COMMUNITY DEVELOPMENT SERVICES
PLANNING AND BUILDING DEPARTMENT
PLANNING SERVICES DIVISION, CURRENT PLANNING UNIT

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NOTICE OF PUBLIC HEARING

The **County of El Dorado Planning Commission** will hold a public hearing in the Building C Hearing Room, 2850 Fairlane Court, Placerville, CA 95667 on **May 23, 2019,** at **8:30 a.m.**, to consider **Conditional Use Permit CUP18-0009/El Dorado Senior Resort** submitted by JIM DAVIES to allow for the construction and operation of a senior living development consisting of a 74-unit assisted living/memory care facility; a 64-unit independent apartment complex with club house; nine single family attached homes; one 5,000 square foot commercial building (2-story); one 2,500 square foot commercial building (2-story); approximately 30 percent open and recreational space; 228 parking spaces of which 128 will be underground; and both wall and monument signage. The property, identified by Assessor's Parcel Numbers 331-221-30 and 331-221-32, consisting of 8.2 acres, is located on the south side of Pleasant Valley Road, approximately 600 feet west of the intersection with Koki Lane, in the El Dorado area, Supervisorial District 3. (County Planner: Efren Sanchez) (Mitigated Negative Declaration prepared)*

The draft mitigated negative declaration for CUP18-0009 addresses environmental issues including Aesthetic/Visual, Agricultural Land, Air Quality, Archeological/Historical, Biological Resources, Drainage/Absorption, Forest Land/Fire Hazard, Geologic/Seismic, Minerals, Noise, Population/Housing Balance, Public Services/Facilities, Recreation/Parks, Schools/Universities, Sewer Capacity, Soil Erosion/Compaction/Grading, Solid Waste, Toxic/Hazardous, Traffic/Circulation, Vegetation, Water Quality, Water Supply/Groundwater, Wetland/Riparian, Growth Inducement, Land Use, and Cumulative Effects. No hazardous waste sites are located within the vicinity of the project. Mitigation has been identified which would reduce potentially significant impacts to a level of insignificance.

Staff Reports are available two weeks prior at https://eldorado.legistar.com/Calendar.aspx

All persons interested are invited to attend and be heard or to write their comments to the Planning Commission. If you challenge the application in court, you may be limited to raising only those items you or someone else raised at the public hearing described in this notice, or in written correspondence delivered to the Commission at, or prior to, the public hearing. Any written correspondence should be directed to the County of El Dorado Planning and Building Department, 2850 Fairlane Court, Placerville, CA 95667 or via e-mail: planning@edcgov.us.

*This is a notice of intent to adopt the negative declaration or mitigated negative declaration that has been prepared for this project and which may be reviewed and/or obtained in the County of El Dorado Planning and Building Department, 2850 Fairlane Court, Placerville, CA 95667, during normal business hours or online at https://edcgov.trakit.net/eTRAKiT/Search/project.aspx by typing the first word of the project name in the search box. A negative declaration or mitigated negative declaration is a document filed to satisfy CEQA (California Environmental Quality Act). This document states that there are no significant environmental effects resulting from the project, or that conditions have been proposed which would mitigate or reduce potential negative effects to an insignificant level. The public review period for the negative declaration or mitigated negative declaration set forth in CEQA for this project is thirty days, beginning April 23, 2019, and ending May 22, 2019.

To ensure delivery to the Commission prior to the hearing, written information from the public is encouraged to be submitted by Thursday the week prior to the meeting. Planning Services cannot guarantee that any FAX or mail received the day of the Commission meeting will be delivered to the Commission prior to any action.

COUNTY OF EL DORADO PLANNING COMMISSION
TIFFANY SCHMID, Executive Secretary
April 22, 2019

Exhibit R

MITIGATED NEGATIVE DECLARATION

FILE: CUP18-0009

PROJECT NAME: El Dorado Senior Resort

NAME OF APPLICANT: Jim Davis

ASSESSOR'S PARCEL NO.: 331-221-30; 331-221-32 **SECTION:** 35 **T:** 10N **R:** 10E

LOCATION: The property is located on the south side of Pleasant Valley Road, approximately 600 feet west of the intersection with Koki Lane, in the El Dorado Area.

☐ **GENERAL PLAN AMENDMENT: FROM: TO:**

☐ **REZONING: FROM: TO:**

☐ **TENTATIVE PARCEL MAP** ☐ **SUBDIVISION TO SPLIT 10.94 ACRES INTO 2 LOTS**
SUBDIVISION (NAME): C&J Parcel Map

☒ **SPECIAL USE PERMIT TO ALLOW:**

☐ **OTHER:**

REASONS THE PROJECT WILL NOT HAVE A SIGNIFICANT ENVIRONMENTAL IMPACT:

☐ **NO SIGNIFICANT ENVIRONMENTAL CONCERNS WERE IDENTIFIED DURING THE INITIAL STUDY.**

☒ **MITIGATION HAS BEEN IDENTIFIED WHICH WOULD REDUCE POTENTIALLY SIGNIFICANT IMPACTS.**

☐ **OTHER:**

In accordance with the authority and criteria contained in the California Environmental Quality Act (CEQA), State Guidelines, and El Dorado County Guidelines for the Implementation of CEQA, the County Environmental Agent analyzed the project and determined that the project will not have a significant impact on the environment. Based on this finding, the Planning Department hereby prepares this MITIGATED NEGATIVE DECLARATION. A period of thirty (30) days from the date of filing this mitigated negative declaration will be provided to enable public review of the project specifications and this document prior to action on the project by COUNTY OF EL DORADO. A copy of the project specifications is on file at the County of El Dorado Planning Services, 2850 Fairlane Court, Placerville, CA 95667.

This Mitigated Negative Declaration was adopted by the Planning Commission on May 23, 2019.

____
Executive Secretary

EL DORADO COUNTY PLANNING SERVICES
2850 FAIRLANE COURT
PLACERVILLE, CA 95667
INITIAL STUDY
ENVIRONMENTAL CHECKLIST

Project Title: Conditional Use Permit CUP18-0009/El Dorado Senior Resort

Lead Agency Name and Address: El Dorado County, 2850 Fairlane Court, Placerville, CA 95667

Contact Person: Efren Sanchez, Assistant Planner | **Phone Number:** (530) 621-6591

Applicant's Name and Address: Jim Davies, 854 Diablo Road, Danville, CA 94526

Project Agent's Name and Address: Jim Davies, 854 Diablo Road, Danville, CA 94526

Project Engineer's Name and Address: Robert Wright AIA NCARB, 101 Lucas Valley Road, Suite 313, San Rafael, CA 94903

Project Location: The property is located on the south side of Pleasant Valley Road, approximately 600 feet west of the intersection with Koki Lane, in the El Dorado area.

Assessor's Parcel Number: 331-221-30 and 331-221-32 **Acres:** 8.2 acres

Sections: Sec 35 **T:** 10N **R:** 10E

General Plan Designation: Multifamily Residential (MFR), and Commercial (C)

Zoning: Multi-unit Residential (RM), and Commercial Main Street (CM) with Design Review- Community(-DC)

Description of Project: The project request is a conditional use permit for a senior living development identified as El Dorado Senior Resort. The proposed development consists of the following: a 74-unit assisted living/memory care facility; a 64-unit independent apartment complex with club house; 9 single family homes; one 5,000 square feet (SF) commercial building; one 2,500 SF commercial building; approximately 30% open and recreational space; 228 parking spaces of which 128 will be underground; and both wall and monument signs. The El Dorado Senior Resort will be age-restricted and include a 10% affordable housing component. The proposed development will be an age-restricted community within the meaning of California Civil Code section 51.3, which legally authorizes these communities and requires that qualified residents be at least 55 years of age. The existing property consists of two parcels with a total of 8.2 acres. Water and sewer service for the project is proposed to be provided by the El Dorado Irrigation District (EID). The site is not currently within the EID service area, and will require annexation, subject to approval from the El Dorado Local Agency Formation Commission (LAFCO), prior to receiving those services. The project proposes to take direct private road access from Koki Lane east of the project site, with an Emergency Vehicle Access (EVA) only driveway along State Route (SR) 49 north of the project site.

Surrounding Land Uses and Setting:

	Zoning	**General Plan**	**Land Use/Improvements**
Site	Multi-unit Residential (RM)/ Commercial Main Street (CM) Design Review Community (-DC)	Multifamily Residential (MFR)/ Commercial (C)	Undeveloped
North	Commercial Main Street (CM)/ Multi-unit Residential (RM)	Multifamily Residential (MFR)/ Commercial (C)	Improved/ single-family residential
South	Single-unit Residential (R1)	High-Density Residential (HDR)	Improved/ single-family residential
East	Commercial Main Street(CM)	Commercial (C)	Undeveloped
West	Multi-unit Residential (RM)	Multifamily Residential (MFR)	Improved/ single-family residential

Environmental Setting: The project site is located in the community region of El Dorado. The site characterized by oak woodland with a small patch of annual grassland, and varying elevation ranges from 1,660 to 1,710 feet above sea level. Both undeveloped commercial and developed single-family structures surround the site. The vegetation of the site consists of blue oak woodland and foothill pines. The understory shrub layer is patchy, and is dominated by poison oak. Other shrub layers at the project site include buckbrush and chamise. Native and nonnative grasses, such as blue wild rye, bromes, fescues, and both native and nonnative forbs, dominate the herb layer of the project site. No water bodies or streams exist on the property.

The property is located on the south side of Pleasant Valley Road, approximately 600 feet west of the intersection with Koki Lane, in the El Dorado area. The surrounding land uses are mostly single-family residential and undeveloped commercial property.

Other public agencies whose approval is required (e.g., permits, financing approval, or participation agreement)

1. Diamond Springs El Dorado Fire Protection District: Review and approval of building permit.
2. Transportation Division: Review and enforcement of Conditions of Approval.
3. El Dorado County Surveyor: Review and enforcement of Conditions of Approval.
4. El Dorado County Air Quality Management District: Review and enforcement of Conditions of Approval.
5. El Dorado County Building Services new construction review.
6. Local Agency Formation Commission (LAFCO) Annexation into El Dorado Irrigation District (EID)

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

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

	Aesthetics		Agriculture and Forestry Resources		Air Quality
	Biological Resources		Cultural Resources		Geology / Soils
	Greenhouse Gas Emissions		Hazards & Hazardous Materials		Hydrology / Water Quality
	Land Use / Planning		Mineral Resources	X	Noise
	Population / Housing		Public Services		Recreation
X	Transportation/Traffic		Tribal Cultural Resources		Utilities / Service Systems

DETERMINATION

On the basis of this initial evaluation:

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

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

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

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

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects: a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION, pursuant to applicable standards; and b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or Mitigation Measures that are imposed upon the proposed project, nothing further is required.

Signature:		Date:	4/15/19
Printed Name:	Efren Sanchez, Assistant Planner	For:	El Dorado County
Signature:		Date:	4/15/19
Printed Name:	Rommel Pabalinas, Principal Planner	For:	El Dorado County

PROJECT DESCRIPTION

Introduction

This Initial Study has been prepared in accordance with the California Environmental Quality Act (CEQA) to evaluate the potential environmental impacts resulting from the proposed project. The project would allow the construction and operation of the El Dorado Senior Resort.

Project Description

The project is a conditional use permit request for the construction and operation of El Dorado Senior Resort, a senior living development consisting of a 74-unit assisted living/memory care facility; a 64-unit independent apartment complex with club house; 9 single family homes; one 5,000 square feet (SF) commercial building; one 2,500 SF commercial building; approximately 30% open and recreational space; 228 parking spaces of which 128 will be underground; and both wall and monument signage. The existing property consists of two parcels with a total of 8.2 acres. This project will also require annexation into the El Dorado Irrigation District (EID), subject to approval from El Dorado LAFCO. Upon annexation, EID will serve the project with potable water and sewer. The project proposes to take direct access primarily from Koki Lane with an emergency vehicular access off Pleasant Valley Road.

The assisted living/memory care facility will operate 24-hours a day seven days a week with an estimated staff of 34 employees. The staff composition will include 3 administration staff, 14 nursing staff, 3 janitorial staff, 2 maintenance staff, and 12 culinary staff for a combined approximate of 34 employees. The senior living development will be age-restricted as defined by California Civil Code section 51.3 for residents of 55 years or older, and include a 10% affordable housing component.

The proposed project buildings will be of shingle siding depicting a craftsman architectural style exterior with roofing and siding colors to blend with the earth tone color. The assisted living/memory care facility, a three-story building, will be the tallest building on the project site with a height of 37.5-foot. The rest of the buildings on the site will be a lesser height as two-story buildings. The project has been designed for consistency with the applicable development standards and zoning district standards. The buildings will conform to the prescribed setback and landscaping requirements. Based on the architectural site plan (Attachment 7) the Commercial Building #2 will be required to shift north in order to accommodate the 10-foot landscape buffer between commercial and residential zoned parcels. The anticipated commercial uses for commercial buildings #1 and #2 are restaurant and professional office building that will be open to the public. Attachment 7 illustrates the layout of the facility in relationship with the apartment complex, residences, commercial buildings, and outdoor activity areas located in the north portions of the site.

The landscaping plan illustrates what would be installed along the perimeter of the facility, throughout the senior living development, and undeveloped portions of the site providing additional vegetation screening to the facility. The landscaping would include a variety of ornamental plants and replacement of oak trees. The project site is proposed to include seven-foot non-combustible perimeter fencing. Project photometric plan illustrates the proposed lighting to be installed in the parking lot area, along the walkways, and driveway aisles.

Project Characteristics

1. Transportation/Circulation/Parking

Access to the project site would be provided via Koki Lane, which is a County-maintained road. The project will include one 36-foot aggregate base/asphalt concrete, on-site full access main driveway that is substantially consistent with 101B of the County of El Dorado Design and Improvement Standards Manual (DISM) with 4-foot sidewalks on both sides of the full access main driveway. Pedestrian paths will be provided to accommodate access between the various project facilities. In addition to a 20-foot wide emergency vehicle access (EVA's) connecting to Pleasant Valley Road (SR-49) for emergency purposes only. Vehicle parking will be available on site. Approximately 228 parking spaces will be provided, with 128 spaces located at the facility's underground parking garage. The required parking for the project site is calculated based on the expected individual combined uses for the project; therefore, the required parking for the project is 206 parking spaces as indicated by zoning ordinance section *130.35 Parking and Loading.* For instance, the assisted living facility or long term care facility requires 18.5 parking spaces, the apartment requires 131.5 parking spaces, the commercial buildings requires 37.5 parking spaces, and the nine single-family units require 18 parking spaces. Overall, the required parking for the project site equals 206 parking spaces.

2. Utilities and Infrastructure

The El Dorado Irrigation District (EID) maintains a 12-inch water line in Pleasant Valley Road and a 6-inch water line is located in Koki Lane. Based on the Facility Improvement Letter (FIL) issued by EID, in order to receive service and provide the required fire flow this project has two options of connecting to either the 12-inch water line or the 6-inch water line. Prior to approval of building permit plans, the water district will need to review these options with the applicant's civil engineer to determine which option will be required. There is a 24-inch sewer line abutting the northern property line in Pleasant Valley Road. This sewer line has adequate capacity at this time, and an extension of facilities of adequate size must be constructed in order to receive service from it. The project would be required to provide a safe and reliable water source at the time of building permit application, for all future development. Acquisition of these district services shall be subject to formal approval of annexation by LAFCO.

A preliminary grading and drainage report were submitted, documenting the project's impacts on flooding potential and water quality. The County Department of Transportation reviewed and provided comments to the preliminary grading and drainage report. The project will facilitate the reduction of flows on Pleasant Valley Road with the construction of detention and/or retention measures to reduce post development peak flows and volumes, below existing levels. A final complete drainage plan and detailed report will be submitted with the project's improvements during building permits to confirm the recommended plan for grading and drainage. Dry utilities such as power and phone would be extended from existing development and neighboring properties.

3. Construction Considerations

The approval of the conditional use permit application would result in future construction activities that would be completed in conformance with the County of El Dorado Grading and Erosion Control, and Air Quality Management District, and subject to building permits. The construction of the senior development is anticipated to occur simultaneously and will not require the construction to be phased out in separate construction phases. Removal of the oak trees will be done during the grading stage of the building permit phase.

Project Schedule and Approvals

This Initial Study is being circulated for public and agency review for a 30-day period. Written comments on the Initial Study should be submitted to the project planner indicated in the Summary section, above. Following the close of the written comment period, the Initial Study will be considered by the Lead Agency in a public meeting and will be certified if it is determined to be in compliance with CEQA. The Lead Agency will also determine whether to approve the project.

EVALUATION OF ENVIRONMENTAL IMPACTS

1. A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2. All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3. If the lead agency has determined that a particular physical impact may occur, the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is a fair argument that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

4. "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of Mitigation Measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the Mitigation Measures, and briefly explain how they reduce the effect to a less than significant level.

5. Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration (Section 15063(c)(3)(D)). In this case, a brief discussion should identify the following:

   a. Earlier Analysis Used. Identify and state where they are available for review.

   b. Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.

   c. Mitigation Measures. For effects that are "Less Than Significant With Mitigation Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6. Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

7. Supporting Information Sources: A source list should be attached, and other sources used, or individuals contacted should be cited in the discussion.

8. This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.

9. The explanation of each issue should identify:

   a. the significance criteria or threshold, if any, used to evaluate each question; and
   b. the mitigation measure identified, if any, to reduce the impact to less than significant.

ENVIRONMENTAL IMPACTS

I. AESTHETICS. *Would the project:*	Potentially Significant Impact	Less than Significant with Mitigation	Less Than Significant Impact	No Impact
a. Have a substantial adverse effect on a scenic vista?			**X**	
b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?			**X**	
c. Substantially degrade the existing visual character quality of the site and its surroundings?			**X**	
d. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?			**X**	

Regulatory Setting:

Federal Laws, Regulations, and Policies

No federal regulations are applicable to aesthetics in relation to the proposed project.

State Laws, Regulations, and Policies

In 1963, the California State Legislature established the California Scenic Highway Program, a provision of the Streets and Highways Code, to preserve and enhance the natural beauty of California (Caltrans, 2015). The state highway system includes designated scenic highways and those that are eligible for designation as scenic highways.

There are no officially designated state scenic corridors in the vicinity of the project site.

Local Laws, Regulations, and Policies

The County has several standards and ordinances that address issues relating to visual resources. Many of these can be found in the County Zoning Ordinance (Title 130 of the County Code). The Zoning Ordinance consists of descriptions of the zoning districts, including identification of uses allowed by right or requiring a conditional-use permit and specific development standards that apply in particular districts based on parcel size and land use density. These development standards often involve limits on the allowable size of structures, required setbacks, and design guidelines. Included are requirements for setbacks and allowable exceptions, the location of public utility distribution and transmission lines, architectural supervision of structures facing a state highway, height limitations on structures and fences, outdoor lighting, and wireless communication facilities.

Visual resources are classified as 1) scenic resources or 2) scenic views. Scenic resources include specific features of a viewing area (or viewshed) such as trees, rock outcroppings, and historic buildings. They are specific features that act as the focal point of a viewshed and are usually foreground elements. Scenic views are elements of the broader viewshed such as mountain ranges, valleys, and ridgelines. They are usually middle ground or background elements of a viewshed that can be seen from a range of viewpoints, often along a roadway or other corridor.

A list of the county's scenic views and resources is presented in Table 5.3-1 of the El Dorado County General Plan EIR (p. 5.3-3). This list includes areas along highways where viewers can see large water bodies (e.g., Lake Tahoe and Folsom Reservoir), river canyons, rolling hills, forests, or historic structures or districts that are reminiscent of El Dorado County's heritage.

Several highways in El Dorado County have been designated by the California Department of Transportation (Caltrans) as scenic highways or are eligible for such designation. These include U.S. 50 from the eastern limits of the Government Center interchange (Placerville Drive/Forni Road) in Placerville to South Lake Tahoe, all of SR 89 within the county, and those portions of SR 88 along the southern border of the county.

Rivers in El Dorado County include the American, Cosumnes, Rubicon, and Upper Truckee rivers. A large portion of El Dorado County is under the jurisdiction of the USFS, which under the Wild and Scenic Rivers Act may designate rivers or river sections to be Wild and Scenic Rivers. To date, no river sections in El Dorado County have been nominated for or granted Wild and Scenic River status.

Discussion: A substantial adverse effect to Visual Resources would result in the introduction of physical features that are not characteristic of the surrounding development, substantially change the natural landscape, or obstruct an identified public scenic vista.

a. **Scenic Vista or Resource:** The project site is located in a developed area of El Dorado surrounded by single-family residences and undeveloped commercial parcels. No scenic vistas, as designated by the county General Plan, are located in the vicinity of the site (El Dorado County, 2003, p. 5.3-3 through 5.3-5). The project site is not adjacent to or visible from a State Scenic Highway. The site is surrounded by existing residential development to the north, west, south, and undeveloped commercial zoned parcel to the east. The proposed development would be in the line-of-site from existing roads and neighboring properties. The buildings would be visible along Koki Lane and partly visible along Pleasant Valley Road. All new structures would require permits for construction and would comply with the applicable standards of general plan, zoning, and building code. Landscaping, which includes a variety of types and sizes of plants would be installed along the project perimeter to provide screening that would minimize potential visual effects. Impacts would be less than significant.

b. **Scenic Resources:** The project is not visible from an officially designated State Scenic Highway or county-designated scenic highway, or any roadway that is part of a corridor protection program (Caltrans, 2013). There are no views of the site from public parks or scenic vistas, it is consistent with existing views, and neighboring development. There are no trees or historic buildings that have been identified by the County as contributing to exceptional aesthetic value at the project site. Impacts would be less than significant.

c. **Visual Character:** The project would change the existing visual character from vacant land to developed residential and commercial land with associated buildings, parking, landscaping, signage, and lighting. This change would result in a less than significant change in visual character as seen from residential property north, west, and south of the site, which would no longer have unimpeded views across the vacant site. Nevertheless, the El Dorado County General Plan and Zoning Ordinance has designated this land as commercial and multi-family residential. Consistent with its designation, a senior living development of approximately +/-235,150 square feet (SF) on an 8.2-acre property is proposed for the project site. Design elements have been incorporated into the project to soften views of the project from surrounding residential properties, and to ensure the project is consistent with surrounding development. The Diamond Springs-El Dorado Community Advisory Committee (CAC) also reviewed the proposed project at their November 15, 2018 scheduled meeting. The CAC expressed their support of the proposed project and had no comments about the esthetic or visual design of the project, and felt that this project would have less of a traffic impact than most other uses of potential consideration for this property. The proposed craftsman architecture is consistent with El Dorado County Historic Design Guidelines of two or three story commercial buildings. The CAC also made a comment about the proposed commercial building near the entrance of the development in making sure there is enough sight distance to the west and that the building itself does not block vehicular sight distance. The proposed project would not affect the visual character of the surrounding area, because the site is surrounded by other single-family homes. Impacts would be less than significant.

d. **Light and Glare:** The lighting associated with the senior living development on this site would create new sources of light and glare that would have potential impact on residential development to the north, west, and south. Based on the submitted lighting and photometric plan, the project proposes exterior lighting that does not exceed the maximum lumen output allowed of 484,800 lumens versus the proposed total lumen output of 196,296. As it relates to changing the character of this parcel from vacant land that generates no light to a lighted residential/commercial parcel, which is similar to existing commercial development in the area. Future outdoor lighting for new development is required conformance to Section 130.34 of the El Dorado County Zoning Ordinance and be fully shielded pursuant to the Illumination Engineering Society of Northern America's (IESNA) full cut-off designation. This ordinance requires that no light spill over onto adjacent properties as demonstrated by the preliminary photometric study that will be reviewed for compliance a second time during the building permit process. The impacts would be less than significant.

FINDING: The proposed project has the potential to result in the construction of approximately +/-235,150 square feet of commercial/residential development consisting of buildings, landscaping, lighting, and parking. This development is entirely consistent with the character of surrounding commercial development. Although, the proposed project would result in a change in the current character of the property, the property is designated and zoned for the proposed use and has incorporated design features to ensure compatibility with surrounding commercial development and soften impacts to surrounding residential development. For the "Aesthetics" category, the thresholds of significance have not been exceeded. As conditioned and with adherence to El Dorado County Code of Ordinances (County Code), applicable General Plan Policies, and the Community Design Standards, environmental impacts to aesthetics resulting from the project is anticipated to be less than significant.

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

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

Regulatory Setting:

Federal Laws, Regulations, and Policies

No federal regulations are applicable to agricultural and forestry resources in relation to the proposed project.

State Laws, Regulations, and Policies

Farmland Mapping and Monitoring Program

The Farmland Mapping and Monitoring Program (FMMP), administered by the California Department of Conservation (CDC), produces maps and statistical data for use in analyzing impacts on California's agricultural resources (CDC 2008). FMMP rates and classifies agricultural land according to soil quality, irrigation status, and other criteria. Important Farmland categories are as follows (CDC 2013a):

> ***Prime Farmland:*** Farmland with the best combination of physical and chemical features able to sustain long-term agricultural production. These lands have the soil quality, growing season, and moisture supply needed to produce sustained high yields. Prime Farmland must have been used for irrigated agricultural production at some time during the 4 years before the FMMP's mapping date.
>
> ***Farmland of Statewide Importance:*** Farmland similar to Prime Farmland, but with minor shortcomings, such as greater slopes or less ability to store soil moisture. Farmland of Statewide Importance must have been used for irrigated agricultural production at some time during the 4 years before the FMMP's mapping date.
>
> ***Unique Farmland***: Farmland of lesser quality soils used for the production of the state's leading agricultural crops. These lands are usually irrigated but might include non-irrigated orchards or vineyards, as found in some climatic zones. Unique Farmland must have been cropped at some time during the 4 years before the FMMP's mapping date.
>
> ***Farmland of Local Importance:*** Land of importance to the local agricultural economy as determined by each county's board of supervisors and a local advisory committee.

California Land Conservation Act of 1965 (Williamson Act)

The California Land Conservation Act of 1965 (commonly referred to as the Williamson Act) allows local governments to enter into contracts with private landowners for the purpose of preventing conversion of agricultural land to non-agricultural uses (CDC 2013b). In exchange for restricting their property to agricultural or related open space use, landowners who enroll in Williamson Act contracts receive property tax assessments that are substantially lower than the market rate.

Z'berg-Nejedly Forest Practice Act

Logging on private and corporate land in California is regulated by the 1973 Z'berg-Nejedly Forest Practice Act. This Act established the Forest Practice Rules (FPRs) and a politically-appointed Board of Forestry to oversee their implementation. The California Department of Forestry (CALFIRE) works under the direction of the Board of Forestry and is the lead government agency responsible for approving logging plans and for enforcing the FPRs.

Discussion: A substantial adverse effect to Agricultural Resources would occur if:

- There is a conversion of choice agricultural land to nonagricultural use, or impairment of the agricultural productivity of agricultural land;
- The amount of agricultural land in the County is substantially reduced; or
- Agricultural uses are subjected to impacts from adjacent incompatible land uses.

a. **Farmland Mapping and Monitoring Program:** The site is not zoned for agricultural use or located within an Agricultural District. The project also does not include a change to the current use from agriculture or convert farmland to another land use. There would be no impact.

b. **Williamson Act Contract:** The property is not located within a Williamson Act Contract, nor is it adjacent to lands under a contract. There would be no impact.

c-d. **Loss of Forest land or Conversion of Forest land:** The site is not designated as Timberland Preserve Zone (TPZ) or other forestland according to the General Plan and Zoning Ordinance. The project would remove 95.8% of the oak woodlands at the project site, which is not a timberland preserve zone or forestland. The oak woodland removal would be subject to Title 130.39 Oak Resources Conservation Ordinance based on the Oak Resource Management Plan, which is further discussed below under Section IV Biological Resources. Therefore, there would be no impact.

e. **Conversion of Prime Farmland or Forest Land:** The project is not within an agricultural district or located on forest land and would not convert farmland or forest land to non-agricultural use. There would be no impact.

FINDING: For this Agriculture category, there would be no impact.

III. AIR QUALITY. *Would the project:*	Potentially Significant Impact	Less than Significant with Mitigation	Less Than Significant Impact	No Impact
a. Conflict with or obstruct implementation of the applicable air quality plan?			**X**	
b. Violate any air quality standard or contribute substantially to an existing or projected air quality violation?			**X**	
c. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?			**X**	
d. Expose sensitive receptors to substantial pollutant concentrations?			**X**	
e. Create objectionable odors affecting a substantial number of people?			**X**	

Regulatory Setting:

Federal Laws, Regulations, and Policies

The Clean Air Act is implemented by the U.S. Environmental Protection Agency (USEPA) and sets ambient air limits, the National Ambient Air Quality Standards (NAAQS), for six criteria pollutants: particulate matter of aerodynamic radius of 10 micrometers or less (PM10), particulate matter of aerodynamic radius of 2.5 micrometers or less (PM2.5), carbon monoxide (CO), nitrogen dioxide (NO2), ground-level ozone, and lead. Of these criteria pollutants, particulate matter and ground-level ozone pose the greatest threats to human health.

State Laws, Regulations, and Policies

The California Air Resources Board (CARB) sets standards for criteria pollutants in California that are more stringent than the NAAQS and include the following additional contaminants: visibility-reducing particles, hydrogen sulfide, sulfates, and vinyl chloride. The proposed project is located within the Mountain Counties Air Basin, which is comprised of seven air districts: the Northern Sierra Air Quality Management District (AQMD), Placer County Air Pollution Control District (APCD), Amador County APCD, Calaveras County APCD, the Tuolumne County APCD, the Mariposa County APCD, and a portion of the El Dorado County AQMD, which consists of the western portion of El Dorado County. The El Dorado County Air Pollution Control District manages air quality for attainment and permitting purposes within the west slope portion of El Dorado County.

USEPA and CARB regulate various stationary sources, area sources, and mobile sources. USEPA has regulations involving performance standards for specific sources that may release toxic air contaminants (TACs), known as hazardous air pollutants (HAPs) at the federal level. In addition, USEPA has regulations involving emission criteria for off-road sources such as emergency generators, construction equipment, and vehicles. CARB is responsible for setting emission standards for vehicles sold in California and for other emission sources, such as consumer products and certain off-road equipment. CARB also establishes passenger vehicle fuel specifications.

USEPA and CARB designate regions as “attainment” (within standards) or “nonattainment” (exceeds standards) based on their respective ambient air quality standards. The County is in nonattainment of both federal and state ozone standards and for the state PM10 standard, and is in attainment or unclassified status for other pollutants (California Air Resources Board 2017).

Local Laws, Regulations, and Policies

The El Dorado County Air Quality Management District (EDCAQMD) is responsible for developing and administering programs to reduce air pollution levels below the health-based ambient air quality standards established by the state and federal governments. EDCAQMD is responsible for enforcing district rules, regulating stationary source emissions, approving permits, maintaining emissions inventories, issuing burn permits, administering grant programs, and reviewing air quality-related sections of environmental documents required to comply with CEQA. EDCAQMD regulates air quality through the federal and state Clean Air Acts, district rules, and its permit authority.

EDCAQMD has developed a Guide to Air Quality Assessment (2002) to evaluate project specific impacts and help determine if air quality mitigation measures are needed, or if potentially significant impacts could result. The Guide provides quantitative and qualitative significance criteria for both construction and operational emissions from a project.

A project would have a significant impact on air quality if quantified emissions exceed the following:

- Emissions of ROG and NO_x will result in construction or operation emissions greater than 82lbs/day
- Emissions of PM_{10}, CO, SO_2 and NO_x, as a result of construction or operation emissions, will result in ambient pollutant concentrations in excess of the applicable National or State Ambient Air Quality Standard (AAQS). Special standards for ozone, CO, and visibility apply in the Lake Tahoe Air Basin portion of the County; or
- Emissions of toxic air contaminants cause cancer risk greater than 1 in 1 million (10 in 1 million if best available control technology for toxics is used) or a non-cancer Hazard Index greater than 1. In addition, the project must demonstrate compliance with all applicable District, State and U.S. EPA regulations governing toxic and hazardous emissions.

A project would have a significant impact on air quality if a qualitative analysis indicates:

- The project triggers any of the air quality significance criteria in Appendix G of the CEQA Guidelines.
- The project results in excessive odors, as defined under the Health & Safety Code definition of an air quality nuisance.
- The project results in land use conflicts with sensitive receptors, such as schools, elderly housing, hospitals or clinics, etc.
- The project, as proposed, is not in compliance with all applicable District rules and regulations.
- The project does not comply with U.S. EPA general and transportation “conformity” regulations.

A project would have a cumulatively significant impact if:

- The project requires a change in the land use designation (e.g., general plan amendment or rezone) that increases ROG and NOx emissions compared to the prior approved use, and the increase in emissions exceeds the "project alone" significance levels shown above for ROG or NOx.
- Project CO emissions, if combined with CO emissions from other nearby projects, result in a "hotspot" that violates a state or national AAQS.
- The project is primarily an industrial project and a modeling analysis indicates that the project's impacts would exceed Class III Prevention of Significant Deterioration (PSD) increments (Class II in Lake Tahoe) for PM10, SO2, or NO2; or, the project is primarily a development project, and the emissions of ROG, NOx, or CO exceed the "project alone" significance criteria for those three pollutants noted above.
- The project causes the risk analysis criteria above for "project alone" Toxic Air Contaminants (TACs) to be exceeded when project emissions of TACs are considered in conjunction with TACs from other nearby projects.

For Fugitive dust (PM10), if dust suppression measures will prevent visible emissions beyond the boundaries of the project, further calculations to determine PM emissions are not necessary. All proposed development must comply with District Rule 223-1 Fugitive Dust.

Naturally occurring asbestos (NOA) is also a concern in El Dorado County because it is known to be present in certain soils and can pose a health risk if released into the air. The AQMD has adopted an El Dorado County Naturally Occurring Asbestos Review Area Map that identifies those areas more likely to contain NOA (El Dorado County 2005). All proposed development in a NOA area must comply with District Rule 223-2 Fugitive Dust – Asbestos Hazard Mitigation.

Discussion: The El Dorado County Air Pollution Control District (APCD) has developed a Guide to Air Quality Assessment to evaluate project specific impacts and help determine if air quality mitigation measures are needed, or if potentially significant impacts could result. An air quality analysis has been prepared by Sycamore Environmental Consultants evaluating the potential impacts to air quality by the project. The study includes an evaluation of potential Greenhouse Gas impacts from the anticipated emissions generated with the construction (grading, building, and paving) of the development and the operation of the proposed uses which is further discussed under *Section VII Greenhouse Gas Emissions.* The El Dorado County Air Quality Management District (AQMD) has reviewed and determined the sufficiency of the study. Details of the study are further summarized below.

a. **Air Quality Plan:** El Dorado County has adopted the *Rules and Regulations of the El Dorado County Air Pollution Control District (2002)* establishing rules and standards for the reduction of stationary source air pollutants (ROG/VOC, NOx, and O3). Any activities associated with the grading and construction of this project would pose a less than significant impact on air quality because the El Dorado County Air Quality Management District (AQMD) would require that the project implement a Fugitive Dust Mitigation (FDM) plan during grading and construction activities in combination with the other applicable California Air Resource Board (CARB) rules enforced by AQMD. Such a plan would address grading measures and operation of equipment to minimize and reduce the level of defined particulate matter exposure and/or emissions, anticipated to be below a level of significance.

b-c. **Air Quality Standards and Cumulative Impacts:** Minor grading improvements and driveway improvements are proposed as part of the project. Commercial/ Residential development is anticipated consequent to approval. Although this would contribute air pollutants due to construction and possible additional vehicle trips to and from the site, these impacts would be minimal. Existing regulations implemented at issuance of building and grading permits would ensure that any construction related PM10 dust emissions would be reduced to acceptable levels. The El Dorado County AQMD reviewed the application materials for this project and determined that by implementing typical conditions including Rule 215 (Architectural Coating) and 501 and 523 (New Paint Source), which are included in the list of recommended conditions, the project would have a less than significant impact. The conditions would be implemented, reviewed, and approved by the AQMD prior to and concurrently with any grading, improvement, or building permit approvals. With full review for consistency with General Plan Policies, impacts would be anticipated to be less than significant.

d. **Sensitive Receptors:** The CEQA Guidelines (14 CCR 15000) identify sensitive receptors as facilities that house or attract children, the elderly, people with illnesses, or others that are especially sensitive to the effects of air pollutants. Hospitals, schools, and convalescent hospitals are examples of sensitive receptors. Union Mine High School is located approximately 0.3 miles south of the project site. No sources of substantial pollutant concentrations will be emitted by the commercial/residential development, during construction or following construction. Impacts would be less than significant.

e. **Objectionable Odors:** Table 3-1 of the Guide to Air Quality Assessment (AQMD, 2002) does not list the proposed use of the parcels as a use known to create objectionable odors. The requested senior living development would not generate or produce substantial objectionable odors as it would create a 74-unit assisted living/memory care facility, 64-unit apartment complex, club house, 9 single-family homes, 2 commercial buildings, and 2 underground parking garages. The proposed project uses are not listed as odor generating facilities. The proposed development would not result in significant impacts resulting from odors. Impacts would be less than significant.

FINDING: The proposed project would not affect the implementation of regional air quality regulations or management plans. The proposed project would not be anticipated to cause substantial adverse effects to air quality, nor exceed established significance thresholds for air quality impacts with standard conditions of approval. Project impacts are anticipated to be less than significant.

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

Regulatory Setting:

Federal Laws, Regulations, and Policies

Endangered Species Act

The Endangered Species Act (ESA) (16 U.S. Code [USC] Section 1531 *et seq*.; 50 Code of Federal Regulations [CFR] Parts 17 and 222) provides for conservation of species that are endangered or threatened throughout all or a substantial portion of their range, as well as protection of the habitats on which they depend. The U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) share responsibility for implementing the ESA. In general, USFWS manages terrestrial and freshwater species, whereas NMFS manages marine and anadromous species.

Section 9 of the ESA and its implementing regulations prohibit the "take" of any fish or wildlife species listed under the ESA as endangered or threatened, unless otherwise authorized by federal regulations. The ESA defines the term "take" to mean "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct" (16 USC Section 1532). Section 7 of the ESA (16 USC Section 1531 *et seq*.) outlines the procedures for federal interagency cooperation to conserve federally listed species and designated critical habitats. Section 10(a)(1)(B) of the ESA provides a process by which nonfederal entities may obtain an incidental take permit from USFWS or NMFS for otherwise lawful activities that incidentally may result in "take" of endangered or threatened species, subject to specific conditions. A habitat conservation plan (HCP) must accompany an application for an incidental take permit.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) (16 USC, Chapter 7, Subchapter II) protects migratory birds. Most actions that result in take, or the permanent or temporary possession of, a migratory bird constitute violations of the MBTA. The MBTA also prohibits destruction of occupied nests. USFWS is responsible for overseeing compliance with the MBTA.

Bald and Golden Eagle Protection Act

The federal Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c), first enacted in 1940, prohibits "taking" bald eagles, including their parts, nests, or eggs. The Act provides criminal penalties for persons who "take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle ... [or any golden eagle], alive or dead, or any part, nest, or egg thereof." The Act defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb." The definition for "Disturb" includes injury to an eagle, a decrease in its productivity, or nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior. In addition to immediate impacts, this definition also covers impacts that result from human-induced alterations initiated around a previously used nest site during a time when eagles are not present.

Clean Water Act

Clean Water Act (CWA) section 404 regulates the discharge of dredged and fill materials into waters of the U.S., which include all navigable waters, their tributaries, and some isolated waters, as well as some wetlands adjacent to the aforementioned waters (33 CFR Section 328.3). Areas typically not considered to be jurisdictional waters include non-tidal drainage and irrigation ditches excavated on dry land, artificially irrigated areas, artificial lakes or ponds used for irrigation or stock watering, small artificial waterbodies such as swimming pools, vernal pools, and water-filled depressions (33 CFR Part 328). Areas meeting the regulatory definition of waters of the U.S. are subject to the jurisdiction of U.S. Army Corps of Engineers (USACE) under the provisions of CWA Section 404. Construction activities involving placement of fill into jurisdictional waters of the U.S. are regulated by USACE through permit requirements. No USACE permit is effective in the absence of state water quality certification pursuant to Section 401 of CWA.

Section 401 of the CWA requires an evaluation of water quality when a proposed activity requiring a federal license or permit could result in a discharge to waters of the U.S. In California, the State Water Resources Control Board (SWRCB) and its nine Regional Water Quality Control Boards (RWQCBs) issue water quality certifications. Each

RWQCB is responsible for implementing Section 401 in compliance with the CWA and its water quality control plan (also known as a Basin Plan). Applicants for a federal license or permit to conduct activities that may result in the discharge to waters of the U.S. (including wetlands or vernal pools) must also obtain a Section 401 water quality certification to ensure that any such discharge will comply with the applicable provisions of the CWA.

State Laws, Regulations, and Policies

California Fish and Game Code

The California Fish and Game Code includes various statutes that protect biological resources, including the Native Plant Protection Act of 1977 (NPPA) and the California Endangered Species Act (CESA). The NPPA (California Fish and Game Code Section 1900-1913) authorizes the Fish and Game Commission to designate plants as endangered or rare and prohibits take of any such plants, except as authorized in limited circumstances.

CESA (California Fish and Game Code Section 2050–2098) prohibits state agencies from approving a project that would jeopardize the continued existence of a species listed under CESA as endangered or threatened. Section 2080 of the California Fish and Game Code prohibits the take of any species that is state listed as endangered or threatened, or designated as a candidate for such listing. California Department of Fish and Wildlife (CDFW) may issue an incidental take permit authorizing the take of listed and candidate species if that take is incidental to an otherwise lawful activity, subject to specified conditions.

California Fish and Game Code Section 3503, 3513, and 3800 protect native and migratory birds, including their active or inactive nests and eggs, from all forms of take. In addition, Section 3511, 4700, 5050, and 5515 identify species that are fully protected from all forms of take. Section 3511 lists fully protected birds, Section 5515 lists fully protected fish, Section 4700 lists fully protected mammals, and Section 5050 lists fully protected amphibians.

Streambed Alteration Agreement

Sections 1601 to 1606 of the California Fish and Game Code require that a Streambed Alteration Application be submitted to CDFW for any activity that may substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake. As a general rule, this requirement applies to any work undertaken within the 100-year floodplain of a stream or river containing fish or wildlife resources.

California Native Plant Protection Act

The California Native Plant Protection Act (California Fish and Game Code Section 1900–1913) prohibits the taking, possessing, or sale of any plants with a state designation of rare, threatened, or endangered (as defined by CDFW). The California Native Plant Society (CNPS) maintains a list of plant species native to California that has low population numbers, limited distribution, or are otherwise threatened with extinction. This information is published in the Inventory of Rare and Endangered Plants of California (CNPS 2001). Potential impacts to populations of CNPS-listed plants receive consideration under CEQA review.

Forest Practice Act

Logging on private and corporate land in California is regulated by the Z'Berg-Nejedly Forest Practices Act (FPA), which took effect January 1, 1974. The act established the Forest Practice Rules (FPRs) and a politically-appointed Board of Forestry to oversee their implementation. The California Department of Forestry (CALFIRE) works under the direction of the Board of Forestry and is the lead government agency responsible for approving logging plans and for enforcing the FPRs. A Timber Harvest Plan (THP) must be prepared by a Registered Professional Forester (RPF) for timber harvest on virtually all non-federal land. The FPA also established the requirement that all non-federal forests cut in the State be regenerated with at least three hundred stems per acre on high site lands, and one hundred fifty trees per acre on low site lands.

Local Laws, Regulations, and Policies

The County General Plan also include policies that contain specific, enforceable requirements and/or restrictions and corresponding performance standards that address potential impacts on special-status plant species or create opportunities for habitat improvement. The El Dorado County General Plan designates the Important Biological Corridor (IBC) (Exhibits 5.12-14, 5.12-5 and 5.12-7, El Dorado County, 2003). Lands located within the overlay district are subject to the following provisions, given that they do not interfere with agricultural practices:

- Increased minimum parcel size;
- Higher canopy-retention standards and/or different mitigation standards/thresholds for oak woodlands;
- Lower thresholds for grading permits;
- Higher wetlands/riparian retention standards and/or more stringent mitigation requirements for wetland/riparian habitat loss;
- Increased riparian corridor and wetland setbacks;
- Greater protection for rare plants (e.g., no disturbance at all or disturbance only as recommended by U.S. Fish and Wildlife Service/California Department of Fish and Wildlife);
- Standards for retention of contiguous areas/large expanses of other (non-oak or non-sensitive) plant communities;
- Building permits discretionary or some other type of "site review" to ensure that canopy is retained;
- More stringent standards for lot coverage, floor area ratio (FAR), and building height; and
- No hindrances to wildlife movement (e.g., no fences that would restrict wildlife movement).

Discussion: A substantial adverse effect on Biological Resources would occur if the implementation of the project would:

- Substantially reduce or diminish habitat for native fish, wildlife or plants;
- Cause a fish or wildlife population to drop below self-sustaining levels;
- Threaten to eliminate a native plant or animal community;
- Reduce the number or restrict the range of a rare or endangered plant or animal;
- Substantially affect a rare or endangered species of animal or plant or the habitat of the species; or
- Interfere substantially with the movement of any resident or migratory fish or wildlife species.

Sycamore Environmental Consultants (Attachment 1) prepared a *Biological Resource Assessment* (dated August 2018) for the proposed development. This report evaluates the existing biological resources on site based on site reconnaissance and research protocols conducted, and provide recommended measures.

An *Oak Woodland Technical Report for El Dorado Senior Resort Project, El Dorado County, CA* report has been prepared analyzing the anticipated oak woodland impacts of the facility in accordance with the recently adopted Oak Resource Management Plan (Attachment 2). This report evaluates the proposed impact to oak trees on site and provides recommended mitigation measure for the identified potential impact from project implementation.

The results and conclusions of the analysis are summarized in the sections below.

a. **Special Status Species:** The development proposed for this senior living project includes the creation of a 74-unit assisted living/memory care facility, 64-unit apartment complex, club house, 9 single-family homes, 2 commercial buildings, and 2 underground parking garages. The project site consists of 8.2 acres, and the project site may provide potential habitat for some special-status wildlife and plant species; however, no special-status wildlife or active nests were found in the biological study area (BSA).

A Biological Resources Evaluation (BRE) (Sycamore Environmental Consultants, Inc. 2018) (Attachment 1) was prepared for the project on August 30, 2018. The findings of the survey are summarized below. Several special status species were evaluated for potential presence at the site or for habitat types, as detailed in the report. The two predominant biological communities found on the site are Blue Oak Woodland and California annual grassland. The blue oak woodland occurs across the majority of the biological study area (BSA). Blue oaks (*Quercus douglassi)* and foothill pine (*Pinus sabiniana)* are the two co-dominant in this blue oak woodland community. The canopy is mostly with a few denser patches of canopy. The understory shrub layer is patchy, and where present is dominated by poison oak (*Toxicodendron diversilobum*). Other shrub layer associates include buckbrush (*Ceanothus cuneatus* var. *cuneatus*) and chamise (*Adenostoma fasciculatum*). The herb layer is dominated by native and nonnative grasses, such as blue wild rye (*Elymus glaucus*), bromes (*Bromus* spp.), fescues (*Festuca* spp.) and native and nonnative forbs. None of the special-status plant species were found in the BSA. Non wetlands or other waters of the U.S. are present at the site.

The project site is not located within a rare plant mitigation zone. Both residential and commercial parcels are required to pay the appropriate mitigation fee as required by Section 130.71 of the Zoning Ordinance prior to building permit issuance. There would be less than significant impact to any special status or natural community as a result of the project.

b-c. **Riparian Habitat and Wetlands:** Based on the BRE, there are no waters or wetlands shown on the USGS Placerville quad map or the USFWS National Wetlands Inventory map. No waters or wetlands are visible on aerial or ground level photographs. There is no aquatic habitat on the site to support amphibians or fish. None of the reviewed sources show evidence of any waters or wetland on the Project. Therefore, no impacts are anticipated with the implementation of the proposed development.

d. **Migration Corridors:** Review of the Department of Fish and Wildlife Migratory Deer Herd Maps and General Plan DEIR exhibit 5.12-7 indicate that the outside deer herd migration corridor does not extend over the project site. Additionally, the El Dorado County General Plan does not identify the project site as an Important Biological Corridor. No Impact.

e. **Local Policies:** Local protection of biological resources includes oak woodland preservation, rare plants and special-status species, and wetland preservation with the goal to preserve and protect sensitive natural resources within the County. The Oak Resources Technical Report for this project reveals that the natural community at the site does contain 7.69 acres of existing oak canopy, and 7.37 acres or 95.8% of the canopy will be removed due to the project.

Sycamore Environmental Consultants, Inc. prepared an Oak Resources Technical Report dated August 30, 2018 (Attachment 2) that demonstrates consistency with the County Oak Ordinance. The proposed project is consistent with the Oak Resources Conservation Ordinance 5061 (Zoning Ordinance Section *130.39-Oak Resources Conservation*), the County's Oak Resources Management Plan (ORMP) adopted on October 24, 2017, which regulates removal of individual oak woodlands and oak canopy. The project design will result in removal of 7.12 acres of oak woodland and removal of six heritage trees. The total diameter at breast height (dbh) for the six heritage trees is 237 inches. This study further indicates a proposed mitigation plan to facilitate the removal of the oak trees on the project site. With implementation of the provisions of the Oak Resources Technical Report and implementation of project condition of approval requiring conformance to the ordinance, impacts to oak resources would be less than significant.

f. **Adopted Plans**: No impacts to protected species, habitat, or wetlands were identified for this project. This project would not conflict with the provisions of an adopted Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. There would be no impact.

FINDING: No jurisdictional wetland or riparian areas are present at the project site. There are no special-status plants or wildlife species detected at the project site. This project would be anticipated to have less than significant impact on Biological Resources with the prescribed mitigation measures for local protection of biological resources.

V. CULTURAL RESOURCES. *Would the project:*	Potentially Significant Impact	Less than Significant with Mitigation	Less Than Significant Impact	No Impact
a. Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?			**X**	
b. Cause a substantial adverse change in the significance of archaeological resource pursuant to Section 15064.5?			**X**	
c. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?			**X**	
d. Disturb any human remains, including those interred outside of formal cemeteries?			**X**	

Regulatory Setting:

Federal Laws, Regulations, and Policies

The National Register of Historic Places

The National Register of Historic Places (NRHP) is the nation's master inventory of known historic resources. The NRHP is administered by the National Park Service and includes listings of buildings, structures, sites, objects, and districts that possess historic, architectural, engineering, archaeological, or cultural significance at the national, state, or local level. The criteria for listing in the NRHP include resources that:

A. Are associated with events that have made a significant contribution to the broad patterns of history (events);
B. Are associated with the lives of persons significant in our past (persons);
C. Embody the distinctive characteristics of a 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 (architecture); or
D. Have yielded or may likely yield information important in prehistory or history (information potential).

State Laws, Regulations, and Policies

California Register of Historical Resources

Public Resources Code Section 5024.1 establishes the CRHR. The register lists all California properties considered to be significant historical resources. The CRHR includes all properties listed as or determined to be eligible for listing in the National Register of Historic Places (NRHP), including properties evaluated under Section 106 of the National Historic Preservation Act. The criteria for listing are similar to those of the NRHP. Criteria for listing in the CRHR include resources that:

1. Are associated with the events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
2. Are associated with the lives of persons important in our past;
3. Embody the distinctive characteristics of a type, period, region, or method of construction, or represent the work of an important creative individual, or possess high artistic values; or
4. Have yielded, or may be likely to yield, information important in prehistory or history.

The regulations set forth the criteria for eligibility as well as guidelines for assessing historical integrity and resources that have special considerations.

The California Register of Historic Places

The California Register of Historic Places (CRHP) program encourages public recognition and protection of resources of architectural, historical, archeological and cultural significance, identifies historical resources for state and local planning purposes, determines eligibility for state historic preservation grant funding and affords certain protections under the California Environmental Quality Act. The criteria for listing in the CRHP include resources that:

A. Are associated with events that have made a significant contribution to the broad patterns of local or regional history or the cultural heritage of California or the United States.
B. Are associated with the lives of persons important to local, California or national history.
C. Embody the distinctive characteristics of a type, period, region or method of construction or represents the work of a master or possesses high artistic values.
D. Have yielded, or have the potential to yield, information important to the prehistory or history of the local area, California or the nation.

The State Office of Historic Preservation sponsors the California Historical Resources Information System (CHRIS), a statewide system for managing information on the full range of historical resources identified in California. CHRIS provides an integrated database of site-specific archaeological and historical resources information. The State Office of Historic Preservation also maintains the California Register of Historical Resources (CRHR), which identifies the State's architectural, historical, archeological and cultural resources. The CRHR includes properties listed in or formally determined eligible for the National Register and lists selected California Registered Historical Landmarks.

Public Resources Code (Section 5024.1[B]) states that any agency proposing a project that could potentially impact a resource listed on the CRHR must first notify the State Historic Preservation Officer, and must work with the officer to ensure that the project incorporates "prudent and feasible measures that will eliminate or mitigate the adverse effects."

California Health and Safety Code Section 7050.5 requires that, in the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the coroner of the county in which the human remains are discovered has determined that the remains are not subject to the provisions of Section 27491 of the Government Code or any other related provisions of law concerning investigation of the circumstances, manner and cause of any death. If the coroner determines that the remains are not subject to his or her authority and if the coroner recognizes the human remains to be those of a Native American, or has reason to believe that they are those of a Native American, he or she shall contact, by telephone within 24 hours, the Native American Heritage Commission.

Section 5097.98 of the California Public Resources Code stipulates that whenever the commission receives notification of a discovery of Native American human remains from a county coroner pursuant to subdivision (c) of Section 7050.5 of the Health and Safety Code, it shall immediately notify those persons it believes to be most likely descended from the deceased Native American. The decedents may, with the permission of the owner of the land, or his or her authorized representative, inspect the site of the discovery of the Native American remains and may recommend to the owner or the person responsible for the excavation work means for treating or disposing, with appropriate dignity, the human remains and any associated grave goods. The descendants shall complete their inspection and make their recommendation within 24 hours of their notification by the Native American Heritage Commission. The recommendation may include the scientific removal and nondestructive analysis of human remains and items associated with Native American burials.

CEQA and CEQA Guidelines

Section 21083.2 of CEQA requires that the lead agency determine whether a project may have a significant effect on unique archaeological resources. A unique archaeological resource is defined in CEQA as an archaeological artifact, object, or site about which it can be clearly demonstrated that there is a high probability that it:

- Contains information needed to answer important scientific research questions, and there is demonstrable public interest in that information;

- Has a special or particular quality, such as being the oldest of its type or the best available example of its type; or
- Is directly associated with a scientifically recognized important prehistoric or historic event or person.
- Although not specifically inclusive of paleontological resources, these criteria may also help to define "a unique paleontological resource or site."

Measures to avoid, conserve, preserve, or mitigate significant effects on these resources are also provided under CEQA Section 21083.2.

Section 15064.5 of the CEQA Guidelines notes that "a project with an effect that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment." Substantial adverse changes include physical changes to the historic resource or to its immediate surroundings, such that the significance of the historic resource would be materially impaired. Lead agencies are expected to identify potentially feasible measures to mitigate significant adverse changes in the significance of a historic resource before they approve such projects. Historic resources are those that are:

- listed in, or determined to be eligible for listing in, the California Register of Historical Resources (CRHR) (Public Resources Code Section 5024.1[k]);
- included in a local register of historic resources (Public Resources Code Section 5020.1) or identified as significant in an historic resource survey meeting the requirements of Public Resources Code Section 5024.1(g); or
- determined by a lead agency to be historically significant.

CEQA Guidelines Section 15064.5 also prescribes the processes and procedures found under Health and Safety Code Section 7050.5 and Public Resources Code Section 5097.95 for addressing the existence of, or probable likelihood of, Native American human remains, as well as the unexpected discovery of any human remains within the project site. This includes consultation with the appropriate Native American tribes.

CEQA Guidelines Section 15126.4 provides further guidance about minimizing effects to historical resources through the application of mitigation measures. Mitigation measures must be legally binding and fully enforceable.

The lead agency having jurisdiction over a project is also responsible to ensure that paleontological resources are protected in compliance with CEQA and other applicable statutes. Paleontological and historical resource management is also addressed in Public Resources Code Section 5097.5, "Archaeological, Paleontological, and Historical Sites." This statute defines as a misdemeanor any unauthorized disturbance or removal of a fossil site or remains on public land and specifies that state agencies may undertake surveys, excavations, or other operations as necessary on state lands to preserve or record paleontological resources. This statute would apply to any construction or other related project impacts that would occur on state-owned or state-managed lands. The County General Plan contains policies describing specific, enforceable measures to protect cultural resources and the treatment of resources when found.

Discussion: In general, significant impacts are those that diminish the integrity, research potential, or other characteristics that make a historical or cultural resource significant or important. A substantial adverse effect on Cultural Resources would occur if the implementation of the project would:

- Disrupt, alter, or adversely affect a prehistoric or historic archaeological site or property that is historically or culturally significant to a community or ethnic or social group; or a paleontological site except as a part of a scientific study;
- Affect a landmark of cultural/historical importance;
- Conflict with established recreational, educational, religious or scientific uses of the area; or
- Conflict with adopted environmental plans and goals of the community where it is located.

a-c. **Historic or Archeological Resources.** Cultural resources analysis includes the potential for discovery and disturbance of paleontological resources. A cultural resources study was conducted by the Historic Resource Associates dated May 2007. Following a field investigation of the project area, no significant prehistoric or historic archaeological sites, features, or artifacts were found, nor were any significant historic buildings, structures, or objects discovered. According to the North Central Information Center (NCIC), there have been eight cultural resource surveys conducted within a ½ mile radius of the project area. State and Federal inventories list no historic properties within the project area. Further archival and/or field study by a cultural resource professional is not recommended. Impact would be less than significant.

d. **Human Remains.** Improvements are proposed for this project, there is some likelihood of human remains discovery during any future construction. Standard conditions of approval to address accidental discovery of human remains would apply during any grading activities. Impacts would be less than significant.

FINDING: No significant cultural resources have been identified on the project site. Standard conditions of approval would apply in the event of accidental discovery during any future construction. This project would be anticipated to have a less than significant impact within the Cultural Resources category.

VI. GEOLOGY AND SOILS. *Would the project:*	Potentially Significant Impact	Less than Significant with Mitigation	Less Than Significant Impact	No Impact
a. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.				X
ii) Strong seismic ground shaking?			X	
iii) Seismic-related ground failure, including liquefaction?				X
iv) Landslides?				X
b. Result in substantial soil erosion or the loss of topsoil?			X	
c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?			X	
d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994) creating substantial risks to life or property?			X	
e. Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?				X

<u>Regulatory Setting:</u>

<u>Federal Laws, Regulations, and Policies</u>

<u>National Earthquake Hazards Reduction Act</u>

The National Earthquake Hazards Reduction Act of 1977 (Public Law 95-124) and creation of the National Earthquake Hazards Reduction Program (NEHRP) established a long-term earthquake risk-reduction program to better understand, predict, and mitigate risks associated with seismic events. The following four federal agencies are responsible for coordinating activities under NEHRP: USGS, National Science Foundation (NSF), Federal Emergency Management Agency (FEMA), and National Institute of Standards and Technology (NIST). Since its inception, NEHRP has shifted its focus from earthquake prediction to hazard reduction. The current program objectives (NEHRP 2009) are to:

1. Develop effective measures to reduce earthquake hazards;
2. Promote the adoption of earthquake hazard reduction activities by federal, state, and local governments; national building standards and model building code organizations; engineers; architects; building owners; and others who play a role in planning and constructing buildings, bridges, structures, and critical infrastructure or "lifelines";
3. Improve the basic understanding of earthquakes and their effects on people and infrastructure through interdisciplinary research involving engineering; natural sciences; and social, economic, and decision sciences; and
4. Develop and maintain the USGS seismic monitoring system (Advanced National Seismic System); the NSF-funded project aimed at improving materials, designs, and construction techniques (George E. Brown Jr. Network for Earthquake Engineering Simulation); and the global earthquake monitoring network (Global Seismic Network).

Implementation of NEHRP objectives is accomplished primarily through original research, publications, and recommendations and guidelines for state, regional, and local agencies in the development of plans and policies to promote safety and emergency planning.

<u>State Laws, Regulations, and Policies</u>

<u>Alquist–Priolo Earthquake Fault Zoning Act</u>

The Alquist–Priolo Earthquake Fault Zoning Act (Public Resources Code Section 2621 *et seq*.) was passed to reduce the risk to life and property from surface faulting in California. The Alquist–Priolo Act prohibits construction of most types of structures intended for human occupancy on the surface traces of active faults and strictly regulates construction in the corridors along active faults (earthquake fault zones). It also defines criteria for identifying active faults, giving legal weight to terms such as "active," and establishes a process for reviewing building proposals in and adjacent to earthquake fault zones. Under the Alquist-Priolo Act, faults are zoned and construction along or across them is strictly regulated if they are "sufficiently active" and "well defined." Before a project can be permitted, cities and counties are required to have a geologic investigation conducted to demonstrate that the proposed buildings would not be constructed across active faults.

Historical seismic activity and fault and seismic hazards mapping in the project vicinity indicate that the area has relatively low potential for seismic activity (El Dorado County 2003). No active faults have been mapped in the project area, and none of the known faults have been designated as an Alquist-Priolo Earthquake Fault Zone.

<u>Seismic Hazards Mapping Act</u>

The Seismic Hazards Mapping Act of 1990 (Public Resources Code Sections 2690–2699.6) establishes statewide minimum public safety standards for mitigation of earthquake hazards. While the Alquist–Priolo Act addresses surface fault rupture, the Seismic Hazards Mapping Act addresses other earthquake-related hazards, including strong ground shaking, liquefaction, and seismically induced landslides. Its provisions are similar in concept to those of the Alquist–Priolo Act. The state is charged with identifying and mapping areas at risk of strong ground shaking, liquefaction, landslides, and other seismic hazards, and cities and counties are required to regulate development within mapped seismic hazard zones. In addition, the act addresses not only seismically induced hazards but also expansive soils, settlement, and slope stability.

Mapping and other information generated pursuant to the SHMA is to be made available to local governments for planning and development purposes. The State requires: (1) local governments to incorporate site-specific geotechnical hazard investigations and associated hazard mitigation, as part of the local construction permit approval process; and (2) the agent for a property seller or the seller if acting without an agent, must disclose to any prospective buyer if the property is located within a Seismic Hazard Zone. Under the Seismic Hazards Mapping Act, cities and counties may withhold the development permits for a site within seismic hazard zones until appropriate site-specific geologic and/or geotechnical investigations have been carried out and measures to reduce potential damage have been incorporated into the development plans.

California Building Standards Code

Title 24 CCR, also known as the California Building Standards Code (CBC), specifies standards for geologic and seismic hazards other than surface faulting. These codes are administered and updated by the California Building Standards Commission. CBC specifies criteria for open excavation, seismic design, and load-bearing capacity directly related to construction in California.

Discussion: A substantial adverse effect on Geologic Resources would occur if the implementation of the project would:

- Allow substantial development of structures or features in areas susceptible to seismically induced hazards such as groundshaking, liquefaction, seiche, and/or slope failure where the risk to people and property resulting from earthquakes could not be reduced through engineering and construction measures in accordance with regulations, codes, and professional standards;
- Allow substantial development in areas subject to landslides, slope failure, erosion, subsidence, settlement, and/or expansive soils where the risk to people and property resulting from such geologic hazards could not be reduced through engineering and construction measures in accordance with regulations, codes, and professional standards; or
- Allow substantial grading and construction activities in areas of known soil instability, steep slopes, or shallow depth to bedrock where such activities could result in accelerated erosion and sedimentation or exposure of people, property, and/or wildlife to hazardous conditions (e.g., blasting) that could not be mitigated through engineering and construction measures in accordance with regulations, codes, and professional standards.

a. **Seismic Hazards:**
i) According to the California Department of Conservation Division of Mines and Geology, there are no Alquist-Priolo fault zones within the west slope of El Dorado County (DOC, 2007). However, a fault zone has been identified in the Tahoe Basin and Echo Lakes area. The West Tahoe Fault has a mapped length of 45 km (28 miles). South of Emerald Bay the West Tahoe Fault extends onshore as two parallel strands. In the lake, the fault has clearly defined scarps that offset submarine fans, lake-bottom sediments, and the McKinney Bay slide deposits (DOC, 2016). There is clear evidence that the discussed onshore portion of the West Tahoe Fault is active with multiple events in the Holocene era and poses a surface rupture hazard. However, because of the distance between the project site and these faults, there would be no impact.

ii) The potential for seismic ground shaking in the project area would be considered remote for the reason stated in Section i) above. Any potential impacts due to seismic impacts would be addressed through compliance with the Uniform Building Code (UBC). All structures would be built to meet the construction standards of the UBC for the appropriate seismic zone. Impacts would be less than significant.

iii) El Dorado County is considered an area with low potential for seismic activity. There are no landslide, liquefaction, or fault zones within the west slope (DOC, 2007). There would be no impact.

iv) All grading activities onsite would be required to comply with the El Dorado County Grading, Erosion Control and Sediment Ordinance. There would be no impact.

b. **Soil Erosion:** For development proposals, all grading activities onsite would comply with the El Dorado County Grading, Erosion and Sediment Control Ordinance including the implementation of pre- and post-construction Best Management Practices (BMPs). Implemented BMPs are required to be consistent with the County's California Stormwater Pollution Prevention Plan (SWPPP) issued by the State Water Resources Control Board to eliminate run-off and erosion and sediment controls. Any grading activities exceeding 250 cubic yards of graded material or grading completed for the purpose of supporting a structure must meet the provisions contained in the County of El Dorado Grading, Erosion, and Sediment Control Ordinance. Any future construction would require review for compliance with the County SWPPP; therefore, impacts would be less than significant.

c. **Geologic Hazards:** Based on the Seismic Hazards Mapping Program administered by the California Geological Survey, no portion of El Dorado County is located in a Seismic Hazard Zone or those areas prone to liquefaction and earthquake-induced landslides (DOC, 2013). Therefore, El Dorado County is not considered to be at risk from liquefaction hazards. Lateral spreading is typically associated with areas experiencing liquefaction. Because liquefaction hazards are not present in El Dorado County, the county is not at risk for lateral spreading. All grading activities would comply with the El Dorado County Grading, Erosion Control and Sediment Ordinance. Impacts would be less than significant.

d. **Expansive Soils:** Expansive soils are those that greatly increase in volume when they absorb water and shrink when they dry out. When buildings are placed on expansive soils, foundations may rise each wet season and fall each dry season. This movement may result in cracking foundations, distortion of structures, and warping of doors and windows. The central portion of the county has a moderate expansiveness rating while the eastern and western portions have a low rating. Linear extensibility is used to determine the shrink-swell potential of soils. No structures for human occupancy would be constructed as part of the proposed project. Any development would be required to comply with the El Dorado County Grading, Erosion and Sediment Control Ordinance and the development plans for any homes or other structures would be required to implement the Seismic construction standards. Impacts would be less than significant.

e. **Septic Capability:** The proposed project would be connected to the wastewater system of the El Dorado Irrigation District (EID). The project does not involve the use of septic tanks or other alternative wastewater disposal systems. There will be no impacts.

FINDING: A review of the soils and geologic conditions on the project site determined that the project would not result in a substantial adverse effect. All grading activities would be required to comply with the El Dorado County Grading, Erosion Control and Sediment Ordinance. Future development would be required to comply with the Uniform Building Code, which would address potential seismic related impacts. For this Geology and Soils category, impacts would be less than significant.

VII. GREENHOUSE GAS EMISSIONS. *Would the project:*	Potentially Significant Impact	Less than Significant with Mitigation	Less Than Significant Impact	No Impact
a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?			**X**	
b. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?			**X**	

Background/Science

Cumulative greenhouse gases (GHG) emissions are believed to contribute to an increased greenhouse effect and global climate change, which may result in sea level rise, changes in precipitation, habitat, temperature, wildfires, air pollution levels, and changes in the frequency and intensity of weather-related events. While criteria pollutants and toxic air contaminants are pollutants of regional and local concern (see Section III. Air Quality above); GHG are global pollutants. The primary land-use related GHG are carbon dioxide (CO_2), methane (CH_4) and nitrous oxides (N_2O). The individual pollutant's ability to retain infrared radiation represents its "global warming potential" and is expressed in terms of CO_2 equivalents; therefore CO_2 is the benchmark having a global warming potential of 1. Methane has a global warming potential of 21 and thus has a 21 times greater global warming effect per metric ton of CH_4 than CO_2. Nitrous Oxide has a global warming potential of 310. Emissions are expressed in annual metric tons of CO_2 equivalent units of measure (i.e., $MTCO_2e$/yr). The three other main GHG are Hydroflourocarbons, Perflourocarbons, and Sulfur Hexaflouride. While these compounds have significantly higher global warming potentials (ranging in the thousands), all three typically are not a concern in land-use development projects and are usually only used in specific industrial processes.

GHG Sources

The primary man-made source of CO_2 is the burning of fossil fuels; the two largest sources being coal burning to produce electricity and petroleum burning in combustion engines. The primary sources of man-made CH_4 are natural gas systems losses (during production, processing, storage, transmission and distribution), enteric fermentation (digestion from livestock) and landfill off-gassing. The primary source of man-made N_2O is agricultural soil management (fertilizers), with fossil fuel combustion a very distant second. In El Dorado County, the primary source of GHG is fossil fuel combustion mainly in the transportation sector (estimated at 70% of countywide GHG emissions). A distant second are residential sources (approximately 20%), and commercial/industrial sources are third (approximately 7%). The remaining sources are waste/landfill (approximately 3%) and agricultural (<1%).

Regulatory Setting:

Federal Laws, Regulations, and Policies

At the federal level, USEPA has developed regulations to reduce GHG emissions from motor vehicles and has developed permitting requirements for large stationary emitters of GHGs. On April 1, 2010, USEPA and the National Highway Traffic Safety Administration (NHTSA) established a program to reduce GHG emissions and improve fuel economy standards for new model year 2012-2016 cars and light trucks. On August 9, 2011, USEPA and the NHTSA announced standards to reduce GHG emissions and improve fuel efficiency for heavy-duty trucks and buses.

Federal Laws, Regulations, and Policies

In September 2006, Governor Arnold Schwarzenegger signed Assembly Bill (AB) 32, the *California Climate Solutions Act of 2006* (Stats. 2006, ch. 488) (Health & Safety Code, Section 38500 et seq.). AB 32 requires a statewide GHG emissions reduction to 1990 levels by the year 2020. AB 32 requires the California Air Resources Board (CARB) to implement and enforce the statewide cap. When AB 32 was signed, California's annual GHG emissions were estimated at 600 million metric tons of CO_2 equivalent ($MMTCO_2e$) while 1990 levels were estimated at 427 $MMTCO_2e$. Setting 427 $MMTCO_2e$ as the emissions target for 2020, current (2006) GHG emissions levels must be reduced by 29%. CARB adopted the AB 32 Scoping Plan in December 2008 establishing various actions the state would implement to achieve this reduction (CARB, 2008). The Scoping Plan recommends a community-wide GHG reduction goal for local governments of 15%.

In June 2008, the California Governor's Office of Planning and Research's (OPR) issued a Technical Advisory (OPR, 2008) providing interim guidance regarding a proposed project's GHG emissions and contribution to global climate change. In the absence of adopted local or statewide thresholds, OPR recommends the following approach for analyzing GHG emissions: Identify and quantify the project's GHG emissions, assess the significance of the impact on climate change; and if the impact is found to be significant, identify alternatives and/or Mitigation Measures that would reduce the impact to less than significant levels (CEC, 2006).

Discussion

CEQA does not provide clear direction on addressing climate change. It requires lead agencies identify project GHG emissions impacts and their "significance," but is not clear what constitutes a "significant" impact. As stated above, GHG impacts are inherently cumulative, and since no single project could cause global climate change, the CEQA test is if impacts are "cumulatively considerable." Not all projects emitting GHG contribute significantly to climate change. CEQA authorizes reliance on previously approved plans (i.e., a Climate Action Plan (CAP), etc.) and mitigation programs adequately analyzing and mitigating GHG emissions to a less than significant level. "Tiering" from such a programmatic-level document is the preferred method to address GHG emissions. El Dorado County does not have an adopted CAP or similar program-level document; therefore, the project's GHG emissions must be addressed at the project-level.

Unlike thresholds of significance established for criteria air pollutants in EDCAQMD's *Guide to Air Quality Assessment* (February 2002) ("CEQA Guide"), the District has not adopted GHG emissions thresholds for land use development projects. In the absence of County adopted thresholds, EDCAQMD recommends using the adopted thresholds of other lead agencies which are based on consistency with the goals of AB 32. Since climate change is a global problem and the location of the individual source of GHG emissions is somewhat irrelevant, it's appropriate to use thresholds established by other jurisdictions as a basis for impact significance determinations. Projects exceeding these thresholds would have a potentially significant impact and be required to mitigate those impacts to a less than significant level. Until the County adopts a CAP consistent with CEQA Guidelines Section 15183.5, and/or establishes GHG thresholds, the County will follow an interim approach to evaluating GHG emissions utilizing significance criteria adopted by the San Luis Obispo Air Pollution Control District (SLOAPCD) to determine the significance of GHG emissions.

SLOAPCD developed a screening table using CalEEMod which allows quick assessment of projects to "screen out" those below the thresholds as their impacts would be less than significant.

These thresholds are summarized below:

Significance Determination Thresholds	
GHG Emission Source Category	**Operational Emissions**
Non-stationary Sources	1,150 $MTCO_2e$/yr OR 4.9 MT CO_2e/SP/yr
Stationary Sources	10,000 $MTCO_2e$/yr

SP = service population, which is resident population plus employee population of the project

Projects below screening levels identified in **Table 1-1** of SLOAPCD's CEQA Air Quality Handbook (pp. 1-3, SLOAPCD, 2012) are estimated to emit less than the applicable threshold. For projects below the threshold, no further GHG analysis is required.

Project Analysis:

Sycamore Environmental Consultants prepared an Air Quality Assessment dated September 18, 2018 for the proposed project, which included an evaluation of the project's potential GHG emissions. The study used the CalEEMod version 2013.3.2 to estimate the construction and operational GHG emissions. The GHG emissions were compared against the Sacramento Metropolitan Air Quality Management District (SMAQMD) threshold based on Service Population Threshold. This threshold is similar to SLOAPCD threshold and has been determined to be acceptable by EDCAQMD.

The analysis concluded that the construction and operational GHG emissions are well below the SMAQMD adopted thresholds for both project construction and operation. Given that the GHG emission from this project are estimated at less than 341 metric tons/year, thus, no further analysis for GHG emissions impact is required. Cumulative GHG emissions impacts are considered to be less than significant. The analysis has been reviewed by AQMD and concurs with the conclusion. Impacts would be less than significant.

a. The project is a senior living development that includes a 74-unit assisted living/memory care facility, 64-unit apartment complex, club house, 9 single-family homes, 2 commercial buildings, and 2 underground parking garages. The projects worst case scenario build-out situation was reviewed by the Air Quality Management District and the determination was made that the impacts would be less than significant. This future construction may involve a small increase in household GHG production. Any future construction would be required to incorporate modern construction and design features that reduce energy consumption to the extent feasible. Implementation of these features would help reduce potential GHG emissions resulting from the development. According to the SLOAPCD Screening Table, the applicable screening level is single family housing. The proposed project is a senior living development comprised of residential units. Based on this equivalency, the GHG emissions from this project are estimated at less than 1,150 metric tons/year, thus, no further analysis for GHG emissions impact is required. Therefore, the proposed project would have a negligible contribution towards statewide GHG inventories and would have a less than significant impact.

b. Because any future construction-related emissions would be temporary and below the minimum standard for reporting requirements under AB 32, and because any ongoing GHG emissions would be a result of a maximum of sixteen additional households, the proposed project's GHG emissions would have a negligible cumulative contribution towards statewide and global GHG emissions. The proposed project would not conflict with the objectives of AB 32 or any other applicable plan, policy or regulation adopted for the purpose of reducing GHG emissions. According to the SLOAPCD Screening Table, the GHG emissions from this project are estimated at less than 1,150 metric tons/year. Cumulative GHG emissions impacts are considered to be less than significant. Therefore, the proposed project would have a less than significant impact.

FINDING: The project would result in less than significant impacts to greenhouse gas emissions. For this Greenhouse Gas Emissions category, there would be no significant adverse environmental effect as a result of the project.

VIII. HAZARDS AND HAZARDOUS MATERIALS. *Would the project:*				
	Potentially Significant Impact	Less than Significant with Mitigation	Less Than Significant Impact	No Impact
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?			**X**	
b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?			**X**	
c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?			**X**	
d. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?				**X**
e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?				**X**
f. For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?				**X**
g. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?			**X**	
h. Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?			**X**	

Regulatory Setting:

Hazardous materials and hazardous wastes are subject to extensive federal, state, and local regulations to protect public health and the environment. These regulations provide definitions of hazardous materials; establish reporting requirements; set guidelines for handling, storage, transport, and disposal of hazardous wastes; and require health and safety provisions for workers and the public. The major federal, state, and regional agencies enforcing these regulations are USEPA and the Occupational Safety and Health Administration (OSHA); California Department of Toxic Substances Control (DTSC); California Department of Industrial Relations, Division of Occupational Safety and Health (Cal/OSHA); California Governor's Office of Emergency Services (Cal OES); and EDCAPCD.

Federal Laws, Regulations, and Policies

Comprehensive Environmental Response, Compensation, and Liability Act

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, also called the Superfund Act; 42 USC Section 9601 *et seq.*) is intended to protect the public and the environment from the effects of past hazardous waste disposal activities and new hazardous material spills. Under CERCLA, USEPA has the authority to seek the parties responsible for hazardous materials releases and to ensure their cooperation in site remediation. CERCLA also provides federal funding (through the "Superfund") for the remediation of hazardous materials contamination. The Superfund Amendments and Reauthorization Act of 1986 (Public Law 99-499) amends some provisions of CERCLA and provides for a Community Right-to-Know program.

Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act of 1976 (RCRA; 42 USC Section 6901 *et seq.*), as amended by the Hazardous and Solid Waste Amendments of 1984, is the primary federal law for the regulation of solid waste and hazardous waste in the United States. These laws provide for the "cradle-to-grave" regulation of hazardous wastes, including generation, transportation, treatment, storage, and disposal. Any business, institution, or other entity that generates hazardous waste is required to identify and track its hazardous waste from the point of generation until it is recycled, reused, or disposed of.

USEPA has primary responsibility for implementing RCRA, but individual states are encouraged to seek authorization to implement some or all RCRA provisions. California received authority to implement the RCRA program in August 1992. DTSC is responsible for implementing the RCRA program in addition to California's own hazardous waste laws, which are collectively known as the Hazardous Waste Control Law.

Energy Policy Act of 2005

Title XV, Subtitle B of the Energy Policy Act of 2005 (the Underground Storage Tank Compliance Act of 2005) contains amendments to Subtitle I of the Solid Waste Disposal Act, the original legislation that created the Underground Storage Tank (UST) Program. As defined by law, a UST is "any one or combination of tanks, including pipes connected thereto, that is used for the storage of hazardous substances and that is substantially or totally beneath the surface of the ground." In cooperation with USEPA, SWRCB oversees the UST Program. The intent is to protect public health and safety and the environment from releases of petroleum and other hazardous substances from tanks. The four primary program elements include leak prevention (implemented by Certified Unified Program Agencies [CUPAs], described in more detail below), cleanup of leaking tanks, enforcement of UST requirements, and tank integrity testing.

Spill Prevention, Control, and Countermeasure Rule

USEPA's Spill Prevention, Control, and Countermeasure (SPCC) Rule (40 CFR, Part 112) apply to facilities with a single above-ground storage tank (AST) with a storage capacity greater than 660 gallons, or multiple tanks with a combined capacity greater than 1,320 gallons. The rule includes requirements for oil spill prevention, preparedness, and response to prevent oil discharges to navigable waters and adjoining shorelines. The rule requires specific facilities to prepare, amend, and implement SPCC Plans.

Occupational Safety and Health Administration

OSHA is responsible at the federal level for ensuring worker safety. OSHA sets federal standards for implementation of workplace training, exposure limits, and safety procedures for the handling of hazardous substances (as well as other hazards). OSHA also establishes criteria by which each state can implement its own health and safety program.

Federal Communications Commission Requirements

There is no federally mandated radio frequency (RF) exposure standard; however, pursuant to the Telecommunications Act of 1996 (47 USC Section 224), the Federal Communications Commission (FCC) established guidelines for dealing with RF exposure, as presented below. The exposure limits are specified in 47 CFR Section 1.1310 in terms of frequency, field strength, power density, and averaging time. Facilities and transmitters licensed and authorized by FCC must either comply with these limits or an applicant must file an environmental assessment (EA) with FCC to evaluate whether the proposed facilities could result in a significant environmental effect.

FCC has established two sets of RF radiation exposure limits—Occupational/Controlled and General Population/Uncontrolled. The less-restrictive Occupational/Controlled limit applies only when a person (worker) is exposed as a consequence of his or her employment and is "fully aware of the potential exposure and can exercise control over his or her exposure," otherwise the General Population limit applies (47 CFR Section 1.1310).

The FCC exposure limits generally apply to all FCC-licensed facilities (47 CFR Section 1.1307[b][1]). Unless exemptions apply, as a condition of obtaining a license to transmit, applicants must certify that they comply with FCC environmental rules, including those that are designed to prevent exposing persons to radiation above FCC RF limits (47 CFR Section1.1307[b]). Licensees at co-located sites (e.g., towers supporting multiple antennas, including antennas under separate ownerships) must take the necessary actions to bring the accessible areas that exceed the FCC exposure limits into compliance. This is a shared responsibility of all licensees whose transmission power density levels account for 5.0 or more percent of the applicable FCC exposure limits (47CFR 1.1307[b][3]).

Code of Federal Regulations (14 CFR) Part 77

14 CFR Part 77.9 is designed to promote air safety and the efficient use of navigable airspace. Implementation of the code is administered by the Federal Aviation Administration (FAA). If an organization plans to sponsor any construction or alterations that might affect navigable airspace, a Notice of Proposed Construction or Alteration (FAA Form 7460-1) must be filed. The code provides specific guidance regarding FAA notification requirements.

State Laws, Regulations, and Policies

Safe Drinking Water and Toxic Enforcement Act of 1986 – Proposition 65

The Safe Drinking Water and Toxic Enforcement Act of 1986, more commonly known as Proposition 65, protects the state's drinking water sources from contamination with chemicals known to cause cancer, birth defects, or other reproductive harm. Proposition 65 also requires businesses to inform the public of exposure to such chemicals in the products they purchase, in their homes or workplaces, or that are released into the environment. In accordance with Proposition 65, the California Governor's Office publishes, at least annually, a list of such chemicals. OEHHA, an agency under the California Environmental Protection Agency (CalEPA), is the lead agency for implementation of the Proposition 65 program. Proposition 65 is enforced through the California Attorney General's Office; however, district and city attorneys and any individual acting in the public interest may also file a lawsuit against a business alleged to be in violation of Proposition 65 regulations.

The Unified Program

The Unified Program consolidates, coordinates, and makes consistent the administrative requirements, permits, inspections, and enforcement activities of six environmental and emergency response programs. CalEPA and other state agencies set the standards for their programs, while local governments (CUPAs) implement the standards. For each county, the CUPA regulates/oversees the following:

- Hazardous materials business plans;
- California accidental release prevention plans or federal risk management plans;
- The operation of USTs and ASTs;
- Universal waste and hazardous waste generators and handlers;
- On-site hazardous waste treatment;
- Inspections, permitting, and enforcement;
- Proposition 65 reporting; and
- Emergency response.

Hazardous Materials Business Plans

Hazardous materials business plans are required for businesses that handle hazardous materials in quantities greater than or equal to 55 gallons of a liquid, 500 pounds of a solid, or 200 cubic feet (cf) of compressed gas, or extremely hazardous substances above the threshold planning quantity (40 CFR, Part 355, Appendix A) (Cal OES, 2015). Business plans are required to include an inventory of the hazardous materials used/stored by the business, a site map, an emergency plan, and a training program for employees (Cal OES, 2015). In addition, business plan information is provided electronically to a statewide information management system, verified by the applicable CUPA, and transmitted to agencies responsible for the protection of public health and safety (i.e., local fire department, hazardous material response team, and local environmental regulatory groups) (Cal OES, 2015).

California Occupational Safety and Health Administration

Cal/OSHA assumes primary responsibility for developing and enforcing workplace safety regulations in California. Cal/OSHA regulations pertaining to the use of hazardous materials in the workplace (CCR Title 8) include requirements for safety training, availability of safety equipment, accident and illness prevention programs, warnings about exposure to hazardous substances, and preparation of emergency action and fire prevention plans.

Hazard communication program regulations that are enforced by Cal/OSHA require workplaces to maintain procedures for identifying and labeling hazardous substances, inform workers about the hazards associated with hazardous substances and their handling, and prepare health and safety plans to protect workers at hazardous waste sites. Employers must also make material safety data sheets available to employees and document employee information and training programs. In addition, Cal/OSHA has established maximum permissible RF radiation exposure limits for workers (Title 8 CCR Section 5085[b]), and requires warning signs where RF radiation might exceed the specified limits (Title 8 CCR Section 5085 [c]).

California Accidental Release Prevention

The purpose of the California Accidental Release Prevention (CalARP) program is to prevent accidental releases of substances that can cause serious harm to the public and the environment, to minimize the damage if releases do occur, and to satisfy community right-to-know laws. In accordance with this program, businesses that handle more than a threshold quantity of regulated substance are required to develop a risk management plan (RMP). This RMP must provide a detailed analysis of potential risk factors and associated mitigation measures that can be implemented to reduce accident potential. CUPAs implement the CalARP program through review of RMPs, facility inspections, and public access to information that is not confidential or a trade secret.

California Department of Forestry and Fire Protection Wildland Fire Management

The Office of the State Fire Marshal and the California Department of Forestry and Fire Protection (CAL FIRE) administer state policies regarding wildland fire safety. Construction contractors must comply with the following requirements in the Public Resources Code during construction activities at any sites with forest-, brush-, or grass-covered land:

- Earthmoving and portable equipment with internal combustion engines must be equipped with a spark arrestor to reduce the potential for igniting a wildland fire (Public Resources Code Section 4442).
- Appropriate fire-suppression equipment must be maintained from April 1 to December 1, the highest-danger period for fires (Public Resources Code Section 4428).
- On days when a burning permit is required, flammable materials must be removed to a distance of 10 feet from any equipment that could produce a spark, fire, or flame, and the construction contractor must maintain the appropriate fire suppression equipment (Public Resources Code Section 4427).
- On days when a burning permit is required, portable tools powered by gasoline fueled internal combustion engines must not be used within 25 feet of any flammable materials (Public Resources Code Section 4431).

<u>California Highway Patrol</u>

CHP, along with Caltrans, enforce and monitor hazardous materials and waste transportation laws and regulations in California. These agencies determine container types used and license hazardous waste haulers for hazardous waste transportation on public roads. All motor carriers and drivers involved in transportation of hazardous materials must apply for and obtain a hazardous materials transportation license from CHP.

Local Laws, Regulations, and Policies

A map of the fuel loading in the County (General Plan Figure HS-1) shows the fire hazard severity classifications of the SRAs in El Dorado County, as established by CDF. The classification system provides three classes of fire hazards: Moderate, High, and Very High. Fire Hazard Ordinance (Chapter 8.08) requires defensible space as described by the State Public Resources Code, including the incorporation and maintenance of a 30-foot fire break or vegetation fuel clearance around structures in fire hazard zones. The County’s requirements on emergency access, signing and numbering, and emergency water are more stringent than those required by state law (Patton 2002). The Fire Hazard Ordinance also establishes limits on campfires, fireworks, smoking, and incinerators for all discretionary and ministerial developments.

<u>Discussion</u>: A substantial adverse effect due to Hazards or Hazardous Materials would occur if implementation of the project would:

- Expose people and property to hazards associated with the use, storage, transport, and disposal of hazardous materials where the risk of such exposure could not be reduced through implementation of Federal, State, and local laws and regulations;
- Expose people and property to risks associated with wildland fires where such risks could not be reduced through implementation of proper fuel management techniques, buffers and landscape setbacks, structural design features, and emergency access; or
- Expose people to safety hazards as a result of former on-site mining operations.

a-c. **Hazardous Materials:** The project is not anticipated to involve the routine transportation, use, or disposal of hazardous materials such as construction materials, paints, fuels, landscaping materials, and household cleaning supplies. The senior living development may produce small amounts of household cleaners or other hazardous materials on a small scale. The impacts would be less than significant.

d. **Hazardous Sites:** The project site is not included on a list of or near any hazardous materials sites pursuant to Government Code section 65962.5 (DTSC, 2015). There would be no impact.

e-f. **Aircraft Hazards, Private Airstrips:** As shown on the El Dorado County Zoning Map, the project is located approximately 8.2 miles southwest of the Placerville Airport. The project site is not within any airport plan, or within close proximity of any public or private airport. There would be no impact.

g. **Emergency Plan:** The project was reviewed by Diamond Springs El Dorado Fire Protection District, and Transportation Division for circulation. Both of these agencies recommended conditions of approval and agreed with the proposed construction of the main driveway and all Emergency Vehicle Access (EVA’s) as identified in the project site plan. The proposed project would not impair implementation of any emergency response plan or emergency evacuation plan. All improvements will be built to the satisfaction of the Fire District. Impacts would be less than significant.

h. **Wildfire Hazards:** The project site is in an area of moderate fire hazard for wildland fire pursuant to Figure 5.8-4
of the 2004 General Plan Draft EIR. The El Dorado County General Plan Safety Element precludes development in areas of high wildland fire hazard unless such development can be adequately protected from wildland fire hazards as demonstrated in a Fire Safe Plan prepared by a Registered Professional Forester (RPF) and approved by the local Fire Protection District and/or California Department of Forestry and Fire Protection. The Diamond Springs El Dorado Fire Protection District reviewed the application. A Wildland Fire Safe Plan (Attachment 5) was prepared for the project, which requires an adequate fire system for purpose of fire protection with items such as, fire sprinkler and firefighting water, fire hydrants, residential sprinkler systems, and specific building materials, as conditioned for the project. In addition, annexation into EID is required for water service to achieve these fire protection measures. With the incorporation of these requirements, the impacts of wildland fire would be less than significant.

FINDING: The proposed project would not expose the area to hazards relating to the use, storage, transport, or disposal of hazardous materials. For this Hazards and Hazardous Materials category, impacts would be less than significant.

IX. HYDROLOGY AND WATER QUALITY. Would the project:	Potentially Significant Impact	Less than Significant with Mitigation	Less Than Significant Impact	No Impact
a. Violate any water quality standards or waste discharge requirements?			**X**	
b. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?			**X**	
c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or -off-site?			**X**	
d. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?			**X**	
e. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?			**X**	
f. Otherwise substantially degrade water quality?			**X**	
g. Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?				**X**

IX. HYDROLOGY AND WATER QUALITY. Would the project:	Potentially Significant Impact	Less than Significant with Mitigation	Less Than Significant Impact	No Impact
h. Place within a 100-year flood hazard area structures which would impede or redirect flood flows?				**X**
i. Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?				**X**
j. Inundation by seiche, tsunami, or mudflow?				**X**

Regulatory Setting:

Federal Laws, Regulations, and Policies

Clean Water Act

The Clean Water Act (CWA) is the primary federal law that protects the quality of the nation's surface waters, including lakes, rivers, and coastal wetlands. The key sections pertaining to water quality regulation for the Proposed Project are CWA Section 303 and Section 402.

Section 303(d) — Listing of Impaired Water Bodies

Under CWA Section 303(d), states are required to identify "impaired water bodies" (those not meeting established water quality standards), identify the pollutants causing the impairment, establish priority rankings for waters on the list, and develop a schedule for the development of control plans to improve water quality. USEPA then approves the State's recommended list of impaired waters or adds and/or removes waterbodies.

Section 402—NPDES Permits for Stormwater Discharge

CWA Section 402 regulates construction-related stormwater discharges to surface waters through the NPDES, which is officially administered by USEPA. In California, USEPA has delegated its authority to the State Water Resources Control Board (SWRCB), which, in turn, delegates implementation responsibility to the nine RWQCBs, as discussed below in reference to the Porter-Cologne Water Quality Control Act.

The NPDES program provides for both general (those that cover a number of similar or related activities) and individual (activity- or project-specific) permits. General Permit for Construction Activities: Most construction projects that disturb 1.0 or more acre of land are required to obtain coverage under SWRCB's General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Order 2009-0009-DWQ as amended by 2010-0014-DWQ and 2012-0006-DWQ). The general permit requires that the applicant file a public notice of intent to discharge stormwater and prepare and implement a Stormwater Pollution Prevention Plan (SWPPP). SWPPP must include a site map and a description of the proposed construction activities, demonstrate compliance with relevant local ordinances and regulations, and present a list of Best Management Practices (BMPs) that will be implemented to prevent soil erosion and protect against discharge of sediment and other construction-related pollutants to surface waters. Permittees are further required to monitor construction activities and report compliance to ensure that BMPs are correctly implemented and are effective in controlling the discharge of construction-related pollutants.

Municipal Stormwater Permitting Program

SWRCB regulates stormwater discharges from municipal separate storm sewer systems (MS4s) through its Municipal Storm Water Permitting Program (SWRCB, 2013). Permits are issued under two phases depending on the size of the urbanized area/municipality. Phase I MS4 permits are issued for medium (population between 100,000 and 250,000 people) and large (population of 250,000 or more people) municipalities, and are often issued to a group of co-permittees within a metropolitan area. Phase I permits have been issued since 1990. Beginning in 2003, SWRCB began issuing Phase II MS4 permits for smaller municipalities (population less than 100,000).

El Dorado County is covered under two SWRCB Regional Boards. The West Slope Phase II Municipal Separate Storm Sewer Systems (MS4) NPDES Permit is administered by the Central Valley Regional Water Quality Control Board (RWQCB) (Region Five). The Lake Tahoe Phase I MS4 NPDES Permit is administered by the Lahontan RWQCB (Region Six). The current West Slope MS4 NPDES Permit was adopted by the SWRCB on February 5, 2013. The Permit became effective on July 1, 2013 for a term of five years and focuses on the enhancement of surface water quality within high priority urbanized areas. The current Lake Tahoe MS4 NPDES Permit was adopted and took effect on December 6, 2011 for a term of five years. The Permit incorporated the Lake Tahoe Total Maximum Daily Load (TMDL) and the Lake Clarity Crediting Program (LCCP) to account for the reduction of fine sediment particles and nutrients discharged to Lake Tahoe.

On May 19, 2015 the El Dorado County Board of Supervisors formally adopted revisions to the Storm Water Quality Ordinance (Ordinance 4992). Previously applicable only to the Lake Tahoe Basin, the ordinance establishes legal authority for the entire unincorporated portion of the County. The purpose of the ordinance is to 1) protect health, safety, and general welfare, 2) enhance and protect the quality of Waters of the State by reducing pollutants in storm water discharges to the maximum extent practicable and controlling non-storm water discharges to the storm drain system, and 3) cause the use of Best Management Practices to reduce the adverse effects of polluted runoff discharges on Waters of the State.

National Flood Insurance Program

The Federal Emergency Management Agency (FEMA) administers the National Flood Insurance Program (NFIP) to provide subsidized flood insurance to communities complying with FEMA regulations that limit development in floodplains. The NFIP regulations permit development within special flood hazard zones provided that residential structures are raised above the base flood elevation of a 100-year flood event. Non-residential structures are required either to provide flood proofing construction techniques for that portion of structures below the 100-year flood elevation or to elevate above the 100-year flood elevation. The regulations also apply to substantial improvements of existing structures.

State Laws, Regulations, and Policies

Porter–Cologne Water Quality Control Act

The Porter–Cologne Water Quality Control Act (known as the Porter–Cologne Act), passed in 1969, dovetails with the CWA (see discussion of the CWA above). It established the SWRCB and divided the state into nine regions, each overseen by an RWQCB. SWRCB is the primary State agency responsible for protecting the quality of the state's surface water and groundwater supplies; however, much of the SWRCB's daily implementation authority is delegated to the nine RWQCBs, which are responsible for implementing CWA Sections 401, 402, and 303[d]. In general, SWRCB manages water rights and regulates statewide water quality, whereas RWQCBs focus on water quality within their respective regions.

The Porter–Cologne Act requires RWQCBs to develop water quality control plans (also known as basin plans) that designate beneficial uses of California's major surface-water bodies and groundwater basins and establish specific narrative and numerical water quality objectives for those waters. Beneficial uses represent the services and qualities of a waterbody (i.e., the reasons that the waterbody is considered valuable). Water quality objectives reflect the standards necessary to protect and support those beneficial uses. Basin plan standards are primarily implemented by regulating waste discharges so that water quality objectives are met. Under the Porter–Cologne Act, basin plans must be updated every 3 years.

Discussion: A substantial adverse effect on Hydrology and Water Quality would occur if the implementation of the project would:

- Expose residents to flood hazards by being located within the 100-year floodplain as defined by the Federal Emergency Management Agency;
- Cause substantial change in the rate and amount of surface runoff leaving the project site ultimately causing a substantial change in the amount of water in a stream, river or other waterway;
- Substantially interfere with groundwater recharge;
- Cause degradation of water quality (temperature, dissolved oxygen, turbidity and/or other typical stormwater pollutants) in the project area; or
- Cause degradation of groundwater quality in the vicinity of the project site.

a. **Water Quality Standards:** No waste discharge will occur as part of this project. Any future public road improvement activities will require an encroachment permit and will undergo review to determine if any further actions or approvals are needed, including any measures for soil and sediment control in compliance with the County SWPPP. Erosion control would be required as part of any future building or grading permit. Stormwater runoff from potential development would contain water quality protection features in accordance with potential National Pollutant Discharge Elimination System (NPDES) stormwater permit, as deemed applicable. The project would not be anticipated to violate water quality standards. Impacts would be less than significant.

b. **Groundwater Supplies:** The geology of the Western Slope portion of El Dorado County is principally hard, crystalline, igneous, or metamorphic rock overlain with a thin mantle of sediment or soil. Groundwater in this region is found in fractures, joints, cracks, and fault zones within the bedrock mass. These discrete fracture areas are typically vertical in orientation rather than horizontal as in sedimentary or alluvial aquifers. Recharge is predominantly through rainfall infiltrating into the fractures. Movement of this groundwater is very limited due to the lack of porosity in the bedrock. Wells are typically drilled to depths ranging from 80 to 300 feet in depth. There is no evidence that the project will substantially reduce or alter the quantity of groundwater in the vicinity, or materially interfere with groundwater recharge in the area of the proposed project. The proposed 74-unit assisted living facility, 64-unit apartment complex, one club house, 9 single-family homes, and 7,500 square feet of commercial building space, will be served by the El Dorado Irrigation District, using connections that are already in place. The project is not anticipated to affect potential groundwater supplies above pre-project levels. Impacts would be less than significant.

c-f. **Drainage Patterns:** The site is currently vacant. A grading permit through Community Development Services would be required to address grading, erosion, and sediment control for any future construction. Construction activities would be required to adhere to the El Dorado County Grading, Erosion Control and Sediment Ordinance. This includes the use of Best Management Practices (BMPs) to minimize degradation of water quality during construction. Impacts would be less than significant.

g-j. **Flood-related Hazards:** The project site is not located within any mapped 100-year flood areas and would not result in the construction of any structures that would impede or redirect flood flows (FEMA, 2008).

No dams which would result in potential hazards related to dam failures are located in the project area. The risk of exposure to seiche, tsunami, or mudflows would be remote. There would be no impact.

FINDING: The proposed project would be required to address any potential erosion and sediment control. No significant hydrological impacts are expected with the development of the project either directly or indirectly. For this hydrology category, impacts are anticipated to be less than significant.

X. LAND USE PLANNING. *Would the project:*	Potentially Significant Impact	Less than Significant with Mitigation	Less Than Significant Impact	No Impact
a. Physically divide an established community?				**X**
b. Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?				**X**
c. Conflict with any applicable habitat conservation plan or natural community conservation plan?				**X**

Regulatory Setting:

California State law requires that each City and County adopt a general plan "for the physical development of the City and any land outside its boundaries which bears relation to its planning." Typically, a general plan is designed to address the issues facing the City or County for the next 15-20 years. The general plan expresses the community's development goals and incorporates public policies relative to the distribution of future public and private land uses. The El Dorado County General Plan was adopted in 2004. The 2013-2021 Housing Element was adopted in 2013.

Discussion: A substantial adverse effect on Land Use would occur if the implementation of the project would:

- Result in the conversion of Prime Farmland as defined by the State Department of Conservation;
- Result in conversion of land that either contains choice soils or which the County Agricultural Commission has identified as suitable for sustained grazing, provided that such lands were not assigned urban or other nonagricultural use in the Land Use Map;
- Result in conversion of undeveloped open space to more intensive land uses;
- Result in a use substantially incompatible with the existing surrounding land uses; or
- Conflict with adopted environmental plans, policies, and goals of the community.

a. **Established Community:** The project is located within the El Dorado Community Region. The project is surrounded by existing single-family residential development and undeveloped commercial parcels. The project would not conflict with the existing land use pattern in the area or physically divide an established community. There would be no impact.

b. **Land Use Consistency:** The project parcels have dual land use designations of Multifamily Residential (MFR) and Commercial (C). Correspondingly, the zoning designations for the project parcels are Multi-Unit Residential (RM) and Commercial Main-Street (CM) with a Design Community combining zone (-DC). The intent of the –DC combining zone is to ensure architectural supervision and consistency with the County of El Dorado Community Design Standards, which is used to evaluate the architectural and site design in commercial districts. The site is in a community region, and land use proposed for the site is residential and commercial. The MFR land use designation establishes those areas suitable for high-density, single family, and multifamily design concepts, with a minimum allowable density of five dwelling units per acre, with a maximum density of 24 dwelling units per acre. Because of project approval, the parcels would have a net MFR density of 13.74 dwelling units per acre. The net MFR density is for the apartment complex and attached single-family dwellings and it excludes the community care facility. The proposed land use for this project include an age-restricted apartment complex, attached single-family dwellings, and a large community care facility that requires conditional use permit approval in the RM zone district. Both the apartment complex and attached single-family dwellings are permitted by right within the RM zone district. The large community care facility is the only use that requires a conditional use permit; while the rest of the residential uses are allowed by right. The CM-DC split zoning on the subject project site allows the proposed commercial uses by right. The proposed project would be consistent with the policies and objectives of the General Plan. There would be no impact.

c. **Habitat Conservation Plan:** The project site is not within the boundaries of an adopted Natural Community Conservation Plan or any other conservation plan. As such, the proposed project would not conflict with an adopted conservation plan. There would be no impact.

FINDING: The proposed use of the land would be consistent with the Zoning Ordinance and General Plan. There would be no impact to land use goals or standards resulting from the project.

XI. MINERAL RESOURCES. *Would the project:*	Potentially Significant Impact	Less than Significant with Mitigation	Less Than Significant Impact	No Impact
a. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?				**X**
b. Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?				**X**

Regulatory Setting:

Federal Laws, Regulations, and Policies

No federal laws, regulations, or policies apply to mineral resources and the Proposed Project.

State Laws, Regulations, and Policies

Surface Mining and Reclamation Act

The Surface Mining and Reclamation Act of 1975 (SMARA) requires that the State Mining and Geology Board identify, map, and classify aggregate resources throughout California that contain regionally significant mineral resources. Designations of land areas are assigned by CDC and California Geological Survey following analysis of geologic reports and maps, field investigations, and using information about the locations of active sand and gravel mining operations. Local jurisdictions are required to enact planning procedures to guide mineral conservation and extraction at particular sites and to incorporate mineral resource management policies into their general plans.

The California Mineral Land Classification System represents the relationship between knowledge of mineral deposits and their economic characteristics (grade and size). The nomenclature used with the California Mineral Land Classification System is important in communicating mineral potential information in activities such as mineral land classification, and usage of these terms are incorporated into the criteria developed for assigning mineral resource zones. Lands classified MRZ-2 are areas that contain identified mineral resources. Areas classified as MRZ-2a or MRZ-2b (referred to hereafter as MRZ-2) are considered important mineral resource areas.

Local Laws, Regulations, and Policies

El Dorado County in general is considered a mining region capable of producing a wide variety of mineral resources. Metallic mineral deposits, including gold, are considered the most significant extractive mineral resources. Exhibit 5.9-6 shows the MRZ-2 areas within the county based on designated Mineral Resource (-MR) overlay areas. The -MR overlay areas are based on mineral resource mapping published in the mineral land classification reports referenced above. The majority of the county's important mineral resource deposits are concentrated in the western third of the county.

According to General Plan Policy 2.2.2.7, before authorizing any land uses within the -MR overlay zone that will threaten the potential to extract minerals in the affected area, the County shall prepare a statement specifying its reasons for considering approval of the proposed land use and shall provide for public and agency notice of such a statement consistent with the requirements of Public Resources Code section 2762. Furthermore, before finally approving any such proposed land use, the County shall balance the mineral values of the threatened mineral resource area against the economic, social, or other values associated with the proposed alternative land uses. Where the affected minerals are of regional significance, the County shall consider the importance of these minerals to their market region as a whole and not just their importance to the County.

Where the affected minerals are of Statewide significance, the County shall consider the importance of these minerals to the State and Nation as a whole. The County may approve the alternative land use if it determines that the benefits of such uses outweigh the potential or certain loss of the affected mineral resources in the affected regional, Statewide, or national market.

Discussion: A substantial adverse effect on Mineral Resources would occur if the implementation of the project would:

- Result in obstruction of access to, and extraction of mineral resources classified MRZ-2x, or result in land use compatibility conflicts with mineral extraction operations.

a-b. **Mineral Resources.** The project site has not been delineated in the El Dorado County General Plan as a locally important mineral resource recovery site (2003, Exhibits 5.9-6 and 5.9-7). Review of the California Department of Conservation Geologic Map data showed that the project site is not within a mineral resource zone district. There would be no impact.

FINDING: No impacts to mineral resources are expected either directly or indirectly. For this mineral resources category, there would be no impacts.

XII. NOISE. *Would the project result in:*	Potentially Significant Impact	Less than Significant with Mitigation	Less Than Significant Impact	No Impact
a. Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?		**X**		
b. Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?			**X**	
c. A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?			**X**	
d. A substantial temporary or periodic increase in ambient noise levels in the			**X**	

XII. NOISE. *Would the project result in:*	Potentially Significant Impact	Less than Significant with Mitigation	Less Than Significant Impact	No Impact
project vicinity above levels existing without the project?				
e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise level?				**X**
f. For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?				**X**

Regulatory Setting:

No federal or state laws, regulations, or policies for construction-related noise and vibration apply to the Proposed Project. However, the Federal Transit Administration (FTA) Guidelines for Construction Vibration in Transit Noise and Vibration Impact Assessment state that for evaluating daytime construction noise impacts in outdoor areas, a noise threshold of 90 dBA Leq and 100 dBA Leq should be used for residential and commercial/industrial areas, respectively (FTA 2006).

For construction vibration impacts, the FTA guidelines use an annoyance threshold of 80 VdB for infrequent events (fewer than 30 vibration events per day) and a damage threshold of 0.12 inches per second (in/sec) PPV for buildings susceptible to vibration damage (FTA 2006).

Discussion: A substantial adverse effect due to Noise would occur if the implementation of the project would:

- Result in short-term construction noise that creates noise exposures to surrounding noise sensitive land uses in excess of 60dBA CNEL;
- Result in long-term operational noise that creates noise exposures in excess of 60 dBA CNEL at the adjoining property line of a noise sensitive land use and the background noise level is increased by 3dBA, or more; or
- Results in noise levels inconsistent with the performance standards contained in Table 130.37.060.1 and Table 130.37.060.2 of the El Dorado County Zoning Ordinance.

TABLE 6-2
NOISE LEVEL PERFORMANCE PROTECTION STANDARDS
FOR NOISE SENSITIVE LAND USES
AFFECTED BY NON-TRANSPORTATION* SOURCES

Noise Level Descriptor	**Daytime 7 a.m. - 7 p.m.**		**Evening 7 p.m. - 10 p.m.**		**Night 10 p.m. - 7 a.m.**	
	Community	**Rural**	**Community**	**Rural**	**Community**	**Rural**
Hourly L_{eq}, dB	55	50	50	45	45	40
Maximum level, dB	70	60	60	55	55	**50**

An Environmental Noise Assessment was conducted by Bollard Acoustical Consultants, Inc. evaluating the potential noise effects by the project in accordance of the applicable policies of the General Plan including Policy 6.5.1.2 (Non-Transportation Sources), and 6.5.1.13 (Noise Level Standards) (Attachment 3). The assessment included an on-site noise measurements based on the project site plan depicting construction of the entire facility. Details of the analysis and conclusions are summarized below.

a. **Noise Exposures:** The proposed project will not expose people to noise levels in excess of standards established in the General Plan or Zoning Ordinance. The driveways and new construction of the senior living development would require the use of trucks and minor fill and grading, which may result in short-term noise impacts to surrounding neighbors. These activities require building permits, which would include restriction to construction hours per the General Plan. The project's construction is not expected to generate noise levels exceeding the performance standards contained within Chapter 6 of the 2004 General Plan. The noise levels for commercial mechanical equipment for buildings #1 and #2 are calculated to range from approximately 51-55 dB Leq during the evening and nighttime. Satisfying the applicable El Dorado County General Plan evening and nighttime noise level standards at the nearest residential property lines would require mitigation. The noise associated with the project's commercial mechanical equipment would be less than significant with the following prescribed mitigation measures.

<ins>Mitigation Measure NOI-1:</ins> Ensure that all rooftop mounted HVAC equipment associated with air heating and cooling requirements of Commercial Buildings #1 and #2 be completely shielded from view of nearby existing residences by building rooftop parapets (as proposed).

AND (one of the following)

<ins>Mitigation Measure NOI-2:</ins> When building plans are available that identify specific HVAC equipment model information and installation locations, the project developer shall review and confirm that the equipment will not exceed 45 dB Leq at 50 feet (Commercial Building #1) and 45 dB Leq at 30 feet (Commercial Building #2).

OR

<ins>Mitigation Measure NOI-3:</ins> Should the project developer choose to install rooftop-mounted HVAC equipment that exceeds 45 dB Leq at 50 feet (Commercial Building #1) or 45 dB Leq at 30 feet (Commercial Building #2), the construction of a 6-foot tall localized barrier that encompasses the equipment would be required. Should a barrier be constructed on the rooftop of Commercial Building #1, the barrier shall encompass the equipment around the north, east and west sides. Should a barrier be constructed on the rooftop of Commercial Building #2, the barrier shall encompass the equipment on the south, west and east sides.

Monitoring Requirement: All grading and building construction activities will require compliance with the Noise Level Standards measures as described in the Environmental Noise Assessment (Attachment 3). Planning Services for consistency will analyze the location of the HVAC equipment and its specifications during Building and Grading Permits review, prior to issuance.

Monitoring Responsibility: El Dorado County Community Development Services- Planning and Building Department.

Implementation of the identified mitigation measures above, future project-generated non-transportation noise sources are expected to satisfy the applicable El Dorado County noise level criteria at the nearest existing residences. As a result, the impact is considered to be less than significant with application of mitigation measures.

b. **Groundborne Shaking:** Future construction may generate short-term ground borne vibration or shaking events during project construction, which includes grading activities and building construction. Adherence to the time limitations of construction activities, which would be incorporated as a condition of the project, to 7:00 AM to 7:00 PM Monday through Friday 8:00 AM to 5:00 PM on weekends and federally recognized holidays would limit the ground shaking effects in the project area. Impacts are anticipated to be less than significant.

c. **Permanent Noise Increases:** Development of the site may generate ground borne vibration or shaking events during project construction, which includes grading activities and building construction. Adherence to the time limitations of construction activities, which would be incorporated as a condition of the project, to 7:00 AM to 7:00 PM Monday through Friday 8:00 AM to 5:00 PM on weekends and federally recognized holidays would limit the ground shaking effects in the project area. The long-term noise associated with the senior living development would not be expected to exceed the noise standards contained in the General Plan. The impacts would be considered less than significant.

d. **Short Term Noise:** The construction noise resulting from that development, as well as the minor filling and grading, would result in short-term noise impacts. These activities require construction permits including grading, building, and encroachment, which would be restricted to construction hours. All construction and grading and grading operations would be required to comply with the noise performance standards contained in the General Plan. Impacts would be less than significant.

e-f. **Aircraft Noise:** The project site is not within any airport plan. The site is not located in the vicinity of a public airport, or private airport. The nearest airport it the Placerville Airport, which is located approximately 8.2 miles northwest of the project site. There would be no impact.

FINDING: As conditioned, and with adherence to County Code, no significant direct or indirect impacts to noise levels are expected either directly or indirectly. For this Noise category, impacts would be less than significant with applicable mitigations measures outlined above.

XIII. POPULATION AND HOUSING. *Would the project:*	Potentially Significant Impact	Less than Significant with Mitigation	Less Than Significant Impact	No Impact
a. Induce substantial population growth in an area, either directly (i.e., by proposing new homes and businesses) or indirectly (i.e., through extension of roads or other infrastructure)?			**X**	
b. Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?				**X**
c. Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?				**X**

Regulatory Setting:

No federal or state laws, regulations, or policies apply to population and housing and the proposed project.

Discussion: A substantial adverse effect on Population and Housing would occur if the implementation of the project would:

- Create substantial growth or concentration in population;
- Create a more substantial imbalance in the County's current jobs to housing ratio; or
- Conflict with adopted goals and policies set forth in applicable planning documents.

a. **Population Growth:** The proposed project would not induce growth directly or indirectly by providing infrastructure that would create development beyond what is currently anticipated in the General Plan Policy 2.2.1.3, Table 2-2. The proposed project would construct 64-unit independent living apartment complex, 9 attached single-family homes, and 74-unit assisted living/memory care facility. According to the General Plan Policy, apartment complexes in multifamily residential land use designated property accounts for an average of 2.3 people per housing unit. Based on the average the proposed apartment complex would equate to 147.2 people, the 74-unit assisted living beds would equate to 74 people, and the attached single-family homes would equate to 20.7 people; therefore, an approximate 241.9 people would live within the proposed senior living development. If the project site were to be developed to its maximum potential, a maximum of 196 multifamily residential unit would be allowed with a population increase of 452.64 persons. The project proposes significantly less than this maximum; therefore, impacts would be less than significant.

b-c. **Housing Displacement:** The site is vacant and implementation of the project would not result in any displacement or relocation of housing or people. There would be no impact.

FINDING: It has been determined that there would be less than significant impacts anticipated to population growth and impacts to population or housing displacement as a result of the project proposal. For this "Population and Housing" category, impacts would be anticipated to be less than significant.

XIV. PUBLIC SERVICES. *Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:*	Potentially Significant Impact	Less than Significant with Mitigation	Less Than Significant Impact	No Impact
a. Fire protection?			X	
b. Police protection?			X	
c. Schools?			X	
d. Parks?			X	
e. Other government services?			X	

Regulatory Setting:

Federal Laws, Regulations, and Policies

California Fire Code

The California Fire Code (Title 24 CCR, Part 9) establishes minimum requirements to safeguard public health, safety, and general welfare from the hazards of fire, explosion, or dangerous conditions in new and existing buildings. Chapter 33 of CCR contains requirements for fire safety during construction and demolition.

Discussion: A substantial adverse effect on Public Services would occur if the implementation of the project would:

- Substantially increase or expand the demand for fire protection and emergency medical services without increasing staffing and equipment to meet the Department's/District's goal of 1.5 firefighters per 1,000 residents and 2 firefighters per 1,000 residents, respectively;
- Substantially increase or expand the demand for public law enforcement protection without increasing staffing and equipment to maintain the Sheriff's Department goal of one sworn officer per 1,000 residents;
- Substantially increase the public school student population exceeding current school capacity without also including provisions to adequately accommodate the increased demand in services;
- Place a demand for library services in excess of available resources;
- Substantially increase the local population without dedicating a minimum of 5 acres of developed parklands for every 1,000 residents; or
- Be inconsistent with County adopted goals, objectives or policies.

a. **Fire Protection:** The Diamond Springs El Dorado Fire Protection District provides emergency and fire protection services to the project area and the station is located approximately 1.45 miles northeast of the site. The project must adhere to an approved Wildland Fire Safe Plan for emergency vehicle access including roadway widths and turning radii, fire flow and sprinkler requirements, and vehicle ingress/egress. Development of the project would result in an increase in the demand for emergency services, due to the healthcare needs associated with any senior resident population; however, the project will have on-call healthcare staff to help reduce the amount of demand placed on the fire department's emergency services. Although, both the type of use and population living at the proposed development would create an increase in the demand for emergency and fire protection services, this would not prevent the Fire Department from meeting its response times for the project, or its designated service area any more than exists today. The Fire District will review the building permit application and include any fire protection measures at the time. The Fire Department would review the project improvement plans, and conformance with their conditions of approval, impacts would be anticipated to be less than significant.

b. **Police Protection:** The project site would be served by the El Dorado County Sheriff's Department with a response time depending on the location of the nearest patrol vehicle. The El Dorado County Sheriff's Department is located approximately 3.17 miles northeast of the project site. The project proposes a senior living development. The development on the project site may result in a minimal increase in calls for emergency services but would not be anticipated to significantly impact the Department any more than was anticipated to significantly impact current Sheriff's response times to the project area as well. Impacts would be less than significant.

c. **Schools:** For the proposed project site, elementary and middle school students are served by Mother Lode Union School District. High school students are served by the El Dorado Union High School District. Although, school districts and schools exist near the proposed facility, the construction and private operation of the facility is not anticipated to result in any permanent population-related increases that would contribute to additional demand on schools. The impact would be less than significant.

d. **Parks:** The senior living development is will not substantially increase the local population and therefore will not substantially increase the use of parks and recreational facilities. At the Building Permit stage of the project, with the payment of park improvement fees, impacts would be less than significant.

e. **Government Services:** Other local services such as libraries would experience minor impacts. No other government services would be anticipated to be required because of the senior living development. The impacts would be expected to be incremental and would be anticipated to be less than significant.

FINDING: The project would not result in a significant increase of public services to the project. Increased demand to services would be addressed through the payment of established impact fees. For this Public Services category, impacts would be less than significant.

XV. RECREATION.	Potentially Significant Impact	Less than Significant with Mitigation	Less Than Significant Impact	No Impact
a. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?			**X**	
b. Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?			**X**	

Regulatory Setting:

National Trails System

The National Trails System Act of 1968 authorized The National Trails System (NTS) in order to provide additional outdoor recreation opportunities and to promote the preservation of access to the outdoor areas and historic resources of the nation. The Appalachian and Pacific Crest National Scenic Trails were the first two components, and the System has grown to include 20 national trails.

The National Trails System includes four classes of trails:

1. National Scenic Trails (NST) provide outdoor recreation and the conservation and enjoyment of significant scenic, historic, natural, or cultural qualities. The Pacific Coast Trail falls under this category. The PCT passes through the Desolation Wilderness area along the western plan area boundary.
2. National Historic Trails (NHT) follow travel routes of national historic significance. The National Park Service has designated two National Historic Trail (NHT) alignments that pass through El Dorado County, the California National Historic Trail and the Pony Express National Historic Trail. The California Historic Trail is a route of approximately 5,700 miles including multiple routes and cutoffs, extending from Independence and Saint Joseph, Missouri, and Council Bluffs, Iowa, to various points in California and Oregon. The Pony Express NHT commemorates the route used to relay mail via horseback from Missouri to California before the advent of the telegraph.
3. National Recreation Trails (NRT) are in, or reasonably accessible to, urban areas on federal, state, or private lands. In El Dorado County there are 5 NRTs.

State Laws, Regulations, and Policies

The California Parklands Act

The California Parklands Act of 1980 (Public Resources Code Section 5096.141-5096.143) recognizes the public interest for the state to acquire, develop, and restore areas for recreation and to aid local governments to do the same. The California Parklands Act also identifies the necessity of local agencies to exercise vigilance to see that the parks, recreation areas, and recreational facilities they now have are not lost to other uses.

The California state legislature approved the California Recreational Trail Act of 1974 (Public Resources Code Section

2070-5077.8) requiring that the Department of Parks and Recreation prepare a comprehensive plan for California trails. The California Recreational Trails Plan is produced for all California agencies and recreation providers that manage trails. The Plan includes information on the benefits of trails, how to acquire funding, effective stewardship, and how to encourage cooperation among different trail users.

The 1975 Quimby Act (California Government Code Section 66477) requires residential subdivision developers to help mitigate the impacts of property improvements by requiring them to set aside land, donate conservation easements, or pay fees for park improvements. The Quimby Act gave authority for passage of land dedication ordinances to cities and counties for parkland dedication or in-lieu fees paid to the local jurisdiction. Quimby exactions must be roughly proportional and closely tied (nexus) to a project's impacts as identified through traffic studies required by CEQA. The exactions only apply to the acquisition of new parkland; they do not apply to the physical development of new park facilities or associated operations and maintenance costs.

The County implements the Quimby Act through §120.12.090 of the County Code. The County Code sets standards for the acquisition of land for parks and recreational purposes, or payments of fees in lieu thereof, on any land subdivision. Other projects, such as ministerial residential or commercial development, could contribute to the demand for park and recreation facilities without providing land or funding for such facilities.

Local Laws, Regulations, and Policies

The 2004 El Dorado County General Plan Parks and Recreation Element establishes goals and policies that address needs for the provision and maintenance of parks and recreation facilities in the county, with a focus on providing recreational opportunities and facilities on a regional scale, securing adequate funding sources, and increasing tourism and recreation-based businesses. The Recreation Element describes the need for 1.5 acres of regional parkland, 1.5 acres of community parkland, and 2 acres of neighborhood parkland per 1,000 residents. Another 95 acres of park land are needed to meet the General Plan guidelines.

Discussion: A substantial adverse effect on Recreational Resources would occur if the implementation of the project would:

- Substantially increase the local population without dedicating a minimum of 5 acres of developed parklands for every 1,000 residents; or
- Substantially increase the use of neighborhood or regional parks in the area such that substantial physical deterioration of the facility would occur.

a. **Parks:** A sixty-four-unit apartment complex and nine single-family homes are proposed for the site, and a 74-unit assisted living facility would be constructed on the project site. As discussed above in the Population and Housing Section, the proposed senior living development would not be anticipated to result in a significant population increase not anticipated by the General Plan for multifamily residential land uses. Therefore, the project is not anticipated to contribute significantly to increased demand on recreation facilities or contribute to increased use of existing facilities. The project would be required to pay park improvement fees to the Parks and Recreation Department at the Building Permit stage. Impacts to parks would be anticipated to be less than significant.

b. **Recreational Services.** There would be no other construction or expansion of public recreational facilities required for this project. The increased demand for services would be mitigated by the payment of park improvement fees as discussed above. Impacts would be anticipated to be less than significant.

FINDING: The project would not result in a significant impacts to open space or park facilities would result as part of the project. For this Recreation category, impacts would be less than significant.

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

Regulatory Setting:

Federal Laws, Regulations, and Policies

No federal laws, regulations, or policies apply to transportation/traffic and the Proposed Project.

State Laws, Regulations, and Policies

Caltrans manages the state highway system and ramp interchange intersections. This state agency is also responsible for highway, bridge, and rail transportation planning, construction, and maintenance.

Local Laws, Regulations, and Policies

According to the transportation element of the County General Plan, Level of Service (LOS) for County-maintained roads and state highways within the unincorporated areas of the county shall not be worse than LOS E in the Community Regions or LOS D in the Rural Centers and Rural Regions. Level of Service is defined in the latest edition of the Highway Capacity Manual (Transportation Research Board, National Research Council). There are some roadway segments that are excepted from these standards and are allowed to operate at LOS F, although none of these are located in the Lake Tahoe Basin. According to Policy TC-Xe, "worsen" is defined as any of the following number of project trips using a road facility at the time of issuance of a use and occupancy permit for the development project:

A. A two percent increase in traffic during a.m., p.m. peak hour, or daily
B. The addition of 100 or more daily trips, or

C. The addition of 10 or more trips during the a.m. or p.m. peak hour.

Discussion: The Transportation and Circulation Policies contained in the County General Plan establish a framework for review of thresholds of significance and identification of potential impacts of new development on the County's road system. These policies are enforced by the application of the Transportation Impact Study (TIS) Guidelines, the County Design and Improvements Standards Manual, and the County Encroachment Ordinance, with review of individual development projects by the Transportation and Long Range Planning Divisions of the Community Development Agency. A substantial adverse effect to traffic would occur if the implementation of the project would:

- Result in an increase in traffic, which is substantial in relation to the existing traffic load and capacity of the street system;
- Generate traffic volumes which cause violations of adopted level of service standards (project and cumulative); or
- Result in or worsen Level of Service (LOS) F traffic congestion during weekday, peak-hour periods on any highway, road, interchange or intersection in the unincorporated areas of the county as a result of a residential development project of 5 or more units.

The Traffic Study prepared by Kimley-Horn established and analyzed existing and future traffic conditions based on additional traffic generated by the proposed development of El Dorado Senior Resort (Attachment 4). Results of this study are incorporated by reference to this document an are on file with El Dorado County Planning Services, 2850 Fairlane Court, Placerville, CA. 95667. The report was circulated to the El Dorado County Department of Transportation, Caltrans, and Long Range Planning Division of Community Development Services. All three agencies concurred with the findings of the report.

a,b. **Traffic Increases/ Levels of Service Standards:** The senior living development would take access via one full access driveway along Koki Lane; an existing County maintained roadway, and an emergency vehicle access (EVA)only driveway along State Highway 49/Pleasant Valley Road north of the project site. Assisted living/memory care facilities provide a living environment with intensive, long-term medical care for seniors with serious health and dementia conditions in a fully staffed and monitored facility. Due to the nature of these facilities, residents are comprised of older adults who typically do not drive; thus, the site trip generation is anticipated as low and predominantly composed of employee and visitor trips.

Based on the County's requirements, six different scenarios were analyzed for the traffic study. These scenarios included:

1. Existing (2018) Conditions
2. Existing (2018) plus Proposed Project Conditions
3. Near-Term (2028) Conditions
4. Near-Term (2028) plus Proposed Project Conditions
5. Cumulative (2035) Conditions
6. Cumulative (2035) plus Proposed Project Conditions

The study found that the project would be expected to generate approximately 787 total new daily trips, with 41 new trips occurring during the AM peak-hour, and 62 new trips occurring during the PM peak-hour based on trip generation rates contained in the *Trip Generation Manual 9th Edition,* published by the Institute of Transportation Engineers (ITE). The traffic study identifies one intersection that the proposed project could create a significant impact to; however, with implementation of mitigation measures M1, M2, and M3 (listed below) the impact would be decreased to a **less than significant** level.

Mitigation Measures

M1. Intersection #1: SR 49 @ Pleasant Valley Road, Existing (2018) plus Proposed Project Conditions

The impact can be mitigated with a traffic signal; however, the subject intersection is under the jurisdiction of Caltrans who will need to approve the timing for implementing a traffic signal.

The County's methods for identifying the timing for an intersection are based on both the Capital Improvement Program and Intersection Needs Prioritization Process. The County's 10-year Capital Improvement Program (CIP) includes a line item for un-programmed traffic signal installation and operational and safety improvements at intersections, including improvements such as construction of new traffic signals, construction of turn pockets, and the upgrade of existing traffic signal systems. The County annually monitors intersections with potential need for improvement through the *Intersection Needs Prioritization Process*. This process is utilized to inform the annual update to the CIP, and the Board of Supervisors can add potential intersection improvements to the CIP, as funding becomes available.

In the absence of identifying timing for implementing a traffic signal, the Community Development Services-Transportation Division has determined that the appropriate mitigation includes payment of traffic mitigation fees to satisfy the project's fair share obligation towards the traffic signal improvement. The project proportional share of growth of traffic entering the intersection is about 0.7% in the AM peak hour under Existing plus Proposed Project conditions.

<u>OR</u>

Construction of the improvement (traffic signal) with reimbursement for costs that exceed the project's proportional share, if the improvement is needed but not included in future updates to the CIP. The improvement will need to consistent with General Plan Goal TC-X and supporting Policy TC-Xf.

Monitoring Requirement: All grading and construction activities will require compliance with the El Dorado County Design and Improvement Standards Manuel and measures as described in the *El Dorado Senior Resort Transportation Impact Study* prepared by Kimley-Horn dated (October 17, 2018) (Attachment 4). Planning Services shall verify the inclusion of this mitigation measure prior to the issuance of grading and building permits.

Monitoring Responsibility: Both Caltrans and Community Development Services-Transportation Division.

M2. Intersection #1: SR 49 @ Pleasant Valley Road, Near-Term (2028) plus Proposed Project Conditions

The impact can be mitigated with a traffic signal; however, the subject intersection is under the jurisdiction of Caltrans who will need to approve the timing for implementing a traffic signal.

The County's methods for identifying the timing for an intersection are based on both the Capital Improvement Program and Intersection Needs Prioritization Process. The County's 10-year Capital Improvement Program (CIP) includes a line item for un-programmed traffic signal installation and operational and safety improvements at intersections, including improvements such as construction of new traffic signals, construction of turn pockets, and the upgrade of existing traffic signal systems. The County annually monitors intersections with potential need for improvement through the *Intersection Needs Prioritization Process*. This process is utilized to inform the annual update to the CIP, and the Board of Supervisors can add potential intersection improvements to the CIP, as funding becomes available.

In the absence of identifying timing for implementing a traffic signal, The Community Development Services-Transportation Division has determined that the appropriate mitigation includes payment of traffic mitigation fees to satisfy the project's fair share obligation towards the traffic signal improvement. The project proportional share of growth of traffic entering the intersection is about 9.6% in the AM peak hour under Near Term (2028) plus Proposed Project conditions.

<u>OR</u>

Construction of the improvement (traffic signal) with reimbursement for costs that exceed the project's proportional share, if the improvement is needed but not included in future updates to the CIP or constructed by others. The improvement will need to consistent with General Plan Goal TC-X and supporting Policy TC-Xf.

Monitoring Requirement: All grading and construction activities will require compliance with the El Dorado County Design and Improvement Standards Manuel and measures as described in the *El Dorado Senior Resort Transportation Impact Study* prepared by Kimley-Horn dated (October 17, 2018) (Attachment 4). Planning Services shall verify the inclusion of this mitigation measure prior to the issuance of grading and building permits.

Monitoring Responsibility: Both Caltrans and Community Development Services-Transportation Division.

M3. Intersection #1: SR 49 @ Pleasant Valley Road, Cumulative (2035) plus Proposed Project Conditions

The impact can be mitigated with a traffic signal; however, the subject intersection is under the jurisdiction of Caltrans who will need to approve the timing for implementing a traffic signal.

The County's methods for identifying the timing for an intersection are based on both the Capital Improvement Program and Intersection Needs Prioritization Process. The County's Capital Improvement Program (CIP) includes a line item for un-programmed traffic signal installation and operational and safety improvements at intersections, including improvements such as construction of new traffic signals, construction of turn pockets, and the upgrade of existing traffic signal systems. The County annually monitors intersections with potential need for improvement through the *Intersection Needs Prioritization Process*. This process is utilized to inform the annual update to the CIP, and the Board of Supervisors can add potential intersection improvements to the CIP, as funding becomes available.

In the absence of identifying timing for implementing a traffic signal, The Community Development Services-Transportation Division has determined that the appropriate mitigation includes payment of traffic mitigation fees to satisfy the project's fair share obligation towards the traffic signal improvement. The project proportional share of growth of traffic entering the intersection is about 4.2% in the AM peak hour and 6.3% in the PM peak hour under Cumulative (2035) plus Proposed Project conditions.

<u>OR</u>

Construction of the improvement (traffic signal) with reimbursement for costs that exceed the project's proportional share, if the improvement is needed but not included in future updates to the CIP or constructed by others. The improvement will need to consistent with General Plan Goal TC-X and supporting Policy TC-Xf.

Monitoring Requirement: All grading and construction activities will require compliance with the El Dorado County Design and Improvement Standards Manuel and measures as described in the *El Dorado Senior Resort Transportation Impact Study* prepared by Kimley-Horn dated (October 17, 2018) (Attachment 4). Planning Services shall verify the inclusion of this mitigation measure prior to the issuance of grading and building permits.

Monitoring Responsibility: Both Caltrans and Community Development Services-Transportation Division.

c. **Air Traffic:** The project site is not within an airport safety zone. No changes in air traffic patterns would occur or be affected by the proposed project. There would be no impact.

d. **Design Hazards:** Transportation Division has reviewed the project plans and submitted traffic study for consistency with standards. Kimley-Horn and Associates, Inc. evaluated the project for potential hazards in their traffic analysis, which included a sight distance evaluation and a preliminary traffic safety evaluation. The study found that the project would not create or exacerbate hazards in the area, nor were there any hazards that might impact the project, as long as project landscaping and trees be placed in such a manner so as not to obstruct sight distance along Koki Lane. According to the project site plan there appears to be adequate sight distance on-site to facilitate safe and orderly circulation. The impacts would be less than significant.

e. **Emergency Access:** Fire Safe Regulations state that on-site roadways shall "provide for safe access for emergency wildland fire equipment and civilian evacuation concurrently, and shall provide unobstructed traffic circulation during a wildfire emergency…" All project roadways shall be designed and constructed in accordance with these requirements. As shown in the project site plan, the turn radius for a firetruck is depicted circulation through the proposed project. An all-weather emergency vehicle access road is being proposed connecting the El Dorado Senior Resort project to Highway 49. This driveway serves as a second point of ingress/egress to the proposed site for emergency vehicles. As such, the proposed project is considered to allow for adequate access and on-site circulation for emergency vehicles. The fire department review of plans associated with building permit would ensure compliance with these standards; therefore, impacts would be less than significant.

f. **Alternative Transportation.** The proposed project vicinity has five (5) transit stops located along SR-49 to promote access to the site. These transit stops are accessible through El Dorado Transit Routes 30 and 35, with the Pleasant Valley Road at Oro Lane stop being the closest to the project site. The proposed project will construct on-site pedestrian facilities in accordance with County design guidelines. These on-site pedestrian and bicycle facilities will connect the project with the proposed Caltrans adjacent bicycle and pedestrian facilities on SR 49, as conditioned of the project. The proposed project will have no impact on adopted policies, plans, or programs regarding public transit. Subsequently, the project would not decrease the performance or safety of such facilities; therefore, impacts would be less than significant.

FINDING: The project would not exceed the thresholds for traffic identified within the General Plan. For this Transportation/Traffic category, the threshold of significance would not be exceeded and impacts would be less than significant with mitigation measures incorporated.

XVII. TRIBAL CULTURAL RESOURCES. *Would the project:*				
Cause a substantial adverse change in the significance of a Tribal Cultural Resource as defined in 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:	Potentially Significant Impact	Less than Significant with Mitigation	Less Than Significant Impact	No Impact
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			**X**	
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.			**X**	

Regulatory Setting:

Federal Laws, Regulations, and Policies

No federal laws, regulations, or policies apply to Tribal Cultural Resources (TCRs) and the Proposed Project.

State Laws, Regulations, and Policies

Assembly Bill (AB) 52

AB 52, which was approved in September 2014 and effective on July 1, 2015, requires that CEQA lead agencies consult with a California Native American tribe that is traditionally and culturally affiliated with the geographic area of a proposed project, if so requested by the tribe. The bill, chaptered in CEQA Section 21084.2, also specifies that a project with an effect that may cause a substantial adverse change in the significance of a TCR is a project that may have a significant effect on the environment.

Defined in Section 21074(a) of the Public Resources Code, TCRs are:

1. Sites, features, places, cultural landscapes, sacred places and objects with cultural value to a California Native American tribe that are either of the following:
   a. Included or determined to be eligible for inclusion in the California Register of Historical Resources; or
   b. Included in a local register of historical resources as defined in subdivision (k) of Section 5020.1.

2. 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 Section 5024.1. In applying the criteria set forth in subdivision (c) of Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe.

TCRs are further defined under Section 21074 as follows:

b. A cultural landscape that meets the criteria of subdivision (a) is a TCR to the extent that the landscape is geographically defined in terms of the size and scope of the landscape; and
c. A historical resource described in Section 21084.1, a unique archaeological resource as defined in subdivision (g) of Section 21083.2, or a "nonunique archaeological resource" as defined in subdivision (h) of Section 21083.2 may also be a TCR if it conforms with the criteria of subdivision (a).

Mitigation measures for TCRs must be developed in consultation with the affected California Native American tribe pursuant to newly chaptered Section 21080.3.2, or according to Section 21084.3. Section 21084.3 identifies mitigation measures that include avoidance and preservation of TCRs and treating TRCs with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource.

Discussion:

In general, significant impacts are those that diminish the integrity, research potential, or other characteristics that make a TCR significant or important. To be considered a TCR, a resource must be either: (1) listed, or determined to be eligible for listing, on the national, state, or local register of historic resources, or: (2) a resource that the lead agency chooses, in its discretion, to treat as a TCR and meets the criteria for listing in the state register of historic resources pursuant to the criteria set forth in Public Resources Code Section 5024.1(c). A substantial adverse change to a TCR would occur if the implementation of the project would:

- Disrupt, alter, or adversely affect a TCR such that the significance of the resource would be materially impaired

a,b. **Tribal Cultural Resources.** There are no known TCRs located on or immediately adjacent to the project site. The Wilton Rancheria, Ione Band of Miwok Indians, and The United Auburn Indian Community of the Auburn Rancheria (UAIC) received notice of the proposed project and given access to all project documents on February 11, 2019, via certified mail. At this time no other tribes requested additional consultation or notification of the proposed project.

In response to a request dated February 25, 2019 from Ed Silva of Wilton Rancheria, the Cultural Resources Study for the project was sent to the tribe via email. No further information or other requests were received from Wilton Rancheria. In response to a request dated March 6, 2019 from Cherilyn Neider of UAIC, the

Cultural Resources Study for the project was sent to the tribe via email. No further information or other requests were received from UAIC. In response to a request dated March 7, 2019 and received March 19, 2019 from Sara Setshwaelo of Ione Band of Miwok Indians, the Cultural Resources Study for the project was sent to the tribe via email. No further information or other requests were received from Ione Band of Miwok Indians. No other requests for formal consultation were received for this project.

Pursuant to the Cultural Resources Study prepared by Historic Resource Associates (2007), the geographic area of the project site is not known to contain any resources 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 considered significant by a California Native American tribe. Standard Conditions of Approval have been added to the project. Impact would be less than significant.

FINDING: No significant TCRs are known to exist on the project site. As a result, the proposed project would not cause a substantial adverse change to a TCR and there would be no impact.

XVIII. UTILITIES AND SERVICE SYSTEMS. *Would the project:*				
	Potentially Significant Impact	Less than Significant with Mitigation	Less Than Significant Impact	No Impact
a. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?			**X**	
b. Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?			**X**	
c. Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?			**X**	
d. Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?			**X**	
e. Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?			**X**	
f. Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?			**X**	
g. Comply with federal, state, and local statutes and regulations related to solid waste?			**X**	

Regulatory Setting:

Federal Laws, Regulations, and Policies

Energy Policy Act of 2005

The Energy Policy Act of 2005, intended to reduce reliance on fossil fuels, provides loan guarantees or tax credits for entities that develop or use fuel-efficient and/or energy efficient technologies (USEPA, 2014). The act also increases the amount of biofuel that must be mixed with gasoline sold in the United States (USEPA, 2014).

State Laws, Regulations, and Policies

California Integrated Waste Management Act of 1989

The California Integrated Waste Management Act of 1989 (Public Resources Code, Division 30) requires all California cities and counties to implement programs to reduce, recycle, and compost wastes by at least 50 percent by 2000 (Public Resources Code Section 41780). The state, acting through the California Integrated Waste Management Board (CIWMB), determines compliance with this mandate. Per-capita disposal rates are used to determine whether a jurisdiction's efforts are meeting the intent of the act.

California Solid Waste Reuse and Recycling Access Act of 1991

The California Solid Waste Reuse and Recycling Access Act of 1991 (Public Resources Code Sections 42900-42911) requires that all development projects applying for building permits include adequate, accessible areas for collecting and loading recyclable materials.

California Integrated Energy Policy

Senate Bill 1389, passed in 2002, requires the California Energy Commission (CEC) to prepare an Integrated Energy Policy Report for the governor and legislature every 2 years (CEC 2015a). The report analyzes data and provides policy recommendations on trends and issues concerning electricity and natural gas, transportation, energy efficiency, renewable energy, and public interest energy research (CEC 2015a). The 2014 Draft Integrated Energy Policy Report Update includes policy recommendations, such as increasing investments in electric vehicle charging infrastructure at workplaces, multi-unit dwellings, and public sites (CEC 2015b).

Title 24–Building Energy Efficiency Standards

Title 24 Building Energy Efficiency Standards of the California Building Code are intended to ensure that building construction, system design, and installation achieve energy efficiency and preserve outdoor and indoor environmental quality (CEC 2012). The standards are updated on an approximately 3-year cycle. The 2013 standards went into effect on July 1, 2014.

Urban Water Management Planning Act

California Water Code Sections 10610 *et seq.* requires that all public water systems providing water for municipal purposes to more than 3,000 customers, or supplying more than 3,000 acre-feet per year (AFY), prepare an urban water management plan (UWMP).

Other Standards and Guidelines

Leadership in Energy & Environmental Design

Leadership in Energy & Environmental Design (LEED) is a green building certification program, operated by the U.S. Green Building Council (USGBC) that recognizes energy efficient and/or environmentally friendly (green) components of building design (USGBC, 2015). To receive LEED certification, a building project must satisfy prerequisites and earn points related to different aspects of green building and environmental design (USGBC, 2015). The four levels of LEED certification are related to the number of points a project earns: (1) certified (40–49 points), (2) silver (50–59 points), (3) gold (60–79 points), and (4) platinum (80+ points) (USGBC, 2015). Points or credits may be obtained for various criteria, such as indoor and outdoor water use reduction, and construction and demolition (C&D) waste management planning. Indoor water use reduction entails reducing consumption of building fixtures and fittings by at least 20% from the calculated baseline and requires all newly installed toilets, urinals, private lavatory faucets, and showerheads that are eligible for labeling to be WaterSense labeled (USGBC, 2014). Outdoor water use reduction may be achieved by showing that the landscape does not require a permanent irrigation system beyond a maximum 2.0-year establishment period, or by reducing the project's landscape water requirement by at least 30% from the calculated baseline for the site's peak watering month (USGBC, 2014). C&D waste management points may be obtained by diverting at least 50% of C&D material and three material streams, or generating less than 2.5 pounds of construction waste per square foot of the building's floor area (USGBC, 2014).

Discussion: A substantial adverse effect on Utilities and Service Systems would occur if the implementation of the project would:

- Breach published national, state, or local standards relating to solid waste or litter control;
- Substantially increase the demand for potable water in excess of available supplies or distribution capacity without also including provisions to adequately accommodate the increased demand, or is unable to provide an adequate on-site water supply, including treatment, storage and distribution;
- Substantially increase the demand for the public collection, treatment, and disposal of wastewater without also including provisions to adequately accommodate the increased demand, or is unable to provide for adequate on-site wastewater system; or
- Result in demand for expansion of power or telecommunications service facilities without also including provisions to adequately accommodate the increased or expanded demand.

a. **Wastewater Requirements**: Wastewater treatment would be provided for the site by El Dorado Irrigation District (EID), upon annexation. The Regional Water Quality Control Board sets treatments requirements for the collection, processing, and disposal of waste that EID must comply. It has been determined that the proposed project would utilize approximately 124.5 EDUs of sewer service. There is a 24-inch sewer line abutting the northern property line in Pleasant Valley Road. This sewer line has adequate capacity at this time. To receive service from this line, an extension of facilities of adequate size must be constructed. EID will need to review and approve any proposed grading and/or structures that are proposed in the vicinity of this sewer line. EID appears to have adequate capacity and facilities available, which could serve the projected wastewater demands of the project. The project would not lead to the EID's wastewater treatment plant (WWTP) to exceed its treatment capacity. Impacts would be less than significant.

b. **Construction of New Facilities:** A 12-inch water line exists in Pleasant Valley Road and a 6-inch water line is located in Koki Lane. The Diamond Springs/El Dorado Fire Protection District has determined that the minimum fire flow for this project is 1,750 GPM for a 2-hour duration while maintaining a 20-psi residual pressure. According to the District's hydraulic model, the existing system can deliver the required fire flow. To provide this fire flow and receive service, the project applicants must connect to the 12-inch water line, the 6-inch water line, or both through a looped water system, depending on site design. Prior to submitting building plans, the District will need to review these options with the applicant's civil engineer in order to determine which option will be required. No facilities expansion would be required as a result of this project. Impacts would be less than significant.

c. **New Stormwater Facilities:** Any possible drainage facilities needed for any future construction would be built in conformance with the County of El Dorado Drainage Manual, as determined by Community Development Services standards, during the grading and building permit processes. The impact would be less than significant.

d. **Sufficient Water Supply:** As of January 1, 2017, there were approximately 12,630 equivalent dwelling units (EDUs) of water supply available in the Western/Eastern Water Supply Region. The proposed project would require 126.5 EDUs of water supply, which would be verified prior to issuance of building permits. The property is not within EID's service area and will require annexation before water service can be obtained. EID has adequate water resources available in this region to serve the projected demands of the project. EID firmly maintains that it operates on a first-come, first-serve basis, and they do not account for provision of water service until a meter is purchased. There would be less than significant impacts to water supply, due to ample EID's inventory of EDUs.

e. **Adequate Wastewater Capacity:** The existing EID facilities are adequate to serve the proposed project with no expansion of either the infrastructure or the wastewater treatment plant. The property is **not** within the District boundary and will require annexation before wastewater service can be obtained. Service to this proposed development is contingent upon annexation approval from the District's Board of Directors and El Dorado Local Agency Formation Commission (LAFCO). Impacts to wastewater facilities would be less than significant.

f-g. **Solid Waste Disposal and Requirements:** El Dorado Disposal distributes municipal solid waste to Forward Landfill in Stockton and Kiefer Landfill in Sacramento. Pursuant to El Dorado County Environmental Management Solid Waste Division staff, both facilities have sufficient capacity to serve the County. Recyclable materials are distributed to a facility in Benicia and green wastes are sent to a processing facility in Sacramento. County Ordinance No. 4319 requires that new development provide areas for adequate, accessible, and convenient storing, collecting and loading of solid waste and recyclables. This project does not propose to add any activities that would generate additional solid waste, and any future additional housing units would generate minimal amounts of solid waste for disposal. Project impacts would be less than significant.

FINDING: No significant utility and service system impacts would be expected with the project, either directly or indirectly. For this Utilities and Service Systems category, the thresholds of significance would not be exceeded.

XIX. MANDATORY FINDINGS OF SIGNIFICANCE. *Does the project:*				
	Potentially Significant Impact	Less than Significant with Mitigation	Less Than Significant Impact	No Impact
a. Have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?			**X**	
b. Have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?			**X**	
c. Have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?			**X**	

Discussion:

a. No substantial evidence contained in the project record has been found that would indicate that this project would have the potential to significantly degrade the quality of the environment. As conditioned or mitigated, and with adherence to County permit requirements, this project would not have the potential to substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of California history, pre-history, or tribal cultural resources. Any impacts from the project would be less than significant due to the design of the project and required standards that would be implemented prior to CUP18-0009 or with the grading and building permit process and/or any required project specific improvements on or off the property.

b. Cumulative impacts are defined in Section 15355 of the California Environmental Quality Act (CEQA) Guidelines as *two or more individual effects, which when considered together, would be considerable or which would compound or increase other environmental impacts.*

The project would not involve development or changes in land use that would result in an excessive increase in population growth. Impacts due to increased demand for public services associated with the project would be offset by the payment of fees as required by service providers to extend the necessary infrastructure services. The project would not be anticipated to contribute substantially to increased traffic in the area and the project would not require an increase in the wastewater treatment capacity of the County. Due to the size of the proposed project, types of activities proposed, and site-specific environmental conditions, which have been disclosed in the Project Description and analyzed in Items I through XVIII, there would be no significant impacts anticipated related to agriculture resources, air quality, biological resources, cultural resources, geology/soils, hazards/hazardous materials, hydrology/water quality, land use/planning, mineral resources, noise, population/housing, public services, recreation, traffic/transportation, or utilities/service systems that would combine with similar effects such that the project’s contribution would be cumulatively considerable. For these issue areas, either no impacts, or less than significant impacts would be anticipated.

As outlined and discussed in this document, as conditioned and with compliance with County Codes, this project would be anticipated to have a less than significant project-related environmental effect which would cause substantial adverse effects on human beings, either directly or indirectly. Based on the analysis in this study, it has been determined that the project would have less than significant cumulative impacts.

c. Based on the discussion contained in this document, no potentially significant impacts to human beings are anticipated to occur with respect to potential project impacts. The project would not include any physical changes to the site, and any future development or physical changes would require review and permitting through the County. Adherence to these standard conditions would be expected to reduce potential impacts to a less than significant level.

FINDINGS: It has been determined that the proposed project would not result in significant environmental impacts. The project would not exceed applicable environmental standards, nor significantly contribute to cumulative environmental impacts.

INITIAL STUDY ATTACHMENTS

SUPPORTING INFORMATION SOURCE LIST

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Attachment 1

Biological Resources Evaluation
for the
El Dorado Senior Resort Project

El Dorado County, CA

Prepared by:

Sycamore Environmental Consultants, Inc.
6355 Riverside Blvd., Suite C
Sacramento, CA 95831
Phone: 916/ 427-0703
Contact: Chuck Hughes, M.S.

Prepared for:

El Dorado Senior Housing, LLC
854 Diablo Road
Danville, CA 94526
Contact: Mr. Jim Davies

30 August 2018

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Biological Resources Evaluation
for the
El Dorado Senior Resort Project

El Dorado County, CA

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I. SUMMARY OF FINDINGS AND CONCLUSIONS

This biological resources evaluation (BRE) was prepared for the El Dorado Senior Resort Project located in the unincorporated community of Diamond Springs in El Dorado County, CA. The approximately 8.18-acre Biological Study Area (BSA) consists mostly of blue oak woodland, and California annual grassland. There are no wetlands or waters.

The BSA provides potential habitat for some special-status wildlife and plant species that are considered during project review under the California Environmental Quality Act (CEQA). The BSA provides nesting habitat for birds regulated by State Fish and Game Code and listed under the Federal Migratory Bird Treaty Act (MBTA). No special-status wildlife or active nests were found in the BSA; however, active nests could become established prior to construction.

The BSA provides potential habitat for three special-status plant species. The three species, Nissenan manzanita (*Arctostaphylos nissenana*), Parry's horkelia (*Horkelia parryi*), and oval-leaved viburnum (*Viburnum ellipticum*) are ranked by the California Native Plant Society (CNPS). A botanical survey was conducted according to California Department of Fish and Wildlife and U.S. Fish and Wildlife Service guidelines. None of the special-status plant species were found in the BSA.

The BSA contains oak woodlands that are regulated under County ordinance implementing the Oak Resources Management Plan (ORMP). The County considers impacts to oak resources during the CEQA process. Mitigation may consist of paying an in-lieu fee, or preserving or replacing oaks on- or off-site.

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II. INTRODUCTION

A. Purpose of Report

The purpose of this report is to document baseline biological resources in the BSA. This report may be used in support of permit applications and in the California Environmental Quality Act (CEQA) review process. Project design is in preparation and biological impacts will be prepared separately.

B. Project Location

The BSA is in Diamond Springs, an unincorporated community in El Dorado County, CA. The approximately 8.18acre BSA is assessor's parcel numbers (APN) 331-221-30 and -32. The BSA is on the Placerville U.S. Geological Survey topographic quad (T10N, R10E, Section 35; Figure 1), and is in the South Fork American hydrologic unit (18020129). Its centroid is 38.680648º north, 120.840485° west, UTM coordinate 687,843 meters E, 4,283,553 meters N, Zone 10S (WGS84). Figure 2 is an aerial photograph of the BSA and surrounding area.

El Dorado County parcel data indicates that the eastern corner of the BSA is located in County rare plant mitigation zone 2, which is defined as the El Dorado Irrigation District Service Area. The rest of the BSA is not within a rare plant mitigation zone. The BSA is outside the U.S. Fish and Wildlife Service (USFWS) recovery boundary for the Pine Hill plants (USFWS 2002b). The BSA is located outside the El Dorado County Important Biological Corridor (IBC) and Ecological Preserve (EP) overlay areas (El Dorado County 2004b).

C. Project Applicant

El Dorado Senior Housing, LLC
854 Diablo Road
Danville, CA 94526

Contact: Mr. Jim Davies
Phone: 925/ 984-1222

D. Project Description

The project intends to design a senior housing development at the site. Project design has not been finalized, and this report does not quantify impacts or propose mitigation.

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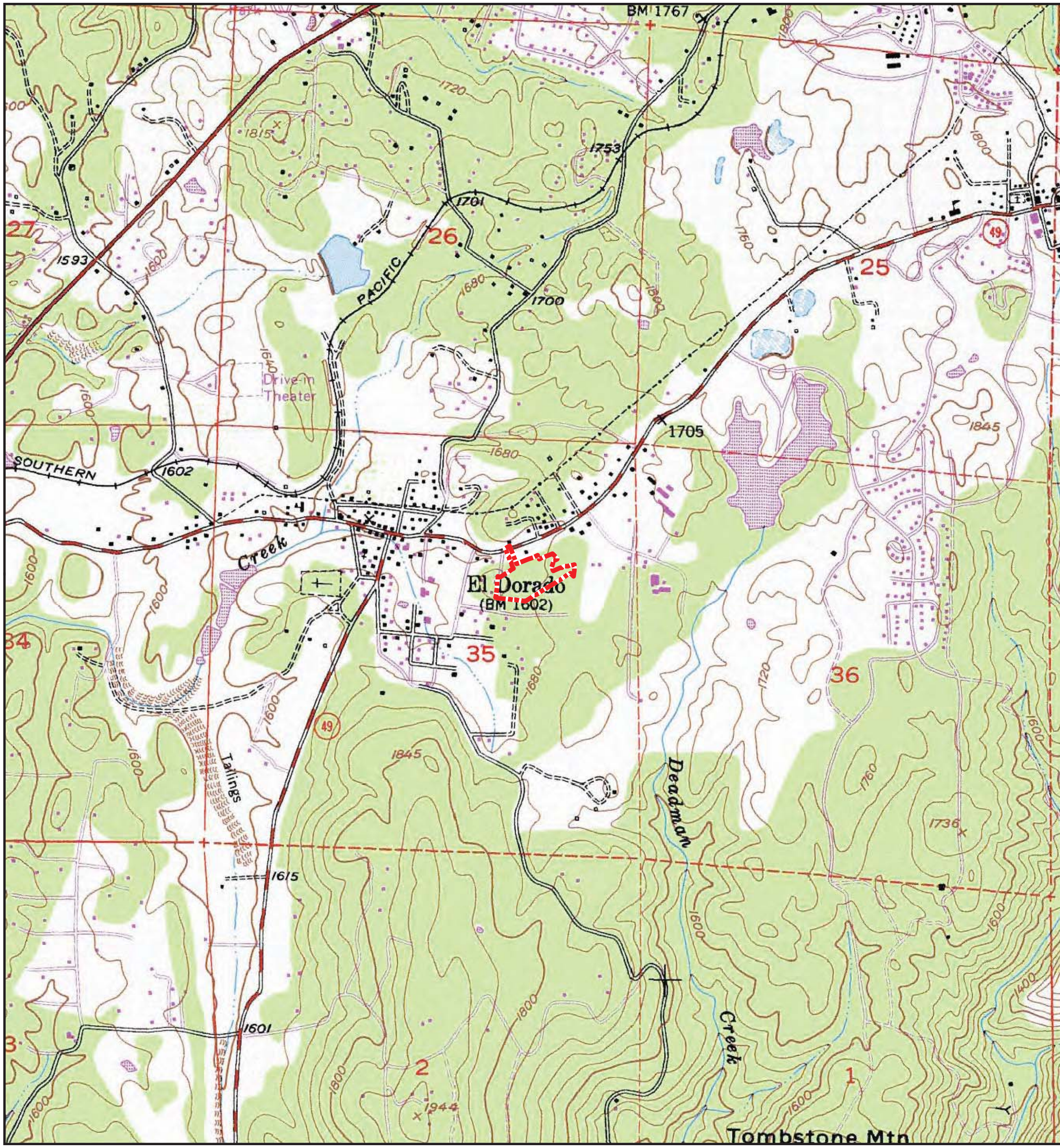

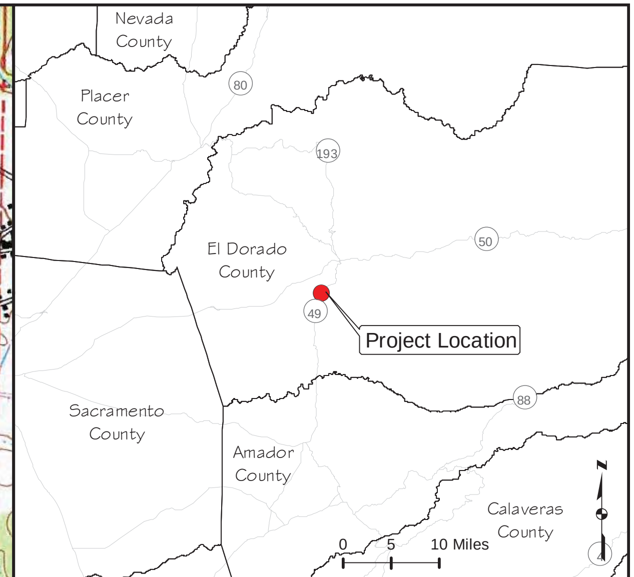

El Dorado Senior Resort
El Dorado County, CA
30 August 2018

Figure 1. Location Map

Project Location

2,000 1,000 0 2,000 Feet

N

Scale: 1 inch = 2,000 feet

Topo Basemap:
Placerville Quad, CA 1973
USGS 7.5' Quadrangle DRG
CASIL California Digital Raster Graphics,
7.5 Minute (C) Series, Albers Nad83 Mosaics (MrSID)
o_nw0102.sid, o_nw0101.sid

18020ElDoradoSeniorHousing_Fig1LocationMap.mxd

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El Dorado Senior Resort
El Dorado County, CA
30 August 2018

Biological Study Area (BSA)

Figure 2. Aerial Photograph

Aerial Photograph: 7 November 2017
UC-G Imagery, US-CA-Sacramento, Microsoft
ESRI ArcGIS Basemap Layer

18020ElDoradoSeniorHousing_Fig2AerialPhoto.mxd

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III. STUDY METHODS

A. Studies Conducted

An evaluation of biological resources was conducted to determine whether any special-status plant or wildlife species, their habitat, or sensitive habitats occur in the BSA. Data on known special-status species and habitats in the area was obtained from state and federal agencies. Maps and aerial photographs of the BSA and surrounding area were reviewed. A general biological survey, wetland reconnaissance survey, and appropriately-timed floristic botanical survey were conducted. The field surveys, map review, and a review of the biology of evaluated species and habitats were used to determine the special-status species and sensitive habitats that could occur in the BSA.

Special-status species in this report are those listed under the federal or state endangered species acts, under the California Native Plant Protection Act, as a California species of special concern or fully protected by the California Department of Fish and Wildlife (CDFW), that are Ranked 1 or 2 by the California Native Plant Society's Inventory of Rare and Endangered Plants of California (CNPS 2018), or are rare plants listed in the El Dorado County Ordinance Code §130.71.030. Special-status natural communities are waters, wetlands, riparian communities, any natural community ranked S1, S2, or S3 by CDFW (2018a), and any community identified as sensitive in the El Dorado County General Plan EIR (2004a).

B. Literature Search

Sycamore Environmental obtained a list from the U.S. Fish and Wildlife Service (USFWS) that identifies federal-listed species that could potentially occur in or be affected by a project in the BSA. The California Natural Diversity Database (CNDDB) and the California Native Plant Society (CNPS) Inventory were queried for the Placerville quad and eight surrounding USGS quads to determine known records of special-status species that occur in the vicinity of the BSA. The CNDDB tracks some species that have not been designated by CDFW as a California species of special concern and do not otherwise meet the criteria for special-status species in this BRE. These species are not evaluated in this BRE. The results of the database queries are in Appendix A.

C. Field Survey Methods

1. Survey History, Dates, and Personnel

Fieldwork for this BRE was conducted by Chuck Hughes, M.S., and Nicole (Desideri) Ibañez on 20 June 2018.

2. Precipitation Conditions

Historic average precipitation for the nearby Placerville gauge from 1 July through 20 June is 37.97 inches (CDEC 2018). From 1 July 2017 through 20 June 2018, the Placerville gauge reported 35.44 inches of precipitation. Precipitation for the rain-year at the time of the surveys was about 93% of normal at the nearby Placerville Gauge.

3. Biological Survey

The general biological survey consisted of walking through the BSA while assessing potential habitat for special-status species and sensitive communities. Wildlife species and vegetation communities were identified and recorded. A list of plant and wildlife species observed in the BSA is in Appendix C. Photographs of the BSA are in Appendix D.

4. Botanical Survey

The botanical survey followed the guidelines set forth by USFWS (1996) and CDFW (2018b). The June 2018 fieldwork was conducted during the published blooming period of special-status plants with potential to occur in the BSA, with the exception of Nissenan manzanita. Manzanitas generally bloom very early in the season, and the blooming period of Nissenan manzanita is February through March (CNPS 2018). However, Nissenan manzanita is best distinguished from the other manzanitas native to the area by bark characteristics, inflorescence bracts, and to a lesser extent by leaf size. The gray, shredding bark of Nissenan manzanita is clearly distinguishable from the red, smooth bark of the more common manzanitas native to the area. The botanical survey was conducted during the evident and identifiable period of Nissenan manzanita.

Systematic transects were walked throughout the BSA to search for all vascular plant species present. Frequent deviations were made from the transects to search areas of different microhabitat, areas that were more likely to support special-status plants, or identify additional plant species. Approximately 8 person-hours were spent in the field during the June 2018 surveys. An additional 1.5 person-hours were spent keying plants collected in the field. All vascular plants found in the BSA were identified to the taxonomic level necessary to determine legal status. A list of all vascular plants observed in the BSA is in Appendix C. Scientific nomenclature follows the Jepson Flora Project (2018), based on Baldwin et al. (2012).

D. Mapping

Aerial photographs acquired from ESRI ArcMap provided the base layer for Figures 2 and 4. Aerial photographs and field notes were used to estimate the boundaries of upland biological communities. Areas mapped as oak woodlands have a minimum of 10% cover of oak tree canopy, consistent with the County Oak Resources Management Plan (ORMP) adopted in 2017. Acreages were calculated using ArcMap functions.

E. Problems Encountered and Limitations That May Influence Results

This BRE is intended to identify baseline biological resources to support review of a project under the California Environmental Quality Act (CEQA). The surveys conducted for this

BRE are not intended to meet the documentation requirements of any published agency protocol or guideline surveys for special-status wildlife. A survey according to agency protocol for plants was conducted. No other problems or limitations were encountered during the fieldwork that would influence the results.

IV. ENVIRONMENTAL SETTING

The BSA is in the community of Diamond Springs in the foothills of the Sierra Nevada Mountains. The elevation ranges from approximately 1,660 to 1,710 feet. Most of the BSA is characterized by oak woodland, with a small patch of California annual grassland. The area surrounding the BSA consists of areas developed to residential and commercial uses, and undeveloped land with similar vegetation.

A. Soils

The primary component soils of mapping units in the BSA (Figure 3) are summarized below (NRCS 1974). Reported colors are for moist soil.

Boomer very rocky loam, 3 to 30% slopes:
The Boomer series consists of well-drained soils underlain by basic schists at a depth of 24 to 52 inches. A typical profile has dark reddish brown (5YR 3/4) gravelly loam from 0 to 13 inches, dark red (2.5YR 3/6) gravelly clay loam from 13 to 24 inches, dark red (2.5YR 3/6) and yellowish red (5YR 4/6) gravelly sandy clay loam from 24 to 37 inches, red (2.5YR 4/6) and yellowish red (5YR 4/6) very gravelly sandy clay loam from 37 to 52 inches, and well-fractured schist that has variable dark red (2.5YR 3/6), yellowish red (5YR 4/6), and strong brown (7.5YR 5/6) sandy clay loam in cracks below 52 inches. Surface runoff is medium, and the erosion hazard is slight to moderate. Boomer soils are used in woodland and range. Rock outcrops cover 5 to 25 percent of the surface.

Sobrante very rocky silt loam, 3 to 30% slopes:
The Sobrante series consists of well-drained soils that are underlain by fine-grained metamorphic rocks at a depth of 22 to 36 inches. A typical profile has dark reddish brown (5YR 3/4) silt loam from 0 to 5 inches, yellowish red (5YR 3/6) silt loam from 5 to 11 inches, dark red (2.5YR 3/6) light clay loam near silty clay loam from 11 to 24 inches, soft, well-weathered basic schist from 24 to 30 inches, and hard basic schist with pockets of slightly weathered material below 30 inches. Surface runoff is slow to medium and erosion hazard is slight to moderate. The soil profile has slight to moderate acidity in the top 5 inches. Sobrante very rocky silt loam is similar to the typical profile except that it is more sloping and rock outcrops make up 5 to 25 percent of the surface area.

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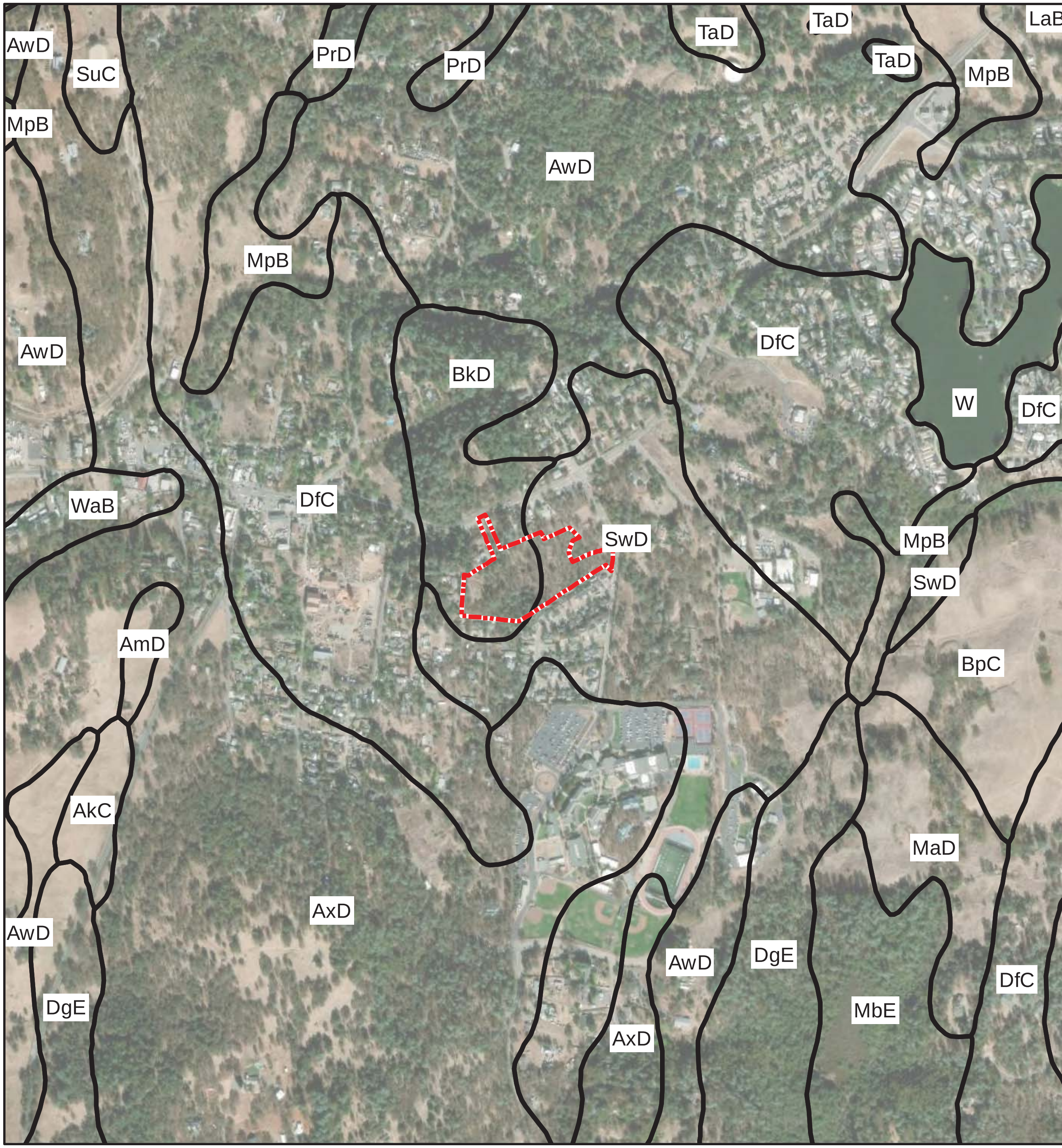

El Dorado Senior Resort
El Dorado County, CA
30 August 2018

Figure 3. Soils Map

Biological Study Area (BSA)
Soil Boundary

Soil Mapping Unit

Symbol	Name
BkD	Boomer very rocky loam, 3 to 30 percent slopes
SwD	Sobrante very rocky silt loam 3 to 30 percent slopes

1,000 500 0 1,000 Feet
N
Scale: 1 inch = 1000 feet

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Soil Survey Geographic (SSURGO) database for
El Dorado Area, California, USDA, NRCS
URL:http://SoilDataMart.nrcs.usda.gov/

Aerial Photograph: 7 November 2017
NAIP2016 USDA FSA Imagery
ESRI ArcGIS Basemap Layer

18020ElDoradoSeniorHousing_Fig3SoilsMap.mxd

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B. Biological Communities

Biological communities are defined by species composition and relative abundance. The biological communities described below correlate where applicable with the California Natural Community List (CDFW 2018a) and the El Dorado County General Plan EIR (2004a). The communities were identified based on Sawyer et al. (2009). Communities are identified at the alliance level. The list of sensitive associations within each alliance was checked to see if any occur (CDFW 2018a). Biological communities are mapped on Figure 4 and listed in Table 1. Representative photographs of the BSA are in Appendix D. There are no wetlands or waters in the BSA.

Table 1. Biological Communities.

Biological Community Common Name **(Scientific Name [CDFW Code][1])**	**El Dorado County Major Habitat Type [2]**	**Area (ac)**
Blue Oak Woodland (*Quercus douglasii* [71.020.02])	Blue Oak-Foothill Pine Woodland	7.69
California annual grassland (*Avena spp. – Bromus spp.* [42.027.00])	Annual grassland	0.49
	Total:	**8.18**

[1] Sawyer et al. 2009; CDFW 2018a
[2] El Dorado County 2004a

1. Blue Oak Woodland

Blue oak woodland occurs across the majority of the BSA (Appendix D, photos 1, 5, 6). Blue oaks (*Quercus douglasii*) and foothill pines (*Pinus sabiniana*) are co-dominant in this community. Other trees in this community include interior live oak (*Q. wislizeni*), and Valley oak (*Q. lobata*). The canopy is mostly open, although some denser patches occur. The understory shrub layer is patchy, and where present is dominated by poison oak (*Toxicodendron diversilobum*). Other shrub layer associates include buckbrush (*Ceanothus cuneatus* var. *cuneatus*) and chamise (*Adenostoma fasciculatum*). The herb layer is dominated by native and nonnative grasses, such as blue wild rye (*Elymus glaucus*), bromes (*Bromus* spp.), fescues (*Festuca* spp.) and native and nonnative forbs.

Blue oak woodland is not a CDFW sensitive community (CDFW 2018a).

1. California annual grassland

There is a small opening in the blue oak woodland that is characterized by California annual grassland (Appendix D, photo 3). This community is dominated by nonnative grasses, including bromes, fescues, slender wild oat (*Avena barbata*), and bristly dogtail grass (*Cynosurus echinatus*), with some native grass associates such as blue wild rye. This community has no canopy or shrub layer. California annual grassland is dominated by nonnatives and is not a CDFW sensitive community (CDFW 2018a).

C. The Existing Level of Disturbance

The northern end of the BSA has some disturbance related to its proximity to an adjacent residence. The northernmost extension of the BSA is an existing gravel driveway that connects the residence to Highway 49. Several tire tracks and short dirt roads occur throughout the northern half of the BSA. There are a couple of abandoned cars near the residence. The rest of the BSA is relatively undisturbed.

El Dorado Senior Resort
El Dorado County, CA
30 August 2018

Figure 4. Biological Resource Map

Biological Community	Area (ac)
Blue Oak Woodland	7.69
California Annual Grassland	0.49
Total:	**8.18**

Biological Study Area (BSA)
Biological Community Boundary

150 75 0 150 Feet
N
Scale: 1 inch = 150 feet

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Environmental
Consultants, Inc.

Aerial Photograph: 7 November 2017
NAIP2016 USDA FSA Imagery
ESRI ArcGIS Basemap Layer

18020ElDoradoSeniorHousing_Fig4BiologicalResourceMap.mxd

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V. BIOLOGICAL RESOURCES IN THE STUDY AREA

A. Determination of Special-Status Species in the Study Area

USFWS file data, CNDDB/CNPS records, and field surveys were used to determine the special-status species that could occur in the BSA (Appendix A). A field survey was conducted to determine whether habitat for special-status species identified in the file data is present in the BSA. Special-status species for which suitable habitat is present in the BSA are listed in Table 2.

Table 2. Special-Status Species and Natural Communities.

Special-Status Species	Common Name	Federal Status [a]	State Status [a] & other codes [b]	Source [c]	Habitat Present? / Species Observed?
Birds					
Nesting Birds (MBTA or CA regulated)		--	--	3	Yes/Yes
Plants			**/CNPS List [b]**		
Arctostaphylos nissenana	Nissenan manzanita	--	--/1B.2	2, 3	Yes/No
Horkelia parryi	Parry's horkelia	--	--/1B.2	2	Yes/No
Viburnum ellipticum	Oval-leaved viburnum	--	--/2B.3	2	Yes/No
Natural Communities					
Oak Woodlands and Trees		--	--	3	Yes/Yes

[a] **Listing Status:** Federal status determined from USFWS letter. State status determined from CDFW (2018c, d, e, f). Codes used in table are: **E** = Endangered; **T** = Threatened; **P** = Proposed; **C** = Candidate; **R** = California Rare; * = Possibly extinct.

[b] **Other Codes:** Other codes determined from USFWS letter; CDFW (2018c, d, e, f). Codes used in table are as follows:

SSC = CDFW Species of Special Concern; **FP** = CDFW Fully Protected; **Prot** = CDFW Protected; **CH =** Critical habitat designated.

CNPS List (plants only): **1A** = Presumed Extinct in CA; **1B** = Rare or Endangered (R/E) in CA and elsewhere; **2** = R/E in CA and more common elsewhere; **3** = Need more information; **4** = Plants of limited distribution

CNPS List Decimal Extensions: .1 = Seriously endangered in California (over 80% of occurrences threatened / high degree and immediacy of threat); **.2** = Fairly endangered in CA (20-80% of occurrences threatened); **.3 =** Not very endangered in CA (< 20% of occurrences threatened or no current threats known).

[c] **Source: 1** = USFWS letter. **2** = CNDDB. **3 =** Observed or included by Sycamore Environmental.

B. Special-Status Species not in the Project Study Area

Special-status species for which suitable habitat is not present, or whose distributional limits preclude the possibility of their occurrence in the BSA, are not discussed in Section V of this report. An evaluation of these species is in Appendix B.

C. Evaluation of Special-Status Wildlife Species

1. Birds

Nesting Birds Listed Under the MBTA or Regulated by CA Fish and Game Code

California Fish and Game Code §3503 protects most birds and their nests. CA Fish and Game Code §3503.5 further protects all birds in the orders Falconiformes and Strigiformes (collectively known as birds of prey). Birds of prey include raptors, falcons, and owls. The federal Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. 703-711) also protects most birds and their nests, including most non-migratory birds in California. The MBTA makes it unlawful to take, possess, buy, sell, purchase, or barter any bird listed in 50 CFR Part 10 including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations. Any disturbance that causes direct injury, death, nest abandonment, or forced fledging of migratory birds, is restricted under the MBTA. Any removal of active nests during the breeding season or any disturbance that results in the abandonment of nestlings is considered a 'take' of the species under federal law.

HABITAT PRESENT IN THE BSA: The BSA provides potential nesting habitat for birds listed under the MBTA or regulated by California Fish and Game Code. Depending on the species, birds may nest on trees, shrubs, in or on the ground, and on artificial structures such as buildings, poles, and signs.

DISCUSSION: Bird species observed in the BSA are identified in Appendix C. Active nests could become established prior to construction. The nesting season is typically considered to be 15 February to 31 August for most bird species. Avoidance of vegetation removal during that time period, and surveys and avoidance of nests during that time period, could avoid impacts to nesting birds.

D. Evaluation of Special-Status Plants

Nissenan Manzanita (*Arctostaphylos nissenana*)

HABITAT AND BIOLOGY: Nissenan manzanita is an evergreen shrub found on rocky soil and ridges in closed-cone coniferous forest, chaparral, or woodland habitats from about 1,475 to 5,400 feet. It typically blooms from February through March (CNPS 2018, Jepson 2018).

RANGE: Nissenan manzanita is known from three counties (Placer, El Dorado, and Tuolumne) in the northern Sierra Nevada Mountains and central Sierra Nevada foothills (CNPS 2018, Jepson 2018).

KNOWN RECORDS: There are 11 CNDDB records in the 9-quad area centered at the BSA. North Fork Associates conducted a botanical survey in 2009 for a site approximately 1.2 miles northeast of the BSA. North Fork reported 62 Nissenan manzanita plants from this site. Sycamore Environmental visited the site briefly in 2013, made a collection of Nissenan manzanita that was deposited at the UC Davis herbarium, and became CNDDB Occurrence 14. Sycamore Environmental conducted a botanical survey of the site in 2017 and counted a total of 88 Nissenan manzanita shrubs (Sycamore 2018). Nearly all of the Nissenan manzanitas on the site occur in areas that were graded for development prior to 1993. They co-occur with *Arctostaphylos viscida*. CNDDB Occurrence 1 is much larger and is 1.2 miles to the east of the BSA. All known Nissenan manzanita records are east of the BSA.

HABITAT PRESENT IN THE BSA: The oak woodland in the BSA provides marginal potential habitat for Nissenan manzanita. The BSA is near the edge of the range of Nissenan manzanita.

DISCUSSION: Nissenan manzanita was not observed in the BSA during the botanical surveys. While the survey was conducted outside of the blooming period, Nissenan manzanita is an evergreen shrub with bark characteristics that make it evident and identifiable year-round. The Sycamore biologists conducting the survey have identified Nissenan manzanita on a nearby site, outside of the blooming period, and are familiar with identifying the shrub in its vegetative state.

Parry's Horkelia (*Horkelia parryi*)

HABITAT AND BIOLOGY: Parry's horkelia is a perennial herb found in chaparral and cismontane woodland, especially of the Ione formation, from about 250 to 3,400 feet in elevation. It blooms April through September (CNPS 2018, Jepson 2018).

RANGE: Parry's horkelia is known from the northern and central Sierra Nevada foothills in Amador, Calaveras, El Dorado, Mariposa, and Tuolumne counties (CNPS 2018, Jepson 2018).

KNOWN RECORDS: There are 13 CNDDB records in the 9-quad area centered on the BSA. The nearest record occurs approximately 3 miles northeast of the BSA. The record is a 1923 collection, with the exact location unknown and mapped as best guess in the vicinity of Placerville. The nearest detailed record occurs 9 miles east of the BSA in habitat described as a grassy site at the edge of chaparral and oak woodland. A total of 30 clumps of about 1-20 plants were observed in 1994; 20-30 clumps of 1 or more plants were observed in 2004; and one clump remained in 2015.

HABITAT PRESENT IN THE BSA: The oak woodland in the BSA provides marginal potential habitat for Parry's horkelia.

DISCUSSION: Parry's horkelia was not observed in the BSA during the botanical surveys conducted during the evident and identifiable period.

Oval-leaved Viburnum (*Viburnum ellipticum*)

HABITAT AND BIOLOGY: Oval-leaved viburnum is a deciduous shrub found in chaparral, cismontane woodland, and lower montane coniferous forest from 700 to 4,600 feet (CNPS 2016). Jepson (2018) describes it as occurring above 980 feet in chaparral or yellow-pine forest, generally on north facing slopes. It blooms May through August (CNPS 2018, Jepson 2018).

RANGE: Known from the north coast, Klamath ranges, north Coast Ranges, Bay Area, and northern/central Sierra Nevada foothills (Jepson 2018).

KNOWN RECORDS: There is one CNDDB record in the 9-quad area centered on the BSA. The record is a 1901 collection mapped approximately 3 miles northeast of the BSA. The exact location of the record is unknown, so it is mapped as best guess in the vicinity of Placerville.

HABITAT PRESENT IN THE BSA: The oak woodland in the BSA may provide potential habitat for oval-leaved viburnum.

DISCUSSION: Oval-leaved viburnum was not observed in the BSA during the botanical survey conducted during the evident and identifiable period.

E. Evaluation of Sensitive Natural Communities

Oak Woodlands and Trees

A total of 7.79 acres in the BSA is comprised of blue oak woodland. Areas mapped as oak woodland have at least 10% canopy cover, consistent with the Oak Resources Management Plan (ORMP) adopted by the County in October 2017. Several of the oak trees in the oak woodland qualify as heritage trees under the ORMP. Blue oak woodland is not classified as sensitive habitat in the El Dorado County General Plan EIR (2004a).

DISCUSSION: The ORMP regulates oak woodlands, individual oak trees outside of oak woodlands, and heritage trees. Oak woodlands, areas with at least 10% cover of oak canopy, are regulated by acreage. Individual oak trees outside oak woodlands, of at least six inches diameter at breast height (dbh), are regulated by size. Heritage oaks, of at least 36 inches dbh, are regulated by size at a higher mitigation ratio, both inside and outside of oak woodlands. Mitigation may occur based on on-site replacement, off-site replacement or preservation, or payment of an in-lieu fee. The ORMP requires an oak resources technical report that is being prepared separately.

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PREPARERS

Chuck Hughes, M.S., Plant Biology, Michigan State University. Over 15 years of experience preparing biological/botanical resource evaluations, wetland delineations, arborist reports, impact analyses, and mitigation/restoration plans. He is a Professional Wetland Scientist (#2029), an ISA Certified Arborist (WE-6885A), holds a California Department of Fish and Wildlife Rare, Threatened and Endangered Plant Voucher Collecting Permit (2081(a)-14-072-V), is a Principal Scientific Investigator on the CDFW Scientific Collecting Permit (SC-7617), and is authorized individual on a USFWS recovery permit for listed vernal pool branchiopods (TE799564-4). His bachelor's degree from UC Davis is in environmental horticulture and urban forestry, with an emphasis in plant biodiversity.
Responsibilities: Fieldwork and report preparation.

Nicole Ibañez, B.S., Biological Sciences (concentration in Field and Wildlife Biology), California Polytechnic State University. Conducts monitoring, plant and wildlife surveys, and assists with preparation of Biological Resource Evaluations, Natural Environment Study reports, permit applications, and documents used in the CEQA/NEPA process. Serves as both field biologist and technical report writer, and conducts database research on special status species' biology, habitat and distribution. She prepares maps and figures for biological and permitting documents such as project location maps, aerial photograph exhibits, soils maps, biological resource maps, wetlands/waters delineation maps, tree location maps and other supporting graphics. She holds a California Department of Fish and Wildlife Rare, Threatened and Endangered Plant Voucher Collecting Permit (2081(a)-16-107-V) and is an authorized individual on the CDFW Scientific Collecting Permit (SC-7617).
Responsibilities: Fieldwork, report and figure preparation.

Jeffery Little, Vice President, Sycamore Environmental.
Responsibilities: Principal in charge.

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APPENDIX A.

Database Queries

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
Phone: (916) 414-6600 Fax: (916) 414-6713

In Reply Refer To: August 30, 2018
Consultation Code: 08ESMF00-2018-SLI-3095
Event Code: 08ESMF00-2018-E-09295
Project Name: El Dorado Senior Housing

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, under the jurisdiction of the U.S. Fish and Wildlife Service (Service) that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the Service under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

Please follow the link below to see if your proposed project has the potential to affect other species or their habitats under the jurisdiction of the National Marine Fisheries Service:

http://www.nwr.noaa.gov/protected_species/species_list/species_lists.html

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

Project Summary

Consultation Code: 08ESMF00-2018-SLI-3095

Event Code: 08ESMF00-2018-E-09295

Project Name: El Dorado Senior Housing

Project Type: DEVELOPMENT

Project Description: Senior Housing Community Development

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/38.679521422512465N120.84198639085494W

Counties: El Dorado, CA

Endangered Species Act Species

There is a total of 3 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Amphibians

NAME	STATUS
California Red-legged Frog Rana draytonii There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2891	Threatened

Fishes

NAME	STATUS
Delta Smelt Hypomesus transpacificus There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/321	Threatened

Flowering Plants

NAME	STATUS
Layne's Butterweed Senecio layneae No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4062	Threatened

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Placerville (3812067) OR Shingle Springs (3812068) OR Camino (3812066) OR Coloma (3812078) OR Garden Valley (3812077) OR Slate Mtn. (3812076) OR Aukum (3812056) OR Fiddletown (3812057) OR Latrobe (3812058))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Accipiter gentilis northern goshawk	ABNKC12060	None	None	G5	S3	SSC
Agelaius tricolor tricolored blackbird	ABPBXB0020	None	Candidate Endangered	G2G3	S1S2	SSC
Allium jepsonii Jepson's onion	PMLIL022V0	None	None	G2	S2	1B.2
Antrozous pallidus pallid bat	AMACC10010	None	None	G5	S3	SSC
Arctostaphylos nissenana Nissenan manzanita	PDERI040V0	None	None	G1	S1	1B.2
Ardea alba great egret	ABNGA04040	None	None	G5	S4	
Ardea herodias great blue heron	ABNGA04010	None	None	G5	S4	
Bombus occidentalis western bumble bee	IIHYM24250	None	None	G2G3	S1	
Calochortus clavatus var. avius Pleasant Valley mariposa-lily	PMLIL0D095	None	None	G4T2	S2	1B.2
Calystegia stebbinsii Stebbins' morning-glory	PDCON040H0	Endangered	Endangered	G1	S1	1B.1
Calystegia vanzuukiae Van Zuuk's morning-glory	PDCON040Q0	None	None	G2Q	S2	1B.3
Carex cyrtostachya Sierra arching sedge	PMCYP03M00	None	None	G2	S2	1B.2
Carex xerophila chaparral sedge	PMCYP03M60	None	None	G2	S2	1B.2
Ceanothus roderickii Pine Hill ceanothus	PDRHA04190	Endangered	Rare	G1	S1	1B.1
Central Valley Drainage Hardhead/Squawfish Stream Central Valley Drainage Hardhead/Squawfish Stream	CARA2443CA	None	None	GNR	SNR	
Central Valley Drainage Resident Rainbow Trout Stream Central Valley Drainage Resident Rainbow Trout Stream	CARA2421CA	None	None	GNR	SNR	
Chlorogalum grandiflorum Red Hills soaproot	PMLIL0G020	None	None	G3	S3	1B.2
Clarkia biloba ssp. brandegeeae Brandegee's clarkia	PDONA05053	None	None	G4G5T4	S4	4.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Cosumnoperla hypocrena Cosumnes stripetail	IIPLE23020	None	None	G2	S2	
Crocanthemum suffrutescens Bisbee Peak rush-rose	PDCIS020F0	None	None	G2?Q	S2?	3.2
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Erethizon dorsatum North American porcupine	AMAFJ01010	None	None	G5	S3	
Fremontodendron decumbens Pine Hill flannelbush	PDSTE03030	Endangered	Rare	G1	S1	1B.2
Galium californicum ssp. sierrae El Dorado bedstraw	PDRUB0N0E7	Endangered	Rare	G5T1	S1	1B.2
Horkelia parryi Parry's horkelia	PDROS0W0C0	None	None	G2	S2	1B.2
Lasionycteris noctivagans silver-haired bat	AMACC02010	None	None	G5	S3S4	
Myotis yumanensis Yuma myotis	AMACC01020	None	None	G5	S4	
Packera layneae Layne's ragwort	PDAST8H1V0	Threatened	Rare	G2	S2	1B.2
Pekania pennanti fisher - West Coast DPS	AMAJF01021	None	Threatened	G5T2T3Q	S2S3	SSC
Phrynosoma blainvillii coast horned lizard	ARACF12100	None	None	G3G4	S3S4	SSC
Rana boylii foothill yellow-legged frog	AAABH01050	None	Candidate Threatened	G3	S3	SSC
Rana draytonii California red-legged frog	AAABH01022	Threatened	None	G2G3	S2S3	SSC
Riparia riparia bank swallow	ABPAU08010	None	Threatened	G5	S2	
Sacramento-San Joaquin Foothill/Valley Ephemeral Stream Sacramento-San Joaquin Foothill/Valley Ephemeral Stream	CARA2130CA	None	None	GNR	SNR	
Strix nebulosa great gray owl	ABNSB12040	None	Endangered	G5	S1	
Viburnum ellipticum oval-leaved viburnum	PDCPR07080	None	None	G4G5	S3?	2B.3
Wyethia reticulata El Dorado County mule ears	PDAST9X0D0	None	None	G2	S2	1B.2

Record Count: 37

CNPS California Native Plant Society

Plant List

Inventory of Rare and Endangered Plants

16 matches found. *Click on scientific name for details*

Search Criteria

California Rare Plant Rank is one of [1A, 1B, 2A, 2B], Found in Quads 3812078, 3812077, 3812076, 3812068, 3812067, 3812066, 3812058 3812057 and 3812056;

Modify Search Criteria Export to Excel Modify Columns Modify Sort Display Photos

Scientific Name	Common Name	Family	Lifeform	Blooming Period	CA Rare Plant Rank	State Rank	Global Rank
Allium jepsonii	Jepson's onion	Alliaceae	perennial bulbiferous herb	Apr-Aug	1B.2	S2	G2
Arctostaphylos nissenana	Nissenan manzanita	Ericaceae	perennial evergreen shrub	Feb-Mar	1B.2	S1	G1
Calochortus clavatus var. avius	Pleasant Valley mariposa lily	Liliaceae	perennial bulbiferous herb	May-Jul	1B.2	S2	G4T2
Calystegia stebbinsii	Stebbins' morning-glory	Convolvulaceae	perennial rhizomatous herb	Apr-Jul	1B.1	S1	G1
Calystegia vanzuukiae	Van Zuuk's morning-glory	Convolvulaceae	perennial rhizomatous herb	May-Aug	1B.3	S2	G2Q
Carex cyrtostachya	Sierra arching sedge	Cyperaceae	perennial herb	May-Aug	1B.2	S2	G2
Carex xerophila	chaparral sedge	Cyperaceae	perennial herb	Mar-Jun	1B.2	S2	G2
Ceanothus roderickii	Pine Hill ceanothus	Rhamnaceae	perennial evergreen shrub	Apr-Jun	1B.1	S1	G1
Chlorogalum grandiflorum	Red Hills soaproot	Agavaceae	perennial bulbiferous herb	May-Jun	1B.2	S3	G3
Erigeron miser	starved daisy	Asteraceae	perennial herb	Jun-Oct	1B.3	S3?	G3?
Fremontodendron decumbens	Pine Hill flannelbush	Malvaceae	perennial evergreen shrub	Apr-Jul	1B.2	S1	G1
Galium californicum ssp. sierrae	El Dorado bedstraw	Rubiaceae	perennial herb	May-Jun	1B.2	S1	G5T1
Horkelia parryi	Parry's horkelia	Rosaceae	perennial herb	Apr-Sep	1B.2	S2	G2
Packera layneae	Layne's ragwort	Asteraceae	perennial herb	Apr-Aug	1B.2	S2	G2
Viburnum ellipticum	oval-leaved viburnum	Adoxaceae	perennial deciduous shrub	May-Jun	2B.3	S3?	G4G5
Wyethia reticulata	El Dorado County mule ears	Asteraceae	perennial herb	Apr-Aug	1B.2	S2	G2

Suggested Citation

California Native Plant Society, Rare Plant Program. 2018. Inventory of Rare and Endangered Plants of California (online edition, v8-03 0.39). Website http://www.rareplants.cnps.org [accessed 29 June 2018].

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APPENDIX B.

Species Evaluated Table

Special-Status Species from USFWS Letter, CNDDB Data, CNPS Data

Special-Status Species/ Common Name	Federal Status [a, b]	State Status [a, b]	Source [c]	Habitat Requirements	Potential to Occur in the BSA
Fish					
Hypomesus transpacificus Delta smelt	T, CH	E	1	Euryhaline (tolerant of a wide salinity range) species that spawns in freshwater dead-end sloughs and shallow edge-waters of channels of the Delta (USFWS 1994). Confined to the San Francisco Estuary, principally in the Delta and Suisun Bay. Currently found only from the San Pablo Bay upstream through the Delta in Contra Costa, Sacramento, San Joaquin, Solano, and Yolo cos. Can be washed into San Pablo Bay during high-outflow periods, but do not establish permanent populations there (Moyle 2002).	No. There is no suitable habitat. The BSA is not in critical habitat.
Amphibians					
Rana boylii Foothill yellow-legged frog	--	CT, SSC	2	Found in or near rocky streams in a variety of habitats, including valley-foothill hardwood, valley-foothill hardwood-conifer, valley-foothill riparian, ponderosa pine, mixed conifer, coastal scrub, mixed chaparral, and wet meadow types. Egg clusters are attached to gravel or rocks in moving water near stream margins. This species is rarely encountered (even on rainy nights) far from permanent water. Its elevation range extends from near sea level to 6,370 ft in the Sierra (CWHR 2018).	No. There is no suitable habitat in the BSA.
Rana draytonii California red-legged frog	T, CH	SSC	1, 2	Inhabits ponds, quiet pools of streams, marshes, and riparian areas with dense, shrubby, or emergent vegetation. Requires permanent or nearly permanent pools for larval development (CWHR 2018; USFWS 2010). May use ephemeral water bodies for breeding if permanent water is nearby (Thomson et al. 2016). The range of CA red-legged frog extends from near sea level to approximately 5,200 ft, though nearly all sightings have occurred below 3,500 ft. CA red-legged frog was probably extirpated from the floor of the Central Valley before 1960 (USFWS 2002a).	No. There is no suitable habitat in the BSA.
Reptiles					
Emys marmorata Western pond turtle	--	SSC	2	Occurs in suitable aquatic habitat throughout CA, west of the Sierra-Cascade crest and absent from desert regions, except in the Mojave Desert along the Mojave River and its tributaries from near sea level to approximately 4,690 ft. Associated with permanent or nearly permanent water in a wide variety of habitats with basking sites such as submerged logs, rocks, mats of floating vegetation, or open mud banks (CWHR 2018).	No. There is no suitable habitat in the BSA.

Special-Status Species/ Common Name	Federal Status [a, b]	State Status [a, b]	Source [c]	Habitat Requirements	Potential to Occur in the BSA
Phrynosoma blainvillii Coast (California) horned lizard	--	SSC	2	Occurs in valley-foothill hardwood, conifer and riparian habitats, as well as in pine-cypress, juniper and annual grassland habitats, especially sandy areas, washes, flood plains and wind-blown deposits. Basks in the early morning (CWHR 2018). Needs loose or sandy soil for burrowing and reproduction. Needs open areas for thermoregulation and shrub cover or kangaroo rat burrows for refugia. Negatively associated with non-native Argentine ant (*Linepithema humile*) presence; positively associated with presence of native ants, and chaparral vegetation (Thomson et al. 2016). Occurs in the Sierra Nevada foothills from Butte Co. to Kern Co. and throughout the central and southern California coast. Found up to 4,000 ft in the northern end of its range and 6,000 ft in the southern end (CWHR 2018).	No. There is no suitable chaparral habitat in the BSA. Records from El Dorado County are in gabbroic chaparral.
Birds					
Accipiter gentilis Northern goshawk	--	SSC	2	Breeds in the North Coast Ranges, Sierra Nevada, Klamath, Cascade, and Warner Mountains. Also breeds in the Piños, San Jacinto, San Bernardino, and White Mtns. Remains yearlong in breeding areas as an uncommon resident. Prefers middle and higher elevations in mature, dense conifer forests. Habitat requirements include meadows and riparian habitat. Casual in winter along north coast, throughout foothills, and in northern deserts, where it may be found in pinyon-juniper and low-elevation riparian habitats. Usually nests near water on north slopes, in the densest parts of vegetation stands, staying close to openings (CWHR 2018). In the west side Ponderosa pine zone, northern goshawks are known to nest down to approximately 2,500 ft. Nest stands consistently have larger trees, greater canopy cover, and relatively more open understories than stands lacking nests (Shuford and Gardali 2008). Goshawks generally do not nest near areas of human habitation or paved roads (USFWS 2001).	No. There are no dense mature conifer groves. The BSA is below the nesting elevation range.
Agelaius tricolor Tricolored blackbird	--	CE/ SSC	2	Mostly a resident in California. Common locally throughout the Central Valley and in coastal districts from Sonoma Co. south. Breeds near freshwater, preferably in emergent wetland with tall, dense cattails or tules, but also in thickets of willow, blackberry, tall herbs, and wild rose. Highly colonial; nesting area must be large enough to support a minimum colony of about 50 pairs (CWHR 2018). Chooses areas with widespread water and large, thick patches of vegetation for colonies to reduce predation (Hamilton 2004). Nesting colonies are of concern to CDFW (2018c).	No. There is no suitable nesting habitat.
Riparia riparia Bank swallow	--	T	2	Found primarily west of CA deserts in riparian and other lowland habitats during the spring-fall period. In summer, restricted to riparian, lacustrine, and coastal areas with vertical banks, bluffs, and cliffs with fine textured sandy soils, into which it digs nesting holes. About 75% of the breeding population in CA occurs along banks of the Sacramento and Feather Rivers in the northern Central Valley. Other colonies are known from the central coast from Monterey to San Mateo cos., and in northeastern California in Shasta, Siskiyou, Lassen, Plumas, and Modoc cos. Breeding colonies can have between 10 and 1,500, but typically between 100 and 200, nesting pairs (CWHR 2018). Nesting sites are of concern to CDFW (2018c).	No. There is no suitable nesting habitat.

Special-Status Species/ Common Name	Federal Status [a, b]	State Status [a, b]	Source [c]	Habitat Requirements	Potential to Occur in the BSA
Strix nebulosa Great gray owl	--	E	2	Occurs between 4,500 and 7,500 ft in the Sierra Nevada in the vicinity of Quincy in Plumas Co. south to Yosemite. Occasionally reported in Northwestern CA in winter and in the Warner Mtns. in summer. Breeds in old-growth red fir, mixed conifer, and lodgepole pine habitats in the vicinity of wet meadows. Uses trees in dense forest stands for roosting cover and small trees and snags in or bordering meadows for hunting perches. Nests in large, broken-topped snags 25 to 72 ft above the ground. Often uses old hawk or eagle nests (CWHR 2018). Nesting sites are of concern to CDFW (2018c).	No. The BSA is below the elevation range. There is no old-growth coniferous forest suitable for nesting habitat.
Mammals					
Pekania pennanti Fisher – West Coast DPS	--	T/ SSC	2	Uncommon permanent resident of the Sierra Nevada, Cascades, Klamath Mountains, and the North Coast Ranges (CWHR 2018). Occurs above 3,200 ft in the Sierra Nevada and Cascades (Jameson and Peeters 2004). Today, fisher distribution in CA is represented by two populations: northwestern California and the southern Sierra Nevada. Fishers apparently no longer inhabit the area between the Pit River in the northern Sierra Nevada/Cascades to the Merced River in the southern Sierra Nevada; a separation of approximately 270 miles. There is little empirical evidence that fishers previously inhabited this gap in the Sierra Nevada (CDFW 2010). Occurs in intermediate- to large-stages of coniferous forest and deciduous-riparian habitat with high percent canopy closure. Canopy closure must be greater than 50% to be suitable habitat. Dens in a variety of protected cavities, brush piles, logs, and upturned trees. Hollow logs, trees, and snags are especially important. Mostly nocturnal and crepuscular, with some diurnal activity (CWHR 2018).	No. There is no mature conifer forest with >50% canopy cover. The BSA occurs below the elevation range.
Antrozous pallidus Pallid bat	--	SSC	2	Occupies a wide variety of habitats including grasslands, shrublands, woodlands, and forests from sea level up through mixed conifer forests. The species is most common in open, dry habitats with rocky areas for roosting. It feeds on a wide variety of insects and arachnids, foraging over open ground, usually 1.6 to 8 ft above level ground. Day roosts in caves, crevices, mines, and occasionally buildings and in hollow trees. Roost must protect bats from high temperatures. Night roosts may be in more open sites, such as porches and open buildings. Prefers rocky outcrops, cliffs, and crevices with access to open habitats for foraging. Locally common in low elevations in CA, it occurs throughout CA except for the high Sierra Nevada from Shasta to Kern counties, and the northwestern corner of the state from Del Norte and western Siskiyou counties to northern Mendocino County. It is a yearlong resident in most of the range (CHWR 2018).	No. There are no suitable rock outcrops/cliffs, or mature conifer forests likely to have suitable hollow trees.
Plants		**/ CNPS [d]**			
Allium jepsonii Jepson's onion	--	--/ 1B.2	2	Bulbiferous herb found in serpentine or volcanic soils in chaparral, cismontane woodland, and lower montane coniferous forest from 984 to 4,331 ft. Known from Butte, El Dorado, Placer, and Tuolumne cos. Blooms April through August (Baldwin et al. 2012; CNPS 2018).	No. There are no serpentine or volcanic soils.

Special-Status Species/ Common Name	Federal Status [a, b]	State Status [a, b]	Source [c]	Habitat Requirements	Potential to Occur in the BSA
Arctostaphylos nissenana Nissenan manzanita	--	--/ 1B.2	2	Perennial evergreen shrub found on highly acidic rocky (slate and shale) soils. Often associated with closed-cone conifer forest and chaparral from about 1,475 to 5,400 ft (USFS 2009, CNPS 2018, Jepson 2018). Known from approximately 15 occurrences in Placer, El Dorado and Tuolumne cos. Blooms February through March (Baldwin et al. 2012; CNPS 2018).	Yes. See discussion.
Calochortus clavatus var. *avius* Pleasant Valley mariposa lily	--	--/1B.2	2	Perennial bulbiferous herb found on Josephine silt loam and volcanic soils in lower montane coniferous forests, from 1,000 to 5,900 ft (USFS 2009 and CNPS 2018). Known from Amador, Calaveras, El Dorado, and Placer cos. Presumed extirpated from Mariposa Co. Blooms May through July (CNPS 2018).	No. There is no suitable habitat and soil.
Calystegia stebbinsii Stebbins' morning-glory	E	E/ 1B.1	2	Perennial rhizomatous herb found in serpentine or gabbroic soils in openings in chaparral and cismontane woodland from 607 to 3,576 ft. Known from El Dorado and Nevada cos. Blooms April through July (Baldwin et al. 2012, CNPS 2018).	No. There are no suitable soils.
Calystegia vanzuukiae Van Zuuk's morning-glory	--	--/1B.3	2	Perennial rhizomatous herb found in gabbroic or serpentinite soils in chaparral and cismontane woodlands from 1,640 to 3,870 ft. Known only from the Central Sierra Nevada foothills, from El Dorado and Placer cos. Blooms May through August (CNPS 2018).	No. There are no suitable soils.
Carex cyrtostachya Sierra arching sedge	--	--/1B.2	2	Perennial herb found in mesic lower montane coniferous forest, meadows and seeps, marshes and swamps, and riparian forest margins from 2,000 to 4,460 ft. Known from Butte, El Dorado, and Yuba cos. Blooms May through August (CNPS 2018).	No. There is no suitable habitat.
Carex xerophila Chaparral sedge	--	--/1B.2	2	Perennial herb found in serpentinite or gabbroic soil in chaparral, cismontane woodland, and lower montane coniferous forest from 1,445 to 2,530 ft. Known from Butte, El Dorado, Nevada and Yuba cos. Blooms March through June (CNPS 2018).	No. There are no suitable soils.
Ceanothus roderickii Pine Hill ceanothus	E	R/ 1B.1	2	Perennial evergreen shrub found on serpentine or gabbroic soils in chaparral and cismontane woodland from 804 to 3,576 ft. This species is found in nutrient-deficient forms of gabbro-derived soils characterized by low concentrations of available potassium, phosphorous, sulfur, iron and zinc. Known from less than 10 occurrences in El Dorado Co. Blooms April through June (Baldwin et al. 2012, CNPS 2018).	No. There are no suitable soils.
Chlorogalum grandiflorum Red Hills soaproot	--	--/ 1B.2	2	Perennial bulbiferous herb found in serpentine, gabbroic, and other soils in chaparral, cismontane woodland, and lower montane coniferous forest from 800 to 5,540 ft. Known from Amador, Butte, Calaveras, El Dorado, Placer, and Tuolumne cos. Blooms May through June (Baldwin et al. 2012, CNPS 2018).	No. There are no suitable soils. In El Dorado County this species is known from the gabbro soils of the Pine Hill formation, elsewhere in the County.
Crocanthemum (=*Helianthemum*) *suffrutescens* Bisbee Peak rush-rose	--	--/ 3.2	3	Perennial evergreen shrub often found in gabbroic or Ione soils in chaparral from 245 to 2,198 ft. Often found in burned or disturbed areas. Known from Amador, Calaveras and El Dorado cos. Blooms April through August (CNPS 2018).	No. There are no suitable soils.
Erigeron miser Starved daisy	--	--/1B.3	2	Perennial herb found on rocky substrates in upper montane coniferous forest from 6,000 to 8,600 ft. This species is endemic to CA, and found in Lassen, Mono, Nevada and Placer Cos. Blooms June through October (CNPS 2018).	No. The BSA is below the elevation range and there is no suitable habitat.

Special-Status Species/ Common Name	Federal Status [a, b]	State Status [a, b]	Source [c]	Habitat Requirements	Potential to Occur in the BSA
Fremontodendron decumbens Pine Hill flannelbush	E	R/ 1B.2	2	Perennial evergreen shrub found on rocky, gabbroic, and serpentine soil in chaparral and cismontane woodland from 1,394 to 2,494 ft. Known from 10 occurrences in El Dorado, Nevada, and Yuba cos. Uncertain about distribution or identity in Nevada and Yuba cos. Blooms April through July (Baldwin et al. 2012, CNPS 2018).	No. There are no suitable soils. In El Dorado County, this species is only known from gabbro soils on Pine Hill and its the immediate surrounding foothills.
Galium californicum ssp. *sierrae* El Dorado bedstraw	E	R/ 1B.2	2	Perennial herb found on gabbroic soils in chaparral, cismontane woodland, and lower montane coniferous forest from 328 to 1,920 ft. Known from fewer than 20 occurrences in El Dorado Co. (CNPS 2018). Blooms March through July (Baldwin et al. 2012).	No. There are no suitable soils.
Horkelia parryi Parry's horkelia	--	--/ 1B.2	2	Perennial herb found on Ione formation and in other soils in chaparral and cismontane woodland from 260 to 3,510 ft. Known from Amador, Calaveras, El Dorado, Mariposa, and Tuolumne cos. Blooms April through September (Baldwin et al. 2012, CNPS 2018). Jepson (2018) describes the habitat as open chaparral.	Yes. See discussion.
Packera (=Senecio) layneae Layne's ragwort	T	R/ 1B.2	1, 2	Perennial herb found in rocky, serpentine, or gabbroic soils in chaparral and cismontane woodland from 650 to 3,560 ft. Known from Butte, El Dorado, Placer, Tuolumne, and Yuba cos. Blooms April through August (Baldwin et al. 2012, CNPS 2018).	No. There are no suitable soils. In El Dorado County this species is known from the gabbro soils of the Pine Hill formation, elsewhere in the County.
Viburnum ellipticum Oval-leaved viburnum	--	--/ 2B.3	2	Deciduous shrub found in chaparral, cismontane woodland, and lower montane coniferous forest from 700 to 4,600 ft. Known from Alameda, Contra Costa, El Dorado, Fresno, Glenn, Humboldt, Lake, Mendocino, Mariposa, Napa, Placer, Shasta, Solano, Sonoma, and Tehama cos. Blooms May through August (Baldwin et al. 2012, CNPS 2018). Jepson (2018) describes the habitat as chaparral, yellow-pine forest, generally on north-facing slopes.	Yes. See discussion.
Wyethia reticulata El Dorado County mule ears	--	--/ 1B.2	2	Perennial rhizomatous herb found on clay or gabbroic soils in chaparral, cismontane woodland, and lower montane coniferous forest from 600 to 2,100 ft. Known from El Dorado and Yuba cos. Blooms April through August (Baldwin et al. 2012, CNPS 2018).	No. There are no suitable soils.

Special-Status Species/ Common Name	Federal Status [a, b]	State Status [a, b]	Source [c]	Habitat Requirements	Potential to Occur in the BSA
Natural Communities					
Central Valley drainage hardhead/ squawfish stream	--	--	2	Hardhead occur in low- to mid-elevation streams in the main Sacramento-San Joaquin drainage and in the Russian River. Their range extends from the Kern River in Kern County, in the south, to the Pit River in Modoc County in the north. In the San Joaquin drainage, the species is scattered in tributary streams and absent from valley reaches of the San Joaquin River. In the Sacramento drainage, the hardhead is present in most large tributary streams as well as in the Sacramento River. Hardhead are typically found in undisturbed areas of larger low- to mid-elevation streams, although they are also found in the mainstem Sacramento River at low elevations and in its tributaries to about 4,920 ft. They prefer clear, deep (>32 inches) pools and runs with sand-gravel-boulder substrates and slow velocities. Hardhead are always found in association with Sacramento pikeminnow (squawfish) and usually with Sacramento sucker. They tend to be absent from streams where introduced species, especially centrarchids (sunfish), predominate and from streams that have been severely altered by human activity. Sacramento pikeminnow occur in clear rivers and creeks of central California and occur in small numbers in the Sacramento-San Joaquin Delta. They are most characteristic of low- to mid-elevation streams with deep pools, slow runs, and undercut banks, and overhanging vegetation. They are most abundant in lightly disturbed, tree-lined reaches that also contain other native fish (Moyle 2002).	No. This community does not occur in the BSA.
Central Valley drainage resident rainbow trout stream	--	--	2	Rainbow trout occur in low order (high elevation) cold streams with a high gradient. These streams are dominated by rainbow trout and often riffle sculpin (Moyle and Ellison 1991).	No. This community does not occur in the BSA.
Sacramento-San Joaquin foothill/valley ephemeral stream	--	--	2	Low elevation streams that flow primarily in response to winter and spring rainfall. Found in oak woodland/ valley grassland areas. Some water may be present in semi-permanent bedrock pools. Streams have a distinct succession of invertebrates and may be important spawning areas for Sierran treefrogs (*Pseudacris sierra*) and newts (*Taricha* spp.; Moyle and Ellison 1991).	No. This community does not occur in the BSA.

[a] **Listing Status:** **E** = Endangered; **T** = Threatened; **P** = Proposed; **C** = Candidate; **R** = California Rare; **D** = Delisted; ***** = Possibly extinct.

[b] **Other Codes:** **SSC** = CA Species of Special Concern; **FP** = CA Fully Protected; **Prot** = CA Protected; **CH =** Critical habitat designated.

CNPS Rank: (plants only): **1A** = Presumed Extinct in CA; **1B** = Rare or Endangered (R/E) in CA and elsewhere; **2** = R/E in CA and more common elsewhere; **3** = Need more information; **4** = Plants of limited distribution

CNPS List Decimal Extensions: **.1** = Seriously endangered in California (over 80% of occurrences threatened / high degree and immediacy of threat); **.2** = Fairly endangered in CA (20-80% of occurrences threatened); **.3 =** Not very endangered in CA (< 20% of occurrences threatened or no current threats known).

[c] **Source:** **1** = USFWS letter. **2** = CNDDB/CNPS. **3 =** Observed or included by Sycamore Environmental.

APPENDIX C.

Plant and Wildlife Species Observed

El Dorado Senior Resort
El Dorado County, CA

Plant Species Observed.

Family	Scientific Name	Common Name	N/I[1]	Cal-IPC
CONIFERS				
Pinaceae	*Pinus sabiniana*	Foothill pine	N	
EUDICOTS				
Anacardiaceae	*Toxicodendron diversilobum*	Western poison oak	N	
Apiaceae	*Daucus pusillus*	Daucus	N	
	Periperidia sp.	Yampah	N	
	Sanicula bipinnatifida	Purple sanicle, shoe buttons	N	
	Sanicula crassicaulis	Sanicula	N	
	Scandix pecten-veneris	Venus' needle	I	
	Torilis arvensis	Hedge parsley	I	Moderate
Apocynaceae	*Vinca major*	Greater periwinkle	I	Moderate
Asteraceae	*Achillea millefolium*	Yarrow	N	
	Agoseris grandiflora	Agoseris	N	
	Baccharis pilularis	Coyote brush	N	
	Carduus pycnocephalus ssp. *pycnocephalus*	Italian thistle	I	Moderate
	Centaurea solstitialis	Yellow star-thistle	I	High
	Centromadia sp.	Tarweed	N	
	Grindelia camporum	Gumplant	N	
	Lactuca serriola	Prickly lettuce	I	
	Leontodon saxatilis	Hairy hawkbit	I	
	Madia subspicata	Tarweed, tarplant	N	
	Micropus californicus ssp. *californicus*	Cottontop	N	
	Pseudognaphalium sp.	Cudweed, everlasting	--	
	Psilocarphus sp.	Woolly-marbles, woollyheads	N	
	Sonchus oleraceus	Common sow thistle	I	
	Tragopogon dubius	Yellow salsify	I	
	Tragopogon porrifolius	Salsify, oyster plant	I	
	Wyethia angustifolia	Mule's ears	N	
Caprifoliaceae	*Lonicera* sp.	Honeysuckle	N	
Caryophyllaceae	*Cerastium glomeratum*	Sticky mouse-ear chickweed	I	
	Stellaria media	Common chickweed	I	
Convolvulaceae	*Calystegia occidentalis*	Morning-glory	N	
	Convolvulus arvensis	Bindweed, orchard morning-glory	I	
Euphorbiaceae	*Euphorbia spathulata*	Spurge	N	
Fabaceae	*Acmispon americanus var. americanus*	Deervetch, deerweed	N	
	Cytisus scoparius	Scotch broom	I	
	Trifolium dubium	Little hop clover	I	
	Trifolium glomeratum	Clustered clover	I	
	Trifolium hirtum	Rose clover	I	Limited
	Vicia sativa	Spring vetch	I	
	Vicia villosa	Hairy vetch, winter vetch	I	

Family	Scientific Name	Common Name	N/I[1]	Cal-IPC
Fagaceae	*Quercus douglasii*	Blue oak	N	
	Quercus lobata	Valley oak, roble	N	
	Quercus wislizeni var. *wislizeni*	Interior live oak	N	
Gentianaceae	*Centaurium* sp.	Centaury	I	
Geraniaceae	*Geranium* sp.	Cranesbill, geranium	--	
Hypericaceae	*Hypericum perforatum* ssp. *perforatum*	Klamathweed	I	Moderate
Lamiaceae	*Marrubium vulgare*	Horehound	I	Limited
	Monardella villosa ssp. *villosa*	Coyote mint	N	
Malvaceae	*Sidalcea* sp. (annual)	Checkerbloom	N	
	Sidalcea malviflora	Checkerbloom	N	
Montiaceae	*Claytonia perfoliata*	Miner's lettuce	N	
Orobanchaceae	*Castilleja attenuata*	Valley tassels	N	
Plantaginaceae	*Plantago lanceolata*	English plantain	I	Limited
	Veronica arvensis	Speedwell, brooklime	I	
Polemoniaceae	*Gilia capitata*	Bluehead gilia	N	
	Navarretia intertexta ssp. *intertexta*	Navarretia	N	
Polygonaceae	*Polygonum aviculare*	Knotweed, knotgrass	I	
	Rumex crispus	Curly dock	I	Limited
Ranunculaceae	*Delphinium* sp.	Larkspur	N	
	Ranunculus muricatus	Buttercup	I	
Rhamnaceae	*Ceanothus cuneatus* var. *cuneatus*	Buckbrush	N	
	Frangula californica ssp. *tomentella*	California coffee berry	N	
	Rhamnus ilicifolia	Hollyleaf redberry	N	
Rosaceae	*Adenostoma fasciculatum*	Chamise	N	
	Drymocallis glandulosa	Woodbeauty	N	
	Heteromeles arbutifolia	Christmas berry, toyon	N	
	Prunus sp. [4]	Prunus	--	
	Rubus armeniacus	Himalayan blackberry	I	High
Rubiaceae	*Galium aparine*	Goose grass	N	
	Galium murale	Tiny bedstraw	I	
	Galium parisiense	Wall bedstraw	I	
	Galium porrigens var. tenue	Climbing bedstraw	N	
Viscaceae	*Phoradendron leucarpum ssp. tomentosum*	American mistletoe	N	
MONOCOTS				
Agavaceae	*Chlorogalum pomeridianum* var. *pomeridianum*	Soaproot	N	
Cyperaceae	*Cyperus eragrostis*	Nutsedge	N	
Iridaceae	*Iris* sp. (waif)	Iris	I	
	Sisyrinchium bellum	Western blue-eyed-grass	N	
Juncaceae	*Juncus bufonius*	Toad rush	N	
	Juncus tenuis	Poverty or slender rush	N	
	Luzula comosa	Hairy wood rush	N	
Liliaceae	*Calochortus albus*	White globe lily, fairy-lantern	N	
	Calochortus superbus	Calochortus	N	
Poaceae	*Aegilops triuncialis*	Barbed goat grass	I	High
	Aira caryophyllea	Silver hair grass	I	
	Avena barbata	Slender wild oat	I	Moderate
	Briza minor	Small quaking grass	I	
	Bromus diandrus	Ripgut grass	I	Moderate
	Bromus hordeaceus	Soft chess	I	Limited
	Cynosurus echinatus	Bristly dogtail grass	I	Moderate

Family	Scientific Name	Common Name	N/I[1]	Cal-IPC
	Dactylis glomerata	Orchard grass	I	Limited
	Elymus caput-medusae	Medusa head	I	High
	Elymus glaucus	Blue or western wild-rye	N	
	Festuca arundinacea	Tall fescue	I	Moderate
	Festuca bromoides	Brome fescue	I	
	Festuca perennis	Rye grass	I	Moderate
	Hordeum marinum ssp. *gussoneanum*	Mediterranean barley	I	Moderate
	Melica torreyana	Torrey's melic	N	
	Poa bulbosa ssp. *vivipara*	Blue grass	I	
Themidaceae	*Brodiaea elegans* ssp. *elegans*	Harvest brodiaea	N	
	Dichelostemma volubile	Twining brodiaea	N	

[1] N = Native to CA; I = Introduced.

[2] Degree of negative ecological impact (Cal-IPC 2017).

[4] Seedling

Wildlife Species Observed.

COMMON NAME	SCIENTIFIC NAME
BIRDS	
Acorn woodpecker	*Melanerpes formicivorus*
Anna's hummingbird	*Calypte anna*
Chestnut-backed chickadee	*Poecile rufescens*
Mourning dove	*Zenaida macroura*
Northern mockingbird	*Mimus polyglottos*
Oak titmouse (Plain titmouse)	*Baeolophus inornatus*
Western bluebird	*Sialia mexicana*
Western scrub-jay	*Aphelocoma californica*

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APPENDIX D.

Photographs
20 June 2018

Photo 1. View of the oak woodland community in the BSA. The canopy is mostly open, and there is a grassy understory.

Photo 2. View of the gravel driveway in the northern end of the BSA, connecting Hwy 49 to the adjacent residence.

Photo 3. View of the California annual grassland community in the west side of the BSA.

Photo 4. View of the north end of the BSA with disturbance from the adjacent residence.

Photo 5. View of oak woodland. Several tire tracks occur in this community in the north end of the BSA.

Photo 6. View of the oak woodland in the eastern edge of the BSA, along Koki Lane.

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SYCAMORE ENVIRONMENTAL CONSULTANTS, INC.
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Attachment 2

30 August 2018

Mr. Jim Davies
El Dorado Senior Housing, LLC
854 Diablo Road
Danville, CA 94526

Subject: Oak Resources Technical Report for El Dorado Senior Resort Project, El Dorado County, CA.

Dear Mr. Davies:

El Dorado County regulates impacts to oak trees and woodlands with the Oak Resources Management Plan (ORMP; El Dorado County 2017). The El Dorado Senior Resort (Project) is a senior citizen's residential facility on approximately 8.18 acres in the community of Diamond Springs. A biological resource evaluation was separately prepared for the Project site (Sycamore Environmental 2018). The Project site contains oak woodlands. This technical report was prepared to quantify oak resources and impacts, and recommend preservation and mitigation methods based on the specifications of the ORMP.

Methods

Nicole Ibañez and I conducted a field review of the Project site on 20 June 2018. A recent aerial photograph for the site was selected as the base for the oak woodland map. The field review and aerial photograph were used to determine the areas of oak woodland on the site. One grassy area without trees was excluded from oak woodland. The ORMP defines oak woodland as "an oak stand with a greater than 10 percent canopy cover or that may have historically supported greater than 10 percent canopy cover" (CA Fish and Game Code §1361). The County ORMP focuses on existing oak woodlands. Oak woodland at the site was classified under the California Department of Fish and Wildlife's Natural Communities List (CDFW 2018, Sawyer *et al*. 2009).

Data for individual trees was collected as necessary. The ORMP requires collection of individual data for oaks at least 6 inches diameter at breast height (dbh) that are outside of oak woodlands, and for any trees that meet heritage tree criteria. There are no oak trees at the Project site that are outside of oak woodlands. County application materials for oak removal permits also request individual tree data for trees between 24–36 inches dbh. Data for individual trees between 24–36 inches dbh is not used for impact and mitigation calculations, but for future County evaluation of the threshold for heritage trees. Attachment C is a map of trees between 24–36 inches dbh, and they are included in the tree table in Attachment D.

The ORMP defines a Heritage Tree as “Any live native oak tree of the genus Quercus (including blue oak (*Quercus douglasii*), valley oak (*Quercus lobata*), California black oak (*Quercus kelloggii*), interior live oak (*Quercus wislizeni*), canyon live oak (*Quercus chrysolepis*), Oregon oak (*Quercus garryana*), oracle oak (*Quercus x morehus*), or hybrids thereof) with a single main trunk measuring 36 inches dbh or greater, or with a multiple trunk with an aggregate trunk diameter measuring 36 inches or greater.” Further, the ORMP requires mitigation for the removal of Heritage Trees, regardless of whether the Heritage Tree is inside or outside oak woodland.

Heritage trees, and oaks between 24–36 inches dbh were individually surveyed. For each individual tree included, the dbh was measured, dripline and height were estimated, and a general assessment of condition was made. Dbh was measured at 4.5 feet above the ground, unless a tree characteristic, such as a branch attachment, interfered with the measurement at that height. In such cases the diameter was measured at the narrowest point in the trunk between the ground and 4.5 ft, or above the point of interference (Council of Tree and Landscape Appraisers 2000). Individual trees included in the survey were located with a global positioning system.

Tree condition was judged in five categories with respect to structure, health, vigor, defects, and conformance to generally accepted arboricultural standards of care, disease, general health, damage, danger of falling, and suitability for retention in a developed area. The five categories were good (G; no defects or minor defects), fair to good (F-G; defects), fair (F; obvious defects), fair to poor (F-P; severe defects), and poor (P; severe defects, and short-term death or structural failure of the tree is expected). Condition was judged based on an external inspection of each tree from the ground.

A grading footprint was provided by the Project engineer and used to determine oak woodland and heritage tree impacts. The Count in-lieu fee was estimated. An area in the northeastern corner of the Project site is tentatively planned for a community garden (see note on Attachment B). This area could result in the removal of oak woodland, or could be designed in a way that some or all of the oaks are retained. The oak woodland impacts and mitigation section below identifies two scenarios, one in which all of the woodland in this area is preserved and one in which it is all removed.

Results

- Blue oak woodland covers 7.69 acres (Attachment A). Most of the oaks on the Project site are blue oaks, with lesser numbers of interior live oak and valley oak. Gray (foothill) pines (*Pinus sabiniana*) are also common at the site.
- The Project, if oaks in the community garden area are removed, will result in the removal of 7.37 acres of oak woodland. The Project would remove 95.8% of the oak woodlands at the site (7.37/7.69).

- The Project, if oaks in the community garden area are retained, will result in the removal of 7.12 acres of oak woodland. The Project would remove 92.6% of the oak woodlands at the site (7.12/7.69).
- The County ORMP requires 2:1 mitigation for removed oak woodland for projects that remove between 75.1–100% of on-site oak woodland.
- There are seven heritage trees in the BSA (Attachment A). None of the heritage trees are in the area of the community garden. The Project will remove six of the heritage trees (Attachment B). The total dbh of the six removed heritage trees is 237 inches. The County ORMP requires 3:1 mitigation per inch for heritage trees.
- Several additional heritage trees (Tree #8, 16, 18, 22) could be retained based on final design, or final design may retain more oak woodland acreage. If so, the in-lieu fee will need to be revised.
- The Project landscaping plan identifies the planting of 28 native oaks (24-inch box size). If the Project claimed these as replacement trees under the ORMP, the in-lieu fee could be reduced. The ORMP requires 7 years of monitoring and a deed restriction or conservation easement for replacement trees.
- The Project intends to mitigate for impacts to oak woodlands and heritage trees through payment of the in-lieu fees identified in the County ORMP. The table below estimates the fee based on the Project impacts.

Estimated ORMP in-lieu fee

	Project, Community Garden Oaks Removed	Project, Community Garden Oaks Retained
Oak Woodland Impacts (acres)	7.37	7.12
Oak Woodland Mitigation Ratio	2:1	2:1
Oak Woodland Fee Per Acre	$8,285	$8,285
Oak Woodland In-lieu Fee Subtotal:	$122,120.90	$117,978.40
Heritage Tree removal (total dbh inches)	237	237
Heritage Tree Mitigation Ratio	3:1	3:1
Mitigation Fee per dbh inch	$153	$153
Heritage Tree In-lieu Fee Subtotal:	$108,783	$108,783
Total In-lieu Fee:	$230,903.90	$226,761.40

Notes:
1. The ultimate fee determination will be made by El Dorado County.
2. Several additional heritage trees (Tree #8, 16, 18, 22) could be retained based on final design, or final design may retain more oak woodland acreage. If so, the in-lieu fee will need to be revised.
3. The Project landscaping plan identifies the planting of 28 native oaks (24-inch box size). If the Project claimed these as replacement trees under the ORMP, the in-lieu fee could be reduced.

Recommended Oak Tree Preservation Measures

The Project will retain oak woodland along part of the southern boundary, and possibly in part of the northeastern corner depending on the layout of a community garden. Oak preservation measures were developed for the project based on Matheny and Clark (1998). Retained trees may be affected by project activities such as clearing, grading, and pruning for clearance requirements. The tree preservation measures below are recommended for preservation of retained trees during the construction process.

Pre-construction

- A tree protection zone (TPZ) shall be established around retained trees. The TPZ shall extend 20 feet beyond the dripline where possible given grading limits. The TPZ around retained trees near the limit of grading will be much smaller.
- The TPZ shall be marked with minimum 4-foot high orange construction fence hung on posts (such as T-posts) before clearing occurs. The fence shall not be supported by trees or other vegetation. The fence shall remain in place until construction is complete.
- There shall be no driving, parking, or storage of supplies or equipment within the TPZ. Entry of construction personnel into the TPZ is not allowed except for maintenance of the fence or other activities undertaken for the protection of trees.
- The tree canopy along the TPZ boundary shall be inspected prior to vegetation clearing in the area of grading. The canopy of trees to be removed shall be pruned where it is intertwined with the canopy of retained trees, or wherever felling of trees to be removed may damage the canopy of retained trees. The canopy of retained trees that overhangs the area to be graded shall be pruned to the minimum height required for construction.
- Pruning of retained trees shall be conducted in accordance with American National Standard Institute (ANSI) A300 Pruning Standard and adhere to the most recent edition of ANSI Z133.1.

During Vegetation Clearing

- Brush clearing along the TPZ boundary may be necessary in some areas for installation of a fence. Brush along the TPZ boundary, outside areas to be graded, shall be cut near ground level, not removed by the roots. Brush shall be cut and removed so that trees in the TPZ are not harmed. Brush shall not be disposed of in the TPZ.
- Trees in the area of grading shall be felled in a direction away from the TPZ.

Project Operation

- Most of the trees in the areas of avoided oak woodland are mature. All of them have been growing under the natural moisture regime without irrigation and are adapted to dry summer/fall conditions. Extra irrigation water should not be applied to the trees, especially within a few feet of the trunk.

We appreciate the opportunity of assisting you with this project. If you have any questions please contact me.

Cordially,

Chuck Hughes, M.S.
Senior Biologist
(ISA Certified Arborist WE-6885A)

Attachment A. Oak Resources Map
Attachment B. Oak Impact Map
Attachment C. Map of 24-36 inch dbh oak trees
Attachment D. Tree Table
Attachment E. Photographs
Attachment F. County Checklist & Data Sheet

Literature Cited

California Department of Fish and Wildlife (CDFW). 24 January 2018. California natural community list. Biogeographic Data Branch, CNDDB, Sacramento, CA.

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Matheny, N. and J. R. Clark. 1998. Trees and development: A technical guide to preservation of trees during land development. International Society of Arboriculture, Champaign, IL.

Sawyer, J. O., T. Keeler-Wolf, and J. M. Evens. 2009. A manual of California vegetation, 2nd ed. California Native Plant Society, Sacramento, CA.

Sycamore Environmental Consultants, Inc. 30 August 2018. Biological resources evaluation for the El Dorado Senior Resort Project.

El Dorado Senior Resort
El Dorado County, CA
30 August 2018

Attachment A.
Oak Resources Map

Biological Study Area (BSA; 8.18 acres)

Biological Community Boundary

Heritage Oak Tree Location

150 75 0 150 Feet

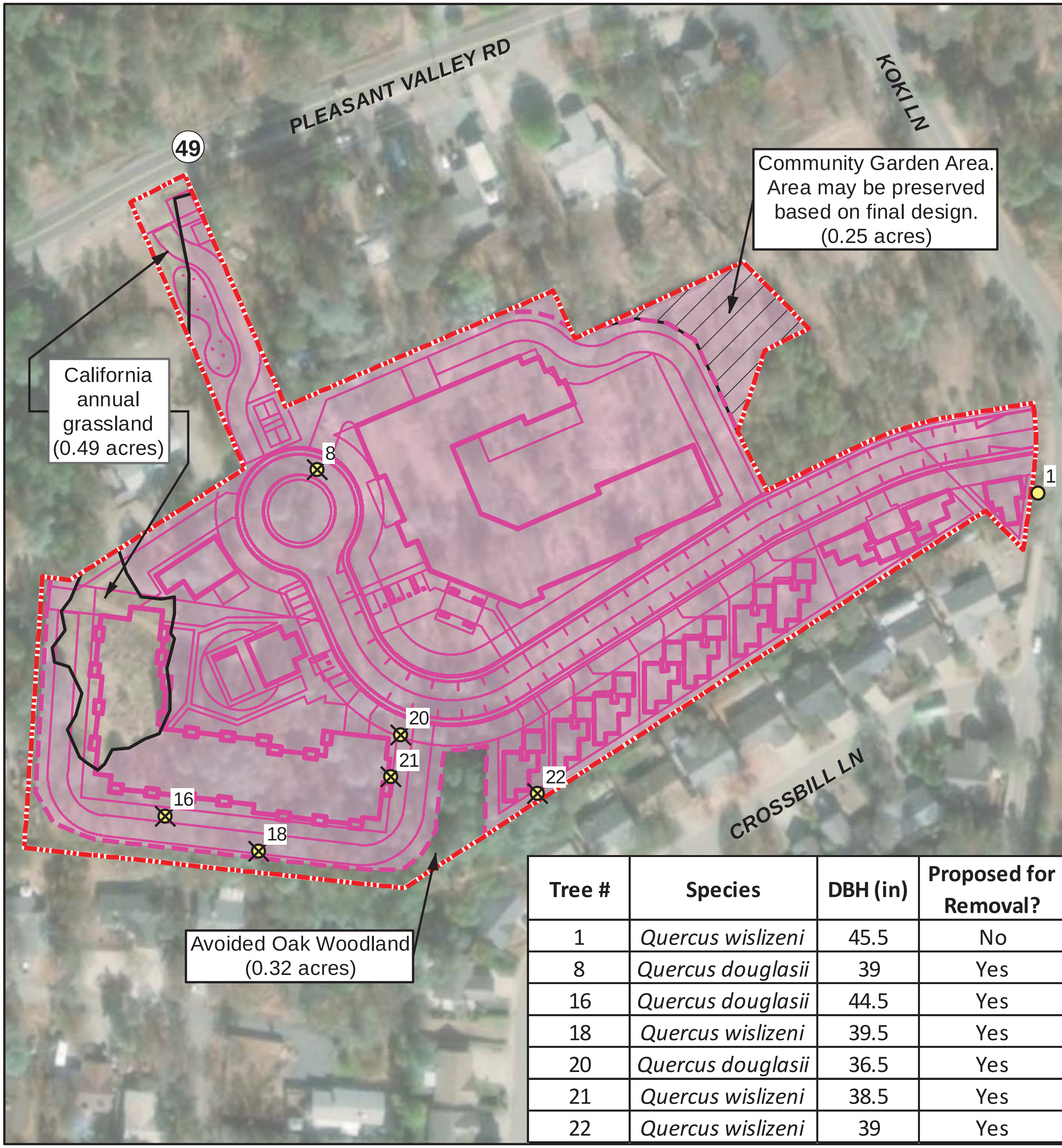
N

Scale: 1 inch = 150 feet

SYCAMORE Environmental Consultants, Inc.

Aerial Photograph: 7 November 2017
NAIP2016 USDA FSA Imagery
ESRI ArcGIS Basemap Layer

18020ElDoradoSeniorResort_AttachAOakResourceMap.mxd



Tree #	Species	DBH (in)	Proposed for Removal?
1	*Quercus wislizeni*	45.5	No
8	*Quercus douglasii*	39	Yes
16	*Quercus douglasii*	44.5	Yes
18	*Quercus wislizeni*	39.5	Yes
20	*Quercus douglasii*	36.5	Yes
21	*Quercus wislizeni*	38.5	Yes
22	*Quercus wislizeni*	39	Yes

El Dorado Senior Resort
El Dorado County, CA
30 August 2018

Attachment B.
Oak Impact Map

Biological Study Area (BSA; 8.18 acres)
Biological Community Boundaries
Grading Limits
Community Garden Area (0.25 ac)
Impacts to Oak Woodland (7.37 ac)
Heritage Oak Tree Location
Heritage tree proposed for removal

150 75 0 150 Feet
N
Scale: 1 inch = 150 feet

SYCAMORE Environmental Consultants, Inc.

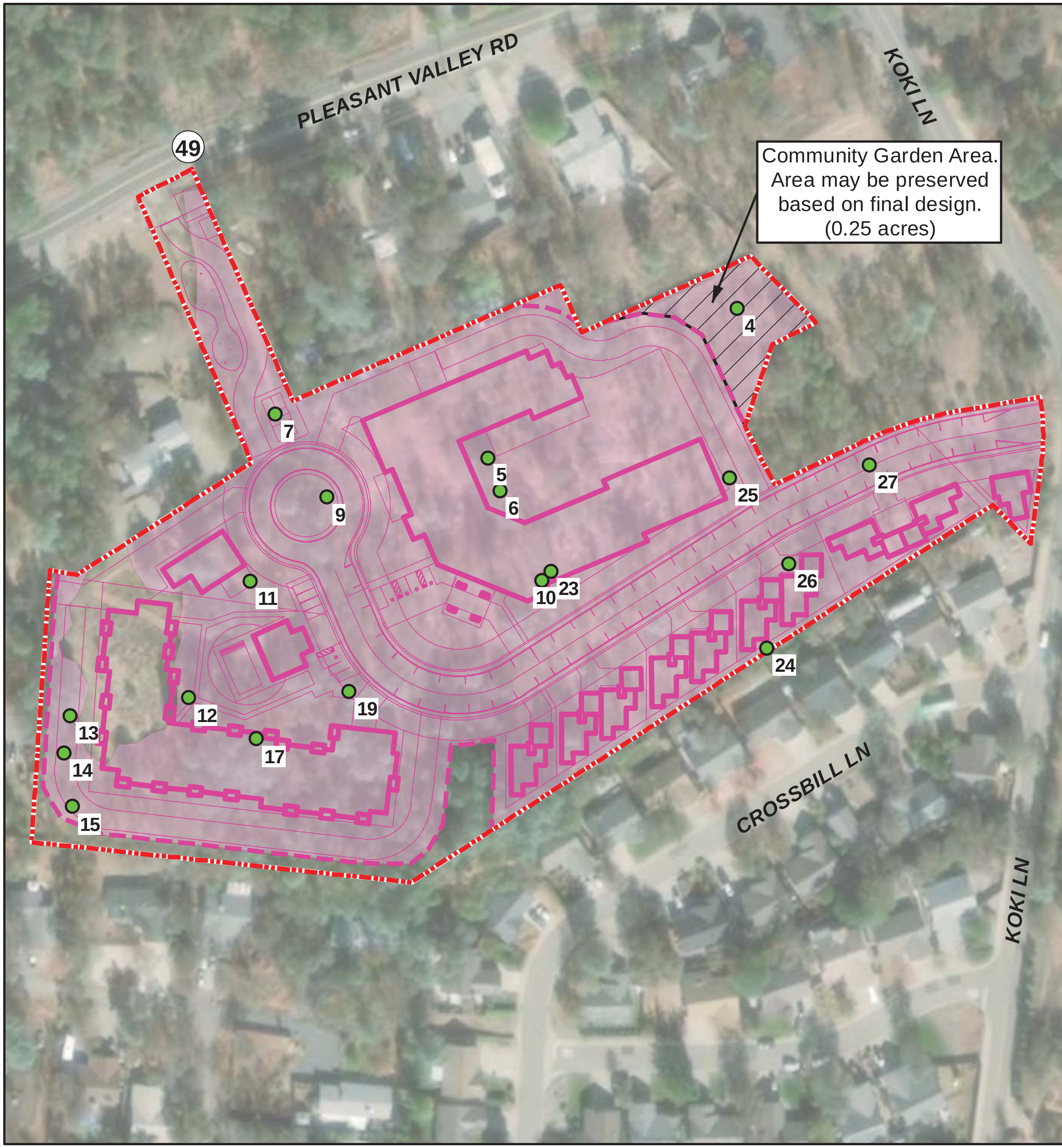
Site Plan for El Dorado Senior Housing (4 Dec. 2012)
by Wright Architecture Studio
CAD file: xbm.dwg (Recvd. 24 July 2018)

Aerial Photograph: 7 November 2017
NAIP2016 USDA FSA Imagery
ESRI ArcGIS Basemap Layer

18020ElDoradoSeniorResort_AttachBOakImpactMap.mxd

El Dorado Senior Resort
El Dorado County, CA
30 August 2018

Attachment C.
Map of 24-36 inch dbh Oak Trees



Biological Study Area (BSA; 8.18 acres)
Community Garden Area
Impacts to Oak Woodland (7.37 ac)
Oak trees (24-36 inch dbh)

150 75 0 150 Feet
N
Scale: 1 inch = 150 feet

SYCAMORE Environmental Consultants, Inc.

Site Plan for El Dorado Senior Housing (4 Dec. 2012)
by Wright Architecture Studio
CAD file: xbm.dwg (RecVd. 24 July 2018)

Aerial Photograph: 7 November 2017
NAIP2016 USDA FSA Imagery
ESRI ArcGIS Basemap Layer

18020ElDoradoSeniorResort_AttachCCountyOakResourceMap.mxd

Attachment D

Tree Table

Tree	Common Name	Scientific Name	DBH (Each Trunk in Inches)	Total DBH (Total Inches)	Dripline	Height	Condition	Retained/ Removed	Comments
1	Interior Live Oak	*Quercus wislizeni*	8, 6.5, 13, 10, 8	45.5	25	32	F-G	Retained	Pruned for clearance over sidewalk. Some decay. Heritage Tree
2	--	--	--	--	--	--	--	--	Removed from survey; outside BSA.
3	--	--	--	--	--	--	--	--	Removed from survey; outside BSA.
4	Blue Oak	*Quercus douglasii*	9.5, 9.5, 9.5	28.5	20	37	G	Undetermined	Old tag #3047.
5	Blue Oak	*Quercus douglasii*	16.5, 16	32.5	25	52	F-G	Removed	Codominant trunks with narrow attachment, and wood grown over old cable. Canopy slightly uneven.
6	Blue Oak	*Quercus douglasii*	34.5	34.5	30	51	F-G	Removed	Codominant trunks with narrow attachment. Hanger.
7	Blue Oak	*Quercus douglasii*	10.5, 16	26.5	25	40	F-G	Removed	Woundwood seam.
8	Blue Oak	*Quercus douglasii*	13, 13.5, 12.5	39.0	25	45	G	Removed	Narrow main trunk attachments. Heritage Tree.
9	Blue Oak	*Quercus douglasii*	24	24.0	25	45	G	Removed	Narrow main trunk attachments.
10	Blue Oak	*Quercus douglasii*	24	24.0	30	40	G	Removed	Narrow trunk attachment. Barbed wire in trunk.
11	Blue Oak	*Quercus douglasii*	11, 15	26.0	20	40	G	Removed	Minor dieback.
12	Interior Live Oak	*Quercus wislizeni*	8.5, 8, 9, 6	31.5	15	25	F-P	Removed	Much dieback.
13	Blue Oak	*Quercus douglasii*	14, 14.5	28.5	25	40	F-G	Removed	Narrow trunk attachment. Uneven canopy.

Tree	Common Name	Scientific Name	DBH (Each Trunk in Inches)	Total DBH (Total Inches)	Dripline	Height	Condition	Retained/ Removed	Comments
14	Blue Oak	*Quercus douglasii*	32	32.0	35	45	G	Removed	
15	Valley Oak	*Quercus lobata*	24	24.0	35	50	G	Removed	
16	Blue Oak	*Quercus douglasii*	19, 13.5, 12	44.5	30	45	G	Removed	Narrow trunk attachment. Heritage Tree.
17	Blue Oak	*Quercus douglasii*	25	25.0	30	45	F-G	Removed	Minor dieback.
18	Interior Live Oak	*Quercus wislizeni*	8, 11, 6, 9, 5.5	39.5	25	35	G	Removed	Old tree tag appears to be #3304, but hard to read. Heritage Tree.
19	Blue Oak	*Quercus douglasii*	14.5, 11	25.5	30	30	F	Removed	Narrow trunk attachment. Suppressed canopy.
20	Blue Oak	*Quercus douglasii*	10.5, 8.5, 8.5, 9	36.5	20	35	F-G	Removed	Narrow trunk attachments. Heritage Tree.
21	Interior Live Oak	*Quercus wislizeni*	7, 5.5, 11, 7, 8	38.5	25	30	F	Removed	Narrow trunk attachments. Some decay. Heritage Tree.
22	Interior Live Oak	*Quercus wislizeni*	17, 15.5, 6.5	39.0	30	35	G	Removed	Uneven Canopy. Heritage Tree.
23	Blue Oak	*Quercus douglasii*	14, 9.5, 9.5	33.0	20	35	G	Removed	Narrow trunk attachments.
24	Interior Live Oak	*Quercus wislizeni*	7, 10, 12	29.0	20	30	F	Removed	Decay at base.
25	Blue Oak	*Quercus douglasii*	7, 6.5, 8, 7	28.5	15	30	G	Removed	
26	Blue Oak	*Quercus douglasii*	8.5, 7.5, 7, 7	30.0	20	30	G	Removed	Narrow trunk attachments. Old tag #3095.
27	Blue Oak	*Quercus douglasii*	11, 9, 12.5	32.5	25	35	F-G	Removed	Decay at base.

ATTACHMENT E.

Photographs
20 June 2018

Photo 1. View of the oak woodland community in the BSA. The canopy is mostly open, and there is a grassy understory. This photo is near the center of the BSA.

Photo 2. Another view of the oak woodland community in the BSA. This photo is along the southern edge of the BSA.

Photo 3. Tree #1, a heritage interior live oak. The tree has 5 trunks, that together sum to 45.5 inches dbh. The heritage tree threshold is 36 inches dbh.

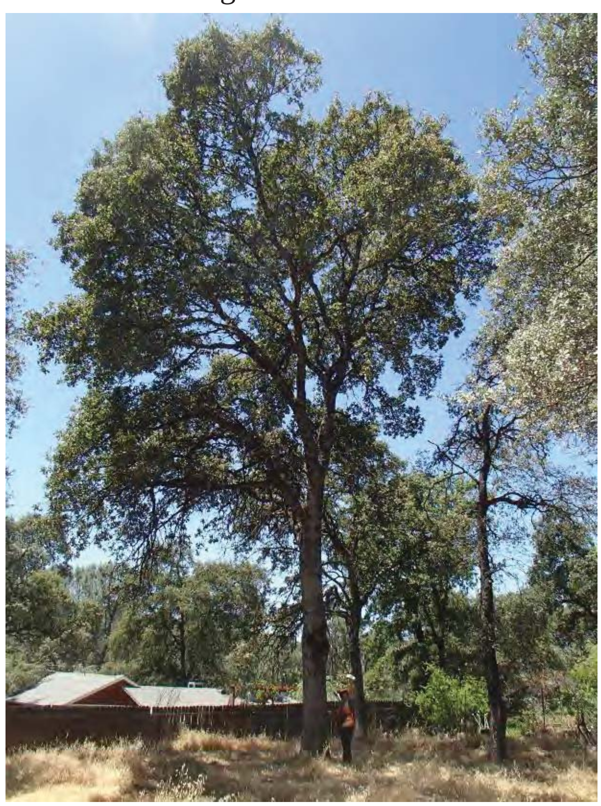


Photo 4. Tree #15, a blue oak with a single trunk of 24 inches dbh.

Photo 5. Tree #20, a heritage blue oak. The tree has 4 trunks, that together sum to 36.5 inches dbh.

COMMUNITY DEVELOPMENT SERVICES
PLANNING AND BUILDING DEPARTMENT

2850 Fairlane Court, Placerville, CA 95667
Phone: (530) 621-5355 www.edcgov.us/Planning/

OAK RESOURCES TECHNICAL REPORT CHECKLIST

The following information is required for all Oak Resources Technical Reports consistent with Section 2.5 (Oak Resources Technical Reports) of the Oak Resources Management Plan (ORMP):

FORMS AND MAPS REQUIRED

Place a check (√) on the "Applicant" lines for those items completed. The planner receiving the application will check (√) the "County" line.

Check (√) Applicant	County		
☒	☐	1)	Identify, locate, and quantify all oak resources on the property, as applicable:
			a) Oak woodlands shall be mapped and assessed in accordance with the CDFG 2009 *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* and subsequent updates, and the *List of Vegetation Alliances and Associations* (CDFG 2010) and subsequent updates;
			b) Data collected for individual native oak trees and Heritage Trees shall include: location, species, trunk diameter (dbh), height, canopy radius, and general health and structural condition.
☒	☐	2)	Identify and quantify project-related impacts to oak resources
☒	☐	3)	Measures identifying how specific trees and woodlands (or retained portions thereof) shall be protected during development and related work

Check
(√)
Applicant County

- ☒ ☐ 4) Proposed actions to mitigate impacts to oak resources, consistent with the requirements included in the ORMP:
  - a) For replacement planting, the report shall provide detail regarding the quantity, location, planting density, replacement tree size(s), and acorn/seedling source consistent with the definition of Replacement Planting included in the ORMP;
  - b) For conservation easement placement/acquisition and/or land acquisition in fee title, the report shall provide documentation of easement placement on-site and/or documentation of easement or land acquisition off-site to the satisfaction of the County;
  - c) For in-lieu fee payment, the report shall document the quantity of impacts (acreage of oak woodlands and/or total diameter inches of individual native oak trees/Heritage Trees) and the total in-lieu fee payment necessary (presented separately for oak woodlands, individual native oak trees, and Heritage Trees, where applicable).
- ☒ ☐ 5) Identification of responsible parties
- ☒ NA ☐ 6) Identification of maintenance, monitoring, and reporting requirements
- ☒ NA ☐ 7) Analysis of non-PCA conservation easement areas, where applicable
- ☒ ☐ 8) Site map(s) depicting:
  - a) location of all oak woodlands, individual native oak trees, and Heritage Trees;
  - b) location of all proposed project-related improvements (including, but not limited to, the limits of grading, fuel modification/defensible space areas, and above- and below-ground infrastructure);
  - c) Site map(s) shall also clearly identify impacted oak resources.
- ☒ ☐ 9) Planning and Building Department Summary Data Sheet of Oak Resources Impacts for Oak Tree/Oak Woodland Removal Permits.

SUPPLEMENTAL DATA FOR INDIVIDUAL NATIVE OAK TREES WITHIN OAK WOODLANDS:

The ORMP and Oak Resources Conservation Ordinance (No. 5061) was adopted on October 24, 2017 and the Board of Supervisors will review implementation within 12 months after adoption. The Board requested the following supplemental information:

- ☒ ☐ 10) Provide an inventory (species and size) of impacted Individual Native Oak Trees greater than 24 inches and less than 36 inches (dbh) in oak woodlands.

COMMUNITY DEVELOPMENT SERVICES
PLANNING AND BUILDING DEPARTMENT

2850 Fairlane Court, Placerville, CA 95667

Phone: (530) 621-5355 www.edcgov.us/Planning/

Summary Data Sheet of Oak Resources Impacts for Oak Tree/Oak Woodland Removal Permits

Description		Blue (*Quercus douglasii*)	California Black (*Quercus kelloggii*)	Canyon Live (*Quercus chrysolepis*)	Interior Live (*Quercus wislizeni*)	Oregon White (*Quercus garryana*)	Valley (*Quercus loabata*)	Oracle (hybrid) (*Quercus x morehus*)
Individual Native Oak Trees								
Quantity (number of trees) of individual native oak trees to be removed, by species	NA	- No oaks outside of oak woodland.						
Quantity (number of trees) of individual native oak trees to be removed, greater than 24 inches and less than 36 inches (dbh), by species		15	--	--	2	--	1	--
Total trunk diameter inches (dbh) to be removed*	0	24-36" oaks in oak woodlands not subject to additional mitigation.						
Heritage Trees								
Quantity (number of trees) of Heritage Trees to be removed, by species		3	--	--	4	--	--	--
Total trunk diameter inches (dbh) to be removed*	237							
Oak Woodlands								
Total Acreage of existing oak woodlands**	7.69							
Acreage of existing oak woodlands to be removed	7.37	-Could be 0.25 ac less depending on community garden.						
Percentage of existing oak woodlands to be removed*	95.8%							

**** Information used for purposes of calculating in-lieu mitigation fee payment.***
***** If Heritage Trees occur within oak woodlands, the area of impacted Heritage Tree(s) should be <u>included</u> in oak woodland acreage calculations.***

APPLICATION FOR CONDITIONAL USE PERMIT
OAK TREE/OAK WOODLAND REMOVAL

Document No: S-011

Title: Item 4 – Security Deposit

Assessor's Parcel Nos.: 331-221-30-100 & -32-100

Project Name: El Dorado Senior Resort

Applicant: Jim Davies

Mailing Address: 854 Diablo Rd., Danville, CA

Phone: 925-984-1222

Email: j854davies@att.net

Property Owner: El Dorado Sr. Housing, LLC.

Application Requirement:

Security deposit for on-site oak tree/oak woodland retention and/or replacement planting (if proposed as part of project mitigation) consistent with Section 130.39.070.F (Security Deposit for On-Site Oak Tree/Oak Woodland Retention and Section 130.30.070.G (Security Deposit for On-Site Oak Tree/Oak Woodland Replacement Planting).

Applicant Response

The extent of any on-site oak tree/oak woodland retention and/or replacement planting that may become a part of the project mitigation is unknown at this time.

APPLICATION FOR CONDITIONAL USE PERMIT
OAK TREE/OAK WOODLAND REMOVAL

Document No: S-012

Title: Item 5 – Explanation for Impact

Assessor's Parcel Nos.: 331-221-30-100 & -32-100

Project Name: El Dorado Senior Resort

Applicant: Jim Davies

Mailing Address: 854 Diablo Rd., Danville, CA

Phone: 925-984-1222

Email: j854davies@att.net

Property Owner: El Dorado Sr. Housing, LLC.

Application Requirement:

Reason and objective for impact to oak trees and/or oak woodlands.

Applicant Response

It is necessary to remove a portion of the existing oak woodlands to provide space for the construction of access ways and buildings. It is a project objective to maximize retention of oak resources wherever practical. To this end a significant portion of the woodlands is being retained as a mini "forest" to provide a recreational area for the residents of the project.

Attachment 3

Environmental Noise and Vibration Assessment

El Dorado Senior Resort

El Dorado County, California

BAC Job # 2018-134

Prepared For:

Sycamore Environmental Consultants, Inc.

Attn: Ms. Paris Krause
6355 Riverside Boulevard, Suite C
Sacramento, CA 95831

Prepared By:

Bollard Acoustical Consultants, Inc.

Paul Bollard, President

August 22, 2018

BOLLARD
Acoustical Consultants

Table of Contents

Executive Summary

The proposed El Dorado Senior Resort (project) is located south of California State Route 49 (SR-49) and west of Koki Lane in El Dorado County, California. The project proposes the development of a 74-unit assisted living facility, 64-unit independent apartments, 9 single-family residences, 2 commercial buildings (1 containing a restaurant), and a community center. Due to the proximity of the proposed development to adjacent existing residential uses, and the potential for elevated Highway 49 traffic noise levels at the project site, Bollard Acoustical Consultants, Inc. (BAC) was contracted by Sycamore Environmental Consultants, Inc. to complete an environmental noise and vibration assessment. The purposes of this analysis are to quantify the existing noise and vibration environments, identify potential noise and vibration impacts due to and upon the project, identify appropriate mitigation measures, and provide a quantitative and qualitative analysis of impacts associated with the project.

The project site contains undeveloped land consisting of natural vegetation. Existing land uses in the project vicinity include residential in all directions. After review of the project description and site plans, BAC determined that the potentially significant noise impacts as a result of the project consist of increases in off-site traffic, noise generated by proposed commercial mechanical (HVAC) equipment, and noise generated by construction-related activities, Potential impacts from project-generated construction vibration levels were also identified. To quantify the existing ambient noise environments in the project vicinity, a continuous (24-hour) noise measurement survey was conducted at the project site on July 26, 2018. To quantify predicted noise environments as a result of the project, Federal Highway Administration (FHWA) traffic data was utilized in analysis. During a site visit on July 25, 2018, vibration levels were below the threshold of perception at the project site and in the immediate project vicinity.

In the assessment of exterior and interior traffic noise levels at the project site, it was determined that predicted future traffic noise exposure at the proposed primary common outdoor areas and interior areas of the residential uses constructed within the development would result in a less than significant impact. In the assessment of changes related to existing, near-term, and future (cumulative) off-site traffic noise levels in the project vicinity, a less than significant project impact was determined. In the assessment of vibration exposure, it was determined that the project would not result in the exposure of persons to or generation of excessive groundborne vibration levels (less than significant impact). However, in the assessment of off-site non-transportation noise exposure, it was determined that commercial mechanical equipment (HVAC) noise levels could potentially exceed the El Dorado County evening and nighttime noise level standards at the nearest existing residences. Similarly, it was determined that noise from project-construction activities could also potentially exceed the applicable El Dorado County noise criteria at the nearest existing residences. Therefore, the impacts related to commercial mechanical equipment and construction noise are considered to be potentially significant. Mitigation measures to reduce mechanical equipment and construction generated noise levels to a state of compliance with the applicable El Dorado County noise standards are included in this report.

CEQA Checklist

NOISE AND VIBRATION – **Would the Project Result in:**	**NA – Not Applicable**	**Potentially Significant Impact**	**Less than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?			X		
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?				X	
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?				X	
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above level existing without the project?			X		
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project to excessive noise levels?					X
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?					X

Introduction

The proposed El Dorado Senior Resort (project) is located south of California State Route 49 (SR-49) and west of Koki Lane in El Dorado County, California. The project proposes the development of a 74-unit assisted living facility, 64-unit independent apartments, 9 single-family residences, 2 commercial buildings (1 including a restaurant), and a community center. Existing land uses in the project vicinity include residential in all directions. The project area and site plan are shown on Figures 1 and 2, respectively.

Due to the proximity of the proposed development to adjacent existing residential uses, and the potential for elevated Highway 49 traffic noise levels at the project site, El Dorado County has requested an environmental noise and vibration assessment to ensure that the applicable noise standards are satisfied. In response to this request, the project applicant has retained Bollard Acoustical Consultants, Inc. (BAC) to prepare this noise and vibration assessment. The purposes of this analysis are to quantify the existing noise and vibration environments, identify potential noise and vibration impacts due to and upon the project, identify appropriate mitigation measures, and provide a quantitative and qualitative analysis of impacts associated with the project. Specifically, impacts are identified if project-related activities would cause a substantial increase in ambient noise or vibration levels at existing sensitive land uses in the project vicinity, or if traffic or project generated noise or vibration levels would exceed applicable El Dorado County standards at the residences proposed within this development.

Noise and Vibration Fundamentals

Noise

Noise is simply described as unwanted sound. Sound is defined as any pressure variation in air that the human ear can detect. Discussing sound directly in terms of pressure would require a very large and awkward range of numbers. To avoid this, the decibel (dB) scale was devised. The decibel scale uses the hearing threshold (20 micropascals of pressure), as a point of reference, defined as 0 dB. Other sound pressures are compared to the reference pressure and the logarithm is taken to keep the numbers in a practical range. The dB scale allows a million-fold increase in pressure to be expressed as 120 dB.

To better relate overall sound levels and loudness to human perception, frequency-dependent weighting networks were developed. There is a strong correlation between the way humans perceive sound and A-weighted sound levels. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment for community exposures. All sound levels expressed as dB in this section are A-weighted sound levels, unless noted otherwise. Definitions of acoustical terminology are provided in Appendix A.

Community noise is commonly described in terms of the “ambient” noise level, which is defined as the all-encompassing noise level associated with a given noise environment. A common statistical tool to measure the ambient noise level is the average, or equivalent, sound level (L_{eq}), over a given time period (usually one hour). The L_{eq} is the foundation of the composite noise descriptors, day-night average level (L_{dn}) and the community noise equivalent level (CNEL), and shows very good correlation with community response to noise for the average person. The median noise level descriptor, denoted L_{50}, represents the noise level which is exceeded 50% of the hour. In other words, half of the hour ambient conditions are higher than the L_{50} and the other half are lower than the L_{50}.

The L_{dn} is based upon the average noise level over a 24-hour day, with a +10 dB weighting applied to noise occurring during nighttime (10:00 p.m. to 7:00 a.m.) hours. The nighttime penalty is based upon the assumption that people react to nighttime noise exposures as though they were twice as loud as daytime exposures. Because L_{dn} represents a 24-hour average, it tends to disguise short-term variations in the noise environment. Where short-term noise sources are an issue, noise impacts may be assessed in terms of maximum noise levels, hourly averages, or other statistical descriptors.

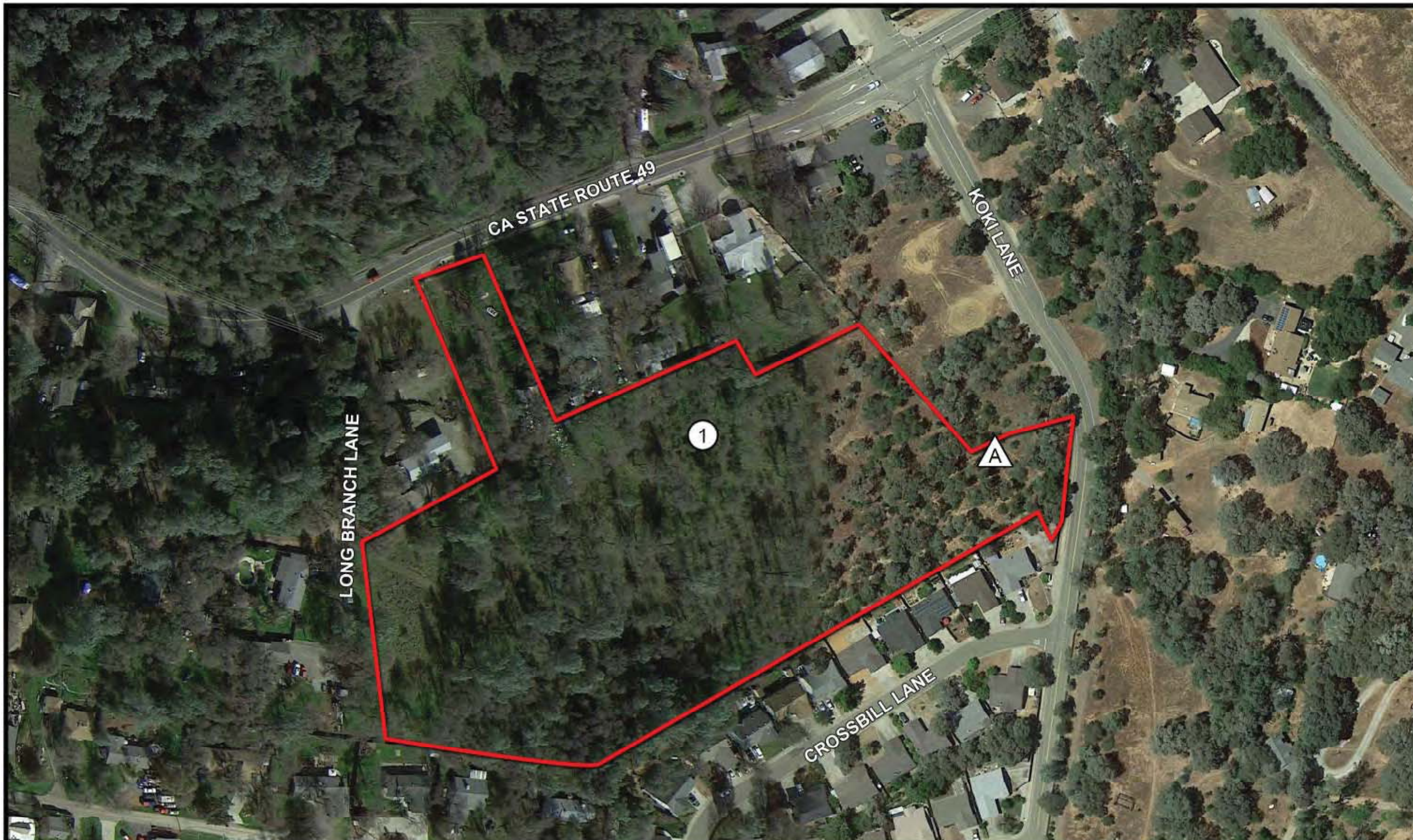
The perceived loudness of sounds and corresponding reactions to noise are dependent upon many factors, including sound pressure level, duration of intrusive sound, frequency of occurrence, time of occurrence, and frequency content. As mentioned above; however, within the usual range of environmental noise levels, perception of loudness is relatively predictable, and can be approximated by weighing the frequency response of a sound level meter by means of the standardized A-weighing network. Appendix B shows examples of noise levels for several common noise sources and environments.

It is generally recognized that an increase of at least 3 dB of similar sources is usually required before most people will perceive a change in noise levels in the community, and an increase of 5 dB is required before the change will be clearly noticeable. A common practice is to assume that a minimally perceptible increase of 3 dB represents a significant increase in ambient noise levels. This approach is very conservative, however, when applied to noise conditions substantially below levels deemed acceptable in general plan noise elements or in noise ordinances.

Vibration

Vibration is like noise in that it involves a source, a transmission path, and a receiver. While vibration is related to noise, it differs in that noise is generally considered to be pressure waves transmitted through air, while vibration is usually associated with transmission through the ground or structures. As with noise, vibration consists of an amplitude and frequency. A person's response to vibration will depend on their individual sensitivity as well as the amplitude and frequency of the source.

Vibration can be described in terms of acceleration, velocity, or displacement. A common practice is to monitor vibration measures in terms of velocity in inches per second or root-mean-square (RMS) in VdB. Standards pertaining to perception as well as damage to structures have been developed for vibration in terms of peak particle velocity as well as RMS velocities.



Legend

Project Border (Approximate)

Long-Term Noise Level Measurement Location

Short-Term Noise Level Measurement Location

N

Scale (feet)

0 100 200

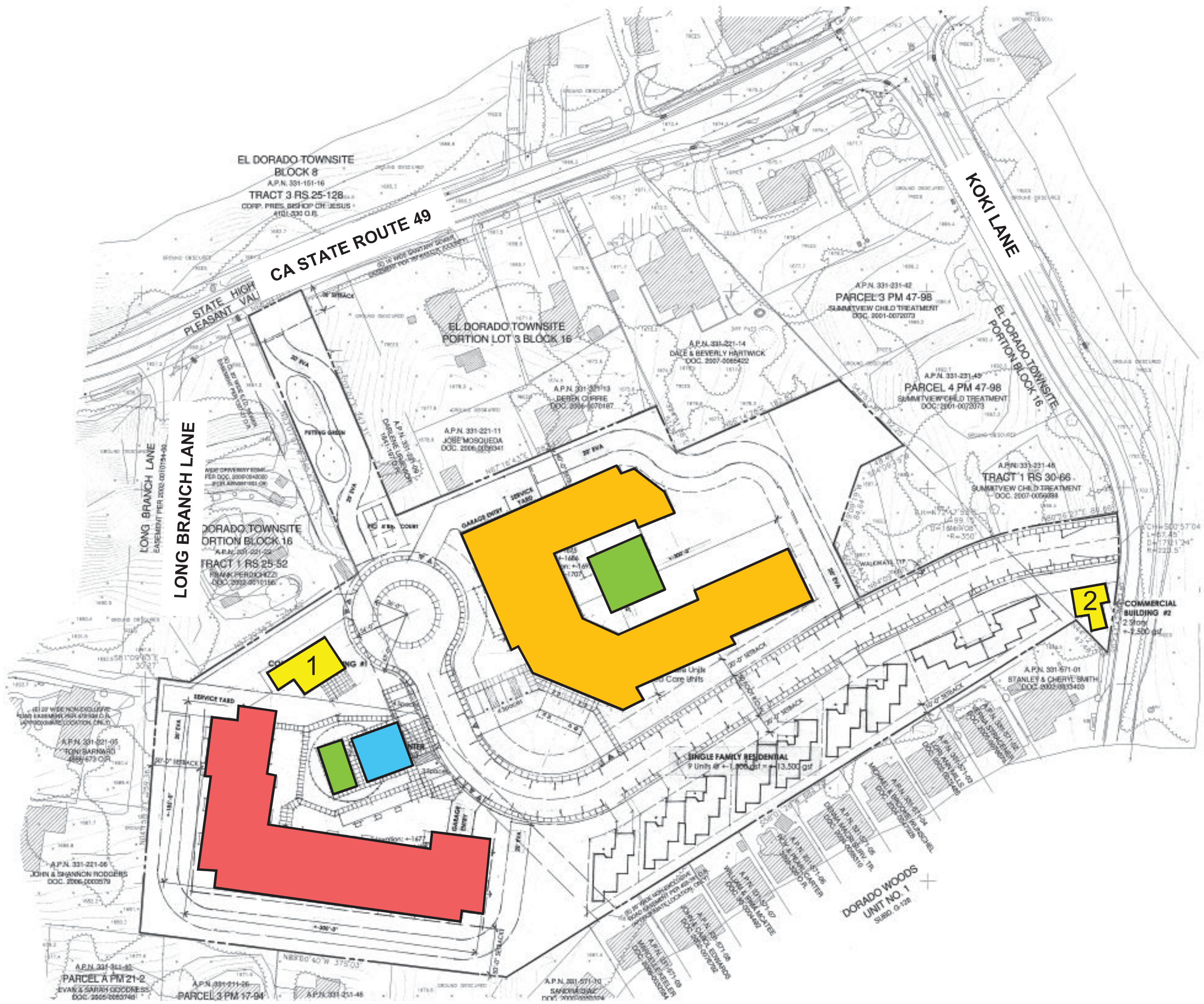
El Dorado Senior Resort

El Dorado County, California

Project Area

Figure 1

BOLLARD Acoustical Consultants



Legend

- Assisted Living and Memory Care Building
- Independent Apartment Building
- Community Center
- Primary Common Outdoor Areas (Courtyards)
- Commercial Buildings

N

Scale (Feet)

0 80 160

El Dorado Senior Resort

El Dorado County, California

Project Site Plan

Figure 2

BOLLARD Acoustical Consultants

As vibrations travel outward from the source, they excite the particles of rock and soil through which they pass and cause them to oscillate. Differences in subsurface geologic conditions and distance from the source of vibration will result in different vibration levels characterized by different frequencies and intensities. In all cases, vibration amplitudes will decrease with increasing distance. The maximum rate, or velocity of particle movement, is the commonly accepted descriptor of the vibration “strength”.

Human response to vibration is difficult to quantify. Vibration can be felt or heard well below the levels that produce any damage to structures. The duration of the event has an effect on human response, as does frequency. Generally, as the duration and vibration frequency increase, the potential for adverse human response increases.

According to the Transportation and Construction-Induced Vibration Guidance Manual (Caltrans, June 2004), operation of construction equipment and construction techniques generate ground vibration. Traffic traveling on roadways can also be a source of such vibration. At high enough amplitudes, ground vibration has the potential to damage structures and/or cause cosmetic damage. Ground vibration can also be a source of annoyance to individuals who live or work close to vibration-generating activities. However, traffic, rarely generates vibration amplitudes high enough to cause structural or cosmetic damage.

Regulatory Setting: Criteria for Acceptable Noise and Vibration Exposure

Federal

There are no federal noise or vibration criteria which would be directly applicable to this project.

State of California

California Environmental Quality Act (CEQA)

The State of California has established regulatory criteria that are applicable to this assessment. Specifically, Appendix G of the State of California Environmental Quality Act (CEQA) Guidelines are used to assess the potential significance of impacts pursuant to local General Plan policies, Municipal Code standards, or the applicable standards of other agencies. According to Appendix G of the CEQA guidelines, the project would result in a significant noise or vibration impact if the following occur:

A. exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;

B. exposure of persons to or generation of excessive groundborne vibration or noise levels;

C. a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;

D. a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project;

E. for a project located within an ALUP or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, the project would expose people residing or working in the project area to excessive noise levels;

F. or a project within the vicinity of a private airstrip, the project would expose people residing or working in the project area to excessive noise levels.

It should be noted that audibility is not a test of significance according to CEQA. If this were the case, any project which added any audible amount of noise to the environment would be considered unacceptable according to CEQA. Because every physical process creates noise, the use of audibility alone as significance criteria would be unworkable. CEQA requires a substantial increase in noise levels before noise impacts are identified, not simply an audible change.

California Department of Transportation (Caltrans)

El Dorado County does not currently have adopted standards for groundborne vibration. As a result, vibration criteria established by the California Department of Transportation (Caltrans 2013) was applied to this project. The Caltrans publication, *Transportation and Construction Vibration Guidance Manual*, provides guidelines for acceptable vibration limits for transportation and construction projects in terms of the induced peak particle velocity (PPV). Human and structural response to different vibration levels is influenced by a number of factors, including ground type, distance between source and receptor, duration, and the number of perceived vibration events. The Caltrans criteria applicable to human responses to vibration are shown below in Table 1.

Table 1
Human Response to Transient Vibration

Human Response/Structure	Peak Particle Velocity (in/sec)
Barely Perceptible	0.04
Distinctly Perceptible	0.25
Strongly Perceptible	0.90
Severe	2.00
Residential Construction	1.0

Source: Caltrans Transportation and Construction Vibration Guidance Manual, September 2013

As shown in Table 1, a vibration level of 0.25 in/sec PPV is the level at which vibration becomes distinctly to strongly perceptible. As a result, the 0.25 threshold is considered to be a conservative benchmark against which project vibration levels are evaluated in this assessment.

Local

El Dorado County General Plan

The Public Health, Safety, and Noise Element of the El Dorado County General Plan contains the County's noise-related policies. The specific policies which are generally applicable to this project are reproduced below:

Policy 6.5.1.1 Where noise-sensitive land uses are proposed in areas exposed to existing or projected exterior noise levels exceeding the levels specified in Table 2 (GP Table 6-1) or the performance standards of Table 3 (GP Table 6-2), an acoustical analysis shall be required as part of the environmental review process so that noise mitigation may be included in the project design.

Policy 6.5.1.2 Where proposed non-residential land uses are likely to produce noise levels exceeding the performance standards of Table 3 at existing or planned noise-sensitive uses, an acoustical analysis shall be required as part of the environmental review process so that noise mitigation may be included in the project design

Policy 6.5.1.3 Where noise mitigation measures are required to achieve the standards of Tables 2 and Table 3, the emphasis of such measures shall be placed upon site planning and project design. The use of noise barriers shall be considered a means of achieving the noise standards only after all other practical design-related noise mitigation measures have been integrated into the project and the noise barriers are not incompatible with the surroundings.

Policy 6.5.1.7 Noise created by new proposed non-transportation noise sources shall be mitigated so as not to exceed the noise level standards of Table 3 for noise-sensitive uses.

Policy 6.5.1.8 New development of noise sensitive land uses will not be permitted in areas exposed to existing or projected levels of noise from transportation noise sources which exceed the levels specified in Table 2 unless the project design includes effective mitigation measures to reduce exterior noise and noise levels in interior spaces to the levels specified in Table 2.

Policy 6.5.1.9 Noise created by new transportation noise sources, excluding airport expansion but including roadway improvement projects, shall be mitigated so as not to exceed the levels specified in Table 2 at existing noise-sensitive land uses.

Policy 6.5.1.11 The standards outlined in Tables 3, 4 and 5 (GP Tables 6-3, 6-4, 6-5) shall not apply to those activities associated with actual construction of a project as long as such construction occurs between the hours of 7 am and 7 pm, Monday through Friday, and 8 am and 5 pm on weekends, and on federally-recognized holidays. Further, the standards outlined in Tables 3, 4, and 5 shall not apply to public projects to alleviate traffic congestion and safety hazards.

Policy 6.5.1.12 When determining the significance of impacts and appropriate mitigation for new development projects, the following criteria shall be taken into consideration:

a) Where existing or projected future traffic noise levels are less than 60 dB L_{dn} at the outdoor activity areas of residential uses, an increase of more than 5 dBA L_{dn} caused by a new transportation noise source will be considered significant.

b) Where existing or projected future traffic noise levels range between 60 and 65 dBA L_{dn} at the outdoor activity areas of residential uses, an increase of more than 3 dBA L_{dn} caused by a new transportation noise source will be considered significant; and

c) Where existing or projected future traffic noise levels are greater than 65 dBA L_{dn} at the outdoor activity areas of residential uses, an increase of more than 1.5 dBA L_{dn} caused by a new transportation noise source will considered significant.

Policy 6.5.1.13 When determining the significance of impacts and appropriate mitigation for new development projects, the following criteria shall be taken into consideration:

a) In areas in which ambient noise levels are in accordance with the standards in Table 3, increases in ambient noise levels caused by new non-transportation noise sources that exceed 5 dBA shall be considered significant; and

b) In areas in which ambient noise levels are not in accordance with the standards in Table 3, increases in ambient noise levels caused by new non-transportation noise sources that exceed 3 dBA shall be considered significant.

Table 2
Maximum Allowable Noise Exposure for Transportation Noise Sources

Land Use	Outdoor Activity Areas[1] Ldn/CNEL, dB	Interior Spaces Ldn/CNEL, dB	Interior Spaces Leq, dB[2]
Residential	60[3]	45	--
Transient Lodging	60[3]	45	--
Hospitals, Nursing Homes	60[3]	45	--
Theaters, Auditoriums, Music Halls	--	--	35
Churches, Meeting Halls, Schools	60[3]	--	40
Office Buildings	--	--	45
Libraries, Museums	--	--	45
Playgrounds, Neighborhood Parks	70	--	--

Notes:

1 In Community Regions and Rural Centers, where the location of outdoor activity areas is not clearly defined, the exterior noise level standard shall be applied to the property line of the receiving land use. For residential uses with front yards facing the identified noise source, an exterior noise level criterion of 65 dB L_{dn} shall be applied at the building facade, in addition to a 60 dB L_{dn} criterion at the outdoor activity area. In Rural Regions, an exterior noise level criterion of 60 dB L_{dn} shall be applied at a 100 foot radius from the residence unless it is within Platted Lands where the underlying land use designation is consistent with Community Region densities in which case the 65 dB L_{dn} may apply. The 100-foot radius applies to properties which are five acres and larger; the balance will fall under the property line requirement.

2 As determined for a typical worst-case hour during periods of use.

3 Where it is not possible to reduce noise in outdoor activity areas to 60 dB L_{dn}/CNEL or less using a practical application of the best-available noise reduction measures, an exterior noise level of up to 65 dB L_{dn}/CNEL may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this table.

Source: El Dorado County General Plan, Public Health & Safety Element, Table 6-1

Table 3
Noise Level Performance Protection Standards for Noise-Sensitive Land Uses Affected by Non-Transportation Sources

Noise Level Descriptor	Daytime 7 am – 7 pm		Evening 7 pm – 10 pm		Nighttime 10 pm – 7 am	
	Community	Rural	Community	Rural	Community	Rural
Hourly, L_{eq}	55	50	50	45	45	40
Maximum, L_{max}	70	60	60	55	55	50

Notes:

-Each of the noise levels specified above shall be lowered by five dB for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises. These noise level standards do not apply to residential units established in conjunction with industrial or commercial uses (e.g., caretaker dwellings).

-The County can impose noise level standards which are up to 5 dB less than those specified above based upon determination of existing low ambient noise levels in the vicinity of the project site.

-In Community Regions the exterior noise level standard shall be applied to the property line of the receiving property. In Rural Areas the exterior noise level standard shall be applied at a point 100' away from the residence. The above standards shall be measured only on property containing a noise-sensitive land use as defined in Objective 6.5.1.

Source: El Dorado County General Plan, Public Health & Safety Element, Table 6-2

Table 4
Maximum Allowable Noise Exposure for Non-Transportation Noise Sources in Community Regions and Adopted Plan Areas – Construction Noise

Land Use Designation	Time Period	Noise Level (dB) L_{eq}	Noise Level (dB) L_{max}
Higher-Density Residential (MFR, HDR, MDR)	7 am – 7 pm	55	75
	7 pm – 10 pm	50	65
	10 pm – 7 am	45	60
Commercial and Public Facilities (C, R&D, PF)	7 am – 7 pm	70	90
	10 pm – 7 am	65	75
Industrial (I)	Any Time	80	90

Notes:
[1] Adopted Plan areas should refer to those land use designations that most closely correspond to the similar General Plan land use designations for similar development.

Table 5
Maximum Allowable Noise Exposure for Non-Transportation Noise Sources in Rural Centers – Construction Noise

Land Use Designation	Time Period	Noise Level (dB) L_{eq}	Noise Level (dB) L_{max}
All Residential (MFR, HDR, MDR)	7 am – 7 pm	55	75
	7 pm – 10 pm	50	65
	10 pm – 7 am	40	55
Commercial, Recreation, and Public Facilities	7 am – 7 pm	65	75
(C, TR, PF)	10 pm – 7 am	60	70
Industrial (I)	Any Time	70	80
Open Space (OS)	7 am – 7 pm	55	75
	7 pm – 7 am	50	65

Table 6
Maximum Allowable Noise Exposure for Non-Transportation Noise Sources in Rural Regions and Adopted Plan Areas – Construction Noise

Land Use Designation	Time Period	Noise Level (dB) L_{eq}	Noise Level (dB) L_{max}
All Residential (LDR)	7 am – 7 pm	50	60
	7 pm – 10 pm	45	55
	10 pm – 7 am	40	50
Commercial, Recreation, and Public Facilities	7 am – 7 pm	65	75
(C, TR, PF)	10 pm – 7 am	60	70
Rural Land, Natural Resources, Open Space, and	7 am – 7 pm	65	75
Agricultural Lands (RR, NR, OS, AL)	7 pm – 7 am	60	70

According to Figure LU-1 (Land Use Diagram) of the El Dorado County General Plan, the project area and adjacent uses are located within a Community Region. As a result, the “Community” noise level performance standards for noise-sensitive uses affected by non-transportation noise sources identified in Table 3 would be applicable to the project.

Environmental Setting – Existing Ambient Noise and Vibration Environment

Noise Environment

The existing ambient noise environment at the project site is primarily defined by traffic on California State Route 49 (SR-49). To quantify the existing ambient noise environment at the project site, BAC conducted continuous (24-hour) noise level measurements on the project site on Thursday, July 26, 2018. The long-term noise measurement location is shown on Figure 1.

A Larson Davis Laboratories (LDL) Model 820 precision integrating sound level meter was used for the noise level measurement survey. The meter was calibrated before use with an LDL Model CA200 acoustical calibrator to ensure the accuracy of the measurements. The equipment used meets all specifications of the American National Standards Institute requirements for Type 1 sound level meters (ANSI S1.4). The results of the measurements are shown numerically and graphically in Appendices C and D, and are summarized in Table 7. Photographs of the noise measurement site are provided in Appendix E.

Table 7
Summary of Long-Term Ambient Noise Monitoring Results
El Dorado Senior Resort – El Dorado County, California
July 26, 2018

		Average Measured Hourly Noise Levels (dB)								
		Daytime 7 am – 7 pm			Evening 7 pm – 10 pm			Nighttime 10 pm – 7 am		
Site[1]	L_{dn}, dB	L_{eq}	L_{50}	L_{max}	L_{eq}	L_{50}	L_{max}	L_{eq}	L_{50}	L_{max}
1	50	45	43	63	45	43	62	42	38	59

Notes:
[1] Long-term ambient noise monitoring site is identified on Figure 1.
Source: Bollard Acoustical Consultants, Inc. (2018)

The Table 7 data indicate that existing ambient noise levels at the project site comply with the El Dorado County 60 dB L_{dn} exterior traffic noise level standard for residential land uses. The Table 7 data also indicates that measured average maximum (L_{max}) noise levels exceeded the County’s evening and nighttime noise level standards for noise-sensitive uses affected by non-transportation noise sources in Community Regions. A detailed analysis of future traffic noise levels was conducted and that analysis is presented in the following section.

In addition to a long-term noise level measurement survey, short-term (4-hour) noise level measurements were also conducted at the project site. The short-term noise measurement location, identified on Figure 1 as Site A, was located approximately 130 feet from the centerline of Koki Lane. Results from the short-term noise survey indicate that measured ambient noise levels ranged from 45 to 47 dB L_{eq} and 57 to 72 dB L_{max}. Based on measurement results from the short-term noise level survey, and taking into consideration existing and worst-case future traffic volumes on the segment of Koki Lane adjacent to the project site, it is expected that future Koki Lane traffic noise exposure will comply with the El Dorado County exterior traffic noise level limits at the project site by a wide margin. As a result, the following analysis focuses on future traffic noise levels at the project site from SR-49.

Vibration Environment

During a site visit on July 25, 2018, vibration levels were below the threshold of perception at the project site and in the immediate project vicinity. Therefore, the existing vibration environment in the immediate project vicinity is considered to be negligible.

Impacts and Mitigation Measures

Methodology

Evaluation of Exterior Traffic Noise Levels at Project Site

The Federal Highway Administration Highway Traffic Noise Prediction Model (FHWA-RD-77-108) was used to predict traffic noise levels at the project site. The model is based upon the CALVENO noise emission factors for automobiles, medium trucks, and heavy trucks, with consideration given to vehicle volume, speed, roadway configuration, distance to the receiver, and the acoustical characteristics of the site. The FHWA Model was developed to predict hourly L_{eq} values for free flowing traffic conditions, and is considered to be accurate within 1.5 dB in most situations.

The FHWA Model was used with future (Cumulative Plus Project) traffic data obtained from the El Dorado Senior Resort Traffic Impact Study (2018) prepared by Kimley-Horn & Associates, Inc. to predict future traffic noise levels from SR-49 at the proposed noise-sensitive areas of the development. The FHWA Model inputs and predicted future traffic noise levels at the noise-sensitive locations are shown in Appendix F. The results are summarized in Table 8.

Based on the project site plans, the primary common outdoor areas of the proposed development have been identified as courtyards located at the assisted living building and community center. The locations of the primary common outdoor areas and buildings are shown in Figure 2. The site plans indicate that the courtyards would be shielded from view of SR-49 by proposed intervening buildings. To account for this shielding, the predicted future exterior traffic noise levels at the primary common outdoor areas of the development have been conservatively adjusted by -7 dB.

Table 8
Predicted Future Exterior SR-49 Traffic Noise Levels[1]
El Dorado Senior Resort – El Dorado County, California

Building	Location	Distance from Centerline (ft)[2]	Offset (dB)[3]	L_{dn} (dB)
Assisted Living Building	Courtyard	415	-7	45
	First-floor facades	300		54
	Upper-floor facades	300	+3	57
Apartment Building	First-floor facades	380		53
	Upper-floor facades	380	+3	56
Community Center	Courtyard	480	-7	44

Notes:
1 A complete listing of FHWA Model inputs and results are provided in Appendix F.
2 Distances measured from indicated location to the centerline of SR-49.
3 A +3 dB offset was applied to the upper-floor facades due to reduced ground absorption at elevated floor levels. A -7 dB offset was conservatively applied to the primary common outdoor areas (courtyards) to account for the shielding provided by proposed intervening structures that would break line of sight of SR-49.
Source: Bollard Acoustical Consultants, Inc. (2018)

Evaluation of Interior Traffic Noise Levels at Project Site

The worst-case traffic noise exposure at the proposed development would occur within the residences proposed closest to SR-49. According to Table 8, predicted future L_{dn} values at the first-floor facades of the residences nearest to SR-49 would range from 53-54 dB L_{dn}. Due to reduced ground absorption at elevated positions, upper-level traffic noise levels from SR-49 would approach 56-57 dB L_{dn}. In addition, standard residential construction (stucco siding, STC-27 windows, door weather-stripping, exterior wall insulation, composition plywood roof), results in an exterior to interior noise reduction of at least 25 dB with windows closed and approximately 15 dB with windows open.

Evaluation of Off-Site Traffic Noise Level Increases in the Project Vicinity

Construction of this project would result in increased traffic on the local roadway network. BAC utilized the FHWA Model with the aforementioned project traffic impact study prepared by Kimley-Horn & Associates, Inc. to determine whether traffic noise impacts (by the impact significance criteria identified in General Plan Policy 6.5.1.12) would occur as a result of this project. The FHWA Model inputs are provided in Appendix G, and the results are shown in Tables 9-11.

Table 9
Existing vs. Existing Plus Project Traffic Noise Levels, dB L_{dn}
El Dorado Senior Resort – El Dorado County, California

Roadway	Segment	Existing	Existing + Project	Change	Substantial Increase?
SR-49	South of Pleasant Valley Rd	68.2	68.3	0.1	No
SR-49	Pleasant Valley Rd to Forni Rd	62.4	62.4	0.0	No
SR-49	Forni Rd to Koki Ln	65.1	65.2	0.1	No
SR-49	Koki Ln to Patterson Dr	67.1	67.1	0.0	No
SR-49	Patterson Dr to Missouri Flats Rd	67.9	68.0	0.1	No
SR-49	Missouri Flats Rd to Fowler Ln	67.0	67.0	0.0	No
SR-49	North of Pleasant Valley Rd	66.6	66.7	0.1	No
Pleasant Valley Rd	West of SR-49	61.8	61.8	0.0	No
Pleasant Valley Rd	East of SR-49	66.7	66.8	0.1	No
Forni Rd	North of SR-49	60.4	60.4	0.0	No
Koki Ln	SR-49 to Project Driveway	54.6	55.9	1.3	No
Koki Ln	South of Project Driveway	54.6	54.7	0.1	No
Patterson Dr	South of SR-49	60.7	63.3	2.6	No
Missouri Flats Rd	North of SR-49	69.5	64.3	-5.2	No
Fowler Ln	South of SR-49	57.8	57.8	0.0	No

Sources: FHWA-RD-77-108, project traffic study, and Bollard Acoustical Consultants, Inc. (2018)

Table 10
Near-Term vs. Near-Term Plus Project Traffic Noise Levels, dB L_{dn}
El Dorado Senior Resort – El Dorado County, California

Roadway	Segment	Near-Term	Near-Term + Project	Change	Substantial Increase?
SR-49	South of Pleasant Valley Rd	68.4	68.4	0.0	No
SR-49	Pleasant Valley Rd to Forni Rd	62.6	62.6	0.0	No
SR-49	Forni Rd to Koki Ln	65.4	65.5	0.1	No
SR-49	Koki Ln to Patterson Dr	67.3	67.5	0.2	No
SR-49	Patterson Dr to Missouri Flats Rd	68.0	68.2	0.2	No
SR-49	Missouri Flats Rd to Fowler Ln	67.0	67.1	0.1	No
SR-49	North of Pleasant Valley Rd	67.6	67.7	0.1	No
Pleasant Valley Rd	West of SR-49	62.2	62.2	0.0	No
Pleasant Valley Rd	East of SR-49	67.1	67.2	0.1	No
Forni Rd	North of SR-49	60.5	60.5	0.0	No
Koki Ln	SR-49 to Project Driveway	55.8	56.9	1.1	No
Koki Ln	South of Project Driveway	55.8	55.9	0.1	No
Patterson Dr	South of SR-49	61.3	63.9	2.6	No
Missouri Flats Rd	North of SR-49	69.6	64.4	-5.2	No
Fowler Ln	South of SR-49	58.3	58.3	0.0	No

Sources: FHWA-RD-77-108, project traffic study, and Bollard Acoustical Consultants, Inc. (2018)

Table 11
Cumulative vs. Cumulative Plus Project Traffic Noise Levels, dB L_{dn}
El Dorado Senior Resort – El Dorado County, California

Roadway	Segment	Cumulative	Cumulative + Project	Change	Substantial Increase?
SR-49	South of Pleasant Valley Rd	68.6	68.7	0.1	No
SR-49	Pleasant Valley Rd to Forni Rd	62.9	62.9	0.0	No
SR-49	Forni Rd to Koki Ln	65.8	65.8	0.0	No
SR-49	Koki Ln to Patterson Dr	67.5	67.7	0.2	No
SR-49	Patterson Dr to Missouri Flats Rd	68.3	68.4	0.1	No
SR-49	Missouri Flats Rd to Fowler Ln	67.1	67.2	0.1	No
SR-49	North of Pleasant Valley Rd	68.7	68.7	0.0	No
Pleasant Valley Rd	West of SR-49	62.7	62.7	0.0	No
Pleasant Valley Rd	East of SR-49	67.7	67.7	0.0	No
Forni Rd	North of SR-49	60.7	60.7	0.0	No
Koki Ln	SR-49 to Project Driveway	57.1	57.8	0.7	No
Koki Ln	South of Project Driveway	57.1	57.1	0.0	No
Patterson Dr	South of SR-49	61.9	64.6	2.7	No
Missouri Flats Rd	North of SR-49	69.8	64.6	-5.2	No
Fowler Ln	South of SR-49	58.9	58.9	0.0	No

Sources: FHWA-RD-77-108, project traffic study, and Bollard Acoustical Consultants, Inc. (2018)

The data shown in Tables 9-11 indicate that the project-related increase in traffic noise levels on the local roadway network would not be substantial.

Evaluation of Proposed Commercial Noise Levels at Existing Residences

The project proposes the construction of two commercial buildings within the development. Commercial Building #1 is proposed to be located at the western end of the development, and will contain a restaurant. Commercial Building #2 is proposed to be located at the eastern end of the development adjacent to Koki Lane. The locations of the commercial buildings are shown on Figure 2. The mechanical equipment (HVAC) has been identified as one of the primary noise sources associated with proposed commercial buildings.

According to the project applicant, the HVAC systems for maintaining comfortable temperatures within the future commercial buildings will consist of packaged rooftop air conditioning systems. Such HVAC units, which typically stand about 4-5 feet tall, would be shielded from view of nearby sensitive uses by the building parapets on top of the proposed two-story commercial buildings. Such rooftop HVAC units frequently generate a noise level of approximately 45 dB L_{eq} at a reference distance of 100 feet from the building facade, including shielding by a building parapet. In addition, additional mechanical equipment may be needed should the restaurant located within Commercial Building #1 require food cold storage.

The building facades of Commercial Buildings #1 & 2 are proposed to be located approximately 35 and 5 feet from the property lines of the nearest residential uses, respectively. After taking into consideration the height of two-story commercial building rooftops, and the locations and sizes of the proposed buildings, it is reasonable to assume that the distances from the rooftop-mounted equipment to the nearest property lines would be greater than the measured ground level distances of 35 and 5 feet. Based on this assumption, and when projecting to distances of 50 feet (Commercial Building #1) and 30 feet (Commercial Building #2) to the nearest residential property lines, commercial HVAC equipment noise levels are calculated to range from approximately 51-55 dB L_{eq} at the nearest residential property lines.

Evaluation of Project Construction Noise at Existing Residences

During project construction, heavy equipment would be used for grading excavation, paving, and building construction, which would increase ambient noise levels when in use. Noise levels would vary depending on the type of equipment used, how it is operated, and how well it is maintained. Noise exposure at any single point outside the project site would also vary depending on the proximity of construction activities to that point. Standard construction equipment, such as graders, backhoes, loaders, and trucks, would be used for this work.

The range of maximum noise levels for various types of construction equipment at a distance of 50 feet is depicted in Table 12. The noise values represent maximum noise generation, or full-power operation of the equipment. As one increases the distance between equipment, or increases separation of areas with simultaneous construction activity, dispersion and distance attenuation reduce the effects of combining separate noise sources.

Table 12
Construction Equipment Noise Emission Levels

Equipment	Typical Sound Level (dBA) 50 Feet from Source
Air compressor	81
Backhoe	80
Compactor	82
Concrete mixer	85
Concrete pump	82
Concrete vibrator	76
Crane, mobile	83
Dozer	85
Generator	81
Grader	85
Impact wrench	85
Jackhammer	88
Loader	85
Paver	89
Pneumatic tool	85
Pump	76
Roller	74
Saw	76
Truck	88

Source: Transit Noise and Vibration Impact Assessment, Federal Transit Administration, Table 12-1. (May 2006)

The nearest existing noise-sensitive receptors (residences) are located approximately 25 feet from construction activities which would occur on the project site. As shown in Table 12, construction activities typically generate noise levels ranging from approximately 75 to 90 dB L_{max} at a reference distance of 50 feet from the construction activities. The noise levels from construction operations decrease at a rate of approximately 6 dB per doubling of distance from the source. As a result, worst-case maximum construction noise levels would range from approximately 81 to 96 dB L_{max} at the nearest residences.

Evaluation of Project Construction Vibration Levels at Existing Residences

During project construction heavy equipment would be used for grading excavation, paving, and building construction, which would generate localized vibration in the immediate vicinity of the construction. The nearest residence is located approximately 25 feet from construction activities which would occur on the project site.

The range of vibration source levels for construction equipment commonly used in similar projects are shown in Table 13. The vibration levels depicted in Table 13 are representative of measurements at a distance of 25 feet from the equipment source.

Table 13
Vibration Levels of Construction Equipment – 25 Foot Reference Distance

Source	Peak Particle Velocity (PPV) inches/second
Vibratory Roller	0.210
Loaded Truck	0.076
Excavator	0.051
Front Loader	0.035
Water Truck	0.001

Source: FTA and FHWA

The vibration data shown in Table 13 indicate that heavy equipment-generated vibration levels would be at or below distinctly perceptible levels, and well below levels considered severe, at the nearest residences to the project site.

Evaluation of Vibration Levels at the Project Site

The project proposes a restaurant to be located within Commercial Building #1. It is the experience of BAC that restaurant operations do not typically have equipment that generates appreciable vibration. In addition, it is our understanding that the proposed restaurant operations do not propose equipment that will produce appreciable vibration.

During a site visit on July 25, 2018, vibration levels were below the threshold of perception at the project site and in the immediate project vicinity. Therefore, the existing vibration environment in the immediate project vicinity is considered to be negligible. Based on this observation, it is the professional opinion of BAC that vibration levels at the project site are well below the threshold of perception (below 0.1 inches/second peak particle velocity).

Evaluation of Impacts Relative to CEQA Criteria

Criteria A: Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.

On-Site Transportation Noise Exposure

As indicated in Table 8, the proposed common use areas (courtyards) near the community center and assisted living buildings would be exposed to future (Cumulative Plus Project) SR-49 traffic noise levels of 44 and 45 dB L_{dn} (respectively), including the -7 dB offset to account for the shielding provided by the proposed buildings. The predicted exterior traffic noise levels of 44 and 45 dB L_{dn} at the proposed primary common use areas of the development would satisfy the applicable El Dorado County General Plan 60 dB L_{dn} exterior noise level standard.

According to Table 8, the predicted future L_{dn} value at the first-floor facades of the proposed residences/rooms nearest to SR-49 would range from 53-54 dB L_{dn}. Due to reduced ground absorption at elevated positions, upper-level traffic noise levels from SR-49 would approach 56-57 dB L_{dn}. In addition, standard residential construction (stucco siding, STC-27 windows, door weather-stripping, exterior wall insulation, composition plywood roof), results in an exterior to interior noise reduction of at least 25 dB with windows closed and approximately 15 dB with windows open. Therefore, standard residential construction would be acceptable for all residences constructed adjacent to SR-49. Nonetheless, mechanical ventilation (air conditioning) should be provided for all residences/rooms within this development to allow the occupants to close doors and windows as desired for additional acoustical isolation.

Off-Site Non-Transportation Noise Exposure

Mechanical equipment (HVAC) noise levels from Commercial Buildings #1 & 2 are calculated to range from approximately 51-55 dB L_{eq} at the nearest residential property lines, including shielding provided by a building parapet. Because commercial HVAC equipment noise exposure could exceed the applicable El Dorado County evening and nighttime noise level standards at the property lines of the nearest existing residences, this impact is considered to be ***potentially significant***.

Mitigation for Criteria A: Commercial Mechanical Equipment Noise Levels

In order to satisfy the applicable El Dorado County General Plan evening and nighttime noise level standards at the nearest residential property lines, the following noise mitigation options could be employed by the project developer to reduce commercial HVAC noise exposure to a state of compliance:

MM-1: Ensure that all rooftop mounted HVAC equipment associated with air heating and cooling requirements of Commercial Buildings #1 & 2 be completely shielded from view of nearby existing residences by building rooftop parapets (as proposed).

AND (one of the following)

MM-2: When plans are available that identify specific HVAC equipment model information and installation locations, the project developer shall review and confirm that the equipment will not exceed 45 dB L_{eq} at 50 feet (Commercial Building #1) and 45 dB L_{eq} at 30 feet (Commercial Building #2).

OR

MM-3: Should the project developer choose to install rooftop-mounted HVAC equipment that exceeds 45 dB L_{eq} at 50 feet (Commercial Building #1) or 45 dB L_{eq} at 30 feet (Commercial Building #2), the construction of a 6-foot tall localized barrier that encompasses the equipment would be required. Should a barrier be constructed on the rooftop of Commercial Building #1, the barrier shall encompass the equipment around the north, east and west sides. Should a barrier be constructed on the rooftop of Commercial Building #2, the barrier shall encompass the equipment on the south, west and east sides.

Future off-site transportation noise sources are expected to satisfy the applicable El Dorado County exterior and interior noise level criteria at the proposed development. In addition, after implementation of the identified mitigation measures, future project-generated non-transportation noise sources are expected to satisfy the applicable El Dorado County noise level criteria at the nearest existing residences. As a result, this impact is considered to be ***less than significant.***

Criteria B: Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels.

At the nearest existing residences to the proposed project area, construction-generated vibration levels are predicted to be less than the 0.25 in/sec PPV threshold at which vibration levels become distinctly perceptible. Because construction-generated vibration levels at nearby existing receptors would satisfy the California Department of Transportation (Caltrans) vibration criteria (Table 1), project construction would not result in the exposure of persons to or generation of excessive groundborne vibration levels.

During a site visit on July 25, 2018, vibration levels were below the threshold of perception at the project site and in the immediate project vicinity (below 0.1 inches per second if converted to peak particle velocity). Therefore, the project would not result in the exposure of persons to or generation of excessive groundborne vibration levels at the project site. In addition, the project is not proposing the installation of equipment that would generate significant off-site vibration levels.

Because vibration levels due to and upon the proposed project will satisfy the applicable Caltrans vibration criteria, this impact is considered to be ***less than significant.***

Criteria C: A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.

The impact significance criteria identified in Policy 6.5.1.12 of the El Dorado County General Plan was used to determine the significance of impacts due to the project relative to CEQA:

- Where existing or projected future traffic noise levels are less than 60 dB L_{dn} at the outdoor activity areas of residential uses, an increase of more than 5 dB L_{dn} caused by a new transportation noise source will be considered significant.
- Where existing or projected future traffic noise levels range between 60 and 65 dB L_{dn} at the outdoor activity areas of residential uses, an increase of more than 3 dB L_{dn} caused by a new transportation noise source will be considered significant; and
- Where existing or projected future traffic noise levels are greater than 65 dB L_{dn} at the outdoor activity areas of residential uses, an increase of more than 1.5 dB L_{dn} caused by a new transportation noise source will be considered significant.

The results from the analysis of 15 roadway segments shown in Tables 9-11 indicate that the project-related increases in traffic noise levels on the local roadway network would not exceed the standards of significance as identified in Policy 6.5.1.12 of the El Dorado County General Plan. As a result, this impact is considered to be ***less than significant***.

Criteria D: A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

As shown in Table 12, exterior noise levels at a residence 50 feet from the noise sources could reach as high as 90 dB L_{max}. As noted in the Regulatory Setting

Section of this report, Policy 6.5.1.11 of the El Dorado County General Plan exempts noise sources associated with construction, provided such activities occur between the hours of 7 am and 7 pm, Monday through Friday, and 8 am and 8 pm on weekends, and on federally-recognized holidays. Provided project construction activities are limited to these hours, construction activities would be exempt and this impact would be considered ***less than significant***.

However, if construction activities are proposed outside of the hours defined by General Plan Policy 6.5.1.11, noise levels generated by construction activities would likely exceed the applicable maximum noise level standards identified in Tables 3 & 4 at the nearest residences. This impact would be considered ***significant***.

Mitigation for Criteria D: Construction Noise Control Measures

MM-3: Noise-generating construction activities shall occur within the hours identified in General Plan Policy 6.5.1.11.

Significance after Mitigation: *Less than Significant*

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

Because the project site is not located within 2 miles of a public airport, ***no noise impact*** is identified relative to this significance criteria.

Criteria F: **For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?**

Because the project site is not located in the vicinity of a private airstrip, ***no noise impact*** is identified relative to this significance criteria.

Conclusions and Recommendations

This analysis concludes the project will not result in adverse impacts at residences of the proposed development. In addition, with implementation of feasible noise mitigation measures, all potentially significant noise impacts at the nearest existing residences can be mitigated to a less than significant level. Finally, this analysis concludes that project-generated vibration will not result in adverse impacts at the nearest existing residences.

This concludes BAC's noise assessment for the proposed El Dorado Senior Resort project in El Dorado County, California. Please contact BAC at (916) 663-0500 or paulb@bacnoise.com with any questions regarding this assessment.

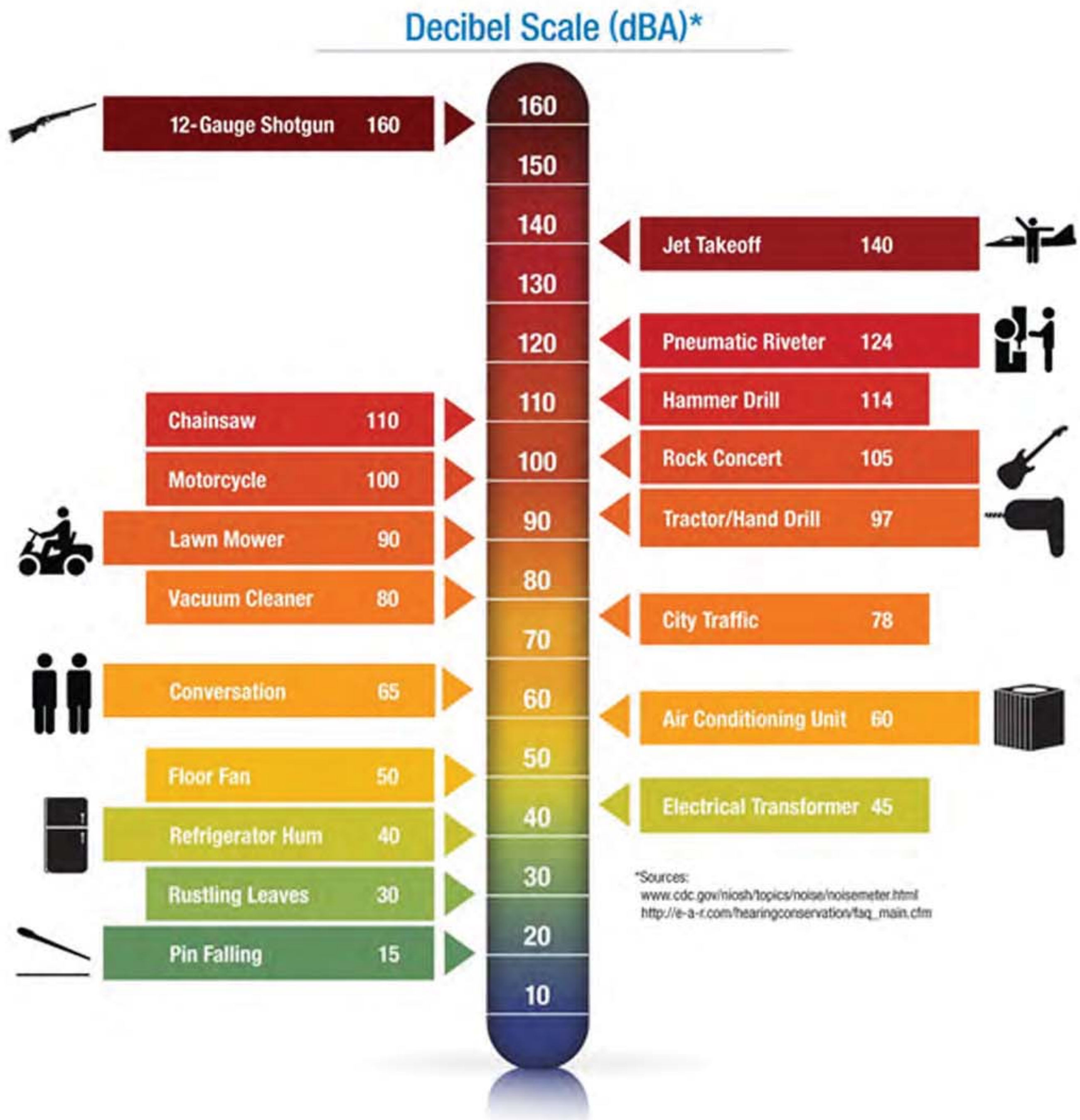
Appendix A

Acoustical Terminology

Acoustics	The science of sound.
Ambient Noise	The distinctive acoustical characteristics of a given space consisting of all noise sources audible at that location. In many cases, the term ambient is used to describe an existing or pre-project condition such as the setting in an environmental noise study.
Attenuation	The reduction of an acoustic signal.
A-Weighting	A frequency-response adjustment of a sound level meter that conditions the output signal to approximate human response.
Decibel or dB	Fundamental unit of sound, A Bell is defined as the logarithm of the ratio of the sound pressure squared over the reference pressure squared. A Decibel is one-tenth of a Bell.
CNEL	Community Noise Equivalent Level. Defined as the 24-hour average noise level with noise occurring during evening hours (7 - 10 p.m.) weighted by a factor of three and nighttime hours weighted by a factor of 10 prior to averaging.
Frequency	The measure of the rapidity of alterations of a periodic signal, expressed in cycles per second or hertz.
Ldn	Day/Night Average Sound Level. Similar to CNEL but with no evening weighting.
Leq	Equivalent or energy-averaged sound level.
Lmax	The highest root-mean-square (RMS) sound level measured over a given period of time.
Loudness	A subjective term for the sensation of the magnitude of sound.
Masking	The amount (or the process) by which the threshold of audibility is for one sound is raised by the presence of another (masking) sound.
Noise	Unwanted sound.
Peak Noise	The level corresponding to the highest (not RMS) sound pressure measured over a given period of time. This term is often confused with the Maximum level, which is the highest RMS level.
RT_{60}	The time it takes reverberant sound to decay by 60 dB once the source has been removed.
Sabin	The unit of sound absorption. One square foot of material absorbing 100% of incident sound has an absorption of 1 sabin.
SEL	A rating, in decibels, of a discrete event, such as an aircraft flyover or train passby, that compresses the total sound energy of the event into a 1-s time period.
Threshold of Hearing	The lowest sound that can be perceived by the human auditory system, generally considered to be 0 dB for persons with perfect hearing.
Threshold of Pain	Approximately 120 dB above the threshold of hearing.

Appendix B

Typical A-Weighted Sound Levels of Common Noise Sources



Appendix C
El Dorado Senior Resort - El Dorado County, CA
Ambient Noise Monitoring Results - Site 1
Thursday, July 26, 2018

Hour	Leq	Lmax	L50	L90
0:00	40	58	35	33
1:00	38	62	34	33
2:00	37	53	34	32
3:00	41	60	35	33
4:00	44	64	40	34
5:00	46	64	45	38
6:00	47	58	46	42
7:00	51	76	47	42
8:00	45	57	43	39
9:00	45	64	42	38
10:00	43	59	42	39
11:00	47	73	42	38
12:00	43	61	41	37
13:00	43	60	41	37
14:00	43	55	42	37
15:00	43	55	42	39
16:00	45	65	43	40
17:00	44	65	43	39
18:00	44	62	42	38
19:00	45	60	42	37
20:00	45	55	44	40
21:00	47	71	43	37
22:00	42	57	38	33
23:00	41	59	37	33

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	51	43	45	47	37	43
Lmax (Maximum)	76	55	63	64	53	59
L50 (Median)	47	41	43	46	34	38
L90 (Background)	42	37	39	42	32	35

Computed Ldn, dB	50
% Daytime Energy	74%
% Nighttime Energy	26%

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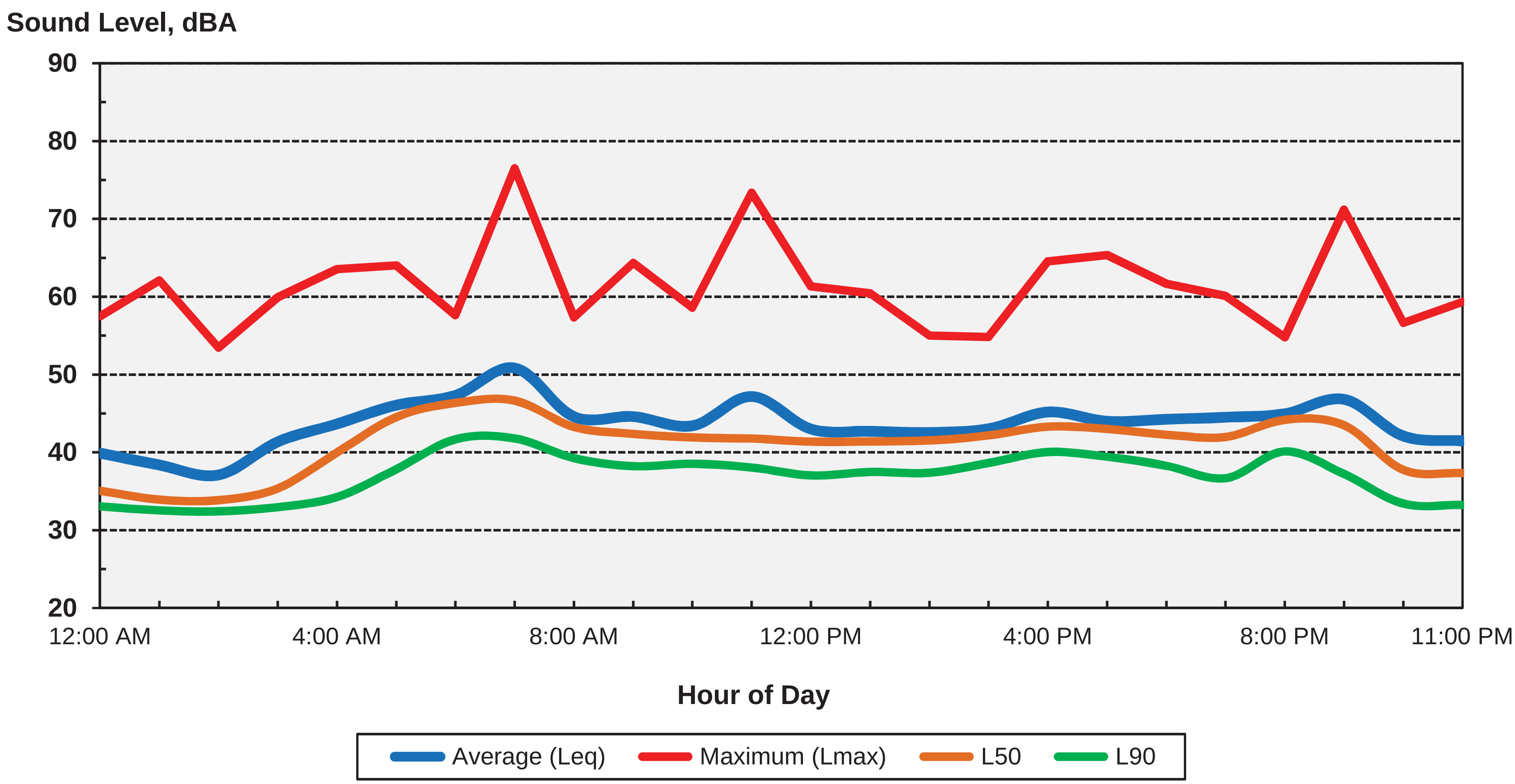
Appendix D
El Dorado Senior Resort - El Dorado County, CA
Ambient Noise Monitoring Results - Site 1
Thursday, July 26, 2018



Ldn: 50 dB

Appendix E

Photographs of Noise Measurement Site Locations
El Dorado Senior Resort - El Dorado County, California

Photo Description: Long-Term Measurement Site 1 (Facing North)
Date of Monitoring: July 26, 2018

Photo Description: Short-Term Measurement Site A (Facing South)
Date of Monitoring: July 25, 2018

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Job Number:	2018-134
Project Name:	El Dorado Senior Resort
Roadway Name:	California State Route 49 (SR-49)

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Year:	Future (2035)
Average Daily Traffic Volume[1]:	8,930
Percent Daytime Traffic:	83
Percent Nighttime Traffic:	17
Percent Medium Trucks (2 axle):	2
Percent Heavy Trucks (3+ axle):	1
Assumed Vehicle Speed (mph):	40
Intervening Ground Type (hard/soft):	ĀÀ!

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1	Assisted Living Building - Courtyard	415	-7	44	36	37	45
2	Assisted Living Building - First-floor facades	300		53	45	47	54
3	Assisted Living Building - Upper-floor facades	300	3	56	48	50	57
4	Apartment Building - First-floor facades	380		51	43	45	53
5	Apartment Building - Upper-floor facades	380	3	54	46	48	56
6	Community Center - Courtyard	480	-7	43	35	36	44

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75	12
70	26
65	57
60	122

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[1] Future average daily traffic volume (Cumulative Plus Project Conditions) for SR-49 was calculated by using peak hour traffic volume data obtained from the El Dorado Senior Resort Traffic Impact Study prepared by Kimley-Horn (2018). Future peak hour traffic volumes were estimated by conservatively multiplying peak hour conditions by a factor of 10.

[2] A +3 dB offset was applied at upper-level facades to account for reduced ground absorption at elevated locations. To account for the shielding provided by proposed intervening buildings, a -7 dB offset was conservatively applied to at the primary common outdoor areas (courtyards).

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Project #: 2018-034 El Dorado Senior Resort
Description: Existing
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
1	SR-49	South of Pleasant Valley Rd	7,070	83		17	2	1	55	50	
2	SR-49	Pleasant Valley Rd to Forni Rd	10,110	83		17	2	1	25	50	
3	SR-49	Forni Rd to Koki Ln	7,600	83		17	2	1	40	50	
4	SR-49	Koki Ln to Patterson Dr	9,010	83		17	2	1	45	50	
5	SR-49	Patterson Dr to Missouri Flats Rd	10,750	83		17	2	1	45	50	
6	SR-49	Missouri Flats Rd to Fowler Ln	15,890	83		17	2	1	35	50	
7	SR-49	North of Pleasant Valley Rd	6,200	83		17	2	1	50	50	
8	Pleasant Valley Rd	West of SR-49	8,860	83		17	2	1	25	50	
9	Pleasant Valley Rd	East of SR-49	14,980	83		17	2	1	35	50	
10	Forni Rd	North of SR-49	3,470	83		17	2	1	35	50	
11	Koki Ln	South of SR-49	1,700	83		17	2	1	25	50	
12	Patterson Dr	South of SR-49	3,790	83		17	2	1	35	50	
13	Missouri Flats Rd	North of SR-49	15,760	83		17	2	1	45	50	
14	Fowler Ln	South of SR-49	3,570	83		17	2	1	25	50	

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Project #: 2018-034 El Dorado Senior Resort
Description: Existing Plus Project
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
1	SR-49	South of Pleasant Valley Rd	7,130	83		17	2	1	55	50	
2	SR-49	Pleasant Valley Rd to Forni Rd	10,250	83		17	2	1	25	50	
3	SR-49	Forni Rd to Koki Ln	7,740	83		17	2	1	40	50	
4	SR-49	Koki Ln to Patterson Dr	9,010	83		17	2	1	45	50	
5	SR-49	Patterson Dr to Missouri Flats Rd	11,150	83		17	2	1	45	50	
6	SR-49	Missouri Flats Rd to Fowler Ln	16,150	83		17	2	1	35	50	
7	SR-49	North of Pleasant Valley Rd	6,340	83		17	2	1	50	50	
8	Pleasant Valley Rd	West of SR-49	8,940	83		17	2	1	25	50	
9	Pleasant Valley Rd	East of SR-49	15,100	83		17	2	1	35	50	
10	Forni Rd	North of SR-49	3,470	83		17	2	1	35	50	
11	Koki Ln	SR-49 to Project Drvwy	2,290	83		17	2	1	25	50	
12	Koki Ln	South of Project Drvwy	1,720	83		17	2	1	25	50	
13	Patterson Dr	South of SR-49	3,790	83		17	2	1	45	50	
14	Missouri Flats Rd	North of SR-49	15,900	83		17	2	1	25	50	
15	Fowler Ln	South of SR-49	3,570	83		17	2	1	25	50	

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Project #: 2018-034 El Dorado Senior Resort
Description: Near-Term
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
1	SR-49	South of Pleasant Valley Rd	7,330	83		17	2	1	55	50	
2	SR-49	Pleasant Valley Rd to Forni Rd	10,590	83		17	2	1	25	50	
3	SR-49	Forni Rd to Koki Ln	8,090	83		17	2	1	40	50	
4	SR-49	Koki Ln to Patterson Dr	9,400	83		17	2	1	45	50	
5	SR-49	Patterson Dr to Missouri Flats Rd	11,160	83		17	2	1	45	50	
6	SR-49	Missouri Flats Rd to Fowler Ln	15,960	83		17	2	1	35	50	
7	SR-49	North of Pleasant Valley Rd	7,720	83		17	2	1	50	50	
8	Pleasant Valley Rd	West of SR-49	9,660	83		17	2	1	25	50	
9	Pleasant Valley Rd	East of SR-49	16,530	83		17	2	1	35	50	
10	Forni Rd	North of SR-49	3,560	83		17	2	1	35	50	
11	Koki Ln	South of SR-49	2,240	83		17	2	1	25	50	
12	Patterson Dr	South of SR-49	4,270	83		17	2	1	35	50	
13	Missouri Flats Rd	North of SR-49	16,100	83		17	2	1	45	50	
14	Fowler Ln	South of SR-49	3,990	83		17	2	1	25	50	

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Project #: 2018-034 El Dorado Senior Resort
Description: Near-Term Plus Project
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
1	SR-49	South of Pleasant Valley Rd	7,390	83		17	2	1	55	50	
2	SR-49	Pleasant Valley Rd to Forni Rd	10,730	83		17	2	1	25	50	
3	SR-49	Forni Rd to Koki Ln	8,260	83		17	2	1	40	50	
4	SR-49	Koki Ln to Patterson Dr	9,850	83		17	2	1	45	50	
5	SR-49	Patterson Dr to Missouri Flats Rd	11,560	83		17	2	1	45	50	
6	SR-49	Missouri Flats Rd to Fowler Ln	16,220	83		17	2	1	35	50	
7	SR-49	North of Pleasant Valley Rd	7,860	83		17	2	1	50	50	
8	Pleasant Valley Rd	West of SR-49	9,740	83		17	2	1	25	50	
9	Pleasant Valley Rd	East of SR-49	16,650	83		17	2	1	35	50	
10	Forni Rd	North of SR-49	3,560	83		17	2	1	35	50	
11	Koki Ln	SR-49 to Project Drvwy	2,860	83		17	2	1	25	50	
12	Koki Ln	South of Project Drvwy	2,260	83		17	2	1	25	50	
13	Patterson Dr	South of SR-49	4,320	83		17	2	1	45	50	
14	Missouri Flats Rd	North of SR-49	16,240	83		17	2	1	25	50	
15	Fowler Ln	South of SR-49	3,990	83		17	2	1	25	50	

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Project #: 2018-034 El Dorado Senior Resort
Description: Cumulative
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
1	SR-49	South of Pleasant Valley Rd	7,720	83		17	2	1	55	50	
2	SR-49	Pleasant Valley Rd to Forni Rd	11,410	83		17	2	1	25	50	
3	SR-49	Forni Rd to Koki Ln	8,790	83		17	2	1	40	50	
4	SR-49	Koki Ln to Patterson Dr	9,970	83		17	2	1	45	50	
5	SR-49	Patterson Dr to Missouri Flats Rd	11,750	83		17	2	1	45	50	
6	SR-49	Missouri Flats Rd to Fowler Ln	16,450	83		17	2	1	35	50	
7	SR-49	North of Pleasant Valley Rd	9,910	83		17	2	1	50	50	
8	Pleasant Valley Rd	West of SR-49	10,850	83		17	2	1	25	50	
9	Pleasant Valley Rd	East of SR-49	18,760	83		17	2	1	35	50	
10	Forni Rd	North of SR-49	3,790	83		17	2	1	35	50	
11	Koki Ln	South of SR-49	2,980	83		17	2	1	25	50	
12	Patterson Dr	South of SR-49	4,960	83		17	2	1	35	50	
13	Missouri Flats Rd	North of SR-49	16,570	83		17	2	1	45	50	
14	Fowler Ln	South of SR-49	4,580	83		17	2	1	25	50	

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Project #: 2018-034 El Dorado Senior Resort
Description: Cumulative Plus Project
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
1	SR-49	South of Pleasant Valley Rd	7,780	83		17	2	1	55	50	
2	SR-49	Pleasant Valley Rd to Forni Rd	11,550	83		17	2	1	25	50	
3	SR-49	Forni Rd to Koki Ln	8,930	83		17	2	1	40	50	
4	SR-49	Koki Ln to Patterson Dr	10,420	83		17	2	1	45	50	
5	SR-49	Patterson Dr to Missouri Flats Rd	12,150	83		17	2	1	45	50	
6	SR-49	Missouri Flats Rd to Fowler Ln	16,710	83		17	2	1	35	50	
7	SR-49	North of Pleasant Valley Rd	10,050	83		17	2	1	50	50	
8	Pleasant Valley Rd	West of SR-49	10,930	83		17	2	1	25	50	
9	Pleasant Valley Rd	East of SR-49	18,880	83		17	2	1	35	50	
10	Forni Rd	North of SR-49	3,790	83		17	2	1	35	50	
11	Koki Ln	SR-49 to Project Drvwy	3,570	83		17	2	1	25	50	
12	Koki Ln	South of Project Drvwy	3,000	83		17	2	1	25	50	
13	Patterson Dr	South of SR-49	5,010	83		17	2	1	45	50	
14	Missouri Flats Rd	North of SR-49	16,710	83		17	2	1	25	50	
15	Fowler Ln	South of SR-49	4,580	83		17	2	1	25	50	

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Attachment 4

Traffic Impact Study

El Dorado Senior Resort
County of El Dorado, California

October 17, 2018

Prepared for:

El Dorado Sr. Housing, LLC.

Prepared by:

Kimley»Horn

555 Capitol Mall, Suite 300
Sacramento, California 95814

Phone: (916) 858-5800

EXECUTIVE SUMMARY

This report documents the results of a traffic impact analysis completed for the El Dorado Senior Resort project proposed to be located west of Koki Lane just south of State Route (SR) 49 in El Dorado County, California (the "proposed project" or "project"). The purpose of this impact analysis is to identify potential environmental impacts to transportation facilities as required by the California Environmental Quality Act (CEQA). This study was performed in accordance with the El Dorado County Community Development Agency's *Transportation Impact Study Guidelines*, and the scope of work provided by a representative of the County.

The 8.2-acre project site is proposed to be developed with an assisted living/memory care facility (84 beds[1]), senior apartments (63 units), single family residences (9 units), and 7,500 square feet of retail, restaurant, and office buildings. Access to the site will be provided via one full access driveway along Koki Lane. The following intersections are included in this evaluation:

1. SR-49 @ Pleasant Valley Road
2. SR-49 @ Forni Road
3. SR-49 @ Koki Lane
4. SR-49 @ Patterson Drive
5. SR-49 @ Missouri Flat Road
6. SR-49/ Fowler Lane @ Pleasant Valley Road
7. Koki Lane @ Project Site Access Driveway (Project Only)

Based on the County's requirements, this LOS analysis was conducted for the above facilities for the following scenarios:

A. Existing (2018) Conditions
B. Existing (2018) plus Proposed Project Conditions[+]
C. Near-Term (2028) Conditions[++]
D. Near-Term (2028) plus Proposed Project Conditions[+++]
E. Cumulative (2035) Conditions[++++]
F. Cumulative (2035) plus Proposed Project Conditions[+++++]

[+] Scenario adds currently proposed project to Existing (2018) Conditions
[++] Scenario established by interpolating between the current El Dorado County Travel Demand Model (TDM) existing and Cumulative year volumes for the study area roadway segments
[+++] Scenario adds currently proposed project to Near-Term (2028) Conditions
[++++] Scenario considers the current El Dorado County Travel Demand Model (TDM) land uses.
[+++++] Scenario adds currently proposed project to Cumulative (2035) Conditions

Significant findings of this study include:

- The proposed project is estimated to generate 787 total new daily trips, with 41 new trips occurring during the AM peak-hour, and 62 new trips occurring during the PM peak-hour.
- As defined by the County, the addition of the proposed project to the Existing (2018) and Cumulative (2035) scenarios worsen conditions at study Intersection #1 (SR 49 @ Pleasant Valley Road). These impacts can be mitigated to less than significant. As a result, the project's potential environmental impacts to transportation facilities are considered to be ***less than significant***.

[1] The project site plan (Email from Roger Lewis on 6/4/18) shows 74 assisted living beds, revised from 84 beds.

TABLE OF CONTENTS

APPENDICES

LIST OF TABLES

LIST OF FIGURES

INTRODUCTION

This report documents the results of a traffic impact analysis completed for the El Dorado Senior Resort project proposed to be located west of Koki Lane just south of State Route (SR) 49 in El Dorado County, California (the "proposed project" or "project"). The purpose of this impact analysis is to identify potential environmental impacts to transportation facilities as required by the California Environmental Quality Act (CEQA). This study was performed in accordance with the El Dorado County Community Development Agency's *Transportation Impact Study Guidelines*, and the scope of work provided by a representative of the County[2]. The remaining sections of this report document the proposed project, analysis methodologies, impacts and mitigation, and general study conclusions.

PROJECT DESCRIPTION

The 8.2-acre project site is proposed to be developed with an assisted living/memory care facility (84 beds), senior apartments (63 units), single family residences (9 units), and 7,500 square feet of retail, restaurant, and office buildings. Access to the site will be provided via one full access driveway along Koki Lane. The project location is shown in **Figure 1**, and the proposed project site plan is shown in **Figure 2**. **Figure 3** illustrates the study facilities, existing traffic control, and existing lane configurations. The following intersections are included in this evaluation:

1. SR-49 @ Pleasant Valley Road
2. SR-49 @ Forni Road
3. SR-49 @ Koki Lane
4. SR-49 @ Patterson Drive
5. SR-49 @ Missouri Flat Road
6. SR-49/ Fowler Lane @ Pleasant Valley Road
7. Koki Lane @ Project Site Access Driveway (Project Only)

In addition, roadway segment counts were collected for the following segments:

1. SR 49, between Forni Road and Koki Lane
2. Koki Lane, between SR 49 ad Union Mine Road

PROJECT AREA ROADWAYS

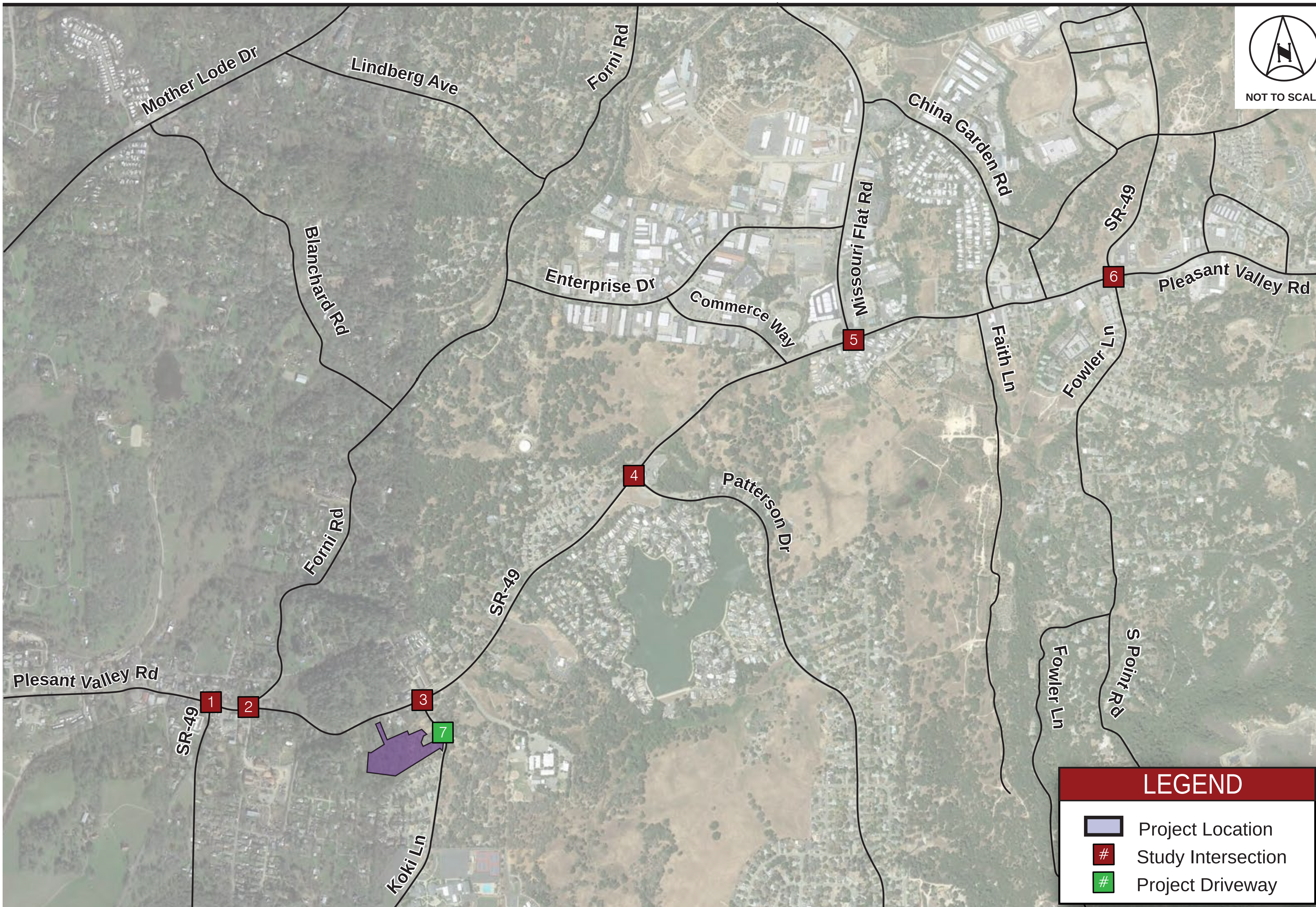
The following are descriptions of the primary roadways in the vicinity of the project.

State Route 49 (SR 49) is an east-west highway located north of the project site. Generally, SR 49 serves all of El Dorado County's major population centers and provides connections to Amador County to the south and the Placer County to the north. Primary access to the project site from SR 49 is provided at the Koki Lane/SR 49 intersection. Within the general project area, SR 49 currently serves approximately 8,500 vehicles per day (vpd) with one travel lane in each direction, between Forni Road and Koki Lane.

Pleasant Valley Road is an east-west arterial roadway that has its western terminus at Mother Lode Drive near Kingsville, and eastern terminus in Pleasant Valley in eastern El Dorado County. Through the project area, Pleasant Valley Road transitions to SR 49 for approximately 2 miles, and transitions back to Pleasant Valley Road east of Diamond Springs.

Missouri Flat Road is a north-south collector roadway that provides access to US-50 north of SR 49. Missouri Flat Road has one travel lane in each direction near the project location, and transitions to two lanes in each direction near US-50.

[2] Memorandum from Natalie Porter and Katie Jackson, El Dorado County, March 19, 2019.



Kimley»Horn

Figure 1
Project Vicinity Map

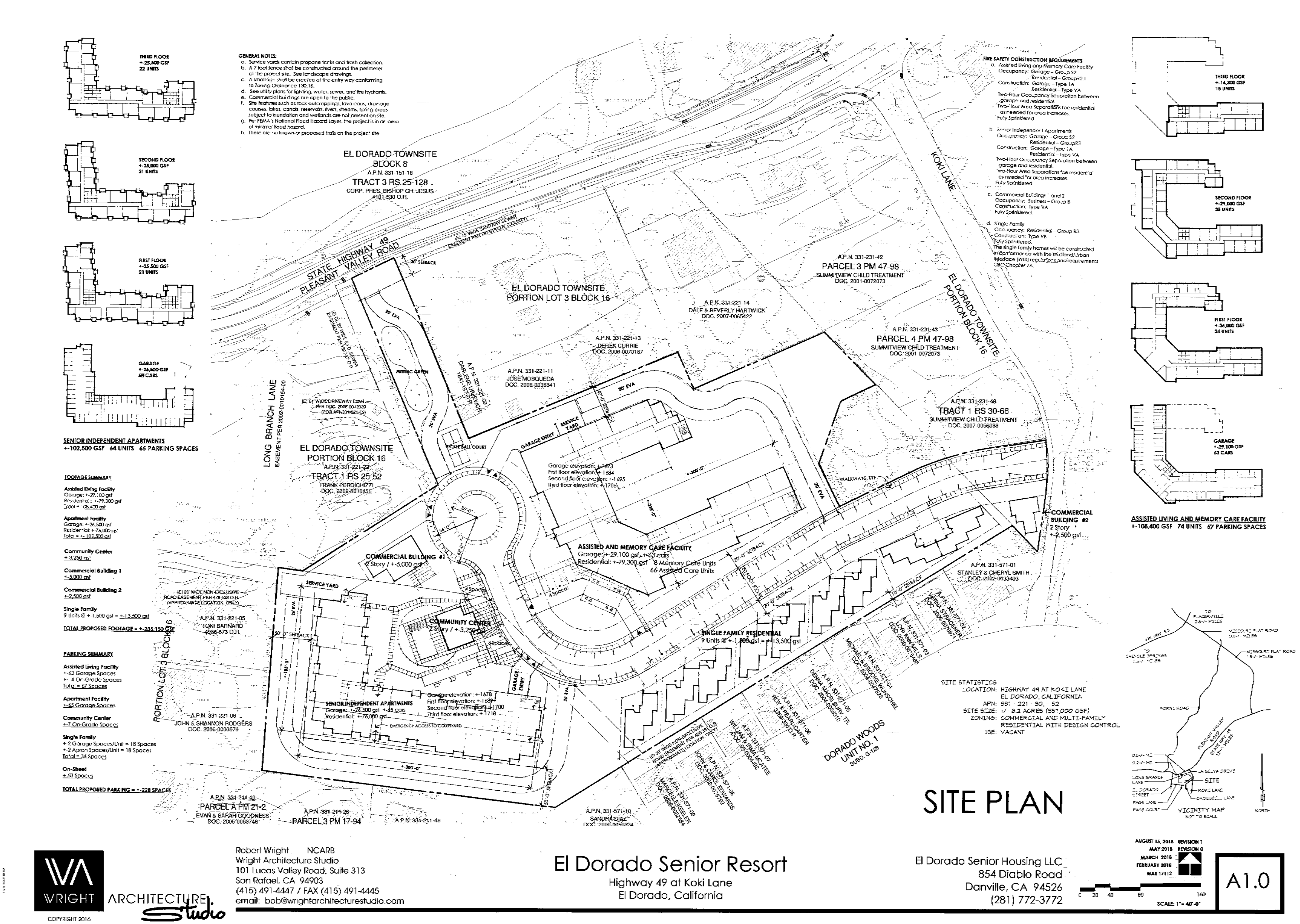


Figure 2
Project Site Plan

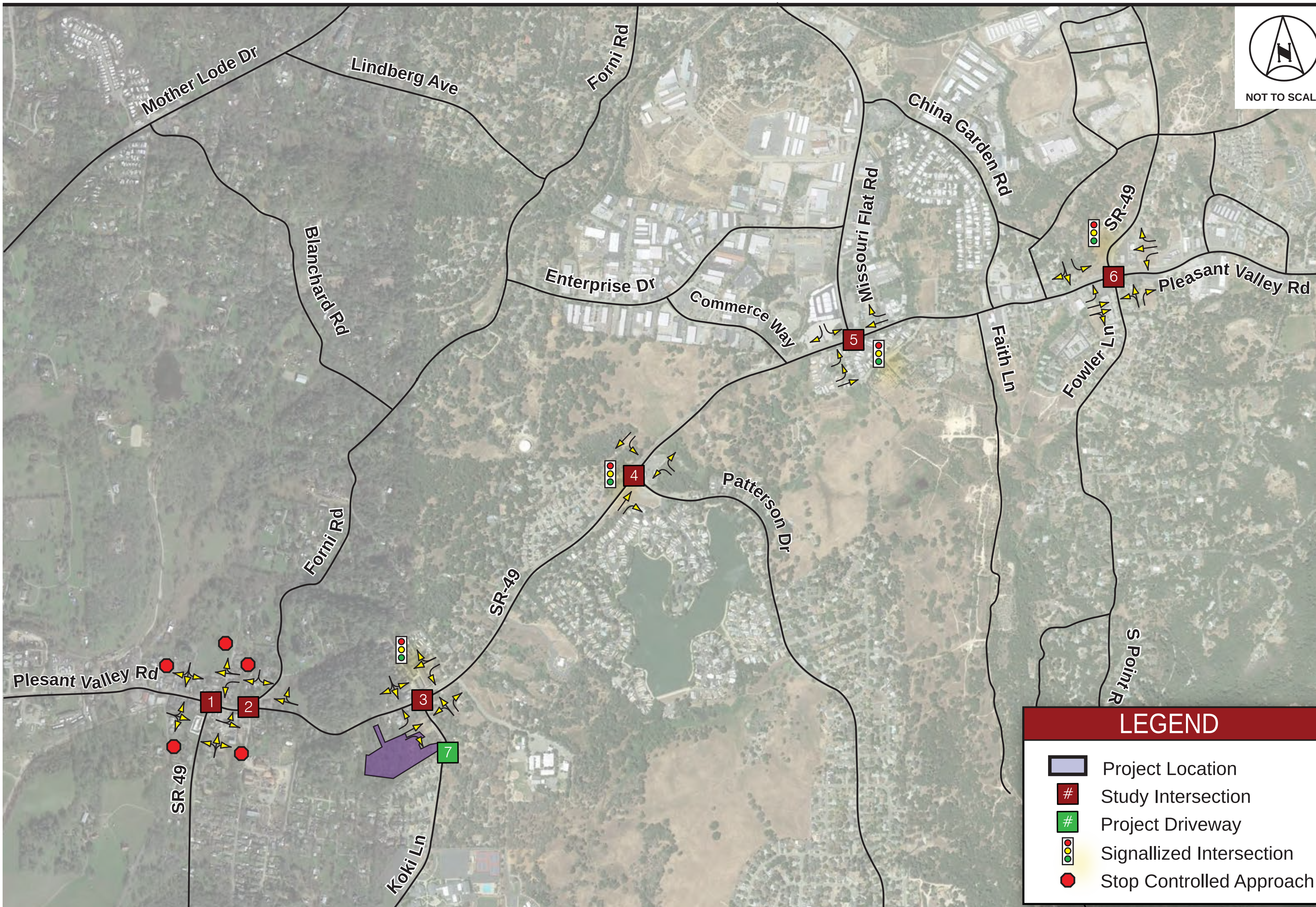


Figure 3
Roadway Lane Geometry

ASSESSMENT OF PROPOSED PROJECT

Proposed Project Trip Generation

The proposed project includes an assisted living/memory care facility with 84-beds (14 of which are designated for memory care and 70 of which are designated for assisted living)[1]. Assisted living/memory care facilities provide a living environment with intensive, long-term medical care for seniors with serious health and dementia conditions in a fully-staffed and monitored facility. Due to the nature of these facilities, residents are comprised of older adults who typically do not drive; thus, the site trip generation is anticipated to be low and predominantly composed of employee and visitor trips.

Trip generation for development projects is typically calculated based on rates contained in the Institute of Transportation Engineer's (ITE) publication, *Trip Generation Manual*. The *Trip Generation Manual* is a standard reference used by jurisdictions throughout the country for the estimation of trip generation potential of proposed developments. A trip is defined in the *Trip Generation Manual* as a single or one-directional vehicle movement with either the origin or destination at the project site. In other words, a trip can be either "to" or "from" the site. In addition, a single customer visit to a site is counted as two trips (i.e., one to and one from the site).

Trip generation for the proposed project was estimated using ITE's *Trip Generation Manual*, 10*th Edition* based on the "Assisted Living" category (ITE Land Use 254). The proposed project also includes senior apartments (ITE Land Use 252) and single-family residences (ITE Land Use 210), and retail, restaurant, and office buildings (ITE Land Use 820). A 19% internal capture rate[3] was applied to PM peak-hour project volumes according to National Cooperative Highway Research Program (NCHRP) Report 684 methodologies. A 5% internal capture rate was applied for daily and AM peak-hour project volumes according to County standards[4]. The anticipated trip generation for this project is shown in **Table 1**.

Table 1 – Proposed Project Trip Generation

Land Use (ITE Code)	Land Use	Size	Units	Daily Trips	AM Peak			PM Peak		
					Total	In	Out	Total	In	Out
210	Single-Family Detached Housing	9	DU	86	7	2	5	9	6	3
252	Senior Adult Housing-Attached	64	DU	238	13	5	8	17	9	8
254	Assisted Living[1]	84	Bed(s)	220	16	10	6	22	8	14
Total Residential Trips				**544**	**36**	**17**	**19**	**48**	**23**	**25**
820	Shopping Center (Retail, Restaurant, and Office)	7.5	ksf	284	7	4	3	29	14	15
Total Shopping Center Trips				**284**	**7**	**4**	**3**	**29**	**14**	**15**
Total Project Trips				**828**	**43**	**21**	**22**	**77**	**37**	**40**
Internal Capture*				-41	-2	-1	-1	-15	-7	-8
Total Project Trips				**787**	**41**	**20**	**21**	**62**	**30**	**32**

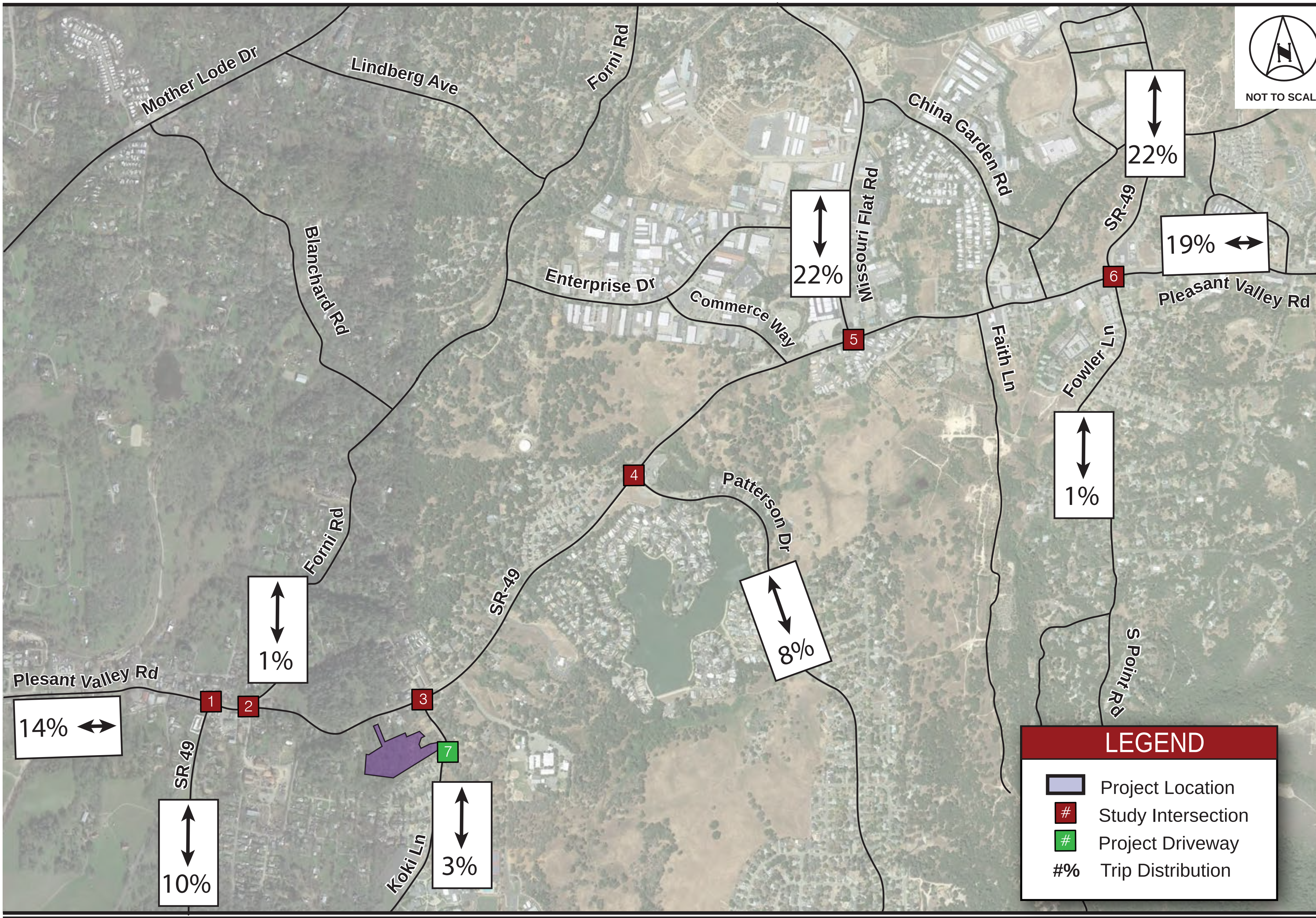
Source: Trip Generation Manual, 10th Edition, ITE.
** Internal capture PM peak hour rate is 19%[3] per National Cooperative Highway Research Program (NCHRP) Report 684. Internal capture rate for Daily and AM peak hour is 5% based on County standards[4].*

As shown in **Table 1**, the proposed project is estimated to generate 787 total new daily trips, with 41 new trips occurring during the AM peak-hour, and 62 new trips occurring during the PM peak-hour.

[1] The project site plan (Email from Roger Lewis on 6/4/18) shows 74 assisted living beds, revised from 84 beds.
[3] See **Appendix K**.
[4] *Review of the El Dorado Senior Resort Trip Generation* memo, DKS, June 8, 2018.

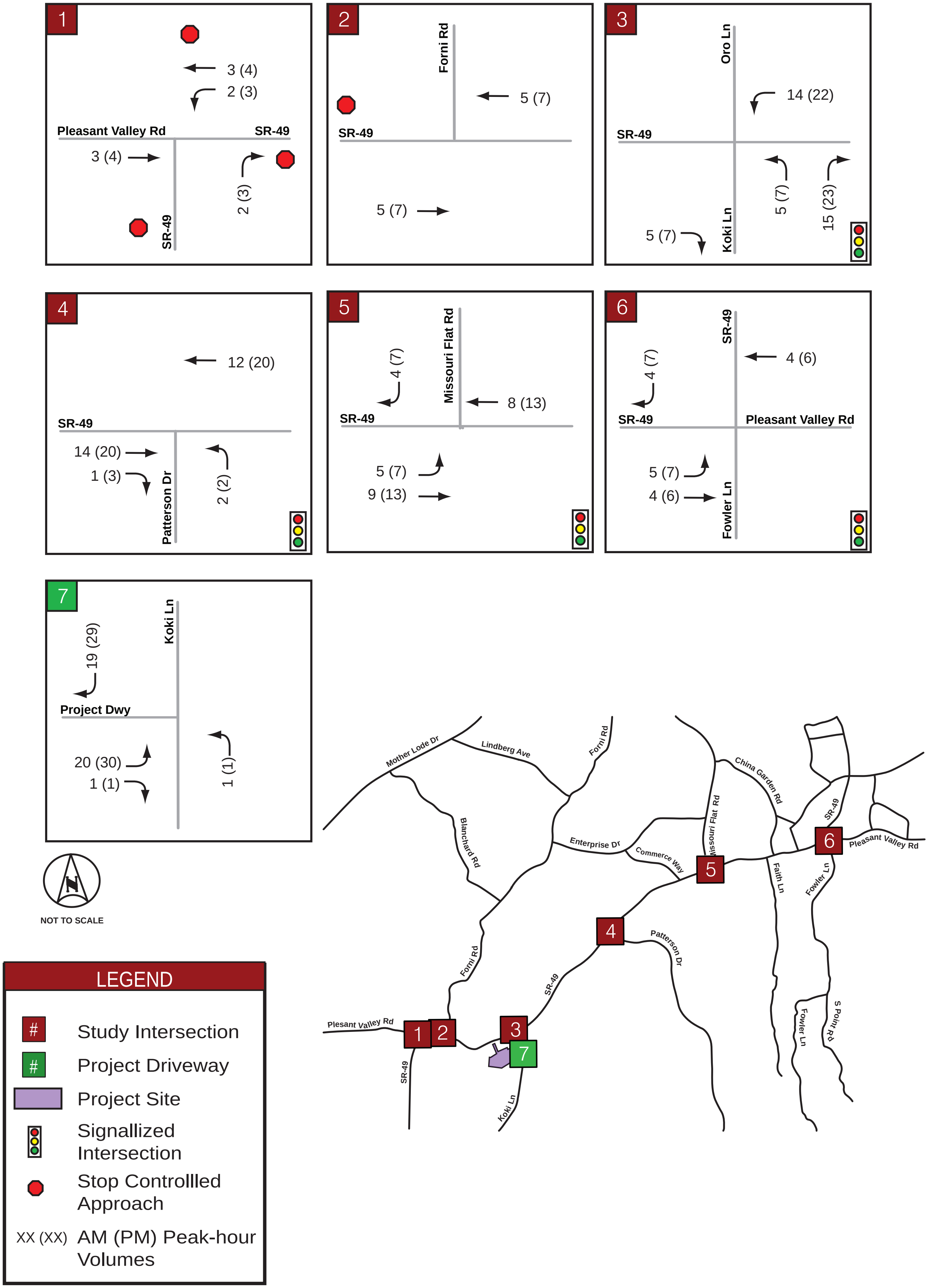
Proposed Project Trip Distribution

The El Dorado County Travel Demand Model (TDM) was used both as the basis to establish the relative assignment of proposed project trips, and to establish background traffic estimates for analysis scenarios (additional discussion on the specific application of the TDM can be found within each scenario's discussion section). The distribution of project traffic was based on existing traffic volumes and general knowledge of the travel patterns in western El Dorado County. The project trip distribution percentages are illustrated in **Figure 4**. The resulting AM and PM peak-hour traffic volumes attributed to the proposed project are illustrated in **Figure 5**.



Kimley»Horn

Figure 4
Project Trip Distribution



Kimley»Horn

Figure 5
Proposed Project Trip Assignment

TRAFFIC IMPACT ANALYSIS METHODOLOGY

Analysis of transportation facility significant environmental impacts is based on the concept of Level of Service (LOS). The LOS of a facility is a qualitative measure used to describe operational conditions. LOS ranges from A (best), which represents minimal delay, to F (worst), which represents heavy delay and a facility that is operating at or near its functional capacity. Levels of Service for this study were determined using methods defined in the *Highway Capacity Manual, 2010* (HCM) and appropriate traffic analysis software.

Intersection Analysis

The HCM includes procedures for analyzing side-street stop controlled (SSSC), all-way stop controlled (AWSC), and signalized intersections. The SSSC procedure defines LOS as a function of average control delay for each minor street approach movement. Conversely, the AWSC and signalized intersection procedures define LOS as a function of average control delay for the intersection as a whole. **Table 2** presents intersection LOS definitions as defined in the HCM.

Table 2 – Intersection Level of Service Criteria

Level of Service (LOS)	Un-Signalized	Signalized
	Average Control Delay* (sec/veh)	Control Delay per Vehicle (sec/veh)
A	≤ 10	≤ 10
B	> 10 – 15	> 10 – 20
C	> 15 – 25	> 20 – 35
D	> 25 – 35	> 35 – 55
E	> 35 – 50	> 55 – 80
F	> 50	> 80

Source: Highway Capacity Manual, 2010
* Applied to the worst lane/lane group(s) for SSSC

Roadway Segment Analysis

The HCM also includes procedures for analyzing multi-lane and two-lane roadway segments. For multilane roadways segments, LOS is determined based on the density of the traffic stream. For two-lane highways, the LOS calculation is dependent on the class of the roadway. Class I two-lane highways are highways generally have high speeds, Class II two-lane highways are lower speed highways that typically serve scenic routes or areas of rugged terrain, and Class III two-lane highways typically serve moderately developed areas with higher densities of local traffic and access. Specifically, for Class III highways, the percent of free-flow speed, which is the measure representing the ability of vehicles to travel at the posted speed limit, is used to determine LOS. SR 4 is considered a Class II facility, and Koki Lane is considered a Class III facility, in the project vicinity. The LOS criteria for multi-lane (Class II and III) segments are shown in **Table 3**.

Table 3 – Two-Lane Roadway Segment (Class II & III) Level of Service Criteria

Level of Service (LOS)	Percent Free-Flow Speed (PFFS) (%)	Percent Time Spent Following (PTSF) (%)
A	> 91.7	≤ 40
B	> 83.3 – 91.7	> 40 – 55
C	> 75.0 – 83.3	> 55 – 70
D	> 66.7 – 75.0	> 70 – 85
E	≤ 66.7	> 85

Source: Highway Capacity Manual, 2010

Based on the above information and direction from County's representative, this LOS analysis was conducted for the study facilities for the following scenarios:

A. Existing (2018) Conditions
B. Existing (2018) plus Proposed Project Conditions[+]
C. Near-Term (2028) Conditions[++]
D. Near-Term (2028) plus Proposed Project Conditions[+++]
E. Cumulative (2035) Conditions[++++]
F. Cumulative (2035) plus Proposed Project Conditions[+++++]

[+] Scenario adds currently proposed project to Existing (2018) Conditions
[++] Scenario established by interpolating between the current El Dorado County Travel Demand Model (TDM) existing and Cumulative year volumes for the study area roadway segments
[+++] Scenario adds currently proposed project to Near-Term (2028) Conditions
[++++] Scenario considers the current El Dorado County Travel Demand Model (TDM) land uses.
[+++++] Scenario adds currently proposed project to Cumulative (2035) Conditions

The following is a discussion of the analyses for these scenarios.

EXISTING (2018) CONDITIONS

Six (6) new weekday AM and PM peak period intersection turning movement traffic counts were conducted in May 2018 for the study intersections. These counts were conducted between the hours of 6:00 a.m. and 9:00 a.m. and 4:00 p.m. and 7:00 p.m. Existing roadway segments counts were collected over two weekdays in May 2018. It is worth noting that a two percent heavy vehicle factor was incorporated in this, and all subsequent analysis scenarios.

Existing (2018) peak-hour turn movement volumes are presented in **Figure 6**, and the traffic count data sheets are provided in **Appendix A**. Analysis worksheets for this scenario are provided in **Appendix B**. **Table 4** presents the peak-hour intersection operating conditions for this analysis scenario.

Table 4 – Existing (2018) Intersection Levels of Service

ID	Intersection	Control	Peak Hour	Existing (2018)	
				Delay (sec)	LOS
1	SR-49 @ Pleasant Valley Road	AWSC	AM	70.3	**F**
			PM	23.5	C
2	SR-49 @ Forni Road	SSSC	AM	37.2	E
			PM	14.7	B
3	SR-49 @ Koki Lane	Signal	AM	24.1	C
			PM	11.6	B
4	SR-49 @ Patterson Drive	Signal	AM	12.9	B
			PM	13.7	B
5	SR-49 @ Missouri Flat Drive	Signal	AM	12.2	B
			PM	14.2	B
6	SR-49/Fowler Lane @ Pleasant Valley Road	Signal	AM	19.9	B
			PM	16.7	B

SSSC control delay is shown for the worst minor approach. **Bold** = Substandard operations based on El Dorado County guidelines.

Table 5 presents the peak-hour roadway operating conditions for this analysis scenario.

Table 5 – Existing (2018) Roadway Levels of Service

Location	Peak-Hour	Analysis Direction	Existing (2018)			
			LOS	PTSF (%)	PFFS (%)	v/c
SR 49 between Forni Rd and Koki Ln	AM	EB	D	76.0		0.35
		WB	C	68.2		0.28
	PM	EB	C	69.8		0.29
		WB	D	76.9		0.38
Koki Ln south of SR 49	AM	NB	C		81.6	0.22
		SB	C		79.2	0.40
	PM	NB	C		81.2	0.32
		SB	B		83.4	0.19

As shown in **Table 4**, the study intersections operate from LOS B to LOS F during the AM and PM peak-hours. As shown in **Table 5**, the study roadway segments operate from LOS B to LOS D during the AM and PM peak-hours.

EXISTING (2018) PLUS PROPOSED PROJECT CONDITIONS

Peak-hour traffic associated with the proposed project was added to the existing traffic volumes and levels of service were determined at the study intersections. The analysis worksheets for this scenario are provided in **Appendix C**. **Table 6** provides a summary of the intersection analysis and **Figure 7** provides the AM and PM peak-hour traffic volumes at the study intersections for this analysis scenario.

Table 6 – Existing (2018) and Existing (2018) plus Proposed Project Intersection Levels of Service

ID	Intersection	Control	Peak Hour	Existing (2018)		Existing (2018) plus Proposed Project	
				Delay (sec)	LOS	Delay (sec)	LOS
1	SR-49 @ Pleasant Valley Road	AWSC	AM	70.3	**F**	72.0	**F**
			PM	23.5	C	24.3	C
2	SR-49 @ Forni Road	SSSC	AM	37.2	E	38.3	E
			PM	14.7	B	14.9	B
3	SR-49 @ Koki Lane	Signal	AM	24.1	C	24.6	C
			PM	11.6	B	12.9	B
4	SR-49 @ Patterson Drive	Signal	AM	12.9	B	13.1	B
			PM	13.7	B	13.8	B
5	SR-49 @ Missouri Flat Drive	Signal	AM	12.2	B	12.3	B
			PM	14.2	B	14.7	B
6	SR-49/Fowler Lane @ Pleasant Valley Road	Signal	AM	19.9	B	20.5	C
			PM	16.7	B	16.9	B
7	Koki Lane @ Project Site Access Driveway	SSSC	AM	-	-	17.0	C
			PM	-	-	9.8	A

SSSC control delay is shown for the worst minor approach. **Bold** = Substandard operations based on El Dorado County guidelines. Shaded = significant impact.

Table 7 presents the peak-hour roadway operating conditions for this analysis scenario.

Table 7 – Existing (2018) and Existing (2018) plus Proposed Project Roadway Levels of Service

Location	Peak-Hour	Analysis Direction	Existing (2018)				Existing (2018) plus Project			
			LOS	PTSF (%)	PFFS (%)	v/c	LOS	PTSF (%)	PFFS (%)	v/c
SR 49 between Forni Rd and Koki Ln	AM	EB	D	76.0		0.35	D	76.4		0.35
		WB	C	68.2		0.28	C	68.2		0.28
	PM	EB	C	69.8		0.29	D	70.6		0.29
		WB	D	76.9		0.38	D	77.7		0.39
Koki Ln south of SR 49	AM	NB	C		81.6	0.22	C		81.0	0.23
		SB	C		79.2	0.40	C		78.4	0.43
	PM	NB	C		81.2	0.32	C		80.6	0.34
		SB	B		83.4	0.19	C		82.5	0.21

As shown in **Table 6**, the study intersections operate from LOS A to LOS F with the addition of project traffic during the AM and PM peak-hours. As shown in **Table** 7, the study roadway segments operate from LOS B to LOS D in the AM and PM peak-hours.

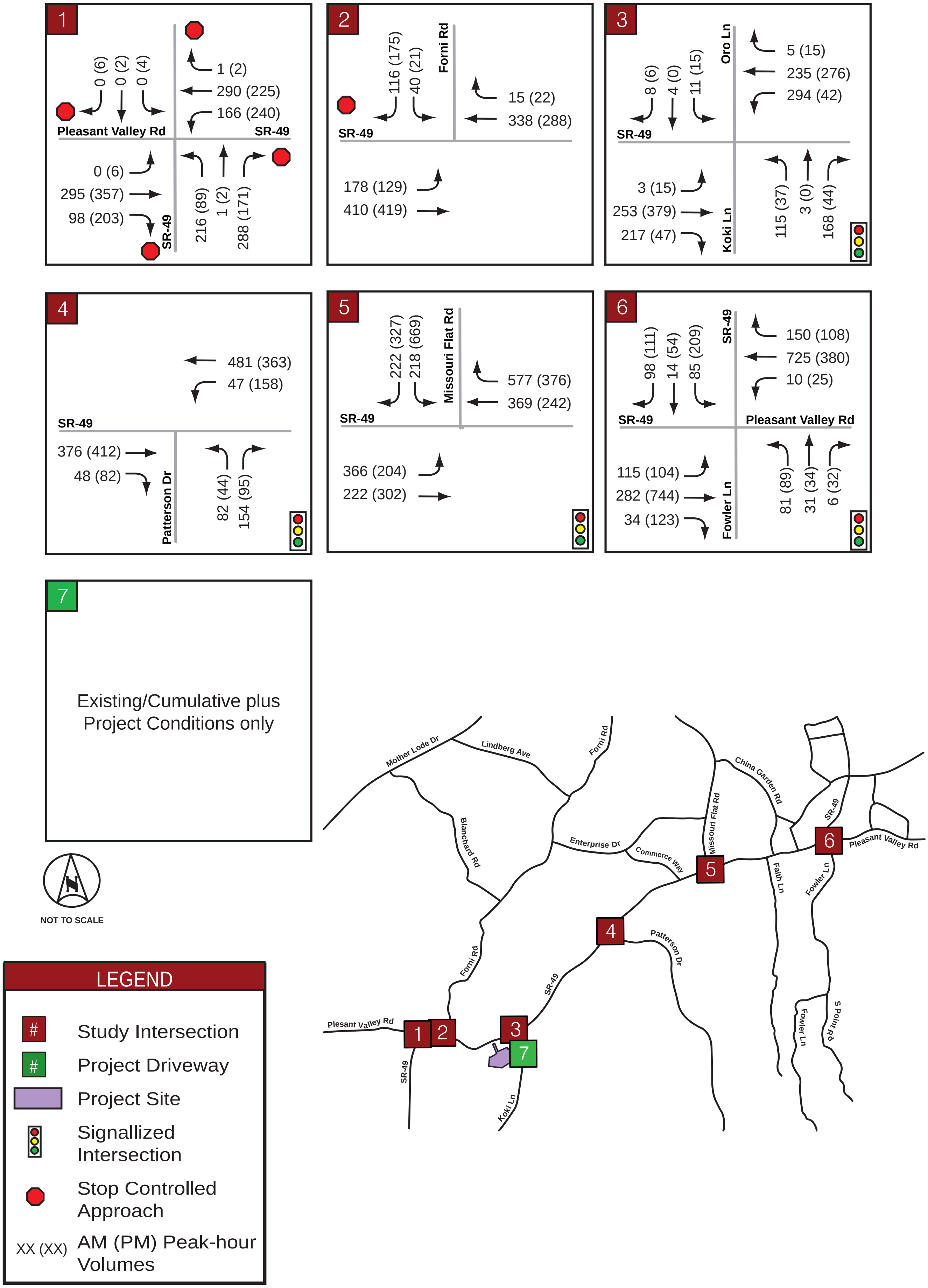


Figure 6
Existing (2018) Peak-Hour Traffic Volumes

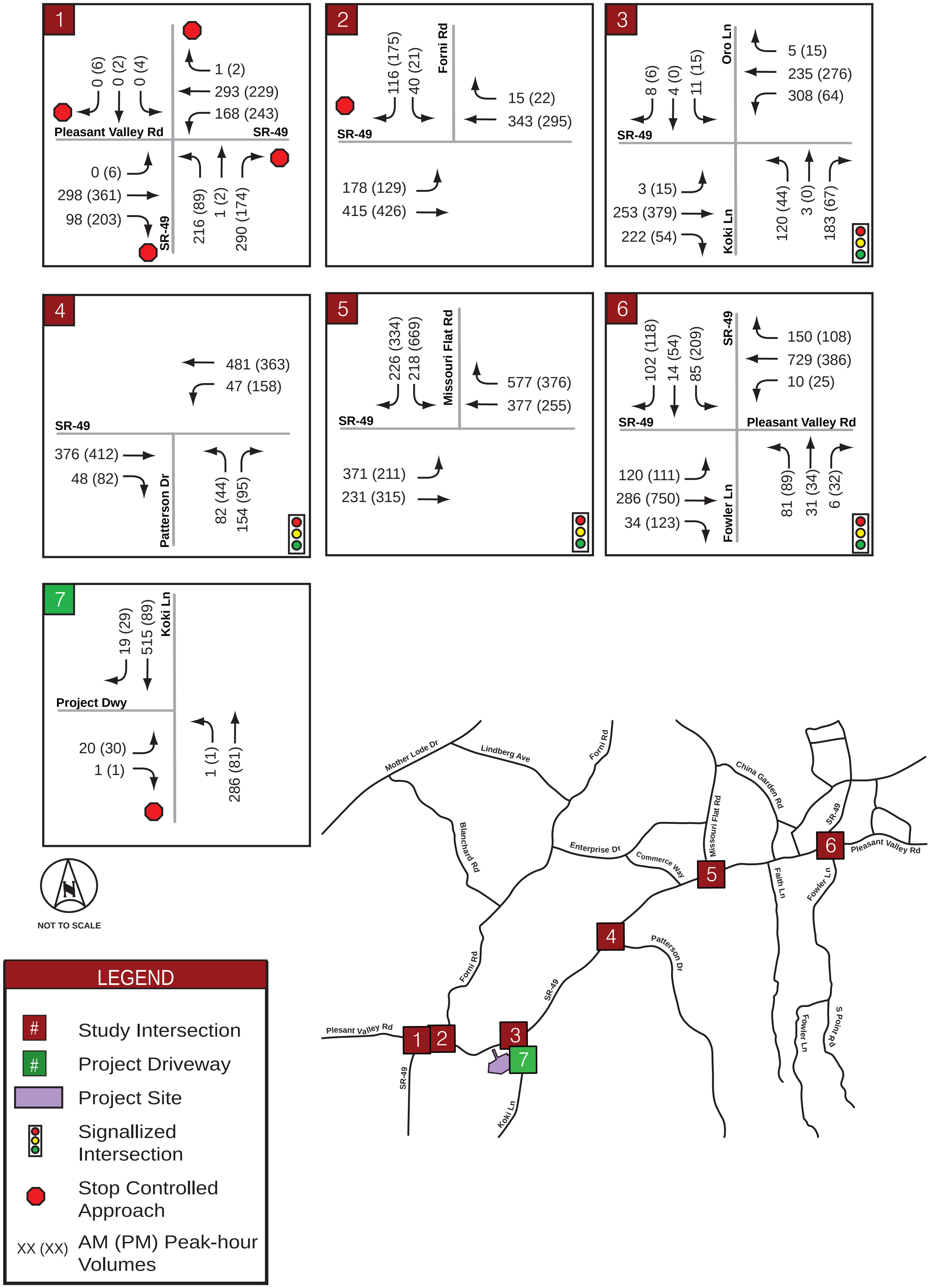


Figure 7

Existing (2018) plus Proposed Project Peak-Hour Traffic Volumes

NEAR-TERM (2028) CONDITIONS

Based on the availability of model data and as directed by the County, traffic volume estimates for the Near-Term (2028) Condition were determined by interpolating selected El Dorado County TDM 2010 and 2035 analysis results based on the most recent version of the model including updates mentioned previously. Specifically, these volumes were achieved by estimating turning movements using 2010 and 2035 land use scenarios and then conducting a straight-line analysis to establish year 2028 turning movement estimates. The difference between the resulting 2028 traffic estimate and the 2010 model results (the growth) was interpolated to represent ten (10) years of growth, and was then added to Existing (2018) traffic volumes to establish base Near-Term (2028) traffic estimates for this study.

Near-Term (2028) conditions include improvements to the transportation system in the project vicinity, such as the construction of the Diamond Springs Parkway between SR 49 and Missouri Flat Road. Construction is anticipated to be completed in 2022.

The analysis worksheets for this scenario are provided in **Appendix D**. **Table 8** provides a summary of the intersection analysis and **Figure 8** provides the AM and PM traffic volumes for this analysis scenario.

Table 8 – Near-Term (2028) Intersection Levels of Service

ID	Intersection	Control	Peak Hour	Near-Term (2028)	
				Delay (sec)	LOS
1	SR-49 @ Pleasant Valley Road	AWSC	AM	69.9	**F**
			PM	40.3	E
2	SR-49 @ Forni Road	SSSC	AM	35.0	E
			PM	16.6	C
3	SR-49 @ Koki Lane	Signal	AM	24.3	C
			PM	12.8	B
4	SR-49 @ Patterson Drive	Signal	AM	14.6	B
			PM	15.7	B
5	SR-49 @ Missouri Flat Drive	Signal	AM	14.3	B
			PM	16.7	B
6	SR-49/Fowler Lane @ Pleasant Valley Road	Signal	AM	27.9	C
			PM	20.5	C

SSSC control delay is shown for the worst minor approach. **Bold** = Substandard operations based on El Dorado County guidelines.

Table 9 presents the peak-hour roadway operating conditions for this analysis scenario.

Table 9 – Near-Term (2028) Roadway Levels of Service

Location	Peak-Hour	Analysis Direction	Near-Term (2028)			
			LOS	PTSF (%)	PFFS (%)	v/c
SR 49 between Forni Rd and Koki Ln	AM	EB	D	73.9		0.32
		WB	C	68.1		0.41
	PM	EB	D	70.8		0.30
		WB	D	78.5		0.40
Koki Ln south of SR 49	AM	NB	C		83.0	0.19
		SB	C		80.8	0.34
	PM	NB	C		82.4	0.28
		SB	B		84.4	0.16

As shown in **Table 8**, the study intersections operate from LOS B to LOS E during the AM and PM peak-hours. As shown in **Table 9**, the study roadway segments operate from LOS B to LOS D in the AM and PM peak-hours.

NEAR-TERM (2028) PLUS PROPOSED PROJECT CONDITIONS

Peak-hour traffic associated with the proposed project was added to the Near-Term (2028) traffic volumes, and levels of service were determined at the study facilities. The analysis worksheets for this scenario are provided in **Appendix E**. **Table 10** provides a summary of the intersection operating conditions for this analysis scenario. **Figure 9** provides the AM and PM traffic volumes for this analysis scenario.

Table 10 – Near-Term (2028) and Near-Term (2028) plus Proposed Project Intersection Levels of Service

ID	Intersection	Control	Peak Hour	Near-Term (2028)		Near-Term (2028) plus Proposed Project	
				Delay (sec)	LOS	Delay (sec)	LOS
1	SR-49 @ Pleasant Valley Road	AWSC	AM	69.9	**F**	71.9	F
			PM	40.3	E	41.9	E
2	SR-49 @ Forni Road	SSSC	AM	35.0	E	36.2	E
			PM	16.6	C	16.9	C
3	SR-49 @ Koki Lane	Signal	AM	24.3	C	24.7	C
			PM	12.8	B	14.2	B
4	SR-49 @ Patterson Drive	Signal	AM	14.6	B	14.7	B
			PM	15.7	B	16.0	B
5	SR-49 @ Missouri Flat Drive	Signal	AM	14.3	B	12.5	B
			PM	16.7	B	17.4	B
6	SR-49/Fowler Lane @ Pleasant Valley Road	Signal	AM	27.9	C	20.1	C
			PM	20.5	C	20.8	C
7	Koki Lane @ Project Site Access Driveway	SSSC	AM	-	-	17.9	C
			PM	-	-	10.2	B

SSSC control delay is shown for the worst minor approach. **Bold** = Substandard operations based on El Dorado County guidelines.

Table 11 presents the peak-hour roadway operating conditions for this analysis scenario.

Table 11 – Near-Term (2028) and Near-Term (2028) plus Proposed Project Roadway Levels of Service

Location	Peak-Hour	Analysis Direction	Near-Term (2028)				Near-Term (2028) plus Project			
			LOS	PTSF (%)	PFFS (%)	v/c	LOS	PTSF (%)	PFFS (%)	v/c
SR 49 between Forni Rd and Koki Ln	AM	EB	D	73.9		0.32	D	75.0		0.32
		WB	C	68.1		0.41	C	70.3		0.30
	PM	EB	D	70.8		0.30	D	71.9		0.30
		WB	D	78.5		0.40	D	80.2		0.40
Koki Ln south of SR 49	AM	NB	C		83.0	0.19	C		82.6	0.21
		SB	C		80.8	0.34	C		80.4	0.35
	PM	NB	C		82.4	0.28	C		81.9	0.29
		SB	B		84.4	0.16	B		83.8	0.18

As shown in **Table 10**, the study intersections operate from LOS B to LOS E during the AM and PM peak-hours. As shown in **Table 11**, the study roadway segments operate from LOS B to LOS D in the AM and PM peak-hours.

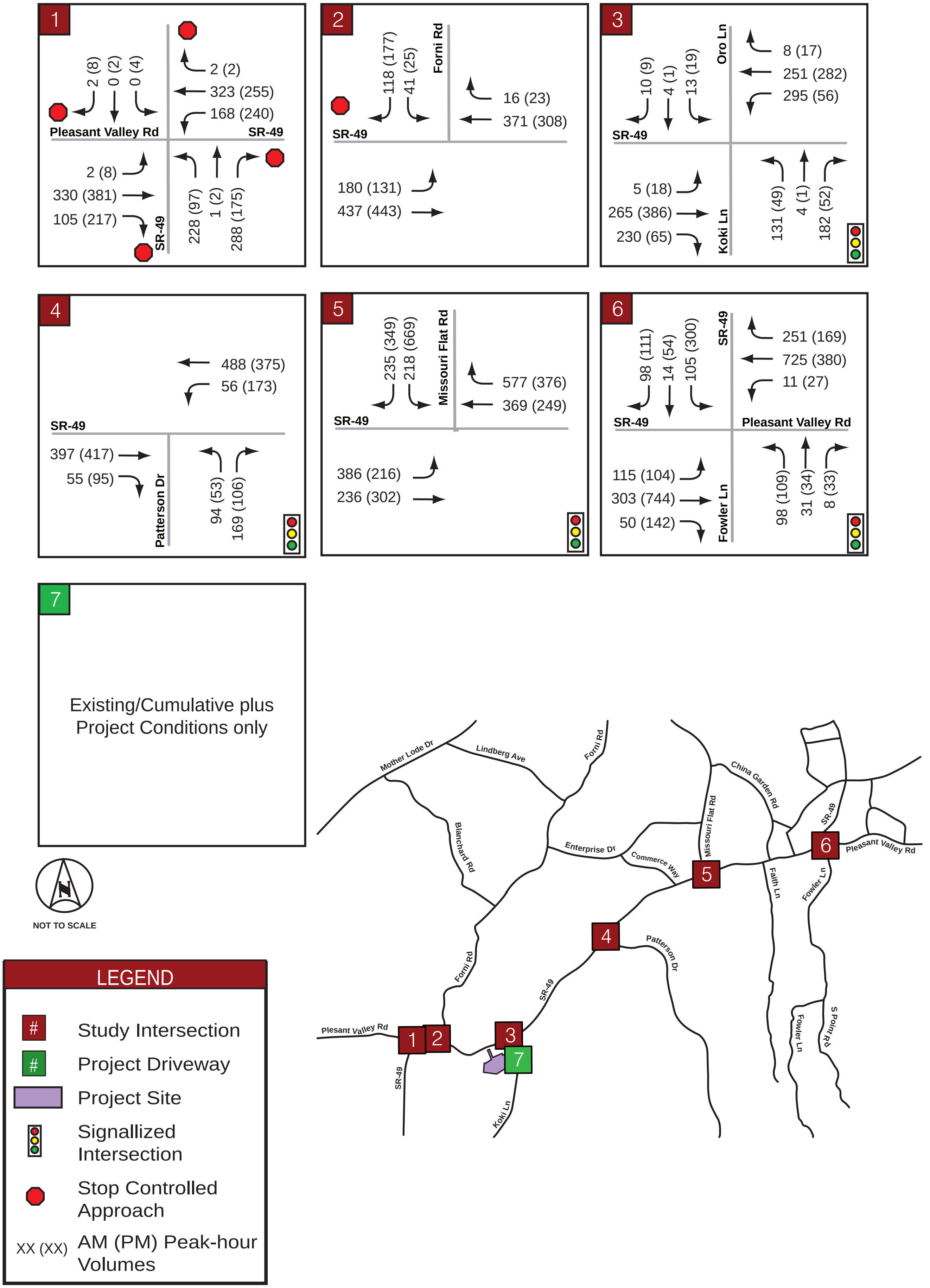


Figure 8

Near-Term (2028) Peak-Hour Traffic Volumes

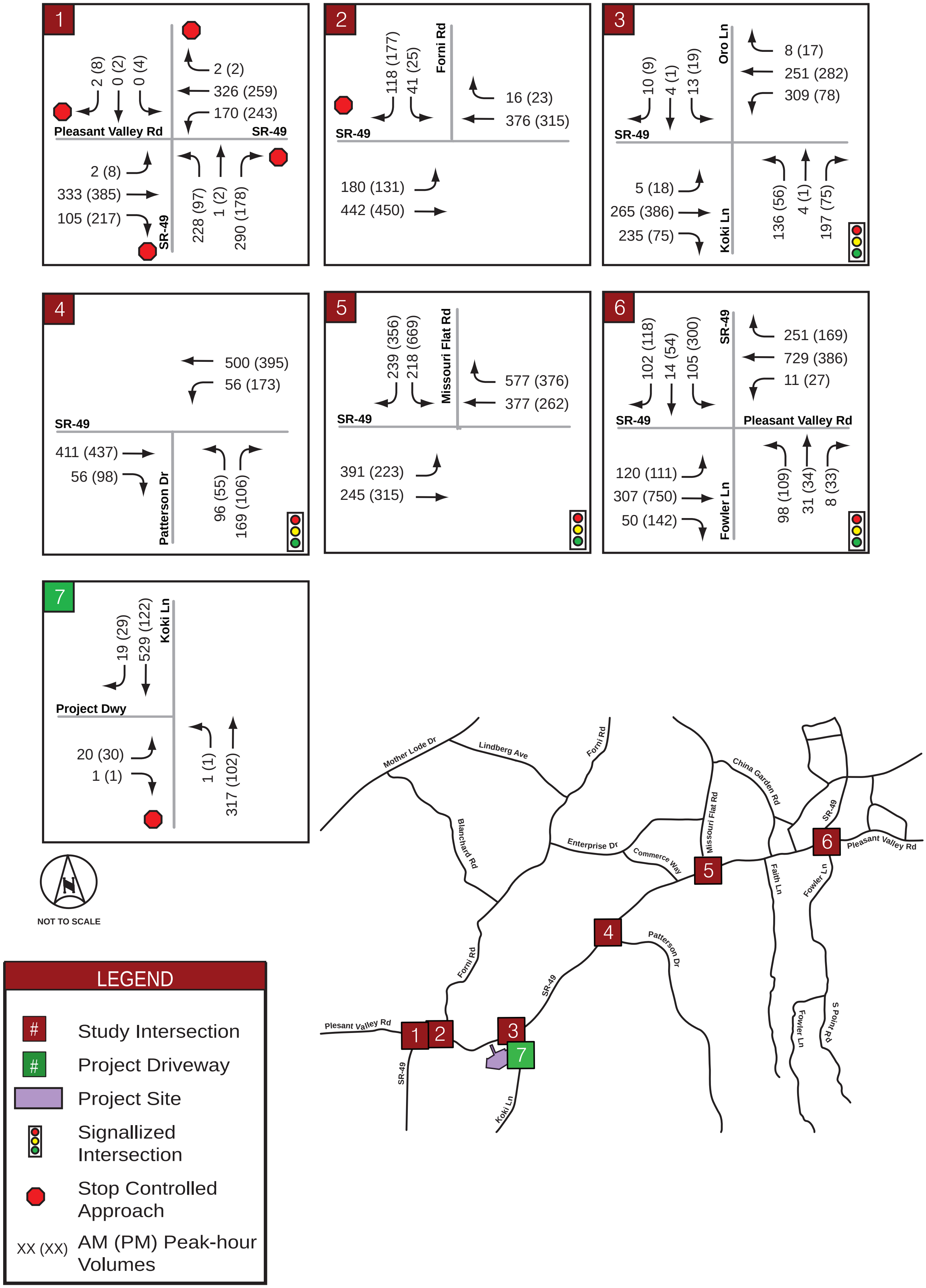


Figure 9

Near-Term (2028) plus Proposed Project Peak-Hour Traffic Volumes

CUMULATIVE (2035) CONDITIONS

Consistent with the traffic forecasting methodology specified by a representative of the County, traffic projections for this study are based on the County's current Travel Demand Model (TDM) and recently approved 20-year growth projections. Intersection turning movement volumes at the intersections of SR 49 at Missouri Flat Drive (Intersection #5) and Pleasant Valley Road (Intersection #6) are consisted with cumulative (2035) plus project volumes as presented in the *Diamond Springs Village Apartments*[5] study (2017).

Cumulative conditions include improvements to the transportation system in the project vicinity, such as the construction of the Diamond Springs Parkway, and improvements to the intersection of SR 49/Fowler Lane at Pleasant Valley Road. Planned developments in the project vicinity include the Diamond Springs Village Apartments and the El Dorado County Sheriff Headquarters Facility in Diamond Springs. Cumulative (2035) lane geometries are presented in **Figure 10**. The analysis worksheets for this scenario are provided in **Appendix F**.

Table 12 provides a summary of the intersection analysis and **Figure 11** provides the AM and PM traffic volumes for this analysis scenario.

Table 12– Cumulative (2035) Intersection Levels of Service

ID	Intersection	Control	Peak Hour	Cumulative (2035)	
				Delay (sec)	LOS
1	SR-49 @ Pleasant Valley Road	AWSC	AM	96.5	**F**
			PM	64.1	**F**
2	SR-49 @ Forni Road	SSSC	AM	37.3	E
			PM	20.1	C
3	SR-49 @ Koki Lane	Signal	AM	24.8	C
			PM	15.0	B
4	SR-49 @ Patterson Drive	Signal	AM	15.1	B
			PM	16.3	B
5	SR-49 @ Missouri Flat Drive	Signal	AM	11.1	B
			PM	18.3	B
6	SR-49/Fowler Lane @ Pleasant Valley Road	Signal	AM	37.2	D
			PM	46.3	D

Control delay for worst minor approach (worst minor movement) for SSSC. **Bold** = Substandard per County

Table 13 presents the peak-hour roadway operating conditions for this analysis scenario.

[5] *Diamond Springs Village Apartments*, Fehr and Peers, 2017.

Table 13 – Cumulative (2035) Roadway Levels of Service

Location	Peak-Hour	Analysis Direction	Cumulative (2035)			
			LOS	PTSF (%)	PFFS (%)	v/c
SR 49 between Forni Rd and Koki Ln	AM	EB	D	76.4		0.34
		WB	C	69.5		0.31
	PM	EB	D	72.1		0.32
		WB	D	80.4		0.43
Koki Ln south of SR 49	AM	NB	C		82.5	0.20
		SB	C		80.1	0.36
	PM	NB	C		81.8	0.30
		SB	B		83.8	0.18

As shown in **Table 12**, the study intersections operate from LOS B to LOS F during the AM and PM peak-hours. As shown in **Table 13**, the study roadway segments operate from LOS B to LOS D in the AM and PM peak-hours.

CUMULATIVE (2035) PLUS PROPOSED PROJECT CONDITIONS

Peak-hour traffic associated with the proposed project was added to the Cumulative (2035) traffic volumes, and levels of service were determined at the study facilities. The analysis worksheets for this scenario are provided in **Appendix G**.

Table 14 provides a summary of the intersection operating conditions for this analysis scenario. **Figure 12** provides the AM and PM traffic volumes for this analysis scenario.

Table 14 – Cumulative (2035) and Cumulative (2035) plus Proposed Project Intersection Levels of Service

ID	Intersection	Control	Peak Hour	Cumulative (2035)		Cumulative (2035) Plus Proposed Project	
				Delay (sec)	LOS	Delay (sec)	LOS
1	SR-49 @ Pleasant Valley Road	AWSC	AM	96.5	**F**	98.9	**F**
			PM	64.1	**F**	66.4	**F**
2	SR-49 @ Forni Road	SSSC	AM	37.3	E	37.8	E
			PM	20.1	C	20.6	C
3	SR-49 @ Koki Lane	Signal	AM	24.8	C	25.1	C
			PM	15.0	B	16.8	B
4	SR-49 @ Patterson Drive	Signal	AM	15.1	B	15.3	B
			PM	16.3	B	16.6	B
5	SR-49 @ Missouri Flat Drive	Signal	AM	11.1	B	11.3	B
			PM	18.3	B	19.0	B
6	SR-49/Fowler Lane @ Pleasant Valley Road	Signal	AM	37.2	D	38.1	D
			PM	46.3	D	48.7	D
7	Koki Lane @ Project Site Access Driveway	SSSC	AM	-	-	19.3	C
			PM	-	-	10.8	B

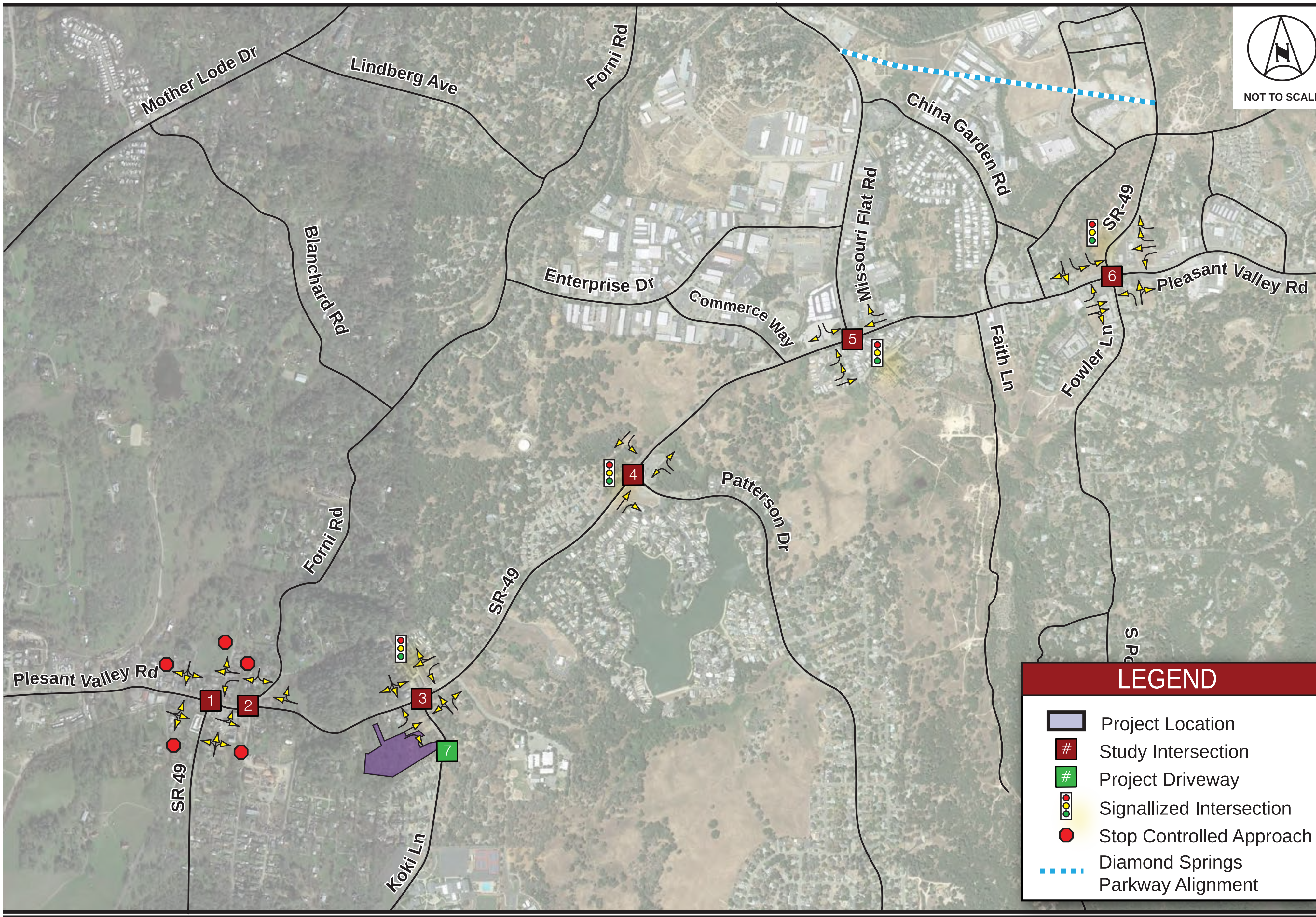
SSSC control delay is shown for the worst minor approach. **Bold** = Substandard operations based on El Dorado County guidelines. Shaded = significant impact.

Table 15 presents the peak-hour roadway operating conditions for this analysis scenario.

Table 15– Cumulative (2035) and Cumulative (2035) plus Proposed Project Roadway Levels of Service

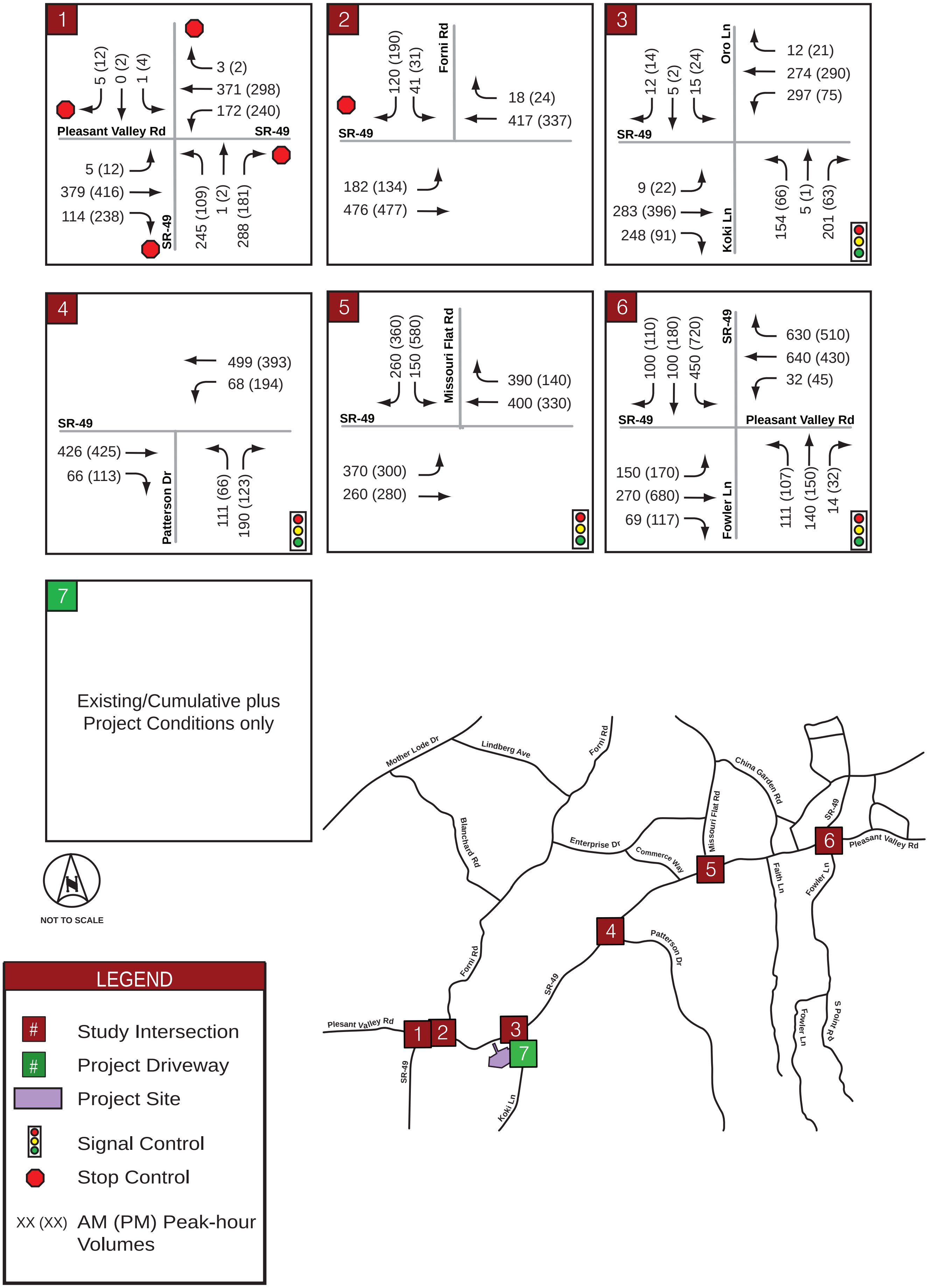
Location	Peak-Hour	Analysis Direction	Cumulative (2035)				Cumulative (2035) plus Project			
			LOS	PTSF (%)	PFFS (%)	v/c	LOS	PTSF (%)	PFFS (%)	v/c
SR 49 between Forni Rd and Koki Ln	AM	EB	D	76.4		0.34	D	76.2		0.34
		WB	C	69.5		0.31	D	70.3		0.31
	PM	EB	D	72.1		0.32	D	71.9		0.32
		WB	D	80.4		0.43	D	80.2		0.43
Koki Ln south of SR 49	AM	NB	C		82.5	0.20	C		82.0	0.22
		SB	C		80.1	0.36	C		79.8	0.38
	PM	NB	C		81.8	0.30	C		81.3	0.32
		SB	B		83.8	0.18	C		83.2	0.20

As shown in **Table 14**, the study intersections operate from LOS B to LOS F during the AM and PM peak-hours. As shown in **Table 15**, the study roadway segments operate from LOS B to LOS D in the AM and PM peak-hours.



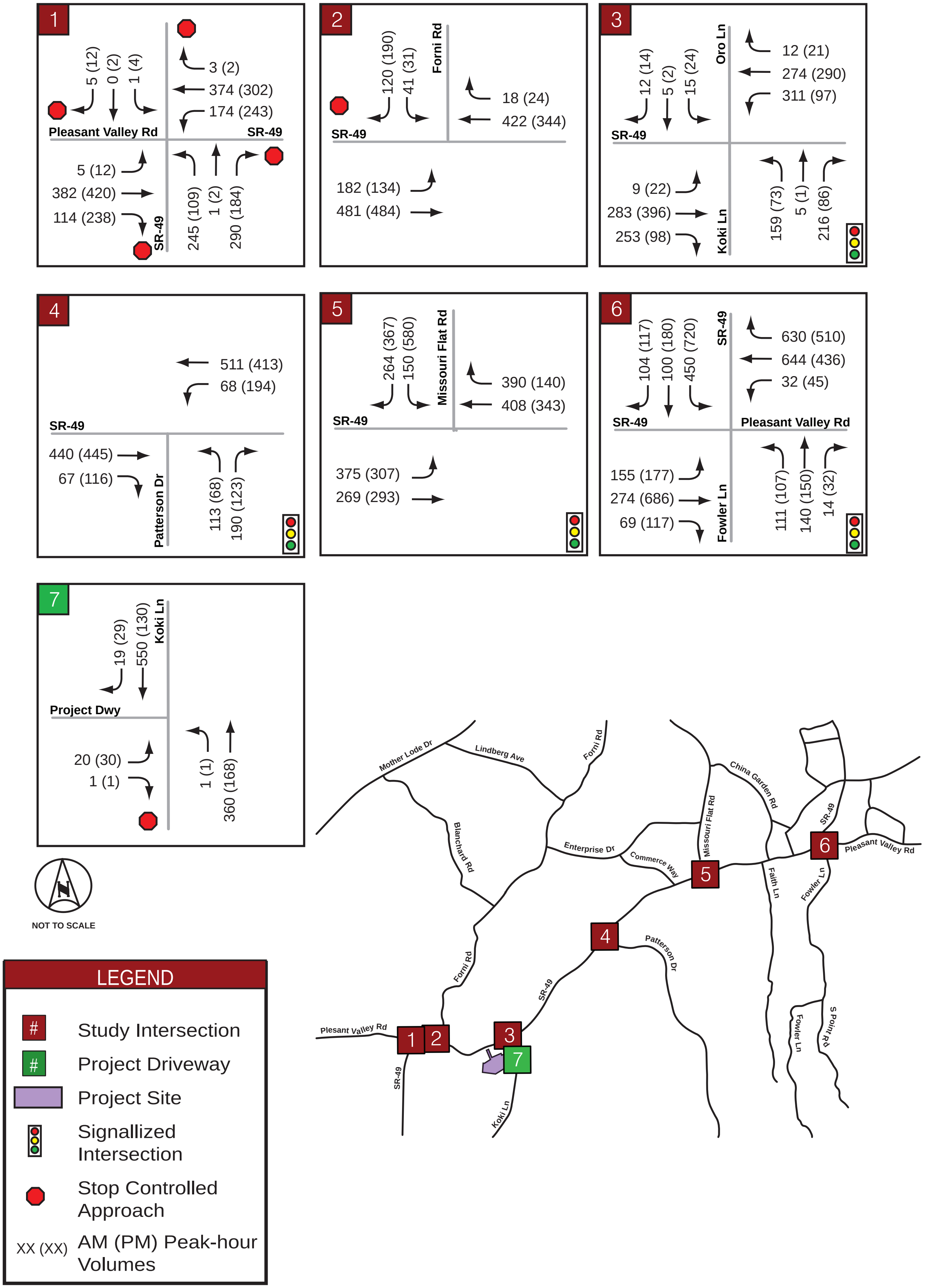
Kimley»Horn

Figure 10
Cumulative (2035) Roadway Lane Geometry



Kimley»Horn

Figure 11
Cumulative (2035) Peak-Hour Traffic Volumes



Kimley»Horn

Figure 12

Cumulative (2035) plus Proposed Project Peak-Hour Traffic Volumes

IMPACTS AND MITIGATION

Standards of Significance

Project impacts were determined by comparing conditions with the proposed project to those without the project. Impacts for intersections are created when traffic from the proposed project forces the LOS to fall below a specific threshold.

The County's standards[6] specify the following:

> "Level of Service (LOS) for County-maintained roads and State highways within the unincorporated areas of the County *shall not be worse than* ***LOS E in the Community Regions***." (El Dorado County General Plan Policy TC-Xd). The study facilities are located within the El Dorado Hills Community Region.
>
> "If a project causes the peak-hour LOS or volume/capacity ratio on a county road or State highway that would otherwise meet the County standards (without the project) to exceed the [given] values, then the impact shall be considered significant."
>
> "If any county road or state highway fails to meet the [given] standards for peak-hour LOS or volume/capacity ratios without the proposed project, and the project will worsen conditions on the road or highway, then the impact shall be considered significant." According to General Plan Policy TC- Xe[7], 'worsen' is defined as "a 2 percent increase in traffic during the a.m. peak-hour, p.m. peak-hour, or daily, or the addition of 100 or more daily trips, or the addition of 10 or more trips during the a.m. peak-hour or the p.m. peak-hour."

Impacts and Mitigation

Existing (2018) plus Proposed Project Conditions

Intersections:

As reflected in **Table 66**, the addition of the proposed project results in a significant impact as defined by the County. The mitigation analysis worksheets for this scenario are provided in **Appendix H**.

Impacts:

1. ***Intersection #1: SR 49 @ Pleasant Valley Road***
   This intersection operates at LOS F in the AM peak-hour without the project, and the project contributes more than 10 peak-hour trips to the intersection during the AM peak-hour. *This is a significant impact.*

Mitigations:

1. ***Intersection #1: SR 49 @ Pleasant Valley Road***
   The impact can be mitigated with a traffic signal. If constructed by others or added to the 10-year CIP prior to residential development levels in the project site that would require this mitigation, payment of traffic impact mitigation fees would satisfy the project's fair share obligation towards this improvement. If not constructed by others, the applicant would be responsible for implementing this improvement consistent with General Plan Goal TC-X and supporting Policy TC-Xf to ensure that transportation improvements are implemented concurrent with approved residential development. If constructed by the applicant, the applicant may be subject to reimbursement through the County's traffic impact mitigation fee program. This improvement is on a facility under the jurisdiction of Caltrans. Therefore, the timing of the implementation will be subject to Caltrans approval. The project proportional share of traffic entering the intersection is 0.7% in the AM peak hour under Existing plus Proposed Project conditions.

[6] *Transportation Impact Study Guidelines,* El Dorado County Community Development Agency, November 2014.
[7] *El Dorado County General Plan, Transportation and Circulation Element*, July 2004.

Near-Term (2028) plus Proposed Project Conditions

As reflected in **Table 10**, the addition of the proposed project results in a significant impact as defined by the County. The mitigation analysis worksheets for this scenario are provided in **Appendix H**.

Impacts:

2. ***Intersection #1: SR 49 @ Pleasant Valley Road***
   This intersection operates at LOS F in the AM peak-hour without the project, and the project contributes more than 10 peak-hour trips to the intersection during the AM peak-hour. *This is a significant impact.*

Mitigations:

2. ***Intersection #1: SR 49 @ Pleasant Valley Road***
   The impact can be mitigated with a traffic signal. If constructed by others or added to the 10-year CIP prior to residential development levels in the project site that would require this mitigation, payment of traffic impact mitigation fees would satisfy the project's fair share obligation towards this improvement. If not constructed by others, the applicant would be responsible for implementing this improvement consistent with General Plan Goal TC-X and supporting Policy TC-Xf to ensure that transportation improvements are implemented concurrent with approved residential development. If constructed by the applicant, the applicant may be subject to reimbursement through the County's traffic impact mitigation fee program. This improvement is on a facility under the jurisdiction of Caltrans. Therefore, the timing of the implementation will be subject to Caltrans approval. The project proportional share of growth of traffic entering the intersection is about 9.6% in the AM peak hour under Near Term (2028) plus Proposed Project conditions.

Cumulative (2035) plus Proposed Project Conditions

As reflected in **Table 14**, the addition of the proposed project results in a significant impact as defined by the County. The mitigation analysis worksheets for this scenario are provided in **Appendix H**.

Impacts:

3. ***Intersection #1: SR 49 @ Pleasant Valley Road***
   This intersection operates at LOS F in the AM and PM peak-hours without the project, and the project contributes more than 10 peak-hour trips to the intersection during the AM and PM peak-hours. *This is a significant impact.*

Mitigations:

3. ***Intersection #1: SR 49 @ Pleasant Valley Road***
   The impact can be mitigated with a traffic signal. The CIP includes a line item for unprogrammed traffic signal installation and operational and safety improvements at intersections, including improvements like construction of new traffic signals, construction of turn pockets, and the upgrade of existing traffic signal systems. The County annually monitors intersections with potential need for improvement through the Intersection Needs Prioritization Process. The Intersection Needs Prioritization Process is then used to inform the annual update to the CIP, and potential intersection improvements can be added, by the Board of Supervisors, to the CIP as funding becomes available.

   Therefore, appropriate mitigation, as determined by the CDS, would include payment of traffic mitigation fees to satisfy the project's fair share obligation towards this improvement or construction of the improvement with reimbursement for costs that exceed the project's proportional share if the improvement is needed but not included in future updates to the CIP or constructed by others. This improvement is on a facility under the jurisdiction of Caltrans. Therefore, the timing of the implementation will be subject to Caltrans approval. The project proportional share of growth of traffic entering the intersection is about 4.2% in the AM peak hour and 6.3% in the PM peak hour under Cumulative (2035) plus Proposed Project conditions.

OTHER CONSIDERATIONS

Peak-Hour Traffic Signal Warrant Evaluation

A planning level assessment of the need for traffic signalization was performed for the un-signalized study intersections. This evaluation was performed consistently with the peak-hour warrant methodologies noted in Section 4C of the *California Manual on Uniform Traffic Control Devices (CMUTCD), 2014 Edition*. A summary of the peak-hour warrant results is presented in **Table 16**.

Table 16 – Traffic Signal Warrant Analysis Results

#	Intersection	Analysis Scenario					
		Existing (2018)	Existing (2018) plus Project	Near-Term (2028)	Near-Term (2028) plus Project	Cumulative (2035)	Cumulative (2035) plus Project
1	SR 49 @ Pleasant Valley Road	Yes / Yes	Yes / Yes	Yes / Yes	Yes / Yes	Yes / Yes	Yes / Yes
2	SR 49 @ Forni Road	No / No	No / No	No / No	No / No	No / Yes	No / Yes
Results are presented in **AM / PM format.** Note: Peak-hour warrant is satisfied if Condition A or B is met.							

As shown in **Table 16**, Intersection #1 (SR 49 @ Pleasant Valley Road) satisfies the peak-hour signal warrant with and without the addition of the proposed project under all analysis scenarios, and Intersection #2 (SR 49 @ Forni Road) satisfies the peak-hour signal warrant under Cumulative conditions.

Sight Distance Evaluation and Minimum Required Throat Depth (MRTD) Evaluation

The project site plan (**Figure 2**) presents a project driveway providing access onto Koki Road, south of SR 49. It is recommended that landscaping and trees be placed in such a manner so as to not obstruct line of sight, especially for southbound and eastbound travelers. The project driveway should provide at least 50-feet or MRTD. This is the throat depth required based on the methodology presented in Estimation of Maximum Queue Lengths at Unsignalized Intersections (ITE Journal, November 2001). According to the project site plan, there appears to be adequate MRTD.

A sight distance triangle calculation was completed for the Project Driveway intersection at Koki Lane. The driveway provides acceptable sight distance for vehicles turning left (looking right). The driveway does not provide acceptable sight distance for vehicles turning right and left (looking left), due to obstructions which include trees and vegetation along the western side of Koki Lane. With the removal of these obstructions, the project driveway would achieve acceptable sight distance for right and left turns. **Table 17** and **Figure 13** presents the sight distance triangle calculations and diagram, respectively.

Table 17 – Sight Distance Triangle Calculations

ID	Approach	Movement Direction	Observed SD (ft.)	Required ISD (ft.)	Status	Mitigated++ SD (ft.)
A	Eastbound (Project Driveway)	Left (looking right)	930	335	Acceptable	N/A
B		Left/Right (looking left)	120	290	Obstructed+	> 290

Notes:
SD = Sight Distance, ISD = Intersection Sight Distance
Design speed of 30 mph assumed along Koki Lane (25 mph posted speed limit).
\+ *Obstructed sight distance refers to the existing condition in which the sight triangle contains an intermediate obstruction(s). When the intermediate obstruction(s) is mitigated, the required ISD is achievable.*
++ *Mitigated Sight Distance refers to the condition anticipated to be achieved with removal or maintenance of trees and vegetation along the western side of Koki Lane.*

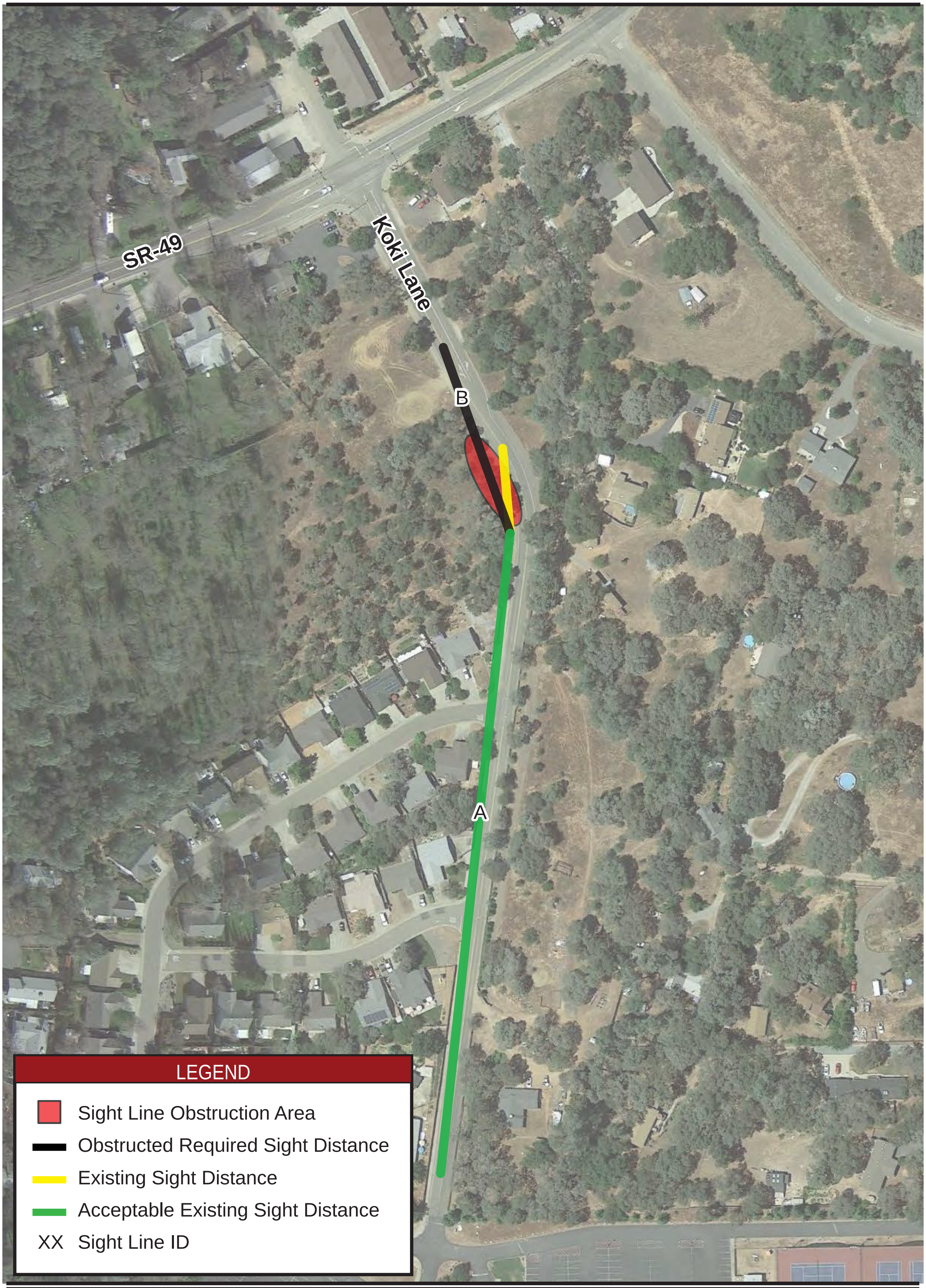


Figure 13
Sight Distance and Vegetation Removal Recommendations

Site Plan, Access, and On-site Circulation Evaluation

The site plan for the proposed project (**Figure 2**) was qualitatively reviewed for general access and on-site circulation. According to the site plan, access to the site will be provided via one (1) driveway along Koki Lane east of the project site, and an emergency vehicle access only driveway along SR 49 north of the project site. Level of service and delay data was previously reported for the project driveway intersection (Intersection #7). This access point, as well as the on-site circulation system provides adequate access to/from both Koki Lane and SR 49.

In addition, *Fire Safe Regulations*[8] state that on-site roadways shall "provide for safe access for emergency wildland fire equipment and civilian evacuation concurrently, and shall provide unobstructed traffic circulation during a wildfire emergency…" All project roadways shall be designed and constructed in accordance with these requirements.

An all-weather emergency vehicle access road is being proposed connecting the El Dorado Senior Resort project to Highway 49. The access connection is designed per the El Dorado County Department of Transportation Standard Plan 103C – "Multi Unit Residential Driveway Connection". This driveway serves as a second point of ingress/egress to the proposed site for emergency vehicles. An automatic access gate will be installed per the El Dorado County Fire District Standard #B-002 to prevent civilian vehicular traffic from entering the project site. Per the El Dorado County Fire District Ordinance No. 2016-02 Emergency Vehicle Access roads (EVA) on-site were designed to be a minimum 20 feet in unobstructed width to service the proposed facilities.

Intersection Queuing Evaluation

Vehicle queuing for the study intersections was evaluated. For the queuing analysis, the anticipated vehicle queues for critical movements at these intersections were evaluated. The calculated vehicle queues were compared to actual or anticipated vehicle storage/segment lengths. Results of the queuing evaluation are presented in **Table 18**. Analysis sheets that include the anticipated vehicle queues are presented in Appendices B, C, E, and F. As presented in **Table 18**, the addition of the proposed project adds additional queuing to Intersection #3 (SR-49 @ Koki Lane), which already exceeds westbound left-turn lane storage capacity in the AM peak-hour under Existing conditions. The project proportional share of traffic entering the intersection is 2.9% in the AM peak hour under Existing plus Proposed Project conditions. The analysis worksheets for this scenario are provided in **Appendix I**.

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[8] *Fire Safe Regulations*, Title 14 Natural Resources, Division 1.5 Department of Forestry, Chapter 7 – Fire Protection, Subchapter 2 SRA Safe Regulations, Article 2 Emergency Access, El Dorado County Building Department.

Table 18 – Intersection Queuing Evaluation Results for Select Locations

Intersection / Analysis Scenario	Movement	AM Peak-Hour Available Storage (ft)	AM Peak-Hour 95th % Queue (ft)	PM Peak-Hour Available Storage (ft)	PM Peak-Hour 95th % Queue (ft)
#1 SR-49 @ Pleasant Valley Road	WBL				
Existing (2018)		75	60	75	60
Existing (2018) plus Project			63		63
Existing (2018) plus Project Mitigated			63		63
Near-Term (2028)			58		73
Near-Term (2028) plus Project			58		73
Cumulative (2035)			60		73
Cumulative (2035) plus Project			60		75
#3 SR-49 @ Koki Lane	EBL				
Existing (2018)		60	10	60	30
Existing (2018) plus Project			10		30
Near-Term (2028)			15		35
Near-Term (2028) plus Project			15		35
Cumulative (2035)			21		40
Cumulative (2035) plus Project			21		40
	WBL				
Existing (2018)		160	**401**	160	66
Existing (2018) plus Project			**429**		90
Near-Term (2028)			**409**		84
Near-Term (2028) plus Project			**440**		108
Cumulative (2035)			**427**		105
Cumulative (2035) plus Project			**455**		128
#4 SR-49 @ Patterson Dr	WBL				
Existing (2018)		415	68	415	184
Existing (2018) plus Project			70		188
Near-Term (2028)			85		215
Near-Term (2028) plus Project			87		220
Cumulative (2035)			106		247
Cumulative (2035) plus Project			108		252
#5 SR-49 @ Missouri Flat Road	EBL				
Existing (2018)		175	137	175	80
Existing (2018) plus Project			140		83
Near-Term (2028)			145		88
Near-Term (2028) plus Project			149		91
Cumulative (2035)			138		124
Cumulative (2035) plus Project			141		128
#6 SR-49 @ Fowler Ln/Pleasant Valley Rd	EBL				
Existing (2018)		210	165	210	133
Existing (2018) plus Project			171		141
Near-Term (2028)			166		145
Near-Term (2028) plus Project			172		154
Cumulative (2035)			215		253
Cumulative (2035) plus Project			220		268

Source: *Highway Capacity Manual (HCM) 2010* methodology per Synchro© v10.

Bicycle and Pedestrian Facilities Evaluation

The proposed project site will include pedestrian facilities to support circulation throughout the site. Pedestrian paths will be included along both sides of the proposed project driveway, extending from Koki Lane at the eastern boundary of the site to the community center, care facility, apartments, and recreational facilities located at the center of the project site. Pedestrian paths will be provided to accommodate access between the various project facilities. A crosswalk will be provided between the community center and the assisted and memory care facility.

There are currently no bike lanes on SR 49 in the project vicinity, and sidewalks are limited or not continuous. There is a marked bike pocket at the intersection of SR 49 at Patterson Drive in the eastbound direction. Existing shoulders are not sufficient to accommodate safe bicycle and pedestrian travel on SR 49 between Pleasant Valley Road and Diamond Springs. There are currently no bicycle facilities on Koki Lane in the project vicinity. There are sidewalks along the southbound segment of Koki Lane in the project vicinity.

According to Caltrans' *State Route 49 Transportation Concept Report* for Segment # 2 (ED PM 9.494/11.239) between Union Mine Road and Missouri Flat Road, a Class II bike lane plan concept has been developed for SR 49 between Pleasant Valley Road and Diamond Springs, and a shared use path for pedestrian and bicyclists concept has been developed for SR 49 between Missouri Flat Rout and Forni Road. Shoulder widening to 8-feet to provide pedestrian and bicyclist access along the highway is currently planned. In addition, road widening on SR 49 from Pleasant Valley Road to Missouri Flat Road is currently planned to add a two-way left-turn lane.

While the project will not result in removal of a bikeway/bike lanes, it is required to include pedestrian/bicycle paths connecting to adjacent commercial, research and development, or industrial projects and any schools, parks, or other public facilities. The proposed project will be required to construct on-site roadway and pedestrian facilities in accordance with County design guidelines. These on-site pedestrian and bicycle facilities will connect the project with the proposed adjacent bicycle and pedestrian facilities on SR 49. The project will provide on-site pedestrian and bicycle facilities that will connect the project via Koki Lane with the proposed pedestrian and bicycle facilities on SR 49.

Planning level bicycle and pedestrian level of service (LOS) analysis was conducted for side-street stop controlled intersections with crosswalks and signalized intersections, as shown in **Tables 19-24** on the following pages. The analysis worksheets for this scenario are provided in **Appendix J**.

Collision History

Table 20 shows the collisions in the project vicinity between the years 2013 and 2017. As shown, most reported collisions consisted of property damage. Injury collisions also occurred within the project vicinity. However, a majority were complaints of pain, with only 3 visible injury and 1 severe injury collisions occurring within the 5-year span. No fatal collisions were reported.

Table 19 – Collision Data for Project Vicinity

ID	Intersection Location	Collision Type					Bike	Pedestrian
		0-Property Damage	1-Fatal	2-Injury (Severe)	3-Injury (Other Visible)	4-Injury (Complaint of Pain)		
1	SR-49 @ Pleasant Valley Road	3	0	0	0	0	No	No
2	SR-49 @ Forni Road	5	0	0	1	1	1	No
3	SR-49 @ Koki Lane	0	0	0	1	1	No	No
4	SR-49 @ Patterson Drive	6	0	1	0	4	No	1
5	SR-49 @ Missouri Flat Drive	13	0	0	2	3	No	No
6	SR-49/Fowler Lane @ Pleasant Valley Road	9	0	0	0	2	No	No

Transit and Parking

The proposed project vicinity has 5 transit stops located along SR-49 to promote access to the site. These transit stops are accessible through El Dorado Transit Routes 30 and 35, with the Pleasant Valley Road at Oro Lane stop being the closest to the project site.

Vehicle parking will also be available on site. Approximately a total of 140 garage parking spots will be provided, with 80 spots located at the senior independent apartments and the remaining 60 located at the assisted living/memory care facility.

CONCLUSIONS

Based upon the analysis documented in this report, the following conclusions are offered:

- The proposed project is estimated to generate 787 total new daily trips, with 41 new trips occurring during the AM peak-hour, and 62 new trips occurring during the PM peak-hour.
- As defined by the County, the addition of the proposed project to the Existing (2018), Near-Term (2028), and Cumulative (2035) scenarios worsen conditions at study Intersection #1 (SR 49 @ Pleasant Valley Road). These impacts can be mitigated to less than significant. As a result, the project's potential environmental impacts to transportation facilities are considered to be ***less than significant***.

Table 20 – Existing Bicycle/Pedestrian LOS

ID	Intersection	Control	Approach	Existing (2018) Bicyclist AM LOS Score		Existing (2018) Pedestrian AM LOS Score	
				Score	LOS	Score	LOS
3	SR-49 @ Koki Lane	SSSC	EB	2.58	B	2.44	B
			WB	2.75	C	2.41	B
			NB	2.79	C	2.33	B
			SB	2.35	B	1.76	A
4	SR-49 @ Patterson Drive	Signal	EB	1.23	A	2.35	B
			WB	1.60	A	No crosswalk	
			NB	2.57	B	2.09	B
5	SR-49 @ Missouri Flat Drive	Signal	EB	3.08	C	2.45	B
			WB	4.03	D	No crosswalk	
			SB	2.01	B	2.51	B
6	SR-49/Fowler Lane @ Pleasant Valley Road	Signal	EB	2.69	B	2.51	B
			WB	3.74	D	No crosswalk	
			NB	2.71	B	2.03	B
			SB	2.65	B	2.14	B

ID	Intersection	Control	Approach	Existing (2018) Bicyclist PM LOS Score		Existing (2018) Pedestrian PM LOS Score	
				Score	LOS	Score	LOS
3	SR-49 @ Koki Lane	SSSC	EB	2.90	C	2.35	B
			WB	2.53	B	2.23	B
			NB	2.26	B	2.02	B
			SB	2.33	B	1.76	A
4	SR-49 @ Patterson Drive	Signal	EB	1.24	A	2.27	B
			WB	1.47	A	No crosswalk	
			NB	2.35	B	2.10	B
5	SR-49 @ Missouri Flat Drive	Signal	EB	2.89	C	2.41	B
			WB	3.39	C	No crosswalk	
			SB	2.92	C	2.54	B
6	SR-49/Fowler Lane @ Pleasant Valley Road	Signal	EB	3.11	C	2.54	B
			WB	3.00	C	No crosswalk	
			NB	2.75	C	2.09	B
			SB	2.92	C	2.17	B

Table 21 – Existing plus Project Bicycle/Pedestrian LOS

ID	Intersection	Control	Approach	Existing (2018) Bicyclist AM LOS Score		Existing (2018) Pedestrian AM LOS Score	
				Score	LOS	Score	LOS
3	SR-49 @ Koki Lane	SSSC	EB	2.60	B	2.44	B
			WB	2.79	C	2.42	B
			NB	2.82	C	2.35	B
			SB	2.37	B	1.76	A
4	SR-49 @ Patterson Drive	Signal	EB	1.26	A	2.36	B
			WB	1.62	A	No crosswalk	
			NB	2.58	B	2.09	B
5	SR-49 @ Missouri Flat Drive	Signal	EB	3.11	C	2.46	B
			WB	4.05	D	No crosswalk	
			SB	2.02	B	2.52	B
6	SR-49/Fowler Lane @ Pleasant Valley Road	Signal	EB	2.69	B	2.52	B
			WB	3.75	D	No crosswalk	
			NB	2.71	B	2.03	B
			SB	2.66	B	2.15	B

ID	Intersection	Control	Approach	Existing (2018) Bicyclist PM LOS Score		Existing (2018) Pedestrian PM LOS Score	
				Score	LOS	Score	LOS
3	SR-49 @ Koki Lane	SSSC	EB	2.95	C	2.35	B
			WB	2.57	B	2.25	B
			NB	2.31	B	2.04	B
			SB	2.34	B	1.76	A
4	SR-49 @ Patterson Drive	Signal	EB	1.29	A	2.29	B
			WB	1.50	A	No crosswalk	
			NB	2.35	B	2.10	B
5	SR-49 @ Missouri Flat Drive	Signal	EB	2.92	B	2.42	B
			WB	3.41	C	No crosswalk	
			SB	2.93	C	2.55	B
6	SR-49/Fowler Lane @ Pleasant Valley Road	Signal	EB	3.12	C	2.55	B
			WB	3.01	C	No crosswalk	
			NB	2.75	C	2.09	B
			SB	2.94	C	2.18	B

Table 22 – Near-Term Bicycle/Pedestrian LOS

ID	Intersection	Control	Approach	Near-Term (2028) Bicyclist AM LOS Score		Near-Term (2028) Pedestrian AM LOS Score	
				Score	LOS	Score	LOS
3	SR-49 @ Koki Lane	SSSC	EB	2.59	B	2.44	B
			WB	2.73	B	2.40	B
			NB	2.82	B	2.33	B
			SB	2.35	B	1.77	A
4	SR-49 @ Patterson Drive	Signal	EB	1.23	A	2.34	B
			WB	1.58	A	No crosswalk	
			NB	2.60	B	2.10	B
5	SR-49 @ Missouri Flat Drive	Signal	EB	3.14	C	2.47	B
			WB	4.03	D	No crosswalk	
			SB	2.03	B	2.52	B
6	SR-49/Fowler Lane @ Pleasant Valley Road	Signal	EB	2.71	B	2.53	B
			WB	3.90	D	No crosswalk	
			NB	2.74	B	2.04	B
			SB	2.68	B	2.18	B

ID	Intersection	Control	Approach	Near-Term (2028) Bicyclist PM LOS Score		Near-Term (2028) Pedestrian PM LOS Score	
				Score	LOS	Score	LOS
3	SR-49 @ Koki Lane	SSSC	EB	2.97	C	2.37	B
			WB	2.58	B	2.25	B
			NB	2.31	B	2.04	B
			SB	2.35	B	1.77	A
4	SR-49 @ Patterson Drive	Signal	EB	1.31	A	2.30	B
			WB	1.56	A	No crosswalk	
			NB	2.40	B	2.12	B
5	SR-49 @ Missouri Flat Drive	Signal	EB	2.96	C	2.44	B
			WB	3.45	C	No crosswalk	
			SB	3.05	C	2.57	B
6	SR-49/Fowler Lane @ Pleasant Valley Road	Signal	EB	3.18	C	2.58	B
			WB	3.17	C	No crosswalk	
			NB	2.81	C	2.11	B
			SB	3.13	C	2.24	B

Table 23 – Near-Term plus Project Bicycle/Pedestrian LOS

ID	Intersection	Control	Approach	Near-Term (2028) Bicyclist AM LOS Score		Near-Term (2028) Pedestrian AM LOS Score	
				Score	LOS	Score	LOS
3	SR-49 @ Koki Lane	SSSC	EB	2.63	B	2.45	B
			WB	2.76	C	2.42	B
			NB	2.86	C	2.35	B
			SB	2.36	B	1.77	A
4	SR-49 @ Patterson Drive	Signal	EB	1.26	A	2.36	B
			WB	1.61	A	No crosswalk	
			NB	2.60	B	2.11	B
5	SR-49 @ Missouri Flat Drive	Signal	EB	3.17	C	2.47	B
			WB	4.04	D	No crosswalk	
			SB	2.04	B	2.53	B
6	SR-49/Fowler Lane @ Pleasant Valley Road	Signal	EB	2.72	B	2.53	B
			WB	3.91	D	No crosswalk	
			NB	2.74	B	2.04	B
			SB	2.69	B	2.19	B

ID	Intersection	Control	Approach	Near-Term (2028) Bicyclist PM LOS Score		Near-Term (2028) Pedestrian PM LOS Score	
				Score	LOS	Score	LOS
3	SR-49 @ Koki Lane	SSSC	EB	3.00	C	2.37	B
			WB	2.62	B	2.27	B
			NB	2.35	B	2.06	B
			SB	2.35	B	1.77	A
4	SR-49 @ Patterson Drive	Signal	EB	1.36	A	2.32	B
			WB	1.59	A	No crosswalk	
			NB	2.40	B	2.12	B
5	SR-49 @ Missouri Flat Drive	Signal	EB	2.99	C	2.45	B
			WB	3.48	C	No crosswalk	
			SB	3.06	C	2.58	B
6	SR-49/Fowler Lane @ Pleasant Valley Road	Signal	EB	3.19	C	2.59	B
			WB	3.18	C	No crosswalk	
			NB	2.81	C	2.11	B
			SB	3.14	C	2.24	B

Table 24 – Cumulative Bicycle/Pedestrian LOS

ID	Intersection	Control	Approach	Cumulative (2035) Bicyclist AM LOS Score		Cumulative (2035) Pedestrian AM LOS Score	
				Score	LOS	Score	LOS
3	SR-49 @ Koki Lane	SSSC	EB	2.60	B	2.45	B
			WB	2.71	B	2.39	B
			NB	2.86	C	2.32	B
			SB	2.36	B	1.77	A
4	SR-49 @ Patterson Drive	Signal	EB	1.30	A	2.36	B
			WB	1.61	A	No crosswalk	
			NB	2.66	B	2.12	B
5	SR-49 @ Missouri Flat Drive	Signal	EB	3.16	C	2.48	B
			WB	3.74	D	No crosswalk	
			SB	1.96	B	2.46	B
6	SR-49/Fowler Lane @ Pleasant Valley Road	Signal	EB	2.73	C	2.51	B
			WB	4.87	E	No crosswalk	
			NB	3.15	C	2.13	B
			SB	3.46	B	2.66	B

ID	Intersection	Control	Approach	Cumulative (2035) Bicyclist PM LOS Score		Cumulative (2035) Pedestrian PM LOS Score	
				Score	LOS	Score	LOS
3	SR-49 @ Koki Lane	SSSC	EB	3.04	C	2.39	B
			WB	2.64	B	2.27	B
			NB	2.36	B	2.07	B
			SB	2.37	B	1.78	A
4	SR-49 @ Patterson Drive	Signal	EB	1.36	A	2.32	B
			WB	1.63	A	No crosswalk	
			NB	2.45	B	2.14	B
5	SR-49 @ Missouri Flat Drive	Signal	EB	3.07	C	2.48	B
			WB	3.18	C	No crosswalk	
			SB	2.91	C	2.51	B
6	SR-49/Fowler Lane @ Pleasant Valley Road	Signal	EB	3.16	C	2.58	B
			WB	4.30	E	No crosswalk	
			NB	3.20	C	2.19	B
			SB	4.11	D	2.72	B

Table 25 – Cumulative plus Project Bicycle/Pedestrian LOS

ID	Intersection	Control	Approach	Cumulative (2035) Bicyclist AM LOS Score		Cumulative (2035) Pedestrian AM LOS Score	
				Score	LOS	Score	LOS
3	SR-49 @ Koki Lane	SSSC	EB	2.62	B	2.46	B
			WB	2.72	B	2.41	B
			NB	2.90	C	2.35	B
			SB	2.36	B	1.77	A
4	SR-49 @ Patterson Drive	Signal	EB	1.33	A	2.38	B
			WB	1.64	A	No crosswalk	
			NB	2.67	B	2.13	B
5	SR-49 @ Missouri Flat Drive	Signal	EB	3.18	C	2.49	B
			WB	3.76	D	No crosswalk	
			SB	1.96	B	2.46	B
6	SR-49/Fowler Lane @ Pleasant Valley Road	Signal	EB	2.74	C	2.52	B
			WB	4.88	E	No crosswalk	
			NB	3.15	C	2.13	B
			SB	3.47	C	2.66	B

ID	Intersection	Control	Approach	Cumulative (2035) Bicyclist PM LOS Score		Cumulative (2035) Pedestrian PM LOS Score	
				Score	LOS	Score	LOS
3	SR-49 @ Koki Lane	SSSC	EB	3.07	C	2.39	B
			WB	2.67	B	2.29	B
			NB	2.40	B	2.09	B
			SB	2.37	B	1.78	A
4	SR-49 @ Patterson Drive	Signal	EB	1.40	A	2.34	B
			WB	1.66	A	No crosswalk	
			NB	2.45	B	2.14	B
5	SR-49 @ Missouri Flat Drive	Signal	EB	3.10	C	2.49	B
			WB	3.21	C	No crosswalk	
			SB	2.92	C	2.52	B
6	SR-49/Fowler Lane @ Pleasant Valley Road	Signal	EB	3.17	C	2.59	B
			WB	4.31	C	No crosswalk	
			NB	3.20	C	2.19	B
			SB	4.12	C	2.72	B

Appendix A:

Traffic Count Data Sheets

Prepared by National Data & Surveying Services

SR-49 & Pleasant Valley Rd

Peak Hour Turning Movement Count

ID: 18-07158-001
City: Diamond Springs

Day: Tuesday
Date: 05/01/2018

	PEAK HOURS	COUNT PERIODS
AM	07:15 AM - 08:15 AM	06:00 AM - 09:00 AM
NOON	NONE	NONE
PM	04:15 PM - 05:15 PM	04:00 PM - 07:00 PM

SR-49 SOUTHBOUND

	↲	↓	↳	U	⇧
AM	0	0	0	0	2
NOON	0	0	0	0	0
PM	6	2	4	0	8
	0	0	0	0	

Pleasant Valley Rd EASTBOUND

	AM	NOON	PM	
⇦	506	0	322	
U-turn	0	0	2	0
Left	0	0	4	0
Through	295	0	357	1
Right	98	0	203	0

Pleasant Valley Rd WESTBOUND

		PM	NOON	AM
Left	0	2	0	1
Through	1	225	0	290
Right	1	240	0	166
U-turn	0	0	0	0
⇨		532	0	583

CONTROL

3-Way Stop(NB/EB/WB)

	AM	NOON	PM
TEV	1355	0	1307
PHF	0.79		0.97

SR-49 NORTHBOUND

	⇩	U	↰	↑	↱
		0	0	1	0
PM	445	0	89	2	171
NOON	0	0	0	0	0
AM	264	0	216	1	288

Total Vehicles (AM)

Approach	U/Left	Through	Right
Southbound	0	0	0
Eastbound	0	295	98
Westbound	1	290	166
Northbound	216	1	288

Bikes (AM)

Approach	Left	Through	Right
Southbound	0	0	0
Eastbound	0	1	0
Westbound	0	1	0
Northbound	0	0	0

Total Vehicles (Noon)

Approach	Left	Through	Right
Southbound	N/A	N/A	N/A
Eastbound	N/A	N/A	N/A
Westbound	N/A	N/A	N/A
Northbound	N/A	N/A	N/A

Bikes (NOON)

Approach	Left	Through	Right
Southbound	N/A	N/A	N/A
Eastbound	N/A	N/A	N/A
Westbound	N/A	N/A	N/A
Northbound	N/A	N/A	N/A

Total Vehicles (PM)

Approach	Left	Through	Right
Southbound	6	2	4
Eastbound	4	357	203
Westbound	2	225	240
Northbound	89	2	171

Bikes (PM)

Approach	Left	Through	Right
Southbound	0	0	0
Eastbound	0	0	0
Westbound	0	0	0
Northbound	0	0	0

Pedestrians (Crosswalks)

Crosswalk		AM	NOON	PM
North	→	0	0	0
North	←	0	0	0
West	↓	0	0	1
West	↑	0	0	2
East	↓	3	0	1
East	↑	2	0	1
South	→	0	0	0
South	←	0	0	6
NW diagonal		0	0	0
NE diagonal		0	0	0
SW diagonal		0	0	0
SE diagonal		0	0	0

Prepared by National Data & Surveying Services

Forni Rd & SR-49

Peak Hour Turning Movement Count

ID: 18-07158-002
City: Diamond Springs

Day: Tuesday
Date: 05/01/2018

	PEAK HOURS	COUNT PERIODS
AM	07:15 AM - 08:15 AM	06:00 AM - 09:00 AM
NOON	NONE	NONE
PM	04:00 PM - 05:00 PM	04:00 PM - 07:00 PM

Forni Rd – SOUTHBOUND

	Right	Through	Left	U-Turn	Departing
AM	116	0	40	0	194
NOON	0	0	0	0	0
PM	175	0	21	0	151
Lanes	0	1	0	0	

SR-49 – EASTBOUND

	AM	NOON	PM	Lanes
Departing	456	0	464	
U-Turn	0	0	0	0
Left	178	0	129	0
Through	410	0	419	1
Right	0	0	0	0

SR-49 – WESTBOUND

	PM	NOON	AM	Lanes
Right	22	0	15	0
Through	288	0	338	1
Left	1	0	4	0
U-Turn	0	0	0	0
Departing	443	0	450	

Forni Rd – NORTHBOUND

	Departing	U-Turn	Left	Through	Right
Lanes		0	0	1	0
PM	1	0	1	0	3
NOON	0	0	0	0	0
AM	4	0	2	1	0

CONTROL

1-Way Stop(SB)

	AM	NOON	PM
TEV	1104	0	1059
PHF	0.80		0.94

Total Vehicles (AM)

Approach	Left	Through	Right
Southbound	40	0	116
Eastbound	178	410	0
Westbound	4	338	15
Northbound	2	1	0

Total Vehicles (Noon)

Approach	Left	Through	Right
Southbound	N/A	N/A	N/A
Eastbound	N/A	N/A	N/A
Westbound	N/A	N/A	N/A
Northbound	N/A	N/A	N/A

Total Vehicles (PM)

Approach	Left	Through	Right
Southbound	21	0	175
Eastbound	129	419	0
Westbound	1	288	22
Northbound	1	0	3

Bikes (AM)

Approach	Left	Through	Right
Southbound	0	0	0
Eastbound	0	1	0
Westbound	0	0	0
Northbound	0	0	0

Bikes (NOON)

Approach	Left	Through	Right
Southbound	N/A	N/A	N/A
Eastbound	N/A	N/A	N/A
Westbound	N/A	N/A	N/A
Northbound	N/A	N/A	N/A

Bikes (PM)

Approach	Left	Through	Right
Southbound	0	0	0
Eastbound	0	0	0
Westbound	0	0	0
Northbound	0	0	0

Pedestrians (Crosswalks)

Crosswalk	AM	NOON	PM
North (eastbound direction)	0	0	0
North (westbound direction)	0	0	0
West (southbound direction)	0	0	0
West (northbound direction)	0	0	0
East (southbound direction)	0	0	0
East (northbound direction)	0	0	0
South (eastbound direction)	0	0	0
South (westbound direction)	0	0	0
NW diagonal	0	0	0
NE diagonal	0	0	0
SW diagonal	0	0	0
SE diagonal	0	0	0

Prepared by National Data & Surveying Services

Koki Ln & SR-49

Peak Hour Turning Movement Count

ID: 18-07158-003
City: Diamond Springs

Day: Tuesday
Date: 05/01/2018

PEAK HOURS	
AM	07:15 AM - 08:15 AM
NOON	NONE
PM	04:00 PM - 05:00 PM

COUNT PERIODS	
AM	06:00 AM - 09:00 AM
NOON	NONE
PM	04:00 PM - 07:00 PM

Koki Ln — SOUTHBOUND

	Right	Thru	Left	U-Turn	Exit
AM	8	4	11	0	11
NOON	0	0	0	0	0
PM	6	0	15	0	30
Lanes	0	1	0	0	

SR-49 — EASTBOUND

	AM	NOON	PM	Lanes
Exit	358	0	319	
U-Turn	0	0	0	0
Left	3	0	15	1
Thru	253	0	379	1
Right	217	0	47	1

SR-49 — WESTBOUND

	PM	NOON	AM	Lanes
Right	15	0	5	0
Thru	276	0	235	1
Left	42	0	294	1
U-Turn	0	0	0	0
Exit	438	0	432	

Koki Ln — NORTHBOUND

	Exit	U-Turn	Left	Thru	Right
Lanes		0	0.5	0.5	1
PM	89	0	37	0	44
NOON	0	0	0	0	0
AM	515	0	115	3	168

CONTROL

Signalized

	AM	NOON	PM
TEV	1316	0	876
PHF	0.71		0.94

Total Vehicles (AM)

	Right	Thru	Left
Southbound	8	4	11
Eastbound	217	253	3
Westbound	5	235	294
Northbound	168	3	115

Total Vehicles (Noon)

	Right	Thru	Left
Southbound	N/A	N/A	N/A
Eastbound	N/A	N/A	N/A
Westbound	N/A	N/A	N/A
Northbound	N/A	N/A	N/A

Total Vehicles (PM)

	Right	Thru	Left
Southbound	6	0	15
Eastbound	47	379	15
Westbound	15	276	42
Northbound	44	0	37

Bikes (AM)

	Right	Thru	Left
Southbound	0	0	0
Eastbound	0	1	0
Westbound	0	1	0
Northbound	0	0	0

Bikes (NOON)

	Right	Thru	Left
Southbound	N/A	N/A	N/A
Eastbound	N/A	N/A	N/A
Westbound	N/A	N/A	N/A
Northbound	N/A	N/A	N/A

Bikes (PM)

	Right	Thru	Left
Southbound	0	0	0
Eastbound	0	0	0
Westbound	0	0	0
Northbound	0	0	0

Pedestrians (Crosswalks)

Crosswalk	AM	NOON	PM
North leg, west half	0	0	1
North leg, east half	0	0	2
West leg, north half	4	0	1
West leg, south half	0	0	1
East leg, north half	0	0	1
East leg, south half	0	0	0
South leg, west half	1	0	0
South leg, east half	1	0	0
NW diagonal	0	0	0
NE diagonal	0	0	0
SW diagonal	0	0	0
SE diagonal	0	0	0

Prepared by National Data & Surveying Services

Patterson Dr & SR-49

Peak Hour Turning Movement Count

ID: 18-07158-004
City: Diamond Springs

Day: Tuesday
Date: 05/01/2018

PEAK HOURS	COUNT PERIODS
07:15 AM - 08:15 AM	06:00 AM - 09:00 AM
NONE	NONE
05:00 PM - 06:00 PM	04:00 PM - 07:00 PM

Patterson Dr — SOUTHBOUND

	U-turn	Left	Through	Right	Departing
AM	0	0	0	0	0
NOON	0	0	0	0	0
PM	0	0	0	0	0
Lanes	0	0	0	0	

SR-49 — EASTBOUND

	AM	NOON	PM	Lanes
Departing	563	0	407	
U-turn	0	0	0	0
Left	0	0	0	0
Through	376	0	412	1
Right	48	0	82	1

SR-49 — WESTBOUND

	PM	NOON	AM	Lanes
Right	0	0	0	0
Through	363	0	481	1
Left	158	0	47	1
U-turn	0	0	0	0
Departing	507	0	530	

Patterson Dr — NORTHBOUND

	Departing	U-turn	Left	Through	Right
Lanes		0	1	0	1
PM	240	0	44	0	95
NOON	0	0	0	0	0
AM	95	0	82	0	154

CONTROL

Signalized

	AM	NOON	PM
TEV	1188	0	1154
PHF	0.84		0.96

Total Vehicles (AM)

	U-turn	Left	Through	Right
Southbound	0	0	0	0
Eastbound		0	376	48
Westbound	0	47	481	0
Northbound		82	0	154

Total Vehicles (Noon)

All movements: N/A

Total Vehicles (PM)

	U-turn	Left	Through	Right
Southbound	0	0	0	0
Eastbound		0	412	82
Westbound	0	158	363	0
Northbound		44	0	95

Bikes (AM)

	Left	Through	Right
Southbound	0	0	0
Eastbound	0	1	0
Westbound	0	0	0
Northbound	0	0	0

Bikes (NOON)

All movements: N/A

Bikes (PM)

	Left	Through	Right
Southbound	0	0	0
Eastbound	0	3	0
Westbound	0	0	0
Northbound	0	0	0

Pedestrians (Crosswalks)

Crosswalk	AM	NOON	PM
North	0	0	0
South	0	0	0
East	0	0	0
West	0	0	0
NW corner (diagonal)	0	0	0
NE corner (diagonal)	0	0	0
SW corner (diagonal)	0	0	0
SE corner (diagonal)	0	0	0

Prepared by National Data & Surveying Services

Missouri Flat Rd & SR-49

Peak Hour Turning Movement Count

ID: 18-07158-005
City: Diamond Springs

Day: Tuesday
Date: 05/01/2018

PEAK HOURS		COUNT PERIODS
07:15 AM - 08:15 AM	AM	06:00 AM - 09:00 AM
NONE	NOON	NONE
04:15 PM - 05:15 PM	PM	04:00 PM - 07:00 PM

Missouri Flat Rd – SOUTHBOUND

	Right	Thru	Left	U-Turn	Departing
AM	222	0	218	0	943
NOON	0	0	0	0	0
PM	327	0	669	0	580
Lanes	1	0	1	0	

SR-49 – EASTBOUND

	AM	NOON	PM	Lanes
Departing	591	0	569	
U-Turn	0	0	0	0
Left	366	0	204	2
Thru	222	0	302	1
Right	0	0	0	0

SR-49 – WESTBOUND

	Lanes	PM	NOON	AM
Left	1	376	0	577
Thru	1	242	0	369
Right	0	0	0	0
U-Turn	0	0	0	0
Departing		971	0	440

Missouri Flat Rd – NORTHBOUND

	Departing	U-Turn	Left	Thru	Right
Lanes		0	0	0	0
PM	0	0	0	0	0
NOON	0	0	0	0	0
AM	0	0	0	0	0

CONTROL

Signalized

	AM	NOON	PM
TEV	1974	0	2120
PHF	0.92		0.97

Total Vehicles (AM)

	Left	Thru	Right
Southbound	218	0	222
Eastbound	366	222	0
Westbound	577	369	0
Northbound	0	0	0

Bikes (AM)

	Left	Thru	Right
Southbound	1	0	0
Eastbound	0	0	0
Westbound	0	0	0
Northbound	0	0	0

Total Vehicles (Noon)

	Left	Thru	Right
Southbound	N/A	N/A	N/A
Eastbound	N/A	N/A	N/A
Westbound	N/A	N/A	N/A
Northbound	N/A	N/A	N/A

Bikes (NOON)

	Left	Thru	Right
Southbound	N/A	N/A	N/A
Eastbound	N/A	N/A	N/A
Westbound	N/A	N/A	N/A
Northbound	N/A	N/A	N/A

Total Vehicles (PM)

	Left	Thru	Right
Southbound	669	0	327
Eastbound	204	302	0
Westbound	376	242	0
Northbound	0	0	0

Bikes (PM)

	Left	Thru	Right
Southbound	0	0	0
Eastbound	0	0	0
Westbound	0	0	0
Northbound	0	0	0

Pedestrians (Crosswalks)

Crosswalk	AM	NOON	PM
North leg	0	0	0
South leg	0	0	0
East leg	0	0	0
West leg	0	0	0
NW corner	0	0	0
NE corner	0	0	0
SW corner	0	0	0
SE corner	0	0	0

Prepared by National Data & Surveying Services

SR-49/Fowler Ln & Pleasant Valley Rd

Peak Hour Turning Movement Count

ID: 18-07158-006
City: Diamond Springs

Day: Tuesday
Date: 05/01/2018

PEAK HOURS		COUNT PERIODS
07:30 AM - 08:30 AM	AM	06:00 AM - 09:00 AM
NONE	NOON	NONE
04:30 PM - 05:30 PM	PM	04:00 PM - 07:00 PM

SR-49/Fowler Ln — SOUTHBOUND

	Right	Through	Left	U-Turn	Out
AM	98	14	85	0	296
NOON	0	0	0	0	0
PM	111	54	209	0	246
Lanes	0.5	0.5	1	0	

Pleasant Valley Rd — EASTBOUND

	AM	NOON	PM	Lanes
Out	904	0	580	
U-Turn	0	0	0	0
Left	115	0	104	1
Through	282	0	744	1.5
Right	34	0	123	0.5

Pleasant Valley Rd — WESTBOUND

	Lanes	PM	NOON	AM
Right	1	108	0	150
Through	1	380	0	725
Left	1	25	0	10
U-Turn	0	0	0	0
Out		985	0	373

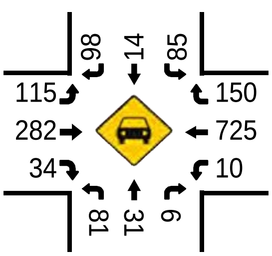
SR-49/Fowler Ln — NORTHBOUND

	Out	U-Turn	Left	Through	Right
Lanes		0	0.5	0.5	1
PM	202	0	89	34	32
NOON	0	0	0	0	0
AM	58	0	81	31	6

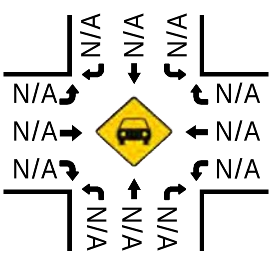
CONTROL: Signalized

	AM	NOON	PM
TEV	1631	0	2013
PHF	0.91		0.98

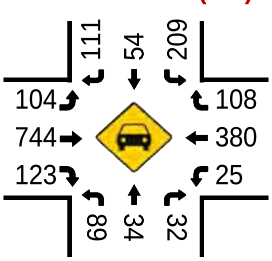
Total Vehicles (AM)



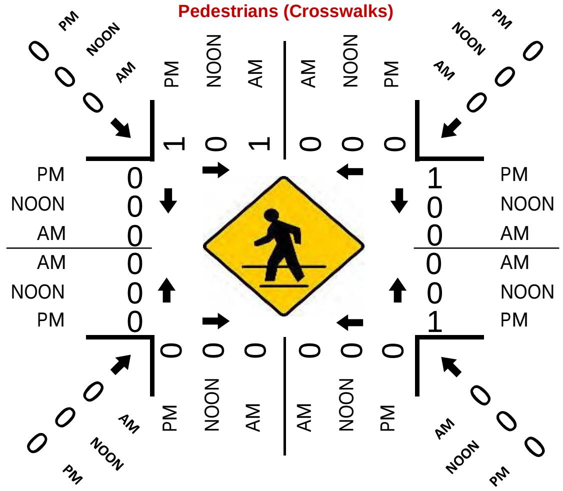
Total Vehicles (Noon)



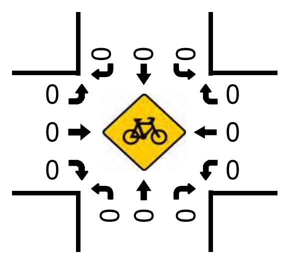
Total Vehicles (PM)



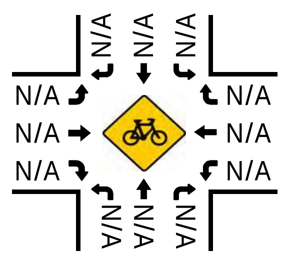
Pedestrians (Crosswalks)



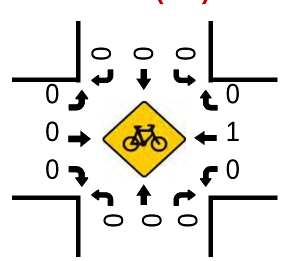
Bikes (AM)



Bikes (NOON)



Bikes (PM)



Prepared by NDS/ATD

VOLUME

SR-49 Bet. Forni Rd & Koki Ln

Day: Tuesday
Date: 5/1/2018

City: El Dorado County
Project #: CA18_7159_001

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	4,333	4,079	8,412

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			2		1		3		12:00			73		61		134	
00:15			5		4		9		12:15			60		75		135	
00:30			2		2		4		12:30			73		63		136	
00:45			1	10	2	9	3	19	12:45			84	290	86	285	170	575
01:00			0		1		1		13:00			77		58		135	
01:15			4		0		4		13:15			55		63		118	
01:30			1		2		3		13:30			66		47		113	
01:45			0	5	0	3	0	8	13:45			90	288	67	235	157	523
02:00			2		3		5		14:00			74		72		146	
02:15			0		1		1		14:15			55		68		123	
02:30			1		0		1		14:30			84		97		181	
02:45			5	8	3	7	8	15	14:45			91	304	107	344	198	648
03:00			0		2		2		15:00			91		160		251	
03:15			0		1		1		15:15			95		95		190	
03:30			2		0		2		15:30			89		76		165	
03:45			2	4	3	6	5	10	15:45			70	345	86	417	156	762
04:00			9		6		15		16:00			102		74		176	
04:15			5		4		9		16:15			113		78		191	
04:30			7		14		21		16:30			101		76		177	
04:45			5	26	8	32	13	58	16:45			106	422	66	294	172	716
05:00			6		15		21		17:00			97		73		170	
05:15			18		19		37		17:15			93		73		166	
05:30			8		36		44		17:30			98		62		160	
05:45			12	44	26	96	38	140	17:45			90	378	57	265	147	643
06:00			20		31		51		18:00			87		55		142	
06:15			18		47		65		18:15			73		57		130	
06:30			27		54		81		18:30			49		44		93	
06:45			29	94	49	181	78	275	18:45			53	262	37	193	90	455
07:00			49		61		110		19:00			22		47		69	
07:15			101		86		187		19:15			50		37		87	
07:30			161		71		232		19:30			33		34		67	
07:45			100	411	89	307	189	718	19:45			34	139	26	144	60	283
08:00			80		82		162		20:00			38		43		81	
08:15			88		94		182		20:15			46		23		69	
08:30			73		84		157		20:30			13		31		44	
08:45			70	311	71	331	141	642	20:45			27	124	24	121	51	245
09:00			46		53		99		21:00			26		21		47	
09:15			50		54		104		21:15			22		15		37	
09:30			44		56		100		21:30			23		10		33	
09:45			59	199	62	225	121	424	21:45			19	90	12	58	31	148
10:00			53		52		105		22:00			20		10		30	
10:15			60		54		114		22:15			11		6		17	
10:30			54		66		120		22:30			12		11		23	
10:45			76	243	57	229	133	472	22:45			4	47	6	33	10	80
11:00			55		76		131		23:00			5		2		7	
11:15			79		67		146		23:15			13		6		19	
11:30			78		41		119		23:30			3		4		7	
11:45			51	263	66	250	117	513	23:45			5	26	2	14	7	40
TOTALS				1618		1676		3294	TOTALS				2715		2403		5118
SPLIT %				49.1%		50.9%		39.2%	SPLIT %				53.0%		47.0%		60.8%

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	4,333	4,079	8,412

	NB	SB	EB	WB	TOTAL		NB	SB	EB	WB	TOTAL
AM Peak Hour			07:15	07:45	07:15	PM Peak Hour			16:00	14:30	14:30
AM Pk Volume			442	349	770	PM Pk Volume			422	459	820
Pk Hr Factor			0.686	0.928	0.830	Pk Hr Factor			0.934	0.717	0.817
7 - 9 Volume	0	0	722	638	1360	4 - 6 Volume	0	0	800	559	1359
7 - 9 Peak Hour			07:15	07:45	07:15	4 - 6 Peak Hour			16:00	16:00	16:00
7 - 9 Pk Volume	0	0	442	349	770	4 - 6 Pk Volume	0	0	422	294	716
Pk Hr Factor	0.000	0.000	0.686	0.928	0.830	Pk Hr Factor	0.000	0.000	0.934	0.942	0.937

Prepared by NDS/ATD

VOLUME

SR-49 Bet. Forni Rd & Koki Ln

Day: Wednesday
Date: 5/2/2018

City: El Dorado County
Project #: CA18_7159_001

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	4,461	4,130	8,591

AM Period	NB		SB		EB		WB		TOTAL		PM Period	NB		SB		EB		WB		TOTAL	
00:00					7		3		10		12:00					63		79		142	
00:15					4		4		8		12:15					70		71		141	
00:30					5		7		12		12:30					67		50		117	
00:45					2	18	1	15	3	33	12:45					67	267	49	249	116	516
01:00					0		2		2		13:00					63		82		145	
01:15					1		1		2		13:15					71		79		150	
01:30					0		1		1		13:30					89		86		175	
01:45					4	5	0	4	4	9	13:45					76	299	78	325	154	624
02:00					1		1		2		14:00					68		54		122	
02:15					0		2		2		14:15					84		86		170	
02:30					1		3		4		14:30					89		92		181	
02:45					1	3	0	6	1	9	14:45					110	351	96	328	206	679
03:00					0		2		2		15:00					102		135		237	
03:15					2		0		2		15:15					88		95		183	
03:30					3		2		5		15:30					91		86		177	
03:45					4	9	1	5	5	14	15:45					87	368	71	387	158	755
04:00					5		6		11		16:00					95		83		178	
04:15					7		7		14		16:15					101		63		164	
04:30					6		15		21		16:30					118		58		176	
04:45					5	23	8	36	13	59	16:45					111	425	64	268	175	693
05:00					10		14		24		17:00					102		70		172	
05:15					12		22		34		17:15					83		79		162	
05:30					14		36		50		17:30					93		56		149	
05:45					10	46	33	105	43	151	17:45					81	359	59	264	140	623
06:00					16		32		48		18:00					63		69		132	
06:15					17		36		53		18:15					62		43		105	
06:30					22		56		78		18:30					60		50		110	
06:45					35	90	49	173	84	263	18:45					56	241	46	208	102	449
07:00					61		43		104		19:00					48		39		87	
07:15					104		87		191		19:15					42		46		88	
07:30					143		67		210		19:30					33		30		63	
07:45					120	428	91	288	211	716	19:45					50	173	33	148	83	321
08:00					82		82		164		20:00					33		48		81	
08:15					94		109		203		20:15					40		27		67	
08:30					73		77		150		20:30					36		35		71	
08:45					58	307	62	330	120	637	20:45					40	149	35	145	75	294
09:00					62		54		116		21:00					23		16		39	
09:15					68		63		131		21:15					26		21		47	
09:30					66		61		127		21:30					23		18		41	
09:45					61	257	58	236	119	493	21:45					19	91	9	64	28	155
10:00					55		51		106		22:00					17		11		28	
10:15					57		76		133		22:15					15		13		28	
10:30					49		54		103		22:30					9		6		15	
10:45					72	233	61	242	133	475	22:45					2	43	6	36	8	79
11:00					47		57		104		23:00					7		7		14	
11:15					68		58		126		23:15					10		5		15	
11:30					75		60		135		23:30					3		4		7	
11:45					61	251	74	249	135	500	23:45					5	25	3	19	8	44
TOTALS						1670		1689		3359	TOTALS						2791		2441		5232
SPLIT %						49.7%		50.3%		39.1%	SPLIT %						53.3%		46.7%		60.9%

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	4,461	4,130	8,591

	NB	SB	EB	WB	TOTAL		NB	SB	EB	WB	TOTAL
AM Peak Hour			07:15	07:45	07:30	PM Peak Hour			16:15	14:30	14:30
AM Pk Volume			449	359	788	PM Pk Volume			432	418	807
Pk Hr Factor			0.785	0.823	0.934	Pk Hr Factor			0.915	0.774	0.851
7 - 9 Volume	0	0	735	618	1353	4 - 6 Volume	0	0	784	532	1316
7 - 9 Peak Hour			07:15	07:45	07:30	4 - 6 Peak Hour			16:15	16:30	16:00
7 - 9 Pk Volume	0	0	449	359	788	4 - 6 Pk Volume	0	0	432	271	693
Pk Hr Factor	0.000	0.000	0.785	0.823	0.934	Pk Hr Factor	0.000	0.000	0.915	0.858	0.973

Prepared by NDS/ATD

VOLUME

Koki Ln Bet. SR-49 & Union Mine Rd

Day: Tuesday
Date: 5/1/2018

City: El Dorado County
Project #: CA18_7159_002

DAILY TOTALS	NB	SB	EB	WB	Total
	1,270	1,237	0	0	2,507

AM Period	NB		SB		EB	WB	TOTAL		PM Period	NB		SB		EB	WB	TOTAL	
00:00	0		0				0		12:00	6		12				18	
00:15	0		0				0		12:15	11		8				19	
00:30	0		0				0		12:30	9		18				27	
00:45	0		0				0		12:45	81	107	17	55			98	162
01:00	0		0				0		13:00	19		16				35	
01:15	0		0				0		13:15	34		13				47	
01:30	0		0				0		13:30	15		4				19	
01:45	0		0				0		13:45	7	75	7	40			14	115
02:00	0		0				0		14:00	7		12				19	
02:15	0		0				0		14:15	15		19				34	
02:30	0		0				0		14:30	23		42				65	
02:45	0		0				0		14:45	92	137	62	135			154	272
03:00	0		0				0		15:00	190		44				234	
03:15	0		0				0		15:15	46		26				72	
03:30	0		0				0		15:30	27		23				50	
03:45	0		0				0		15:45	17	280	11	104			28	384
04:00	0		0				0		16:00	11		11				22	
04:15	0		0				0		16:15	18		17				35	
04:30	0		0				0		16:30	24		26				50	
04:45	0		0				0		16:45	14	67	16	70			30	137
05:00	0		0				0		17:00	13		19				32	
05:15	0		0				0		17:15	47		23				70	
05:30	0		0				0		17:30	32		19				51	
05:45	0		1	1			1	1	17:45	23	115	29	90			52	205
06:00	0		9				9		18:00	21		8				29	
06:15	1		5				6		18:15	12		14				26	
06:30	5		10				15		18:30	16		7				23	
06:45	12	18	20	44			32	62	18:45	8	57	6	35			14	92
07:00	19		48				67		19:00	5		4				9	
07:15	75		170				245		19:15	6		4				10	
07:30	68		166				234		19:30	1		1				2	
07:45	58	220	85	469			143	689	19:45	2	14	13	22			15	36
08:00	16		12				28		20:00	36		8				44	
08:15	5		6				11		20:15	7		2				9	
08:30	4		7				11		20:30	1		1				2	
08:45	3	28	12	37			15	65	20:45	11	55	1	12			12	67
09:00	3		17				20		21:00	2		1				3	
09:15	11		23				34		21:15	1		1				2	
09:30	13		14				27		21:30	2		0				2	
09:45	10	37	10	64			20	101	21:45	2	7	0	2			2	9
10:00	4		3				7		22:00	0		0				0	
10:15	2		4				6		22:15	0		0				0	
10:30	5		3				8		22:30	0		0				0	
10:45	7	18	12	22			19	40	22:45	1	1	1	1			2	2
11:00	14		18				32		23:00	0		0				0	
11:15	10		4				14		23:15	0		0				0	
11:30	5		7				12		23:30	0		0				0	
11:45	5	34	5	34			10	68	23:45	0		0				0	
TOTALS		355		671				1026	TOTALS		915		566				1481
SPLIT %		34.6%		65.4%				40.9%	SPLIT %		61.8%		38.2%				59.1%

DAILY TOTALS	NB	SB	EB	WB	Total
	1,270	1,237	0	0	2,507

	NB	SB	EB	WB	Total		NB	SB	EB	WB	Total
AM Peak Hour	07:00	07:00			07:00	PM Peak Hour	14:45	14:30			14:30
AM Pk Volume	220	469			689	PM Pk Volume	355	174			525
Pk Hr Factor	0.733	0.690			0.703	Pk Hr Factor	0.467	0.702			0.561
7 - 9 Volume	248	506	0	0	754	4 - 6 Volume	182	160	0	0	342
7 - 9 Peak Hour	07:00	07:00			07:00	4 - 6 Peak Hour	17:00	17:00			17:00
7 - 9 Pk Volume	220	469	0	0	689	4 - 6 Pk Volume	115	90	0	0	205
Pk Hr Factor	0.733	0.690	0.000	0.000	0.703	Pk Hr Factor	0.612	0.776	0.000	0.000	0.732

Prepared by NDS/ATD

VOLUME

Koki Ln Bet. SR-49 & Union Mine Rd

Day: Wednesday
Date: 5/2/2018

City: El Dorado County
Project #: CA18_7159_002

DAILY TOTALS	NB	SB	EB	WB	Total
	1,266	1,168	0	0	2,434

AM Period	NB		SB		EB	WB	TOTAL	
00:00	0		0				0	
00:15	0		0				0	
00:30	0		0				0	
00:45	0		0				0	
01:00	0		0				0	
01:15	1		0				1	
01:30	0		0				0	
01:45	0	1	0				0	1
02:00	0		0				0	
02:15	0		0				0	
02:30	0		0				0	
02:45	0		0				0	
03:00	0		0				0	
03:15	0		0				0	
03:30	0		0				0	
03:45	0		0				0	
04:00	0		0				0	
04:15	0		0				0	
04:30	0		0				0	
04:45	0		0				0	
05:00	0		0				0	
05:15	2		1				3	
05:30	0		0				0	
05:45	0	2	0	1			0	3
06:00	0		0				0	
06:15	0		6				6	
06:30	10		17				27	
06:45	15	25	19	42			34	67
07:00	17		51				68	
07:15	68		153				221	
07:30	85		166				251	
07:45	41	211	64	434			105	645
08:00	17		17				34	
08:15	4		7				11	
08:30	9		12				21	
08:45	3	33	14	50			17	83
09:00	6		25				31	
09:15	19		8				27	
09:30	6		9				15	
09:45	5	36	6	48			11	84
10:00	9		9				18	
10:15	6		11				17	
10:30	5		8				13	
10:45	9	29	10	38			19	67
11:00	6		10				16	
11:15	9		6				15	
11:30	12		11				23	
11:45	11	38	7	34			18	72
TOTALS		375		647				1022
SPLIT %		36.7%		63.3%				42.0%

PM Period	NB		SB		EB	WB	TOTAL	
12:00	8		8				16	
12:15	10		11				21	
12:30	12		12				24	
12:45	8	38	16	47			24	85
13:00	71		16				87	
13:15	21		11				32	
13:30	28		16				44	
13:45	12	132	8	51			20	183
14:00	11		7				18	
14:15	11		24				35	
14:30	31		47				78	
14:45	100	153	64	142			164	295
15:00	172		41				213	
15:15	34		23				57	
15:30	24		8				32	
15:45	8	238	3	75			11	313
16:00	19		10				29	
16:15	8		11				19	
16:30	16		23				39	
16:45	18	61	16	60			34	121
17:00	14		18				32	
17:15	44		11				55	
17:30	12		18				30	
17:45	31	101	20	67			51	168
18:00	12		15				27	
18:15	10		7				17	
18:30	18		7				25	
18:45	7	47	8	37			15	84
19:00	12		3				15	
19:15	13		6				19	
19:30	5		4				9	
19:45	12	42	12	25			24	67
20:00	31		5				36	
20:15	11		6				17	
20:30	28		3				31	
20:45	6	76	0	14			6	90
21:00	0		2				2	
21:15	0		1				1	
21:30	2		0				2	
21:45	0	2	0	3			0	5
22:00	0		0				0	
22:15	0		0				0	
22:30	1		0				1	
22:45	0	1	0				0	1
23:00	0		0				0	
23:15	0		0				0	
23:30	0		0				0	
23:45	0		0				0	
TOTALS		891		521				1412
SPLIT %		63.1%		36.9%				58.0%

DAILY TOTALS	NB	SB	EB	WB	Total
	1,266	1,168	0	0	2,434

	NB	SB	EB	WB	TOTAL
AM Peak Hour	07:00	07:00			07:00
AM Pk Volume	211	434			645
Pk Hr Factor	0.621	0.654			0.642
7 - 9 Volume	244	484	0	0	728
7 - 9 Peak Hour	07:00	07:00			07:00
7 - 9 Pk Volume	211	434	0	0	645
Pk Hr Factor	0.621	0.654	0.000	0.000	0.642

	NB	SB	EB	WB	TOTAL
PM Peak Hour	14:30	14:15			14:30
PM Pk Volume	337	176			512
Pk Hr Factor	0.490	0.688			0.601
4 - 6 Volume	162	127	0	0	289
4 - 6 Peak Hour	17:00	16:15			17:00
4 - 6 Pk Volume	101	68	0	0	168
Pk Hr Factor	0.574	0.739	0.000	0.000	0.764

Appendix B:

*Analysis Worksheets for
Existing (2018) Conditions*

Intersection	
Intersection Delay, s/veh	70.3
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	295	98	166	290	1	216	1	288	0	0	0
Future Vol, veh/h	0	295	98	166	290	1	216	1	288	0	0	0
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	373	124	210	367	1	273	1	365	0	0	0
Number of Lanes	0	1	0	1	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay	54.9	28.3	120.3	0
HCM LOS	F	D	F	-

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	43%	0%	100%	0%	0%
Vol Thru, %	0%	75%	0%	100%	100%
Vol Right, %	57%	25%	0%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	505	393	166	291	0
LT Vol	216	0	166	0	0
Through Vol	1	295	0	290	0
RT Vol	288	98	0	1	0
Lane Flow Rate	639	497	210	368	0
Geometry Grp	2	5	7	7	2
Degree of Util (X)	1.175	0.942	0.47	0.772	0
Departure Headway (Hd)	6.616	7.4	8.698	8.177	9.789
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	550	492	416	446	0
Service Time	4.66	5.4	6.398	5.877	7.789
HCM Lane V/C Ratio	1.162	1.01	0.505	0.825	0
HCM Control Delay	120.3	54.9	18.9	33.6	12.8
HCM Lane LOS	F	F	C	D	N
HCM 95th-tile Q	22.4	11.5	2.4	6.6	0

Intersection	
Int Delay, s/veh	6.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	178	410	338	15	40	116
Future Vol, veh/h	178	410	338	15	40	116
Conflicting Peds, #/hr	0	0	0	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	81	81	81	81	81	81
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	220	506	417	19	49	143

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	436	0	-	0	1373	427
Stage 1	-	-	-	-	427	-
Stage 2	-	-	-	-	946	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1124	-	-	-	161	628
Stage 1	-	-	-	-	658	-
Stage 2	-	-	-	-	377	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1124	-	-	-	117	628
Mov Cap-2 Maneuver	-	-	-	-	117	-
Stage 1	-	-	-	-	658	-
Stage 2	-	-	-	-	274	-

Approach	EB	WB	SB
HCM Control Delay, s	2.7	0	37.2
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1124	-	-	-	296
HCM Lane V/C Ratio	0.196	-	-	-	0.651
HCM Control Delay (s)	9	0	-	-	37.2
HCM Lane LOS	A	A	-	-	E
HCM 95th %tile Q(veh)	0.7	-	-	-	4.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	253	217	294	235	5	115	3	168	11	4	8
Future Volume (vph)	3	253	217	294	235	5	115	3	168	11	4	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.9	4.9	3.0	4.9			3.7	3.7		3.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00			1.00	1.00		0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	1.00			1.00	0.85		0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.98	
Satd. Flow (prot)	1770	1863	1544	1770	1856			1776	1583		1720	
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.98	
Satd. Flow (perm)	1770	1863	1544	1770	1856			1776	1583		1720	
Peak-hour factor, PHF	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
Adj. Flow (vph)	4	356	306	414	331	7	162	4	237	15	6	11
RTOR Reduction (vph)	0	0	106	0	0	0	0	0	200	0	10	0
Lane Group Flow (vph)	4	356	200	414	338	0	0	166	37	0	22	0
Confl. Peds. (#/hr)			2	2			4					4
Confl. Bikes (#/hr)			1			1						
Turn Type	Prot	NA	custom	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases			6						8			
Actuated Green, G (s)	3.3	20.1	46.8	30.0	46.8			12.9	12.9		5.6	
Effective Green, g (s)	3.3	20.1	46.8	30.0	46.8			12.9	12.9		5.6	
Actuated g/C Ratio	0.04	0.24	0.56	0.36	0.56			0.15	0.15		0.07	
Clearance Time (s)	3.0	4.9	4.9	3.0	4.9			3.7	3.7		3.5	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0			2.0	2.0		2.0	
Lane Grp Cap (vph)	69	447	863	634	1037			273	243		115	
v/s Ratio Prot	0.00	c0.19		c0.23	0.18			c0.09			c0.01	
v/s Ratio Perm			0.13						0.02			
v/c Ratio	0.06	0.80	0.23	0.65	0.33			0.61	0.15		0.19	
Uniform Delay, d1	38.7	29.9	9.3	22.5	9.9			33.0	30.7		36.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.1	8.9	0.1	1.8	0.1			2.6	0.1		0.3	
Delay (s)	38.8	38.8	9.4	24.3	10.0			35.7	30.8		37.2	
Level of Service	D	D	A	C	B			D	C		D	
Approach Delay (s)		25.3			17.9			32.8			37.2	
Approach LOS		C			B			C			D	

Intersection Summary			
HCM 2000 Control Delay	24.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	83.7	Sum of lost time (s)	15.1
Intersection Capacity Utilization	52.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM 2010 analysis does not support custom phasing.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	376	48	47	481	82	154
Future Volume (vph)	376	48	47	481	82	154
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.1	4.1	5.8	5.1	4.1
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.98	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1559	1770	1863	1770	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1863	1559	1770	1863	1770	1583
Peak-hour factor, PHF	0.84	0.84	1.00	0.84	0.84	0.84
Adj. Flow (vph)	448	57	47	573	98	183
RTOR Reduction (vph)	0	29	0	0	0	130
Lane Group Flow (vph)	448	28	47	573	98	53
Confl. Bikes (#/hr)		1				
Turn Type	NA	pm+ov	Prot	NA	Prot	pm+ov
Protected Phases	2	3	1	6	3	1
Permitted Phases		2				3
Actuated Green, G (s)	19.8	27.1	8.7	32.6	7.3	16.0
Effective Green, g (s)	19.8	27.1	8.7	32.6	7.3	16.0
Actuated g/C Ratio	0.36	0.49	0.16	0.59	0.13	0.29
Clearance Time (s)	5.8	5.1	4.1	5.8	5.1	4.1
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)	662	758	276	1090	231	454
v/s Ratio Prot	c0.24	0.00	0.03	c0.31	c0.06	0.02
v/s Ratio Perm		0.01				0.02
v/c Ratio	0.68	0.04	0.17	0.53	0.42	0.12
Uniform Delay, d1	15.2	7.5	20.4	6.9	22.3	14.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.2	0.0	0.1	0.2	0.5	0.0
Delay (s)	17.4	7.5	20.5	7.1	22.7	14.7
Level of Service	B	A	C	A	C	B
Approach Delay (s)	16.3			8.1	17.5	
Approach LOS	B			A	B	

Intersection Summary			
HCM 2000 Control Delay	12.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	55.7	Sum of lost time (s)	17.0
Intersection Capacity Utilization	44.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM 2010 methodology does not support exclusive ped or hold phases.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	366	222	369	577	218	222
Future Volume (vph)	366	222	369	577	218	222
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.1	4.1	4.6	4.6	4.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	1863	1863	1583	1770	1566
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	1863	1863	1583	1770	1566
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	398	241	401	627	237	241
RTOR Reduction (vph)	0	0	0	49	0	133
Lane Group Flow (vph)	398	241	401	578	237	108
Confl. Bikes (#/hr)						1
Turn Type	Prot	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	5	2	6	7	7	5
Permitted Phases				6		4
Actuated Green, G (s)	12.6	35.8	19.2	32.5	13.3	25.9
Effective Green, g (s)	12.6	35.8	19.2	32.5	13.3	25.9
Actuated g/C Ratio	0.22	0.62	0.33	0.56	0.23	0.45
Clearance Time (s)	4.0	4.1	4.1	4.6	4.6	4.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	748	1153	618	890	407	701
v/s Ratio Prot	c0.12	0.13	0.22	c0.15	0.13	0.03
v/s Ratio Perm				0.22		0.04
v/c Ratio	0.53	0.21	0.65	0.65	0.58	0.15
Uniform Delay, d1	20.0	4.8	16.4	8.7	19.8	9.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	0.0	1.8	1.2	1.4	0.0
Delay (s)	20.4	4.8	18.2	9.9	21.2	9.5
Level of Service	C	A	B	A	C	A
Approach Delay (s)		14.5	13.2		15.3	
Approach LOS		B	B		B	

Intersection Summary			
HCM 2000 Control Delay	14.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	57.8	Sum of lost time (s)	12.7
Intersection Capacity Utilization	53.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	366	222	369	577	218	222
Future Volume (veh/h)	366	222	369	577	218	222
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	398	241	401	627	237	241
Adj No. of Lanes	2	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	563	1197	741	918	322	547
Arrive On Green	0.16	0.64	0.40	0.40	0.18	0.18
Sat Flow, veh/h	3442	1863	1863	1583	1774	1583
Grp Volume(v), veh/h	398	241	401	627	237	241
Grp Sat Flow(s),veh/h/ln	1721	1863	1863	1583	1774	1583
Q Serve(g_s), s	5.4	2.6	8.2	13.6	6.2	5.8
Cycle Q Clear(g_c), s	5.4	2.6	8.2	13.6	6.2	5.8
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	563	1197	741	918	322	547
V/C Ratio(X)	0.71	0.20	0.54	0.68	0.74	0.44
Avail Cap(c_a), veh/h	1740	1507	1507	1569	1076	1220
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.6	3.6	11.4	7.2	19.1	12.5
Incr Delay (d2), s/veh	0.6	0.0	0.2	0.3	1.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	1.3	4.2	12.2	3.1	5.5
LnGrp Delay(d),s/veh	20.2	3.7	11.6	7.6	20.3	12.7
LnGrp LOS	C	A	B	A	C	B
Approach Vol, veh/h		639	1028		478	
Approach Delay, s/veh		13.9	9.2		16.5	
Approach LOS		B	A		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		35.9		13.6	12.1	23.8		
Change Period (Y+Rc), s		4.1		4.6	4.0	4.1		
Max Green Setting (Gmax), s		40.0		30.0	25.0	40.0		
Max Q Clear Time (g_c+I1), s		4.6		8.2	7.4	15.6		
Green Ext Time (p_c), s		4.2		0.8	0.7	4.0		

Intersection Summary		
HCM 2010 Ctrl Delay		12.2
HCM 2010 LOS		B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	282	34	10	725	150	81	31	6	85	14	98
Future Volume (vph)	115	282	34	10	725	150	81	31	6	85	14	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.6		3.0	4.6	4.6		4.1	4.1	3.0	3.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98		1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85		1.00	0.85	1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3483		1770	1863	1548		1798	1583	1770	1617	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.97	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3483		1770	1863	1548		1798	1583	1770	1617	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	126	310	37	11	797	165	89	34	7	93	15	108
RTOR Reduction (vph)	0	4	0	0	0	33	0	0	6	0	98	0
Lane Group Flow (vph)	126	343	0	11	797	132	0	123	1	93	25	0
Confl. Peds. (#/hr)	1					1						
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	1	6		5	2		8	8		4	4	
Permitted Phases						2			8			
Actuated Green, G (s)	11.7	64.3		1.1	53.7	53.7		13.6	13.6	9.9	9.9	
Effective Green, g (s)	11.7	64.3		1.1	53.7	53.7		13.6	13.6	9.9	9.9	
Actuated g/C Ratio	0.11	0.62		0.01	0.52	0.52		0.13	0.13	0.10	0.10	
Clearance Time (s)	3.0	4.6		3.0	4.6	4.6		4.1	4.1	3.0	3.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0		2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	199	2161		18	965	802		236	207	169	154	
v/s Ratio Prot	c0.07	0.10		0.01	c0.43			c0.07		c0.05	0.02	
v/s Ratio Perm						0.09			0.00			
v/c Ratio	0.63	0.16		0.61	0.83	0.16		0.52	0.00	0.55	0.16	
Uniform Delay, d1	43.9	8.3		51.0	21.0	13.1		42.0	39.1	44.7	43.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2	4.8	0.0		36.2	5.6	0.0		1.0	0.0	2.2	0.2	
Delay (s)	48.7	8.3		87.2	26.6	13.2		42.9	39.1	46.9	43.2	
Level of Service	D	A		F	C	B		D	D	D	D	
Approach Delay (s)		19.0			25.0			42.7			44.8	
Approach LOS		B			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	27.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	103.6	Sum of lost time (s)	14.7
Intersection Capacity Utilization	67.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	115	282	34	10	725	150	81	31	6	85	14	98
Future Volume (veh/h)	115	282	34	10	725	150	81	31	6	85	14	98
Number	1	6	16	5	2	12	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1900	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	126	310	37	11	797	165	89	34	7	93	15	108
Adj No. of Lanes	1	2	0	1	1	1	0	1	1	1	1	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	162	1819	215	19	914	776	135	52	165	190	21	151
Arrive On Green	0.09	0.57	0.57	0.01	0.49	0.49	0.10	0.10	0.10	0.11	0.11	0.11
Sat Flow, veh/h	1774	3188	377	1774	1863	1582	1301	497	1583	1774	197	1416
Grp Volume(v), veh/h	126	171	176	11	797	165	123	0	7	93	0	123
Grp Sat Flow(s),veh/h/ln	1774	1770	1796	1774	1863	1582	1798	0	1583	1774	0	1613
Q Serve(g_s), s	4.9	3.3	3.3	0.4	27.0	4.2	4.7	0.0	0.3	3.5	0.0	5.2
Cycle Q Clear(g_c), s	4.9	3.3	3.3	0.4	27.0	4.2	4.7	0.0	0.3	3.5	0.0	5.2
Prop In Lane	1.00		0.21	1.00		1.00	0.72		1.00	1.00		0.88
Lane Grp Cap(c), veh/h	162	1010	1025	19	914	776	187	0	165	190	0	172
V/C Ratio(X)	0.78	0.17	0.17	0.56	0.87	0.21	0.66	0.00	0.04	0.49	0.00	0.71
Avail Cap(c_a), veh/h	500	1248	1267	500	1314	1116	761	0	670	500	0	455
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	31.5	7.2	7.2	34.9	16.1	10.3	30.5	0.0	28.6	29.8	0.0	30.6
Incr Delay (d2), s/veh	3.1	0.0	0.0	9.2	3.5	0.1	1.5	0.0	0.0	0.7	0.0	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	1.6	1.6	0.3	14.6	1.8	2.4	0.0	0.1	1.7	0.0	2.4
LnGrp Delay(d),s/veh	34.6	7.3	7.3	44.1	19.6	10.3	32.0	0.0	28.6	30.6	0.0	32.7
LnGrp LOS	C	A	A	D	B	B	C		C	C		C
Approach Vol, veh/h		473			973			130			216	
Approach Delay, s/veh		14.5			18.3			31.8			31.8	
Approach LOS		B			B			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.5	39.4		10.6	3.8	45.0		11.5				
Change Period (Y+Rc), s	3.0	4.6		3.0	3.0	4.6		4.1				
Max Green Setting (Gmax), s	20.0	50.0		20.0	20.0	50.0		30.0				
Max Q Clear Time (g_c+I1), s	6.9	29.0		7.2	2.4	5.3		6.7				
Green Ext Time (p_c), s	0.1	5.8		0.5	0.0	6.5		0.4				
Intersection Summary												
HCM 2010 Ctrl Delay			19.9									
HCM 2010 LOS			B									

Intersection	
Intersection Delay, s/veh	23.5
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	357	203	240	225	2	89	2	171	4	2	6
Future Vol, veh/h	6	357	203	240	225	2	89	2	171	4	2	6
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	368	209	247	232	2	92	2	176	4	2	6
Number of Lanes	0	1	0	1	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay	35.5	14.2	14.7	10.5
HCM LOS	E	B	B	B

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	34%	1%	100%	0%	33%
Vol Thru, %	1%	63%	0%	99%	17%
Vol Right, %	65%	36%	0%	1%	50%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	262	566	240	227	12
LT Vol	89	6	240	0	4
Through Vol	2	357	0	225	2
RT Vol	171	203	0	2	6
Lane Flow Rate	270	584	247	234	12
Geometry Grp	2	5	7	7	2
Degree of Util (X)	0.466	0.881	0.462	0.404	0.025
Departure Headway (Hd)	6.214	5.435	6.726	6.21	7.309
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	575	665	534	576	493
Service Time	4.29	3.495	4.499	3.984	5.309
HCM Lane V/C Ratio	0.47	0.878	0.463	0.406	0.024
HCM Control Delay	14.7	35.5	15.2	13.2	10.5
HCM Lane LOS	B	E	C	B	B
HCM 95th-tile Q	2.5	10.6	2.4	1.9	0.1

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	129	419	288	22	21	175
Future Vol, veh/h	129	419	288	22	21	175
Conflicting Peds, #/hr	0	0	0	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	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	137	446	306	23	22	186

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	330	0	-	0	1038	318
Stage 1	-	-	-	-	318	-
Stage 2	-	-	-	-	720	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1229	-	-	-	256	723
Stage 1	-	-	-	-	738	-
Stage 2	-	-	-	-	482	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1229	-	-	-	218	723
Mov Cap-2 Maneuver	-	-	-	-	218	-
Stage 1	-	-	-	-	738	-
Stage 2	-	-	-	-	411	-

Approach	EB	WB	SB
HCM Control Delay, s	2	0	14.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1229	-	-	-	579
HCM Lane V/C Ratio	0.112	-	-	-	0.36
HCM Control Delay (s)	8.3	0	-	-	14.7
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.4	-	-	-	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	379	47	42	276	15	37	0	44	15	0	6
Future Volume (vph)	15	379	47	42	276	15	37	0	44	15	0	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.9	4.9	3.0	4.9			3.7	3.7		3.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	0.98		0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	0.99			1.00	0.85		0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.96	
Satd. Flow (prot)	1770	1863	1583	1770	1846			1770	1550		1721	
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.96	
Satd. Flow (perm)	1770	1863	1583	1770	1846			1770	1550		1721	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	16	403	50	45	294	16	39	0	47	16	0	6
RTOR Reduction (vph)	0	0	25	0	1	0	0	0	41	0	21	0
Lane Group Flow (vph)	16	403	25	45	309	0	0	39	6	0	1	0
Confl. Peds. (#/hr)	3					3	2		1	1		2
Turn Type	Prot	NA	custom	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases			6						8			
Actuated Green, G (s)	1.6	26.0	27.2	2.8	27.2			7.4	7.4		3.4	
Effective Green, g (s)	1.6	26.0	27.2	2.8	27.2			7.4	7.4		3.4	
Actuated g/C Ratio	0.03	0.48	0.50	0.05	0.50			0.14	0.14		0.06	
Clearance Time (s)	3.0	4.9	4.9	3.0	4.9			3.7	3.7		3.5	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0			2.0	2.0		2.0	
Lane Grp Cap (vph)	51	885	787	90	917			239	209		106	
v/s Ratio Prot	0.01	c0.22		c0.03	0.17			c0.02			c0.00	
v/s Ratio Perm			0.02						0.00			
v/c Ratio	0.31	0.46	0.03	0.50	0.34			0.16	0.03		0.01	
Uniform Delay, d1	26.0	9.6	7.0	25.3	8.3			20.9	20.5		24.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	1.3	0.1	0.0	1.6	0.1			0.1	0.0		0.0	
Delay (s)	27.3	9.7	7.0	26.9	8.4			21.0	20.6		24.1	
Level of Service	C	A	A	C	A			C	C		C	
Approach Delay (s)		10.1			10.7			20.8			24.1	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	11.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	54.7	Sum of lost time (s)	15.1
Intersection Capacity Utilization	42.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM 2010 analysis does not support custom phasing.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	412	82	158	363	44	95
Future Volume (vph)	412	82	158	363	44	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.1	4.1	5.8	5.1	4.1
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.98	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1556	1770	1863	1770	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1863	1556	1770	1863	1770	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	429	85	165	378	46	99
RTOR Reduction (vph)	0	45	0	0	0	68
Lane Group Flow (vph)	429	40	165	378	46	31
Confl. Bikes (#/hr)		3				
Turn Type	NA	pm+ov	Prot	NA	Prot	pm+ov
Protected Phases	2	3	1	6	3	1
Permitted Phases		2				3
Actuated Green, G (s)	21.3	28.0	11.7	37.1	6.7	18.4
Effective Green, g (s)	21.3	28.0	11.7	37.1	6.7	18.4
Actuated g/C Ratio	0.36	0.47	0.20	0.62	0.11	0.31
Clearance Time (s)	5.8	5.1	4.1	5.8	5.1	4.1
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)	665	731	347	1159	198	488
v/s Ratio Prot	c0.23	0.01	c0.09	0.20	c0.03	0.01
v/s Ratio Perm		0.02				0.01
v/c Ratio	0.65	0.05	0.48	0.33	0.23	0.06
Uniform Delay, d1	16.0	8.6	21.2	5.3	24.1	14.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.6	0.0	0.4	0.1	0.2	0.0
Delay (s)	17.6	8.6	21.6	5.4	24.3	14.5
Level of Service	B	A	C	A	C	B
Approach Delay (s)	16.1			10.3	17.6	
Approach LOS	B			B	B	

Intersection Summary			
HCM 2000 Control Delay	13.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	59.6	Sum of lost time (s)	17.0
Intersection Capacity Utilization	49.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM 2010 methodology does not support exclusive ped or hold phases.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	204	302	242	376	669	327
Future Volume (vph)	204	302	242	376	669	327
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.1	4.1	4.6	4.6	4.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	1863	1863	1583	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	1863	1863	1583	1770	1583
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	210	311	249	388	690	337
RTOR Reduction (vph)	0	0	0	109	0	137
Lane Group Flow (vph)	210	311	249	279	690	200
Turn Type	Prot	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	5	2	6	7	7	5
Permitted Phases				6		4
Actuated Green, G (s)	8.5	26.5	14.0	44.3	30.3	38.8
Effective Green, g (s)	8.5	26.5	14.0	44.3	30.3	38.8
Actuated g/C Ratio	0.13	0.40	0.21	0.68	0.46	0.59
Clearance Time (s)	4.0	4.1	4.1	4.6	4.6	4.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	445	753	398	1070	818	937
v/s Ratio Prot	0.06	c0.17	c0.13	0.12	c0.39	0.03
v/s Ratio Perm				0.06		0.10
v/c Ratio	0.47	0.41	0.63	0.26	0.84	0.21
Uniform Delay, d1	26.4	13.9	23.4	4.2	15.5	6.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3	0.1	2.2	0.0	7.6	0.0
Delay (s)	26.7	14.1	25.6	4.2	23.1	6.3
Level of Service	C	B	C	A	C	A
Approach Delay (s)		19.2	12.6		17.6	
Approach LOS		B	B		B	

Intersection Summary			
HCM 2000 Control Delay	16.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	65.5	Sum of lost time (s)	12.7
Intersection Capacity Utilization	66.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	204	302	242	376	669	327
Future Volume (veh/h)	204	302	242	376	669	327
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	210	311	249	388	690	337
Adj No. of Lanes	2	1	1	1	1	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	342	740	408	1030	766	841
Arrive On Green	0.10	0.40	0.22	0.22	0.43	0.43
Sat Flow, veh/h	3442	1863	1863	1583	1774	1583
Grp Volume(v), veh/h	210	311	249	388	690	337
Grp Sat Flow(s),veh/h/ln	1721	1863	1863	1583	1774	1583
Q Serve(g_s), s	3.0	6.1	6.1	5.8	18.4	6.4
Cycle Q Clear(g_c), s	3.0	6.1	6.1	5.8	18.4	6.4
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	342	740	408	1030	766	841
V/C Ratio(X)	0.61	0.42	0.61	0.38	0.90	0.40
Avail Cap(c_a), veh/h	1693	1466	1466	1929	1047	1092
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.0	11.1	17.9	4.1	13.4	7.1
Incr Delay (d2), s/veh	0.7	0.1	0.6	0.1	6.9	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	3.1	3.2	7.3	10.3	6.9
LnGrp Delay(d),s/veh	22.6	11.2	18.4	4.2	20.4	7.2
LnGrp LOS	C	B	B	A	C	A
Approach Vol, veh/h		521	637		1027	
Approach Delay, s/veh		15.8	9.8		16.0	
Approach LOS		B	A		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		24.3		26.5	9.1	15.2		
Change Period (Y+Rc), s		4.1		4.6	4.0	4.1		
Max Green Setting (Gmax), s		40.0		30.0	25.0	40.0		
Max Q Clear Time (g_c+I1), s		8.1		20.4	5.0	8.1		
Green Ext Time (p_c), s		3.0		1.5	0.4	3.0		

Intersection Summary			
HCM 2010 Ctrl Delay			14.2
HCM 2010 LOS			B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	104	744	123	25	380	108	89	34	32	209	54	111
Future Volume (vph)	104	744	123	25	380	108	89	34	32	209	54	111
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.6		3.0	4.6	4.6		4.1	4.1	3.0	3.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98		1.00	0.99	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85		1.00	0.85	1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3464		1770	1863	1547		1798	1563	1770	1675	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.97	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3464		1770	1863	1547		1798	1563	1770	1675	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	106	759	126	26	388	110	91	35	33	213	55	113
RTOR Reduction (vph)	0	10	0	0	0	64	0	0	27	0	51	0
Lane Group Flow (vph)	106	875	0	26	388	46	0	126	6	213	117	0
Confl. Peds. (#/hr)	1					1			1	1		
Confl. Bikes (#/hr)						1						
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	1	6		5	2		8	8		4	4	
Permitted Phases						2			8			
Actuated Green, G (s)	8.0	29.5		2.2	23.7	23.7		13.1	13.1	15.4	15.4	
Effective Green, g (s)	8.0	29.5		2.2	23.7	23.7		13.1	13.1	15.4	15.4	
Actuated g/C Ratio	0.11	0.39		0.03	0.32	0.32		0.17	0.17	0.21	0.21	
Clearance Time (s)	3.0	4.6		3.0	4.6	4.6		4.1	4.1	3.0	3.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0		2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	189	1364		51	589	489		314	273	363	344	
v/s Ratio Prot	c0.06	c0.25		0.01	0.21			c0.07		c0.12	0.07	
v/s Ratio Perm						0.03			0.00			
v/c Ratio	0.56	0.64		0.51	0.66	0.09		0.40	0.02	0.59	0.34	
Uniform Delay, d1	31.8	18.4		35.8	22.1	18.0		27.4	25.6	26.9	25.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.3	0.8		2.9	2.0	0.0		0.3	0.0	1.6	0.2	
Delay (s)	34.0	19.2		38.7	24.1	18.1		27.7	25.6	28.4	25.6	
Level of Service	C	B		D	C	B		C	C	C	C	
Approach Delay (s)		20.8			23.6			27.3			27.2	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	23.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	74.9	Sum of lost time (s)	14.7
Intersection Capacity Utilization	60.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	104	744	123	25	380	108	89	34	32	209	54	111
Future Volume (veh/h)	104	744	123	25	380	108	89	34	32	209	54	111
Number	1	6	16	5	2	12	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1900	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	106	759	126	26	388	110	91	35	33	213	55	113
Adj No. of Lanes	1	2	0	1	1	1	0	1	1	1	1	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	138	1188	197	43	629	522	182	70	221	294	90	186
Arrive On Green	0.08	0.39	0.39	0.02	0.34	0.34	0.14	0.14	0.14	0.17	0.17	0.17
Sat Flow, veh/h	1774	3038	504	1774	1863	1548	1298	499	1578	1774	544	1119
Grp Volume(v), veh/h	106	442	443	26	388	110	126	0	33	213	0	168
Grp Sat Flow(s),veh/h/ln	1774	1770	1773	1774	1863	1548	1798	0	1578	1774	0	1663
Q Serve(g_s), s	3.1	10.7	10.7	0.8	9.2	2.7	3.4	0.0	1.0	6.0	0.0	4.9
Cycle Q Clear(g_c), s	3.1	10.7	10.7	0.8	9.2	2.7	3.4	0.0	1.0	6.0	0.0	4.9
Prop In Lane	1.00		0.28	1.00		1.00	0.72		1.00	1.00		0.67
Lane Grp Cap(c), veh/h	138	692	693	43	629	522	252	0	221	294	0	276
V/C Ratio(X)	0.77	0.64	0.64	0.61	0.62	0.21	0.50	0.00	0.15	0.72	0.00	0.61
Avail Cap(c_a), veh/h	673	1678	1681	673	1766	1468	1023	0	898	673	0	631
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.9	13.0	13.0	25.5	14.6	12.5	21.0	0.0	19.9	20.8	0.0	20.4
Incr Delay (d2), s/veh	3.4	0.4	0.4	5.1	0.4	0.1	0.6	0.0	0.1	1.3	0.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	5.2	5.2	0.4	4.7	1.1	1.7	0.0	0.4	3.0	0.0	2.3
LnGrp Delay(d),s/veh	27.2	13.4	13.4	30.6	15.0	12.5	21.5	0.0	20.0	22.1	0.0	21.2
LnGrp LOS	C	B	B	C	B	B	C		C	C		C
Approach Vol, veh/h		991			524			159			381	
Approach Delay, s/veh		14.9			15.2			21.2			21.7	
Approach LOS		B			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.1	22.4		11.7	4.3	25.2		11.5
Change Period (Y+Rc), s	3.0	4.6		3.0	3.0	4.6		4.1
Max Green Setting (Gmax), s	20.0	50.0		20.0	20.0	50.0		30.0
Max Q Clear Time (g_c+I1), s	5.1	11.2		8.0	2.8	12.7		5.4
Green Ext Time (p_c), s	0.1	6.6		0.8	0.0	6.5		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	16.7
HCM 2010 LOS	B

Appendix C:

Analysis Worksheets for
Existing (2018) plus Proposed Project Conditions

Intersection	
Intersection Delay, s/veh	72
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	298	98	168	293	1	216	1	290	0	0	0
Future Vol, veh/h	0	298	98	168	293	1	216	1	290	0	0	0
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	377	124	213	371	1	273	1	367	0	0	0
Number of Lanes	0	1	0	1	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay	56.6	28.9	123.3	0
HCM LOS	F	D	F	-

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	43%	0%	100%	0%	0%
Vol Thru, %	0%	75%	0%	100%	100%
Vol Right, %	57%	25%	0%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	507	396	168	294	0
LT Vol	216	0	168	0	0
Through Vol	1	298	0	293	0
RT Vol	290	98	0	1	0
Lane Flow Rate	642	501	213	372	0
Geometry Grp	2	5	7	7	2
Degree of Util (X)	1.183	0.95	0.476	0.781	0
Departure Headway (Hd)	6.638	7.428	8.731	8.21	9.85
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	552	491	415	443	0
Service Time	4.677	5.428	6.431	5.91	7.85
HCM Lane V/C Ratio	1.163	1.02	0.513	0.84	0
HCM Control Delay	123.3	56.6	19.1	34.5	12.9
HCM Lane LOS	F	F	C	D	N
HCM 95th-tile Q	22.8	11.7	2.5	6.8	0

Intersection	
Int Delay, s/veh	6.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	178	415	343	15	40	116
Future Vol, veh/h	178	415	343	15	40	116
Conflicting Peds, #/hr	0	0	0	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	81	81	81	81	81	81
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	220	512	423	19	49	143

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	442	0	-	0	1385	433
Stage 1	-	-	-	-	433	-
Stage 2	-	-	-	-	952	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1118	-	-	-	158	623
Stage 1	-	-	-	-	654	-
Stage 2	-	-	-	-	375	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1118	-	-	-	115	623
Mov Cap-2 Maneuver	-	-	-	-	115	-
Stage 1	-	-	-	-	654	-
Stage 2	-	-	-	-	272	-

Approach	EB	WB	SB
HCM Control Delay, s	2.7	0	38.3
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1118	-	-	-	292
HCM Lane V/C Ratio	0.197	-	-	-	0.66
HCM Control Delay (s)	9	0	-	-	38.3
HCM Lane LOS	A	A	-	-	E
HCM 95th %tile Q(veh)	0.7	-	-	-	4.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	253	222	308	235	5	120	3	183	11	4	8
Future Volume (vph)	3	253	222	308	235	5	120	3	183	11	4	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.9	4.9	3.0	4.9			3.7	3.7		3.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00			1.00	1.00		0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	1.00			1.00	0.85		0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.98	
Satd. Flow (prot)	1770	1863	1544	1770	1856			1776	1583		1720	
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.98	
Satd. Flow (perm)	1770	1863	1544	1770	1856			1776	1583		1720	
Peak-hour factor, PHF	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
Adj. Flow (vph)	4	356	313	434	331	7	169	4	258	15	6	11
RTOR Reduction (vph)	0	0	109	0	0	0	0	0	217	0	10	0
Lane Group Flow (vph)	4	356	204	434	338	0	0	173	41	0	22	0
Confl. Peds. (#/hr)			2	2			4					4
Confl. Bikes (#/hr)			1			1						
Turn Type	Prot	NA	custom	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases			6						8			
Actuated Green, G (s)	3.3	20.2	46.8	29.9	46.8			13.2	13.2		5.6	
Effective Green, g (s)	3.3	20.2	46.8	29.9	46.8			13.2	13.2		5.6	
Actuated g/C Ratio	0.04	0.24	0.56	0.36	0.56			0.16	0.16		0.07	
Clearance Time (s)	3.0	4.9	4.9	3.0	4.9			3.7	3.7		3.5	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0			2.0	2.0		2.0	
Lane Grp Cap (vph)	69	448	860	630	1034			279	248		114	
v/s Ratio Prot	0.00	c0.19		c0.25	0.18			c0.10			c0.01	
v/s Ratio Perm			0.13						0.03			
v/c Ratio	0.06	0.79	0.24	0.69	0.33			0.62	0.16		0.19	
Uniform Delay, d1	38.9	30.0	9.5	23.1	10.1			33.1	30.6		37.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.1	8.8	0.1	2.5	0.1			3.1	0.1		0.3	
Delay (s)	39.0	38.8	9.5	25.6	10.1			36.1	30.7		37.4	
Level of Service	D	D	A	C	B			D	C		D	
Approach Delay (s)		25.2			18.8			32.9			37.4	
Approach LOS		C			B			C			D	

Intersection Summary			
HCM 2000 Control Delay	24.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	84.0	Sum of lost time (s)	15.1
Intersection Capacity Utilization	54.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM 2010 analysis does not support custom phasing.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	390	49	47	493	84	154
Future Volume (vph)	390	49	47	493	84	154
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.1	4.1	5.8	5.1	4.1
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.98	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1559	1770	1863	1770	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1863	1559	1770	1863	1770	1583
Peak-hour factor, PHF	0.84	0.84	1.00	0.84	0.84	0.84
Adj. Flow (vph)	464	58	47	587	100	183
RTOR Reduction (vph)	0	29	0	0	0	131
Lane Group Flow (vph)	464	29	47	587	100	52
Confl. Bikes (#/hr)		1				
Turn Type	NA	pm+ov	Prot	NA	Prot	pm+ov
Protected Phases	2	3	1	6	3	1
Permitted Phases		2				3
Actuated Green, G (s)	20.5	27.9	8.7	33.3	7.4	16.1
Effective Green, g (s)	20.5	27.9	8.7	33.3	7.4	16.1
Actuated g/C Ratio	0.36	0.49	0.15	0.59	0.13	0.28
Clearance Time (s)	5.8	5.1	4.1	5.8	5.1	4.1
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)	675	769	272	1098	231	451
v/s Ratio Prot	c0.25	0.00	0.03	c0.32	c0.06	0.02
v/s Ratio Perm		0.01				0.02
v/c Ratio	0.69	0.04	0.17	0.53	0.43	0.12
Uniform Delay, d1	15.3	7.4	20.8	7.0	22.6	14.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.3	0.0	0.1	0.3	0.5	0.0
Delay (s)	17.6	7.4	20.9	7.2	23.1	15.0
Level of Service	B	A	C	A	C	B
Approach Delay (s)	16.5			8.2	17.8	
Approach LOS	B			A	B	

Intersection Summary			
HCM 2000 Control Delay	13.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	56.5	Sum of lost time (s)	17.0
Intersection Capacity Utilization	45.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM 2010 methodology does not support exclusive ped or hold phases.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	371	231	377	577	218	226
Future Volume (vph)	371	231	377	577	218	226
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.1	4.1	4.6	4.6	4.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	1863	1863	1583	1770	1566
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	1863	1863	1583	1770	1566
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	403	251	410	627	237	246
RTOR Reduction (vph)	0	0	0	47	0	136
Lane Group Flow (vph)	403	251	410	580	237	110
Confl. Bikes (#/hr)						1
Turn Type	Prot	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	5	2	6	7	7	5
Permitted Phases				6		4
Actuated Green, G (s)	12.7	36.3	19.6	33.0	13.4	26.1
Effective Green, g (s)	12.7	36.3	19.6	33.0	13.4	26.1
Actuated g/C Ratio	0.22	0.62	0.34	0.57	0.23	0.45
Clearance Time (s)	4.0	4.1	4.1	4.6	4.6	4.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	746	1157	625	894	406	699
v/s Ratio Prot	c0.12	0.13	c0.22	c0.15	0.13	0.03
v/s Ratio Perm				0.22		0.04
v/c Ratio	0.54	0.22	0.66	0.65	0.58	0.16
Uniform Delay, d1	20.3	4.8	16.5	8.7	20.0	9.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	0.0	1.9	1.2	1.4	0.0
Delay (s)	20.7	4.9	18.4	9.9	21.4	9.6
Level of Service	C	A	B	A	C	A
Approach Delay (s)		14.6	13.3		15.4	
Approach LOS		B	B		B	

Intersection Summary			
HCM 2000 Control Delay	14.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	58.4	Sum of lost time (s)	12.7
Intersection Capacity Utilization	53.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	371	231	377	577	218	226
Future Volume (veh/h)	371	231	377	577	218	226
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	403	251	410	627	237	246
Adj No. of Lanes	2	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	567	1199	743	918	322	548
Arrive On Green	0.16	0.64	0.40	0.40	0.18	0.18
Sat Flow, veh/h	3442	1863	1863	1583	1774	1583
Grp Volume(v), veh/h	403	251	410	627	237	246
Grp Sat Flow(s),veh/h/ln	1721	1863	1863	1583	1774	1583
Q Serve(g_s), s	5.5	2.8	8.5	13.7	6.3	6.0
Cycle Q Clear(g_c), s	5.5	2.8	8.5	13.7	6.3	6.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	567	1199	743	918	322	548
V/C Ratio(X)	0.71	0.21	0.55	0.68	0.74	0.45
Avail Cap(c_a), veh/h	1728	1496	1496	1559	1069	1215
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.7	3.6	11.5	7.3	19.3	12.6
Incr Delay (d2), s/veh	0.6	0.0	0.2	0.3	1.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	1.4	4.4	12.3	3.1	5.6
LnGrp Delay(d),s/veh	20.3	3.7	11.8	7.6	20.5	12.8
LnGrp LOS	C	A	B	A	C	B
Approach Vol, veh/h		654	1037		483	
Approach Delay, s/veh		13.9	9.3		16.6	
Approach LOS		B	A		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		36.2		13.6	12.2	24.0		
Change Period (Y+Rc), s		4.1		4.6	4.0	4.1		
Max Green Setting (Gmax), s		40.0		30.0	25.0	40.0		
Max Q Clear Time (g_c+I1), s		4.8		8.3	7.5	15.7		
Green Ext Time (p_c), s		4.3		0.8	0.7	4.1		

Intersection Summary			
HCM 2010 Ctrl Delay			12.3
HCM 2010 LOS			B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	120	286	34	10	729	150	81	31	6	85	14	102
Future Volume (vph)	120	286	34	10	729	150	81	31	6	85	14	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.6		3.0	4.6	4.6		4.1	4.1	3.0	3.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98		1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85		1.00	0.85	1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3483		1770	1863	1548		1798	1583	1770	1616	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.97	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3483		1770	1863	1548		1798	1583	1770	1616	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	132	314	37	11	801	165	89	34	7	93	15	112
RTOR Reduction (vph)	0	4	0	0	0	33	0	0	6	0	101	0
Lane Group Flow (vph)	132	347	0	11	801	132	0	123	1	93	26	0
Confl. Peds. (#/hr)	1					1						
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	1	6		5	2		8	8		4	4	
Permitted Phases						2			8			
Actuated Green, G (s)	12.1	64.6		1.1	53.6	53.6		13.6	13.6	9.9	9.9	
Effective Green, g (s)	12.1	64.6		1.1	53.6	53.6		13.6	13.6	9.9	9.9	
Actuated g/C Ratio	0.12	0.62		0.01	0.52	0.52		0.13	0.13	0.10	0.10	
Clearance Time (s)	3.0	4.6		3.0	4.6	4.6		4.1	4.1	3.0	3.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0		2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	206	2165		18	961	798		235	207	168	153	
v/s Ratio Prot	c0.07	0.10		0.01	c0.43			c0.07		c0.05	0.02	
v/s Ratio Perm						0.09			0.00			
v/c Ratio	0.64	0.16		0.61	0.83	0.17		0.52	0.00	0.55	0.17	
Uniform Delay, d1	43.8	8.3		51.2	21.4	13.3		42.1	39.3	44.9	43.2	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2	5.0	0.0		36.2	6.0	0.0		1.0	0.0	2.2	0.2	
Delay (s)	48.8	8.3		87.4	27.4	13.3		43.1	39.3	47.1	43.4	
Level of Service	D	A		F	C	B		D	D	D	D	
Approach Delay (s)		19.4			25.7			42.9			45.0	
Approach LOS		B			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	27.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	103.9	Sum of lost time (s)	14.7
Intersection Capacity Utilization	68.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	120	286	34	10	729	150	81	31	6	85	14	102
Future Volume (veh/h)	120	286	34	10	729	150	81	31	6	85	14	102
Number	1	6	16	5	2	12	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1900	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	132	314	37	11	801	165	89	34	7	93	15	112
Adj No. of Lanes	1	2	0	1	1	1	0	1	1	1	1	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	168	1835	215	19	914	776	133	51	162	193	21	155
Arrive On Green	0.09	0.57	0.57	0.01	0.49	0.49	0.10	0.10	0.10	0.11	0.11	0.11
Sat Flow, veh/h	1774	3193	373	1774	1863	1582	1301	497	1583	1774	190	1422
Grp Volume(v), veh/h	132	173	178	11	801	165	123	0	7	93	0	127
Grp Sat Flow(s),veh/h/ln	1774	1770	1797	1774	1863	1582	1798	0	1583	1774	0	1612
Q Serve(g_s), s	5.3	3.3	3.4	0.4	27.8	4.3	4.8	0.0	0.3	3.6	0.0	5.5
Cycle Q Clear(g_c), s	5.3	3.3	3.4	0.4	27.8	4.3	4.8	0.0	0.3	3.6	0.0	5.5
Prop In Lane	1.00		0.21	1.00		1.00	0.72		1.00	1.00		0.88
Lane Grp Cap(c), veh/h	168	1017	1033	19	914	776	184	0	162	193	0	176
V/C Ratio(X)	0.78	0.17	0.17	0.57	0.88	0.21	0.67	0.00	0.04	0.48	0.00	0.72
Avail Cap(c_a), veh/h	490	1221	1239	490	1285	1091	744	0	655	490	0	445
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	32.1	7.3	7.3	35.7	16.5	10.5	31.3	0.0	29.3	30.4	0.0	31.2
Incr Delay (d2), s/veh	3.0	0.0	0.0	9.2	4.0	0.1	1.6	0.0	0.0	0.7	0.0	2.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	1.6	1.7	0.3	15.0	1.9	2.4	0.0	0.1	1.8	0.0	2.6
LnGrp Delay(d),s/veh	35.1	7.3	7.3	44.9	20.5	10.5	32.9	0.0	29.4	31.0	0.0	33.3
LnGrp LOS	D	A	A	D	C	B	C		C	C		C
Approach Vol, veh/h		483			977			130			220	
Approach Delay, s/veh		14.9			19.1			32.7			32.4	
Approach LOS		B			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.9	40.2		10.9	3.8	46.3		11.5
Change Period (Y+Rc), s	3.0	4.6		3.0	3.0	4.6		4.1
Max Green Setting (Gmax), s	20.0	50.0		20.0	20.0	50.0		30.0
Max Q Clear Time (g_c+I1), s	7.3	29.8		7.5	2.4	5.4		6.8
Green Ext Time (p_c), s	0.1	5.7		0.5	0.0	6.5		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	20.5
HCM 2010 LOS	C

Intersection						
Int Delay, s/veh	0.4					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	20	1	1	286	515	19
Future Vol, veh/h	20	1	1	286	515	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	1	1	311	560	21

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	883	570	580	0	-	0
Stage 1	570	-	-	-	-	-
Stage 2	313	-	-	-	-	-
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	316	521	994	-	-	-
Stage 1	566	-	-	-	-	-
Stage 2	741	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	316	521	994	-	-	-
Mov Cap-2 Maneuver	316	-	-	-	-	-
Stage 1	566	-	-	-	-	-
Stage 2	740	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	994	-	322	-	-
HCM Lane V/C Ratio	0.001	-	0.071	-	-
HCM Control Delay (s)	8.6	0	17	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection	
Intersection Delay, s/veh	24.3
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	361	203	243	229	2	89	2	174	4	2	6
Future Vol, veh/h	6	361	203	243	229	2	89	2	174	4	2	6
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	372	209	251	236	2	92	2	179	4	2	6
Number of Lanes	0	1	0	1	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay	37.2	14.4	14.9	10.6
HCM LOS	E	B	B	B

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	34%	1%	100%	0%	33%
Vol Thru, %	1%	63%	0%	99%	17%
Vol Right, %	66%	36%	0%	1%	50%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	265	570	243	231	12
LT Vol	89	6	243	0	4
Through Vol	2	361	0	229	2
RT Vol	174	203	0	2	6
Lane Flow Rate	273	588	251	238	12
Geometry Grp	2	5	7	7	2
Degree of Util (X)	0.474	0.892	0.47	0.413	0.025
Departure Headway (Hd)	6.24	5.462	6.753	6.238	7.367
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	574	658	531	574	489
Service Time	4.317	3.525	4.53	4.015	5.367
HCM Lane V/C Ratio	0.476	0.894	0.473	0.415	0.025
HCM Control Delay	14.9	37.2	15.4	13.4	10.6
HCM Lane LOS	B	E	C	B	B
HCM 95th-tile Q	2.5	11	2.5	2	0.1

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	129	426	295	22	21	175
Future Vol, veh/h	129	426	295	22	21	175
Conflicting Peds, #/hr	0	0	0	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	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	137	453	314	23	22	186

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	337	0	-	0	1054	326
Stage 1	-	-	-	-	326	-
Stage 2	-	-	-	-	728	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1222	-	-	-	250	715
Stage 1	-	-	-	-	731	-
Stage 2	-	-	-	-	478	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1222	-	-	-	213	715
Mov Cap-2 Maneuver	-	-	-	-	213	-
Stage 1	-	-	-	-	731	-
Stage 2	-	-	-	-	406	-

Approach	EB	WB	SB
HCM Control Delay, s	1.9	0	14.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1222	-	-	-	571
HCM Lane V/C Ratio	0.112	-	-	-	0.365
HCM Control Delay (s)	8.3	0	-	-	14.9
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.4	-	-	-	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	379	54	64	276	15	44	0	67	15	0	6
Future Volume (vph)	15	379	54	64	276	15	44	0	67	15	0	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.9	4.9	3.0	4.9			3.7	3.7		3.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	0.98		0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	0.99			1.00	0.85		0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.96	
Satd. Flow (prot)	1770	1863	1583	1770	1846			1770	1550		1721	
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.96	
Satd. Flow (perm)	1770	1863	1583	1770	1846			1770	1550		1721	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	16	403	57	68	294	16	47	0	71	16	0	6
RTOR Reduction (vph)	0	0	28	0	1	0	0	0	62	0	21	0
Lane Group Flow (vph)	16	403	29	68	309	0	0	47	9	0	1	0
Confl. Peds. (#/hr)	3					3	2		1	1		2
Turn Type	Prot	NA	custom	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases			6						8			
Actuated Green, G (s)	1.7	24.1	28.2	5.8	28.2			7.4	7.4		3.4	
Effective Green, g (s)	1.7	24.1	28.2	5.8	28.2			7.4	7.4		3.4	
Actuated g/C Ratio	0.03	0.43	0.51	0.10	0.51			0.13	0.13		0.06	
Clearance Time (s)	3.0	4.9	4.9	3.0	4.9			3.7	3.7		3.5	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0			2.0	2.0		2.0	
Lane Grp Cap (vph)	53	804	800	183	932			234	205		104	
v/s Ratio Prot	0.01	c0.22		c0.04	0.17			c0.03			c0.00	
v/s Ratio Perm			0.02						0.01			
v/c Ratio	0.30	0.50	0.04	0.37	0.33			0.20	0.05		0.01	
Uniform Delay, d1	26.5	11.5	7.0	23.3	8.2			21.6	21.1		24.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	1.2	0.2	0.0	0.5	0.1			0.2	0.0		0.0	
Delay (s)	27.6	11.7	7.0	23.8	8.3			21.7	21.2		24.6	
Level of Service	C	B	A	C	A			C	C		C	
Approach Delay (s)		11.6			11.1			21.4			24.6	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	12.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	55.8	Sum of lost time (s)	15.1
Intersection Capacity Utilization	42.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM 2010 analysis does not support custom phasing.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	432	85	158	383	46	95
Future Volume (vph)	432	85	158	383	46	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.1	4.1	5.8	5.1	4.1
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.98	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1556	1770	1863	1770	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1863	1556	1770	1863	1770	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	450	89	165	399	48	99
RTOR Reduction (vph)	0	47	0	0	0	69
Lane Group Flow (vph)	450	42	165	399	48	30
Confl. Bikes (#/hr)		3				
Turn Type	NA	pm+ov	Prot	NA	Prot	pm+ov
Protected Phases	2	3	1	6	3	1
Permitted Phases		2				3
Actuated Green, G (s)	22.3	29.0	11.9	38.3	6.7	18.6
Effective Green, g (s)	22.3	29.0	11.9	38.3	6.7	18.6
Actuated g/C Ratio	0.37	0.48	0.20	0.63	0.11	0.31
Clearance Time (s)	5.8	5.1	4.1	5.8	5.1	4.1
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)	683	742	346	1173	195	484
v/s Ratio Prot	c0.24	0.01	c0.09	0.21	c0.03	0.01
v/s Ratio Perm		0.02				0.01
v/c Ratio	0.66	0.06	0.48	0.34	0.25	0.06
Uniform Delay, d1	16.1	8.5	21.7	5.3	24.7	14.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.8	0.0	0.4	0.1	0.2	0.0
Delay (s)	17.8	8.6	22.1	5.4	25.0	15.0
Level of Service	B	A	C	A	C	B
Approach Delay (s)	16.3			10.2	18.2	
Approach LOS	B			B	B	

Intersection Summary			
HCM 2000 Control Delay	13.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	60.8	Sum of lost time (s)	17.0
Intersection Capacity Utilization	50.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM 2010 methodology does not support exclusive ped or hold phases.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	211	315	255	376	669	334
Future Volume (vph)	211	315	255	376	669	334
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.1	4.1	4.6	4.6	4.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	1863	1863	1583	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	1863	1863	1583	1770	1583
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	218	325	263	388	690	344
RTOR Reduction (vph)	0	0	0	104	0	141
Lane Group Flow (vph)	218	325	263	284	690	203
Turn Type	Prot	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	5	2	6	7	7	5
Permitted Phases				6		4
Actuated Green, G (s)	8.7	27.1	14.4	44.7	30.3	39.0
Effective Green, g (s)	8.7	27.1	14.4	44.7	30.3	39.0
Actuated g/C Ratio	0.13	0.41	0.22	0.68	0.46	0.59
Clearance Time (s)	4.0	4.1	4.1	4.6	4.6	4.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	451	763	405	1070	811	933
v/s Ratio Prot	0.06	c0.17	c0.14	0.12	c0.39	0.03
v/s Ratio Perm				0.06		0.10
v/c Ratio	0.48	0.43	0.65	0.27	0.85	0.22
Uniform Delay, d1	26.6	13.9	23.6	4.2	15.9	6.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3	0.1	2.7	0.0	8.2	0.0
Delay (s)	26.9	14.1	26.2	4.3	24.1	6.4
Level of Service	C	B	C	A	C	A
Approach Delay (s)		19.2	13.1		18.2	
Approach LOS		B	B		B	

Intersection Summary			
HCM 2000 Control Delay	17.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	66.1	Sum of lost time (s)	12.7
Intersection Capacity Utilization	67.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations								
Traffic Volume (veh/h)	211	315	255	376	669	334		
Future Volume (veh/h)	211	315	255	376	669	334		
Number	5	2	6	16	7	14		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	218	325	263	388	690	344		
Adj No. of Lanes	2	1	1	1	1	1		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	350	752	420	1038	763	842		
Arrive On Green	0.10	0.40	0.23	0.23	0.43	0.43		
Sat Flow, veh/h	3442	1863	1863	1583	1774	1583		
Grp Volume(v), veh/h	218	325	263	388	690	344		
Grp Sat Flow(s),veh/h/ln	1721	1863	1863	1583	1774	1583		
Q Serve(g_s), s	3.2	6.6	6.7	5.8	19.0	6.8		
Cycle Q Clear(g_c), s	3.2	6.6	6.7	5.8	19.0	6.8		
Prop In Lane	1.00			1.00	1.00	1.00		
Lane Grp Cap(c), veh/h	350	752	420	1038	763	842		
V/C Ratio(X)	0.62	0.43	0.63	0.37	0.90	0.41		
Avail Cap(c_a), veh/h	1644	1424	1424	1891	1017	1068		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	22.6	11.3	18.3	4.1	13.9	7.3		
Incr Delay (d2), s/veh	0.7	0.1	0.6	0.1	7.7	0.1		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	1.5	3.4	3.5	7.6	10.8	7.3		
LnGrp Delay(d),s/veh	23.2	11.4	18.8	4.2	21.6	7.5		
LnGrp LOS	C	B	B	A	C	A		
Approach Vol, veh/h		543	651		1034			
Approach Delay, s/veh		16.2	10.1		16.9			
Approach LOS		B	B		B			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		25.2		27.1	9.3	15.9		
Change Period (Y+Rc), s		4.1		4.6	4.0	4.1		
Max Green Setting (Gmax), s		40.0		30.0	25.0	40.0		
Max Q Clear Time (g_c+I1), s		8.6		21.0	5.2	8.7		
Green Ext Time (p_c), s		3.1		1.5	0.4	3.1		

Intersection Summary		
HCM 2010 Ctrl Delay		14.7
HCM 2010 LOS		B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	111	750	123	25	386	108	89	34	32	209	54	118
Future Volume (vph)	111	750	123	25	386	108	89	34	32	209	54	118
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.6		3.0	4.6	4.6		4.1	4.1	3.0	3.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98		1.00	0.99	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85		1.00	0.85	1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3464		1770	1863	1547		1798	1563	1770	1671	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.97	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3464		1770	1863	1547		1798	1563	1770	1671	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	113	765	126	26	394	110	91	35	33	213	55	120
RTOR Reduction (vph)	0	10	0	0	0	63	0	0	27	0	54	0
Lane Group Flow (vph)	113	881	0	26	394	47	0	126	6	213	121	0
Confl. Peds. (#/hr)	1					1			1	1		
Confl. Bikes (#/hr)						1						
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	1	6		5	2		8	8		4	4	
Permitted Phases						2			8			
Actuated Green, G (s)	8.3	30.2		2.3	24.2	24.2		13.2	13.2	15.4	15.4	
Effective Green, g (s)	8.3	30.2		2.3	24.2	24.2		13.2	13.2	15.4	15.4	
Actuated g/C Ratio	0.11	0.40		0.03	0.32	0.32		0.17	0.17	0.20	0.20	
Clearance Time (s)	3.0	4.6		3.0	4.6	4.6		4.1	4.1	3.0	3.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0		2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	193	1380		53	594	493		313	272	359	339	
v/s Ratio Prot	c0.06	c0.25		0.01	0.21			c0.07		c0.12	0.07	
v/s Ratio Perm						0.03			0.00			
v/c Ratio	0.59	0.64		0.49	0.66	0.09		0.40	0.02	0.59	0.36	
Uniform Delay, d1	32.1	18.4		36.2	22.3	18.1		27.8	25.9	27.4	25.9	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.9	0.7		2.6	2.2	0.0		0.3	0.0	1.8	0.2	
Delay (s)	35.0	19.1		38.8	24.4	18.1		28.1	26.0	29.1	26.2	
Level of Service	D	B		D	C	B		C	C	C	C	
Approach Delay (s)		20.9			23.8			27.7			27.8	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	23.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	75.8	Sum of lost time (s)	14.7
Intersection Capacity Utilization	60.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	111	750	123	25	386	108	89	34	32	209	54	118
Future Volume (veh/h)	111	750	123	25	386	108	89	34	32	209	54	118
Number	1	6	16	5	2	12	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1900	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	113	765	126	26	394	110	91	35	33	213	55	120
Adj No. of Lanes	1	2	0	1	1	1	0	1	1	1	1	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	147	1211	199	42	632	525	180	69	218	294	86	188
Arrive On Green	0.08	0.40	0.40	0.02	0.34	0.34	0.14	0.14	0.14	0.17	0.17	0.17
Sat Flow, veh/h	1774	3042	501	1774	1863	1548	1298	499	1578	1774	522	1138
Grp Volume(v), veh/h	113	445	446	26	394	110	126	0	33	213	0	175
Grp Sat Flow(s),veh/h/ln	1774	1770	1774	1774	1863	1548	1798	0	1578	1774	0	1660
Q Serve(g_s), s	3.3	10.8	10.9	0.8	9.5	2.7	3.5	0.0	1.0	6.1	0.0	5.3
Cycle Q Clear(g_c), s	3.3	10.8	10.9	0.8	9.5	2.7	3.5	0.0	1.0	6.1	0.0	5.3
Prop In Lane	1.00		0.28	1.00		1.00	0.72		1.00	1.00		0.69
Lane Grp Cap(c), veh/h	147	704	706	42	632	525	249	0	218	294	0	275
V/C Ratio(X)	0.77	0.63	0.63	0.61	0.62	0.21	0.51	0.00	0.15	0.72	0.00	0.64
Avail Cap(c_a), veh/h	661	1649	1653	661	1736	1442	1005	0	882	661	0	619
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.1	13.0	13.0	25.9	14.9	12.6	21.4	0.0	20.3	21.2	0.0	20.9
Incr Delay (d2), s/veh	3.2	0.4	0.4	5.2	0.4	0.1	0.6	0.0	0.1	1.3	0.0	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	5.3	5.3	0.4	4.9	1.2	1.8	0.0	0.4	3.1	0.0	2.5
LnGrp Delay(d),s/veh	27.3	13.3	13.3	31.1	15.2	12.7	22.0	0.0	20.5	22.5	0.0	21.8
LnGrp LOS	C	B	B	C	B	B	C		C	C		C
Approach Vol, veh/h		1004			530			159			388	
Approach Delay, s/veh		14.9			15.5			21.7			22.2	
Approach LOS		B			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.4	22.8		11.9	4.3	26.0		11.5
Change Period (Y+Rc), s	3.0	4.6		3.0	3.0	4.6		4.1
Max Green Setting (Gmax), s	20.0	50.0		20.0	20.0	50.0		30.0
Max Q Clear Time (g_c+I1), s	5.3	11.5		8.1	2.8	12.9		5.5
Green Ext Time (p_c), s	0.1	6.6		0.8	0.0	6.6		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	16.9
HCM 2010 LOS	B

Intersection						
Int Delay, s/veh	1.4					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	1	1	81	89	29
Future Vol, veh/h	30	1	1	81	89	29
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	33	1	1	88	97	32

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	203	113	128	0	-	0
Stage 1	113	-	-	-	-	-
Stage 2	90	-	-	-	-	-
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	786	940	1458	-	-	-
Stage 1	912	-	-	-	-	-
Stage 2	934	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	785	940	1458	-	-	-
Mov Cap-2 Maneuver	785	-	-	-	-	-
Stage 1	912	-	-	-	-	-
Stage 2	933	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.8	0.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1458	-	789	-	-
HCM Lane V/C Ratio	0.001	-	0.043	-	-
HCM Control Delay (s)	7.5	0	9.8	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Appendix D:

Near-Term (2028) Traffic Volumes

Intersection	
Intersection Delay, s/veh	69.9
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	330	105	168	323	2	228	1	288	0	0	2
Future Vol, veh/h	2	330	105	168	323	2	228	1	288	0	0	2
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	393	125	200	385	2	271	1	343	0	0	2
Number of Lanes	0	1	0	1	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay	65.5	31.4	110.6	12.3
HCM LOS	F	D	F	B

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	44%	0%	100%	0%	0%
Vol Thru, %	0%	76%	0%	99%	0%
Vol Right, %	56%	24%	0%	1%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	517	437	168	325	2
LT Vol	228	2	168	0	0
Through Vol	1	330	0	323	0
RT Vol	288	105	0	2	2
Lane Flow Rate	615	520	200	387	2
Geometry Grp	2	5	7	7	2
Degree of Util (X)	1.147	0.99	0.45	0.816	0.006
Departure Headway (Hd)	6.711	7.373	8.7	8.177	9.283
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	542	494	416	445	388
Service Time	4.779	5.373	6.4	5.877	7.283
HCM Lane V/C Ratio	1.135	1.053	0.481	0.87	0.005
HCM Control Delay	110.6	65.5	18.3	38.2	12.3
HCM Lane LOS	F	F	C	E	B
HCM 95th-tile Q	20.8	13.2	2.3	7.6	0

Intersection	
Int Delay, s/veh	6.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	180	437	371	16	41	118
Future Vol, veh/h	180	437	371	16	41	118
Conflicting Peds, #/hr	0	0	0	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	86	86	86	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	209	508	431	19	48	137

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	450	0	-	0	1368	441
Stage 1	-	-	-	-	441	-
Stage 2	-	-	-	-	927	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1110	-	-	-	162	616
Stage 1	-	-	-	-	648	-
Stage 2	-	-	-	-	385	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1110	-	-	-	120	616
Mov Cap-2 Maneuver	-	-	-	-	120	-
Stage 1	-	-	-	-	648	-
Stage 2	-	-	-	-	284	-

Approach	EB	WB	SB
HCM Control Delay, s	2.6	0	35
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1110	-	-	-	298
HCM Lane V/C Ratio	0.189	-	-	-	0.62
HCM Control Delay (s)	9	0	-	-	35
HCM Lane LOS	A	A	-	-	E
HCM 95th %tile Q(veh)	0.7	-	-	-	3.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	265	230	295	251	8	131	4	182	13	4	10
Future Volume (vph)	5	265	230	295	251	8	131	4	182	13	4	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.9	4.9	3.0	4.9			3.7	3.7		3.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00			1.00	1.00		0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	1.00			1.00	0.85		0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.98	
Satd. Flow (prot)	1770	1863	1544	1770	1853			1776	1583		1710	
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.98	
Satd. Flow (perm)	1770	1863	1544	1770	1853			1776	1583		1710	
Peak-hour factor, PHF	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Adj. Flow (vph)	7	353	307	393	335	11	175	5	243	17	5	13
RTOR Reduction (vph)	0	0	108	0	0	0	0	0	204	0	12	0
Lane Group Flow (vph)	7	353	199	393	346	0	0	180	39	0	23	0
Confl. Peds. (#/hr)			2	2			4					4
Confl. Bikes (#/hr)			1			1						
Turn Type	Prot	NA	custom	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases			6						8			
Actuated Green, G (s)	3.3	20.1	46.8	30.0	46.8			13.5	13.5		5.6	
Effective Green, g (s)	3.3	20.1	46.8	30.0	46.8			13.5	13.5		5.6	
Actuated g/C Ratio	0.04	0.24	0.56	0.36	0.56			0.16	0.16		0.07	
Clearance Time (s)	3.0	4.9	4.9	3.0	4.9			3.7	3.7		3.5	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0			2.0	2.0		2.0	
Lane Grp Cap (vph)	69	444	857	629	1028			284	253		113	
v/s Ratio Prot	0.00	c0.19		c0.22	0.19			c0.10			c0.01	
v/s Ratio Perm			0.13						0.02			
v/c Ratio	0.10	0.80	0.23	0.62	0.34			0.63	0.15		0.20	
Uniform Delay, d1	39.1	30.2	9.6	22.5	10.3			33.1	30.5		37.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.2	8.9	0.1	1.4	0.1			3.4	0.1		0.3	
Delay (s)	39.3	39.1	9.6	23.9	10.3			36.5	30.6		37.6	
Level of Service	D	D	A	C	B			D	C		D	
Approach Delay (s)		25.5			17.5			33.1			37.6	
Approach LOS		C			B			C			D	

Intersection Summary			
HCM 2000 Control Delay	24.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	84.3	Sum of lost time (s)	15.1
Intersection Capacity Utilization	54.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM 2010 analysis does not support custom phasing.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	397	55	56	488	94	169
Future Volume (vph)	397	55	56	488	94	169
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.1	4.1	5.8	5.1	4.1
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1562	1770	1863	1770	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1863	1562	1770	1863	1770	1583
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	446	62	63	548	106	190
RTOR Reduction (vph)	0	31	0	0	0	129
Lane Group Flow (vph)	446	31	63	548	106	61
Confl. Bikes (#/hr)		1				
Turn Type	NA	pm+ov	Prot	NA	Prot	pm+ov
Protected Phases	2	3	1	6	3	1
Permitted Phases		2				3
Actuated Green, G (s)	19.2	29.4	8.5	31.8	10.2	18.7
Effective Green, g (s)	19.2	29.4	8.5	31.8	10.2	18.7
Actuated g/C Ratio	0.33	0.51	0.15	0.55	0.18	0.32
Clearance Time (s)	5.8	5.1	4.1	5.8	5.1	4.1
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)	617	793	259	1023	311	511
v/s Ratio Prot	c0.24	0.01	0.04	c0.29	c0.06	0.02
v/s Ratio Perm		0.01				0.02
v/c Ratio	0.72	0.04	0.24	0.54	0.34	0.12
Uniform Delay, d1	17.0	7.2	21.9	8.3	20.9	13.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.6	0.0	0.2	0.3	0.2	0.0
Delay (s)	20.6	7.2	22.0	8.6	21.1	13.8
Level of Service	C	A	C	A	C	B
Approach Delay (s)	18.9			10.0	16.5	
Approach LOS	B			A	B	

Intersection Summary			
HCM 2000 Control Delay	14.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	57.9	Sum of lost time (s)	17.0
Intersection Capacity Utilization	45.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM 2010 methodology does not support exclusive ped or hold phases.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	386	236	369	577	218	235
Future Volume (vph)	386	236	369	577	218	235
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.1	4.1	4.6	4.6	4.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	1863	1863	1583	1770	1567
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	1863	1863	1583	1770	1567
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	420	257	401	627	237	255
RTOR Reduction (vph)	0	0	0	44	0	140
Lane Group Flow (vph)	420	257	401	583	237	115
Confl. Bikes (#/hr)						1
Turn Type	Prot	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	5	2	6	7	7	5
Permitted Phases				6		4
Actuated Green, G (s)	13.1	36.5	19.4	32.8	13.4	26.5
Effective Green, g (s)	13.1	36.5	19.4	32.8	13.4	26.5
Actuated g/C Ratio	0.22	0.62	0.33	0.56	0.23	0.45
Clearance Time (s)	4.0	4.1	4.1	4.6	4.6	4.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	767	1160	616	886	404	708
v/s Ratio Prot	c0.12	0.14	0.22	c0.15	0.13	0.04
v/s Ratio Perm				0.22		0.04
v/c Ratio	0.55	0.22	0.65	0.66	0.59	0.16
Uniform Delay, d1	20.1	4.8	16.7	9.0	20.1	9.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	0.0	1.9	1.4	1.4	0.0
Delay (s)	20.6	4.9	18.6	10.4	21.5	9.5
Level of Service	C	A	B	B	C	A
Approach Delay (s)		14.6	13.6		15.3	
Approach LOS		B	B		B	

Intersection Summary			
HCM 2000 Control Delay	14.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	58.6	Sum of lost time (s)	12.7
Intersection Capacity Utilization	53.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations								
Traffic Volume (veh/h)	386	236	369	577	218	235		
Future Volume (veh/h)	386	236	369	577	218	235		
Number	5	2	6	16	7	14		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	420	257	401	627	237	255		
Adj No. of Lanes	2	1	1	1	1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	584	1204	740	916	321	555		
Arrive On Green	0.17	0.65	0.40	0.40	0.18	0.18		
Sat Flow, veh/h	3442	1863	1863	1583	1774	1583		
Grp Volume(v), veh/h	420	257	401	627	237	255		
Grp Sat Flow(s),veh/h/ln	1721	1863	1863	1583	1774	1583		
Q Serve(g_s), s	5.8	2.9	8.3	13.9	6.4	6.3		
Cycle Q Clear(g_c), s	5.8	2.9	8.3	13.9	6.4	6.3		
Prop In Lane	1.00			1.00	1.00	1.00		
Lane Grp Cap(c), veh/h	584	1204	740	916	321	555		
V/C Ratio(X)	0.72	0.21	0.54	0.68	0.74	0.46		
Avail Cap(c_a), veh/h	1706	1477	1477	1542	1055	1210		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	19.8	3.7	11.7	7.4	19.5	12.7		
Incr Delay (d2), s/veh	0.6	0.0	0.2	0.3	1.3	0.2		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	2.8	1.4	4.3	12.5	3.2	5.9		
LnGrp Delay(d),s/veh	20.4	3.7	11.9	7.8	20.8	12.9		
LnGrp LOS	C	A	B	A	C	B		
Approach Vol, veh/h		677	1028		492			
Approach Delay, s/veh		14.1	9.4		16.7			
Approach LOS		B	A		B			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		36.7		13.7	12.6	24.2		
Change Period (Y+Rc), s		4.1		4.6	4.0	4.1		
Max Green Setting (Gmax), s		40.0		30.0	25.0	40.0		
Max Q Clear Time (g_c+I1), s		4.9		8.4	7.8	15.9		
Green Ext Time (p_c), s		4.3		0.8	0.8	4.1		
Intersection Summary								
HCM 2010 Ctrl Delay			12.5					
HCM 2010 LOS			B					

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	303	50	11	725	251	98	31	8	105	14	98
Future Volume (vph)	115	303	50	11	725	251	98	31	8	105	14	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.6		3.0	4.6	4.6		4.1	4.1	3.0	3.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98		1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85		1.00	0.85	1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.96	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3464		1770	1863	1548		1795	1583	1770	1618	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.96	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3464		1770	1863	1548		1795	1583	1770	1618	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	125	329	54	12	788	273	107	34	9	114	15	107
RTOR Reduction (vph)	0	6	0	0	0	57	0	0	8	0	96	0
Lane Group Flow (vph)	125	377	0	12	788	216	0	141	1	114	26	0
Confl. Peds. (#/hr)	1					1						
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	1	6		5	2		8	8		4	4	
Permitted Phases						2			8			
Actuated Green, G (s)	11.8	64.4		1.1	53.7	53.7		14.4	14.4	11.2	11.2	
Effective Green, g (s)	11.8	64.4		1.1	53.7	53.7		14.4	14.4	11.2	11.2	
Actuated g/C Ratio	0.11	0.61		0.01	0.51	0.51		0.14	0.14	0.11	0.11	
Clearance Time (s)	3.0	4.6		3.0	4.6	4.6		4.1	4.1	3.0	3.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0		2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	197	2108		18	945	785		244	215	187	171	
v/s Ratio Prot	c0.07	0.11		0.01	c0.42			c0.08		c0.06	0.02	
v/s Ratio Perm						0.14			0.00			
v/c Ratio	0.63	0.18		0.67	0.83	0.28		0.58	0.01	0.61	0.15	
Uniform Delay, d1	44.9	9.1		52.2	22.2	14.9		42.9	39.5	45.2	43.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2	4.8	0.0		54.1	6.1	0.1		2.1	0.0	3.8	0.2	
Delay (s)	49.8	9.1		106.3	28.4	15.0		44.9	39.5	49.0	43.1	
Level of Service	D	A		F	C	B		D	D	D	D	
Approach Delay (s)		19.1			25.8			44.6			46.0	
Approach LOS		B			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	27.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	105.8	Sum of lost time (s)	14.7
Intersection Capacity Utilization	68.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	115	303	50	11	725	251	98	31	8	105	14	98
Future Volume (veh/h)	115	303	50	11	725	251	98	31	8	105	14	98
Number	1	6	16	5	2	12	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1900	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	125	329	54	12	788	273	107	34	9	114	15	107
Adj No. of Lanes	1	2	0	1	1	1	0	1	1	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	160	1731	281	21	911	774	145	46	169	190	21	151
Arrive On Green	0.09	0.57	0.57	0.01	0.49	0.49	0.11	0.11	0.11	0.11	0.11	0.11
Sat Flow, veh/h	1774	3049	495	1774	1863	1582	1362	433	1583	1774	198	1415
Grp Volume(v), veh/h	125	190	193	12	788	273	141	0	9	114	0	122
Grp Sat Flow(s),veh/h/ln	1774	1770	1775	1774	1863	1582	1795	0	1583	1774	0	1613
Q Serve(g_s), s	4.9	3.7	3.8	0.5	26.6	7.6	5.4	0.0	0.4	4.4	0.0	5.2
Cycle Q Clear(g_c), s	4.9	3.7	3.8	0.5	26.6	7.6	5.4	0.0	0.4	4.4	0.0	5.2
Prop In Lane	1.00		0.28	1.00		1.00	0.76		1.00	1.00		0.88
Lane Grp Cap(c), veh/h	160	1005	1008	21	911	774	191	0	169	190	0	173
V/C Ratio(X)	0.78	0.19	0.19	0.57	0.86	0.35	0.74	0.00	0.05	0.60	0.00	0.71
Avail Cap(c_a), veh/h	499	1244	1247	499	1309	1112	757	0	668	499	0	454
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	31.7	7.4	7.5	35.0	16.1	11.2	30.8	0.0	28.5	30.3	0.0	30.7
Incr Delay (d2), s/veh	3.1	0.0	0.0	8.7	3.2	0.1	2.1	0.0	0.0	1.1	0.0	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	1.8	1.8	0.3	14.4	3.3	2.8	0.0	0.2	2.2	0.0	2.4
LnGrp Delay(d),s/veh	34.7	7.5	7.5	43.7	19.3	11.3	32.9	0.0	28.6	31.4	0.0	32.7
LnGrp LOS	C	A	A	D	B	B	C		C	C		C
Approach Vol, veh/h		508			1073			150			236	
Approach Delay, s/veh		14.2			17.5			32.6			32.1	
Approach LOS		B			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.4	39.4		10.6	3.8	45.0		11.7
Change Period (Y+Rc), s	3.0	4.6		3.0	3.0	4.6		4.1
Max Green Setting (Gmax), s	20.0	50.0		20.0	20.0	50.0		30.0
Max Q Clear Time (g_c+I1), s	6.9	28.6		7.2	2.5	5.8		7.4
Green Ext Time (p_c), s	0.1	6.2		0.5	0.0	6.9		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	19.6
HCM 2010 LOS	B

Intersection	
Intersection Delay, s/veh	40.3
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	381	217	240	255	2	97	2	175	4	2	8
Future Vol, veh/h	8	381	217	240	255	2	97	2	175	4	2	8
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	414	236	261	277	2	105	2	190	4	2	9
Number of Lanes	0	1	0	1	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay	70.8	16.6	17.3	11.2
HCM LOS	F	C	C	B

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	35%	1%	100%	0%	29%
Vol Thru, %	1%	63%	0%	99%	14%
Vol Right, %	64%	36%	0%	1%	57%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	274	606	240	257	14
LT Vol	97	8	240	0	4
Through Vol	2	381	0	255	2
RT Vol	175	217	0	2	8
Lane Flow Rate	298	659	261	279	15
Geometry Grp	2	5	7	7	2
Degree of Util (X)	0.543	1.041	0.512	0.508	0.033
Departure Headway (Hd)	6.668	5.692	7.176	6.659	7.914
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	545	632	506	545	455
Service Time	4.668	3.778	4.876	4.359	5.914
HCM Lane V/C Ratio	0.547	1.043	0.516	0.512	0.033
HCM Control Delay	17.3	70.8	17.2	16	11.2
HCM Lane LOS	C	F	C	C	B
HCM 95th-tile Q	3.2	17.3	2.9	2.9	0.1

Intersection						
Int Delay, s/veh	4					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	131	443	308	23	25	177
Future Vol, veh/h	131	443	308	23	25	177
Conflicting Peds, #/hr	0	0	0	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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	142	482	335	25	27	192

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	360	0	-	0	1113	347
Stage 1	-	-	-	-	347	-
Stage 2	-	-	-	-	766	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1199	-	-	-	231	696
Stage 1	-	-	-	-	716	-
Stage 2	-	-	-	-	459	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1199	-	-	-	194	696
Mov Cap-2 Maneuver	-	-	-	-	194	-
Stage 1	-	-	-	-	716	-
Stage 2	-	-	-	-	385	-

Approach	EB	WB	SB
HCM Control Delay, s	1.9	0	16.6
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1199	-	-	-	527
HCM Lane V/C Ratio	0.119	-	-	-	0.417
HCM Control Delay (s)	8.4	0	-	-	16.6
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.4	-	-	-	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	386	65	56	282	17	49	1	52	19	1	9
Future Volume (vph)	18	386	65	56	282	17	49	1	52	19	1	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.9	4.9	3.0	4.9			3.7	3.7		3.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	0.98		0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	0.99			1.00	0.85		0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.97	
Satd. Flow (prot)	1770	1863	1583	1770	1845			1776	1550		1715	
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.97	
Satd. Flow (perm)	1770	1863	1583	1770	1845			1776	1550		1715	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	20	420	71	61	307	18	53	1	57	21	1	10
RTOR Reduction (vph)	0	0	30	0	1	0	0	0	50	0	9	0
Lane Group Flow (vph)	20	420	41	61	324	0	0	54	7	0	23	0
Confl. Peds. (#/hr)	3					3	2		1	1		2
Turn Type	Prot	NA	custom	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases			6						8			
Actuated Green, G (s)	1.6	25.6	29.6	5.6	29.6			7.5	7.5		3.5	
Effective Green, g (s)	1.6	25.6	29.6	5.6	29.6			7.5	7.5		3.5	
Actuated g/C Ratio	0.03	0.45	0.52	0.10	0.52			0.13	0.13		0.06	
Clearance Time (s)	3.0	4.9	4.9	3.0	4.9			3.7	3.7		3.5	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0			2.0	2.0		2.0	
Lane Grp Cap (vph)	49	832	817	172	953			232	202		104	
v/s Ratio Prot	0.01	c0.23		c0.03	0.18			c0.03			c0.01	
v/s Ratio Perm			0.03						0.00			
v/c Ratio	0.41	0.50	0.05	0.35	0.34			0.23	0.04		0.22	
Uniform Delay, d1	27.4	11.3	6.9	24.2	8.1			22.3	21.7		25.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	2.0	0.2	0.0	0.5	0.1			0.2	0.0		0.4	
Delay (s)	29.4	11.5	6.9	24.6	8.2			22.5	21.8		26.0	
Level of Service	C	B	A	C	A			C	C		C	
Approach Delay (s)		11.6			10.8			22.1			26.0	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	12.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	57.3	Sum of lost time (s)	15.1
Intersection Capacity Utilization	43.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM 2010 analysis does not support custom phasing.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	417	95	173	375	53	106
Future Volume (vph)	417	95	173	375	53	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.1	4.1	5.8	5.1	4.1
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.98	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1559	1770	1863	1770	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1863	1559	1770	1863	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	453	103	188	408	58	115
RTOR Reduction (vph)	0	52	0	0	0	75
Lane Group Flow (vph)	453	51	188	408	58	40
Confl. Bikes (#/hr)		3				
Turn Type	NA	pm+ov	Prot	NA	Prot	pm+ov
Protected Phases	2	3	1	6	3	1
Permitted Phases		2				3
Actuated Green, G (s)	22.0	31.6	12.6	38.7	9.6	22.2
Effective Green, g (s)	22.0	31.6	12.6	38.7	9.6	22.2
Actuated g/C Ratio	0.34	0.49	0.20	0.60	0.15	0.35
Clearance Time (s)	5.8	5.1	4.1	5.8	5.1	4.1
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)	638	767	347	1123	264	547
v/s Ratio Prot	c0.24	0.01	c0.11	0.22	c0.03	0.01
v/s Ratio Perm		0.02				0.01
v/c Ratio	0.71	0.07	0.54	0.36	0.22	0.07
Uniform Delay, d1	18.3	8.6	23.2	6.5	24.0	14.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.1	0.0	0.9	0.1	0.2	0.0
Delay (s)	21.4	8.6	24.1	6.6	24.2	14.1
Level of Service	C	A	C	A	C	B
Approach Delay (s)	19.1			12.1	17.5	
Approach LOS	B			B	B	

Intersection Summary			
HCM 2000 Control Delay	15.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	64.2	Sum of lost time (s)	17.0
Intersection Capacity Utilization	50.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM 2010 methodology does not support exclusive ped or hold phases.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	216	302	249	376	669	349
Future Volume (vph)	216	302	249	376	669	349
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.1	4.1	4.6	4.6	4.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	1863	1863	1583	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	1863	1863	1583	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	235	328	271	409	727	379
RTOR Reduction (vph)	0	0	0	95	0	155
Lane Group Flow (vph)	235	328	271	314	727	224
Turn Type	Prot	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	5	2	6	7	7	5
Permitted Phases				6		4
Actuated Green, G (s)	9.1	27.8	14.7	45.0	30.3	39.4
Effective Green, g (s)	9.1	27.8	14.7	45.0	30.3	39.4
Actuated g/C Ratio	0.14	0.42	0.22	0.67	0.45	0.59
Clearance Time (s)	4.0	4.1	4.1	4.6	4.6	4.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	467	775	409	1066	802	933
v/s Ratio Prot	c0.07	0.18	c0.15	0.13	c0.41	0.03
v/s Ratio Perm				0.06		0.11
v/c Ratio	0.50	0.42	0.66	0.29	0.91	0.24
Uniform Delay, d1	26.8	13.8	23.8	4.4	16.9	6.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3	0.1	3.1	0.1	13.5	0.0
Delay (s)	27.1	14.0	26.9	4.5	30.4	6.6
Level of Service	C	B	C	A	C	A
Approach Delay (s)		19.4	13.4		22.3	
Approach LOS		B	B		C	

Intersection Summary			
HCM 2000 Control Delay	19.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	66.8	Sum of lost time (s)	12.7
Intersection Capacity Utilization	66.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	216	302	249	376	669	349
Future Volume (veh/h)	216	302	249	376	669	349
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	235	328	271	409	727	379
Adj No. of Lanes	2	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	362	747	419	1061	790	872
Arrive On Green	0.11	0.40	0.22	0.22	0.45	0.45
Sat Flow, veh/h	3442	1863	1863	1583	1774	1583
Grp Volume(v), veh/h	235	328	271	409	727	379
Grp Sat Flow(s),veh/h/ln	1721	1863	1863	1583	1774	1583
Q Serve(g_s), s	3.7	7.2	7.5	6.5	21.8	8.0
Cycle Q Clear(g_c), s	3.7	7.2	7.5	6.5	21.8	8.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	362	747	419	1061	790	872
V/C Ratio(X)	0.65	0.44	0.65	0.39	0.92	0.43
Avail Cap(c_a), veh/h	1521	1317	1317	1825	941	1007
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.3	12.3	19.9	4.1	14.7	7.5
Incr Delay (d2), s/veh	0.7	0.2	0.6	0.1	11.6	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	3.7	3.9	8.5	13.0	8.6
LnGrp Delay(d),s/veh	25.0	12.5	20.5	4.2	26.3	7.6
LnGrp LOS	C	B	C	A	C	A
Approach Vol, veh/h		563	680		1106	
Approach Delay, s/veh		17.7	10.7		19.9	
Approach LOS		B	B		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		26.8		29.8	10.0	16.8		
Change Period (Y+Rc), s		4.1		4.6	4.0	4.1		
Max Green Setting (Gmax), s		40.0		30.0	25.0	40.0		
Max Q Clear Time (g_c+I1), s		9.2		23.8	5.7	9.5		
Green Ext Time (p_c), s		3.3		1.4	0.4	3.3		

Intersection Summary		
HCM 2010 Ctrl Delay		16.7
HCM 2010 LOS		B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	104	744	142	27	380	169	109	34	33	300	54	111
Future Volume (vph)	104	744	142	27	380	169	109	34	33	300	54	111
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.6		3.0	4.6	4.6		4.1	4.1	3.0	3.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98		1.00	0.99	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85		1.00	0.85	1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.96	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3454		1770	1863	1547		1794	1563	1770	1675	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.96	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3454		1770	1863	1547		1794	1563	1770	1675	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	113	809	154	29	413	184	118	37	36	326	59	121
RTOR Reduction (vph)	0	12	0	0	0	104	0	0	30	0	48	0
Lane Group Flow (vph)	113	951	0	29	413	80	0	155	6	326	132	0
Confl. Peds. (#/hr)	1					1			1	1		
Confl. Bikes (#/hr)						1						
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	1	6		5	2		8	8		4	4	
Permitted Phases						2			8			
Actuated Green, G (s)	10.5	32.3		3.8	25.6	25.6		14.1	14.1	21.1	21.1	
Effective Green, g (s)	10.5	32.3		3.8	25.6	25.6		14.1	14.1	21.1	21.1	
Actuated g/C Ratio	0.12	0.38		0.04	0.30	0.30		0.16	0.16	0.25	0.25	
Clearance Time (s)	3.0	4.6		3.0	4.6	4.6		4.1	4.1	3.0	3.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0		2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	216	1297		78	554	460		294	256	434	410	
v/s Ratio Prot	c0.06	c0.28		0.02	0.22			c0.09		c0.18	0.08	
v/s Ratio Perm						0.05			0.00			
v/c Ratio	0.52	0.73		0.37	0.75	0.17		0.53	0.02	0.75	0.32	
Uniform Delay, d1	35.4	23.1		39.9	27.3	22.4		32.9	30.2	30.0	26.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.1	1.9		1.1	4.8	0.1		0.8	0.0	6.4	0.2	
Delay (s)	36.5	25.0		41.0	32.0	22.4		33.7	30.2	36.4	26.7	
Level of Service	D	C		D	C	C		C	C	D	C	
Approach Delay (s)		26.2			29.6			33.0			33.0	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	29.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	86.0	Sum of lost time (s)	14.7
Intersection Capacity Utilization	67.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	104	744	142	27	380	169	109	34	33	300	54	111
Future Volume (veh/h)	104	744	142	27	380	169	109	34	33	300	54	111
Number	1	6	16	5	2	12	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1900	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	113	809	154	29	413	184	118	37	36	326	59	121
Adj No. of Lanes	1	2	0	1	1	1	0	1	1	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	147	1177	224	45	632	525	171	54	198	390	120	246
Arrive On Green	0.08	0.40	0.40	0.03	0.34	0.34	0.13	0.13	0.13	0.22	0.22	0.22
Sat Flow, veh/h	1774	2967	565	1774	1863	1548	1366	428	1577	1774	545	1118
Grp Volume(v), veh/h	113	483	480	29	413	184	155	0	36	326	0	180
Grp Sat Flow(s),veh/h/ln	1774	1770	1762	1774	1863	1548	1794	0	1577	1774	0	1664
Q Serve(g_s), s	3.9	14.3	14.3	1.0	11.9	5.6	5.2	0.0	1.3	11.1	0.0	6.0
Cycle Q Clear(g_c), s	3.9	14.3	14.3	1.0	11.9	5.6	5.2	0.0	1.3	11.1	0.0	6.0
Prop In Lane	1.00		0.32	1.00		1.00	0.76		1.00	1.00		0.67
Lane Grp Cap(c), veh/h	147	702	699	45	632	525	225	0	198	390	0	365
V/C Ratio(X)	0.77	0.69	0.69	0.65	0.65	0.35	0.69	0.00	0.18	0.84	0.00	0.49
Avail Cap(c_a), veh/h	562	1402	1396	562	1475	1226	853	0	749	562	0	527
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	28.4	15.8	15.8	30.5	17.7	15.6	26.4	0.0	24.7	23.5	0.0	21.6
Incr Delay (d2), s/veh	3.2	0.5	0.5	5.7	0.4	0.1	1.4	0.0	0.2	5.0	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	7.1	7.0	0.6	6.2	2.4	2.7	0.0	0.6	6.0	0.0	2.8
LnGrp Delay(d),s/veh	31.6	16.2	16.2	36.2	18.1	15.8	27.8	0.0	24.9	28.6	0.0	21.9
LnGrp LOS	C	B	B	D	B	B	C		C	C		C
Approach Vol, veh/h		1076			626			191			506	
Approach Delay, s/veh		17.9			18.3			27.3			26.2	
Approach LOS		B			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.2	26.0		16.9	4.6	29.6		12.0
Change Period (Y+Rc), s	3.0	4.6		3.0	3.0	4.6		4.1
Max Green Setting (Gmax), s	20.0	50.0		20.0	20.0	50.0		30.0
Max Q Clear Time (g_c+I1), s	5.9	13.9		13.1	3.0	16.3		7.2
Green Ext Time (p_c), s	0.1	7.5		0.8	0.0	7.5		0.6

Intersection Summary	
HCM 2010 Ctrl Delay	20.5
HCM 2010 LOS	C

Appendix E:

Analysis Worksheets for
Near-Term (2028) plus Proposed Project Conditions

Intersection	
Intersection Delay, s/veh	71.9
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	333	105	170	326	2	228	1	290	0	0	2
Future Vol, veh/h	2	333	105	170	326	2	228	1	290	0	0	2
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	396	125	202	388	2	271	1	345	0	0	2
Number of Lanes	0	1	0	1	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay	67.6	32.3	113.9	12.4
HCM LOS	F	D	F	B

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	44%	0%	100%	0%	0%
Vol Thru, %	0%	76%	0%	99%	0%
Vol Right, %	56%	24%	0%	1%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	519	440	170	328	2
LT Vol	228	2	170	0	0
Through Vol	1	333	0	326	0
RT Vol	290	105	0	2	2
Lane Flow Rate	618	524	202	390	2
Geometry Grp	2	5	7	7	2
Degree of Util (X)	1.156	0.998	0.456	0.825	0.006
Departure Headway (Hd)	6.733	7.403	8.736	8.213	9.346
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	538	492	415	445	385
Service Time	4.797	5.403	6.436	5.913	7.346
HCM Lane V/C Ratio	1.149	1.065	0.487	0.876	0.005
HCM Control Delay	113.9	67.6	18.6	39.4	12.4
HCM Lane LOS	F	F	C	E	B
HCM 95th-tile Q	21.2	13.4	2.3	7.8	0

Intersection	
Int Delay, s/veh	6.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	180	442	376	16	41	118
Future Vol, veh/h	180	442	376	16	41	118
Conflicting Peds, #/hr	0	0	0	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	86	86	86	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	209	514	437	19	48	137

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	456	0	-	0	1380	447
Stage 1	-	-	-	-	447	-
Stage 2	-	-	-	-	933	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1105	-	-	-	159	612
Stage 1	-	-	-	-	644	-
Stage 2	-	-	-	-	383	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1105	-	-	-	117	612
Mov Cap-2 Maneuver	-	-	-	-	117	-
Stage 1	-	-	-	-	644	-
Stage 2	-	-	-	-	282	-

Approach	EB	WB	SB
HCM Control Delay, s	2.6	0	36.2
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1105	-	-	-	293
HCM Lane V/C Ratio	0.189	-	-	-	0.631
HCM Control Delay (s)	9	0	-	-	36.2
HCM Lane LOS	A	A	-	-	E
HCM 95th %tile Q(veh)	0.7	-	-	-	4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	265	235	309	251	8	136	4	197	13	4	10
Future Volume (vph)	5	265	235	309	251	8	136	4	197	13	4	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.9	4.9	3.0	4.9			3.7	3.7		3.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00			1.00	1.00		0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	1.00			1.00	0.85		0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.98	
Satd. Flow (prot)	1770	1863	1544	1770	1853			1776	1583		1710	
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.98	
Satd. Flow (perm)	1770	1863	1544	1770	1853			1776	1583		1710	
Peak-hour factor, PHF	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Adj. Flow (vph)	7	353	313	412	335	11	181	5	263	17	5	13
RTOR Reduction (vph)	0	0	111	0	0	0	0	0	220	0	12	0
Lane Group Flow (vph)	7	353	202	412	346	0	0	186	43	0	23	0
Confl. Peds. (#/hr)			2	2			4					4
Confl. Bikes (#/hr)			1			1						
Turn Type	Prot	NA	custom	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases			6						8			
Actuated Green, G (s)	3.3	20.2	46.8	29.9	46.8			13.8	13.8		5.6	
Effective Green, g (s)	3.3	20.2	46.8	29.9	46.8			13.8	13.8		5.6	
Actuated g/C Ratio	0.04	0.24	0.55	0.35	0.55			0.16	0.16		0.07	
Clearance Time (s)	3.0	4.9	4.9	3.0	4.9			3.7	3.7		3.5	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0			2.0	2.0		2.0	
Lane Grp Cap (vph)	69	444	854	625	1025			289	258		113	
v/s Ratio Prot	0.00	c0.19		c0.23	0.19			c0.10			c0.01	
v/s Ratio Perm			0.13						0.03			
v/c Ratio	0.10	0.80	0.24	0.66	0.34			0.64	0.17		0.20	
Uniform Delay, d1	39.2	30.3	9.7	23.1	10.4			33.1	30.5		37.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.2	8.9	0.1	1.9	0.1			3.7	0.1		0.3	
Delay (s)	39.5	39.1	9.8	25.0	10.5			36.8	30.6		37.7	
Level of Service	D	D	A	C	B			D	C		D	
Approach Delay (s)		25.5			18.3			33.1			37.7	
Approach LOS		C			B			C			D	

Intersection Summary			
HCM 2000 Control Delay	24.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	84.6	Sum of lost time (s)	15.1
Intersection Capacity Utilization	56.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM 2010 analysis does not support custom phasing.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	411	56	56	500	96	169
Future Volume (vph)	411	56	56	500	96	169
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.1	4.1	5.8	5.1	4.1
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1562	1770	1863	1770	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1863	1562	1770	1863	1770	1583
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	462	63	63	562	108	190
RTOR Reduction (vph)	0	31	0	0	0	129
Lane Group Flow (vph)	462	32	63	562	108	61
Confl. Bikes (#/hr)		1				
Turn Type	NA	pm+ov	Prot	NA	Prot	pm+ov
Protected Phases	2	3	1	6	3	1
Permitted Phases		2				3
Actuated Green, G (s)	20.0	30.3	8.5	32.6	10.3	18.8
Effective Green, g (s)	20.0	30.3	8.5	32.6	10.3	18.8
Actuated g/C Ratio	0.34	0.52	0.14	0.55	0.18	0.32
Clearance Time (s)	5.8	5.1	4.1	5.8	5.1	4.1
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)	633	804	255	1032	310	506
v/s Ratio Prot	c0.25	0.01	0.04	c0.30	c0.06	0.02
v/s Ratio Perm		0.01				0.02
v/c Ratio	0.73	0.04	0.25	0.54	0.35	0.12
Uniform Delay, d1	17.0	7.1	22.3	8.4	21.3	14.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.6	0.0	0.2	0.3	0.2	0.0
Delay (s)	20.6	7.1	22.5	8.7	21.6	14.2
Level of Service	C	A	C	A	C	B
Approach Delay (s)	19.0			10.1	16.9	
Approach LOS	B			B	B	

Intersection Summary			
HCM 2000 Control Delay	14.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	58.8	Sum of lost time (s)	17.0
Intersection Capacity Utilization	46.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM 2010 methodology does not support exclusive ped or hold phases.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	391	245	377	577	218	239
Future Volume (vph)	391	245	377	577	218	239
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.1	4.1	4.6	4.6	4.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	1863	1863	1583	1770	1567
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	1863	1863	1583	1770	1567
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	425	266	410	627	237	260
RTOR Reduction (vph)	0	0	0	42	0	142
Lane Group Flow (vph)	425	266	410	585	237	118
Confl. Bikes (#/hr)						1
Turn Type	Prot	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	5	2	6	7	7	5
Permitted Phases				6		4
Actuated Green, G (s)	13.2	37.0	19.8	33.3	13.5	26.7
Effective Green, g (s)	13.2	37.0	19.8	33.3	13.5	26.7
Actuated g/C Ratio	0.22	0.62	0.33	0.56	0.23	0.45
Clearance Time (s)	4.0	4.1	4.1	4.6	4.6	4.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	765	1164	623	890	403	706
v/s Ratio Prot	c0.12	0.14	c0.22	c0.15	0.13	0.04
v/s Ratio Perm				0.22		0.04
v/c Ratio	0.56	0.23	0.66	0.66	0.59	0.17
Uniform Delay, d1	20.4	4.9	16.8	9.0	20.4	9.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5	0.0	1.9	1.3	1.4	0.0
Delay (s)	20.9	4.9	18.7	10.3	21.8	9.7
Level of Service	C	A	B	B	C	A
Approach Delay (s)		14.7	13.7		15.5	
Approach LOS		B	B		B	

Intersection Summary			
HCM 2000 Control Delay	14.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	59.2	Sum of lost time (s)	12.7
Intersection Capacity Utilization	54.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations								
Traffic Volume (veh/h)	391	245	377	577	218	239		
Future Volume (veh/h)	391	245	377	577	218	239		
Number	5	2	6	16	7	14		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	425	266	410	627	237	260		
Adj No. of Lanes	2	1	1	1	1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	588	1206	741	918	323	558		
Arrive On Green	0.17	0.65	0.40	0.40	0.18	0.18		
Sat Flow, veh/h	3442	1863	1863	1583	1774	1583		
Grp Volume(v), veh/h	425	266	410	627	237	260		
Grp Sat Flow(s),veh/h/ln	1721	1863	1863	1583	1774	1583		
Q Serve(g_s), s	5.9	3.0	8.6	14.0	6.4	6.5		
Cycle Q Clear(g_c), s	5.9	3.0	8.6	14.0	6.4	6.5		
Prop In Lane	1.00			1.00	1.00	1.00		
Lane Grp Cap(c), veh/h	588	1206	741	918	323	558		
V/C Ratio(X)	0.72	0.22	0.55	0.68	0.73	0.47		
Avail Cap(c_a), veh/h	1691	1465	1465	1533	1046	1204		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	20.0	3.7	11.8	7.4	19.7	12.8		
Incr Delay (d2), s/veh	0.6	0.0	0.2	0.3	1.2	0.2		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	2.9	1.5	4.5	12.5	3.2	6.0		
LnGrp Delay(d),s/veh	20.6	3.7	12.1	7.8	20.9	13.0		
LnGrp LOS	C	A	B	A	C	B		
Approach Vol, veh/h		691	1037		497			
Approach Delay, s/veh		14.1	9.5		16.7			
Approach LOS		B	A		B			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		37.0		13.8	12.7	24.3		
Change Period (Y+Rc), s		4.1		4.6	4.0	4.1		
Max Green Setting (Gmax), s		40.0		30.0	25.0	40.0		
Max Q Clear Time (g_c+I1), s		5.0		8.5	7.9	16.0		
Green Ext Time (p_c), s		4.4		0.8	0.8	4.2		
Intersection Summary								
HCM 2010 Ctrl Delay			12.5					
HCM 2010 LOS			B					

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	120	307	50	11	729	251	98	31	8	105	14	102
Future Volume (vph)	120	307	50	11	729	251	98	31	8	105	14	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.6		3.0	4.6	4.6		4.1	4.1	3.0	3.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98		1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85		1.00	0.85	1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.96	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3465		1770	1863	1548		1795	1583	1770	1617	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.96	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3465		1770	1863	1548		1795	1583	1770	1617	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	130	334	54	12	792	273	107	34	9	114	15	111
RTOR Reduction (vph)	0	6	0	0	0	56	0	0	8	0	99	0
Lane Group Flow (vph)	130	382	0	12	792	217	0	141	1	114	27	0
Confl. Peds. (#/hr)	1					1						
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	1	6		5	2		8	8		4	4	
Permitted Phases						2			8			
Actuated Green, G (s)	12.1	64.7		1.1	53.7	53.7		14.4	14.4	11.2	11.2	
Effective Green, g (s)	12.1	64.7		1.1	53.7	53.7		14.4	14.4	11.2	11.2	
Actuated g/C Ratio	0.11	0.61		0.01	0.51	0.51		0.14	0.14	0.11	0.11	
Clearance Time (s)	3.0	4.6		3.0	4.6	4.6		4.1	4.1	3.0	3.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0		2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	201	2112		18	942	783		243	214	186	170	
v/s Ratio Prot	c0.07	0.11		0.01	c0.43			c0.08		c0.06	0.02	
v/s Ratio Perm						0.14			0.00			
v/c Ratio	0.65	0.18		0.67	0.84	0.28		0.58	0.01	0.61	0.16	
Uniform Delay, d1	45.0	9.1		52.3	22.5	15.0		43.0	39.7	45.4	43.2	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2	5.3	0.0		54.1	6.6	0.1		2.3	0.0	4.2	0.2	
Delay (s)	50.2	9.1		106.4	29.1	15.1		45.3	39.7	49.5	43.3	
Level of Service	D	A		F	C	B		D	D	D	D	
Approach Delay (s)		19.4			26.4			44.9			46.3	
Approach LOS		B			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	28.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	106.1	Sum of lost time (s)	14.7
Intersection Capacity Utilization	69.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	120	307	50	11	729	251	98	31	8	105	14	102
Future Volume (veh/h)	120	307	50	11	729	251	98	31	8	105	14	102
Number	1	6	16	5	2	12	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1900	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	130	334	54	12	792	273	107	34	9	114	15	111
Adj No. of Lanes	1	2	0	1	1	1	0	1	1	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	166	1747	280	21	912	775	143	45	166	194	21	155
Arrive On Green	0.09	0.57	0.57	0.01	0.49	0.49	0.11	0.11	0.11	0.11	0.11	0.11
Sat Flow, veh/h	1774	3056	489	1774	1863	1582	1362	433	1583	1774	192	1420
Grp Volume(v), veh/h	130	192	196	12	792	273	141	0	9	114	0	126
Grp Sat Flow(s),veh/h/ln	1774	1770	1776	1774	1863	1582	1795	0	1583	1774	0	1612
Q Serve(g_s), s	5.2	3.8	3.9	0.5	27.4	7.7	5.5	0.0	0.4	4.4	0.0	5.5
Cycle Q Clear(g_c), s	5.2	3.8	3.9	0.5	27.4	7.7	5.5	0.0	0.4	4.4	0.0	5.5
Prop In Lane	1.00		0.28	1.00		1.00	0.76		1.00	1.00		0.88
Lane Grp Cap(c), veh/h	166	1011	1015	21	912	775	189	0	166	194	0	176
V/C Ratio(X)	0.78	0.19	0.19	0.57	0.87	0.35	0.75	0.00	0.05	0.59	0.00	0.72
Avail Cap(c_a), veh/h	489	1219	1223	489	1283	1089	741	0	654	489	0	444
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	32.2	7.5	7.5	35.7	16.4	11.4	31.6	0.0	29.2	30.8	0.0	31.3
Incr Delay (d2), s/veh	3.0	0.0	0.0	8.8	3.6	0.1	2.2	0.0	0.0	1.1	0.0	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	1.8	1.9	0.3	14.8	3.4	2.9	0.0	0.2	2.2	0.0	2.5
LnGrp Delay(d),s/veh	35.2	7.5	7.5	44.4	20.1	11.5	33.8	0.0	29.3	31.9	0.0	33.3
LnGrp LOS	D	A	A	D	C	B	C		C	C		C
Approach Vol, veh/h		518			1077			150			240	
Approach Delay, s/veh		14.5			18.2			33.5			32.6	
Approach LOS		B			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.8	40.2		10.9	3.9	46.1		11.7
Change Period (Y+Rc), s	3.0	4.6		3.0	3.0	4.6		4.1
Max Green Setting (Gmax), s	20.0	50.0		20.0	20.0	50.0		30.0
Max Q Clear Time (g_c+I1), s	7.2	29.4		7.5	2.5	5.9		7.5
Green Ext Time (p_c), s	0.1	6.1		0.5	0.0	7.0		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	20.1
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	20	1	1	317	529	19
Future Vol, veh/h	20	1	1	317	529	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	1	1	345	575	21

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	932	585	596	0	-	0
Stage 1	585	-	-	-	-	-
Stage 2	347	-	-	-	-	-
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	296	511	980	-	-	-
Stage 1	557	-	-	-	-	-
Stage 2	716	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	296	511	980	-	-	-
Mov Cap-2 Maneuver	296	-	-	-	-	-
Stage 1	557	-	-	-	-	-
Stage 2	715	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.9	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	980	-	302	-	-
HCM Lane V/C Ratio	0.001	-	0.076	-	-
HCM Control Delay (s)	8.7	0	17.9	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection	
Intersection Delay, s/veh	41.9
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	385	217	243	259	2	97	2	178	4	2	8
Future Vol, veh/h	8	385	217	243	259	2	97	2	178	4	2	8
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	418	236	264	282	2	105	2	193	4	2	9
Number of Lanes	0	1	0	1	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay	74.6	16.6	17.3	11.2
HCM LOS	F	C	C	B

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	35%	1%	100%	0%	29%
Vol Thru, %	1%	63%	0%	99%	14%
Vol Right, %	64%	36%	0%	1%	57%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	277	610	243	261	14
LT Vol	97	8	243	0	4
Through Vol	2	385	0	259	2
RT Vol	178	217	0	2	8
Lane Flow Rate	301	663	264	284	15
Geometry Grp	2	5	7	7	2
Degree of Util (X)	0.541	1.054	0.512	0.51	0.032
Departure Headway (Hd)	6.683	5.721	7.18	6.663	7.938
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	542	637	504	545	454
Service Time	4.683	3.773	4.88	4.363	5.938
HCM Lane V/C Ratio	0.555	1.041	0.524	0.521	0.033
HCM Control Delay	17.3	74.6	17.2	16.1	11.2
HCM Lane LOS	C	F	C	C	B
HCM 95th-tile Q	3.2	17.9	2.9	2.9	0.1

Intersection	
Int Delay, s/veh	4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	131	450	315	23	25	177
Future Vol, veh/h	131	450	315	23	25	177
Conflicting Peds, #/hr	0	0	0	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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	142	489	342	25	27	192

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	367	0	-	0	1129	355
Stage 1	-	-	-	-	355	-
Stage 2	-	-	-	-	774	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1192	-	-	-	226	689
Stage 1	-	-	-	-	710	-
Stage 2	-	-	-	-	455	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1192	-	-	-	189	689
Mov Cap-2 Maneuver	-	-	-	-	189	-
Stage 1	-	-	-	-	710	-
Stage 2	-	-	-	-	380	-

Approach	EB	WB	SB
HCM Control Delay, s	1.9	0	16.9
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1192	-	-	-	519
HCM Lane V/C Ratio	0.119	-	-	-	0.423
HCM Control Delay (s)	8.4	0	-	-	16.9
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.4	-	-	-	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	386	72	78	282	17	56	1	75	19	1	9
Future Volume (vph)	18	386	72	78	282	17	56	1	75	19	1	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.9	4.9	3.0	4.9			3.7	3.7		3.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	0.98		0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	0.99			1.00	0.85		0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.97	
Satd. Flow (prot)	1770	1863	1583	1770	1845			1775	1550		1715	
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.97	
Satd. Flow (perm)	1770	1863	1583	1770	1845			1775	1550		1715	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	20	420	78	85	307	18	61	1	82	21	1	10
RTOR Reduction (vph)	0	0	29	0	1	0	0	0	72	0	9	0
Lane Group Flow (vph)	20	420	49	85	324	0	0	62	10	0	23	0
Confl. Peds. (#/hr)	3					3	2		1	1		2
Turn Type	Prot	NA	custom	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases			6						8			
Actuated Green, G (s)	1.8	24.9	32.3	9.2	32.3			7.5	7.5		3.5	
Effective Green, g (s)	1.8	24.9	32.3	9.2	32.3			7.5	7.5		3.5	
Actuated g/C Ratio	0.03	0.41	0.54	0.15	0.54			0.12	0.12		0.06	
Clearance Time (s)	3.0	4.9	4.9	3.0	4.9			3.7	3.7		3.5	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0			2.0	2.0		2.0	
Lane Grp Cap (vph)	52	770	849	270	989			221	193		99	
v/s Ratio Prot	0.01	c0.23		c0.05	c0.18			c0.03			c0.01	
v/s Ratio Perm			0.03						0.01			
v/c Ratio	0.38	0.55	0.06	0.31	0.33			0.28	0.05		0.23	
Uniform Delay, d1	28.7	13.4	6.7	22.7	7.8			23.9	23.2		27.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	1.7	0.4	0.0	0.2	0.1			0.3	0.0		0.4	
Delay (s)	30.4	13.8	6.7	22.9	7.9			24.2	23.3		27.5	
Level of Service	C	B	A	C	A			C	C		C	
Approach Delay (s)		13.4			11.0			23.6			27.5	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	14.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	60.2	Sum of lost time (s)	15.1
Intersection Capacity Utilization	44.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM 2010 analysis does not support custom phasing.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	437	98	173	395	55	106
Future Volume (vph)	437	98	173	395	55	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.1	4.1	5.8	5.1	4.1
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.98	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1559	1770	1863	1770	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1863	1559	1770	1863	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	475	107	188	429	60	115
RTOR Reduction (vph)	0	54	0	0	0	76
Lane Group Flow (vph)	475	54	188	429	60	39
Confl. Bikes (#/hr)		3				
Turn Type	NA	pm+ov	Prot	NA	Prot	pm+ov
Protected Phases	2	3	1	6	3	1
Permitted Phases		2				3
Actuated Green, G (s)	23.2	32.9	12.9	40.2	9.7	22.6
Effective Green, g (s)	23.2	32.9	12.9	40.2	9.7	22.6
Actuated g/C Ratio	0.35	0.50	0.20	0.61	0.15	0.34
Clearance Time (s)	5.8	5.1	4.1	5.8	5.1	4.1
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)	656	779	347	1138	260	543
v/s Ratio Prot	c0.26	0.01	c0.11	0.23	c0.03	0.01
v/s Ratio Perm		0.02				0.01
v/c Ratio	0.72	0.07	0.54	0.38	0.23	0.07
Uniform Delay, d1	18.5	8.5	23.8	6.5	24.8	14.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.4	0.0	0.9	0.1	0.2	0.0
Delay (s)	21.9	8.5	24.7	6.5	24.9	14.6
Level of Service	C	A	C	A	C	B
Approach Delay (s)	19.4			12.1	18.1	
Approach LOS	B			B	B	

Intersection Summary			
HCM 2000 Control Delay	16.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	65.8	Sum of lost time (s)	17.0
Intersection Capacity Utilization	51.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM 2010 methodology does not support exclusive ped or hold phases.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	223	315	262	376	669	356
Future Volume (vph)	223	315	262	376	669	356
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.1	4.1	4.6	4.6	4.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	1863	1863	1583	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	1863	1863	1583	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	242	342	285	409	727	387
RTOR Reduction (vph)	0	0	0	91	0	160
Lane Group Flow (vph)	242	342	285	318	727	227
Turn Type	Prot	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	5	2	6	7	7	5
Permitted Phases				6		4
Actuated Green, G (s)	9.2	28.4	15.2	45.5	30.3	39.5
Effective Green, g (s)	9.2	28.4	15.2	45.5	30.3	39.5
Actuated g/C Ratio	0.14	0.42	0.23	0.68	0.45	0.59
Clearance Time (s)	4.0	4.1	4.1	4.6	4.6	4.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	468	785	420	1068	795	927
v/s Ratio Prot	c0.07	0.18	c0.15	0.13	c0.41	0.03
v/s Ratio Perm				0.07		0.11
v/c Ratio	0.52	0.44	0.68	0.30	0.91	0.24
Uniform Delay, d1	27.0	13.8	23.9	4.5	17.3	6.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	0.1	3.4	0.1	14.7	0.1
Delay (s)	27.4	14.0	27.3	4.5	32.0	6.8
Level of Service	C	B	C	A	C	A
Approach Delay (s)		19.5	13.9		23.3	
Approach LOS		B	B		C	

Intersection Summary			
HCM 2000 Control Delay	19.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	67.4	Sum of lost time (s)	12.7
Intersection Capacity Utilization	67.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations								
Traffic Volume (veh/h)	223	315	262	376	669	356		
Future Volume (veh/h)	223	315	262	376	669	356		
Number	5	2	6	16	7	14		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	242	342	285	409	727	387		
Adj No. of Lanes	2	1	1	1	1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	368	758	431	1069	787	871		
Arrive On Green	0.11	0.41	0.23	0.23	0.44	0.44		
Sat Flow, veh/h	3442	1863	1863	1583	1774	1583		
Grp Volume(v), veh/h	242	342	285	409	727	387		
Grp Sat Flow(s),veh/h/ln	1721	1863	1863	1583	1774	1583		
Q Serve(g_s), s	3.9	7.8	8.1	6.6	22.5	8.5		
Cycle Q Clear(g_c), s	3.9	7.8	8.1	6.6	22.5	8.5		
Prop In Lane	1.00			1.00	1.00	1.00		
Lane Grp Cap(c), veh/h	368	758	431	1069	787	871		
V/C Ratio(X)	0.66	0.45	0.66	0.38	0.92	0.44		
Avail Cap(c_a), veh/h	1478	1280	1280	1790	914	985		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	25.0	12.5	20.3	4.1	15.3	7.8		
Incr Delay (d2), s/veh	0.8	0.2	0.7	0.1	12.6	0.1		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	1.9	4.0	4.2	8.8	13.7	9.1		
LnGrp Delay(d),s/veh	25.7	12.7	20.9	4.2	27.9	7.9		
LnGrp LOS	C	B	C	A	C	A		
Approach Vol, veh/h		584	694		1114			
Approach Delay, s/veh		18.1	11.1		21.0			
Approach LOS		B	B		C			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		27.8		30.4	10.2	17.6		
Change Period (Y+Rc), s		4.1		4.6	4.0	4.1		
Max Green Setting (Gmax), s		40.0		30.0	25.0	40.0		
Max Q Clear Time (g_c+I1), s		9.8		24.5	5.9	10.1		
Green Ext Time (p_c), s		3.4		1.3	0.4	3.4		
Intersection Summary								
HCM 2010 Ctrl Delay			17.4					
HCM 2010 LOS			B					

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	111	750	142	27	386	169	109	34	33	300	54	118
Future Volume (vph)	111	750	142	27	386	169	109	34	33	300	54	118
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.6		3.0	4.6	4.6		4.1	4.1	3.0	3.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98		1.00	0.99	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85		1.00	0.85	1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.96	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3455		1770	1863	1547		1794	1563	1770	1671	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.96	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3455		1770	1863	1547		1794	1563	1770	1671	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	121	815	154	29	420	184	118	37	36	326	59	128
RTOR Reduction (vph)	0	11	0	0	0	101	0	0	30	0	52	0
Lane Group Flow (vph)	121	958	0	29	420	83	0	155	6	326	135	0
Confl. Peds. (#/hr)	1					1			1	1		
Confl. Bikes (#/hr)						1						
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	1	6		5	2		8	8		4	4	
Permitted Phases						2			8			
Actuated Green, G (s)	11.0	33.3		3.9	26.2	26.2		14.1	14.1	21.1	21.1	
Effective Green, g (s)	11.0	33.3		3.9	26.2	26.2		14.1	14.1	21.1	21.1	
Actuated g/C Ratio	0.13	0.38		0.04	0.30	0.30		0.16	0.16	0.24	0.24	
Clearance Time (s)	3.0	4.6		3.0	4.6	4.6		4.1	4.1	3.0	3.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0		2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	223	1320		79	560	465		290	253	428	404	
v/s Ratio Prot	c0.07	c0.28		0.02	0.23			c0.09		c0.18	0.08	
v/s Ratio Perm						0.05			0.00			
v/c Ratio	0.54	0.73		0.37	0.75	0.18		0.53	0.02	0.76	0.34	
Uniform Delay, d1	35.7	23.0		40.4	27.5	22.5		33.5	30.7	30.7	27.2	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.4	1.7		1.1	5.0	0.1		1.0	0.0	7.1	0.2	
Delay (s)	37.1	24.7		41.5	32.5	22.6		34.4	30.7	37.7	27.4	
Level of Service	D	C		D	C	C		C	C	D	C	
Approach Delay (s)		26.1			30.0			33.7			34.0	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	29.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	87.1	Sum of lost time (s)	14.7
Intersection Capacity Utilization	67.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	111	750	142	27	386	169	109	34	33	300	54	118
Future Volume (veh/h)	111	750	142	27	386	169	109	34	33	300	54	118
Number	1	6	16	5	2	12	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1900	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	121	815	154	29	420	184	118	37	36	326	59	128
Adj No. of Lanes	1	2	0	1	1	1	0	1	1	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	156	1201	227	45	636	528	168	53	194	389	115	249
Arrive On Green	0.09	0.40	0.40	0.03	0.34	0.34	0.12	0.12	0.12	0.22	0.22	0.22
Sat Flow, veh/h	1774	2971	561	1774	1863	1548	1366	428	1577	1774	524	1136
Grp Volume(v), veh/h	121	485	484	29	420	184	155	0	36	326	0	187
Grp Sat Flow(s),veh/h/ln	1774	1770	1763	1774	1863	1548	1794	0	1577	1774	0	1660
Q Serve(g_s), s	4.3	14.5	14.5	1.0	12.4	5.7	5.3	0.0	1.3	11.3	0.0	6.4
Cycle Q Clear(g_c), s	4.3	14.5	14.5	1.0	12.4	5.7	5.3	0.0	1.3	11.3	0.0	6.4
Prop In Lane	1.00		0.32	1.00		1.00	0.76		1.00	1.00		0.68
Lane Grp Cap(c), veh/h	156	716	713	45	636	528	221	0	194	389	0	364
V/C Ratio(X)	0.77	0.68	0.68	0.65	0.66	0.35	0.70	0.00	0.19	0.84	0.00	0.51
Avail Cap(c_a), veh/h	551	1374	1368	551	1446	1201	836	0	734	551	0	516
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	28.7	15.7	15.7	31.1	18.0	15.9	27.1	0.0	25.3	24.1	0.0	22.1
Incr Delay (d2), s/veh	3.1	0.4	0.4	5.8	0.4	0.1	1.5	0.0	0.2	5.6	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	7.1	7.1	0.6	6.4	2.5	2.7	0.0	0.6	6.1	0.0	3.0
LnGrp Delay(d),s/veh	31.8	16.2	16.2	36.9	18.5	16.0	28.6	0.0	25.5	29.6	0.0	22.6
LnGrp LOS	C	B	B	D	B	B	C		C	C		C
Approach Vol, veh/h		1090			633			191			513	
Approach Delay, s/veh		17.9			18.6			28.0			27.1	
Approach LOS		B			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.7	26.6		17.1	4.6	30.6		12.0
Change Period (Y+Rc), s	3.0	4.6		3.0	3.0	4.6		4.1
Max Green Setting (Gmax), s	20.0	50.0		20.0	20.0	50.0		30.0
Max Q Clear Time (g_c+I1), s	6.3	14.4		13.3	3.0	16.5		7.3
Green Ext Time (p_c), s	0.1	7.6		0.8	0.0	7.5		0.6

Intersection Summary			
HCM 2010 Ctrl Delay			20.8
HCM 2010 LOS			C

Intersection						
Int Delay, s/veh	1.1					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	1	1	102	122	29
Future Vol, veh/h	30	1	1	102	122	29
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	33	1	1	111	133	32

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	261	148	164	0	-	0
Stage 1	148	-	-	-	-	-
Stage 2	113	-	-	-	-	-
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	728	899	1414	-	-	-
Stage 1	880	-	-	-	-	-
Stage 2	912	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	727	899	1414	-	-	-
Mov Cap-2 Maneuver	727	-	-	-	-	-
Stage 1	880	-	-	-	-	-
Stage 2	911	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.2	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1414	-	732	-	-
HCM Lane V/C Ratio	0.001	-	0.046	-	-
HCM Control Delay (s)	7.5	0	10.2	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Appendix F:

Analysis Worksheets for
Cumulative (2035) Conditions

Intersection	
Intersection Delay, s/veh	96.5
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	379	114	172	371	3	245	1	288	1	0	5
Future Vol, veh/h	5	379	114	172	371	3	245	1	288	1	0	5
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	451	136	205	442	4	292	1	343	1	0	6
Number of Lanes	0	1	0	1	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay	112.9	47.6	132.1	13.4
HCM LOS	F	E	F	B

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	46%	1%	100%	0%	17%
Vol Thru, %	0%	76%	0%	99%	0%
Vol Right, %	54%	23%	0%	1%	83%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	534	498	172	374	6
LT Vol	245	5	172	0	1
Through Vol	1	379	0	371	0
RT Vol	288	114	0	3	5
Lane Flow Rate	636	593	205	445	7
Geometry Grp	2	5	7	7	2
Degree of Util (X)	1.201	1.142	0.464	0.945	0.018
Departure Headway (Hd)	7.121	7.64	9.092	8.566	10.217
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	515	480	399	427	352
Service Time	5.121	5.64	6.792	6.266	8.217
HCM Lane V/C Ratio	1.235	1.235	0.514	1.042	0.02
HCM Control Delay	132.1	112.9	19.4	60.5	13.4
HCM Lane LOS	F	F	C	F	B
HCM 95th-tile Q	22.7	19	2.4	10.8	0.1

Intersection						
Int Delay, s/veh	6.1					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	182	476	417	18	41	120
Future Vol, veh/h	182	476	417	18	41	120
Conflicting Peds, #/hr	0	0	0	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	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	202	529	463	20	46	133

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	483	0	-	0	1406	473
Stage 1	-	-	-	-	473	-
Stage 2	-	-	-	-	933	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1080	-	-	-	153	591
Stage 1	-	-	-	-	627	-
Stage 2	-	-	-	-	383	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1080	-	-	-	112	591
Mov Cap-2 Maneuver	-	-	-	-	112	-
Stage 1	-	-	-	-	627	-
Stage 2	-	-	-	-	282	-

Approach	EB	WB	SB
HCM Control Delay, s	2.5	0	37.3
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1080	-	-	-	283
HCM Lane V/C Ratio	0.187	-	-	-	0.632
HCM Control Delay (s)	9.1	0	-	-	37.3
HCM Lane LOS	A	A	-	-	E
HCM 95th %tile Q(veh)	0.7	-	-	-	4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	283	248	297	274	12	154	5	201	15	5	12
Future Volume (vph)	9	283	248	297	274	12	154	5	201	15	5	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.9	4.9	3.0	4.9			3.7	3.7		3.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00			1.00	1.00		0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	0.99			1.00	0.85		0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.98	
Satd. Flow (prot)	1770	1863	1544	1770	1849			1777	1583		1710	
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.98	
Satd. Flow (perm)	1770	1863	1544	1770	1849			1777	1583		1710	
Peak-hour factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	11	354	310	371	342	15	192	6	251	19	6	15
RTOR Reduction (vph)	0	0	110	0	1	0	0	0	209	0	14	0
Lane Group Flow (vph)	11	354	200	371	357	0	0	199	42	0	26	0
Confl. Peds. (#/hr)			2	2			4					4
Confl. Bikes (#/hr)			1			1						
Turn Type	Prot	NA	custom	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases			6						8			
Actuated Green, G (s)	3.3	20.4	47.0	29.9	47.0			14.4	14.4		5.7	
Effective Green, g (s)	3.3	20.4	47.0	29.9	47.0			14.4	14.4		5.7	
Actuated g/C Ratio	0.04	0.24	0.55	0.35	0.55			0.17	0.17		0.07	
Clearance Time (s)	3.0	4.9	4.9	3.0	4.9			3.7	3.7		3.5	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0			2.0	2.0		2.0	
Lane Grp Cap (vph)	68	444	848	618	1016			299	266		114	
v/s Ratio Prot	0.01	c0.19		c0.21	0.19			c0.11			c0.02	
v/s Ratio Perm			0.13						0.03			
v/c Ratio	0.16	0.80	0.24	0.60	0.35			0.67	0.16		0.23	
Uniform Delay, d1	39.8	30.6	10.0	22.9	10.7			33.3	30.4		37.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.4	9.0	0.1	1.1	0.1			4.3	0.1		0.4	
Delay (s)	40.2	39.6	10.0	24.0	10.8			37.6	30.5		38.2	
Level of Service	D	D	B	C	B			D	C		D	
Approach Delay (s)		26.0			17.5			33.6			38.2	
Approach LOS		C			B			C			D	

Intersection Summary			
HCM 2000 Control Delay	24.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	85.5	Sum of lost time (s)	15.1
Intersection Capacity Utilization	58.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM 2010 analysis does not support custom phasing.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	426	66	68	499	111	190
Future Volume (vph)	426	66	68	499	111	190
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.1	4.1	5.8	5.1	4.1
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1562	1770	1863	1770	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1863	1562	1770	1863	1770	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	473	73	76	554	123	211
RTOR Reduction (vph)	0	35	0	0	0	143
Lane Group Flow (vph)	473	38	76	554	123	68
Confl. Bikes (#/hr)		1				
Turn Type	NA	pm+ov	Prot	NA	Prot	pm+ov
Protected Phases	2	3	1	6	3	1
Permitted Phases		2				3
Actuated Green, G (s)	21.3	32.1	9.0	34.4	10.8	19.8
Effective Green, g (s)	21.3	32.1	9.0	34.4	10.8	19.8
Actuated g/C Ratio	0.35	0.53	0.15	0.56	0.18	0.32
Clearance Time (s)	5.8	5.1	4.1	5.8	5.1	4.1
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)	649	820	260	1048	312	512
v/s Ratio Prot	c0.25	0.01	0.04	c0.30	c0.07	0.02
v/s Ratio Perm		0.02				0.02
v/c Ratio	0.73	0.05	0.29	0.53	0.39	0.13
Uniform Delay, d1	17.4	7.1	23.2	8.3	22.3	14.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.5	0.0	0.2	0.2	0.3	0.0
Delay (s)	20.9	7.1	23.4	8.5	22.6	14.6
Level of Service	C	A	C	A	C	B
Approach Delay (s)	19.0			10.3	17.6	
Approach LOS	B			B	B	

Intersection Summary			
HCM 2000 Control Delay	15.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	61.1	Sum of lost time (s)	17.0
Intersection Capacity Utilization	47.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM 2010 methodology does not support exclusive ped or hold phases.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	370	260	400	390	150	260
Future Volume (vph)	370	260	400	390	150	260
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.1	4.1	4.6	4.6	4.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	1863	1863	1583	1770	1568
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	1863	1863	1583	1770	1568
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	402	283	435	424	163	283
RTOR Reduction (vph)	0	0	0	50	0	136
Lane Group Flow (vph)	402	283	435	374	163	147
Confl. Bikes (#/hr)						1
Turn Type	Prot	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	5	2	6	7	7	5
Permitted Phases				6		4
Actuated Green, G (s)	12.1	35.1	19.0	30.1	11.1	23.2
Effective Green, g (s)	12.1	35.1	19.0	30.1	11.1	23.2
Actuated g/C Ratio	0.22	0.64	0.35	0.55	0.20	0.42
Clearance Time (s)	4.0	4.1	4.1	4.6	4.6	4.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	756	1191	644	867	357	662
v/s Ratio Prot	c0.12	0.15	c0.23	0.09	c0.09	0.05
v/s Ratio Perm				0.15		0.04
v/c Ratio	0.53	0.24	0.68	0.43	0.46	0.22
Uniform Delay, d1	18.9	4.2	15.3	7.3	19.2	10.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	0.0	2.2	0.1	0.3	0.1
Delay (s)	19.3	4.2	17.5	7.5	19.6	10.2
Level of Service	B	A	B	A	B	B
Approach Delay (s)		13.1	12.6		13.6	
Approach LOS		B	B		B	

Intersection Summary			
HCM 2000 Control Delay	13.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	54.9	Sum of lost time (s)	12.7
Intersection Capacity Utilization	50.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	370	260	400	390	150	260
Future Volume (veh/h)	370	260	400	390	150	260
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	402	283	435	424	163	283
Adj No. of Lanes	2	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	589	1120	630	850	353	586
Arrive On Green	0.17	0.60	0.34	0.34	0.20	0.20
Sat Flow, veh/h	3442	1863	1863	1583	1774	1583
Grp Volume(v), veh/h	402	283	435	424	163	283
Grp Sat Flow(s),veh/h/ln	1721	1863	1863	1583	1774	1583
Q Serve(g_s), s	4.8	3.1	8.8	7.4	3.5	6.0
Cycle Q Clear(g_c), s	4.8	3.1	8.8	7.4	3.5	6.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	589	1120	630	850	353	586
V/C Ratio(X)	0.68	0.25	0.69	0.50	0.46	0.48
Avail Cap(c_a), veh/h	1979	1714	1714	1772	1224	1364
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.9	4.1	12.4	6.4	15.4	10.5
Incr Delay (d2), s/veh	0.5	0.0	0.5	0.2	0.4	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	1.6	4.6	7.5	1.8	5.6
LnGrp Delay(d),s/veh	17.4	4.1	12.9	6.5	15.7	10.7
LnGrp LOS	B	A	B	A	B	B
Approach Vol, veh/h		685	859		446	
Approach Delay, s/veh		11.9	9.8		12.6	
Approach LOS		B	A		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		30.2		13.2	11.4	18.8		
Change Period (Y+Rc), s		4.1		4.6	4.0	4.1		
Max Green Setting (Gmax), s		40.0		30.0	25.0	40.0		
Max Q Clear Time (g_c+I1), s		5.1		8.0	6.8	10.8		
Green Ext Time (p_c), s		4.0		0.7	0.7	3.9		

Intersection Summary	
HCM 2010 Ctrl Delay	11.1
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	150	270	69	32	640	630	111	140	14	450	100	100
Future Volume (vph)	150	270	69	32	640	630	111	140	14	450	100	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.6		3.0	4.6	4.6	4.1	4.1		3.0	3.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	0.88	1.00	1.00		0.97	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.99		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3431		1770	1863	2724	1770	1838		3433	1723	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3431		1770	1863	2724	1770	1838		3433	1723	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	163	293	75	35	696	685	121	152	15	489	109	109
RTOR Reduction (vph)	0	13	0	0	0	182	0	3	0	0	26	0
Lane Group Flow (vph)	163	355	0	35	696	503	121	164	0	489	192	0
Confl. Peds. (#/hr)	1					1						
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	
Protected Phases	1	6		5	2		8	8		4	4	
Permitted Phases						2						
Actuated Green, G (s)	14.5	61.1		4.6	51.2	51.2	16.0	16.0		19.6	19.6	
Effective Green, g (s)	14.5	61.1		4.6	51.2	51.2	16.0	16.0		19.6	19.6	
Actuated g/C Ratio	0.12	0.53		0.04	0.44	0.44	0.14	0.14		0.17	0.17	
Clearance Time (s)	3.0	4.6		3.0	4.6	4.6	4.1	4.1		3.0	3.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	221	1807		70	822	1202	244	253		580	291	
v/s Ratio Prot	c0.09	0.10		0.02	c0.37		0.07	c0.09		c0.14	0.11	
v/s Ratio Perm						0.18						
v/c Ratio	0.74	0.20		0.50	0.85	0.42	0.50	0.65		0.84	0.66	
Uniform Delay, d1	48.9	14.5		54.6	28.9	22.2	46.3	47.3		46.7	45.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	10.5	0.0		2.0	7.7	0.1	0.6	4.3		10.4	4.3	
Delay (s)	59.4	14.5		56.6	36.6	22.3	46.8	51.6		57.1	49.4	
Level of Service	E	B		E	D	C	D	D		E	D	
Approach Delay (s)		28.3			30.2			49.6			54.7	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	37.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	116.0	Sum of lost time (s)	14.7
Intersection Capacity Utilization	77.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	150	270	69	32	640	630	111	140	14	450	100	100
Future Volume (veh/h)	150	270	69	32	640	630	111	140	14	450	100	100
Number	1	6	16	5	2	12	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	163	293	75	35	696	685	121	152	15	489	109	109
Adj No. of Lanes	1	2	0	1	1	2	1	1	0	2	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	199	1455	366	46	807	1206	210	198	20	592	147	147
Arrive On Green	0.11	0.52	0.52	0.03	0.43	0.43	0.12	0.12	0.12	0.17	0.17	0.17
Sat Flow, veh/h	1774	2802	705	1774	1863	2783	1774	1669	165	3442	856	856
Grp Volume(v), veh/h	163	183	185	35	696	685	121	0	167	489	0	218
Grp Sat Flow(s),veh/h/ln	1774	1770	1738	1774	1863	1392	1774	0	1834	1721	0	1712
Q Serve(g_s), s	8.0	5.0	5.1	1.8	30.2	16.5	5.8	0.0	7.9	12.3	0.0	10.8
Cycle Q Clear(g_c), s	8.0	5.0	5.1	1.8	30.2	16.5	5.8	0.0	7.9	12.3	0.0	10.8
Prop In Lane	1.00		0.41	1.00		1.00	1.00		0.09	1.00		0.50
Lane Grp Cap(c), veh/h	199	919	902	46	807	1206	210	0	217	592	0	294
V/C Ratio(X)	0.82	0.20	0.20	0.76	0.86	0.57	0.58	0.00	0.77	0.83	0.00	0.74
Avail Cap(c_a), veh/h	397	989	971	397	1041	1556	595	0	615	769	0	383
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	38.8	11.5	11.6	43.3	22.9	19.1	37.3	0.0	38.2	35.8	0.0	35.2
Incr Delay (d2), s/veh	3.2	0.0	0.0	9.1	5.0	0.2	0.9	0.0	2.2	4.5	0.0	3.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	2.4	2.5	1.0	16.6	6.3	2.9	0.0	4.1	6.2	0.0	5.4
LnGrp Delay(d),s/veh	42.1	11.6	11.6	52.4	28.0	19.2	38.2	0.0	40.4	40.3	0.0	38.7
LnGrp LOS	D	B	B	D	C	B	D		D	D		D
Approach Vol, veh/h		531			1416			288			707	
Approach Delay, s/veh		20.9			24.3			39.5			39.8	
Approach LOS		C			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	13.0	43.4		18.4	5.3	51.1		14.7
Change Period (Y+Rc), s	3.0	4.6		3.0	3.0	4.6		4.1
Max Green Setting (Gmax), s	20.0	50.0		20.0	20.0	50.0		30.0
Max Q Clear Time (g_c+I1), s	10.0	32.2		14.3	3.8	7.1		9.9
Green Ext Time (p_c), s	0.1	6.5		1.1	0.0	7.9		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	28.9
HCM 2010 LOS	C

Intersection	
Intersection Delay, s/veh	64.1
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	416	238	240	298	2	109	2	181	4	2	12
Future Vol, veh/h	12	416	238	240	298	2	109	2	181	4	2	12
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	452	259	261	324	2	118	2	197	4	2	13
Number of Lanes	0	1	0	1	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay	122	18.7	19	11.7
HCM LOS	F	C	C	B

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	37%	2%	100%	0%	22%
Vol Thru, %	1%	62%	0%	99%	11%
Vol Right, %	62%	36%	0%	1%	67%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	292	666	240	300	18
LT Vol	109	12	240	0	4
Through Vol	2	416	0	298	2
RT Vol	181	238	0	2	12
Lane Flow Rate	317	724	261	326	20
Geometry Grp	2	5	7	7	2
Degree of Util (X)	0.576	1.189	0.517	0.6	0.042
Departure Headway (Hd)	6.984	5.913	7.437	6.919	8.329
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	521	615	488	525	433
Service Time	4.984	3.929	5.137	4.619	6.329
HCM Lane V/C Ratio	0.608	1.177	0.535	0.621	0.046
HCM Control Delay	19	122	17.8	19.5	11.7
HCM Lane LOS	C	F	C	C	B
HCM 95th-tile Q	3.6	25.1	2.9	3.9	0.1

Intersection	
Int Delay, s/veh	4.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	134	477	337	24	31	190
Future Vol, veh/h	134	477	337	24	31	190
Conflicting Peds, #/hr	0	0	0	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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	146	518	366	26	34	207

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	392	0	-	0	1189	379
Stage 1	-	-	-	-	379	-
Stage 2	-	-	-	-	810	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1167	-	-	-	208	668
Stage 1	-	-	-	-	692	-
Stage 2	-	-	-	-	438	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1167	-	-	-	171	668
Mov Cap-2 Maneuver	-	-	-	-	171	-
Stage 1	-	-	-	-	692	-
Stage 2	-	-	-	-	361	-

Approach	EB	WB	SB
HCM Control Delay, s	1.9	0	20.1
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1167	-	-	-	475
HCM Lane V/C Ratio	0.125	-	-	-	0.506
HCM Control Delay (s)	8.5	0	-	-	20.1
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.4	-	-	-	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	396	91	75	290	21	66	1	63	24	2	14
Future Volume (vph)	22	396	91	75	290	21	66	1	63	24	2	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.9	4.9	3.0	4.9			3.7	3.7		3.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	0.98		0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	0.99			1.00	0.85		0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.97	
Satd. Flow (prot)	1770	1863	1583	1770	1841			1775	1550		1709	
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.97	
Satd. Flow (perm)	1770	1863	1583	1770	1841			1775	1550		1709	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	24	430	99	82	315	23	72	1	68	26	2	15
RTOR Reduction (vph)	0	0	30	0	1	0	0	0	60	0	14	0
Lane Group Flow (vph)	24	430	69	82	337	0	0	73	8	0	29	0
Confl. Peds. (#/hr)	3					3	2		1	1		2
Turn Type	Prot	NA	custom	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases			6						8			
Actuated Green, G (s)	1.7	26.2	33.4	8.9	33.4			7.6	7.6		5.1	
Effective Green, g (s)	1.7	26.2	33.4	8.9	33.4			7.6	7.6		5.1	
Actuated g/C Ratio	0.03	0.42	0.53	0.14	0.53			0.12	0.12		0.08	
Clearance Time (s)	3.0	4.9	4.9	3.0	4.9			3.7	3.7		3.5	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0			2.0	2.0		2.0	
Lane Grp Cap (vph)	47	776	840	250	977			214	187		138	
v/s Ratio Prot	0.01	c0.23		c0.05	c0.18			c0.04			c0.02	
v/s Ratio Perm			0.04						0.01			
v/c Ratio	0.51	0.55	0.08	0.33	0.34			0.34	0.04		0.21	
Uniform Delay, d1	30.2	13.9	7.2	24.3	8.5			25.4	24.4		27.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	3.8	0.5	0.0	0.3	0.1			0.3	0.0		0.3	
Delay (s)	34.0	14.4	7.2	24.6	8.5			25.7	24.5		27.3	
Level of Service	C	B	A	C	A			C	C		C	
Approach Delay (s)		14.0			11.7			25.1			27.3	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	15.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	62.9	Sum of lost time (s)	15.1
Intersection Capacity Utilization	45.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM 2010 analysis does not support custom phasing.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	425	113	194	393	66	123
Future Volume (vph)	425	113	194	393	66	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.1	4.1	5.8	5.1	4.1
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.98	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1558	1770	1863	1770	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1863	1558	1770	1863	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	462	123	211	427	72	134
RTOR Reduction (vph)	0	63	0	0	0	86
Lane Group Flow (vph)	462	60	211	427	72	48
Confl. Bikes (#/hr)		3				
Turn Type	NA	pm+ov	Prot	NA	Prot	pm+ov
Protected Phases	2	3	1	6	3	1
Permitted Phases		2				3
Actuated Green, G (s)	23.4	33.2	14.3	41.8	9.8	24.1
Effective Green, g (s)	23.4	33.2	14.3	41.8	9.8	24.1
Actuated g/C Ratio	0.35	0.49	0.21	0.62	0.14	0.36
Clearance Time (s)	5.8	5.1	4.1	5.8	5.1	4.1
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)	644	765	374	1151	256	564
v/s Ratio Prot	c0.25	0.01	c0.12	0.23	c0.04	0.02
v/s Ratio Perm		0.03				0.01
v/c Ratio	0.72	0.08	0.56	0.37	0.28	0.08
Uniform Delay, d1	19.2	9.1	23.9	6.4	25.8	14.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.2	0.0	1.2	0.1	0.2	0.0
Delay (s)	22.4	9.1	25.0	6.5	26.0	14.5
Level of Service	C	A	C	A	C	B
Approach Delay (s)	19.6			12.6	18.5	
Approach LOS	B			B	B	

Intersection Summary			
HCM 2000 Control Delay	16.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	67.6	Sum of lost time (s)	17.0
Intersection Capacity Utilization	52.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM 2010 methodology does not support exclusive ped or hold phases.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	300	280	330	140	580	360
Future Volume (vph)	300	280	330	140	580	360
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.1	4.1	4.6	4.6	4.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	1863	1863	1583	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	1863	1863	1583	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	326	304	359	152	630	391
RTOR Reduction (vph)	0	0	0	50	0	133
Lane Group Flow (vph)	326	304	359	102	630	258
Turn Type	Prot	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	5	2	6	7	7	5
Permitted Phases				6		4
Actuated Green, G (s)	11.7	34.4	18.7	49.1	30.4	42.1
Effective Green, g (s)	11.7	34.4	18.7	49.1	30.4	42.1
Actuated g/C Ratio	0.16	0.47	0.25	0.67	0.41	0.57
Clearance Time (s)	4.0	4.1	4.1	4.6	4.6	4.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	546	871	473	1057	732	906
v/s Ratio Prot	c0.09	0.16	c0.19	0.04	c0.36	0.05
v/s Ratio Perm				0.02		0.12
v/c Ratio	0.60	0.35	0.76	0.10	0.86	0.28
Uniform Delay, d1	28.7	12.4	25.3	4.3	19.6	8.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.2	0.1	6.1	0.0	9.8	0.1
Delay (s)	29.9	12.5	31.4	4.3	29.4	8.1
Level of Service	C	B	C	A	C	A
Approach Delay (s)		21.5	23.4		21.3	
Approach LOS		C	C		C	

Intersection Summary			
HCM 2000 Control Delay	21.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	73.5	Sum of lost time (s)	12.7
Intersection Capacity Utilization	68.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	300	280	330	140	580	360
Future Volume (veh/h)	300	280	330	140	580	360
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	326	304	359	152	630	391
Adj No. of Lanes	2	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	459	859	485	1034	696	832
Arrive On Green	0.13	0.46	0.26	0.26	0.39	0.39
Sat Flow, veh/h	3442	1863	1863	1583	1774	1583
Grp Volume(v), veh/h	326	304	359	152	630	391
Grp Sat Flow(s),veh/h/ln	1721	1863	1863	1583	1774	1583
Q Serve(g_s), s	5.4	6.2	10.5	2.2	19.9	9.2
Cycle Q Clear(g_c), s	5.4	6.2	10.5	2.2	19.9	9.2
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	459	859	485	1034	696	832
V/C Ratio(X)	0.71	0.35	0.74	0.15	0.90	0.47
Avail Cap(c_a), veh/h	1448	1254	1254	1687	896	1011
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.6	10.3	20.1	4.0	17.0	8.9
Incr Delay (d2), s/veh	0.8	0.1	0.8	0.0	9.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	3.2	5.5	3.4	11.4	9.5
LnGrp Delay(d),s/veh	25.4	10.4	21.0	4.0	26.2	9.0
LnGrp LOS	C	B	C	A	C	A
Approach Vol, veh/h		630	511		1021	
Approach Delay, s/veh		18.2	15.9		19.6	
Approach LOS		B	B		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		31.5		27.9	11.9	19.6		
Change Period (Y+Rc), s		4.1		4.6	4.0	4.1		
Max Green Setting (Gmax), s		40.0		30.0	25.0	40.0		
Max Q Clear Time (g_c+I1), s		8.2		21.9	7.4	12.5		
Green Ext Time (p_c), s		3.0		1.4	0.6	3.0		

Intersection Summary		
HCM 2010 Ctrl Delay		18.3
HCM 2010 LOS		B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	170	680	117	45	430	510	107	150	32	720	180	110
Future Volume (vph)	170	680	117	45	430	510	107	150	32	720	180	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.6		3.0	4.6	4.6	4.1	4.1		3.0	3.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	0.88	1.00	1.00		0.97	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.97		1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3461		1770	1863	2722	1770	1809		3433	1757	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3461		1770	1863	2722	1770	1809		3433	1757	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	185	739	127	49	467	554	116	163	35	783	196	120
RTOR Reduction (vph)	0	9	0	0	0	267	0	6	0	0	15	0
Lane Group Flow (vph)	185	857	0	49	467	287	116	192	0	783	301	0
Confl. Peds. (#/hr)	1					1			1	1		
Confl. Bikes (#/hr)						1						
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	
Protected Phases	1	6		5	2		8	8		4	4	
Permitted Phases						2						
Actuated Green, G (s)	14.8	40.0		6.2	31.4	31.4	16.2	16.2		21.1	21.1	
Effective Green, g (s)	14.8	40.0		6.2	31.4	31.4	16.2	16.2		21.1	21.1	
Actuated g/C Ratio	0.15	0.41		0.06	0.32	0.32	0.16	0.16		0.21	0.21	
Clearance Time (s)	3.0	4.6		3.0	4.6	4.6	4.1	4.1		3.0	3.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	266	1409		111	595	870	291	298		737	377	
v/s Ratio Prot	c0.10	0.25		0.03	c0.25		0.07	c0.11		c0.23	0.17	
v/s Ratio Perm						0.11						
v/c Ratio	0.70	0.61		0.44	0.78	0.33	0.40	0.64		1.06	0.80	
Uniform Delay, d1	39.6	22.9		44.3	30.3	25.4	36.6	38.3		38.5	36.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	6.2	0.5		1.0	6.2	0.1	0.3	3.6		51.0	10.5	
Delay (s)	45.8	23.4		45.4	36.6	25.5	37.0	41.9		89.5	47.1	
Level of Service	D	C		D	D	C	D	D		F	D	
Approach Delay (s)		27.4			31.2			40.1			77.3	
Approach LOS		C			C			D			E	

Intersection Summary			
HCM 2000 Control Delay	45.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	98.2	Sum of lost time (s)	14.7
Intersection Capacity Utilization	76.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	170	680	117	45	430	510	107	150	32	720	180	110
Future Volume (veh/h)	170	680	117	45	430	510	107	150	32	720	180	110
Number	1	6	16	5	2	12	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	185	739	127	49	467	554	116	163	35	783	196	120
Adj No. of Lanes	1	2	0	1	1	2	1	1	0	2	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	222	1300	223	63	634	928	249	209	45	782	246	150
Arrive On Green	0.13	0.43	0.43	0.04	0.34	0.34	0.14	0.14	0.14	0.23	0.23	0.23
Sat Flow, veh/h	1774	3021	519	1774	1863	2724	1774	1486	319	3442	1082	663
Grp Volume(v), veh/h	185	433	433	49	467	554	116	0	198	783	0	316
Grp Sat Flow(s),veh/h/ln	1774	1770	1771	1774	1863	1362	1774	0	1805	1721	0	1745
Q Serve(g_s), s	9.0	16.2	16.3	2.4	19.4	14.8	5.3	0.0	9.3	20.0	0.0	15.1
Cycle Q Clear(g_c), s	9.0	16.2	16.3	2.4	19.4	14.8	5.3	0.0	9.3	20.0	0.0	15.1
Prop In Lane	1.00		0.29	1.00		1.00	1.00		0.18	1.00		0.38
Lane Grp Cap(c), veh/h	222	762	762	63	634	928	249	0	253	782	0	396
V/C Ratio(X)	0.83	0.57	0.57	0.78	0.74	0.60	0.47	0.00	0.78	1.00	0.00	0.80
Avail Cap(c_a), veh/h	403	1005	1005	403	1057	1546	604	0	615	782	0	396
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	37.6	18.9	18.9	42.1	25.6	24.0	34.8	0.0	36.6	34.0	0.0	32.1
Incr Delay (d2), s/veh	3.1	0.2	0.2	7.7	0.6	0.2	0.5	0.0	2.0	32.7	0.0	10.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.6	8.0	8.0	1.3	10.1	5.6	2.6	0.0	4.8	13.0	0.0	8.3
LnGrp Delay(d),s/veh	40.8	19.2	19.2	49.9	26.2	24.3	35.3	0.0	38.5	66.7	0.0	42.2
LnGrp LOS	D	B	B	D	C	C	D		D	F		D
Approach Vol, veh/h		1051			1070			314			1099	
Approach Delay, s/veh		23.0			26.3			37.4			59.7	
Approach LOS		C			C			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	14.0	34.6		23.0	6.1	42.5		16.5
Change Period (Y+Rc), s	3.0	4.6		3.0	3.0	4.6		4.1
Max Green Setting (Gmax), s	20.0	50.0		20.0	20.0	50.0		30.0
Max Q Clear Time (g_c+I1), s	11.0	21.4		22.0	4.4	18.3		11.3
Green Ext Time (p_c), s	0.2	8.6		0.0	0.0	8.8		0.8

Intersection Summary		
HCM 2010 Ctrl Delay		36.7
HCM 2010 LOS		D

Appendix G:

Cumulative (2035) plus Proposed Project Conditions

Intersection	
Intersection Delay, s/veh	98.9
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣		↰	↱			✣			✣	
Traffic Vol, veh/h	5	382	114	174	374	3	245	1	290	1	0	5
Future Vol, veh/h	5	382	114	174	374	3	245	1	290	1	0	5
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	455	136	207	445	4	292	1	345	1	0	6
Number of Lanes	0	1	0	1	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay	116.6	49.2	134.5	13.5
HCM LOS	F	E	F	B

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	46%	1%	100%	0%	17%
Vol Thru, %	0%	76%	0%	99%	0%
Vol Right, %	54%	23%	0%	1%	83%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	536	501	174	377	6
LT Vol	245	5	174	0	1
Through Vol	1	382	0	374	0
RT Vol	290	114	0	3	5
Lane Flow Rate	638	596	207	449	7
Geometry Grp	2	5	7	7	2
Degree of Util (X)	1.207	1.152	0.471	0.955	0.018
Departure Headway (Hd)	7.14	7.663	9.124	8.597	10.28
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	517	477	398	426	350
Service Time	5.14	5.663	6.824	6.297	8.28
HCM Lane V/C Ratio	1.234	1.249	0.52	1.054	0.02
HCM Control Delay	134.5	116.6	19.7	62.8	13.5
HCM Lane LOS	F	F	C	F	B
HCM 95th-tile Q	23	19.4	2.4	11.1	0.1

Intersection	
Int Delay, s/veh	6.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	182	481	422	18	41	120
Future Vol, veh/h	182	481	422	18	41	120
Conflicting Peds, #/hr	0	0	0	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	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	202	534	469	20	46	133

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	489	0	-	0	1418	479
Stage 1	-	-	-	-	479	-
Stage 2	-	-	-	-	939	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1074	-	-	-	151	587
Stage 1	-	-	-	-	623	-
Stage 2	-	-	-	-	380	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1074	-	-	-	111	587
Mov Cap-2 Maneuver	-	-	-	-	111	-
Stage 1	-	-	-	-	623	-
Stage 2	-	-	-	-	278	-

Approach	EB	WB	SB
HCM Control Delay, s	2.5	0	37.8
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1074	-	-	-	281
HCM Lane V/C Ratio	0.188	-	-	-	0.637
HCM Control Delay (s)	9.1	0	-	-	37.8
HCM Lane LOS	A	A	-	-	E
HCM 95th %tile Q(veh)	0.7	-	-	-	4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	283	253	311	274	12	159	5	216	15	5	12
Future Volume (vph)	9	283	253	311	274	12	159	5	216	15	5	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.9	4.9	3.0	4.9			3.7	3.7		3.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00			1.00	1.00		0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	0.99			1.00	0.85		0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.98	
Satd. Flow (prot)	1770	1863	1544	1770	1849			1777	1583		1710	
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.98	
Satd. Flow (perm)	1770	1863	1544	1770	1849			1777	1583		1710	
Peak-hour factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	11	354	316	389	342	15	199	6	270	19	6	15
RTOR Reduction (vph)	0	0	113	0	1	0	0	0	224	0	14	0
Lane Group Flow (vph)	11	354	203	389	357	0	0	205	46	0	26	0
Confl. Peds. (#/hr)			2	2			4					4
Confl. Bikes (#/hr)			1			1						
Turn Type	Prot	NA	custom	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases			6						8			
Actuated Green, G (s)	3.3	20.5	47.0	29.8	47.0			14.6	14.6		5.7	
Effective Green, g (s)	3.3	20.5	47.0	29.8	47.0			14.6	14.6		5.7	
Actuated g/C Ratio	0.04	0.24	0.55	0.35	0.55			0.17	0.17		0.07	
Clearance Time (s)	3.0	4.9	4.9	3.0	4.9			3.7	3.7		3.5	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0			2.0	2.0		2.0	
Lane Grp Cap (vph)	68	445	846	615	1014			302	269		113	
v/s Ratio Prot	0.01	c0.19		c0.22	0.19			c0.12			c0.02	
v/s Ratio Perm			0.13						0.03			
v/c Ratio	0.16	0.80	0.24	0.63	0.35			0.68	0.17		0.23	
Uniform Delay, d1	39.9	30.6	10.1	23.4	10.8			33.4	30.4		37.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.4	8.9	0.1	1.6	0.1			4.7	0.1		0.4	
Delay (s)	40.3	39.5	10.1	24.9	10.9			38.1	30.5		38.3	
Level of Service	D	D	B	C	B			D	C		D	
Approach Delay (s)		25.9			18.2			33.8			38.3	
Approach LOS		C			B			C			D	

Intersection Summary			
HCM 2000 Control Delay	25.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	85.7	Sum of lost time (s)	15.1
Intersection Capacity Utilization	59.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM 2010 analysis does not support custom phasing.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	440	67	68	511	113	190
Future Volume (vph)	440	67	68	511	113	190
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.1	4.1	5.8	5.1	4.1
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1561	1770	1863	1770	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1863	1561	1770	1863	1770	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	489	74	76	568	126	211
RTOR Reduction (vph)	0	34	0	0	0	143
Lane Group Flow (vph)	489	40	76	568	126	68
Confl. Bikes (#/hr)		1				
Turn Type	NA	pm+ov	Prot	NA	Prot	pm+ov
Protected Phases	2	3	1	6	3	1
Permitted Phases		2				3
Actuated Green, G (s)	22.3	33.4	9.0	35.4	11.1	20.1
Effective Green, g (s)	22.3	33.4	9.0	35.4	11.1	20.1
Actuated g/C Ratio	0.36	0.54	0.14	0.57	0.18	0.32
Clearance Time (s)	5.8	5.1	4.1	5.8	5.1	4.1
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)	665	835	255	1056	314	509
v/s Ratio Prot	c0.26	0.01	0.04	c0.30	c0.07	0.02
v/s Ratio Perm		0.02				0.02
v/c Ratio	0.74	0.05	0.30	0.54	0.40	0.13
Uniform Delay, d1	17.5	6.9	23.9	8.4	22.7	15.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.6	0.0	0.2	0.3	0.3	0.0
Delay (s)	21.1	6.9	24.1	8.7	23.0	15.0
Level of Service	C	A	C	A	C	B
Approach Delay (s)	19.3			10.5	18.0	
Approach LOS	B			B	B	

Intersection Summary			
HCM 2000 Control Delay	15.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	62.4	Sum of lost time (s)	17.0
Intersection Capacity Utilization	48.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM 2010 methodology does not support exclusive ped or hold phases.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	375	269	408	390	150	264
Future Volume (vph)	375	269	408	390	150	264
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.1	4.1	4.6	4.6	4.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	1863	1863	1583	1770	1568
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	1863	1863	1583	1770	1568
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	408	292	443	424	163	287
RTOR Reduction (vph)	0	0	0	48	0	133
Lane Group Flow (vph)	408	292	443	376	163	154
Confl. Bikes (#/hr)						1
Turn Type	Prot	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	5	2	6	7	7	5
Permitted Phases				6		4
Actuated Green, G (s)	12.4	35.8	19.4	30.5	11.1	23.5
Effective Green, g (s)	12.4	35.8	19.4	30.5	11.1	23.5
Actuated g/C Ratio	0.22	0.64	0.35	0.55	0.20	0.42
Clearance Time (s)	4.0	4.1	4.1	4.6	4.6	4.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	765	1199	650	868	353	662
v/s Ratio Prot	c0.12	0.16	c0.24	0.09	c0.09	0.05
v/s Ratio Perm				0.15		0.05
v/c Ratio	0.53	0.24	0.68	0.43	0.46	0.23
Uniform Delay, d1	19.0	4.2	15.5	7.4	19.6	10.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	0.0	2.4	0.1	0.3	0.1
Delay (s)	19.4	4.2	17.8	7.6	20.0	10.3
Level of Service	B	A	B	A	B	B
Approach Delay (s)		13.1	12.8		13.8	
Approach LOS		B	B		B	

Intersection Summary			
HCM 2000 Control Delay	13.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	55.6	Sum of lost time (s)	12.7
Intersection Capacity Utilization	51.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations								
Traffic Volume (veh/h)	375	269	408	390	150	264		
Future Volume (veh/h)	375	269	408	390	150	264		
Number	5	2	6	16	7	14		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	408	292	443	424	163	287		
Adj No. of Lanes	2	1	1	1	1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	592	1125	636	857	354	589		
Arrive On Green	0.17	0.60	0.34	0.34	0.20	0.20		
Sat Flow, veh/h	3442	1863	1863	1583	1774	1583		
Grp Volume(v), veh/h	408	292	443	424	163	287		
Grp Sat Flow(s),veh/h/ln	1721	1863	1863	1583	1774	1583		
Q Serve(g_s), s	4.9	3.3	9.1	7.4	3.6	6.2		
Cycle Q Clear(g_c), s	4.9	3.3	9.1	7.4	3.6	6.2		
Prop In Lane	1.00			1.00	1.00	1.00		
Lane Grp Cap(c), veh/h	592	1125	636	857	354	589		
V/C Ratio(X)	0.69	0.26	0.70	0.49	0.46	0.49		
Avail Cap(c_a), veh/h	1943	1683	1683	1747	1202	1345		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	17.2	4.1	12.6	6.4	15.6	10.7		
Incr Delay (d2), s/veh	0.5	0.0	0.5	0.2	0.3	0.2		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	2.4	1.6	4.6	7.6	1.8	5.8		
LnGrp Delay(d),s/veh	17.8	4.2	13.1	6.5	16.0	10.9		
LnGrp LOS	B	A	B	A	B	B		
Approach Vol, veh/h		700	867		450			
Approach Delay, s/veh		12.1	9.9		12.7			
Approach LOS		B	A		B			
Timer	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		30.8		13.4	11.6	19.2		
Change Period (Y+Rc), s		4.1		4.6	4.0	4.1		
Max Green Setting (Gmax), s		40.0		30.0	25.0	40.0		
Max Q Clear Time (g_c+I1), s		5.3		8.2	6.9	11.1		
Green Ext Time (p_c), s		4.1		0.7	0.7	4.0		
Intersection Summary								
HCM 2010 Ctrl Delay			11.3					
HCM 2010 LOS			B					

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	155	274	69	32	644	630	111	140	14	450	100	104
Future Volume (vph)	155	274	69	32	644	630	111	140	14	450	100	104
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.6		3.0	4.6	4.6	4.1	4.1		3.0	3.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	0.88	1.00	1.00		0.97	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.99		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3432		1770	1863	2724	1770	1838		3433	1721	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3432		1770	1863	2724	1770	1838		3433	1721	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	168	298	75	35	700	685	121	152	15	489	109	113
RTOR Reduction (vph)	0	12	0	0	0	180	0	3	0	0	27	0
Lane Group Flow (vph)	168	361	0	35	700	505	121	164	0	489	195	0
Confl. Peds. (#/hr)	1					1						
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	
Protected Phases	1	6		5	2		8	8		4	4	
Permitted Phases						2						
Actuated Green, G (s)	14.7	61.8		4.6	51.7	51.7	16.0	16.0		19.6	19.6	
Effective Green, g (s)	14.7	61.8		4.6	51.7	51.7	16.0	16.0		19.6	19.6	
Actuated g/C Ratio	0.13	0.53		0.04	0.44	0.44	0.14	0.14		0.17	0.17	
Clearance Time (s)	3.0	4.6		3.0	4.6	4.6	4.1	4.1		3.0	3.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	222	1817		69	825	1206	242	251		576	289	
v/s Ratio Prot	c0.09	0.11		0.02	c0.38		0.07	c0.09		c0.14	0.11	
v/s Ratio Perm						0.19						
v/c Ratio	0.76	0.20		0.51	0.85	0.42	0.50	0.66		0.85	0.67	
Uniform Delay, d1	49.3	14.4		54.9	29.0	22.2	46.6	47.7		47.1	45.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	12.3	0.0		2.1	7.8	0.1	0.6	4.6		10.8	4.8	
Delay (s)	61.5	14.5		57.1	36.8	22.3	47.2	52.4		57.9	50.3	
Level of Service	E	B		E	D	C	D	D		E	D	
Approach Delay (s)		29.1			30.3			50.2			55.5	
Approach LOS		C			C			D			E	

Intersection Summary			
HCM 2000 Control Delay	38.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	116.7	Sum of lost time (s)	14.7
Intersection Capacity Utilization	77.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	155	274	69	32	644	630	111	140	14	450	100	104
Future Volume (veh/h)	155	274	69	32	644	630	111	140	14	450	100	104
Number	1	6	16	5	2	12	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	168	298	75	35	700	685	121	152	15	489	109	113
Adj No. of Lanes	1	2	0	1	1	2	1	1	0	2	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	203	1470	364	46	808	1208	210	197	19	590	144	149
Arrive On Green	0.11	0.52	0.52	0.03	0.43	0.43	0.12	0.12	0.12	0.17	0.17	0.17
Sat Flow, veh/h	1774	2812	697	1774	1863	2783	1774	1669	165	3442	839	870
Grp Volume(v), veh/h	168	186	187	35	700	685	121	0	167	489	0	222
Grp Sat Flow(s),veh/h/ln	1774	1770	1739	1774	1863	1392	1774	0	1834	1721	0	1709
Q Serve(g_s), s	8.4	5.1	5.2	1.8	30.9	16.8	5.9	0.0	8.0	12.5	0.0	11.2
Cycle Q Clear(g_c), s	8.4	5.1	5.2	1.8	30.9	16.8	5.9	0.0	8.0	12.5	0.0	11.2
Prop In Lane	1.00		0.40	1.00		1.00	1.00		0.09	1.00		0.51
Lane Grp Cap(c), veh/h	203	925	909	46	808	1208	210	0	217	590	0	293
V/C Ratio(X)	0.83	0.20	0.21	0.76	0.87	0.57	0.58	0.00	0.77	0.83	0.00	0.76
Avail Cap(c_a), veh/h	391	974	958	391	1026	1533	586	0	606	758	0	376
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	39.3	11.6	11.6	44.0	23.3	19.3	37.9	0.0	38.8	36.3	0.0	35.8
Incr Delay (d2), s/veh	3.2	0.0	0.0	9.4	5.5	0.2	0.9	0.0	2.2	4.8	0.0	4.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.3	2.5	2.5	1.0	17.0	6.4	2.9	0.0	4.2	6.3	0.0	5.7
LnGrp Delay(d),s/veh	42.6	11.6	11.6	53.3	28.8	19.5	38.8	0.0	41.0	41.2	0.0	40.4
LnGrp LOS	D	B	B	D	C	B	D		D	D		D
Approach Vol, veh/h		541			1420			288			711	
Approach Delay, s/veh		21.2			24.9			40.1			40.9	
Approach LOS		C			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	13.4	44.0		18.6	5.3	52.1		14.8
Change Period (Y+Rc), s	3.0	4.6		3.0	3.0	4.6		4.1
Max Green Setting (Gmax), s	20.0	50.0		20.0	20.0	50.0		30.0
Max Q Clear Time (g_c+I1), s	10.4	32.9		14.5	3.8	7.2		10.0
Green Ext Time (p_c), s	0.2	6.5		1.1	0.0	8.0		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	29.6
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	20	1	1	360	550	19
Future Vol, veh/h	20	1	1	360	550	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	1	1	391	598	21

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1001	608	618	0	-	0
Stage 1	608	-	-	-	-	-
Stage 2	393	-	-	-	-	-
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	269	496	962	-	-	-
Stage 1	543	-	-	-	-	-
Stage 2	682	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	269	496	962	-	-	-
Mov Cap-2 Maneuver	269	-	-	-	-	-
Stage 1	543	-	-	-	-	-
Stage 2	681	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	19.3	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	962	-	275	-	-
HCM Lane V/C Ratio	0.001	-	0.083	-	-
HCM Control Delay (s)	8.7	0	19.3	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Intersection	
Intersection Delay, s/veh	66.4
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	420	238	243	302	2	109	2	184	4	2	12
Future Vol, veh/h	12	420	238	243	302	2	109	2	184	4	2	12
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	457	259	264	328	2	118	2	200	4	2	13
Number of Lanes	0	1	0	1	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay	127.1	19.1	19.4	11.8
HCM LOS	F	C	C	B

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	37%	2%	100%	0%	22%
Vol Thru, %	1%	63%	0%	99%	11%
Vol Right, %	62%	36%	0%	1%	67%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	295	670	243	304	18
LT Vol	109	12	243	0	4
Through Vol	2	420	0	302	2
RT Vol	184	238	0	2	12
Lane Flow Rate	321	728	264	330	20
Geometry Grp	2	5	7	7	2
Degree of Util (X)	0.584	1.202	0.525	0.61	0.042
Departure Headway (Hd)	7.009	5.943	7.473	6.955	8.394
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	519	612	486	522	429
Service Time	5.009	3.958	5.173	4.655	6.394
HCM Lane V/C Ratio	0.618	1.19	0.543	0.632	0.047
HCM Control Delay	19.4	127.1	18.1	19.9	11.8
HCM Lane LOS	C	F	C	C	B
HCM 95th-tile Q	3.7	25.8	3	4	0.1

Intersection						
Int Delay, s/veh	4.7					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	134	484	344	24	31	190
Future Vol, veh/h	134	484	344	24	31	190
Conflicting Peds, #/hr	0	0	0	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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	146	526	374	26	34	207

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	400	0	-	0	1204	387
Stage 1	-	-	-	-	387	-
Stage 2	-	-	-	-	817	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1159	-	-	-	203	661
Stage 1	-	-	-	-	686	-
Stage 2	-	-	-	-	434	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1159	-	-	-	167	661
Mov Cap-2 Maneuver	-	-	-	-	167	-
Stage 1	-	-	-	-	686	-
Stage 2	-	-	-	-	357	-

Approach	EB	WB	SB
HCM Control Delay, s	1.9	0	20.6
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1159	-	-	-	467
HCM Lane V/C Ratio	0.126	-	-	-	0.514
HCM Control Delay (s)	8.6	0	-	-	20.6
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.4	-	-	-	2.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	396	98	97	290	21	73	1	86	24	2	14
Future Volume (vph)	22	396	98	97	290	21	73	1	86	24	2	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.9	4.9	3.0	4.9			3.7	3.7		3.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	0.98		0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	0.99			1.00	0.85		0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.97	
Satd. Flow (prot)	1770	1863	1583	1770	1841			1775	1550		1709	
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.97	
Satd. Flow (perm)	1770	1863	1583	1770	1841			1775	1550		1709	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	24	430	107	105	315	23	79	1	93	26	2	15
RTOR Reduction (vph)	0	0	34	0	1	0	0	0	79	0	14	0
Lane Group Flow (vph)	24	430	73	105	337	0	0	80	14	0	29	0
Confl. Peds. (#/hr)	3					3	2		1	1		2
Turn Type	Prot	NA	custom	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases			6						8			
Actuated Green, G (s)	2.0	25.4	33.4	10.0	33.4			10.0	10.0		5.3	
Effective Green, g (s)	2.0	25.4	33.4	10.0	33.4			10.0	10.0		5.3	
Actuated g/C Ratio	0.03	0.39	0.51	0.15	0.51			0.15	0.15		0.08	
Clearance Time (s)	3.0	4.9	4.9	3.0	4.9			3.7	3.7		3.5	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0			2.0	2.0		2.0	
Lane Grp Cap (vph)	53	719	803	268	934			269	235		137	
v/s Ratio Prot	0.01	c0.23		c0.06	0.18			c0.05			c0.02	
v/s Ratio Perm			0.05						0.01			
v/c Ratio	0.45	0.60	0.09	0.39	0.36			0.30	0.06		0.21	
Uniform Delay, d1	31.4	16.1	8.4	25.2	9.8			24.8	23.9		28.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	2.2	0.9	0.0	0.3	0.1			0.2	0.0		0.3	
Delay (s)	33.6	17.0	8.4	25.5	9.8			25.0	23.9		28.6	
Level of Service	C	B	A	C	A			C	C		C	
Approach Delay (s)		16.1			13.6			24.4			28.6	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	16.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	65.8	Sum of lost time (s)	15.1
Intersection Capacity Utilization	46.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM 2010 analysis does not support custom phasing.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	445	116	194	413	68	123
Future Volume (vph)	445	116	194	413	68	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.1	4.1	5.8	5.1	4.1
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.98	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1558	1770	1863	1770	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1863	1558	1770	1863	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	484	126	211	449	74	134
RTOR Reduction (vph)	0	63	0	0	0	87
Lane Group Flow (vph)	484	63	211	449	74	47
Confl. Bikes (#/hr)		3				
Turn Type	NA	pm+ov	Prot	NA	Prot	pm+ov
Protected Phases	2	3	1	6	3	1
Permitted Phases		2				3
Actuated Green, G (s)	24.7	34.6	14.6	43.4	9.9	24.5
Effective Green, g (s)	24.7	34.6	14.6	43.4	9.9	24.5
Actuated g/C Ratio	0.36	0.50	0.21	0.63	0.14	0.35
Clearance Time (s)	5.8	5.1	4.1	5.8	5.1	4.1
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)	664	777	372	1166	252	559
v/s Ratio Prot	c0.26	0.01	c0.12	0.24	c0.04	0.02
v/s Ratio Perm		0.03				0.01
v/c Ratio	0.73	0.08	0.57	0.39	0.29	0.08
Uniform Delay, d1	19.4	9.1	24.5	6.4	26.6	14.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.4	0.0	1.2	0.1	0.2	0.0
Delay (s)	22.8	9.1	25.7	6.5	26.8	15.0
Level of Service	C	A	C	A	C	B
Approach Delay (s)	20.0			12.6	19.2	
Approach LOS	B			B	B	

Intersection Summary			
HCM 2000 Control Delay	16.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	69.3	Sum of lost time (s)	17.0
Intersection Capacity Utilization	53.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM 2010 methodology does not support exclusive ped or hold phases.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	307	293	343	140	580	367
Future Volume (vph)	307	293	343	140	580	367
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.1	4.1	4.6	4.6	4.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	1863	1863	1583	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	1863	1863	1583	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	334	318	373	152	630	399
RTOR Reduction (vph)	0	0	0	50	0	127
Lane Group Flow (vph)	334	318	373	102	630	272
Turn Type	Prot	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	5	2	6	7	7	5
Permitted Phases				6		4
Actuated Green, G (s)	12.0	35.5	19.5	49.9	30.4	42.4
Effective Green, g (s)	12.0	35.5	19.5	49.9	30.4	42.4
Actuated g/C Ratio	0.16	0.48	0.26	0.67	0.41	0.57
Clearance Time (s)	4.0	4.1	4.1	4.6	4.6	4.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	552	886	486	1058	721	899
v/s Ratio Prot	c0.10	0.17	c0.20	0.04	c0.36	0.05
v/s Ratio Perm				0.03		0.12
v/c Ratio	0.61	0.36	0.77	0.10	0.87	0.30
Uniform Delay, d1	29.1	12.4	25.5	4.4	20.3	8.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.3	0.1	6.4	0.0	11.1	0.1
Delay (s)	30.4	12.4	31.9	4.4	31.4	8.5
Level of Service	C	B	C	A	C	A
Approach Delay (s)		21.6	23.9		22.5	
Approach LOS		C	C		C	

Intersection Summary			
HCM 2000 Control Delay	22.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	74.6	Sum of lost time (s)	12.7
Intersection Capacity Utilization	69.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations								
Traffic Volume (veh/h)	307	293	343	140	580	367		
Future Volume (veh/h)	307	293	343	140	580	367		
Number	5	2	6	16	7	14		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	334	318	373	152	630	399		
Adj No. of Lanes	2	1	1	1	1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	464	870	497	1042	694	832		
Arrive On Green	0.13	0.47	0.27	0.27	0.39	0.39		
Sat Flow, veh/h	3442	1863	1863	1583	1774	1583		
Grp Volume(v), veh/h	334	318	373	152	630	399		
Grp Sat Flow(s),veh/h/ln	1721	1863	1863	1583	1774	1583		
Q Serve(g_s), s	5.7	6.7	11.2	2.2	20.5	9.8		
Cycle Q Clear(g_c), s	5.7	6.7	11.2	2.2	20.5	9.8		
Prop In Lane	1.00			1.00	1.00	1.00		
Lane Grp Cap(c), veh/h	464	870	497	1042	694	832		
V/C Ratio(X)	0.72	0.37	0.75	0.15	0.91	0.48		
Avail Cap(c_a), veh/h	1405	1216	1216	1653	869	989		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	25.4	10.5	20.6	4.0	17.6	9.2		
Incr Delay (d2), s/veh	0.8	0.1	0.9	0.0	10.2	0.2		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	2.7	3.5	5.8	3.5	11.9	10.0		
LnGrp Delay(d),s/veh	26.2	10.6	21.4	4.0	27.8	9.4		
LnGrp LOS	C	B	C	A	C	A		
Approach Vol, veh/h		652	525		1029			
Approach Delay, s/veh		18.6	16.4		20.7			
Approach LOS		B	B		C			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		32.7		28.5	12.3	20.5		
Change Period (Y+Rc), s		4.1		4.6	4.0	4.1		
Max Green Setting (Gmax), s		40.0		30.0	25.0	40.0		
Max Q Clear Time (g_c+I1), s		8.7		22.5	7.7	13.2		
Green Ext Time (p_c), s		3.2		1.4	0.6	3.1		
Intersection Summary								
HCM 2010 Ctrl Delay			19.0					
HCM 2010 LOS			B					

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	177	686	117	45	436	510	107	150	32	720	180	117
Future Volume (vph)	177	686	117	45	436	510	107	150	32	720	180	117
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.6		3.0	4.6	4.6	4.1	4.1		3.0	3.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	0.88	1.00	1.00		0.97	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.97		1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3462		1770	1863	2722	1770	1809		3433	1753	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3462		1770	1863	2722	1770	1809		3433	1753	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	192	746	127	49	474	554	116	163	35	783	196	127
RTOR Reduction (vph)	0	9	0	0	0	262	0	6	0	0	16	0
Lane Group Flow (vph)	192	864	0	49	474	292	116	192	0	783	307	0
Confl. Peds. (#/hr)	1					1			1	1		
Confl. Bikes (#/hr)						1						
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	
Protected Phases	1	6		5	2		8	8		4	4	
Permitted Phases						2						
Actuated Green, G (s)	15.3	41.1		6.2	32.0	32.0	16.2	16.2		21.0	21.0	
Effective Green, g (s)	15.3	41.1		6.2	32.0	32.0	16.2	16.2		21.0	21.0	
Actuated g/C Ratio	0.15	0.41		0.06	0.32	0.32	0.16	0.16		0.21	0.21	
Clearance Time (s)	3.0	4.6		3.0	4.6	4.6	4.1	4.1		3.0	3.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	272	1434		110	600	878	289	295		726	371	
v/s Ratio Prot	c0.11	0.25		0.03	c0.25		0.07	c0.11		c0.23	0.18	
v/s Ratio Perm						0.11						
v/c Ratio	0.71	0.60		0.45	0.79	0.33	0.40	0.65		1.08	0.83	
Uniform Delay, d1	39.8	22.7		44.8	30.5	25.5	37.2	38.9		39.1	37.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	6.7	0.5		1.0	6.5	0.1	0.3	3.9		56.6	13.5	
Delay (s)	46.5	23.2		45.9	37.1	25.6	37.5	42.7		95.7	50.8	
Level of Service	D	C		D	D	C	D	D		F	D	
Approach Delay (s)		27.4			31.6			40.8			82.6	
Approach LOS		C			C			D			F	

Intersection Summary			
HCM 2000 Control Delay	47.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	99.2	Sum of lost time (s)	14.7
Intersection Capacity Utilization	77.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	177	686	117	45	436	510	107	150	32	720	180	117
Future Volume (veh/h)	177	686	117	45	436	510	107	150	32	720	180	117
Number	1	6	16	5	2	12	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	192	746	127	49	474	554	116	163	35	783	196	127
Adj No. of Lanes	1	2	0	1	1	2	1	1	0	2	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	229	1321	225	63	639	934	248	208	45	770	236	153
Arrive On Green	0.13	0.44	0.44	0.04	0.34	0.34	0.14	0.14	0.14	0.22	0.22	0.22
Sat Flow, veh/h	1774	3026	515	1774	1863	2724	1774	1486	319	3442	1056	684
Grp Volume(v), veh/h	192	436	437	49	474	554	116	0	198	783	0	323
Grp Sat Flow(s),veh/h/ln	1774	1770	1771	1774	1863	1362	1774	0	1805	1721	0	1741
Q Serve(g_s), s	9.5	16.5	16.5	2.4	20.0	15.0	5.4	0.0	9.5	20.0	0.0	15.8
Cycle Q Clear(g_c), s	9.5	16.5	16.5	2.4	20.0	15.0	5.4	0.0	9.5	20.0	0.0	15.8
Prop In Lane	1.00		0.29	1.00		1.00	1.00		0.18	1.00		0.39
Lane Grp Cap(c), veh/h	229	773	773	63	639	934	248	0	253	770	0	389
V/C Ratio(X)	0.84	0.56	0.56	0.78	0.74	0.59	0.47	0.00	0.78	1.02	0.00	0.83
Avail Cap(c_a), veh/h	397	990	991	397	1042	1523	595	0	606	770	0	389
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	38.0	18.8	18.8	42.8	25.9	24.2	35.4	0.0	37.1	34.7	0.0	33.1
Incr Delay (d2), s/veh	3.2	0.2	0.2	7.7	0.6	0.2	0.5	0.0	2.0	36.7	0.0	13.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.8	8.0	8.1	1.3	10.4	5.6	2.7	0.0	4.9	13.3	0.0	9.0
LnGrp Delay(d),s/veh	41.2	19.1	19.1	50.5	26.5	24.4	35.9	0.0	39.2	71.4	0.0	46.2
LnGrp LOS	D	B	B	D	C	C	D		D	F		D
Approach Vol, veh/h		1065			1077			314			1106	
Approach Delay, s/veh		23.1			26.5			38.0			64.1	
Approach LOS		C			C			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	14.5	35.3		23.0	6.2	43.6		16.6
Change Period (Y+Rc), s	3.0	4.6		3.0	3.0	4.6		4.1
Max Green Setting (Gmax), s	20.0	50.0		20.0	20.0	50.0		30.0
Max Q Clear Time (g_c+I1), s	11.5	22.0		22.0	4.4	18.5		11.5
Green Ext Time (p_c), s	0.2	8.6		0.0	0.0	8.9		0.8

Intersection Summary		
HCM 2010 Ctrl Delay		38.2
HCM 2010 LOS		D

Intersection						
Int Delay, s/veh	1					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	1	1	130	168	29
Future Vol, veh/h	30	1	1	130	168	29
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	33	1	1	141	183	32

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	341	198	214	0	-	0
Stage 1	198	-	-	-	-	-
Stage 2	143	-	-	-	-	-
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	655	843	1356	-	-	-
Stage 1	835	-	-	-	-	-
Stage 2	884	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	654	843	1356	-	-	-
Mov Cap-2 Maneuver	654	-	-	-	-	-
Stage 1	835	-	-	-	-	-
Stage 2	883	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.8	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1356	-	659	-	-
HCM Lane V/C Ratio	0.001	-	0.051	-	-
HCM Control Delay (s)	7.7	0	10.8	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Appendix H:

Existing (2018), Near-Term (2028) and Cumulative (2035) plus Proposed Project Mitigated Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	382	114	174	374	3	245	1	290	1	0	5
Future Volume (veh/h)	5	382	114	174	374	3	245	1	290	1	0	5
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	6	455	136	207	445	4	292	1	345	1	0	6
Adj No. of Lanes	0	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	32	616	183	257	832	7	305	1	360	9	0	55
Arrive On Green	0.45	0.45	0.45	0.45	0.45	0.45	0.40	0.40	0.40	0.04	0.00	0.04
Sat Flow, veh/h	5	1366	405	822	1843	17	760	3	898	230	0	1378
Grp Volume(v), veh/h	597	0	0	207	0	449	638	0	0	7	0	0
Grp Sat Flow(s),veh/h/ln	1776	0	0	822	0	1860	1660	0	0	1608	0	0
Q Serve(g_s), s	0.0	0.0	0.0	21.9	0.0	21.9	46.8	0.0	0.0	0.5	0.0	0.0
Cycle Q Clear(g_c), s	34.6	0.0	0.0	56.5	0.0	21.9	46.8	0.0	0.0	0.5	0.0	0.0
Prop In Lane	0.01		0.23	1.00		0.01	0.46		0.54	0.14		0.86
Lane Grp Cap(c), veh/h	831	0	0	257	0	839	665	0	0	64	0	0
V/C Ratio(X)	0.72	0.00	0.00	0.81	0.00	0.53	0.96	0.00	0.00	0.11	0.00	0.00
Avail Cap(c_a), veh/h	831	0	0	257	0	839	689	0	0	231	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	28.3	0.0	0.0	44.4	0.0	24.8	36.5	0.0	0.0	57.9	0.0	0.0
Incr Delay (d2), s/veh	3.0	0.0	0.0	16.9	0.0	0.7	24.1	0.0	0.0	0.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	17.6	0.0	0.0	8.3	0.0	11.4	25.9	0.0	0.0	0.2	0.0	0.0
LnGrp Delay(d),s/veh	31.4	0.0	0.0	61.3	0.0	25.5	60.6	0.0	0.0	58.7	0.0	0.0
LnGrp LOS	C			E		C	E			E		
Approach Vol, veh/h		597			656			638			7	
Approach Delay, s/veh		31.4			36.8			60.6			58.7	
Approach LOS		C			D			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		54.7		61.0		9.5		61.0
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		52.0		56.5		18.0		56.5
Max Q Clear Time (g_c+I1), s		48.8		36.6		2.5		58.5
Green Ext Time (p_c), s		1.4		4.1		0.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	43.2
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	420	238	243	302	2	109	2	184	4	2	12
Future Volume (veh/h)	12	420	238	243	302	2	109	2	184	4	2	12
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	13	457	259	264	328	2	118	2	200	4	2	13
Adj No. of Lanes	0	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	54	590	329	331	984	6	133	2	226	24	12	79
Arrive On Green	0.53	0.53	0.53	0.53	0.53	0.53	0.22	0.22	0.22	0.07	0.07	0.07
Sat Flow, veh/h	11	1110	618	732	1849	11	606	10	1027	341	171	1110
Grp Volume(v), veh/h	729	0	0	264	0	330	320	0	0	19	0	0
Grp Sat Flow(s),veh/h/ln	1739	0	0	732	0	1861	1643	0	0	1622	0	0
Q Serve(g_s), s	0.0	0.0	0.0	15.0	0.0	7.7	14.4	0.0	0.0	0.8	0.0	0.0
Cycle Q Clear(g_c), s	25.5	0.0	0.0	40.5	0.0	7.7	14.4	0.0	0.0	0.8	0.0	0.0
Prop In Lane	0.02		0.36	1.00		0.01	0.37		0.62	0.21		0.68
Lane Grp Cap(c), veh/h	973	0	0	331	0	990	361	0	0	115	0	0
V/C Ratio(X)	0.75	0.00	0.00	0.80	0.00	0.33	0.89	0.00	0.00	0.16	0.00	0.00
Avail Cap(c_a), veh/h	973	0	0	331	0	990	388	0	0	383	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	14.3	0.0	0.0	24.2	0.0	10.1	28.8	0.0	0.0	33.2	0.0	0.0
Incr Delay (d2), s/veh	3.3	0.0	0.0	12.7	0.0	0.2	20.2	0.0	0.0	0.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.0	0.0	0.0	6.7	0.0	4.0	8.5	0.0	0.0	0.4	0.0	0.0
LnGrp Delay(d),s/veh	17.6	0.0	0.0	36.9	0.0	10.3	48.9	0.0	0.0	33.9	0.0	0.0
LnGrp LOS	B			D		B	D			C		
Approach Vol, veh/h		729			594			320			19	
Approach Delay, s/veh		17.6			22.2			48.9			33.9	
Approach LOS		B			C			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		21.2		45.0		9.9		45.0
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		18.0		40.5		18.0		40.5
Max Q Clear Time (g_c+I1), s		16.4		27.5		2.8		42.5
Green Ext Time (p_c), s		0.3		4.5		0.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	25.4
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	298	98	168	293	1	216	1	290	0	0	0
Future Volume (veh/h)	0	298	98	168	293	1	216	1	290	0	0	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	0	377	124	213	371	1	273	1	367	0	0	0
Adj No. of Lanes	0	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	645	212	322	897	2	301	1	404	0	2	0
Arrive On Green	0.00	0.48	0.48	0.48	0.48	0.48	0.43	0.43	0.43	0.00	0.00	0.00
Sat Flow, veh/h	0	1335	439	894	1857	5	704	3	947	0	1863	0
Grp Volume(v), veh/h	0	0	501	213	0	372	641	0	0	0	0	0
Grp Sat Flow(s),veh/h/ln	0	0	1774	894	0	1862	1654	0	0	0	1863	0
Q Serve(g_s), s	0.0	0.0	20.3	22.6	0.0	12.9	36.3	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	20.3	42.9	0.0	12.9	36.3	0.0	0.0	0.0	0.0	0.0
Prop In Lane	0.00		0.25	1.00		0.00	0.43		0.57	0.00		0.00
Lane Grp Cap(c), veh/h	0	0	857	322	0	899	706	0	0	0	2	0
V/C Ratio(X)	0.00	0.00	0.58	0.66	0.00	0.41	0.91	0.00	0.00	0.00	0.00	0.00
Avail Cap(c_a), veh/h	0	0	1126	457	0	1182	909	0	0	0	335	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	18.6	34.1	0.0	16.7	26.8	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.6	2.3	0.0	0.3	10.7	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	10.0	5.8	0.0	6.7	18.7	0.0	0.0	0.0	0.0	0.0
LnGrp Delay(d),s/veh	0.0	0.0	19.3	36.4	0.0	17.0	37.5	0.0	0.0	0.0	0.0	0.0
LnGrp LOS			B	D		B	D					
Approach Vol, veh/h		501			585			641			0	
Approach Delay, s/veh		19.3			24.1			37.5			0.0	
Approach LOS		B			C			D				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		47.2		52.8		0.0		52.8
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		55.0		63.5		18.0		63.5
Max Q Clear Time (g_c+I1), s		38.3		22.3		0.0		44.9
Green Ext Time (p_c), s		4.4		3.8		0.0		3.4

Intersection Summary	
HCM 2010 Ctrl Delay	27.7
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	361	203	243	229	2	89	2	174	4	2	6
Future Volume (veh/h)	6	361	203	243	229	2	89	2	174	4	2	6
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	6	372	209	251	236	2	92	2	179	4	2	6
Adj No. of Lanes	0	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	58	568	315	428	936	8	113	2	220	45	23	68
Arrive On Green	0.51	0.51	0.51	0.51	0.51	0.51	0.20	0.20	0.20	0.08	0.08	0.08
Sat Flow, veh/h	4	1118	621	830	1844	16	551	12	1073	556	278	835
Grp Volume(v), veh/h	587	0	0	251	0	238	273	0	0	12	0	0
Grp Sat Flow(s),veh/h/ln	1744	0	0	830	0	1860	1636	0	0	1669	0	0
Q Serve(g_s), s	0.0	0.0	0.0	9.3	0.0	4.7	10.4	0.0	0.0	0.4	0.0	0.0
Cycle Q Clear(g_c), s	16.3	0.0	0.0	25.6	0.0	4.7	10.4	0.0	0.0	0.4	0.0	0.0
Prop In Lane	0.01		0.36	1.00		0.01	0.34		0.66	0.33		0.50
Lane Grp Cap(c), veh/h	940	0	0	428	0	944	335	0	0	136	0	0
V/C Ratio(X)	0.62	0.00	0.00	0.59	0.00	0.25	0.82	0.00	0.00	0.09	0.00	0.00
Avail Cap(c_a), veh/h	1111	0	0	510	0	1127	470	0	0	459	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	12.0	0.0	0.0	16.2	0.0	9.1	24.9	0.0	0.0	27.8	0.0	0.0
Incr Delay (d2), s/veh	0.8	0.0	0.0	1.3	0.0	0.1	7.5	0.0	0.0	0.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.0	0.0	0.0	4.1	0.0	2.4	5.4	0.0	0.0	0.2	0.0	0.0
LnGrp Delay(d),s/veh	12.8	0.0	0.0	17.4	0.0	9.3	32.3	0.0	0.0	28.1	0.0	0.0
LnGrp LOS	B			B		A	C			C		
Approach Vol, veh/h		587			489			273			12	
Approach Delay, s/veh		12.8			13.5			32.3			28.1	
Approach LOS		B			B			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		17.9		37.8		9.9		37.8				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		18.8		39.7		18.0		39.7				
Max Q Clear Time (g_c+I1), s		12.4		18.3		2.4		27.6				
Green Ext Time (p_c), s		0.8		7.6		0.0		5.6				
Intersection Summary												
HCM 2010 Ctrl Delay			17.1									
HCM 2010 LOS			B									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	333	105	170	326	2	228	1	290	0	0	2
Future Volume (veh/h)	2	333	105	170	326	2	228	1	290	0	0	2
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	2	396	125	202	388	2	271	1	345	0	0	2
Adj No. of Lanes	0	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	36	569	179	296	780	4	288	1	367	0	0	78
Arrive On Green	0.42	0.42	0.42	0.42	0.42	0.42	0.40	0.40	0.40	0.00	0.00	0.05
Sat Flow, veh/h	1	1350	425	877	1851	10	727	3	926	0	0	1583
Grp Volume(v), veh/h	523	0	0	202	0	390	617	0	0	0	0	2
Grp Sat Flow(s),veh/h/ln	1776	0	0	877	0	1861	1656	0	0	0	0	1583
Q Serve(g_s), s	0.0	0.0	0.0	14.8	0.0	15.5	36.3	0.0	0.0	0.0	0.0	0.1
Cycle Q Clear(g_c), s	24.5	0.0	0.0	39.3	0.0	15.5	36.3	0.0	0.0	0.0	0.0	0.1
Prop In Lane	0.00		0.24	1.00		0.01	0.44		0.56	0.00		1.00
Lane Grp Cap(c), veh/h	784	0	0	296	0	784	656	0	0	0	0	78
V/C Ratio(X)	0.67	0.00	0.00	0.68	0.00	0.50	0.94	0.00	0.00	0.00	0.00	0.03
Avail Cap(c_a), veh/h	833	0	0	320	0	836	703	0	0	0	0	281
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	24.0	0.0	0.0	33.7	0.0	21.5	29.4	0.0	0.0	0.0	0.0	45.9
Incr Delay (d2), s/veh	1.9	0.0	0.0	5.3	0.0	0.5	20.0	0.0	0.0	0.0	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.3	0.0	0.0	5.9	0.0	8.0	20.1	0.0	0.0	0.0	0.0	0.1
LnGrp Delay(d),s/veh	25.9	0.0	0.0	39.0	0.0	22.0	49.5	0.0	0.0	0.0	0.0	46.0
LnGrp LOS	C			D		C	D					D
Approach Vol, veh/h		523			592			617			2	
Approach Delay, s/veh		25.9			27.8			49.5			46.0	
Approach LOS		C			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		44.7		47.2		9.5		47.2
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		43.0		45.5		18.0		45.5
Max Q Clear Time (g_c+I1), s		38.3		26.5		2.1		41.3
Green Ext Time (p_c), s		1.8		3.4		0.0		1.4

Intersection Summary		
HCM 2010 Ctrl Delay		35.0
HCM 2010 LOS		C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	385	217	243	259	2	97	2	178	4	2	8
Future Volume (veh/h)	8	385	217	243	259	2	97	2	178	4	2	8
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	9	418	236	264	282	2	105	2	193	4	2	9
Adj No. of Lanes	0	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	54	589	328	379	977	7	123	2	225	32	16	73
Arrive On Green	0.53	0.53	0.53	0.53	0.53	0.53	0.21	0.21	0.21	0.07	0.07	0.07
Sat Flow, veh/h	7	1115	620	776	1847	13	574	11	1055	438	219	986
Grp Volume(v), veh/h	663	0	0	264	0	284	300	0	0	15	0	0
Grp Sat Flow(s),veh/h/ln	1742	0	0	776	0	1860	1639	0	0	1643	0	0
Q Serve(g_s), s	0.0	0.0	0.0	15.2	0.0	6.2	12.9	0.0	0.0	0.6	0.0	0.0
Cycle Q Clear(g_c), s	21.1	0.0	0.0	36.4	0.0	6.2	12.9	0.0	0.0	0.6	0.0	0.0
Prop In Lane	0.01		0.36	1.00		0.01	0.35		0.64	0.27		0.60
Lane Grp Cap(c), veh/h	971	0	0	379	0	984	350	0	0	121	0	0
V/C Ratio(X)	0.68	0.00	0.00	0.70	0.00	0.29	0.86	0.00	0.00	0.12	0.00	0.00
Avail Cap(c_a), veh/h	988	0	0	387	0	1002	425	0	0	403	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	13.1	0.0	0.0	20.4	0.0	9.6	27.8	0.0	0.0	31.8	0.0	0.0
Incr Delay (d2), s/veh	1.9	0.0	0.0	5.3	0.0	0.2	13.7	0.0	0.0	0.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.6	0.0	0.0	5.7	0.0	3.2	7.2	0.0	0.0	0.3	0.0	0.0
LnGrp Delay(d),s/veh	15.0	0.0	0.0	25.7	0.0	9.8	41.5	0.0	0.0	32.2	0.0	0.0
LnGrp LOS	B			C		A	D			C		
Approach Vol, veh/h		663			548			300			15	
Approach Delay, s/veh		15.0			17.4			41.5			32.2	
Approach LOS		B			B			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		20.2		43.3		9.9		43.3
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		19.0		39.5		18.0		39.5
Max Q Clear Time (g_c+I1), s		14.9		23.1		2.6		38.4
Green Ext Time (p_c), s		0.7		4.4		0.0		0.4

Intersection Summary			
HCM 2010 Ctrl Delay			21.3
HCM 2010 LOS			C

Appendix I:

Queuing Analysis

Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	11	354	310	371	358	199	251	40
Act Effct Green (s)	7.9	20.4	47.0	27.0	47.0	14.4	14.4	9.0
Actuated g/C Ratio	0.10	0.25	0.57	0.33	0.57	0.18	0.18	0.11
v/c Ratio	0.07	0.76	0.31	0.64	0.34	0.64	0.52	0.20
Control Delay	39.8	42.1	6.5	35.5	18.0	44.6	9.2	29.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.8	42.1	6.5	35.5	18.0	44.6	9.2	29.9
LOS	D	D	A	D	B	D	A	C
Approach Delay		25.7			26.9	24.8		29.9
Approach LOS		C			C	C		C
Queue Length 50th (ft)	5	164	12	159	80	94	0	12
Queue Length 95th (ft)	21	310	84	#427	313	196	42	42
Internal Link Dist (ft)		1839			446	1093		188
Turn Bay Length (ft)	55		150	160			310	
Base Capacity (vph)	584	861	988	584	1062	586	690	573
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.41	0.31	0.64	0.34	0.34	0.36	0.07

Intersection Summary

Cycle Length: 125.1
Actuated Cycle Length: 81.9
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.76
Intersection Signal Delay: 26.1 Intersection LOS: C
Intersection Capacity Utilization 58.0% ICU Level of Service B
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	473	73	76	554	123	211
Act Effct Green (s)	20.7	32.3	9.0	34.4	10.8	25.3
Actuated g/C Ratio	0.34	0.53	0.15	0.56	0.18	0.41
v/c Ratio	0.75	0.08	0.29	0.53	0.39	0.27
Control Delay	28.0	2.7	34.3	12.6	32.8	3.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.0	2.7	34.3	12.6	32.8	3.4
LOS	C	A	C	B	C	A
Approach Delay	24.6			15.2	14.2	
Approach LOS	C			B	B	
Queue Length 50th (ft)	107	0	19	73	31	0
Queue Length 95th (ft)	436	21	106	406	151	34
Internal Link Dist (ft)	884			1059	1395	
Turn Bay Length (ft)		400	400			190
Base Capacity (vph)	1678	1325	842	1769	1011	1231
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.06	0.09	0.31	0.12	0.17

Intersection Summary	
Cycle Length: 159	
Actuated Cycle Length: 61.1	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.75	
Intersection Signal Delay: 18.4	Intersection LOS: B
Intersection Capacity Utilization 47.4%	ICU Level of Service A
Analysis Period (min) 15	

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	402	283	435	424	163	283
Act Effct Green (s)	12.1	35.1	18.7	34.1	11.1	23.8
Actuated g/C Ratio	0.22	0.63	0.34	0.61	0.20	0.43
v/c Ratio	0.54	0.24	0.69	0.42	0.46	0.35
Control Delay	24.1	5.3	23.6	5.3	26.7	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.1	5.3	23.6	5.3	26.7	3.7
LOS	C	A	C	A	C	A
Approach Delay		16.4	14.6		12.1	
Approach LOS		B	B		B	
Queue Length 50th (ft)	56	30	113	39	45	7
Queue Length 95th (ft)	138	85	275	102	126	48
Internal Link Dist (ft)		587	765		83	
Turn Bay Length (ft)	130			160		
Base Capacity (vph)	1663	1802	1414	1496	1029	1166
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.16	0.31	0.28	0.16	0.24

Intersection Summary	
Cycle Length: 107.7	
Actuated Cycle Length: 55.5	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.69	
Intersection Signal Delay: 14.6	Intersection LOS: B
Intersection Capacity Utilization 50.5%	ICU Level of Service A
Analysis Period (min) 15	

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	163	368	35	696	685	121	167	489	218
Act Effct Green (s)	14.5	61.1	6.8	49.9	49.9	16.0	16.0	19.6	19.6
Actuated g/C Ratio	0.13	0.53	0.06	0.43	0.43	0.14	0.14	0.17	0.17
v/c Ratio	0.73	0.20	0.34	0.86	0.50	0.49	0.64	0.84	0.68
Control Delay	69.2	15.3	64.1	43.5	14.2	52.9	58.0	61.0	52.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.2	15.3	64.1	43.5	14.2	52.9	58.0	61.0	52.1
LOS	E	B	E	D	B	D	E	E	D
Approach Delay		31.9		29.8			55.9		58.2
Approach LOS		C		C			E		E
Queue Length 50th (ft)	116	69	25	449	99	84	117	179	129
Queue Length 95th (ft)	215	131	66	#876	206	149	195	#331	#283
Internal Link Dist (ft)		636		910			807		1084
Turn Bay Length (ft)	180		100		170			400	
Base Capacity (vph)	311	1837	311	821	1382	468	488	605	329
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.20	0.11	0.85	0.50	0.26	0.34	0.81	0.66

Intersection Summary	
Cycle Length: 134.7	
Actuated Cycle Length: 114.8	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.86	
Intersection Signal Delay: 39.6	Intersection LOS: D
Intersection Capacity Utilization 77.0%	ICU Level of Service D
Analysis Period (min) 15	

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	24	430	99	82	338	73	68	43
Act Effct Green (s)	7.3	28.3	35.4	8.8	35.4	10.1	10.1	9.4
Actuated g/C Ratio	0.12	0.48	0.60	0.15	0.60	0.17	0.17	0.16
v/c Ratio	0.11	0.48	0.10	0.31	0.31	0.24	0.21	0.15
Control Delay	33.7	21.9	8.8	34.3	16.0	29.6	9.5	23.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.7	21.9	8.8	34.3	16.0	29.6	9.5	23.2
LOS	C	C	A	C	B	C	A	C
Approach Delay		20.1			19.6	19.9		23.3
Approach LOS		C			B	B		C
Queue Length 50th (ft)	7	117	5	24	55	22	0	8
Queue Length 95th (ft)	40	394	60	105	310	85	34	47
Internal Link Dist (ft)		1839			446	1093		188
Turn Bay Length (ft)	55		150	160			310	
Base Capacity (vph)	921	1273	1102	921	1259	924	841	938
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.34	0.09	0.09	0.27	0.08	0.08	0.05

Intersection Summary	
Cycle Length: 125.1	
Actuated Cycle Length: 59	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.48	
Intersection Signal Delay: 20.0	Intersection LOS: B
Intersection Capacity Utilization 45.5%	ICU Level of Service A
Analysis Period (min) 15	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	462	123	211	427	72	134
Act Effct Green (s)	22.7	33.4	14.3	41.8	9.8	29.6
Actuated g/C Ratio	0.34	0.49	0.21	0.62	0.15	0.44
v/c Ratio	0.74	0.15	0.56	0.37	0.28	0.17
Control Delay	29.8	3.1	34.8	8.7	37.9	3.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.8	3.1	34.8	8.7	37.9	3.4
LOS	C	A	C	A	D	A
Approach Delay	24.2			17.3	15.5	
Approach LOS	C			B	B	
Queue Length 50th (ft)	126	0	61	50	22	0
Queue Length 95th (ft)	461	32	247	261	107	27
Internal Link Dist (ft)	884			1059	1395	
Turn Bay Length (ft)		400	400			190
Base Capacity (vph)	1650	1321	758	1750	909	1082
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.09	0.28	0.24	0.08	0.12

Intersection Summary	
Cycle Length: 159	
Actuated Cycle Length: 67.5	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.74	
Intersection Signal Delay: 19.9	Intersection LOS: B
Intersection Capacity Utilization 52.3%	ICU Level of Service A
Analysis Period (min) 15	

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	326	304	359	152	630	391
Act Effct Green (s)	11.7	34.4	18.6	53.2	30.4	46.8
Actuated g/C Ratio	0.16	0.47	0.25	0.72	0.41	0.64
v/c Ratio	0.60	0.35	0.76	0.13	0.86	0.35
Control Delay	34.4	13.1	36.9	1.0	36.7	2.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.4	13.1	36.9	1.0	36.7	2.7
LOS	C	B	D	A	D	A
Approach Delay		24.1	26.2		23.7	
Approach LOS		C	C		C	
Queue Length 50th (ft)	71	83	149	0	248	12
Queue Length 95th (ft)	124	131	258	15	#584	56
Internal Link Dist (ft)		587	765		53	
Turn Bay Length (ft)	130			160		
Base Capacity (vph)	1181	1724	1025	1186	731	1354
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.18	0.35	0.13	0.86	0.29

Intersection Summary

Cycle Length: 107.7
Actuated Cycle Length: 73.6
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.86
Intersection Signal Delay: 24.4 Intersection LOS: C
Intersection Capacity Utilization 68.6% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	185	866	49	467	554	116	198	783	316
Act Effct Green (s)	14.8	40.0	7.5	30.6	30.6	16.2	16.2	21.1	21.1
Actuated g/C Ratio	0.15	0.41	0.08	0.31	0.31	0.17	0.17	0.22	0.22
v/c Ratio	0.70	0.61	0.36	0.81	0.50	0.40	0.65	1.06	0.81
Control Delay	57.6	25.3	57.4	43.2	9.5	43.6	49.8	90.6	55.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.6	25.3	57.4	43.2	9.5	43.6	49.8	90.6	55.5
LOS	E	C	E	D	A	D	D	F	E
Approach Delay		31.0		26.4			47.5		80.5
Approach LOS		C		C			D		F
Queue Length 50th (ft)	106	211	28	255	39	63	109	~273	172
Queue Length 95th (ft)	#253	357	84	467	105	143	227	#621	#499
Internal Link Dist (ft)		636		910			807		1084
Turn Bay Length (ft)	180		100		170			400	
Base Capacity (vph)	380	1907	380	999	1642	570	587	737	392
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.45	0.13	0.47	0.34	0.20	0.34	1.06	0.81

Intersection Summary

Cycle Length: 134.7
Actuated Cycle Length: 98.1
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.06
Intersection Signal Delay: 46.5 Intersection LOS: D
Intersection Capacity Utilization 76.9% ICU Level of Service D
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	11	354	316	389	358	205	270	40
Act Effct Green (s)	7.9	20.5	47.0	27.0	47.0	14.6	14.6	9.0
Actuated g/C Ratio	0.10	0.25	0.57	0.33	0.57	0.18	0.18	0.11
v/c Ratio	0.07	0.76	0.32	0.67	0.34	0.65	0.54	0.20
Control Delay	39.9	42.2	6.5	36.6	18.0	45.0	9.2	30.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.9	42.2	6.5	36.6	18.0	45.0	9.2	30.0
LOS	D	D	A	D	B	D	A	C
Approach Delay		25.6			27.7	24.6		30.0
Approach LOS		C			C	C		C
Queue Length 50th (ft)	5	165	13	171	81	97	0	12
Queue Length 95th (ft)	21	310	84	#455	313	202	42	42
Internal Link Dist (ft)		1839			446	473		188
Turn Bay Length (ft)	55		150	160			310	
Base Capacity (vph)	582	857	988	582	1059	584	701	571
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.41	0.32	0.67	0.34	0.35	0.39	0.07

Intersection Summary

Cycle Length: 125.1
Actuated Cycle Length: 82.2
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.76
Intersection Signal Delay: 26.3 Intersection LOS: C
Intersection Capacity Utilization 59.0% ICU Level of Service B
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	489	74	76	568	126	211
Act Effct Green (s)	21.5	33.4	9.0	35.4	11.1	25.6
Actuated g/C Ratio	0.35	0.54	0.14	0.57	0.18	0.41
v/c Ratio	0.76	0.08	0.30	0.54	0.40	0.27
Control Delay	28.2	2.6	35.1	12.7	33.5	3.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.2	2.6	35.1	12.7	33.5	3.4
LOS	C	A	D	B	C	A
Approach Delay	24.9			15.4	14.6	
Approach LOS	C			B	B	
Queue Length 50th (ft)	113	0	20	77	32	0
Queue Length 95th (ft)	456	21	108	422	156	35
Internal Link Dist (ft)	884			1059	1395	
Turn Bay Length (ft)		400	400			190
Base Capacity (vph)	1674	1328	828	1763	994	1218
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.06	0.09	0.32	0.13	0.17

Intersection Summary	
Cycle Length: 159	
Actuated Cycle Length: 62.3	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.76	
Intersection Signal Delay: 18.7	Intersection LOS: B
Intersection Capacity Utilization 48.2%	ICU Level of Service A
Analysis Period (min) 15	

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	408	292	443	424	163	287
Act Effct Green (s)	12.4	35.7	19.1	34.6	11.1	24.1
Actuated g/C Ratio	0.22	0.64	0.34	0.62	0.20	0.43
v/c Ratio	0.54	0.25	0.70	0.42	0.47	0.36
Control Delay	24.4	5.3	23.8	5.4	27.3	4.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.4	5.3	23.8	5.4	27.3	4.0
LOS	C	A	C	A	C	A
Approach Delay		16.4	14.8		12.4	
Approach LOS		B	B		B	
Queue Length 50th (ft)	58	31	116	40	46	8
Queue Length 95th (ft)	141	88	282	105	128	52
Internal Link Dist (ft)		587	765		83	
Turn Bay Length (ft)	130			160		
Base Capacity (vph)	1644	1798	1400	1492	1017	1154
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.16	0.32	0.28	0.16	0.25

Intersection Summary	
Cycle Length: 107.7	
Actuated Cycle Length: 56.2	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.70	
Intersection Signal Delay: 14.8	Intersection LOS: B
Intersection Capacity Utilization 51.1%	ICU Level of Service A
Analysis Period (min) 15	

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	168	373	35	700	685	121	167	489	222
Act Effct Green (s)	14.7	61.8	6.8	50.3	50.3	16.1	16.1	19.6	19.6
Actuated g/C Ratio	0.13	0.54	0.06	0.44	0.44	0.14	0.14	0.17	0.17
v/c Ratio	0.75	0.20	0.34	0.86	0.50	0.49	0.65	0.84	0.70
Control Delay	70.1	15.4	64.2	43.9	14.3	53.2	58.4	61.7	52.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.1	15.4	64.2	43.9	14.3	53.2	58.4	61.7	52.7
LOS	E	B	E	D	B	D	E	E	D
Approach Delay		32.4		30.1			56.2		58.9
Approach LOS		C		C			E		E
Queue Length 50th (ft)	120	70	25	456	101	85	117	180	132
Queue Length 95th (ft)	220	132	66	#885	207	149	195	#331	#287
Internal Link Dist (ft)		636		910			807		1084
Turn Bay Length (ft)	180		100		170			400	
Base Capacity (vph)	309	1848	309	815	1373	464	485	600	328
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.20	0.11	0.86	0.50	0.26	0.34	0.81	0.68

Intersection Summary

Cycle Length: 134.7
Actuated Cycle Length: 115.5
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.86
Intersection Signal Delay: 40.0 Intersection LOS: D
Intersection Capacity Utilization 77.5% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	24	430	107	105	338	80	93	43
Act Effct Green (s)	7.2	25.4	33.4	9.6	33.4	10.0	10.0	9.0
Actuated g/C Ratio	0.11	0.40	0.53	0.15	0.53	0.16	0.16	0.14
v/c Ratio	0.12	0.57	0.12	0.39	0.34	0.28	0.29	0.17
Control Delay	34.4	24.2	8.8	35.2	16.6	31.1	10.3	24.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.4	24.2	8.8	35.2	16.6	31.1	10.3	24.1
LOS	C	C	A	D	B	C	B	C
Approach Delay		21.7			21.0	19.9		24.1
Approach LOS		C			C	B		C
Queue Length 50th (ft)	8	122	5	32	56	25	0	9
Queue Length 95th (ft)	40	404	63	128	314	93	43	48
Internal Link Dist (ft)		1839			446	469		188
Turn Bay Length (ft)	55		150	160			310	
Base Capacity (vph)	813	1244	1086	813	1236	815	761	793
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.35	0.10	0.13	0.27	0.10	0.12	0.05

Intersection Summary	
Cycle Length: 125.1	
Actuated Cycle Length: 62.8	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.57	
Intersection Signal Delay: 21.3	Intersection LOS: C
Intersection Capacity Utilization 46.7%	ICU Level of Service A
Analysis Period (min) 15	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	484	126	211	449	74	134
Act Effct Green (s)	24.0	34.7	14.6	43.3	9.9	29.9
Actuated g/C Ratio	0.35	0.50	0.21	0.63	0.14	0.43
v/c Ratio	0.75	0.15	0.57	0.38	0.29	0.18
Control Delay	30.1	3.0	35.7	8.7	38.9	3.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.1	3.0	35.7	8.7	38.9	3.5
LOS	C	A	D	A	D	A
Approach Delay	24.5			17.4	16.1	
Approach LOS	C			B	B	
Queue Length 50th (ft)	136	0	63	53	23	0
Queue Length 95th (ft)	489	32	252	280	111	28
Internal Link Dist (ft)	884			1059	1395	
Turn Bay Length (ft)		400	400			190
Base Capacity (vph)	1635	1323	740	1744	888	1062
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.10	0.29	0.26	0.08	0.13

Intersection Summary	
Cycle Length: 159	
Actuated Cycle Length: 69.1	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.75	
Intersection Signal Delay: 20.2	Intersection LOS: C
Intersection Capacity Utilization 53.3%	ICU Level of Service A
Analysis Period (min) 15	

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	334	318	373	152	630	399
Act Effct Green (s)	12.0	35.5	19.4	54.0	30.4	47.1
Actuated g/C Ratio	0.16	0.48	0.26	0.72	0.41	0.63
v/c Ratio	0.61	0.36	0.77	0.13	0.88	0.36
Control Delay	34.9	13.1	37.2	1.0	38.6	3.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.9	13.1	37.2	1.0	38.6	3.2
LOS	C	B	D	A	D	A
Approach Delay		24.3	26.7		24.9	
Approach LOS		C	C		C	
Queue Length 50th (ft)	74	87	157	0	255	17
Queue Length 95th (ft)	128	136	271	15	#599	65
Internal Link Dist (ft)		587	765		53	
Turn Bay Length (ft)	130			160		
Base Capacity (vph)	1165	1708	1011	1186	720	1336
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.19	0.37	0.13	0.88	0.30

Intersection Summary	
Cycle Length: 107.7	
Actuated Cycle Length: 74.7	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.88	
Intersection Signal Delay: 25.1	Intersection LOS: C
Intersection Capacity Utilization 69.5%	ICU Level of Service C
Analysis Period (min) 15	

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	192	873	49	474	554	116	198	783	323
Act Effct Green (s)	15.3	41.1	7.5	31.1	31.1	16.3	16.3	21.0	21.0
Actuated g/C Ratio	0.15	0.41	0.08	0.31	0.31	0.16	0.16	0.21	0.21
v/c Ratio	0.70	0.60	0.37	0.81	0.50	0.40	0.66	1.08	0.83
Control Delay	57.9	25.1	58.1	43.9	9.8	44.1	50.4	95.3	58.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.9	25.1	58.1	43.9	9.8	44.1	50.4	95.3	58.5
LOS	E	C	E	D	A	D	D	F	E
Approach Delay		31.0		27.0			48.1		84.6
Approach LOS		C		C			D		F
Queue Length 50th (ft)	112	214	29	264	42	65	112	~282	181
Queue Length 95th (ft)	#268	361	84	475	108	143	227	#621	#514
Internal Link Dist (ft)		636		910			807		1084
Turn Bay Length (ft)	180		100		170			400	
Base Capacity (vph)	375	1885	375	987	1623	563	580	728	387
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.46	0.13	0.48	0.34	0.21	0.34	1.08	0.83

Intersection Summary

Cycle Length: 134.7
Actuated Cycle Length: 99.2
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.08
Intersection Signal Delay: 47.9 Intersection LOS: D
Intersection Capacity Utilization 77.6% ICU Level of Service D
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	4	356	306	414	338	166	237	32
Act Effct Green (s)	7.7	20.1	46.8	27.1	46.8	12.9	12.9	8.9
Actuated g/C Ratio	0.10	0.25	0.58	0.34	0.58	0.16	0.16	0.11
v/c Ratio	0.02	0.76	0.31	0.69	0.31	0.58	0.52	0.16
Control Delay	38.7	41.3	6.4	36.2	17.1	43.2	9.8	30.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.7	41.3	6.4	36.2	17.1	43.2	9.8	30.3
LOS	D	D	A	D	B	D	A	C
Approach Delay		25.3			27.6	23.6		30.3
Approach LOS		C			C	C		C
Queue Length 50th (ft)	2	160	12	176	70	76	0	10
Queue Length 95th (ft)	10	265	53	#401	250	146	19	31
Internal Link Dist (ft)		1839			446	1093		188
Turn Bay Length (ft)	55		150	160			310	
Base Capacity (vph)	598	882	999	598	1084	600	692	588
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.40	0.31	0.69	0.31	0.28	0.34	0.05

Intersection Summary

Cycle Length: 125.1
Actuated Cycle Length: 80.1
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.76
Intersection Signal Delay: 25.9 Intersection LOS: C
Intersection Capacity Utilization 52.7% ICU Level of Service A
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	448	57	47	573	98	183
Act Effct Green (s)	18.9	30.2	8.7	34.8	10.4	19.8
Actuated g/C Ratio	0.35	0.56	0.16	0.64	0.19	0.37
v/c Ratio	0.69	0.06	0.17	0.48	0.29	0.26
Control Delay	24.2	2.9	30.9	11.8	29.2	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.2	2.9	30.9	11.8	29.2	3.6
LOS	C	A	C	B	C	A
Approach Delay	21.8			13.2	12.5	
Approach LOS	C			B	B	
Queue Length 50th (ft)	98	0	11	74	22	0
Queue Length 95th (ft)	341	16	68	367	107	24
Internal Link Dist (ft)	884			1059	1395	
Turn Bay Length (ft)		400	400			190
Base Capacity (vph)	1699	1362	982	1801	1159	1247
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.04	0.05	0.32	0.08	0.15

Intersection Summary	
Cycle Length: 159	
Actuated Cycle Length: 54.2	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.69	
Intersection Signal Delay: 16.2	Intersection LOS: B
Intersection Capacity Utilization 44.8%	ICU Level of Service A
Analysis Period (min) 15	

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	398	241	401	627	237	241
Act Effct Green (s)	12.6	35.8	19.0	36.7	13.3	26.6
Actuated g/C Ratio	0.22	0.61	0.33	0.63	0.23	0.46
v/c Ratio	0.54	0.21	0.66	0.61	0.59	0.29
Control Delay	25.2	6.0	24.2	8.1	28.4	2.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.2	6.0	24.2	8.1	28.4	2.4
LOS	C	A	C	A	C	A
Approach Delay		17.9	14.3		15.3	
Approach LOS		B	B		B	
Queue Length 50th (ft)	60	30	113	79	70	0
Queue Length 95th (ft)	137	78	258	197	174	31
Internal Link Dist (ft)		587	765		74	
Turn Bay Length (ft)	130			160		
Base Capacity (vph)	1560	1803	1354	1458	965	1164
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.13	0.30	0.43	0.25	0.21

Intersection Summary	
Cycle Length: 107.7	
Actuated Cycle Length: 58.4	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.66	
Intersection Signal Delay: 15.6	Intersection LOS: B
Intersection Capacity Utilization 53.3%	ICU Level of Service A
Analysis Period (min) 15	

Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	126	347	11	797	165	123	7	93	123
Act Effct Green (s)	11.7	64.3	5.3	51.0	51.0	13.6	13.6	9.9	9.9
Actuated g/C Ratio	0.12	0.64	0.05	0.50	0.50	0.13	0.13	0.10	0.10
v/c Ratio	0.61	0.16	0.12	0.85	0.20	0.51	0.03	0.54	0.48
Control Delay	57.9	9.7	55.1	34.9	11.5	48.9	0.2	58.0	18.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.9	9.7	55.1	34.9	11.5	48.9	0.2	58.0	18.9
LOS	E	A	E	C	B	D	A	E	B
Approach Delay		22.6		31.1		46.3			35.7
Approach LOS		C		C		D			D
Queue Length 50th (ft)	75	36	7	396	29	73	0	55	9
Queue Length 95th (ft)	165	115	30	#1007	105	144	0	131	71
Internal Link Dist (ft)		636		910		807			1084
Turn Bay Length (ft)	180		100		170		90	400	
Base Capacity (vph)	357	2216	357	939	814	543	522	357	412
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.16	0.03	0.85	0.20	0.23	0.01	0.26	0.30

Intersection Summary	
Cycle Length: 134.7	
Actuated Cycle Length: 101.2	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.85	
Intersection Signal Delay: 30.5	Intersection LOS: C
Intersection Capacity Utilization 67.9%	ICU Level of Service C
Analysis Period (min) 15	

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	16	403	50	45	310	39	47	22
Act Effct Green (s)	7.3	27.8	29.0	7.5	29.0	9.6	9.6	9.4
Actuated g/C Ratio	0.14	0.55	0.57	0.15	0.57	0.19	0.19	0.19
v/c Ratio	0.06	0.40	0.05	0.17	0.29	0.12	0.13	0.06
Control Delay	28.7	16.9	5.3	30.4	15.8	24.6	4.7	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.7	16.9	5.3	30.4	15.8	24.6	4.7	0.3
LOS	C	B	A	C	B	C	A	A
Approach Delay		16.0			17.7	13.7		0.3
Approach LOS		B			B	B		A
Queue Length 50th (ft)	2	31	0	5	22	4	0	0
Queue Length 95th (ft)	30	349	22	66	285	50	16	0
Internal Link Dist (ft)		1839			446	1093		188
Turn Bay Length (ft)	55		150	160			310	
Base Capacity (vph)	1128	1460	1254	1128	1447	1128	1013	1123
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.28	0.04	0.04	0.21	0.03	0.05	0.02

Intersection Summary	
Cycle Length: 125.1	
Actuated Cycle Length: 50.7	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.40	
Intersection Signal Delay: 16.1	Intersection LOS: B
Intersection Capacity Utilization 42.7%	ICU Level of Service A
Analysis Period (min) 15	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	429	85	165	378	46	99
Act Effct Green (s)	20.4	31.2	11.7	39.5	9.9	22.1
Actuated g/C Ratio	0.35	0.54	0.20	0.68	0.17	0.38
v/c Ratio	0.66	0.10	0.46	0.30	0.15	0.15
Control Delay	24.9	3.4	31.5	8.1	33.2	3.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.9	3.4	31.5	8.1	33.2	3.8
LOS	C	A	C	A	C	A
Approach Delay	21.3			15.2	13.1	
Approach LOS	C			B	B	
Queue Length 50th (ft)	103	0	42	43	11	0
Queue Length 95th (ft)	387	27	184	217	71	23
Internal Link Dist (ft)	884			1059	1395	
Turn Bay Length (ft)		400	400			190
Base Capacity (vph)	1685	1363	928	1779	1099	1143
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.06	0.18	0.21	0.04	0.09

Intersection Summary	
Cycle Length: 159	
Actuated Cycle Length: 58.2	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.66	
Intersection Signal Delay: 17.6	Intersection LOS: B
Intersection Capacity Utilization 49.6%	ICU Level of Service A
Analysis Period (min) 15	

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	210	311	249	388	690	337
Act Effct Green (s)	8.5	26.5	13.9	48.4	30.3	43.5
Actuated g/C Ratio	0.13	0.40	0.21	0.74	0.46	0.66
v/c Ratio	0.47	0.41	0.63	0.31	0.84	0.29
Control Delay	31.2	15.3	30.9	1.2	29.8	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.2	15.3	30.9	1.2	29.8	1.5
LOS	C	B	C	A	C	A
Approach Delay		21.7	12.9		20.6	
Approach LOS		C	B		C	
Queue Length 50th (ft)	39	85	90	4	221	0
Queue Length 95th (ft)	80	138	162	24	#563	30
Internal Link Dist (ft)		587	765		211	
Turn Bay Length (ft)	130			160		
Base Capacity (vph)	1322	1819	1148	1256	818	1471
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.17	0.22	0.31	0.84	0.23

Intersection Summary

Cycle Length: 107.7
Actuated Cycle Length: 65.6
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.84
Intersection Signal Delay: 18.6 Intersection LOS: B
Intersection Capacity Utilization 66.2% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	106	885	26	388	110	126	33	213	168
Act Effct Green (s)	10.0	29.5	6.3	22.4	22.4	13.1	13.1	15.3	15.3
Actuated g/C Ratio	0.13	0.40	0.08	0.30	0.30	0.18	0.18	0.21	0.21
v/c Ratio	0.45	0.64	0.17	0.69	0.21	0.40	0.10	0.58	0.42
Control Delay	42.4	21.9	44.3	33.1	8.8	35.3	2.9	39.2	24.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.4	21.9	44.3	33.1	8.8	35.3	2.9	39.2	24.7
LOS	D	C	D	C	A	D	A	D	C
Approach Delay		24.1		28.6		28.6			32.8
Approach LOS		C		C		C			C
Queue Length 50th (ft)	43	132	11	149	5	51	0	83	38
Queue Length 95th (ft)	133	358	48	364	50	131	9	#253	142
Internal Link Dist (ft)		636		910		807			1084
Turn Bay Length (ft)	180		100		170		90	400	
Base Capacity (vph)	535	2489	535	1336	1135	815	742	535	550
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.36	0.05	0.29	0.10	0.15	0.04	0.40	0.31

Intersection Summary

Cycle Length: 134.7
Actuated Cycle Length: 74.2
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.69
Intersection Signal Delay: 27.2 Intersection LOS: C
Intersection Capacity Utilization 60.6% ICU Level of Service B
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	4	356	313	434	338	173	258	32
Act Effct Green (s)	7.7	20.2	46.8	27.1	46.8	13.2	13.2	8.9
Actuated g/C Ratio	0.10	0.25	0.58	0.34	0.58	0.16	0.16	0.11
v/c Ratio	0.02	0.76	0.31	0.73	0.31	0.59	0.54	0.16
Control Delay	38.7	41.4	6.4	37.8	17.2	43.5	9.7	30.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.7	41.4	6.4	37.8	17.2	43.5	9.7	30.4
LOS	D	D	A	D	B	D	A	C
Approach Delay		25.1			28.8	23.3		30.4
Approach LOS		C			C	C		C
Queue Length 50th (ft)	2	161	12	189	70	79	0	10
Queue Length 95th (ft)	10	265	53	#429	250	151	18	31
Internal Link Dist (ft)		1839			446	582		188
Turn Bay Length (ft)	55		150	160			310	
Base Capacity (vph)	595	877	998	595	1080	596	703	584
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.41	0.31	0.73	0.31	0.29	0.37	0.05

Intersection Summary	
Cycle Length: 125.1	
Actuated Cycle Length: 80.5	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.76	
Intersection Signal Delay: 26.3	Intersection LOS: C
Intersection Capacity Utilization 54.0%	ICU Level of Service A
Analysis Period (min) 15	

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	464	58	47	587	100	183
Act Effct Green (s)	19.6	31.0	8.7	35.6	10.5	19.9
Actuated g/C Ratio	0.36	0.56	0.16	0.65	0.19	0.36
v/c Ratio	0.70	0.06	0.17	0.49	0.30	0.27
Control Delay	24.5	2.8	31.5	11.8	29.7	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.5	2.8	31.5	11.8	29.7	3.7
LOS	C	A	C	B	C	A
Approach Delay	22.1			13.3	12.9	
Approach LOS	C			B	B	
Queue Length 50th (ft)	103	0	11	77	23	0
Queue Length 95th (ft)	358	16	70	379	110	24
Internal Link Dist (ft)	884			1059	1395	
Turn Bay Length (ft)		400	400			190
Base Capacity (vph)	1695	1364	972	1795	1146	1236
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.04	0.05	0.33	0.09	0.15

Intersection Summary	
Cycle Length: 159	
Actuated Cycle Length: 55.1	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.70	
Intersection Signal Delay: 16.4	Intersection LOS: B
Intersection Capacity Utilization 45.5%	ICU Level of Service A
Analysis Period (min) 15	

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	403	251	410	627	237	246
Act Effct Green (s)	12.7	36.3	19.3	37.1	13.4	26.8
Actuated g/C Ratio	0.22	0.62	0.33	0.63	0.23	0.45
v/c Ratio	0.54	0.22	0.67	0.61	0.59	0.29
Control Delay	25.5	6.0	24.5	8.1	28.7	2.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.5	6.0	24.5	8.1	28.7	2.4
LOS	C	A	C	A	C	A
Approach Delay		18.0	14.6		15.3	
Approach LOS		B	B		B	
Queue Length 50th (ft)	62	32	116	80	71	0
Queue Length 95th (ft)	140	82	267	201	177	31
Internal Link Dist (ft)		587	765		211	
Turn Bay Length (ft)	130			160		
Base Capacity (vph)	1546	1798	1342	1455	956	1159
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.14	0.31	0.43	0.25	0.21

Intersection Summary

Cycle Length: 107.7
Actuated Cycle Length: 59
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.67
Intersection Signal Delay: 15.8 Intersection LOS: B
Intersection Capacity Utilization 53.5% ICU Level of Service A
Analysis Period (min) 15

Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	132	351	11	801	165	123	7	93	127
Act Effct Green (s)	12.1	64.6	5.4	51.0	51.0	13.6	13.6	9.9	9.9
Actuated g/C Ratio	0.12	0.64	0.05	0.50	0.50	0.13	0.13	0.10	0.10
v/c Ratio	0.63	0.16	0.12	0.86	0.20	0.51	0.03	0.54	0.49
Control Delay	58.2	9.7	55.3	35.7	11.8	49.3	0.2	58.3	18.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.2	9.7	55.3	35.7	11.8	49.3	0.2	58.3	18.9
LOS	E	A	E	D	B	D	A	E	B
Approach Delay		23.0		31.8		46.6			35.5
Approach LOS		C		C		D			D
Queue Length 50th (ft)	79	36	7	402	30	73	0	56	9
Queue Length 95th (ft)	171	116	30	#1022	107	145	0	130	73
Internal Link Dist (ft)		636		910		807			1084
Turn Bay Length (ft)	180		100		170		90	400	
Base Capacity (vph)	355	2219	355	935	810	541	520	355	414
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.16	0.03	0.86	0.20	0.23	0.01	0.26	0.31

Intersection Summary

Cycle Length: 134.7
Actuated Cycle Length: 101.6
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.86
Intersection Signal Delay: 31.0 — Intersection LOS: C
Intersection Capacity Utilization 68.4% — ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	16	403	57	68	310	47	71	22
Act Effct Green (s)	7.4	25.9	30.1	8.3	30.1	9.7	9.7	9.5
Actuated g/C Ratio	0.14	0.50	0.58	0.16	0.58	0.19	0.19	0.18
v/c Ratio	0.06	0.43	0.06	0.24	0.29	0.14	0.20	0.06
Control Delay	29.7	19.0	6.2	30.7	15.8	26.0	9.7	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.7	19.0	6.2	30.7	15.8	26.0	9.7	0.3
LOS	C	B	A	C	B	C	A	A
Approach Delay		17.8			18.5	16.2		0.3
Approach LOS		B			B	B		A
Queue Length 50th (ft)	3	65	0	12	22	8	0	0
Queue Length 95th (ft)	30	359	28	90	290	59	36	0
Internal Link Dist (ft)		1839			446	534		188
Turn Bay Length (ft)	55		150	160			310	
Base Capacity (vph)	1104	1451	1247	1104	1437	1150	1031	1101
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.28	0.05	0.06	0.22	0.04	0.07	0.02

Intersection Summary

Cycle Length: 125.1
Actuated Cycle Length: 51.8
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.43
Intersection Signal Delay: 17.5 Intersection LOS: B
Intersection Capacity Utilization 42.9% ICU Level of Service A
Analysis Period (min) 15

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	450	89	165	399	48	99
Act Effct Green (s)	21.4	32.3	11.9	40.7	10.0	22.4
Actuated g/C Ratio	0.36	0.54	0.20	0.68	0.17	0.38
v/c Ratio	0.67	0.10	0.46	0.31	0.16	0.15
Control Delay	25.2	3.3	32.2	8.1	34.0	3.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.2	3.3	32.2	8.1	34.0	3.9
LOS	C	A	C	A	C	A
Approach Delay	21.6			15.1	13.7	
Approach LOS	C			B	B	
Queue Length 50th (ft)	110	0	43	46	12	0
Queue Length 95th (ft)	412	28	188	231	75	23
Internal Link Dist (ft)	884			1059	1395	
Turn Bay Length (ft)		400	400			190
Base Capacity (vph)	1680	1366	913	1772	1083	1126
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.07	0.18	0.23	0.04	0.09

Intersection Summary	
Cycle Length: 159	
Actuated Cycle Length: 59.5	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.67	
Intersection Signal Delay: 17.8	Intersection LOS: B
Intersection Capacity Utilization 50.7%	ICU Level of Service A
Analysis Period (min) 15	

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	218	325	263	388	690	344
Act Effct Green (s)	8.7	27.1	14.4	48.8	30.3	43.6
Actuated g/C Ratio	0.13	0.41	0.22	0.74	0.46	0.66
v/c Ratio	0.48	0.43	0.65	0.31	0.85	0.30
Control Delay	31.5	15.4	31.6	1.3	30.9	1.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.5	15.4	31.6	1.3	30.9	1.6
LOS	C	B	C	A	C	A
Approach Delay		21.8	13.5		21.2	
Approach LOS		C	B		C	
Queue Length 50th (ft)	41	89	96	5	227	0
Queue Length 95th (ft)	83	144	171	26	#565	30
Internal Link Dist (ft)		587	765		77	
Turn Bay Length (ft)	130			160		
Base Capacity (vph)	1309	1818	1137	1252	810	1462
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.18	0.23	0.31	0.85	0.24

Intersection Summary	
Cycle Length: 107.7	
Actuated Cycle Length: 66.2	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.85	
Intersection Signal Delay: 19.1	Intersection LOS: B
Intersection Capacity Utilization 67.1%	ICU Level of Service C
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	113	891	26	394	110	126	33	213	175
Act Effct Green (s)	10.4	30.2	6.3	22.8	22.8	13.2	13.2	15.4	15.4
Actuated g/C Ratio	0.14	0.40	0.08	0.30	0.30	0.18	0.18	0.20	0.20
v/c Ratio	0.46	0.64	0.18	0.70	0.21	0.40	0.10	0.59	0.44
Control Delay	42.9	21.8	45.0	33.5	8.9	36.0	2.8	39.9	25.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.9	21.8	45.0	33.5	8.9	36.0	2.8	39.9	25.0
LOS	D	C	D	C	A	D	A	D	C
Approach Delay		24.1		29.0		29.1			33.2
Approach LOS		C		C		C			C
Queue Length 50th (ft)	47	135	11	153	5	52	0	84	40
Queue Length 95th (ft)	141	361	49	374	51	133	9	#261	149
Internal Link Dist (ft)		636		910		807			1084
Turn Bay Length (ft)	180		100		170		90	400	
Base Capacity (vph)	529	2465	529	1323	1125	807	735	529	547
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.36	0.05	0.30	0.10	0.16	0.04	0.40	0.32

Intersection Summary

Cycle Length: 134.7
Actuated Cycle Length: 75.2
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.70
Intersection Signal Delay: 27.4 | Intersection LOS: C
Intersection Capacity Utilization 60.8% | ICU Level of Service B
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	7	353	307	393	346	180	243	35
Act Effct Green (s)	7.8	20.1	46.8	27.1	46.8	13.5	13.5	9.0
Actuated g/C Ratio	0.10	0.25	0.58	0.34	0.58	0.17	0.17	0.11
v/c Ratio	0.04	0.76	0.31	0.66	0.32	0.61	0.52	0.17
Control Delay	38.8	41.4	6.4	35.6	17.4	43.9	9.6	29.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.8	41.4	6.4	35.6	17.4	43.9	9.6	29.7
LOS	D	D	A	D	B	D	A	C
Approach Delay		25.3			27.1	24.2		29.7
Approach LOS		C			C	C		C
Queue Length 50th (ft)	3	160	12	167	74	83	0	10
Queue Length 95th (ft)	15	281	64	#409	275	166	29	35
Internal Link Dist (ft)		1839			446	1093		188
Turn Bay Length (ft)	55		150	160			310	
Base Capacity (vph)	593	874	994	593	1073	595	692	581
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.40	0.31	0.66	0.32	0.30	0.35	0.06

Intersection Summary

Cycle Length: 125.1
Actuated Cycle Length: 80.7
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.76
Intersection Signal Delay: 25.8 Intersection LOS: C
Intersection Capacity Utilization 54.9% ICU Level of Service A
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	446	62	63	548	106	190
Act Effct Green (s)	18.6	29.5	8.5	31.8	10.2	24.1
Actuated g/C Ratio	0.32	0.51	0.15	0.55	0.18	0.42
v/c Ratio	0.74	0.07	0.24	0.53	0.34	0.25
Control Delay	27.4	2.9	32.0	12.7	30.5	3.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.4	2.9	32.0	12.7	30.5	3.4
LOS	C	A	C	B	C	A
Approach Delay	24.4			14.7	13.1	
Approach LOS	C			B	B	
Queue Length 50th (ft)	98	0	15	69	24	0
Queue Length 95th (ft)	381	19	85	383	125	30
Internal Link Dist (ft)	884			1059	1395	
Turn Bay Length (ft)		400	400			190
Base Capacity (vph)	1692	1320	881	1790	1058	1260
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.05	0.07	0.31	0.10	0.15

Intersection Summary

Cycle Length: 159
Actuated Cycle Length: 57.7
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.74
Intersection Signal Delay: 17.8 Intersection LOS: B
Intersection Capacity Utilization 45.9% ICU Level of Service A
Analysis Period (min) 15

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	420	257	401	627	237	255
Act Effct Green (s)	13.1	36.4	19.1	36.9	13.4	27.1
Actuated g/C Ratio	0.22	0.62	0.32	0.62	0.23	0.46
v/c Ratio	0.55	0.22	0.67	0.61	0.59	0.30
Control Delay	25.4	6.0	24.6	8.5	28.9	2.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.4	6.0	24.6	8.5	28.9	2.3
LOS	C	A	C	A	C	A
Approach Delay		18.0	14.8		15.1	
Approach LOS		B	B		B	
Queue Length 50th (ft)	64	33	114	85	71	0
Queue Length 95th (ft)	145	83	262	209	177	31
Internal Link Dist (ft)		587	765		88	
Turn Bay Length (ft)	130			160		
Base Capacity (vph)	1541	1798	1338	1449	953	1159
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.14	0.30	0.43	0.25	0.22

Intersection Summary	
Cycle Length: 107.7	
Actuated Cycle Length: 59.1	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.67	
Intersection Signal Delay: 15.9	Intersection LOS: B
Intersection Capacity Utilization 53.9%	ICU Level of Service A
Analysis Period (min) 15	

Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	125	383	12	788	273	141	9	114	122
Act Effct Green (s)	11.8	64.4	5.4	51.1	51.1	14.4	14.4	11.2	11.2
Actuated g/C Ratio	0.11	0.62	0.05	0.49	0.49	0.14	0.14	0.11	0.11
v/c Ratio	0.62	0.18	0.13	0.86	0.33	0.57	0.03	0.60	0.45
Control Delay	59.4	10.5	56.5	36.8	12.7	51.5	0.2	59.6	17.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.4	10.5	56.5	36.8	12.7	51.5	0.2	59.6	17.8
LOS	E	B	E	D	B	D	A	E	B
Approach Delay		22.5		30.9		48.5			38.0
Approach LOS		C		C		D			D
Queue Length 50th (ft)	77	43	7	413	53	86	0	70	9
Queue Length 95th (ft)	166	130	32	#1017	174	166	0	155	70
Internal Link Dist (ft)		636		910		807			1084
Turn Bay Length (ft)	180		100		170		90	400	
Base Capacity (vph)	349	2162	349	919	821	531	512	349	405
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.18	0.03	0.86	0.33	0.27	0.02	0.33	0.30

Intersection Summary

Cycle Length: 134.7
Actuated Cycle Length: 103.5
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.86
Intersection Signal Delay: 30.9 Intersection LOS: C
Intersection Capacity Utilization 68.8% ICU Level of Service C
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	20	420	71	61	325	54	57	32
Act Effct Green (s)	7.3	27.4	31.4	8.0	31.4	9.8	9.8	9.4
Actuated g/C Ratio	0.14	0.52	0.59	0.15	0.59	0.18	0.18	0.18
v/c Ratio	0.08	0.44	0.07	0.23	0.30	0.16	0.16	0.10
Control Delay	31.1	18.8	7.2	31.8	15.4	26.5	7.1	22.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.1	18.8	7.2	31.8	15.4	26.5	7.1	22.5
LOS	C	B	A	C	B	C	A	C
Approach Delay		17.6			18.0	16.6		22.5
Approach LOS		B			B	B		C
Queue Length 50th (ft)	4	71	1	13	25	11	0	5
Queue Length 95th (ft)	35	373	38	84	298	65	24	38
Internal Link Dist (ft)		1839			446	1093		188
Turn Bay Length (ft)	55		150	160			310	
Base Capacity (vph)	1067	1408	1211	1067	1394	1069	962	1037
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.30	0.06	0.06	0.23	0.05	0.06	0.03

Intersection Summary

Cycle Length: 125.1
Actuated Cycle Length: 53
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.44
Intersection Signal Delay: 17.8 Intersection LOS: B
Intersection Capacity Utilization 43.5% ICU Level of Service A
Analysis Period (min) 15

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	453	103	188	408	58	115
Act Effct Green (s)	21.4	31.8	12.6	38.7	9.6	27.7
Actuated g/C Ratio	0.33	0.50	0.20	0.60	0.15	0.43
v/c Ratio	0.73	0.13	0.54	0.36	0.22	0.15
Control Delay	28.8	3.3	34.0	8.7	35.8	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.8	3.3	34.0	8.7	35.8	3.6
LOS	C	A	C	A	D	A
Approach Delay	24.0			16.7	14.4	
Approach LOS	C			B	B	
Queue Length 50th (ft)	116	0	51	47	16	0
Queue Length 95th (ft)	434	30	215	241	89	25
Internal Link Dist (ft)	884			1059	1395	
Turn Bay Length (ft)		400	400			190
Base Capacity (vph)	1672	1327	798	1761	957	1121
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.08	0.24	0.23	0.06	0.10

Intersection Summary	
Cycle Length: 159	
Actuated Cycle Length: 64.2	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.73	
Intersection Signal Delay: 19.5	Intersection LOS: B
Intersection Capacity Utilization 50.7%	ICU Level of Service A
Analysis Period (min) 15	

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	235	328	271	409	727	379
Act Effct Green (s)	9.1	27.8	14.7	49.1	30.3	44.0
Actuated g/C Ratio	0.14	0.42	0.22	0.73	0.45	0.66
v/c Ratio	0.51	0.42	0.66	0.33	0.91	0.32
Control Delay	31.8	15.2	32.2	1.7	37.2	1.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.8	15.2	32.2	1.7	37.2	1.6
LOS	C	B	C	A	D	A
Approach Delay		22.1	13.9		25.0	
Approach LOS		C	B		C	
Queue Length 50th (ft)	45	90	101	10	255	0
Queue Length 95th (ft)	88	145	178	35	#612	32
Internal Link Dist (ft)		587	765		79	
Turn Bay Length (ft)	130			160		
Base Capacity (vph)	1296	1814	1125	1240	802	1457
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.18	0.24	0.33	0.91	0.26

Intersection Summary

Cycle Length: 107.7
Actuated Cycle Length: 66.9
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.91
Intersection Signal Delay: 21.1 Intersection LOS: C
Intersection Capacity Utilization 66.9% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	113	963	29	413	184	155	36	326	180
Act Effct Green (s)	10.5	32.3	6.3	24.2	24.2	14.1	14.1	21.1	21.1
Actuated g/C Ratio	0.12	0.38	0.07	0.28	0.28	0.17	0.17	0.25	0.25
v/c Ratio	0.52	0.73	0.22	0.78	0.34	0.52	0.12	0.75	0.39
Control Delay	48.1	27.1	48.6	40.4	9.1	41.1	3.8	45.9	24.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.1	27.1	48.6	40.4	9.1	41.1	3.8	45.9	24.9
LOS	D	C	D	D	A	D	A	D	C
Approach Delay		29.3		31.6		34.1			38.4
Approach LOS		C		C		C			D
Queue Length 50th (ft)	54	223	14	188	13	73	0	151	47
Queue Length 95th (ft)	145	400	54	395	74	166	11	#484	162
Internal Link Dist (ft)		636		910		807			1084
Turn Bay Length (ft)	180		100		170		90	400	
Base Capacity (vph)	437	2141	437	1151	1011	664	617	437	461
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.45	0.07	0.36	0.18	0.23	0.06	0.75	0.39

Intersection Summary

Cycle Length: 134.7
Actuated Cycle Length: 85.3
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.78
Intersection Signal Delay: 32.2 Intersection LOS: C
Intersection Capacity Utilization 67.4% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	7	353	313	412	346	186	263	35
Act Effct Green (s)	7.8	20.2	46.9	27.1	46.9	13.8	13.8	9.0
Actuated g/C Ratio	0.10	0.25	0.58	0.33	0.58	0.17	0.17	0.11
v/c Ratio	0.04	0.76	0.31	0.70	0.32	0.62	0.54	0.17
Control Delay	39.2	41.7	6.4	36.9	17.6	44.0	9.5	29.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.2	41.7	6.4	36.9	17.6	44.0	9.5	29.9
LOS	D	D	A	D	B	D	A	C
Approach Delay		25.2			28.1	23.8		29.9
Approach LOS		C			C	C		C
Queue Length 50th (ft)	3	161	12	179	75	86	0	10
Queue Length 95th (ft)	15	283	65	#440	276	171	28	36
Internal Link Dist (ft)		1839			446	570		188
Turn Bay Length (ft)	55		150	160			310	
Base Capacity (vph)	591	870	994	591	1070	593	703	579
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.41	0.31	0.70	0.32	0.31	0.37	0.06

Intersection Summary	
Cycle Length: 125.1	
Actuated Cycle Length: 81.1	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.76	
Intersection Signal Delay: 26.1	Intersection LOS: C
Intersection Capacity Utilization 56.2%	ICU Level of Service B
Analysis Period (min) 15	

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	462	63	63	562	108	190
Act Effct Green (s)	19.4	30.5	8.5	32.6	10.3	24.3
Actuated g/C Ratio	0.33	0.52	0.14	0.56	0.18	0.41
v/c Ratio	0.75	0.07	0.25	0.54	0.35	0.25
Control Delay	27.5	2.8	32.6	12.7	31.2	3.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.5	2.8	32.6	12.7	31.2	3.4
LOS	C	A	C	B	C	A
Approach Delay	24.6			14.7	13.5	
Approach LOS	C			B	B	
Queue Length 50th (ft)	103	0	15	72	26	0
Queue Length 95th (ft)	399	19	87	396	129	30
Internal Link Dist (ft)	884			1059	1395	
Turn Bay Length (ft)		400	400			190
Base Capacity (vph)	1688	1323	868	1784	1042	1246
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.05	0.07	0.32	0.10	0.15

Intersection Summary	
Cycle Length: 159	
Actuated Cycle Length: 58.7	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.75	
Intersection Signal Delay: 18.0	Intersection LOS: B
Intersection Capacity Utilization 46.6%	ICU Level of Service A
Analysis Period (min) 15	

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	425	266	410	627	237	260
Act Effct Green (s)	13.2	37.0	19.5	37.4	13.5	27.4
Actuated g/C Ratio	0.22	0.62	0.33	0.63	0.23	0.46
v/c Ratio	0.56	0.23	0.68	0.61	0.59	0.30
Control Delay	25.7	6.1	24.9	8.6	29.3	2.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.7	6.1	24.9	8.6	29.3	2.4
LOS	C	A	C	A	C	A
Approach Delay		18.2	15.0		15.2	
Approach LOS		B	B		B	
Queue Length 50th (ft)	66	34	118	86	72	0
Queue Length 95th (ft)	149	87	271	214	180	33
Internal Link Dist (ft)		587	765		88	
Turn Bay Length (ft)	130			160		
Base Capacity (vph)	1526	1792	1325	1446	944	1154
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.15	0.31	0.43	0.25	0.23

Intersection Summary	
Cycle Length: 107.7	
Actuated Cycle Length: 59.8	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.68	
Intersection Signal Delay: 16.1	Intersection LOS: B
Intersection Capacity Utilization 54.0%	ICU Level of Service A
Analysis Period (min) 15	

Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	130	388	12	792	273	141	9	114	126
Act Effct Green (s)	12.1	64.7	5.4	51.0	51.0	14.4	14.4	11.2	11.2
Actuated g/C Ratio	0.12	0.62	0.05	0.49	0.49	0.14	0.14	0.11	0.11
v/c Ratio	0.63	0.18	0.13	0.86	0.33	0.57	0.03	0.60	0.46
Control Delay	59.7	10.5	56.8	37.7	12.9	51.9	0.2	59.7	17.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.7	10.5	56.8	37.7	12.9	51.9	0.2	59.7	17.7
LOS	E	B	E	D	B	D	A	E	B
Approach Delay		22.9		31.6		48.8			37.6
Approach LOS		C		C		D			D
Queue Length 50th (ft)	80	44	7	421	54	87	0	70	9
Queue Length 95th (ft)	172	132	32	#1032	176	167	0	155	71
Internal Link Dist (ft)		636		910		807			1084
Turn Bay Length (ft)	180		100		170		90	400	
Base Capacity (vph)	348	2164	348	916	818	529	510	348	407
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.18	0.03	0.86	0.33	0.27	0.02	0.33	0.31

Intersection Summary

Cycle Length: 134.7
Actuated Cycle Length: 103.8
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.86
Intersection Signal Delay: 31.3 Intersection LOS: C
Intersection Capacity Utilization 69.3% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	20	420	78	85	325	62	82	32
Act Effct Green (s)	7.4	26.8	34.3	8.9	34.3	9.9	9.9	9.3
Actuated g/C Ratio	0.13	0.48	0.62	0.16	0.62	0.18	0.18	0.17
v/c Ratio	0.09	0.47	0.08	0.30	0.29	0.20	0.24	0.11
Control Delay	31.8	20.6	7.7	32.2	15.3	27.8	10.0	23.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.8	20.6	7.7	32.2	15.3	27.8	10.0	23.4
LOS	C	C	A	C	B	C	A	C
Approach Delay		19.1			18.8	17.7		23.4
Approach LOS		B			B	B		C
Queue Length 50th (ft)	5	76	1	19	26	14	0	5
Queue Length 95th (ft)	35	383	44	108	302	74	40	40
Internal Link Dist (ft)		1839			446	494		188
Turn Bay Length (ft)	55		150	160			310	
Base Capacity (vph)	991	1371	1181	991	1358	994	903	964
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.31	0.07	0.09	0.24	0.06	0.09	0.03

Intersection Summary

Cycle Length: 125.1
Actuated Cycle Length: 55.7
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.47
Intersection Signal Delay: 18.9 | Intersection LOS: B
Intersection Capacity Utilization 44.5% | ICU Level of Service A
Analysis Period (min) 15

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	475	107	188	429	60	115
Act Effct Green (s)	22.6	33.1	12.9	40.2	9.7	28.1
Actuated g/C Ratio	0.34	0.50	0.20	0.61	0.15	0.43
v/c Ratio	0.74	0.13	0.54	0.38	0.23	0.16
Control Delay	29.1	3.2	34.9	8.7	36.8	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.1	3.2	34.9	8.7	36.8	3.7
LOS	C	A	C	A	D	A
Approach Delay	24.3			16.7	15.0	
Approach LOS	C			B	B	
Queue Length 50th (ft)	124	0	53	50	17	0
Queue Length 95th (ft)	464	30	220	258	93	26
Internal Link Dist (ft)	884			1059	1395	
Turn Bay Length (ft)		400	400			190
Base Capacity (vph)	1667	1328	781	1753	937	1101
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.08	0.24	0.24	0.06	0.10

Intersection Summary	
Cycle Length: 159	
Actuated Cycle Length: 65.8	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.74	
Intersection Signal Delay: 19.7	Intersection LOS: B
Intersection Capacity Utilization 51.8%	ICU Level of Service A
Analysis Period (min) 15	

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	242	342	285	409	727	387
Act Effct Green (s)	9.2	28.4	15.1	49.6	30.3	44.2
Actuated g/C Ratio	0.14	0.42	0.22	0.73	0.45	0.65
v/c Ratio	0.52	0.44	0.68	0.33	0.92	0.33
Control Delay	32.1	15.3	32.9	1.8	38.8	1.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.1	15.3	32.9	1.8	38.8	1.6
LOS	C	B	C	A	D	A
Approach Delay		22.3	14.6		25.9	
Approach LOS		C	B		C	
Queue Length 50th (ft)	47	95	107	11	262	0
Queue Length 95th (ft)	91	152	188	37	#614	32
Internal Link Dist (ft)		587	765		79	
Turn Bay Length (ft)	130			160		
Base Capacity (vph)	1284	1809	1114	1237	794	1450
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.19	0.26	0.33	0.92	0.27

Intersection Summary

Cycle Length: 107.7
Actuated Cycle Length: 67.5
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.92
Intersection Signal Delay: 21.7 Intersection LOS: C
Intersection Capacity Utilization 67.8% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	121	969	29	420	184	155	36	326	187
Act Effct Green (s)	11.0	33.3	6.3	24.6	24.6	14.1	14.1	21.1	21.1
Actuated g/C Ratio	0.13	0.39	0.07	0.29	0.29	0.16	0.16	0.24	0.24
v/c Ratio	0.54	0.72	0.22	0.79	0.34	0.53	0.12	0.75	0.41
Control Delay	48.6	26.8	49.4	41.0	9.4	41.9	3.8	47.0	25.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.6	26.8	49.4	41.0	9.4	41.9	3.8	47.0	25.2
LOS	D	C	D	D	A	D	A	D	C
Approach Delay		29.2		32.2		34.7			39.1
Approach LOS		C		C		C			D
Queue Length 50th (ft)	58	226	14	194	14	74	0	152	49
Queue Length 95th (ft)	154	403	55	406	76	170	11	#495	169
Internal Link Dist (ft)		636		910		807			1084
Turn Bay Length (ft)	180		100		170		90	400	
Base Capacity (vph)	432	2123	432	1138	1001	657	612	432	459
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.46	0.07	0.37	0.18	0.24	0.06	0.75	0.41

Intersection Summary

Cycle Length: 134.7
Actuated Cycle Length: 86.3
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.79
Intersection Signal Delay: 32.5 Intersection LOS: C
Intersection Capacity Utilization 67.5% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Appendix J:

Bicycle and Pedestrian Analysis

Approach		
Approach Direction	EB	
Median Present?	Yes	
Approach Delay(s)	8.7	
Level of Service	B	

Crosswalk		
Length (ft)	12	17
Lanes Crossed	1	1
Veh Vol Crossed	476	417
Ped Vol Crossed	0	0
Yield Rate(%)	0	0
Ped Platooning	No	No
Critical Headway (s)	6.43	7.86
Prob of Delayed X-ing	0.57	0.60
Prob of Blocked Lane	0.57	0.60
Delay for adq Gap	6.47	8.30
Avg Ped Delay (s)	3.70	4.96

Approach		
Approach Direction	WB	
Median Present?	Yes	
Approach Delay(s)	9.1	
Level of Service	B	

Crosswalk		
Length (ft)	12	17
Lanes Crossed	1	1
Veh Vol Crossed	417	476
Ped Vol Crossed	0	0
Yield Rate(%)	0	0
Ped Platooning	No	No
Critical Headway (s)	6.43	7.86
Prob of Delayed X-ing	0.53	0.65
Prob of Blocked Lane	0.53	0.65
Delay for adq Gap	5.94	9.21
Avg Ped Delay (s)	3.12	5.95

Approach	EB	WB	NB	SB
Crosswalk Length (ft)	48.2	36.8	37.2	25.0
Crosswalk Width (ft)	55.0	55.0	65.0	55.0
Total Number of Lanes Crossed	4	3	3	2
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	2	1	4	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	4	0	2	0
Ped. Right-Left Flow Rate (p/h)	4	0	2	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	6035.9	0.0	18185.9	9073.4
Right Corner Quality of Service	A	-	A	A
Ped. Circulation Area (sq.ft)	0.0	0.0	0.1	0.0
Crosswalk Circulation Code	F	-	F	-
Pedestrian Delay (s/p)	62.5	62.5	62.5	62.5
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.45	2.40	2.33	1.77
Pedestrian Crosswalk LOS	B	B	B	A

Approach	EB	WB	NB	SB
Bicycle Flow Rate (bike/h)	1	1	0	0
Total Flow Rate (veh/h)	675	728	449	40
Effct. Green for Bike (s)	20.4	47.0	14.4	9.0
Cross Street Width (ft)	37.2	25.0	36.8	48.2
Through Lanes Number	1	1	1	1
Through Lane Width (ft)	12.0	12.0	12.0	12.0
Bicycle Lane Width (ft)	0.0	0.0	0.0	0.0
Paved Shoulder Width (ft)	3.0	2.0	0.0	0.0
Curb Is Present?	No	No	No	No
On Street Parking?	No	No	No	No
Bicycle Lane Capacity (bike/h)	326	752	230	144
Bicycle Delay (s/bike)	43.8	24.3	48.9	53.8
Bicycle Compliance	Poor	Fair	Poor	Poor
Bicycle LOS Score	2.60	2.71	2.86	2.36
Bicycle LOS	B	B	C	B

Approach	EB	WB	NB
Crosswalk Length (ft)	47.7	36.0	36.1
Crosswalk Width (ft)	12.0	12.0	12.0
Total Number of Lanes Crossed	3	3	3
Number of Right-Turn Islands	0	0	0
Type of Control	Actuated	None	Actuated
Corresponding Signal Phase	6	8	2
Effective Walk Time (s)	11.0	0.0	11.0
Right Corner Size A (ft)	9.0	0.1	9.0
Right Corner Size B (ft)	9.0	0.1	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	0.01	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0
85th percentile speed (mph)	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-
Pedestrian Delay (s/p)	68.9	79.5	68.9
Pedestrian Compliance Code	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.36	2.40	2.12
Pedestrian Crosswalk LOS	B	B	B

Approach	EB	WB	NB
Bicycle Flow Rate (bike/h)	1	0	0
Total Flow Rate (veh/h)	546	630	334
Effct. Green for Bike (s)	20.7	34.4	10.8
Cross Street Width (ft)	36.1	47.7	36.0
Through Lanes Number	1	1	1
Through Lane Width (ft)	12.0	12.0	12.0
Bicycle Lane Width (ft)	8.0	0.0	0.0
Paved Shoulder Width (ft)	0.0	8.0	0.0
Curb Is Present?	No	No	No
On Street Parking?	No	No	No
Bicycle Lane Capacity (bike/h)	260	433	136
Bicycle Delay (s/bike)	60.2	48.8	69.1
Bicycle Compliance	Poor	Poor	Poor
Bicycle LOS Score	1.30	1.61	2.66
Bicycle LOS	A	A	B

Approach	EB	WB	SB
Crosswalk Length (ft)	48.0	58.7	50.1
Crosswalk Width (ft)	12.0	12.0	12.0
Total Number of Lanes Crossed	4	3	4
Number of Right-Turn Islands	0	0	0
Type of Control	Actuated	None	Actuated
Corresponding Signal Phase	6	4	8
Effective Walk Time (s)	10.0	0.0	0.0
Right Corner Size A (ft)	9.0	0.1	9.0
Right Corner Size B (ft)	9.0	0.1	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	0.01	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0
85th percentile speed (mph)	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-
Pedestrian Delay (s/p)	44.5	54.0	54.0
Pedestrian Compliance Code	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.48	2.38	2.46
Pedestrian Crosswalk LOS	B	B	B

Approach	EB	WB	SB
Bicycle Flow Rate (bike/h)	0	0	1
Total Flow Rate (veh/h)	685	859	446
Effct. Green for Bike (s)	35.1	18.7	11.1
Cross Street Width (ft)	58.7	50.1	48.0
Through Lanes Number	1	1	1
Through Lane Width (ft)	12.0	12.0	12.0
Bicycle Lane Width (ft)	0.0	0.0	0.0
Paved Shoulder Width (ft)	2.0	0.0	5.0
Curb Is Present?	No	No	No
On Street Parking?	No	No	No
Bicycle Lane Capacity (bike/h)	650	346	206
Bicycle Delay (s/bike)	24.6	36.9	43.5
Bicycle Compliance	Fair	Poor	Poor
Bicycle LOS Score	3.16	3.74	1.96
Bicycle LOS	C	D	A

Approach	EB	WB	NB	SB
Crosswalk Length (ft)	48.1	73.2	48.1	63.9
Crosswalk Width (ft)	12.0	12.0	12.0	12.0
Total Number of Lanes Crossed	4	6	3	5
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	4	8	6	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0	1
Ped. Right-Left Flow Rate (p/h)	0	0	0	1
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	36407.8	0.0	36407.8
Right Corner Quality of Service	-	A	-	A
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0	0.1
Crosswalk Circulation Code	-	-	-	F
Pedestrian Delay (s/p)	67.5	67.5	67.5	67.5
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.51	2.84	2.13	2.66
Pedestrian Crosswalk LOS	B	C	B	B

Approach	EB	WB	NB	SB
Bicycle Flow Rate (bike/h)	0	0	0	0
Total Flow Rate (veh/h)	531	1416	288	707
Effct. Green for Bike (s)	61.1	49.9	16.0	19.6
Cross Street Width (ft)	48.1	63.9	73.2	48.1
Through Lanes Number	2	1	1	1
Through Lane Width (ft)	12.0	12.0	12.0	12.0
Bicycle Lane Width (ft)	0.0	0.0	0.0	0.0
Paved Shoulder Width (ft)	0.0	0.0	0.0	0.0
Curb Is Present?	No	No	No	No
On Street Parking?	No	No	No	No
Bicycle Lane Capacity (bike/h)	905	739	237	290
Bicycle Delay (s/bike)	20.2	26.8	52.4	49.3
Bicycle Compliance	Fair	Fair	Poor	Poor
Bicycle LOS Score	2.73	4.87	3.15	3.46
Bicycle LOS	B	E	C	C

Approach		
Approach Direction	EB	
Median Present?	Yes	
Approach Delay(s)	7.5	
Level of Service	B	
Crosswalk		
Length (ft)	12	17
Lanes Crossed	1	1
Veh Vol Crossed	477	337
Ped Vol Crossed	0	0
Yield Rate(%)	0	0
Ped Platooning	No	No
Critical Headway (s)	6.43	7.86
Prob of Delayed X-ing	0.57	0.52
Prob of Blocked Lane	0.57	0.52
Delay for adq Gap	6.48	7.20
Avg Ped Delay (s)	3.71	3.75

Approach		
Approach Direction	WB	
Median Present?	Yes	
Approach Delay(s)	8.4	
Level of Service	B	
Crosswalk		
Length (ft)	12	17
Lanes Crossed	1	1
Veh Vol Crossed	337	477
Ped Vol Crossed	0	0
Yield Rate(%)	0	0
Ped Platooning	No	No
Critical Headway (s)	6.43	7.86
Prob of Delayed X-ing	0.45	0.65
Prob of Blocked Lane	0.45	0.65
Delay for adq Gap	5.28	9.23
Avg Ped Delay (s)	2.39	5.97

Approach	EB	WB	NB	SB
Crosswalk Length (ft)	48.2	36.8	37.2	25.0
Crosswalk Width (ft)	12.0	12.0	12.0	12.0
Total Number of Lanes Crossed	4	3	3	2
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	2	1	2	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	2	1	0	3
Ped. Right-Left Flow Rate (p/h)	2	1	0	3
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	18185.9	9073.4	36410.9	7250.9
Right Corner Quality of Service	A	A	A	A
Ped. Circulation Area (sq.ft)	0.0	0.1	0.0	0.1
Crosswalk Circulation Code	F	F	-	F
Pedestrian Delay (s/p)	62.5	62.5	62.5	62.5
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.39	2.27	2.07	1.78
Pedestrian Crosswalk LOS	B	B	B	A

Approach	EB	WB	NB	SB
Bicycle Flow Rate (bike/h)	0	0	0	0
Total Flow Rate (veh/h)	553	420	141	43
Effct. Green for Bike (s)	28.3	35.4	10.1	9.4
Cross Street Width (ft)	37.2	25.0	36.8	48.2
Through Lanes Number	1	1	1	1
Through Lane Width (ft)	12.0	12.0	12.0	12.0
Bicycle Lane Width (ft)	0.0	0.0	0.0	0.0
Paved Shoulder Width (ft)	0.0	0.0	0.0	0.0
Curb Is Present?	No	No	No	No
On Street Parking?	No	No	No	No
Bicycle Lane Capacity (bike/h)	453	566	162	150
Bicycle Delay (s/bike)	37.4	32.1	52.8	53.5
Bicycle Compliance	Poor	Poor	Poor	Poor
Bicycle LOS Score	3.04	2.64	2.36	2.37
Bicycle LOS	C	B	B	B

Approach	EB	WB	NB
Crosswalk Length (ft)	47.7	36.0	36.1
Crosswalk Width (ft)	12.0	12.0	12.0
Total Number of Lanes Crossed	3	3	3
Number of Right-Turn Islands	0	0	0
Type of Control	Actuated	None	Actuated
Corresponding Signal Phase	6	8	2
Effective Walk Time (s)	11.0	0.0	11.0
Right Corner Size A (ft)	9.0	0.1	9.0
Right Corner Size B (ft)	9.0	0.1	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	0.01	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0
85th percentile speed (mph)	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-
Pedestrian Delay (s/p)	68.9	79.5	68.9
Pedestrian Compliance Code	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.32	2.37	2.14
Pedestrian Crosswalk LOS	B	B	B

Approach	EB	WB	NB
Bicycle Flow Rate (bike/h)	3	0	0
Total Flow Rate (veh/h)	585	638	206
Effct. Green for Bike (s)	22.7	41.8	9.8
Cross Street Width (ft)	36.1	47.7	36.0
Through Lanes Number	1	1	1
Through Lane Width (ft)	12.0	12.0	12.0
Bicycle Lane Width (ft)	8.0	0.0	0.0
Paved Shoulder Width (ft)	0.0	8.0	0.0
Curb Is Present?	No	No	No
On Street Parking?	No	No	No
Bicycle Lane Capacity (bike/h)	286	526	123
Bicycle Delay (s/bike)	58.5	43.2	70.0
Bicycle Compliance	Poor	Poor	Poor
Bicycle LOS Score	1.36	1.63	2.45
Bicycle LOS	A	A	B

Approach	EB	WB	SB
Crosswalk Length (ft)	48.0	58.6	51.1
Crosswalk Width (ft)	12.0	12.0	12.0
Total Number of Lanes Crossed	4	3	4
Number of Right-Turn Islands	0	0	0
Type of Control	Actuated	None	Actuated
Corresponding Signal Phase	6	2	8
Effective Walk Time (s)	10.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0
85th percentile speed (mph)	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-
Pedestrian Delay (s/p)	44.5	54.0	54.0
Pedestrian Compliance Code	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.48	2.43	2.51
Pedestrian Crosswalk LOS	B	B	B

Approach	EB	WB	SB
Bicycle Flow Rate (bike/h)	0	0	0
Total Flow Rate (veh/h)	630	511	1021
Effct. Green for Bike (s)	34.4	18.6	30.4
Cross Street Width (ft)	58.6	51.1	48.0
Through Lanes Number	1	1	1
Through Lane Width (ft)	12.0	12.0	12.0
Bicycle Lane Width (ft)	0.0	0.0	0.0
Paved Shoulder Width (ft)	2.0	0.0	5.0
Curb Is Present?	No	No	No
On Street Parking?	No	No	No
Bicycle Lane Capacity (bike/h)	637	344	563
Bicycle Delay (s/bike)	25.1	37.0	27.9
Bicycle Compliance	Fair	Poor	Fair
Bicycle LOS Score	3.07	3.18	2.91
Bicycle LOS	C	C	C

Approach	EB	WB	NB	SB
Crosswalk Length (ft)	48.1	73.2	48.1	63.9
Crosswalk Width (ft)	12.0	12.0	12.0	12.0
Total Number of Lanes Crossed	4	6	3	5
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	4	2	6	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	0	1	0	1
Ped. Right-Left Flow Rate (p/h)	0	1	0	1
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	18182.8	36407.8	36407.8
Right Corner Quality of Service	-	A	A	A
Ped. Circulation Area (sq.ft)	0.0	0.1	0.0	0.1
Crosswalk Circulation Code	-	F	-	F
Pedestrian Delay (s/p)	67.5	67.5	67.5	67.5
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.58	2.91	2.19	2.72
Pedestrian Crosswalk LOS	B	C	B	B

Approach	EB	WB	NB	SB
Bicycle Flow Rate (bike/h)	0	0	0	0
Total Flow Rate (veh/h)	1051	1070	314	1099
Effct. Green for Bike (s)	40.0	30.6	16.2	21.1
Cross Street Width (ft)	48.1	63.9	73.2	48.1
Through Lanes Number	2	1	1	1
Through Lane Width (ft)	12.0	12.0	12.0	12.0
Bicycle Lane Width (ft)	0.0	0.0	0.0	0.0
Paved Shoulder Width (ft)	0.0	0.0	0.0	0.0
Curb Is Present?	No	No	No	No
On Street Parking?	No	No	No	No
Bicycle Lane Capacity (bike/h)	593	453	240	313
Bicycle Delay (s/bike)	33.4	40.4	52.3	48.0
Bicycle Compliance	Poor	Poor	Poor	Poor
Bicycle LOS Score	3.16	4.30	3.20	4.11
Bicycle LOS	C	E	C	D

Approach		
Approach Direction	EB	
Median Present?	Yes	
Approach Delay(s)	8.8	
Level of Service	B	
Crosswalk		
Length (ft)	12	17
Lanes Crossed	1	1
Veh Vol Crossed	481	422
Ped Vol Crossed	0	0
Yield Rate(%)	0	0
Ped Platooning	No	No
Critical Headway (s)	6.43	7.86
Prob of Delayed X-ing	0.58	0.60
Prob of Blocked Lane	0.58	0.60
Delay for adq Gap	6.51	8.37
Avg Ped Delay (s)	3.75	5.04

Approach		
Approach Direction	WB	
Median Present?	Yes	
Approach Delay(s)	9.2	
Level of Service	B	
Crosswalk		
Length (ft)	12	17
Lanes Crossed	1	1
Veh Vol Crossed	422	481
Ped Vol Crossed	0	0
Yield Rate(%)	0	0
Ped Platooning	No	No
Critical Headway (s)	6.43	7.86
Prob of Delayed X-ing	0.53	0.65
Prob of Blocked Lane	0.53	0.65
Delay for adq Gap	5.98	9.30
Avg Ped Delay (s)	3.16	6.04

Approach	EB	WB	NB	SB
Crosswalk Length (ft)	48.1	36.5	38.0	25.0
Crosswalk Width (ft)	55.0	55.0	65.0	55.0
Total Number of Lanes Crossed	4	3	3	2
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	2	1	4	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	4	0	2	0
Ped. Right-Left Flow Rate (p/h)	4	0	2	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	6035.9	0.0	18185.9	9073.4
Right Corner Quality of Service	A	-	A	A
Ped. Circulation Area (sq.ft)	0.0	0.0	0.1	0.0
Crosswalk Circulation Code	F	-	F	-
Pedestrian Delay (s/p)	62.5	62.5	62.5	62.5
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.46	2.41	2.35	1.77
Pedestrian Crosswalk LOS	B	B	B	A

Approach	EB	WB	NB	SB
Bicycle Flow Rate (bike/h)	1	1	0	0
Total Flow Rate (veh/h)	681	746	475	40
Effct. Green for Bike (s)	20.5	47.0	14.6	9.0
Cross Street Width (ft)	38.0	25.0	36.5	48.1
Through Lanes Number	1	1	1	1
Through Lane Width (ft)	12.0	12.0	12.0	12.0
Bicycle Lane Width (ft)	0.0	0.0	0.0	0.0
Paved Shoulder Width (ft)	3.0	2.0	0.0	0.0
Curb Is Present?	No	No	No	No
On Street Parking?	No	No	No	No
Bicycle Lane Capacity (bike/h)	328	752	234	144
Bicycle Delay (s/bike)	43.7	24.3	48.8	53.8
Bicycle Compliance	Poor	Fair	Poor	Poor
Bicycle LOS Score	2.62	2.74	2.90	2.36
Bicycle LOS	B	B	C	B

Approach	EB	WB	NB
Crosswalk Length (ft)	47.7	36.0	36.1
Crosswalk Width (ft)	12.0	12.0	12.0
Total Number of Lanes Crossed	3	3	3
Number of Right-Turn Islands	0	0	0
Type of Control	Actuated	None	Actuated
Corresponding Signal Phase	6	8	2
Effective Walk Time (s)	11.0	0.0	11.0
Right Corner Size A (ft)	9.0	0.1	9.0
Right Corner Size B (ft)	9.0	0.1	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	0.01	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0
85th percentile speed (mph)	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-
Pedestrian Delay (s/p)	68.9	79.5	68.9
Pedestrian Compliance Code	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.38	2.41	2.13
Pedestrian Crosswalk LOS	B	B	B

Approach	EB	WB	NB
Bicycle Flow Rate (bike/h)	1	0	0
Total Flow Rate (veh/h)	563	644	337
Effct. Green for Bike (s)	21.5	35.4	11.1
Cross Street Width (ft)	36.1	47.7	36.0
Through Lanes Number	1	1	1
Through Lane Width (ft)	12.0	12.0	12.0
Bicycle Lane Width (ft)	8.0	0.0	0.0
Paved Shoulder Width (ft)	0.0	8.0	0.0
Curb Is Present?	No	No	No
On Street Parking?	No	No	No
Bicycle Lane Capacity (bike/h)	270	445	140
Bicycle Delay (s/bike)	59.5	48.0	68.8
Bicycle Compliance	Poor	Poor	Poor
Bicycle LOS Score	1.33	1.64	2.67
Bicycle LOS	A	A	B

Approach	EB	WB	SB
Crosswalk Length (ft)	48.0	58.7	50.1
Crosswalk Width (ft)	12.0	12.0	12.0
Total Number of Lanes Crossed	4	3	4
Number of Right-Turn Islands	0	0	0
Type of Control	Actuated	None	Actuated
Corresponding Signal Phase	6	4	8
Effective Walk Time (s)	10.0	0.0	0.0
Right Corner Size A (ft)	9.0	0.1	9.0
Right Corner Size B (ft)	9.0	0.1	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	0.01	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0
85th percentile speed (mph)	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-
Pedestrian Delay (s/p)	44.5	54.0	54.0
Pedestrian Compliance Code	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.49	2.39	2.46
Pedestrian Crosswalk LOS	B	B	B

Approach	EB	WB	SB
Bicycle Flow Rate (bike/h)	0	0	1
Total Flow Rate (veh/h)	700	867	450
Effct. Green for Bike (s)	35.7	19.1	11.1
Cross Street Width (ft)	58.7	50.1	48.0
Through Lanes Number	1	1	1
Through Lane Width (ft)	12.0	12.0	12.0
Bicycle Lane Width (ft)	0.0	0.0	0.0
Paved Shoulder Width (ft)	2.0	0.0	5.0
Curb Is Present?	No	No	No
On Street Parking?	No	No	No
Bicycle Lane Capacity (bike/h)	661	354	206
Bicycle Delay (s/bike)	24.2	36.6	43.5
Bicycle Compliance	Fair	Poor	Poor
Bicycle LOS Score	3.18	3.76	1.96
Bicycle LOS	C	D	A

Approach	EB	WB	NB	SB
Crosswalk Length (ft)	48.1	73.2	48.1	63.9
Crosswalk Width (ft)	12.0	12.0	12.0	12.0
Total Number of Lanes Crossed	4	6	3	5
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	4	8	6	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0	1
Ped. Right-Left Flow Rate (p/h)	0	0	0	1
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	36407.8	0.0	36407.8
Right Corner Quality of Service	-	A	-	A
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0	0.1
Crosswalk Circulation Code	-	-	-	F
Pedestrian Delay (s/p)	67.5	67.5	67.5	67.5
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.52	2.84	2.13	2.66
Pedestrian Crosswalk LOS	B	C	B	B

Approach	EB	WB	NB	SB
Bicycle Flow Rate (bike/h)	0	0	0	0
Total Flow Rate (veh/h)	541	1420	288	711
Effct. Green for Bike (s)	61.8	50.3	16.1	19.6
Cross Street Width (ft)	48.1	63.9	73.2	48.1
Through Lanes Number	2	1	1	1
Through Lane Width (ft)	12.0	12.0	12.0	12.0
Bicycle Lane Width (ft)	0.0	0.0	0.0	0.0
Paved Shoulder Width (ft)	0.0	0.0	0.0	0.0
Curb Is Present?	No	No	No	No
On Street Parking?	No	No	No	No
Bicycle Lane Capacity (bike/h)	916	745	239	290
Bicycle Delay (s/bike)	19.8	26.6	52.4	49.3
Bicycle Compliance	Fair	Fair	Poor	Poor
Bicycle LOS Score	2.74	4.88	3.15	3.47
Bicycle LOS	B	E	C	C

Approach		
Approach Direction	EB	
Median Present?	Yes	
Approach Delay(s)	7.6	
Level of Service	B	

Crosswalk		
Length (ft)	12	17
Lanes Crossed	1	1
Veh Vol Crossed	484	344
Ped Vol Crossed	0	0
Yield Rate(%)	0	0
Ped Platooning	No	No
Critical Headway (s)	6.43	7.86
Prob of Delayed X-ing	0.58	0.53
Prob of Blocked Lane	0.58	0.53
Delay for adq Gap	6.54	7.29
Avg Ped Delay (s)	3.79	3.85

Approach		
Approach Direction	WB	
Median Present?	Yes	
Approach Delay(s)	8.5	
Level of Service	B	

Crosswalk		
Length (ft)	12	17
Lanes Crossed	1	1
Veh Vol Crossed	344	484
Ped Vol Crossed	0	0
Yield Rate(%)	0	0
Ped Platooning	No	No
Critical Headway (s)	6.43	7.86
Prob of Delayed X-ing	0.46	0.65
Prob of Blocked Lane	0.46	0.65
Delay for adq Gap	5.34	9.34
Avg Ped Delay (s)	2.45	6.10

Approach	EB	WB	NB	SB
Crosswalk Length (ft)	48.2	36.4	38.5	25.0
Crosswalk Width (ft)	12.0	12.0	12.0	12.0
Total Number of Lanes Crossed	4	3	3	2
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	2	1	2	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	2	1	0	3
Ped. Right-Left Flow Rate (p/h)	2	1	0	3
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	18185.9	9073.4	36410.9	7250.9
Right Corner Quality of Service	A	A	A	A
Ped. Circulation Area (sq.ft)	0.0	0.1	0.0	0.1
Crosswalk Circulation Code	F	F	-	F
Pedestrian Delay (s/p)	62.5	62.5	62.5	62.5
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.39	2.29	2.09	1.78
Pedestrian Crosswalk LOS	B	B	B	A

Approach	EB	WB	NB	SB
Bicycle Flow Rate (bike/h)	0	0	0	0
Total Flow Rate (veh/h)	561	443	173	43
Effct. Green for Bike (s)	25.4	33.4	10.0	9.0
Cross Street Width (ft)	38.5	25.0	36.4	48.2
Through Lanes Number	1	1	1	1
Through Lane Width (ft)	12.0	12.0	12.0	12.0
Bicycle Lane Width (ft)	0.0	0.0	0.0	0.0
Paved Shoulder Width (ft)	0.0	0.0	0.0	0.0
Curb Is Present?	No	No	No	No
On Street Parking?	No	No	No	No
Bicycle Lane Capacity (bike/h)	406	534	160	144
Bicycle Delay (s/bike)	39.7	33.6	52.9	53.8
Bicycle Compliance	Poor	Poor	Poor	Poor
Bicycle LOS Score	3.07	2.67	2.40	2.37
Bicycle LOS	C	B	B	B

Approach	EB	WB	NB
Crosswalk Length (ft)	47.7	36.0	36.1
Crosswalk Width (ft)	12.0	12.0	12.0
Total Number of Lanes Crossed	3	3	3
Number of Right-Turn Islands	0	0	0
Type of Control	Actuated	None	Actuated
Corresponding Signal Phase	6	8	2
Effective Walk Time (s)	11.0	0.0	11.0
Right Corner Size A (ft)	9.0	0.1	9.0
Right Corner Size B (ft)	9.0	0.1	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	0.01	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0
85th percentile speed (mph)	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-
Pedestrian Delay (s/p)	68.9	79.5	68.9
Pedestrian Compliance Code	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.34	2.39	2.14
Pedestrian Crosswalk LOS	B	B	B

Approach	EB	WB	NB
Bicycle Flow Rate (bike/h)	3	0	0
Total Flow Rate (veh/h)	610	660	208
Effct. Green for Bike (s)	24.0	43.3	9.9
Cross Street Width (ft)	36.1	47.7	36.0
Through Lanes Number	1	1	1
Through Lane Width (ft)	12.0	12.0	12.0
Bicycle Lane Width (ft)	8.0	0.0	0.0
Paved Shoulder Width (ft)	0.0	8.0	0.0
Curb Is Present?	No	No	No
On Street Parking?	No	No	No
Bicycle Lane Capacity (bike/h)	302	545	125
Bicycle Delay (s/bike)	57.4	42.1	69.9
Bicycle Compliance	Poor	Poor	Poor
Bicycle LOS Score	1.40	1.66	2.45
Bicycle LOS	A	A	B

Approach	EB	WB	SB
Crosswalk Length (ft)	48.0	58.6	51.1
Crosswalk Width (ft)	12.0	12.0	12.0
Total Number of Lanes Crossed	4	3	4
Number of Right-Turn Islands	0	0	0
Type of Control	Actuated	None	Actuated
Corresponding Signal Phase	6	2	8
Effective Walk Time (s)	10.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0
85th percentile speed (mph)	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-
Pedestrian Delay (s/p)	44.5	54.0	54.0
Pedestrian Compliance Code	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.49	2.44	2.52
Pedestrian Crosswalk LOS	B	B	B

Approach	EB	WB	SB
Bicycle Flow Rate (bike/h)	0	0	0
Total Flow Rate (veh/h)	652	525	1029
Effct. Green for Bike (s)	35.5	19.4	30.4
Cross Street Width (ft)	58.6	51.1	48.0
Through Lanes Number	1	1	1
Through Lane Width (ft)	12.0	12.0	12.0
Bicycle Lane Width (ft)	0.0	0.0	0.0
Paved Shoulder Width (ft)	2.0	0.0	5.0
Curb Is Present?	No	No	No
On Street Parking?	No	No	No
Bicycle Lane Capacity (bike/h)	657	359	563
Bicycle Delay (s/bike)	24.3	36.3	27.9
Bicycle Compliance	Fair	Poor	Fair
Bicycle LOS Score	3.10	3.21	2.92
Bicycle LOS	C	C	C

Approach	EB	WB	NB	SB
Crosswalk Length (ft)	48.1	73.2	48.1	63.9
Crosswalk Width (ft)	12.0	12.0	12.0	12.0
Total Number of Lanes Crossed	4	6	3	5
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	4	2	6	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	0	1	0	1
Ped. Right-Left Flow Rate (p/h)	0	1	0	1
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	18182.8	36407.8	36407.8
Right Corner Quality of Service	-	A	A	A
Ped. Circulation Area (sq.ft)	0.0	0.1	0.0	0.1
Crosswalk Circulation Code	-	F	-	F
Pedestrian Delay (s/p)	67.5	67.5	67.5	67.5
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.59	2.91	2.19	2.72
Pedestrian Crosswalk LOS	B	C	B	B

Approach	EB	WB	NB	SB
Bicycle Flow Rate (bike/h)	0	0	0	0
Total Flow Rate (veh/h)	1065	1077	314	1106
Effct. Green for Bike (s)	41.1	31.1	16.3	21.0
Cross Street Width (ft)	48.1	63.9	73.2	48.1
Through Lanes Number	2	1	1	1
Through Lane Width (ft)	12.0	12.0	12.0	12.0
Bicycle Lane Width (ft)	0.0	0.0	0.0	0.0
Paved Shoulder Width (ft)	0.0	0.0	0.0	0.0
Curb Is Present?	No	No	No	No
On Street Parking?	No	No	No	No
Bicycle Lane Capacity (bike/h)	609	461	241	311
Bicycle Delay (s/bike)	32.7	40.0	52.2	48.1
Bicycle Compliance	Poor	Poor	Poor	Poor
Bicycle LOS Score	3.17	4.31	3.20	4.12
Bicycle LOS	C	E	C	D

Approach		
Approach Direction	EB	
Median Present?	Yes	
Approach Delay(s)	6.8	
Level of Service	B	
Crosswalk		
Length (ft)	12	17
Lanes Crossed	1	1
Veh Vol Crossed	410	338
Ped Vol Crossed	0	0
Yield Rate(%)	0	0
Ped Platooning	No	No
Critical Headway (s)	6.43	7.86
Prob of Delayed X-ing	0.52	0.52
Prob of Blocked Lane	0.52	0.52
Delay for adq Gap	5.88	7.21
Avg Ped Delay (s)	3.05	3.76

Approach		
Approach Direction	WB	
Median Present?	Yes	
Approach Delay(s)	7.2	
Level of Service	B	
Crosswalk		
Length (ft)	12	17
Lanes Crossed	1	1
Veh Vol Crossed	338	410
Ped Vol Crossed	0	0
Yield Rate(%)	0	0
Ped Platooning	No	No
Critical Headway (s)	6.43	7.86
Prob of Delayed X-ing	0.45	0.59
Prob of Blocked Lane	0.45	0.59
Delay for adq Gap	5.29	8.20
Avg Ped Delay (s)	2.40	4.85

Approach	EB	WB	NB	SB
Crosswalk Length (ft)	48.2	36.8	37.2	25.0
Crosswalk Width (ft)	55.0	55.0	65.0	55.0
Total Number of Lanes Crossed	4	3	3	2
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	2	1	4	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	4	0	2	0
Ped. Right-Left Flow Rate (p/h)	4	0	2	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	6035.9	0.0	18185.9	9073.4
Right Corner Quality of Service	A	-	A	A
Ped. Circulation Area (sq.ft)	0.0	0.0	0.1	0.0
Crosswalk Circulation Code	F	-	F	-
Pedestrian Delay (s/p)	62.5	62.5	62.5	62.5
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.44	2.41	2.33	1.76
Pedestrian Crosswalk LOS	B	B	B	A

Approach	EB	WB	NB	SB
Bicycle Flow Rate (bike/h)	1	1	0	0
Total Flow Rate (veh/h)	666	752	403	32
Effct. Green for Bike (s)	20.1	46.8	12.9	8.9
Cross Street Width (ft)	37.2	25.0	36.8	48.2
Through Lanes Number	1	1	1	1
Through Lane Width (ft)	12.0	12.0	12.0	12.0
Bicycle Lane Width (ft)	0.0	0.0	0.0	0.0
Paved Shoulder Width (ft)	3.0	2.0	0.0	0.0
Curb Is Present?	No	No	No	No
On Street Parking?	No	No	No	No
Bicycle Lane Capacity (bike/h)	322	749	206	142
Bicycle Delay (s/bike)	44.0	24.5	50.3	53.9
Bicycle Compliance	Poor	Fair	Poor	Poor
Bicycle LOS Score	2.58	2.75	2.79	2.35
Bicycle LOS	B	C	C	B

Approach	EB	WB	NB
Crosswalk Length (ft)	47.7	36.0	36.1
Crosswalk Width (ft)	12.0	12.0	12.0
Total Number of Lanes Crossed	3	3	3
Number of Right-Turn Islands	0	0	0
Type of Control	Actuated	None	Actuated
Corresponding Signal Phase	6	8	2
Effective Walk Time (s)	11.0	0.0	11.0
Right Corner Size A (ft)	9.0	0.1	9.0
Right Corner Size B (ft)	9.0	0.1	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	0.01	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0
85th percentile speed (mph)	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-
Pedestrian Delay (s/p)	68.9	79.5	68.9
Pedestrian Compliance Code	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.35	2.38	2.09
Pedestrian Crosswalk LOS	B	B	B

Approach	EB	WB	NB
Bicycle Flow Rate (bike/h)	1	0	0
Total Flow Rate (veh/h)	505	620	281
Effct. Green for Bike (s)	18.9	34.8	10.4
Cross Street Width (ft)	36.1	47.7	36.0
Through Lanes Number	1	1	1
Through Lane Width (ft)	12.0	12.0	12.0
Bicycle Lane Width (ft)	8.0	0.0	0.0
Paved Shoulder Width (ft)	0.0	8.0	0.0
Curb Is Present?	No	No	No
On Street Parking?	No	No	No
Bicycle Lane Capacity (bike/h)	238	438	131
Bicycle Delay (s/bike)	61.8	48.5	69.4
Bicycle Compliance	Poor	Poor	Poor
Bicycle LOS Score	1.23	1.60	2.57
Bicycle LOS	A	A	B

Approach	EB	WB	SB
Crosswalk Length (ft)	48.1	58.6	50.9
Crosswalk Width (ft)	12.0	12.0	12.0
Total Number of Lanes Crossed	4	3	4
Number of Right-Turn Islands	0	0	0
Type of Control	Actuated	None	Actuated
Corresponding Signal Phase	6	2	8
Effective Walk Time (s)	10.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0
85th percentile speed (mph)	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-
Pedestrian Delay (s/p)	44.5	54.0	54.0
Pedestrian Compliance Code	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.45	2.45	2.51
Pedestrian Crosswalk LOS	B	B	B

Approach	EB	WB	SB
Bicycle Flow Rate (bike/h)	0	0	1
Total Flow Rate (veh/h)	639	1028	478
Effct. Green for Bike (s)	35.8	19.0	13.3
Cross Street Width (ft)	58.6	50.9	48.1
Through Lanes Number	1	1	1
Through Lane Width (ft)	12.0	12.0	12.0
Bicycle Lane Width (ft)	0.0	0.0	0.0
Paved Shoulder Width (ft)	2.0	0.0	5.0
Curb Is Present?	No	No	No
On Street Parking?	No	No	No
Bicycle Lane Capacity (bike/h)	663	352	246
Bicycle Delay (s/bike)	24.1	36.7	41.5
Bicycle Compliance	Fair	Poor	Poor
Bicycle LOS Score	3.08	4.03	2.01
Bicycle LOS	C	D	B

Approach	EB	WB	NB	SB
Crosswalk Length (ft)	48.1	60.9	48.1	37.5
Crosswalk Width (ft)	12.0	12.0	12.0	12.0
Total Number of Lanes Crossed	4	5	3	3
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	4	8	6	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0	1
Ped. Right-Left Flow Rate (p/h)	0	0	0	1
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	36407.8	0.0	36407.8
Right Corner Quality of Service	-	A	-	A
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0	0.1
Crosswalk Circulation Code	-	-	-	F
Pedestrian Delay (s/p)	67.5	67.5	67.5	67.5
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.51	2.60	2.03	2.14
Pedestrian Crosswalk LOS	B	B	B	B

Approach	EB	WB	NB	SB
Bicycle Flow Rate (bike/h)	0	0	0	0
Total Flow Rate (veh/h)	473	973	130	216
Effct. Green for Bike (s)	64.3	51.0	13.6	9.9
Cross Street Width (ft)	48.1	37.5	60.9	48.1
Through Lanes Number	2	1	1	1
Through Lane Width (ft)	12.0	12.0	12.0	12.0
Bicycle Lane Width (ft)	0.0	0.0	0.0	0.0
Paved Shoulder Width (ft)	0.0	0.0	0.0	0.0
Curb Is Present?	No	No	No	No
On Street Parking?	No	No	No	No
Bicycle Lane Capacity (bike/h)	953	756	201	147
Bicycle Delay (s/bike)	18.5	26.1	54.6	58.0
Bicycle Compliance	Fair	Fair	Poor	Poor
Bicycle LOS Score	2.69	3.74	2.71	2.65
Bicycle LOS	B	D	B	B

Approach		
Approach Direction	EB	
Median Present?	Yes	
Approach Delay(s)	6.2	
Level of Service	B	
Crosswalk		
Length (ft)	12	17
Lanes Crossed	1	1
Veh Vol Crossed	419	288
Ped Vol Crossed	0	0
Yield Rate(%)	0	0
Ped Platooning	No	No
Critical Headway (s)	6.43	7.86
Prob of Delayed X-ing	0.53	0.47
Prob of Blocked Lane	0.53	0.47
Delay for adq Gap	5.95	6.60
Avg Ped Delay (s)	3.14	3.08

Approach		
Approach Direction	WB	
Median Present?	Yes	
Approach Delay(s)	7.0	
Level of Service	B	
Crosswalk		
Length (ft)	12	17
Lanes Crossed	1	1
Veh Vol Crossed	288	419
Ped Vol Crossed	0	0
Yield Rate(%)	0	0
Ped Platooning	No	No
Critical Headway (s)	6.43	7.86
Prob of Delayed X-ing	0.40	0.60
Prob of Blocked Lane	0.40	0.60
Delay for adq Gap	4.92	8.33
Avg Ped Delay (s)	1.98	4.99

Approach	EB	WB	NB	SB
Crosswalk Length (ft)	48.2	36.8	37.2	25.0
Crosswalk Width (ft)	12.0	12.0	12.0	12.0
Total Number of Lanes Crossed	4	3	3	2
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	2	1	2	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	2	1	0	3
Ped. Right-Left Flow Rate (p/h)	2	1	0	3
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	18185.9	9073.4	36410.9	7250.9
Right Corner Quality of Service	A	A	A	A
Ped. Circulation Area (sq.ft)	0.0	0.1	0.0	0.1
Crosswalk Circulation Code	F	F	-	F
Pedestrian Delay (s/p)	62.5	62.5	62.5	62.5
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.35	2.23	2.02	1.76
Pedestrian Crosswalk LOS	B	B	B	A

Approach	EB	WB	NB	SB
Bicycle Flow Rate (bike/h)	0	0	0	0
Total Flow Rate (veh/h)	469	355	86	22
Effct. Green for Bike (s)	27.8	29.0	9.6	9.4
Cross Street Width (ft)	37.2	25.0	36.8	48.2
Through Lanes Number	1	1	1	1
Through Lane Width (ft)	12.0	12.0	12.0	12.0
Bicycle Lane Width (ft)	0.0	0.0	0.0	0.0
Paved Shoulder Width (ft)	0.0	0.0	0.0	0.0
Curb Is Present?	No	No	No	No
On Street Parking?	No	No	No	No
Bicycle Lane Capacity (bike/h)	445	464	154	150
Bicycle Delay (s/bike)	37.8	36.9	53.3	53.5
Bicycle Compliance	Poor	Poor	Poor	Poor
Bicycle LOS Score	2.90	2.53	2.26	2.33
Bicycle LOS	C	B	B	B

Approach	EB	WB	NB
Crosswalk Length (ft)	47.7	36.0	36.1
Crosswalk Width (ft)	12.0	12.0	12.0
Total Number of Lanes Crossed	3	3	3
Number of Right-Turn Islands	0	0	0
Type of Control	Actuated	None	Actuated
Corresponding Signal Phase	6	8	2
Effective Walk Time (s)	11.0	0.0	11.0
Right Corner Size A (ft)	9.0	0.1	9.0
Right Corner Size B (ft)	9.0	0.1	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	0.01	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0
85th percentile speed (mph)	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-
Pedestrian Delay (s/p)	68.9	79.5	68.9
Pedestrian Compliance Code	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.27	2.32	2.10
Pedestrian Crosswalk LOS	B	B	B

Approach	EB	WB	NB
Bicycle Flow Rate (bike/h)	3	0	0
Total Flow Rate (veh/h)	514	543	145
Effct. Green for Bike (s)	20.4	39.5	9.9
Cross Street Width (ft)	36.1	47.7	36.0
Through Lanes Number	1	1	1
Through Lane Width (ft)	12.0	12.0	12.0
Bicycle Lane Width (ft)	8.0	0.0	0.0
Paved Shoulder Width (ft)	0.0	8.0	0.0
Curb Is Present?	No	No	No
On Street Parking?	No	No	No
Bicycle Lane Capacity (bike/h)	257	497	125
Bicycle Delay (s/bike)	60.5	44.9	69.9
Bicycle Compliance	Poor	Poor	Poor
Bicycle LOS Score	1.24	1.47	2.35
Bicycle LOS	A	A	B

Approach	EB	WB	SB
Crosswalk Length (ft)	48.0	58.6	51.2
Crosswalk Width (ft)	12.0	12.0	12.0
Total Number of Lanes Crossed	4	3	4
Number of Right-Turn Islands	0	0	0
Type of Control	Actuated	None	Actuated
Corresponding Signal Phase	6	2	8
Effective Walk Time (s)	10.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0
85th percentile speed (mph)	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-
Pedestrian Delay (s/p)	44.5	54.0	54.0
Pedestrian Compliance Code	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.41	2.49	2.54
Pedestrian Crosswalk LOS	B	B	B

Approach	EB	WB	SB
Bicycle Flow Rate (bike/h)	0	0	0
Total Flow Rate (veh/h)	521	637	1027
Effct. Green for Bike (s)	26.5	13.9	30.3
Cross Street Width (ft)	58.6	51.2	48.0
Through Lanes Number	1	1	1
Through Lane Width (ft)	12.0	12.0	12.0
Bicycle Lane Width (ft)	0.0	0.0	0.0
Paved Shoulder Width (ft)	2.0	0.0	5.0
Curb Is Present?	No	No	No
On Street Parking?	No	No	No
Bicycle Lane Capacity (bike/h)	491	257	561
Bicycle Delay (s/bike)	30.8	41.0	28.0
Bicycle Compliance	Poor	Poor	Fair
Bicycle LOS Score	2.89	3.39	2.92
Bicycle LOS	C	C	C

Approach	EB	WB	NB	SB
Crosswalk Length (ft)	48.1	60.9	48.1	37.5
Crosswalk Width (ft)	12.0	12.0	12.0	12.0
Total Number of Lanes Crossed	4	5	3	3
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	4	2	6	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	0	1	0	1
Ped. Right-Left Flow Rate (p/h)	0	1	0	1
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	18182.8	36407.8	36407.8
Right Corner Quality of Service	-	A	A	A
Ped. Circulation Area (sq.ft)	0.0	0.1	0.0	0.1
Crosswalk Circulation Code	-	F	-	F
Pedestrian Delay (s/p)	67.5	67.5	67.5	67.5
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.54	2.62	2.09	2.17
Pedestrian Crosswalk LOS	B	B	B	B

Approach	EB	WB	NB	SB
Bicycle Flow Rate (bike/h)	0	0	0	0
Total Flow Rate (veh/h)	991	524	159	381
Effct. Green for Bike (s)	29.5	22.4	13.1	15.3
Cross Street Width (ft)	48.1	37.5	60.9	48.1
Through Lanes Number	2	1	1	1
Through Lane Width (ft)	12.0	12.0	12.0	12.0
Bicycle Lane Width (ft)	0.0	0.0	0.0	0.0
Paved Shoulder Width (ft)	0.0	0.0	0.0	0.0
Curb Is Present?	No	No	No	No
On Street Parking?	No	No	No	No
Bicycle Lane Capacity (bike/h)	437	332	194	227
Bicycle Delay (s/bike)	41.2	47.0	55.0	53.1
Bicycle Compliance	Poor	Poor	Poor	Poor
Bicycle LOS Score	3.11	3.00	2.75	2.92
Bicycle LOS	C	C	C	C

Approach		
Approach Direction	EB	
Median Present?	Yes	
Approach Delay(s)	6.9	
Level of Service	B	
Crosswalk		
Length (ft)	12	17
Lanes Crossed	1	1
Veh Vol Crossed	415	343
Ped Vol Crossed	0	0
Yield Rate(%)	0	0
Ped Platooning	No	No
Critical Headway (s)	6.43	7.86
Prob of Delayed X-ing	0.52	0.53
Prob of Blocked Lane	0.52	0.53
Delay for adq Gap	5.92	7.28
Avg Ped Delay (s)	3.10	3.84
Approach		
Approach Direction	WB	
Median Present?	Yes	
Approach Delay(s)	7.4	
Level of Service	B	
Crosswalk		
Length (ft)	12	17
Lanes Crossed	1	1
Veh Vol Crossed	343	415
Ped Vol Crossed	0	0
Yield Rate(%)	0	0
Ped Platooning	No	No
Critical Headway (s)	6.43	7.86
Prob of Delayed X-ing	0.46	0.60
Prob of Blocked Lane	0.46	0.60
Delay for adq Gap	5.33	8.27
Avg Ped Delay (s)	2.44	4.93

Approach	EB	WB	NB	SB
Crosswalk Length (ft)	49.7	36.1	37.4	25.0
Crosswalk Width (ft)	55.0	55.0	65.0	55.0
Total Number of Lanes Crossed	4	3	3	2
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	2	1	4	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	4	0	2	0
Ped. Right-Left Flow Rate (p/h)	4	0	2	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	6035.9	0.0	18185.9	9073.4
Right Corner Quality of Service	A	-	A	A
Ped. Circulation Area (sq.ft)	0.0	0.0	0.1	0.0
Crosswalk Circulation Code	F	-	F	-
Pedestrian Delay (s/p)	62.5	62.5	62.5	62.5
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.44	2.42	2.35	1.76
Pedestrian Crosswalk LOS	B	B	B	A

Approach	EB	WB	NB	SB
Bicycle Flow Rate (bike/h)	1	1	0	0
Total Flow Rate (veh/h)	673	772	431	32
Effct. Green for Bike (s)	20.2	46.8	13.2	8.9
Cross Street Width (ft)	37.4	25.0	36.1	49.7
Through Lanes Number	1	1	1	1
Through Lane Width (ft)	12.0	12.0	12.0	12.0
Bicycle Lane Width (ft)	0.0	0.0	0.0	0.0
Paved Shoulder Width (ft)	3.0	2.0	0.0	0.0
Curb Is Present?	No	No	No	No
On Street Parking?	No	No	No	No
Bicycle Lane Capacity (bike/h)	323	749	211	142
Bicycle Delay (s/bike)	44.0	24.5	50.0	53.9
Bicycle Compliance	Poor	Fair	Poor	Poor
Bicycle LOS Score	2.60	2.79	2.82	2.37
Bicycle LOS	B	C	C	B

Approach	EB	WB	NB
Crosswalk Length (ft)	47.7	36.0	36.1
Crosswalk Width (ft)	12.0	12.0	12.0
Total Number of Lanes Crossed	3	3	3
Number of Right-Turn Islands	0	0	0
Type of Control	Actuated	None	Actuated
Corresponding Signal Phase	6	8	2
Effective Walk Time (s)	11.0	0.0	11.0
Right Corner Size A (ft)	9.0	0.1	9.0
Right Corner Size B (ft)	9.0	0.1	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	0.01	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0
85th percentile speed (mph)	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-
Pedestrian Delay (s/p)	68.9	79.5	68.9
Pedestrian Compliance Code	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.36	2.39	2.09
Pedestrian Crosswalk LOS	B	B	B

Approach	EB	WB	NB
Bicycle Flow Rate (bike/h)	1	0	0
Total Flow Rate (veh/h)	522	634	283
Effct. Green for Bike (s)	19.6	35.6	10.5
Cross Street Width (ft)	36.1	47.7	36.0
Through Lanes Number	1	1	1
Through Lane Width (ft)	12.0	12.0	12.0
Bicycle Lane Width (ft)	8.0	0.0	0.0
Paved Shoulder Width (ft)	0.0	8.0	0.0
Curb Is Present?	No	No	No
On Street Parking?	No	No	No
Bicycle Lane Capacity (bike/h)	247	448	132
Bicycle Delay (s/bike)	61.1	47.9	69.3
Bicycle Compliance	Poor	Poor	Poor
Bicycle LOS Score	1.26	1.62	2.58
Bicycle LOS	A	A	B

Approach	EB	WB	SB
Crosswalk Length (ft)	48.0	58.6	51.2
Crosswalk Width (ft)	12.0	12.0	12.0
Total Number of Lanes Crossed	4	3	4
Number of Right-Turn Islands	0	0	0
Type of Control	Actuated	None	Actuated
Corresponding Signal Phase	6	2	8
Effective Walk Time (s)	10.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0
85th percentile speed (mph)	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-
Pedestrian Delay (s/p)	44.5	54.0	54.0
Pedestrian Compliance Code	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.46	2.45	2.52
Pedestrian Crosswalk LOS	B	B	B

Approach	EB	WB	SB
Bicycle Flow Rate (bike/h)	0	0	1
Total Flow Rate (veh/h)	654	1037	483
Effct. Green for Bike (s)	36.3	19.3	13.4
Cross Street Width (ft)	58.6	51.2	48.0
Through Lanes Number	1	1	1
Through Lane Width (ft)	12.0	12.0	12.0
Bicycle Lane Width (ft)	0.0	0.0	0.0
Paved Shoulder Width (ft)	2.0	0.0	5.0
Curb Is Present?	No	No	No
On Street Parking?	No	No	No
Bicycle Lane Capacity (bike/h)	672	357	248
Bicycle Delay (s/bike)	23.8	36.4	41.5
Bicycle Compliance	Fair	Poor	Poor
Bicycle LOS Score	3.11	4.05	2.02
Bicycle LOS	C	D	B

Approach	EB	WB	NB	SB
Crosswalk Length (ft)	48.1	60.9	48.1	37.5
Crosswalk Width (ft)	12.0	12.0	12.0	12.0
Total Number of Lanes Crossed	4	5	3	3
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	4	8	6	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0	1
Ped. Right-Left Flow Rate (p/h)	0	0	0	1
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	36407.8	0.0	36407.8
Right Corner Quality of Service	-	A	-	A
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0	0.1
Crosswalk Circulation Code	-	-	-	F
Pedestrian Delay (s/p)	67.5	67.5	67.5	67.5
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.52	2.60	2.03	2.15
Pedestrian Crosswalk LOS	B	B	B	B

Approach	EB	WB	NB	SB
Bicycle Flow Rate (bike/h)	0	0	0	0
Total Flow Rate (veh/h)	483	977	130	220
Effct. Green for Bike (s)	64.6	51.0	13.6	9.9
Cross Street Width (ft)	48.1	37.5	60.9	48.1
Through Lanes Number	2	1	1	1
Through Lane Width (ft)	12.0	12.0	12.0	12.0
Bicycle Lane Width (ft)	0.0	0.0	0.0	0.0
Paved Shoulder Width (ft)	0.0	0.0	0.0	0.0
Curb Is Present?	No	No	No	No
On Street Parking?	No	No	No	No
Bicycle Lane Capacity (bike/h)	957	756	201	147
Bicycle Delay (s/bike)	18.4	26.1	54.6	58.0
Bicycle Compliance	Fair	Fair	Poor	Poor
Bicycle LOS Score	2.69	3.75	2.71	2.66
Bicycle LOS	B	D	B	B

Approach		
Approach Direction	EB	
Median Present?	Yes	
Approach Delay(s)	6.4	
Level of Service	B	
Crosswalk		
Length (ft)	12	17
Lanes Crossed	1	1
Veh Vol Crossed	426	295
Ped Vol Crossed	0	0
Yield Rate(%)	0	0
Ped Platooning	No	No
Critical Headway (s)	6.43	7.86
Prob of Delayed X-ing	0.53	0.47
Prob of Blocked Lane	0.53	0.47
Delay for adq Gap	6.01	6.68
Avg Ped Delay (s)	3.20	3.17

Approach		
Approach Direction	WB	
Median Present?	Yes	
Approach Delay(s)	7.1	
Level of Service	B	
Crosswalk		
Length (ft)	12	17
Lanes Crossed	1	1
Veh Vol Crossed	295	426
Ped Vol Crossed	0	0
Yield Rate(%)	0	0
Ped Platooning	No	No
Critical Headway (s)	6.43	7.86
Prob of Delayed X-ing	0.41	0.61
Prob of Blocked Lane	0.41	0.61
Delay for adq Gap	4.97	8.43
Avg Ped Delay (s)	2.03	5.11

Approach	EB	WB	NB	SB
Crosswalk Length (ft)	48.5	36.4	39.5	25.0
Crosswalk Width (ft)	12.0	12.0	12.0	12.0
Total Number of Lanes Crossed	4	3	3	2
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	2	1	2	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	2	1	0	3
Ped. Right-Left Flow Rate (p/h)	2	1	0	3
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	18185.9	9073.4	36410.9	7250.9
Right Corner Quality of Service	A	A	A	A
Ped. Circulation Area (sq.ft)	0.0	0.1	0.0	0.1
Crosswalk Circulation Code	F	F	-	F
Pedestrian Delay (s/p)	62.5	62.5	62.5	62.5
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.35	2.25	2.04	1.76
Pedestrian Crosswalk LOS	B	B	B	A

Approach	EB	WB	NB	SB
Bicycle Flow Rate (bike/h)	0	0	0	0
Total Flow Rate (veh/h)	476	378	118	22
Effct. Green for Bike (s)	25.9	30.1	9.7	9.5
Cross Street Width (ft)	39.5	25.0	36.4	48.5
Through Lanes Number	1	1	1	1
Through Lane Width (ft)	12.0	12.0	12.0	12.0
Bicycle Lane Width (ft)	0.0	0.0	0.0	0.0
Paved Shoulder Width (ft)	0.0	0.0	0.0	0.0
Curb Is Present?	No	No	No	No
On Street Parking?	No	No	No	No
Bicycle Lane Capacity (bike/h)	414	482	155	152
Bicycle Delay (s/bike)	39.3	36.0	53.2	53.4
Bicycle Compliance	Poor	Poor	Poor	Poor
Bicycle LOS Score	2.95	2.57	2.31	2.34
Bicycle LOS	C	B	B	B

Approach	EB	WB	NB
Crosswalk Length (ft)	47.7	36.0	36.1
Crosswalk Width (ft)	12.0	12.0	12.0
Total Number of Lanes Crossed	3	3	3
Number of Right-Turn Islands	0	0	0
Type of Control	Actuated	None	Actuated
Corresponding Signal Phase	6	8	2
Effective Walk Time (s)	11.0	0.0	11.0
Right Corner Size A (ft)	9.0	0.1	9.0
Right Corner Size B (ft)	9.0	0.1	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	0.01	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0
85th percentile speed (mph)	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-
Pedestrian Delay (s/p)	68.9	79.5	68.9
Pedestrian Compliance Code	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.29	2.33	2.10
Pedestrian Crosswalk LOS	B	B	B

Approach	EB	WB	NB
Bicycle Flow Rate (bike/h)	3	0	0
Total Flow Rate (veh/h)	539	564	147
Effct. Green for Bike (s)	21.4	40.7	10.0
Cross Street Width (ft)	36.1	47.7	36.0
Through Lanes Number	1	1	1
Through Lane Width (ft)	12.0	12.0	12.0
Bicycle Lane Width (ft)	8.0	0.0	0.0
Paved Shoulder Width (ft)	0.0	8.0	0.0
Curb Is Present?	No	No	No
On Street Parking?	No	No	No
Bicycle Lane Capacity (bike/h)	269	512	126
Bicycle Delay (s/bike)	59.6	44.0	69.8
Bicycle Compliance	Poor	Poor	Poor
Bicycle LOS Score	1.29	1.50	2.35
Bicycle LOS	A	A	B

Approach	EB	WB	SB
Crosswalk Length (ft)	48.0	58.7	50.7
Crosswalk Width (ft)	12.0	12.0	12.0
Total Number of Lanes Crossed	4	3	4
Number of Right-Turn Islands	0	0	0
Type of Control	Actuated	None	Actuated
Corresponding Signal Phase	6	2	8
Effective Walk Time (s)	10.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0
85th percentile speed (mph)	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-
Pedestrian Delay (s/p)	44.5	54.0	54.0
Pedestrian Compliance Code	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.42	2.50	2.55
Pedestrian Crosswalk LOS	B	B	B

Approach	EB	WB	SB
Bicycle Flow Rate (bike/h)	0	0	0
Total Flow Rate (veh/h)	543	651	1034
Effct. Green for Bike (s)	27.1	14.4	30.3
Cross Street Width (ft)	58.7	50.7	48.0
Through Lanes Number	1	1	1
Through Lane Width (ft)	12.0	12.0	12.0
Bicycle Lane Width (ft)	0.0	0.0	0.0
Paved Shoulder Width (ft)	2.0	0.0	5.0
Curb Is Present?	No	No	No
On Street Parking?	No	No	No
Bicycle Lane Capacity (bike/h)	502	267	561
Bicycle Delay (s/bike)	30.3	40.6	28.0
Bicycle Compliance	Poor	Poor	Fair
Bicycle LOS Score	2.92	3.41	2.93
Bicycle LOS	C	C	C

Approach	EB	WB	NB	SB
Crosswalk Length (ft)	48.1	60.9	48.1	37.5
Crosswalk Width (ft)	12.0	12.0	12.0	12.0
Total Number of Lanes Crossed	4	5	3	3
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	4	2	6	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	0	1	0	1
Ped. Right-Left Flow Rate (p/h)	0	1	0	1
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	18182.8	36407.8	36407.8
Right Corner Quality of Service	-	A	A	A
Ped. Circulation Area (sq.ft)	0.0	0.1	0.0	0.1
Crosswalk Circulation Code	-	F	-	F
Pedestrian Delay (s/p)	67.5	67.5	67.5	67.5
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.55	2.63	2.09	2.18
Pedestrian Crosswalk LOS	B	B	B	B

Approach	EB	WB	NB	SB
Bicycle Flow Rate (bike/h)	0	0	0	0
Total Flow Rate (veh/h)	1004	530	159	388
Effct. Green for Bike (s)	30.2	22.8	13.2	15.4
Cross Street Width (ft)	48.1	37.5	60.9	48.1
Through Lanes Number	2	1	1	1
Through Lane Width (ft)	12.0	12.0	12.0	12.0
Bicycle Lane Width (ft)	0.0	0.0	0.0	0.0
Paved Shoulder Width (ft)	0.0	0.0	0.0	0.0
Curb Is Present?	No	No	No	No
On Street Parking?	No	No	No	No
Bicycle Lane Capacity (bike/h)	447	338	196	228
Bicycle Delay (s/bike)	40.7	46.6	54.9	53.0
Bicycle Compliance	Poor	Poor	Poor	Poor
Bicycle LOS Score	3.12	3.01	2.75	2.94
Bicycle LOS	C	C	C	C

Approach		
Approach Direction	EB	
Median Present?	Yes	
Approach Delay(s)	7.6	
Level of Service	B	
Crosswalk		
Length (ft)	12	17
Lanes Crossed	1	1
Veh Vol Crossed	437	371
Ped Vol Crossed	0	0
Yield Rate(%)	0	0
Ped Platooning	No	No
Critical Headway (s)	6.43	7.86
Prob of Delayed X-ing	0.54	0.56
Prob of Blocked Lane	0.54	0.56
Delay for adq Gap	6.11	7.65
Avg Ped Delay (s)	3.31	4.25
Approach		
Approach Direction	WB	
Median Present?	Yes	
Approach Delay(s)	8.0	
Level of Service	B	
Crosswalk		
Length (ft)	12	17
Lanes Crossed	1	1
Veh Vol Crossed	371	437
Ped Vol Crossed	0	0
Yield Rate(%)	0	0
Ped Platooning	No	No
Critical Headway (s)	6.43	7.86
Prob of Delayed X-ing	0.48	0.61
Prob of Blocked Lane	0.48	0.61
Delay for adq Gap	5.55	8.60
Avg Ped Delay (s)	2.69	5.29

Approach	EB	WB	NB	SB
Crosswalk Length (ft)	48.2	36.8	37.2	25.0
Crosswalk Width (ft)	55.0	55.0	65.0	55.0
Total Number of Lanes Crossed	4	3	3	2
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	2	1	4	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	4	0	2	0
Ped. Right-Left Flow Rate (p/h)	4	0	2	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	6035.9	0.0	18185.9	9073.4
Right Corner Quality of Service	A	-	A	A
Ped. Circulation Area (sq.ft)	0.0	0.0	0.1	0.0
Crosswalk Circulation Code	F	-	F	-
Pedestrian Delay (s/p)	62.5	62.5	62.5	62.5
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.44	2.40	2.33	1.77
Pedestrian Crosswalk LOS	B	B	B	A

Approach	EB	WB	NB	SB
Bicycle Flow Rate (bike/h)	1	1	0	0
Total Flow Rate (veh/h)	667	739	423	35
Effct. Green for Bike (s)	20.1	46.8	13.5	9.0
Cross Street Width (ft)	37.2	25.0	36.8	48.2
Through Lanes Number	1	1	1	1
Through Lane Width (ft)	12.0	12.0	12.0	12.0
Bicycle Lane Width (ft)	0.0	0.0	0.0	0.0
Paved Shoulder Width (ft)	3.0	2.0	0.0	0.0
Curb Is Present?	No	No	No	No
On Street Parking?	No	No	No	No
Bicycle Lane Capacity (bike/h)	322	749	216	144
Bicycle Delay (s/bike)	44.0	24.5	49.7	53.8
Bicycle Compliance	Poor	Fair	Poor	Poor
Bicycle LOS Score	2.59	2.73	2.82	2.35
Bicycle LOS	B	B	C	B

Approach	EB	WB	NB
Crosswalk Length (ft)	47.7	36.0	36.1
Crosswalk Width (ft)	12.0	12.0	12.0
Total Number of Lanes Crossed	3	3	3
Number of Right-Turn Islands	0	0	0
Type of Control	Actuated	None	Actuated
Corresponding Signal Phase	6	8	2
Effective Walk Time (s)	11.0	0.0	11.0
Right Corner Size A (ft)	9.0	0.1	9.0
Right Corner Size B (ft)	9.0	0.1	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	0.01	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0
85th percentile speed (mph)	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-
Pedestrian Delay (s/p)	68.9	79.5	68.9
Pedestrian Compliance Code	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.34	2.38	2.10
Pedestrian Crosswalk LOS	B	B	B

Approach	EB	WB	NB
Bicycle Flow Rate (bike/h)	1	0	0
Total Flow Rate (veh/h)	508	611	296
Effct. Green for Bike (s)	18.6	31.8	10.2
Cross Street Width (ft)	36.1	47.7	36.0
Through Lanes Number	1	1	1
Through Lane Width (ft)	12.0	12.0	12.0
Bicycle Lane Width (ft)	8.0	0.0	0.0
Paved Shoulder Width (ft)	0.0	8.0	0.0
Curb Is Present?	No	No	No
On Street Parking?	No	No	No
Bicycle Lane Capacity (bike/h)	234	400	128
Bicycle Delay (s/bike)	62.0	50.9	69.6
Bicycle Compliance	Poor	Poor	Poor
Bicycle LOS Score	1.23	1.58	2.60
Bicycle LOS	A	A	B

Approach	EB	WB	SB
Crosswalk Length (ft)	48.0	58.6	50.4
Crosswalk Width (ft)	12.0	12.0	12.0
Total Number of Lanes Crossed	4	3	4
Number of Right-Turn Islands	0	0	0
Type of Control	Actuated	None	Actuated
Corresponding Signal Phase	6	2	8
Effective Walk Time (s)	10.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0
85th percentile speed (mph)	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-
Pedestrian Delay (s/p)	44.5	54.0	54.0
Pedestrian Compliance Code	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.47	2.45	2.52
Pedestrian Crosswalk LOS	B	B	B

Approach	EB	WB	SB
Bicycle Flow Rate (bike/h)	0	0	1
Total Flow Rate (veh/h)	677	1028	492
Effct. Green for Bike (s)	36.4	19.1	13.4
Cross Street Width (ft)	58.6	50.4	48.0
Through Lanes Number	1	1	1
Through Lane Width (ft)	12.0	12.0	12.0
Bicycle Lane Width (ft)	0.0	0.0	0.0
Paved Shoulder Width (ft)	2.0	0.0	5.0
Curb Is Present?	No	No	No
On Street Parking?	No	No	No
Bicycle Lane Capacity (bike/h)	674	354	248
Bicycle Delay (s/bike)	23.7	36.6	41.5
Bicycle Compliance	Fair	Poor	Poor
Bicycle LOS Score	3.14	4.03	2.03
Bicycle LOS	C	D	B

Approach	EB	WB	NB	SB
Crosswalk Length (ft)	48.1	60.9	48.1	37.5
Crosswalk Width (ft)	12.0	12.0	12.0	12.0
Total Number of Lanes Crossed	4	5	3	3
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	4	8	6	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0	1
Ped. Right-Left Flow Rate (p/h)	0	0	0	1
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	36407.8	0.0	36407.8
Right Corner Quality of Service	-	A	-	A
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0	0.1
Crosswalk Circulation Code	-	-	-	F
Pedestrian Delay (s/p)	67.5	67.5	67.5	67.5
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.53	2.62	2.04	2.18
Pedestrian Crosswalk LOS	B	B	B	B

Approach	EB	WB	NB	SB
Bicycle Flow Rate (bike/h)	0	0	0	0
Total Flow Rate (veh/h)	508	1073	150	236
Effct. Green for Bike (s)	64.4	51.1	14.4	11.2
Cross Street Width (ft)	48.1	37.5	60.9	48.1
Through Lanes Number	2	1	1	1
Through Lane Width (ft)	12.0	12.0	12.0	12.0
Bicycle Lane Width (ft)	0.0	0.0	0.0	0.0
Paved Shoulder Width (ft)	0.0	0.0	0.0	0.0
Curb Is Present?	No	No	No	No
On Street Parking?	No	No	No	No
Bicycle Lane Capacity (bike/h)	954	757	213	166
Bicycle Delay (s/bike)	18.5	26.1	53.9	56.8
Bicycle Compliance	Fair	Fair	Poor	Poor
Bicycle LOS Score	2.71	3.90	2.74	2.68
Bicycle LOS	B	D	B	B

Approach		
Approach Direction	EB	
Median Present?	Yes	
Approach Delay(s)	6.7	
Level of Service	B	

Crosswalk		
Length (ft)	12	17
Lanes Crossed	1	1
Veh Vol Crossed	443	308
Ped Vol Crossed	0	0
Yield Rate(%)	0	0
Ped Platooning	No	No
Critical Headway (s)	6.43	7.86
Prob of Delayed X-ing	0.55	0.49
Prob of Blocked Lane	0.55	0.49
Delay for adq Gap	6.16	6.84
Avg Ped Delay (s)	3.37	3.35

Approach		
Approach Direction	WB	
Median Present?	Yes	
Approach Delay(s)	7.5	
Level of Service	B	

Crosswalk		
Length (ft)	12	17
Lanes Crossed	1	1
Veh Vol Crossed	308	443
Ped Vol Crossed	0	0
Yield Rate(%)	0	0
Ped Platooning	No	No
Critical Headway (s)	6.43	7.86
Prob of Delayed X-ing	0.42	0.62
Prob of Blocked Lane	0.42	0.62
Delay for adq Gap	5.06	8.69
Avg Ped Delay (s)	2.14	5.39

Approach	EB	WB	NB	SB
Crosswalk Length (ft)	48.2	36.8	37.2	25.0
Crosswalk Width (ft)	12.0	12.0	12.0	12.0
Total Number of Lanes Crossed	4	3	3	2
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	2	1	2	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	2	1	0	3
Ped. Right-Left Flow Rate (p/h)	2	1	0	3
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	18185.9	9073.4	36410.9	7250.9
Right Corner Quality of Service	A	A	A	A
Ped. Circulation Area (sq.ft)	0.0	0.1	0.0	0.1
Crosswalk Circulation Code	F	F	-	F
Pedestrian Delay (s/p)	62.5	62.5	62.5	62.5
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.37	2.25	2.04	1.77
Pedestrian Crosswalk LOS	B	B	B	A

Approach	EB	WB	NB	SB
Bicycle Flow Rate (bike/h)	0	0	0	0
Total Flow Rate (veh/h)	511	386	111	32
Effct. Green for Bike (s)	27.4	31.4	9.8	9.4
Cross Street Width (ft)	37.2	25.0	36.8	48.2
Through Lanes Number	1	1	1	1
Through Lane Width (ft)	12.0	12.0	12.0	12.0
Bicycle Lane Width (ft)	0.0	0.0	0.0	0.0
Paved Shoulder Width (ft)	0.0	0.0	0.0	0.0
Curb Is Present?	No	No	No	No
On Street Parking?	No	No	No	No
Bicycle Lane Capacity (bike/h)	438	502	157	150
Bicycle Delay (s/bike)	38.1	35.0	53.1	53.5
Bicycle Compliance	Poor	Poor	Poor	Poor
Bicycle LOS Score	2.97	2.58	2.31	2.35
Bicycle LOS	C	B	B	B

Approach	EB	WB	NB
Crosswalk Length (ft)	47.7	36.0	36.1
Crosswalk Width (ft)	12.0	12.0	12.0
Total Number of Lanes Crossed	3	3	3
Number of Right-Turn Islands	0	0	0
Type of Control	Actuated	None	Actuated
Corresponding Signal Phase	6	8	2
Effective Walk Time (s)	11.0	0.0	11.0
Right Corner Size A (ft)	9.0	0.1	9.0
Right Corner Size B (ft)	9.0	0.1	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	0.01	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0
85th percentile speed (mph)	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-
Pedestrian Delay (s/p)	68.9	79.5	68.9
Pedestrian Compliance Code	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.30	2.35	2.12
Pedestrian Crosswalk LOS	B	B	B

Approach	EB	WB	NB
Bicycle Flow Rate (bike/h)	3	0	0
Total Flow Rate (veh/h)	556	596	173
Effct. Green for Bike (s)	21.4	38.7	9.6
Cross Street Width (ft)	36.1	47.7	36.0
Through Lanes Number	1	1	1
Through Lane Width (ft)	12.0	12.0	12.0
Bicycle Lane Width (ft)	8.0	0.0	0.0
Paved Shoulder Width (ft)	0.0	8.0	0.0
Curb Is Present?	No	No	No
On Street Parking?	No	No	No
Bicycle Lane Capacity (bike/h)	269	487	121
Bicycle Delay (s/bike)	59.6	45.5	70.2
Bicycle Compliance	Poor	Poor	Poor
Bicycle LOS Score	1.31	1.56	2.40
Bicycle LOS	A	A	B

Approach	EB	WB	SB
Crosswalk Length (ft)	48.0	58.7	50.4
Crosswalk Width (ft)	12.0	12.0	12.0
Total Number of Lanes Crossed	4	3	4
Number of Right-Turn Islands	0	0	0
Type of Control	Actuated	None	Actuated
Corresponding Signal Phase	6	2	8
Effective Walk Time (s)	10.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0
85th percentile speed (mph)	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-
Pedestrian Delay (s/p)	44.5	54.0	54.0
Pedestrian Compliance Code	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.44	2.52	2.57
Pedestrian Crosswalk LOS	B	B	B

Approach	EB	WB	SB
Bicycle Flow Rate (bike/h)	0	0	0
Total Flow Rate (veh/h)	563	680	1106
Effct. Green for Bike (s)	27.8	14.7	30.3
Cross Street Width (ft)	58.7	50.4	48.0
Through Lanes Number	1	1	1
Through Lane Width (ft)	12.0	12.0	12.0
Bicycle Lane Width (ft)	0.0	0.0	0.0
Paved Shoulder Width (ft)	2.0	0.0	5.0
Curb Is Present?	No	No	No
On Street Parking?	No	No	No
Bicycle Lane Capacity (bike/h)	515	272	561
Bicycle Delay (s/bike)	29.8	40.3	28.0
Bicycle Compliance	Fair	Poor	Fair
Bicycle LOS Score	2.96	3.45	3.05
Bicycle LOS	C	C	C

Approach	EB	WB	NB	SB
Crosswalk Length (ft)	48.1	60.9	48.1	37.5
Crosswalk Width (ft)	12.0	12.0	12.0	12.0
Total Number of Lanes Crossed	4	5	3	3
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	4	2	6	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	0	1	0	1
Ped. Right-Left Flow Rate (p/h)	0	1	0	1
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	18182.8	36407.8	36407.8
Right Corner Quality of Service	-	A	A	A
Ped. Circulation Area (sq.ft)	0.0	0.1	0.0	0.1
Crosswalk Circulation Code	-	F	-	F
Pedestrian Delay (s/p)	67.5	67.5	67.5	67.5
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.58	2.68	2.11	2.24
Pedestrian Crosswalk LOS	B	B	B	B

Approach	EB	WB	NB	SB
Bicycle Flow Rate (bike/h)	0	0	0	0
Total Flow Rate (veh/h)	1076	626	191	506
Effct. Green for Bike (s)	32.3	24.2	14.1	21.1
Cross Street Width (ft)	48.1	37.5	60.9	48.1
Through Lanes Number	2	1	1	1
Through Lane Width (ft)	12.0	12.0	12.0	12.0
Bicycle Lane Width (ft)	0.0	0.0	0.0	0.0
Paved Shoulder Width (ft)	0.0	0.0	0.0	0.0
Curb Is Present?	No	No	No	No
On Street Parking?	No	No	No	No
Bicycle Lane Capacity (bike/h)	479	359	209	313
Bicycle Delay (s/bike)	39.1	45.5	54.1	48.0
Bicycle Compliance	Poor	Poor	Poor	Poor
Bicycle LOS Score	3.18	3.17	2.81	3.13
Bicycle LOS	C	C	C	C

Approach		
Approach Direction	EB	
Median Present?	Yes	
Approach Delay(s)	7.7	
Level of Service	B	
Crosswalk		
Length (ft)	12	17
Lanes Crossed	1	1
Veh Vol Crossed	442	376
Ped Vol Crossed	0	0
Yield Rate(%)	0	0
Ped Platooning	No	No
Critical Headway (s)	6.43	7.86
Prob of Delayed X-ing	0.55	0.56
Prob of Blocked Lane	0.55	0.56
Delay for adq Gap	6.16	7.72
Avg Ped Delay (s)	3.36	4.32
Approach		
Approach Direction	WB	
Median Present?	Yes	
Approach Delay(s)	8.1	
Level of Service	B	
Crosswalk		
Length (ft)	12	17
Lanes Crossed	1	1
Veh Vol Crossed	376	442
Ped Vol Crossed	0	0
Yield Rate(%)	0	0
Ped Platooning	No	No
Critical Headway (s)	6.43	7.86
Prob of Delayed X-ing	0.49	0.62
Prob of Blocked Lane	0.49	0.62
Delay for adq Gap	5.59	8.68
Avg Ped Delay (s)	2.73	5.37

Approach	EB	WB	NB	SB
Crosswalk Length (ft)	48.5	36.4	39.5	25.0
Crosswalk Width (ft)	55.0	55.0	65.0	55.0
Total Number of Lanes Crossed	4	3	3	2
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	2	1	4	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	4	0	2	0
Ped. Right-Left Flow Rate (p/h)	4	0	2	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	6035.9	0.0	18185.9	9073.4
Right Corner Quality of Service	A	-	A	A
Ped. Circulation Area (sq.ft)	0.0	0.0	0.1	0.0
Crosswalk Circulation Code	F	-	F	-
Pedestrian Delay (s/p)	62.5	62.5	62.5	62.5
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.45	2.42	2.35	1.77
Pedestrian Crosswalk LOS	B	B	B	A

Approach	EB	WB	NB	SB
Bicycle Flow Rate (bike/h)	1	1	0	0
Total Flow Rate (veh/h)	673	758	449	35
Effct. Green for Bike (s)	20.2	46.9	13.8	9.0
Cross Street Width (ft)	39.5	25.0	36.4	48.5
Through Lanes Number	1	1	1	1
Through Lane Width (ft)	12.0	12.0	12.0	12.0
Bicycle Lane Width (ft)	0.0	0.0	0.0	0.0
Paved Shoulder Width (ft)	3.0	2.0	0.0	0.0
Curb Is Present?	No	No	No	No
On Street Parking?	No	No	No	No
Bicycle Lane Capacity (bike/h)	323	750	221	144
Bicycle Delay (s/bike)	44.0	24.4	49.5	53.8
Bicycle Compliance	Poor	Fair	Poor	Poor
Bicycle LOS Score	2.63	2.76	2.86	2.36
Bicycle LOS	B	C	C	B

Approach	EB	WB	NB
Crosswalk Length (ft)	47.7	36.0	36.1
Crosswalk Width (ft)	12.0	12.0	12.0
Total Number of Lanes Crossed	3	3	3
Number of Right-Turn Islands	0	0	0
Type of Control	Actuated	None	Actuated
Corresponding Signal Phase	6	8	2
Effective Walk Time (s)	11.0	0.0	11.0
Right Corner Size A (ft)	9.0	0.1	9.0
Right Corner Size B (ft)	9.0	0.1	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	0.01	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0
85th percentile speed (mph)	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-
Pedestrian Delay (s/p)	68.9	79.5	68.9
Pedestrian Compliance Code	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.36	2.39	2.11
Pedestrian Crosswalk LOS	B	B	B

Approach	EB	WB	NB
Bicycle Flow Rate (bike/h)	1	0	0
Total Flow Rate (veh/h)	525	625	298
Effct. Green for Bike (s)	19.4	32.6	10.3
Cross Street Width (ft)	36.1	47.7	36.0
Through Lanes Number	1	1	1
Through Lane Width (ft)	12.0	12.0	12.0
Bicycle Lane Width (ft)	8.0	0.0	0.0
Paved Shoulder Width (ft)	0.0	8.0	0.0
Curb Is Present?	No	No	No
On Street Parking?	No	No	No
Bicycle Lane Capacity (bike/h)	244	410	130
Bicycle Delay (s/bike)	61.3	50.2	69.5
Bicycle Compliance	Poor	Poor	Poor
Bicycle LOS Score	1.26	1.61	2.60
Bicycle LOS	A	A	B

Approach	EB	WB	SB
Crosswalk Length (ft)	48.0	58.6	50.4
Crosswalk Width (ft)	12.0	12.0	12.0
Total Number of Lanes Crossed	4	3	4
Number of Right-Turn Islands	0	0	0
Type of Control	Actuated	None	Actuated
Corresponding Signal Phase	6	2	8
Effective Walk Time (s)	10.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0
85th percentile speed (mph)	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-
Pedestrian Delay (s/p)	44.5	54.0	54.0
Pedestrian Compliance Code	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.47	2.46	2.53
Pedestrian Crosswalk LOS	B	B	B

Approach	EB	WB	SB
Bicycle Flow Rate (bike/h)	0	0	1
Total Flow Rate (veh/h)	691	1037	497
Effct. Green for Bike (s)	37.0	19.5	13.5
Cross Street Width (ft)	58.6	50.4	48.0
Through Lanes Number	1	1	1
Through Lane Width (ft)	12.0	12.0	12.0
Bicycle Lane Width (ft)	0.0	0.0	0.0
Paved Shoulder Width (ft)	2.0	0.0	5.0
Curb Is Present?	No	No	No
On Street Parking?	No	No	No
Bicycle Lane Capacity (bike/h)	685	361	250
Bicycle Delay (s/bike)	23.3	36.3	41.4
Bicycle Compliance	Fair	Poor	Poor
Bicycle LOS Score	3.17	4.04	2.04
Bicycle LOS	C	D	B

Approach	EB	WB	NB	SB
Crosswalk Length (ft)	48.1	60.9	48.1	37.5
Crosswalk Width (ft)	12.0	12.0	12.0	12.0
Total Number of Lanes Crossed	4	5	3	3
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	4	8	6	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0	1
Ped. Right-Left Flow Rate (p/h)	0	0	0	1
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	36407.8	0.0	36407.8
Right Corner Quality of Service	-	A	-	A
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0	0.1
Crosswalk Circulation Code	-	-	-	F
Pedestrian Delay (s/p)	67.5	67.5	67.5	67.5
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.53	2.63	2.04	2.19
Pedestrian Crosswalk LOS	B	B	B	B

Approach	EB	WB	NB	SB
Bicycle Flow Rate (bike/h)	0	0	0	0
Total Flow Rate (veh/h)	518	1077	150	240
Effct. Green for Bike (s)	64.7	51.0	14.4	11.2
Cross Street Width (ft)	48.1	37.5	60.9	48.1
Through Lanes Number	2	1	1	1
Through Lane Width (ft)	12.0	12.0	12.0	12.0
Bicycle Lane Width (ft)	0.0	0.0	0.0	0.0
Paved Shoulder Width (ft)	0.0	0.0	0.0	0.0
Curb Is Present?	No	No	No	No
On Street Parking?	No	No	No	No
Bicycle Lane Capacity (bike/h)	959	756	213	166
Bicycle Delay (s/bike)	18.3	26.1	53.9	56.8
Bicycle Compliance	Fair	Fair	Poor	Poor
Bicycle LOS Score	2.72	3.91	2.74	2.69
Bicycle LOS	B	D	B	B

Approach		
Approach Direction	EB	
Median Present?	Yes	
Approach Delay(s)	6.9	
Level of Service	B	

Crosswalk		
Length (ft)	12	17
Lanes Crossed	1	1
Veh Vol Crossed	450	315
Ped Vol Crossed	0	0
Yield Rate(%)	0	0
Ped Platooning	No	No
Critical Headway (s)	6.43	7.86
Prob of Delayed X-ing	0.55	0.50
Prob of Blocked Lane	0.55	0.50
Delay for adq Gap	6.23	6.92
Avg Ped Delay (s)	3.44	3.44

Approach		
Approach Direction	WB	
Median Present?	Yes	
Approach Delay(s)	7.7	
Level of Service	B	

Crosswalk		
Length (ft)	12	17
Lanes Crossed	1	1
Veh Vol Crossed	315	450
Ped Vol Crossed	0	0
Yield Rate(%)	0	0
Ped Platooning	No	No
Critical Headway (s)	6.43	7.86
Prob of Delayed X-ing	0.43	0.63
Prob of Blocked Lane	0.43	0.63
Delay for adq Gap	5.12	8.80
Avg Ped Delay (s)	2.20	5.50

Approach	EB	WB	NB	SB
Crosswalk Length (ft)	48.2	36.3	38.5	25.0
Crosswalk Width (ft)	12.0	12.0	12.0	12.0
Total Number of Lanes Crossed	4	3	3	2
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	2	1	2	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	2	1	0	3
Ped. Right-Left Flow Rate (p/h)	2	1	0	3
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	18185.9	9073.4	36410.9	7250.9
Right Corner Quality of Service	A	A	A	A
Ped. Circulation Area (sq.ft)	0.0	0.1	0.0	0.1
Crosswalk Circulation Code	F	F	-	F
Pedestrian Delay (s/p)	62.5	62.5	62.5	62.5
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.37	2.27	2.06	1.77
Pedestrian Crosswalk LOS	B	B	B	A

Approach	EB	WB	NB	SB
Bicycle Flow Rate (bike/h)	0	0	0	0
Total Flow Rate (veh/h)	518	410	144	32
Effct. Green for Bike (s)	26.8	34.3	9.9	9.3
Cross Street Width (ft)	38.5	25.0	36.3	48.2
Through Lanes Number	1	1	1	1
Through Lane Width (ft)	12.0	12.0	12.0	12.0
Bicycle Lane Width (ft)	0.0	0.0	0.0	0.0
Paved Shoulder Width (ft)	0.0	0.0	0.0	0.0
Curb Is Present?	No	No	No	No
On Street Parking?	No	No	No	No
Bicycle Lane Capacity (bike/h)	429	549	158	149
Bicycle Delay (s/bike)	38.6	32.9	53.0	53.5
Bicycle Compliance	Poor	Poor	Poor	Poor
Bicycle LOS Score	3.00	2.62	2.35	2.35
Bicycle LOS	C	B	B	B

Approach	EB	WB	NB
Crosswalk Length (ft)	47.7	36.0	36.1
Crosswalk Width (ft)	12.0	12.0	12.0
Total Number of Lanes Crossed	3	3	3
Number of Right-Turn Islands	0	0	0
Type of Control	Actuated	None	Actuated
Corresponding Signal Phase	6	8	2
Effective Walk Time (s)	11.0	0.0	11.0
Right Corner Size A (ft)	9.0	0.1	9.0
Right Corner Size B (ft)	9.0	0.1	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	0.01	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0
85th percentile speed (mph)	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-
Pedestrian Delay (s/p)	68.9	79.5	68.9
Pedestrian Compliance Code	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.32	2.37	2.12
Pedestrian Crosswalk LOS	B	B	B

Approach	EB	WB	NB
Bicycle Flow Rate (bike/h)	3	0	0
Total Flow Rate (veh/h)	582	617	175
Effct. Green for Bike (s)	22.6	40.2	9.7
Cross Street Width (ft)	36.1	47.7	36.0
Through Lanes Number	1	1	1
Through Lane Width (ft)	12.0	12.0	12.0
Bicycle Lane Width (ft)	8.0	0.0	0.0
Paved Shoulder Width (ft)	0.0	8.0	0.0
Curb Is Present?	No	No	No
On Street Parking?	No	No	No
Bicycle Lane Capacity (bike/h)	284	506	122
Bicycle Delay (s/bike)	58.6	44.4	70.1
Bicycle Compliance	Poor	Poor	Poor
Bicycle LOS Score	1.36	1.59	2.40
Bicycle LOS	A	A	B

Approach	EB	WB	SB
Crosswalk Length (ft)	48.0	58.7	50.4
Crosswalk Width (ft)	12.0	12.0	12.0
Total Number of Lanes Crossed	4	3	4
Number of Right-Turn Islands	0	0	0
Type of Control	Actuated	None	Actuated
Corresponding Signal Phase	6	2	8
Effective Walk Time (s)	10.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0
85th percentile speed (mph)	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-
Pedestrian Delay (s/p)	44.5	54.0	54.0
Pedestrian Compliance Code	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.45	2.53	2.58
Pedestrian Crosswalk LOS	B	B	B

Approach	EB	WB	SB
Bicycle Flow Rate (bike/h)	0	0	0
Total Flow Rate (veh/h)	584	694	1114
Effct. Green for Bike (s)	28.4	15.1	30.3
Cross Street Width (ft)	58.7	50.4	48.0
Through Lanes Number	1	1	1
Through Lane Width (ft)	12.0	12.0	12.0
Bicycle Lane Width (ft)	0.0	0.0	0.0
Paved Shoulder Width (ft)	2.0	0.0	5.0
Curb Is Present?	No	No	No
On Street Parking?	No	No	No
Bicycle Lane Capacity (bike/h)	526	280	561
Bicycle Delay (s/bike)	29.3	40.0	28.0
Bicycle Compliance	Fair	Poor	Fair
Bicycle LOS Score	2.99	3.48	3.06
Bicycle LOS	C	C	C

Approach	EB	WB	NB	SB
Crosswalk Length (ft)	48.1	60.9	48.1	37.5
Crosswalk Width (ft)	12.0	12.0	12.0	12.0
Total Number of Lanes Crossed	4	5	3	3
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	4	2	6	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	0	1	0	1
Ped. Right-Left Flow Rate (p/h)	0	1	0	1
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	18182.8	36407.8	36407.8
Right Corner Quality of Service	-	A	A	A
Ped. Circulation Area (sq.ft)	0.0	0.1	0.0	0.1
Crosswalk Circulation Code	-	F	-	F
Pedestrian Delay (s/p)	67.5	67.5	67.5	67.5
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.59	2.68	2.11	2.24
Pedestrian Crosswalk LOS	B	B	B	B

Approach	EB	WB	NB	SB
Bicycle Flow Rate (bike/h)	0	0	0	0
Total Flow Rate (veh/h)	1090	633	191	513
Effct. Green for Bike (s)	33.3	24.6	14.1	21.1
Cross Street Width (ft)	48.1	37.5	60.9	48.1
Through Lanes Number	2	1	1	1
Through Lane Width (ft)	12.0	12.0	12.0	12.0
Bicycle Lane Width (ft)	0.0	0.0	0.0	0.0
Paved Shoulder Width (ft)	0.0	0.0	0.0	0.0
Curb Is Present?	No	No	No	No
On Street Parking?	No	No	No	No
Bicycle Lane Capacity (bike/h)	493	364	209	313
Bicycle Delay (s/bike)	38.3	45.1	54.1	48.0
Bicycle Compliance	Poor	Poor	Poor	Poor
Bicycle LOS Score	3.19	3.18	2.81	3.14
Bicycle LOS	C	C	C	C

Appendix K:

NCHRP Report 684 Worksheet

NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:		**Organization:**	Kimley-Horn and Associates, Inc.
Project Location:		**Performed By:**	
Scenario Description:		**Date:**	
Analysis Year:		**Checked By:**	
Analysis Period:	**PM Street Peak Hour**	**Date:**	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips[3]		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office		-	0	0	0	0
Retail		8	ksf	29	14	15
Restaurant		3	ksf	0	0	0
Cinema/Entertainment		-	0	0	0	0
Residential		72	DU	26	15	11
Hotel		-	0	0	0	0
All Other Land Uses[2]		-	0	0	0	0
				55	29	26

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.[4]	% Transit	% Non-Motorized	Veh. Occ.[4]	% Transit	% Non-Motorized
Office	1.00	0%	0%	1.00	0%	0%
Retail	1.00	0%	0%	1.00	0%	0%
Restaurant	1.00	0%	0%	1.00	0%	0%
Cinema/Entertainment	1.00	0%	0%	1.00	0%	0%
Residential	1.00	0%	0%	1.00	0%	0%
Hotel	1.00	0%	0%	1.00	0%	0%
All Other Land Uses[2]	1.00	0%	0%	1.00	0%	0%

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	4	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	1	0	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	55	29	26
Internal Capture Percentage	18%	17%	19%
External Vehicle-Trips[5]	45	24	21
External Transit-Trips[6]	0	0	0
External Non-Motorized Trips[6]	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	7%	27%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	27%	9%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

[3]Enter trips assuming no transit or non-motorized trips (as assumed in ITE *Trip Generation Manual*).

[4]Enter vehicle occupancy assumed in Table 1-P vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be

[5]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P.

[6]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute - Version 2013.1

El Dorado Senior Resort

APN: 331-221-30, 32

Wildland Fire Safe Plan

Prepared for:

El Dorado Senior Housing, LLC

Prepared by:

CDS Fire Prevention Planning
William F. Draper
Registered Professional Forester
#898
4645 Meadowlark Way
Placerville, CA 95667

October 11, 2018

El Dorado Senior Resort

Approved by:

10/31/18

Kenneth Earle, DC
Fire Marshal
Diamond Springs-El Dorado Fire Protection District

Date

10/31/18

Darin McFarlin, FC
Fire Prevention
California Department of Forestry
and Fire Protection

Date

Prepared by:

10/31/18

William F. Draper
RPF #898

Date

CONTENTS

El Dorado Senior Resort

Purpose:

This Wildland Fire Safe Plan is for the development of parcels APN:331-221-30 and 32 consisting of 8.2+/- acres into a senior living complex. There will be 9 single family residential units, senior independent apartments, assisted and memory care facility, community center, and two commercial buildings. There will also be a community garden area, recreation area and a native woodland open space. The property is located at 6362 Pleasant Valley Road in El Dorado. This property is on the south side of Pleasant Valley Road. The entrance is off of Koki Lane and ends in a cul-de-sac with a 60' turning radius. The single-family residence all have off street parking at each residence. The other facilities all have designated parking garages or spaces.

There are 2 Emergency Evacuation Access (EVA) roads, one will be 26'wide, leading around the independent apartment building. Another, 20' wide EVA, providing access to the rear of the assisted/memory care facility. There is another 20' wide EVA, which can also be used for emergency evacuation, connecting the cul-de-sac to Pleasant Valley Road.

All roadways and cul-de-sac will meet Department of Transportation (DOT) requirements. The project will be served by El Dorado Irrigation District (EID). Fire hydrants will be installed as determined by the Fire District. The project area is a Moderate Fire Severity zone.

Incorporation of the fire hazard reduction measures into the design and maintenance of the project area will reduce the size and intensity of wildfires and help prevent catastrophic fire losses. State and County regulations provide the basic guidelines and requirements for fire safe mitigation measures and defensible space around dwellings. This plan builds on these basic rules and provides additional fire hazard reduction measures customized to the topography and vegetation of the development with special emphases on the interface of homes and wildland fuels.

The scope of the Wildland Fire Safe Plan (Plan) recognizes the extraordinary natural features of the area and designs wildfire safety measures which are meant to compliment and become part of the community design. The Plan contains measures for providing and maintaining defensible space around future homes and open space. Plan implementation measures must be maintained in order to assure adequate wildfire protection.

Homeowners who live in and adjacent to the wildfire environment must take primary responsibility along with the fire services for ensuring their homes have sufficient low ignitability and surrounding fuel reduction treatment. The fire services should become a community partner providing homeowners with technical assistance as well as fire response. For this to succeed it must be shared and implemented equally by homeowners and the fire services.

El Dorado County Oak Tree Ordinance applies to the removal of any oak tree on any of the project area. The ordinance does not prevent the pruning of any oak tree that interferes with fire safe maintenance.

FIRE PLAN LIMITATIONS:

The Wildland Fire Safe Plan for the El Dorado Senior Resort does not guarantee that wildfire will not threaten, damage or destroy natural resources, homes or endanger residents. However, the full implementation of the mitigation measures will greatly reduce the exposure of structures to potential loss from wildfire and provide defensible space for firefighters and residents as well as protect the native vegetation. Specific items are listed for the facility operators' attention to aid in community wildfire safety.

EL DORADO SENIOR RESORT WILDLAND FIRE SAFE PLAN:

The wildfire potential will be greatly reduced once this community is developed. Yards and common areas will need to be landscaped and regularly maintained. The native woodland open space will be required to have a one-time cleanup of all dead and down limbs of the trees in the area. Trees must be limbed up 8' from the ground. The understory vegetation must be treated annually to maintain the dry grass to a 2" stubble by June 1. All bushes need to be kept free of dead limbs. All slash and brush piles created during the clearing and construction of the project must have 30' clearance around all piles and the piles must be disposed of within 30 days of their creation.

The community garden area shall be kept free of dry grass at all times. All trees within the garden will need to be pruned up to 8' above the ground. Perimeter fencing shall be non-combustible and have a Fuel Hazard Reduction Zone of 5' along the exterior perimeter.

The EVA's may be gated with openers. A gate shall be 2' wider than the roadway. If installed, it shall comply with an automatic opener. The opener must meet the requirements of the Fire District (DSEDFPD).

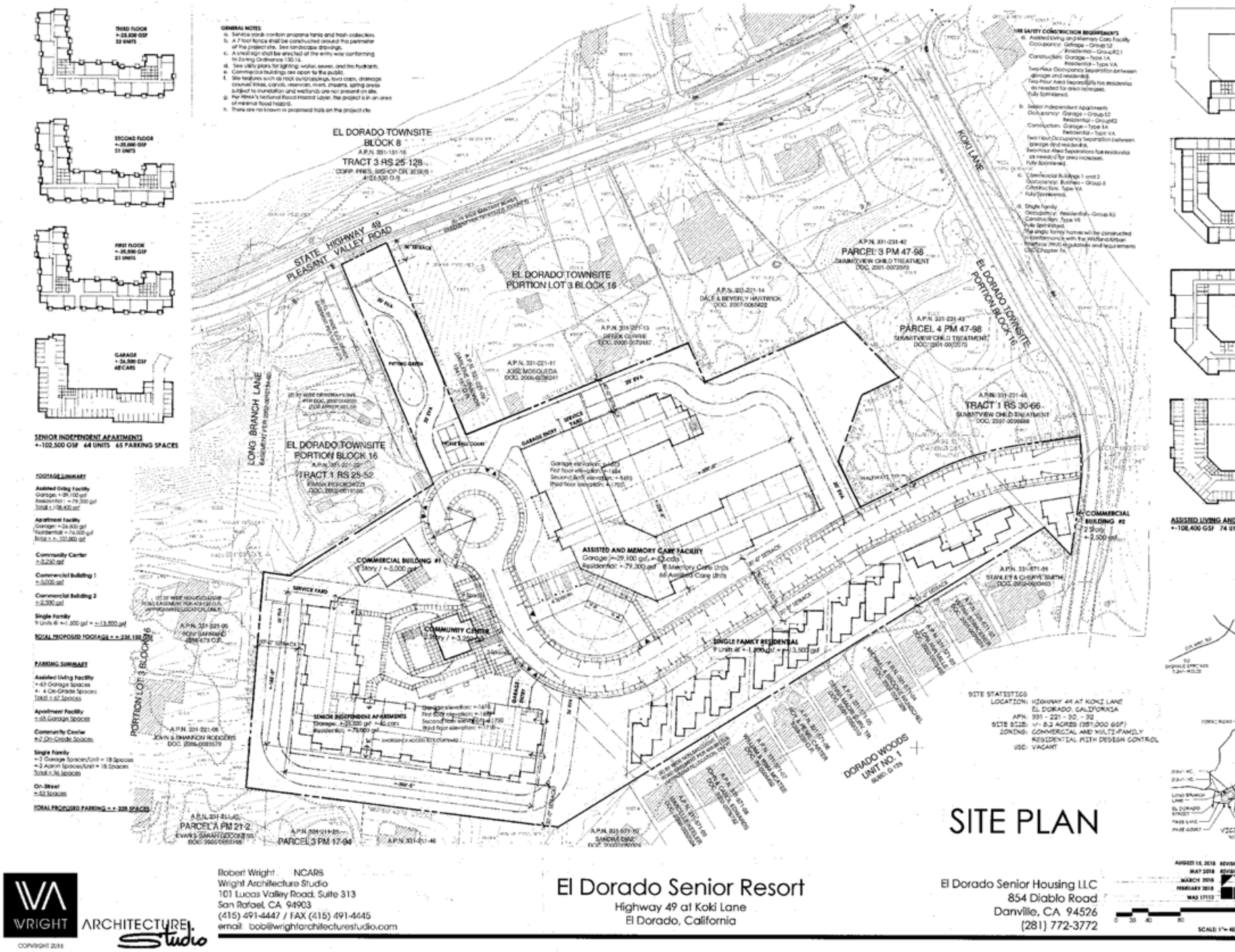
Ladder fuels need to be eliminated and tree canopy pruned up 8' from the surface of the ground. Irrigated landscaping and specimen trees are acceptable within this area. All flashy fuels (grass) shall be cut to a 2" stubble or disked. It is essential that the fuel reduction be done annually and maintained throughout the declared fire season.

Fire Safe Requirements

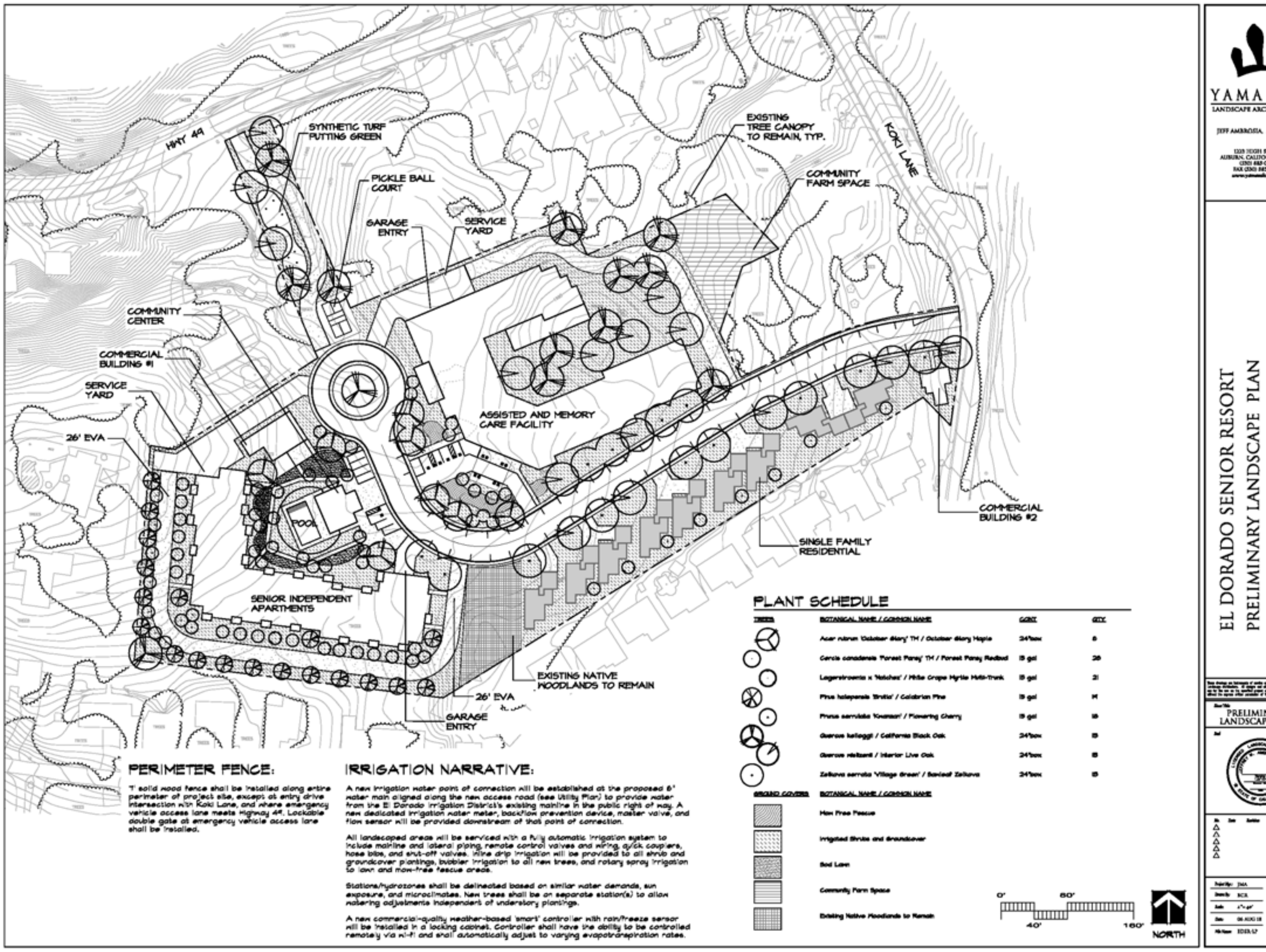
- All open space natural areas shall be fully treated annually by June 1 so the flashy fuels (grass) are cut to a 2" stubble.
- All brush and slash piles shall have 30' of clearance around the piles.
- All brush and slash piles shall be disposed of within 30' days of their creation.
- All trees within those areas shall be pruned up to 8' above the ground.
- A one-time cleanup of native trees to remain on the project site must have all the dead limbs removed.
- All fencing within the project area shall be non-combustible.
- All roads and EVA's shall meet DOT and Fire District requirements.
- Any gate shall comply with specifications of the Fire District.

Approval of the Wildland Fire Safe Plan does not guarantee approval of the project.

Appendix



SITE PLAN
El Dorado Senior Resort
Highway 49 at Koki Lane
El Dorado, California
Robert Wright NCARB
Wright Architecture Studio
101 Lucas Valley Road, Suite 313
San Rafael, CA 94903
(415) 491-4447 / FAX (415) 491-4445
email: bob@wrightarchitecturestudio.com
El Dorado Senior Housing LLC
854 Diablo Road
Danville, CA 94526
(281) 772-3772
WRIGHT ARCHITECTURE Studio
COPYRIGHT 2016
EL DORADO TOWNSITE BLOCK 8
TRACT 3 RS 25-128
STATE HIGHWAY 49
PLEASANT VALLEY ROAD
EL DORADO TOWNSITE PORTION LOT 3 BLOCK 16
PARCEL 3 PM 47-98
PARCEL 4 PM 47-98
TRACT 1 RS 30-66
KOKI LANE
EL DORADO TOWNSITE PORTION BLOCK 16
LONG BRANCH LANE
EL DORADO TOWNSITE PORTION BLOCK 16
TRACT 1 RS 25-52
COMMERCIAL BUILDING #1
COMMUNITY CENTER
ASSISTED AND MEMORY CARE FACILITY
SINGLE FAMILY RESIDENTIAL
SENIOR INDEPENDENT APARTMENTS
DORADO WOODS UNIT NO. 1
PORTION LOT 3 BLOCK 16
PARCEL A PM 21-2
PARCEL 3 PM 17-94
SENIOR INDEPENDENT APARTMENTS
+-102,500 GSF 64 UNITS 65 PARKING SPACES


HWY 49
SYNTHETIC TURF PUTTING GREEN
PICKLE BALL COURT
GARAGE ENTRY
SERVICE YARD
EXISTING TREE CANOPY TO REMAIN, TYP.
COMMUNITY FARM SPACE
KOKI LANE
COMMUNITY CENTER
COMMERCIAL BUILDING #1
SERVICE YARD
26' EVA
ASSISTED AND MEMORY CARE FACILITY
POOL
SENIOR INDEPENDENT APARTMENTS
COMMERCIAL BUILDING #2
SINGLE FAMILY RESIDENTIAL
EXISTING NATIVE WOODLANDS TO REMAIN
26' EVA
GARAGE ENTRY
PERIMETER FENCE:
7' solid wood fence shall be installed along entire perimeter of project site, except at entry drive intersection with Koki Lane, and where emergency vehicle access lane meets Highway 49. Lockable double gate at emergency vehicle access lane shall be installed.
IRRIGATION NARRATIVE:
A new irrigation water point of connection will be established at the proposed 6" water main aligned along the new access road (see Utility Plan) to provide water from the El Dorado Irrigation District's existing mainline in the public right of way. A new dedicated irrigation water meter, backflow prevention device, master valve, and flow sensor will be provided downstream of that point of connection.
All landscaped areas will be serviced with a fully automatic irrigation system to include mainline and lateral piping, remote control valves and wiring, quick couplers, hose bibs, and shut-off valves. Inline drip irrigation will be provided to all shrub and groundcover plantings, bubbler irrigation to all new trees, and rotary spray irrigation to lawn and mow-free fescue areas.
Stations/hydrozones shall be delineated based on similar water demands, sun exposure, and microclimates. New trees shall be on separate station(s) to allow watering adjustments independent of understory plantings.
A new commercial-quality weather-based 'smart' controller with rain/freeze sensor will be installed in a locking cabinet. Controller shall have the ability to be controlled remotely via wi-fi and shall automatically adjust to varying evapotranspiration rates.
PLANT SCHEDULE
TREES
BOTANICAL NAME / COMMON NAME
CONT
QTY
Acer rubrum 'October Glory' TM / October Glory Maple
Cercis canadensis 'Forest Pansy' TM / Forest Pansy Redbud
Lagerstroemia x 'Natchez' / White Crape Myrtle Multi-Trunk
Pinus halepensis 'Brutia' / Calabrian Pine
Prunus serrulata 'Kwanzan' / Flowering Cherry
Quercus kelloggii / California Black Oak
Quercus wislizenii / Interior Live Oak
Zelkova serrata 'Village Green' / Sawleaf Zelkova
GROUND COVERS
BOTANICAL NAME / COMMON NAME
Mow Free Fescue
Irrigated Shrubs and Groundcover
Sod Lawn
Community Farm Space
Existing Native Woodlands to Remain
0'
40'
80'
160'
NORTH
YAMA
EL DORADO SENIOR RESORT
PRELIMINARY LANDSCAPE PLAN


Pleasant Valley Rd
49
Page Ln

APPENDIX A

EL DORADO SENIOR RESORT
FIRE SAFE

FUEL TREATMENT SPECIFICATIONS
For
OAK WOODLAND

Within The Designated Fuel Treatment Areas

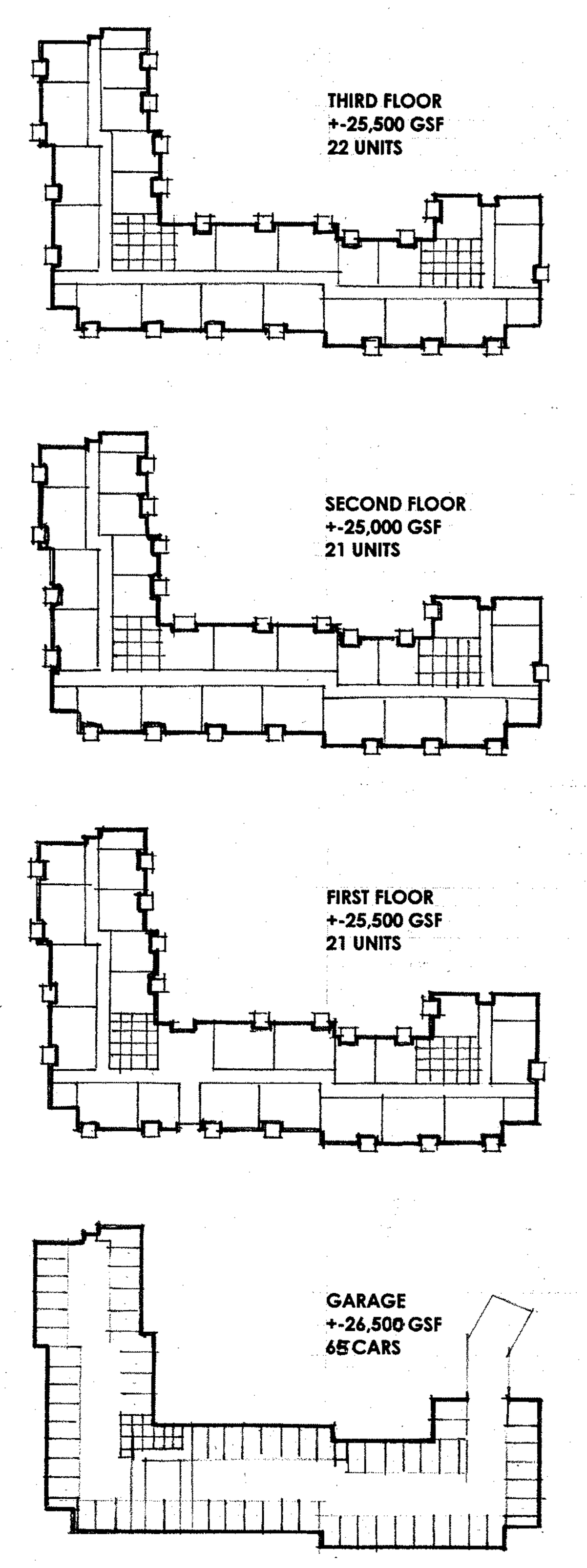
1. Leave live trees where possible.

2. Remove all dead trees.

3. Remove all brush.

4. Prune all live trees of dead branches and green branches 8 feet from the ground as measured on the uphill side of the tree, except no more than 1/3 of the live crown is removed. All slash created by pruning must be disposed of by chipping, burning or hauling off site. Trees adjacent to the road shall be pruned up 15'.

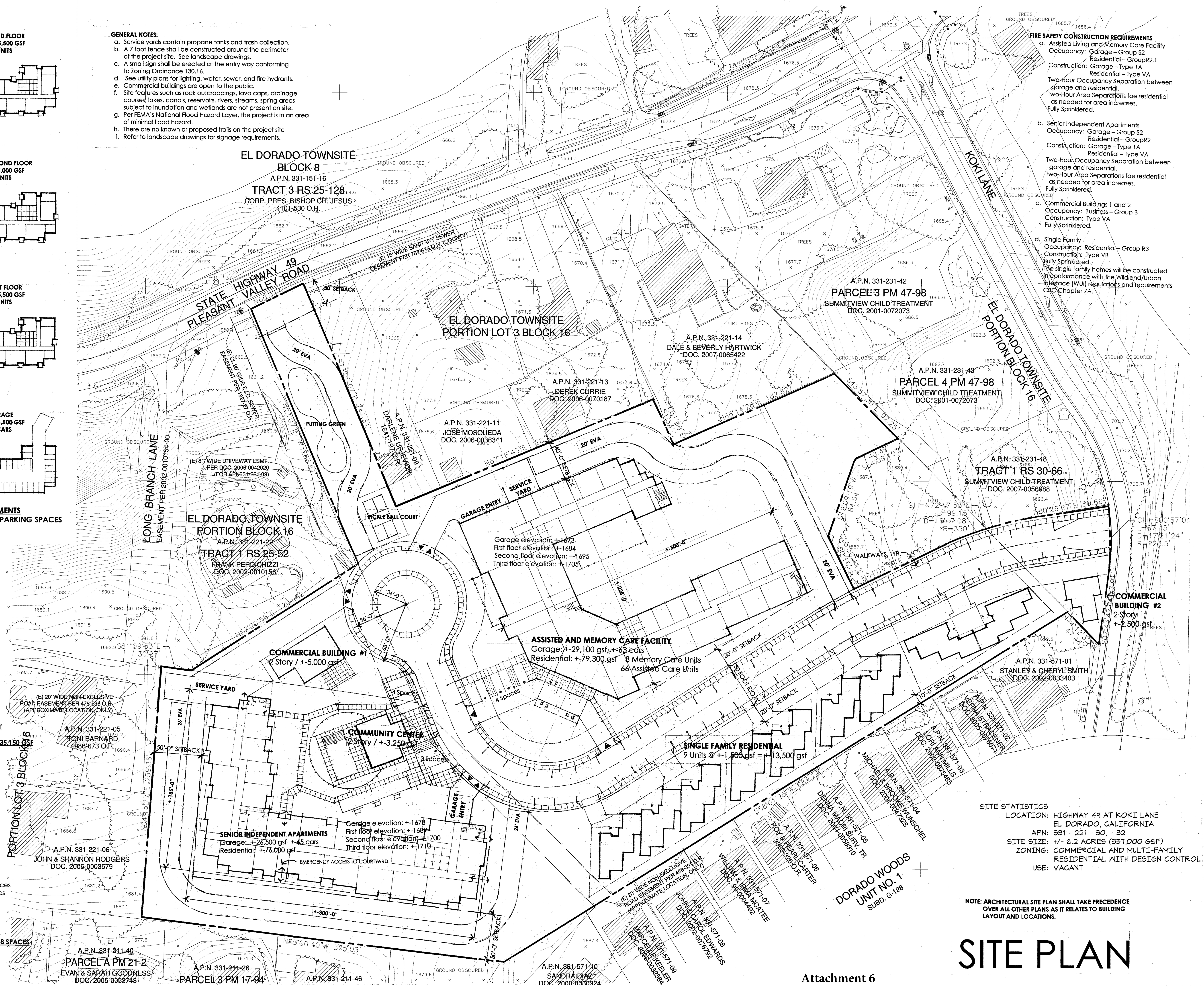
5. Annually by June 1, reduce the grass or weeds to a 2 inch stubble by mowing, chemical treatment, disking or a combination of treatments.



SENIOR INDEPENDENT APARTMENTS
+-102,500 GSF 64 UNITS 65 PARKING SPACES

GENERAL NOTES:

a. Service yards contain propane tanks and trash collection.
b. A 7 foot fence shall be constructed around the perimeter of the project site. See landscape drawings.
c. A small sign shall be erected at the entry way conforming to Zoning Ordinance 130.16.
d. See utility plans for lighting, water, sewer, and fire hydrants.
e. Commercial buildings are open to the public.
f. Site features such as rock outcroppings, lava caps, drainage courses, lakes, canals, reservoirs, rivers, streams, spring areas subject to inundation and wetlands are not present on site.
g. Per FEMA's National Flood Hazard Layer, the project is in an area of minimal flood hazard.
h. There are no known or proposed trails on the project site
i. Refer to landscape drawings for signage requirements.



FOOTAGE SUMMARY

Assisted Living Facility
Garage: +-29,100 gsf
Residential : +-79.300 gsf
Total + 108,400 gsf

Apartment Facility
Garage: +-26,500 gsf
Residential: +-76,000 gsf
Total = +- 102,500 gsf

Community Center
+-3,250 gsf

Commercial Building 1
+-5,000 gsf

Commercial Building 2
+-2,500 gsf

Single Family
9 Units @ +-1,500 gsf = +-13,500 gsf

TOTAL PROPOSED FOOTAGE = +-235,150 GSF

PARKING SUMMARY

Assisted Living Facility
+-63 Garage Spaces
+- 4 On-Grade Spaces
Total = 67 Spaces

Apartment Facility
+-65 Garage Spaces

Community Center
+-7 On-Grade Spaces

Single Family
+-2 Garage Spaces/Unit = 18 Spaces
+-2 Apron Spaces/Unit = 18 Spaces
Total = 36 Spaces

On-Street
+-53 Spaces

TOTAL PROPOSED PARKING = +-228 SPACES

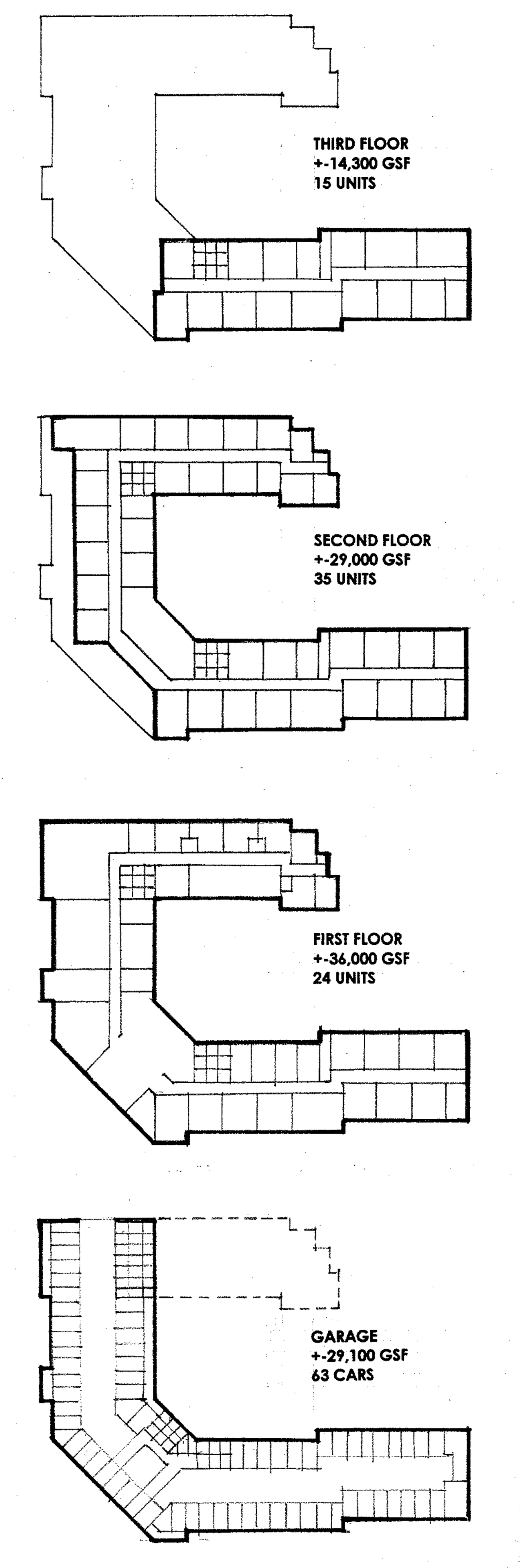
FIRE SAFETY CONSTRUCTION REQUIREMENTS

a. Assisted Living and Memory Care Facility
Occupancy: Garage – Group S2
Residential – GroupR2.1
Construction: Garage – Type 1A
Residential – Type VA
Two-Hour Occupancy Separation between garage and residential.
Two-Hour Area Separations foe residential as needed for area increases.
Fully Sprinklered.

b. Senior Independent Apartments
Occupancy: Garage – Group S2
Residential – GroupR2
Construction: Garage – Type 1A
Residential – Type VA
Two-Hour Occupancy Separation between garage and residential.
Two-Hour Area Separations foe residential as needed for area increases.
Fully Sprinklered.

c. Commercial Buildings 1 and 2
Occupancy: Business – Group B
Construction: Type VA
Fully Sprinklered.

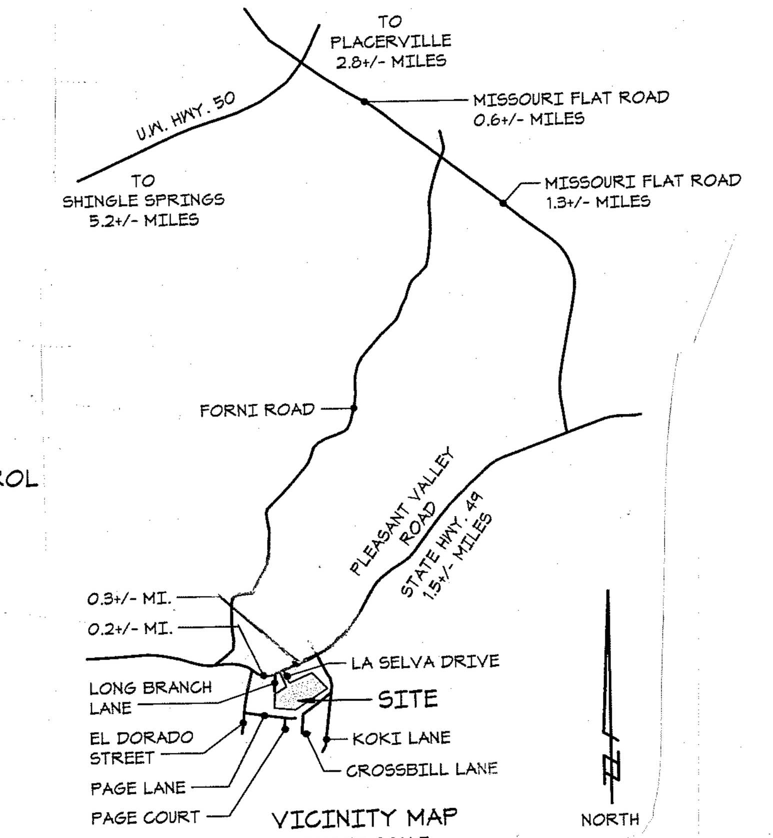
d. Single Family
Occupancy: Residential – Group R3
Construction: Type VB
Fully Sprinklered.
The single family homes will be constructed in conformance with the Wildland/Urban Interface (WUI) regulations and requirements CBC Chapter 7A.



ASSISTED LIVING AND MEMORY CARE FACILITY
+-108,400 GSF 74 UNITS 67 PARKING SPACES

SITE STATISTICS
LOCATION: HIGHWAY 49 AT KOKI LANE
EL DORADO, CALIFORNIA
APN: 331 - 221 - 30, - 32
SITE SIZE: +/- 8.2 ACRES (357,000 GSF)
ZONING: COMMERCIAL AND MULTI-FAMILY RESIDENTIAL WITH DESIGN CONTROL
USE: VACANT

NOTE: ARCHITECTURAL SITE PLAN SHALL TAKE PRECEDENCE OVER ALL OTHER PLANS AS IT RELATES TO BUILDING LAYOUT AND LOCATIONS.



VICINITY MAP
NOT TO SCALE

SITE PLAN

Attachment 6

Robert Wright NCARB
Wright Architecture Studio
101 Lucas Valley Road, Suite 313
San Rafael, CA 94903
(415) 491-4447 / FAX (415) 491-4445
email: bob@wrightarchitecturestudio.com

WRIGHT ARCHITECTURE Studio

El Dorado Senior Resort

Highway 49 at Koki Lane
El Dorado, California

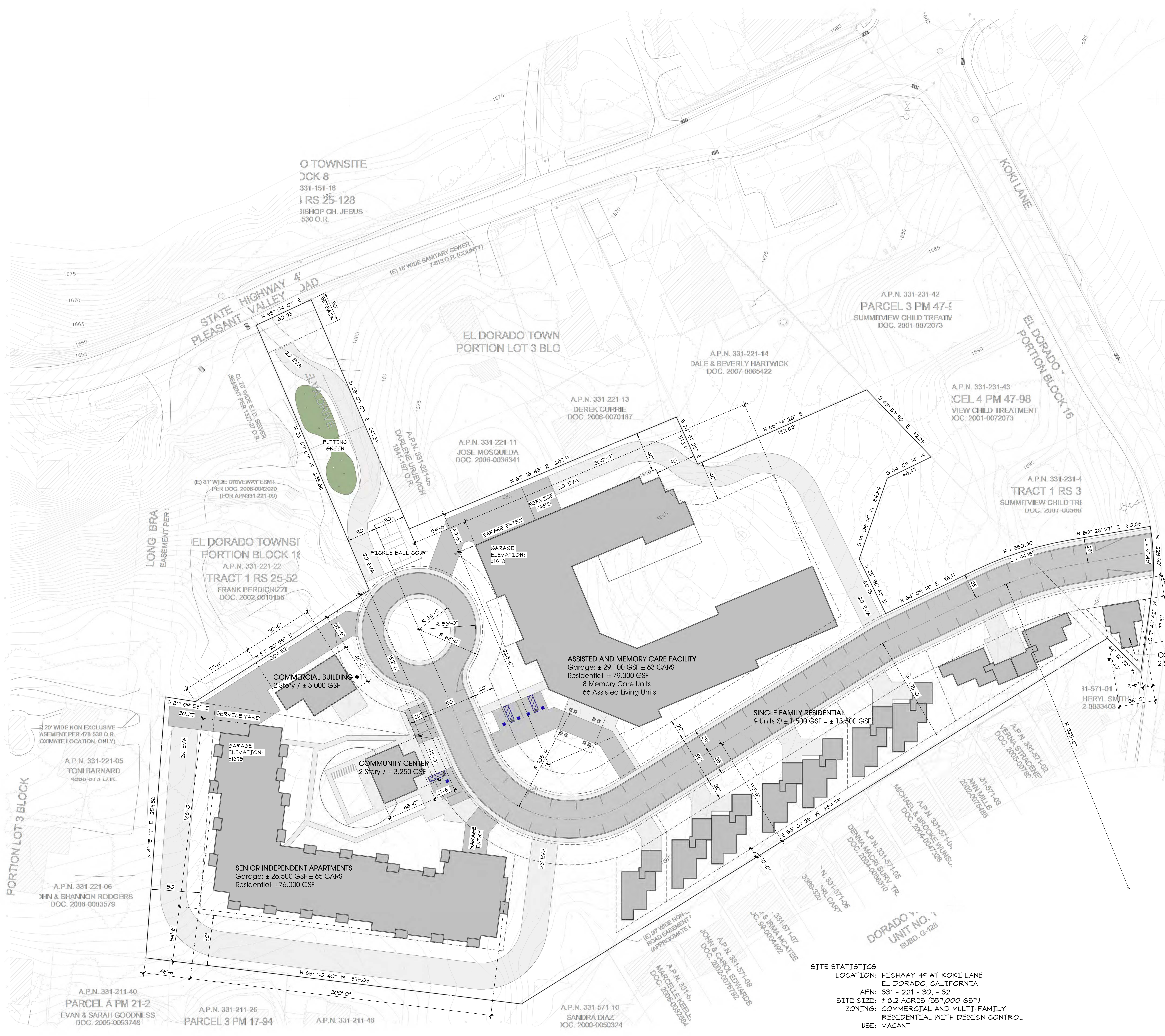
Attachment 6

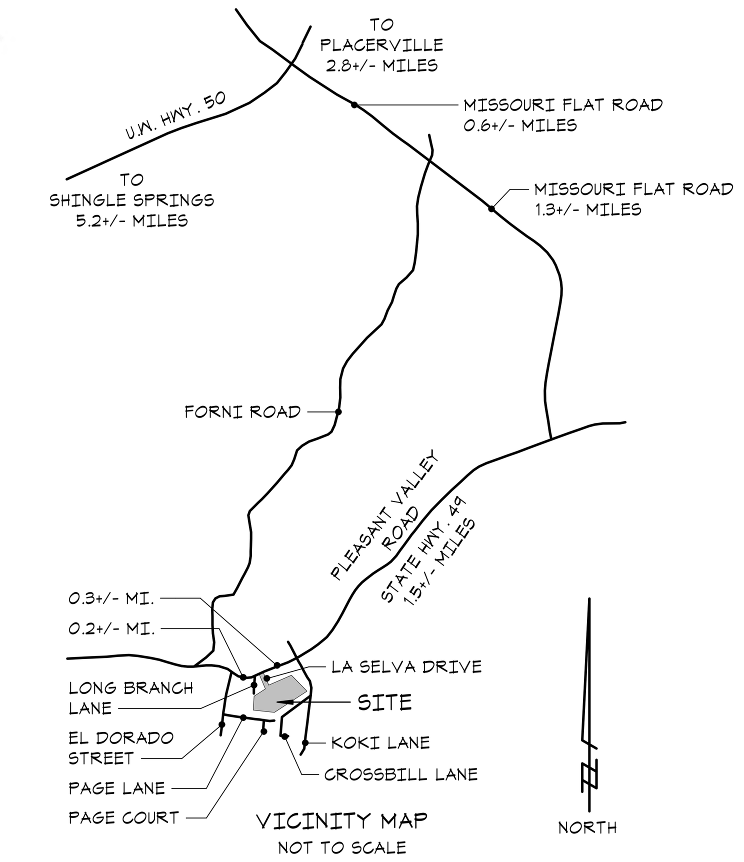
El Dorado Senior Housing LLC
854 Diablo Road
Danville, CA 94526
(281) 772-3772

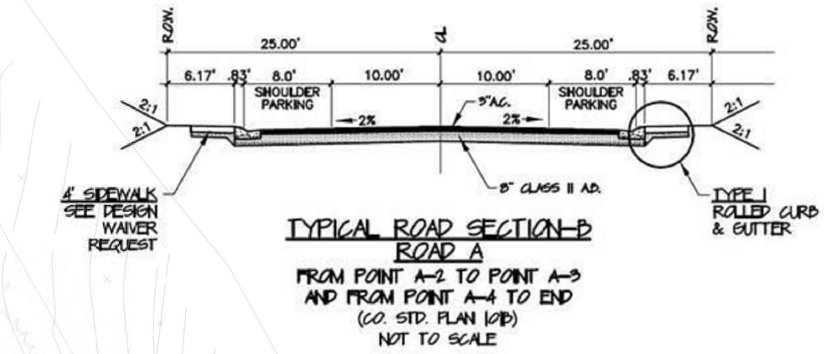
OCTOBER 26, 2018 REVISION 2
AUGUST 15, 2018 REVISION 1
MAY 2018 REVISION 0
MARCH 2018
FEBRUARY 2018
WAS 17112

0 20 40 80 160
SCALE: 1"= 40'-0"

A1.0







SITE STATISTICS

LOCATION: HIGHWAY 49 AT KOKI LANE
EL DORADO, CALIFORNIA
APN: 331 - 221 - 30, - 32
SITE SIZE: ± 8.2 ACRES (357,000 GSF)
ZONING: COMMERCIAL AND MULTI-FAMILY
RESIDENTIAL WITH DESIGN CONTROL
USE: VACANT

DRAWING IS FOR USE BY CIVIL/MECHANICAL/ELECTRICAL DISCIPLINES. SEE DRAWING A1.0 FOR ARCHITECTURAL INFORMATION.

0 20 40 80 160

1" = 40'

WRIGHT ARCHITECTURE Studio

Robert Wright NCARB
Wright Architecture Studio
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San Rafael, California 94903
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email: bob@wrightarchitecturestudio.com

El Dorado Senior Resort

Highway 49 at Koki Road
El Dorado, California

Attachment 7

El Dorado Senior Housing LLC
854 Diablo Road
Danville, California
(281) 772-3772

Site Plan

A1.1

August 15, 2018: Revision 1

WAS 17112

Mitigation Measure(s) Agreement

Project:CUP18-0009: El Dorado Senior Housing

As the applicant, owner, or their legal agent, I hereby agree to incorporate all required mitigation measures, as identified in the related Environmental Checklist, which are necessary in order to avoid or reduce any potentially significant environmental effect to a point where clearly no significant adverse impacts would occur as a result of project implementation.

I understand that by agreeing to incorporate the identified mitigation measures, all potentially adverse environmental impacts will be reduced to an acceptable level and a "Proposed Mitigated Negative Declaration" will be prepared and circulated in accordance with County procedures for implementing the California Environmental Quality Act (CEQA). I also underestand that additional mitigation measures may be required following the review of the "Proposed Mitigated Negative Declaration" by the public, affected agencies, and by the applicable advisory and final decision making bodies.

I understand the required mitigation measures incorporated into the project will be subject to the El Dorado County Mitigation Monitoring and Reporting Program adopted in conjunction with the Mitigated Negative Declaration.

This agreement shall be binding on the applicant/property owner and on any successors or assigns in interest.

IN WITNESS WHEREOF, the Planning Director or his assign, representing the County of El Dorado, and the applicant/owner or his legal agent have executed this agreement on this 15th day of April, 2019.

El Dorado County Planning Services

By: [signature]

Efren Sanchez, Associate Planner
Print name and title above

Signature of Applicant/Owner/Agent:

Jim Davies, Project Mgr.

Print name and address below:

Jim Davies, Project Manager
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854 Diablo Rd
Danville, CA. 94526

Attachment 8

MITIGATION MEASURES	MONITORING				VERIFICATION		
	Implementing RP[1]	**Type of Monitoring Action**	**Timing Requirements**[3]	**Monitoring/ Verification Entity**[4]	**Signature**	**Date**	**Comments**
A. Noise							
Mitigation Measure NOI- 1: Ensure that all rooftop mounted HVAC equipment associated with air heating and cooling requirements of Commercial Buildings #1 and #2 be completely shielded from view of nearby existing residences by building rooftop parapets (as proposed). AND (one of the following) NOI-2 or NOI-3	Appl.	PC, CPI	PGP	EDCPD			
Mitigation Measure NOI-2: When building plans are available that identify specific HVAC equipment model information and installation locations, the project developer shall review and confirm that the equipment will not exceed 45 dB Leq at 50 feet (Commercial Building #1) and 45 dB Leq at 30 feet (Commercial Building #2).	Appl.	PC, CPI	PGP	EDCPD			
Mitigation Measure NOI-3: Should the project developer choose to install rooftop-mounted HVAC equipment that exceeds 45 dB Leq at 50 feet (Commercial Building #1) or 45 dB Leq at 30 feet (Commercial Building #2), the construction of a 6-foot tall localized barrier that encompasses the equipment would be required. Should a barrier be constructed on the rooftop of Commercial Building #1, the barrier shall encompass the equipment around the north, east and west sides. Should a barrier be constructed on the rooftop of Commercial Building #2, the barrier shall encompass the equipment on the south, west and east sides.	Appl.	CPI	PGP	EDCPD			

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B. Transportation							
Mitigation Measure M1: ***SR 49 @ Pleasant Valley Road, Existing (2018) plus Proposed Project Conditions*** The impact can be mitigated with a traffic signal; however, the subject intersection is under the jurisdiction of Caltrans who will need to approve the timing for implementing a traffic signal. The County's methods for identifying the timing for an intersection are based on both the Capital Improvement Program and Intersection Needs Prioritization Process. The County's 10-year Capital Improvement Program (CIP) includes a line item for un-programmed traffic signal installation and operational and safety improvements at intersections, including improvements such as construction of new traffic signals, construction of turn pockets, and the upgrade of existing traffic signal systems. The County annually monitors intersections with potential need for	Appl.	PC, CPI	PGP	EDCPD, EDCDOT, and CALTRANS			

1 Appl. = Applicant; EDC = El Dorado County
2 CPI = Construction Period Inspection, OTC = One-time Confirmation Action; PC = Plan Check; POC = Post Occupancy Inspection; SMS = Specialized Monitoring Study; SSR = Subsequent Standard Review
3 DPC = During Project Construction; PBP = Prior to Issuance of Building Permit; PGP = Prior to Issuance of Grading Permit; PPO = Prior to Project Occupancy; STR = Specialized Timing Requirement
4 EDCPD = El Dorado County Planning Division; EDCSD = El Dorado County Sheriff's Department; EDHFD = El Dorado Hills Fire District; EDCDOT = El Dorado County Transportation Division; EDCBD = El Dorado County Building Division; EDCDEH = El Dorado County Department of Environmental Health

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improvement through the *Intersection Needs Prioritization Process*. This process is utilized to inform the annual update to the CIP, and the Board of Supervisors can add potential intersection improvements to the CIP, as funding becomes available. In the absence of identifying timing for implementing a traffic signal, the Community Development Services-Transportation Division has determined that the appropriate mitigation includes payment of traffic mitigation fees to satisfy the project's fair share obligation towards the traffic signal improvement. The project proportional share of growth of traffic entering the intersection is about 0.7% in the AM peak hour under Existing plus Proposed Project conditions. **<u>OR</u>** Construction of the improvement (traffic signal) with reimbursement for costs that exceed the project's proportional share, if the improvement is needed but not included in future updates to the CIP. The improvement will need to consistent with General Plan Goal TC-X and supporting Policy TC-Xf.							
Mitigation Measure M2: *: SR 49 @ Pleasant Valley Road, Near-Term (2028) plus Proposed Project Conditions* The impact can be mitigated with a traffic signal; however, the subject intersection is under the jurisdiction of Caltrans who will need to approve the timing for implementing a traffic signal. The County's methods for identifying the timing for an intersection are based on both the Capital Improvement Program and Intersection Needs Prioritization Process. The County's 10-year Capital Improvement Program (CIP) includes a line item for un-programmed traffic signal installation and operational and safety improvements at intersections, including improvements such as construction of new traffic signals, construction of turn pockets, and the upgrade of existing traffic signal systems. The County annually monitors intersections with potential need for improvement through the *Intersection Needs Prioritization Process*. This process is utilized to inform the annual update to the CIP, and the Board of Supervisors can add potential intersection improvements to the CIP, as funding becomes available. In the absence of identifying timing for implementing a traffic signal, The Community Development Services-Transportation Division has determined that the appropriate mitigation includes payment of traffic mitigation fees to satisfy the project's fair share obligation towards the traffic signal improvement. The project proportional share of growth of traffic entering the intersection is about 9.6% in the AM peak hour under Near Term (2028) plus Proposed Project conditions.	Appl.	PC, CPI	PGP	EDCPD, EDCDOT, and CALTRANS			

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OR Construction of the improvement (traffic signal) with reimbursement for costs that exceed the project's proportional share, if the improvement is needed but not included in future updates to the CIP or constructed by others. The improvement will need to consistent with General Plan Goal TC-X and supporting Policy TC-Xf.							
Mitigation Measure M3: ***SR 49 @ Pleasant Valley Road, Cumulative (2035) plus Proposed Project Conditions*** The impact can be mitigated with a traffic signal; however, the subject intersection is under the jurisdiction of Caltrans who will need to approve the timing for implementing a traffic signal. The County's methods for identifying the timing for an intersection are based on both the Capital Improvement Program and Intersection Needs Prioritization Process. The County's Capital Improvement Program (CIP) includes a line item for un-programmed traffic signal installation and operational and safety improvements at intersections, including improvements such as construction of new traffic signals, construction of turn pockets, and the upgrade of existing traffic signal systems. The County annually monitors intersections with potential need for improvement through the *Intersection Needs Prioritization Process*. This process is utilized to inform the annual update to the CIP, and the Board of Supervisors can add potential intersection improvements to the CIP, as funding becomes available. In the absence of identifying timing for implementing a traffic signal, The Community Development Services-Transportation Division has determined that the appropriate mitigation includes payment of traffic mitigation fees to satisfy the project's fair share obligation towards the traffic signal improvement. The project proportional share of growth of traffic entering the intersection is about 4.2% in the AM peak hour and 6.3% in the PM peak hour under Cumulative (2035) plus Proposed Project conditions. Should the project developer choose to install rooftop-mounted HVAC equipment that exceeds 45 dB Leq at 50 feet (Commercial Building #1) or 45 dB Leq at 30 feet (Commercial Building #2), the construction of a 6-foot tall localized barrier that encompasses the equipment would be required. Should a barrier be constructed on the rooftop of Commercial Building #1, the barrier shall encompass the equipment around the north, east and west sides. Should a barrier be constructed on the rooftop of Commercial Building #2, the barrier shall encompass the equipment on the south, west and east sides. **OR** Construction of the improvement (traffic signal) with reimbursement for costs that	Appl.	CPI	PGP	EDCPD, EDCDOT, and CALTRANS			

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exceed the project's proportional share, if the improvement is needed but not included in future updates to the CIP or constructed by others. The improvement will need to consistent with General Plan Goal TC-X and supporting Policy TC-Xf.							

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