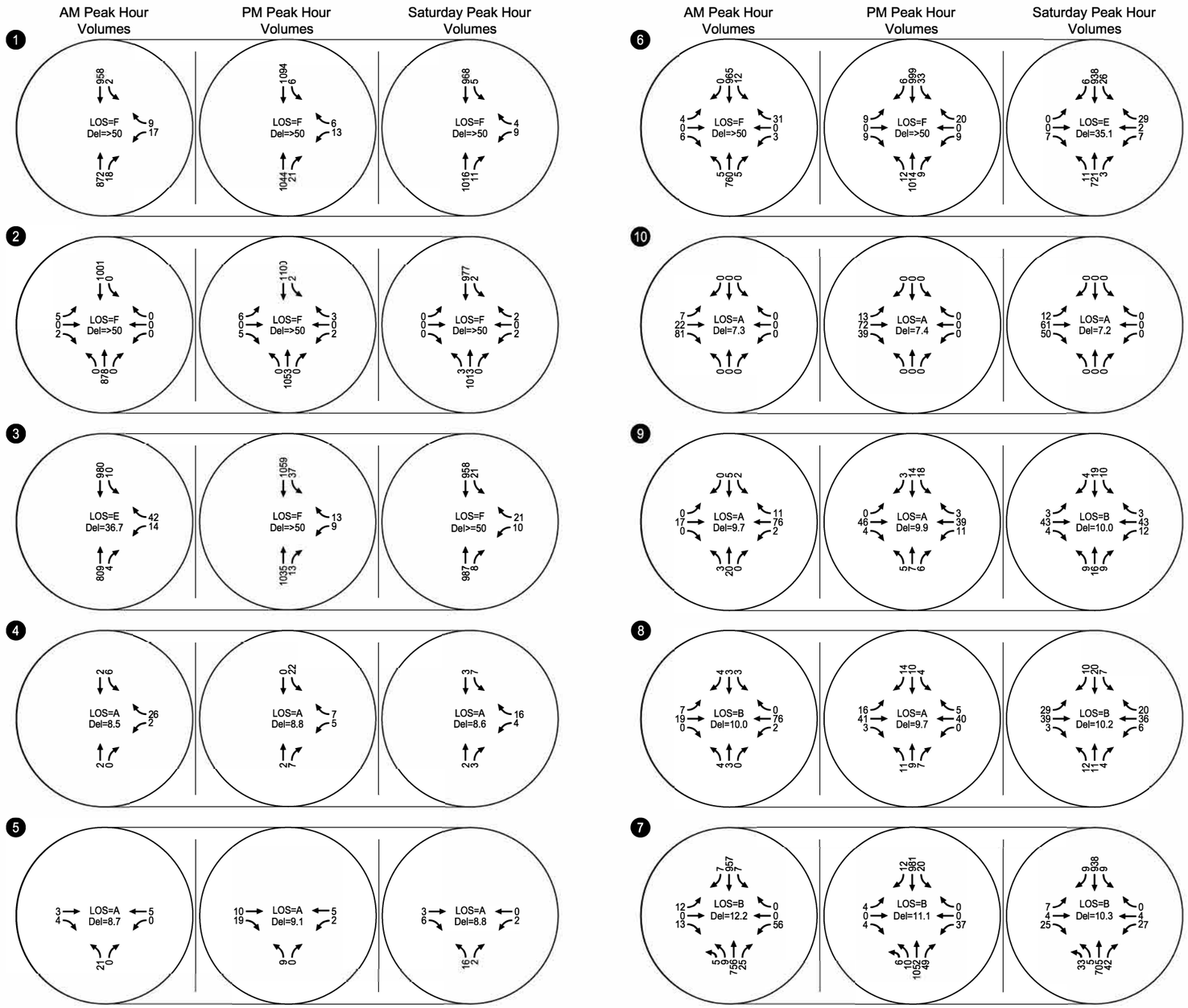
Note: **Bold lettering** indicates an intersection that does not meet the County's minimum acceptable design level of service (LOS C, and LOS D for critical movements). Shaded cells indicate a significant impact.
AWSC: All-Way Stop Control, TWSC: Two-Way Stop Control. LOS and delay reported for TWSC intersections is for the worst approach or movement; complete intersection operations are provided in Appendix 9.
Source: Highway Capacity Manual 2010; Kittelson & Associates, 2018

Table 15: Cumulative with Project Saturday Peak Hour Intersection Operations

No	Location	Control	Cumulative Saturday		Cumulative Saturday + Project	
			Delay	LOS	Delay	LOS
1	State Route 1 & 14th Street	TWSC	**59.8**	**F**	**60.6**	**F**
2	State Route 1 & 16th Street	TWSC	**59.7**	**F**	**61.4**	**F**
3	State Route 1 & Carlos Street	TWSC	19.5	C	**49.1**	**E**
4	Carlos Street & Sierra Street	TWSC	8.6	A	8.6	A
5	Stetson Street & Sierra Street	TWSC	8.8	A	8.8	A
6	State Route 1 & Vallemar Street / Etheldore Street	TWSC	34.1	D	**35.1**	**E**
7	State Route 1 & California Avenue / Wienke Way	Signal	10.4	B	10.3	B
8	Carlos Street & California Avenue	TWSC	10.2	B	10.2	B
9	Etheldore Street & California Avenue	TWSC	10.0	B	10.0	B
10	Stetson Street & California Avenue	AWSC	7.2	A	7.2	A

Note: **Bold lettering** indicates an intersection that does not meet the County's minimum acceptable design level of service (LOS C, and LOS D for critical movements). Shaded cells indicate a significant impact.
AWSC: All-Way Stop Control, TWSC: Two-Way Stop Control. LOS and delay reported for TWSC intersections is for the worst approach or movement; complete intersection operations are provided in Appendix 9.
Source: Highway Capacity Manual 2010; Kittelson & Associates, 2018





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Cumulative with Project Turning Movement Volumes and Operations
AM, PM, and Saturday Peak Hour
Moss Beach, California

Figure
13

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DESIGN AND INCOMPATIBLE USE

The conceptual site plan for the Project was reviewed to assess potential hazards due to Project design or operations and potential incompatible land uses. The proposed land uses are generally compatible with existing uses in the Project vicinity and would not result in undue hazards. Therefore, this assessment focuses on potential hazards due to design. The design topic considered was the Project's impact on intersections with restricted sight distance for existing operating speeds per Caltrans *Highway Design Manual* standards.

Kittelson reviewed the study intersections that access State Route 1 to determine if any of these have restricted sight distance that does not meet Caltrans standards. The intersection of State Route 1 and Carlos Street was found to provide 305 feet of sight distance to the south, which is 300 feet less than what is required for an intersection with a 55-mph facility such as State Route 1, per Table 405.1A in the Caltrans *Highway Design Manual*.[8]

Additionally, a two-way left turn lane is present along State Route 1 exclusively between Carlos Street and 16th Street. Considering the need for deceleration before making a left turn from State Route 1 to either street, motorists making northbound left turns to 16th Street and those making southbound left turns to Carlos Street represent overlapping and conflicting uses of the lane. The addition of southbound left-turning project traffic from State Route 1 to Carlos Street would further contribute to potential conflict between the two movements.

Because this intersection would serve as the principal means of access for the Project to and from State Route 1, the Project would add traffic to both the movements with restricted sight distance and the overlapping left turns, resulting in a **significant impact** in all Project scenarios.

San Mateo County is currently completing an updated draft of its *Connect the Coastside* study to evaluate transportation needs in in the area. County staff have indicated that they will be providing additional analysis and recommendations to address the conditions at the State 1 and Carlos Street intersection. However, at this point in time, the County has not presented recommended improvements or indicated a preferred strategy. Therefore, while Kittelson examined three potential mitigation options as part of this report, we are unable to declare any option feasible until the County selects a preferred option and demonstrates a pathway for implementation. For the purposes of further discussion, Kittelson provides information on the three mitigation options below:

[8] Note that the applicable section of State Route 1 has a posted speed limit of 50 miles per hour, which would indicate a design speed of 55 miles per hour, which is the applicable standard for corner sight distance per the Caltrans *Highway Design Manual*.

1. **Closing Carlos Street between State Route 1 and the Project to all but emergency vehicles.** This option was considered because the removal of traffic from this intersection would negate the need for improving intersection sight distance since vehicles would no longer be allowed to enter or exit at this location. Project traffic as well as existing traffic at the intersection would instead be routed south along Carlos Street and Stetson Street to access State Route 1 at either Etheldore Street or California Avenue.

   Traffic redistribution associated with this closure was modeled and found to result in a secondary significant impact at the intersection of Etheldore Street and State Route 1 where the critical movement delay increased by 4 seconds or more during the PM peak hour, which would cause it to fall below the LOS 'D' threshold in the AM and Saturday peak hours. Feasible mitigation measures to address this secondary impact could not be found (explained in discussion of Impact TRAF-2 in CEQA Project Impacts and Proposed Mitigations).

2. **Connecting Carlos Street with 16th Street instead of State Route 1.** In field review, 16th Street was found to provide sufficient corner sight distance. This option would reroute Carlos Street at State Route 1 into 16th Street instead, directing all inbound and outbound Carlos Street traffic to 16th Street through a new connection between these two streets. However, this option faces three potential challenges that must be examined further:

   - The State Route 1/ 16th Street intersection operates below the County threshold under the Cumulative and Cumulative with Project Conditions. Therefore, routing additional vehicle trips otherwise destined for Carlos Street to 16th Street would further degrade operations at this intersection and may trigger a significant impact at that location.
   - A new "Tee" intersection of 16th Street and Carlos Street in close proximity (less than one car length) to the existing stop-controlled intersection between State Route 1 and 16th Street would have the potential to create conflicts between vehicles turning from State Route 1 onto 16th Street and vehicles turning from Carlos Street onto 16th Street, especially given the difference in operating speeds for motorists turning from the highway compared to motorists driving along Carlos Street. In order to avoid conflicts, the County could need to obtain additional right of way to increase the distance between State Route 1 and a potential Carlos Street/16th Street intersection.
   - There is a significant grade difference between Carlos Street and 16th Street and providing a formal connection may not be reasonable geometrically. In order to create a reasonable grade for such connection, the County would potentially need to obtain additional right of way.

3. **Grading the east side of State Route 1 to provide clear sight distance.** Given speeds along State Route 1, earthwork or tree clearing would be necessary to clear required sight distance to the south at Carlos Street. This would include cutting back trees and re-grading the berm between Highway 1 and Carlos Street. While clearing the land would provide adequate sight distance for the horizontal curvature of the road (see Figure 1), there is also a vertical curve due to elevation changes that may obstruct sight distance. Because Highway 1 crests south of the Carlos Street intersection, a driver may

not be able to see vehicles on the other side of the crest of the curve. A detailed topographic map would be needed to determine if horizontal clearing, which may be prohibitively expensive and would require an encroachment permit from Caltrans, would provide adequate sight distance given the vertical curve.

EMERGENCY ACCESS

Primary access to the Project would be provided by the driveway on Carlos Street. Additionally, there is an emergency vehicle access route provided from Lincoln Street. Given the two access points available for emergency vehicle ingress and egress, the Project's proposed site plan is expected to provide adequate emergency vehicle access. This analysis assumes, in accordance with CEQA, that the final design of all circulation improvements shall be required to adhere to all applicable County and other statutes and requirements, including, without limitation, those set forth in the California Fire Code and California Vehicle Code. Therefore, the impact is considered to be **less than significant**.

TRANSIT IMPACTS

The Project site is served by two bus routes (Route 17 and Route 18) operated by SamTrans transit service (see Figure 4). The nearest Route 17 bus stops are at the following locations:

- Northbound: North of the Project on the east side of State Route 1 at State Route 1 / 14th Street (0.23 miles from the Project).
- Southbound weekday AM: South of the Project at Etheldore Street / Sunshine Valley Road (0.62 miles from the Project).
- Southbound weekday PM and weekend: North of the Project on the west side of State Route 1 between Carlos Street and 16th Street (0.11 miles from the Project) and at California Avenue / Etheldore Street (0.47 miles from the Project).

The nearest Route 18 bus stops in both directions are at Sunshine Valley Road / Etheldore Street (0.47 miles from the Project).

Both of these routes primarily travel along State Route 1. Since the majority of State Route 1 traffic movements experience little or no delay, the Project traffic is not anticipated to decrease the performance of public transit.

BICYCLE IMPACTS

A qualitative assessment was conducted to determine the Project's potential impacts on bicyclists and bicycle facilities. San Mateo County's Bicycle and Pedestrian Master Plan (2011) includes planned Class I, Class II and Class III bikeways in the vicinity of the Project. These facilities include:

- Class I multi-use path near State Route 1 between Carlos Street and Main Street
- Class II bicycle lane along Carlos Street

- Class III bicycle route along State Route 1

The Project does not conflict with existing or proposed bicycle facilities identified in the Bicycle and Pedestrian Master Plan because the Project is not proposing to change roadway geometries in ways which would prevent the development of the proposed bicycle facilities. Therefore, the impact is considered to be **less than significant**.

PEDESTRIAN IMPACTS

A qualitative assessment was conducted to determine the Project's potential impacts on pedestrians and pedestrian facilities. Based on this assessment, the project would result in the following potentially significant impacts on the performance or safety of pedestrian facilities:

Pedestrian Access to Transit – The Project may lead to an increase in pedestrians accessing the nearest bus stop which is located across State Route 1 near Carlos Street (see *Transit Impacts* for more information on the local transit network). This stop serves Route 17 for the weekday PM and weekend service but there is no marked crosswalk across State Route 1 to access it. Additionally, there is inadequate corner sight distance at the intersection of Carlos Street and State Route 1 for pedestrians to see vehicles and drivers to see pedestrians.

The draft *Connect the Coastside* study, which was prepared by San Mateo County to evaluate transportation needs in this area, has proposed a striped pedestrian crossing with a beacon along State Route 1 at 16th Street in the vicinity of the southbound bus stop based on established needs.[9] The published report is a draft, and final recommendations have not yet been developed. Additionally, there has not been a detailed design study for this crossing to determine if it is feasible given the inadequate sight distance.

Since the Project will likely increase the pedestrian demand for crossing State Route 1 at an unmarked crossing location with inadequate sight distance, the Project will increase the hazard for this crossing, resulting in a **significant impact.**

Pedestrian Access to Sidewalk Network – The proposed access driveway for the Project is on Carlos Street, which does not provide pedestrian facilities such as sidewalks to connect the Project to sidewalks on the north side of Sierra Street and the east side of Stetson Street. Since the Project is anticipated to house more than 200 residents, it is likely to increase pedestrian activity in the area. Without a proper connection to the sidewalks on Sierra Street and Stetson Street, Project residents would need to walk in

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[9] *Connect the Coastside* Draft Report, March 2016. Available online at https://planning.smcgov.org/sites/planning.smcgov.org/files/press-release/files/1.3%20CTMP%20Draft%20Recommendation%20of%20Transportation%20Improvements%20and%20Appendices%204.13.16.pdf

the street, resulting in the potential for decreased pedestrian safety. Therefore, the impact is considered to be a **significant impact**.

CEQA PROJECT IMPACTS AND PROPOSED MITIGATIONS

TRAF-1 **The proposed project would conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the intersections under Existing Conditions. This is considered to be a potentially significant impact.**

The Project's potentially significant impacts to intersection operations were identified using the criteria previously described in this report. Based on these criteria, the following intersections were found to be operating below the LOS standard under Existing Conditions.

Impact TRAF-1A: The additional traffic generated by the Project would result in an increase in delay for the critical movement at the intersection of **State Route 1 and California Avenue/Wienke Way (#7)**, which is already operating below the LOS standard, by at least 4 seconds during the PM and Saturday peak hours under Existing Conditions.

As one of the main access points to the neighborhood in which the Project is located, the additional traffic at this intersection caused by the Project represents about a 1.4% increase in intersection demand. This will increase the delay by at least four seconds for vehicles waiting to make the westbound left turn from California Avenue to southbound State Route 1. The addition of this traffic would result in the delay for the westbound left turn increasing by 5.9 seconds per vehicle during the PM peak hour and 5.2 seconds per vehicle during the Saturday peak hour. To reduce this impact, the following mitigation measures are proposed.

> **Mitigation Measure TRAF-1A –** San Mateo County will work with Caltrans to convert the intersection control from two-way stop control into a roundabout or signalized intersection. The exact intersection control will be determined at the conclusion of an Intersection Control Evaluation (ICE) study as required by Caltrans. The ICE study would be performed as part of the design phase for changing the intersection control.

The intersection was modeled as a five-leg signalized intersection to assess the mitigation measure. Conversion to a five-leg signalized intersection would improve the operation of this intersection to LOS 'A' during the PM peak hour and LOS 'B' during the Saturday peak hour with critical movements operating within County LOS standards, lessening the Project impacts to less than significant (Table 16 and Appendix 10). A preliminary analysis was also performed for a single-lane roundabout alternative, which was found to meet the current LOS standard for the County under Cumulative conditions (see Appendix 11). To be consistent with the draft *Connect the Coastside* recommendations, the signal control alternative was modeled to represent the ability of Mitigation Measure TRAF-1A to mitigate the impact fully. A more detailed analysis will be performed as part of an ICE during the design phase to select whether a roundabout or signal is preferred.

Although this mitigation measure with conversion to a signalized intersection would reduce this impact to a less-than-significant level, this intersection is under the jurisdiction of Caltrans. Thus, San Mateo County would need to obtain an encroachment permit from Caltrans. With the implementation and

timing of the mitigation measure not entirely under the County's control and therefore uncertain, this impact would be significant and unavoidable.

Mitigation Measure TRAF-1B – Develop a Transportation Demand Management (TDM) plan for review and approval by San Mateo County which may include:

- Local live-work preference for residents
- One or more dedicated car share parking space(s)
- Free or discounted SamTrans transit passes
- Provide public transit information and education for residents – maps and schedules for residents, brochures about environmental and health benefits
- Provide a pedestrian trunk (grocery cart) to eliminate driving to local market
- Provide both short and long-term secure bicycle parking
- Support for active transportation through provision of bicycle and pedestrian-supportive infrastructure, streets, etc. within the Project
- Additional measures that may become available as technology evolves

Implementation of a TDM plan may reduce the number of vehicle trips generated by the Project and reduce the impact to the transportation infrastructure. Although a TDM plan may reduce the vehicle trip generation and lessen the impact, the effectiveness of a TDM plan cannot be guaranteed. Therefore, the impact remains significant and unavoidable.

Significance After Mitigation: Significant and unavoidable.

Table 16: Existing Conditions Intersection Operations at State Route 1 & California Avenue / Wienke Way

#	Location	Control	Peak Hour	Existing		Existing + Project		Existing + Project, Mitigated (Signal)	
				Delay	LOS	Delay	LOS	Delay	LOS
7	State Route 1 & California Avenue / Wienke Way	TWSC (Signal in Mitigated Condition)	AM	**43.5**	**E**	**45.6**	**E**	9.9	A
			PM	**78.2**	**F**	**84.1**	**F**	8.5	A
			Sat.	**87.1**	**F**	**92.3**	**F**	11.1	B

Note: Bold lettering indicates an intersection that does not meet the County's minimum acceptable design level of service (LOS C, and LOS D for critical movements). Shaded cells represent a significant impact.
TWSC: Two-Way Stop Control. LOS and delay reported for TWSC intersections is for the worst approach or movement; complete intersection operations are provided in Appendix 4, Appendix 5, and Appendix 10.
Source; Highway Capacity Manual 2010; Kittelson & Associates, 2018

TRAF-2	**The proposed project would conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the intersections under Background Conditions. This is considered to be a potentially significant impact.**

The Project's potentially significant impacts to intersection operations were identified using the criteria previously described in this report. Based on these criteria, the following intersections were found to be operating below the LOS standard under Background with Project Conditions.

Impact TRAF-2A: The additional traffic generated by the Project would increase delay for the critical movement at the intersection of **State Route 1 and California Avenue/Wienke Way (#7)**, which is already operating below the LOS standard, by at least 4 seconds during the PM and Saturday peak hours under Background with Project conditions.

As one of the main access points to the neighborhood in which the Project is located, the additional traffic at this intersection caused by the Project represents about a 1.3% increase in intersection demand. This will increase the delay by at least four seconds for vehicles waiting to make the westbound left turn from California Avenue to southbound State Route 1. The addition of this traffic results in the westbound left turn delay increasing by 11.6 seconds per vehicle during the PM peak hour and 6.3 seconds per vehicle during the Saturday peak hour. To reduce this impact, implement the following mitigation measures.

Mitigation Measures: Implement Mitigation Measures **TRAF-1A** and **TRAF-1B**.

Implementation of Mitigation Measures **TRAF-1A** and **TRAF-1B** would improve the operation of this intersection to LOS 'A' during the PM peak hour and LOS 'B' during the Saturday peak hour with critical movements operating within County LOS standards, lessening the Project impacts to less than significant (Table 17 and Appendix 12). Although this mitigation measure would reduce this impact to a less-than-significant level, this intersection is under the jurisdiction of Caltrans. Thus, San Mateo County will need to obtain an encroachment permit from Caltrans. With the implementation and timing of the mitigation measure not entirely under the County's control and therefore uncertain, this impact would be significant and unavoidable.

Implementation of a TDM plan may reduce the number of vehicle trips generated by the Project and reduce the impact to the transportation infrastructure. Although a TDM plan may reduce the vehicle trip generation and lessen the impact, the effectiveness of a TDM plan cannot be guaranteed. Therefore, the impact remains significant and unavoidable.

Significance After Mitigation: Significant and unavoidable.

Table 17: Background Conditions Intersection Operations at State Route 1 & California Avenue / Wienke Way

#	Location	Control	Peak Hour	Background		Background + Project		Background + Project, Mitigated	
				Delay	LOS	Delay	LOS	Delay	LOS
7	State Route 1 & California Avenue / Wienke Way	TWSC (Signal in Mitigated Condition)	AM	**47.4**	**E**	**49.9**	**E**	9.9	A
			PM	**112.6**	**F**	**124.2**	**F**	9.7	A
			Sat.	**96.1**	**F**	**102.4**	**F**	11.6	B

Note: Bold lettering indicates an intersection that does not meet the County's minimum acceptable design level of service. (LOS C, and LOS D for critical movements). Shaded cells represent a significant impact.
TWSC: Two-Way Stop Control. LOS and delay reported for TWSC intersections is for the worst approach or movement; complete intersection operations are provided in Appendix 6, Appendix 7, and Appendix 12.
Source; Highway Capacity Manual 2010; Kittelson & Associates, 2018

Impact TRAF-2B: The Project would cause the critical movement of **State Route 1 and Carlos Street (#3)** to operate below the LOS D standard under Background with Project Conditions during the Saturday peak hour.

This intersection would serve as the main access point to the Project from State Route 1. The addition of Project traffic to the westbound approach at this intersection would increase the average delay for vehicles waiting to turn onto State Route 1, causing the westbound approach to change from LOS C to LOS E.

Mitigation Measures: Implement Mitigation Measure **TRAF-1B**

Although three additional potential mitigation options were considered, they cannot be considered feasible until San Mateo County selects a preferred approach.

1. **Closing Carlos Street between State Route 1 and the Project to all but emergency vehicles.** This option was considered because the removal of traffic from this intersection would negate the need for improving intersection sight distance since vehicles would no longer be allowed to exit at this location. Project traffic as well as existing traffic at the intersection would instead be routed south along Carlos Street and Stetson Street to access State Route 1 at either Etheldore Street or California Avenue.

   Traffic redistribution associated with this closure was modeled and found to result in a secondary significant impact at the intersection of Etheldore Street and State Route 1 where the critical

movement delay increased by 4 seconds or more during the PM peak hour and would fall below the LOS 'D' threshold in the AM and Saturday peak hours. Feasible mitigation measures to address this secondary impact could not be found (explained in discussion of Impact TRAF-2 in CEQA Project Impacts and Proposed Mitigations).

2. **Connecting Carlos Street with 16th Street instead of State Route 1.** In field review, 16th Street was found to provide sufficient corner sight distance. This option would reroute Carlos Street at State Route 1 into 16th Street instead, directing all inbound and outbound Carlos Street traffic to 16th Street. However, this option was considered infeasible for the following reasons:
   - State Route 1 & 16th Street operates below the County threshold in Cumulative and Cumulative with Project Conditions. Therefore, routing additional vehicle trips otherwise destined for Carlos Street to 16th Street would further degrade operations at this intersection and could trigger a significant impact at that location.
   - A "Tee" intersection of 16th Street and Carlos Street in close proximity (less than one car length) to the existing stop-controlled intersection between State Route 1 and 16th Street would have the potential to create conflicts between vehicles turning from State Route 1 onto 16th Street and vehicles turning from Carlos Street onto 16th Street, especially given a difference in operating speeds for motorists turning from the highway compared to motorists driving along Carlos Street. In order to avoid conflicts, the County could need to obtain additional right of way to increase the distance between State Route 1 and a potential Carlos Street/16th Street intersection.
   - There is a significant grade difference between Carlos Street and 16th Street and providing a formal connection may not be reasonable geometrically. In order to create a reasonable grade for such connection, the County would potentially need to obtain additional right of way.

3. **Grading the east side of State Route 1 to provide clear sight distance.** Given speeds along State Route 1, earthwork or tree clearing would be necessary to clear required sight distance to the south at Carlos Street. This would include cutting back trees and re-grading the berm between Highway 1 and Carlos Street. While clearing the land would provide adequate sight distance for the horizontal curvature of the road (see Figure 1), there is also a vertical curve due to elevation changes that may obstruct sight distance. Because Highway 1 crests south of the Carlos Street intersection, a driver may not be able to see vehicles on the other side of the crest of the curve. A detailed topographic map would be needed to determine if horizontal clearing, which may be prohibitively expensive and would require an encroachment permit from Caltrans, would provide adequate sight distance given the vertical curve.

Implementation of a TDM plan may reduce the number of vehicle trips generated by the Project and reduce the impact to the transportation infrastructure. Although a TDM plan may reduce the vehicle trip generation and lessen the impact, the effectiveness of a TDM plan cannot be guaranteed. Additionally, County staff have indicated that they will be providing additional analysis and recommendations in the updated *Connect the Coastside* report. However, the County has not presented a recommended mitigation or indicated a clear pathway for implementing potential improvements. As a result, we cannot consider any option feasible at this point in time.

Therefore, the impact remains significant and unavoidable.

Significance After Mitigation: Significant and unavoidable.

TRAF-3	**The proposed project would conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the intersections under Cumulative Conditions. This is considered to be a potentially significant impact.**

The Project's potentially significant impacts to intersection operations were identified using the criteria previously described in this report. Based on these criteria, the following significant impacts were found for Cumulative with Project Conditions.

Impact TRAF-3A: The additional traffic generated by the Project would result in the critical movement of **State Route 1 and Carlos Street (#3)** operating below the LOS D standard under Cumulative Conditions during the AM, PM, and Saturday peak hours.

This intersection serves as the main access point to the Project from State Route 1. The addition of Project traffic to the westbound approach at this intersection increases the average delay for vehicles waiting to turn onto State Route 1 causing the westbound approach to change from LOS C to LOS E during the AM peak hour and LOS C to LOS F during the PM and Saturday peak hours. To reduce this impact, implement the following mitigation measures.

Mitigation Measure: Implement Mitigation Measure **TRAF-1B**.

Three additional potential mitigations were considered but not advanced because they were considered infeasible (see discussion of Impact **TRAF-2B**). Implementation of a TDM plan may reduce the number of vehicle trips generated by the Project and reduce the impact to the transportation infrastructure. Although a TDM plan may reduce the vehicle trip generation and lessen the impact, the effectiveness of a TDM plan cannot be guaranteed. Therefore, the impact remains significant and unavoidable.

Significance After Mitigation: Significant and unavoidable.

Impact TRAF-3B: The additional traffic generated by the Project would result in delay of the critical movement at the intersection of **State Route 1 and Vallemar Street / Etheldore Street (#6)**, which is already operating below the LOS standard, to increase by at least 4 seconds during the Saturday peak

hour (5.7 seconds) under Cumulative with Project conditions. To reduce this impact, implement the following mitigation measures.[10]

Mitigation Measure TRAF-3B – Implement Mitigation Measure **TRAF-1B**.

Implementation of a TDM plan (TRAF-1B) may reduce the number of vehicle trips generated by the Project and reduce the impact to the transportation infrastructure. Although a TDM plan could reduce the vehicle trip generation and lessen the impact, the effectiveness of a TDM plan cannot be guaranteed. Therefore, the impact remains significant and unavoidable.

Additional mitigation measures were considered including signalization, left turn restrictions, and the addition of left turn lanes. However, these options were determined to not be feasible for the following reasons:

- Signalization – The intersection of Etheldore Street and State Route 1 does not meet the peak hour signal warrant (Appendix 13), therefore, signalization is not warranted.
- Left Turn Restrictions – restricting the eastbound and westbound left turns out of Etheldore Street and State Route 1 during the peak periods and reassigning them to the intersection of California Avenue/Wienke Way and State Route 1 would reduce the impact to less than significant. However, Caltrans has indicated that they would not allow this type of restriction making this option infeasible.
- Additional Turn Lanes – Adding exclusive left turn lanes on the eastbound and westbound approaches at the intersection would separate the left and right turning traffic reducing queues and delay. However, separating the left and through/right lanes was not sufficient to mitigate the impact since the left turn lanes still have a delay that is at least 4 seconds higher than in the No Project conditions. Since the intersection delay is still impacted, the additional lanes would not mitigate the impact.

Significant After Mitigation: Significant and unavoidable.

Impact TRAF-3C: The additional traffic generated by the Project would result in delay of the critical movement at the intersection of **State Route 1 and 16th Street (#2)**, which is already operating below the

[10] Note that the draft *Connect the Coastside* study recommends maintaining intersection level of service standards only for signalized intersections or for unsignalized intersections that meet a peak-hour signal warrant. If this change is made by the County upon completing of the study, this intersection would not represent an impact.

LOS standard, to increase by at least 4 seconds during the PM peak hour (8.9 seconds) under Cumulative with Project conditions.[11] To reduce this impact, implement the following mitigation measures.

Mitigation Measure: Implement Mitigation Measure **TRAF-1B**.

Implementation of a TDM plan (TRAF-1B) may reduce the number of vehicle trips generated by the Project and reduce the impact to the transportation infrastructure. Although a TDM plan could reduce the vehicle trip generation and lessen the impact, the effectiveness of a TDM plan cannot be guaranteed. Therefore, the impact remains significant and unavoidable.

Additional mitigation measures were considered including signalization, left turn restrictions, and the addition of left turn lanes. However, these options were determined to not be feasible for the following reasons:

- Signalization – The intersection of 16th Street and State Route 1 does not meet the peak hour signal warrant (Appendix 13), therefore, signalization is not warranted.
- Left Turn Restrictions – restricting the westbound left turn out of 16th Street and State Route 1 during the peak periods and reassigning them to the right turn movement would reduce the impact to less than significant. However, Caltrans has indicated that they would not allow this type of restriction making this option infeasible.
- Additional Turn Lanes – Adding exclusive left turn lane on westbound approach at the intersection would separate the left and right turning traffic reducing queues and delay. However, separating the left and through/right lanes was not sufficient to mitigate the impact since the left turn lanes still have a delay that is at least 4 seconds higher than the no project conditions. Since the intersection delay is still impacted, the additional lanes would not mitigate the impact.

Significant After Mitigation: Significant and unavoidable.

[11] Note that the draft *Connect the Coastside* study recommends maintaining intersection level of service standards only for signalized intersections or for unsignalized intersections that meet a peak-hour signal warrant. If this change is made by the County upon completing of the study, this intersection would not represent an impact.

TRAF-4	**The proposed project would substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).**

The conceptual site plan for the Project was reviewed to assess potential hazards due to Project design and potentially incompatible uses. The proposed land uses are generally compatible with existing uses in the Project area and would not result in undue hazards. Therefore, this assessment focuses on potential hazards due to design by examining whether the Project would increase the level of traffic for movements that have restricted sight distance based on existing operating speeds per Caltrans *Highway Design Manual* standards.

Impact TRAF-4A: The Project would add traffic to the westbound approach to the intersection of Carlos Street and State Route 1, which has inadequate sight distance for seeing northbound vehicles on State Route 1. It would also cause potential conflict between Project trips making a southbound left onto Carlos Street and non-Project traffic making a northbound left into the Lighthouse since both movements share a very short left turn lane. This would cause a significant impact under all with Project scenarios.

This intersection provides primary access to the Project site from State Route 1. Project vehicles would have restricted sight distance when exiting onto State Route 1 making it difficult to judge adequate gap acceptance for safe entry onto State Route 1. To reduce this impact, implement the following mitigation measures.

Mitigation Measure: Implement Mitigation Measure TRAF-1B.

Three additional potential mitigations were considered but not advanced because they were considered infeasible (see discussion of Impact **TRAF-2B**). Implementation of a TDM plan may reduce the number of vehicle trips generated by the Project and reduce the impact to the transportation infrastructure. Although a TDM plan may reduce the vehicle trip generation and lessen the impact, the effectiveness of a TDM plan cannot be guaranteed. Therefore, the impact remains significant and unavoidable.

Significance After Mitigation: Significant and unavoidable.

TRAF-5	**The additional traffic associated with the proposed project has the potential to decrease the performance or safety of public transit, bicycle, or pedestrian facilities. This would be considered a potentially significant impact.**

The Project's potentially significant impacts on transit, bicycle, and pedestrian facility performance and safety were assessed using both qualitative and quantitative measures.

Impact TRAF-5A: The increase in pedestrian activity expected as a result of the Project generate more pedestrian activity on Carlos Street and an increased potential for pedestrian/vehicle interactions because there are currently no sidewalks along the Project's frontage. To reduce this impact, implement the following mitigation measure.

> **Mitigation Measure TRAF-5A –** Construct a sidewalk that connects the Project entrance on Carlos Street to the sidewalk located on the north side of Sierra Street. This includes land both on and adjacent to the Project property.

Implementation of Mitigation Measure TRAF-5A would separate pedestrians from motor vehicles reducing the potential for pedestrian/vehicle interactions. After implementation, this impact will be less than significant.

> **Significance After Mitigation:** Less than significant.

Impact TRAF-5B: The increase in transit ridership expected as a result of the Project may lead to more pedestrians crossing State Route 1 to access the bus stop on southbound State Route 1 at 16th Street. This may increase the potential risk for pedestrian/vehicle interactions on State Route 1 given that there are currently no marked pedestrian crossings across State Route 1 near Carlos Street to access this stop. Additionally, the limited sight distance at this location would not allow sufficient visibility for pedestrians to be seen by vehicles on State Route 1. To reduce this impact, implement the following mitigation measures.

> **Mitigation Measure TRAF-5B –** The project sponsor should distribute informational literature to tenants upon move-in detailing available transit service and bus stop locations. The informational literature should discourage the use of the southbound bus stop at Carlos Street and State Route 1 because of the inadequate corner sight distance provided at the intersection. Residents should be redirected to use the bus stop at Etheldore Street and California Street instead which is approximately a ten-minute walk from the project entrance.

With implementation of Mitigation Measure TRAF-5B, Project residents would be directed away from a crossing at State Route 1 where there is inadequate sight distance to a bus stop with increased accessibility located approximately 10 minutes from the project entrance via Carlos Street, Sierra Street, Stetson Street, and California Avenue. Implementation of TRAF-5B would also promote transit usage among Project residents by providing information on available transit in the area.

However, the effectiveness of this mitigation in deterring residents from crossing State Route 1 cannot be guaranteed. Therefore, this impact would remain significant and unavoidable.

Significance After Mitigation: Significant and unavoidable.

PARKING ASSESSMENT

Kittelson has provided a parking assessment for informational purposes. This parking assessment reviews the estimated demand for parking based on land use as well as parking requirements stipulated in the San Mateo County Zoning Regulations.[12] Based on the proposed site plan, the Project will provide 142 parking spaces. This section evaluates the adequacy of parking for the Project using two methods. It is first evaluated against San Mateo County zoning regulations on parking. It is also evaluated against parking demand, as estimated based on industry standards.

County Parking Requirements

Based on County zoning regulations, a 71-unit apartment complex is required to have 127 parking spaces as shown in Table 18. Therefore, the Project provides 15 more parking spaces than required by San Mateo County.

Table 18: Parking Requirements for the Project

Apartment Type	Number of Units	Parking Rate (Per Unit)	Parking Required
1 Bedroom	16	1.2	20
2 Bedroom	37	1.5	56
3 Bedroom	18	2	36
Guest Parking[1]		0.2	15
		Total:	127

Source: Kittelson & Associates, Inc. 2018
San Mateo County Zoning Regulations Chapter 3, Section 6119
[1]Guest parking at 1 space per 5 units

Estimated Parking Demand

An estimate of parking demand was performed using the *Parking Generation Manual* (4th edition) published by the Institute of Transportation Engineers (ITE). This manual is a standard transportation industry document that estimates the demand for parking based on studies conducted at similar sites.

[12] San Mateo County Zoning Regulations, Chapter 3, Section 6119 (December 2012)

The land use in the ITE manual that is the most similar with the Project is the Low/Mid-Rise Apartment (LU 221) since the Apartment (LU 220) is not available.

Based on the demand rates from previous studies compiled in the ITE Manual, the average demand for a 71 unit apartment complex would be about 88 parking spaces while the maximum observed demand would be about 138 parking spaces, as shown in Table 19. This demand includes demand from any guests as well as residents. With a parking supply of 142 spaces, the Project is anticipated to have about 4 more parking spaces than anticipated maximum demand.

Using both criteria, the amount of parking contained in the Project is adequate to meet the demand.

Table 19: Average Estimated Parking Demand for the Project

Parking Demand	Number of Units	Demand Rate[1]	Parking Spaces Needed
Average	71	1.23	88
Maximum Observed		1.94	138

Source: Kittelson & Associates, Inc.
Demand based on ITE Parking Generation Manual, 4th Edition (LU 221)
[1]Demand rate in vehicles per apartment

STATE ROUTE 92 TRAFFIC VOLUMES

Using the C/CAG-VTA San Mateo County Travel Demand Model, Kittelson analyzed AM and PM peak hour traffic flows to and from the Project's traffic analysis zone (TAZ) to estimate project contributions to traffic volumes along State Route 92. The model generates traffic based on assumed land uses within Traffic Analysis Zones (TAZs). Each TAZ is relatively large, so the TAZ containing the project site also includes surrounding areas. As shown in Table 23, information from the model regarding the total number of trips generated by the TAZ that contains the project site, and the number that use SR 92 was used to calculate the percentage of TAZ-generated trips that use SR 92. This percentage was then applied to the trips generated by the Project to estimate trips from the project utilizing SR 92.

Table 20: Project Area Trips on State Route 92

Time Period	Direction	TAZ Volume along SR92	TAZ Total Volume	Percent of TAZ Volume	Total Project Trips	Project Trips Projected on SR92
AM Peak Hour	Inbound	75	490	15%	8	1
	Outbound	111	539	21%	29	6
PM Peak Hour	Inbound	111	539	21%	29	6
	Outbound	75	490	15%	16	2

Source: Kittelson & Associates, Inc.

The Project is projected to generate six eastbound (outbound) and one westbound (inbound) trip along SR 92 in the AM peak hour. In the PM peak hour, the Project is projected to generate two northbound (outbound) and six southbound (inbound) trips in the PM peak hour. These numbers represent a very small fraction of overall traffic on State Route 92, roughly 2,400 during the peak hour (based on Caltrans traffic volumes during 2016).

As part of the resident selection process, the Project proposes to include a preference for individuals who live and/or work in the region. This preference structure increases chances for individuals who meet these criteria to live in this development, although it does not restrict individuals who do not live and/work in the area from being accepted. Based on most recent available data from the U.S. Census Bureau, there are 11,258 jobs located in the Midcoast region (Princeton, Miramar, El Granada, Montara, and Moss Beach) and the neighboring coastal cities of Pacifica and Half Moon Bay. Among these jobs, 7,181 (63.8%) are held by individuals commuting from outside this area. A total of 2,621 of these jobs also require commutes between 10 and 24 miles, and 2,501 additional jobs require commutes of 25 miles or more.[13] Since this preference would increase the possibility that residents of Cypress Point would already work in the region, additional traffic along State Route 92 would likely be lower than what is indicated from prevailing model numbers presented here.

[13] Supportive data is provided in Appendix 14

95TH PERCENTILE QUEUE ANALYSIS

In addition to operations analysis, Kittelson also reviewed the changes in 95th percentile queue lengths along State Route 1 for the study intersections that include it. Queue lengths are typically evaluated as part of network-level or design-related considerations (i.e., to gauge interaction between nearby intersections). The 95th percentile queue lengths are reported to provide an appropriate storage for all but the worst 5% of traffic scenarios. This report is providing queue lengths at the request of Caltrans. Since there are no impact criteria available to evaluate queue length, this information is presented for informational purposes only.

The queue lengths presented are derived from outputs from Synchro traffic analysis software and are representative of the 95th percentile traffic volumes. Microsimulation of queues using SimTraffic, another analysis software package, was not performed because this model is typically used in the design phase of a project. For a planning level study, industry practice is to use the Synchro outputs.

Table 21 shows the 95th percentile queue lengths for the Existing, Existing with Project, Background, Background with Project, Cumulative, and Cumulative with Project conditions. A summary of how the Project may affect queues for each scenario includes:

- Existing Conditions – Most intersections maintain the same vehicle queue length except State Route 1 and Carlos Street during the AM peak hour and State Route 1 and California Avenue during the PM peak hour. At State Route 1 and California Avenue the Existing with Project scenario does not create any additional queueing on State Route 1, but the mitigated scenario introduces a traffic signal which would create a queue during the signal's red phase.
- Background Conditions –At State Route 1 and California Avenue the Background with Project scenario does not create any additional queueing on State Route 1, but the mitigated scenario introduces a traffic signal which would create a queue during the signal's red phase.
- Cumulative Conditions – The intersection of State Route 1 and California Avenue, assumed signalized under Cumulative Conditions, shows a one vehicle increase on the southbound approach in the AM peak hour and a two-vehicle increase on the northbound approach in the PM peak hour. Note that the projected queues on State Route 1 at California Avenue are in excess of 30 vehicles without the Project.

Table 21: 95th Percentile Queue Lengths (in Equivalent 25-foot Vehicle Lengths) for Intersections along State Route 1

#	Location	Control	Scenario	Existing Conditions				Background Conditions				Cumulative Conditions			
				Northbound Approach		Southbound Approach		Northbound Approach		Southbound Approach		Northbound Approach		Southbound Approach	
				Left Turn Storage Provided (Right Turn Deceleration)	95th Percentile Left Turn Queue	Left Turn Storage Provided (Right Turn Deceleration)	95th Percentile Left Turn Queue	Left Turn Storage Provided (Right Turn Deceleration)	95th Percentile Left Turn Queue	Left Turn Storage Provided (Right Turn Deceleration)	95th Percentile Left Turn Queue	Left Turn Storage Provided (Right Turn Deceleration)	95th Percentile Left Turn Queue	Left Turn Storage Provided (Right Turn Deceleration)	95th Percentile Left Turn Queue
1	SR 1 & 14th Street	TWSC	AM No Project	0 (4)	-	-	-	0 (4)	-	-	-	0 (4)	-	-	-
			AM with Project	0 (4)	-	-	-	0 (4)	-	-	-	0 (4)	-	-	-
			PM No Project	0 (4)	-	-	-	0 (4)	-	-	-	0 (4)	-	-	1
			PM with Project	0 (4)	-	-	-	0 (4)	-	-	-	0 (4)	-	-	1
			Sat. No Project	0 (4)	-	-	-	0 (4)	-	-	-	0 (4)	-	-	1
			Sat. with Project	0 (4)	-	-	-	0 (4)	-	-	-	0 (4)	-	-	1
2	SR 1 & 16th Street	TWSC	AM No Project	4 (0)	-	1 (0)	-	4 (0)	-	1 (0)	-	4 (0)	-	1 (0)	-
			AM with Project	4 (0)	-	1 (0)	-	4 (0)	-	1 (0)	-	4 (0)	-	1 (0)	-
			PM No Project	4 (0)	-	1 (0)	-	4 (0)	-	1 (0)	-	4 (0)	-	1 (0)	-
			PM with Project	4 (0)	-	1 (0)	-	4 (0)	-	1 (0)	-	4 (0)	-	1 (0)	-
			Sat. No Project	4 (0)	-	1(0)	-	4 (0)	-	1(0)	-	4 (0)	-	1(0)	-
			Sat. with Project	4 (0)	-	1 (0)	-	4 (0)	-	1 (0)	-	4 (0)	-	1 (0)	-
3	SR 1 & Carlos Street	TWSC	AM No Project	- (0)	-	4 (0)	-	- (0)	-	4 (0)	-	- (0)	0	4 (0)	1
			AM with Project	- (0)	-	4 (0)	-	- (0)	-	4 (0)	-	- (0)	-	4 (0)	-
			PM No Project	- (0)	-	4 (0)	1	- (0)	-	4 (0)	1	- (0)	-	4 (0)	1
			PM with Project	- (0)	-	4 (0)	-	- (0)	-	4 (0)	-	- (0)	-	4 (0)	-
			Sat. No Project	- (0)	-	4 (0)	1	- (0)	-	4 (0)	1	- (0)	-	4 (0)	-
			Sat. with Project	- (0)	-	4 (0)	-	- (0)	-	4 (0)	-	- (0)	-	4 (0)	-
6	SR 1 & Vallemar Street / Etheldore Street	TWSC	AM No Project	3 (0)	-	4 (0)	1	3 (0)	-	4 (0)	1	3 (0)	1	4 (0)	1
			AM with Project	3 (0)	-	4 (0)	1	3 (0)	-	4 (0)	1	3 (0)	1	4 (0)	1
			PM No Project	3 (0)	1	4 (0)	1	3 (0)	1	4 (0)	1	3 (0)	1	4 (0)	1
			PM with Project	3 (0)	1	4 (0)	1	3 (0)	1	4 (0)	1	3 (0)	1	4 (0)	1
			Sat. No Project	3 (0)	1	4 (0)	1	3 (0)	1	4 (0)	1	3 (0)	1	4 (0)	1
			Sat. with Project	3 (0)	1	4 (0)	1	3 (0)	1	4 (0)	1	3 (0)	1	4 (0)	1
7	SR 1 & California Avenue / Wienke Way	TWSC (Signalized in Mitigated and Cumulative scenarios)	AM No Project	3 (0)	1	4 (0)	1	3 (0)	-	4 (0)	1	3 (0)	35*	4 (0)	51*
			AM with Project	3 (0)	1	4 (0)	1	3 (0)	-	4 (0)	1	3 (0)	35*	4 (0)	53*
			AM with Project, Mit.	3 (0)	29*	4 (0)	24*	3 (0)	30*	4 (0)	26*	-	-	-	-
			PM No Project	3 (0)	-	4 (0)	1	3 (0)	1	4 (0)	1	3 (0)	64*	4 (0)	55*
			PM with Project	3 (0)	-	4 (0)	1	3 (0)	1	4 (0)	1	3 (0)	66*	4 (0)	56*
			PM with Project, Mit.	3 (0)	31*	4 (0)	42*	3 (0)	36*	4 (0)	48*	-	-	-	-
			Sat. No Project	3 (0)	1	4 (0)	1	3 (0)	1	4 (0)	1	3 (0)	32*	4 (0)	51*
			Sat with Project	3 (0)	1	4 (0)	1	3 (0)	1	4 (0)	1	3 (0)	32*	4 (0)	51*
			Sat. with Project, Mit.	3 (0)	31*	4 (0)	49*	3 (0)	36*	4 (0)	51*	-	-	-	-

Notes: All "with Project' conditions represent fully mitigated scenarios. Shaded cells indicate queue lengths exceed storage. "Mit" refers to the conversion of State Route 1 & California Avenue / Wienke Way to a signal-controlled intersection (Measure TRAF 1-A)

*These queue lengths represent queued vehicles for the signalized through movement. The closest intersection to the south is approximately 250 feet away (10 car lengths) and to the north is approximately 570 feet (23 car lengths)

Appendix 1
SamTrans Service Memo

KITTELSON & ASSOCIATES
155 GRAND AVENUE, SUITE 900
OAKLAND, CA 94612
P 510.839.1742 F 510.839.0871

MEMORANDUM

Date: December 5, 2018 Project #: 20616

To: Andrew Bielak
MidPen Housing
303 Vintage Park Drive, Suite 250
Foster City, CA 94404

From: Mike Alston and Aaron Elias, PE

Project: Cypress Point Residential Project

Subject: SamTrans Service through Moss Beach

This memorandum presents likely transit ridership among the population at the proposed MidPen Cypress Point housing Project ("Project"), located on the northeast corner of Carlos Street and Sierra Street in Moss Beach, California. The memo also summarizes the SamTrans service through Moss Beach today and requests increased SamTrans service for Moss Beach and Project residents.

Based on historical data and staff experience from similar MidPen projects, improved transit access for Cypress Point residents would improve student access to schools. Conversely, the Project would provide increased ridership to SamTrans lines currently serving or passing through Moss Beach—particularly routes serving area schools. Thus, this memo includes a request to expand SamTrans service to and through Moss Beach; details are included in the Recommendations section.

CYPRESS POINT PROJECT

The Project proposes to provide 71 units of low-income housing (location shown in Figure 1). Based on the experience of MidPen staff, the Project residents with the greatest propensity to use SamTrans service would be children traveling to or from school. Data provided by MidPen shows an estimated 50 school-age children will live in the Project: 14 high school-age children and 36 elementary/middle school-age children.[1]

Anticipated Transit Ridership

MidPen has supplied data from two projects of similar size and also serving low-income residents: Delaware Pacific and Peninsula Station, both in San Mateo, California. MidPen provides residents at

[1]MidPen staff estimate 0.7 children per unit (0.5 elementary school-age children per unit and 0.2 high school-age children per unit)

both projects with the opportunity for participation in SamTrans's Way2Go program.[2] Under this program MidPen purchases unlimited-ride passes for any residents who choose to participate. Residents who choose to participate in the program must register to do so (i.e., opt in) on an annual basis. Table 1 provides the level of Way2Go participation at these other projects.

Table 1: Way2Go Participation at MidPen Projects

Project	Dwelling Units	Residents	Total Residents Participating in Way2Go (including school-age children)	School-age Residents (Ages 5 – 18) Participating in Way2Go
Delaware Pacific	60	178	105 (59%)	44
Peninsula Station	68	216	118 (55%)	46

Source: MidPen Housing

These projects are similar in size to the Cypress Point project and have each accounted for an average of 45 school-age residents participating in the Way2Go program. MidPen will offer the same Way2Go participation for Cypress Point. Therefore, transit demand would be anticipated to be about the same for the Project: at least 100 residents (including at least 45 students) participating in the Way2Go program.

EXISTING SAMTRANS SERVICE

SamTrans runs two routes that pass through Moss Beach: Route 17 and Route 18. The routes and their stops are presented in Figure 1, and more detail on each route is included below.

Route 17

SamTrans route 17 follows two different northbound routes and two southbound routes. All route variations are shown in Figure 1.

Northbound

The weekday morning and weekend all-day northbound route respectively includes stops at California Avenue / Etheldore Street (0.47 miles from the project) and State Route 1 / 14th Street (0.23 miles from the project). The weekday afternoon/evening northbound route includes a stop at Etheldore Street / Sunshine Valley Road (0.62 miles from the project).

[2]The Way2Go website is http://www.samtrans.com/fares/faretypes/Way2Go_Program.html

Collectively, these routes operate hourly from 5:30 a.m. to 9:00 p.m. on weekdays and every other hour from 5:13 a.m. to 7:58 p.m. on weekends.

Southbound

The weekday morning southbound route includes a stop at Etheldore Street / Sunshine Valley Road (0.62 miles from the project). The weekday afternoon/evening southbound route stops at State Route 1 / 16th Street (0.11 miles from the project) and California Avenue / Etheldore Street (0.47 miles from the project).

Collectively, these routes operate hourly from 6:18 a.m. to 9:50 p.m. on weekdays and every other hour from 6:16 a.m. to 9:28 p.m. on weekends.

Route 18

SamTrans route 18 operates between Main Street / 7th Street in Montara and Moonridge Apartments near Half Moon Bay. The route travels north-south along Sunshine Valley Road and includes stops (in both directions) at Sunshine Valley Road / Etheldore Street (0.47 miles from the project). Route 18 operates two northbound buses in the morning, two northbound buses in the afternoon, three southbound buses in the morning, and two southbound buses in the afternoon.[3]

TRANSIT ACCESS TO SCHOOLS

School-age children will be one of the main groups of Project residents that will use transit service. The Project is currently served by three schools of the Cabrillo Unified School District including:

- Farallone View Elementary School
  - Kindergarten: 8:30 a.m. – 1:00/2:40 p.m.
  - 1st through 3rd grade: 8:30 a.m. – 2:40 p.m.[4]
  - 4th and 5th grade: 8:30 a.m. –3:25 p.m.[5]
- Manuel F. Cunha Intermediate School
  - 8:25 a.m.[6] – 3:05 p.m.[7]
- Half Moon Bay High School
  - 8:00 a.m. – 3:30 p.m.[8]

[3] There are some exceptions to this generalization of Route 18 service. More information (including some routes which only operate on specific days) can be found at http://www.samtrans.com/schedulesandmaps/timetables/18.html .

[4] 1:10 p.m. on Tuesdays

[5] 1:10 p.m. on Tuesdays

[6] 9:29 a.m. on Thursdays

[7] 12:33 p.m. on early minimum days, occasionally throughout the school year

[8] There are some exceptions to this schedule (available at the school's website here: https://hmbhs.schoolloop.com/bell-schedules)

Figure 2 shows the location of these schools. Table 2 provides a summary of which routes and times Project residents would need take in order to get to and from school with the existing SamTrans service. As Table 2 illustrates, Route 17 provides access only to Farallone View Elementary School. However, the nearest bus stop is 0.42 miles from school, which may not be close enough for the younger elementary students. Route 17 also provides hourly access to and from Manuel F. Cunha Intermediate School and Half Moon Bay High School, meaning that students have one Route 17 option reasonably close to the beginning or end of their school day.

Route 18 also provides service to Manuel F. Cunha Intermediate School and Half Moon Bay High School with limited service. For intermediate students and high school students, there is one convenient Route 18 bus per school day in the morning and afternoon.

Table 2: SamTrans Bus Stop Proximity to Cabrillo Unified Schools

School	Location	Nearest SamTrans Stop (distance from school)	Morning Arrival Times -- outbound from Moss Beach (to school)		Afternoon Departure Times -- Inbound to Moss Beach (from school)	
			Route 17	Route 18	Route 17	Route 18
Farallone View Elementary School	1100 Le Conte Avenue, Montara	Main Street / 4th Street (0.42 mi)	**7:40 a.m.** 8:43 a.m.	n/a	12:24 p.m. 1:24 p.m. 2:27 p.m. **3:19 p.m.** **4:22 p.m.** **5:24 p.m.**	n/a
Manuel F. Cunha Intermediate School	600 Church Street, Half Moon Bay	Kelly Avenue / Church Street (0.13 mi)	**7:02 a.m.** **8:02 a.m.** 8:40 a.m.	**8:12 a.m.**[1] **9:20 a.m.**[2]	**3:08 p.m.** **3:58 p.m.** **5:00 p.m.**	**3:15 p.m.**
Half Moon Bay High School	1 Lewis Foster Drive, Half Moon Bay	Main Street / Lewis Foster Drive (0.37 mi)	**6:54 a.m.** **7:53 a.m.** 8:42 a.m.	**7:30 a.m.** 8:06 a.m.[1] 8:25 a.m. 9:14 a..m.[2]	3:00 p.m. **3:51 p.m.** 4:53 p.m.	3:19 p.m. **3:50 p.m.**

[1]Operates on weekdays except Thursday.
[2]Operates on Tuesdays and Thursdays only.
Note: Not all stop times have been included; only those close to school beginning or dismissal times have been included. **Bolded** times are those arriving before school starts in the morning or leaving after school ends in the afternoon.
Source: SamTrans. More information is available at http://www.samtrans.com/schedulesandmaps/timetables/18.html .

RECOMMENDATIONS

The Cypress Point Project provides an opportunity for SamTrans to attract more transit riders to and from Moss Beach, particularly school-age residents traveling to and from Cabrillo Unified schools. Presently, Moss Beach residents have access to Route 17 and Route 18, which runs hourly on weekdays. Route 18 operates in tandem with the Cabrillo Unified School District schedule, providing access to Manuel F. Cunha Intermediate School and Half Moon Bay High School. Given that the Project would generate new transit riders, it is requested that SamTrans consider one or both of the following changes to service:

- Dispatch an extra Route 17 and/or Route 18 bus timed for the beginning and end of the school days. Route 18 is timed for the school schedule but only provides one morning and one afternoon bus serving Manuel F. Cunha Intermediate School and Half Moon Bay High School. Route 17 runs hourly; one extra bus running both in the morning and in the afternoon would provide more redundancy of service, especially for families and students using the bus for transportation to and from school.
- Consider locating an additional Route 17 stop closer to Farallone View Elementary School. The nearest stop is located at Main Street / 4th Street in Montara, which is a 0.42-mile walking distance from the school. Locations along Le Conte Avenue or Third Street would provide better access to the school.

These service changes would benefit Moss Beach residents through improved transit access, and SamTrans through an increased redundancy of service to encourage increased ridership.

SamTrans Service through Moss Beach
Routes 17 and 18

Figure
1

KITTELSON & ASSOCIATES

Coordinate System: NAD 1983 StatePlane California III FIPS 0403 Feet

Project Site and School Locations

Figure **2**

KITTELSON & ASSOCIATES

Coordinate System: NAD 1983 StatePlane California III FIPS 0403 Feet

Appendix 2 Traffic Count Data

Type of peak hour being reported: Intersection Peak

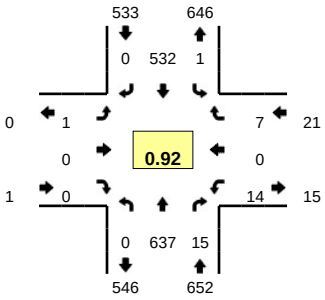
Method for determining peak hour: Total Entering Volume

LOCATION: Cabrillo Hwy (Hwy 1) -- 14th St

CITY/STATE: Montara, CA

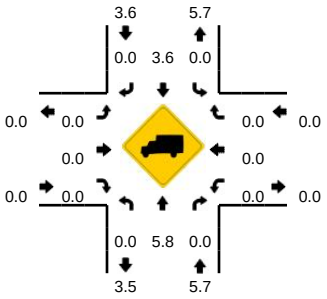
QC JOB #: 14384607

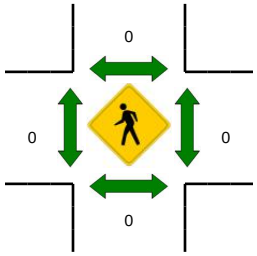
DATE: Thu, Apr 20 2017

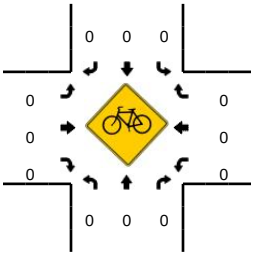


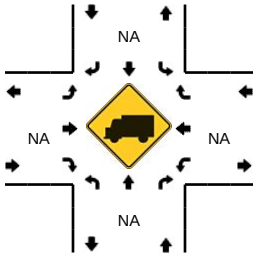
Peak-Hour: 7:45 AM -- 8:45 AM

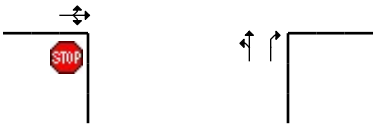
Peak 15-Min: 8:10 AM -- 8:25 AM

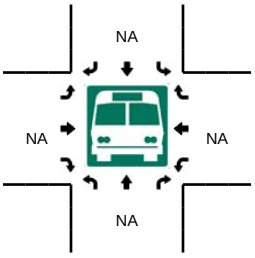












5-Min Count Period Beginning At	Cabrillo Hwy (Hwy 1) (Northbound)				Cabrillo Hwy (Hwy 1) (Southbound)				14th St (Eastbound)				14th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	59	0	0	0	23	0	0	0	0	0	0	0	0	1	0	83	
7:05 AM	0	50	0	0	0	22	0	0	0	0	0	0	1	0	0	0	73	
7:10 AM	0	49	0	0	0	33	0	0	0	0	0	0	2	0	4	0	88	
7:15 AM	0	57	0	0	0	24	0	0	0	0	0	0	0	0	0	0	81	
7:20 AM	0	62	0	0	0	26	0	0	0	0	0	0	2	0	1	0	91	
7:25 AM	0	47	0	0	0	30	0	0	0	0	0	0	1	0	0	0	78	
7:30 AM	0	55	0	0	0	21	0	0	0	0	0	0	2	0	1	0	79	
7:35 AM	0	51	0	0	0	37	0	0	0	0	0	0	4	0	0	0	92	
7:40 AM	0	60	0	0	0	38	0	0	0	0	0	0	0	0	2	0	100	
7:45 AM	0	55	0	0	0	46	0	0	0	0	0	0	0	0	0	0	101	
7:50 AM	0	59	1	0	0	52	0	0	1	0	0	0	3	0	0	0	116	
7:55 AM	0	48	0	0	0	34	0	0	0	0	0	0	2	0	2	0	86	1068
8:00 AM	0	50	1	0	0	22	0	0	0	0	0	0	1	0	0	0	74	1059
8:05 AM	0	42	0	0	0	39	0	0	0	0	0	0	4	0	0	0	85	1071
8:10 AM	0	55	4	0	0	42	0	0	0	0	0	0	0	0	1	0	102	1085
8:15 AM	0	66	0	0	0	41	0	0	0	0	0	0	0	0	0	0	107	1111
8:20 AM	0	73	1	0	0	44	0	0	0	0	0	0	0	0	1	0	119	1139
8:25 AM	0	49	4	0	0	42	0	0	0	0	0	0	1	0	1	0	97	1158
8:30 AM	0	38	1	0	0	48	0	1	0	0	0	0	0	0	0	0	88	1167
8:35 AM	0	50	1	0	0	65	0	0	0	0	0	0	3	0	1	0	120	1195
8:40 AM	0	52	2	0	0	57	0	0	0	0	0	0	0	0	1	0	112	1207
8:45 AM	0	37	1	0	0	31	0	0	0	0	0	0	1	0	0	0	70	1176
8:50 AM	0	40	1	0	0	38	0	0	0	0	0	0	0	0	0	0	79	1139
8:55 AM	0	39	0	0	0	39	0	0	0	0	0	0	1	0	0	0	79	1132

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	776	20	0	0	508	0	0	0	0	0	0	0	0	8	0	1312
Heavy Trucks	0	40	0		0	4	0		0	0	0		0	0	0		44
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/1/2017 4:16 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: Cabrillo Hwy (Hwy 1) -- 14th St

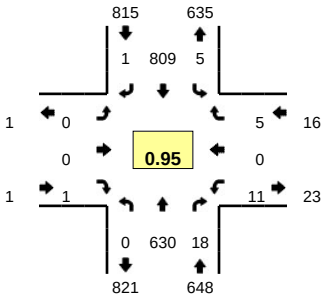
CITY/STATE: Montara, CA

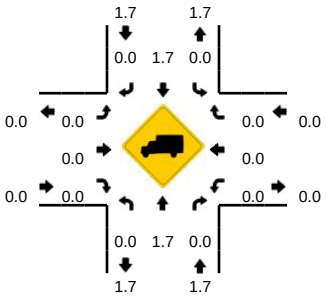
QC JOB #: 14384608

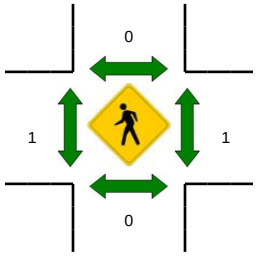
DATE: Thu, Apr 20 2017

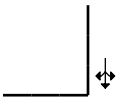
Peak-Hour: 4:45 PM -- 5:45 PM

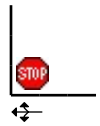
Peak 15-Min: 4:55 PM -- 5:10 PM

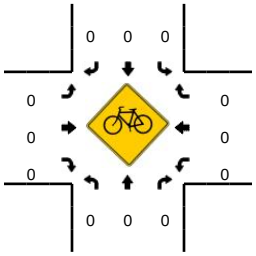


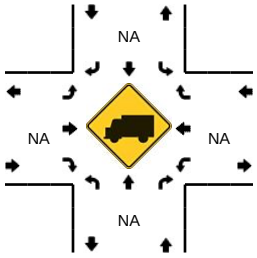


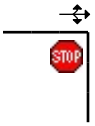


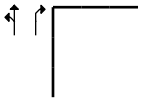


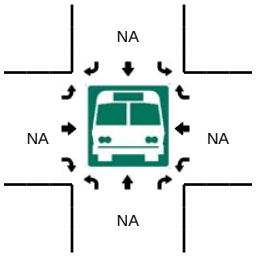












5-Min Count Period Beginning At	Cabrillo Hwy (Hwy 1) (Northbound)				Cabrillo Hwy (Hwy 1) (Southbound)				14th St (Eastbound)				14th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	69	2	0	0	69	0	0	0	0	0	0	3	0	1	0	144	
4:05 PM	0	53	2	0	0	69	0	0	0	0	0	0	0	0	0	0	124	
4:10 PM	0	47	3	0	1	51	0	0	0	0	0	0	0	0	0	0	102	
4:15 PM	1	56	1	0	1	72	0	0	0	0	0	0	0	0	0	0	131	
4:20 PM	0	55	0	0	1	51	0	0	1	0	0	0	3	0	0	0	111	
4:25 PM	0	55	1	0	0	62	0	0	0	0	0	0	1	0	0	0	119	
4:30 PM	1	51	1	0	1	49	0	0	1	0	0	0	0	0	0	0	104	
4:35 PM	0	55	0	0	0	68	0	0	0	0	0	0	0	0	0	0	123	
4:40 PM	0	43	1	0	0	54	0	0	0	0	0	0	0	0	1	0	99	
4:45 PM	0	49	1	0	0	86	0	0	0	0	0	0	1	0	1	0	138	
4:50 PM	0	51	2	0	1	62	0	0	0	0	0	0	0	0	2	0	118	
4:55 PM	0	45	2	0	2	79	0	0	0	0	0	0	0	0	0	0	128	1441
5:00 PM	0	61	1	0	0	65	0	0	0	0	0	0	2	0	0	0	129	1426
5:05 PM	0	60	2	0	0	70	0	0	0	0	0	0	2	0	0	0	134	1436
5:10 PM	0	42	0	0	0	57	0	0	0	0	0	0	1	0	2	0	102	1436
5:15 PM	0	57	2	0	0	66	0	0	0	0	1	0	1	0	0	0	127	1432
5:20 PM	0	53	0	0	1	65	0	0	0	0	0	0	1	0	0	0	120	1441
5:25 PM	0	53	1	0	0	75	0	0	0	0	0	0	0	0	0	0	129	1451
5:30 PM	0	48	3	0	0	49	0	0	0	0	0	0	0	0	0	0	100	1447
5:35 PM	0	58	2	0	0	77	1	0	0	0	0	0	2	0	0	0	140	1464
5:40 PM	0	53	2	0	1	58	0	0	0	0	0	0	1	0	0	0	115	1480
5:45 PM	0	41	1	0	1	54	0	0	0	0	0	0	0	0	0	0	97	1439
5:50 PM	1	49	2	0	0	67	0	0	0	0	0	0	0	0	0	0	119	1440
5:55 PM	1	55	6	0	0	71	0	0	0	0	0	0	1	0	0	0	134	1446

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	664	20	0	8	856	0	0	0	0	0	0	16	0	0	0	1564
Heavy Trucks	0	20	0		0	8	0		0	0	0		0	0	0		28
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/1/2017 4:16 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

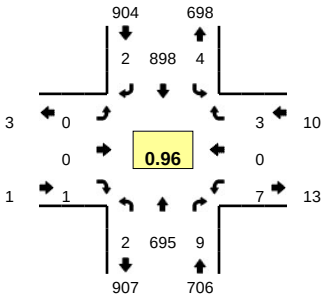
Method for determining peak hour: Total Entering Volume

LOCATION: Cabrillo Hwy (Hwy 1) -- 14th St

CITY/STATE: Montara, CA

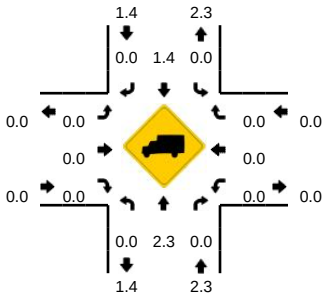
QC JOB #: 14384609

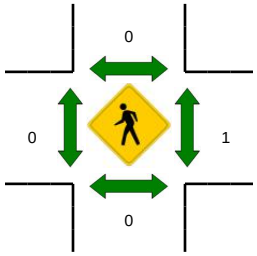
DATE: Sat, Apr 22 2017

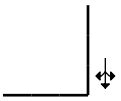


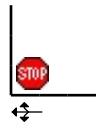
Peak-Hour: 11:55 AM -- 12:55 PM

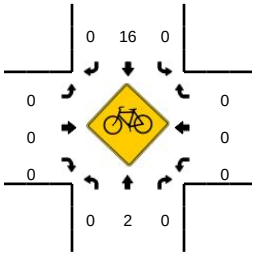
Peak 15-Min: 11:55 AM -- 12:10 PM

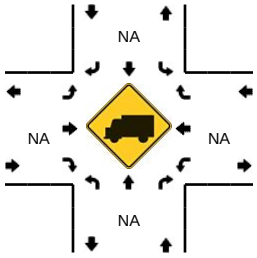


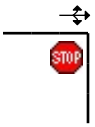


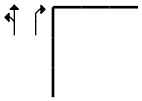


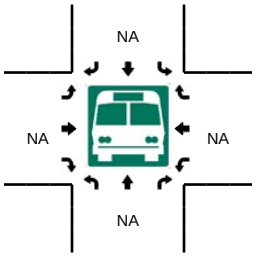












5-Min Count Period Beginning At	Cabrillo Hwy (Hwy 1) (Northbound)				Cabrillo Hwy (Hwy 1) (Southbound)				14th St (Eastbound)				14th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:00 AM	0	53	0	0	0	62	0	0	0	0	0	0	1	0	0	0	116	
11:05 AM	0	50	1	0	0	76	0	0	0	0	0	0	3	0	0	0	130	
11:10 AM	0	59	1	0	0	72	0	0	0	0	0	0	0	0	0	0	132	
11:15 AM	0	60	2	0	0	61	1	0	0	0	0	0	2	0	1	0	127	
11:20 AM	0	50	1	0	0	82	0	0	1	0	0	0	1	0	0	0	135	
11:25 AM	0	70	2	0	0	73	0	0	0	0	0	0	0	0	0	0	145	
11:30 AM	0	37	0	0	0	82	0	0	0	0	0	0	0	0	1	0	120	
11:35 AM	0	58	0	0	0	73	0	0	0	0	0	0	0	0	0	0	131	
11:40 AM	0	37	1	0	0	89	0	0	0	0	0	0	1	0	0	0	128	
11:45 AM	0	45	0	0	0	71	0	0	0	0	0	0	1	0	0	0	117	
11:50 AM	0	41	0	0	0	72	0	0	0	0	0	0	0	0	1	0	114	
11:55 AM	0	50	1	0	0	89	0	0	0	0	0	0	0	0	0	0	140	1535
12:00 PM	0	69	1	0	2	86	0	0	0	0	0	0	1	0	0	0	159	1578
12:05 PM	0	42	1	0	0	81	0	0	0	0	0	0	0	0	0	0	124	1572
12:10 PM	0	59	1	0	1	71	0	0	0	0	0	0	0	0	0	0	132	1572
12:15 PM	0	61	2	0	1	77	0	0	0	0	0	0	0	0	0	0	141	1586
12:20 PM	0	58	0	0	0	79	0	0	0	0	0	0	0	0	0	0	137	1588
12:25 PM	0	55	0	0	0	72	0	0	0	0	0	0	2	0	1	0	130	1573
12:30 PM	0	72	0	0	0	54	0	0	0	0	0	0	1	0	1	0	128	1581
12:35 PM	0	49	1	0	0	75	1	0	0	0	0	0	1	0	0	0	127	1577
12:40 PM	1	53	2	0	0	64	1	0	0	0	1	0	1	0	0	0	123	1572
12:45 PM	0	64	0	1	0	69	0	0	0	0	0	0	0	0	0	0	134	1589
12:50 PM	0	63	0	0	0	81	0	0	0	0	0	0	1	0	1	0	146	1621
12:55 PM	0	53	0	0	0	62	0	0	1	0	0	0	2	0	0	0	118	1599

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	644	12	0	8	1024	0	0	0	0	0	0	4	0	0	0	1692
Heavy Trucks	0	12	0		0	4	0		0	0	0		0	0	0		16
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	5	0		0	0	0		0	0	0		5
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/17/2017 6:04 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: Cabrillo Hwy (Hwy 1) -- 16th St

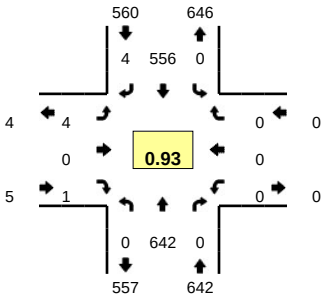
CITY/STATE: Montara, CA

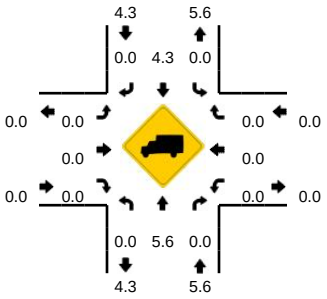
QC JOB #: 14384604

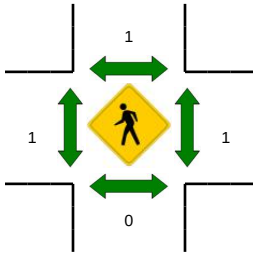
DATE: Thu, Apr 20 2017

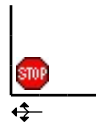
Peak-Hour: 7:45 AM -- 8:45 AM

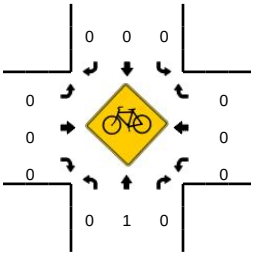
Peak 15-Min: 8:10 AM -- 8:25 AM

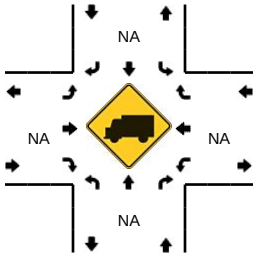


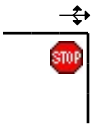


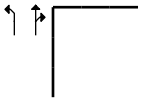


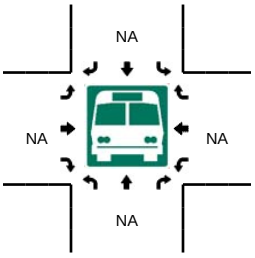












5-Min Count Period Beginning At	Cabrillo Hwy (Hwy 1) (Northbound)				Cabrillo Hwy (Hwy 1) (Southbound)				16th St (Eastbound)				16th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	58	0	0	0	21	0	0	0	0	0	0	0	0	0	0	79	
7:05 AM	0	55	0	0	0	24	1	0	0	0	0	0	0	0	0	0	80	
7:10 AM	0	47	0	0	0	35	0	0	0	0	0	0	0	0	0	0	82	
7:15 AM	0	55	0	0	0	25	0	0	0	0	0	0	0	0	0	0	80	
7:20 AM	0	43	0	0	0	25	0	0	0	0	0	0	0	0	0	0	68	
7:25 AM	2	46	0	0	0	31	0	0	0	0	0	0	0	0	0	0	79	
7:30 AM	0	53	0	0	0	22	0	0	1	0	0	0	0	0	0	0	76	
7:35 AM	0	51	0	0	0	45	0	0	1	0	0	0	1	0	0	0	98	
7:40 AM	0	56	0	0	0	35	0	0	0	0	0	0	0	0	0	0	91	
7:45 AM	0	58	0	0	0	49	1	0	0	0	0	0	0	0	0	0	108	
7:50 AM	0	57	0	0	0	57	1	0	3	0	0	0	0	0	0	0	118	
7:55 AM	0	48	0	0	0	35	0	0	0	0	0	0	0	0	0	0	83	1042
8:00 AM	0	48	0	0	0	23	0	0	0	0	1	0	0	0	0	0	72	1035
8:05 AM	0	44	0	0	0	44	0	0	0	0	0	0	0	0	0	0	88	1043
8:10 AM	0	59	0	0	0	45	0	0	0	0	0	0	0	0	0	0	104	1065
8:15 AM	0	62	0	0	0	42	0	0	0	0	0	0	0	0	0	0	104	1089
8:20 AM	0	71	0	0	0	43	1	0	0	0	0	0	0	0	0	0	115	1136
8:25 AM	0	56	0	0	0	45	0	0	0	0	0	0	0	0	0	0	101	1158
8:30 AM	0	35	0	0	0	46	1	0	0	0	0	0	0	0	0	0	82	1164
8:35 AM	0	50	0	0	0	71	0	0	1	0	0	0	0	0	0	0	122	1188
8:40 AM	0	54	0	0	0	56	0	0	0	0	0	0	0	0	0	0	110	1207
8:45 AM	0	33	0	0	0	33	1	0	0	0	0	0	0	0	0	0	67	1166
8:50 AM	0	45	0	0	0	41	1	0	0	0	0	0	0	0	0	0	87	1135
8:55 AM	0	36	0	0	0	40	0	0	1	0	0	0	1	0	1	0	79	1131

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	768	0	0	0	520	4	0	0	0	0	0	0	0	0	0	1292
Heavy Trucks	0	44	0		0	8	0		0	0	0		0	0	0		52
Pedestrians		0				0				0				0			0
Bicycles	0	1	0		0	0	0		0	0	0		0	0	0		1
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/1/2017 4:15 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: Cabrillo Hwy (Hwy 1) -- 16th St

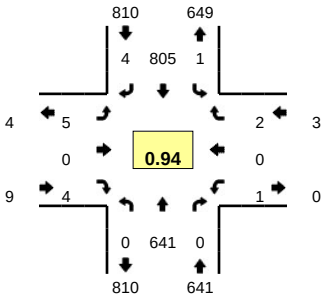
CITY/STATE: Montara, CA

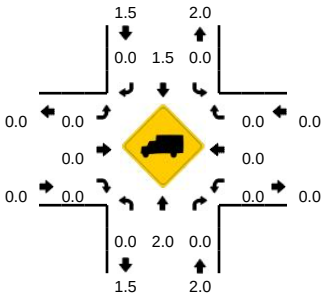
QC JOB #: 14384605

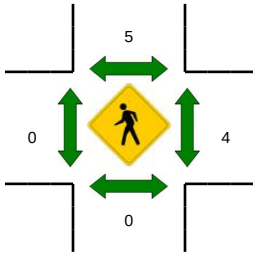
DATE: Thu, Apr 20 2017

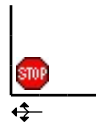
Peak-Hour: 4:45 PM -- 5:45 PM

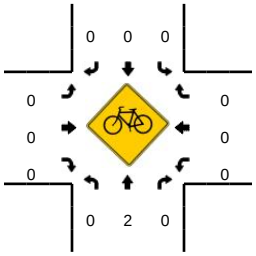
Peak 15-Min: 4:55 PM -- 5:10 PM

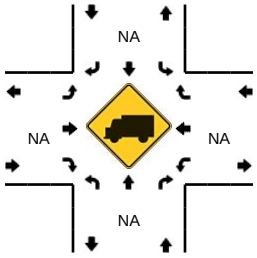


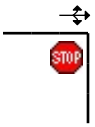


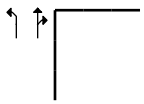


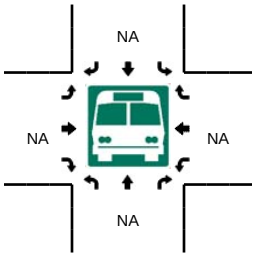












5-Min Count Period Beginning At	Cabrillo Hwy (Hwy 1) (Northbound)				Cabrillo Hwy (Hwy 1) (Southbound)				16th St (Eastbound)				16th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	58	0	0	0	70	0	0	2	0	2	0	0	0	0	0	132	
4:05 PM	0	53	0	0	0	71	0	0	0	0	1	0	0	0	0	0	125	
4:10 PM	1	50	0	0	0	48	0	0	0	0	0	0	0	0	0	0	99	
4:15 PM	0	56	0	0	0	72	2	0	1	0	0	0	0	0	0	0	131	
4:20 PM	0	56	0	0	0	55	1	0	0	0	0	0	0	0	0	0	112	
4:25 PM	0	55	0	0	0	58	1	0	0	0	0	0	0	0	0	0	114	
4:30 PM	1	53	0	0	0	53	0	0	4	0	0	0	0	0	0	0	111	
4:35 PM	0	49	1	0	0	64	0	0	0	0	0	0	0	0	0	0	114	
4:40 PM	0	45	0	0	0	61	0	0	0	0	0	0	0	0	0	0	106	
4:45 PM	0	55	0	0	0	79	0	0	0	0	0	0	0	0	1	0	135	
4:50 PM	0	45	0	0	0	62	0	0	0	0	0	0	0	0	0	0	107	
4:55 PM	0	45	0	0	0	82	0	0	0	0	0	0	0	0	0	0	127	1413
5:00 PM	0	68	0	0	0	64	1	0	1	0	0	0	0	0	0	0	134	1415
5:05 PM	0	52	0	0	0	70	2	1	2	0	0	0	0	0	0	0	127	1417
5:10 PM	0	51	0	0	0	59	0	0	0	0	2	0	0	0	0	0	112	1430
5:15 PM	0	53	0	0	0	64	1	0	0	0	0	0	0	0	0	0	118	1417
5:20 PM	0	56	0	0	0	67	0	0	0	0	1	0	0	0	0	0	124	1429
5:25 PM	0	49	0	0	0	76	0	0	1	0	0	0	0	0	0	0	126	1441
5:30 PM	0	52	0	0	0	49	0	0	1	0	0	0	1	0	1	0	104	1434
5:35 PM	0	62	0	0	0	74	0	0	0	0	1	0	0	0	0	0	137	1457
5:40 PM	0	53	0	0	0	59	0	0	0	0	0	0	0	0	0	0	112	1463
5:45 PM	0	37	0	0	0	57	0	0	0	0	0	0	0	0	0	0	94	1422
5:50 PM	0	53	0	0	0	65	0	0	0	0	0	0	0	0	0	0	118	1433
5:55 PM	0	62	0	0	1	73	1	0	0	0	0	0	0	0	0	0	137	1443

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	660	0	0	0	864	12	4	12	0	0	0	0	0	0	0	1552
Heavy Trucks	0	28	0		0	8	0		0	0	0		0	0	0		36
Pedestrians		0				12				0				4			16
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/1/2017 4:15 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

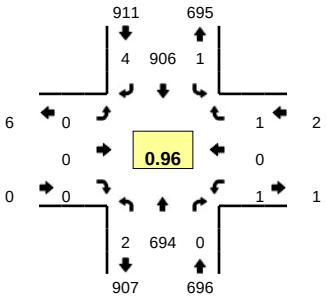
Method for determining peak hour: Total Entering Volume

LOCATION: Cabrillo Hwy (Hwy 1) -- 16th St

CITY/STATE: Montara, CA

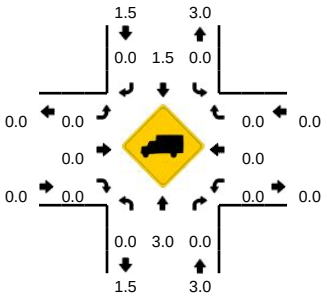
QC JOB #: 14384606

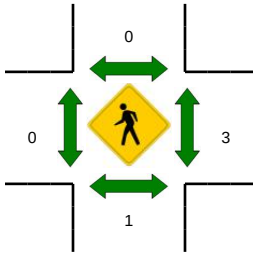
DATE: Sat, Apr 22 2017

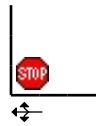


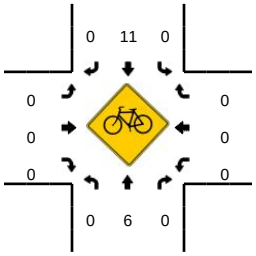
Peak-Hour: 11:55 AM -- 12:55 PM

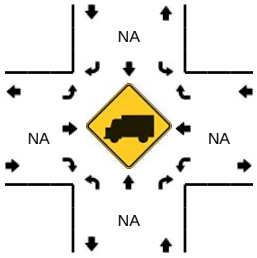
Peak 15-Min: 12:10 PM -- 12:25 PM

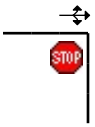


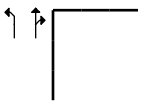


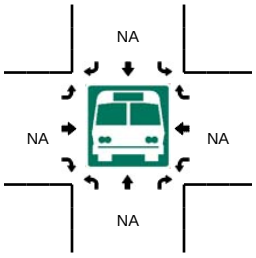












5-Min Count Period Beginning At	Cabrillo Hwy (Hwy 1) (Northbound)				Cabrillo Hwy (Hwy 1) (Southbound)				16th St (Eastbound)				16th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:00 AM	0	54	0	0	0	67	0	0	0	0	0	0	0	0	0	0	121	
11:05 AM	0	59	0	0	0	77	0	0	0	0	0	0	0	0	0	0	136	
11:10 AM	0	53	0	0	0	75	0	0	0	0	0	0	0	0	0	0	128	
11:15 AM	0	62	0	0	0	62	0	0	0	0	0	0	0	0	0	0	124	
11:20 AM	0	49	0	0	0	84	1	0	0	0	0	0	0	0	0	0	134	
11:25 AM	0	69	0	0	0	71	0	0	0	0	1	0	0	0	0	0	141	
11:30 AM	0	44	0	0	0	82	2	0	0	0	1	0	0	0	0	0	129	
11:35 AM	0	51	0	0	0	75	0	0	0	0	0	0	0	0	0	0	126	
11:40 AM	1	38	0	0	0	88	0	0	1	0	1	0	1	0	0	0	130	
11:45 AM	0	43	0	0	0	73	0	0	0	0	0	0	0	0	0	0	116	
11:50 AM	0	45	0	0	0	70	0	0	1	0	0	0	0	0	0	0	116	
11:55 AM	0	48	0	0	0	93	0	0	0	0	0	0	0	0	0	0	141	1542
12:00 PM	0	68	0	0	0	81	0	0	0	0	0	0	0	0	0	0	149	1570
12:05 PM	0	42	0	0	1	82	0	0	0	0	0	0	0	0	0	0	125	1559
12:10 PM	1	68	0	0	0	72	0	0	0	0	0	0	0	0	0	0	141	1572
12:15 PM	0	58	0	0	0	80	0	0	0	0	0	0	0	0	0	0	138	1586
12:20 PM	0	60	0	0	0	78	0	0	0	0	0	0	0	0	0	0	138	1590
12:25 PM	0	54	0	0	0	74	0	0	0	0	0	0	0	0	0	0	128	1577
12:30 PM	1	69	0	0	0	55	0	0	0	0	0	0	0	0	0	0	125	1573
12:35 PM	0	47	0	0	0	76	0	0	0	0	0	0	0	0	0	0	123	1570
12:40 PM	0	51	0	0	0	63	1	0	0	0	0	0	0	0	1	0	116	1556
12:45 PM	0	70	0	0	0	71	2	0	0	0	0	0	1	0	0	0	144	1584
12:50 PM	0	59	0	0	0	81	1	0	0	0	0	0	0	0	0	0	141	1609
12:55 PM	1	56	0	0	0	67	0	0	0	0	2	0	0	0	0	0	126	1594

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	744	0	0	0	920	0	0	0	0	0	0	0	0	0	0	1668
Heavy Trucks	0	12	0		0	8	0		0	0	0		0	0	0		20
Pedestrians		0				0				0				0			0
Bicycles	0	3	0		0	1	0		0	0	0		0	0	0		4
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/17/2017 6:04 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

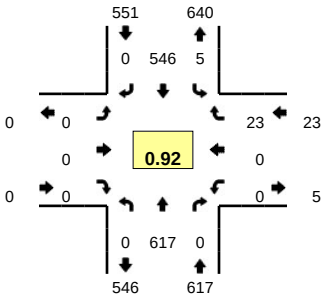
Method for determining peak hour: Total Entering Volume

LOCATION: Cabrillo Hwy (Hwy 1) -- Carlos St

CITY/STATE: Montara, CA

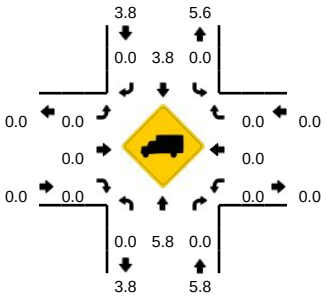
QC JOB #: 14384601

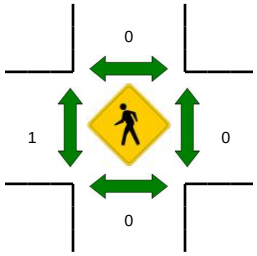
DATE: Thu, Apr 20 2017

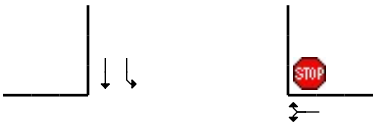


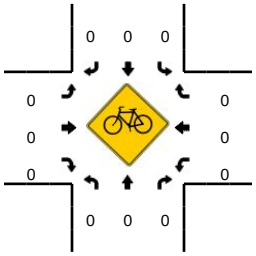
Peak-Hour: 7:45 AM -- 8:45 AM

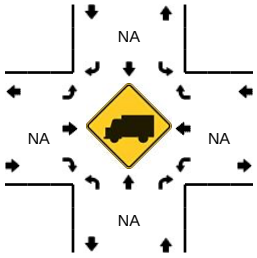
Peak 15-Min: 8:10 AM -- 8:25 AM

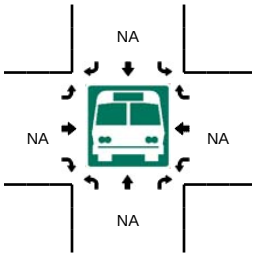












5-Min Count Period Beginning At	Cabrillo Hwy (Hwy 1) (Northbound)				Cabrillo Hwy (Hwy 1) (Southbound)				Carlos St (Eastbound)				Carlos St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	55	0	0	0	23	0	0	0	0	0	0	0	0	4	0	82	
7:05 AM	0	50	0	0	1	23	0	0	0	0	0	0	0	0	0	0	74	
7:10 AM	0	49	0	0	0	33	0	0	0	0	0	0	0	0	0	0	82	
7:15 AM	0	53	0	0	1	25	0	0	0	0	0	0	0	0	3	0	82	
7:20 AM	0	62	0	0	0	28	0	0	0	0	0	0	0	0	2	0	92	
7:25 AM	0	44	0	0	0	27	0	0	0	0	0	0	0	0	3	0	74	
7:30 AM	0	54	0	0	1	23	0	0	0	0	0	0	0	0	0	0	78	
7:35 AM	0	50	0	0	1	40	0	0	0	0	0	0	0	0	0	0	91	
7:40 AM	0	59	0	0	0	39	0	0	0	0	0	0	0	0	1	0	99	
7:45 AM	0	53	0	0	0	46	0	0	0	0	0	0	0	0	1	0	100	
7:50 AM	0	57	0	0	1	57	0	0	0	0	0	0	0	0	2	0	117	
7:55 AM	0	44	0	0	0	36	0	0	0	0	0	0	0	0	2	0	82	1053
8:00 AM	0	50	0	0	0	24	0	0	0	0	0	0	0	0	1	0	75	1046
8:05 AM	0	38	0	0	0	42	0	0	0	0	0	0	0	0	3	0	83	1055
8:10 AM	0	56	0	0	0	41	0	0	0	0	0	0	0	0	3	0	100	1073
8:15 AM	0	64	0	0	0	45	0	0	0	0	0	0	0	0	1	0	110	1101
8:20 AM	0	71	0	0	2	40	0	0	0	0	0	0	0	0	1	0	114	1123
8:25 AM	0	49	0	0	0	42	0	0	0	0	0	0	0	0	5	0	96	1145
8:30 AM	0	37	0	0	0	50	0	0	0	0	0	0	0	0	1	0	88	1155
8:35 AM	0	51	0	0	2	67	0	0	0	0	0	0	0	0	0	0	120	1184
8:40 AM	0	47	0	0	0	56	0	0	0	0	0	0	0	0	3	0	106	1191
8:45 AM	0	39	0	0	0	37	0	0	0	0	0	0	0	0	0	0	76	1167
8:50 AM	0	40	0	0	0	40	0	0	0	0	0	0	0	0	0	0	80	1130
8:55 AM	0	37	0	0	0	39	0	0	0	0	0	0	0	0	0	0	76	1124

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	764	0	0	8	504	0	0	0	0	0	0	0	0	20	0	1296
Heavy Trucks	0	44	0		0	8	0		0	0	0		0	0	0		52
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/1/2017 4:15 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

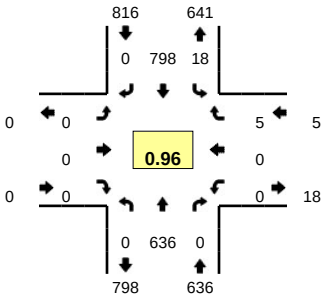
Method for determining peak hour: Total Entering Volume

LOCATION: Cabrillo Hwy (Hwy 1) -- Carlos St

QC JOB #: 14384602

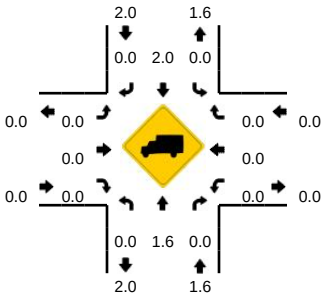
CITY/STATE: Montara, CA

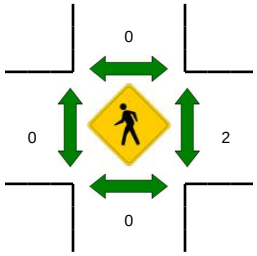
DATE: Thu, Apr 20 2017

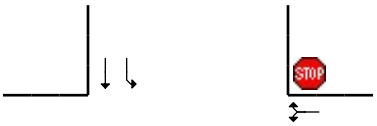


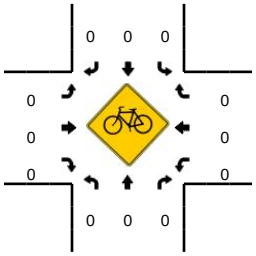
Peak-Hour: 4:45 PM -- 5:45 PM

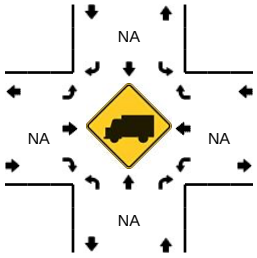
Peak 15-Min: 4:55 PM -- 5:10 PM

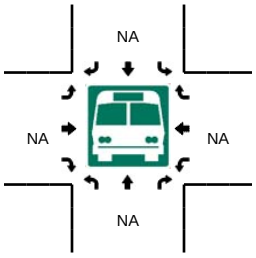












5-Min Count Period Beginning At	Cabrillo Hwy (Hwy 1) (Northbound)				Cabrillo Hwy (Hwy 1) (Southbound)				Carlos St (Eastbound)				Carlos St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	66	0	0	0	76	0	0	0	0	0	0	0	0	1	0	143	
4:05 PM	0	53	0	0	2	69	0	0	0	0	0	0	0	0	1	0	125	
4:10 PM	0	51	0	0	0	47	0	0	0	0	0	0	0	0	0	0	98	
4:15 PM	0	57	0	0	1	70	0	0	0	0	0	0	0	0	0	0	128	
4:20 PM	0	53	0	0	1	44	0	0	0	0	0	0	0	0	1	0	99	
4:25 PM	0	57	0	0	0	73	0	0	0	0	0	0	0	0	0	0	130	
4:30 PM	0	50	0	0	1	44	0	0	0	0	0	0	0	0	1	0	96	
4:35 PM	0	56	0	0	1	70	0	0	0	0	0	0	0	0	0	0	127	
4:40 PM	0	42	0	0	0	58	0	0	0	0	0	0	0	0	0	0	100	
4:45 PM	0	50	0	0	2	76	0	0	0	0	0	0	0	0	0	0	128	
4:50 PM	0	52	0	0	3	61	0	0	0	0	0	0	0	0	0	0	116	
4:55 PM	0	47	0	0	0	79	0	0	0	0	0	0	0	0	0	0	126	1416
5:00 PM	0	62	0	0	1	62	0	0	0	0	0	0	0	0	0	0	125	1398
5:05 PM	0	59	0	0	3	65	0	0	0	0	0	0	0	0	0	0	127	1400
5:10 PM	0	39	0	0	2	57	0	0	0	0	0	0	0	0	2	0	100	1402
5:15 PM	0	59	0	0	1	68	0	0	0	0	0	0	0	0	0	0	128	1402
5:20 PM	0	49	0	0	1	70	0	0	0	0	0	0	0	0	1	0	121	1424
5:25 PM	0	56	0	0	3	68	0	0	0	0	0	0	0	0	0	0	127	1421
5:30 PM	0	49	0	0	1	54	0	0	0	0	0	0	0	0	0	0	104	1429
5:35 PM	0	59	0	0	1	79	0	0	0	0	0	0	0	0	2	0	141	1443
5:40 PM	0	55	0	0	0	59	0	0	0	0	0	0	0	0	0	0	114	1457
5:45 PM	0	42	0	0	3	53	0	0	0	0	0	0	0	0	0	0	98	1427
5:50 PM	0	48	0	0	2	56	0	0	0	0	0	0	0	0	3	0	109	1420
5:55 PM	0	62	0	0	3	75	0	0	0	0	0	0	0	0	1	0	141	1435

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	672	0	0	16	824	0	0	0	0	0	0	0	0	0	0	1512
Heavy Trucks	0	16	0		0	12	0		0	0	0		0	0	0		28
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/1/2017 4:15 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

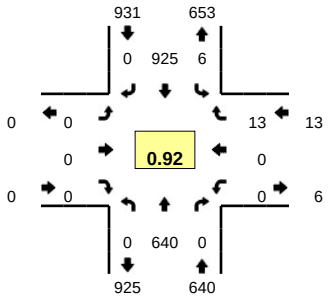
Method for determining peak hour: Total Entering Volume

LOCATION: Cabrillo Hwy (Hwy 1) -- Carlos St

QC JOB #: 14384603

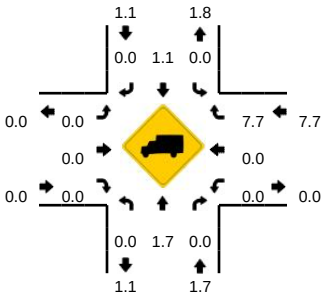
CITY/STATE: Montara, CA

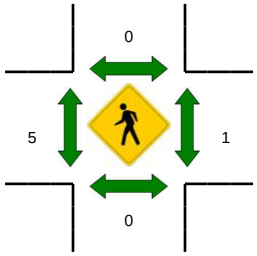
DATE: Sat, Apr 22 2017

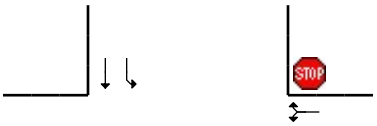


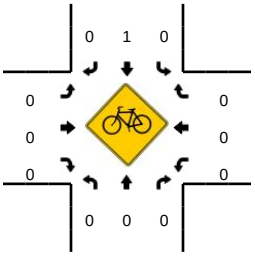
Peak-Hour: 11:35 AM -- 12:35 PM

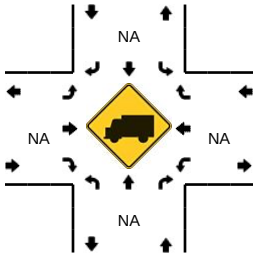
Peak 15-Min: 12:15 PM -- 12:30 PM

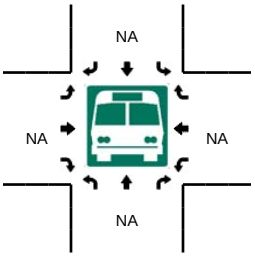












5-Min Count Period Beginning At	Cabrillo Hwy (Hwy 1) (Northbound)				Cabrillo Hwy (Hwy 1) (Southbound)				Carlos St (Eastbound)				Carlos St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:00 AM	0	50	0	0	2	61	0	0	0	0	0	0	0	0	1	0	114	
11:05 AM	0	57	0	0	0	82	0	0	0	0	0	0	0	0	0	0	139	
11:10 AM	0	60	0	0	0	74	0	0	0	0	0	0	0	0	0	0	134	
11:15 AM	0	54	0	0	0	64	0	0	0	0	0	0	0	0	0	0	118	
11:20 AM	0	56	0	0	0	84	0	0	0	0	0	0	0	0	1	0	141	
11:25 AM	0	69	0	0	1	64	0	0	0	0	0	0	0	0	0	0	134	
11:30 AM	0	39	0	0	0	82	0	0	0	0	0	0	0	0	1	0	122	
11:35 AM	0	51	0	0	0	80	0	0	0	0	0	0	0	0	1	0	132	
11:40 AM	0	42	0	0	1	80	0	0	0	0	0	0	0	0	0	0	123	
11:45 AM	0	47	0	0	0	84	0	0	0	0	0	0	0	0	1	0	132	
11:50 AM	0	38	0	0	0	68	0	0	0	0	0	0	0	0	2	0	108	
11:55 AM	0	47	0	0	2	79	0	0	0	0	0	0	0	0	1	0	129	1526
12:00 PM	0	62	0	0	0	88	0	0	0	0	0	0	0	0	2	0	152	1564
12:05 PM	0	47	0	0	0	83	0	0	0	0	0	0	0	0	0	0	130	1555
12:10 PM	0	49	0	0	0	71	0	0	0	0	0	0	0	0	1	0	121	1542
12:15 PM	0	79	0	0	2	75	0	0	0	0	0	0	0	0	1	0	157	1581
12:20 PM	0	42	0	0	0	79	0	0	0	0	0	0	0	0	0	0	121	1561
12:25 PM	0	61	0	0	1	89	0	0	0	0	0	0	0	0	1	0	152	1579
12:30 PM	0	75	0	0	0	49	0	0	0	0	0	0	0	0	3	0	127	1584
12:35 PM	0	45	0	0	0	70	0	0	0	0	0	0	0	0	2	0	117	1569
12:40 PM	0	57	0	0	1	49	0	0	0	0	0	0	0	0	0	0	107	1553
12:45 PM	0	63	0	0	1	62	0	0	0	0	0	0	0	0	0	0	126	1547
12:50 PM	0	62	0	0	1	75	0	0	0	0	0	0	0	0	0	0	138	1577
12:55 PM	0	59	0	0	1	60	0	0	0	0	0	0	0	0	0	0	120	1568

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	728	0	0	12	972	0	0	0	0	0	0	0	0	8	0	1720
Heavy Trucks	0	4	0		0	8	0		0	0	0		0	0	0		12
Pedestrians		0				0				0				4			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/17/2017 6:04 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: Carlos St -- Sierra St

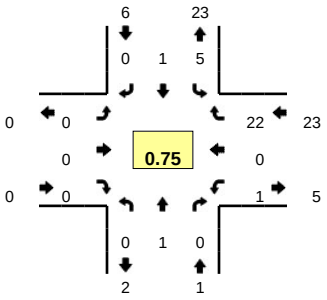
CITY/STATE: San Mateo, CA

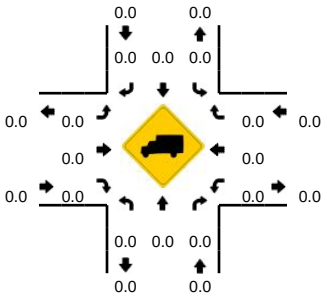
QC JOB #: 14384619

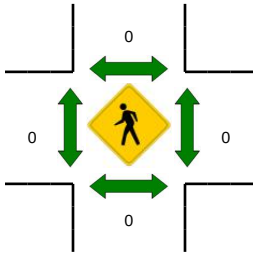
DATE: Thu, Apr 20 2017

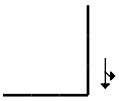
Peak-Hour: 7:45 AM -- 8:45 AM

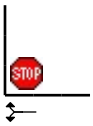
Peak 15-Min: 8:15 AM -- 8:30 AM

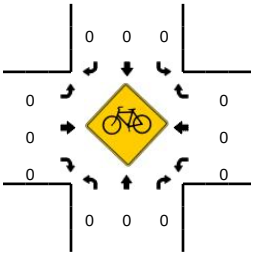


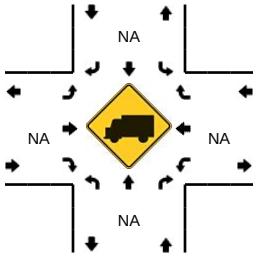


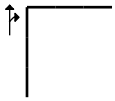


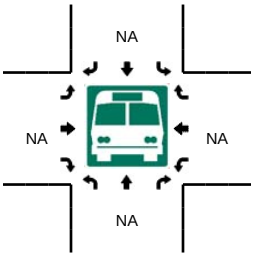












5-Min Count Period Beginning At	Carlos St (Northbound)				Carlos St (Southbound)				Sierra St (Eastbound)				Sierra St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4	
7:05 AM	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	2	
7:10 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:15 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	3	0	4	
7:20 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	
7:25 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	
7:35 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
7:40 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	2	
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	
7:50 AM	0	0	0	0	1	1	0	0	0	0	0	0	0	0	2	0	4	
7:55 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	26
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	23
8:05 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	24
8:10 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	27
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	24
8:20 AM	0	0	0	0	1	0	0	0	0	0	0	0	1	0	2	0	4	26
8:25 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	4	0	5	28
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	28
8:35 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	28
8:40 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	3	0	4	30
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	29
8:50 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25
8:55 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23

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	0	0	0	8	0	0	0	0	0	0	0	4	0	28	0	40
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/1/2017 4:16 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: Carlos St -- Sierra St

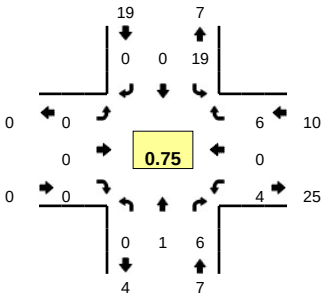
CITY/STATE: San Mateo, CA

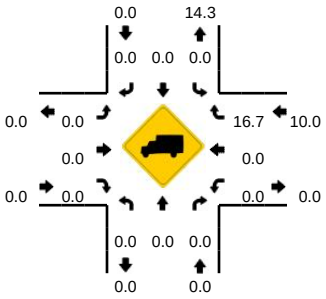
QC JOB #: 14384620

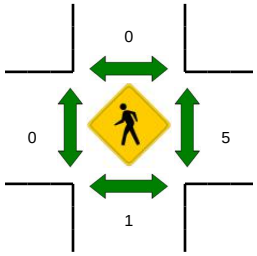
DATE: Thu, Apr 20 2017

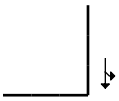
Peak-Hour: 5:00 PM -- 6:00 PM

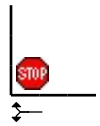
Peak 15-Min: 5:40 PM -- 5:55 PM

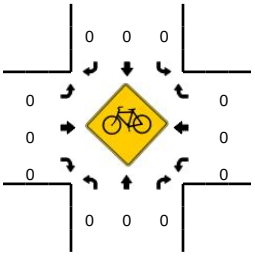


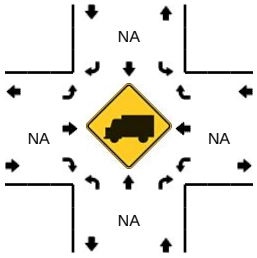


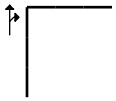


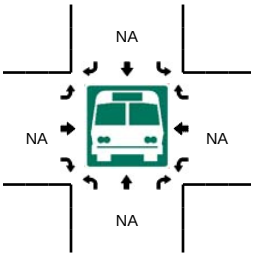












5-Min Count Period Beginning At	Carlos St (Northbound)				Carlos St (Southbound)				Sierra St (Eastbound)				Sierra St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	
4:05 PM	0	0	0	0	2	0	0	0	0	0	0	0	0	0	1	0	3	
4:10 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4:15 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	
4:20 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	2	
4:25 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4:30 PM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	1	0	3	
4:35 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	
4:40 PM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
4:45 PM	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2	
4:50 PM	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	3	
4:55 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	19
5:00 PM	0	0	2	0	1	0	0	0	0	0	0	0	1	0	0	0	4	22
5:05 PM	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	3	22
5:10 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	24
5:15 PM	0	0	0	0	3	0	0	0	0	0	0	0	1	0	0	0	4	27
5:20 PM	0	0	0	0	1	0	0	0	0	0	0	0	1	0	1	0	3	28
5:25 PM	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	3	31
5:30 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	29
5:35 PM	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	2	30
5:40 PM	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	30
5:45 PM	0	0	1	0	3	0	0	0	0	0	0	0	0	0	1	0	5	33
5:50 PM	0	0	1	0	2	0	0	0	0	0	0	0	0	0	2	0	5	35
5:55 PM	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2	36

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	4	12	0	20	0	0	0	0	0	0	0	0	0	12	0	48
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	4		4
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/1/2017 4:16 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: Carlos St -- Sierra St

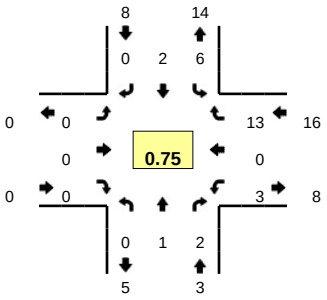
CITY/STATE: San Mateo, CA

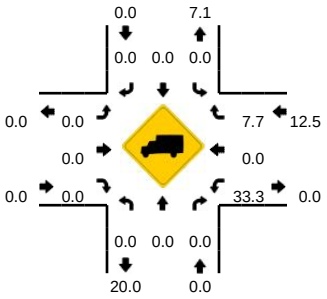
QC JOB #: 14384621

DATE: Sat, Apr 22 2017

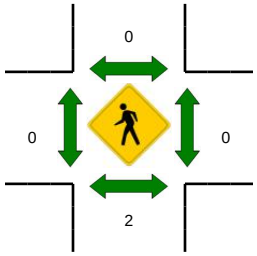
Peak-Hour: 11:50 AM -- 12:50 PM

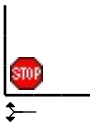
Peak 15-Min: 12:25 PM -- 12:40 PM

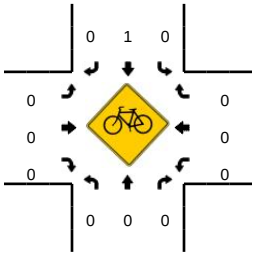


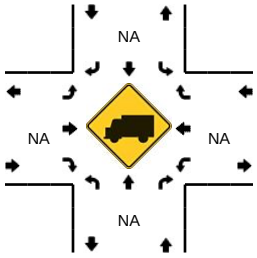


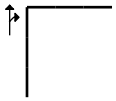
Quality Counts
TRANSPORTATION DATA COLLECTION SERVICES

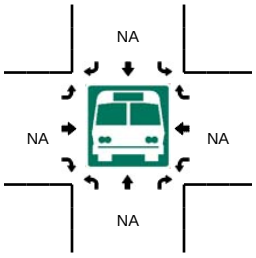












5-Min Count Period Beginning At	Carlos St (Northbound)				Carlos St (Southbound)				Sierra St (Eastbound)				Sierra St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:00 AM	0	0	0	0	2	0	0	0	0	0	0	0	3	0	1	0	6	
11:05 AM	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	
11:10 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
11:20 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	
11:25 AM	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	2	
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	
11:35 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	
11:40 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	
11:45 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	
11:50 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	
11:55 AM	0	0	0	0	2	0	0	0	0	0	0	0	1	0	1	0	4	22
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	19
12:05 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17
12:10 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	18
12:15 PM	0	0	0	0	2	0	0	0	0	0	0	0	1	0	1	0	4	22
12:20 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	21
12:25 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	2	21
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4	24
12:35 PM	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	3	26
12:40 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25
12:45 PM	0	0	0	0	2	0	0	0	0	0	0	0	1	0	1	0	4	27
12:50 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	27
12:55 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	24

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	4	8	0	0	4	0	0	0	0	0	0	0	0	20	0	36
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Pedestrians		4				0				0				0			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/17/2017 6:04 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: Stetson St -- Sierra St

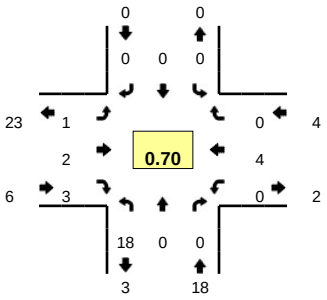
CITY/STATE: Moss Beach, CA

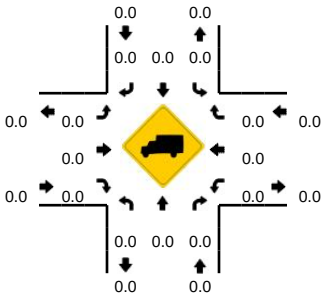
QC JOB #: 14384616

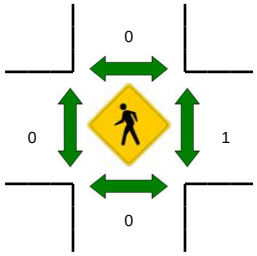
DATE: Thu, Apr 20 2017

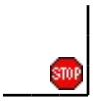
Peak-Hour: 7:45 AM -- 8:45 AM

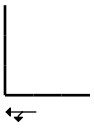
Peak 15-Min: 8:15 AM -- 8:30 AM

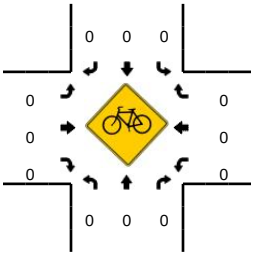


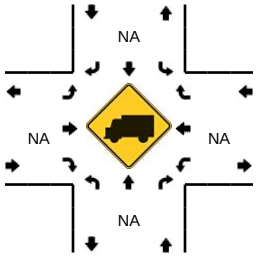


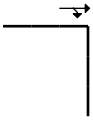


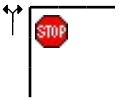


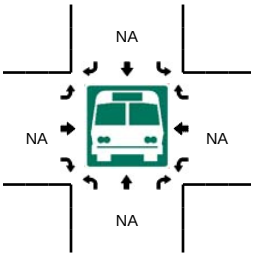












5-Min Count Period Beginning At	Stetson St (Northbound)				Stetson St (Southbound)				Sierra St (Eastbound)				Sierra St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	4	
7:05 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	2	
7:10 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	
7:15 AM	1	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	3	
7:20 AM	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
7:25 AM	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	
7:35 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	
7:40 AM	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	
7:45 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
7:50 AM	1	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	3	
7:55 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	24
8:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	21
8:05 AM	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	22
8:10 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	3	24
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	22
8:20 AM	2	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	4	24
8:25 AM	4	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	5	26
8:30 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	26
8:35 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	26
8:40 AM	3	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	4	28
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	27
8:50 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
8:55 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23

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	24	0	0	0	0	0	0	0	0	4	4	4	0	4	0	0	40
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Pedestrians		0				0				0				4			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/1/2017 4:16 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: Stetson St -- Sierra St

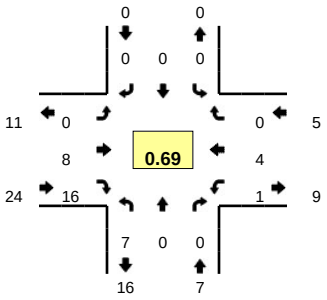
CITY/STATE: Moss Beach, CA

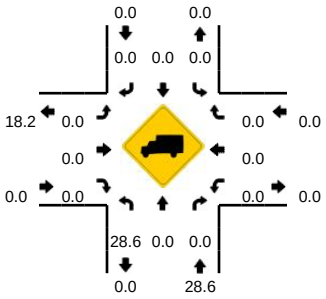
QC JOB #: 14384617

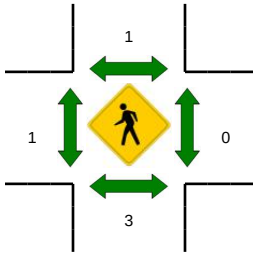
DATE: Thu, Apr 20 2017

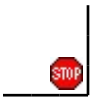
Peak-Hour: 5:00 PM -- 6:00 PM

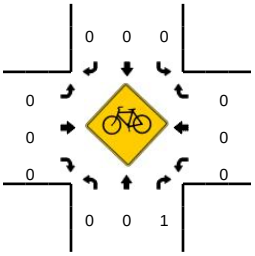
Peak 15-Min: 5:45 PM -- 6:00 PM

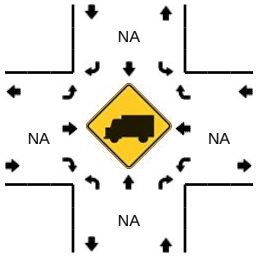


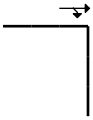


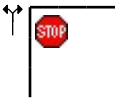


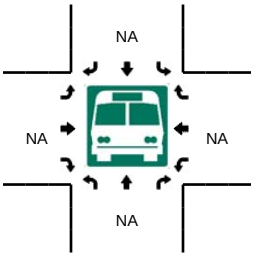












5-Min Count Period Beginning At	Stetson St (Northbound)				Stetson St (Southbound)				Sierra St (Eastbound)				Sierra St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	
4:05 PM	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	0	3	
4:10 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	
4:20 PM	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
4:25 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4:30 PM	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	3	
4:35 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	
4:40 PM	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	2	
4:45 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2	
4:50 PM	0	0	0	0	0	0	0	0	0	1	2	0	0	0	0	0	3	
4:55 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	19
5:00 PM	0	0	0	0	0	0	0	0	0	2	1	0	0	1	0	0	4	22
5:05 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3	22
5:10 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2	24
5:15 PM	0	0	0	0	0	0	0	0	0	1	2	0	0	1	0	0	4	27
5:20 PM	1	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	3	28
5:25 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3	31
5:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	29
5:35 PM	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2	30
5:40 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	29
5:45 PM	2	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	6	33
5:50 PM	2	0	0	0	0	0	0	0	0	1	2	0	0	0	0	0	5	35
5:55 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2	36

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	16	0	0	0	0	0	0	0	0	12	24	0	0	0	0	0	52
Heavy Trucks	8	0	0		0	0	0		0	0	0		0	0	0		8
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/1/2017 4:16 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: Stetson St -- Sierra St

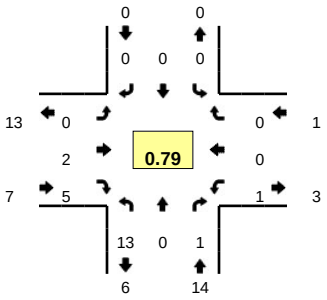
CITY/STATE: Moss Beach, CA

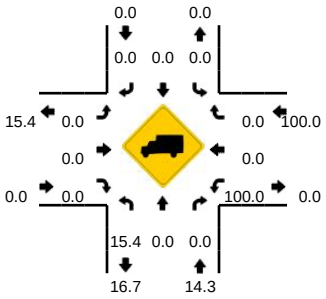
QC JOB #: 14384618

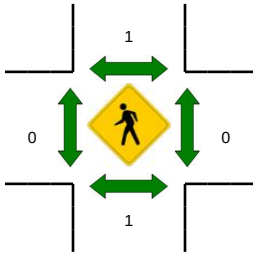
DATE: Sat, Apr 22 2017

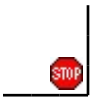
Peak-Hour: 11:40 AM -- 12:40 PM

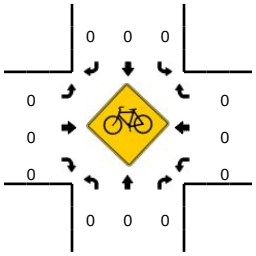
Peak 15-Min: 11:50 AM -- 12:05 PM

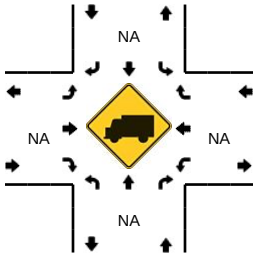


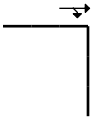


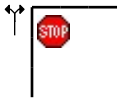


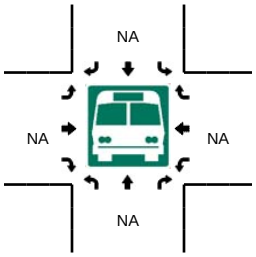












5-Min Count Period Beginning At	Stetson St (Northbound)				Stetson St (Southbound)				Sierra St (Eastbound)				Sierra St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:00 AM	1	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	3	
11:05 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	
11:10 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
11:20 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
11:25 AM	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
11:35 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
11:40 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	
11:45 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
11:50 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
11:55 AM	1	0	1	0	0	0	0	0	0	0	2	0	0	0	0	0	4	15
12:00 PM	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	14
12:05 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	14
12:10 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	15
12:15 PM	2	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	4	19
12:20 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18
12:25 PM	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	18
12:30 PM	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	21
12:35 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	22
12:40 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	21
12:45 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2	22
12:50 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	22
12:55 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	19

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	16	0	4	0	0	0	0	0	0	0	8	0	0	0	0	0	28
Heavy Trucks	4	0	0		0	0	0		0	0	0		0	0	0		4
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/17/2017 6:04 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

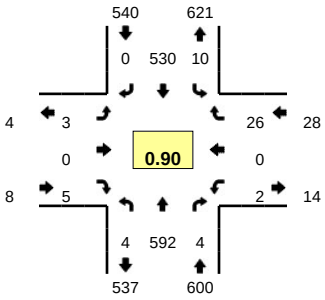
Method for determining peak hour: Total Entering Volume

LOCATION: Cabrillo Hwy (Hwy 1) -- Vallemar St/Etheldore St

QC JOB #: 14384628

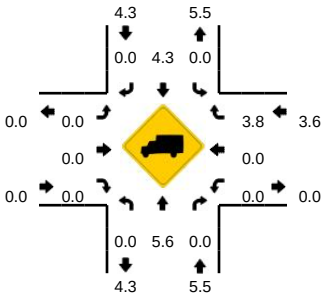
CITY/STATE: San Mateo, CA

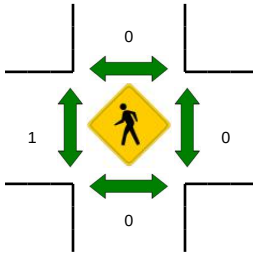
DATE: Thu, Apr 20 2017

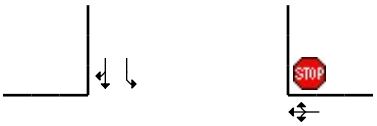


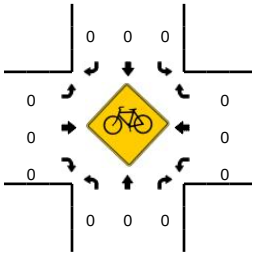
Peak-Hour: 7:45 AM -- 8:45 AM

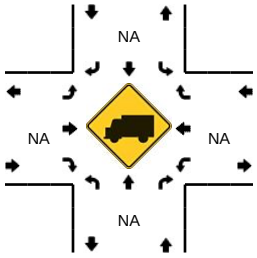
Peak 15-Min: 8:10 AM -- 8:25 AM

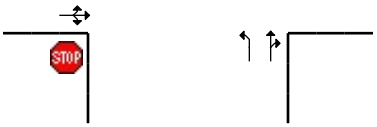


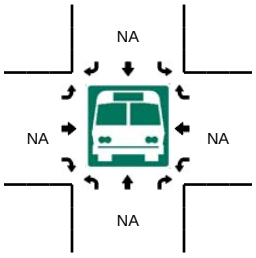












5-Min Count Period Beginning At	Cabrillo Hwy (Hwy 1) (Northbound)				Cabrillo Hwy (Hwy 1) (Southbound)				Vallemar St/Etheldore St (Eastbound)				Vallemar St/Etheldore St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	1	49	0	0	1	21	1	0	0	0	1	0	0	0	4	0	78	
7:05 AM	0	53	0	0	0	25	0	0	0	0	1	0	0	0	2	0	81	
7:10 AM	0	44	0	0	0	30	0	0	0	0	0	0	2	0	0	0	76	
7:15 AM	0	49	1	0	1	25	0	0	0	0	0	0	0	0	5	0	81	
7:20 AM	0	55	0	0	0	29	0	0	3	0	0	0	1	0	4	0	92	
7:25 AM	0	42	0	0	0	24	0	0	0	0	1	0	0	0	2	0	69	
7:30 AM	0	50	0	0	2	27	1	0	1	0	2	0	1	0	2	0	86	
7:35 AM	0	48	0	0	0	29	0	0	0	0	1	0	0	0	3	0	81	
7:40 AM	1	52	0	0	0	43	0	0	1	0	0	0	0	0	4	0	101	
7:45 AM	0	53	2	0	0	50	0	0	2	0	0	0	0	0	2	0	109	
7:50 AM	0	51	0	0	1	47	0	0	0	0	0	0	0	0	2	0	101	
7:55 AM	0	43	1	0	1	41	0	0	0	0	1	0	0	0	2	0	89	1044
8:00 AM	0	49	0	0	0	26	0	0	0	0	0	0	0	0	1	0	76	1042
8:05 AM	0	40	0	0	1	34	0	0	0	0	1	0	0	0	0	0	76	1037
8:10 AM	1	51	0	0	2	43	0	0	0	0	0	0	1	0	4	0	102	1063
8:15 AM	1	58	0	0	2	46	0	0	0	0	0	0	0	0	5	0	112	1094
8:20 AM	1	68	0	0	2	38	0	0	1	0	0	0	0	0	3	0	113	1115
8:25 AM	0	49	1	0	0	41	0	0	0	0	1	0	1	0	1	0	94	1140
8:30 AM	0	34	0	0	1	46	0	0	0	0	0	0	0	0	1	0	82	1136
8:35 AM	0	48	0	0	0	65	0	0	0	0	2	0	0	0	1	0	116	1171
8:40 AM	1	48	0	0	0	53	0	0	0	0	0	0	0	0	4	0	106	1176
8:45 AM	0	31	0	0	1	43	0	0	1	0	1	0	0	0	1	0	78	1145
8:50 AM	0	43	0	0	1	34	1	0	0	0	0	0	0	0	1	0	80	1124
8:55 AM	0	32	0	0	0	44	0	0	0	0	1	0	0	0	3	0	80	1115

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	12	708	0	0	24	508	0	0	4	0	0	0	4	0	48	0	1308
Heavy Trucks	0	40	0		0	12	0		0	0	0		0	0	0		52
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/1/2017 4:16 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

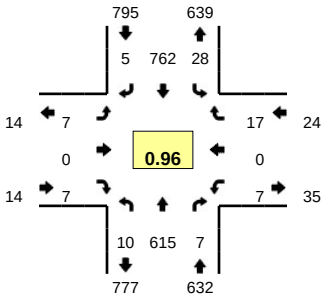
Method for determining peak hour: Total Entering Volume

LOCATION: Cabrillo Hwy (Hwy 1) -- Vallemar St/Etheldore St

QC JOB #: 14384629

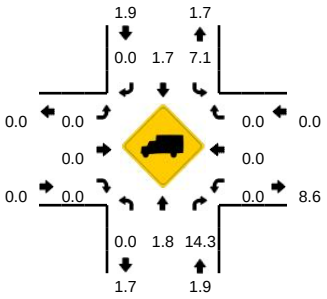
CITY/STATE: San Mateo, CA

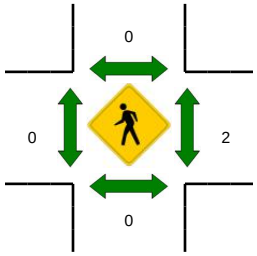
DATE: Thu, Apr 20 2017

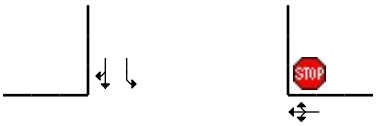


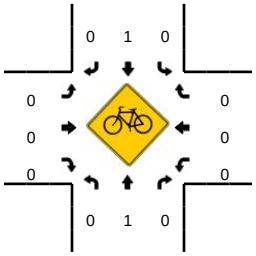
Peak-Hour: 4:45 PM -- 5:45 PM

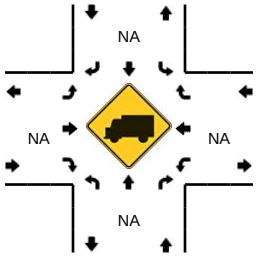
Peak 15-Min: 4:50 PM -- 5:05 PM

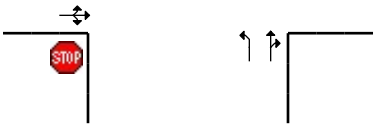


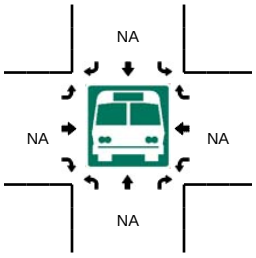












5-Min Count Period Beginning At	Cabrillo Hwy (Hwy 1) (Northbound)				Cabrillo Hwy (Hwy 1) (Southbound)				Vallemar St/Etheldore St (Eastbound)				Vallemar St/Etheldore St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	20	0	0	0	30	0	0	0	0	0	0	0	0	0	0	50	
4:05 PM	1	53	0	0	3	67	0	0	0	0	0	0	0	0	1	0	125	
4:10 PM	1	50	1	0	2	53	0	0	0	0	0	0	0	0	2	0	109	
4:15 PM	0	53	1	0	2	62	0	0	0	0	0	0	0	0	2	0	120	
4:20 PM	0	56	1	0	0	54	0	0	0	0	1	0	1	0	0	0	113	
4:25 PM	0	54	2	0	4	65	1	0	0	0	0	0	0	0	1	0	127	
4:30 PM	0	50	2	0	1	45	1	0	0	0	0	0	0	1	1	0	101	
4:35 PM	0	52	0	0	1	57	1	0	0	0	2	0	0	0	1	0	114	
4:40 PM	0	44	1	0	2	66	0	0	0	0	0	0	0	0	0	0	113	
4:45 PM	2	51	0	0	4	62	0	0	0	0	1	0	1	0	2	0	123	
4:50 PM	1	47	1	0	3	56	1	0	0	0	1	0	1	0	2	0	113	
4:55 PM	2	44	1	1	4	75	0	0	1	0	0	0	1	0	2	0	131	1339
5:00 PM	1	62	0	0	0	69	0	0	0	0	1	0	0	0	6	0	139	1428
5:05 PM	0	53	2	0	1	51	1	0	0	0	0	0	0	0	0	0	108	1411
5:10 PM	0	47	1	0	2	68	0	0	0	0	1	0	0	0	0	0	119	1421
5:15 PM	1	52	0	0	5	61	0	0	2	0	1	0	1	0	1	0	124	1425
5:20 PM	1	51	0	0	1	52	1	0	2	0	0	0	1	0	1	0	110	1422
5:25 PM	0	49	0	0	4	78	1	0	0	0	1	0	1	0	1	0	135	1430
5:30 PM	1	49	0	0	2	55	0	0	0	0	0	0	0	0	0	0	107	1436
5:35 PM	0	58	2	0	1	73	0	0	1	0	1	0	1	0	1	0	138	1460
5:40 PM	0	52	0	0	1	62	1	0	1	0	0	0	0	0	1	0	118	1465
5:45 PM	0	37	1	0	3	45	0	0	0	0	0	0	0	0	2	0	88	1430
5:50 PM	0	49	0	0	4	53	0	0	1	0	0	0	0	0	2	0	109	1426
5:55 PM	0	62	0	0	2	71	0	0	0	0	0	0	0	0	0	0	135	1430

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	16	612	8	4	28	800	4	0	4	0	8	0	8	0	40	0	1532
Heavy Trucks	0	24	0		0	12	0		0	0	0		0	0	0		36
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/1/2017 4:16 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

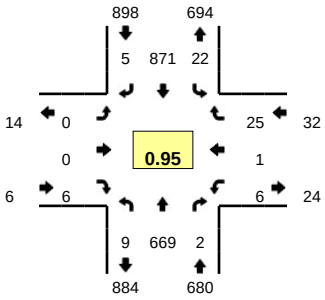
Method for determining peak hour: Total Entering Volume

LOCATION: Cabrillo Hwy(Hwy 1) -- Vallemar St/Etheldore St

QC JOB #: 14384630

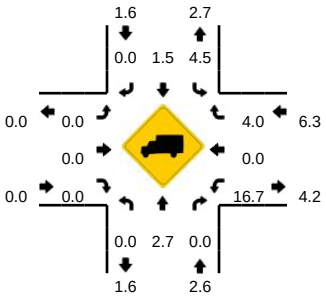
CITY/STATE: San Mateo, CA

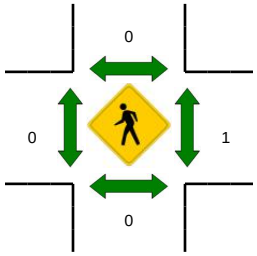
DATE: Sat, Apr 22 2017

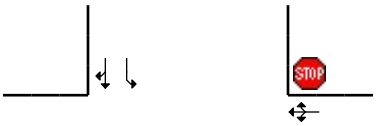


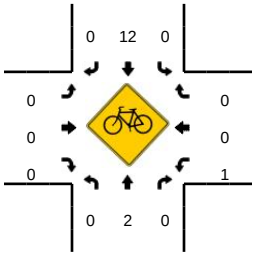
Peak-Hour: 11:55 AM -- 12:55 PM

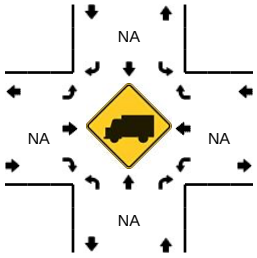
Peak 15-Min: 12:15 PM -- 12:30 PM

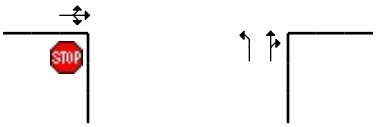


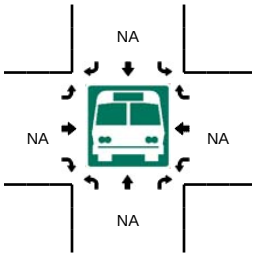












5-Min Count Period Beginning At	Cabrillo Hwy(Hwy 1) (Northbound)				Cabrillo Hwy(Hwy 1) (Southbound)				Vallemar St/Etheldore St (Eastbound)				Vallemar St/Etheldore St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:00 AM	1	50	0	0	2	58	2	0	0	0	2	0	1	1	1	0	118	
11:05 AM	0	59	0	0	0	80	0	0	0	0	0	0	2	0	3	0	144	
11:10 AM	0	51	0	0	2	73	0	0	0	0	0	0	2	0	2	0	130	
11:15 AM	0	56	1	0	0	63	0	0	0	0	1	0	1	0	3	0	125	
11:20 AM	1	47	0	0	2	83	0	0	0	0	0	0	0	0	2	0	135	
11:25 AM	1	65	0	0	2	61	0	0	2	0	0	0	1	0	3	0	135	
11:30 AM	1	38	0	0	3	77	1	0	0	0	1	0	1	0	2	0	124	
11:35 AM	0	52	0	0	1	78	0	0	0	0	0	0	0	0	0	0	131	
11:40 AM	0	39	3	0	1	74	0	0	0	0	1	0	0	0	1	0	119	
11:45 AM	0	39	0	0	2	81	0	0	0	0	0	0	0	0	5	0	127	
11:50 AM	0	39	1	0	3	69	0	0	0	1	0	0	0	0	2	0	115	
11:55 AM	0	46	0	0	3	74	0	0	0	0	0	0	1	0	2	0	126	1529
12:00 PM	1	64	0	0	2	88	0	0	0	0	0	0	1	0	2	0	158	1569
12:05 PM	1	41	0	0	2	81	0	0	0	0	0	0	1	0	2	0	128	1553
12:10 PM	1	64	0	0	3	64	0	0	0	0	1	0	0	0	2	0	135	1558
12:15 PM	0	56	1	0	1	76	1	0	0	0	0	0	0	0	2	0	137	1570
12:20 PM	2	59	0	0	1	77	0	0	0	0	1	0	1	0	3	0	144	1579
12:25 PM	1	50	0	1	2	89	0	0	0	0	1	0	0	0	0	0	144	1588
12:30 PM	0	68	0	0	0	47	0	0	0	0	0	0	0	0	2	0	117	1581
12:35 PM	0	48	0	0	1	68	0	0	0	0	0	0	0	0	2	0	119	1569
12:40 PM	0	49	0	0	2	76	3	0	0	0	0	0	1	0	2	0	133	1583
12:45 PM	2	67	0	0	0	61	0	0	0	0	2	0	1	0	2	0	135	1591
12:50 PM	0	57	1	0	5	70	1	0	0	0	1	0	0	1	4	0	140	1616
12:55 PM	0	55	0	0	0	57	0	0	0	0	1	0	0	1	0	0	114	1604

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	12	660	4	4	16	968	4	0	0	0	8	0	4	0	20	0	1700
Heavy Trucks	0	24	0		0	16	0		0	0	0		4	0	0		44
Pedestrians		0				0				0				0			0
Bicycles	0	1	0		0	0	0		0	0	0		0	0	0		1
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/17/2017 6:04 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Quality Counts
TRANSPORTATION DATA COLLECTION SERVICES

Location: California Ave & Cabrillo Hwy
Date: 4/20/2017
Site Code: 14384625

	Cabrillo Hwy (Hwy 1) Southbound					California Ave Westbound					Cabrillo Hwy (Hwy 1) Northbound					California Ave Eastbound					Wienke Way Southeastbound				
Location:	Right to Wienke Way	Right	Thru	Left	U-Turn	Right	Thru to Wienke Way	Thru	Left	U-Turn	Right	Thru	Left to Wienke Way	Left	U-Turn	Right	Thru	Left	Left to Wienke Way	U-Turn	Right to California Ave	Right to Cabrillo Hwy (Hwy 1)	Thru to California Ave	Left to Cabrillo Hwy (Hwy 1)	U-Turn
7:00 AM	0	0	23	0	0	3	0	0	2	0	0	49	0	0	0	0	0	0	0	0	0	0	0	0	0
7:05 AM	0	0	26	0	0	4	0	0	2	0	0	47	0	0	0	0	0	1	0	0	0	1	0	0	0
7:10 AM	0	0	32	0	0	1	0	0	5	0	1	42	1	0	0	2	0	0	0	0	0	0	0	1	0
7:15 AM	0	0	26	0	0	0	0	0	3	0	0	49	0	0	0	0	0	0	0	0	0	3	0	0	0
7:20 AM	0	0	26	0	0	1	0	0	3	0	0	55	0	1	0	0	0	0	0	0	0	0	0	0	0
7:25 AM	0	0	28	0	0	1	0	0	5	0	0	43	0	0	0	1	0	0	0	0	0	1	0	0	0
7:30 AM	0	0	29	0	0	1	0	0	8	0	3	46	0	0	0	1	0	2	0	0	0	2	0	0	0
7:35 AM	0	0	31	1	0	1	0	0	3	0	1	47	1	0	0	0	0	0	0	0	0	0	0	0	0
7:40 AM	0	0	43	0	0	4	0	0	6	0	0	50	1	1	0	0	0	0	0	0	0	0	1	0	0
7:45 AM	0	0	45	2	0	0	0	0	6	0	2	52	1	0	0	0	0	0	0	0	0	1	0	0	0
7:50 AM	0	0	45	1	0	1	0	0	4	0	1	54	0	0	0	1	0	0	0	0	0	1	0	0	0
7:55 AM	0	1	42	0	0	2	0	0	3	0	2	41	1	0	0	0	0	1	0	0	0	2	0	0	0
8:00 AM	0	0	28	0	0	1	0	0	4	0	1	48	1	0	0	1	0	0	0	0	0	0	0	0	0
8:05 AM	0	0	34	0	0	0	0	0	3	0	1	35	1	0	0	1	0	2	0	0	0	0	0	1	0
8:10 AM	0	0	43	0	0	1	0	0	6	0	4	50	0	1	0	2	0	1	0	0	0	0	0	0	0
8:15 AM	0	0	45	1	0	2	0	0	4	0	1	59	0	0	0	1	0	0	0	0	1	0	0	0	0
8:20 AM	0	0	34	0	0	1	0	0	1	0	0	67	2	1	0	1	0	2	0	0	0	1	0	0	0
8:25 AM	0	1	45	1	0	2	0	0	5	0	1	45	1	0	0	1	0	1	0	0	0	0	0	1	0
8:30 AM	0	0	46	0	0	2	0	0	3	0	1	32	0	0	0	0	0	0	0	0	0	0	0	1	0
8:35 AM	0	0	60	1	0	2	0	0	4	0	3	46	0	2	0	2	0	2	0	0	0	0	0	0	0
8:40 AM	0	3	54	0	0	1	0	0	5	0	4	45	0	0	0	1	0	1	0	0	0	0	0	0	0
8:45 AM	0	0	44	0	0	0	0	0	4	0	1	33	1	1	0	2	0	0	0	0	0	2	0	0	0
8:50 AM	0	1	35	1	0	1	0	0	4	0	0	40	2	1	0	2	0	0	0	0	0	0	0	2	0
8:55 AM	0	0	42	2	0	1	0	0	5	0	2	31	0	0	0	1	0	0	0	0	0	0	0	0	0
Total	**0**	**6**	**906**	**10**	**0**	**33**	**0**	**0**	**98**	**0**	**29**	**1106**	**13**	**8**	**0**	**20**	**0**	**13**	**0**	**0**	**1**	**14**	**1**	**6**	**0**

Peak Hour: 7:45 AM - 8:45 AM
Peak 15: 8:30 AM - 8:45 AM
PHF: 0.929348

Quality Counts
TRANSPORTATION DATA COLLECTION SERVICES

Location: California Ave & Cabrillo Hwy
Date: 4/20/2017
Site Code: 14384625

	Cabrillo Hwy (Hwy 1) Southbound					California Ave Westbound					Cabrillo Hwy (Hwy 1) Northbound					California Ave Eastbound					Wienke Way Southeastbound				
Location:	Right to Wienke Way	Right	Thru	Left	U-Turn	Right	Thru to Wienke Way	Thru	Left	U-Turn	Right	Thru	Left to Wienke Way	Left	U-Turn	Right	Thru	Left	Left to Wienke Way	U-Turn	Right to California Ave	Right to Cabrillo Hwy (Hwy 1)	Thru to California Ave	Left to Cabrillo Hwy (Hwy 1)	U-Turn
7:00 AM	0	0	20	0	0	3	0	0	2	0	0	47	0	0	0	0	0	0	0	0	0	0	0	0	0
7:05 AM	0	0	24	0	0	4	0	0	2	0	0	45	0	0	0	0	0	1	0	0	0	1	0	0	0
7:10 AM	0	0	32	0	0	1	0	0	5	0	1	39	1	0	0	2	0	0	0	0	0	0	0	1	0
7:15 AM	0	0	24	0	0	0	0	0	3	0	0	49	0	0	0	0	0	0	0	0	0	3	0	0	0
7:20 AM	0	0	25	0	0	1	0	0	3	0	0	51	0	1	0	0	0	0	0	0	0	0	0	0	0
7:25 AM	0	0	27	0	0	1	0	0	5	0	0	42	0	0	0	1	0	0	0	0	0	1	0	0	0
7:30 AM	0	0	28	0	0	1	0	0	8	0	3	45	0	0	0	1	0	2	0	0	0	2	0	0	0
7:35 AM	0	0	30	1	0	1	0	0	3	0	1	42	1	0	0	0	0	0	0	0	0	0	0	0	0
7:40 AM	0	0	43	0	0	3	0	0	6	0	0	49	1	1	0	0	0	0	0	0	0	0	1	0	0
7:45 AM	0	0	43	2	0	0	0	0	6	0	2	46	1	0	0	0	0	0	0	0	0	1	0	0	0
7:50 AM	0	0	45	1	0	1	0	0	4	0	1	47	0	0	0	1	0	0	0	0	0	1	0	0	0
7:55 AM	0	1	41	0	0	2	0	0	3	0	2	37	1	0	0	0	0	1	0	0	0	2	0	0	0
8:00 AM	0	0	28	0	0	1	0	0	4	0	1	45	1	0	0	1	0	0	0	0	0	0	0	0	0
8:05 AM	0	0	34	0	0	0	0	0	3	0	1	30	1	0	0	1	0	2	0	0	0	0	0	1	0
8:10 AM	0	0	43	0	0	1	0	0	6	0	4	45	0	1	0	2	0	1	0	0	0	0	0	0	0
8:15 AM	0	0	43	1	0	2	0	0	4	0	1	56	0	0	0	1	0	0	0	0	1	0	0	0	0
8:20 AM	0	0	34	0	0	1	0	0	1	0	0	61	2	1	0	1	0	2	0	0	0	1	0	0	0
8:25 AM	0	1	40	1	0	2	0	0	5	0	1	42	1	0	0	1	0	1	0	0	0	0	0	1	0
8:30 AM	0	0	40	0	0	2	0	0	3	0	1	31	0	0	0	0	0	0	0	0	0	0	0	1	0
8:35 AM	0	0	57	1	0	2	0	0	4	0	3	45	0	2	0	2	0	2	0	0	0	0	0	0	0
8:40 AM	0	3	52	0	0	1	0	0	5	0	4	43	0	0	0	1	0	1	0	0	0	0	0	0	0
8:45 AM	0	0	42	0	0	0	0	0	4	0	1	31	1	1	0	2	0	0	0	0	0	2	0	0	0
8:50 AM	0	1	32	1	0	1	0	0	4	0	0	40	2	1	0	2	0	0	0	0	0	0	0	2	0
8:55 AM	0	0	41	2	0	1	0	0	5	0	2	29	0	0	0	1	0	0	0	0	0	0	0	0	0
Total	**0**	**6**	**868**	**10**	**0**	**32**	**0**	**0**	**98**	**0**	**29**	**1037**	**13**	**8**	**0**	**20**	**0**	**13**	**0**	**0**	**1**	**14**	**1**	**6**	**0**

Quality Counts
TRANSPORTATION DATA COLLECTION SERVICES

Location: California Ave & Cabrillo Hwy
Date: 4/20/2017
Site Code: 14384625

	Cabrillo Hwy (Hwy 1) Southbound					California Ave Westbound					Cabrillo Hwy (Hwy 1) Northbound					California Ave Eastbound					Wienke Way Southeastbound				
Location:	Right to Wienke Way	Right	Thru	Left		Right	Thru to Wienke Way	Thru	Left		Right	Thru	Left to Wienke Way	Left		Right	Thru	Left	Left to Wienke Way		Right to California Ave	Right to Cabrillo Hwy (Hwy 1)	Thru to California Ave	Left to Cabrillo Hwy (Hwy 1)	
7:00 AM	0	0	3	0		0	0	0	0		0	2	0	0		0	0	0	0		0	0	0	0	
7:05 AM	0	0	2	0		0	0	0	0		0	2	0	0		0	0	0	0		0	0	0	0	
7:10 AM	0	0	0	0		0	0	0	0		0	3	0	0		0	0	0	0		0	0	0	0	
7:15 AM	0	0	2	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
7:20 AM	0	0	1	0		0	0	0	0		0	4	0	0		0	0	0	0		0	0	0	0	
7:25 AM	0	0	1	0		0	0	0	0		0	1	0	0		0	0	0	0		0	0	0	0	
7:30 AM	0	0	1	0		0	0	0	0		0	1	0	0		0	0	0	0		0	0	0	0	
7:35 AM	0	0	1	0		0	0	0	0		0	5	0	0		0	0	0	0		0	0	0	0	
7:40 AM	0	0	0	0		1	0	0	0		0	1	0	0		0	0	0	0		0	0	0	0	
7:45 AM	0	0	2	0		0	0	0	0		0	6	0	0		0	0	0	0		0	0	0	0	
7:50 AM	0	0	0	0		0	0	0	0		0	7	0	0		0	0	0	0		0	0	0	0	
7:55 AM	0	0	1	0		0	0	0	0		0	4	0	0		0	0	0	0		0	0	0	0	
8:00 AM	0	0	0	0		0	0	0	0		0	3	0	0		0	0	0	0		0	0	0	0	
8:05 AM	0	0	0	0		0	0	0	0		0	5	0	0		0	0	0	0		0	0	0	0	
8:10 AM	0	0	0	0		0	0	0	0		0	5	0	0		0	0	0	0		0	0	0	0	
8:15 AM	0	0	2	0		0	0	0	0		0	3	0	0		0	0	0	0		0	0	0	0	
8:20 AM	0	0	0	0		0	0	0	0		0	6	0	0		0	0	0	0		0	0	0	0	
8:25 AM	0	0	5	0		0	0	0	0		0	3	0	0		0	0	0	0		0	0	0	0	
8:30 AM	0	0	6	0		0	0	0	0		0	1	0	0		0	0	0	0		0	0	0	0	
8:35 AM	0	0	3	0		0	0	0	0		0	1	0	0		0	0	0	0		0	0	0	0	
8:40 AM	0	0	2	0		0	0	0	0		0	2	0	0		0	0	0	0		0	0	0	0	
8:45 AM	0	0	2	0		0	0	0	0		0	2	0	0		0	0	0	0		0	0	0	0	
8:50 AM	0	0	3	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
8:55 AM	0	0	1	0		0	0	0	0		0	2	0	0		0	0	0	0		0	0	0	0	
Total	**0**	**0**	**38**	**0**		**1**	**0**	**0**	**0**		**0**	**69**	**0**	**0**		**0**	**0**	**0**	**0**		**0**	**0**	**0**	**0**	

Quality Counts
TRANSPORTATION DATA COLLECTION SERVICES

Location: California Ave & Cabrillo Hwy
Date: 4/20/2017
Site Code: 14384625

	Cabrillo Hwy (Hwy 1) Southbound					California Ave Westbound					Cabrillo Hwy (Hwy 1) Northbound					California Ave Eastbound					Wienke Way Southeastbound				
Location:	Right to Wienke Way	Right	Thru	Left	Peds	Right	Thru to Wienke Way	Thru	Left	Peds	Right	Thru	Left to Wienke Way	Left	Peds	Right	Thru	Left	Left to Wienke Way	Peds	Right to California Ave	Right to Cabrillo Hwy (Hwy 1)	Thru to California Ave	Left to Cabrillo Hwy (Hwy 1)	Peds
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:05 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
7:10 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
7:20 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:25 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0	0
7:35 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:40 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:50 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
7:55 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
8:05 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0	0
8:10 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
8:20 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0	0
8:25 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:35 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0
8:40 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
8:50 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
8:55 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Total	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**20**	**0**	**13**	**0**	**1**	**0**	**0**	**0**	**0**	**1**

Quality Counts
TRANSPORTATION DATA COLLECTION SERVICES

Location: California Ave & Cabrillo Hwy
Date: 4/20/2017
Site Code: 14384626

	Cabrillo Hwy (Hwy 1) Southbound					California Ave Westbound					Cabrillo Hwy (Hwy 1) Northbound					California Ave Eastbound					Wienke Way Southeastbound				
Location:	Right to Wienke Way	Right	Thru	Left	U-Turn	Right	Thru to Wienke Way	Thru	Left	U-Turn	Right	Thru	Left to Wienke Way	Left	U-Turn	Right	Thru	Left	Left to Wienke Way	U-Turn	Right to California Ave	Right to Cabrillo Hwy (Hwy 1)	Thru to California Ave	Left to Cabrillo Hwy (Hwy 1)	U-Turn
4:00 PM	0	0	68	4	0	1	0	0	4	0	5	51	1	1	0	0	0	3	0	0	0	0	0	0	0
4:05 PM	0	0	64	0	0	0	0	0	1	0	3	53	3	0	0	0	0	0	0	0	0	0	0	0	0
4:10 PM	0	0	52	1	0	3	0	0	2	0	5	51	0	1	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	1	0	57	2	0	0	0	0	1	0	3	54	0	1	0	4	1	0	0	0	0	0	0	0	0
4:20 PM	0	1	56	1	0	1	0	0	2	0	4	55	1	3	0	1	0	1	0	0	1	1	0	0	0
4:25 PM	1	0	61	0	0	3	0	0	4	0	1	53	0	3	0	0	0	1	0	0	0	0	0	0	0
4:30 PM	0	1	47	1	0	1	0	0	3	0	5	49	1	1	0	1	0	1	0	0	0	2	0	2	0
4:35 PM	0	0	57	1	0	0	0	0	3	0	3	53	0	1	0	0	0	0	0	0	0	1	0	0	0
4:40 PM	0	0	63	0	0	1	0	0	1	0	3	44	1	0	0	0	0	0	0	0	0	1	0	0	0
4:45 PM	0	1	63	1	0	2	0	0	3	0	4	48	1	1	0	0	0	0	0	0	0	0	0	0	0
4:50 PM	0	2	60	3	0	1	0	0	6	0	4	47	0	0	0	0	0	0	0	0	0	0	0	1	0
4:55 PM	1	0	62	3	0	1	0	0	0	0	8	45	0	0	0	0	0	1	0	0	1	0	0	0	0
5:00 PM	0	0	68	2	0	1	0	0	1	0	1	60	1	0	0	0	0	0	0	0	0	0	0	0	0
5:05 PM	0	0	55	1	0	2	0	0	2	0	2	54	0	0	0	1	0	0	0	0	0	0	0	0	0
5:10 PM	0	0	71	0	0	0	0	0	2	0	1	46	2	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	1	58	2	0	2	0	0	4	0	4	53	0	2	0	1	0	0	0	0	0	0	0	0	0
5:20 PM	0	3	52	1	0	3	0	0	5	0	4	48	0	0	0	0	0	0	0	0	0	0	0	0	0
5:25 PM	0	0	72	2	0	0	0	0	3	0	1	50	0	1	0	1	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	59	0	0	0	1	0	1	0	3	48	1	1	0	0	0	1	0	0	0	0	0	0	0
5:35 PM	0	2	77	2	0	0	0	0	0	0	1	62	1	0	0	0	0	0	0	0	0	1	0	0	0
5:40 PM	0	1	59	0	0	0	0	0	5	0	9	51	1	0	0	0	0	1	0	0	0	0	0	0	0
5:45 PM	0	0	45	0	0	0	0	1	2	0	9	37	1	0	0	0	0	2	0	0	1	1	0	0	0
5:50 PM	0	0	50	0	0	0	0	0	4	0	3	48	0	0	0	0	0	0	0	0	0	0	0	0	0
5:55 PM	0	0	69	0	0	1	0	0	2	0	3	59	1	0	0	0	0	0	0	0	1	1	0	0	0
Total	**3**	**12**	**1445**	**27**	**0**	**23**	**1**	**1**	**61**	**0**	**89**	**1219**	**16**	**16**	**0**	**9**	**1**	**11**	**0**	**0**	**4**	**8**	**0**	**3**	**0**

Peak Hour: 4:45 PM - 5:45 PM
Peak 15: 5:30 PM - 5:45 PM
PHF: 0.907609

Quality Counts
TRANSPORTATION DATA COLLECTION SERVICES

Location: California Ave & Cabrillo Hwy
Date: 4/20/2017
Site Code: 14384626

	Cabrillo Hwy (Hwy 1) Southbound					California Ave Westbound					Cabrillo Hwy (Hwy 1) Northbound					California Ave Eastbound					Wienke Way Southeastbound				
Location:	Right to Wienke Way	Right	Thru	Left	U-Turn	Right	Thru to Wienke Way	Thru	Left	U-Turn	Right	Thru	Left to Wienke Way	Left	U-Turn	Right	Thru	Left	Left to Wienke Way	U-Turn	Right to California Ave	Right to Cabrillo Hwy (Hwy 1)	Thru to California Ave	Left to Cabrillo Hwy (Hwy 1)	U-Turn
4:00 PM	0	0	67	4	0	1	0	0	4	0	5	50	1	1	0	0	0	3	0	0	0	0	0	0	0
4:05 PM	0	0	61	0	0	0	0	0	1	0	3	51	3	0	0	0	0	0	0	0	0	0	0	0	0
4:10 PM	0	0	49	1	0	3	0	0	2	0	5	50	0	1	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	1	0	57	2	0	0	0	0	1	0	3	53	0	1	0	4	1	0	0	0	0	0	0	0	0
4:20 PM	0	1	53	1	0	1	0	0	2	0	4	52	1	3	0	1	0	1	0	0	0	1	0	0	0
4:25 PM	1	0	61	0	0	3	0	0	4	0	1	52	0	3	0	0	0	1	0	0	0	0	0	0	0
4:30 PM	0	1	45	1	0	1	0	0	3	0	5	49	1	1	0	1	0	1	0	0	0	2	0	2	0
4:35 PM	0	0	53	1	0	0	0	0	3	0	3	52	0	1	0	0	0	0	0	0	0	1	0	0	0
4:40 PM	0	0	62	0	0	1	0	0	1	0	3	41	1	0	0	0	0	0	0	0	0	1	0	0	0
4:45 PM	0	1	61	1	0	2	0	0	3	0	4	47	1	1	0	0	0	0	0	0	0	0	0	0	0
4:50 PM	0	2	58	3	0	1	0	0	6	0	4	44	0	0	0	0	0	0	0	0	0	0	0	1	0
4:55 PM	1	0	62	3	0	1	0	0	0	0	7	45	0	0	0	0	0	1	0	0	1	0	0	0	0
5:00 PM	0	0	65	2	0	1	0	0	1	0	1	57	1	0	0	0	0	0	0	0	0	0	0	0	0
5:05 PM	0	0	55	1	0	2	0	0	2	0	2	52	0	0	0	1	0	0	0	0	0	0	0	0	0
5:10 PM	0	0	70	0	0	0	0	0	2	0	1	45	2	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	1	58	2	0	2	0	0	4	0	4	53	0	2	0	1	0	0	0	0	0	0	0	0	0
5:20 PM	0	3	51	1	0	3	0	0	5	0	4	47	0	0	0	0	0	0	0	0	0	0	0	0	0
5:25 PM	0	0	70	2	0	0	0	0	2	0	1	49	0	1	0	1	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	58	0	0	0	1	0	0	0	3	48	1	1	0	0	0	1	0	0	0	0	0	0	0
5:35 PM	0	2	76	2	0	0	0	0	0	0	1	62	1	0	0	0	0	0	0	0	0	1	0	0	0
5:40 PM	0	1	57	0	0	0	0	0	5	0	9	51	1	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	45	0	0	0	0	1	2	0	9	36	1	0	0	0	0	2	0	0	1	1	0	0	0
5:50 PM	0	0	50	0	0	0	0	0	4	0	3	47	0	0	0	0	0	0	0	0	0	0	0	0	0
5:55 PM	0	0	69	0	0	1	0	0	2	0	3	59	1	0	0	0	0	0	0	0	1	1	0	0	0
Total	**3**	**12**	**1413**	**27**	**0**	**23**	**1**	**1**	**59**	**0**	**88**	**1192**	**16**	**16**	**0**	**9**	**1**	**10**	**0**	**0**	**3**	**8**	**0**	**3**	**0**

Quality Counts
TRANSPORTATION DATA COLLECTION SERVICES

Location: California Ave & Cabrillo Hwy
Date: 4/20/2017
Site Code: 14384626

	Cabrillo Hwy (Hwy 1) Southbound					California Ave Westbound					Cabrillo Hwy (Hwy 1) Northbound					California Ave Eastbound					Wienke Way Southeastbound				
Location:	Right to Wienke Way	Right	Thru	Left		Right	Thru to Wienke Way	Thru	Left		Right	Thru	Left to Wienke Way	Left		Right	Thru	Left	Left to Wienke Way		Right to California Ave	Right to Cabrillo Hwy (Hwy 1)	Thru to California Ave	Left to Cabrillo Hwy (Hwy 1)	
4:00 PM	0	0	1	0		0	0	0	0		0	1	0	0		0	0	0	0		0	0	0	0	
4:05 PM	0	0	3	0		0	0	0	0		0	2	0	0		0	0	0	0		0	0	0	0	
4:10 PM	0	0	3	0		0	0	0	0		0	1	0	0		0	0	0	0		0	0	0	0	
4:15 PM	0	0	0	0		0	0	0	0		0	1	0	0		0	0	0	0		0	0	0	0	
4:20 PM	0	0	3	0		0	0	0	0		0	3	0	0		0	0	0	0		1	0	0	0	
4:25 PM	0	0	0	0		0	0	0	0		0	1	0	0		0	0	0	0		0	0	0	0	
4:30 PM	0	0	2	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
4:35 PM	0	0	4	0		0	0	0	0		0	1	0	0		0	0	0	0		0	0	0	0	
4:40 PM	0	0	1	0		0	0	0	0		0	3	0	0		0	0	0	0		0	0	0	0	
4:45 PM	0	0	2	0		0	0	0	0		0	1	0	0		0	0	0	0		0	0	0	0	
4:50 PM	0	0	2	0		0	0	0	0		0	3	0	0		0	0	0	0		0	0	0	0	
4:55 PM	0	0	0	0		0	0	0	0		1	0	0	0		0	0	0	0		0	0	0	0	
5:00 PM	0	0	3	0		0	0	0	0		0	3	0	0		0	0	0	0		0	0	0	0	
5:05 PM	0	0	0	0		0	0	0	0		0	2	0	0		0	0	0	0		0	0	0	0	
5:10 PM	0	0	1	0		0	0	0	0		0	1	0	0		0	0	0	0		0	0	0	0	
5:15 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
5:20 PM	0	0	1	0		0	0	0	0		0	1	0	0		0	0	0	0		0	0	0	0	
5:25 PM	0	0	2	0		0	0	0	1		0	1	0	0		0	0	0	0		0	0	0	0	
5:30 PM	0	0	1	0		0	0	0	1		0	0	0	0		0	0	0	0		0	0	0	0	
5:35 PM	0	0	1	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
5:40 PM	0	0	2	0		0	0	0	0		0	0	0	0		0	0	1	0		0	0	0	0	
5:45 PM	0	0	0	0		0	0	0	0		0	1	0	0		0	0	0	0		0	0	0	0	
5:50 PM	0	0	0	0		0	0	0	0		0	1	0	0		0	0	0	0		0	0	0	0	
5:55 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
Total	**0**	**0**	**32**	**0**		**0**	**0**	**0**	**2**		**1**	**27**	**0**	**0**		**0**	**0**	**1**	**0**		**1**	**0**	**0**	**0**	

Quality Counts
TRANSPORTATION DATA COLLECTION SERVICES

Location: California Ave & Cabrillo Hwy
Date: 4/20/2017
Site Code: 14384626

	Cabrillo Hwy (Hwy 1) Southbound					California Ave Westbound					Cabrillo Hwy (Hwy 1) Northbound					California Ave Eastbound					Wienke Way Southeastbound				
Location:	Right to Wienke Way	Right	Thru	Left	Peds	Right	Thru to Wienke Way	Thru	Left	Peds	Right	Thru	Left to Wienke Way	Left	Peds	Right	Thru	Left	Left to Wienke Way	Peds	Right to California Ave	Right to Cabrillo Hwy (Hwy 1)	Thru to California Ave	Left to Cabrillo Hwy (Hwy 1)	Peds
4:00 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:05 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:10 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
4:20 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:25 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
4:35 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:40 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:50 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:55 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:05 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:10 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:20 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:25 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:35 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:40 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	3	0	0	0	0	0	0
5:50 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:55 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**0**

Quality Counts
TRANSPORTATION DATA COLLECTION SERVICES

Location: California Ave & Cabrillo Hwy
Date: 4/22/2017
Site Code: 14384627

	Cabrillo Hwy (Hwy 1) Southbound					California Ave Westbound					Cabrillo Hwy (Hwy 1) Northbound					California Ave Eastbound					Wienke Way Southeastbound				
Location:	Right to Wienke Way	Right	Thru	Left	U-Turn	Right	Thru to Wienke Way	Thru	Left	U-Turn	Right	Thru	Left to Wienke Way	Left	U-Turn	Right	Thru	Left	Left to Wienke Way	U-Turn	Right to California Ave	Right to Cabrillo Hwy (Hwy 1)	Thru to California Ave	Left to Cabrillo Hwy (Hwy 1)	U-Turn
11:00 AM	1	0	66	0	0	1	0	1	1	0	2	49	1	1	0	1	0	1	0	0	1	0	0	0	0
11:05 AM	1	2	76	1	0	1	0	1	3	0	3	53	0	2	0	0	1	0	0	0	1	2	0	0	0
11:10 AM	0	0	74	1	0	4	0	0	3	0	3	47	0	0	0	1	0	1	0	0	0	0	0	0	0
11:15 AM	0	0	64	1	0	1	0	0	0	0	6	58	0	4	0	2	1	1	0	0	0	0	1	0	0
11:20 AM	0	0	83	1	0	1	0	0	1	0	3	46	1	1	0	1	0	1	0	0	0	1	0	0	0
11:25 AM	1	0	59	0	0	1	0	0	2	0	4	64	0	2	0	0	0	2	0	0	0	1	0	0	0
11:30 AM	0	1	79	1	0	3	0	0	1	0	4	31	1	1	0	2	0	0	0	0	0	1	0	0	0
11:35 AM	1	0	75	0	0	1	0	0	6	0	5	52	0	0	0	2	0	1	0	0	1	2	0	0	0
11:40 AM	0	0	75	1	0	0	0	0	4	0	9	40	1	2	0	2	0	1	1	0	0	1	0	0	0
11:45 AM	0	0	79	0	0	1	0	0	3	0	4	38	0	0	0	2	0	0	0	0	0	1	0	0	0
11:50 AM	0	0	70	1	0	0	0	0	0	0	4	40	0	1	0	0	0	0	0	0	0	1	0	0	0
11:55 AM	0	1	73	1	0	2	1	1	2	0	2	48	1	1	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	87	0	0	5	0	0	1	0	3	54	0	0	0	4	0	1	0	0	0	2	0	1	0
12:05 PM	1	0	82	1	0	2	0	0	3	0	4	40	0	0	0	0	0	0	0	0	0	0	0	0	0
12:10 PM	1	1	67	0	0	1	0	1	1	0	1	63	0	4	0	2	0	1	0	0	0	2	0	0	0
12:15 PM	0	1	70	1	0	2	0	0	2	0	0	57	0	4	1	2	0	0	0	0	0	0	0	0	0
12:20 PM	0	0	76	0	0	0	0	0	1	0	3	61	0	3	0	3	0	0	1	0	0	0	0	0	0
12:25 PM	1	1	91	1	0	1	0	0	4	0	4	51	0	3	0	1	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	51	0	0	1	0	0	1	0	2	65	1	3	0	1	0	1	0	0	0	1	0	0	0
12:35 PM	0	0	69	0	0	1	0	0	1	0	5	46	0	3	0	1	2	1	0	0	0	0	1	0	0
12:40 PM	0	1	69	0	0	2	0	1	5	0	4	47	0	3	0	3	0	0	0	0	0	2	0	2	0
12:45 PM	0	1	65	1	0	5	0	0	1	0	5	62	0	4	1	1	1	0	0	0	0	0	0	0	0
12:50 PM	2	1	64	1	0	0	0	0	1	0	3	58	0	0	0	3	0	1	0	0	0	0	0	0	0
12:55 PM	0	0	61	1	0	1	0	0	0	0	2	53	1	0	0	0	0	0	0	0	0	1	0	0	0
Total	**9**	**10**	**1725**	**14**	**0**	**37**	**1**	**5**	**47**	**0**	**85**	**1223**	**7**	**42**	**2**	**34**	**5**	**13**	**2**	**0**	**3**	**18**	**2**	**3**	**0**

Peak Hour: 11:55 AM - 12:55 PM
Peak 15: 12:40 PM - 12:55 PM
PHF: 0.952381

Quality Counts
TRANSPORTATION DATA COLLECTION SERVICES

Location: California Ave & Cabrillo Hwy
Date: 4/22/2017
Site Code: 14384627

	Cabrillo Hwy (Hwy 1) Southbound					California Ave Westbound					Cabrillo Hwy (Hwy 1) Northbound					California Ave Eastbound					Wienke Way Southeastbound				
Location:	Right to Wienke Way	Right	Thru	Left	U-Turn	Right	Thru to Wienke Way	Thru	Left	U-Turn	Right	Thru	Left to Wienke Way	Left	U-Turn	Right	Thru	Left	Left to Wienke Way	U-Turn	Right to California Ave	Right to Cabrillo Hwy (Hwy 1)	Thru to California Ave	Left to Cabrillo Hwy (Hwy 1)	U-Turn
11:00 AM	1	0	64	0	0	1	0	1	1	0	2	49	1	1	0	1	0	1	0	0	1	0	0	0	0
11:05 AM	0	2	76	1	0	1	0	1	3	0	3	53	0	2	0	0	1	0	0	0	0	2	0	0	0
11:10 AM	0	0	72	1	0	4	0	0	3	0	3	45	0	0	0	1	0	1	0	0	0	0	0	0	0
11:15 AM	0	0	63	1	0	1	0	0	0	0	6	57	0	4	0	2	1	1	0	0	0	0	1	0	0
11:20 AM	0	0	82	1	0	1	0	0	1	0	3	45	1	1	0	1	0	1	0	0	0	1	0	0	0
11:25 AM	1	0	59	0	0	1	0	0	2	0	4	63	0	2	0	0	0	2	0	0	0	1	0	0	0
11:30 AM	0	1	77	1	0	3	0	0	1	0	4	31	1	1	0	2	0	0	0	0	0	1	0	0	0
11:35 AM	1	0	72	0	0	1	0	0	6	0	5	51	0	0	0	2	0	1	0	0	1	2	0	0	0
11:40 AM	0	0	75	1	0	0	0	0	4	0	9	40	1	2	0	2	0	1	1	0	0	1	0	0	0
11:45 AM	0	0	79	0	0	1	0	0	3	0	4	37	0	0	0	2	0	0	0	0	0	1	0	0	0
11:50 AM	0	0	66	1	0	0	0	0	0	0	4	39	0	1	0	0	0	0	0	0	0	1	0	0	0
11:55 AM	0	1	73	1	0	2	1	1	2	0	2	47	1	1	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	87	0	0	5	0	0	1	0	3	54	0	0	0	4	0	1	0	0	0	2	0	1	0
12:05 PM	1	0	82	1	0	2	0	0	3	0	4	40	0	0	0	0	0	0	0	0	0	0	0	0	0
12:10 PM	1	1	66	0	0	1	0	1	1	0	1	63	0	4	0	2	0	1	0	0	0	2	0	0	0
12:15 PM	0	1	69	1	0	2	0	0	2	0	0	57	0	4	1	2	0	0	0	0	0	0	0	0	0
12:20 PM	0	0	74	0	0	0	0	0	1	0	3	60	0	3	0	3	0	0	1	0	0	0	0	0	0
12:25 PM	1	1	89	1	0	1	0	0	4	0	4	48	0	3	0	1	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	48	0	0	1	0	0	1	0	2	63	1	3	0	1	0	1	0	0	0	1	0	0	0
12:35 PM	0	0	65	0	0	1	0	0	1	0	5	45	0	3	0	1	2	1	0	0	0	0	1	0	0
12:40 PM	0	1	68	0	0	2	0	1	5	0	4	45	0	3	0	3	0	0	0	0	0	2	0	2	0
12:45 PM	0	1	64	1	0	5	0	0	1	0	5	59	0	4	1	1	1	0	0	0	0	0	0	0	0
12:50 PM	2	1	64	1	0	0	0	0	1	0	3	57	0	0	0	3	0	1	0	0	0	0	0	0	0
12:55 PM	0	0	57	1	0	1	0	0	0	0	2	53	1	0	0	0	0	0	0	0	0	1	0	0	0
Total	**8**	**10**	**1691**	**14**	**0**	**37**	**1**	**5**	**47**	**0**	**85**	**1201**	**7**	**42**	**2**	**34**	**5**	**13**	**2**	**0**	**2**	**18**	**2**	**3**	**0**

Quality Counts
TRANSPORTATION DATA COLLECTION SERVICES

Location: California Ave & Cabrillo Hwy
Date: 4/22/2017
Site Code: 14384627

	Cabrillo Hwy (Hwy 1) Southbound					California Ave Westbound					Cabrillo Hwy (Hwy 1) Northbound					California Ave Eastbound					Wienke Way Southeastbound				
Location:	Right to Wienke Way	Right	Thru	Left		Right	Thru to Wienke Way	Thru	Left		Right	Thru	Left to Wienke Way	Left		Right	Thru	Left	Left to Wienke Way		Right to California Ave	Right to Cabrillo Hwy (Hwy 1)	Thru to California Ave	Left to Cabrillo Hwy (Hwy 1)	
11:00 AM	0	0	2	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
11:05 AM	1	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		1	0	0	0	
11:10 AM	0	0	2	0		0	0	0	0		0	2	0	0		0	0	0	0		0	0	0	0	
11:15 AM	0	0	1	0		0	0	0	0		0	1	0	0		0	0	0	0		0	0	0	0	
11:20 AM	0	0	1	0		0	0	0	0		0	1	0	0		0	0	0	0		0	0	0	0	
11:25 AM	0	0	0	0		0	0	0	0		0	1	0	0		0	0	0	0		0	0	0	0	
11:30 AM	0	0	2	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
11:35 AM	0	0	3	0		0	0	0	0		0	1	0	0		0	0	0	0		0	0	0	0	
11:40 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
11:45 AM	0	0	0	0		0	0	0	0		0	1	0	0		0	0	0	0		0	0	0	0	
11:50 AM	0	0	4	0		0	0	0	0		0	1	0	0		0	0	0	0		0	0	0	0	
11:55 AM	0	0	0	0		0	0	0	0		0	1	0	0		0	0	0	0		0	0	0	0	
12:00 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
12:05 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
12:10 PM	0	0	1	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
12:15 PM	0	0	1	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
12:20 PM	0	0	2	0		0	0	0	0		0	1	0	0		0	0	0	0		0	0	0	0	
12:25 PM	0	0	2	0		0	0	0	0		0	3	0	0		0	0	0	0		0	0	0	0	
12:30 PM	0	0	3	0		0	0	0	0		0	2	0	0		0	0	0	0		0	0	0	0	
12:35 PM	0	0	4	0		0	0	0	0		0	1	0	0		0	0	0	0		0	0	0	0	
12:40 PM	0	0	1	0		0	0	0	0		0	2	0	0		0	0	0	0		0	0	0	0	
12:45 PM	0	0	1	0		0	0	0	0		0	3	0	0		0	0	0	0		0	0	0	0	
12:50 PM	0	0	0	0		0	0	0	0		0	1	0	0		0	0	0	0		0	0	0	0	
12:55 PM	0	0	4	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
Total	**1**	**0**	**34**	**0**		**0**	**0**	**0**	**0**		**0**	**22**	**0**	**0**		**0**	**0**	**0**	**0**		**1**	**0**	**0**	**0**	

Quality Counts
TRANSPORTATION DATA COLLECTION SERVICES

Location: California Ave & Cabrillo Hwy
Date: 4/22/2017
Site Code: 14384627

	Cabrillo Hwy (Hwy 1) Southbound					California Ave Westbound					Cabrillo Hwy (Hwy 1) Northbound					California Ave Eastbound					Wienke Way Southeastbound				
Location:	Right to Wienke Way	Right	Thru	Left	Peds	Right	Thru to Wienke Way	Thru	Left	Peds	Right	Thru	Left to Wienke Way	Left	Peds	Right	Thru	Left	Left to Wienke Way	Peds	Right to California Ave	Right to Cabrillo Hwy (Hwy 1)	Thru to California Ave	Left to Cabrillo Hwy (Hwy 1)	Peds
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:05 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:10 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
11:20 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:25 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:35 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:40 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
11:45 AM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
11:50 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:55 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:05 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:10 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
12:20 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:25 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
12:35 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:40 PM	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:50 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:55 PM	0	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Total	**0**	**0**	**17**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: Carlos St -- California Ave

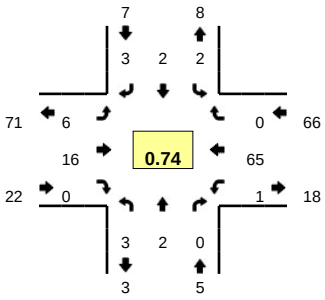
CITY/STATE: San Mateo, CA

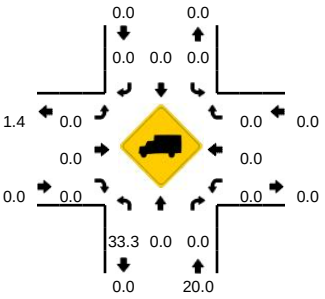
QC JOB #: 14384622

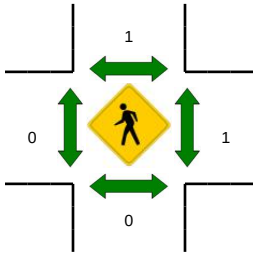
DATE: Thu, Apr 20 2017

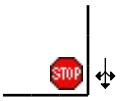
Peak-Hour: 7:25 AM -- 8:25 AM

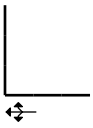
Peak 15-Min: 7:30 AM -- 7:45 AM

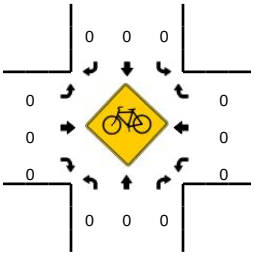


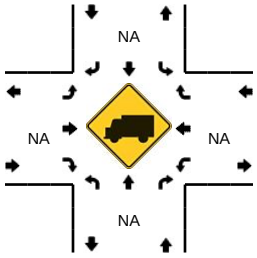


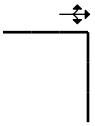


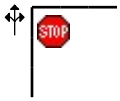


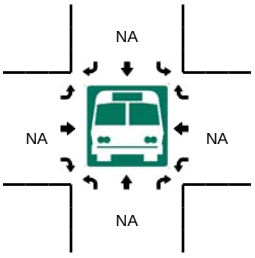












5-Min Count Period Beginning At	Carlos St (Northbound)				Carlos St (Southbound)				California Ave (Eastbound)				California Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	
7:05 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	7	
7:10 AM	0	0	0	0	0	0	0	0	1	0	0	0	1	5	0	0	7	
7:15 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	3	0	0	4	
7:20 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	
7:25 AM	0	0	0	0	0	0	0	0	1	0	0	0	0	6	0	0	7	
7:30 AM	0	0	0	0	1	0	0	0	1	2	0	0	0	9	0	0	13	
7:35 AM	0	1	0	0	0	0	0	0	0	1	0	0	0	5	0	0	7	
7:40 AM	2	0	0	0	0	0	0	0	0	2	0	0	0	10	0	0	14	
7:45 AM	0	0	0	0	1	0	0	0	0	2	0	0	0	5	0	0	8	
7:50 AM	0	0	0	0	0	0	1	0	1	1	0	0	0	3	0	0	6	
7:55 AM	0	1	0	0	0	0	0	0	1	1	0	0	0	4	0	0	7	86
8:00 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	5	0	0	7	91
8:05 AM	0	0	0	0	0	0	1	0	1	1	0	0	0	5	0	0	8	92
8:10 AM	0	0	0	0	0	0	0	0	0	3	0	0	1	6	0	0	10	95
8:15 AM	1	0	0	0	0	1	0	0	1	1	0	0	0	2	0	0	6	97
8:20 AM	0	0	0	0	0	1	0	0	0	1	0	0	0	5	0	0	7	100
8:25 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	5	0	0	6	99
8:30 AM	0	0	0	0	0	0	0	0	1	1	0	0	0	5	0	0	7	93
8:35 AM	0	1	0	0	0	0	2	0	2	4	0	0	0	5	0	0	14	100
8:40 AM	0	0	0	0	0	0	1	0	1	0	0	0	0	5	0	0	7	93
8:45 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	2	1	0	4	89
8:50 AM	0	0	0	0	0	0	2	0	0	1	0	0	0	5	0	0	8	91
8:55 AM	0	1	0	0	0	0	1	0	2	4	0	0	0	5	1	0	14	98

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	4	0	0	4	0	0	0	4	20	0	0	0	96	0	0	136
Heavy Trucks	4	0	0		0	0	0		0	0	0		0	0	0		4
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/1/2017 4:16 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

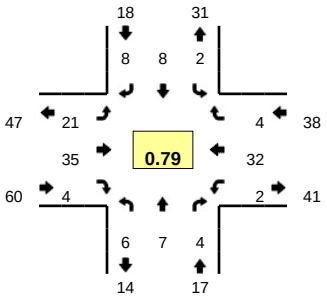
Method for determining peak hour: Total Entering Volume

LOCATION: Carlos St -- California Ave

CITY/STATE: San Mateo, CA

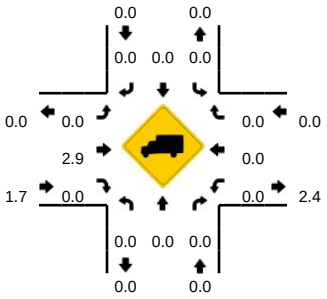
QC JOB #: 14384623

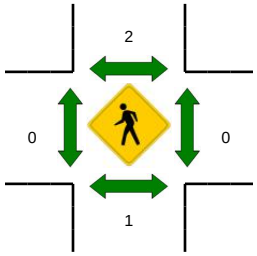
DATE: Thu, Apr 20 2017

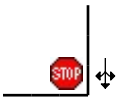


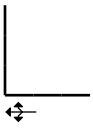
Peak-Hour: 4:00 PM -- 5:00 PM

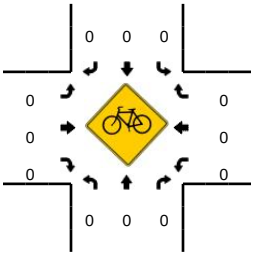
Peak 15-Min: 4:45 PM -- 5:00 PM

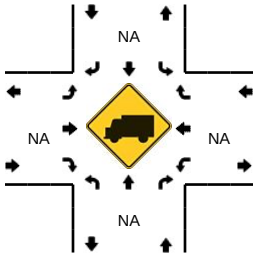


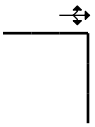


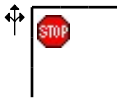


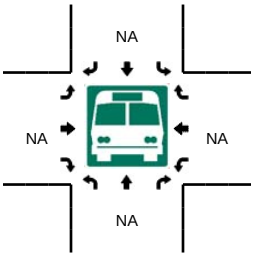












5-Min Count Period Beginning At	Carlos St (Northbound)				Carlos St (Southbound)				California Ave (Eastbound)				California Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	1	0	0	0	0	1	0	0	0	5	1	0	1	4	0	0	13	
4:05 PM	0	0	0	0	1	0	1	0	4	1	0	0	1	0	0	0	8	
4:10 PM	1	0	1	0	0	0	0	0	3	1	0	0	0	4	0	0	10	
4:15 PM	0	1	1	0	0	2	0	0	3	3	1	0	0	1	0	0	12	
4:20 PM	0	0	0	0	0	0	0	0	1	3	0	0	0	2	0	0	6	
4:25 PM	0	1	0	0	1	0	3	0	0	1	0	0	0	4	0	0	10	
4:30 PM	0	2	1	0	0	2	1	0	2	3	1	0	0	4	1	0	17	
4:35 PM	0	0	0	0	0	0	0	0	1	2	0	0	0	2	0	0	5	
4:40 PM	2	0	0	0	0	1	0	0	1	2	0	0	0	2	2	0	10	
4:45 PM	2	1	0	0	0	0	0	0	0	6	1	1	0	4	0	0	15	
4:50 PM	0	2	1	0	0	0	2	0	1	2	0	0	0	3	0	0	11	
4:55 PM	0	0	0	0	0	2	1	0	4	6	0	0	0	2	1	0	16	133
5:00 PM	2	0	0	0	1	2	0	0	0	1	0	0	0	1	0	0	7	127
5:05 PM	0	0	2	0	0	0	1	0	0	4	0	0	0	2	0	0	9	128
5:10 PM	0	1	0	0	0	0	0	0	1	0	0	0	0	3	0	0	5	123
5:15 PM	0	0	1	0	1	1	2	0	1	5	0	0	0	4	0	0	15	126
5:20 PM	3	0	1	0	0	0	2	0	1	3	0	0	0	3	0	0	13	133
5:25 PM	1	0	0	0	1	0	0	0	0	3	0	0	1	1	0	0	7	130
5:30 PM	0	0	1	0	0	1	1	0	2	1	0	0	0	0	0	0	6	119
5:35 PM	0	0	0	0	0	0	1	0	2	3	0	0	0	0	0	0	6	120
5:40 PM	0	1	0	0	0	0	0	0	4	6	0	0	0	4	0	0	15	125
5:45 PM	0	0	0	0	1	1	1	0	0	7	0	0	0	2	1	0	13	123
5:50 PM	0	0	0	0	0	1	1	0	0	1	0	0	0	4	0	0	7	119
5:55 PM	1	0	1	0	0	1	1	0	2	3	0	0	0	0	0	0	9	112

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	12	4	0	0	8	12	0	20	56	4	4	0	36	4	0	168
Heavy Trucks	0	0	0		0	0	0		0	4	0		0	0	0		4
Pedestrians		4				0				0				0			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/1/2017 4:16 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: Carlos St -- California Ave

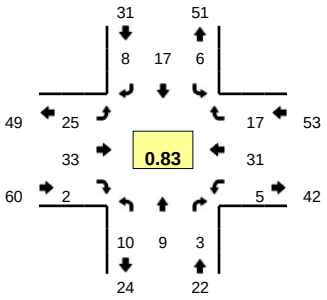
CITY/STATE: San Mateo, CA

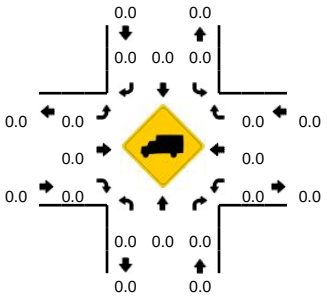
QC JOB #: 14384624

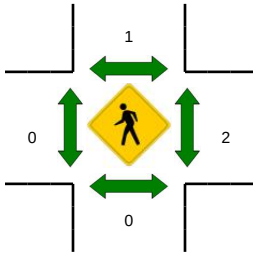
DATE: Sat, Apr 22 2017

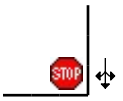
Peak-Hour: 11:10 AM -- 12:10 PM

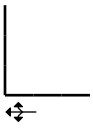
Peak 15-Min: 11:35 AM -- 11:50 AM

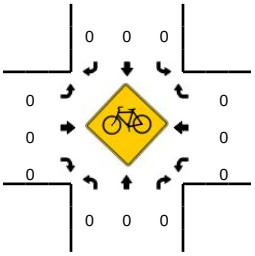


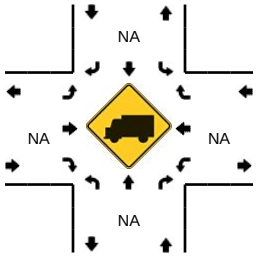


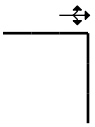


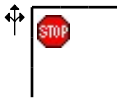


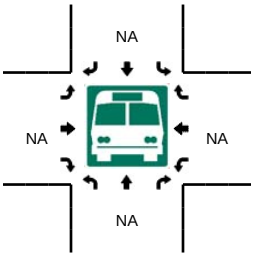












5-Min Count Period Beginning At	Carlos St (Northbound)				Carlos St (Southbound)				California Ave (Eastbound)				California Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:00 AM	0	0	0	0	1	0	3	0	1	2	0	0	0	2	0	0	9	
11:05 AM	2	1	0	0	0	1	1	0	0	3	0	0	0	1	1	0	10	
11:10 AM	1	0	0	0	0	0	0	0	3	4	0	0	0	5	4	0	17	
11:15 AM	1	0	0	0	0	3	0	0	3	2	0	0	0	0	0	0	9	
11:20 AM	0	3	0	0	0	1	0	0	0	4	0	0	0	3	1	0	12	
11:25 AM	0	0	0	0	1	1	1	0	2	2	0	0	0	1	1	0	9	
11:30 AM	3	1	0	0	0	1	2	0	3	4	0	0	0	1	1	0	16	
11:35 AM	1	0	0	0	0	1	1	0	4	4	0	0	0	4	1	0	16	
11:40 AM	0	2	0	0	1	1	2	0	2	3	0	0	1	3	1	0	16	
11:45 AM	0	1	2	0	0	3	0	0	3	3	0	0	1	1	4	0	18	
11:50 AM	0	1	0	0	2	3	0	0	0	2	1	0	0	1	2	0	12	
11:55 AM	1	0	0	0	1	0	1	0	2	0	1	0	0	3	1	0	10	154
12:00 PM	3	1	1	0	1	2	1	0	1	2	0	0	2	4	1	0	19	164
12:05 PM	0	0	0	0	0	1	0	0	2	3	0	0	1	5	0	0	12	166
12:10 PM	0	0	1	0	0	0	1	0	0	1	0	0	0	1	0	1	5	154
12:15 PM	0	2	1	0	0	0	1	0	1	1	0	0	0	3	0	0	9	154
12:20 PM	1	0	0	0	0	0	0	0	2	4	0	0	0	2	0	0	9	151
12:25 PM	0	1	0	0	0	1	0	0	0	2	0	0	0	2	0	0	6	148
12:30 PM	1	0	0	0	0	0	0	0	0	2	0	0	1	2	0	0	6	138
12:35 PM	1	1	1	0	1	0	0	0	5	3	1	0	0	2	0	0	15	137
12:40 PM	0	1	1	0	1	0	1	0	1	2	0	0	0	8	0	0	15	136
12:45 PM	2	0	0	0	1	0	1	0	1	5	1	0	0	0	0	0	11	129
12:50 PM	0	0	0	0	0	0	0	0	3	0	1	0	0	1	0	0	5	122
12:55 PM	0	0	0	0	0	0	1	0	1	1	0	0	0	0	1	0	4	116

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	12	8	0	4	20	12	0	36	40	0	0	8	32	24	0	200
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Pedestrians		0				4				0				4			8
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/17/2017 6:04 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

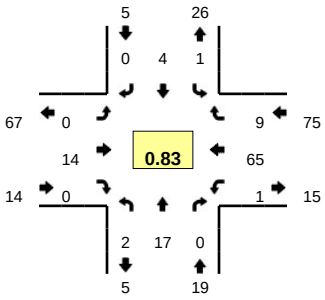
LOCATION: Etheldore St -- California Ave

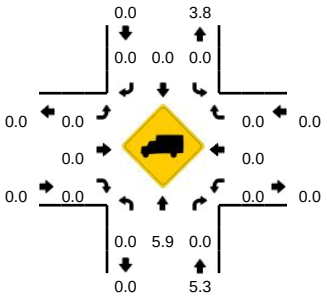
QC JOB #: 14384610

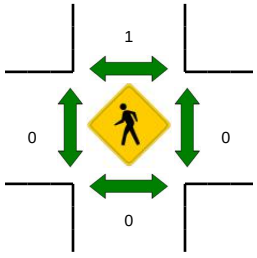
CITY/STATE: Moss Beach, CA

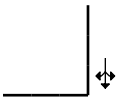
DATE: Thu, Apr 20 2017

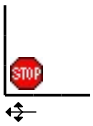
Peak-Hour: 7:15 AM -- 8:15 AM
Peak 15-Min: 7:30 AM -- 7:45 AM

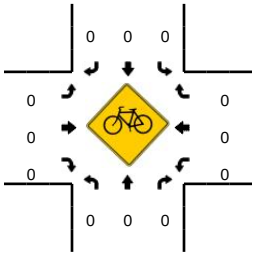


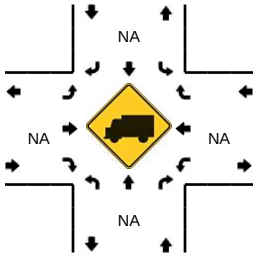


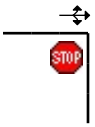


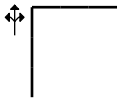


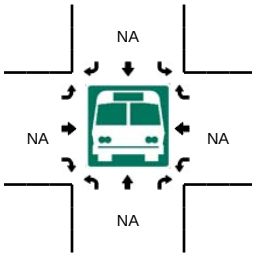












5-Min Count Period Beginning At	Etheldore St (Northbound)				Etheldore St (Southbound)				California Ave (Eastbound)				California Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	1	0	0	0	1	1	0	0	0	0	0	0	2	2	0	7	
7:05 AM	1	1	0	0	0	0	0	0	0	0	0	0	0	5	0	0	7	
7:10 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	6	
7:15 AM	0	4	0	0	0	1	0	0	0	0	0	0	0	3	2	0	10	
7:20 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	4	1	0	6	
7:25 AM	1	2	0	0	0	0	0	0	0	0	0	0	0	8	1	0	12	
7:30 AM	0	1	0	0	0	0	0	0	0	3	0	0	0	6	1	0	11	
7:35 AM	0	2	0	0	0	0	0	0	0	1	0	0	0	5	0	0	8	
7:40 AM	0	2	0	0	0	0	0	0	0	2	0	0	0	10	1	0	15	
7:45 AM	0	1	0	0	0	1	0	0	0	2	0	0	0	5	1	0	10	
7:50 AM	0	0	0	0	1	1	0	0	0	0	0	0	0	3	1	0	6	
7:55 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	4	1	0	6	104
8:00 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	5	0	0	6	103
8:05 AM	0	1	0	0	0	0	0	0	0	1	0	0	0	5	0	0	7	103
8:10 AM	1	3	0	0	0	1	0	0	0	3	0	0	1	7	0	0	16	113
8:15 AM	0	1	0	0	0	1	0	0	0	0	1	0	0	1	2	0	6	109
8:20 AM	1	1	0	0	1	0	0	0	0	1	0	0	0	6	0	0	10	113
8:25 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	105
8:30 AM	0	1	0	0	1	0	0	0	0	1	0	0	1	6	0	0	10	104
8:35 AM	0	3	0	0	0	0	1	0	0	4	0	0	0	3	1	0	12	108
8:40 AM	2	1	0	0	0	0	1	0	0	0	0	0	0	2	0	0	6	99
8:45 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	3	0	0	4	93
8:50 AM	0	2	1	0	0	0	0	0	0	1	0	0	0	7	0	0	11	98
8:55 AM	0	1	0	0	0	0	0	0	0	2	0	0	0	4	0	0	7	99

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	20	0	0	0	0	0	0	0	24	0	0	0	84	8	0	136
Heavy Trucks	0	4	0		0	0	0		0	0	0		0	0	0		4
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/1/2017 4:16 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: Etheldore St -- California Ave

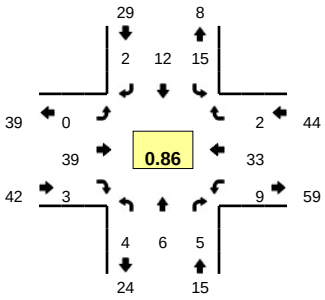
CITY/STATE: Moss Beach, CA

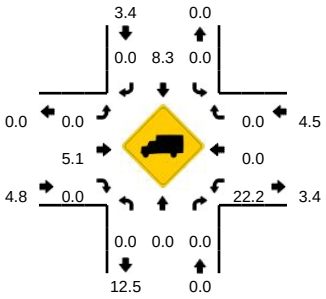
QC JOB #: 14384611

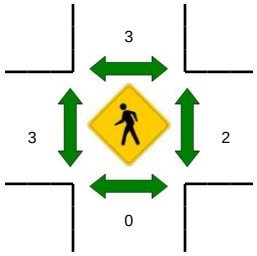
DATE: Thu, Apr 20 2017

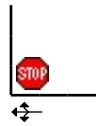
Peak-Hour: 4:25 PM -- 5:25 PM

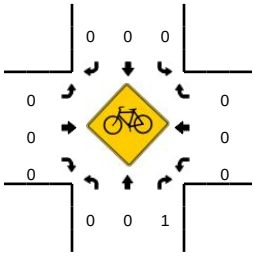
Peak 15-Min: 5:10 PM -- 5:25 PM

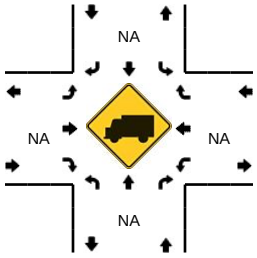


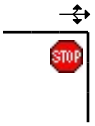


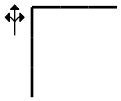


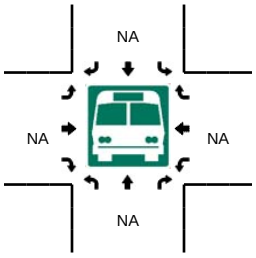












5-Min Count Period Beginning At	Etheldore St (Northbound)				Etheldore St (Southbound)				California Ave (Eastbound)				California Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	1	0	1	0	0	0	0	5	0	0	0	4	0	0	11	
4:05 PM	0	1	1	0	0	1	0	0	0	2	0	0	0	1	0	0	6	
4:10 PM	1	0	1	0	1	1	0	0	1	2	0	0	1	3	0	0	11	
4:15 PM	0	1	0	0	1	3	0	0	0	4	0	0	0	1	0	0	10	
4:20 PM	1	1	0	0	0	0	0	0	0	2	1	0	0	1	0	0	6	
4:25 PM	0	1	0	0	0	3	0	0	0	2	0	0	1	4	0	0	11	
4:30 PM	0	0	0	0	0	1	0	0	0	2	1	0	1	7	0	0	12	
4:35 PM	0	0	1	0	1	2	0	0	0	2	0	0	1	0	0	0	7	
4:40 PM	2	0	0	0	1	0	0	0	0	2	0	0	0	3	0	0	8	
4:45 PM	1	0	1	0	3	1	1	0	0	5	0	0	0	2	0	0	14	
4:50 PM	0	1	0	0	0	2	0	0	0	3	0	0	0	3	0	0	9	
4:55 PM	1	0	0	0	1	0	0	0	0	6	0	0	0	2	0	0	10	115
5:00 PM	0	2	1	0	1	1	0	0	0	2	0	0	0	1	2	0	10	114
5:05 PM	0	0	1	0	1	1	0	0	0	6	1	0	0	1	0	0	11	119
5:10 PM	0	0	0	0	3	0	1	0	0	0	0	0	0	4	0	0	8	116
5:15 PM	0	0	0	0	2	0	0	0	0	5	1	0	3	2	0	0	13	119
5:20 PM	0	2	1	0	2	1	0	0	0	4	0	0	3	4	0	0	17	130
5:25 PM	0	0	2	0	0	1	0	0	0	4	0	0	1	1	0	0	9	128
5:30 PM	0	0	1	0	1	0	0	0	0	1	0	0	0	0	0	0	3	119
5:35 PM	0	1	0	0	1	2	0	0	0	1	0	0	0	0	0	0	5	117
5:40 PM	0	0	0	0	1	0	0	0	0	6	0	0	0	3	0	0	10	119
5:45 PM	1	2	0	0	1	1	0	0	0	5	1	0	1	2	0	0	14	119
5:50 PM	0	0	0	0	0	1	0	0	0	2	0	0	1	4	0	0	8	118
5:55 PM	0	0	0	0	1	1	0	0	0	3	1	0	0	0	0	0	6	114

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	8	4	0	28	4	4	0	0	36	4	0	24	40	0	0	152
Heavy Trucks	0	0	0		0	0	0		0	4	0		8	0	0		12
Pedestrians		0				0				12				0			12
Bicycles	0	0	1		0	0	0		0	0	0		0	0	0		1
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/1/2017 4:16 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

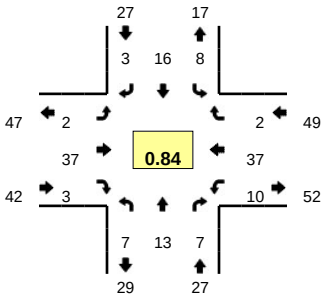
LOCATION: Etheldore St -- California Ave

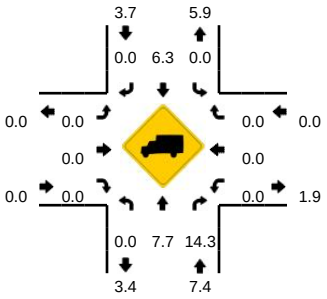
QC JOB #: 14384612

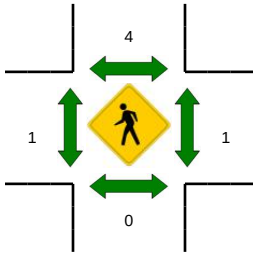
CITY/STATE: Moss Beach, CA

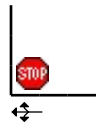
DATE: Sat, Apr 22 2017

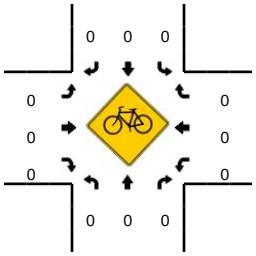
Peak-Hour: 11:45 AM -- 12:45 PM
Peak 15-Min: 12:00 PM -- 12:15 PM

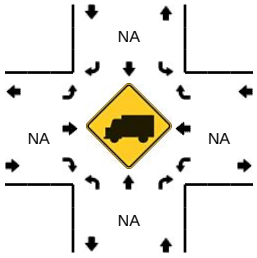


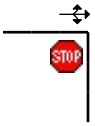


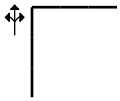


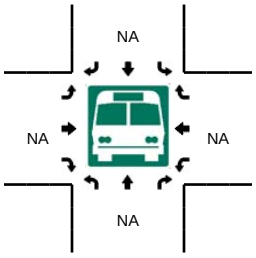












5-Min Count Period Beginning At	Etheldore St (Northbound)				Etheldore St (Southbound)				California Ave (Eastbound)				California Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:00 AM	0	2	0	0	0	0	0	0	0	3	0	0	0	2	0	0	7	
11:05 AM	1	3	0	0	0	0	0	0	0	2	0	0	0	3	0	0	9	
11:10 AM	2	0	0	0	2	1	0	0	0	4	0	0	0	5	1	0	15	
11:15 AM	0	1	0	0	2	1	0	0	0	2	0	0	0	1	0	0	7	
11:20 AM	0	0	0	0	0	1	0	0	0	4	0	0	1	4	0	0	10	
11:25 AM	0	1	1	0	0	1	0	0	0	2	1	0	1	2	0	0	9	
11:30 AM	0	1	1	0	1	0	0	0	0	4	0	0	0	2	1	0	10	
11:35 AM	0	0	0	0	1	0	0	0	0	4	0	0	0	5	0	0	10	
11:40 AM	0	1	0	0	0	1	1	0	0	4	0	0	2	4	0	0	13	
11:45 AM	3	1	0	0	0	3	0	0	1	4	0	0	0	4	0	0	16	
11:50 AM	1	0	2	0	0	3	0	0	0	4	0	0	1	1	0	0	12	
11:55 AM	0	1	0	0	0	1	0	0	0	0	1	0	0	5	0	0	8	126
12:00 PM	2	2	1	0	2	2	2	0	0	4	0	0	1	2	1	0	19	138
12:05 PM	0	1	0	0	0	1	0	0	0	4	0	0	1	6	0	0	13	142
12:10 PM	0	2	1	0	3	1	0	0	0	2	1	0	0	1	0	0	11	138
12:15 PM	0	1	0	0	0	3	0	0	0	2	0	0	3	3	0	0	12	143
12:20 PM	0	2	2	0	0	0	0	0	0	3	0	0	1	2	0	0	10	143
12:25 PM	0	0	0	0	1	2	0	0	1	3	0	0	1	2	0	0	10	144
12:30 PM	0	2	0	0	0	0	0	0	0	2	0	0	1	3	0	0	8	142
12:35 PM	0	1	1	0	1	0	1	0	0	5	0	0	0	2	0	0	11	143
12:40 PM	1	0	0	0	1	0	0	0	0	4	1	0	1	6	1	0	15	145
12:45 PM	0	3	1	0	0	1	0	0	0	5	0	0	1	0	1	0	12	141
12:50 PM	0	1	0	0	0	4	1	0	0	0	0	0	0	0	0	0	6	135
12:55 PM	0	1	2	0	0	0	0	0	0	0	0	0	0	1	0	0	4	131

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	20	8	0	20	16	8	0	0	40	4	0	8	36	4	0	172
Heavy Trucks	0	0	4		0	0	0		0	0	0		0	0	0		4
Pedestrians		0				8				0				4			12
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/17/2017 6:04 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: Stetson St -- California Ave

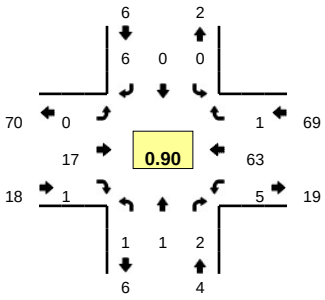
CITY/STATE: Moss Beach, CA

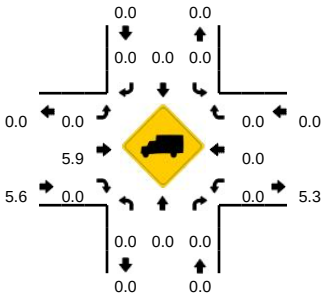
QC JOB #: 14384613

DATE: Thu, Apr 20 2017

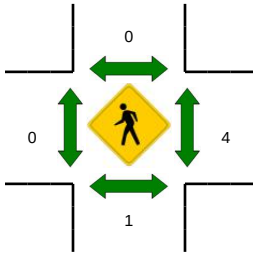
Peak-Hour: 7:30 AM -- 8:30 AM

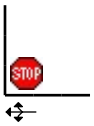
Peak 15-Min: 7:35 AM -- 7:50 AM

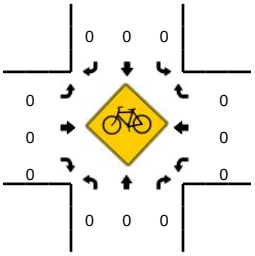


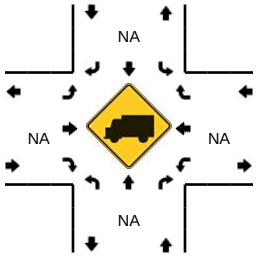


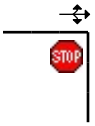
Quality Counts
TRANSPORTATION DATA COLLECTION SERVICES

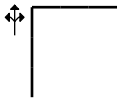


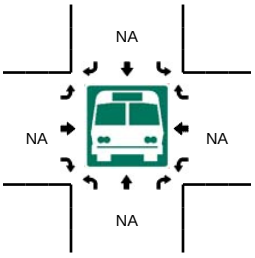












5-Min Count Period Beginning At	Stetson St (Northbound)				Stetson St (Southbound)				California Ave (Eastbound)				California Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	5	0	0	6	
7:05 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	5	
7:10 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	3	
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0	10	
7:20 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	
7:25 AM	1	0	1	0	0	0	0	0	0	0	0	0	0	7	0	0	9	
7:30 AM	0	0	0	0	0	0	2	0	0	1	0	0	0	5	0	0	8	
7:35 AM	0	0	0	0	0	0	0	0	0	2	1	0	0	5	0	0	8	
7:40 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	9	
7:45 AM	0	0	0	0	0	0	1	0	0	3	0	0	0	5	1	0	10	
7:50 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	6	0	0	8	
7:55 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	6	0	0	8	88
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	86
8:05 AM	0	0	0	0	0	0	1	0	0	2	0	0	0	3	0	0	6	87
8:10 AM	0	0	1	0	0	0	1	0	0	2	0	0	1	6	0	0	11	95
8:15 AM	0	0	0	0	0	0	1	0	0	1	0	0	2	5	0	0	9	94
8:20 AM	0	0	0	0	0	0	0	0	0	0	0	0	2	3	0	0	5	95
8:25 AM	0	1	1	0	0	0	0	0	0	2	0	0	0	7	0	0	11	97
8:30 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	5	0	0	6	95
8:35 AM	0	0	2	0	0	0	0	0	1	2	0	0	0	4	0	0	9	96
8:40 AM	2	0	0	0	0	0	1	0	0	3	0	0	0	1	0	0	7	94
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	87
8:50 AM	0	0	0	0	0	0	1	0	1	0	0	0	0	4	0	0	6	85
8:55 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	4	0	0	6	83

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	0	0	0	0	0	4	0	0	20	4	0	0	72	4	0	108
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/1/2017 4:16 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

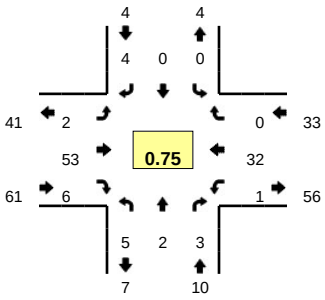
LOCATION: Stetson St -- California Ave

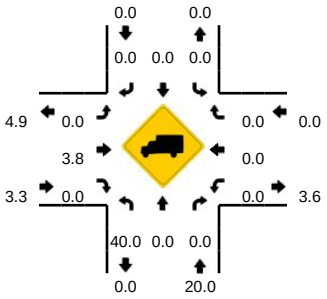
QC JOB #: 14384614

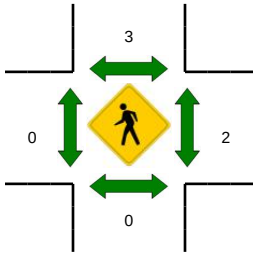
CITY/STATE: Moss Beach, CA

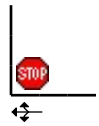
DATE: Thu, Apr 20 2017

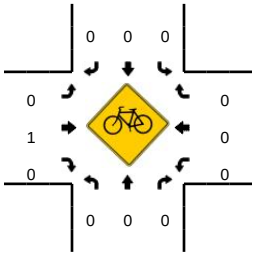
Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 5:15 PM -- 5:30 PM

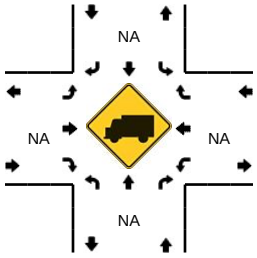


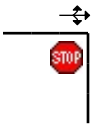


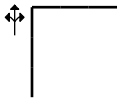


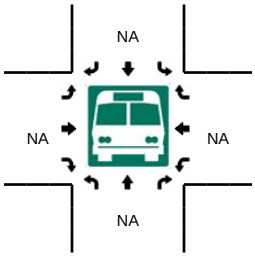












5-Min Count Period Beginning At	Stetson St (Northbound)				Stetson St (Southbound)				California Ave (Eastbound)				California Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	0	0	1	0	3	6	0	0	0	1	0	0	11	
4:05 PM	0	0	0	0	0	1	1	0	0	5	0	0	0	3	0	0	10	
4:10 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	3	
4:15 PM	1	1	0	0	0	0	0	0	0	6	0	0	0	1	0	0	9	
4:20 PM	0	0	0	0	0	0	0	0	1	2	0	0	0	2	0	0	5	
4:25 PM	0	0	0	0	0	0	0	0	0	1	0	0	1	5	0	0	7	
4:30 PM	1	1	0	0	0	0	1	0	1	2	0	0	0	3	0	0	9	
4:35 PM	0	0	0	0	0	0	1	0	0	3	0	0	0	2	0	0	6	
4:40 PM	1	0	0	0	0	0	0	0	0	2	0	0	0	2	0	0	5	
4:45 PM	0	0	0	0	0	0	0	0	0	5	1	0	0	2	0	0	8	
4:50 PM	1	0	1	0	0	0	1	0	0	7	1	0	1	2	0	0	14	
4:55 PM	0	0	1	0	0	0	0	0	0	3	0	0	0	1	0	0	5	92
5:00 PM	0	1	0	0	0	0	0	0	1	5	1	0	0	3	0	0	11	92
5:05 PM	0	0	0	0	0	0	0	0	0	6	0	0	0	2	0	0	8	90
5:10 PM	0	0	0	0	0	0	0	0	0	4	1	0	0	1	0	0	6	93
5:15 PM	1	0	0	0	0	0	0	0	0	5	2	0	0	4	0	0	12	96
5:20 PM	1	0	1	0	0	0	1	0	0	2	0	0	0	6	0	0	11	102
5:25 PM	0	0	0	0	0	0	0	0	0	9	0	0	0	4	0	0	13	108
5:30 PM	0	0	0	0	0	0	0	0	1	3	0	0	1	0	0	0	5	104
5:35 PM	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	3	101
5:40 PM	1	0	0	0	0	0	0	0	0	2	0	0	0	2	0	0	5	101
5:45 PM	0	0	0	0	0	0	0	0	0	8	0	0	0	3	0	0	11	104
5:50 PM	0	0	1	0	0	0	2	0	1	4	0	0	0	1	0	0	9	99
5:55 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	0	4	98

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	4	0	0	0	4	0	0	64	8	0	0	56	0	0	144
Heavy Trucks	8	0	0		0	0	0		0	4	0		0	0	0		12
Pedestrians		0				0				0				8			8
Bicycles	0	0	0		0	0	0		0	1	0		0	0	0		1
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/1/2017 4:16 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: Stetson St -- California Ave

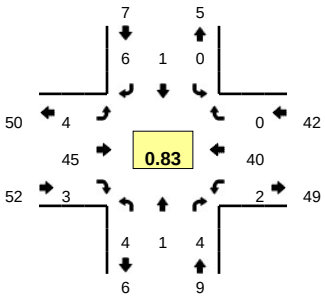
CITY/STATE: Moss Beach, CA

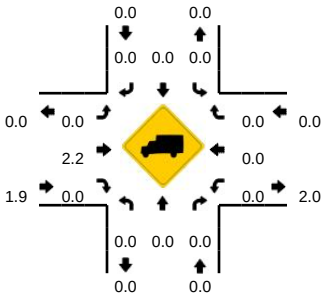
QC JOB #: 14384615

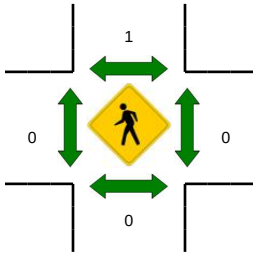
DATE: Sat, Apr 22 2017

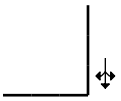
Peak-Hour: 11:10 AM -- 12:10 PM

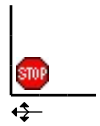
Peak 15-Min: 11:35 AM -- 11:50 AM

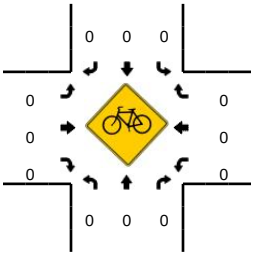


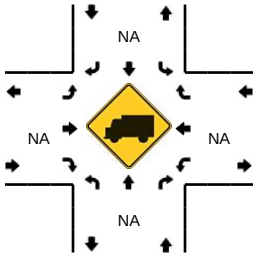


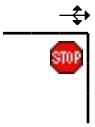


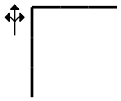


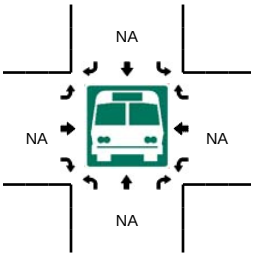












5-Min Count Period Beginning At	Stetson St (Northbound)				Stetson St (Southbound)				California Ave (Eastbound)				California Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:00 AM	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	3	
11:05 AM	0	0	1	0	0	0	0	0	0	3	0	0	0	1	0	0	5	
11:10 AM	0	0	1	0	0	0	1	0	0	3	0	0	0	6	0	0	11	
11:15 AM	1	0	0	0	0	0	0	0	1	4	0	0	0	1	0	0	7	
11:20 AM	0	0	1	0	0	0	0	0	0	6	0	0	0	4	0	0	11	
11:25 AM	1	0	0	0	0	0	1	0	0	3	0	0	0	2	0	0	7	
11:30 AM	0	0	0	0	0	0	1	0	0	1	0	0	1	1	0	0	4	
11:35 AM	0	0	0	0	0	0	3	0	2	5	0	0	0	4	0	0	14	
11:40 AM	1	0	1	0	0	0	0	0	1	5	0	0	0	3	0	0	11	
11:45 AM	1	0	0	0	0	1	0	0	0	2	1	0	0	3	0	0	8	
11:50 AM	0	1	1	0	0	0	0	0	0	5	0	0	0	3	0	0	10	
11:55 AM	0	0	0	0	0	0	0	0	0	5	0	0	0	4	0	0	9	100
12:00 PM	0	0	0	0	0	0	0	0	0	3	1	0	1	4	0	0	9	106
12:05 PM	0	0	0	0	0	0	0	0	0	3	1	0	0	5	0	0	9	110
12:10 PM	1	0	0	0	0	0	0	0	0	3	0	0	0	3	0	0	7	106
12:15 PM	0	0	0	0	0	0	1	0	0	4	0	0	0	2	0	0	7	106
12:20 PM	0	0	0	0	0	0	0	0	0	3	0	0	0	3	0	0	6	101
12:25 PM	1	0	1	0	0	0	0	0	1	5	0	0	0	5	0	0	13	107
12:30 PM	0	0	0	0	0	0	0	0	0	2	1	0	0	2	0	0	5	108
12:35 PM	0	0	0	0	0	0	0	0	0	3	1	0	0	3	0	0	7	101
12:40 PM	0	0	0	0	0	0	0	0	0	7	0	0	0	6	0	0	13	103
12:45 PM	0	0	0	0	0	0	0	0	1	4	0	0	0	3	0	0	8	103
12:50 PM	0	0	0	0	0	0	0	0	1	2	0	0	0	3	0	0	6	99
12:55 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	91

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	4	0	0	4	12	0	12	48	4	0	0	40	0	0	132
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Pedestrians		0				4				0				0			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/17/2017 6:04 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Appendix 3
Seasonal Adjustment Methodology for Existing Conditions

Mike Alston

From: Nowinski, Bill@DOT <bill.nowinski@dot.ca.gov>
Sent: Monday, October 23, 2017 9:20 AM
To: Mike Alston; Pribyl, Cindy L@DOT
Cc: Aaron Elias
Subject: RE: Highway 1 Peak Month ADT

Hello Mike,

The method you described would get you the best estimate for this area.
Due to road closures due to fires and flooding our data is based on estimates from the surrounding areas.
The ratio should give you the best results.

Bill Nowinski
Caltrans, District 5
Traffic Census-south
805-748-4437

From: Mike Alston [mailto:malston@kittelson.com]
Sent: Friday, October 20, 2017 12:56 PM
To: Pribyl, Cindy L@DOT <cindy.pribyl@dot.ca.gov>
Cc: Aaron Elias <aelias@kittelson.com>; Nowinski, Bill@DOT <bill.nowinski@dot.ca.gov>
Subject: RE: Highway 1 Peak Month ADT

Great, thank you Cindy.

Mike Alston
Transportation Analyst

Kittelson & Associates, Inc.
Transportation Engineering / Planning
510.433.8076 (direct)

From: Pribyl, Cindy L@DOT [mailto:cindy.pribyl@dot.ca.gov]
Sent: Friday, October 20, 2017 12:49 PM
To: Mike Alston
Cc: Aaron Elias; Nowinski, Bill@DOT
Subject: RE: Highway 1 Peak Month ADT

Hi Mike

I am forwarding your email to the Caltrans local District 5 Traffic Census Staff member Bill Nowinski. I am not familiar with this area's traffic patterns.

Bill is out in the field most days, but he does check his email account.

From: Mike Alston [mailto:malston@kittelson.com]
Sent: Friday, October 20, 2017 12:45 PM
To: Pribyl, Cindy L@DOT <cindy.pribyl@dot.ca.gov>
Cc: Aaron Elias <aelias@kittelson.com>
Subject: Highway 1 Peak Month ADT

Hi Cindy,

I am working on a transportation impact study in Moss Beach, California and am hoping you can provide me with some context on what's available on the Caltrans website.

Specifically, I am looking at the PDF "2015 Traffic Volumes on California State Highways."
(http://www.dot.ca.gov/trafficops/census/docs/2015_aadt_volumes.pdf)

For this project, Kittelson & Associates has Highway 1 traffic counts conducted in April 2017 but have been advised that we should find a conversion factor to represent the peak summer conditions. Based on what's in the PDF, I suspect our best option currently would be to use a ratio between **AADT** and the **Peak Month** to inflate them. (our counts as AADT, and our desired summer count number as peak month).

I am writing to ask you if you have any more granular information—specific months, for example, or any other seasonal/time trend related data. In particular, I am looking at SR1 in Caltrans District 4, San Mateo County, and the Vallemar/Etheldore Streets location (postmile 35.334).

Any guidance or more detailed information you could provide in this matter would be greatly appreciated.

Thank you,
Mike Alston

Mike Alston
Transportation Analyst

Kittelson & Associates, Inc.
Transportation Engineering / Planning
155 Grand Avenue, Suite 900
Oakland, California 94612
510.839.1742
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Streetwise Twitter Facebook

Appendix 4 Existing Conditions Level-of-Service Worksheets

Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	14	7	679	15	1	567
Future Vol, veh/h	14	7	679	15	1	567
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	-	-	125	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	6	0	0	4
Mvmt Flow	15	8	738	16	1	616

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1356	738	0	0	738	0
Stage 1	738	-	-	-	-	-
Stage 2	618	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	166	421	-	-	877	-
Stage 1	476	-	-	-	-	-
Stage 2	542	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	166	421	-	-	877	-
Mov Cap-2 Maneuver	166	-	-	-	-	-
Stage 1	476	-	-	-	-	-
Stage 2	541	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	24.4	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	208	877	-
HCM Lane V/C Ratio	-	-	0.11	0.001	-
HCM Control Delay (s)	-	-	24.4	9.1	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	0	1	0	0	0	0	684	0	0	593	4
Future Vol, veh/h	4	0	1	0	0	0	0	684	0	0	593	4
Conflicting Peds, #/hr	1	0	0	0	0	1	1	0	1	1	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	65	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	0	0	0	0	6	0	0	4	0
Mvmt Flow	4	0	1	0	0	0	0	735	0	0	638	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1377	1377	641	1376	1379	737	643	0	0	736	0	0
Stage 1	641	641	-	736	736	-	-	-	-	-	-	-
Stage 2	736	736	-	640	643	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	123	146	478	124	146	422	951	-	-	879	-	-
Stage 1	466	473	-	414	428	-	-	-	-	-	-	-
Stage 2	414	428	-	467	472	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	123	146	478	124	146	421	951	-	-	878	-	-
Mov Cap-2 Maneuver	123	146	-	124	146	-	-	-	-	-	-	-
Stage 1	466	473	-	414	428	-	-	-	-	-	-	-
Stage 2	414	428	-	466	472	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	31	0	0	0
HCM LOS	D	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	951	-	-	144	-	878	-	-
HCM Lane V/C Ratio	-	-	-	0.037	-	-	-	-
HCM Control Delay (s)	0	-	-	31	0	0	-	-
HCM Lane LOS	A	-	-	D	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	-	0	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	23	658	0	5	582
Future Vol, veh/h	0	23	658	0	5	582
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	-	-	-	65	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	6	0	0	4
Mvmt Flow	0	25	715	0	5	633

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1358	715	0	0	715	0
Stage 1	715	-	-	-	-	-
Stage 2	643	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	166	434	-	-	895	-
Stage 1	488	-	-	-	-	-
Stage 2	527	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	165	434	-	-	895	-
Mov Cap-2 Maneuver	165	-	-	-	-	-
Stage 1	488	-	-	-	-	-
Stage 2	524	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.8	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	434	895	-
HCM Lane V/C Ratio	-	-	0.058	0.006	-
HCM Control Delay (s)	-	-	13.8	9	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Intersection	
Int Delay, s/veh	7.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	22	1	0	5	1
Future Vol, veh/h	1	22	1	0	5	1
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	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	1	29	1	0	7	1

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	16	1	0	0	1	0
Stage 1	1	-	-	-	-	-
Stage 2	15	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	1008	1090	-	-	1635	-
Stage 1	1028	-	-	-	-	-
Stage 2	1013	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	1004	1090	-	-	1635	-
Mov Cap-2 Maneuver	1004	-	-	-	-	-
Stage 1	1028	-	-	-	-	-
Stage 2	1009	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.4	0	6
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1086	1635	-
HCM Lane V/C Ratio	-	-	0.028	0.004	-
HCM Control Delay (s)	-	-	8.4	7.2	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	5.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	2	3	0	4	18	0
Future Vol, veh/h	2	3	0	4	18	0
Conflicting Peds, #/hr	0	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	70	70	70	70	70	70
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	3	4	0	6	26	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	7	0	11	6
Stage 1	-	-	-	-	5	-
Stage 2	-	-	-	-	6	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1627	-	1014	1083
Stage 1	-	-	-	-	1023	-
Stage 2	-	-	-	-	1022	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1625	-	1014	1082
Mov Cap-2 Maneuver	-	-	-	-	1014	-
Stage 1	-	-	-	-	1023	-
Stage 2	-	-	-	-	1022	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	8.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1014	-	-	1625	-
HCM Lane V/C Ratio	0.025	-	-	-	-
HCM Control Delay (s)	8.6	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↑			↑	
Traffic Vol, veh/h	3	0	5	2	0	26	4	631	4	10	565	0
Future Vol, veh/h	3	0	5	2	0	26	4	631	4	10	565	0
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	0	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	125	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	4	0	6	0	0	4	0
Mvmt Flow	3	0	6	2	0	29	4	701	4	11	628	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1378	1365	629	1365	1363	703	629	0	0	706	0	0
Stage 1	651	651	-	712	712	-	-	-	-	-	-	-
Stage 2	727	714	-	653	651	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.24	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.336	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	123	149	486	126	149	434	963	-	-	902	-	-
Stage 1	461	468	-	427	439	-	-	-	-	-	-	-
Stage 2	419	438	-	460	468	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	113	146	486	123	146	434	963	-	-	902	-	-
Mov Cap-2 Maneuver	113	146	-	123	146	-	-	-	-	-	-	-
Stage 1	459	462	-	425	437	-	-	-	-	-	-	-
Stage 2	389	436	-	449	462	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	22.3	15.7	0.1	0.2
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	963	-	-	217	368	902	-	-
HCM Lane V/C Ratio	0.005	-	-	0.041	0.085	0.012	-	-
HCM Control Delay (s)	8.8	-	-	22.3	15.7	9	-	-
HCM Lane LOS	A	-	-	C	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.3	0	-	-

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	0	11	48	0	15	4	619	21	6	561	6
Future Vol, veh/h	10	0	11	48	0	15	4	619	21	6	561	6
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	0	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	80	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	0	12	52	0	16	4	666	23	6	603	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1314	1317	607	1310	1309	677	611	0	0	688	0	0
Stage 1	620	620	-	685	685	-	-	-	-	-	-	-
Stage 2	694	697	-	625	624	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	135	157	496	136	159	453	968	-	-	906	-	-
Stage 1	476	480	-	438	448	-	-	-	-	-	-	-
Stage 2	433	443	-	473	478	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	129	155	496	132	157	453	968	-	-	906	-	-
Mov Cap-2 Maneuver	129	155	-	132	157	-	-	-	-	-	-	-
Stage 1	474	476	-	436	446	-	-	-	-	-	-	-
Stage 2	416	441	-	459	474	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	24.1	43.5	0.1	0.1
HCM LOS	C	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	968	-	-	211	159	906	-	-
HCM Lane V/C Ratio	0.004	-	-	0.107	0.426	0.007	-	-
HCM Control Delay (s)	8.7	-	-	24.1	43.5	9	-	-
HCM Lane LOS	A	-	-	C	E	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.4	1.9	0	-	-

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	16	0	1	65	0	3	2	0	2	2	3
Future Vol, veh/h	6	16	0	1	65	0	3	2	0	2	2	3
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	74	74	74	74	74	74	74	74	74	74	74	74
Heavy Vehicles, %	0	0	0	0	0	0	33	0	0	0	0	0
Mvmt Flow	8	22	0	1	88	0	4	3	0	3	3	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	89	0	0	22	0	0	132	130	23	132	130	89
Stage 1	-	-	-	-	-	-	38	38	-	92	92	-
Stage 2	-	-	-	-	-	-	94	92	-	40	38	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.43	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.43	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.43	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.797	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1519	-	-	1607	-	-	773	764	1060	845	764	975
Stage 1	-	-	-	-	-	-	904	867	-	920	823	-
Stage 2	-	-	-	-	-	-	842	823	-	980	867	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1519	-	-	1605	-	-	764	759	1059	837	759	974
Mov Cap-2 Maneuver	-	-	-	-	-	-	764	759	-	837	759	-
Stage 1	-	-	-	-	-	-	899	863	-	915	821	-
Stage 2	-	-	-	-	-	-	835	821	-	971	863	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2	0.1	9.8	9.2
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	762	1519	-	-	1605	-	-	864
HCM Lane V/C Ratio	0.009	0.005	-	-	0.001	-	-	0.011
HCM Control Delay (s)	9.8	7.4	0	-	7.2	0	-	9.2
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	7.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	14	0	1	65	9	2	17	0	1	4	0
Future Vol, veh/h	0	14	0	1	65	9	2	17	0	1	4	0
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	0	0	0	0	0	0	0	6	0	0	0	0
Mvmt Flow	0	17	0	1	78	11	2	20	0	1	5	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	78	32	5	41	32	21	5	0	0	20	0	0
Stage 1	7	7	-	25	25	-	-	-	-	-	-	-
Stage 2	71	25	-	16	7	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	916	865	1084	968	865	1062	1630	-	-	1609	-	-
Stage 1	1020	894	-	998	878	-	-	-	-	-	-	-
Stage 2	944	878	-	1009	894	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	842	863	1084	952	863	1061	1630	-	-	1607	-	-
Mov Cap-2 Maneuver	842	863	-	952	863	-	-	-	-	-	-	-
Stage 1	1019	893	-	997	877	-	-	-	-	-	-	-
Stage 2	849	877	-	989	893	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.3	9.5	0.8	1.4
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1630	-	-	863	884	1607	-	-
HCM Lane V/C Ratio	0.001	-	-	0.02	0.102	0.001	-	-
HCM Control Delay (s)	7.2	0	-	9.3	9.5	7.2	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.3	0	-	-

Intersection	
Intersection Delay, s/veh	7.2
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Traffic Vol, veh/h	0	0	17	1	0	5	63	1	0	1	1	2
Future Vol, veh/h	0	0	17	1	0	5	63	1	0	1	1	2
Peak Hour Factor	0.92	0.90	0.90	0.90	0.92	0.90	0.90	0.90	0.92	0.90	0.90	0.90
Heavy Vehicles, %	2	0	6	0	2	0	0	0	2	0	0	0
Mvmt Flow	0	0	19	1	0	6	70	1	0	1	1	2
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	7.2	7.3	6.9
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	25%	0%	7%	0%
Vol Thru, %	25%	94%	91%	0%
Vol Right, %	50%	6%	1%	100%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	4	18	69	6
LT Vol	1	0	5	0
Through Vol	1	17	63	0
RT Vol	2	1	1	6
Lane Flow Rate	4	20	77	7
Geometry Grp	1	1	1	1
Degree of Util (X)	0.005	0.022	0.084	0.006
Departure Headway (Hd)	3.823	4.045	3.94	3.47
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	932	887	913	1026
Service Time	1.861	2.061	1.946	1.51
HCM Lane V/C Ratio	0.004	0.023	0.084	0.007
HCM Control Delay	6.9	7.2	7.3	6.5
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0	0.1	0.3	0

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Lane Configurations				
Traffic Vol, veh/h	0	0	0	6
Future Vol, veh/h	0	0	0	6
Peak Hour Factor	0.92	0.90	0.90	0.90
Heavy Vehicles, %	2	0	0	0
Mvmt Flow	0	0	0	7
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	6.5
HCM LOS	A

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	6	7	638	567	0
Future Vol, veh/h	3	6	7	638	567	0
Conflicting Peds, #/hr	0	0	1	0	0	1
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	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	6	8	686	610	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1312	611	611	0	-	0
Stage 1	611	-	-	-	-	-
Stage 2	701	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	175	494	968	-	-	-
Stage 1	542	-	-	-	-	-
Stage 2	492	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	172	494	968	-	-	-
Mov Cap-2 Maneuver	172	-	-	-	-	-
Stage 1	541	-	-	-	-	-
Stage 2	485	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.2	0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	968	-	304	-	-
HCM Lane V/C Ratio	0.008	-	0.032	-	-
HCM Control Delay (s)	8.7	0	17.2	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	11	5	671	18	5	862
Future Vol, veh/h	11	5	671	18	5	862
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	125	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	2	0	0	2
Mvmt Flow	12	5	706	19	5	907

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1625	707	0	0	707	0
Stage 1	707	-	-	-	-	-
Stage 2	918	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	114	439	-	-	901	-
Stage 1	493	-	-	-	-	-
Stage 2	392	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	113	439	-	-	901	-
Mov Cap-2 Maneuver	113	-	-	-	-	-
Stage 1	493	-	-	-	-	-
Stage 2	388	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	32.6	0	0.1
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	147	901	-
HCM Lane V/C Ratio	-	-	0.115	0.006	-
HCM Control Delay (s)	-	-	32.6	9	0
HCM Lane LOS	-	-	D	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↰	↱		↰	↑	
Traffic Vol, veh/h	5	0	4	1	0	2	0	683	0	1	858	4
Future Vol, veh/h	5	0	4	1	0	2	0	683	0	1	858	4
Conflicting Peds, #/hr	5	0	0	0	0	5	0	0	4	4	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	65	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0	0	2	0	0	1	0
Mvmt Flow	5	0	4	1	0	2	0	727	0	1	913	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1650	1648	915	1650	1650	736	917	0	0	731	0	0
Stage 1	917	917	-	731	731	-	-	-	-	-	-	-
Stage 2	733	731	-	919	919	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	80	100	333	80	100	422	752	-	-	883	-	-
Stage 1	329	354	-	416	430	-	-	-	-	-	-	-
Stage 2	415	430	-	328	353	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	79	100	333	79	100	418	752	-	-	879	-	-
Mov Cap-2 Maneuver	79	100	-	79	100	-	-	-	-	-	-	-
Stage 1	329	354	-	414	428	-	-	-	-	-	-	-
Stage 2	411	428	-	323	353	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	37.6	26.3	0	0
HCM LOS	E	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	752	-	-	120	172	879	-	-
HCM Lane V/C Ratio	-	-	-	0.08	0.019	0.001	-	-
HCM Control Delay (s)	0	-	-	37.6	26.3	9.1	-	-
HCM Lane LOS	A	-	-	E	D	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.1	0	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	5	678	0	18	851
Future Vol, veh/h	0	5	678	0	18	851
Conflicting Peds, #/hr	0	0	0	2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	65	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	2	0	0	2
Mvmt Flow	0	5	706	0	19	886

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1632	708	0	0	708	0
Stage 1	708	-	-	-	-	-
Stage 2	924	-	-	-	-	-
Critical Hdwy	7.1	6.2	-	-	4.1	-
Critical Hdwy Stg 1	6.1	-	-	-	-	-
Critical Hdwy Stg 2	6.1	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	82	438	-	-	900	-
Stage 1	429	-	-	-	-	-
Stage 2	326	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	81	437	-	-	900	-
Mov Cap-2 Maneuver	81	-	-	-	-	-
Stage 1	429	-	-	-	-	-
Stage 2	319	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.3	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	437	900	-
HCM Lane V/C Ratio	-	-	0.012	0.021	-
HCM Control Delay (s)	-	-	13.3	9.1	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0	0.1	-

Intersection	
Int Delay, s/veh	6.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	6	1	6	19	0
Future Vol, veh/h	4	6	1	6	19	0
Conflicting Peds, #/hr	1	0	0	5	5	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	75	75	75	75	75	75
Heavy Vehicles, %	0	17	0	0	0	0
Mvmt Flow	5	8	1	8	25	0

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	62	10	0	0	14	0
Stage 1	10	-	-	-	-	-
Stage 2	52	-	-	-	-	-
Critical Hdwy	6.4	6.37	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.453	-	-	2.2	-
Pot Cap-1 Maneuver	949	1029	-	-	1617	-
Stage 1	1018	-	-	-	-	-
Stage 2	976	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	929	1024	-	-	1617	-
Mov Cap-2 Maneuver	929	-	-	-	-	-
Stage 1	1013	-	-	-	-	-
Stage 2	960	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.7	0	7.3
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	984	1617	-
HCM Lane V/C Ratio	-	-	0.014	0.016	-
HCM Control Delay (s)	-	-	8.7	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	8	16	1	4	7	0
Future Vol, veh/h	8	16	1	4	7	0
Conflicting Peds, #/hr	0	3	3	0	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	69	69	69	69	69	69
Heavy Vehicles, %	0	0	0	0	29	0
Mvmt Flow	12	23	1	6	10	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	38	0	36	26
Stage 1	-	-	-	-	26	-
Stage 2	-	-	-	-	10	-
Critical Hdwy	-	-	4.1	-	6.69	6.2
Critical Hdwy Stg 1	-	-	-	-	5.69	-
Critical Hdwy Stg 2	-	-	-	-	5.69	-
Follow-up Hdwy	-	-	2.2	-	3.761	3.3
Pot Cap-1 Maneuver	-	-	1585	-	912	1056
Stage 1	-	-	-	-	931	-
Stage 2	-	-	-	-	947	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1585	-	908	1053
Mov Cap-2 Maneuver	-	-	-	-	908	-
Stage 1	-	-	-	-	928	-
Stage 2	-	-	-	-	945	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.5	9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	908	-	-	1585	-
HCM Lane V/C Ratio	0.011	-	-	0.001	-
HCM Control Delay (s)	9	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↑			↑	
Traffic Vol, veh/h	7	0	7	7	0	17	10	655	7	28	812	5
Future Vol, veh/h	7	0	7	7	0	17	10	655	7	28	812	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	2	2	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	125	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	0	0	0	2	14	7	2	0
Mvmt Flow	7	0	7	7	0	18	10	682	7	29	846	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1623	1619	848	1619	1618	688	851	0	0	692	0	0
Stage 1	907	907	-	709	709	-	-	-	-	-	-	-
Stage 2	716	712	-	910	909	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.17	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.263	-	-
Pot Cap-1 Maneuver	83	104	364	84	104	450	796	-	-	880	-	-
Stage 1	333	357	-	428	440	-	-	-	-	-	-	-
Stage 2	424	439	-	332	357	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	77	99	364	79	99	449	796	-	-	880	-	-
Mov Cap-2 Maneuver	77	99	-	79	99	-	-	-	-	-	-	-
Stage 1	329	345	-	422	434	-	-	-	-	-	-	-
Stage 2	402	433	-	315	345	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	37	26.8	0.1	0.3
HCM LOS	E	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	796	-	-	127	190	880	-	-
HCM Lane V/C Ratio	0.013	-	-	0.115	0.132	0.033	-	-
HCM Control Delay (s)	9.6	-	-	37	26.8	9.2	-	-
HCM Lane LOS	A	-	-	E	D	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.4	0.1	-	-

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	0	3	32	0	13	5	660	42	17	806	10
Future Vol, veh/h	3	0	3	32	0	13	5	660	42	17	806	10
Conflicting Peds, #/hr	1	0	0	0	0	1	1	0	0	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	80	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	0	3	35	0	14	5	725	46	19	886	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1697	1712	892	1689	1694	749	898	0	0	771	0	0
Stage 1	930	930	-	759	759	-	-	-	-	-	-	-
Stage 2	767	782	-	930	935	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	73	90	341	74	93	412	756	-	-	844	-	-
Stage 1	321	346	-	399	415	-	-	-	-	-	-	-
Stage 2	395	405	-	321	344	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	69	87	341	72	90	412	756	-	-	843	-	-
Mov Cap-2 Maneuver	69	87	-	72	90	-	-	-	-	-	-	-
Stage 1	319	338	-	396	412	-	-	-	-	-	-	-
Stage 2	378	402	-	311	336	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	38.2	78.2	0.1	0.2
HCM LOS	E	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	756	-	-	115	95	843	-	-
HCM Lane V/C Ratio	0.007	-	-	0.057	0.521	0.022	-	-
HCM Control Delay (s)	9.8	-	-	38.2	78.2	9.4	-	-
HCM Lane LOS	A	-	-	E	F	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	2.3	0.1	-	-

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	13	35	2	0	34	4	9	7	6	3	8	12
Future Vol, veh/h	13	35	2	0	34	4	9	7	6	3	8	12
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	79	79	79	79	79	79	79	79	79	79	79	79
Heavy Vehicles, %	0	3	0	0	0	0	0	0	0	33	0	0
Mvmt Flow	16	44	3	0	43	5	11	9	8	4	10	15

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	48	0	0	48	0	0	137	127	47	133	127	46
Stage 1	-	-	-	-	-	-	79	79	-	46	46	-
Stage 2	-	-	-	-	-	-	58	48	-	87	81	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.43	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.43	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.43	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.797	4	3.3
Pot Cap-1 Maneuver	1572	-	-	1572	-	-	838	767	1028	772	767	1029
Stage 1	-	-	-	-	-	-	935	833	-	895	861	-
Stage 2	-	-	-	-	-	-	959	859	-	849	832	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1572	-	-	1572	-	-	810	759	1027	754	759	1029
Mov Cap-2 Maneuver	-	-	-	-	-	-	810	759	-	754	759	-
Stage 1	-	-	-	-	-	-	925	824	-	886	861	-
Stage 2	-	-	-	-	-	-	934	859	-	825	823	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.9	0	9.4	9.2
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	840	1572	-	-	1572	-	-	879
HCM Lane V/C Ratio	0.033	0.01	-	-	-	-	-	0.033
HCM Control Delay (s)	9.4	7.3	0	-	0	-	-	9.2
HCM Lane LOS	A	A	A	-	A	-	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	7.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	39	3	9	33	2	4	6	5	15	12	2
Future Vol, veh/h	0	39	3	9	33	2	4	6	5	15	12	2
Conflicting Peds, #/hr	3	0	0	0	0	3	3	0	2	2	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	0	5	0	22	0	0	0	0	0	0	8	0
Mvmt Flow	0	45	3	10	38	2	5	7	6	17	14	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	96	77	18	95	75	15	19	0	0	15	0	0
Stage 1	53	53	-	21	21	-	-	-	-	-	-	-
Stage 2	43	24	-	74	54	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.55	6.2	7.32	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.55	-	6.32	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.55	-	6.32	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.045	3.3	3.698	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	891	808	1066	842	819	1070	1611	-	-	1616	-	-
Stage 1	965	845	-	948	882	-	-	-	-	-	-	-
Stage 2	976	869	-	888	854	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	843	793	1063	793	804	1065	1611	-	-	1611	-	-
Mov Cap-2 Maneuver	843	793	-	793	804	-	-	-	-	-	-	-
Stage 1	959	833	-	943	878	-	-	-	-	-	-	-
Stage 2	926	865	-	828	842	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.7	9.7	1.9	3.8
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1611	-	-	808	811	1611	-	-
HCM Lane V/C Ratio	0.003	-	-	0.06	0.063	0.011	-	-
HCM Control Delay (s)	7.2	0	-	9.7	9.7	7.3	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.2	0	-	-

Intersection	
Intersection Delay, s/veh	7.3
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Traffic Vol, veh/h	0	2	53	6	0	1	32	0	0	5	2	3
Future Vol, veh/h	0	2	53	6	0	1	32	0	0	5	2	3
Peak Hour Factor	0.92	0.75	0.75	0.75	0.92	0.75	0.75	0.75	0.92	0.75	0.75	0.75
Heavy Vehicles, %	2	0	4	0	2	0	0	0	2	40	0	0
Mvmt Flow	0	3	71	8	0	1	43	0	0	7	3	4
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	7.3	7.2	7.9
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	50%	3%	3%	0%
Vol Thru, %	20%	87%	97%	0%
Vol Right, %	30%	10%	0%	100%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	10	61	33	4
LT Vol	5	2	1	0
Through Vol	2	53	32	0
RT Vol	3	6	0	4
Lane Flow Rate	13	81	44	5
Geometry Grp	1	1	1	1
Degree of Util (X)	0.017	0.088	0.049	0.005
Departure Headway (Hd)	4.721	3.914	4	3.525
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	755	917	895	1006
Service Time	2.771	1.932	2.023	1.579
HCM Lane V/C Ratio	0.017	0.088	0.049	0.005
HCM Control Delay	7.9	7.3	7.2	6.6
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.1	0.3	0.2	0

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Lane Configurations				
Traffic Vol, veh/h	0	0	0	4
Future Vol, veh/h	0	0	0	4
Peak Hour Factor	0.92	0.75	0.75	0.75
Heavy Vehicles, %	2	0	0	0
Mvmt Flow	0	0	0	5
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	6.6
HCM LOS	A

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	2	8	691	835	1
Future Vol, veh/h	1	2	8	691	835	1
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	91	91	91	91	91	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	2	9	759	918	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1695	918	919	0	-	0
Stage 1	918	-	-	-	-	-
Stage 2	777	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	102	329	743	-	-	-
Stage 1	389	-	-	-	-	-
Stage 2	453	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	100	329	743	-	-	-
Mov Cap-2 Maneuver	100	-	-	-	-	-
Stage 1	389	-	-	-	-	-
Stage 2	443	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	24.6	0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	743	-	187	-	-
HCM Lane V/C Ratio	0.012	-	0.018	-	-
HCM Control Delay (s)	9.9	0	24.6	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	7	3	741	9	4	957
Future Vol, veh/h	7	3	741	9	4	957
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	125	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	2	0	0	1
Mvmt Flow	7	3	772	9	4	997

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1778	773	0	0	773	0
Stage 1	773	-	-	-	-	-
Stage 2	1005	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	92	402	-	-	851	-
Stage 1	459	-	-	-	-	-
Stage 2	357	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	91	402	-	-	851	-
Mov Cap-2 Maneuver	91	-	-	-	-	-
Stage 1	459	-	-	-	-	-
Stage 2	353	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	38.1	0	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	119	851	-
HCM Lane V/C Ratio	-	-	0.088	0.005	-
HCM Control Delay (s)	-	-	38.1	9.3	0
HCM Lane LOS	-	-	E	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	1	0	1	2	740	0	1	966	4
Future Vol, veh/h	0	0	0	1	0	1	2	740	0	1	966	4
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	3	3	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	65	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	0	0	0	3	0	0	2	0
Mvmt Flow	0	0	0	1	0	1	2	771	0	1	1006	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1786	1788	1009	1789	1791	774	1010	0	0	774	0	0
Stage 1	1010	1010	-	778	778	-	-	-	-	-	-	-
Stage 2	776	778	-	1011	1013	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	64	82	294	64	82	402	694	-	-	851	-	-
Stage 1	292	320	-	392	410	-	-	-	-	-	-	-
Stage 2	393	410	-	291	319	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	64	81	294	64	81	401	693	-	-	851	-	-
Mov Cap-2 Maneuver	64	81	-	64	81	-	-	-	-	-	-	-
Stage 1	291	320	-	390	408	-	-	-	-	-	-	-
Stage 2	391	408	-	290	319	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	38.4	0	0
HCM LOS	A	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	693	-	-	-	110	851	-	-
HCM Lane V/C Ratio	0.003	-	-	-	0.019	0.001	-	-
HCM Control Delay (s)	10.2	-	-	0	38.4	9.2	-	-
HCM Lane LOS	B	-	-	A	E	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	0.1	0	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	11	734	0	8	958
Future Vol, veh/h	0	11	734	0	8	958
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	65	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	9	2	0	0	1
Mvmt Flow	0	12	789	0	9	1030

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1837	790	0	0	790	0
Stage 1	790	-	-	-	-	-
Stage 2	1047	-	-	-	-	-
Critical Hdwy	6.4	6.29	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.381	-	-	2.2	-
Pot Cap-1 Maneuver	84	379	-	-	839	-
Stage 1	451	-	-	-	-	-
Stage 2	341	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	83	379	-	-	839	-
Mov Cap-2 Maneuver	83	-	-	-	-	-
Stage 1	451	-	-	-	-	-
Stage 2	337	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.8	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	379	839	-
HCM Lane V/C Ratio	-	-	0.031	0.01	-
HCM Control Delay (s)	-	-	14.8	9.3	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	6.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	13	1	2	6	2
Future Vol, veh/h	3	13	1	2	6	2
Conflicting Peds, #/hr	2	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	75	75	75	75	75	75
Heavy Vehicles, %	33	8	0	0	0	0
Mvmt Flow	4	17	1	3	8	3

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	24	3	0	0	4	0
Stage 1	3	-	-	-	-	-
Stage 2	21	-	-	-	-	-
Critical Hdwy	6.73	6.28	-	-	4.1	-
Critical Hdwy Stg 1	5.73	-	-	-	-	-
Critical Hdwy Stg 2	5.73	-	-	-	-	-
Follow-up Hdwy	3.797	3.372	-	-	2.2	-
Pot Cap-1 Maneuver	918	1064	-	-	1631	-
Stage 1	945	-	-	-	-	-
Stage 2	927	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	912	1064	-	-	1631	-
Mov Cap-2 Maneuver	912	-	-	-	-	-
Stage 1	945	-	-	-	-	-
Stage 2	921	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.6	0	5.4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1032	1631	-
HCM Lane V/C Ratio	-	-	0.021	0.005	-
HCM Control Delay (s)	-	-	8.6	7.2	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	5.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	2	5	1	0	13	1
Future Vol, veh/h	2	5	1	0	13	1
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	0	0	100	0	15	0
Mvmt Flow	3	6	1	0	16	1

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	10	0	10	7
Stage 1	-	-	-	-	7	-
Stage 2	-	-	-	-	3	-
Critical Hdwy	-	-	5.1	-	6.55	6.2
Critical Hdwy Stg 1	-	-	-	-	5.55	-
Critical Hdwy Stg 2	-	-	-	-	5.55	-
Follow-up Hdwy	-	-	3.1	-	3.635	3.3
Pot Cap-1 Maneuver	-	-	1150	-	977	1081
Stage 1	-	-	-	-	983	-
Stage 2	-	-	-	-	987	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1150	-	975	1080
Mov Cap-2 Maneuver	-	-	-	-	975	-
Stage 1	-	-	-	-	982	-
Stage 2	-	-	-	-	986	-

Approach	EB	WB	NB
HCM Control Delay, s	0	8.1	8.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	982	-	-	1150	-
HCM Lane V/C Ratio	0.018	-	-	0.001	-
HCM Control Delay (s)	8.7	-	-	8.1	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↑			↑	
Traffic Vol, veh/h	0	0	6	6	1	25	9	713	2	22	928	5
Future Vol, veh/h	0	0	6	6	1	25	9	713	2	22	928	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	125	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	17	0	4	0	3	0	5	1	0
Mvmt Flow	0	0	6	6	1	26	9	751	2	23	977	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1810	1799	979	1801	1800	753	982	0	0	754	0	0
Stage 1	1026	1026	-	772	772	-	-	-	-	-	-	-
Stage 2	784	773	-	1029	1028	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.27	6.5	6.24	4.1	-	-	4.15	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.27	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.27	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.653	4	3.336	2.2	-	-	2.245	-	-
Pot Cap-1 Maneuver	62	81	306	57	81	406	711	-	-	843	-	-
Stage 1	286	315	-	370	412	-	-	-	-	-	-	-
Stage 2	389	412	-	265	314	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	56	78	306	54	78	406	711	-	-	843	-	-
Mov Cap-2 Maneuver	56	78	-	54	78	-	-	-	-	-	-	-
Stage 1	282	306	-	365	406	-	-	-	-	-	-	-
Stage 2	358	406	-	252	305	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	17	31	0.1	0.2
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	711	-	-	306	172	843	-	-
HCM Lane V/C Ratio	0.013	-	-	0.021	0.196	0.027	-	-
HCM Control Delay (s)	10.1	-	-	17	31	9.4	-	-
HCM Lane LOS	B	-	-	C	D	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.7	0.1	-	-

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	3	21	23	3	23	28	697	36	7	928	7
Future Vol, veh/h	6	3	21	23	3	23	28	697	36	7	928	7
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	80	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	3	22	24	3	24	29	734	38	7	977	7

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1821	1826	981	1820	1811	754	984	0	0	772	0	0
Stage 1	995	995	-	812	812	-	-	-	-	-	-	-
Stage 2	826	831	-	1008	999	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	60	77	303	60	79	409	702	-	-	843	-	-
Stage 1	295	323	-	373	392	-	-	-	-	-	-	-
Stage 2	366	384	-	290	321	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	53	73	303	52	75	409	702	-	-	842	-	-
Mov Cap-2 Maneuver	53	73	-	52	75	-	-	-	-	-	-	-
Stage 1	283	320	-	358	376	-	-	-	-	-	-	-
Stage 2	327	368	-	264	318	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	40	87.1	0.4	0.1
HCM LOS	E	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	702	-	-	134	91	842	-	-
HCM Lane V/C Ratio	0.042	-	-	0.236	0.567	0.009	-	-
HCM Control Delay (s)	10.4	-	-	40	87.1	9.3	-	-
HCM Lane LOS	B	-	-	E	F	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.9	2.6	0	-	-

Intersection	
Int Delay, s/veh	4.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	25	33	2	5	31	17	10	9	3	6	17	8
Future Vol, veh/h	25	33	2	5	31	17	10	9	3	6	17	8
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	2	2	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	30	40	2	6	37	20	12	11	4	7	20	10

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	59	0	0	42	0	0	176	172	43	171	163	49
Stage 1	-	-	-	-	-	-	101	101	-	61	61	-
Stage 2	-	-	-	-	-	-	75	71	-	110	102	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1558	-	-	1580	-	-	791	725	1033	797	733	1025
Stage 1	-	-	-	-	-	-	910	815	-	955	848	-
Stage 2	-	-	-	-	-	-	939	840	-	900	815	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1558	-	-	1577	-	-	752	707	1031	768	715	1024
Mov Cap-2 Maneuver	-	-	-	-	-	-	752	707	-	768	715	-
Stage 1	-	-	-	-	-	-	892	799	-	935	844	-
Stage 2	-	-	-	-	-	-	904	836	-	865	799	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3.1	0.7	9.9	9.8
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	760	1558	-	-	1577	-	-	787
HCM Lane V/C Ratio	0.035	0.019	-	-	0.004	-	-	0.047
HCM Control Delay (s)	9.9	7.4	0	-	7.3	0	-	9.8
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	6.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	37	3	10	37	2	7	13	7	8	16	3
Future Vol, veh/h	2	37	3	10	37	2	7	13	7	8	16	3
Conflicting Peds, #/hr	4	0	0	0	0	4	1	0	1	1	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	0	0	0	0	0	0	0	8	14	0	6	0
Mvmt Flow	2	44	4	12	44	2	8	15	8	10	19	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	105	82	22	101	80	25	24	0	0	25	0	0
Stage 1	41	41	-	37	37	-	-	-	-	-	-	-
Stage 2	64	41	-	64	43	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	880	812	1061	885	814	1057	1604	-	-	1603	-	-
Stage 1	979	865	-	984	868	-	-	-	-	-	-	-
Stage 2	952	865	-	952	863	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	830	802	1060	837	804	1052	1604	-	-	1597	-	-
Mov Cap-2 Maneuver	830	802	-	837	804	-	-	-	-	-	-	-
Stage 1	973	859	-	978	863	-	-	-	-	-	-	-
Stage 2	893	860	-	895	857	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.7	9.7	1.9	2.2
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1604	-	-	818	818	1597	-	-
HCM Lane V/C Ratio	0.005	-	-	0.061	0.071	0.006	-	-
HCM Control Delay (s)	7.3	0	-	9.7	9.7	7.3	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.2	0	-	-

Intersection	
Intersection Delay, s/veh	7.2
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Traffic Vol, veh/h	0	4	45	3	0	2	40	0	0	4	1	4
Future Vol, veh/h	0	4	45	3	0	2	40	0	0	4	1	4
Peak Hour Factor	0.92	0.83	0.83	0.83	0.92	0.83	0.83	0.83	0.92	0.83	0.83	0.83
Heavy Vehicles, %	2	0	2	0	2	0	0	0	2	0	0	0
Mvmt Flow	0	5	54	4	0	2	48	0	0	5	1	5
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	7.3	7.2	7
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	44%	8%	5%	0%
Vol Thru, %	11%	87%	95%	14%
Vol Right, %	44%	6%	0%	86%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	9	52	42	7
LT Vol	4	4	2	0
Through Vol	1	45	40	1
RT Vol	4	3	0	6
Lane Flow Rate	11	63	51	8
Geometry Grp	1	1	1	1
Degree of Util (X)	0.012	0.069	0.056	0.008
Departure Headway (Hd)	3.924	3.952	3.99	3.59
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	907	908	899	990
Service Time	1.971	1.967	2.007	1.638
HCM Lane V/C Ratio	0.012	0.069	0.057	0.008
HCM Control Delay	7	7.3	7.2	6.7
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0	0.2	0.2	0

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Lane Configurations				
Traffic Vol, veh/h	0	0	1	6
Future Vol, veh/h	0	0	1	6
Peak Hour Factor	0.92	0.83	0.83	0.83
Heavy Vehicles, %	2	0	0	0
Mvmt Flow	0	0	1	7
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	6.7
HCM LOS	A

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	8	4	724	935	5
Future Vol, veh/h	3	8	4	724	935	5
Conflicting Peds, #/hr	0	0	1	0	0	1
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	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	8	4	762	984	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1759	988	990	0	-	0
Stage 1	988	-	-	-	-	-
Stage 2	771	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	93	300	698	-	-	-
Stage 1	361	-	-	-	-	-
Stage 2	456	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	92	300	698	-	-	-
Mov Cap-2 Maneuver	92	-	-	-	-	-
Stage 1	361	-	-	-	-	-
Stage 2	451	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	25.6	0.1	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	698	-	186	-	-
HCM Lane V/C Ratio	0.006	-	0.062	-	-
HCM Control Delay (s)	10.2	0	25.6	-	-
HCM Lane LOS	B	A	D	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Appendix 5 Existing with Project Conditions Level-of-Service Worksheets

Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	14	7	694	15	1	571
Future Vol, veh/h	14	7	694	15	1	571
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	-	-	125	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	6	0	0	4
Mvmt Flow	15	8	754	16	1	621

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1377	754	0	0	754	0
Stage 1	754	-	-	-	-	-
Stage 2	623	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	161	412	-	-	865	-
Stage 1	468	-	-	-	-	-
Stage 2	539	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	161	412	-	-	865	-
Mov Cap-2 Maneuver	161	-	-	-	-	-
Stage 1	468	-	-	-	-	-
Stage 2	538	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	25.1	0	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	202	865	-
HCM Lane V/C Ratio	-	-	0.113	0.001	-
HCM Control Delay (s)	-	-	25.1	9.2	0
HCM Lane LOS	-	-	D	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	0	1	0	0	0	0	699	0	0	597	4
Future Vol, veh/h	4	0	1	0	0	0	0	699	0	0	597	4
Conflicting Peds, #/hr	1	0	0	0	0	1	1	0	1	1	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	65	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	0	0	0	0	6	0	0	4	0
Mvmt Flow	4	0	1	0	0	0	0	752	0	0	642	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1398	1398	645	1398	1400	754	647	0	0	753	0	0
Stage 1	645	645	-	753	753	-	-	-	-	-	-	-
Stage 2	753	753	-	645	647	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	119	142	476	119	142	412	948	-	-	866	-	-
Stage 1	464	471	-	405	420	-	-	-	-	-	-	-
Stage 2	405	420	-	464	470	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	119	142	476	119	142	411	948	-	-	865	-	-
Mov Cap-2 Maneuver	119	142	-	119	142	-	-	-	-	-	-	-
Stage 1	464	471	-	405	420	-	-	-	-	-	-	-
Stage 2	405	420	-	463	470	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	31.7	0	0	0
HCM LOS	D	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	948	-	-	140	-	865	-	-
HCM Lane V/C Ratio	-	-	-	0.038	-	-	-	-
HCM Control Delay (s)	0	-	-	31.7	0	0	-	-
HCM Lane LOS	A	-	-	D	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	-	0	-	-

Intersection	
Int Delay, s/veh	0.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	14	38	658	4	9	582
Future Vol, veh/h	14	38	658	4	9	582
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	-	-	-	65	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	6	0	0	4
Mvmt Flow	15	41	715	4	10	633

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1369	717	0	0	720	0
Stage 1	717	-	-	-	-	-
Stage 2	652	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	163	433	-	-	891	-
Stage 1	487	-	-	-	-	-
Stage 2	522	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	161	433	-	-	891	-
Mov Cap-2 Maneuver	161	-	-	-	-	-
Stage 1	487	-	-	-	-	-
Stage 2	516	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	19.9	0	0.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	298	891	-
HCM Lane V/C Ratio	-	-	0.19	0.011	-
HCM Control Delay (s)	-	-	19.9	9.1	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	0.7	0	-

Intersection	
Int Delay, s/veh	7.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	22	1	0	5	1
Future Vol, veh/h	1	22	1	0	5	1
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	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	1	29	1	0	7	1

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	16	1	0	0	1	0
Stage 1	1	-	-	-	-	-
Stage 2	15	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	1008	1090	-	-	1635	-
Stage 1	1028	-	-	-	-	-
Stage 2	1013	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	1004	1090	-	-	1635	-
Mov Cap-2 Maneuver	1004	-	-	-	-	-
Stage 1	1028	-	-	-	-	-
Stage 2	1009	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.4	0	6
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1086	1635	-
HCM Lane V/C Ratio	-	-	0.028	0.004	-
HCM Control Delay (s)	-	-	8.4	7.2	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	5.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	2	3	0	4	18	0
Future Vol, veh/h	2	3	0	4	18	0
Conflicting Peds, #/hr	0	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	70	70	70	70	70	70
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	3	4	0	6	26	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	7	0	11	6
Stage 1	-	-	-	-	5	-
Stage 2	-	-	-	-	6	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1627	-	1014	1083
Stage 1	-	-	-	-	1023	-
Stage 2	-	-	-	-	1022	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1625	-	1014	1082
Mov Cap-2 Maneuver	-	-	-	-	1014	-
Stage 1	-	-	-	-	1023	-
Stage 2	-	-	-	-	1022	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	8.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1014	-	-	1625	-
HCM Lane V/C Ratio	0.025	-	-	-	-
HCM Control Delay (s)	8.6	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↑			↑	
Traffic Vol, veh/h	3	0	5	2	0	26	4	635	4	10	579	0
Future Vol, veh/h	3	0	5	2	0	26	4	635	4	10	579	0
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	0	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	125	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	4	0	6	0	0	4	0
Mvmt Flow	3	0	6	2	0	29	4	706	4	11	643	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1398	1386	644	1385	1384	708	644	0	0	710	0	0
Stage 1	667	667	-	717	717	-	-	-	-	-	-	-
Stage 2	731	719	-	668	667	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.24	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.336	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	119	144	476	122	145	431	951	-	-	899	-	-
Stage 1	451	460	-	424	437	-	-	-	-	-	-	-
Stage 2	416	436	-	451	460	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	110	142	476	119	142	431	951	-	-	899	-	-
Mov Cap-2 Maneuver	110	142	-	119	142	-	-	-	-	-	-	-
Stage 1	449	454	-	422	435	-	-	-	-	-	-	-
Stage 2	386	434	-	440	454	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	22.7	15.8	0.1	0.2
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	951	-	-	212	363	899	-	-
HCM Lane V/C Ratio	0.005	-	-	0.042	0.086	0.012	-	-
HCM Control Delay (s)	8.8	-	-	22.7	15.8	9.1	-	-
HCM Lane LOS	A	-	-	C	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.3	0	-	-

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	0	11	48	0	15	4	623	21	6	575	6
Future Vol, veh/h	10	0	11	48	0	15	4	623	21	6	575	6
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	0	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	80	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	0	12	52	0	16	4	670	23	6	618	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1333	1336	623	1330	1329	681	626	0	0	692	0	0
Stage 1	635	635	-	690	690	-	-	-	-	-	-	-
Stage 2	698	701	-	640	639	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	131	153	486	132	155	450	956	-	-	903	-	-
Stage 1	467	472	-	435	446	-	-	-	-	-	-	-
Stage 2	431	441	-	464	470	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	125	151	486	128	153	450	956	-	-	903	-	-
Mov Cap-2 Maneuver	125	151	-	128	153	-	-	-	-	-	-	-
Stage 1	465	468	-	433	444	-	-	-	-	-	-	-
Stage 2	414	439	-	450	466	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	24.7	45.6	0.1	0.1
HCM LOS	C	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	956	-	-	205	154	903	-	-
HCM Lane V/C Ratio	0.004	-	-	0.11	0.44	0.007	-	-
HCM Control Delay (s)	8.8	-	-	24.7	45.6	9	-	-
HCM Lane LOS	A	-	-	C	E	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.4	2	0	-	-

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	16	0	1	65	0	3	2	0	2	2	3
Future Vol, veh/h	6	16	0	1	65	0	3	2	0	2	2	3
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	74	74	74	74	74	74	74	74	74	74	74	74
Heavy Vehicles, %	0	0	0	0	0	0	33	0	0	0	0	0
Mvmt Flow	8	22	0	1	88	0	4	3	0	3	3	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	89	0	0	22	0	0	132	130	23	132	130	89
Stage 1	-	-	-	-	-	-	38	38	-	92	92	-
Stage 2	-	-	-	-	-	-	94	92	-	40	38	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.43	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.43	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.43	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.797	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1519	-	-	1607	-	-	773	764	1060	845	764	975
Stage 1	-	-	-	-	-	-	904	867	-	920	823	-
Stage 2	-	-	-	-	-	-	842	823	-	980	867	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1519	-	-	1605	-	-	764	759	1059	837	759	974
Mov Cap-2 Maneuver	-	-	-	-	-	-	764	759	-	837	759	-
Stage 1	-	-	-	-	-	-	899	863	-	915	821	-
Stage 2	-	-	-	-	-	-	835	821	-	971	863	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2	0.1	9.8	9.2
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	762	1519	-	-	1605	-	-	864
HCM Lane V/C Ratio	0.009	0.005	-	-	0.001	-	-	0.011
HCM Control Delay (s)	9.8	7.4	0	-	7.2	0	-	9.2
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	7.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	14	0	1	65	9	2	17	0	1	4	0
Future Vol, veh/h	0	14	0	1	65	9	2	17	0	1	4	0
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	0	0	0	0	0	0	0	6	0	0	0	0
Mvmt Flow	0	17	0	1	78	11	2	20	0	1	5	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	78	32	5	41	32	21	5	0	0	20	0	0
Stage 1	7	7	-	25	25	-	-	-	-	-	-	-
Stage 2	71	25	-	16	7	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	916	865	1084	968	865	1062	1630	-	-	1609	-	-
Stage 1	1020	894	-	998	878	-	-	-	-	-	-	-
Stage 2	944	878	-	1009	894	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	842	863	1084	952	863	1061	1630	-	-	1607	-	-
Mov Cap-2 Maneuver	842	863	-	952	863	-	-	-	-	-	-	-
Stage 1	1019	893	-	997	877	-	-	-	-	-	-	-
Stage 2	849	877	-	989	893	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.3	9.5	0.8	1.4
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1630	-	-	863	884	1607	-	-
HCM Lane V/C Ratio	0.001	-	-	0.02	0.102	0.001	-	-
HCM Control Delay (s)	7.2	0	-	9.3	9.5	7.2	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.3	0	-	-

Intersection	
Intersection Delay, s/veh	7.2
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations			↕				↕				↕	
Traffic Vol, veh/h	0	0	17	1	0	5	63	1	0	1	1	2
Future Vol, veh/h	0	0	17	1	0	5	63	1	0	1	1	2
Peak Hour Factor	0.92	0.90	0.90	0.90	0.92	0.90	0.90	0.90	0.92	0.90	0.90	0.90
Heavy Vehicles, %	2	0	6	0	2	0	0	0	2	0	0	0
Mvmt Flow	0	0	19	1	0	6	70	1	0	1	1	2
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	7.2	7.3	6.9
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	25%	0%	7%	0%
Vol Thru, %	25%	94%	91%	0%
Vol Right, %	50%	6%	1%	100%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	4	18	69	6
LT Vol	1	0	5	0
Through Vol	1	17	63	0
RT Vol	2	1	1	6
Lane Flow Rate	4	20	77	7
Geometry Grp	1	1	1	1
Degree of Util (X)	0.005	0.022	0.084	0.006
Departure Headway (Hd)	3.823	4.045	3.94	3.47
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	932	887	913	1026
Service Time	1.861	2.061	1.946	1.51
HCM Lane V/C Ratio	0.004	0.023	0.084	0.007
HCM Control Delay	6.9	7.2	7.3	6.5
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0	0.1	0.3	0

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Lane Configurations				
Traffic Vol, veh/h	0	0	0	6
Future Vol, veh/h	0	0	0	6
Peak Hour Factor	0.92	0.90	0.90	0.90
Heavy Vehicles, %	2	0	0	0
Mvmt Flow	0	0	0	7
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	6.5
HCM LOS	A

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	6	7	642	581	0
Future Vol, veh/h	3	6	7	642	581	0
Conflicting Peds, #/hr	0	0	1	0	0	1
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	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	6	8	690	625	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1331	626	626	0	-	0
Stage 1	626	-	-	-	-	-
Stage 2	705	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	170	484	956	-	-	-
Stage 1	533	-	-	-	-	-
Stage 2	490	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	167	484	956	-	-	-
Mov Cap-2 Maneuver	167	-	-	-	-	-
Stage 1	532	-	-	-	-	-
Stage 2	483	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.6	0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	956	-	296	-	-
HCM Lane V/C Ratio	0.008	-	0.033	-	-
HCM Control Delay (s)	8.8	0	17.6	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	11	5	678	18	5	878
Future Vol, veh/h	11	5	678	18	5	878
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	125	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	2	0	0	2
Mvmt Flow	12	5	714	19	5	924

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1650	715	0	0	715	0
Stage 1	715	-	-	-	-	-
Stage 2	935	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	110	434	-	-	895	-
Stage 1	488	-	-	-	-	-
Stage 2	385	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	109	434	-	-	895	-
Mov Cap-2 Maneuver	109	-	-	-	-	-
Stage 1	488	-	-	-	-	-
Stage 2	381	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	33.7	0	0.1
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	142	895	-
HCM Lane V/C Ratio	-	-	0.119	0.006	-
HCM Control Delay (s)	-	-	33.7	9	0
HCM Lane LOS	-	-	D	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↰	↱		↰	↑	
Traffic Vol, veh/h	5	0	4	1	0	2	0	690	0	1	874	4
Future Vol, veh/h	5	0	4	1	0	2	0	690	0	1	874	4
Conflicting Peds, #/hr	5	0	0	0	0	5	0	0	4	4	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	65	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0	0	2	0	0	1	0
Mvmt Flow	5	0	4	1	0	2	0	734	0	1	930	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1674	1672	932	1674	1674	743	934	0	0	738	0	0
Stage 1	934	934	-	738	738	-	-	-	-	-	-	-
Stage 2	740	738	-	936	936	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	77	97	326	77	97	418	741	-	-	877	-	-
Stage 1	322	347	-	413	427	-	-	-	-	-	-	-
Stage 2	412	427	-	321	346	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	76	97	326	76	97	414	741	-	-	873	-	-
Mov Cap-2 Maneuver	76	97	-	76	97	-	-	-	-	-	-	-
Stage 1	322	347	-	411	425	-	-	-	-	-	-	-
Stage 2	408	425	-	316	346	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	39.1	27	0	0
HCM LOS	E	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	741	-	-	115	167	873	-	-
HCM Lane V/C Ratio	-	-	-	0.083	0.019	0.001	-	-
HCM Control Delay (s)	0	-	-	39.1	27	9.1	-	-
HCM Lane LOS	A	-	-	E	D	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.1	0	-	-

Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	9	12	678	13	34	851
Future Vol, veh/h	9	12	678	13	34	851
Conflicting Peds, #/hr	0	0	0	2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	65	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	2	0	0	2
Mvmt Flow	9	13	706	14	35	886

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1672	715	0	0	722	0
Stage 1	715	-	-	-	-	-
Stage 2	957	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	107	434	-	-	889	-
Stage 1	488	-	-	-	-	-
Stage 2	376	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	103	433	-	-	889	-
Mov Cap-2 Maneuver	103	-	-	-	-	-
Stage 1	487	-	-	-	-	-
Stage 2	361	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	27.5	0	0.4
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	182	889	-
HCM Lane V/C Ratio	-	-	0.12	0.04	-
HCM Control Delay (s)	-	-	27.5	9.2	-
HCM Lane LOS	-	-	D	A	-
HCM 95th %tile Q(veh)	-	-	0.4	0.1	-

Intersection	
Int Delay, s/veh	6.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	6	1	6	19	0
Future Vol, veh/h	4	6	1	6	19	0
Conflicting Peds, #/hr	1	0	0	5	5	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	75	75	75	75	75	75
Heavy Vehicles, %	0	17	0	0	0	0
Mvmt Flow	5	8	1	8	25	0

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	62	10	0	0	14	0
Stage 1	10	-	-	-	-	-
Stage 2	52	-	-	-	-	-
Critical Hdwy	6.4	6.37	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.453	-	-	2.2	-
Pot Cap-1 Maneuver	949	1029	-	-	1617	-
Stage 1	1018	-	-	-	-	-
Stage 2	976	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	929	1024	-	-	1617	-
Mov Cap-2 Maneuver	929	-	-	-	-	-
Stage 1	1013	-	-	-	-	-
Stage 2	960	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.7	0	7.3
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	984	1617	-
HCM Lane V/C Ratio	-	-	0.014	0.016	-
HCM Control Delay (s)	-	-	8.7	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	8	16	1	4	7	0
Future Vol, veh/h	8	16	1	4	7	0
Conflicting Peds, #/hr	0	3	3	0	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	69	69	69	69	69	69
Heavy Vehicles, %	0	0	0	0	29	0
Mvmt Flow	12	23	1	6	10	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	38	0	36	26
Stage 1	-	-	-	-	26	-
Stage 2	-	-	-	-	10	-
Critical Hdwy	-	-	4.1	-	6.69	6.2
Critical Hdwy Stg 1	-	-	-	-	5.69	-
Critical Hdwy Stg 2	-	-	-	-	5.69	-
Follow-up Hdwy	-	-	2.2	-	3.761	3.3
Pot Cap-1 Maneuver	-	-	1585	-	912	1056
Stage 1	-	-	-	-	931	-
Stage 2	-	-	-	-	947	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1585	-	908	1053
Mov Cap-2 Maneuver	-	-	-	-	908	-
Stage 1	-	-	-	-	928	-
Stage 2	-	-	-	-	945	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.5	9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	908	-	-	1585	-
HCM Lane V/C Ratio	0.011	-	-	0.001	-
HCM Control Delay (s)	9	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↑			↑	
Traffic Vol, veh/h	7	0	7	7	0	17	10	668	7	28	821	5
Future Vol, veh/h	7	0	7	7	0	17	10	668	7	28	821	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	2	2	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	125	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	0	0	0	2	14	7	2	0
Mvmt Flow	7	0	7	7	0	18	10	696	7	29	855	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1645	1642	858	1642	1641	701	860	0	0	705	0	0
Stage 1	916	916	-	722	722	-	-	-	-	-	-	-
Stage 2	729	726	-	920	919	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.17	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.263	-	-
Pot Cap-1 Maneuver	80	101	359	81	101	442	790	-	-	870	-	-
Stage 1	329	354	-	421	434	-	-	-	-	-	-	-
Stage 2	417	433	-	327	353	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	74	96	359	76	96	441	790	-	-	870	-	-
Mov Cap-2 Maneuver	74	96	-	76	96	-	-	-	-	-	-	-
Stage 1	325	342	-	415	428	-	-	-	-	-	-	-
Stage 2	395	427	-	310	341	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	38.2	27.6	0.1	0.3
HCM LOS	E	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	790	-	-	123	184	870	-	-
HCM Lane V/C Ratio	0.013	-	-	0.119	0.136	0.034	-	-
HCM Control Delay (s)	9.6	-	-	38.2	27.6	9.3	-	-
HCM Lane LOS	A	-	-	E	D	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.5	0.1	-	-

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	0	3	32	0	13	5	673	42	17	815	10
Future Vol, veh/h	3	0	3	32	0	13	5	673	42	17	815	10
Conflicting Peds, #/hr	1	0	0	0	0	1	1	0	0	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	80	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	0	3	35	0	14	5	740	46	19	896	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1721	1736	902	1714	1719	764	908	0	0	786	0	0
Stage 1	939	939	-	774	774	-	-	-	-	-	-	-
Stage 2	782	797	-	940	945	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	70	87	336	71	90	404	750	-	-	833	-	-
Stage 1	317	343	-	391	408	-	-	-	-	-	-	-
Stage 2	387	399	-	316	340	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	66	84	336	69	87	404	750	-	-	832	-	-
Mov Cap-2 Maneuver	66	84	-	69	87	-	-	-	-	-	-	-
Stage 1	315	335	-	388	405	-	-	-	-	-	-	-
Stage 2	370	396	-	306	332	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	39.8	84.1	0.1	0.2
HCM LOS	E	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	750	-	-	110	91	832	-	-
HCM Lane V/C Ratio	0.007	-	-	0.06	0.543	0.022	-	-
HCM Control Delay (s)	9.8	-	-	39.8	84.1	9.4	-	-
HCM Lane LOS	A	-	-	E	F	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	2.4	0.1	-	-

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	13	35	2	0	34	4	9	7	6	3	8	12
Future Vol, veh/h	13	35	2	0	34	4	9	7	6	3	8	12
Conflicting Peds, #/hr	2	0	1	1	0	2	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	79	79	79	79	79	79	79	79	79	79	79	79
Heavy Vehicles, %	0	3	0	0	0	0	0	0	0	33	0	0
Mvmt Flow	16	44	3	0	43	5	11	9	8	4	10	15

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	50	0	0	48	0	0	137	129	47	135	129	48
Stage 1	-	-	-	-	-	-	79	79	-	48	48	-
Stage 2	-	-	-	-	-	-	58	50	-	87	81	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.43	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.43	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.43	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.797	4	3.3
Pot Cap-1 Maneuver	1570	-	-	1572	-	-	838	765	1028	770	765	1027
Stage 1	-	-	-	-	-	-	935	833	-	892	859	-
Stage 2	-	-	-	-	-	-	959	857	-	849	832	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1570	-	-	1572	-	-	810	755	1027	750	755	1025
Mov Cap-2 Maneuver	-	-	-	-	-	-	810	755	-	750	755	-
Stage 1	-	-	-	-	-	-	925	824	-	881	857	-
Stage 2	-	-	-	-	-	-	934	855	-	825	823	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.9	0	9.4	9.3
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	839	1570	-	-	1572	-	-	874
HCM Lane V/C Ratio	0.033	0.01	-	-	-	-	-	0.033
HCM Control Delay (s)	9.4	7.3	0	-	0	-	-	9.3
HCM Lane LOS	A	A	A	-	A	-	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	7.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	39	3	9	33	2	4	6	5	15	12	2
Future Vol, veh/h	0	39	3	9	33	2	4	6	5	15	12	2
Conflicting Peds, #/hr	3	0	0	0	0	3	3	0	2	2	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	0	5	0	22	0	0	0	0	0	0	8	0
Mvmt Flow	0	45	3	10	38	2	5	7	6	17	14	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	96	77	18	95	75	15	19	0	0	15	0	0
Stage 1	53	53	-	21	21	-	-	-	-	-	-	-
Stage 2	43	24	-	74	54	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.55	6.2	7.32	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.55	-	6.32	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.55	-	6.32	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.045	3.3	3.698	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	891	808	1066	842	819	1070	1611	-	-	1616	-	-
Stage 1	965	845	-	948	882	-	-	-	-	-	-	-
Stage 2	976	869	-	888	854	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	843	793	1063	793	804	1065	1611	-	-	1611	-	-
Mov Cap-2 Maneuver	843	793	-	793	804	-	-	-	-	-	-	-
Stage 1	959	833	-	943	878	-	-	-	-	-	-	-
Stage 2	926	865	-	828	842	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.7	9.7	1.9	3.8
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1611	-	-	808	811	1611	-	-
HCM Lane V/C Ratio	0.003	-	-	0.06	0.063	0.011	-	-
HCM Control Delay (s)	7.2	0	-	9.7	9.7	7.3	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.2	0	-	-

Intersection	
Intersection Delay, s/veh	7.3
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Traffic Vol, veh/h	0	2	53	6	0	1	32	0	0	5	2	3
Future Vol, veh/h	0	2	53	6	0	1	32	0	0	5	2	3
Peak Hour Factor	0.92	0.75	0.75	0.75	0.92	0.75	0.75	0.75	0.92	0.75	0.75	0.75
Heavy Vehicles, %	2	0	4	0	2	0	0	0	2	40	0	0
Mvmt Flow	0	3	71	8	0	1	43	0	0	7	3	4
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	7.3	7.2	7.9
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	50%	3%	3%	0%
Vol Thru, %	20%	87%	97%	0%
Vol Right, %	30%	10%	0%	100%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	10	61	33	4
LT Vol	5	2	1	0
Through Vol	2	53	32	0
RT Vol	3	6	0	4
Lane Flow Rate	13	81	44	5
Geometry Grp	1	1	1	1
Degree of Util (X)	0.017	0.088	0.049	0.005
Departure Headway (Hd)	4.721	3.914	4	3.525
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	755	917	895	1006
Service Time	2.771	1.932	2.023	1.579
HCM Lane V/C Ratio	0.017	0.088	0.049	0.005
HCM Control Delay	7.9	7.3	7.2	6.6
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.1	0.3	0.2	0

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Lane Configurations				
Traffic Vol, veh/h	0	0	0	4
Future Vol, veh/h	0	0	0	4
Peak Hour Factor	0.92	0.75	0.75	0.75
Heavy Vehicles, %	2	0	0	0
Mvmt Flow	0	0	0	5
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	6.6
HCM LOS	A

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	2	8	704	844	1
Future Vol, veh/h	1	2	8	704	844	1
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	91	91	91	91	91	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	2	9	774	927	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1719	928	929	0	-	0
Stage 1	928	-	-	-	-	-
Stage 2	791	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	99	325	736	-	-	-
Stage 1	385	-	-	-	-	-
Stage 2	447	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	97	325	736	-	-	-
Mov Cap-2 Maneuver	97	-	-	-	-	-
Stage 1	385	-	-	-	-	-
Stage 2	438	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	25.1	0.1	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	736	-	182	-	-
HCM Lane V/C Ratio	0.012	-	0.018	-	-
HCM Control Delay (s)	9.9	0	25.1	-	-
HCM Lane LOS	A	A	D	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	7	3	749	9	4	968
Future Vol, veh/h	7	3	749	9	4	968
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	125	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	2	0	0	1
Mvmt Flow	7	3	780	9	4	1008

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1798	781	0	0	781	0
Stage 1	781	-	-	-	-	-
Stage 2	1017	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	89	398	-	-	845	-
Stage 1	455	-	-	-	-	-
Stage 2	352	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	88	398	-	-	845	-
Mov Cap-2 Maneuver	88	-	-	-	-	-
Stage 1	455	-	-	-	-	-
Stage 2	348	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	39.4	0	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	115	845	-
HCM Lane V/C Ratio	-	-	0.091	0.005	-
HCM Control Delay (s)	-	-	39.4	9.3	0
HCM Lane LOS	-	-	E	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	1	0	1	2	748	0	1	977	4
Future Vol, veh/h	0	0	0	1	0	1	2	748	0	1	977	4
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	3	3	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	65	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	0	0	0	3	0	0	2	0
Mvmt Flow	0	0	0	1	0	1	2	779	0	1	1018	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1806	1808	1021	1809	1810	782	1022	0	0	782	0	0
Stage 1	1022	1022	-	786	786	-	-	-	-	-	-	-
Stage 2	784	786	-	1023	1024	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	62	80	289	62	80	397	687	-	-	845	-	-
Stage 1	287	316	-	388	406	-	-	-	-	-	-	-
Stage 2	389	406	-	287	315	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	62	79	289	62	79	396	686	-	-	845	-	-
Mov Cap-2 Maneuver	62	79	-	62	79	-	-	-	-	-	-	-
Stage 1	286	316	-	386	404	-	-	-	-	-	-	-
Stage 2	387	404	-	286	315	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	39.3	0	0
HCM LOS	A	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	686	-	-	-	107	845	-	-
HCM Lane V/C Ratio	0.003	-	-	-	0.019	0.001	-	-
HCM Control Delay (s)	10.3	-	-	0	39.3	9.3	-	-
HCM Lane LOS	B	-	-	A	E	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	0.1	0	-	-

Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	19	734	8	19	958
Future Vol, veh/h	10	19	734	8	19	958
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	65	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	9	2	0	0	1
Mvmt Flow	11	20	789	9	20	1030

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1866	795	0	0	799	0
Stage 1	795	-	-	-	-	-
Stage 2	1071	-	-	-	-	-
Critical Hdwy	6.4	6.29	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.381	-	-	2.2	-
Pot Cap-1 Maneuver	81	377	-	-	833	-
Stage 1	448	-	-	-	-	-
Stage 2	332	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	79	377	-	-	833	-
Mov Cap-2 Maneuver	79	-	-	-	-	-
Stage 1	448	-	-	-	-	-
Stage 2	324	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	32	0	0.2
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	164	833	-
HCM Lane V/C Ratio	-	-	0.19	0.025	-
HCM Control Delay (s)	-	-	32	9.4	-
HCM Lane LOS	-	-	D	A	-
HCM 95th %tile Q(veh)	-	-	0.7	0.1	-

Intersection	
Int Delay, s/veh	6.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	13	1	2	6	2
Future Vol, veh/h	3	13	1	2	6	2
Conflicting Peds, #/hr	2	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	75	75	75	75	75	75
Heavy Vehicles, %	33	8	0	0	0	0
Mvmt Flow	4	17	1	3	8	3

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	24	3	0	0	4	0
Stage 1	3	-	-	-	-	-
Stage 2	21	-	-	-	-	-
Critical Hdwy	6.73	6.28	-	-	4.1	-
Critical Hdwy Stg 1	5.73	-	-	-	-	-
Critical Hdwy Stg 2	5.73	-	-	-	-	-
Follow-up Hdwy	3.797	3.372	-	-	2.2	-
Pot Cap-1 Maneuver	918	1064	-	-	1631	-
Stage 1	945	-	-	-	-	-
Stage 2	927	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	912	1064	-	-	1631	-
Mov Cap-2 Maneuver	912	-	-	-	-	-
Stage 1	945	-	-	-	-	-
Stage 2	921	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.6	0	5.4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1032	1631	-
HCM Lane V/C Ratio	-	-	0.021	0.005	-
HCM Control Delay (s)	-	-	8.6	7.2	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	5.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	2	5	1	0	13	1
Future Vol, veh/h	2	5	1	0	13	1
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	0	0	100	0	15	0
Mvmt Flow	3	6	1	0	16	1

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	10	0	10	7
Stage 1	-	-	-	-	7	-
Stage 2	-	-	-	-	3	-
Critical Hdwy	-	-	5.1	-	6.55	6.2
Critical Hdwy Stg 1	-	-	-	-	5.55	-
Critical Hdwy Stg 2	-	-	-	-	5.55	-
Follow-up Hdwy	-	-	3.1	-	3.635	3.3
Pot Cap-1 Maneuver	-	-	1150	-	977	1081
Stage 1	-	-	-	-	983	-
Stage 2	-	-	-	-	987	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1150	-	975	1080
Mov Cap-2 Maneuver	-	-	-	-	975	-
Stage 1	-	-	-	-	982	-
Stage 2	-	-	-	-	986	-

Approach	EB	WB	NB
HCM Control Delay, s	0	8.1	8.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	982	-	-	1150	-
HCM Lane V/C Ratio	0.018	-	-	0.001	-
HCM Control Delay (s)	8.7	-	-	8.1	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↑			↑	
Traffic Vol, veh/h	0	0	6	6	1	25	9	721	2	22	938	5
Future Vol, veh/h	0	0	6	6	1	25	9	721	2	22	938	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	125	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	17	0	4	0	3	0	5	1	0
Mvmt Flow	0	0	6	6	1	26	9	759	2	23	987	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1829	1817	990	1819	1819	761	993	0	0	762	0	0
Stage 1	1036	1036	-	780	780	-	-	-	-	-	-	-
Stage 2	793	781	-	1039	1039	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.27	6.5	6.24	4.1	-	-	4.15	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.27	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.27	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.653	4	3.336	2.2	-	-	2.245	-	-
Pot Cap-1 Maneuver	60	79	302	55	79	402	704	-	-	837	-	-
Stage 1	282	311	-	367	409	-	-	-	-	-	-	-
Stage 2	385	408	-	261	310	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	54	76	302	52	76	402	704	-	-	837	-	-
Mov Cap-2 Maneuver	54	76	-	52	76	-	-	-	-	-	-	-
Stage 1	278	302	-	362	403	-	-	-	-	-	-	-
Stage 2	354	402	-	249	301	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	17.2	31.7	0.1	0.2
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	704	-	-	302	168	837	-	-
HCM Lane V/C Ratio	0.013	-	-	0.021	0.201	0.028	-	-
HCM Control Delay (s)	10.2	-	-	17.2	31.7	9.4	-	-
HCM Lane LOS	B	-	-	C	D	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.7	0.1	-	-

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	3	21	23	3	23	28	705	36	7	938	7
Future Vol, veh/h	6	3	21	23	3	23	28	705	36	7	938	7
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	80	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	3	22	24	3	24	29	742	38	7	987	7

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1841	1845	991	1838	1829	762	995	0	0	780	0	0
Stage 1	1006	1006	-	820	820	-	-	-	-	-	-	-
Stage 2	835	839	-	1018	1009	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	58	75	299	58	77	405	695	-	-	837	-	-
Stage 1	291	319	-	369	389	-	-	-	-	-	-	-
Stage 2	362	381	-	286	318	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	51	71	299	50	73	405	695	-	-	836	-	-
Mov Cap-2 Maneuver	51	71	-	50	73	-	-	-	-	-	-	-
Stage 1	279	316	-	354	373	-	-	-	-	-	-	-
Stage 2	323	365	-	260	315	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	41.4	92.3	0.4	0.1
HCM LOS	E	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	695	-	-	130	88	836	-	-
HCM Lane V/C Ratio	0.042	-	-	0.243	0.586	0.009	-	-
HCM Control Delay (s)	10.4	-	-	41.4	92.3	9.3	-	-
HCM Lane LOS	B	-	-	E	F	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.9	2.7	0	-	-

Intersection	
Int Delay, s/veh	4.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	25	33	2	5	31	17	10	9	3	6	17	8
Future Vol, veh/h	25	33	2	5	31	17	10	9	3	6	17	8
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	2	2	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	30	40	2	6	37	20	12	11	4	7	20	10

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	59	0	0	42	0	0	176	172	43	171	163	49
Stage 1	-	-	-	-	-	-	101	101	-	61	61	-
Stage 2	-	-	-	-	-	-	75	71	-	110	102	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1558	-	-	1580	-	-	791	725	1033	797	733	1025
Stage 1	-	-	-	-	-	-	910	815	-	955	848	-
Stage 2	-	-	-	-	-	-	939	840	-	900	815	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1558	-	-	1577	-	-	752	707	1031	768	715	1024
Mov Cap-2 Maneuver	-	-	-	-	-	-	752	707	-	768	715	-
Stage 1	-	-	-	-	-	-	892	799	-	935	844	-
Stage 2	-	-	-	-	-	-	904	836	-	865	799	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3.1	0.7	9.9	9.8
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	760	1558	-	-	1577	-	-	787
HCM Lane V/C Ratio	0.035	0.019	-	-	0.004	-	-	0.047
HCM Control Delay (s)	9.9	7.4	0	-	7.3	0	-	9.8
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	6.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	37	3	10	37	2	7	13	7	8	16	3
Future Vol, veh/h	2	37	3	10	37	2	7	13	7	8	16	3
Conflicting Peds, #/hr	4	0	0	0	0	4	1	0	1	1	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	0	0	0	0	0	0	0	8	14	0	6	0
Mvmt Flow	2	44	4	12	44	2	8	15	8	10	19	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	105	82	22	101	80	25	24	0	0	25	0	0
Stage 1	41	41	-	37	37	-	-	-	-	-	-	-
Stage 2	64	41	-	64	43	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	880	812	1061	885	814	1057	1604	-	-	1603	-	-
Stage 1	979	865	-	984	868	-	-	-	-	-	-	-
Stage 2	952	865	-	952	863	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	830	802	1060	837	804	1052	1604	-	-	1597	-	-
Mov Cap-2 Maneuver	830	802	-	837	804	-	-	-	-	-	-	-
Stage 1	973	859	-	978	863	-	-	-	-	-	-	-
Stage 2	893	860	-	895	857	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.7	9.7	1.9	2.2
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1604	-	-	818	818	1597	-	-
HCM Lane V/C Ratio	0.005	-	-	0.061	0.071	0.006	-	-
HCM Control Delay (s)	7.3	0	-	9.7	9.7	7.3	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.2	0	-	-

Intersection	
Intersection Delay, s/veh	7.2
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Traffic Vol, veh/h	0	4	45	3	0	2	40	0	0	4	1	4
Future Vol, veh/h	0	4	45	3	0	2	40	0	0	4	1	4
Peak Hour Factor	0.92	0.83	0.83	0.83	0.92	0.83	0.83	0.83	0.92	0.83	0.83	0.83
Heavy Vehicles, %	2	0	2	0	2	0	0	0	2	0	0	0
Mvmt Flow	0	5	54	4	0	2	48	0	0	5	1	5
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	7.3	7.2	7
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	44%	8%	5%	0%
Vol Thru, %	11%	87%	95%	14%
Vol Right, %	44%	6%	0%	86%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	9	52	42	7
LT Vol	4	4	2	0
Through Vol	1	45	40	1
RT Vol	4	3	0	6
Lane Flow Rate	11	63	51	8
Geometry Grp	1	1	1	1
Degree of Util (X)	0.012	0.069	0.056	0.008
Departure Headway (Hd)	3.924	3.952	3.99	3.59
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	907	908	899	990
Service Time	1.971	1.967	2.007	1.638
HCM Lane V/C Ratio	0.012	0.069	0.057	0.008
HCM Control Delay	7	7.3	7.2	6.7
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0	0.2	0.2	0

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Lane Configurations				
Traffic Vol, veh/h	0	0	1	6
Future Vol, veh/h	0	0	1	6
Peak Hour Factor	0.92	0.83	0.83	0.83
Heavy Vehicles, %	2	0	0	0
Mvmt Flow	0	0	1	7
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	6.7
HCM LOS	A

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	8	4	732	945	5
Future Vol, veh/h	3	8	4	732	945	5
Conflicting Peds, #/hr	0	0	1	0	0	1
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	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	8	4	771	995	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1777	998	1001	0	-	0
Stage 1	998	-	-	-	-	-
Stage 2	779	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	91	296	692	-	-	-
Stage 1	357	-	-	-	-	-
Stage 2	452	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	90	296	692	-	-	-
Mov Cap-2 Maneuver	90	-	-	-	-	-
Stage 1	357	-	-	-	-	-
Stage 2	447	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	26.1	0.1	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	692	-	182	-	-
HCM Lane V/C Ratio	0.006	-	0.064	-	-
HCM Control Delay (s)	10.2	0	26.1	-	-
HCM Lane LOS	B	A	D	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Appendix 6 Background Conditions Level-of-Service Worksheets

Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	14	7	696	15	1	584
Future Vol, veh/h	14	7	696	15	1	584
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	-	-	125	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	6	0	0	4
Mvmt Flow	15	8	757	16	1	635

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1394	757	0	0	757	0
Stage 1	757	-	-	-	-	-
Stage 2	637	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	158	411	-	-	863	-
Stage 1	467	-	-	-	-	-
Stage 2	531	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	158	411	-	-	863	-
Mov Cap-2 Maneuver	158	-	-	-	-	-
Stage 1	467	-	-	-	-	-
Stage 2	530	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	25.4	0	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	199	863	-
HCM Lane V/C Ratio	-	-	0.115	0.001	-
HCM Control Delay (s)	-	-	25.4	9.2	0
HCM Lane LOS	-	-	D	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	0	1	0	0	0	0	701	0	0	610	4
Future Vol, veh/h	4	0	1	0	0	0	0	701	0	0	610	4
Conflicting Peds, #/hr	1	0	0	0	0	1	1	0	1	1	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	65	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	0	0	0	0	6	0	0	4	0
Mvmt Flow	4	0	1	0	0	0	0	754	0	0	656	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1414	1414	659	1414	1416	756	661	0	0	755	0	0
Stage 1	659	659	-	755	755	-	-	-	-	-	-	-
Stage 2	755	755	-	659	661	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	116	139	467	116	139	411	937	-	-	865	-	-
Stage 1	456	464	-	404	420	-	-	-	-	-	-	-
Stage 2	404	420	-	456	463	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	116	139	467	116	139	410	937	-	-	864	-	-
Mov Cap-2 Maneuver	116	139	-	116	139	-	-	-	-	-	-	-
Stage 1	456	464	-	404	420	-	-	-	-	-	-	-
Stage 2	404	420	-	455	463	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	32.3	0	0	0
HCM LOS	D	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	937	-	-	137	-	864	-	-
HCM Lane V/C Ratio	-	-	-	0.039	-	-	-	-
HCM Control Delay (s)	0	-	-	32.3	0	0	-	-
HCM Lane LOS	A	-	-	D	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	-	0	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	23	675	0	5	599
Future Vol, veh/h	0	23	675	0	5	599
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	-	-	-	65	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	6	0	0	4
Mvmt Flow	0	25	734	0	5	651

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1396	734	0	0	734	0
Stage 1	734	-	-	-	-	-
Stage 2	662	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	157	423	-	-	880	-
Stage 1	478	-	-	-	-	-
Stage 2	517	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	156	423	-	-	880	-
Mov Cap-2 Maneuver	156	-	-	-	-	-
Stage 1	478	-	-	-	-	-
Stage 2	514	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	423	880	-
HCM Lane V/C Ratio	-	-	0.059	0.006	-
HCM Control Delay (s)	-	-	14	9.1	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Intersection	
Int Delay, s/veh	7.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	22	1	0	5	1
Future Vol, veh/h	1	22	1	0	5	1
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	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	1	29	1	0	7	1

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	16	1	0	0	1	0
Stage 1	1	-	-	-	-	-
Stage 2	15	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	1008	1090	-	-	1635	-
Stage 1	1028	-	-	-	-	-
Stage 2	1013	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	1004	1090	-	-	1635	-
Mov Cap-2 Maneuver	1004	-	-	-	-	-
Stage 1	1028	-	-	-	-	-
Stage 2	1009	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.4	0	6
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1086	1635	-
HCM Lane V/C Ratio	-	-	0.028	0.004	-
HCM Control Delay (s)	-	-	8.4	7.2	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	5.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	2	3	0	4	18	0
Future Vol, veh/h	2	3	0	4	18	0
Conflicting Peds, #/hr	0	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	70	70	70	70	70	70
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	3	4	0	6	26	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	7	0	11	6
Stage 1	-	-	-	-	5	-
Stage 2	-	-	-	-	6	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1627	-	1014	1083
Stage 1	-	-	-	-	1023	-
Stage 2	-	-	-	-	1022	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1625	-	1014	1082
Mov Cap-2 Maneuver	-	-	-	-	1014	-
Stage 1	-	-	-	-	1023	-
Stage 2	-	-	-	-	1022	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	8.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1014	-	-	1625	-
HCM Lane V/C Ratio	0.025	-	-	-	-
HCM Control Delay (s)	8.6	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↑			↑	
Traffic Vol, veh/h	3	0	5	2	0	26	4	648	4	10	582	0
Future Vol, veh/h	3	0	5	2	0	26	4	648	4	10	582	0
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	0	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	125	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	4	0	6	0	0	4	0
Mvmt Flow	3	0	6	2	0	29	4	720	4	11	647	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1416	1403	648	1403	1401	722	648	0	0	724	0	0
Stage 1	670	670	-	731	731	-	-	-	-	-	-	-
Stage 2	746	733	-	672	670	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.24	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.336	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	116	141	474	118	141	423	947	-	-	888	-	-
Stage 1	450	459	-	416	430	-	-	-	-	-	-	-
Stage 2	409	429	-	449	459	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	107	139	474	115	139	423	947	-	-	888	-	-
Mov Cap-2 Maneuver	107	139	-	115	139	-	-	-	-	-	-	-
Stage 1	448	453	-	414	428	-	-	-	-	-	-	-
Stage 2	379	427	-	438	453	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	23.2	16.1	0.1	0.2
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	947	-	-	207	355	888	-	-
HCM Lane V/C Ratio	0.005	-	-	0.043	0.088	0.013	-	-
HCM Control Delay (s)	8.8	-	-	23.2	16.1	9.1	-	-
HCM Lane LOS	A	-	-	C	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.3	0	-	-

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	0	11	48	0	15	4	636	21	6	578	6
Future Vol, veh/h	10	0	11	48	0	15	4	636	21	6	578	6
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	0	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	80	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	0	12	52	0	16	4	684	23	6	622	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1351	1354	626	1348	1346	695	629	0	0	706	0	0
Stage 1	639	639	-	704	704	-	-	-	-	-	-	-
Stage 2	712	715	-	644	642	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	127	150	484	128	151	442	953	-	-	892	-	-
Stage 1	464	470	-	428	440	-	-	-	-	-	-	-
Stage 2	423	434	-	461	469	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	121	148	484	124	149	442	953	-	-	892	-	-
Mov Cap-2 Maneuver	121	148	-	124	149	-	-	-	-	-	-	-
Stage 1	462	466	-	426	438	-	-	-	-	-	-	-
Stage 2	406	432	-	447	465	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	25.4	47.4	0.1	0.1
HCM LOS	D	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	953	-	-	199	150	892	-	-
HCM Lane V/C Ratio	0.005	-	-	0.113	0.452	0.007	-	-
HCM Control Delay (s)	8.8	-	-	25.4	47.4	9.1	-	-
HCM Lane LOS	A	-	-	D	E	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.4	2.1	0	-	-

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	16	0	1	65	0	3	2	0	2	2	3
Future Vol, veh/h	6	16	0	1	65	0	3	2	0	2	2	3
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	74	74	74	74	74	74	74	74	74	74	74	74
Heavy Vehicles, %	0	0	0	0	0	0	33	0	0	0	0	0
Mvmt Flow	8	22	0	1	88	0	4	3	0	3	3	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	89	0	0	22	0	0	132	130	23	132	130	89
Stage 1	-	-	-	-	-	-	38	38	-	92	92	-
Stage 2	-	-	-	-	-	-	94	92	-	40	38	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.43	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.43	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.43	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.797	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1519	-	-	1607	-	-	773	764	1060	845	764	975
Stage 1	-	-	-	-	-	-	904	867	-	920	823	-
Stage 2	-	-	-	-	-	-	842	823	-	980	867	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1519	-	-	1605	-	-	764	759	1059	837	759	974
Mov Cap-2 Maneuver	-	-	-	-	-	-	764	759	-	837	759	-
Stage 1	-	-	-	-	-	-	899	863	-	915	821	-
Stage 2	-	-	-	-	-	-	835	821	-	971	863	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2	0.1	9.8	9.2
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	762	1519	-	-	1605	-	-	864
HCM Lane V/C Ratio	0.009	0.005	-	-	0.001	-	-	0.011
HCM Control Delay (s)	9.8	7.4	0	-	7.2	0	-	9.2
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	7.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	14	0	1	65	9	2	17	0	1	4	0
Future Vol, veh/h	0	14	0	1	65	9	2	17	0	1	4	0
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	0	0	0	0	0	0	0	6	0	0	0	0
Mvmt Flow	0	17	0	1	78	11	2	20	0	1	5	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	78	32	5	41	32	21	5	0	0	20	0	0
Stage 1	7	7	-	25	25	-	-	-	-	-	-	-
Stage 2	71	25	-	16	7	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	916	865	1084	968	865	1062	1630	-	-	1609	-	-
Stage 1	1020	894	-	998	878	-	-	-	-	-	-	-
Stage 2	944	878	-	1009	894	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	842	863	1084	952	863	1061	1630	-	-	1607	-	-
Mov Cap-2 Maneuver	842	863	-	952	863	-	-	-	-	-	-	-
Stage 1	1019	893	-	997	877	-	-	-	-	-	-	-
Stage 2	849	877	-	989	893	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.3	9.5	0.8	1.4
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1630	-	-	863	884	1607	-	-
HCM Lane V/C Ratio	0.001	-	-	0.02	0.102	0.001	-	-
HCM Control Delay (s)	7.2	0	-	9.3	9.5	7.2	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.3	0	-	-

Intersection	
Intersection Delay, s/veh	7.2
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Traffic Vol, veh/h	0	0	17	1	0	5	63	1	0	1	1	2
Future Vol, veh/h	0	0	17	1	0	5	63	1	0	1	1	2
Peak Hour Factor	0.92	0.90	0.90	0.90	0.92	0.90	0.90	0.90	0.92	0.90	0.90	0.90
Heavy Vehicles, %	2	0	6	0	2	0	0	0	2	0	0	0
Mvmt Flow	0	0	19	1	0	6	70	1	0	1	1	2
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	7.2	7.3	6.9
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	25%	0%	7%	0%
Vol Thru, %	25%	94%	91%	0%
Vol Right, %	50%	6%	1%	100%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	4	18	69	6
LT Vol	1	0	5	0
Through Vol	1	17	63	0
RT Vol	2	1	1	6
Lane Flow Rate	4	20	77	7
Geometry Grp	1	1	1	1
Degree of Util (X)	0.005	0.022	0.084	0.006
Departure Headway (Hd)	3.823	4.045	3.94	3.47
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	932	887	913	1026
Service Time	1.861	2.061	1.946	1.51
HCM Lane V/C Ratio	0.004	0.023	0.084	0.007
HCM Control Delay	6.9	7.2	7.3	6.5
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0	0.1	0.3	0

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Lane Configurations				
Traffic Vol, veh/h	0	0	0	6
Future Vol, veh/h	0	0	0	6
Peak Hour Factor	0.92	0.90	0.90	0.90
Heavy Vehicles, %	2	0	0	0
Mvmt Flow	0	0	0	7
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	6.5
HCM LOS	A

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	6	7	655	584	0
Future Vol, veh/h	3	6	7	655	584	0
Conflicting Peds, #/hr	0	0	1	0	0	1
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	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	6	8	704	628	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1348	629	629	0	-	0
Stage 1	629	-	-	-	-	-
Stage 2	719	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	166	482	953	-	-	-
Stage 1	531	-	-	-	-	-
Stage 2	483	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	163	482	953	-	-	-
Mov Cap-2 Maneuver	163	-	-	-	-	-
Stage 1	530	-	-	-	-	-
Stage 2	476	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.8	0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	953	-	292	-	-
HCM Lane V/C Ratio	0.008	-	0.033	-	-
HCM Control Delay (s)	8.8	0	17.8	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	11	5	732	18	5	923
Future Vol, veh/h	11	5	732	18	5	923
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	125	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	2	0	0	2
Mvmt Flow	12	5	771	19	5	972

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1754	772	0	0	772	0
Stage 1	772	-	-	-	-	-
Stage 2	982	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	95	403	-	-	852	-
Stage 1	459	-	-	-	-	-
Stage 2	366	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	94	403	-	-	852	-
Mov Cap-2 Maneuver	94	-	-	-	-	-
Stage 1	459	-	-	-	-	-
Stage 2	361	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	38.5	0	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	124	852	-
HCM Lane V/C Ratio	-	-	0.136	0.006	-
HCM Control Delay (s)	-	-	38.5	9.3	0
HCM Lane LOS	-	-	E	A	A
HCM 95th %tile Q(veh)	-	-	0.5	0	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↰	↱		↰	↑	
Traffic Vol, veh/h	5	0	4	1	0	2	0	744	0	1	919	4
Future Vol, veh/h	5	0	4	1	0	2	0	744	0	1	919	4
Conflicting Peds, #/hr	5	0	0	0	0	5	0	0	4	4	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	65	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0	0	2	0	0	1	0
Mvmt Flow	5	0	4	1	0	2	0	791	0	1	978	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1780	1777	980	1779	1779	800	982	0	0	795	0	0
Stage 1	982	982	-	795	795	-	-	-	-	-	-	-
Stage 2	798	795	-	984	984	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	65	83	306	65	83	388	711	-	-	835	-	-
Stage 1	302	330	-	384	402	-	-	-	-	-	-	-
Stage 2	382	402	-	302	329	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	64	83	306	64	83	385	711	-	-	831	-	-
Mov Cap-2 Maneuver	64	83	-	64	83	-	-	-	-	-	-	-
Stage 1	302	330	-	383	400	-	-	-	-	-	-	-
Stage 2	378	400	-	297	329	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	45.2	30.6	0	0
HCM LOS	E	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	711	-	-	99	144	831	-	-
HCM Lane V/C Ratio	-	-	-	0.097	0.022	0.001	-	-
HCM Control Delay (s)	0	-	-	45.2	30.6	9.3	-	-
HCM Lane LOS	A	-	-	E	D	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.1	0	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	5	739	0	18	912
Future Vol, veh/h	0	5	739	0	18	912
Conflicting Peds, #/hr	0	0	0	2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	65	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	2	0	0	2
Mvmt Flow	0	5	770	0	19	950

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1760	772	0	0	772	0
Stage 1	772	-	-	-	-	-
Stage 2	988	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	94	403	-	-	852	-
Stage 1	459	-	-	-	-	-
Stage 2	364	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	92	402	-	-	852	-
Mov Cap-2 Maneuver	92	-	-	-	-	-
Stage 1	458	-	-	-	-	-
Stage 2	356	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.1	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	402	852	-
HCM Lane V/C Ratio	-	-	0.013	0.022	-
HCM Control Delay (s)	-	-	14.1	9.3	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0	0.1	-

Intersection	
Int Delay, s/veh	6.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	6	1	6	19	0
Future Vol, veh/h	4	6	1	6	19	0
Conflicting Peds, #/hr	1	0	0	5	5	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	75	75	75	75	75	75
Heavy Vehicles, %	0	17	0	0	0	0
Mvmt Flow	5	8	1	8	25	0

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	62	10	0	0	14	0
Stage 1	10	-	-	-	-	-
Stage 2	52	-	-	-	-	-
Critical Hdwy	6.4	6.37	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.453	-	-	2.2	-
Pot Cap-1 Maneuver	949	1029	-	-	1617	-
Stage 1	1018	-	-	-	-	-
Stage 2	976	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	929	1024	-	-	1617	-
Mov Cap-2 Maneuver	929	-	-	-	-	-
Stage 1	1013	-	-	-	-	-
Stage 2	960	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.7	0	7.3
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	984	1617	-
HCM Lane V/C Ratio	-	-	0.014	0.016	-
HCM Control Delay (s)	-	-	8.7	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	8	16	1	4	7	0
Future Vol, veh/h	8	16	1	4	7	0
Conflicting Peds, #/hr	0	3	3	0	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	69	69	69	69	69	69
Heavy Vehicles, %	0	0	0	0	29	0
Mvmt Flow	12	23	1	6	10	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	38	0	36	26
Stage 1	-	-	-	-	26	-
Stage 2	-	-	-	-	10	-
Critical Hdwy	-	-	4.1	-	7.39	6.2
Critical Hdwy Stg 1	-	-	-	-	6.39	-
Critical Hdwy Stg 2	-	-	-	-	6.39	-
Follow-up Hdwy	-	-	2.2	-	3.761	3.3
Pot Cap-1 Maneuver	-	-	1585	-	906	1056
Stage 1	-	-	-	-	926	-
Stage 2	-	-	-	-	945	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1585	-	902	1053
Mov Cap-2 Maneuver	-	-	-	-	902	-
Stage 1	-	-	-	-	926	-
Stage 2	-	-	-	-	943	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.5	9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	902	-	-	1585	-
HCM Lane V/C Ratio	0.011	-	-	0.001	-
HCM Control Delay (s)	9	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↑			↑	
Traffic Vol, veh/h	7	0	7	7	0	17	10	716	7	28	873	5
Future Vol, veh/h	7	0	7	7	0	17	10	716	7	28	873	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	2	2	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	125	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	0	0	0	2	14	7	2	0
Mvmt Flow	7	0	7	7	0	18	10	746	7	29	909	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1749	1746	912	1746	1745	751	915	0	0	755	0	0
Stage 1	970	970	-	772	772	-	-	-	-	-	-	-
Stage 2	779	776	-	974	973	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.17	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.263	-	-
Pot Cap-1 Maneuver	68	87	335	68	87	414	754	-	-	833	-	-
Stage 1	307	334	-	395	412	-	-	-	-	-	-	-
Stage 2	392	410	-	305	333	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	63	83	335	64	83	413	754	-	-	833	-	-
Mov Cap-2 Maneuver	63	83	-	64	83	-	-	-	-	-	-	-
Stage 1	303	322	-	389	406	-	-	-	-	-	-	-
Stage 2	370	404	-	288	321	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	44.3	31.8	0.1	0.3
HCM LOS	E	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	754	-	-	106	159	833	-	-
HCM Lane V/C Ratio	0.014	-	-	0.138	0.157	0.035	-	-
HCM Control Delay (s)	9.8	-	-	44.3	31.8	9.5	-	-
HCM Lane LOS	A	-	-	E	D	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.5	0.5	0.1	-	-

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	0	3	32	0	13	5	721	42	17	867	10
Future Vol, veh/h	3	0	3	32	0	13	5	721	42	17	867	10
Conflicting Peds, #/hr	1	0	0	0	0	1	1	0	0	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	80	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	0	3	35	0	14	5	792	46	19	953	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1832	1846	959	1823	1828	816	965	0	0	838	0	0
Stage 1	997	997	-	826	826	-	-	-	-	-	-	-
Stage 2	835	849	-	997	1002	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	59	75	312	60	77	377	714	-	-	796	-	-
Stage 1	294	322	-	366	387	-	-	-	-	-	-	-
Stage 2	362	377	-	294	320	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	55	73	312	58	75	377	714	-	-	795	-	-
Mov Cap-2 Maneuver	55	73	-	58	75	-	-	-	-	-	-	-
Stage 1	292	314	-	363	384	-	-	-	-	-	-	-
Stage 2	346	374	-	284	312	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	46.2	112.6	0.1	0.2
HCM LOS	E	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	714	-	-	94	77	795	-	-
HCM Lane V/C Ratio	0.008	-	-	0.07	0.642	0.023	-	-
HCM Control Delay (s)	10.1	-	-	46.2	112.6	9.6	-	-
HCM Lane LOS	B	-	-	E	F	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	2.9	0.1	-	-

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	13	35	2	0	34	4	9	7	6	3	8	12
Future Vol, veh/h	13	35	2	0	34	4	9	7	6	3	8	12
Conflicting Peds, #/hr	2	0	1	1	0	2	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	79	79	79	79	79	79	79	79	79	79	79	79
Heavy Vehicles, %	0	3	0	0	0	0	0	0	0	33	0	0
Mvmt Flow	16	44	3	0	43	5	11	9	8	4	10	15

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	50	0	0	48	0	0	137	129	47	135	129	48
Stage 1	-	-	-	-	-	-	79	79	-	48	48	-
Stage 2	-	-	-	-	-	-	58	50	-	87	81	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.43	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.43	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.43	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.797	4	3.3
Pot Cap-1 Maneuver	1570	-	-	1572	-	-	838	765	1028	770	765	1027
Stage 1	-	-	-	-	-	-	935	833	-	892	859	-
Stage 2	-	-	-	-	-	-	959	857	-	849	832	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1570	-	-	1572	-	-	810	755	1027	750	755	1025
Mov Cap-2 Maneuver	-	-	-	-	-	-	810	755	-	750	755	-
Stage 1	-	-	-	-	-	-	925	824	-	881	857	-
Stage 2	-	-	-	-	-	-	934	855	-	825	823	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.9	0	9.4	9.3
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	839	1570	-	-	1572	-	-	874
HCM Lane V/C Ratio	0.033	0.01	-	-	-	-	-	0.033
HCM Control Delay (s)	9.4	7.3	0	-	0	-	-	9.3
HCM Lane LOS	A	A	A	-	A	-	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	7.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	39	3	9	33	2	4	6	5	15	12	2
Future Vol, veh/h	0	39	3	9	33	2	4	6	5	15	12	2
Conflicting Peds, #/hr	3	0	0	0	0	3	3	0	2	2	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	0	5	0	22	0	0	0	0	0	0	8	0
Mvmt Flow	0	45	3	10	38	2	5	7	6	17	14	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	96	77	18	95	75	15	19	0	0	15	0	0
Stage 1	53	53	-	21	21	-	-	-	-	-	-	-
Stage 2	43	24	-	74	54	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.55	6.2	7.32	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.55	-	6.32	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.55	-	6.32	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.045	3.3	3.698	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	891	808	1066	842	819	1070	1611	-	-	1616	-	-
Stage 1	965	845	-	948	882	-	-	-	-	-	-	-
Stage 2	976	869	-	888	854	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	843	793	1063	793	804	1065	1611	-	-	1611	-	-
Mov Cap-2 Maneuver	843	793	-	793	804	-	-	-	-	-	-	-
Stage 1	959	833	-	943	878	-	-	-	-	-	-	-
Stage 2	926	865	-	828	842	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.7	9.7	1.9	3.8
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1611	-	-	808	811	1611	-	-
HCM Lane V/C Ratio	0.003	-	-	0.06	0.063	0.011	-	-
HCM Control Delay (s)	7.2	0	-	9.7	9.7	7.3	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.2	0	-	-

Intersection	
Intersection Delay, s/veh	7.3
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Traffic Vol, veh/h	0	2	53	6	0	1	32	0	0	5	2	3
Future Vol, veh/h	0	2	53	6	0	1	32	0	0	5	2	3
Peak Hour Factor	0.92	0.75	0.75	0.75	0.92	0.75	0.75	0.75	0.92	0.75	0.75	0.75
Heavy Vehicles, %	2	0	4	0	2	0	0	0	2	40	0	0
Mvmt Flow	0	3	71	8	0	1	43	0	0	7	3	4
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	7.3	7.2	7.9
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	50%	3%	3%	0%
Vol Thru, %	20%	87%	97%	0%
Vol Right, %	30%	10%	0%	100%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	10	61	33	4
LT Vol	5	2	1	0
Through Vol	2	53	32	0
RT Vol	3	6	0	4
Lane Flow Rate	13	81	44	5
Geometry Grp	1	1	1	1
Degree of Util (X)	0.017	0.088	0.049	0.005
Departure Headway (Hd)	4.721	3.914	4	3.525
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	755	917	895	1006
Service Time	2.771	1.932	2.023	1.579
HCM Lane V/C Ratio	0.017	0.088	0.049	0.005
HCM Control Delay	7.9	7.3	7.2	6.6
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.1	0.3	0.2	0

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Lane Configurations				
Traffic Vol, veh/h	0	0	0	4
Future Vol, veh/h	0	0	0	4
Peak Hour Factor	0.92	0.75	0.75	0.75
Heavy Vehicles, %	2	0	0	0
Mvmt Flow	0	0	0	5
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	6.6
HCM LOS	A

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	2	8	752	896	1
Future Vol, veh/h	1	2	8	752	896	1
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	91	91	91	91	91	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	2	9	826	985	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1829	985	986	0	-	0
Stage 1	985	-	-	-	-	-
Stage 2	844	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	84	301	701	-	-	-
Stage 1	362	-	-	-	-	-
Stage 2	422	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	82	301	701	-	-	-
Mov Cap-2 Maneuver	82	-	-	-	-	-
Stage 1	362	-	-	-	-	-
Stage 2	412	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	28.1	0.1	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	701	-	159	-	-
HCM Lane V/C Ratio	0.013	-	0.021	-	-
HCM Control Delay (s)	10.2	0	28.1	-	-
HCM Lane LOS	B	A	D	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	7	3	756	9	4	972
Future Vol, veh/h	7	3	756	9	4	972
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	125	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	2	0	0	1
Mvmt Flow	7	3	788	9	4	1013

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1810	789	0	0	789	0
Stage 1	789	-	-	-	-	-
Stage 2	1021	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	88	394	-	-	840	-
Stage 1	451	-	-	-	-	-
Stage 2	351	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	87	394	-	-	840	-
Mov Cap-2 Maneuver	87	-	-	-	-	-
Stage 1	451	-	-	-	-	-
Stage 2	347	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	39.7	0	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	114	840	-
HCM Lane V/C Ratio	-	-	0.091	0.005	-
HCM Control Delay (s)	-	-	39.7	9.3	0
HCM Lane LOS	-	-	E	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	1	0	1	2	755	0	1	981	4
Future Vol, veh/h	0	0	0	1	0	1	2	755	0	1	981	4
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	3	3	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	65	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	0	0	0	3	0	0	2	0
Mvmt Flow	0	0	0	1	0	1	2	786	0	1	1022	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1817	1820	1025	1821	1822	789	1026	0	0	789	0	0
Stage 1	1026	1026	-	794	794	-	-	-	-	-	-	-
Stage 2	791	794	-	1027	1028	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	61	78	288	60	78	394	685	-	-	840	-	-
Stage 1	286	315	-	384	403	-	-	-	-	-	-	-
Stage 2	386	403	-	285	314	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	61	77	288	60	77	393	684	-	-	840	-	-
Mov Cap-2 Maneuver	61	77	-	60	77	-	-	-	-	-	-	-
Stage 1	285	315	-	382	401	-	-	-	-	-	-	-
Stage 2	384	401	-	284	314	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	40.3	0	0
HCM LOS	A	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	684	-	-	-	104	840	-	-
HCM Lane V/C Ratio	0.003	-	-	-	0.02	0.001	-	-
HCM Control Delay (s)	10.3	-	-	0	40.3	9.3	-	-
HCM Lane LOS	B	-	-	A	E	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	0.1	0	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	11	749	0	8	973
Future Vol, veh/h	0	11	749	0	8	973
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	65	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	9	2	0	0	1
Mvmt Flow	0	12	805	0	9	1046

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1869	806	0	0	806	0
Stage 1	806	-	-	-	-	-
Stage 2	1063	-	-	-	-	-
Critical Hdwy	6.4	6.29	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.381	-	-	2.2	-
Pot Cap-1 Maneuver	80	371	-	-	828	-
Stage 1	443	-	-	-	-	-
Stage 2	335	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	79	371	-	-	828	-
Mov Cap-2 Maneuver	79	-	-	-	-	-
Stage 1	443	-	-	-	-	-
Stage 2	331	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15	0	0.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	371	828	-
HCM Lane V/C Ratio	-	-	0.032	0.01	-
HCM Control Delay (s)	-	-	15	9.4	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	6.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	13	1	2	6	2
Future Vol, veh/h	3	13	1	2	6	2
Conflicting Peds, #/hr	2	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	75	75	75	75	75	75
Heavy Vehicles, %	33	8	0	0	0	0
Mvmt Flow	4	17	1	3	8	3

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	24	3	0	0	4	0
Stage 1	3	-	-	-	-	-
Stage 2	21	-	-	-	-	-
Critical Hdwy	6.73	6.28	-	-	4.1	-
Critical Hdwy Stg 1	5.73	-	-	-	-	-
Critical Hdwy Stg 2	5.73	-	-	-	-	-
Follow-up Hdwy	3.797	3.372	-	-	2.2	-
Pot Cap-1 Maneuver	918	1064	-	-	1631	-
Stage 1	945	-	-	-	-	-
Stage 2	927	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	912	1064	-	-	1631	-
Mov Cap-2 Maneuver	912	-	-	-	-	-
Stage 1	945	-	-	-	-	-
Stage 2	921	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.6	0	5.4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1032	1631	-
HCM Lane V/C Ratio	-	-	0.021	0.005	-
HCM Control Delay (s)	-	-	8.6	7.2	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	5.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	2	5	1	0	13	1
Future Vol, veh/h	2	5	1	0	13	1
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	0	0	100	0	15	0
Mvmt Flow	3	6	1	0	16	1

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	10	0	10	7
Stage 1	-	-	-	-	7	-
Stage 2	-	-	-	-	3	-
Critical Hdwy	-	-	5.1	-	6.55	6.2
Critical Hdwy Stg 1	-	-	-	-	5.55	-
Critical Hdwy Stg 2	-	-	-	-	5.55	-
Follow-up Hdwy	-	-	3.1	-	3.635	3.3
Pot Cap-1 Maneuver	-	-	1150	-	977	1081
Stage 1	-	-	-	-	983	-
Stage 2	-	-	-	-	987	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1150	-	975	1080
Mov Cap-2 Maneuver	-	-	-	-	975	-
Stage 1	-	-	-	-	982	-
Stage 2	-	-	-	-	986	-

Approach	EB	WB	NB
HCM Control Delay, s	0	8.1	8.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	982	-	-	1150	-
HCM Lane V/C Ratio	0.018	-	-	0.001	-
HCM Control Delay (s)	8.7	-	-	8.1	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↑			↑	
Traffic Vol, veh/h	0	0	6	6	1	25	9	728	2	22	943	5
Future Vol, veh/h	0	0	6	6	1	25	9	728	2	22	943	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	125	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	17	0	4	0	3	0	5	1	0
Mvmt Flow	0	0	6	6	1	26	9	766	2	23	993	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1842	1830	995	1832	1831	768	998	0	0	769	0	0
Stage 1	1042	1042	-	787	787	-	-	-	-	-	-	-
Stage 2	800	788	-	1045	1044	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.27	6.5	6.24	4.1	-	-	4.15	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.27	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.27	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.653	4	3.336	2.2	-	-	2.245	-	-
Pot Cap-1 Maneuver	58	77	300	54	77	398	701	-	-	832	-	-
Stage 1	280	309	-	363	406	-	-	-	-	-	-	-
Stage 2	382	405	-	259	309	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	52	74	300	51	74	398	701	-	-	832	-	-
Mov Cap-2 Maneuver	52	74	-	51	74	-	-	-	-	-	-	-
Stage 1	276	300	-	358	400	-	-	-	-	-	-	-
Stage 2	351	399	-	247	300	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	17.3	32.3	0.1	0.2
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	701	-	-	300	165	832	-	-
HCM Lane V/C Ratio	0.014	-	-	0.021	0.204	0.028	-	-
HCM Control Delay (s)	10.2	-	-	17.3	32.3	9.5	-	-
HCM Lane LOS	B	-	-	C	D	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.7	0.1	-	-

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	3	21	23	3	23	28	712	36	7	943	7
Future Vol, veh/h	6	3	21	23	3	23	28	712	36	7	943	7
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	80	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	3	22	24	3	24	29	749	38	7	993	7

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1853	1857	996	1851	1842	769	1000	0	0	787	0	0
Stage 1	1011	1011	-	827	827	-	-	-	-	-	-	-
Stage 2	842	846	-	1024	1015	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	57	74	297	57	75	401	692	-	-	832	-	-
Stage 1	289	317	-	366	386	-	-	-	-	-	-	-
Stage 2	359	378	-	284	316	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	50	70	297	49	71	401	692	-	-	831	-	-
Mov Cap-2 Maneuver	50	70	-	49	71	-	-	-	-	-	-	-
Stage 1	277	314	-	351	370	-	-	-	-	-	-	-
Stage 2	320	362	-	258	313	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	42.1	96.1	0.4	0.1
HCM LOS	E	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	692	-	-	128	86	831	-	-
HCM Lane V/C Ratio	0.043	-	-	0.247	0.6	0.009	-	-
HCM Control Delay (s)	10.4	-	-	42.1	96.1	9.4	-	-
HCM Lane LOS	B	-	-	E	F	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.9	2.7	0	-	-

Intersection	
Int Delay, s/veh	4.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	25	33	2	5	31	17	10	9	3	6	17	8
Future Vol, veh/h	25	33	2	5	31	17	10	9	3	6	17	8
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	2	2	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	30	40	2	6	37	20	12	11	4	7	20	10

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	59	0	0	42	0	0	176	172	43	171	163	49
Stage 1	-	-	-	-	-	-	101	101	-	61	61	-
Stage 2	-	-	-	-	-	-	75	71	-	110	102	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1558	-	-	1580	-	-	791	725	1033	797	733	1025
Stage 1	-	-	-	-	-	-	910	815	-	955	848	-
Stage 2	-	-	-	-	-	-	939	840	-	900	815	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1558	-	-	1577	-	-	752	707	1031	768	715	1024
Mov Cap-2 Maneuver	-	-	-	-	-	-	752	707	-	768	715	-
Stage 1	-	-	-	-	-	-	892	799	-	935	844	-
Stage 2	-	-	-	-	-	-	904	836	-	865	799	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3.1	0.7	9.9	9.8
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	760	1558	-	-	1577	-	-	787
HCM Lane V/C Ratio	0.035	0.019	-	-	0.004	-	-	0.047
HCM Control Delay (s)	9.9	7.4	0	-	7.3	0	-	9.8
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	6.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	37	3	10	37	2	7	13	7	8	16	3
Future Vol, veh/h	2	37	3	10	37	2	7	13	7	8	16	3
Conflicting Peds, #/hr	4	0	0	0	0	4	1	0	1	1	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	0	0	0	0	0	0	0	8	14	0	6	0
Mvmt Flow	2	44	4	12	44	2	8	15	8	10	19	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	105	82	22	101	80	25	24	0	0	25	0	0
Stage 1	41	41	-	37	37	-	-	-	-	-	-	-
Stage 2	64	41	-	64	43	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	880	812	1061	885	814	1057	1604	-	-	1603	-	-
Stage 1	979	865	-	984	868	-	-	-	-	-	-	-
Stage 2	952	865	-	952	863	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	830	802	1060	837	804	1052	1604	-	-	1597	-	-
Mov Cap-2 Maneuver	830	802	-	837	804	-	-	-	-	-	-	-
Stage 1	973	859	-	978	863	-	-	-	-	-	-	-
Stage 2	893	860	-	895	857	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.7	9.7	1.9	2.2
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1604	-	-	818	818	1597	-	-
HCM Lane V/C Ratio	0.005	-	-	0.061	0.071	0.006	-	-
HCM Control Delay (s)	7.3	0	-	9.7	9.7	7.3	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.2	0	-	-

Intersection	
Intersection Delay, s/veh	7.2
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Traffic Vol, veh/h	0	4	45	3	0	2	40	0	0	4	1	4
Future Vol, veh/h	0	4	45	3	0	2	40	0	0	4	1	4
Peak Hour Factor	0.92	0.83	0.83	0.83	0.92	0.83	0.83	0.83	0.92	0.83	0.83	0.83
Heavy Vehicles, %	2	0	2	0	2	0	0	0	2	0	0	0
Mvmt Flow	0	5	54	4	0	2	48	0	0	5	1	5
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	7.3	7.2	7
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	44%	8%	5%	0%
Vol Thru, %	11%	87%	95%	14%
Vol Right, %	44%	6%	0%	86%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	9	52	42	7
LT Vol	4	4	2	0
Through Vol	1	45	40	1
RT Vol	4	3	0	6
Lane Flow Rate	11	63	51	8
Geometry Grp	1	1	1	1
Degree of Util (X)	0.012	0.069	0.056	0.008
Departure Headway (Hd)	3.924	3.952	3.99	3.59
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	907	908	899	990
Service Time	1.971	1.967	2.007	1.638
HCM Lane V/C Ratio	0.012	0.069	0.057	0.008
HCM Control Delay	7	7.3	7.2	6.7
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0	0.2	0.2	0

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Lane Configurations				
Traffic Vol, veh/h	0	0	1	6
Future Vol, veh/h	0	0	1	6
Peak Hour Factor	0.92	0.83	0.83	0.83
Heavy Vehicles, %	2	0	0	0
Mvmt Flow	0	0	1	7
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	6.7
HCM LOS	A

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	8	4	739	950	5
Future Vol, veh/h	3	8	4	739	950	5
Conflicting Peds, #/hr	0	0	1	0	0	1
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	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	8	4	778	1000	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1790	1004	1006	0	-	0
Stage 1	1004	-	-	-	-	-
Stage 2	786	-	-	-	-	-
Critical Hdwy	7.12	6.22	4.12	-	-	-
Critical Hdwy Stg 1	6.12	-	-	-	-	-
Critical Hdwy Stg 2	6.12	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	63	294	689	-	-	-
Stage 1	291	-	-	-	-	-
Stage 2	385	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	62	294	689	-	-	-
Mov Cap-2 Maneuver	62	-	-	-	-	-
Stage 1	288	-	-	-	-	-
Stage 2	381	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	31.8	0.1	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	689	-	146	-	-
HCM Lane V/C Ratio	0.006	-	0.079	-	-
HCM Control Delay (s)	10.3	0	31.8	-	-
HCM Lane LOS	B	A	D	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Appendix 7 Background with Project Level-of-Service Worksheets

Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	14	7	711	15	1	588
Future Vol, veh/h	14	7	711	15	1	588
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	-	-	125	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	6	0	0	4
Mvmt Flow	15	8	773	16	1	639

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1414	773	0	0	773	0
Stage 1	773	-	-	-	-	-
Stage 2	641	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	153	402	-	-	851	-
Stage 1	459	-	-	-	-	-
Stage 2	528	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	153	402	-	-	851	-
Mov Cap-2 Maneuver	153	-	-	-	-	-
Stage 1	459	-	-	-	-	-
Stage 2	527	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	26.1	0	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	193	851	-
HCM Lane V/C Ratio	-	-	0.118	0.001	-
HCM Control Delay (s)	-	-	26.1	9.2	0
HCM Lane LOS	-	-	D	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↰	↱		↰	↑	
Traffic Vol, veh/h	4	0	1	0	0	0	0	716	0	0	614	4
Future Vol, veh/h	4	0	1	0	0	0	0	716	0	0	614	4
Conflicting Peds, #/hr	1	0	0	0	0	1	1	0	1	1	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	65	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	0	0	0	0	6	0	0	4	0
Mvmt Flow	4	0	1	0	0	0	0	770	0	0	660	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1434	1434	663	1434	1437	772	666	0	0	771	0	0
Stage 1	663	663	-	771	771	-	-	-	-	-	-	-
Stage 2	771	771	-	663	666	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	113	135	465	113	135	403	933	-	-	853	-	-
Stage 1	454	462	-	396	413	-	-	-	-	-	-	-
Stage 2	396	413	-	454	460	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	113	135	465	113	135	402	933	-	-	852	-	-
Mov Cap-2 Maneuver	113	135	-	113	135	-	-	-	-	-	-	-
Stage 1	454	462	-	396	413	-	-	-	-	-	-	-
Stage 2	396	413	-	453	460	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	33.2	0	0	0
HCM LOS	D	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	933	-	-	133	-	852	-	-
HCM Lane V/C Ratio	-	-	-	0.04	-	-	-	-
HCM Control Delay (s)	0	-	-	33.2	0	0	-	-
HCM Lane LOS	A	-	-	D	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	-	0	-	-

Intersection	
Int Delay, s/veh	0.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	14	38	675	4	9	599
Future Vol, veh/h	14	38	675	4	9	599
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	-	-	-	65	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	6	0	0	4
Mvmt Flow	15	41	734	4	10	651

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1407	736	0	0	738	0
Stage 1	736	-	-	-	-	-
Stage 2	671	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	155	422	-	-	877	-
Stage 1	477	-	-	-	-	-
Stage 2	512	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	153	422	-	-	877	-
Mov Cap-2 Maneuver	153	-	-	-	-	-
Stage 1	477	-	-	-	-	-
Stage 2	506	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	20.7	0	0.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	286	877	-
HCM Lane V/C Ratio	-	-	0.198	0.011	-
HCM Control Delay (s)	-	-	20.7	9.2	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	0.7	0	-

Intersection	
Int Delay, s/veh	7.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	22	1	0	5	1
Future Vol, veh/h	1	22	1	0	5	1
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	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	1	29	1	0	7	1

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	16	1	0	0	1	0
Stage 1	1	-	-	-	-	-
Stage 2	15	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	1008	1090	-	-	1635	-
Stage 1	1028	-	-	-	-	-
Stage 2	1013	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	1004	1090	-	-	1635	-
Mov Cap-2 Maneuver	1004	-	-	-	-	-
Stage 1	1028	-	-	-	-	-
Stage 2	1009	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.4	0	6
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1086	1635	-
HCM Lane V/C Ratio	-	-	0.028	0.004	-
HCM Control Delay (s)	-	-	8.4	7.2	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	5.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	2	3	0	4	18	0
Future Vol, veh/h	2	3	0	4	18	0
Conflicting Peds, #/hr	0	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	70	70	70	70	70	70
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	3	4	0	6	26	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	7	0	11	6
Stage 1	-	-	-	-	5	-
Stage 2	-	-	-	-	6	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1627	-	1014	1083
Stage 1	-	-	-	-	1023	-
Stage 2	-	-	-	-	1022	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1625	-	1014	1082
Mov Cap-2 Maneuver	-	-	-	-	1014	-
Stage 1	-	-	-	-	1023	-
Stage 2	-	-	-	-	1022	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	8.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1014	-	-	1625	-
HCM Lane V/C Ratio	0.025	-	-	-	-
HCM Control Delay (s)	8.6	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↑			↑	
Traffic Vol, veh/h	3	0	5	2	0	26	4	652	4	10	596	0
Future Vol, veh/h	3	0	5	2	0	26	4	652	4	10	596	0
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	0	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	125	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	4	0	6	0	0	4	0
Mvmt Flow	3	0	6	2	0	29	4	724	4	11	662	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1435	1423	663	1423	1421	727	663	0	0	729	0	0
Stage 1	685	685	-	736	736	-	-	-	-	-	-	-
Stage 2	750	738	-	687	685	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.24	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.336	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	113	137	465	115	138	421	935	-	-	884	-	-
Stage 1	441	451	-	414	428	-	-	-	-	-	-	-
Stage 2	407	427	-	440	451	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	104	135	465	112	136	421	935	-	-	884	-	-
Mov Cap-2 Maneuver	104	135	-	112	136	-	-	-	-	-	-	-
Stage 1	439	445	-	412	426	-	-	-	-	-	-	-
Stage 2	377	425	-	429	445	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	23.6	16.2	0.1	0.2
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	935	-	-	202	352	884	-	-
HCM Lane V/C Ratio	0.005	-	-	0.044	0.088	0.013	-	-
HCM Control Delay (s)	8.9	-	-	23.6	16.2	9.1	-	-
HCM Lane LOS	A	-	-	C	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.3	0	-	-

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	0	11	48	0	15	4	640	21	6	592	6
Future Vol, veh/h	10	0	11	48	0	15	4	640	21	6	592	6
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	0	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	80	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	0	12	52	0	16	4	688	23	6	637	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1370	1373	641	1367	1365	699	644	0	0	711	0	0
Stage 1	654	654	-	708	708	-	-	-	-	-	-	-
Stage 2	716	719	-	659	657	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	124	146	475	124	147	440	941	-	-	888	-	-
Stage 1	456	463	-	426	438	-	-	-	-	-	-	-
Stage 2	421	433	-	453	462	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	118	144	475	120	145	440	941	-	-	888	-	-
Mov Cap-2 Maneuver	118	144	-	120	145	-	-	-	-	-	-	-
Stage 1	454	459	-	424	436	-	-	-	-	-	-	-
Stage 2	404	431	-	439	458	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	25.9	49.9	0.1	0.1
HCM LOS	D	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	941	-	-	195	145	888	-	-
HCM Lane V/C Ratio	0.005	-	-	0.116	0.467	0.007	-	-
HCM Control Delay (s)	8.8	-	-	25.9	49.9	9.1	-	-
HCM Lane LOS	A	-	-	D	E	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.4	2.2	0	-	-

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	16	0	1	65	0	3	2	0	2	2	3
Future Vol, veh/h	6	16	0	1	65	0	3	2	0	2	2	3
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	74	74	74	74	74	74	74	74	74	74	74	74
Heavy Vehicles, %	0	0	0	0	0	0	33	0	0	0	0	0
Mvmt Flow	8	22	0	1	88	0	4	3	0	3	3	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	89	0	0	22	0	0	132	130	23	132	130	89
Stage 1	-	-	-	-	-	-	38	38	-	92	92	-
Stage 2	-	-	-	-	-	-	94	92	-	40	38	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.43	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.43	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.43	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.797	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1519	-	-	1607	-	-	773	764	1060	845	764	975
Stage 1	-	-	-	-	-	-	904	867	-	920	823	-
Stage 2	-	-	-	-	-	-	842	823	-	980	867	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1519	-	-	1605	-	-	764	759	1059	837	759	974
Mov Cap-2 Maneuver	-	-	-	-	-	-	764	759	-	837	759	-
Stage 1	-	-	-	-	-	-	899	863	-	915	821	-
Stage 2	-	-	-	-	-	-	835	821	-	971	863	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2	0.1	9.8	9.2
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	762	1519	-	-	1605	-	-	864
HCM Lane V/C Ratio	0.009	0.005	-	-	0.001	-	-	0.011
HCM Control Delay (s)	9.8	7.4	0	-	7.2	0	-	9.2
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	7.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	14	0	1	65	9	2	17	0	1	4	0
Future Vol, veh/h	0	14	0	1	65	9	2	17	0	1	4	0
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	0	0	0	0	0	0	0	6	0	0	0	0
Mvmt Flow	0	17	0	1	78	11	2	20	0	1	5	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	78	32	5	41	32	21	5	0	0	20	0	0
Stage 1	7	7	-	25	25	-	-	-	-	-	-	-
Stage 2	71	25	-	16	7	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	916	865	1084	968	865	1062	1630	-	-	1609	-	-
Stage 1	1020	894	-	998	878	-	-	-	-	-	-	-
Stage 2	944	878	-	1009	894	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	842	863	1084	952	863	1061	1630	-	-	1607	-	-
Mov Cap-2 Maneuver	842	863	-	952	863	-	-	-	-	-	-	-
Stage 1	1019	893	-	997	877	-	-	-	-	-	-	-
Stage 2	849	877	-	989	893	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.3	9.5	0.8	1.4
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1630	-	-	863	884	1607	-	-
HCM Lane V/C Ratio	0.001	-	-	0.02	0.102	0.001	-	-
HCM Control Delay (s)	7.2	0	-	9.3	9.5	7.2	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.3	0	-	-

Intersection	
Intersection Delay, s/veh	7.2
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Traffic Vol, veh/h	0	0	17	1	0	5	63	1	0	1	1	2
Future Vol, veh/h	0	0	17	1	0	5	63	1	0	1	1	2
Peak Hour Factor	0.92	0.90	0.90	0.90	0.92	0.90	0.90	0.90	0.92	0.90	0.90	0.90
Heavy Vehicles, %	2	0	6	0	2	0	0	0	2	0	0	0
Mvmt Flow	0	0	19	1	0	6	70	1	0	1	1	2
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	7.2	7.3	6.9
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	25%	0%	7%	0%
Vol Thru, %	25%	94%	91%	0%
Vol Right, %	50%	6%	1%	100%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	4	18	69	6
LT Vol	1	0	5	0
Through Vol	1	17	63	0
RT Vol	2	1	1	6
Lane Flow Rate	4	20	77	7
Geometry Grp	1	1	1	1
Degree of Util (X)	0.005	0.022	0.084	0.006
Departure Headway (Hd)	3.823	4.045	3.94	3.47
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	932	887	913	1026
Service Time	1.861	2.061	1.946	1.51
HCM Lane V/C Ratio	0.004	0.023	0.084	0.007
HCM Control Delay	6.9	7.2	7.3	6.5
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0	0.1	0.3	0

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Lane Configurations				
Traffic Vol, veh/h	0	0	0	6
Future Vol, veh/h	0	0	0	6
Peak Hour Factor	0.92	0.90	0.90	0.90
Heavy Vehicles, %	2	0	0	0
Mvmt Flow	0	0	0	7
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	6.5
HCM LOS	A

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	6	7	659	598	0
Future Vol, veh/h	3	6	7	659	598	0
Conflicting Peds, #/hr	0	0	1	0	0	1
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	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	6	8	709	643	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1368	644	644	0	-	0
Stage 1	644	-	-	-	-	-
Stage 2	724	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	162	473	941	-	-	-
Stage 1	523	-	-	-	-	-
Stage 2	480	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	159	473	941	-	-	-
Mov Cap-2 Maneuver	159	-	-	-	-	-
Stage 1	523	-	-	-	-	-
Stage 2	473	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18.1	0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	941	-	285	-	-
HCM Lane V/C Ratio	0.008	-	0.034	-	-
HCM Control Delay (s)	8.9	0	18.1	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	11	5	739	18	5	939
Future Vol, veh/h	11	5	739	18	5	939
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	125	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	2	0	0	2
Mvmt Flow	12	5	778	19	5	988

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1778	779	0	0	779	0
Stage 1	779	-	-	-	-	-
Stage 2	999	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	92	399	-	-	847	-
Stage 1	456	-	-	-	-	-
Stage 2	359	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	91	399	-	-	847	-
Mov Cap-2 Maneuver	91	-	-	-	-	-
Stage 1	456	-	-	-	-	-
Stage 2	354	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	39.8	0	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	120	847	-
HCM Lane V/C Ratio	-	-	0.14	0.006	-
HCM Control Delay (s)	-	-	39.8	9.3	0
HCM Lane LOS	-	-	E	A	A
HCM 95th %tile Q(veh)	-	-	0.5	0	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↰	↱		↰	↑	
Traffic Vol, veh/h	5	0	4	1	0	2	0	751	0	1	935	4
Future Vol, veh/h	5	0	4	1	0	2	0	751	0	1	935	4
Conflicting Peds, #/hr	5	0	0	0	0	5	0	0	4	4	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	65	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0	0	2	0	0	1	0
Mvmt Flow	5	0	4	1	0	2	0	799	0	1	995	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1804	1802	997	1804	1804	808	999	0	0	803	0	0
Stage 1	999	999	-	803	803	-	-	-	-	-	-	-
Stage 2	805	803	-	1001	1001	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	62	80	299	62	80	384	701	-	-	830	-	-
Stage 1	296	324	-	380	399	-	-	-	-	-	-	-
Stage 2	379	399	-	295	323	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	61	80	299	61	80	381	701	-	-	826	-	-
Mov Cap-2 Maneuver	61	80	-	61	80	-	-	-	-	-	-	-
Stage 1	296	324	-	379	397	-	-	-	-	-	-	-
Stage 2	375	397	-	290	323	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	47.6	31.5	0	0
HCM LOS	E	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	701	-	-	94	139	826	-	-
HCM Lane V/C Ratio	-	-	-	0.102	0.023	0.001	-	-
HCM Control Delay (s)	0	-	-	47.6	31.5	9.4	-	-
HCM Lane LOS	A	-	-	E	D	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.1	0	-	-

Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	9	12	739	13	34	912
Future Vol, veh/h	9	12	739	13	34	912
Conflicting Peds, #/hr	0	0	0	2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	65	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	2	0	0	2
Mvmt Flow	9	13	770	14	35	950

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1800	779	0	0	785	0
Stage 1	779	-	-	-	-	-
Stage 2	1021	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	89	399	-	-	843	-
Stage 1	456	-	-	-	-	-
Stage 2	351	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	85	398	-	-	843	-
Mov Cap-2 Maneuver	85	-	-	-	-	-
Stage 1	455	-	-	-	-	-
Stage 2	336	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	32.2	0	0.3
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	154	843	-
HCM Lane V/C Ratio	-	-	0.142	0.042	-
HCM Control Delay (s)	-	-	32.2	9.5	-
HCM Lane LOS	-	-	D	A	-
HCM 95th %tile Q(veh)	-	-	0.5	0.1	-

Intersection	
Int Delay, s/veh	6.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	6	1	6	19	0
Future Vol, veh/h	4	6	1	6	19	0
Conflicting Peds, #/hr	1	0	0	5	5	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	75	75	75	75	75	75
Heavy Vehicles, %	0	17	0	0	0	0
Mvmt Flow	5	8	1	8	25	0

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	62	10	0	0	14	0
Stage 1	10	-	-	-	-	-
Stage 2	52	-	-	-	-	-
Critical Hdwy	6.4	6.37	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.453	-	-	2.2	-
Pot Cap-1 Maneuver	949	1029	-	-	1617	-
Stage 1	1018	-	-	-	-	-
Stage 2	976	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	929	1024	-	-	1617	-
Mov Cap-2 Maneuver	929	-	-	-	-	-
Stage 1	1013	-	-	-	-	-
Stage 2	960	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.7	0	7.3
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	984	1617	-
HCM Lane V/C Ratio	-	-	0.014	0.016	-
HCM Control Delay (s)	-	-	8.7	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	8	16	1	4	7	0
Future Vol, veh/h	8	16	1	4	7	0
Conflicting Peds, #/hr	0	3	3	0	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	69	69	69	69	69	69
Heavy Vehicles, %	0	0	0	0	29	0
Mvmt Flow	12	23	1	6	10	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	38	0	36	26
Stage 1	-	-	-	-	26	-
Stage 2	-	-	-	-	10	-
Critical Hdwy	-	-	4.1	-	7.39	6.2
Critical Hdwy Stg 1	-	-	-	-	6.39	-
Critical Hdwy Stg 2	-	-	-	-	6.39	-
Follow-up Hdwy	-	-	2.2	-	3.761	3.3
Pot Cap-1 Maneuver	-	-	1585	-	906	1056
Stage 1	-	-	-	-	926	-
Stage 2	-	-	-	-	945	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1585	-	902	1053
Mov Cap-2 Maneuver	-	-	-	-	902	-
Stage 1	-	-	-	-	926	-
Stage 2	-	-	-	-	943	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.5	9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	902	-	-	1585	-
HCM Lane V/C Ratio	0.011	-	-	0.001	-
HCM Control Delay (s)	9	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↑			↑	
Traffic Vol, veh/h	7	0	7	7	0	17	10	729	7	28	882	5
Future Vol, veh/h	7	0	7	7	0	17	10	729	7	28	882	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	2	2	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	125	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	0	0	0	2	14	7	2	0
Mvmt Flow	7	0	7	7	0	18	10	759	7	29	919	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1773	1770	921	1769	1768	765	924	0	0	769	0	0
Stage 1	980	980	-	786	786	-	-	-	-	-	-	-
Stage 2	793	790	-	983	982	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.17	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.263	-	-
Pot Cap-1 Maneuver	65	84	331	66	84	406	748	-	-	823	-	-
Stage 1	303	331	-	388	406	-	-	-	-	-	-	-
Stage 2	385	404	-	302	330	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	60	80	331	62	80	405	748	-	-	823	-	-
Mov Cap-2 Maneuver	60	80	-	62	80	-	-	-	-	-	-	-
Stage 1	299	319	-	382	400	-	-	-	-	-	-	-
Stage 2	363	398	-	285	318	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	46.1	32.6	0.1	0.3
HCM LOS	E	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	748	-	-	102	155	823	-	-
HCM Lane V/C Ratio	0.014	-	-	0.143	0.161	0.035	-	-
HCM Control Delay (s)	9.9	-	-	46.1	32.6	9.5	-	-
HCM Lane LOS	A	-	-	E	D	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.5	0.6	0.1	-	-

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	0	3	32	0	13	5	734	42	17	876	10
Future Vol, veh/h	3	0	3	32	0	13	5	734	42	17	876	10
Conflicting Peds, #/hr	1	0	0	0	0	1	1	0	0	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	80	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	0	3	35	0	14	5	807	46	19	963	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1855	1870	969	1848	1853	831	975	0	0	853	0	0
Stage 1	1006	1006	-	841	841	-	-	-	-	-	-	-
Stage 2	849	864	-	1007	1012	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	57	72	308	57	74	370	707	-	-	786	-	-
Stage 1	291	319	-	359	380	-	-	-	-	-	-	-
Stage 2	356	371	-	290	317	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	53	70	308	55	72	370	707	-	-	785	-	-
Mov Cap-2 Maneuver	53	70	-	55	72	-	-	-	-	-	-	-
Stage 1	289	311	-	356	377	-	-	-	-	-	-	-
Stage 2	340	368	-	280	309	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	48.1	124.2	0.1	0.2
HCM LOS	E	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	707	-	-	90	73	785	-	-
HCM Lane V/C Ratio	0.008	-	-	0.073	0.677	0.024	-	-
HCM Control Delay (s)	10.1	-	-	48.1	124.2	9.7	-	-
HCM Lane LOS	B	-	-	E	F	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	3.1	0.1	-	-

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	13	35	2	0	34	4	9	7	6	3	8	12
Future Vol, veh/h	13	35	2	0	34	4	9	7	6	3	8	12
Conflicting Peds, #/hr	2	0	1	1	0	2	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	79	79	79	79	79	79	79	79	79	79	79	79
Heavy Vehicles, %	0	3	0	0	0	0	0	0	0	33	0	0
Mvmt Flow	16	44	3	0	43	5	11	9	8	4	10	15

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	50	0	0	48	0	0	137	129	47	135	129	48
Stage 1	-	-	-	-	-	-	79	79	-	48	48	-
Stage 2	-	-	-	-	-	-	58	50	-	87	81	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.43	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.43	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.43	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.797	4	3.3
Pot Cap-1 Maneuver	1570	-	-	1572	-	-	838	765	1028	770	765	1027
Stage 1	-	-	-	-	-	-	935	833	-	892	859	-
Stage 2	-	-	-	-	-	-	959	857	-	849	832	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1570	-	-	1572	-	-	810	755	1027	750	755	1025
Mov Cap-2 Maneuver	-	-	-	-	-	-	810	755	-	750	755	-
Stage 1	-	-	-	-	-	-	925	824	-	881	857	-
Stage 2	-	-	-	-	-	-	934	855	-	825	823	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.9	0	9.4	9.3
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	839	1570	-	-	1572	-	-	874
HCM Lane V/C Ratio	0.033	0.01	-	-	-	-	-	0.033
HCM Control Delay (s)	9.4	7.3	0	-	0	-	-	9.3
HCM Lane LOS	A	A	A	-	A	-	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	7.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	39	3	9	33	2	4	6	5	15	12	2
Future Vol, veh/h	0	39	3	9	33	2	4	6	5	15	12	2
Conflicting Peds, #/hr	3	0	0	0	0	3	3	0	2	2	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	0	5	0	22	0	0	0	0	0	0	8	0
Mvmt Flow	0	45	3	10	38	2	5	7	6	17	14	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	96	77	18	95	75	15	19	0	0	15	0	0
Stage 1	53	53	-	21	21	-	-	-	-	-	-	-
Stage 2	43	24	-	74	54	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.55	6.2	7.32	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.55	-	6.32	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.55	-	6.32	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.045	3.3	3.698	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	891	808	1066	842	819	1070	1611	-	-	1616	-	-
Stage 1	965	845	-	948	882	-	-	-	-	-	-	-
Stage 2	976	869	-	888	854	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	843	793	1063	793	804	1065	1611	-	-	1611	-	-
Mov Cap-2 Maneuver	843	793	-	793	804	-	-	-	-	-	-	-
Stage 1	959	833	-	943	878	-	-	-	-	-	-	-
Stage 2	926	865	-	828	842	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.7	9.7	1.9	3.8
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1611	-	-	808	811	1611	-	-
HCM Lane V/C Ratio	0.003	-	-	0.06	0.063	0.011	-	-
HCM Control Delay (s)	7.2	0	-	9.7	9.7	7.3	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.2	0	-	-

Intersection	
Intersection Delay, s/veh	7.3
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations			↕				↕				↕	
Traffic Vol, veh/h	0	2	53	6	0	1	32	0	0	5	2	3
Future Vol, veh/h	0	2	53	6	0	1	32	0	0	5	2	3
Peak Hour Factor	0.92	0.75	0.75	0.75	0.92	0.75	0.75	0.75	0.92	0.75	0.75	0.75
Heavy Vehicles, %	2	0	4	0	2	0	0	0	2	40	0	0
Mvmt Flow	0	3	71	8	0	1	43	0	0	7	3	4
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	7.3	7.2	7.9
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	50%	3%	3%	0%
Vol Thru, %	20%	87%	97%	0%
Vol Right, %	30%	10%	0%	100%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	10	61	33	4
LT Vol	5	2	1	0
Through Vol	2	53	32	0
RT Vol	3	6	0	4
Lane Flow Rate	13	81	44	5
Geometry Grp	1	1	1	1
Degree of Util (X)	0.017	0.088	0.049	0.005
Departure Headway (Hd)	4.721	3.914	4	3.525
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	755	917	895	1006
Service Time	2.771	1.932	2.023	1.579
HCM Lane V/C Ratio	0.017	0.088	0.049	0.005
HCM Control Delay	7.9	7.3	7.2	6.6
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.1	0.3	0.2	0

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Lane Configurations				
Traffic Vol, veh/h	0	0	0	4
Future Vol, veh/h	0	0	0	4
Peak Hour Factor	0.92	0.75	0.75	0.75
Heavy Vehicles, %	2	0	0	0
Mvmt Flow	0	0	0	5
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	6.6
HCM LOS	A

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	2	8	765	905	1
Future Vol, veh/h	1	2	8	765	905	1
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	91	91	91	91	91	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	2	9	841	995	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1853	995	996	0	-	0
Stage 1	995	-	-	-	-	-
Stage 2	858	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	81	297	695	-	-	-
Stage 1	358	-	-	-	-	-
Stage 2	415	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	79	297	695	-	-	-
Mov Cap-2 Maneuver	79	-	-	-	-	-
Stage 1	358	-	-	-	-	-
Stage 2	405	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	28.7	0.1	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	695	-	155	-	-
HCM Lane V/C Ratio	0.013	-	0.021	-	-
HCM Control Delay (s)	10.2	0	28.7	-	-
HCM Lane LOS	B	A	D	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	7	3	764	9	4	983
Future Vol, veh/h	7	3	764	9	4	983
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	125	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	2	0	0	1
Mvmt Flow	7	3	796	9	4	1024

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1829	797	0	0	797	0
Stage 1	797	-	-	-	-	-
Stage 2	1032	-	-	-	-	-
Critical Hdwy	7.1	6.2	-	-	4.1	-
Critical Hdwy Stg 1	6.1	-	-	-	-	-
Critical Hdwy Stg 2	6.1	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	60	390	-	-	834	-
Stage 1	383	-	-	-	-	-
Stage 2	284	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	59	390	-	-	834	-
Mov Cap-2 Maneuver	59	-	-	-	-	-
Stage 1	383	-	-	-	-	-
Stage 2	281	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	57.4	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	79	834	-
HCM Lane V/C Ratio	-	-	0.132	0.005	-
HCM Control Delay (s)	-	-	57.4	9.3	0
HCM Lane LOS	-	-	F	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	1	0	1	2	763	0	1	992	4
Future Vol, veh/h	0	0	0	1	0	1	2	763	0	1	992	4
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	3	3	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	65	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	0	0	0	3	0	0	2	0
Mvmt Flow	0	0	0	1	0	1	2	795	0	1	1033	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1837	1840	1036	1841	1842	798	1038	0	0	798	0	0
Stage 1	1038	1038	-	802	802	-	-	-	-	-	-	-
Stage 2	799	802	-	1039	1040	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	59	76	284	59	76	389	678	-	-	833	-	-
Stage 1	281	311	-	381	399	-	-	-	-	-	-	-
Stage 2	382	399	-	281	310	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	59	75	284	59	75	388	677	-	-	833	-	-
Mov Cap-2 Maneuver	59	75	-	59	75	-	-	-	-	-	-	-
Stage 1	280	311	-	379	397	-	-	-	-	-	-	-
Stage 2	380	397	-	280	310	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	41	0	0
HCM LOS	A	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	677	-	-	-	102	833	-	-
HCM Lane V/C Ratio	0.003	-	-	-	0.02	0.001	-	-
HCM Control Delay (s)	10.3	-	-	0	41	9.3	-	-
HCM Lane LOS	B	-	-	A	E	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	0.1	0	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	19	749	8	19	973
Future Vol, veh/h	10	19	749	8	19	973
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	65	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	9	2	0	0	1
Mvmt Flow	11	20	805	9	20	1046

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1898	811	0	0	815	0
Stage 1	811	-	-	-	-	-
Stage 2	1087	-	-	-	-	-
Critical Hdwy	6.4	6.29	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.381	-	-	2.2	-
Pot Cap-1 Maneuver	77	369	-	-	821	-
Stage 1	440	-	-	-	-	-
Stage 2	326	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	75	369	-	-	821	-
Mov Cap-2 Maneuver	75	-	-	-	-	-
Stage 1	440	-	-	-	-	-
Stage 2	318	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	33.5	0	0.2
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	157	821	-
HCM Lane V/C Ratio	-	-	0.199	0.025	-
HCM Control Delay (s)	-	-	33.5	9.5	-
HCM Lane LOS	-	-	D	A	-
HCM 95th %tile Q(veh)	-	-	0.7	0.1	-

Intersection	
Int Delay, s/veh	6.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	13	1	2	6	2
Future Vol, veh/h	3	13	1	2	6	2
Conflicting Peds, #/hr	2	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	75	75	75	75	75	75
Heavy Vehicles, %	33	8	0	0	0	0
Mvmt Flow	4	17	1	3	8	3

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	24	3	0	0	4	0
Stage 1	3	-	-	-	-	-
Stage 2	21	-	-	-	-	-
Critical Hdwy	6.73	6.28	-	-	4.1	-
Critical Hdwy Stg 1	5.73	-	-	-	-	-
Critical Hdwy Stg 2	5.73	-	-	-	-	-
Follow-up Hdwy	3.797	3.372	-	-	2.2	-
Pot Cap-1 Maneuver	918	1064	-	-	1631	-
Stage 1	945	-	-	-	-	-
Stage 2	927	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	912	1064	-	-	1631	-
Mov Cap-2 Maneuver	912	-	-	-	-	-
Stage 1	945	-	-	-	-	-
Stage 2	921	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.6	0	5.4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1032	1631	-
HCM Lane V/C Ratio	-	-	0.021	0.005	-
HCM Control Delay (s)	-	-	8.6	7.2	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	5.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	2	5	1	0	13	1
Future Vol, veh/h	2	5	1	0	13	1
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	0	0	100	0	15	0
Mvmt Flow	3	6	1	0	16	1

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	10	0	10	7
Stage 1	-	-	-	-	7	-
Stage 2	-	-	-	-	3	-
Critical Hdwy	-	-	5.1	-	6.55	6.2
Critical Hdwy Stg 1	-	-	-	-	5.55	-
Critical Hdwy Stg 2	-	-	-	-	5.55	-
Follow-up Hdwy	-	-	3.1	-	3.635	3.3
Pot Cap-1 Maneuver	-	-	1150	-	977	1081
Stage 1	-	-	-	-	983	-
Stage 2	-	-	-	-	987	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1150	-	975	1080
Mov Cap-2 Maneuver	-	-	-	-	975	-
Stage 1	-	-	-	-	982	-
Stage 2	-	-	-	-	986	-

Approach	EB	WB	NB
HCM Control Delay, s	0	8.1	8.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	982	-	-	1150	-
HCM Lane V/C Ratio	0.018	-	-	0.001	-
HCM Control Delay (s)	8.7	-	-	8.1	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↑			↑	
Traffic Vol, veh/h	0	0	6	6	1	25	9	736	2	22	953	5
Future Vol, veh/h	0	0	6	6	1	25	9	736	2	22	953	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	125	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	17	0	4	0	3	0	5	1	0
Mvmt Flow	0	0	6	6	1	26	9	775	2	23	1003	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1860	1849	1006	1851	1851	777	1008	0	0	778	0	0
Stage 1	1052	1052	-	796	796	-	-	-	-	-	-	-
Stage 2	808	797	-	1055	1055	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.27	6.5	6.24	4.1	-	-	4.15	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.27	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.27	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.653	4	3.336	2.2	-	-	2.245	-	-
Pot Cap-1 Maneuver	57	75	295	52	75	394	695	-	-	825	-	-
Stage 1	276	306	-	359	402	-	-	-	-	-	-	-
Stage 2	378	401	-	256	305	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	51	72	295	49	72	394	695	-	-	825	-	-
Mov Cap-2 Maneuver	51	72	-	49	72	-	-	-	-	-	-	-
Stage 1	272	297	-	354	396	-	-	-	-	-	-	-
Stage 2	347	395	-	244	296	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	17.5	33.4	0.1	0.2
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	695	-	-	295	160	825	-	-
HCM Lane V/C Ratio	0.014	-	-	0.021	0.211	0.028	-	-
HCM Control Delay (s)	10.3	-	-	17.5	33.4	9.5	-	-
HCM Lane LOS	B	-	-	C	D	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.8	0.1	-	-

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	3	21	23	3	23	28	720	36	7	953	7
Future Vol, veh/h	6	3	21	23	3	23	28	720	36	7	953	7
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	80	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	3	22	24	3	24	29	758	38	7	1003	7

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1872	1877	1007	1870	1861	778	1011	0	0	796	0	0
Stage 1	1022	1022	-	836	836	-	-	-	-	-	-	-
Stage 2	850	855	-	1034	1025	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	55	71	292	55	73	396	686	-	-	826	-	-
Stage 1	285	313	-	362	382	-	-	-	-	-	-	-
Stage 2	355	375	-	280	312	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	48	67	292	47	69	396	686	-	-	825	-	-
Mov Cap-2 Maneuver	48	67	-	47	69	-	-	-	-	-	-	-
Stage 1	273	310	-	347	366	-	-	-	-	-	-	-
Stage 2	316	359	-	254	309	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	43.7	102.4	0.4	0.1
HCM LOS	E	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	686	-	-	124	83	825	-	-
HCM Lane V/C Ratio	0.043	-	-	0.255	0.621	0.009	-	-
HCM Control Delay (s)	10.5	-	-	43.7	102.4	9.4	-	-
HCM Lane LOS	B	-	-	E	F	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.9	2.9	0	-	-

Intersection	
Int Delay, s/veh	4.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	25	33	2	5	31	17	10	9	3	6	17	8
Future Vol, veh/h	25	33	2	5	31	17	10	9	3	6	17	8
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	2	2	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	30	40	2	6	37	20	12	11	4	7	20	10

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	59	0	0	42	0	0	176	172	43	171	163	49
Stage 1	-	-	-	-	-	-	101	101	-	61	61	-
Stage 2	-	-	-	-	-	-	75	71	-	110	102	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1558	-	-	1580	-	-	791	725	1033	797	733	1025
Stage 1	-	-	-	-	-	-	910	815	-	955	848	-
Stage 2	-	-	-	-	-	-	939	840	-	900	815	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1558	-	-	1577	-	-	752	707	1031	768	715	1024
Mov Cap-2 Maneuver	-	-	-	-	-	-	752	707	-	768	715	-
Stage 1	-	-	-	-	-	-	892	799	-	935	844	-
Stage 2	-	-	-	-	-	-	904	836	-	865	799	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3.1	0.7	9.9	9.8
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	760	1558	-	-	1577	-	-	787
HCM Lane V/C Ratio	0.035	0.019	-	-	0.004	-	-	0.047
HCM Control Delay (s)	9.9	7.4	0	-	7.3	0	-	9.8
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	6.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	37	3	10	37	2	7	13	7	8	16	3
Future Vol, veh/h	2	37	3	10	37	2	7	13	7	8	16	3
Conflicting Peds, #/hr	4	0	0	0	0	4	1	0	1	1	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	0	0	0	0	0	0	0	8	14	0	6	0
Mvmt Flow	2	44	4	12	44	2	8	15	8	10	19	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	105	82	22	101	80	25	24	0	0	25	0	0
Stage 1	41	41	-	37	37	-	-	-	-	-	-	-
Stage 2	64	41	-	64	43	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	880	812	1061	885	814	1057	1604	-	-	1603	-	-
Stage 1	979	865	-	984	868	-	-	-	-	-	-	-
Stage 2	952	865	-	952	863	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	830	802	1060	837	804	1052	1604	-	-	1597	-	-
Mov Cap-2 Maneuver	830	802	-	837	804	-	-	-	-	-	-	-
Stage 1	973	859	-	978	863	-	-	-	-	-	-	-
Stage 2	893	860	-	895	857	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.7	9.7	1.9	2.2
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1604	-	-	818	818	1597	-	-
HCM Lane V/C Ratio	0.005	-	-	0.061	0.071	0.006	-	-
HCM Control Delay (s)	7.3	0	-	9.7	9.7	7.3	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.2	0	-	-

Intersection	
Intersection Delay, s/veh	7.2
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Traffic Vol, veh/h	0	4	45	3	0	2	40	0	0	4	1	4
Future Vol, veh/h	0	4	45	3	0	2	40	0	0	4	1	4
Peak Hour Factor	0.92	0.83	0.83	0.83	0.92	0.83	0.83	0.83	0.92	0.83	0.83	0.83
Heavy Vehicles, %	2	0	2	0	2	0	0	0	2	0	0	0
Mvmt Flow	0	5	54	4	0	2	48	0	0	5	1	5
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	7.3	7.2	7
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	44%	8%	5%	0%
Vol Thru, %	11%	87%	95%	14%
Vol Right, %	44%	6%	0%	86%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	9	52	42	7
LT Vol	4	4	2	0
Through Vol	1	45	40	1
RT Vol	4	3	0	6
Lane Flow Rate	11	63	51	8
Geometry Grp	1	1	1	1
Degree of Util (X)	0.012	0.069	0.056	0.008
Departure Headway (Hd)	3.924	3.952	3.99	3.59
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	907	908	899	990
Service Time	1.971	1.967	2.007	1.638
HCM Lane V/C Ratio	0.012	0.069	0.057	0.008
HCM Control Delay	7	7.3	7.2	6.7
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0	0.2	0.2	0

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Lane Configurations				
Traffic Vol, veh/h	0	0	1	6
Future Vol, veh/h	0	0	1	6
Peak Hour Factor	0.92	0.83	0.83	0.83
Heavy Vehicles, %	2	0	0	0
Mvmt Flow	0	0	1	7
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	6.7
HCM LOS	A

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	8	4	747	960	5
Future Vol, veh/h	3	8	4	747	960	5
Conflicting Peds, #/hr	0	0	1	0	0	1
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	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	8	4	786	1011	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1809	1014	1017	0	-	0
Stage 1	1014	-	-	-	-	-
Stage 2	795	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	87	290	682	-	-	-
Stage 1	350	-	-	-	-	-
Stage 2	445	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	86	290	682	-	-	-
Mov Cap-2 Maneuver	86	-	-	-	-	-
Stage 1	350	-	-	-	-	-
Stage 2	440	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	26.9	0.1	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	682	-	176	-	-
HCM Lane V/C Ratio	0.006	-	0.066	-	-
HCM Control Delay (s)	10.3	0	26.9	-	-
HCM Lane LOS	B	A	D	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Appendix 8 Cumulative Conditions Level-of-Service Worksheets

Intersection	
Int Delay, s/veh	0.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	17	9	857	18	2	954
Future Vol, veh/h	17	9	857	18	2	954
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	-	-	125	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	6	0	0	4
Mvmt Flow	18	10	932	20	2	1037

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1973	932	0	0	932	0
Stage 1	932	-	-	-	-	-
Stage 2	1041	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	69	326	-	-	743	-
Stage 1	386	-	-	-	-	-
Stage 2	343	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	69	326	-	-	743	-
Mov Cap-2 Maneuver	69	-	-	-	-	-
Stage 1	386	-	-	-	-	-
Stage 2	341	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	58.2	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	95	743	-
HCM Lane V/C Ratio	-	-	0.297	0.003	-
HCM Control Delay (s)	-	-	58.2	9.9	0
HCM Lane LOS	-	-	F	A	A
HCM 95th %tile Q(veh)	-	-	1.1	0	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	0	2	0	0	0	0	863	0	0	997	5
Future Vol, veh/h	5	0	2	0	0	0	0	863	0	0	997	5
Conflicting Peds, #/hr	1	0	0	0	0	1	1	0	1	1	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	65	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	0	0	0	0	6	0	0	4	0
Mvmt Flow	5	0	2	0	0	0	0	928	0	0	1072	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2005	2005	1076	2005	2007	930	1078	0	0	929	0	0
Stage 1	1076	1076	-	929	929	-	-	-	-	-	-	-
Stage 2	929	929	-	1076	1078	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	45	60	269	45	60	327	655	-	-	744	-	-
Stage 1	268	298	-	324	349	-	-	-	-	-	-	-
Stage 2	324	349	-	268	297	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	45	60	269	45	60	326	655	-	-	743	-	-
Mov Cap-2 Maneuver	45	60	-	45	60	-	-	-	-	-	-	-
Stage 1	268	298	-	324	349	-	-	-	-	-	-	-
Stage 2	324	349	-	266	297	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	74.7	0	0	0
HCM LOS	F	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	655	-	-	59	-	743	-	-
HCM Lane V/C Ratio	-	-	-	0.128	-	-	-	-
HCM Control Delay (s)	0	-	-	74.7	0	0	-	-
HCM Lane LOS	A	-	-	F	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.4	-	0	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	27	809	0	6	980
Future Vol, veh/h	0	27	809	0	6	980
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	-	-	-	65	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	6	0	0	4
Mvmt Flow	0	29	879	0	7	1065

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1957	879	0	0	879	0
Stage 1	879	-	-	-	-	-
Stage 2	1078	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	71	350	-	-	777	-
Stage 1	409	-	-	-	-	-
Stage 2	330	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	70	350	-	-	777	-
Mov Cap-2 Maneuver	70	-	-	-	-	-
Stage 1	409	-	-	-	-	-
Stage 2	327	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.2	0	0.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	350	777	-
HCM Lane V/C Ratio	-	-	0.084	0.008	-
HCM Control Delay (s)	-	-	16.2	9.7	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	0.3	0	-

Intersection	
Int Delay, s/veh	7.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	26	2	0	6	2
Future Vol, veh/h	2	26	2	0	6	2
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	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	3	35	3	0	8	3

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	22	3	0	0	3	0
Stage 1	3	-	-	-	-	-
Stage 2	19	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	1000	1087	-	-	1632	-
Stage 1	1025	-	-	-	-	-
Stage 2	1009	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	995	1087	-	-	1632	-
Mov Cap-2 Maneuver	995	-	-	-	-	-
Stage 1	1025	-	-	-	-	-
Stage 2	1004	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.5	0	5.4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1080	1632	-
HCM Lane V/C Ratio	-	-	0.035	0.005	-
HCM Control Delay (s)	-	-	8.5	7.2	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	5.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	3	4	0	5	21	0
Future Vol, veh/h	3	4	0	5	21	0
Conflicting Peds, #/hr	0	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	70	70	70	70	70	70
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	4	6	0	7	30	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	10	0	14	8
Stage 1	-	-	-	-	7	-
Stage 2	-	-	-	-	7	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1623	-	1010	1080
Stage 1	-	-	-	-	1021	-
Stage 2	-	-	-	-	1021	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1621	-	1010	1079
Mov Cap-2 Maneuver	-	-	-	-	1010	-
Stage 1	-	-	-	-	1021	-
Stage 2	-	-	-	-	1021	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	8.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1010	-	-	1621	-
HCM Lane V/C Ratio	0.03	-	-	-	-
HCM Control Delay (s)	8.7	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↑			↑	
Traffic Vol, veh/h	4	0	6	3	0	31	5	756	5	12	951	0
Future Vol, veh/h	4	0	6	3	0	31	5	756	5	12	951	0
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	0	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	125	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	4	0	6	0	0	4	0
Mvmt Flow	4	0	7	3	0	34	6	840	6	13	1057	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1955	1941	1058	1941	1938	843	1058	0	0	846	0	0
Stage 1	1084	1084	-	854	854	-	-	-	-	-	-	-
Stage 2	871	857	-	1087	1084	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.24	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.336	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	49	66	276	50	66	361	666	-	-	800	-	-
Stage 1	265	296	-	356	378	-	-	-	-	-	-	-
Stage 2	349	377	-	264	296	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	43	64	276	48	64	361	666	-	-	800	-	-
Mov Cap-2 Maneuver	43	64	-	48	64	-	-	-	-	-	-	-
Stage 1	262	291	-	353	375	-	-	-	-	-	-	-
Stage 2	313	374	-	253	291	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	52.3	23.8	0.1	0.1
HCM LOS	F	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	666	-	-	87	229	800	-	-
HCM Lane V/C Ratio	0.008	-	-	0.128	0.165	0.017	-	-
HCM Control Delay (s)	10.5	-	-	52.3	23.8	9.6	-	-
HCM Lane LOS	B	-	-	F	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.6	0.1	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	12	0	13	56	0	18	5	9	752	25	7	943
Future Volume (vph)	12	0	13	56	0	18	5	9	752	25	7	943
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5	4.5		4.5	4.5
Lane Util. Factor		1.00			1.00			1.00	1.00		1.00	1.00
Frpb, ped/bikes		0.99			1.00			1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00			1.00			1.00	1.00		1.00	1.00
Frt		0.93			0.97			1.00	1.00		1.00	1.00
Flt Protected		0.98			0.96			0.95	1.00		0.95	1.00
Satd. Flow (prot)		1673			1734			1770	1854		1770	1861
Flt Permitted		0.87			0.76			0.18	1.00		0.27	1.00
Satd. Flow (perm)		1498			1368			337	1854		500	1861
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.92	0.93	0.93	0.93	0.93
Adj. Flow (vph)	13	0	14	60	0	19	5	10	809	27	8	1014
RTOR Reduction (vph)	0	25	0	0	43	0	0	0	1	0	0	0
Lane Group Flow (vph)	0	2	0	0	36	0	0	15	835	0	8	1022
Confl. Peds. (#/hr)			1	1								
Turn Type	Perm	NA		Perm	NA		Perm	Perm	NA		Perm	NA
Protected Phases		8			4				6			2
Permitted Phases	8			4			6	6			2	
Actuated Green, G (s)		9.2			9.2			77.0	77.0		77.0	77.0
Effective Green, g (s)		9.2			9.2			77.0	77.0		77.0	77.0
Actuated g/C Ratio		0.09			0.09			0.75	0.75		0.75	0.75
Clearance Time (s)		4.5			4.5			4.5	4.5		4.5	4.5
Vehicle Extension (s)		3.0			3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		133			122			251	1384		373	1389
v/s Ratio Prot									0.45			c0.55
v/s Ratio Perm		0.00			c0.03			0.04			0.02	
v/c Ratio		0.02			0.30			0.06	0.60		0.02	0.74
Uniform Delay, d1		42.8			43.9			3.5	6.0		3.4	7.3
Progression Factor		1.00			1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2		0.1			1.4			0.1	0.7		0.0	2.1
Delay (s)		42.9			45.3			3.6	6.8		3.4	9.4
Level of Service		D			D			A	A		A	A
Approach Delay (s)		42.9			45.3				6.7			9.4
Approach LOS		D			D				A			A

Intersection Summary			
HCM 2000 Control Delay	10.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	103.1	Sum of lost time (s)	13.5
Intersection Capacity Utilization	72.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR	SEL2	SEL	SER
Lane Configurations				
Traffic Volume (vph)	7	4	0	7
Future Volume (vph)	7	4	0	7
Ideal Flow (vphpl)	1900	1900	1900	1900
Total Lost time (s)			4.5	
Lane Util. Factor			1.00	
Frpb, ped/bikes			1.00	
Flpb, ped/bikes			1.00	
Frt			0.91	
Flt Protected			0.98	
Satd. Flow (prot)			1667	
Flt Permitted			0.98	
Satd. Flow (perm)			1667	
Peak-hour factor, PHF	0.93	0.92	0.92	0.92
Adj. Flow (vph)	8	4	0	8
RTOR Reduction (vph)	0	0	0	0
Lane Group Flow (vph)	0	0	12	0
Confl. Peds. (#/hr)				
Turn Type		Perm	Prot	
Protected Phases			9	
Permitted Phases		9		
Actuated Green, G (s)			3.4	
Effective Green, g (s)			3.4	
Actuated g/C Ratio			0.03	
Clearance Time (s)			4.5	
Vehicle Extension (s)			3.0	
Lane Grp Cap (vph)			54	
v/s Ratio Prot				
v/s Ratio Perm			0.01	
v/c Ratio			0.22	
Uniform Delay, d1			48.6	
Progression Factor			1.00	
Incremental Delay, d2			2.1	
Delay (s)			50.6	
Level of Service			D	
Approach Delay (s)			50.6	
Approach LOS			D	

Intersection Summary

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	7	19	0	2	76	0	4	3	0	3	3	4
Future Vol, veh/h	7	19	0	2	76	0	4	3	0	3	3	4
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	74	74	74	74	74	74	74	74	74	74	74	74
Heavy Vehicles, %	0	0	0	0	0	0	33	0	0	0	0	0
Mvmt Flow	9	26	0	3	103	0	5	4	0	4	4	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	104	0	0	26	0	0	158	154	27	157	154	104
Stage 1	-	-	-	-	-	-	45	45	-	109	109	-
Stage 2	-	-	-	-	-	-	113	109	-	48	45	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.43	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.43	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.43	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.797	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1500	-	-	1601	-	-	743	741	1054	814	741	956
Stage 1	-	-	-	-	-	-	896	861	-	901	809	-
Stage 2	-	-	-	-	-	-	822	809	-	971	861	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1500	-	-	1599	-	-	731	734	1053	804	734	955
Mov Cap-2 Maneuver	-	-	-	-	-	-	731	734	-	804	734	-
Stage 1	-	-	-	-	-	-	891	856	-	895	807	-
Stage 2	-	-	-	-	-	-	812	807	-	960	856	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2	0.2	10	9.4
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	732	1500	-	-	1599	-	-	833
HCM Lane V/C Ratio	0.013	0.006	-	-	0.002	-	-	0.016
HCM Control Delay (s)	10	7.4	0	-	7.3	0	-	9.4
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	7.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	17	0	2	76	11	3	20	0	2	5	0
Future Vol, veh/h	0	17	0	2	76	11	3	20	0	2	5	0
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	0	0	0	0	0	0	0	6	0	0	0	0
Mvmt Flow	0	20	0	2	92	13	4	24	0	2	6	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	96	42	6	52	42	25	6	0	0	24	0	0
Stage 1	11	11	-	31	31	-	-	-	-	-	-	-
Stage 2	85	31	-	21	11	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	891	854	1083	952	854	1057	1628	-	-	1604	-	-
Stage 1	1015	890	-	991	873	-	-	-	-	-	-	-
Stage 2	928	873	-	1003	890	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	805	851	1083	932	851	1056	1628	-	-	1602	-	-
Mov Cap-2 Maneuver	805	851	-	932	851	-	-	-	-	-	-	-
Stage 1	1013	889	-	989	871	-	-	-	-	-	-	-
Stage 2	818	871	-	979	889	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.3	9.7	0.9	2.1
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1628	-	-	851	874	1602	-	-
HCM Lane V/C Ratio	0.002	-	-	0.024	0.123	0.002	-	-
HCM Control Delay (s)	7.2	0	-	9.3	9.7	7.3	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.4	0	-	-

Intersection	
Intersection Delay, s/veh	7.3
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Traffic Vol, veh/h	0	0	20	2	0	6	73	2	0	2	2	3
Future Vol, veh/h	0	0	20	2	0	6	73	2	0	2	2	3
Peak Hour Factor	0.92	0.90	0.90	0.90	0.92	0.90	0.90	0.90	0.92	0.90	0.90	0.90
Heavy Vehicles, %	2	0	6	0	2	0	0	0	2	0	0	0
Mvmt Flow	0	0	22	2	0	7	81	2	0	2	2	3
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	7.2	7.4	7
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	29%	0%	7%	0%
Vol Thru, %	29%	91%	90%	0%
Vol Right, %	43%	9%	2%	100%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	7	22	81	7
LT Vol	2	0	6	0
Through Vol	2	20	73	0
RT Vol	3	2	2	7
Lane Flow Rate	8	24	90	8
Geometry Grp	1	1	1	1
Degree of Util (X)	0.008	0.027	0.099	0.008
Departure Headway (Hd)	3.904	4.042	3.946	3.504
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	911	887	912	1014
Service Time	1.952	2.062	1.954	1.551
HCM Lane V/C Ratio	0.009	0.027	0.099	0.008
HCM Control Delay	7	7.2	7.4	6.6
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0	0.1	0.3	0

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Lane Configurations				
Traffic Vol, veh/h	0	0	0	7
Future Vol, veh/h	0	0	0	7
Peak Hour Factor	0.92	0.90	0.90	0.90
Heavy Vehicles, %	2	0	0	0
Mvmt Flow	0	0	0	8
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	6.6
HCM LOS	A

Intersection	
Int Delay, s/veh	0.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	13	6	1037	21	6	1078
Future Vol, veh/h	13	6	1037	21	6	1078
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	125	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	2	0	0	2
Mvmt Flow	14	6	1092	22	6	1135

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2240	1093	0	0	1093	0
Stage 1	1093	-	-	-	-	-
Stage 2	1147	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	47	263	-	-	646	-
Stage 1	324	-	-	-	-	-
Stage 2	305	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	46	263	-	-	646	-
Mov Cap-2 Maneuver	46	-	-	-	-	-
Stage 1	324	-	-	-	-	-
Stage 2	297	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	88.6	0	0.1
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	62	646	-
HCM Lane V/C Ratio	-	-	0.323	0.01	-
HCM Control Delay (s)	-	-	88.6	10.6	0
HCM Lane LOS	-	-	F	B	A
HCM 95th %tile Q(veh)	-	-	1.2	0	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↑	↱		↑	
Traffic Vol, veh/h	6	0	5	2	0	3	0	1046	0	2	1084	5
Future Vol, veh/h	6	0	5	2	0	3	0	1046	0	2	1084	5
Conflicting Peds, #/hr	5	0	0	0	0	5	0	0	4	4	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	65	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0	0	2	0	0	1	0
Mvmt Flow	6	0	5	2	0	3	0	1113	0	2	1153	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2279	2277	1156	2280	2280	1122	1159	0	0	1117	0	0
Stage 1	1160	1160	-	1117	1117	-	-	-	-	-	-	-
Stage 2	1119	1117	-	1163	1163	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	29	41	242	29	40	253	610	-	-	633	-	-
Stage 1	240	272	-	254	285	-	-	-	-	-	-	-
Stage 2	253	285	-	239	271	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	28	41	242	28	40	251	610	-	-	630	-	-
Mov Cap-2 Maneuver	28	41	-	28	40	-	-	-	-	-	-	-
Stage 1	240	271	-	253	284	-	-	-	-	-	-	-
Stage 2	249	284	-	233	270	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	105.3	70.8	0	0
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	610	-	-	47	60	630	-	-
HCM Lane V/C Ratio	-	-	-	0.249	0.089	0.003	-	-
HCM Control Delay (s)	0	-	-	105.3	70.8	10.7	-	-
HCM Lane LOS	A	-	-	F	F	B	-	-
HCM 95th %tile Q(veh)	0	-	-	0.8	0.3	0	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	6	1035	0	21	1059
Future Vol, veh/h	0	6	1035	0	21	1059
Conflicting Peds, #/hr	0	0	0	2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	65	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	2	0	0	2
Mvmt Flow	0	6	1078	0	22	1103

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2227	1080	0	0	1080	0
Stage 1	1080	-	-	-	-	-
Stage 2	1147	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	48	268	-	-	653	-
Stage 1	329	-	-	-	-	-
Stage 2	305	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	46	267	-	-	653	-
Mov Cap-2 Maneuver	46	-	-	-	-	-
Stage 1	328	-	-	-	-	-
Stage 2	295	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	18.8	0	0.2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	267	653	-
HCM Lane V/C Ratio	-	-	0.023	0.033	-
HCM Control Delay (s)	-	-	18.8	10.7	-
HCM Lane LOS	-	-	C	B	-
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-

Intersection	
Int Delay, s/veh	6.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	7	2	7	22	0
Future Vol, veh/h	5	7	2	7	22	0
Conflicting Peds, #/hr	1	0	0	5	5	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	75	75	75	75	75	75
Heavy Vehicles, %	0	17	0	0	0	0
Mvmt Flow	7	9	3	9	29	0

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	72	12	0	0	17	0
Stage 1	12	-	-	-	-	-
Stage 2	60	-	-	-	-	-
Critical Hdwy	6.4	6.37	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.453	-	-	2.2	-
Pot Cap-1 Maneuver	937	1027	-	-	1613	-
Stage 1	1016	-	-	-	-	-
Stage 2	968	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	915	1022	-	-	1613	-
Mov Cap-2 Maneuver	915	-	-	-	-	-
Stage 1	1011	-	-	-	-	-
Stage 2	950	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.8	0	7.3
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	975	1613	-
HCM Lane V/C Ratio	-	-	0.016	0.018	-
HCM Control Delay (s)	-	-	8.8	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-

Intersection	
Int Delay, s/veh	2.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	10	19	2	5	9	0
Future Vol, veh/h	10	19	2	5	9	0
Conflicting Peds, #/hr	0	3	3	0	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	69	69	69	69	69	69
Heavy Vehicles, %	0	0	0	0	29	0
Mvmt Flow	14	28	3	7	13	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	45	0	45	31
Stage 1	-	-	-	-	31	-
Stage 2	-	-	-	-	14	-
Critical Hdwy	-	-	4.1	-	6.69	6.2
Critical Hdwy Stg 1	-	-	-	-	5.69	-
Critical Hdwy Stg 2	-	-	-	-	5.69	-
Follow-up Hdwy	-	-	2.2	-	3.761	3.3
Pot Cap-1 Maneuver	-	-	1576	-	901	1049
Stage 1	-	-	-	-	926	-
Stage 2	-	-	-	-	943	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1576	-	896	1046
Mov Cap-2 Maneuver	-	-	-	-	896	-
Stage 1	-	-	-	-	923	-
Stage 2	-	-	-	-	940	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.1	9.1
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	896	-	-	1576	-
HCM Lane V/C Ratio	0.015	-	-	0.002	-
HCM Control Delay (s)	9.1	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↑			↑	
Traffic Vol, veh/h	9	0	9	9	0	20	12	1001	9	33	990	6
Future Vol, veh/h	9	0	9	9	0	20	12	1001	9	33	990	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	2	2	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	125	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	0	0	0	2	14	7	2	0
Mvmt Flow	9	0	9	9	0	21	13	1043	9	34	1031	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2186	2182	1034	2182	2180	1049	1038	0	0	1054	0	0
Stage 1	1103	1103	-	1074	1074	-	-	-	-	-	-	-
Stage 2	1083	1079	-	1108	1106	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.17	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.263	-	-
Pot Cap-1 Maneuver	33	47	285	34	47	279	678	-	-	642	-	-
Stage 1	259	290	-	269	299	-	-	-	-	-	-	-
Stage 2	265	297	-	257	289	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	29	44	285	31	44	278	678	-	-	642	-	-
Mov Cap-2 Maneuver	29	44	-	31	44	-	-	-	-	-	-	-
Stage 1	254	275	-	263	293	-	-	-	-	-	-	-
Stage 2	240	291	-	235	274	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	106.3	75.1	0.1	0.4
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	678	-	-	53	80	642	-	-
HCM Lane V/C Ratio	0.018	-	-	0.354	0.378	0.054	-	-
HCM Control Delay (s)	10.4	-	-	106.3	75.1	10.9	-	-
HCM Lane LOS	B	-	-	F	F	B	-	-
HCM 95th %tile Q(veh)	0.1	-	-	1.3	1.5	0.2	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	4	0	4	37	0	16	6	10	1039	49	20	972
Future Volume (vph)	4	0	4	37	0	16	6	10	1039	49	20	972
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5	4.5		4.5	4.5
Lane Util. Factor		1.00			1.00			1.00	1.00		1.00	1.00
Frpb, ped/bikes		0.99			1.00			1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00			1.00			1.00	1.00		1.00	1.00
Frt		0.93			0.96			1.00	0.99		1.00	1.00
Flt Protected		0.98			0.97			0.95	1.00		0.95	1.00
Satd. Flow (prot)		1676			1725			1770	1850		1770	1858
Flt Permitted		0.90			0.79			0.19	1.00		0.14	1.00
Satd. Flow (perm)		1554			1404			349	1850		259	1858
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.92	0.93	0.93	0.93	0.93
Adj. Flow (vph)	4	0	4	40	0	17	6	11	1117	53	22	1045
RTOR Reduction (vph)	0	7	0	0	41	0	0	0	1	0	0	0
Lane Group Flow (vph)	0	1	0	0	16	0	0	17	1169	0	22	1060
Confl. Peds. (#/hr)			1	1			1	1				
Turn Type	Perm	NA		Perm	NA		Perm	Perm	NA		Perm	NA
Protected Phases		8			4				6			2
Permitted Phases	8			4			6	6			2	
Actuated Green, G (s)		8.8			8.8			96.2	96.2		96.2	96.2
Effective Green, g (s)		8.8			8.8			96.2	96.2		96.2	96.2
Actuated g/C Ratio		0.07			0.07			0.79	0.79		0.79	0.79
Clearance Time (s)		4.5			4.5			4.5	4.5		4.5	4.5
Vehicle Extension (s)		3.0			3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		111			101			274	1455		203	1461
v/s Ratio Prot									c0.63			0.57
v/s Ratio Perm		0.00			c0.01			0.05			0.08	
v/c Ratio		0.01			0.16			0.06	0.80		0.11	0.73
Uniform Delay, d1		52.7			53.3			2.9	7.6		3.0	6.5
Progression Factor		1.00			1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2		0.0			0.7			0.1	3.3		0.2	1.8
Delay (s)		52.7			54.0			3.0	10.9		3.3	8.3
Level of Service		D			D			A	B		A	A
Approach Delay (s)		52.7			54.0				10.8			8.2
Approach LOS		D			D				B			A

Intersection Summary			
HCM 2000 Control Delay	10.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	122.3	Sum of lost time (s)	13.5
Intersection Capacity Utilization	77.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR	SBR2	SEL2	SEL	SER
Lane Configurations					
Traffic Volume (vph)	12	2	2	0	3
Future Volume (vph)	12	2	2	0	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)				4.5	
Lane Util. Factor				1.00	
Frpb, ped/bikes				1.00	
Flpb, ped/bikes				1.00	
Frt				0.92	
Flt Protected				0.98	
Satd. Flow (prot)				1678	
Flt Permitted				0.98	
Satd. Flow (perm)				1678	
Peak-hour factor, PHF	0.93	0.92	0.92	0.92	0.92
Adj. Flow (vph)	13	2	2	0	3
RTOR Reduction (vph)	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	5	0
Confl. Peds. (#/hr)	1	1			
Turn Type			Perm	Prot	
Protected Phases				9	
Permitted Phases			9		
Actuated Green, G (s)				3.8	
Effective Green, g (s)				3.8	
Actuated g/C Ratio				0.03	
Clearance Time (s)				4.5	
Vehicle Extension (s)				3.0	
Lane Grp Cap (vph)				52	
v/s Ratio Prot					
v/s Ratio Perm				0.00	
v/c Ratio				0.10	
Uniform Delay, d1				57.6	
Progression Factor				1.00	
Incremental Delay, d2				0.8	
Delay (s)				58.4	
Level of Service				E	
Approach Delay (s)				58.4	
Approach LOS				E	

Intersection Summary

Intersection	
Int Delay, s/veh	4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	16	41	3	0	40	5	11	9	7	4	10	14
Future Vol, veh/h	16	41	3	0	40	5	11	9	7	4	10	14
Conflicting Peds, #/hr	2	0	1	1	0	2	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	79	79	79	79	79	79	79	79	79	79	79	79
Heavy Vehicles, %	0	3	0	0	0	0	0	0	0	33	0	0
Mvmt Flow	20	52	4	0	51	6	14	11	9	5	13	18

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	59	0	0	57	0	0	164	154	55	160	153	56
Stage 1	-	-	-	-	-	-	95	95	-	56	56	-
Stage 2	-	-	-	-	-	-	69	59	-	104	97	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.43	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.43	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.43	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.797	4	3.3
Pot Cap-1 Maneuver	1558	-	-	1560	-	-	805	741	1018	741	742	1016
Stage 1	-	-	-	-	-	-	917	820	-	883	852	-
Stage 2	-	-	-	-	-	-	946	850	-	831	819	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1558	-	-	1560	-	-	772	729	1017	717	730	1014
Mov Cap-2 Maneuver	-	-	-	-	-	-	772	729	-	717	730	-
Stage 1	-	-	-	-	-	-	904	809	-	870	850	-
Stage 2	-	-	-	-	-	-	916	848	-	802	808	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2	0	9.7	9.4
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	807	1558	-	-	1560	-	-	846
HCM Lane V/C Ratio	0.042	0.013	-	-	-	-	-	0.042
HCM Control Delay (s)	9.7	7.3	0	-	0	-	-	9.4
HCM Lane LOS	A	A	A	-	A	-	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	7.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	46	4	11	39	3	5	7	6	18	14	3
Future Vol, veh/h	0	46	4	11	39	3	5	7	6	18	14	3
Conflicting Peds, #/hr	3	0	0	0	0	3	3	0	2	2	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	0	5	0	22	0	0	0	0	0	0	8	0
Mvmt Flow	0	53	5	13	45	3	6	8	7	21	16	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	114	92	21	114	90	17	23	0	0	17	0	0
Stage 1	63	63	-	25	25	-	-	-	-	-	-	-
Stage 2	51	29	-	89	65	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.55	6.2	7.32	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.55	-	6.32	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.55	-	6.32	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.045	3.3	3.698	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	868	792	1062	818	804	1068	1605	-	-	1613	-	-
Stage 1	953	837	-	944	878	-	-	-	-	-	-	-
Stage 2	967	865	-	871	845	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	812	775	1059	760	787	1063	1605	-	-	1608	-	-
Mov Cap-2 Maneuver	812	775	-	760	787	-	-	-	-	-	-	-
Stage 1	946	824	-	938	873	-	-	-	-	-	-	-
Stage 2	908	860	-	800	832	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.9	9.9	2	3.7
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1605	-	-	792	793	1608	-	-
HCM Lane V/C Ratio	0.004	-	-	0.073	0.078	0.013	-	-
HCM Control Delay (s)	7.3	0	-	9.9	9.9	7.3	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.3	0	-	-

Intersection	
Intersection Delay, s/veh	7.4
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Traffic Vol, veh/h	0	3	62	7	0	2	37	0	0	6	3	4
Future Vol, veh/h	0	3	62	7	0	2	37	0	0	6	3	4
Peak Hour Factor	0.92	0.75	0.75	0.75	0.92	0.75	0.75	0.75	0.92	0.75	0.75	0.75
Heavy Vehicles, %	2	0	4	0	2	0	0	0	2	40	0	0
Mvmt Flow	0	4	83	9	0	3	49	0	0	8	4	5
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	7.4	7.3	7.9
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	46%	4%	5%	0%
Vol Thru, %	23%	86%	95%	0%
Vol Right, %	31%	10%	0%	100%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	13	72	39	5
LT Vol	6	3	2	0
Through Vol	3	62	37	0
RT Vol	4	7	0	5
Lane Flow Rate	17	96	52	7
Geometry Grp	1	1	1	1
Degree of Util (X)	0.023	0.105	0.058	0.007
Departure Headway (Hd)	4.748	3.93	4.023	3.566
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	749	911	888	991
Service Time	2.811	1.958	2.058	1.634
HCM Lane V/C Ratio	0.023	0.105	0.059	0.007
HCM Control Delay	7.9	7.4	7.3	6.7
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.1	0.4	0.2	0

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Lane Configurations				
Traffic Vol, veh/h	0	0	0	5
Future Vol, veh/h	0	0	0	5
Peak Hour Factor	0.92	0.75	0.75	0.75
Heavy Vehicles, %	2	0	0	0
Mvmt Flow	0	0	0	7
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	6.7
HCM LOS	A

Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	9	4	1008	11	5	957
Future Vol, veh/h	9	4	1008	11	5	957
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	125	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	2	0	0	1
Mvmt Flow	9	4	1050	11	5	997

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2058	1051	0	0	1051	0
Stage 1	1051	-	-	-	-	-
Stage 2	1007	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	61	278	-	-	670	-
Stage 1	339	-	-	-	-	-
Stage 2	356	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	60	278	-	-	670	-
Mov Cap-2 Maneuver	60	-	-	-	-	-
Stage 1	339	-	-	-	-	-
Stage 2	350	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	59.8	0	0.1
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	79	670	-
HCM Lane V/C Ratio	-	-	0.171	0.008	-
HCM Control Delay (s)	-	-	59.8	10.4	0
HCM Lane LOS	-	-	F	B	A
HCM 95th %tile Q(veh)	-	-	0.6	0	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	2	0	2	3	1005	0	2	966	5
Future Vol, veh/h	0	0	0	2	0	2	3	1005	0	2	966	5
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	3	3	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	65	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	0	0	0	3	0	0	2	0
Mvmt Flow	0	0	0	2	0	2	3	1047	0	2	1006	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2067	2069	1010	2070	2072	1050	1011	0	0	1050	0	0
Stage 1	1013	1013	-	1056	1056	-	-	-	-	-	-	-
Stage 2	1054	1056	-	1014	1016	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	40	55	294	40	55	278	694	-	-	671	-	-
Stage 1	291	319	-	275	305	-	-	-	-	-	-	-
Stage 2	276	305	-	290	318	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	39	54	294	40	54	277	693	-	-	671	-	-
Mov Cap-2 Maneuver	39	54	-	40	54	-	-	-	-	-	-	-
Stage 1	290	318	-	273	303	-	-	-	-	-	-	-
Stage 2	273	303	-	289	317	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	59.7	0	0
HCM LOS	A	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	693	-	-	-	70	671	-	-
HCM Lane V/C Ratio	0.005	-	-	-	0.06	0.003	-	-
HCM Control Delay (s)	10.2	-	-	0	59.7	10.4	-	-
HCM Lane LOS	B	-	-	A	F	B	-	-
HCM 95th %tile Q(veh)	0	-	-	-	0.2	0	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	13	987	0	10	958
Future Vol, veh/h	0	13	987	0	10	958
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	65	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	9	2	0	0	1
Mvmt Flow	0	14	1061	0	11	1030

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2114	1062	0	0	1062	0
Stage 1	1062	-	-	-	-	-
Stage 2	1052	-	-	-	-	-
Critical Hdwy	6.4	6.29	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.381	-	-	2.2	-
Pot Cap-1 Maneuver	57	263	-	-	664	-
Stage 1	335	-	-	-	-	-
Stage 2	339	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	56	263	-	-	664	-
Mov Cap-2 Maneuver	56	-	-	-	-	-
Stage 1	335	-	-	-	-	-
Stage 2	333	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	263	664	-
HCM Lane V/C Ratio	-	-	0.053	0.016	-
HCM Control Delay (s)	-	-	19.5	10.5	-
HCM Lane LOS	-	-	C	B	-
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Intersection	
Int Delay, s/veh	6.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	16	2	3	7	3
Future Vol, veh/h	4	16	2	3	7	3
Conflicting Peds, #/hr	2	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	75	75	75	75	75	75
Heavy Vehicles, %	33	8	0	0	0	0
Mvmt Flow	5	21	3	4	9	4

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	30	5	0	0	7	0
Stage 1	5	-	-	-	-	-
Stage 2	25	-	-	-	-	-
Critical Hdwy	6.73	6.28	-	-	4.1	-
Critical Hdwy Stg 1	5.73	-	-	-	-	-
Critical Hdwy Stg 2	5.73	-	-	-	-	-
Follow-up Hdwy	3.797	3.372	-	-	2.2	-
Pot Cap-1 Maneuver	911	1061	-	-	1627	-
Stage 1	943	-	-	-	-	-
Stage 2	923	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	904	1061	-	-	1627	-
Mov Cap-2 Maneuver	904	-	-	-	-	-
Stage 1	943	-	-	-	-	-
Stage 2	916	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.6	0	5.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1025	1627	-
HCM Lane V/C Ratio	-	-	0.026	0.006	-
HCM Control Delay (s)	-	-	8.6	7.2	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	3	6	2	0	16	2
Future Vol, veh/h	3	6	2	0	16	2
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	0	0	100	0	15	0
Mvmt Flow	4	8	3	0	20	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	12	0	14	9
Stage 1	-	-	-	-	9	-
Stage 2	-	-	-	-	5	-
Critical Hdwy	-	-	5.1	-	7.25	6.2
Critical Hdwy Stg 1	-	-	-	-	6.25	-
Critical Hdwy Stg 2	-	-	-	-	6.25	-
Follow-up Hdwy	-	-	3.1	-	3.635	3.3
Pot Cap-1 Maneuver	-	-	1148	-	970	1079
Stage 1	-	-	-	-	979	-
Stage 2	-	-	-	-	984	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1148	-	967	1078
Mov Cap-2 Maneuver	-	-	-	-	967	-
Stage 1	-	-	-	-	979	-
Stage 2	-	-	-	-	981	-

Approach	EB	WB	NB
HCM Control Delay, s	0	8.1	8.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	978	-	-	1148	-
HCM Lane V/C Ratio	0.023	-	-	0.002	-
HCM Control Delay (s)	8.8	-	-	8.1	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↑			↑	
Traffic Vol, veh/h	0	0	7	7	2	29	11	713	3	26	928	6
Future Vol, veh/h	0	0	7	7	2	29	11	713	3	26	928	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	125	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	17	0	4	0	3	0	5	1	0
Mvmt Flow	0	0	7	7	2	31	12	751	3	27	977	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1827	1813	980	1814	1814	753	983	0	0	755	0	0
Stage 1	1035	1035	-	776	776	-	-	-	-	-	-	-
Stage 2	792	778	-	1038	1038	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.27	6.5	6.24	4.1	-	-	4.15	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.27	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.27	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.653	4	3.336	2.2	-	-	2.245	-	-
Pot Cap-1 Maneuver	60	79	306	55	79	406	711	-	-	842	-	-
Stage 1	282	312	-	369	410	-	-	-	-	-	-	-
Stage 2	385	410	-	261	311	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	52	75	306	52	75	406	711	-	-	842	-	-
Mov Cap-2 Maneuver	52	75	-	52	75	-	-	-	-	-	-	-
Stage 1	277	302	-	362	403	-	-	-	-	-	-	-
Stage 2	348	403	-	247	301	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	17.1	34.1	0.2	0.3
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	711	-	-	306	163	842	-	-
HCM Lane V/C Ratio	0.016	-	-	0.024	0.245	0.033	-	-
HCM Control Delay (s)	10.1	-	-	17.1	34.1	9.4	-	-
HCM Lane LOS	B	-	-	C	D	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	0.9	0.1	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	7	4	25	27	4	27	33	5	697	42	9	928
Future Volume (vph)	7	4	25	27	4	27	33	5	697	42	9	928
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5	4.5		4.5	4.5
Lane Util. Factor		1.00			1.00			1.00	1.00		1.00	1.00
Frt		0.91			0.94			1.00	0.99		1.00	1.00
Flt Protected		0.99			0.98			0.95	1.00		0.95	1.00
Satd. Flow (prot)		1672			1705			1770	1847		1770	1858
Flt Permitted		0.95			0.86			0.18	1.00		0.29	1.00
Satd. Flow (perm)		1602			1508			333	1847		531	1858
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.92	0.93	0.93	0.93	0.93
Adj. Flow (vph)	8	4	27	29	4	29	35	5	749	45	10	998
RTOR Reduction (vph)	0	25	0	0	43	0	0	0	1	0	0	0
Lane Group Flow (vph)	0	14	0	0	19	0	0	40	793	0	10	1015
Turn Type	Perm	NA		Perm	NA		Perm	Perm	NA		Perm	NA
Protected Phases		8			4				6			2
Permitted Phases	8			4			6	6			2	
Actuated Green, G (s)		8.4			8.4			75.2	75.2		75.2	75.2
Effective Green, g (s)		8.4			8.4			75.2	75.2		75.2	75.2
Actuated g/C Ratio		0.08			0.08			0.74	0.74		0.74	0.74
Clearance Time (s)		4.5			4.5			4.5	4.5		4.5	4.5
Vehicle Extension (s)		3.0			3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		132			124			245	1364		392	1372
v/s Ratio Prot									0.43			c0.55
v/s Ratio Perm		0.01			c0.01			0.12			0.02	
v/c Ratio		0.11			0.15			0.16	0.58		0.03	0.74
Uniform Delay, d1		43.2			43.4			4.0	6.1		3.5	7.7
Progression Factor		1.00			1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2		0.4			0.6			0.3	0.6		0.0	2.1
Delay (s)		43.6			44.0			4.3	6.7		3.6	9.8
Level of Service		D			D			A	A		A	A
Approach Delay (s)		43.6			44.0				6.6			9.7
Approach LOS		D			D				A			A

Intersection Summary			
HCM 2000 Control Delay	10.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	101.8	Sum of lost time (s)	13.5
Intersection Capacity Utilization	72.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBR	SBR2	SEL2	SEL	SER
Lane Configurations					
Traffic Volume (vph)	9	6	4	0	10
Future Volume (vph)	9	6	4	0	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)				4.5	
Lane Util. Factor				1.00	
Frt				0.90	
Flt Protected				0.99	
Satd. Flow (prot)				1656	
Flt Permitted				0.99	
Satd. Flow (perm)				1656	
Peak-hour factor, PHF	0.93	0.92	0.92	0.92	0.92
Adj. Flow (vph)	10	7	4	0	11
RTOR Reduction (vph)	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	15	0
Turn Type			Perm	Prot	
Protected Phases				9	
Permitted Phases			9		
Actuated Green, G (s)				4.7	
Effective Green, g (s)				4.7	
Actuated g/C Ratio				0.05	
Clearance Time (s)				4.5	
Vehicle Extension (s)				3.0	
Lane Grp Cap (vph)				76	
v/s Ratio Prot					
v/s Ratio Perm				0.01	
v/c Ratio				0.20	
Uniform Delay, d1				46.7	
Progression Factor				1.00	
Incremental Delay, d2				1.3	
Delay (s)				48.0	
Level of Service				D	
Approach Delay (s)				48.0	
Approach LOS				D	

Intersection Summary

Intersection	
Int Delay, s/veh	4.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	29	39	3	6	36	20	12	11	4	7	20	10
Future Vol, veh/h	29	39	3	6	36	20	12	11	4	7	20	10
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	2	2	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	35	47	4	7	43	24	14	13	5	8	24	12

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	68	0	0	51	0	0	207	202	51	201	191	56
Stage 1	-	-	-	-	-	-	119	119	-	71	71	-
Stage 2	-	-	-	-	-	-	88	83	-	130	120	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1546	-	-	1568	-	-	755	698	1023	762	708	1016
Stage 1	-	-	-	-	-	-	890	801	-	944	840	-
Stage 2	-	-	-	-	-	-	925	830	-	878	800	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1546	-	-	1565	-	-	711	678	1021	729	688	1015
Mov Cap-2 Maneuver	-	-	-	-	-	-	711	678	-	729	688	-
Stage 1	-	-	-	-	-	-	870	783	-	921	835	-
Stage 2	-	-	-	-	-	-	883	825	-	838	782	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3	0.7	10.2	10
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	729	1546	-	-	1565	-	-	763
HCM Lane V/C Ratio	0.045	0.023	-	-	0.005	-	-	0.058
HCM Control Delay (s)	10.2	7.4	0	-	7.3	0	-	10
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.2

Intersection	
Int Delay, s/veh	6.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	43	4	12	43	3	9	16	9	10	19	4
Future Vol, veh/h	3	43	4	12	43	3	9	16	9	10	19	4
Conflicting Peds, #/hr	4	0	0	0	0	4	1	0	1	1	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	0	0	0	0	0	0	0	8	14	0	6	0
Mvmt Flow	4	51	5	14	51	4	11	19	11	12	23	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	127	102	26	124	99	29	28	0	0	31	0	0
Stage 1	50	50	-	47	47	-	-	-	-	-	-	-
Stage 2	77	52	-	77	52	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	851	792	1056	855	795	1052	1599	-	-	1595	-	-
Stage 1	968	857	-	972	860	-	-	-	-	-	-	-
Stage 2	937	856	-	937	856	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	793	779	1055	799	782	1047	1599	-	-	1589	-	-
Mov Cap-2 Maneuver	793	779	-	799	782	-	-	-	-	-	-	-
Stage 1	960	849	-	964	853	-	-	-	-	-	-	-
Stage 2	868	849	-	870	848	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.9	10	1.9	2.2
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1599	-	-	797	796	1589	-	-
HCM Lane V/C Ratio	0.007	-	-	0.075	0.087	0.007	-	-
HCM Control Delay (s)	7.3	0	-	9.9	10	7.3	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.3	0	-	-

Intersection	
Intersection Delay, s/veh	7.2
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Traffic Vol, veh/h	0	5	52	4	0	3	47	0	0	5	2	5
Future Vol, veh/h	0	5	52	4	0	3	47	0	0	5	2	5
Peak Hour Factor	0.92	0.83	0.83	0.83	0.92	0.83	0.83	0.83	0.92	0.83	0.83	0.83
Heavy Vehicles, %	2	0	2	0	2	0	0	0	2	0	0	0
Mvmt Flow	0	6	63	5	0	4	57	0	0	6	2	6
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	7.3	7.3	7.1
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	42%	8%	6%	0%
Vol Thru, %	17%	85%	94%	22%
Vol Right, %	42%	7%	0%	78%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	12	61	50	9
LT Vol	5	5	3	0
Through Vol	2	52	47	2
RT Vol	5	4	0	7
Lane Flow Rate	14	73	60	11
Geometry Grp	1	1	1	1
Degree of Util (X)	0.016	0.081	0.067	0.011
Departure Headway (Hd)	3.973	3.968	4.012	3.675
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	894	904	893	965
Service Time	2.029	1.986	2.033	1.733
HCM Lane V/C Ratio	0.016	0.081	0.067	0.011
HCM Control Delay	7.1	7.3	7.3	6.8
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0	0.3	0.2	0

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Lane Configurations				
Traffic Vol, veh/h	0	0	2	7
Future Vol, veh/h	0	0	2	7
Peak Hour Factor	0.92	0.83	0.83	0.83
Heavy Vehicles, %	2	0	0	0
Mvmt Flow	0	0	2	8
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	6.8
HCM LOS	A

Appendix 9 Cumulative with Project Level-of-Service Worksheets

Intersection	
Int Delay, s/veh	0.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	17	9	872	18	2	958
Future Vol, veh/h	17	9	872	18	2	958
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	-	-	125	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	6	0	0	4
Mvmt Flow	18	10	948	20	2	1041

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1994	948	0	0	948	0
Stage 1	948	-	-	-	-	-
Stage 2	1046	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	67	319	-	-	732	-
Stage 1	380	-	-	-	-	-
Stage 2	341	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	67	319	-	-	732	-
Mov Cap-2 Maneuver	67	-	-	-	-	-
Stage 1	380	-	-	-	-	-
Stage 2	339	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	60.6	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	92	732	-
HCM Lane V/C Ratio	-	-	0.307	0.003	-
HCM Control Delay (s)	-	-	60.6	9.9	0
HCM Lane LOS	-	-	F	A	A
HCM 95th %tile Q(veh)	-	-	1.2	0	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↰	↱		↰	↑	
Traffic Vol, veh/h	5	0	2	0	0	0	0	878	0	0	1001	5
Future Vol, veh/h	5	0	2	0	0	0	0	878	0	0	1001	5
Conflicting Peds, #/hr	1	0	0	0	0	1	1	0	1	1	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	65	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	0	0	0	0	6	0	0	4	0
Mvmt Flow	5	0	2	0	0	0	0	944	0	0	1076	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2025	2025	1080	2025	2028	946	1083	0	0	945	0	0
Stage 1	1080	1080	-	945	945	-	-	-	-	-	-	-
Stage 2	945	945	-	1080	1083	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	43	58	268	43	58	320	652	-	-	734	-	-
Stage 1	267	297	-	317	343	-	-	-	-	-	-	-
Stage 2	317	343	-	267	296	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	43	58	268	43	58	319	652	-	-	733	-	-
Mov Cap-2 Maneuver	43	58	-	43	58	-	-	-	-	-	-	-
Stage 1	267	297	-	317	343	-	-	-	-	-	-	-
Stage 2	317	343	-	265	296	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	77.5	0	0	0
HCM LOS	F	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	652	-	-	57	-	733	-	-
HCM Lane V/C Ratio	-	-	-	0.132	-	-	-	-
HCM Control Delay (s)	0	-	-	77.5	0	0	-	-
HCM Lane LOS	A	-	-	F	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.4	-	0	-	-

Intersection	
Int Delay, s/veh	1.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	14	42	809	4	10	980
Future Vol, veh/h	14	42	809	4	10	980
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	-	-	-	65	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	6	0	0	4
Mvmt Flow	15	46	879	4	11	1065

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1969	882	0	0	884	0
Stage 1	882	-	-	-	-	-
Stage 2	1087	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	70	348	-	-	774	-
Stage 1	408	-	-	-	-	-
Stage 2	326	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	69	348	-	-	774	-
Mov Cap-2 Maneuver	69	-	-	-	-	-
Stage 1	408	-	-	-	-	-
Stage 2	321	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	36.7	0	0.1
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	173	774	-
HCM Lane V/C Ratio	-	-	0.352	0.014	-
HCM Control Delay (s)	-	-	36.7	9.7	-
HCM Lane LOS	-	-	E	A	-
HCM 95th %tile Q(veh)	-	-	1.5	0	-

Intersection	
Int Delay, s/veh	7.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	26	2	0	6	2
Future Vol, veh/h	2	26	2	0	6	2
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	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	3	35	3	0	8	3

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	22	3	0	0	3	0
Stage 1	3	-	-	-	-	-
Stage 2	19	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	1000	1087	-	-	1632	-
Stage 1	1025	-	-	-	-	-
Stage 2	1009	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	995	1087	-	-	1632	-
Mov Cap-2 Maneuver	995	-	-	-	-	-
Stage 1	1025	-	-	-	-	-
Stage 2	1004	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.5	0	5.4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1080	1632	-
HCM Lane V/C Ratio	-	-	0.035	0.005	-
HCM Control Delay (s)	-	-	8.5	7.2	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	5.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	3	4	0	5	21	0
Future Vol, veh/h	3	4	0	5	21	0
Conflicting Peds, #/hr	0	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	70	70	70	70	70	70
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	4	6	0	7	30	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	10	0	14	8
Stage 1	-	-	-	-	7	-
Stage 2	-	-	-	-	7	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1623	-	1010	1080
Stage 1	-	-	-	-	1021	-
Stage 2	-	-	-	-	1021	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1621	-	1010	1079
Mov Cap-2 Maneuver	-	-	-	-	1010	-
Stage 1	-	-	-	-	1021	-
Stage 2	-	-	-	-	1021	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	8.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1010	-	-	1621	-
HCM Lane V/C Ratio	0.03	-	-	-	-
HCM Control Delay (s)	8.7	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↑			↑	
Traffic Vol, veh/h	4	0	6	3	0	31	5	760	5	12	965	0
Future Vol, veh/h	4	0	6	3	0	31	5	760	5	12	965	0
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	0	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	125	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	4	0	6	0	0	4	0
Mvmt Flow	4	0	7	3	0	34	6	844	6	13	1072	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1976	1961	1073	1960	1958	847	1073	0	0	850	0	0
Stage 1	1100	1100	-	858	858	-	-	-	-	-	-	-
Stage 2	876	861	-	1102	1100	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.24	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.336	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	47	64	270	48	64	359	657	-	-	797	-	-
Stage 1	260	290	-	354	376	-	-	-	-	-	-	-
Stage 2	346	375	-	259	290	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	42	62	270	46	62	359	657	-	-	797	-	-
Mov Cap-2 Maneuver	42	62	-	46	62	-	-	-	-	-	-	-
Stage 1	257	285	-	351	373	-	-	-	-	-	-	-
Stage 2	310	372	-	248	285	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	53.6	24.3	0.1	0.1
HCM LOS	F	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	657	-	-	85	224	797	-	-
HCM Lane V/C Ratio	0.008	-	-	0.131	0.169	0.017	-	-
HCM Control Delay (s)	10.5	-	-	53.6	24.3	9.6	-	-
HCM Lane LOS	B	-	-	F	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.6	0.1	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	12	0	13	56	0	18	5	9	756	25	7	957
Future Volume (vph)	12	0	13	56	0	18	5	9	756	25	7	957
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5	4.5		4.5	4.5
Lane Util. Factor		1.00			1.00			1.00	1.00		1.00	1.00
Frpb, ped/bikes		0.99			1.00			1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00			1.00			1.00	1.00		1.00	1.00
Frt		0.93			0.97			1.00	1.00		1.00	1.00
Flt Protected		0.98			0.96			0.95	1.00		0.95	1.00
Satd. Flow (prot)		1673			1734			1770	1854		1770	1861
Flt Permitted		0.88			0.76			0.15	1.00		0.25	1.00
Satd. Flow (perm)		1515			1368			288	1854		470	1861
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.92	0.93	0.93	0.93	0.93
Adj. Flow (vph)	13	0	14	60	0	19	5	10	813	27	8	1029
RTOR Reduction (vph)	0	24	0	0	39	0	0	0	1	0	0	0
Lane Group Flow (vph)	0	3	0	0	40	0	0	15	839	0	8	1037
Confl. Peds. (#/hr)			1	1								
Turn Type	Perm	NA		Perm	NA		Perm	Perm	NA		Perm	NA
Protected Phases		8			4				6			2
Permitted Phases	8			4			6	6			2	
Actuated Green, G (s)		10.7			10.7			73.7	73.7		73.7	73.7
Effective Green, g (s)		10.7			10.7			73.7	73.7		73.7	73.7
Actuated g/C Ratio		0.10			0.10			0.72	0.72		0.72	0.72
Clearance Time (s)		4.5			4.5			4.5	4.5		4.5	4.5
Vehicle Extension (s)		3.0			3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		158			142			207	1334		338	1339
v/s Ratio Prot									0.45			c0.56
v/s Ratio Perm		0.00			c0.03			0.05			0.02	
v/c Ratio		0.02			0.28			0.07	0.63		0.02	0.77
Uniform Delay, d1		41.1			42.3			4.2	7.4		4.1	9.1
Progression Factor		1.00			1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2		0.0			1.1			0.1	0.9		0.0	2.9
Delay (s)		41.2			43.4			4.4	8.3		4.1	12.0
Level of Service		D			D			A	A		A	B
Approach Delay (s)		41.2			43.4				8.2			11.9
Approach LOS		D			D				A			B

Intersection Summary			
HCM 2000 Control Delay	12.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	102.4	Sum of lost time (s)	13.5
Intersection Capacity Utilization	73.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR	SEL2	SEL	SER
Lane Configurations				
Traffic Volume (vph)	7	4	0	7
Future Volume (vph)	7	4	0	7
Ideal Flow (vphpl)	1900	1900	1900	1900
Total Lost time (s)			4.5	
Lane Util. Factor			1.00	
Frpb, ped/bikes			1.00	
Flpb, ped/bikes			1.00	
Frt			0.91	
Flt Protected			0.98	
Satd. Flow (prot)			1667	
Flt Permitted			0.98	
Satd. Flow (perm)			1667	
Peak-hour factor, PHF	0.93	0.92	0.92	0.92
Adj. Flow (vph)	8	4	0	8
RTOR Reduction (vph)	0	0	0	0
Lane Group Flow (vph)	0	0	12	0
Confl. Peds. (#/hr)				
Turn Type		Perm	Prot	
Protected Phases			9	
Permitted Phases		9		
Actuated Green, G (s)			4.5	
Effective Green, g (s)			4.5	
Actuated g/C Ratio			0.04	
Clearance Time (s)			4.5	
Vehicle Extension (s)			3.0	
Lane Grp Cap (vph)			73	
v/s Ratio Prot				
v/s Ratio Perm			0.01	
v/c Ratio			0.16	
Uniform Delay, d1			47.1	
Progression Factor			1.00	
Incremental Delay, d2			1.1	
Delay (s)			48.2	
Level of Service			D	
Approach Delay (s)			48.2	
Approach LOS			D	

Intersection Summary

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	7	19	0	2	76	0	4	3	0	3	3	4
Future Vol, veh/h	7	19	0	2	76	0	4	3	0	3	3	4
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	74	74	74	74	74	74	74	74	74	74	74	74
Heavy Vehicles, %	0	0	0	0	0	0	33	0	0	0	0	0
Mvmt Flow	9	26	0	3	103	0	5	4	0	4	4	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	104	0	0	26	0	0	158	154	27	157	154	104
Stage 1	-	-	-	-	-	-	45	45	-	109	109	-
Stage 2	-	-	-	-	-	-	113	109	-	48	45	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.43	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.43	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.43	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.797	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1500	-	-	1601	-	-	743	741	1054	814	741	956
Stage 1	-	-	-	-	-	-	896	861	-	901	809	-
Stage 2	-	-	-	-	-	-	822	809	-	971	861	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1500	-	-	1599	-	-	731	734	1053	804	734	955
Mov Cap-2 Maneuver	-	-	-	-	-	-	731	734	-	804	734	-
Stage 1	-	-	-	-	-	-	891	856	-	895	807	-
Stage 2	-	-	-	-	-	-	812	807	-	960	856	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2	0.2	10	9.4
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	732	1500	-	-	1599	-	-	833
HCM Lane V/C Ratio	0.013	0.006	-	-	0.002	-	-	0.016
HCM Control Delay (s)	10	7.4	0	-	7.3	0	-	9.4
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	7.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	17	0	2	76	11	3	20	0	2	5	0
Future Vol, veh/h	0	17	0	2	76	11	3	20	0	2	5	0
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	0	0	0	0	0	0	0	6	0	0	0	0
Mvmt Flow	0	20	0	2	92	13	4	24	0	2	6	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	96	42	6	52	42	25	6	0	0	24	0	0
Stage 1	11	11	-	31	31	-	-	-	-	-	-	-
Stage 2	85	31	-	21	11	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	891	854	1083	952	854	1057	1628	-	-	1604	-	-
Stage 1	1015	890	-	991	873	-	-	-	-	-	-	-
Stage 2	928	873	-	1003	890	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	805	851	1083	932	851	1056	1628	-	-	1602	-	-
Mov Cap-2 Maneuver	805	851	-	932	851	-	-	-	-	-	-	-
Stage 1	1013	889	-	989	871	-	-	-	-	-	-	-
Stage 2	818	871	-	979	889	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.3	9.7	0.9	2.1
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1628	-	-	851	874	1602	-	-
HCM Lane V/C Ratio	0.002	-	-	0.024	0.123	0.002	-	-
HCM Control Delay (s)	7.2	0	-	9.3	9.7	7.3	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.4	0	-	-

Intersection	
Intersection Delay, s/veh	7.3
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Traffic Vol, veh/h	0	0	20	2	0	6	73	2	0	2	2	3
Future Vol, veh/h	0	0	20	2	0	6	73	2	0	2	2	3
Peak Hour Factor	0.92	0.90	0.90	0.90	0.92	0.90	0.90	0.90	0.92	0.90	0.90	0.90
Heavy Vehicles, %	2	0	6	0	2	0	0	0	2	0	0	0
Mvmt Flow	0	0	22	2	0	7	81	2	0	2	2	3
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	7.2	7.4	7
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	29%	0%	7%	0%
Vol Thru, %	29%	91%	90%	0%
Vol Right, %	43%	9%	2%	100%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	7	22	81	7
LT Vol	2	0	6	0
Through Vol	2	20	73	0
RT Vol	3	2	2	7
Lane Flow Rate	8	24	90	8
Geometry Grp	1	1	1	1
Degree of Util (X)	0.008	0.027	0.099	0.008
Departure Headway (Hd)	3.904	4.042	3.946	3.504
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	911	887	912	1014
Service Time	1.952	2.062	1.954	1.551
HCM Lane V/C Ratio	0.009	0.027	0.099	0.008
HCM Control Delay	7	7.2	7.4	6.6
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0	0.1	0.3	0

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Lane Configurations				
Traffic Vol, veh/h	0	0	0	7
Future Vol, veh/h	0	0	0	7
Peak Hour Factor	0.92	0.90	0.90	0.90
Heavy Vehicles, %	2	0	0	0
Mvmt Flow	0	0	0	8
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	6.6
HCM LOS	A

Intersection	
Int Delay, s/veh	1.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	13	6	1044	21	6	1094
Future Vol, veh/h	13	6	1044	21	6	1094
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	125	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	2	0	0	2
Mvmt Flow	14	6	1099	22	6	1152

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2264	1100	0	0	1100	0
Stage 1	1100	-	-	-	-	-
Stage 2	1164	-	-	-	-	-
Critical Hdwy	7.1	6.2	-	-	4.1	-
Critical Hdwy Stg 1	6.1	-	-	-	-	-
Critical Hdwy Stg 2	6.1	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	29	260	-	-	642	-
Stage 1	260	-	-	-	-	-
Stage 2	239	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	28	260	-	-	642	-
Mov Cap-2 Maneuver	28	-	-	-	-	-
Stage 1	260	-	-	-	-	-
Stage 2	233	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	170.2	0	0.1
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	39	642	-
HCM Lane V/C Ratio	-	-	0.513	0.01	-
HCM Control Delay (s)	-	-	170.2	10.7	0
HCM Lane LOS	-	-	F	B	A
HCM 95th %tile Q(veh)	-	-	1.8	0	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	0	5	2	0	3	0	1053	0	2	1100	5
Future Vol, veh/h	6	0	5	2	0	3	0	1053	0	2	1100	5
Conflicting Peds, #/hr	5	0	0	0	0	5	0	0	4	4	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	65	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0	0	2	0	0	1	0
Mvmt Flow	6	0	5	2	0	3	0	1120	0	2	1170	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2304	2301	1173	2304	2304	1129	1176	0	0	1124	0	0
Stage 1	1177	1177	-	1124	1124	-	-	-	-	-	-	-
Stage 2	1127	1124	-	1180	1180	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	27	39	236	27	39	251	601	-	-	629	-	-
Stage 1	235	267	-	252	283	-	-	-	-	-	-	-
Stage 2	251	283	-	234	266	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	26	39	236	26	39	249	601	-	-	626	-	-
Mov Cap-2 Maneuver	26	39	-	26	39	-	-	-	-	-	-	-
Stage 1	235	266	-	251	282	-	-	-	-	-	-	-
Stage 2	247	282	-	228	265	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	114.2	75.9	0	0
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	601	-	-	44	56	626	-	-
HCM Lane V/C Ratio	-	-	-	0.266	0.095	0.003	-	-
HCM Control Delay (s)	0	-	-	114.2	75.9	10.8	-	-
HCM Lane LOS	A	-	-	F	F	B	-	-
HCM 95th %tile Q(veh)	0	-	-	0.9	0.3	0	-	-

Intersection	
Int Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	9	13	1035	13	37	1059
Future Vol, veh/h	9	13	1035	13	37	1059
Conflicting Peds, #/hr	0	0	0	2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	65	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	2	0	0	2
Mvmt Flow	9	14	1078	14	39	1103

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2267	1087	0	0	1094	0
Stage 1	1087	-	-	-	-	-
Stage 2	1180	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	45	265	-	-	645	-
Stage 1	326	-	-	-	-	-
Stage 2	295	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	42	264	-	-	645	-
Mov Cap-2 Maneuver	42	-	-	-	-	-
Stage 1	325	-	-	-	-	-
Stage 2	277	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	64.2	0	0.4
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	83	645	-
HCM Lane V/C Ratio	-	-	0.276	0.06	-
HCM Control Delay (s)	-	-	64.2	10.9	-
HCM Lane LOS	-	-	F	B	-
HCM 95th %tile Q(veh)	-	-	1	0.2	-

Intersection	
Int Delay, s/veh	6.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	7	2	7	22	0
Future Vol, veh/h	5	7	2	7	22	0
Conflicting Peds, #/hr	1	0	0	5	5	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	75	75	75	75	75	75
Heavy Vehicles, %	0	17	0	0	0	0
Mvmt Flow	7	9	3	9	29	0

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	72	12	0	0	17	0
Stage 1	12	-	-	-	-	-
Stage 2	60	-	-	-	-	-
Critical Hdwy	6.4	6.37	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.453	-	-	2.2	-
Pot Cap-1 Maneuver	937	1027	-	-	1613	-
Stage 1	1016	-	-	-	-	-
Stage 2	968	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	915	1022	-	-	1613	-
Mov Cap-2 Maneuver	915	-	-	-	-	-
Stage 1	1011	-	-	-	-	-
Stage 2	950	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.8	0	7.3
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	975	1613	-
HCM Lane V/C Ratio	-	-	0.016	0.018	-
HCM Control Delay (s)	-	-	8.8	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-

Intersection	
Int Delay, s/veh	2.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	10	19	2	5	9	0
Future Vol, veh/h	10	19	2	5	9	0
Conflicting Peds, #/hr	0	3	3	0	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	69	69	69	69	69	69
Heavy Vehicles, %	0	0	0	0	29	0
Mvmt Flow	14	28	3	7	13	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	45	0	45	31
Stage 1	-	-	-	-	31	-
Stage 2	-	-	-	-	14	-
Critical Hdwy	-	-	4.1	-	6.69	6.2
Critical Hdwy Stg 1	-	-	-	-	5.69	-
Critical Hdwy Stg 2	-	-	-	-	5.69	-
Follow-up Hdwy	-	-	2.2	-	3.761	3.3
Pot Cap-1 Maneuver	-	-	1576	-	901	1049
Stage 1	-	-	-	-	926	-
Stage 2	-	-	-	-	943	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1576	-	896	1046
Mov Cap-2 Maneuver	-	-	-	-	896	-
Stage 1	-	-	-	-	923	-
Stage 2	-	-	-	-	940	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.1	9.1
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	896	-	-	1576	-
HCM Lane V/C Ratio	0.015	-	-	0.002	-
HCM Control Delay (s)	9.1	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↑			↑	
Traffic Vol, veh/h	9	0	9	9	0	20	12	1014	9	33	999	6
Future Vol, veh/h	9	0	9	9	0	20	12	1014	9	33	999	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	2	2	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	125	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	0	0	0	2	14	7	2	0
Mvmt Flow	9	0	9	9	0	21	13	1056	9	34	1041	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2209	2206	1044	2205	2204	1063	1047	0	0	1068	0	0
Stage 1	1113	1113	-	1088	1088	-	-	-	-	-	-	-
Stage 2	1096	1093	-	1117	1116	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.17	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.263	-	-
Pot Cap-1 Maneuver	32	45	281	32	45	274	672	-	-	634	-	-
Stage 1	255	286	-	264	294	-	-	-	-	-	-	-
Stage 2	261	293	-	254	285	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	28	42	281	29	42	273	672	-	-	634	-	-
Mov Cap-2 Maneuver	28	42	-	29	42	-	-	-	-	-	-	-
Stage 1	250	271	-	258	288	-	-	-	-	-	-	-
Stage 2	236	287	-	232	270	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	112	80.7	0.1	0.3
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	672	-	-	51	76	634	-	-
HCM Lane V/C Ratio	0.019	-	-	0.368	0.397	0.054	-	-
HCM Control Delay (s)	10.5	-	-	112	80.7	11	-	-
HCM Lane LOS	B	-	-	F	F	B	-	-
HCM 95th %tile Q(veh)	0.1	-	-	1.3	1.6	0.2	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	4	0	4	37	0	16	6	10	1052	49	20	981
Future Volume (vph)	4	0	4	37	0	16	6	10	1052	49	20	981
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5	4.5		4.5	4.5
Lane Util. Factor		1.00			1.00			1.00	1.00		1.00	1.00
Frpb, ped/bikes		0.99			1.00			1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00			1.00			1.00	1.00		1.00	1.00
Frt		0.93			0.96			1.00	0.99		1.00	1.00
Flt Protected		0.98			0.97			0.95	1.00		0.95	1.00
Satd. Flow (prot)		1676			1725			1770	1850		1770	1858
Flt Permitted		0.91			0.79			0.18	1.00		0.13	1.00
Satd. Flow (perm)		1555			1404			342	1850		249	1858
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.92	0.93	0.93	0.93	0.93
Adj. Flow (vph)	4	0	4	40	0	17	6	11	1131	53	22	1055
RTOR Reduction (vph)	0	7	0	0	41	0	0	0	1	0	0	0
Lane Group Flow (vph)	0	1	0	0	16	0	0	17	1183	0	22	1070
Confl. Peds. (#/hr)			1	1			1	1				
Turn Type	Perm	NA		Perm	NA		Perm	Perm	NA		Perm	NA
Protected Phases		8			4				6			2
Permitted Phases	8			4			6	6			2	
Actuated Green, G (s)		8.8			8.8			96.8	96.8		96.8	96.8
Effective Green, g (s)		8.8			8.8			96.8	96.8		96.8	96.8
Actuated g/C Ratio		0.07			0.07			0.79	0.79		0.79	0.79
Clearance Time (s)		4.5			4.5			4.5	4.5		4.5	4.5
Vehicle Extension (s)		3.0			3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		111			100			269	1457		196	1463
v/s Ratio Prot									c0.64			0.58
v/s Ratio Perm		0.00			c0.01			0.05			0.09	
v/c Ratio		0.01			0.16			0.06	0.81		0.11	0.73
Uniform Delay, d1		53.0			53.6			2.9	7.7		3.0	6.5
Progression Factor		1.00			1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2		0.0			0.8			0.1	3.6		0.3	1.9
Delay (s)		53.0			54.3			3.0	11.3		3.3	8.5
Level of Service		D			D			A	B		A	A
Approach Delay (s)		53.0			54.3				11.1			8.4
Approach LOS		D			D				B			A

Intersection Summary			
HCM 2000 Control Delay	11.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	122.9	Sum of lost time (s)	13.5
Intersection Capacity Utilization	78.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR	SBR2	SEL2	SEL	SER
Lane Configurations					
Traffic Volume (vph)	12	2	2	0	3
Future Volume (vph)	12	2	2	0	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)				4.5	
Lane Util. Factor				1.00	
Frpb, ped/bikes				1.00	
Flpb, ped/bikes				1.00	
Frt				0.92	
Flt Protected				0.98	
Satd. Flow (prot)				1678	
Flt Permitted				0.98	
Satd. Flow (perm)				1678	
Peak-hour factor, PHF	0.93	0.92	0.92	0.92	0.92
Adj. Flow (vph)	13	2	2	0	3
RTOR Reduction (vph)	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	5	0
Confl. Peds. (#/hr)	1	1			
Turn Type			Perm	Prot	
Protected Phases				9	
Permitted Phases			9		
Actuated Green, G (s)				3.8	
Effective Green, g (s)				3.8	
Actuated g/C Ratio				0.03	
Clearance Time (s)				4.5	
Vehicle Extension (s)				3.0	
Lane Grp Cap (vph)				51	
v/s Ratio Prot					
v/s Ratio Perm				0.00	
v/c Ratio				0.10	
Uniform Delay, d1				57.9	
Progression Factor				1.00	
Incremental Delay, d2				0.8	
Delay (s)				58.7	
Level of Service				E	
Approach Delay (s)				58.7	
Approach LOS				E	

Intersection Summary

Intersection	
Int Delay, s/veh	4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	16	41	3	0	40	5	11	9	7	4	10	14
Future Vol, veh/h	16	41	3	0	40	5	11	9	7	4	10	14
Conflicting Peds, #/hr	2	0	1	1	0	2	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	79	79	79	79	79	79	79	79	79	79	79	79
Heavy Vehicles, %	0	3	0	0	0	0	0	0	0	33	0	0
Mvmt Flow	20	52	4	0	51	6	14	11	9	5	13	18

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	59	0	0	57	0	0	164	154	55	160	153	56
Stage 1	-	-	-	-	-	-	95	95	-	56	56	-
Stage 2	-	-	-	-	-	-	69	59	-	104	97	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.43	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.43	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.43	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.797	4	3.3
Pot Cap-1 Maneuver	1558	-	-	1560	-	-	805	741	1018	741	742	1016
Stage 1	-	-	-	-	-	-	917	820	-	883	852	-
Stage 2	-	-	-	-	-	-	946	850	-	831	819	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1558	-	-	1560	-	-	772	729	1017	717	730	1014
Mov Cap-2 Maneuver	-	-	-	-	-	-	772	729	-	717	730	-
Stage 1	-	-	-	-	-	-	904	809	-	870	850	-
Stage 2	-	-	-	-	-	-	916	848	-	802	808	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2	0	9.7	9.4
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	807	1558	-	-	1560	-	-	846
HCM Lane V/C Ratio	0.042	0.013	-	-	-	-	-	0.042
HCM Control Delay (s)	9.7	7.3	0	-	0	-	-	9.4
HCM Lane LOS	A	A	A	-	A	-	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	7.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	46	4	11	39	3	5	7	6	18	14	3
Future Vol, veh/h	0	46	4	11	39	3	5	7	6	18	14	3
Conflicting Peds, #/hr	3	0	0	0	0	3	3	0	2	2	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	0	5	0	22	0	0	0	0	0	0	8	0
Mvmt Flow	0	53	5	13	45	3	6	8	7	21	16	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	114	92	21	114	90	17	23	0	0	17	0	0
Stage 1	63	63	-	25	25	-	-	-	-	-	-	-
Stage 2	51	29	-	89	65	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.55	6.2	7.32	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.55	-	6.32	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.55	-	6.32	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.045	3.3	3.698	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	868	792	1062	818	804	1068	1605	-	-	1613	-	-
Stage 1	953	837	-	944	878	-	-	-	-	-	-	-
Stage 2	967	865	-	871	845	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	812	775	1059	760	787	1063	1605	-	-	1608	-	-
Mov Cap-2 Maneuver	812	775	-	760	787	-	-	-	-	-	-	-
Stage 1	946	824	-	938	873	-	-	-	-	-	-	-
Stage 2	908	860	-	800	832	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.9	9.9	2	3.7
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1605	-	-	792	793	1608	-	-
HCM Lane V/C Ratio	0.004	-	-	0.073	0.078	0.013	-	-
HCM Control Delay (s)	7.3	0	-	9.9	9.9	7.3	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.3	0	-	-

Intersection	
Intersection Delay, s/veh	7.4
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Traffic Vol, veh/h	0	3	62	7	0	2	37	0	0	6	3	4
Future Vol, veh/h	0	3	62	7	0	2	37	0	0	6	3	4
Peak Hour Factor	0.92	0.75	0.75	0.75	0.92	0.75	0.75	0.75	0.92	0.75	0.75	0.75
Heavy Vehicles, %	2	0	4	0	2	0	0	0	2	40	0	0
Mvmt Flow	0	4	83	9	0	3	49	0	0	8	4	5
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	7.4	7.3	7.9
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	46%	4%	5%	0%
Vol Thru, %	23%	86%	95%	0%
Vol Right, %	31%	10%	0%	100%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	13	72	39	5
LT Vol	6	3	2	0
Through Vol	3	62	37	0
RT Vol	4	7	0	5
Lane Flow Rate	17	96	52	7
Geometry Grp	1	1	1	1
Degree of Util (X)	0.023	0.105	0.058	0.007
Departure Headway (Hd)	4.748	3.93	4.023	3.566
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	749	911	888	991
Service Time	2.811	1.958	2.058	1.634
HCM Lane V/C Ratio	0.023	0.105	0.059	0.007
HCM Control Delay	7.9	7.4	7.3	6.7
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.1	0.4	0.2	0

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Lane Configurations				
Traffic Vol, veh/h	0	0	0	5
Future Vol, veh/h	0	0	0	5
Peak Hour Factor	0.92	0.75	0.75	0.75
Heavy Vehicles, %	2	0	0	0
Mvmt Flow	0	0	0	7
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	6.7
HCM LOS	A

Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	9	4	1016	11	5	968
Future Vol, veh/h	9	4	1016	11	5	968
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	125	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	2	0	0	1
Mvmt Flow	9	4	1058	11	5	1008

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2078	1059	0	0	1059	0
Stage 1	1059	-	-	-	-	-
Stage 2	1019	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	60	275	-	-	665	-
Stage 1	336	-	-	-	-	-
Stage 2	351	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	59	275	-	-	665	-
Mov Cap-2 Maneuver	59	-	-	-	-	-
Stage 1	336	-	-	-	-	-
Stage 2	345	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	60.6	0	0.1
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	78	665	-
HCM Lane V/C Ratio	-	-	0.174	0.008	-
HCM Control Delay (s)	-	-	60.6	10.5	0
HCM Lane LOS	-	-	F	B	A
HCM 95th %tile Q(veh)	-	-	0.6	0	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	2	0	2	3	1013	0	2	977	5
Future Vol, veh/h	0	0	0	2	0	2	3	1013	0	2	977	5
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	3	3	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	65	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	0	0	0	3	0	0	2	0
Mvmt Flow	0	0	0	2	0	2	3	1055	0	2	1018	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2087	2088	1021	2089	2091	1058	1023	0	0	1058	0	0
Stage 1	1024	1024	-	1064	1064	-	-	-	-	-	-	-
Stage 2	1063	1064	-	1025	1027	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	39	53	289	39	53	276	686	-	-	666	-	-
Stage 1	286	315	-	272	302	-	-	-	-	-	-	-
Stage 2	272	302	-	286	314	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	38	52	289	39	52	275	685	-	-	666	-	-
Mov Cap-2 Maneuver	38	52	-	39	52	-	-	-	-	-	-	-
Stage 1	285	314	-	270	300	-	-	-	-	-	-	-
Stage 2	269	300	-	285	313	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	61.4	0	0
HCM LOS	A	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	685	-	-	-	68	666	-	-
HCM Lane V/C Ratio	0.005	-	-	-	0.061	0.003	-	-
HCM Control Delay (s)	10.3	-	-	0	61.4	10.4	-	-
HCM Lane LOS	B	-	-	A	F	B	-	-
HCM 95th %tile Q(veh)	0	-	-	-	0.2	0	-	-

Intersection	
Int Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	21	987	8	21	958
Future Vol, veh/h	10	21	987	8	21	958
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	65	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	9	2	0	0	1
Mvmt Flow	11	23	1061	9	23	1030

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2142	1067	0	0	1071	0
Stage 1	1067	-	-	-	-	-
Stage 2	1075	-	-	-	-	-
Critical Hdwy	6.4	6.29	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.381	-	-	2.2	-
Pot Cap-1 Maneuver	54	261	-	-	658	-
Stage 1	334	-	-	-	-	-
Stage 2	331	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	52	261	-	-	658	-
Mov Cap-2 Maneuver	52	-	-	-	-	-
Stage 1	334	-	-	-	-	-
Stage 2	319	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	49.1	0	0.2
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	114	658	-
HCM Lane V/C Ratio	-	-	0.292	0.034	-
HCM Control Delay (s)	-	-	49.1	10.7	-
HCM Lane LOS	-	-	E	B	-
HCM 95th %tile Q(veh)	-	-	1.1	0.1	-

Intersection	
Int Delay, s/veh	6.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	16	2	3	7	3
Future Vol, veh/h	4	16	2	3	7	3
Conflicting Peds, #/hr	2	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	75	75	75	75	75	75
Heavy Vehicles, %	33	8	0	0	0	0
Mvmt Flow	5	21	3	4	9	4

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	30	5	0	0	7	0
Stage 1	5	-	-	-	-	-
Stage 2	25	-	-	-	-	-
Critical Hdwy	6.73	6.28	-	-	4.1	-
Critical Hdwy Stg 1	5.73	-	-	-	-	-
Critical Hdwy Stg 2	5.73	-	-	-	-	-
Follow-up Hdwy	3.797	3.372	-	-	2.2	-
Pot Cap-1 Maneuver	911	1061	-	-	1627	-
Stage 1	943	-	-	-	-	-
Stage 2	923	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	904	1061	-	-	1627	-
Mov Cap-2 Maneuver	904	-	-	-	-	-
Stage 1	943	-	-	-	-	-
Stage 2	916	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.6	0	5.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1025	1627	-
HCM Lane V/C Ratio	-	-	0.026	0.006	-
HCM Control Delay (s)	-	-	8.6	7.2	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	3	6	2	0	16	2
Future Vol, veh/h	3	6	2	0	16	2
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	0	0	100	0	15	0
Mvmt Flow	4	8	3	0	20	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	12	0	14	9
Stage 1	-	-	-	-	9	-
Stage 2	-	-	-	-	5	-
Critical Hdwy	-	-	5.1	-	6.55	6.2
Critical Hdwy Stg 1	-	-	-	-	5.55	-
Critical Hdwy Stg 2	-	-	-	-	5.55	-
Follow-up Hdwy	-	-	3.1	-	3.635	3.3
Pot Cap-1 Maneuver	-	-	1148	-	972	1079
Stage 1	-	-	-	-	981	-
Stage 2	-	-	-	-	985	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1148	-	968	1078
Mov Cap-2 Maneuver	-	-	-	-	968	-
Stage 1	-	-	-	-	980	-
Stage 2	-	-	-	-	982	-

Approach	EB	WB	NB
HCM Control Delay, s	0	8.1	8.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	979	-	-	1148	-
HCM Lane V/C Ratio	0.023	-	-	0.002	-
HCM Control Delay (s)	8.8	-	-	8.1	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↑			↑	
Traffic Vol, veh/h	0	0	7	7	2	29	11	721	3	26	938	6
Future Vol, veh/h	0	0	7	7	2	29	11	721	3	26	938	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	125	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	17	0	4	0	3	0	5	1	0
Mvmt Flow	0	0	7	7	2	31	12	759	3	27	987	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1845	1831	991	1834	1833	762	994	0	0	763	0	0
Stage 1	1045	1045	-	785	785	-	-	-	-	-	-	-
Stage 2	800	786	-	1049	1048	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.27	6.5	6.24	4.1	-	-	4.15	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.27	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.27	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.653	4	3.336	2.2	-	-	2.245	-	-
Pot Cap-1 Maneuver	58	77	301	53	77	402	704	-	-	836	-	-
Stage 1	279	308	-	364	407	-	-	-	-	-	-	-
Stage 2	382	406	-	258	307	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	50	73	301	50	73	402	704	-	-	836	-	-
Mov Cap-2 Maneuver	50	73	-	50	73	-	-	-	-	-	-	-
Stage 1	274	298	-	357	400	-	-	-	-	-	-	-
Stage 2	345	399	-	244	297	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	17.3	35.1	0.2	0.3
HCM LOS	C	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	704	-	-	301	159	836	-	-
HCM Lane V/C Ratio	0.016	-	-	0.024	0.252	0.033	-	-
HCM Control Delay (s)	10.2	-	-	17.3	35.1	9.5	-	-
HCM Lane LOS	B	-	-	C	E	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	0.9	0.1	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	7	4	25	27	4	27	33	5	705	42	9	938
Future Volume (vph)	7	4	25	27	4	27	33	5	705	42	9	938
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5	4.5		4.5	4.5
Lane Util. Factor		1.00			1.00			1.00	1.00		1.00	1.00
Frt		0.91			0.94			1.00	0.99		1.00	1.00
Flt Protected		0.99			0.98			0.95	1.00		0.95	1.00
Satd. Flow (prot)		1672			1705			1770	1847		1770	1858
Flt Permitted		0.95			0.87			0.18	1.00		0.28	1.00
Satd. Flow (perm)		1603			1510			329	1847		527	1858
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.92	0.93	0.93	0.93	0.93
Adj. Flow (vph)	8	4	27	29	4	29	35	5	758	45	10	1009
RTOR Reduction (vph)	0	25	0	0	40	0	0	0	1	0	0	0
Lane Group Flow (vph)	0	14	0	0	22	0	0	40	802	0	10	1026
Turn Type	Perm	NA		Perm	NA		Perm	Perm	NA		Perm	NA
Protected Phases		8			4				6			2
Permitted Phases	8			4			6	6			2	
Actuated Green, G (s)		8.1			8.1			75.2	75.2		75.2	75.2
Effective Green, g (s)		8.1			8.1			75.2	75.2		75.2	75.2
Actuated g/C Ratio		0.08			0.08			0.74	0.74		0.74	0.74
Clearance Time (s)		4.5			4.5			4.5	4.5		4.5	4.5
Vehicle Extension (s)		3.0			3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		128			120			244	1372		391	1380
v/s Ratio Prot									0.43			c0.55
v/s Ratio Perm		0.01			c0.01			0.12			0.02	
v/c Ratio		0.11			0.18			0.16	0.58		0.03	0.74
Uniform Delay, d1		43.2			43.4			3.8	5.9		3.4	7.5
Progression Factor		1.00			1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2		0.4			0.7			0.3	0.6		0.0	2.2
Delay (s)		43.6			44.2			4.1	6.5		3.4	9.7
Level of Service		D			D			A	A		A	A
Approach Delay (s)		43.6			44.2				6.4			9.6
Approach LOS		D			D				A			A

Intersection Summary			
HCM 2000 Control Delay	10.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	101.2	Sum of lost time (s)	13.5
Intersection Capacity Utilization	72.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBR	SBR2	SEL2	SEL	SER
Lane Configurations					
Traffic Volume (vph)	9	6	4	0	10
Future Volume (vph)	9	6	4	0	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)				4.5	
Lane Util. Factor				1.00	
Frt				0.90	
Flt Protected				0.99	
Satd. Flow (prot)				1656	
Flt Permitted				0.99	
Satd. Flow (perm)				1656	
Peak-hour factor, PHF	0.93	0.92	0.92	0.92	0.92
Adj. Flow (vph)	10	7	4	0	11
RTOR Reduction (vph)	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	15	0
Turn Type			Perm	Prot	
Protected Phases				9	
Permitted Phases			9		
Actuated Green, G (s)				4.4	
Effective Green, g (s)				4.4	
Actuated g/C Ratio				0.04	
Clearance Time (s)				4.5	
Vehicle Extension (s)				3.0	
Lane Grp Cap (vph)				72	
v/s Ratio Prot					
v/s Ratio Perm				0.01	
v/c Ratio				0.21	
Uniform Delay, d1				46.7	
Progression Factor				1.00	
Incremental Delay, d2				1.4	
Delay (s)				48.2	
Level of Service				D	
Approach Delay (s)				48.2	
Approach LOS				D	

Intersection Summary

Intersection	
Int Delay, s/veh	4.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	29	39	3	6	36	20	12	11	4	7	20	10
Future Vol, veh/h	29	39	3	6	36	20	12	11	4	7	20	10
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	2	2	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	35	47	4	7	43	24	14	13	5	8	24	12

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	68	0	0	51	0	0	207	202	51	201	191	56
Stage 1	-	-	-	-	-	-	119	119	-	71	71	-
Stage 2	-	-	-	-	-	-	88	83	-	130	120	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1546	-	-	1568	-	-	755	698	1023	762	708	1016
Stage 1	-	-	-	-	-	-	890	801	-	944	840	-
Stage 2	-	-	-	-	-	-	925	830	-	878	800	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1546	-	-	1565	-	-	711	678	1021	729	688	1015
Mov Cap-2 Maneuver	-	-	-	-	-	-	711	678	-	729	688	-
Stage 1	-	-	-	-	-	-	870	783	-	921	835	-
Stage 2	-	-	-	-	-	-	883	825	-	838	782	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3	0.7	10.2	10
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	729	1546	-	-	1565	-	-	763
HCM Lane V/C Ratio	0.045	0.023	-	-	0.005	-	-	0.058
HCM Control Delay (s)	10.2	7.4	0	-	7.3	0	-	10
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.2

Intersection	
Int Delay, s/veh	6.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	43	4	12	43	3	9	16	9	10	19	4
Future Vol, veh/h	3	43	4	12	43	3	9	16	9	10	19	4
Conflicting Peds, #/hr	4	0	0	0	0	4	1	0	1	1	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	0	0	0	0	0	0	0	8	14	0	6	0
Mvmt Flow	4	51	5	14	51	4	11	19	11	12	23	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	127	102	26	124	99	29	28	0	0	31	0	0
Stage 1	50	50	-	47	47	-	-	-	-	-	-	-
Stage 2	77	52	-	77	52	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	851	792	1056	855	795	1052	1599	-	-	1595	-	-
Stage 1	968	857	-	972	860	-	-	-	-	-	-	-
Stage 2	937	856	-	937	856	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	793	779	1055	799	782	1047	1599	-	-	1589	-	-
Mov Cap-2 Maneuver	793	779	-	799	782	-	-	-	-	-	-	-
Stage 1	960	849	-	964	853	-	-	-	-	-	-	-
Stage 2	868	849	-	870	848	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.9	10	1.9	2.2
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1599	-	-	797	796	1589	-	-
HCM Lane V/C Ratio	0.007	-	-	0.075	0.087	0.007	-	-
HCM Control Delay (s)	7.3	0	-	9.9	10	7.3	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.3	0	-	-

Intersection	
Intersection Delay, s/veh	7.2
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations			↕				↕				↕	
Traffic Vol, veh/h	0	5	52	4	0	3	47	0	0	5	2	5
Future Vol, veh/h	0	5	52	4	0	3	47	0	0	5	2	5
Peak Hour Factor	0.92	0.83	0.83	0.83	0.92	0.83	0.83	0.83	0.92	0.83	0.83	0.83
Heavy Vehicles, %	2	0	2	0	2	0	0	0	2	0	0	0
Mvmt Flow	0	6	63	5	0	4	57	0	0	6	2	6
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	7.3	7.3	7.1
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	42%	8%	6%	0%
Vol Thru, %	17%	85%	94%	22%
Vol Right, %	42%	7%	0%	78%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	12	61	50	9
LT Vol	5	5	3	0
Through Vol	2	52	47	2
RT Vol	5	4	0	7
Lane Flow Rate	14	73	60	11
Geometry Grp	1	1	1	1
Degree of Util (X)	0.016	0.081	0.067	0.011
Departure Headway (Hd)	3.973	3.968	4.012	3.675
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	894	904	893	965
Service Time	2.029	1.986	2.033	1.733
HCM Lane V/C Ratio	0.016	0.081	0.067	0.011
HCM Control Delay	7.1	7.3	7.3	6.8
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0	0.3	0.2	0

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Lane Configurations				
Traffic Vol, veh/h	0	0	2	7
Future Vol, veh/h	0	0	2	7
Peak Hour Factor	0.92	0.83	0.83	0.83
Heavy Vehicles, %	2	0	0	0
Mvmt Flow	0	0	2	8
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	6.8
HCM LOS	A

Appendix 10 Existing with Project Conditions, Mitigated Level-of-Service Worksheets

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	10	0	11	48	0	15	0	4	623	21	6	575
Future Volume (vph)	10	0	11	48	0	15	0	4	623	21	6	575
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5				4.5		4.5	4.5
Lane Util. Factor		1.00			1.00				1.00		1.00	1.00
Frpb, ped/bikes		1.00			1.00				1.00		1.00	1.00
Flpb, ped/bikes		1.00			1.00				1.00		1.00	1.00
Frt		0.93			0.97				1.00		1.00	1.00
Flt Protected		0.98			0.96				1.00		0.95	1.00
Satd. Flow (prot)		1691			1737				1853		1770	1860
Flt Permitted		0.86			0.76				1.00		0.29	1.00
Satd. Flow (perm)		1485			1373				1849		545	1860
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.92	0.93	0.92	0.93	0.93	0.93	0.93
Adj. Flow (vph)	11	0	12	52	0	16	0	4	670	23	6	618
RTOR Reduction (vph)	0	20	0	0	0	0	0	0	1	0	0	0
Lane Group Flow (vph)	0	3	0	0	68	0	0	0	696	0	6	624
Confl. Peds. (#/hr)							1					
Turn Type	Perm	NA		Perm	NA		Perm	Perm	NA		Perm	NA
Protected Phases		8			4				6			2
Permitted Phases	8			4			6	6			2	
Actuated Green, G (s)		9.2			9.2				43.2		43.2	43.2
Effective Green, g (s)		9.2			9.2				43.2		43.2	43.2
Actuated g/C Ratio		0.13			0.13				0.63		0.63	0.63
Clearance Time (s)		4.5			4.5				4.5		4.5	4.5
Vehicle Extension (s)		3.0			3.0				3.0		3.0	3.0
Lane Grp Cap (vph)		198			183				1162		342	1169
v/s Ratio Prot												0.34
v/s Ratio Perm		0.00			c0.05				c0.38		0.01	
v/c Ratio		0.02			0.37				0.60		0.02	0.53
Uniform Delay, d1		25.8			27.1				7.6		4.8	7.1
Progression Factor		1.00			1.00				1.00		1.00	1.00
Incremental Delay, d2		0.0			1.3				0.8		0.0	0.5
Delay (s)		25.9			28.4				8.4		4.8	7.6
Level of Service		C			C				A		A	A
Approach Delay (s)		25.9			28.4				8.4			7.6
Approach LOS		C			C				A			A

Intersection Summary			
HCM 2000 Control Delay	9.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	68.7	Sum of lost time (s)	13.5
Intersection Capacity Utilization	50.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR	SEL
Lane Configurations		
Traffic Volume (vph)	6	0
Future Volume (vph)	6	0
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		
Lane Util. Factor		
Frpb, ped/bikes		
Flpb, ped/bikes		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Peak-hour factor, PHF	0.93	0.92
Adj. Flow (vph)	6	0
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	0
Confl. Peds. (#/hr)	1	
Turn Type		Prot
Protected Phases		9
Permitted Phases		
Actuated Green, G (s)		
Effective Green, g (s)		
Actuated g/C Ratio		
Clearance Time (s)		
Vehicle Extension (s)		
Lane Grp Cap (vph)		
v/s Ratio Prot		
v/s Ratio Perm		
v/c Ratio		
Uniform Delay, d1		
Progression Factor		
Incremental Delay, d2		
Delay (s)		
Level of Service		
Approach Delay (s)		0.0
Approach LOS		A

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	3	0	3	32	0	13	0	5	673	42	17	815
Future Volume (vph)	3	0	3	32	0	13	0	5	673	42	17	815
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5				4.5		4.5	4.5
Lane Util. Factor		1.00			1.00				1.00		1.00	1.00
Frpb, ped/bikes		1.00			1.00				1.00		1.00	1.00
Flpb, ped/bikes		1.00			1.00				1.00		1.00	1.00
Frt		0.93			0.96				0.99		1.00	1.00
Flt Protected		0.98			0.97				1.00		0.95	1.00
Satd. Flow (prot)		1693			1729				1846		1770	1859
Flt Permitted		0.88			0.78				1.00		0.28	1.00
Satd. Flow (perm)		1534			1405				1839		521	1859
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.92	0.91	0.92	0.91	0.91	0.91	0.91
Adj. Flow (vph)	3	0	3	35	0	14	0	5	740	46	19	896
RTOR Reduction (vph)	0	5	0	0	0	0	0	0	1	0	0	0
Lane Group Flow (vph)	0	1	0	0	49	0	0	0	790	0	19	907
Confl. Peds. (#/hr)	1						1					
Turn Type	Perm	NA		Perm	NA		Perm	Perm	NA		Perm	NA
Protected Phases		8			4				6			2
Permitted Phases	8			4			6	6			2	
Actuated Green, G (s)		9.5			9.5				67.2		67.2	67.2
Effective Green, g (s)		9.5			9.5				67.2		67.2	67.2
Actuated g/C Ratio		0.10			0.10				0.72		0.72	0.72
Clearance Time (s)		4.5			4.5				4.5		4.5	4.5
Vehicle Extension (s)		3.0			3.0				3.0		3.0	3.0
Lane Grp Cap (vph)		156			143				1325		375	1340
v/s Ratio Prot												c0.49
v/s Ratio Perm		0.00			c0.03				0.43		0.04	
v/c Ratio		0.00			0.34				0.60		0.05	0.68
Uniform Delay, d1		37.6			38.9				6.4		3.8	7.1
Progression Factor		1.00			1.00				1.00		1.00	1.00
Incremental Delay, d2		0.0			1.4				0.7		0.1	1.4
Delay (s)		37.6			40.4				7.1		3.8	8.5
Level of Service		D			D				A		A	A
Approach Delay (s)		37.6			40.4				7.1			8.4
Approach LOS		D			D				A			A

Intersection Summary			
HCM 2000 Control Delay	8.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	93.2	Sum of lost time (s)	13.5
Intersection Capacity Utilization	55.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR	SEL
Lane Configurations		
Traffic Volume (vph)	10	0
Future Volume (vph)	10	0
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		
Lane Util. Factor		
Frpb, ped/bikes		
Flpb, ped/bikes		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Peak-hour factor, PHF	0.91	0.92
Adj. Flow (vph)	11	0
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	0
Confl. Peds. (#/hr)	1	
Turn Type		Prot
Protected Phases		9
Permitted Phases		
Actuated Green, G (s)		
Effective Green, g (s)		
Actuated g/C Ratio		
Clearance Time (s)		
Vehicle Extension (s)		
Lane Grp Cap (vph)		
v/s Ratio Prot		
v/s Ratio Perm		
v/c Ratio		
Uniform Delay, d1		
Progression Factor		
Incremental Delay, d2		
Delay (s)		
Level of Service		
Approach Delay (s)		0.0
Approach LOS		A

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	6	3	21	23	3	23	0	28	705	36	7	938
Future Volume (vph)	6	3	21	23	3	23	0	28	705	36	7	938
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5				4.5		4.5	4.5
Lane Util. Factor		1.00			1.00				1.00		1.00	1.00
Frpb, ped/bikes		1.00			1.00				1.00		1.00	1.00
Flpb, ped/bikes		1.00			1.00				1.00		1.00	1.00
Frt		0.90			0.94				0.99		1.00	1.00
Flt Protected		0.99			0.98				1.00		0.95	1.00
Satd. Flow (prot)		1667			1703				1846		1770	1861
Flt Permitted		0.94			0.84				0.94		0.29	1.00
Satd. Flow (perm)		1588			1468				1743		544	1861
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.92	0.95	0.92	0.95	0.95	0.95	0.95
Adj. Flow (vph)	6	3	22	24	3	25	0	30	742	38	7	987
RTOR Reduction (vph)	0	20	0	0	0	0	0	0	1	0	0	0
Lane Group Flow (vph)	0	11	0	0	52	0	0	0	809	0	7	994
Confl. Peds. (#/hr)	1											
Turn Type	Perm	NA		Perm	NA		Perm	Perm	NA		Perm	NA
Protected Phases		8			4				6			2
Permitted Phases	8			4			6	6			2	
Actuated Green, G (s)		10.4			10.4				96.5		96.5	96.5
Effective Green, g (s)		10.4			10.4				96.5		96.5	96.5
Actuated g/C Ratio		0.08			0.08				0.78		0.78	0.78
Clearance Time (s)		4.5			4.5				4.5		4.5	4.5
Vehicle Extension (s)		3.0			3.0				3.0		3.0	3.0
Lane Grp Cap (vph)		132			122				1354		422	1445
v/s Ratio Prot												c0.53
v/s Ratio Perm		0.01			c0.04				0.46		0.01	
v/c Ratio		0.08			0.43				0.60		0.02	0.69
Uniform Delay, d1		52.5			54.1				5.8		3.1	6.6
Progression Factor		1.00			1.00				1.00		1.00	1.00
Incremental Delay, d2		0.3			2.4				0.7		0.0	1.4
Delay (s)		52.8			56.5				6.5		3.1	8.0
Level of Service		D			E				A		A	A
Approach Delay (s)		52.8			56.5				6.5			8.0
Approach LOS		D			E				A			A

Intersection Summary			
HCM 2000 Control Delay	9.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	124.2	Sum of lost time (s)	13.5
Intersection Capacity Utilization	76.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR	SEL
Lane Configurations		
Traffic Volume (vph)	7	0
Future Volume (vph)	7	0
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		
Lane Util. Factor		
Frpb, ped/bikes		
Flpb, ped/bikes		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Peak-hour factor, PHF	0.95	0.92
Adj. Flow (vph)	7	0
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	0
Confl. Peds. (#/hr)		
Turn Type		Prot
Protected Phases		9
Permitted Phases		
Actuated Green, G (s)		
Effective Green, g (s)		
Actuated g/C Ratio		
Clearance Time (s)		
Vehicle Extension (s)		
Lane Grp Cap (vph)		
v/s Ratio Prot		
v/s Ratio Perm		
v/c Ratio		
Uniform Delay, d1		
Progression Factor		
Incremental Delay, d2		
Delay (s)		
Level of Service		
Approach Delay (s)		0.0
Approach LOS		A

Intersection Summary

Appendix 11 Roundabout Analysis at State Route 1/ California Avenue / Wienke Way

Cumulative AM Scenario

Vistro File: \...\Roundabout_Analysis.vistro
Report File: C:\...\VistroResults_CumAM1.pdf

Scenario 1 CumAM
11/20/2018

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Hwy 1 and California Ave	Roundabout	HCM 6th Edition	SB Thru		14.7	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Hwy 1 and California Ave

Control Type:	Roundabout	Delay (sec / veh):	14.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes		

Intersection Setup

Name	Hwy 1				California Ave				California Ave			
Approach	Southbound				Northeastbound				Southwestbound			
Lane Configuration												
Turning Movement	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00				30.00				30.00			
Grade [%]	0.00				0.00				0.00			
Crosswalk	Yes				Yes				Yes			

Volumes

Name	Hwy 1				California Ave				California Ave			
Base Volume Input [veh/h]	7	943	7	0	0	12	0	13	56	0	0	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	7	943	7	0	0	12	0	13	56	0	0	18
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	253	2	0	0	3	0	3	15	0	0	5
Total Analysis Volume [veh/h]	8	1014	8	0	0	13	0	14	60	0	0	19
Pedestrian Volume [ped/h]	0				0				0			

Intersection Settings

Number of Conflicting Circulating Lanes	1				1				1			
Circulating Flow Rate [veh/h]	77				1116				858			
Exiting Flow Rate [veh/h]	862				13				36			
Demand Flow Rate [veh/h]	7	943	7	0	0	12	0	13	56	0	0	18
Adjusted Demand Flow Rate [veh/h]	8	1014	8	0	0	13	0	14	60	0	0	19

Lanes

Overwrite Calculated Critical Headway	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00
A (intercept)	1380.00	1380.00	1380.00
B (coefficient)	0.00102	0.00102	0.00102
HV Adjustment Factor	0.98	0.98	0.98
Entry Flow Rate [veh/h]	1051	28	81
Capacity of Entry and Bypass Lanes [veh/h]	1277	443	576
Pedestrian Impedance	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	1252	434	565
X, volume / capacity	0.82	0.06	0.14

Movement, Approach, & Intersection Results

Lane LOS	C	A	A
95th-Percentile Queue Length [veh]	10.20	0.20	0.48
95th-Percentile Queue Length [ft]	254.97	4.96	12.12
Approach Delay [s/veh]	18.67	9.17	8.12
Approach LOS	C	A	A
Intersection Delay [s/veh]	14.71		
Intersection LOS	B		

Intersection Setup

Name	Hwy 1				Wienke Way			
Approach	Northwestbound				Southeastbound			
Lane Configuration								
Turning Movement	Left2	Left	Thru	Right	Left2	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00				30.00			
Grade [%]	0.00				0.00			
Crosswalk	Yes				Yes			

Volumes

Name	Hwy 1				Wienke Way			
Base Volume Input [veh/h]	5	9	752	25	4	0	7	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	5	9	752	25	4	0	7	0
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	2	202	7	1	0	2	0
Total Analysis Volume [veh/h]	5	10	809	27	4	0	8	0
Pedestrian Volume [ped/h]	1				0			

Intersection Settings

Number of Conflicting Circulating Lanes	1				1			
Circulating Flow Rate [veh/h]	26				1117			
Exiting Flow Rate [veh/h]	1118				10			
Demand Flow Rate [veh/h]	5	9	752	25	4	0	7	0
Adjusted Demand Flow Rate [veh/h]	5	10	809	27	4	0	8	0

Lanes

Overwrite Calculated Critical Headway	No	No
User-Defined Critical Headway [s]	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No
User-Defined Follow-Up Time [s]	3.00	3.00
A (intercept)	1380.00	1380.00
B (coefficient)	0.00102	0.00102
HV Adjustment Factor	0.98	0.98
Entry Flow Rate [veh/h]	869	13
Capacity of Entry and Bypass Lanes [veh/h]	1345	442
Pedestrian Impedance	1.00	1.00
Capacity per Entry Lane [veh/h]	1319	434
X, volume / capacity	0.65	0.03

Movement, Approach, & Intersection Results

Lane LOS	B	A
95th-Percentile Queue Length [veh]	5.03	0.09
95th-Percentile Queue Length [ft]	125.82	2.13
Approach Delay [s/veh]	10.79	8.69
Approach LOS	B	A
Intersection Delay [s/veh]	14.71	
Intersection LOS	B	

Cumulative PM Scenario

Vistro File: \...\Roundabout_Analysis.vistro
Report File: C:\...\VistroResults_CumPM.pdf

Scenario 2 CumPM
11/20/2018

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Hwy 1 and California Ave	Roundabout	HCM 6th Edition	NWB Thru		22.6	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Hwy 1 and California Ave

Control Type:	Roundabout	Delay (sec / veh):	22.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes		

Intersection Setup

Name	Hwy 1				California Ave				California Ave			
Approach	Southbound				Northeastbound				Southwestbound			
Lane Configuration												
Turning Movement	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00				30.00				30.00			
Grade [%]	0.00				0.00				0.00			
Crosswalk	Yes				Yes				Yes			

Volumes

Name	Hwy 1				California Ave				California Ave			
Base Volume Input [veh/h]	20	972	12	2	0	4	0	4	37	0	0	16
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	20	972	12	2	0	4	0	4	37	0	0	16
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	261	3	1	0	1	0	1	10	0	0	4
Total Analysis Volume [veh/h]	22	1045	13	2	0	4	0	4	40	0	0	17
Pedestrian Volume [ped/h]	0				1				0			

Intersection Settings

Number of Conflicting Circulating Lanes	1				1				1			
Circulating Flow Rate [veh/h]	58				1134				1163			
Exiting Flow Rate [veh/h]	1163				19				77			
Demand Flow Rate [veh/h]	20	972	12	2	0	4	0	4	37	0	0	16
Adjusted Demand Flow Rate [veh/h]	22	1045	13	2	0	4	0	4	40	0	0	17

Lanes

Overwrite Calculated Critical Headway	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00
A (intercept)	1380.00	1380.00	1380.00
B (coefficient)	0.00102	0.00102	0.00102
HV Adjustment Factor	0.98	0.98	0.98
Entry Flow Rate [veh/h]	1104	9	59
Capacity of Entry and Bypass Lanes [veh/h]	1301	434	422
Pedestrian Impedance	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	1276	426	414
X, volume / capacity	0.85	0.02	0.14

Movement, Approach, & Intersection Results

Lane LOS	C	A	B
95th-Percentile Queue Length [veh]	11.42	0.06	0.47
95th-Percentile Queue Length [ft]	285.38	1.44	11.87
Approach Delay [s/veh]	20.32	8.72	10.79
Approach LOS	C	A	B
Intersection Delay [s/veh]	22.57		
Intersection LOS	C		

Intersection Setup

Name	Hwy 1				Wienke Way			
Approach	Northwestbound				Southeastbound			
Lane Configuration								
Turning Movement	Left2	Left	Thru	Right	Left2	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00				30.00			
Grade [%]	0.00				0.00			
Crosswalk	Yes				Yes			

Volumes

Name	Hwy 1				Wienke Way			
Base Volume Input [veh/h]	6	10	1039	49	2	0	3	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	6	10	1039	49	2	0	3	0
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	3	279	13	1	0	1	0
Total Analysis Volume [veh/h]	6	11	1117	53	2	0	3	0
Pedestrian Volume [ped/h]	1				1			

Intersection Settings

Number of Conflicting Circulating Lanes	1				1			
Circulating Flow Rate [veh/h]	29				1149			
Exiting Flow Rate [veh/h]	1114				13			
Demand Flow Rate [veh/h]	6	10	1039	49	2	0	3	0
Adjusted Demand Flow Rate [veh/h]	6	11	1117	53	2	0	3	0

Lanes

Overwrite Calculated Critical Headway	No	No
User-Defined Critical Headway [s]	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No
User-Defined Follow-Up Time [s]	3.00	3.00
A (intercept)	1380.00	1380.00
B (coefficient)	0.00102	0.00102
HV Adjustment Factor	0.98	0.98
Entry Flow Rate [veh/h]	1211	6
Capacity of Entry and Bypass Lanes [veh/h]	1341	428
Pedestrian Impedance	1.00	1.00
Capacity per Entry Lane [veh/h]	1314	420
X, volume / capacity	0.90	0.01

Movement, Approach, & Intersection Results

Lane LOS	D	A
95th-Percentile Queue Length [veh]	14.61	0.04
95th-Percentile Queue Length [ft]	365.19	0.90
Approach Delay [s/veh]	25.35	8.75
Approach LOS	D	A
Intersection Delay [s/veh]	22.57	
Intersection LOS	C	

Cumulative Saturday Midday Scenario

Vistro File: \...\Roundabout_Analysis.vistro
Report File: C:\...\VistroResults_CumMid.pdf

Scenario 3 CumMid
11/20/2018

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Hwy 1 and California Ave	Roundabout	HCM 6th Edition	SB Thru		14.4	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Hwy 1 and California Ave

Control Type:	Roundabout	Delay (sec / veh):	14.4
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes		

Intersection Setup

Name	Hwy 1				California Ave				California Ave			
Approach	Southbound				Northeastbound				Southwestbound			
Lane Configuration												
Turning Movement	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00				30.00				30.00			
Grade [%]	0.00				0.00				0.00			
Crosswalk	Yes				Yes				Yes			

Volumes

Name	Hwy 1				California Ave				California Ave			
Base Volume Input [veh/h]	9	928	9	6	0	7	4	25	27	4	0	27
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	9	928	9	6	0	7	4	25	27	4	0	27
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	249	2	2	0	2	1	7	7	1	0	7
Total Analysis Volume [veh/h]	10	998	10	6	0	8	4	27	29	4	0	29
Pedestrian Volume [ped/h]	0				0				0			

Intersection Settings

Number of Conflicting Circulating Lanes	1				1				1			
Circulating Flow Rate [veh/h]	74				1073				817			
Exiting Flow Rate [veh/h]	806				50				60			
Demand Flow Rate [veh/h]	9	928	9	6	0	7	4	25	27	4	0	27
Adjusted Demand Flow Rate [veh/h]	10	998	10	6	0	8	4	27	29	4	0	29

Lanes

Overwrite Calculated Critical Headway	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00
A (intercept)	1380.00	1380.00	1380.00
B (coefficient)	0.00102	0.00102	0.00102
HV Adjustment Factor	0.98	0.98	0.98
Entry Flow Rate [veh/h]	1045	40	64
Capacity of Entry and Bypass Lanes [veh/h]	1280	462	600
Pedestrian Impedance	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	1254	453	588
X, volume / capacity	0.82	0.09	0.11

Movement, Approach, & Intersection Results

Lane LOS	C	A	A
95th-Percentile Queue Length [veh]	9.93	0.28	0.35
95th-Percentile Queue Length [ft]	248.21	7.03	8.79
Approach Delay [s/veh]	18.20	9.13	7.37
Approach LOS	C	A	A
Intersection Delay [s/veh]	14.35		
Intersection LOS	B		

Intersection Setup

Name	Hwy 1				Wienke Way			
Approach	Northwestbound				Southeastbound			
Lane Configuration								
Turning Movement	Left2	Left	Thru	Right	Left2	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00				30.00			
Grade [%]	0.00				0.00			
Crosswalk	Yes				Yes			

Volumes

Name	Hwy 1				Wienke Way			
Base Volume Input [veh/h]	33	5	697	42	4	0	10	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	33	5	697	42	4	0	10	0
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	1	187	11	1	0	3	0
Total Analysis Volume [veh/h]	35	5	749	45	4	0	11	0
Pedestrian Volume [ped/h]	0				0			

Intersection Settings

Number of Conflicting Circulating Lanes	1				1			
Circulating Flow Rate [veh/h]	27				1108			
Exiting Flow Rate [veh/h]	1086				11			
Demand Flow Rate [veh/h]	33	5	697	42	4	0	10	0
Adjusted Demand Flow Rate [veh/h]	35	5	749	45	4	0	11	0

Lanes

Overwrite Calculated Critical Headway	No	No
User-Defined Critical Headway [s]	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No
User-Defined Follow-Up Time [s]	3.00	3.00
A (intercept)	1380.00	1380.00
B (coefficient)	0.00102	0.00102
HV Adjustment Factor	0.98	0.98
Entry Flow Rate [veh/h]	851	16
Capacity of Entry and Bypass Lanes [veh/h]	1344	446
Pedestrian Impedance	1.00	1.00
Capacity per Entry Lane [veh/h]	1317	438
X, volume / capacity	0.63	0.03

Movement, Approach, & Intersection Results

Lane LOS	B	A
95th-Percentile Queue Length [veh]	4.80	0.11
95th-Percentile Queue Length [ft]	120.00	2.66
Approach Delay [s/veh]	10.49	8.70
Approach LOS	B	A
Intersection Delay [s/veh]	14.35	
Intersection LOS	B	

Cumulative with Project AM Scenario

Vistro File: \...\Roundabout_Analysis.vistro
Report File: C:\...\VistroResults_CumPrAM.pdf

Scenario 4 CumPrAM
11/20/2018

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Hwy 1 and California Ave	Roundabout	HCM 6th Edition	SB Thru		15.2	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Hwy 1 and California Ave

Control Type:	Roundabout	Delay (sec / veh):	15.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes		

Intersection Setup

Name	Hwy 1				California Ave				California Ave			
Approach	Southbound				Northeastbound				Southwestbound			
Lane Configuration												
Turning Movement	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00				30.00				30.00			
Grade [%]	0.00				0.00				0.00			
Crosswalk	Yes				Yes				Yes			

Volumes

Name	Hwy 1				California Ave				California Ave			
Base Volume Input [veh/h]	7	957	7	0	0	12	0	13	56	0	0	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	7	957	7	0	0	12	0	13	56	0	0	18
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	257	2	0	0	3	0	3	15	0	0	5
Total Analysis Volume [veh/h]	8	1029	8	0	0	13	0	14	60	0	0	19
Pedestrian Volume [ped/h]	0				0				0			

Intersection Settings

Number of Conflicting Circulating Lanes	1				1				1			
Circulating Flow Rate [veh/h]	77				1131				862			
Exiting Flow Rate [veh/h]	866				13				36			
Demand Flow Rate [veh/h]	7	957	7	0	0	12	0	13	56	0	0	18
Adjusted Demand Flow Rate [veh/h]	8	1029	8	0	0	13	0	14	60	0	0	19

Lanes

Overwrite Calculated Critical Headway	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00
A (intercept)	1380.00	1380.00	1380.00
B (coefficient)	0.00102	0.00102	0.00102
HV Adjustment Factor	0.98	0.98	0.98
Entry Flow Rate [veh/h]	1066	28	81
Capacity of Entry and Bypass Lanes [veh/h]	1277	436	573
Pedestrian Impedance	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	1252	427	562
X, volume / capacity	0.84	0.06	0.14

Movement, Approach, & Intersection Results

Lane LOS	C	A	A
95th-Percentile Queue Length [veh]	10.73	0.20	0.49
95th-Percentile Queue Length [ft]	268.21	5.05	12.18
Approach Delay [s/veh]	19.52	9.32	8.16
Approach LOS	C	A	A
Intersection Delay [s/veh]	15.21		
Intersection LOS	C		

Intersection Setup

Name	Hwy 1				Wienke Way			
Approach	Northwestbound				Southeastbound			
Lane Configuration								
Turning Movement	Left2	Left	Thru	Right	Left2	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00				30.00			
Grade [%]	0.00				0.00			
Crosswalk	Yes				Yes			

Volumes

Name	Hwy 1				Wienke Way			
Base Volume Input [veh/h]	5	9	756	25	4	0	7	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	5	9	756	25	4	0	7	0
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	2	203	7	1	0	2	0
Total Analysis Volume [veh/h]	5	10	813	27	4	0	8	0
Pedestrian Volume [ped/h]	1				0			

Intersection Settings

Number of Conflicting Circulating Lanes	1				1			
Circulating Flow Rate [veh/h]	26				1132			
Exiting Flow Rate [veh/h]	1133				10			
Demand Flow Rate [veh/h]	5	9	756	25	4	0	7	0
Adjusted Demand Flow Rate [veh/h]	5	10	813	27	4	0	8	0

Lanes

Overwrite Calculated Critical Headway	No	No
User-Defined Critical Headway [s]	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No
User-Defined Follow-Up Time [s]	3.00	3.00
A (intercept)	1380.00	1380.00
B (coefficient)	0.00102	0.00102
HV Adjustment Factor	0.98	0.98
Entry Flow Rate [veh/h]	873	13
Capacity of Entry and Bypass Lanes [veh/h]	1345	435
Pedestrian Impedance	1.00	1.00
Capacity per Entry Lane [veh/h]	1319	427
X, volume / capacity	0.65	0.03

Movement, Approach, & Intersection Results

Lane LOS	B	A
95th-Percentile Queue Length [veh]	5.09	0.09
95th-Percentile Queue Length [ft]	127.29	2.17
Approach Delay [s/veh]	10.87	8.83
Approach LOS	B	A
Intersection Delay [s/veh]	15.21	
Intersection LOS	C	

Cumulative with Project PM Scenario

Vistro File: \...\Roundabout_Analysis.vistro
Report File: C:\...\VistroResults_CumPrPM.pdf

Scenario 5 CumPrPM
11/20/2018

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Hwy 1 and California Ave	Roundabout	HCM 6th Edition	NWB Thru		23.6	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Hwy 1 and California Ave

Control Type:	Roundabout	Delay (sec / veh):	23.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes		

Intersection Setup

Name	Hwy 1				California Ave				California Ave			
Approach	Southbound				Northeastbound				Southwestbound			
Lane Configuration												
Turning Movement	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00				30.00				30.00			
Grade [%]	0.00				0.00				0.00			
Crosswalk	Yes				Yes				Yes			

Volumes

Name	Hwy 1				California Ave				California Ave			
Base Volume Input [veh/h]	20	981	12	2	0	4	0	4	37	0	0	16
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	20	981	12	2	0	4	0	4	37	0	0	16
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	264	3	1	0	1	0	1	10	0	0	4
Total Analysis Volume [veh/h]	22	1055	13	2	0	4	0	4	40	0	0	17
Pedestrian Volume [ped/h]	0				1				0			

Intersection Settings

Number of Conflicting Circulating Lanes	1				1				1			
Circulating Flow Rate [veh/h]	58				1144				1177			
Exiting Flow Rate [veh/h]	1177				19				77			
Demand Flow Rate [veh/h]	20	981	12	2	0	4	0	4	37	0	0	16
Adjusted Demand Flow Rate [veh/h]	22	1055	13	2	0	4	0	4	40	0	0	17

Lanes

Overwrite Calculated Critical Headway	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00
A (intercept)	1380.00	1380.00	1380.00
B (coefficient)	0.00102	0.00102	0.00102
HV Adjustment Factor	0.98	0.98	0.98
Entry Flow Rate [veh/h]	1114	9	59
Capacity of Entry and Bypass Lanes [veh/h]	1301	430	416
Pedestrian Impedance	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	1276	422	408
X, volume / capacity	0.86	0.02	0.14

Movement, Approach, & Intersection Results

Lane LOS	C	A	B
95th-Percentile Queue Length [veh]	11.81	0.06	0.48
95th-Percentile Queue Length [ft]	295.15	1.45	12.07
Approach Delay [s/veh]	20.97	8.81	10.97
Approach LOS	C	A	B
Intersection Delay [s/veh]	23.58		
Intersection LOS	C		

Intersection Setup

Name	Hwy 1				Wienke Way			
Approach	Northwestbound				Southeastbound			
Lane Configuration								
Turning Movement	Left2	Left	Thru	Right	Left2	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00				30.00			
Grade [%]	0.00				0.00			
Crosswalk	Yes				Yes			

Volumes

Name	Hwy 1				Wienke Way			
Base Volume Input [veh/h]	6	10	1052	49	2	0	3	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	6	10	1052	49	2	0	3	0
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	3	283	13	1	0	1	0
Total Analysis Volume [veh/h]	6	11	1131	53	2	0	3	0
Pedestrian Volume [ped/h]	1				1			

Intersection Settings

Number of Conflicting Circulating Lanes	1				1			
Circulating Flow Rate [veh/h]	29				1159			
Exiting Flow Rate [veh/h]	1124				13			
Demand Flow Rate [veh/h]	6	10	1052	49	2	0	3	0
Adjusted Demand Flow Rate [veh/h]	6	11	1131	53	2	0	3	0

Lanes

Overwrite Calculated Critical Headway	No	No
User-Defined Critical Headway [s]	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No
User-Defined Follow-Up Time [s]	3.00	3.00
A (intercept)	1380.00	1380.00
B (coefficient)	0.00102	0.00102
HV Adjustment Factor	0.98	0.98
Entry Flow Rate [veh/h]	1226	6
Capacity of Entry and Bypass Lanes [veh/h]	1341	424
Pedestrian Impedance	1.00	1.00
Capacity per Entry Lane [veh/h]	1314	415
X, volume / capacity	0.91	0.01

Movement, Approach, & Intersection Results

Lane LOS	D	A
95th-Percentile Queue Length [veh]	15.31	0.04
95th-Percentile Queue Length [ft]	382.69	0.91
Approach Delay [s/veh]	26.72	8.84
Approach LOS	D	A
Intersection Delay [s/veh]	23.58	
Intersection LOS	C	

Cumulative with Project
Saturday Midday Scenario

Vistro File: \...\Roundabout_Analysis.vistro
Report File: C:\...\VistroResults_CumPrMid.pdf

Scenario 6 CumPrMid
11/20/2018

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Hwy 1 and California Ave	Roundabout	HCM 6th Edition	SB Thru		14.7	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Hwy 1 and California Ave

Control Type:	Roundabout	Delay (sec / veh):	14.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes		

Intersection Setup

Name	Hwy 1				California Ave				California Ave			
Approach	Southbound				Northeastbound				Southwestbound			
Lane Configuration												
Turning Movement	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00				30.00				30.00			
Grade [%]	0.00				0.00				0.00			
Crosswalk	Yes				Yes				Yes			

Volumes

Name	Hwy 1				California Ave				California Ave			
Base Volume Input [veh/h]	9	938	9	6	0	7	4	25	27	4	0	27
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	9	938	9	6	0	7	4	25	27	4	0	27
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	252	2	2	0	2	1	7	7	1	0	7
Total Analysis Volume [veh/h]	10	1009	10	6	0	8	4	27	29	4	0	29
Pedestrian Volume [ped/h]	0				0				0			

Intersection Settings

Number of Conflicting Circulating Lanes	1				1				1			
Circulating Flow Rate [veh/h]	74				1084				826			
Exiting Flow Rate [veh/h]	815				50				60			
Demand Flow Rate [veh/h]	9	938	9	6	0	7	4	25	27	4	0	27
Adjusted Demand Flow Rate [veh/h]	10	1009	10	6	0	8	4	27	29	4	0	29

Lanes

Overwrite Calculated Critical Headway	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00
A (intercept)	1380.00	1380.00	1380.00
B (coefficient)	0.00102	0.00102	0.00102
HV Adjustment Factor	0.98	0.98	0.98
Entry Flow Rate [veh/h]	1056	40	64
Capacity of Entry and Bypass Lanes [veh/h]	1280	457	595
Pedestrian Impedance	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	1254	448	583
X, volume / capacity	0.83	0.09	0.11

Movement, Approach, & Intersection Results

Lane LOS	C	A	A
95th-Percentile Queue Length [veh]	10.30	0.28	0.36
95th-Percentile Queue Length [ft]	257.54	7.12	8.89
Approach Delay [s/veh]	18.79	9.24	7.45
Approach LOS	C	A	A
Intersection Delay [s/veh]	14.74		
Intersection LOS	B		

Intersection Setup

Name	Hwy 1				Wienke Way			
Approach	Northwestbound				Southeastbound			
Lane Configuration								
Turning Movement	Left2	Left	Thru	Right	Left2	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00				30.00			
Grade [%]	0.00				0.00			
Crosswalk	Yes				Yes			

Volumes

Name	Hwy 1				Wienke Way			
Base Volume Input [veh/h]	33	5	705	42	4	0	10	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	33	5	705	42	4	0	10	0
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	1	190	11	1	0	3	0
Total Analysis Volume [veh/h]	35	5	758	45	4	0	11	0
Pedestrian Volume [ped/h]	0				0			

Intersection Settings

Number of Conflicting Circulating Lanes	1				1			
Circulating Flow Rate [veh/h]	27				1119			
Exiting Flow Rate [veh/h]	1098				11			
Demand Flow Rate [veh/h]	33	5	705	42	4	0	10	0
Adjusted Demand Flow Rate [veh/h]	35	5	758	45	4	0	11	0

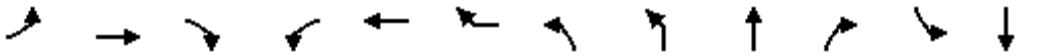
Lanes

Overwrite Calculated Critical Headway	No	No
User-Defined Critical Headway [s]	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No
User-Defined Follow-Up Time [s]	3.00	3.00
A (intercept)	1380.00	1380.00
B (coefficient)	0.00102	0.00102
HV Adjustment Factor	0.98	0.98
Entry Flow Rate [veh/h]	860	16
Capacity of Entry and Bypass Lanes [veh/h]	1344	441
Pedestrian Impedance	1.00	1.00
Capacity per Entry Lane [veh/h]	1317	433
X, volume / capacity	0.64	0.03

Movement, Approach, & Intersection Results

Lane LOS	B	A
95th-Percentile Queue Length [veh]	4.93	0.11
95th-Percentile Queue Length [ft]	123.18	2.69
Approach Delay [s/veh]	10.66	8.80
Approach LOS	B	A
Intersection Delay [s/veh]	14.74	
Intersection LOS	B	

Appendix 12 Background with Project Conditions, Mitigated Level-of-Service Worksheets



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	10	0	11	48	0	15	0	4	640	21	6	592
Future Volume (vph)	10	0	11	48	0	15	0	4	640	21	6	592
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5				4.5		4.5	4.5
Lane Util. Factor		1.00			1.00				1.00		1.00	1.00
Frpb, ped/bikes		1.00			1.00				1.00		1.00	1.00
Flpb, ped/bikes		1.00			1.00				1.00		1.00	1.00
Frt		0.93			0.97				1.00		1.00	1.00
Flt Protected		0.98			0.96				1.00		0.95	1.00
Satd. Flow (prot)		1691			1737				1853		1770	1860
Flt Permitted		0.86			0.76				1.00		0.29	1.00
Satd. Flow (perm)		1487			1373				1849		542	1860
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.92	0.93	0.92	0.93	0.93	0.93	0.93
Adj. Flow (vph)	11	0	12	52	0	16	0	4	688	23	6	637
RTOR Reduction (vph)	0	20	0	0	0	0	0	0	1	0	0	0
Lane Group Flow (vph)	0	3	0	0	68	0	0	0	714	0	6	643
Confl. Peds. (#/hr)							1					
Turn Type	Perm	NA		Perm	NA		Perm	Perm	NA		Perm	NA
Protected Phases		8			4				6			2
Permitted Phases	8			4			6	6			2	
Actuated Green, G (s)		9.6			9.6				49.0		49.0	49.0
Effective Green, g (s)		9.6			9.6				49.0		49.0	49.0
Actuated g/C Ratio		0.13			0.13				0.65		0.65	0.65
Clearance Time (s)		4.5			4.5				4.5		4.5	4.5
Vehicle Extension (s)		3.0			3.0				3.0		3.0	3.0
Lane Grp Cap (vph)		189			175				1204		353	1211
v/s Ratio Prot												0.35
v/s Ratio Perm		0.00			c0.05				c0.39		0.01	
v/c Ratio		0.02			0.39				0.59		0.02	0.53
Uniform Delay, d1		28.7			30.1				7.4		4.6	7.0
Progression Factor		1.00			1.00				1.00		1.00	1.00
Incremental Delay, d2		0.0			1.4				0.8		0.0	0.4
Delay (s)		28.7			31.5				8.2		4.6	7.4
Level of Service		C			C				A		A	A
Approach Delay (s)		28.7			31.5				8.2			7.4
Approach LOS		C			C				A			A

Intersection Summary			
HCM 2000 Control Delay	9.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	75.2	Sum of lost time (s)	13.5
Intersection Capacity Utilization	51.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR	SEL
Lane Configurations		
Traffic Volume (vph)	6	0
Future Volume (vph)	6	0
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		
Lane Util. Factor		
Frpb, ped/bikes		
Flpb, ped/bikes		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Peak-hour factor, PHF	0.93	0.92
Adj. Flow (vph)	6	0
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	0
Confl. Peds. (#/hr)	1	
Turn Type		Prot
Protected Phases		9
Permitted Phases		
Actuated Green, G (s)		
Effective Green, g (s)		
Actuated g/C Ratio		
Clearance Time (s)		
Vehicle Extension (s)		
Lane Grp Cap (vph)		
v/s Ratio Prot		
v/s Ratio Perm		
v/c Ratio		
Uniform Delay, d1		
Progression Factor		
Incremental Delay, d2		
Delay (s)		
Level of Service		
Approach Delay (s)		0.0
Approach LOS		A

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	3	0	3	32	0	13	0	5	734	42	17	876
Future Volume (vph)	3	0	3	32	0	13	0	5	734	42	17	876
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5				4.5		4.5	4.5
Lane Util. Factor		1.00			1.00				1.00		1.00	1.00
Frpb, ped/bikes		1.00			1.00				1.00		1.00	1.00
Flpb, ped/bikes		1.00			1.00				1.00		1.00	1.00
Frt		0.93			0.96				0.99		1.00	1.00
Flt Protected		0.98			0.97				1.00		0.95	1.00
Satd. Flow (prot)		1693			1729				1847		1770	1859
Flt Permitted		0.89			0.78				1.00		0.27	1.00
Satd. Flow (perm)		1540			1405				1840		494	1859
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.92	0.91	0.92	0.91	0.91	0.91	0.91
Adj. Flow (vph)	3	0	3	35	0	14	0	5	807	46	19	963
RTOR Reduction (vph)	0	5	0	0	0	0	0	0	1	0	0	0
Lane Group Flow (vph)	0	1	0	0	49	0	0	0	857	0	19	974
Confl. Peds. (#/hr)	1						1					
Turn Type	Perm	NA		Perm	NA		Perm	Perm	NA		Perm	NA
Protected Phases		8			4				6			2
Permitted Phases	8			4			6	6			2	
Actuated Green, G (s)		10.4			10.4				89.5		89.5	89.5
Effective Green, g (s)		10.4			10.4				89.5		89.5	89.5
Actuated g/C Ratio		0.09			0.09				0.76		0.76	0.76
Clearance Time (s)		4.5			4.5				4.5		4.5	4.5
Vehicle Extension (s)		3.0			3.0				3.0		3.0	3.0
Lane Grp Cap (vph)		136			124				1407		377	1422
v/s Ratio Prot												c0.52
v/s Ratio Perm		0.00			c0.03				0.47		0.04	
v/c Ratio		0.00			0.40				0.61		0.05	0.68
Uniform Delay, d1		48.6			50.3				6.1		3.4	6.8
Progression Factor		1.00			1.00				1.00		1.00	1.00
Incremental Delay, d2		0.0			2.1				0.8		0.1	1.4
Delay (s)		48.6			52.4				6.8		3.4	8.2
Level of Service		D			D				A		A	A
Approach Delay (s)		48.6			52.4				6.8			8.1
Approach LOS		D			D				A			A

Intersection Summary			
HCM 2000 Control Delay	8.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	117.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	59.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR	SEL
Lane Configurations		
Traffic Volume (vph)	10	0
Future Volume (vph)	10	0
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		
Lane Util. Factor		
Frpb, ped/bikes		
Flpb, ped/bikes		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Peak-hour factor, PHF	0.91	0.92
Adj. Flow (vph)	11	0
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	0
Confl. Peds. (#/hr)	1	
Turn Type		Prot
Protected Phases		9
Permitted Phases		
Actuated Green, G (s)		
Effective Green, g (s)		
Actuated g/C Ratio		
Clearance Time (s)		
Vehicle Extension (s)		
Lane Grp Cap (vph)		
v/s Ratio Prot		
v/s Ratio Perm		
v/c Ratio		
Uniform Delay, d1		
Progression Factor		
Incremental Delay, d2		
Delay (s)		
Level of Service		
Approach Delay (s)		0.0
Approach LOS		A

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	6	3	21	23	3	23	0	28	720	36	7	953
Future Volume (vph)	6	3	21	23	3	23	0	28	720	36	7	953
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5				4.5		4.5	4.5
Lane Util. Factor		1.00			1.00				1.00		1.00	1.00
Frpb, ped/bikes		1.00			1.00				1.00		1.00	1.00
Flpb, ped/bikes		1.00			1.00				1.00		1.00	1.00
Frt		0.90			0.94				0.99		1.00	1.00
Flt Protected		0.99			0.98				1.00		0.95	1.00
Satd. Flow (prot)		1667			1703				1847		1770	1861
Flt Permitted		0.94			0.84				0.94		0.28	1.00
Satd. Flow (perm)		1588			1468				1743		531	1861
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.92	0.95	0.92	0.95	0.95	0.95	0.95
Adj. Flow (vph)	6	3	22	24	3	25	0	30	758	38	7	1003
RTOR Reduction (vph)	0	20	0	0	0	0	0	0	1	0	0	0
Lane Group Flow (vph)	0	11	0	0	52	0	0	0	825	0	7	1010
Confl. Peds. (#/hr)	1											
Turn Type	Perm	NA		Perm	NA		Perm	Perm	NA		Perm	NA
Protected Phases		8			4				6			2
Permitted Phases	8			4			6	6			2	
Actuated Green, G (s)		10.4			10.4				96.5		96.5	96.5
Effective Green, g (s)		10.4			10.4				96.5		96.5	96.5
Actuated g/C Ratio		0.08			0.08				0.78		0.78	0.78
Clearance Time (s)		4.5			4.5				4.5		4.5	4.5
Vehicle Extension (s)		3.0			3.0				3.0		3.0	3.0
Lane Grp Cap (vph)		132			122				1354		412	1445
v/s Ratio Prot												c0.54
v/s Ratio Perm		0.01			c0.04				0.47		0.01	
v/c Ratio		0.08			0.43				0.61		0.02	0.70
Uniform Delay, d1		52.5			54.1				5.9		3.1	6.8
Progression Factor		1.00			1.00				1.00		1.00	1.00
Incremental Delay, d2		0.3			2.4				0.8		0.0	1.5
Delay (s)		52.8			56.5				6.7		3.1	8.3
Level of Service		D			E				A		A	A
Approach Delay (s)		52.8			56.5				6.7			8.2
Approach LOS		D			E				A			A

Intersection Summary			
HCM 2000 Control Delay	9.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	124.2	Sum of lost time (s)	13.5
Intersection Capacity Utilization	76.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR	SEL
Lane Configurations		
Traffic Volume (vph)	7	0
Future Volume (vph)	7	0
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		
Lane Util. Factor		
Frpb, ped/bikes		
Flpb, ped/bikes		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Peak-hour factor, PHF	0.95	0.92
Adj. Flow (vph)	7	0
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	0
Confl. Peds. (#/hr)		
Turn Type		Prot
Protected Phases		9
Permitted Phases		
Actuated Green, G (s)		
Effective Green, g (s)		
Actuated g/C Ratio		
Clearance Time (s)		
Vehicle Extension (s)		
Lane Grp Cap (vph)		
v/s Ratio Prot		
v/s Ratio Perm		
v/c Ratio		
Uniform Delay, d1		
Progression Factor		
Incremental Delay, d2		
Delay (s)		
Level of Service		
Approach Delay (s)		0.0
Approach LOS		A

Intersection Summary

Appendix 13 Signal Warrant Analysis

Traffic Signal Warrants Worksheet

MUTCD Warrant 3: Peak Hour

Scenario: **2040 Conditions – Weekday PM Peak Hour**

Intersection: **Highway 1 & 16th Street**

PART A or PART B SATISFIED YES ☐ NO ☒

PART A SATISFIED YES ☐ NO ☒

(All parts 1, 2, and 3 below must be satisfied)

7. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle-hours for a two-lane approach; AND — YES ☐ NO ☒

8. The volume on the same minor street approach equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND — YES ☐ NO ☒

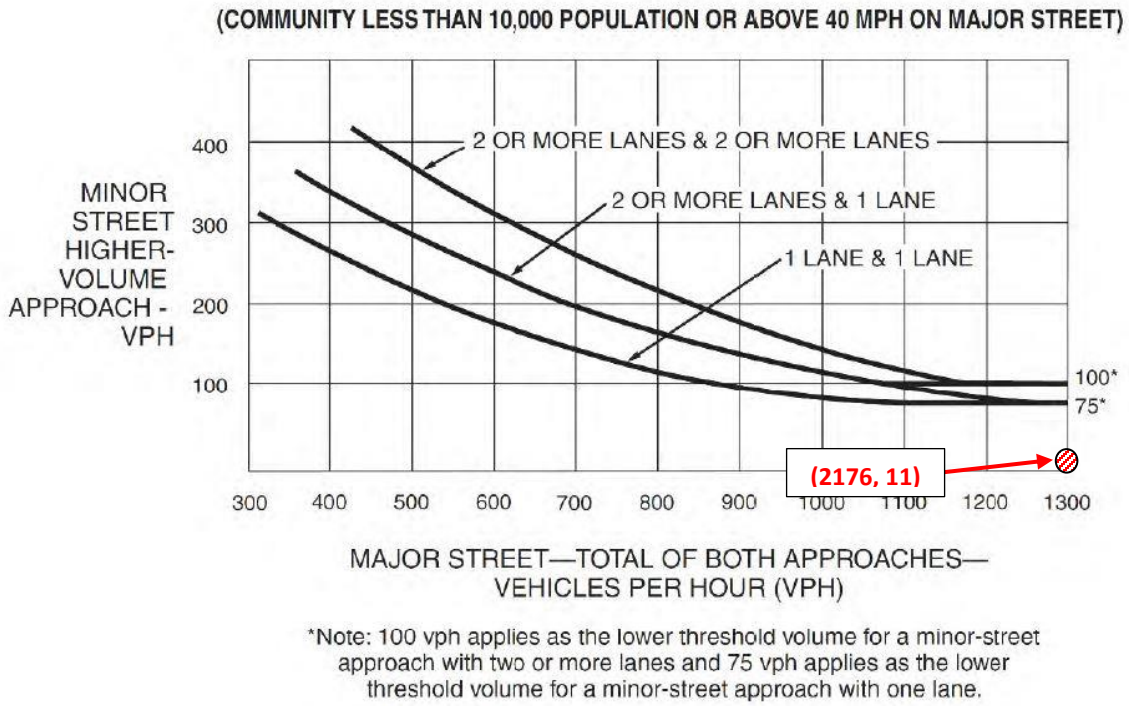
9. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches. — (2,176 vph ; 4 approach) YES ☒ NO ☐

PART B SATISFIED YES ☐ NO ☒

APPROACH LANES	Lanes	VPH
Both Approaches – Major Street	1	2,160
Highest Approaches – Minor Street	1	11

The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above the applicable curves in MUTCD Figure 4C-4.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Traffic Signal Warrants Worksheet

MUTCD Warrant 3: Peak Hour

Scenario: **2040 Conditions – Saturday Peak Hour**

Intersection: **Highway 1 & Vallemar Street/Etheldore Street**

PART A or PART B SATISFIED YES ☐ NO ☒

PART A SATISFIED YES ☐ NO ☒

(All parts 1, 2, and 3 below must be satisfied)

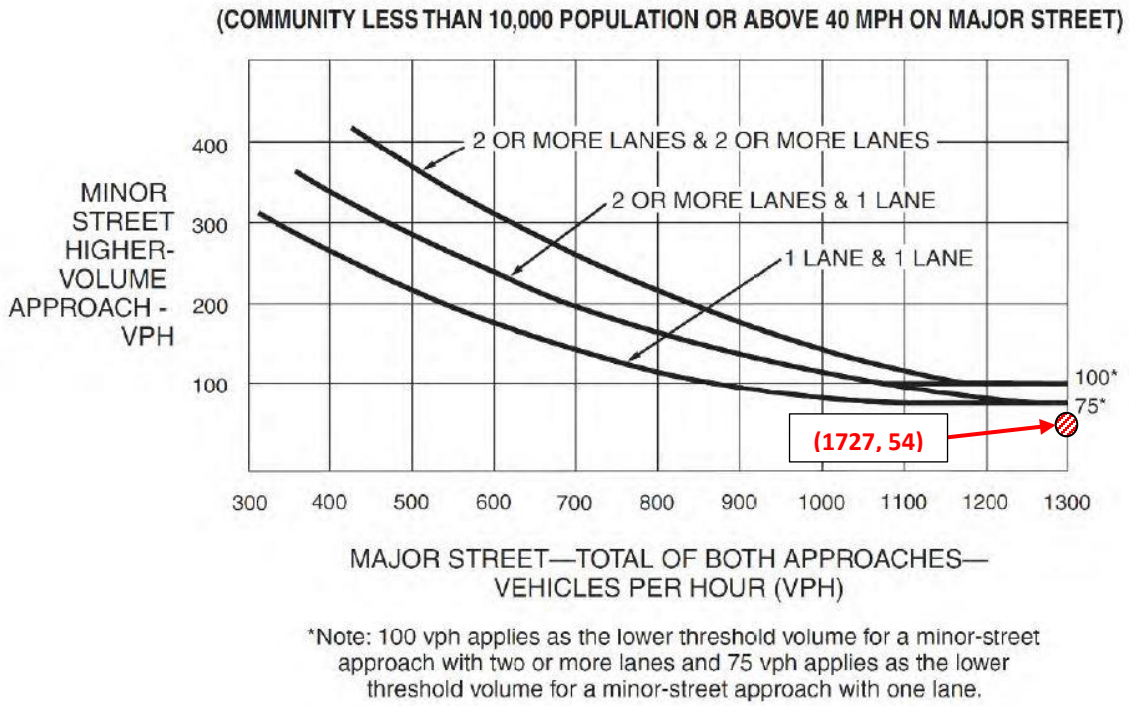
1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle-hours for a two-lane approach; AND — YES ☐ NO ☒
2. The volume on the same minor street approach equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND — YES ☐ NO ☒
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches. — (1,788 vph ; 4 approach) YES ☒ NO ☐

PART B SATISFIED YES ☐ NO ☒

APPROACH LANES	Lanes	VPH
Both Approaches – Major Street	1	1,727
Highest Approaches – Minor Street	1	54

The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above the applicable curves in MUTCD Figure 4C-4.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Appendix 14 U.S. Census Data on Midcoast Residents and Jobs

OnTheMap

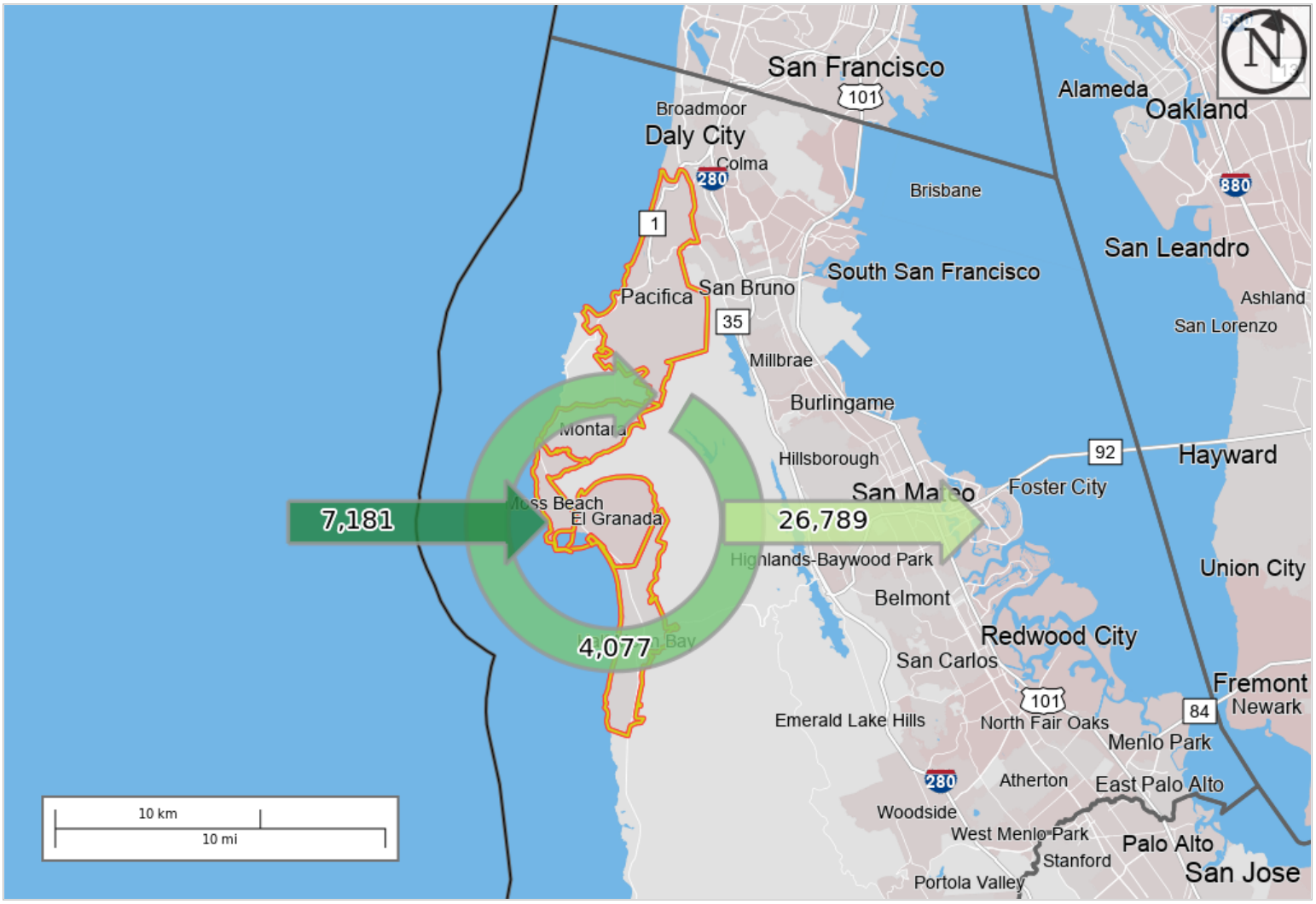
Inflow/Outflow Report

All Jobs for All Workers in 2015

Created by the U.S. Census Bureau's OnTheMap `https://onthemap.ces.census.gov` on 03/19/2019

Inflow/Outflow Counts of All Jobs for Selection Area in 2015

All Workers



Map Legend

Selection Areas

- Analysis Selection

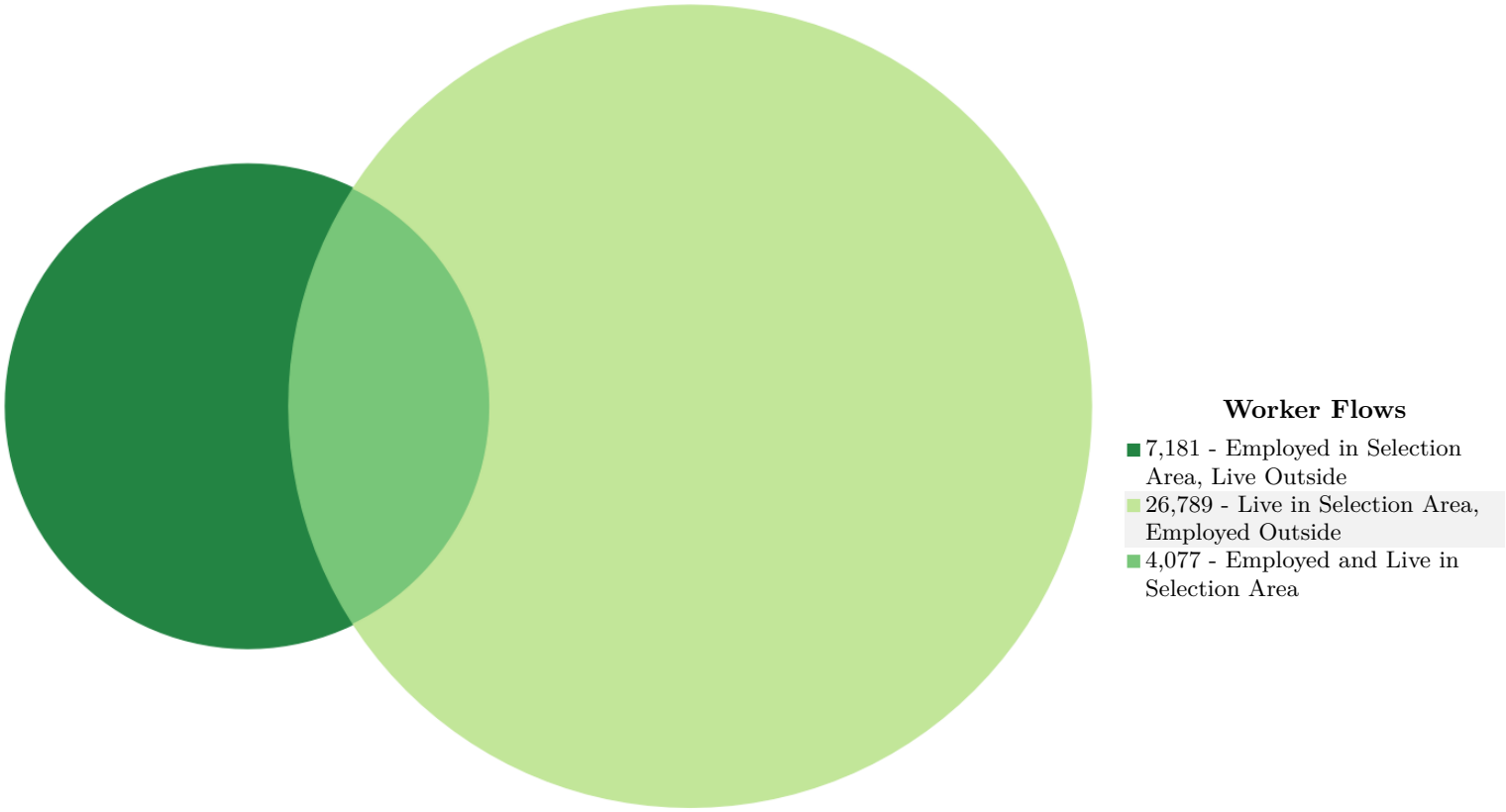
Inflow/Outflow

- Employed and Live in Selection Area
- Employed in Selection Area, Live Outside
- Live in Selection Area, Employed Outside

Note: Overlay arrows do not indicate directionality of worker flow between home and employment locations.

Inflow/Outflow Counts of All Jobs for Selection Area in 2015

All Workers



Inflow/Outflow Counts of All Jobs for Selection Area in 2015

All Workers

Worker Totals and Flows	2015 Count	2015 Share
Employed in the Selection Area	11,258	100.0
Employed in the Selection Area but Living Outside	7,181	63.8
Employed and Living in the Selection Area	4,077	36.2
Living in the Selection Area	30,866	100.0
Living in the Selection Area but Employed Outside	26,789	86.8
Living and Employed in the Selection Area	4,077	13.2

Additional Information

Analysis Settings

Analysis Type	Inflow/Outflow
Selection area as	N/A
Year(s)	2015
Job Type	All Jobs
Selection Area	El Granada CDP, CA; Half Moon Bay city, CA; Pacifica city, CA; Montara CDP, CA; Moss Beach CDP, CA from Places (Cities, CDPs, etc.)
Advanced Modification	Add Selection Areas
Advanced Selection	El Granada CDP, CA; Half Moon Bay city, CA; Pacifica city, CA; Montara CDP, CA; Moss Beach CDP, CA from Places (Cities, CDPs, etc.)
Selected Census Blocks	840
Analysis Generation Date	03/19/2019 16:15 - OnTheMap 6.6
Code Revision	862b6296f5ebf0d900479b7d896f6536db69dfe7
LODES Data Version	20170818

Data Sources

Source: U.S. Census Bureau, OnTheMap Application and LEHD Origin-Destination Employment Statistics (Beginning of Quarter Employment, 2nd Quarter of 2002-2015).

Notes

1. Race, Ethnicity, Educational Attainment, and Sex statistics are beta release results and are not available before 2009.
2. Educational Attainment is only produced for workers aged 30 and over.
3. Firm Age and Firm Size statistics are beta release results for All Private jobs and are not available before 2011.

Inflow/Outflow Report

Selection Area Labor Market Size (All Jobs)

	2015	
	Count	Share
Employed in the Selection Area	11,258	100.0%
Living in the Selection Area	30,866	274.2%
Net Job Inflow (+) or Outflow (-)	-19,608	-

In-Area Labor Force Efficiency (All Jobs)

	2015	
	Count	Share
Living in the Selection Area	30,866	100.0%
Living and Employed in the Selection Area	4,077	13.2%
Living in the Selection Area but Employed Outside	26,789	86.8%

In-Area Employment Efficiency (All Jobs)

	2015	
	Count	Share
Employed in the Selection Area	11,258	100.0%
Employed and Living in the Selection Area	4,077	36.2%
Employed in the Selection Area but Living Outside	7,181	63.8%

Source: U.S. Census Bureau, OnTheMap Application, https://onthemap.ces.census.gov

Outflow Job Characteristics (All Jobs)

	2015	
	Count	Share
External Jobs Filled by Residents	26,789	100.0%
Workers Aged 29 or younger	4,755	17.7%
Workers Aged 30 to 54	15,084	56.3%
Workers Aged 55 or older	6,950	25.9%
Workers Earning $1,250 per month or less	4,397	16.4%
Workers Earning $1,251 to $3,333 per month	5,914	22.1%
Workers Earning More than $3,333 per month	16,478	61.5%
Workers in the "Goods Producing" Industry Class	3,162	11.8%
Workers in the "Trade, Transportation, and Utilities" Industry Class	4,954	18.5%
Workers in the "All Other Services" Industry Class	18,673	69.7%

Inflow Job Characteristics (All Jobs)

	2015	
	Count	Share
Internal Jobs Filled by Outside Workers	7,181	100.0%
Workers Aged 29 or younger	1,641	22.9%
Workers Aged 30 to 54	3,879	54.0%
Workers Aged 55 or older	1,661	23.1%
Workers Earning $1,250 per month or less	2,124	29.6%

Source: U.S. Census Bureau, OnTheMap Application, https://onthemap.ces.census.gov

Inflow Job Characteristics (All Jobs)

	2015	
	Count	Share
Workers Earning $1,251 to $3,333 per month	2,616	36.4%
Workers Earning More than $3,333 per month	2,441	34.0%
Workers in the "Goods Producing" Industry Class	1,029	14.3%
Workers in the "Trade, Transportation, and Utilities" Industry Class	1,080	15.0%
Workers in the "All Other Services" Industry Class	5,072	70.6%

Interior Flow Job Characteristics (All Jobs)

	2015	
	Count	Share
Internal Jobs Filled by Residents	4,077	100.0%
Workers Aged 29 or younger	1,027	25.2%
Workers Aged 30 to 54	1,942	47.6%
Workers Aged 55 or older	1,108	27.2%
Workers Earning $1,250 per month or less	1,328	32.6%
Workers Earning $1,251 to $3,333 per month	1,533	37.6%
Workers Earning More than $3,333 per month	1,216	29.8%
Workers in the "Goods Producing" Industry Class	639	15.7%

Source: U.S. Census Bureau, OnTheMap Application, https://onthemap.ces.census.gov

Interior Flow Job Characteristics (All Jobs)

	2015	
	Count	Share
Workers in the "Trade, Transportation, and Utilities" Industry Class	555	13.6%
Workers in the "All Other Services" Industry Class	2,883	70.7%

Source: U.S. Census Bureau, OnTheMap Application, https://onthemap.ces.census.gov

Report Settings

Analysis Type	Inflow/Outflow
Selection area as	N/A
Year(s)	2015
Job Type	All Jobs
Selection Area	El Granada CDP, CA; Half Moon Bay city, CA; Pacifica city, CA; Montara CDP, CA; Moss Beach CDP, CA from Places (Cities, CDPs, etc.)
Advanced Modification	Add Selection Areas
Advanced Selection	El Granada CDP, CA; Half Moon Bay city, CA; Pacifica city, CA; Montara CDP, CA; Moss Beach CDP, CA from Places (Cities, CDPs, etc.)
Selected Census Blocks	840
Analysis Generation Date	03/19/2019 16:15 - OnTheMap 6.6
Code Revision	862b6296f5ebf0d900479b7d896f6536db69dfe7
LODES Data Version	20170818

Source: U.S. Census Bureau, OnTheMap Application and LEHD Origin-Destination Employment Statistics (Beginning of Quarter Employment, 2nd Quarter of 2002-2015).
Notes:

1. Race, Ethnicity, Educational Attainment, and Sex statistics are beta release results and are not available before 2009.
2. Educational Attainment is only produced for workers aged 30 and over.
3. Firm Age and Firm Size statistics are beta release results for All Private jobs and are not available before 2011.

County of San Mateo - Planning and Building Department

ATTACHMENT H

County Review Draft

BIOLOGICAL RESOURCES ASSESSMENT

FOR THE

MIDPEN HOUSING CYPRESS POINT HOUSING PROJECT

MAY 24, 2018

Prepared for:

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De Novo Planning Group

A Land Use Planning, Design, and Environmental Firm

County Review Draft

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PROJECT DESCRIPTION AND LOCATION

The project site is located in the community of Moss Beach, San Mateo County (**Figures 1 and 2**), on Assessor's Parcel Number (APN) 037-022-070. The project site is approximately 10.88 acres in size. The project site is located at the corner of Sierra and Carlos Street, just east of Highway 1. In the 1940's the site was used as military installation, which was converted into school buildings after the World War II. At some point, the buildings were burned down by the fire department as an exercise. In 1986, the site was rezoned for a Planned Unit Development under the San Mateo MidCoast Local Coastal Program, which was never constructed.

The project site is a previously developed site with extensive remnant concrete foundations. The site topography slopes generally from east to west at approximately five percent. The project site has scattered Monterey Pine and Monterey Cypress trees with various understory shrubs and herbs. There are several dirt roads that traverse the site. A homeless encampment for a single person was observed during an initial survey of the site, although during subsequent visits the client has reported to have no longer seen the encampment. There are several areas that appear to be illegal trash dumps. **Figure 3** provides an aerial photo and **Figure 4** provides a USGS map.

The existing project site has a General Plan designation of Medium-High Density Residential. This designation allows for development at densities of between 8.8 to 17.4 housing units per acre. The project site also has a zoning of Planned Unit Development (PUD-124/CD), which allows for a total of 148 units on the site, with a density of 13.6 units per acre. Additionally, the site is designated as Medium-High Density Residential in the San Mateo County Mid-Coast Local Coastal Program (LCP), which allows for development at densities from 8.1 to 16.0 units per acre. The site is defined as infill in the Local Coastal Program, and designated as a priority development site for affordable housing in the San Mateo County Local Coastal Program Policies document. Lastly, the site is also designated as an affordable housing opportunity site under the San Mateo County Housing Element.

The project site is proposed to be developed with affordable multi-family housing. **Figure 5** provides a preliminary project features map. The project would develop 71 affordable housing units on the project site, consisting of approximately 22 two-story buildings holding 2-4 units each. The project would provide a mixture of 1, 2, and 3-bedroom units, including a combination of two-story townhouses and ADA-accessible 1-story flats. All of the units, except for the manager's apartment, are designated to be affordable to households earning less than 80% of the Area Median Income (AMI). It is expected that the project will provide housing for approximately 213 people, including adults and children.

In addition to the housing units, the development will include an approximately 3,200 square foot community building, that will include the general office, the manager's office, a community room, kitchen, computer room, laundry, and maintenance and storage areas. The project plan also includes several outdoor amenities, including:

- Landscaping;
- A community garden;
- A children's play area;

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- An upper and a lower green;
- BBQ areas; and
- A public walking trail.

Access to and from the project site will be provided by a single driveway on Carlos Street. A second access route, which would be restricted to emergency vehicles only, connects with Lincoln Street. Current plans provide for 161 parking spaces on site, forming a ring around the central core of apartment buildings. Accessible walkways would provide internal pedestrian access to the site, and soft trails would be provided around most of the perimeter of the site for recreational use by both residents and the general public.

The project sponsor (MidPen Housing, or MidPen) is seeking two actions from two separate agencies: (1) an amendment to the existing zoning for the parcel, which requires an amendment to the adopted San Mateo County MidCoast Local Coastal Program from the California Coastal Commission (Coastal Commission), and (2) a Coastal Development Permit from the San Mateo County Planning and Building Department.

METHODS

LITERATURE AND DATABASE REVIEW

De Novo Planning Group Biologist Steve McMurtry conducted a literature review and database search to gather information regarding sensitive plants, animals, and habitats occurring in the project area. The purpose of the literature and database review was to identify species known to occur within the region based on historic range, observations, and habitat requirements. Information for the literature and database review was derived primarily from the following:

- California Natural Diversity Data Base (CNDDB RareFind 5, December 1, 2017);
- California Native Plant Society's Inventory of Rare and Endangered Vascular Plants of California (Skinner, Mark W. and Bruce M. Pavlik, Eds. 2001);
- A Manual of California Vegetation (Sawyer, John and Todd Keeler-Wolf 1995);
- Terrestrial vegetation of California (Barbour and Major 1988);
- Jepson Manual: Higher Plants of California (Hickman, James C. 1993);
- “Special Plants List.” Natural Diversity Database. (California Dept. of Fish and Wildlife);
- “Special Animals List.” Natural Diversity Database. (California Dept. of Fish and Wildlife);
- “Special Vascular Plants, Bryophytes, and Lichens List.” Natural Diversity Database. (California Dept. of Fish and Wildlife);
- Army Corps of Engineers Wetland Delineation Manual. (ACOE 1987).

WRA Environmental Consultants also reviewed the following resources in order to obtain a list of potential Environmentally Sensitive Habitat Areas (ESHAs), as defined in the California Coastal Act, and special-status species that may be found within the project site. Database searches for known occurrences of special-status species focused on the Half Moon Bay and Montara Mountain 7.5 minute U.S. Geological Survey quadrangles.

- CNDDB records (CDFW, 2017);
- CNPS Inventory records (CNPS, 2017);
- California Amphibian and Reptile Species of Special Concern (Thomson, 2016) California Department of Fish and Game publication "California's Wildlife, Volumes I-III" (Zeiner et al., 1990);
- California Bird Species of Special Concern (Shuford and Gardali, 2008);
- USFWS Critical Habitat Mapper (USFWS, 2017);
- San Mateo County Local Coastal Program (County of San Mateo 1998, 2013);
- Soil Survey of San Mateo Area, California (NRCS, 2017).

AERIAL-PHOTO SURVEY

De Novo Biologist Steve McMurtry examined current aerial photographs of the project site to document the existing conditions, and historical aerial photographs to assess any changes that have occurred to the site.

FIELD SURVEYS

On November 27, 2015 De Novo Biologist Steve McMurtry traversed the project site on foot to determine the presence of plant communities, special status species, and sensitive habitats. Additionally, a windshield survey was conducted for the area within an approximately one-mile radius of the project site. The purpose of the site survey was to document the existing biological conditions on the project site, and in the project vicinity.

On March 29, 2017, Cara Witte (professional botanist), Nicholas Brinton (wildlife ecologist), and Michael Josselyn (wetland scientist) of WRA Environmental Consultants performed a site assessment. WRA traversed the project site on foot to determine (1) biological communities present within the project site, (2) if existing conditions provide suitable habitat for any special-status plant or wildlife species, and (3) if sensitive habitats including any ESHAs are present.

On May 5, 2018, a botanist from WRA completed a follow-up protocol-level survey of the project site to determine whether rare plant species occur on the project site.

The potential for each special-status species to occur within the project site was then evaluated according to the following criteria:

- No Potential. Habitat on and adjacent to the site is unsuitable or absent for the species requirements (foraging, breeding, cover, substrate, elevation, hydrology, plant community, site history, disturbance regime).
- Potential. Some of the habitat components meeting the species requirements are present, and/or only some of the habitat on or adjacent to the site is unsuitable.
- Present. Species was observed on the site or has been recorded (i.e. CNDDB, other reports) on the site.

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REGIONAL SETTING

Moss Beach is located in the western part of San Mateo County, approximately 20 miles south of San Francisco. The elevation ranges from approximately 115 to 180 feet above mean sea level (msl). The climate in Moss Beach is Mediterranean and does not vary much year-around. The coastal area experiences relatively cool, often foggy summers, mild falls, and chilly, rainy winters.

GEOMORPHIC PROVINCES

Moss Beach is located in the Coast Range Geomorphic Province of California. The Coast Range is a northwest-trending mountain range (with elevations from 2,000 to 4,000, and occasionally 6,000 feet above sea level), with valleys between the mountains. The ranges and valleys trend northwest. To the west is the Pacific Ocean. The coastline is uplifted, terraced and wave-cut.

The Coast Ranges are composed of thick Mesozoic and Cenozoic sedimentary strata. The northern and southern ranges are separated by a depression containing the San Francisco Bay. The northern Coast Ranges are dominated by irregular, knobby, landslide-topography of the Franciscan Complex. The eastern border is characterized by strike-ridges and valleys in Upper Mesozoic strata. In several areas, Franciscan rocks are overlain by volcanic cones and flows of the Quien Sabe, Sonoma and Clear Lake volcanic fields. The Coast Ranges are subparallel to the active San Andreas Fault. The San Andreas Fault is more than 600 miles long, extending from Pt. Arena to the Gulf of California. West of the San Andreas is the Salinian Block, a granitic core extending from the southern extremity of the Coast Ranges to the north of the Farallon Islands.

BIOREGION

Moss Beach is located within the Bay Area/Delta Bioregion, which extends from the Pacific Ocean to the Sacramento Valley and San Joaquin Valley bioregions to the northeast and southeast. A short stretch of the eastern boundary joins the Sierra Bioregion at Amador and Calaveras counties. The bioregion is bounded by the Klamath/North Coast on the north and the Central Coast Bioregion to the south. The Bay Area/Delta Bioregion is one of the most populous areas of the state, encompassing the San Francisco Bay Area and the Sacramento-San Joaquin River Delta. The water that flows through the Delta supplies two-thirds of California's drinking water, irrigating farmland, and sustaining fish and wildlife and their habitat. The bioregion fans out from San Francisco Bay in a jagged semi-circle that takes in all or part of 12 counties: Alameda, Contra Costa, Marin, Napa, San Francisco, San Joaquin, San Mateo, Santa Clara, Solano, Sonoma, and parts of Sacramento, and Yolo. The habitats and vegetation of the Bay Area/Delta Bioregion are as varied as the geography.

LOCAL SETTING

HYDROLOGY

The hydrology of the project site is shown in **Figure 6**. At its closest point, the project site is located approximately 750 feet from the coastline of the Pacific Ocean. In addition, there is a perennial stream located approximately 250 feet to the northeast of the project site that runs approximately

parallel to the northern border of the project site (prior to emptying into the Pacific Ocean). Other perennial and intermittent streams are located throughout Moss Beach, as shown in **Figure 6**.

VEGETATION

Vegetative communities on the project site are classified mostly as grassland, coastal scrub, and urban, with Monterey cypress (*Cupressus macrocarpa*) and Monterey pine (*Pinus radiata*) forest along the northern boundary of the project site. The dominant plants on the project site include: dandelion (*Agoseris heterophylla*), scarlet pimpernel (*Anagallis arvensis*), buckwheat (*Eriogonum fasciculatum*), wild oats (*Avena fatua*), mustard (*Brassica nigra*), ripgut brome (*Bromus diandrus*), soft chess (*Bromus hordeaceus*), filaree (*Erodium cicutarium*), California poppy (*Eschschozia californica*), *geranium* (*Geranium dissectum*), mediterranean barley (*Hordeum leporinum*), Italian rye (*Festuca perennis*), birds's foot trefoil (*Lotus corniculatus*), wild radish (*Raphanus raphanistrum),* Italian thistle (*Carduus pycnocephalus*), medusa-head (*Elymus caput-medusae*), mule fat (*Baccharis salicifolia*), and spring vetch (*Vicia sativa*). Less dominant plants on the project site include: Coyote Bush (*Baccharis pilularis*), poison hemlock (*Conium maculatum*), pampas grass (*Cortaderia selloana*), Beach strawberry (*Fragaria chiloensis*), and Himalayan blackberry (*Rubus discolor*). The developed portions of the site are largely barren due to the presence of remnant concrete building foundations.

WILDLIFE

The grassland and coastal scrub areas of the project site can support wildlife species including California ground squirrel (*Spermophilus beecheyi*), California vole (*Microtus californicus*), coyote (*Canis latrans*), raccoon (*Procyon lotor*), opossum (*Didelphis virginiana*), striped skunk (*Mephitis mephitis*), Savannah sparrows (*Passerculus sandwichensis*), horned larks (*Eremophila alpestris*), western meadowlarks *(Sturnella neglecta*), lesser goldfinches *(Carduelis psaltria*), barn swallows (*Hirundo rustica*), American killdeer (*Charadrius vociferus*), gopher snake (*Pituophis melanoleucus*), garter snake (*Thamnophis species*), and western fence lizard (*Sceloporus occidentalis*), as well as many native insect species. Raptors, such as red-tailed hawk (*Buteo jamaicensis*), northern harrier (*Circus cyaneus),* American kestrel (*Falco sparverius*), and white-tailed kite (*Elanus leucurus*) commonly forage over this habitat type as well. There are also several bat species known to occur in the region, which feed on insects as they fly over areas.

The urban portions of the site, and the habitats located immediately adjacent to the urban areas can support certain wildlife species adapted to the unique nesting and foraging opportunities found there, but wildlife abundance and diversity are generally lower in this habitat. Striped skunks (*Mephitis mephitis)*, raccoons (*Procyon lotor)*, Virginia opossums (*Didelphis virginiana*), and coyote (*Canis latrans*) occur regularly in urban habitats, as well as areas immediately adjacent to these habitats. Birds adapted to the urban landscape include house finches (*Carpodacus mexicanus*), northern mockingbirds (*Mimus polyglottos*), mourning doves (*Zenaida macroura*), European starlings (*Sturus vulgaris*), house sparrows (*Passer domesticus*), and rock doves (*Columba livia*).

Forested environments, including those located near or in drainages like the Monterey cypress and Monterey pine forest in the northern portion of the project site, provide habitat for a variety of

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wintering and migrating birds, such as ruby-crowned kinglets (*Regulus calendula*) and yellow-rumped warblers (*Dendroica coronata*), and breeding habitat for migrants including warbling vireos (*Vireo glivus*), orange crowned warblers (*Vermivora celata*), and Wilson's warblers (*Wilsonia pusilla*). Downy woodpeckers (*Picoides pubescens*), black phoebes (*Sayornis nigricans*), spotted towhees (*Pipilo maculatus*), and black-headed grosbeaks (*Pheuticus melanocephalus*) are other birds typically found in forested habitats near drainages. This habitat supports a variety of mammals and reptiles that are listed above, including those that use the urban, grassland, and coastal scrub areas, and others such as brush rabbits (*Sylvilagus bachmani*), and dusky-footed woodrats (*Neotoma fuscipes*). The forest overstory in this habitat can provide important nesting habitat for raptors.

SPECIAL-STATUS SPECIES

The following discussion is based on a search of special-status species documented in the California Natural Diversity Database (CNDDB), the California Native Plant Society's (CNPS) Inventory of Rare and Endangered Plants, and the U.S. Fish and Wildlife Service's (USFWS) endangered and threatened species lists. The background search was regional in scope and focused on the documented occurrences within five miles of the project site (**Figure 7**).

The search revealed thirty documented special status species within the region: twenty plants, three invertebrate, one amphibian, one reptile, one fish, two birds, and two mammals. There were also two sensitive natural communities documented (Northern Coastal Salt Marsh, and Northern Maritime Chaparral). **Table 1** provides a list of special-status species that are documented in the region, their habitat requirements, and current protective status.

TABLE 1: SPECIAL STATUS SPECIES PRESENT IN THE PROJECT VICINITY (FIVE MILE RADIUS)

SPECIES	*STATUS*	*HABITAT*	*POTENTIAL TO OCCUR*
Plants			
BLASDALE'S BENT GRASS *Agrostis Blasdalei*	--;--;1B	Cismontane woodland, valley and foothill grassland. Clay soils; often on serpentine. Dry hillsides. 50-300M. Bloom May-June. Perennial blub, native, endemic.	Absent. Potential to occur given presence in regional vicinity, but none found in surveys during blooming period.
FRANCISCAN ONION *Allium peninsulare var. franciscanum*	--;--;1B	Chaparral, coastal scrub. Slopes and ridges. 150-500M. Bloom Jan-March. Shrub, native, endemic.	Absent. None observed during the March surveys, and no records of this species on the project site.
MONTARA MANZANITA *Arctostaphylos montaraensis*	--;--;1B	Broadleaved upland forest, chaparral, north coast coniferous forest. Granitic or sandstone outcrops. 305-730M. Bloom Jan-April. Shrub, native, endemic.	Absent. None observed during the March surveys, and no records of this species on the project site.
KINGS MOUNTAIN MANZANITA *Arctostaphylos regismontana*	--;--;1B	Coastal dunes, coastal salt marshes. Mesic sites in dunes or along streams or coastal salt marshes. 0-30M. Bloom April-October. Perennial herb, native, endemic.	Absent. No appropriate habitat.

SPECIES	*STATUS*	*HABITAT*	*POTENTIAL TO OCCUR*
COASTAL MARSH MILK-VETCH *Astragalus pycnostachyus var. pycnostachyus*	--;--;1B	Coastal bluff scrub, broadleaved upland forest, coastal scrub, coastal prairie. Sometimes serpentine seeps. 0-150 M. Bloom March-July. Perennial herb, native, endemic.	Absent. None observed during the March surveys, and no records of this species on the project site.
FRANCISCAN THISTLE *Cirsium andrewsii*	--;--;1B	Closed-cone coniferous forest, coastal scrub. On decomposed shale (Mudstone) mixed with humus; sometimes on serpentine. 30-250M. Bloom March-May. Annual herb, native, endemic.	Absent. None observed during the March surveys, and no records of this species on the project site.
SAN FRANCISCO COLLINSIA *Collinsia multicolor*	--;--;1B	Broadleaved upland forest, chaparral, closed-cone coniferous forest, cismontane woodland, north coast coniferous forest. On brushy slopes, mesic sites; mostly in mixed evergreen and foothill woodland communities. 25-425 M. Bloom January-March. Shrub, native, endemic.	Absent. None observed during the March surveys, and no records of this species on the project site.
WESTERN LEATHERWOOD *Dirca occidentalis*	--;--;1B	Coastal scrub, valley and foothill grassland, coastal prairie. Often on serpentine; various soils reported though usually clay, in grassland, 1-410M. Bloom February-April. Perennial bulb, native, endemic.	Absent. None observed during the March surveys, and no records of this species on the project site.
FRAGRANT FRITILLARY *Fritillaria liliacea*	--;--;1B	Coastal; occurs usually in wetlands. Bloom June-September. Perennial herb, native, endemic.	Absent. No appropriate habitat.
SAN FRANCISCO GUMPLANT *Grindelia hirsutula var. maritima*	--;--;1B	Sandy or gravelly opening. Located in closed-cone coniferous forests, chaparral (maritime), coastal dunes, and coastal scrub. Bloom February-July. Perennial herb, native, endemic.	Absent. None observed during the March surveys, and no records of this species on the project site.
KELLOGG'S HORKELIA *Horkelia cuneate var. sericea*	--;--;1B	Occurs over a wide range of habitat, such as meadows, shrubland and open forest. Bloom January-November. Annual herb, native.	Absent. None observed during the March surveys, and no records of this species on the project site.
PERENNIAL GOLDFIELDS *Lasthenia californica ssp. macrantha*	--;--;1B	Coastal bluff scrub, coastal prairie. 10-150M. Bloom April-May. Annual herb, native.	Absent. Potential to occur given presence in regional vicinity, but none found in surveys during blooming period.
COAST YELLOW LEPTOSIPHON *Leptosiphon croceus*	--;--;1B	Coastal bluff scrub. 0-100M. Bloom April-July. Annual herb, native.	Absent. Potential to occur given presence in regional vicinity, but none found in surveys during blooming period.
ROSE LEPTOSIPHON *Leptosiphon rosaceus*	--;--;1B	Meadows and seeps, agricultural fields. 10-20M. Bloom November-May. Annual herb, native.	Absent. None observed during the March surveys, and no records of this species on the project site.

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SPECIES	STATUS	HABITAT	POTENTIAL TO OCCUR
ORNDUFF'S MEADOWFOAM *Limnanthes douglasii ssp. ornduffii*	--;--;1B	Chaparral, cismontane woodland, Gravelly alluvium. 15-355M. Bloom April-September. Shrub, native, endemic.	Absent. No appropriate habitat.
ARCUATE BUSH-MALLOW *Malacothamnus arcuatus*	--;--;1B	Chaparral, valley and foothill grasslands (serpentine), cismontane woodland, broadleaved upland forests, north coast. Grassy sites, in openings; sandy to rocky soils. Often seen on serpentine after burns but may have only weak affinity. Bloom March-July. Annual herb, native, endemic.	Absent. None observed during the March surveys, and no records of this species on the project site.
WOODLAND WOOLLYTHREADS *Monolopia gracilens*	--;--;1B	Coastal bluff scrub, closed-cone coniferous forest, meadows and seeps, marshes and swamps. Freshwater marshes, seeps, and small streams in open or forested areas along the coast. 10-150M. Bloom April-August. Perennial herb, native, endemic.	Absent. Potential to occur given presence in regional vicinity, but none found in surveys during blooming period.
HICKMAN'S CINQUEFOIL *Potentilla hickmanii*	FE;CE;1B	Coastal scrub, valley and foothill grassland, coastal bluff scrub, chaparral, coastal prairie. Often on mudstone or shale; one site on serpentine. 30-645M. Bloom March-June. Perennial herb, native, endemic.	Absent. None observed during the March surveys, and no records of this species on the project site.
SAN FRANCISCO CAMPION *Silene verecunda ssp. verecunda*	--;--;1B	Coastal prairie; sometimes on serpentine soils. Bloom April-June. Annual herb, native, endemic.	Absent. Potential to occur given presence in regional vicinity, but none found in surveys during blooming period.
SAN FRANCISCO'S OWL'S-CLOVER *Triphysaria floribunda*	--;--;1B	Cismontane woodland, valley and foothill grassland. Clay soils; often on serpentine. Dry hillsides. 50-300M. Bloom May-June. Perennial blub, native, endemic.	Absent. Potential to occur given presence in regional vicinity, but none found in surveys during blooming period.
Invertebrates			
SAN BRUNO ELFIN BUTTERFLY *Callophrys mossii bayensis*	FE;--;--	Coastal, mountainous areas with grassy ground cover, mainly in the vicinity of the San Bruno Mountain, San Mateo County. Colonies are located on steep, north-facing slopes within the fog belt. Larval host plant is *Sedum spathulifolium*.	Absent. Requires a specific host plant, which is absent. This species was not observed on the project site.
MONARCH BUTTERFLY *Danaus plexippus*	--;--;--	Winter roost sites extend along the coast from northern Mendocino to Baja California, Mexico. Roosts located in wind-protected tree groves (Eucalyptus, Monterey pine, and Monterey Cypress), with nectar and water sources nearby.	Potential Presence. Not an overwintering site. Species known to move through the region and may overwinter in the vicinity. No documented occurrences immediately adjacent.

SPECIES	*STATUS*	*HABITAT*	*POTENTIAL TO OCCUR*
MYRTLE'S SILVERSPOT BUTTERFLY *Speyeria zerene myrtleae*	FE;--;--	Restricted to the Foggy, Coastal dune/hills of the Point Reyes Penninsula; Extirpated from Coastal San Mateo County. Larval foodplant through to be *Viola adunca*.	Absent. Larval food plant (*Viola adunca)* has been extirpated from coastal San Mateo County.
Amphibians/Reptiles			
CALIFORNIA RED-LEGGED FROG *Rana draytonii*	FT;CSC;--	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation. Requires 11-20 weeks of permanent water for larval development. Must have access to aestivation habitat.	Absent. No aquatic habitat, no records of this species on the project site.
SAN FRANCISCO GARTERSNAKE *Thamnophis sirtalis tetrataenis*	FE;CE;CSC	Endemic to San Mateo County and the extreme northern part of coastal Santa Cruz County in California. This species utilizes creeks and other waterways that are currently unexplored. This garter snake prefers wet and marshy areas, and because of its elusive nature, it is difficult to see or capture.	Potential presence. No aquatic habitat, no records of this species on the project site. Drainage north of site provides limited habitat, cypress along northern boundary is potential upland. Likelihood of presence is low give lack of aquatic habitat in drainage to the north.
Fish			
STEELHEAD - CENTRAL CALIFORNIA COAST DPS *Oncorhynchus mykiss irideus*	FT;--;--	From Russian River, south to Soquel Creek and to, but not including, Pajaro River, also San Francisco and San Pablo Bay basins.	Absent. No appropriate habitat.
Birds			
SALTMARSH COMMON YELLOWTHROAT *Geothlypis trichas sinuosa*	--;CSC;--	Resident of the San Francisco Bay region, in fresh and salt water marshes. requires thick, continuous cover down to water surface for foraging; tall grasses, tule patches, willows for nesting.	Absent. No habitat, none observed, and no records of this species on the project site.
RAPTORS (BIRDS OF PREY: FALCONS. HAWKS, OWLS, ETC.) AND OTHER MIGRATORY AND RESIDENT BIRDS	MBTA; §3503.5 FG Code	Large trees and riparian woodlands for nesting.	Potential presence. No nests. Foraging habitat present. Potential for nesting in trees.
Mammals			
BIG FREE-TAILED BAT *Nyctinomops macrotis*	--;CSC;--	Low-lying arid areas in southern California. Need high cliffs or rocky outcrops for roosting sites. Feeds principally on large moths.	Absent. No habitat, none observed, and no records of this species on the project site.
AMERICAN BADGER *Taxidea taxus*	--;CSC;--	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. Needs sufficient food, friable soils and open, uncultivated ground. Preys on burrowing rodents. Digs burrows.	Potentially present. Not observed, no dens. Due to the mobility of this species, it would possible for badgers to visit the site during their foraging efforts.

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SPECIES	*STATUS*	*HABITAT*	*POTENTIAL TO OCCUR*
Sensitive Community			
NORTHERN COASTAL SALT MARSH			Absent. None observed during the surveys, and no records of this habitat on the project site.
NORTHERN MARITIME CHAPARRAL			Absent. None observed during the surveys, and no records of this habitat on the project site.

SOURCE: CALIFORNIA DFW CNDDB 2017

Abbreviations:

FE	Federal Endangered
FT	Federal Threatened
FC	Federal Candidate
FPD	Federal proposed for delisting
FPT	Federal proposed threatened
FD	Federal delisted
MBTA	Protected by Migratory Bird Treaty Act
CE	California Endangered Species
CT	California Threatened
CR	California Rare (Protected by Native Plant Protection Act)
CSC	CDFW Species of Special Concern
CC	State candidate for listing
1B	CNPS - Rare, Threatened, or Endangered

REGULATORY SETTING

There are a number of regulatory agencies whose responsibility includes the oversight of the natural resources of the state and nation, including the California Department of Fish and Wildlife (CDFW), United States Fish and Wildlife Service (USFWS), United States Army Corps of Engineers (USACOE), and the National Marine Fisheries Service (NMFS). These agencies often respond to declines in the quantity of a particular habitat or plant or animal species by developing protective measures for those species or habitat type. Federal and state agencies are increasingly involved with projects at the local level in San Mateo County, due to the presence of protected species. The following is an overview of the federal, state and local regulations that are applicable to the proposed project.

FEDERAL

Federal Endangered Species Act

The Federal Endangered Species Act (FESA), passed in 1973, defines an endangered species as any species or subspecies that is in danger of extinction throughout all or a significant portion of its range. A threatened species is defined as any species or subspecies that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

Once a species is listed it is protected from a "take" unless a take permit is issued by the USFWS. A take is defined as the harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, or collecting wildlife species or any attempt to engage in such conduct, including modification of its habitat (16 USC 1532, 50 CFR 17.3). Proposed endangered or threatened species are those species for which a proposed regulation, but not a final rule, has been published in the Federal Register.

Migratory Bird Treaty Act

To kill, possess, or trade a migratory bird, bird part, nest, or egg is a violation of the Federal Migratory Bird Treaty Act (FMBTA: 16 U.S.C., §703, Supp. I, 1989), unless it is in accordance with the regulations that have been set forth by the Secretary of the Interior.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (16 U.S.C. §668 et seq.), as amended, provides for the protection of the bald eagle (the national emblem) and the golden eagle by prohibiting, except under certain specified conditions, the taking, possession and commerce of such birds. The protection provided includes prohibitions against the import, export, take, sale, purchase or barter of any bald eagle or golden eagle, their parts, products, nests or eggs. The taking includes pursuing, shooting, poisoning, wounding, killing, capturing, trapping, collecting, molesting or disturbing. The law provides exceptions that can be granted for scientific or exhibition use, or for traditional and cultural use by Native Americans.

Clean Water Act – Section 404

Section 404 of the CWA regulates all discharges of dredged or fill material into waters of the U.S. Discharges of fill material includes the placement of fill that is necessary for the construction of any structure, or impoundment requiring rock, sand, dirt, or other material for its construction; site-development fills for recreational, industrial, commercial, residential, and other uses; causeways or road fills; and fill for intake and outfall pipes and subaqueous utility lines [33 C.F.R. §328.2(f)].

Waters of the U.S. include lakes, rivers, streams, intermittent drainages, mudflats, sandflats, wetlands, sloughs, and wet meadows. Wetlands are defined as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" [33 C.F.R. §328.3(b)]. Waters of the U.S. exhibit a defined bed and bank and ordinary highwater mark (OHWM). The OHWM is defined by the USACOE as "that line on shore established by the fluctuations of water and indicated by physical character of the soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas" [33 C.F.R. §328.3(e)].

The USACOE is the agency responsible for administering the permit process for activities that affect waters of the U.S. Executive Order 11990 is a federal implementation policy, which is intended to result in no net loss of wetlands.

Clean Water Act – Section 401

Section 401 of the CWA (33 U.S.C. 1341) requires an applicant who is seeking a Section 404 permit to first obtain a water quality certification from the Regional Water Quality Control Board. To obtain the water quality certification, the Regional Water Quality Control Board must find that the proposed fill would be consistent with the water quality standards set forth by the state.

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STATE

Fish and Game Code §1900-1913 California Native Plant Protection Act

In 1977 the State Legislature passed the Native Plant Protection Act (NPPA) in recognition of rare and endangered plants of the state. The intent of the law was to preserve, protect, and enhance endangered plants. The NPPA gave the California Fish and Game Commission the power to designate native plants as endangered or rare, and to require permits for collecting, transporting, or selling such plants. The NPPA includes provisions that prohibit the taking of plants designated as "rare" from the wild, and a salvage mandate for landowners, which requires notification of the CDFW 10 days in advance of approving a building site.

Fish and Game Code §2050-2097 - California Endangered Species Act

The California Endangered Species Act (CESA) protects certain plant and animal species when they are of special ecological, educational, historical, recreational, aesthetic, economic, and scientific value to the people of the State. CESA established that it is State policy to conserve, protect, restore, and enhance endangered species and their habitats.

CESA enhanced the legal protection for plants covered by the NPPA. To be consistent with Federal regulations, CESA created the categories of "threatened" and "endangered" species. It converted all "rare" animals into the Act as threatened species, but did not do so for rare plants. Thus, under California State law, plant and animal species may be formally designated as rare, threatened, or endangered by the California Fish and Game Commission.

Fish and Game Code §3503, 3503.5, 3800 - Predatory Birds

California Fish and Game Code Sections 3503, 3503.5, and 3800 protect all predatory birds in the order Falconiformes or Strigiformes in California, generally called “raptors,”. The law indicates that it is unlawful to take, posses, or destroy the nest or eggs of any such bird unless it is in accordance with the code. Any activity that would cause a nest to be abandoned or cause a reduction or loss in a reproductive effort is considered a take. This generally includes construction activities.

Fish and Game Code §1601-1603 – Lake or Streambed Alteration

Under the California Fish and Game Code, CDFW has jurisdiction over any proposed activities that would divert or obstruct the natural flow or change the bed, channel, or bank of any lake or stream. Private landowners or project proponents must obtain a “Lake or Streambed Alteration Agreement” from CDFW prior to any alteration of a lake bed, stream channel, or their banks. Through this agreement, the CDFW may impose conditions to limit and fully mitigate impacts on fish and wildlife resources. These agreements are usually initiated through the local CDFW warden and will specify timing and construction conditions, including any mitigation necessary to protect fish and wildlife from impacts of the work.

Public Resources Code § 21000 - California Environmental Quality Act

The California Environmental Quality Act (CEQA) requires public agencies to determine if a proposed project would adversely affect plant or animal species, including those not protected by FESA or

CESA. Species that are not listed under FESA or CESA, but are otherwise eligible for listing (i.e. candidate, or proposed) may be protected by the local government until the opportunity to list the species arises for the responsible agency.

Species that may be considered for review are included on a list of "Species of Special Concern," developed by the CDFW. Additionally, the California Native Plant Society (CNPS) maintains a list of plant species native to California that have low numbers, limited distribution, or are otherwise threatened with extinction. This information is published in the Inventory of Rare and Endangered Vascular Plants of California. List 1A contains plants that are believed to be extinct. List 1B contains plants that are rare, threatened, or endangered in California and elsewhere. List 2 contains plants that are rare, threatened, or endangered in California, but more numerous elsewhere. List 3 contains plants where additional information is needed. List 4 contains plants with a limited distribution. In general, protection under CEQA extends to plants included in List 1 or List 2. Although protection under CEQA does not necessarily extend to plants included in List 3 and 4, the CNPS recommends that impacts to plants included in List 3 and 4 should also be analyzed by CEQA.

California Wetlands Conservation Policy

In August 1993, the Governor announced the "California Wetlands Conservation Policy." The goals of the policy are to establish a framework and strategy that will:

- Ensure no overall net loss and to achieve a long-term net gain in the quantity, quality, and permanence of wetland acreage and values in California in a manner that fosters creativity, stewardship, and respect for private property.
- Reduce procedural complexity in the administration of State and federal wetland conservation programs.
- Encourage partnerships to make landowner incentive programs and cooperative planning efforts the primary focus of wetland conservation and restoration.

The Governor also signed Executive Order W-59-93, which incorporates the goals and objectives contained in the new policy and directs the Resources Agency to establish an Interagency Task Force to direct and coordinate administration and implementation of the policy.

California Coastal Act

The California Coastal Act was passed by the State Legislature and signed by the Governor in 1976 to provide long-term protection of the state's 1,100-mile coastline for the benefit of current and future generations. The Coastal Act created a unique partnership between the State (acting through the California Coastal Commission [CCC]) and local government entities (15 coastal counties and 58 cities) to manage the conservation and development of coastal resources through a comprehensive planning and regulatory program. Coastal Act policies, the heart of the coastal protection program, are the standards used by the CCC in its coastal development permit decisions and review of LCPs prepared by local governments and submitted to the Commission for approval.

In order to approve development within the Coastal Zone, a local government within the coastal zone boundary must prepare a Local Coastal Program (LCP) that consists of a Land Use Plan, zoning

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ordinance and map, and policies and actions that meet the requirements and implement the provisions of the Coastal Act. The California Coastal Commission (CCC) reviews proposed LCPs by cities and counties to determine their consistency with the requirements of the Coastal Act. One of the primary purposes of Coastal Commission review of LCPs is to ensure that the local governments consider and protect environmentally sensitive habitat areas (ESHAs), which include: 1) Sand dunes, 2) Marine habitats, 3) Sea cliffs, 4) Riparian areas, 5) Wetlands, coastal tidelands and marshes, lakes and ponds and adjacent shore habitats, 6) Coastal and off-shore areas containing breeding and/or nesting sites or used by migratory and resident water-associated birds for resting and feeding, 7) Areas used for scientific study and research concerning fish and wildlife, and existing, game or wildlife refuges and reserves, 8) Habitats containing or supporting unique species or any rare and endangered species defined by the State Fish and Game Commission, 9) Rocky intertidal zones, and 10) Coastal scrub community associated with coastal bluffs and gullies.

LOCAL

San Mateo County Local Coastal Program

The project site is within the Coastal Zone. San Mateo County has adopted an LCP for the San Mateo County MidCoast area that encompasses the proposed project site (San Mateo County 2013). The San Mateo County MidCoast LCP contains the following policies related to biological resources:

GENERAL POLICIES

7.1 Definition of Sensitive Habitats

Define sensitive habitats as any area in which plant or animal life or their habitats are either rare or especially valuable and any area which meets one of the following criteria: (1) habitats containing or supporting "rare and endangered" species as defined by the State Fish and Game Commission, (2) all perennial and intermittent streams and their tributaries, (3) coastal tide lands and marshes, (4) coastal and offshore areas containing breeding or nesting sites and coastal areas used by migratory and resident water-associated birds for resting areas and feeding, (5) areas used for scientific study and research concerning fish and wildlife, (6) lakes and ponds and adjacent shore habitat, (7) existing game and wildlife refuges and reserves, and (8) sand dunes.

Sensitive habitat areas include, but are not limited to, riparian corridors, wetlands, marine habitats, sand dunes, sea cliffs, and habitats supporting rare, endangered, and unique species.

7.2 Designation of Sensitive Habitats

Designate sensitive habitats as including, but not limited to, those shown on the Sensitive Habitats Map for the Coastal Zone.

7.3 Protection of Sensitive Habitats

a. Prohibit any land use or development which would have significant adverse impact on sensitive habitat areas.

b. Development in areas adjacent to sensitive habitats shall be sited and designed to prevent impacts that could significantly degrade the sensitive habitats. All uses shall be compatible with the maintenance of biologic productivity of the habitats.

7.4 Permitted Uses in Sensitive Habitats

a. Permit only resource dependent uses in sensitive habitats. Resource dependent uses for riparian corridors, wetlands, marine habitats, sand dunes, sea cliffs and habitats supporting rare, endangered, and unique species shall be the uses permitted in Policies 7.9, 7.16, 7.23, 7.26, 7.30, 7.33, and 7.44, respectively, of the County Local Coastal Program on March 25, 1986.

b. In sensitive habitats, require that all permitted uses comply with U.S. Fish and Wildlife and State Department of Fish and Game regulations.

7.5 Permit Conditions

a. As part of the development review process, require the applicant to demonstrate that there will be no significant impact on sensitive habitats. When it is determined that significant impacts may occur, require the applicant to provide a report prepared by a qualified professional which provides: (1) mitigation measures which protect resources and comply with the policies of the Shoreline Access, Recreation/Visitor-Serving Facilities and Sensitive Habitats Components, and (2) a program for monitoring and evaluating the effectiveness of mitigation measures. Develop an appropriate program to inspect the adequacy of the applicant's mitigation measures.

b. When applicable, require as a condition of permit approval the restoration of damaged habitat(s) when in the judgment of the Planning Director restoration is partially or wholly feasible.

7.6 Allocation of Public Funds

In setting priorities for allocating limited local, State, or federal public funds for preservation or restoration, use the following criteria: (1) biological and scientific significance of the habitat, (2) degree of endangerment from development or other activities, and (3) accessibility for educational and scientific uses and vulnerability to overuse.

RIPARIAN CORRIDORS

7.7 Definition of Riparian Corridors

Define riparian corridors by the "limit of riparian vegetation" (i.e., a line determined by the association of plant and animal species normally found near streams, lakes and other bodies of freshwater: red alder, jaumea, pickleweed, big leaf maple, narrow-leaf cattail, arroyo willow, broadleaf cattail, horsetail, creek dogwood, black cottonwood, and box elder). Such a corridor must contain at least a 50% cover of some combination of the plants listed.

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7.8 Designation of Riparian Corridors

Establish riparian corridors for all perennial and intermittent streams and lakes and other bodies of freshwater in the Coastal Zone. Designate those corridors shown on the Sensitive Habitats Map and any other riparian area meeting the definition of Policy 7.7 as sensitive habitats requiring protection, except for manmade irrigation ponds over 2,500 sq. ft. surface area.

7.9 Permitted Uses in Riparian Corridors

a. Within corridors, permit only the following uses: (1) education and research, (2) consumptive uses as provided for in the Fish and Game Code and Title 14 of the California Administrative Code, (3) fish and wildlife management activities, (4) trails and scenic overlooks on public land(s), and (5) necessary water supply projects.

b. When no feasible or practicable alternative exists, permit the following uses: (1) stream dependent aquaculture, provided that non-stream dependent facilities locate outside of corridor, (2) flood control projects, including selective removal of riparian vegetation, where no other method for protecting existing structures in the floodplain is feasible and where such protection is necessary for public safety or to protect existing development, (3) bridges when supports are not in significant conflict with corridor resources, (4) pipelines, (5) repair or maintenance of roadways or road crossings, (6) logging operations which are limited to temporary skid trails, stream crossings, roads and landings in accordance with State and County timber harvesting regulations, and (7) agricultural uses, provided no existing riparian vegetation is removed, and no soil is allowed to enter stream channels.

7.10 Performance Standards in Riparian Corridors

Require development permitted in corridors to: (1) minimize removal of vegetation, (2) minimize land exposure during construction and use temporary vegetation or mulching to protect critical areas, (3) minimize erosion, sedimentation, and runoff by appropriately grading and replanting modified areas, (4) use only adapted native or non-invasive exotic plant species when replanting, (5) provide sufficient passage for native and anadromous fish as specified by the State Department of Fish and Game, (6) minimize adverse effects of waste water discharges and entrainment, (7) prevent depletion of groundwater supplies and substantial interference with surface and subsurface waterflows, (8) encourage waste water reclamation, (9) maintain natural vegetation buffer areas that protect riparian habitats, and (10) minimize alteration of natural streams.

7.11 Establishment of Buffer Zones

a. On both sides of riparian corridors, from the “limit of riparian vegetation” extend buffer zones 50 feet outward for perennial streams and 30 feet outward for intermittent streams.

b. Where no riparian vegetation exists along both sides of riparian corridors, extend buffer zones 50 feet from the predictable high-water point for perennial streams and 30 feet from the midpoint of intermittent streams.

c. Along lakes, ponds, and other wet areas, extend buffer zones 100 feet from the high-water point except for man-made ponds and reservoirs used for agricultural purposes for which no buffer zone is designated.

7.12 Permitted Uses in Buffer Zones

Within buffer zones, permit only the following uses: (1) uses permitted in riparian corridors; (2) residential uses on existing legal building sites, set back 20 feet from the limit of riparian vegetation, only if no feasible alternative exists, and only if no other building site on the parcel exists; (3) on parcels designated on the LCP Land Use Plan Map: Agriculture, Open Space, or Timber Production, residential structures or impervious surfaces only if no feasible alternative exists; (4) crop growing and grazing consistent with Policy 7.9; (5) timbering in "streamside corridors" as defined and controlled by State and County regulations for timber harvesting; and (6) no new residential parcels shall be created whose only building site is in the buffer area.

7.13 Performance Standards in Buffer Zones

Require uses permitted in buffer zones to: (1) minimize removal of vegetation; (2) conform to natural topography to minimize erosion potential; (3) make provisions (i.e., catch basins) to keep runoff and sedimentation from exceeding pre-development levels; (4) replant where appropriate with native and noninvasive exotics; (5) prevent discharge of toxic substances, such as fertilizers and pesticides; into the riparian corridor; (6) remove vegetation in or adjacent to man-made agricultural ponds if the life of the pond is endangered; (7) allow dredging in or adjacent to man-made ponds if the San Mateo County Resource Conservation District certified that siltation imperils continued use of the pond for agricultural water storage and supply; and (8) limit the sound emitted from motorized machinery to be kept to less than 45-dBA at any riparian buffer zone boundary except for farm machinery and motorboats.

WETLANDS

7.14 Definition of Wetland

Define wetland as an area where the water table is at, near, or above the land surface long enough to bring about the formation of hydric soils or to support the growth of plants which normally are found to grow in water or wet ground. Such wetlands can include mudflats (barren of vegetation), marshes, and swamps. Such wetlands can be either fresh or saltwater, along streams (riparian), in tidally influenced areas (near the ocean and usually below extreme high water of spring tides), marginal to lakes, ponds, and man-made impoundments. Wetlands do not include areas which in normal rainfall years are permanently submerged (streams, lakes, ponds and impoundments), nor marine or

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estuarine areas below extreme low water of spring tides, nor vernally wet areas where the soils are not hydric.

In San Mateo County, wetlands typically contain the following plants: cordgrass, pickleweed, jaumea, frankenia, marsh mint, tule, bullrush, narrow-leaf cattail, broadleaf cattail, pacific silverweed, salt rush, and bog rush. To qualify, a wetland must contain at least a 50% cover of some combination of these plants, unless it is a mudflat.

7.15 Designation of Wetlands

a. Designate the following as wetlands requiring protection: Pescadero Marsh, Pillar Point Marsh (as delineated on Map 7.1), marshy areas at Tunitas Creek, San Gregorio Creek, Pomponio Creek and Gazos Creek, and any other wetland meeting the definition in Policy 7.14.

b. At the time a development application is submitted, consider modifying the boundary of Pillar Point Marsh (as delineated on Map 7.1) if a report by a qualified professional, selected jointly by the County and the applicant, can demonstrate that land within the boundary does not meet the definition of a wetland.

7.16 Permitted Uses in Wetlands

Within wetlands, permit only the following uses: (1) nature education and research, (2) hunting, (3) fishing, (4) fish and wildlife management, (5) mosquito abatement through water management and biological controls; however, when determined to be ineffective, allow chemical controls which will not have a significant impact, (6) diking, dredging, and filling only as it serves to maintain existing dikes and an open channel at Pescadero Marsh, where such activity is necessary for the protection of pre-existing dwellings from flooding, or where such activity will enhance or restore the biological productivity of the marsh, (7) diking, dredging, and filling in any other wetland only if such activity serves to restore or enhance the biological productivity of the wetland, (8) dredging man-made reservoirs for agricultural water supply where wetlands may have formed, providing spoil disposal is planned and carried out to avoid significant disruption to marine and wildlife habitats and water circulation, and (9) incidental public service purposes, including, but not limited to, burying cables and pipes or inspection of piers and maintenance of existing intake and outfall lines.

7.17 Performance Standards in Wetlands

Require that development permitted in wetlands minimize adverse impacts during and after construction. Specifically, require that: (1) all paths be elevated (catwalks) so as not to impede movement of water, (2) all construction takes place during daylight hours, (3) all outdoor lighting be kept at a distance away from the wetland sufficient not to affect the wildlife, (4) motorized machinery be kept to less than 45-dBA at the wetland boundary, except for farm machinery, (5) all construction which alters wetland vegetation be required to replace the vegetation to the satisfaction of the Planning Director including “no action”

in order to allow for natural reestablishment, (6) no herbicides be used in wetlands unless specifically approved by the County Agricultural Commissioner and State Department of Fish and Game, and (7) all projects be reviewed by the State Department of Fish and Game and State Water Quality Board to determine appropriate mitigation measures.

7.18 Establishment of Buffer Zones

Buffer zones shall extend a minimum of 100 feet landward from the outermost line of wetland vegetation. This setback may be reduced to no less than 50 feet only where: (1) no alternative development site or design is possible; and (2) adequacy of the alternative setback to protect wetland resources is conclusively demonstrated by a professional biologist to the satisfaction of the County and the State Department of Fish and Game. A larger setback shall be required as necessary to maintain the functional capacity of the wetland ecosystem.

7.19 Permitted Uses in Buffer Zones

Within buffer zones, permit the following uses only: (1) uses allowed within wetlands (Policy 7.16) and (2) public trails, scenic overlooks, and agricultural uses that produce no impact on the adjacent wetlands.

7.20 Management of Pillar Point Marsh

a. Define safe yield from the aquifer feeding the marsh as the amount of water that can be removed without adverse impacts on marsh health.

b. Restrict groundwater extraction in the aquifer to a safe yield as determined by a hydrologic study participated in by the two public water systems (CUC and CCWD). Water system capacity permitted and the number of building permits allowed in any calendar year shall be limited if necessary by the findings of the study.

c. Encourage purchase by an appropriate public agency such as the Coastal Conservancy.

d. Encourage management of the marsh to enhance the biological productivity and to maximize wildlife potential.

e. All adjacent development shall, where feasible, contribute to the restoration of biologic productivity and habitat.

RARE AND ENDANGERED SPECIES

7.32 Designation of Habitats of Rare and Endangered Species

Designate habitats of rare and endangered species to include, but not be limited to, those areas defined on the Sensitive Habitats Map for the Coastal Zone.

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7.33 Permitted Uses

a. Permit only the following uses: (1) education and research, (2) hunting, fishing, pedestrian and equestrian trails that have no adverse impact on the species or its habitat, and (3) fish and wildlife management to restore damaged habitats and to protect and encourage the survival of rare and endangered species.

b. If the critical habitat has been identified by the Federal Office of Endangered Species, permit only those uses deemed compatible by the U.S. Fish and Wildlife Service in accordance with the provisions of the Endangered Species Act of 1973, as amended.

7.34 Permit Conditions

In addition to the conditions set forth in Policy 7.5, require, prior to permit issuance, that a qualified biologist prepare a report, which defines the requirements of rare and endangered organisms. At minimum, require the report to:

a. Discuss:

(1) Animal food, water, nesting or denning sites and reproduction, predation and migration requirements, and

(2) Plants life histories and soils, climate and geographic requirements.

b. Include a map depicting the locations of plants or animals and/or their habitats.

c. Demonstrate that any development will not impact the functional capacity of the habitat.

d. Recommend mitigation if development is permitted within or adjacent to identified habitats.

7.35 Preservation of Critical Habitats

Require preservation of all habitats of rare and endangered species using criteria including, but not limited to, Section 6325.2 (Primary Fish and Wildlife Habitat Area Criteria) and Section 6325.7 (Primary Natural Vegetative Areas Criteria) of the Resource Management Zoning District.

7.36 San Francisco Garter Snake (Thanmophis sirtalis tetrataenia)

a. Prevent any development where there is known to be a riparian or wetland location for the San Francisco garter snake with the following exceptions: (1) existing man-made impoundments smaller than one-half acre in surface, and (2) existing man-made impoundments greater than one-half acre in surface providing mitigation measures are taken to prevent disruption of no more than one half of the snake's known habitat in that location in accordance with recommendations from the State Department of Fish and Game.

b. Require developers to make sufficiently detailed analyses of any construction which could impair the potential or existing migration routes of the San Francisco garter snake. Such analyses will determine appropriate mitigation measures to be taken to provide for appropriate migration corridors.

7.37 San Francisco Tree Lupine Moth (Graptholitha edwardsiana)

Prevent the loss of any large populations (more than 100 plants in a 1/10-acre area) of tree lupine within 1 mile of the coastline.

7.41 Rare Plant Search

Encourage a continued search for any rare plants known to have occurred in San Mateo County Coastal Zone but not recently seen. Such search can be done by various persons or groups concerned with such matters.

7.42 Development Standards

Prevent any development on or within 50 feet of any rare plant population. When no feasible alternative exists, permit development if: (1) the site or a significant portion thereof is returned to a natural state to allow for the reestablishment of the plant, or (2) a new site is made available for the plant to inhabit.

UNIQUE SPECIES

7.43 Designation of Habitats of Unique Species

Designate habitats of unique species to include, but not be limited to, those areas designated on the Sensitive Habitats Map for the Coastal Zone.

7.44 Permitted Uses

Permit only the following uses: (1) education and research, (2) hunting, fishing, pedestrian and equestrian trails that have no adverse impact on the species or its habitat, and (3) fish and wildlife management to the degree specified by existing governmental regulations.

7.45 Permit Conditions

In addition to the conditions set forth in Policy 7.5, require, as a condition of permit approval, that a qualified biologist prepare a report which defines the requirements of a unique organism. At minimum, require the report to discuss: (1) animal food, water, nesting or denning sites and reproduction, predation and migration requirements, and (2) plants life histories and soils, climate and geographic requirements.

7.46 Preservation of Habitats

Require preservation of critical habitats using criteria including, but not limited to, Section 6325.2 (Primary Fish and Wildlife Habitat Area Criteria) and Section 6325.7 (Primary Natural Vegetative Areas Criteria) of the Resource Management Zoning District.

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7.48 Monterey Pine (Pinus radiata)

a. Require any development to keep to a minimum the number of native Monterey pine cut in the natural pine habitat near the San Mateo-Santa Cruz County line.

b. Allow the commercial cutting of Monterey pine if it: (1) perpetuates the long-term viability of stands, (2) prevents environmental degradation, and (3) protects the viewshed within the Cabrillo Highway Scenic Corridor.

c. To preserve the productivity of prime agricultural soils, encourage the control of invasive Monterey pine onto the soils.

7.49 California Wild Strawberry (Fragaria californica)

Require any development, within one-half mile of the coast, to mitigate against the destruction of any California wild strawberry in one of the following ways:

a. Prevent any development, trampling, or other destructive activity which would destroy the plant; or

b. After determining specifically if the plants involved are of particular value, successfully transplant them or have them successfully transplanted to some other suitable site. Determination of the importance of the plants can only be made by a professional doing work in strawberry breeding.

7.50 Champion Monterey Cypress (Cupressus macrocarpa)

Declare the Champion Monterey Cypress Tree a Class I Heritage Tree.

WEEDY, UNDESIRABLE PLANTS

7.51 Voluntary Cooperation

Encourage the voluntary cooperation of private landowners to remove from their lands the undesirable pampas grass, French, Scotch and other invasive brooms. Similarly, encourage landowners to remove blue gum seedlings to prevent their spread.

NATURAL FEATURES – VEGETATIVE FORMS

8.9 Trees

a. Locate and design new development to minimize tree removal.

b. Employ the regulations of the Significant Tree Ordinance to protect significant trees (38 inches or more in circumference) which are located in urban areas zoned Design Review (DR).

c. Employ the regulations of the Heritage Tree Ordinance to protect unique trees which meet specific size and locational requirements.

d. Protect trees specifically selected for their visual prominence and their important scenic or scientific qualities.

e. Prohibit the removal of trees in scenic corridors except by selective harvesting which protects the existing visual resource from harmful impacts or by other cutting methods necessary for development approved in compliance with LCP policies and for opening up the display of important views from public places, i.e., vista points, roadways, trails, etc.

f. Prohibit the removal of living trees in the Coastal Zone with a trunk circumference of more than 55 inches measured 4 1/2 feet above the average surface of the ground, except as may be permitted for development under the regulations of the LCP, or permitted under the Timber Harvesting Ordinance, or for reason of danger to life or property.

g. Allow the removal of trees which are a threat to public health, safety, and welfare.

8.10 Vegetative Cover (with the exception of crops grown for commercial purposes)

Replace vegetation removed during construction with plant materials (trees, shrubs, ground cover) which are compatible with surrounding vegetation and is suitable to the climate, soil, and ecological characteristics of the area.

SPECIAL FEATURES

8.27 Natural Features

Prohibit the destruction or significant alteration of special natural features through implementation of Landform Policies and Vegetative Form Policies of the LCP.

DEVELOPMENT STANDARDS FOR RECREATION AND VISITOR-SERVING FACILITIES

8.27 Sensitive Habitats

Prohibit the destruction or significant alteration of special natural features through implementation of Landform Policies and Vegetative Form Policies of the LCP.

a. Conduct studies by a qualified person agreed by the County and the applicant during the planning and design phases of facilities located within or near sensitive habitats and archaeological/paleontological resources to determine the least disruptive locations for improvements and the methods of construction.

   These studies should consider the appropriate intensity of use, improvements and management to protect the resources and reduce or mitigate impacts.

b. Provide improvements and management adequate to protect sensitive habitats. These may include, but are not limited to, the following:
   (1) informative displays, brochures, and signs to minimize public intrusion and impact, (2) organized tours of sensitive areas, (3) landscaped buffers or fences, and (4) staff to maintain improvements and manage the use of sensitive habitats.

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c. Provide setbacks from bluff edges adequate to protect the public, based on local geology and erosion rates and consistent with the Hazards Component.

IMPACTS AND MITIGATION MEASURES

THRESHOLDS OF SIGNIFICANCE

The proposed project will have a significant impact on biological resources if it will:

- 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;
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service;
- 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;
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

IMPACTS AND MITIGATION

The California Natural Diversity Data Base (CNDDB) search identified occurrences of several documented special-status species within 5 miles of the project site. Some species require localized micro-habitats, while others are highly mobile and may occur throughout the region. Below is a brief description of the special status species that are present in the region and their habitat requirements. **Table 1** provides a detailed description of the species habitat and listing status.

Impact Bio-1: Direct or Indirect Effects on Candidate, Sensitive, or Special-Status Species including their Habitat or Movement Corridors (less than significant with mitigation incorporated)

Plants: There are twenty special status plant species documented within five miles of the project site. One of these species is federally and state listed as Endangered, and another species is state listed as Candidate Endangered. The CNPS lists all of these plants on the 1B list, which is categorized as Rare, Threatened, or Endangered. None of these species have been previously reported on site. The project site does not contain the appropriate habitat for the majority of these species. The following eight species were initially determined to have potential to occur due to the presence of similar habitat types, or local occurrences in close proximity to the project site.

- Blasdale's bent grass (Agrostis blasdalei);

- Perennial goldfields (Lasthenia californica ssp. macrantha);
- Coast yellow leptosiphon (Leptosiphon croceus);
- Rose leptosiphon (Leptosiphon rosaceus);
- Woodland Woolythreads (Monolopia gacilens)
- Hickman's cinquefoil (Potentilla hickmanii); and,
- San Francisco campion (silene verecunda ssp. verecunda);
- San Francisco owl's-clover (Triphysaria floribunda).

Blasdale's bent grass (*Agrostis blasdalei*) is a CNPS 1B plant that is known to occur along immediate coastline, such as dunes and bluffs. This is a perennial grass (rhizomatous) that is native to California and is endemic (limited) to California. This species flowers between May and July. This species was not observed during field surveys taken during its blooming period (May 5, 2018) and is presumed absent.

Perennial goldfields (*Lasthenia californica* ssp. *macrantha*) is a CNPS 1B plant that is known to occur over a wide range of habitat types, such as meadows, shrubland and open forest. This is an annual herb that is native to California. This species flowers from January to November. This species was not observed during either the March 29, 2017 or May 5, 2018 field surveys, which were during the blooming period. This species is presumed absent.

Coast yellow leptosiphon (*Leptosiphon croceus*) is a CNPS 1B plant known to occur on coastal bluff scrub, and coastal prairie from 10-150 meters in elevation. This is an annual herb that is native to California. This species flowers from April to May. This species was not observed during field surveys taken during its blooming period (May 5, 2018) and is presumed absent.

Rose leptosiphon (*Leptosiphon rosaceus*) is a CNPS 1B plant that is known to occur on coastal bluff scrub from 0-100 meters in elevation. This is an annual herb that is native to California. This species flowers from April to July. This species was not observed during field surveys taken during its blooming period (May 5, 2018) and is presumed absent.

Hickman's cinquefoil (*Potentilla hickmanii*) is a Federal and State listed Endangered species and is a CNPS 1B plant that is known to occur in coastal bluff scrub, closed-cone coniferous forest, meadows and seeps, and marshes and swamps from 10-150 meters. This is a perennial herb that is native to California and is endemic (limited) to California. This species flowers from April to August. This species was not observed during field surveys taken during its blooming period (May 5, 2018) and is presumed absent.

San Francisco campion (*Silene verecunda ssp. verecunda*) is a CNPS 1B plant that is known to occur on Coastal prairie, sometimes on serpentine soils. This is an annual herb that is native to California and is endemic (limited) to California. This species flowers from April to June. This species was not observed during field surveys taken during its blooming period (May 5, 2018) and is presumed absent.

San Francisco owl's-clover (*Triphysaria floribunda*) is a CNPS 1B plant that is known to occur on Coastal prairie and sometimes on serpentine soils. This is an annual herb that is native to California

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and is endemic (limited) to California. This species flowers from April to June. This species was not observed during field surveys taken during its blooming period (May 5, 2018) and is presumed absent.

Wildlife: There are ten special status wildlife species within five miles of the project site.

San Bruno elfin butterfly: This is a federally endangered species found in coastal, mountainous areas with grassy ground cover, mainly in the vicinity of San Bruno Mountain in San Mateo County. Colonies are located on steep, north-facing slopes within the fog belt. The larval host plant is Stonecrop (Sedum spathulifolium). This species is considered absent because it requires a specific host plant, which is absent from the Project Area. Stonecrop is only found on the rocky outcrops of north facing slopes. There are no north facing slopes or exposed rocky outcrops to support the host plant. This species was not observed on the project site.

Monarch butterfly: This species' winter roost sites include wind-protected tree groves (Eucalyptus, Monterey pine, and Monterey cypress), with nectar and water sources nearby. This species is known to occur in the region. Most trees within the Project Area are small, or do not grow in groves with sufficient density to resist offshore winds and protect roosting butterflies. As such, they are unlikely to inhabit the site. Field surveys were performed during the Monarch overwintering period and these species were not observed in the Monterey cypress or Monterey Pine trees, which may be due to a lack of tree density among other reasons. Winter roosting trees are very evident when present given the number of butterflies resting on the tree branches—the property is very accessible and no previous records of the area being used as a roosting site have been reported. The project site is not expected to be an overwintering site for this species.

Myrtle's silverspot butterfly. This is a federally endangered species that is restricted to the Foggy, Coastal dune/hills of the Point Reyes Penninsula. The larval food plant is thought to be *Viola adunca*, which has been extirpated from coastal San Mateo County.

California red-legged frog: This is a federally threatened species and California species of concern. Aquatic habitat is necessary for California red-legged frog, which is generally found in lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation. This species requires 11-20 weeks of permanent water for larval development and must have access to upland aestivation habitat. The project site does not provide the appropriate aquatic habitat necessary for this species, and there are no records of this species on the project site.

San Francisco garter snake: This is a federal and state endangered species. Aquatic habitat is necessary for San Francisco garter snake, which is generally found in the vicinity of freshwater marshes, ponds, and slow-moving streams in San Mateo County and extreme northern Santa Cruz County. This species prefers dense cover and water depths of at least one foot. Upland areas near water are also very important. The project site does not provide the appropriate aquatic habitat necessary for this species. This species is known to occur in the coastal streams of the region and the drainage to the north of the project site provides appropriate habitat. The dense cypress habitat along the northern property boundary is an upland area that is unlikely to be used by this species given the distance to appropriate aquatic habitat in the vicinity. Construction activities within the

project site are not expected to impact this species because they are not presumed present due to the lack of nearby aquatic habitat.

Steelhead - Central California Coast DPS: Steelhead - Central California Coast DPS is a federally threatened species. This species is not documented on the project site, nor is there appropriate aquatic habitat for this species.

Saltmarsh common yellowthroat: The saltmarsh common yellowthroat is a resident of the San Francisco Bay region that is found in fresh and saltwater marshes. This species requires thick, continuous cover down to water surface for foraging. They are often found in tall grasses, tule patches, and willows for nesting. The project site does not contain the appropriate habitat for this species, none were observed during field surveys, and there are no records of this species on the project site.

Raptors: Raptors are protected under the Fish and Game Code. Raptor nests are present throughout most of the wooded, edge, and riparian portions of the state. Forested habitats, dense stands of trees, riparian deciduous and open grasslands are used most frequently for nesting (note: specific nesting habits vary from species to species). Prey for raptor species varies and may include (but is not limited to) birds, small mammals, invertebrates, reptiles, and amphibians.

There were no active or remnant nests observed within the project site. Additionally, there were no individuals or pairs observed overhead in the immediate vicinity of the project site during the field surveys. Although no raptors or raptor nests have been identified on the project site, the forested areas in the northern portion of the site could become occupied by raptors in the future prior to the initiation of project construction. Therefore, out of an abundance of caution, the project will implement Mitigation Measures 1 and 2 (as specified below).

Big free-tailed bat: This is a California Species of Special Concern that is typically found in low-lying arid areas in southern California. They need high cliffs or rocky outcrops for roosting sites and they feed principally on large moths. The project site does not contain the appropriate habitat for this species, none were observed during field surveys, and there are no records of this species on the project site.

American badger: This is a California Species of Special Concern that is most abundant in drier open stages of most shrub, forest, and herbaceous habitats that contain friable soils. They need sufficient food, friable soils and open, uncultivated ground. They prey on burrowing rodents and they dig burrows for shelter. No evidence of badger burrows were found during field surveys on the project site. Due to the mobility of this species, it would not be entirely uncommon for badgers to visit the site during their foraging efforts; however, there is no evidence of this species denning on the project site.

Other Species (Not Documented in the CNDDB within 5-mile)

San Francisco dusky-footed woodrat: The San Francisco dusky-footed woodrat is a California Species of Special Concern. The CNDDB search did not identify an occurrence of this species within 5 miles.

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However, this species is known to occur in the Rancho de Tierra Park area located beginning approximately 1.5 miles east of the project site. The dense cypress habitat along the northern property boundary could provide forest habitat for San Francisco dusky-footed woodrat. Forest habitat is necessary for this species, which is generally found in forest habitat of moderate canopy and moderate to dense understory, and can be found in chaparral and redwood habitats. This species constructs nests of shredded grass, leaves and other material, and is limited by availability of nest building materials. The cypress debris associated with northern edge of the property could provide nest building materials; however, the majority of the project site is not anticipated to be appropriate habitat. There were no nests observed during field surveys and there are no records of this species on the project site, nor were there are occurrences documented within 5 miles of the project. The dense cypress habitat along the northern property boundary is not proposed for removal/disturbance. Construction activities within the project site would not impact this species.

Impact Summary: The proposed project would result in construction activities that would change a portion of the 10.88-acre parcel into medium high-density housing. The project site was previously developed.

There has been no documented evidence that any special status species are currently occupying the project site or have occupied it in recent history. The proposed project would result in redevelopment of a largely disturbed urban site that has been naturalized to some extent. The ground-disturbing activities on the site will consist of demolishing the existing foundations and grading the site. Subsequently, new construction will result in new buildings, infrastructure, ancillary facilities (e.g. parking areas), and landscaping on the areas that are currently developed and those that are naturalized as grassland and coastal scrub. The parcel does not contain special status species or their habitat and is currently exposed to on-going human presence including some vehicle and pedestrian traffic (hiking/jogging). This impact is considered significant because, although no raptors have been identified on the project site, the forested areas in the northern portion of the site could be occupied by raptors prior to the initiation of project construction. However, with the implementation of the following mitigation measures, the impact on special-status raptor species from the development of the project would be reduced to ***less than significant***. Mitigation Measures 1 and 2 will ensure that impacts on any raptors that may occupy the forested area on the northern portion of the project site are protected from disturbance during construction.

MITIGATION MEASURES

Mitigation Measure Bio-1: *MidPen or its contractors shall install orange construction barrier fencing to define the northern edge of the project site, in order to minimize disturbance to the Monterey cypress/Monterey pine forested area. Before construction, the contractor shall work with the project engineer and a qualified biologist to identify the locations for the barrier fencing, and will place stakes around these areas to prevent disturbance. The fencing will be installed before construction activities are initiated and will be maintained throughout the construction period.*

Temporary fences around the areas to be preserved will be installed as the first order of work. Temporary fences will be furnished, constructed, maintained, and removed, and as directed by the project engineer. The fencing will be commercial-quality woven polypropylene (Tensar Polygrid or

equivalent, orange in color, and at least 4 feet high). The fencing will be tightly strung on posts with a maximum 10-foot spacing.

Mitigation Measure Bio-2: *MidPen shall hire a qualified biologist to conduct preconstruction surveys for nesting raptors within two weeks prior to initiating any project construction activity during the raptor nesting season (March 1 through September 5). This shall apply to each construction phase. Survey results shall be provided to the San Mateo County Planning and Building Department in a written report, within 30 days of commencement of construction activities. If nesting raptors are found, the qualified biologist shall consult with CDFW to determine if construction activities could cause reproductive failure (nest abandonment and loss of eggs and/or young). If, in the course of consultation with the CDFW, a determination is made that the construction activities could cause reproductive failure (nest abandonment and loss of eggs and/or young), an appropriate buffer shall be established by a qualified biologist in coordination with the CDFW until the young have fledged, or the adults are no longer nesting. Any work that must occur within established buffers shall be approved by CDFW and monitored by a qualified biologist. If adverse effects due to project activities within the buffer are observed (including but not limited to the potential to compromise the nest), work within the no-disturbance buffer shall halt until the nest occupants have fledged.*

Impact Bio-2: Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service (no impact)

The Coastal Act Section 30107.5 states, 'Environmental sensitive area' means any area in which plant or animal life or their habitat are either rare or especially valuable because of their special nature or role in the ecosystem and which could be easily disturbed or degraded by human activities and developments.

The proposed project would not require construction in areas that meet the definition of a sensitive habitat contained in Policy 7.1 in the San Mateo County MidCoast LCP, which includes riparian habitat, but other sensitive coastal habitats as well. The project does not contain any: perennial or intermittent streams or their tributaries; coastal tide lands and marshes: coastal and offshore areas containing breeding or nesting sites; coastal areas used by migratory and resident water-associated birds for resting areas and feeding; areas used for scientific study and research concerning fish and wildlife; lakes and ponds and adjacent shore habitat; existing game and wildlife refuges and reserves; or sand dunes. No ESHAs were identified on the project site during field surveys (November 27, 2015-De Novo, and March 29, 2017-WRA), or records searches (CNDDB, CNPS Inventory, USFWS Critical Habitat Mapper). Due to the absence of any ESHAs, as defined by the San Mateo LCP, on the project site, or any other sensitive habitats as defined under CEQA, implementation of the proposed project would have ***no impact*** on these resources.

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Impact Bio-3: Potential to have a substantial adverse effect on federal or state protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means (no impact)

Field surveys performed by De Novo Planning Group on November 17, 2015 and by WRA Environmental Consultants on March 29, 2017 did not find any evidence of federally protected wetlands as defined by the Section 404 of the Clean Water Act. Additionally, there are no areas within the project site that meet the definition of State Waters under the San Mateo County LCP, the Porter-Cologne Water Quality Control Act, or Fish and Game Code. Adjacent properties were observed, to the extent that there was visibility, to determine whether there were any immediately adjacent wetlands. Some immediately adjacent properties were not observable due to ground/tree cover and because trespass permission was not granted at the time of the survey. The closest recognizable wetlands are approximately 350 feet to the north near 16th street, and approximately 600 feet to the west in the Pacific Ocean. Neither construction nor operation of the project would have a substantial adverse effect on these nearby wetlands, given the distance of these wetlands to the project site, and the fact that drainage from the site will be directed away from the adjacent stream. The proposed project does not warrant a buffer from these adjacent wetlands, and there would be no substantial direct or indirect impacts on these wetlands. Implementation of the proposed project would have ***no impact*** on federal or state protected wetlands.

Impact Bio-4: Potential to interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites (less than significant)

The CNDDB record search did not reveal any documented wildlife corridors or wildlife nursery sites on or adjacent to the project site. Furthermore, the field survey did not reveal any wildlife corridors or wildlife nursery sites on or adjacent to the project site. The annual grassland, urban, and barren portions of the project site are not significant wildlife movement corridors, nor are these areas wildlife nursery sites. Further, the project site is bounded by urban development on two sides, and by SR 1 on the third side, so it would provide little opportunity for migration of native resident or migratory wildlife species potentially present within the project area. Lastly, the project would not impact the movement of any fish species, since there is no aquatic habitat located with the project site, and the project would not interfere with the movement of any fish species outside of the project site. Implementation of the proposed project would have a ***less than significant*** impact.

Impact Bio-5: Potential for conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan (less than significant)

The U.S. Fish and Wildlife Service (USFWS) has issued Pacific Gas and Electric Company (PG&E) an Endangered Species Act Section 10(a)(1)(B) incidental take permit for the company's Bay Area Operations and Maintenance (O&M) Habitat Conservation Plan (HCP). This HCP is designed only to

cover PG&E's activities; therefore, aspects of the proposed project outside of PG&E's activities are not subject to the provisions contained within the PG&E O&M HCP. The HCP includes strategies to avoid, minimize, and offset potential direct, indirect, and cumulative effects of PG&E's operations, maintenance, and minor new construction activities on 32 species federally listed as threatened or endangered (USFWS, 2017a). The proposed activities are located within an approximately 402,440-acre plan area in portions of California's Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma Counties, which includes the project site. The purpose of the Bay Area O&M HCP is to enable PG&E to continue to conduct current and future O&M activities within the nine counties of the Bay Area while avoiding, minimizing, and mitigating for temporary and permanent impacts on threatened and endangered species habitat that could result from PG&E's ongoing O&M activities. To avoid and minimize the impacts of its activities, PG&E often redesigns or reconfigures construction plans in consultation with PG&E biologists and land planners.

The PG&E O&M HCP is different from most other HCPs in that it shifts the habitat conservation plan paradigm from one-time use (i.e., standard development projects) and permanent habitat impacts, to infrequent and dispersed permanent and temporary impacts that occur at or near existing facilities during infrastructure maintenance. Generally, O&M activities result in temporary impacts on proposed covered species. The O&M approach contained within the HCP includes a programmatic strategy for infrastructure maintenance and long-term commitments for sensitive species and habitat protection over 30 years.

Since the HCP is designed only to cover PG&E's activities, aspects of the proposed project outside of PG&E's activities are not subject to the provisions contained within the PG&E O&M HCP. To the extent that PG&E conducts maintenance activities on their facilities on the project site, these activities would be subject to the HCP, but they would not be part of the proposed project, and thus project activities would not be subject to that HCP. There are no other Habitat Conservation Plans or Natural Community Conservation Plans in effect on the project site. Because the proposed project does not include PG&E O&M activities on the project site, and no other HCPs exist that contain the project site, implementation of the proposed project would have a ***less than significant*** impact on this environmental topic.

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REFERENCES

ArcGIS Online Bing Maps Hybrid Map Service. 2015. Map date: December 3, 2015.

ArcGIS Online USGS Topographic Map Service. 2015. Map Date: November 15, 2015.

Barbour and Major. 1988. Terrestrial vegetation of California.

California Dept. of Fish and Wildlife (DFW). "Special Animals List." Natural Diversity Database.

California Dept. of Fish and Wildlife (DFW). "Special Plants List." Natural Diversity Database.

California Dept. of Fish and Wildlife (DFW). "Special Vascular Plants, Bryophytes, and Lichens List." Natural Diversity Database.

California Natural Diversity Data Base (CNDDB). 2017. CNDDB RareFind 5. December 1, 2017.

California Native Plant Society (CNPS). 2017. Records search.

California Spatial Information Library. 2015. Map Date: December 4, 2015.

Hickman, James C. 1993. Jepson Manual: Higher Plants of California.

San Mateo County. 1998; 2013. San Mateo County Local Coastal Program.

San Mateo County GIS. 2015. Map Date: December 4, 2015.

Sawyer, John and Todd Keeler-Wolf. 1995. A Manual of California Vegetation

Shuford and Gardali. 2008. California Bird Species of Special Concern.

Skinner, Mark W. and Bruce M. Pavlik, Eds. 2001. California Native Plant Society's Inventory of Rare and Endangered Vascular Plants of California.

Stevens Consulting, Pyatok. 2017. Map Date: December 8, 2017.

Thomason. 2016. California Amphibian and Reptile Species of Special Concern.

U.S. Army Corp of Engineers (ACOE). 1987. Army Corp of Engineers Wetland Delineation Manual.

U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS). 2017. Soil Survey of San Mateo County area.

U.S. Fish and Wildlife Service (USFWS). 2017a. Bay Area Habitat Conservation Plan Operations and Maintenance. September 2017. *https://www.fws.gov/sacramento/outreach/2017/11-22/docs/PGE_Bay_Area_HCP_Final.pdf*

U.S. Fish and Wildlife Service (USFWS). 2017b. USFWS Critical Habitat Mapper.

U.S. Geological Survey (USGS). 2015. USGS National Hydrography Dataset. Map Date: December 4, 2015.

WRA Environmental Consultants. 2017. Memorandum: Biological Reconnaissance on 10 acre parcel in Moss Beach, CA. April 20, 2017.

Zeiner et al. 1990. California Department of Fish and Game publication "California's Wildlife, Volumes I-III".

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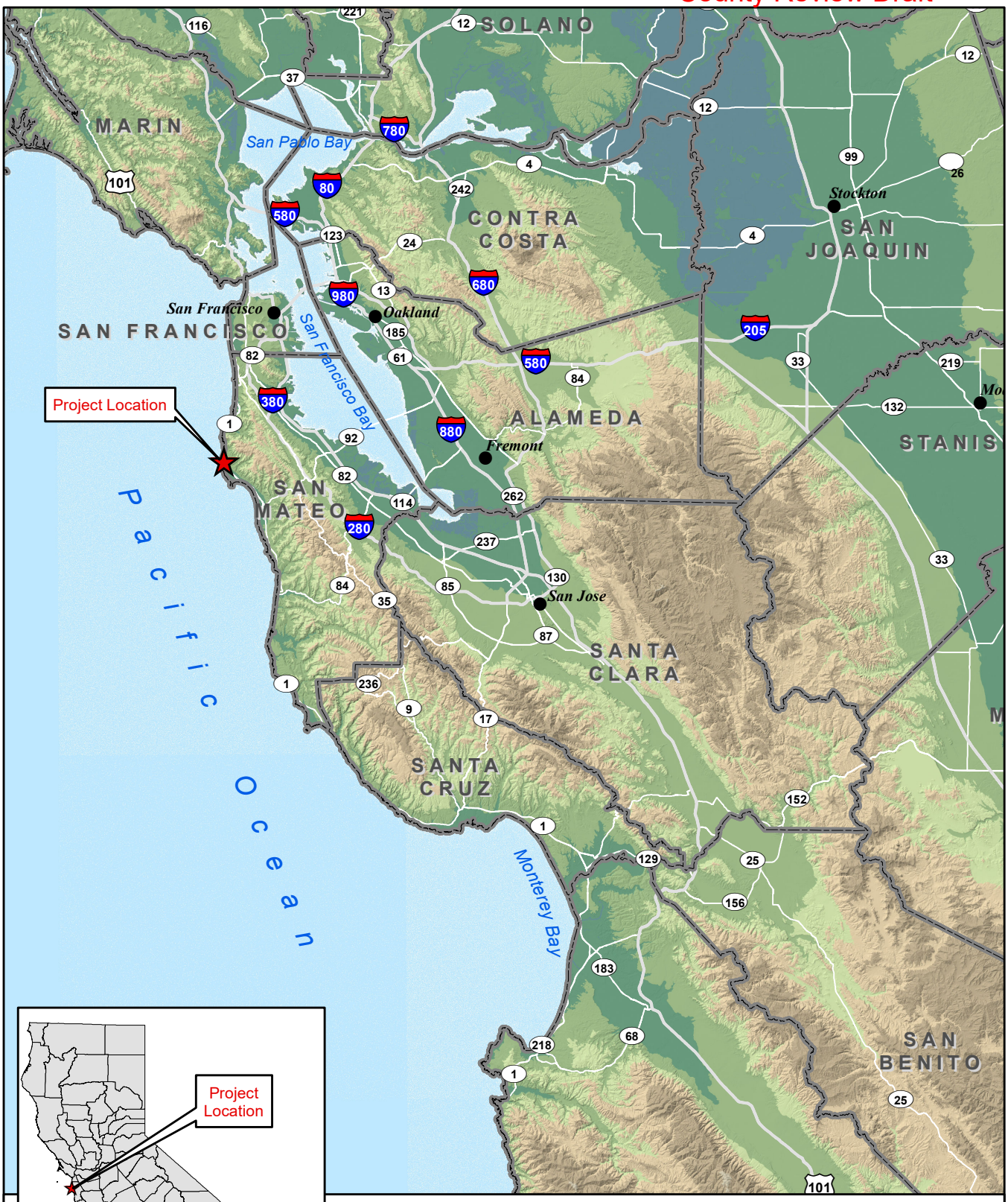

MIDPEN HOUSING CYPRESS POINT AFFORDABLE HOUSING

Figure 1: Regional Location Map

Sources: California Spatial Information Library. Map date: December 4, 2015.

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Legend

- City
- Golden Gate National Recreation Area
- Beach
- Park
- Fire Station
- Hospital
- School
- Airport

0 600 1,200
Feet
1:30,000

MIDPEN HOUSING CYPRESS POINT AFFORDABLE HOUSING

Figure 1: Vicinity Map

Sources: San Mateo County GIS; National Park Service. Map date: December 4, 2015.

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MIDPEN HOUSING CYPRESS POINT AFFORDABLE HOUSING

Figure 3: Aerial View

Legend

Project Location

0 100 200

Feet

1:2,400

Sources: San Mateo County GIS; ArcGIS Online Bing Maps Hybrid map service. Map date: December 3, 2015.

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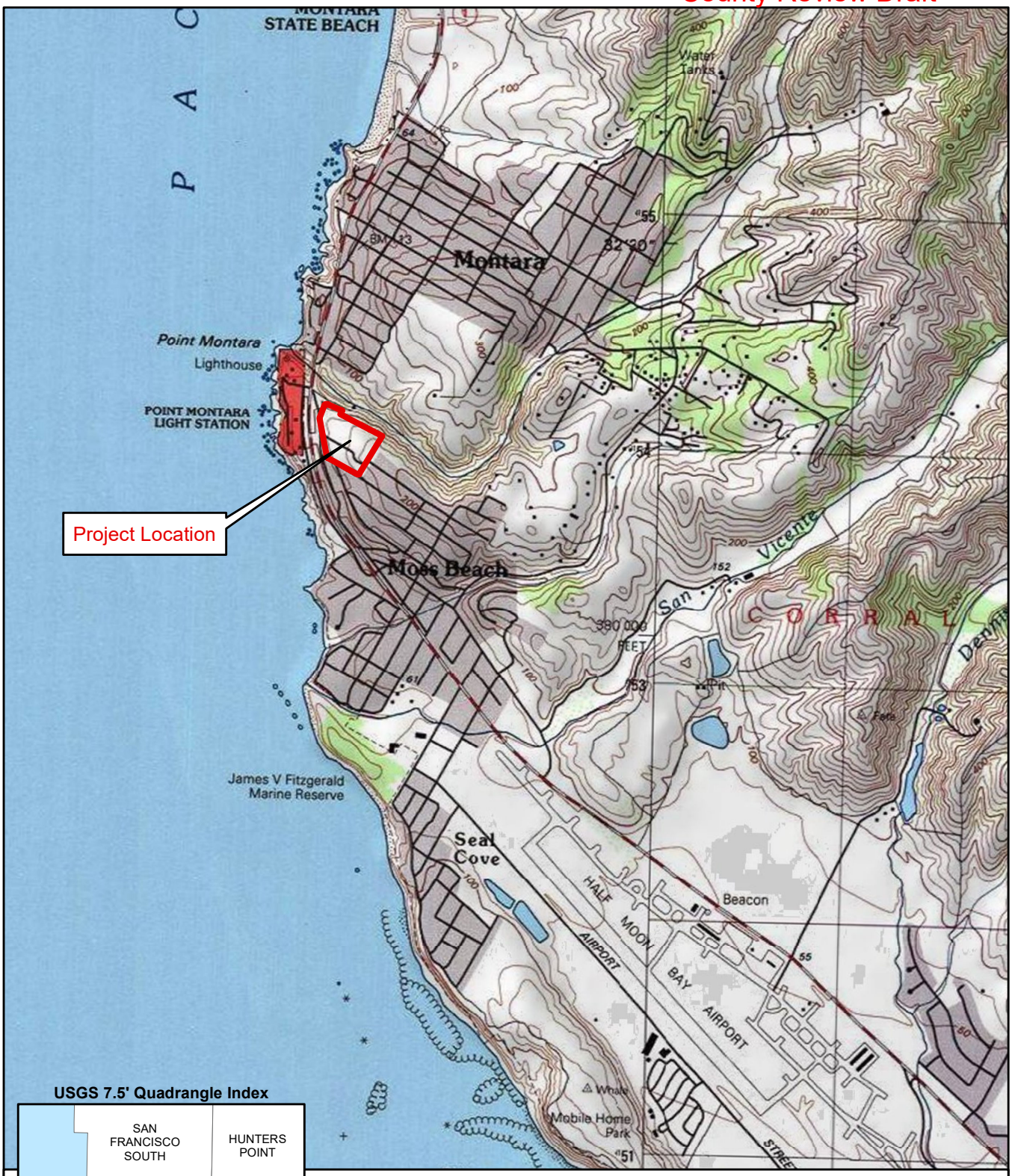
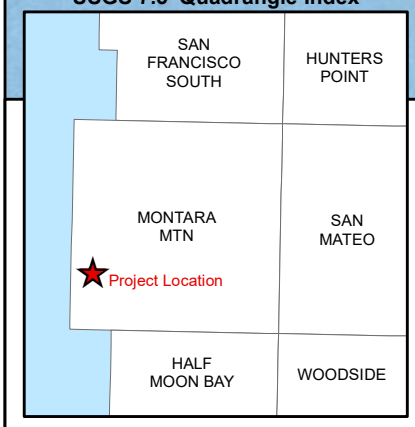


USGS 7.5' Quadrangle Index



Sources: San Mateo County GIS; ArcGIS Online USGS Topographic Map Service. Map date: November 25, 2015.

MIDPEN HOUSING CYPRESS POINT AFFORDABLE HOUSING

Figure 4: USGS Topographic Map

0 500 1,000
Feet

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TREE LEGEND

- EXISTING TREE
- ENTRY TREE
- LARGE CANOPY TREE
- PARKING LOT SHADE TREE
- BUILDING ENTRY TREE
- OAK TREE
- FLOWERING TREE
- EVERGREEN SCREENING
- BIORETENTION TREE
- FRUIT TREE

KEY NOTES

1. CYPRESS POINT ENTRY DRIVE
2. BIORETENTION AREA
3. PLAY STRUCTURE (AGES 2-5 YEARS) ON RUBBER PLAY SURFACE
4. LAWN AREA
5. TRELLIS, SEATING, AND BBQ AREA
6. BOULDER RETAINING WALL (30" HIGH)
7. CONCRETE RETAINING WALL (HEIGHT VARIES)
8. GATHERING AREA WITH SEATING, PING PONG TABLE, AND BIKE RACKS
9. LOW MAINTENANCE PLANTING ON SLOPE - NATIVE TREES, SHRUBS, AND GRASSES
10. STAIRS WITH HANDRAILS
11. COMMUNITY GARDEN WITH DEER FENCE, RAISED BEDS, COMPOST AREA, TOOL SHED, AND FRUIT TREES
12. WASTE ENCLOSURE (2 TOTAL)
13. SCENIC OVERLOOK WITH PICNIC TABLES, BOULDER WALLS, AND GRAVEL PAVING
14. EXISTING GRAVEL ACCESS ROAD
15. EXISTING WATER TANKS
16. TRAIL FOOT PATH AROUND PERIMETER OF SITE
17. PARKING LOT - ASPHALT PAVING
18. ACCESSIBLE CROSSING
19. PATH TO SIERRA STREET
20. EMERGENCY VEHICLE ROUTE (GRAVEL)
21. SEATING AREA

MidPen HOUSING | PYATOK

CYPRESS POINT AFFORDABLE HOUSING

MOSS BEACH, CA

CONCEPTUAL LANDSCAPE PLAN

JUNE 6, 2018

JONI L. JANECKI & ASSOCIATES

Legend

- Accessible Route
- Soft Trail
- Bio-Retention Area

Source: Stevens Consulting, Pyatok. Map date: December 8, 2017.

MIDPEN HOUSING CYPRESS POINT AFFORDABLE HOUSING

Figure 5. Project Features Map

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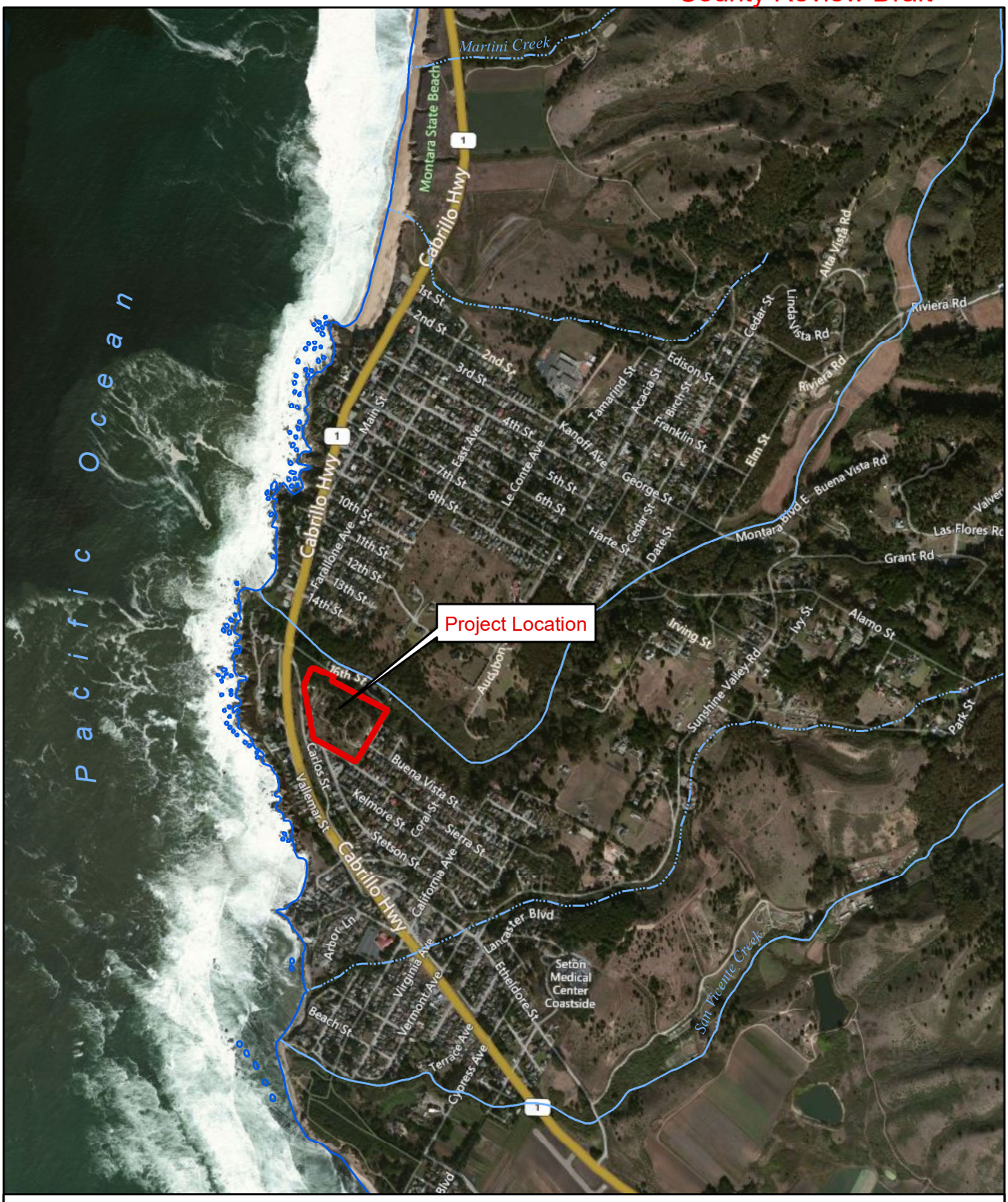

MIDPEN HOUSING CYPRESS POINT AFFORDABLE HOUSING

Figure 6: Hydrography

Legend

- Intermittent Stream
- Perennial Stream
- Coastline

0 500 1,000
Feet

Sources: USGS National Hydrography Dataset; San Mateo County GIS; ArcGIS Online Bing Maps Hybrid map service. Map date: December 4, 2015.

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CNDDB Occurrences

- Plant (80m)
- Plant (specific)
- Plant (non-specific)
- Plant (circular)
- Animal (80m)
- Animal (specific)
- Animal (non-specific)
- Animal (circular)
- Terrestrial Comm. (specific)
- Terrestrial Comm. (circular)
- Multiple (specific)
- Multiple (circular)
- Sensitive EO's (Commercial only)

MIDPEN HOUSING CYPRESS POINT AFFORDABLE HOUSING

Figure 7: California Natural Diversity Database
5-mile Radius Search

0 ¼ ½
Miles

CNDDB version 12/01/2017. Please Note: the occurrences shown on this map represent the known locations of the species listed here as of the date of this version. There may be additional occurrences or additional species within this area which have not been surveyed and/or mapped. Lack of information in the CNDDB about a species or an area can never be used as proof that no special status species occur in an area. Basemap: ArcGIS Online Topographic Map Service. Map date: December 8, 2017.

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APPENDIX A – PLANT AND WILDLIFE SPECIES IDENTIFIED DURING THE FIELD SURVEYS

List of Observed Plants (Alphabetical by Scientific Name)

Scientific Name	Common Name	Origin	Form
Acacia sp.	-	-	-
Acaena sp.	-	-	-
Achillea millefolium	Common yarrow	native	perennial herb
Adiantum sp.	-	-	-
Agave sp.	-	-	-
Agoseris heterophylla	dandelion	native	Annual herb
Albizia lophantha	Stink bean	non-native	tree, shrub
Allium triquetrum	White flowered onion	non-native	perennial herb (bulb)
Anagallis arvensis	Scarlet pimpernel	non-native	Annual herb
Artemisia californica	Coastal sage brush	native	shrub
Artemisia douglasiana	California mugwort	native	perennial herb
Avena barbata	Slim oat	non-native (invasive)	annual, perennial grass
Baccharis pilularis	Coyote brush	native	shrub
Bellardia trixago	Mediterranean lineseed	non-native (invasive)	annual herb
Bellis perennis	English lawn daisy	non-native	perennial herb
Borago officinalis	Common borage	non-native	annual herb
Brassica rapa	Common mustard	non-native (invasive)	annual herb
Briza maxima	Rattlesnake grass	non-native (invasive)	annual grass
Briza minor	Little rattlesnake grass	non-native	annual grass
Bromus carinatus	California bromegrass	native	perennial grass
Bromus diandrus	Ripgut brome	non-native (invasive)	annual grass
Bromus hordeaceus	Soft chess	non-native (invasive)	annual grass
Bromus laevipes	Narrow flowered brome	native	annual, perennial grass
Carduus pycnocephalus ssp. pycnocephalus	Italian thistle	non-native (invasive)	annual herb
Carex praegracilis	Field sedge	native	perennial grasslike herb
Carpobrotus edulis	Iceplant	non-native (invasive)	perennial herb
Ceanothus thyrsiflorus	Blueblossom	native	tree, shrub
Chasmanthe floribunda	Chasmanthe	non-native	perennial herb

Cirsium vulgare	Bullthistle	non-native (invasive)	perennial herb
Clinopodium douglasii	Yerba buena	native	perennial herb
Conium maculatum	Poison hemlock	non-native (invasive)	perennial herb
Cortaderia jubata	Andean pampas grass	non-native (invasive)	perennial grass
Cotoneaster franchetii	Cotoneaster	non-native (invasive)	shrub
Crassula ovata	Jade plant	non-native	annual herb
Cynosurus echinatus	Dogtail grass	non-native (invasive)	annual grass
Danthonia californica	California oatgrass	native	perennial grass
Daucus carota	Carrot	non-native	perennial herb
Delairea odorata	Cape ivy	non-native (invasive)	perennial herb
Echium candicans	Pride of madeira	non-native (invasive)	shrub
Echium pininana	Pine echium	non-native	shrub
Ehrharta erecta	Upright veldt grass	non-native (invasive)	perennial grass
Erigeron canadensis	Canada horseweed	native	annual herb
Erodium cicutarium	Red-stemmed filaree	Non-native	annual herb
Eschscholzia californica	California poppy	native	annual, perennial herb
Euphorbia lathyris	Gopher plant	non-native	annual, perennial herb
Euphorbia peplus	Petty spurge	non-native	annual herb
Festuca myuros	Rattail sixweeks grass	non-native (invasive)	annual grass
Festuca perennis	Italian rye grass	non-native (invasive)	annual, perennial grass
Foeniculum vulgare	Fennel	non-native (invasive)	perennial herb
Fragaria chiloensis	Beach strawberry	native	perennial herb
Frangula californica	California coffeeberry	native	shrub
Fumaria officinalis	Fumitory	non-native	annual herb
Galium aparine	Cleavers	native	annual herb
Genista monspessulana	French broom	non-native (invasive)	shrub
Geranium dissectum	Wild geranium	non-native (invasive)	annual herb
Glebionis coronaria	Crown daisy	non-native (invasive)	annual herb
Grindelia hirsutula	Gumweed	native	perennial herb
Hedera helix	English ivy	non-native (invasive)	vine, shrub
Helminthotheca echioides	Bristly ox-tongue	non-native (invasive)	annual, perennial herb
Hesperocyparis macrocarpa	Monterey cypress	native	tree
Hirschfeldia incana	Short-podded mustard	non-native (invasive)	perennial herb
Holcus lanatus	Common velvetgrass	non-native (invasive)	perennial grass
Hordeum murinum	Foxtail barley	non-native (invasive)	annual grass
Hypochaeris radicata	Hairy cats ear	non-native (invasive)	perennial herb
Iris douglasiana	Douglas iris	native	perennial herb

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Juncus patens	Rush	native	perennial grasslike herb
Lathyrus vestitus	Common pacific pea	native	perennial herb
Linum bienne	Flax	non-native	annual herb
Lysimachia arvensis	Scarlet pimpernel	non-native	annual herb
Malva nicaeensis	Bull mallow	non-native	annual herb
Marah fabacea	California man-root	native	perennial herb, vine
Matricaria discoidea	Pineapple weed	native	annual herb
Medicago polymorpha	California burclover	non-native (invasive)	annual herb
Melilotus indicus	Annual yellow sweetclover	non-native	annual herb
Mimulus aurantiacus	Sticky monkeyflower	native	shrub
Oxalis pes-caprae	Bermuda buttercup	non-native (invasive)	perennial herb
Pennisetum clandestinum	Kikuyu grass	non-native (invasive)	perennial grass
Pinus radiata	Monterey pine	native	tree
Pittosporum sp.	-	-	-
Plantago coronopus	Cut leaf plantain	non-native	annual herb
Plantago lanceolata	Ribwort	non-native (invasive)	perennial herb
Polystichum munitum	Western sword fern	native	fern
Prunus cerasifera	Cherry plum	non-native (invasive)	tree
Pseudognaphalium luteoalbum	Jersey cudweed	non-native	annual herb
Pyracantha angustifolia	Firethorn	non-native (invasive)	shrub
Raphanus sativus	Radish	non-native (invasive)	annual, biennial herb
Rubus ursinus	California blackberry	native	vine, shrub
Rumex acetosella	Sheep sorrel	non-native (invasive)	perennial herb
Rumex crispus	Curly dock	non-native (invasive)	perennial herb
Rumex pulcher	Fiddleleaf dock	non-native	perennial herb
Salix lasiolepis	Arroyo willow	native	tree, shrub
Sambucus racemosa	Red elderberry	native	shrub
Sanicula crassicaulis	Pacific sanicle	native	perennial herb
Scabiosa atropurpurea	Pincushions	non-native	annual herb
Scrophularia californica	California bee plant	native	perennial herb
Senecio vulgaris	Common groundsel	non-native	annual herb
Sidalcea malviflora ssp. malviflora	Checker mallow	native	perennial herb (rhizomatous)
Sisyrinchium bellum	Blue eyed grass	native	perennial herb
Solanum sp.	-	-	-
Sonchus asper ssp. asper	Sow thistle	non-native	annual herb

Sonchus oleraceus	Sow thistle	non-native	annual herb
Stellaria media	Chickweed	non-native	annual herb
Stipa pulchra	Purple needle grass	native	perennial grass
Symphyotrichum chilense	Pacific aster	native	perennial herb
Taraxacum officinale	Red seeded dandelion	non-native	perennial herb
Taraxia ovata	Sun cup	native	perennial herb
Toxicodendron diversilobum	Poison oak	native	vine, shrub
Trifolium dubium	Shamrock	non-native	annual herb
Trifolium glomeratum	Clustered clover	non-native	annual herb
Trifolium hirtum	Rose clover	non-native (invasive)	annual herb
Vicia sativa	Spring vetch	non-native	annual herb, vine
Vinca major	Vinca	non-native (invasive)	perennial herb
Zantedeschia aethiopica	Callalily	non-native (invasive)	perennial herb

List of Observed Wildlife Species (in Taxonomic Order)

Scientific Name	Common Name
Cathartes aura	Turkey vulture
Buteo jamaicensis	Red-tailed hawk
Larus occidentalis	Western gull
Calypte anna	Anna's hummingbird
Corvus brachyrhynchos	American crow
Corvus corax	Common raven
Molothrus ater	Brown-headed cowbird
Agelaius phoeniceus	Red-winged blackbird
Euphagus cyanocephalus	Brewer's blackbird

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APPENDIX B – CNDDB SEARCH RESULTS

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SNAME	CNAME	SENSITIVE	FEDLIST	CALLIST	GRANK	SRANK	RPLANTRANK	CDFWSTATUS
Agrostis blasdalei	Blasdale's bent grass	N	None	None	G2	S2	1B.2	
Allium peninsulare var. franciscanum	Franciscan onion	N	None	None	G5T1	S1	1B.2	
Arctostaphylos montaraensis	Montara manzanita	N	None	None	G1	S1	1B.2	
Arctostaphylos montaraensis	Montara manzanita	N	None	None	G1	S1	1B.2	
Arctostaphylos montaraensis	Montara manzanita	N	None	None	G1	S1	1B.2	
Arctostaphylos regismontana	Kings Mountain manzanita	N	None	None	G2	S2	1B.2	
Arctostaphylos regismontana	Kings Mountain manzanita	N	None	None	G2	S2	1B.2	
Astragalus pycnostachyus var. pycnostachyus	coastal marsh milk-vetch	N	None	None	G2T2	S2	1B.2	
Bombus caliginosus	obscure bumble bee	N	None	None	G4?	S1S2		
Bombus caliginosus	obscure bumble bee	N	None	None	G4?	S1S2		
Bombus occidentalis	western bumble bee	N	None	None	G2G3	S1		
Callophrys mossii bayensis	San Bruno elfin butterfly	N	Endangered	None	G4T1	S1		
Callophrys mossii bayensis	San Bruno elfin butterfly	N	Endangered	None	G4T1	S1		
Callophrys mossii bayensis	San Bruno elfin butterfly	N	Endangered	None	G4T1	S1		
Callophrys mossii bayensis	San Bruno elfin butterfly	N	Endangered	None	G4T1	S1		
Cirsium andrewsii	Franciscan thistle	N	None	None	G3	S3	1B.2	
Cirsium andrewsii	Franciscan thistle	N	None	None	G3	S3	1B.2	
Collinsia multicolor	San Francisco collinsia	N	None	None	G2	S2	1B.2	
Collinsia multicolor	San Francisco collinsia	N	None	None	G2	S2	1B.2	
Danaus plexippus pop. 1	monarch - California overwintering population	N	None	None	G4T2T3	S2S3		
Danaus plexippus pop. 1	monarch - California overwintering population	N	None	None	G4T2T3	S2S3		
Danaus plexippus pop. 1	monarch - California overwintering population	N	None	None	G4T2T3	S2S3		
Dirca occidentalis	western leatherwood	N	None	None	G2	S2	1B.2	
Dirca occidentalis	western leatherwood	N	None	None	G2	S2	1B.2	
Dirca occidentalis	western leatherwood	N	None	None	G2	S2	1B.2	
Fritillaria liliacea	fragrant fritillary	N	None	None	G2	S2	1B.2	
Geothlypis trichas sinuosa	saltmarsh common yellowthroat	N	None	None	G5T3	S3		SSC
Geothlypis trichas sinuosa	saltmarsh common yellowthroat	N	None	None	G5T3	S3		SSC
Grindelia hirsutula var. maritima	San Francisco gumplant	N	None	None	G5T1Q	S1	3.2	
Horkelia cuneata var. sericea	Kellogg's horkelia	N	None	None	G4T1?	S1?	1B.1	
Lasthenia californica ssp. macrantha	perennial goldfields	N	None	None	G3T2	S2	1B.2	
Lasthenia californica ssp. macrantha	perennial goldfields	N	None	None	G3T2	S2	1B.2	
Leptosiphon croceus	coast yellow leptosiphon	N	None	Candidate Endangered	G1	S1	1B.1	
Leptosiphon rosaceus	rose leptosiphon	N	None	None	G1	S1	1B.1	
Leptosiphon rosaceus	rose leptosiphon	N	None	None	G1	S1	1B.1	
Limnanthes douglasii ssp. ornduffii	Ornduff's meadowfoam	N	None	None	G4T1	S1	1B.1	
Limnanthes douglasii ssp. ornduffii	Ornduff's meadowfoam	N	None	None	G4T1	S1	1B.1	
Malacothamnus arcuatus	arcuate bush-mallow	N	None	None	G2Q	S2	1B.2	
Monolopia gracilens	woodland woollythreads	N	None	None	G3	S3	1B.2	
Northern Coastal Salt Marsh	Northern Coastal Salt Marsh	N	None	None	G3	S3.2		
Northern Maritime Chaparral	Northern Maritime Chaparral	N	None	None	G1	S1.2		
Northern Maritime Chaparral	Northern Maritime Chaparral	N	None	None	G1	S1.2		
Nyctinomops macrotis	big free-tailed bat	N	None	None	G5	S3		SSC
Oncorhynchus mykiss irideus pop. 8	steelhead - central California coast DPS	N	Threatened	None	G5T2T3Q	S2S3		
Oncorhynchus mykiss irideus pop. 8	steelhead - central California coast DPS	N	Threatened	None	G5T2T3Q	S2S3		
Polemonium carneum	Oregon polemonium	N	None	None	G3G4	S2	2B.2	
Potentilla hickmanii	Hickman's cinquefoil	N	Endangered	Endangered	G1	S1	1B.1	
Potentilla hickmanii	Hickman's cinquefoil	N	Endangered	Endangered	G1	S1	1B.1	
Rana draytonii	California red-legged frog	N	Threatened	None	G2G3	S2S3		SSC
Rana draytonii	California red-legged frog	N	Threatened	None	G2G3	S2S3		SSC
Rana draytonii	California red-legged frog	N	Threatened	None	G2G3	S2S3		SSC
Rana draytonii	California red-legged frog	N	Threatened	None	G2G3	S2S3		SSC
Rana draytonii	California red-legged frog	N	Threatened	None	G2G3	S2S3		SSC
Rana draytonii	California red-legged frog	N	Threatened	None	G2G3	S2S3		SSC
Rana draytonii	California red-legged frog	N	Threatened	None	G2G3	S2S3		SSC
Rana draytonii	California red-legged frog	N	Threatened	None	G2G3	S2S3		SSC
Rana draytonii	California red-legged frog	N	Threatened	None	G2G3	S2S3		SSC
Rana draytonii	California red-legged frog	N	Threatened	None	G2G3	S2S3		SSC
Silene verecunda ssp. verecunda	San Francisco campion	N	None	None	G5T1	S1	1B.2	
Speyeria zerene myrtleae	Myrtle's silverspot butterfly	N	Endangered	None	G5T1	S1		
Taxidea taxus	American badger	N	None	None	G5	S3		SSC
Thamnophis sirtalis tetrataenia	San Francisco gartersnake	Y	Endangered	Endangered	G5T2Q	S2		FP
Thamnophis sirtalis tetrataenia	San Francisco gartersnake	Y	Endangered	Endangered	G5T2Q	S2		FP
Thamnophis sirtalis tetrataenia	San Francisco gartersnake	Y	Endangered	Endangered	G5T2Q	S2		FP
Thamnophis sirtalis tetrataenia	San Francisco gartersnake	Y	Endangered	Endangered	G5T2Q	S2		FP
Thamnophis sirtalis tetrataenia	San Francisco gartersnake	Y	Endangered	Endangered	G5T2Q	S2		FP
Thamnophis sirtalis tetrataenia	San Francisco gartersnake	Y	Endangered	Endangered	G5T2Q	S2		FP
Thamnophis sirtalis tetrataenia	San Francisco gartersnake	Y	Endangered	Endangered	G5T2Q	S2		FP
Thamnophis sirtalis tetrataenia	San Francisco gartersnake	Y	Endangered	Endangered	G5T2Q	S2		FP
Thamnophis sirtalis tetrataenia	San Francisco gartersnake	Y	Endangered	Endangered	G5T2Q	S2		FP
Thamnophis sirtalis tetrataenia	San Francisco gartersnake	Y	Endangered	Endangered	G5T2Q	S2		FP
Thamnophis sirtalis tetrataenia	San Francisco gartersnake	Y	Endangered	Endangered	G5T2Q	S2		FP
Thamnophis sirtalis tetrataenia	San Francisco gartersnake	Y	Endangered	Endangered	G5T2Q	S2		FP
Thamnophis sirtalis tetrataenia	San Francisco gartersnake	Y	Endangered	Endangered	G5T2Q	S2		FP
Thamnophis sirtalis tetrataenia	San Francisco gartersnake	Y	Endangered	Endangered	G5T2Q	S2		FP
Thamnophis sirtalis tetrataenia	San Francisco gartersnake	Y	Endangered	Endangered	G5T2Q	S2		FP
Thamnophis sirtalis tetrataenia	San Francisco gartersnake	Y	Endangered	Endangered	G5T2Q	S2		FP
Thamnophis sirtalis tetrataenia	San Francisco gartersnake	Y	Endangered	Endangered	G5T2Q	S2		FP
Thamnophis sirtalis tetrataenia	San Francisco gartersnake	Y	Endangered	Endangered	G5T2Q	S2		FP
Thamnophis sirtalis tetrataenia	San Francisco gartersnake	Y	Endangered	Endangered	G5T2Q	S2		FP
Thamnophis sirtalis tetrataenia	San Francisco gartersnake	Y	Endangered	Endangered	G5T2Q	S2		FP
Thamnophis sirtalis tetrataenia	San Francisco gartersnake	Y	Endangered	Endangered	G5T2Q	S2		FP
Thamnophis sirtalis tetrataenia	San Francisco gartersnake	Y	Endangered	Endangered	G5T2Q	S2		FP
Triphysaria floribunda	San Francisco owl's-clover	N	None	None	G2?	S2?	1B.2	

County of San Mateo - Planning and Building Department

ATTACHMENT I

1. INTRODUCTION AND BACKGROUND

1.1 INTRODUCTION

This report addresses the potential impacts of the proposed Cypress Point project on the visual resources of the project site and adjacent areas, including the existing visual character of the project site and the visibility of the project site from offsite viewpoints. This assessment evaluates the potential visual quality impacts associated with implementing the project, including impacts to scenic resources, views, visual character, and light and glare.

Following this introduction is a section providing background information on visual resources. Next is a section describing the visual resources of the project site and its surroundings. This is followed by a description of local policies with respect to visual resources, the methods used to analyze the impacts of the proposed project on visual resources, and an assessment of the impacts of the proposed project on visual resources, including mitigation recommended for any significant impacts.

1.2 BACKGROUND

This section defines key terms used in assessing impacts on aesthetics and visual resources.

Aesthetics refers to visual resources and the quality of what can be seen. It also refers to the overall visual perception of the environment, and may include such characteristics as building height and mass, development density, design character, and landscaping. View analysis evaluates visual access to, and obstruction of, prominent visual features, including both specific visual landmarks and panoramic vistas.

Viewsheds are defined as the visual qualities of a geographical area including the horizon, topography, and other natural features that give an area its visual boundary and context. It may also include development that has become a prominent visual component of the area. Viewshed impacts are typically characterized by the loss and/or obstruction of existing scenic vistas or other major views in the area of the site.

Light and glare impacts are analyzed by considering the qualitative characteristics of the existing nighttime lighting and daytime glare environments on the site.

2. PROJECT DESCRIPTION

2.1 LOCATION OF THE PROPOSED PROJECT

The subject area consists of approximately 10.88 acres of land off near the northeast corner of Carlos and Sierra streets in Moss Beach, County of San Mateo (see Figures 1 and 2). The elevation of the project site ranges from approximately 80 to 190 feet above mean sea level (MSL).

2.2 PROPOSED PROJECT DEVELOPMENT

Implementation of the proposed Cypress Point project would include the construction of 71 affordable housing units consisting of 18 two-story buildings containing 2-4 units each. The heights of the residential buildings would vary between 32 and 36 feet with a simple traditional roof shape and slope (4:12). The project would also include a single building housing a general office, manager's office, community room, kitchen, computer room, laundry, and maintenance and storage areas. The project plan (see Figure 3) also includes several outdoor amenities, including: landscaping; a community garden; a children's play area; an upper and a lower green; BBQ areas; and a public walking trail. The site would be graded to develop building pads at elevations from 186 feet MSL for the buildings nearest the easterly site boundary to 154 feet for buildings nearest Carlos Street. Approximately one-half of the site would be developed, and the remainder would remain undeveloped.

Much of the existing vegetation on the project site, especially along its perimeters would remain undisturbed by the proposed project. Areas within the interior of the site that would be cleared during site grading and construction would be revegetated as shown in Figure 4.

3. ENVIRONMENTAL SETTING

3.1.1 REGIONAL VISUAL CHARACTER

The general topography of the San Mateo County area is characterized by northwest trending mountain ranges and intervening valleys. Seventy-four percent of County land, primarily in the area west of Interstate (I-280), is in agricultural, watershed, open space, wetlands or parks use. The Pacific Ocean, sea cliffs and beaches, abundant natural resources, rolling green foothills, stands of old redwoods, and creeks characterize western San Mateo County, providing many areas with high visual quality.

Western San Mateo County is primarily accessed by State Route1 (Highway 1), which follows the Pacific coast through much of California. Along the San Mateo County coastline, Highway 1 (Cabrillo Highway) is a well-known, highly recognized county designated scenic corridor, and Highway 1 north of Half Moon Bay (including in the project vicinity) is eligible for designation as a State Scenic Highway by Caltrans. South of Half Moon Bay, Highway 1 is a state designated scenic highway (California Department of Transportation 2018). The westerly 1/3 of the project site is located within the Cabrillo Highway County Scenic Corridor. See Figure 5.

E:\Projects\Stevens Consulting\Cypress Point Project\MXD\cypress_point_project_vicinity_figure_1.mxd

Base Map Source: ESRI, 2017
Map Date: 10/05/2017

Stevens Consulting

0 500 1,000
Feet

N
W E
S

Figure 1
Project Location
San Mateo County, CA

E:\Projects\Stevens Consulting\Cypress Point Project\MXD\cypress_point_project_location_figure_2.mxd

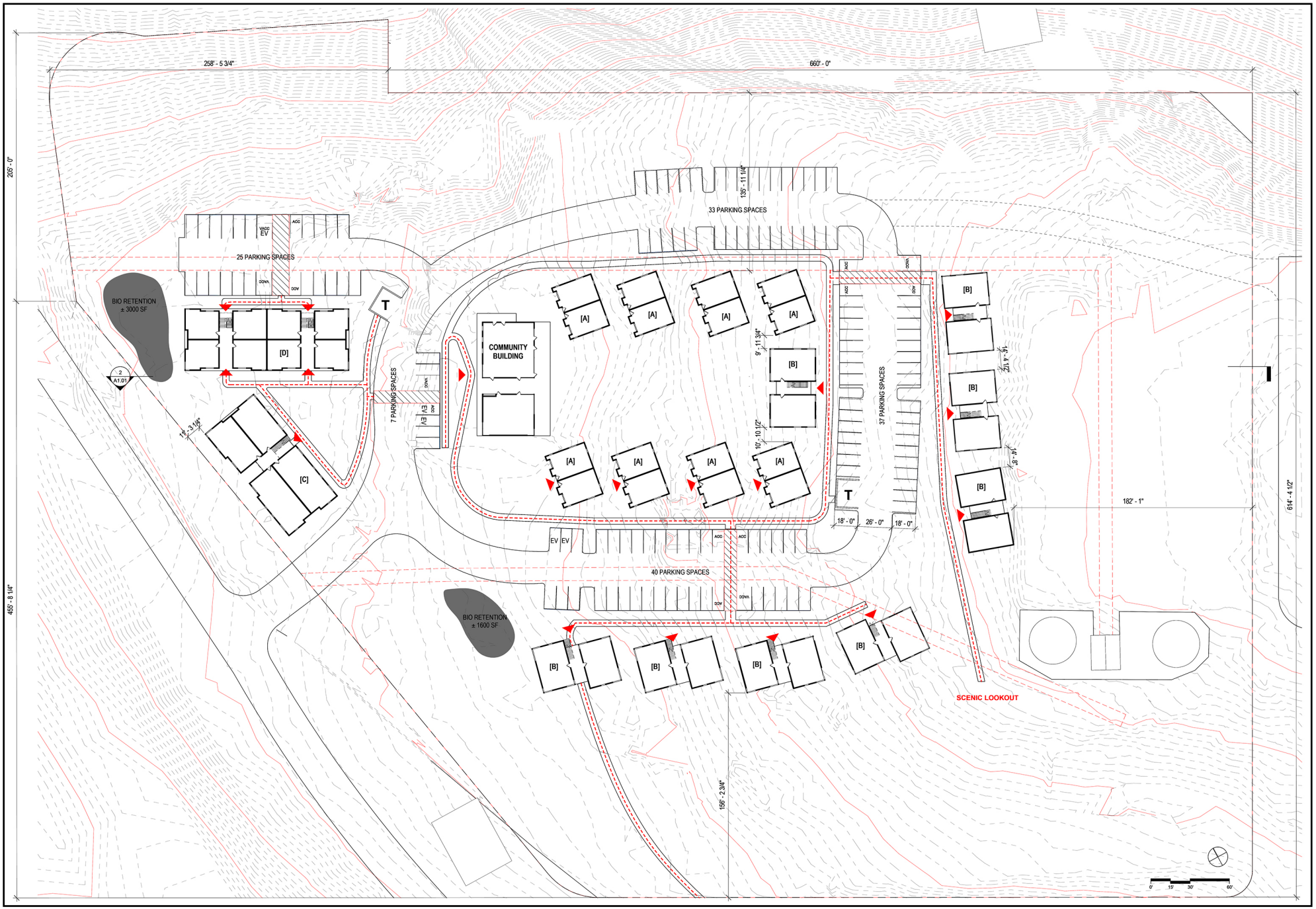
Aerial Source: NAIP (2016)

Stevens Consulting

0 500 1,000
Feet

N
W E
S

Figure 2
Project Vicinity
San Mateo County, CA



Source = MidPen Housing Corporation and Pyatok Architects, June 2018

Figure 3

Cypress Point Proposed Site Plan

San Mateo County, CA

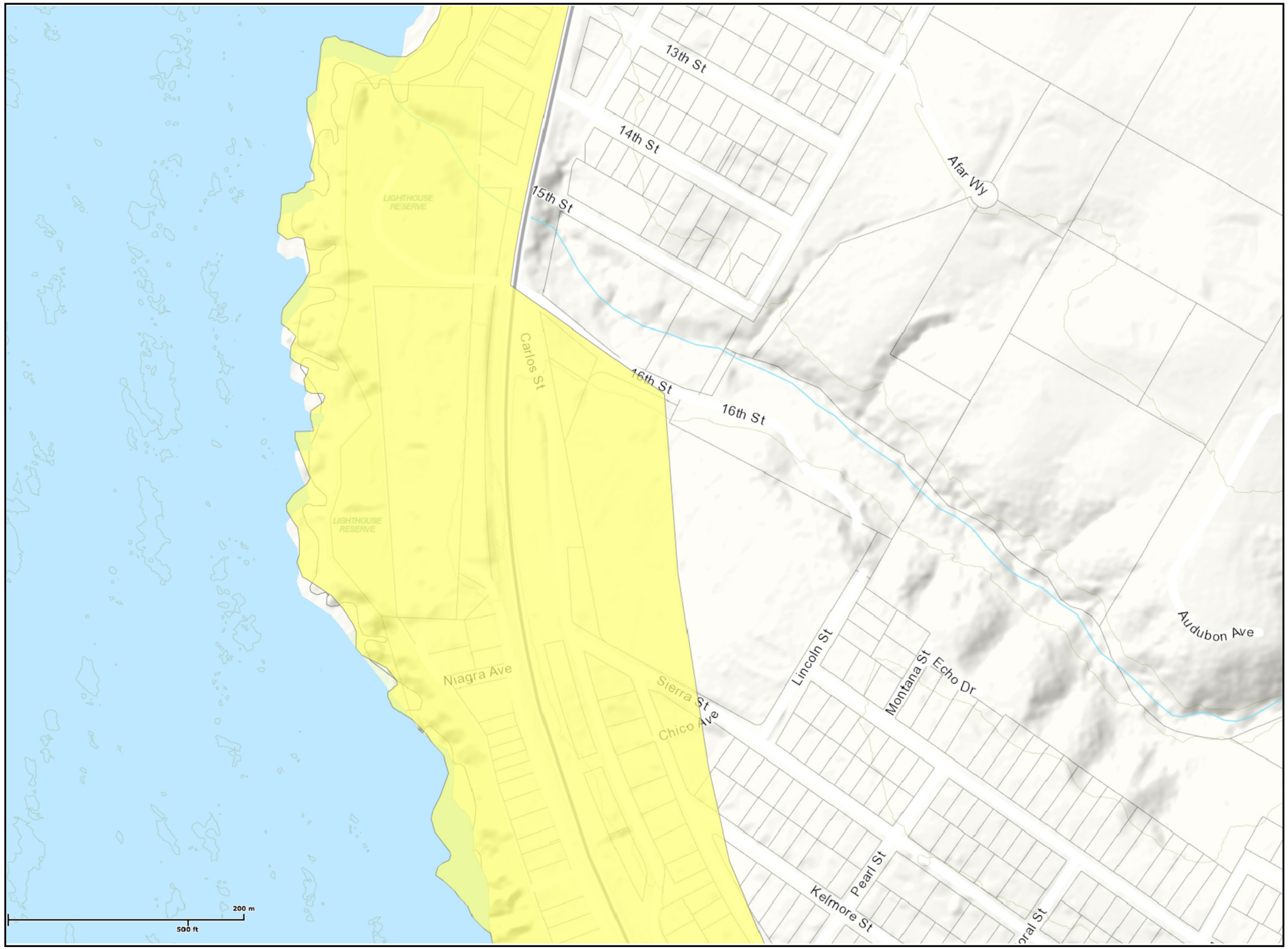
Stevens Consulting

Source = Midpen Housing Corporation and Joni L. Janecki & Associates, June 2018

Figure 4

Cypress Point Proposed Landscape Plan

San Mateo County, CA



Source = San Mateo County GIS, June 2018

Figure 5

San Mateo County Coastal Scenic Corridor in the Project Vicinity

San Mateo County, CA

Stevens Consulting

According to the San Mateo County General Plan, the project site is located in the Montara-Moss Beach El Granada community plan area (CPA). The CPA extends along the Pacific Coast from Martini Creek, at the base of Montara Mountain, to the northern city limits of Half Moon Bay. The CPA is characterized by a series of streams and arroyos, the Pacific Ocean, eucalyptus and cypress trees, as well as the Montara Mountains. The CPA includes the communities of Montara, Moss Beach, El Granada, and Princeton by the Sea.

3.1.2 Local Visual Character in the Vicinity of the Project Site

The site is adjacent to an existing residential neighborhood, with single-family houses located to the east and south of the site. To the north is a steeply-sloped wooded area leading to the ravine containing Montara Creek, and to the west, across Carlos Street, is a steep slope down to Highway 1. The Highway 1 corridor in the project vicinity is characterized by extensive evergreen vegetation and a substantial change in grade between the highway and the project site. See Figures 6a through 6c. Additional potential locations of sensitive viewers to the west include hikers on the California Coastal Trail and recreationists within the James V. Fitzgerald Marine Reserve. Together, vegetation and topography act to shield the project site from the view of travelers on Highway 1 and from views from west of Highway 1.

Beyond the wooded area to the north of the site are a few rural homes, and then another wooded area that separates this area from the developed community of Montara further to the north. Other than several rural residences, the ravine containing Montara Creek is undeveloped to the north and east of the site.

The site is nominally delineated by Carlos Street on the west, the Montara Creek canyon and 16th Street on the north, Lincoln Street on the east, and Sierra Street on the south. Except for a single residence at the northeast corner of Carlos Street and Sierra Street, there are no developed uses immediately adjacent to Carlos Street in the project vicinity (see Figures 7a and 7b). The Highway 1 corridor is located approximately 150 feet to the west of Carlos Street. Developed uses north of the project site include 16th Street and several rural, large lot single-family residences. Sixteenth Street and the several residences are located at a substantially lower elevation within the canyon than the area of the Cypress Point project site to be developed, and dense vegetation between the project site and 16th Street provides additional visual screening of the site (see Figures 8a and 8b). Several residences are located to the east of Lincoln Street and at the base of Buena Vista Street, east of the project site. These residences are located at approximately the same elevation as the site's eastern boundary (see Figures 9a and 9b). Several residences with views of the project site are located south of Sierra Street (see Figures 10a and 10b). Additional residences with potential views of the site are located along the north and south sides of Sierra Street to its intersection with Pearl Street, and along Buena Vista Street slightly to the east of Montana Street. For most of the identified residences on Sierra Street and Buena Vista Street, views of the site would be interrupted by intervening residences and vegetation.

Figure 6a: Highway 1 & Carlos St.

Figure 6b: Highway 1

Figure 6c: Highway 1

View Context Key

Stevens Consulting, June 2018

Figure 6

Highway 1 - Existing Visual Conditions

San Mateo County, CA

Figure 7a: Highway 1 & Carlos St.

Figure 7b: Carlos St.

View Context Key

Stevens Consulting, June 2018

Stevens Consulting

Figure 7

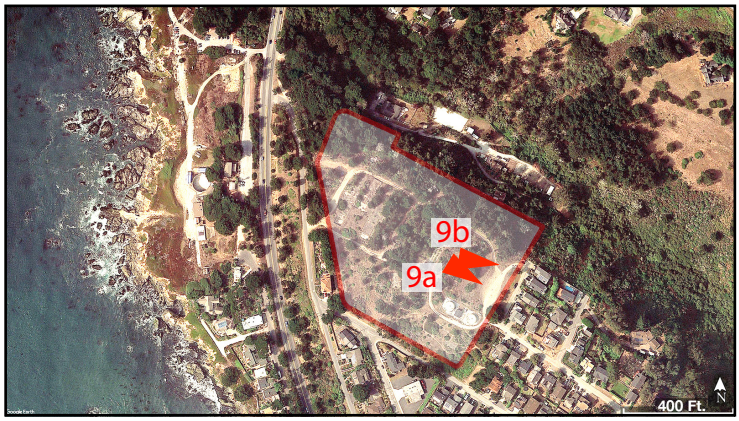
Carlos Street - Existing Visual Conditions

San Mateo County, CA

Figures 8a and 8b – 16th Street – Existing Visual Conditions

Figure 9a: Lincoln St.

Figure 9b: Lincoln St.



View Context Key

Stevens Consulting, June 2018

Stevens Consulting

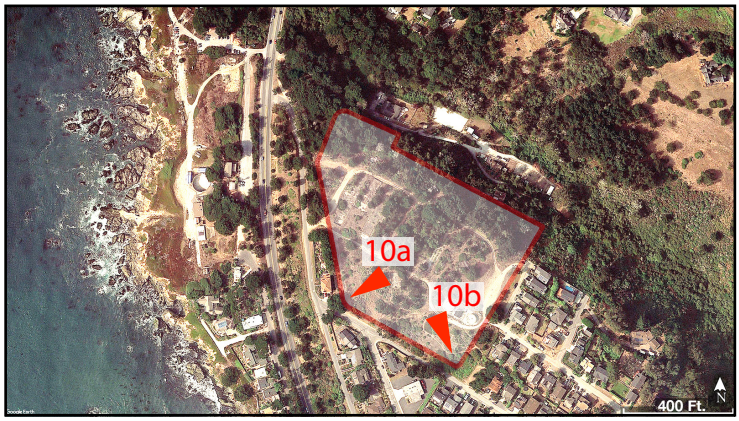
Figure 9

Lincoln Street - Existing Visual Conditions

San Mateo County, CA

Figure 10a: Sierra St. Looking Southwest

Figure 10b: Sierra St. Looking Southeast



View Context Key

Stevens Consulting, June 2018

Figure 10

Sierra Street - Existing Visual Conditions

San Mateo County, CA

Existing screening vegetation characterized by shrubs and trees is present on the site along its Carlos Street frontage, and along the slope down the Montara Creek canyon. Additional screening vegetation is present along and within the eastern area of the site west of Lincoln Street, and intermittently along the Sierra Street frontage.

Changes in grade and vegetation between the project site and residences along its Sierra Street frontage hinder direct views of the site, and these views are further impaired by intermittent vegetation.

3.1.3 Existing Visual Resources of the Project Site

The project site slopes up gently to moderately to the east/northeast with the exception of a north-facing slope along the northern side of the site, which slopes moderately down to the Montara Creek canyon, and some localized flat areas near the center and eastern portions of the site. The site is currently vegetated with a variety of native and non-native grasses, plants, shrubs, and trees. Perimeter vegetation on the site ranges from very dense trees and shrubs (north and west) to scattered shrubs and trees (east and south).

The site has been altered from its natural state by its previous development as a military facility during World War II. The foundations for buildings from that era are present on the site. Two existing water tanks maintained by the Montara Water and Sanitary District are within the boundaries of the project property, but are not a part of the proposed Cypress Point project

3.1.4 Scenic Vistas

The San Mateo County General Plan and the San Mateo County Local Coastal Program (LCP) do not define or identify scenic vistas. However, in general, a “scenic vista” is typically considered an aesthetically-pleasing view, as seen through an opening or passageway. The General Plan does not include a description or list of vantage points within the County from which vistas are considered “scenic.” Given the many steep-trending hillsides, hilltops, knolls, and ridgelines in the County, a multitude of potential “scenic vistas” are available throughout the region. However, at several vantage points in the project vicinity, various surrounding topographic characteristics partially obstruct these vistas.

The project is located in a hilly area, the top portion of which provides vistas encompassing the ravine containing Montara Creek, and the forested hills and ridgelines of the Montara Mountains towards the east, and the Pacific Ocean towards the west. Many of the residences east and south of the site along Lincoln and Sierra Streets are oriented to the Pacific Ocean and feature decks and large windows to capture the view of the ocean.

3.1.5 Scenic Resources

In general, per the CEQA Guidelines for Aesthetics as modified by San Mateo County, scenic resources are thought of as objects, natural or manmade, that are aesthetically pleasing to view (i.e., trees, rock outcroppings, and historic buildings within a State Scenic Highway). There are no rock outcroppings or historical structures located within or adjacent to the project site.

According to the San Mateo County General Plan, visual resources are defined as: "those attractive visible elements of the natural and developed landscape, such as landforms, vegetative forms, water bodies, structures, and communities." Additionally, scenic corridors are defined as: "land adjacent to a scenic road right-of-way which, when seen from the road, provides outstanding views of natural landscapes and attractive man-made development." As further defined by the General Plan, a scenic roadway is: "a designated travel route providing outstanding views of natural landscapes and attractive man-made development." The General Plan has designated several "scenic" roadways within the County.

Highway 1 is a County-designated scenic highway from Junipero Serra Freeway (SR 280) to the northern limits of the City of Half Moon Bay) and is located within the Cabrillo Highway County Scenic Corridor. The portion of Highway 1 adjacent to the project site is not a State-designated scenic roadway, but is eligible for such designation (California Department of Transportation 2018).

3.1.6 Open Space

Open space, as defined by Government Code Section 65560, is any parcel or area of land or water that is essentially unimproved and devoted to an open-space usage and designated in a local, regional or state open-space plan for preservation of natural resources, managed production of resources, outdoor recreation, or public health and safety. The General Plan establishes the uses that may be allowed on land with a General Open Space designation. Uses are limited to resource management and production, recreation and limited residential or service.

The project site is designated for residential development in the San Mateo County General Plan, the Local Coastal Plan, and through its zoning designation. Neither the project site nor any adjacent areas are formally designated as open space.

3.1.7 Ridgelines and Skylines

The General Plan defines ridgelines as: "the tops of hills or hillocks normally viewed against a background of other hills." Meanwhile, skylines are defined as: "the line where sky and land masses meet." Views to the east from portions of the project site include both ridgelines and skylines, but views from most of the site do not include these features, due to the presence of slopes and vegetation. The project site is lower in elevation when viewed from Lincoln Street, and would not appear as a ridgeline or skyline to residences along Sierra Street south and east of the of the project. For viewers south of the project on Sierra Street, the project site would appear at a higher elevation, but though higher in elevation the site would not qualify as either a ridgeline or skyline.

3.1.8 LIGHT AND GLARE

"Light spill" is typically defined as the presence of unwanted and/or misdirected light on properties adjacent to a project site from project-related illumination. Light spill can emanate from the interior of structures through windows or from exterior sources, such as street lighting, security lighting, and landscape lighting.

Perceived glare is the unwanted and potentially objectionable sensation as observed by a person when looking directly into the light source of a lighting fixture. Glare also results from sunlight reflection off of flat building surfaces, with glass typically having the highest degree of reflectivity.

The only existing sources of light and glare on the proposed project site are lights associated with the Montara Water and Sanitary District storage tanks, as the remainder of the site is currently undeveloped. Existing development is located to the southeast, south, and southwest of the project site, which does produce some light at night. Other sources of light or glare within the vicinity of the project site are from the headlights or windshields of vehicles on adjacent roads.

4. REGULATORY SETTING

4.1 CALIFORNIA COASTAL ACT

Article 6: Development, Section 30251 of the California Coastal Act states that:

> The scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance. Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural land forms, to be visually compatible with the character of surrounding areas, and, where feasible, to restore and enhance visual quality in visually degraded areas. New development in highly scenic areas such as those designated in the California Coastline Preservation and Recreation Plan prepared by the Department of Parks and Recreation and by local government shall be subordinate to the character of its setting.

4.2 SAN MATEO COUNTY LOCAL COASTAL PROGRAM

The San Mateo County Local Coast Program (San Mateo County Planning and Building Department 2013) is the vehicle by which the County of San Mateo assumes responsibility for implementing the State Coastal Act. In late 1980, the County Board of Supervisors and the California Coastal Commission approved the San Mateo County LCP, and in April 1981, the County assumed responsibility for implementing the State Coastal Act in the unincorporated area of San Mateo County, including issuance of Coastal Development Permits.

The policies contained in the Local Coastal Program that have a bearing on visual resources are presented below.

4.2.1 HOUSING COMPONENT

Policy 3.15 (d(3)) Comply with Structural and Community Features

Development must comply with all of the regulations established for Structural and Community Features (Urban), as established in the Visual Resources Component.

4.2.2 VISUAL RESOURCES COMPONENT - NATURAL FEATURES - LANDFORMS

Policy 8.5 Location of Development

On rural lands and urban parcels larger than 20,000 sq. ft.:

a. Require that new development be located on a portion of a parcel where the development: (1) is least visible from State and County Scenic Roads; (2) is least likely to significantly impact views from public viewpoints; and (3) is consistent with all other LCP requirements, best preserves the visual and open space qualities of the parcel overall. Where conflicts in complying with this requirement occur, resolve them in a manner which, on balance, most protects significant coastal resources on the parcel, consistent with Coastal Act Section 30007.5. Public viewpoints include, but are not limited to, coastal roads, roadside rests and vista points, recreation areas, trails, coastal accessways, and beaches.

   This provision does not apply to enlargement of existing structures, provided that the size of the structure after enlargement does not exceed 150% of the pre-existing floor area, or 2,000 sq. ft., whichever is greater. This provision does not apply to agricultural development to the extent that application of the provision would impair any agricultural use or operation on the parcel. In such cases, agricultural development shall use appropriate building materials, colors, landscaping and screening to eliminate or minimize the visual impact of the development.

b. Require, including by clustering if necessary, that new parcels have building sites that are not visible from State and County Scenic Roads and will not significantly impact views from other public viewpoints. If the entire property being subdivided is visible from State and County Scenic Roads or other public viewpoints, then require that new parcels have building sites that minimize visibility from those roads and other public viewpoints.

Policy 8.6 Streams, Wetlands, and Estuaries

a. Set back development from the edge of streams and other natural waterways a sufficient distance to preserve the visual character of the waterway.

b. Prohibit structural development which will adversely affect the visual quality of perennial streams and associated riparian habitat, except for those permitted by Sensitive Habitats Component Policies.

c. Retain the open natural visual appearance of estuaries and their surrounding beaches.

d. Retain wetlands intact except for public accessways designed to respect the visual and ecological fragility of the area and adjacent land.

Policy 8.9 Trees (Natural Features-Vegetative Forms)

a. Locate and design new development to minimize tree removal.

b. Employ the regulations of the Significant Tree Ordinance to protect significant trees (38 inches or more in circumference) which are located in urban areas zoned Design Review (DR).

c. Employ the regulations of the Heritage Tree Ordinance to protect unique trees which meet specific size and locational requirements.

d. Protect trees specifically selected for their visual prominence and their important scenic or scientific qualities.

e. Prohibit the removal of trees in scenic corridors except by selective harvesting which protects the existing visual resource from harmful impacts or by other cutting methods necessary for development approved in compliance with LCP policies and for opening up the display of important views from public places, i.e., vista points, roadways, trails, etc.

f. Prohibit the removal of living trees in the Coastal Zone with a trunk circumference of more than 55 inches measured 4 1/2 feet above the average surface of the ground, except as may be permitted for development under the regulations of the LCP, or permitted under the Timber Harvesting Ordinance, or for reason of danger to life or property.

g. Allow the removal of trees which are a threat to public health, safety, and welfare.

Policy 8.10 Vegetative Cover (with the exception of crops grown for commercial purposes)

Replace vegetation removed during construction with plant materials (trees, shrubs, ground cover) which are compatible with surrounding vegetation and is suitable to the climate, soil, and ecological characteristics of the area.

Policy 8.12 General Regulations

a. Apply the Design Review (DR) Zoning District to urban areas of the Coastal Zone

(2) For all other development (*other than one or two-family dwellings*), apply the design standards contained in Section 6565.17 and the design criteria set forth in the Community Design Manual.

b. Locate and design new development and landscaping so that ocean views are not blocked from public viewing points such as public roads and publicly-owned lands.

Policy 8.13 Special Design Guidelines for Coastal Communities

a. Montara-Moss Beach-El Granada-Miramar

(1) Design structures that fit the topography of the site and do not require extensive cutting, grading, or filling for construction.

(2) Employ the use of natural materials and colors that blend with the vegetative cover of the site.

(3) Use pitched roofs that are surfaced with non-reflective materials except for the employment of solar energy devices. The limited use of flat roofs may be allowed if necessary to reduce view impacts or to accommodate varying architectural styles that are compatible with the character of the surrounding area.

(4) Design structures that are in scale with the character of their setting and blend rather than dominate or distract from the overall view of the urbanscape.

(5) To the extent feasible, design development to minimize the blocking of views to or along the ocean shoreline from Highway 1 and other public viewpoints between Highway 1 and the sea. Public viewpoints include coastal roads, roadside rests and vista points, recreation areas, trails, coastal accessways, and beaches. This provision shall not apply in areas west of Denniston Creek zoned either Coastside Commercial Recreation or Waterfront.

Consistency Assessment: Final designs for the proposed project are not required at this stage of project approval, but such designs will be provided when MidPen applies for a Coastal Development Permit. However, as noted above, the proposed project would not block any views of the ocean from public viewpoints between Highway 1 and the sea.

Policy 8.32 Regulation of Scenic Corridors in Urban Areas

a. Apply the regulations of the Design Review (DR) Zoning Ordinance.

b. Apply the design criteria of the Community Design Manual.

c. Apply specific design guidelines for Montara, Moss Beach, El Granada, Princeton-by-the-Sea, Miramar, San Gregorio, and Pescadero as set forth in Urban Design Policies of the LCP.

4.3 San Mateo County General Plan Policies

The San Mateo County General Plan (County of San Mateo Environmental Services Agency 1986) was adopted in 1986. It serves as a guide for land development and conservation in the unincorporated portions of the county. The plan contains goals and policies to guide future development of the County, in part by encouraging the preservation and enhancement of aesthetic resources. The Visual Quality chapter of the San Mateo County General Plan contains the following relevant goals and policies.

4.3.1 Visual Quality

Policy 4.1 Protection of Visual Quality

Encourage positive visual quality for all development and minimize adverse visual impacts.

Policy 4.4 Appearance of Rural and Urban Development

Promote aesthetically pleasing development in rural and urban areas.

Policy 4.15 Appearance of New Development

a. Regulate development to promote and enhance good design, site relationships and other aesthetic considerations.

b. Regulate land divisions to promote visually attractive development.

Policy 4.17 Protection of Coastal Features

Regulate coastal development to protect and enhance natural landscape features and visual quality through measures that ensure the basic integrity of sand dunes, cliffs, bluffs and wetlands.

Policy 4.21 Utility Structures

Minimize the adverse visual quality of utility structures, including roads, roadway and building signs, overhead wires, utility poles, T.V. antennae, windmills and satellite dishes.

Policy 4.22 Scenic Corridors

Protect and enhance the visual quality of scenic corridors by managing the location and appearance of structural development.

Policy 4.28 Ridgelines and Skyline

a. Discourage structures on open ridgelines and skylines, when seen as part of a public view in order to preserve visual integrity.

b. Allow structures on open ridgelines and skylines as part of a public view when no alternative building site exists.

c. Require structures on ridgelines in forested areas, which are part of a public view to: (1) blend with the existing silhouette; (2) not break or cause gaps within the ridgeline silhouette by removing tree masses; and (3) relate to the ridgeline form.

d. Define public view as a range of vision from a public road or other public facility.

Policy 4.29 Trees and Vegetation

a. Preserve trees and natural vegetation except where removal is required for approved development or safety.

b. Replace vegetation and trees removed during construction wherever possible. Use native plant materials or vegetation compatible with the surrounding vegetation, climate, soil, ecological characteristics of the region and acceptable to the California Department of Forestry.

c. Provide special protection to large and native trees.

Policy 4.30 Landscaping and Screening

a. Provide a smooth transition between development and adjacent forested or open space areas through the use of landscaping.

b. Limit landscaping in open grasslands to areas immediately surrounding structures.

c. Where it is appropriate to screen uses from view, use natural vegetation rather than solid fencing.

Policy 4.36 Urban Area Design Concept

a. Maintain and, where possible, improve upon the appearance and visual character of development in urban areas.

b. Ensure that new development in urban areas is designed and constructed to contribute to the orderly harmonious development of the locality.

Policy 4.40 Scenic Roads

Give special recognition and protection to travel routes in rural and unincorporated urban areas which provide outstanding views of scenic vistas, natural landscape features, historical sites and attractive urban development.

Policy 4.47 Regulation of Development in Scenic Corridors

Institute special controls to regulate both site and architectural design of structures located within rural scenic corridors in order to protect and enhance the visual quality of select rural landscapes.

Policy 4.57 Tree and Vegetation Removal

a) Allow the removal of trees and natural vegetation when done in accordance with existing regulations.

b) Prohibit the removal of more than 50% of the tree coverage except as allowed by permit.

Policy 4.60 Outdoor Lighting

Minimize exterior lighting in scenic corridors and, where used, employ warm colors rather than cool tones and shield the scenic corridor from glare.

Policy 4.61 Roads and Driveways

a) Design and construct new roads, road improvements and driveways to be sensitive to the visual qualities and character of the scenic corridor, including such factors as width, alignment, grade, slope, grading and drainage facilities.

b) Limit number of access roads connecting to a scenic road to the greatest extent possible.

c) Share driveways where possible to reduce the number of entries onto scenic roads.

Policy 4.62 Parking and Paved Areas

Integrate paved areas with their site and landscape and/or screen them to reduce visual impact from the scenic corridor.

Policy 4.63 Storage Areas

Screen areas used for the storage of equipment, supplies or debris by fencing, landscaping or other means so they are not visible from scenic roadways, trails, parks, and neighborhoods.

Policy 4.64 Utilities in County Scenic Corridors

a. Install new distribution lines underground.

b. Consider exceptions for certain circumstances including, but not limited to, financial hardship, topographic conditions or land use conflicts.

4.3.2 URBAN LAND USE

Policy 8.1 Urban Land Use Planning

Plan for a compatible and harmonious arrangement of land uses in urban areas by providing a type and mix of functionally well-integrated land uses which meet general social and economics.

Policy 8.14 Residential Land Use Compatibility

a. Protect and enhance the character of existing single-family areas.

b. Protect existing single-family areas from adjacent incompatible land use designations which would degrade the environmental quality and economic stability of the area.

Policy 8.27 Parcel Consolidation

Where necessary to achieve quality site planning and greater design flexibility, encourage the consolidation of smaller parcels which are designed for intense land uses, including, but not limited to, Industrial, Medium High and High Density Residential.

4.4 COMMUNITY DESIGN MANUAL

The San Mateo County Community Design Manual (San Mateo County 1976) contains the following relevant goals and policies.

Structures and accessory structures should be located, designed, and constructed to retain and blend with the natural vegetation and natural land forms of the site (i.e., topography, rock outcroppings, ridgelines, tree masses, etc.), and should be complementary to adjacent neighborhood structures.

Grading

To ensure minimal impact on the physical setting of the site and adjacent properties, site preparation, grading and structure location should be carefully controlled to reduce erosion, soil exposure, impacts on natural drainage systems, and to maintain surface runoff at or near existing levels. Grading or removal of vegetation which could contribute to the instability of the site or adjacent property should not be permitted.

Vegetation Preservation

Structures should blend with the natural vegetative cover of the site and only that vegetation should be removed which is necessary for the construction of the structure;

Structures should be designed around major trees or tree stands.

Landscaping

Landscaping material should have an informal character and should provide a smooth transition between the development and adjacent open space areas;

Only tree and plant materials native to the area should be used to assure against non-native plant intrusion to reduce irrigation and maintenance requirements, and to minimize visual impact.

Water

With the exception of trails and paths, and related appurtenances, structural development should be set back from and not permitted to be constructed where such development will adversely affect a stream, drainage area, or body of water.

View Preservation

Views should be preserved by limiting structure height. Introduced vegetation should be located so as to not block views from uphill structures or views from scenic corridors and vista points;

Public views within and from scenic corridors should be protected and enhanced, and development should not be allowed to significantly obscure, detract from, or negatively affect the quality of these views. Visual screening or increased setbacks may be used to mitigate such impacts;

Structures should be located to retain views of prominent scenic features, i.e., bodies of water, mountains, valleys, etc.

Open Space Preservation

Structures should be sited to retain maximum open space and to reduce the visual impact in scenic open space areas;

Where possible, structures should be clustered near existing natural and man-made vertical features such as tree masses, hills, and existing structures;

Cliffs and Bluffs

Structures should be set back from bluffs and cliffs so as to not destroy natural land forms;

Intrusion of structures into views from scenic areas should be minimized.

Accessory Structures

- Fences should be built to fit the natural contours of the land. Use of living (vegetative) fences in conjunction with earth berms, and fences made of natural materials are encouraged
- Paved areas
- Paved areas such as parking lots, driveways, sidewalks, etc., should be well integrated into the site, relate to existing and proposed structures and landscaped to reduce visual impact
- Small separate paved parking lots are preferred to large single paved lots
- Parking areas should be screened from residential areas and from scenic roadways
- Driveways should be shared when feasible to reduce curb cuts, especially along major arterials and scenic roads
- Paving materials used for pathways, sidewalks, driveways, and parking areas should be varied, textured, colored or patterned to add visual interest, especially where visible from above.

Scale

Structures should relate in size and scale to adjacent buildings and to the neighborhood in which they are located.

4.5 Montara-Moss Beach-El Granada Community Plan

The Montara-Moss Beach-El Granada Community Plan (Montara-Moss Beach-El Granada Community Plan website, undated) contains the following relevant goals and policies. The consistency of the proposed project with each of these policies is assessed in the report.

1.2 Design Characteristics

Encourage good design in new construction which reflects the character, and is compatible with the scale of the neighborhood in which it is located.

2.7 Commercial Development Buffers

Buffer commercial areas from surrounding residential development with landscaping, fencing, and/or buildings designed for compatibility between these land uses.

2.9 Appearance of Commercial Development

A. Employ the design guidelines of the Community Design Manual in all new commercial development.

3.1 Circulation System

Develop a circulation system, and road standards for residential streets, which complement the small-town character of the community.

4.1 Housing Design

Build housing which relates to its physical setting, does not destroy the natural features of the land, and is compatible with the neighborhood scale and coastal character of the community.

7.1 Preserving Visual Quality

Preserve and enhance the visual qualities of the coastal community which give it a unique character and distinguish it from other places.

7.2 Preserving Community Character

a. Maintain community character and ensure that new developments are compatible with existing homes in scale, size, and design.

b. Maintain the small-town character of the area by preventing construction of massive structures out of scale with the community.

7.3 Preserving Natural Amenities

Preserve the natural amenities of the community through appropriate location of new structures designed to harmonize with their surroundings.

7.6 Protection of Scenic Vistas

Preserve and protect scenic vistas of ocean, beaches, and mountains for residents of the community.

7.7 Tree Planting

Encourage the planting of trees along streets and walkways.

7.8 Preservation of Landforms and Vegetation

Preserve the existing landforms and vegetation.

7.11 Design Review

Apply the Design Review Overlay Zoning District in the urbanized areas of the community to regulate siting of structures, to protect natural features, and to provide for design compatibility with surrounding development.

4.6 San Mateo County Code

4.6.1 Zoning Regulations Generally

The San Mateo County Zoning Code contains specific provisions pertaining to lighting, signage, building height, setbacks, and other design elements specific to the zoning designations of the project site. In the County, development and building improvements requiring a building permit are subject to review to determine their adherence with County standards, regulations, and policies. Compliance is ensured by conditions of approval attached to discretionary development permits.

4.6.2 Standards for Design in Other Areas

Section 6565.17 of the Zoning Code establishes the following design standards for the development of land uses that are not single- or two-family residences within the Coastal Zone. Though the Cypress Point project site is not currently zoned to require design review, Section 8.12.a.2 of the Local Coastal Plan extends the authority for design review to all other development types (*other than one or two-family dwellings*) within the Coastal Zone. The following standards listed in Section 6565.17 would apply to the proposed project.

a. Proposed structures are designed and situated so as to retain and blend with the natural vegetation and landforms of the site and to ensure adequate space for light and air to itself and adjacent properties.

b. Where grading is necessary for the construction of structures and paved areas, it blends with adjacent landforms through the use of contour grading rather than harsh cutting or terracing of the site and does not create problems of drainage or erosion on its site or adjacent property.

c. Streams and other natural drainage systems are not altered so as to affect their character and thereby causing problems of drainage, erosion or flooding.

d. Structures are located outside flood zones, drainage channels and other areas subject to inundation.

e. Trees and other vegetative land cover are removed only where necessary for the construction of structures or paved areas in order to reduce erosion and impacts on natural drainage channels, and maintain surface runoff at acceptable levels.

f. A smooth transition is maintained between development and adjacent open areas through the use of natural landscaping and plant materials which are native or appropriate to the area.

g. Views are protected by the height and location of structures and through the selective pruning or removal of trees and vegetative matter at the end of view corridors.

h. Construction on ridgelines blends with the existing silhouette by maintaining natural vegetative masses and landforms and does not extend above the height of the forest or tree canopy.

i. Structures are set back from the edge of bluffs and cliffs to protect views from scenic areas below.

j. Public views to and along the shoreline from public roads and other public lands are protected.

k. Varying architectural styles are made compatible through the use of similar materials and colors which blend with the natural setting and surrounding neighborhoods.

l. The design of the structure is appropriate to the use of the property and is in harmony with the shape, size and scale of adjacent building in the community.

m. Overhead utility lines are placed underground where appropriate to reduce the visual impact in open and scenic areas.

n. The number, location, size, design, lighting, materials, and use of colors in signs are compatible with the architectural style of the structure they identify and harmonize with their surroundings.

o. Paved areas are integrated into the site, relate to their structure, and are landscaped to reduce visual impact from residential areas and from roadways.

5. METHODOLOGY

A field reconnaissance of the project site and surrounding areas was conducted by Stevens Consulting and Pyatok Architects on October 17, 2017. The purpose of the visit was to document existing visual conditions at the project site and views of the site from neighboring properties and from Highway 1. Numerous photos were taken from vantage points at the project site and from areas surrounding the project site from which the site is visible, in order to analyze the representative views and the potential aesthetic impacts associated with the proposed project. See Figures 6 through 10.

In addition, computer-generated visual simulations illustrating “before” and conceptual “after” visual conditions at the project site as seen from three representative vantage points are presented as part of the analysis. See Figures 11, 12, and 13. The “after” condition photos were developed using digital photographs, computer modeling, and rendering techniques. These photos are not meant as an exhaustive collection of the views from all vantage points that include the project site, but instead are intended as representative views from within the project site as well as views of the site from the surrounding areas. It should be noted that because final design of the proposed project has not yet been completed, these visual simulations provide only generalized representations of project buildings, and do not represent how the buildings will actually look.

This report evaluates potential aesthetic impacts associated with implementation of the project, including impacts to scenic resources, views, visual character, and light and glare. The visual impacts of the proposed project were completed by evaluating the compatibility of the physical components of the proposed project with its surroundings land uses. Visual impacts are also analyzed through an examination of views and/or viewsheds, scenic resources, visual character, changes in light or glare, and compatibility with pertinent local policies.

Before

After

View Context Key

Stevens Consulting, June 2018

Figure 11

Post Project View - Carlos Street/Sierra Street

San Mateo County, CA

Before

After

View Context Key

Stevens Consulting, June 2018

Figure 12

Post Project View - Lincoln Street

San Mateo County, CA

Before

After

View Context Key

Stevens Consulting, June 2018

Figure 13

Post Project View - Sierra Street near Stetson Street

San Mateo County, CA

5.1 SIGNIFICANCE CRITERIA

In accordance with guidance provided in Appendix G of the State CEQA Guidelines as modified by San Mateo County, the proposed project could have a potentially significant impact if it were to result in one or more of the following:

a) Have a significant adverse effect on a scenic vista, views from existing residential areas, public lands, water bodies or roads;

b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway;

c) Significantly degrade the existing visual character or quality of the site and its surroundings, including significant changes in topography, or ground surface relief features, and/or development on a ridgeline;

d) Create a new source of significant light or glare that would adversely affect day or nighttime views in the area;

e) Be adjacent to a designated Scenic Highway or within a State or County Scenic Corridor;

f) If in a design review District, conflict with applicable General Plan or Zoning Ordinance provisions; or

g) Visually intrude into an area having natural scenic qualities.

6. IMPACTS AND MITIGATION MEASURES

Impact: *Have a significant adverse effect on a scenic vista, views from existing residential areas, public lands, water bodies or roads?* **Less than significant Impact.**

The County General Plan and Local Coastal Program do not specifically identify scenic vistas within the County. In absence of a specific "scenic vista" designation, this analysis will focus on the definitions that are included in the 1986 General Plan and Local Coastal Program.

Scenic vistas to the east of the project site beyond Lincoln Street include both ridges and skylines, while the vistas to the west include coastal bluffs and the Pacific Ocean, all of which are identified by the General Plan as important aesthetic features. No sensitive viewing locations are west of the project site that would have views of the ridges and skylines to the east. The view of travelers on Highway 1 to the east is truncated by existing vegetation and changes in grade, neither of which would be modified by the proposed project. See Figures 6a through 6c. Together, vegetation and topography act to shield the project site from the view of travelers on Highway 1. Additional potential locations of sensitive viewers to the west include hikers on the California Coastal Trail and recreationists within the James V. Fitzgerald Marine Reserve. In the vicinity of the Cypress Point project, the California Coastal Trail is routed through the entrance drive of the Montara Water and Sanitary District office and thence to Vallamar Street. The views to the east from this Trail also are hampered by changes in grade and existing vegetation, neither of which would be modified by the project at this location. In

the vicinity of the project, the area within the James V. Fitzgerald Marine Reserve is limited to the rocky shore at the base of 50- to 60-foot cliffs and adjacent ocean waters. Views to the east for visitors within the Reserve near the project site would be blocked by the cliffs.

Westerly scenic vistas seen from points east and southeast of the site are dominated by the Pacific Ocean, and the skyline at the western horizon. Sensitive viewers with direct views of western vistas that could be affected by implementation of the Cypress Point project include residents of the 3 homes on Lincoln Street and 2 homes at the base of Buena Vista Street, and several residences on Sierra Street near the southeastern site boundary. Because the site would not be in the ocean viewshed for residences along Stetson Street or Carlos Street, there would be no potential for significant visual interference for these viewers.

As previously noted, the project site slopes down from east to west. The elevation of the project site ranges from approximately 80 to 190 feet MSL. With implementation of the Cypress Point project, the site would be graded to develop building pads at elevations from 186 feet MSL for the buildings nearest the easterly site boundary to 154 feet MSL for buildings nearest Carlos Street. Within the developed area of the site, 18 two-story buildings and a community building with roof heights varying between 32 and 36 feet with a simple traditional roof shape and slope (4:12) would be constructed. Approximately one-half of the site would be developed, and the remainder would remain undeveloped. Building pad elevations for the buildings nearest to Lincoln Street would range from 183 feet MSL to 186 feet MSL. All other building pad elevations on the site would be lower. Buildings nearest Lincoln Street and Buena Vista Street would be set back approximately 230 feet from the nearest offsite residences on Lincoln Street or Buena Vista Avenue. Within this setback area, existing trees would be retained, as would trees along the northerly site boundary.

The floor elevations for the existing residences along Lincoln Street and the base of Buena Vista Street range from 186 feet MSL to 193 feet MSL. As shown in Figure 11[1], the tops of project buildings would be visible from Lincoln Street and the base of Buena Vista Street. They would appear similar in height and mass to the existing water storage tanks, and lower in height than the background vegetation. All other proposed buildings on the project site would be located at lower elevations and more distant from Lincoln and Buena Vista Street. Because of the change in elevation between onsite building pads, the distance of the buildings from sensitive viewers, and intervening vegetation that would not be affected by the project, vistas of the Pacific Ocean would not be blocked with project implementation.

For the foregoing reasons, there would be no significant interference with scenic vistas as viewed from existing residential areas, public lands, water bodies or roads. Therefore, this impact on scenic vistas would be less than significant.

[1] Note that Figures 11, 12, and 13 show the representative massing of the project buildings, but do not show how the buildings will look when finished, nor do they include the landscaping that will be part of the project.

Impact: *Significantly damage scenic resources, including, but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway?* **Less than significant Impact.**

There are no designated state scenic highways near to the project site, though Highway 1 is a County-designated scenic highway, and the westerly third of the project site is within the Cabrillo Highway County Scenic Corridor (see Figure 5). Further, there are no rock outcroppings or historic buildings on the project site. While some trees on the project site would be removed through project implementation, the project site is not visible from Highway 1. Therefore, impacts related to damage to views from a state scenic highway would be less than significant.

Impact: *Significantly degrade the existing visual character of the site and its surroundings, including significant changes in topography, or ground surface relief features, and/or development on a ridgeline?* **Less than significant Impact.**

Development of the project as proposed would result in changes to the existing visual character of the site by replacing an existing undeveloped area with 18 residential buildings, a commons building, parking lots, landscaping, and other improvements. No buildings would be more than two stories (32 to 36 feet) tall. Approximately one-half of the project site would remain in open space. Existing vegetation within open space areas that would be maintained and additional proposed landscaping would provide a buffer between the project and the existing residential uses along Carlos Street, Sierra Street, Stetson Street, Buena Vista Street, and Lincoln Street. All developed areas of the site would be set back from adjoining residences by a minimum of 200 feet (230 feet adjacent to Lincoln Street) except for buildings north of the project entrance on Carlos Street where there are no adjoining land uses. In this location, the nearest project building would be set back approximately 60 feet from the street.

Although the existing visual character of the site would be altered by implementation of the project, the change would not be a significant degradation. Site grading and fill to construct building pads, roadways, and parking areas, or install utilities would not be visible or apparent from areas outside of the project site. The only site features visible to viewers from surrounding areas would be the buildings themselves. As noted above, the buildings would be set back from adjacent viewers so that their apparent mass would be reduced. See Figures 11 through 13. Further, the project site would represent an additional residential use within an already developed residential area that already includes many two-story buildings.

Development onsite would be subject to the policies of the San Mateo County 1986 General Plan, the San Mateo County Local Coastal Program, the San Mateo County Community Design Manual, and Section 6565.17 of the San Mateo County Zoning Code. The project would be required to comply with all applicable County visual quality policies, which would, "…promote and enhance good design, site relationships, and other aesthetic considerations," and would, "…promote visually attractive development." To ensure compliance with County visual resource policies, the project will be subject to review by the Coastside Design Review Committee (CDRC).

In summary, proposed onsite uses would be sited with large setbacks from Sierra, Buena Vista and Lincoln streets, approximately one-half of the project site would remain in open space, existing (except for the removal of dead or diseased) vegetation would be maintained to screen the project from adjacent viewers. Further, the project would be subject to future design review and will comply with all applicable design standards and guidelines. With implementation of the proposed site plan, the project would not result in a substantial degradation to the visual character of the project area. This impact would be less than significant.

Impact: *Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?* **Less than significant with Mitigation Incorporated.**

The proposed project would introduce additional sources of lighting and reflective surfaces to the project site. New lighting sources would include outdoor street lighting and security lighting, indoor lighting, and light generated by vehicle headlights. Lighting would be used as a design tool to highlight architectural elements and landscaping. Lighting would also provide security and safety in parking areas, service passages, and common areas of the project. A detailed lighting plan is not available at this time, but MidPen has agreed to an Environmental Commitment to use "Night-sky" compliant site lighting. While it appears the project would not introduce new sources of light or glare on the project site that would be incompatible with the areas surrounding the project site or which pose a safety hazard, because a lighting plan for the project has not yet been prepared, this impact would be significant. To reduce this impact to a less-than-significant level, implement the following mitigation measure:

> **Mitigation Measure VIS-1: Submit Detailed Lighting Plan to San Mateo County for Approval**
>
> Prior to the approval of final project plans, a detailed lighting plan shall be submitted to San Mateo County for review and approval by the Community Development Director, consistent with County requirements. The lighting plan shall prohibit light spillover across property lines and limit lighting to the minimum necessary for security and exterior lighting purposes, as determined by the Community Development Director. All lighting shall be designed to be compatible with surrounding development. The project shall not propose light sources that are atypical of the surrounding environment.
>
> Reflective glass or other glaring building materials shall be discouraged. The exterior of the proposed building shall be constructed of non-reflective materials such as, but not limited to, high-performance tinted non-reflective glass, metal panel, and pre-cast concrete or cast in-place or fabricated wall surfaces. The proposed materials shall be reviewed and approved by the Community Development Director prior to approval of the Coastal Development Permit.

Implementing Mitigation Measure VIS-1 would ensure that the lighting design for the proposed project meets all San Mateo County lighting standards.

Impact: *Be adjacent to a designated Scenic Highway or within a State or County Scenic Corridor?* **Less than significant Impact.**

State Route 1 in the vicinity of the project site, although eligible, has not been designated as a State Scenic Highway. San Mateo County has designated this portion of Highway 1 as the Cabrillo Highway County Scenic Corridor. The westerly one-third of the project site is located within this County Scenic Corridor. Based on the discussion provided in Questions a, b, and c, the project poses no significant impacts due to its location alongside and within the County Scenic Corridor.

Impact: *If within a Design Review District, conflict with applicable General Plan or Zoning Ordinance provisions?* **Less than significant Impact with Mitigation Incorporated.**

The project site's PUD-124/CD zoning includes the Design Review (DR) Overlay District. As noted in the discussion of Question c, the project would be subject to review by the Coastside Design Review Committee (CDRC) pursuant to Section 6565.17 of the San Mateo County Zoning Code. At the time of preparation of this report, project design details and materials have not been finalized, nor has design review been initiated or completed. This impact would be significant. To reduce this impact to less than significant and to ensure that the project complies with San Mateo County design policies and standards, the following mitigation measure is required.

> **Mitigation Measure VIS-2: Submit Detailed Design Plans to San Mateo County for Review and Approval**
>
> Prior to the approval of a Coastal Development Permit, detailed design, materials, and landscaping plans shall be submitted to San Mateo County for review and approval by the Community Development Director, consistent with County requirements. The plans shall address design standards (a) through (o) set forth in Section 6565.17 of the Zoning Code, as well as all other applicable County design standards. The project shall be constructed consistent with the approved plans.

Implementing Mitigation Measure VIS-2 would ensure that the design, materials, and landscaping for the proposed project would meet San Mateo County design standards.

Impact: *Visually intrude into an area having natural scenic qualities?* **Less than significant Impact.**

The project site is an undeveloped island on the margin of an existing single-family neighborhood (see Figure 2). Scenic resources on the site consist of native and non-native trees, shrubs, and other vegetation. Other features of the site include concrete foundations of buildings from the former military use of the site. Several of the foundations have been disfigured by graffiti. Several dirt roads and paths cross the site. In addition, two water storage tanks maintained by the Montara Water and Sanitary District are located within the boundaries of the project, although they are not a part of the proposed development.

Much of the vegetation of the site will be preserved during development as approximately half of the site will be maintained in open space. Except for the removal of dead or diseased trees and shrubs, vegetation adjacent to 16th Street, Sierra Street, and Lincoln Street will be maintained. The only additional perimeter vegetation taken along Carlos Street would be to accommodate the project driveway.

Because of existing changes in grade and dense vegetation, views of the project site from adjacent areas along 16th Street, Carlos Street, and Sierra Street tend to be short range. Views from upper Sierra Street, Buena Vista Street, and Lincoln Street tend to be mid-range, although even from these vantage points the entirety of the site is not visible. As discussed in Question c, site grading and fill to construct building pads, roadways, and parking areas, or install utilities would not be apparent from areas outside of the project site. The only site features visible to viewers from surrounding areas would be the buildings themselves. As noted above, the buildings would be substantially set back from adjacent viewers so that their apparent mass would be reduced.

While the site currently provides some visual relief to the adjacent neighborhoods, because the perimeter shrubs and trees (the site's primary visual asset) would be preserved, and because only portions of the interior developed portion of the site would be visible to nearby viewers, this would be a less than significant impact, and no mitigation is necessary.

7. REFERENCES

California, State of. 2018. Department of Transportation. Officially Designated State Scenic Highways and Historic Parkways. Accessed by Craig Stevens of Stevens Consulting on May 22, 2018 at: <http://www.dot.ca.gov/hq/LandArch/16_livability/scenic_highways/>

San Mateo, County of. 2013. Planning and Building Department. Local Coastal Program Policies. June 2013.

_____. 1986. Environmental Services Agency, Planning and Building Department. San Mateo County General Plan, Overview and Background Issues. Approved November 1986.

_____. 1985. Department of Environmental Management, Planning and Development Division, Area Plans Summary, Montara-Moss Beach-El Granada Community Plan, 1985.

_____1976. Community Design Manual. Adopted by the Board of Supervisors on July 20, 1976.

County of San Mateo - Planning and Building Department

ATTACHMENT J

MidPen Housing Corporation
Andrew Bielak
303 Vintage Park Drive, Ste. 250
Foster City, CA 95131

Dear Mr. Bielak:

SUBJECT: Summary of Comments and Questions Received at a Public Workshop held on September 20, 2017 regarding a proposed Planned Unit Development re-zoning located on a vacant parcel at 1993 Carlos Street in the unincorporated Moss Beach area of San Mateo County.

APN 037-022-070; County File Number PRE 2017-00032.

Thank you for your participation in the public workshop. As discussed in Section 6415.5 of County Zoning Regulations, the public workshop is intended to allow community members and public agency representatives the opportunity to provide an applicant with project input before the preparation of final development plans. The purpose of this letter is to summarize the comments received at the workshop and include additional comments received from other reviewing agencies and interested parties.

Let me emphasize that the purpose of this summary letter is not to render a decision on the merits of this project. Nor is this letter intended to serve as a substitute for future staff analysis if or when a project application is submitted to the County. There were many questions and concerns raised by the community. It is hoped that these questions/issues can be addressed by the project design or supporting analysis if/when an application is submitted.

Key Comments and Concerns of the Community

Due to the variety of comments received at the workshop, many similar in nature, I have summarized the various comments and organized them into relevant categories, although there may be some overlap of issues. Copies of all submitted comments received as of the date of this letter have been included as attachments. Additionally, the comments that were being recorded on the note pads by the PCRC support staff are included in Attachment B. Comments received from government agencies are included in Attachment C.

1. Scale (Too Big)

    - The proposed 71 unit housing development seems to be way out of scale for such a small neighborhood.

2. Traffic (Overall Traffic Volume on the Coastside)

    - What mitigation measures will be put in place to address traffic during the construction of this project?

- Traffic analysis should include entire commute corridor beyond choke points on 92 and Pacifica.

- The *Highway 1 Safety and Mobility Study* was based on Caltrans data from before the opening of the tunnel. This data is 7 years old. Coastside residents frequently speak of the increase of traffic since the opening of the tunnel. Also, the MidPen project was not considered in the study at the time of its adoption (2012).

- The crossings as presented in the *Cyprus Point Preliminary Traffic Assessment* do not sufficiently represent the traffic impact of the MidPen project. Nor can either be presented as a future condition that mitigates the impact of the pedestrian and vehicle traffic.

- The KAI traffic study is looking only at the MidPen development and ignores surrounding measures that are planned by the County. Moss Beach is one of the access choke points for Big Wave and current plans show two additional traffic lights (Connect the Coastside) in Moss Beach.

- How will the traffic flow on Highway 1 be impacted with all the additional signals (maybe one turns into a roundabout), increased traffic volume resulting out of the MidPen and Big Wave developments (ignoring the two proposed Hotels in Montara for now) and an estimated 2 Million annual visitors to the Coastside?

- What is the impact on neighborhood streets and Farallone View Elementary School (many kids walk and bike to school and many roads do not have sidewalks) in Montara and Moss Beach as commuters and tourists try to bypass the gridlock on Highway 1 that will be created by the additional traffic measures and the MidPen and Big Wave developments?

3. Traffic (Project specific – Safety)

- **Blind curve**: MidPen's preliminary traffic report states that there is no room for a deceleration lane for those making a right turn from Highway 1 onto Carlos. Drivers who yield to bicyclists/pedestrians or slow as southbound cars turn left will be at risk of being rear-ended. The traffic report indicates that it *might* be possible to cut the hillside back to improve visibility south, but feasibility and CalTrans funding for this are not established.

- **Car traffic on narrow residential streets**: I am concerned that traffic from the new homes will divert to Carlos and Stetson Streets. Carlos and Stetson will become the most highly trafficked automobile, pedestrian and bicycle routes in Moss Beach, and the roads are not wide enough to accommodate these activities safely.

- Signalization of the Highway 1/Carlos intersection, or roundabout and a pedestrian crossing in close proximity will most likely result in a significant increase of accidents. Drivers from the South do not have visibility beyond the curve and stopped traffic or a

pedestrians crossing on Highway 1 will add to the accident risk. A reduction of speed will most likely be ignored by many residents and visitors to the Coastside.

- Highway traffic calming measures would substantially improve safety at the Carlos and 16th Street intersections with Highway 1 where sight distance is limited. Lower highway speed shortens the sight distance required for safe stopping and cross-traffic movements. The Mobility Study suggests raised medians and other features for traffic calming. In addition to further analysis and refinement of Mobility Study concept plans for the area, please fully assess the feasibility of rerouting Carlos St to 16th St for safer vehicle highway access.

4. Hazardous Waste/Site Contamination

- What documents are available regarding the real estate transfer of the property? Was some sort of detailed environmental clearance done and is it available to the public?

- The project site was formerly a Navy anti-aircraft training center. We request that soil sampling be conducted at the project site - in consultation with the community regarding what contaminants to test for and what locations to sample on the site.

5. Sewer Problems

- There have been numerous sewage system overflows both from the Sewer Authority Mid-Coast sewage treatment plant and pipes, and locally within the Montara Water Sewer District. These repeated, significant sewage spills appear to result, at a minimum, from antiquated and failing pipes. The proposed project should be evaluated for its impact on this failing sewer system, and for the cumulative sewage impact of this proposed project in conjunction with past, present and future projects. In addition, there should be analysis of what monetary contributions will be necessary from MidPen to ensure that there are no additional sewage spills resulting from adding the proposed project to the already failing sewage system.

6. Parking

- With room for one or two cars in front of each house, increasing automobile density has the potential to generate a lot of conflict. I have seen cars at MidPen's Moonridge complex overflowing onto Miramontes Point Road - Moss Beach does not have a similar wide empty street that can absorb extra cars.

7. Drainage

- When will storm drainage be addressed? How big is the culvert that passes under Highway 1 for Montara Creek, and what is its capacity? What is the coverage (pavement and roofs) for the planned development, and how will this affect 10 minute runoff in a

100 year storm event? Will the runoff be considered as a point source for NPDES purposes?

8. Pedestrian Traffic

- A safe crossing is needed at the lighthouse/16th Street for the southbound bus stop and for the Coastal Trail which crosses the highway there. A raised median refuge island, proposed in the Mobility Study, would enable two-stage crossing.

- If this housing project is to proceed, the Parallel Trail segment in this area must be prioritized and implemented, at a minimum between downtown Moss Beach and 14th Street.

9. Jobs (source of numbers)

- They stated that we have 1400 local jobs in El Granada/Princeton, Moss Beach, and Montara but miss to provide the source information. Jan Lindenthal, MidPen's vice president of real estate development is quoted in the SM Journal "Still, with 1,300 low-income jobs on the midcoast." 1400 vs 1300 with no source information? Where are the jobs?

10. Water

- We request that the project be evaluated for the volume of water (gallons/day) needed for the proposed project, and that these estimates include realistic estimates of water for project residential units, project landscaping, and water for firefighting. Also, the impact of this increased water demand should be evaluated for its impact on water quality to residents in the proposed project and the surrounding Moss Beach community.

11. Population

- The MidPen housing proposal is for 71 units totaling 144 bedrooms. At maximum occupancy, there would be 359 residents. And this doesn't include guests or visitors to the community center. This development would increase the population of Moss Beach east of Highway 1, where this will be built, by 26%. This population increase will take place in one location all at once, as opposed to several decades of gradual development.

12. Public Transit

- This project highlights the urgent need for expanded Coastside public transit and the funding that requires. Quite simply, without convenient school and commuter bus service at this location on the highway corridor, this project cannot be justified.

- This site is near a SamTrans bus stop serving the #17 bus. Measures should be taken to ensure safe and convenient access and waiting areas for passengers. These measures

should include crosswalks and appropriate pedestrian access to the bus stop. This bus operates on headways of approximately one hour, measures to increase the level of service should be taken.

- Given the size of the project, it should include a robust Transportation Demand Management (TDM) Program to reduce VMT and greenhouse gas emissions. Such measures will be critical in order to facilitate efficient transportation access to and from the site and reduce transportation impacts associated with the project.

Applicable Regulations, Review, and Approvals Required:

As was discussed in the public notice for the workshop, this application will require an amendment to the County's Zoning Regulations, the LCP Land Use Plan Map, and Policy 3.15(b) and (d.1) of the LCP because the existing PUD zoning for this parcel calls for a much different, denser development. The Coastal Commission must approve this change to the County's LCP before the County can act upon a request for a Coastal Development Permit.

Once a formal application for this project is submitted to the County Planning Department, then the project will be scheduled for public hearings at the Planning Commission and Board of Supervisors. If the Board of Supervisors chooses to support the proposed LCP amendment, then the County will forward the proposed amendment request to the Coastal Commission for certification at a public hearing. The Coastal Commission is the final decision making body for any proposed LCP amendment and is responsible for compliance with the California Environmental Quality Act for this first phase.

Section 21080.5 of the California Environmental Quality Act (CEQA) exempts local governments from the requirement of preparing an environmental impact report (EIR) in connection with its local coastal program. Instead, the CEQA responsibilities are assigned to the Coastal Commission and the Commission's LCP review and approval program has been found by the California Resources Agency to be functionally equivalent to the EIR process. For this first phase of this project, the County will only submit the technical studies required to meet the Coastal Commission's LCP Amendment requirements.

Assuming that the Coastal Commission certifies the proposed amendments, then the applicant will be able to apply for a Coastal Development Permit to construct the project. Consideration of this Coastal Development Permit will follow the same path as any other CDP with referrals to the MidCoast Community Council and consideration at the Planning Commission. However, the project does not automatically go to the Board of Supervisors or the Coastal Commission unless appealed. The County will be responsible for addressing California Environmental Quality Act requirements in conjunction with its consideration of the CDP application.

If you have any questions regarding this summary, please contact me at 650/363-1849 or at mschaller@smcgov.org.

Sincerely,

Michael Schaller
Senior Planner

Attachment A: E-mailed comments
Attachment B: Notes from the PCRC support staff
Attachment C: Government Agency comments

cc: Board of Supervisors
Planning Commission
Workshop attendees
Other interested parties