



SAN RAFAEL
THE CITY WITH A MISSION

Agenda Item No: 4.j

Meeting Date: June 15, 2020

SAN RAFAEL CITY COUNCIL AGENDA REPORT

Department: Public Works

Prepared by: Bill Guerin,
Director of Public Works

City Manager Approval: _____

File No.: 16.01.291

TOPIC: FRANCISCO BOULEVARD WEST - RICE DRIVE TO SECOND STREET PROJECT

SUBJECT: ADOPT RESOLUTIONS RELATED TO THE FRANCISCO BOULEVARD WEST - RICE DRIVE TO SECOND STREET PROJECT, CITY PROJECT NO. 11364:

1. RESOLUTION AWARDDING AND AUTHORIZING THE CITY MANAGER TO EXECUTE A CONSTRUCTION AGREEMENT FOR THE FRANCISCO BOULEVARD WEST – RICE DRIVE TO SECOND STREET PROJECT, CITY PROJECT NO. 11364, TO GHILOTTI BROS., INC., IN THE AMOUNT OF \$2,259,787, AND AUTHORIZING CONTINGENCY FUNDS IN THE AMOUNT OF \$253,498, FOR A TOTAL APPROPRIATED AMOUNT OF \$2,513,285.
2. RESOLUTION AUTHORIZING THE CITY MANAGER TO EXECUTE A DEDUCTIVE CHANGE ORDER FOR THE FRANCISCO BOULEVARD WEST – RICE DRIVE TO SECOND STREET PROJECT, CITY PROJECT NO. 11364, IN THE AMOUNT OF \$573,285.

RECOMMENDATION: Staff recommends that the City Council:

1. Adopt the resolution awarding and authorizing the City Manager to execute a construction agreement with Ghilotti Bros., Inc. in the amount of \$2,259,787, and authorizing contingency funds in the amount of \$253,498.
2. Adopt the resolution authorizing the City Manager to execute a deductive change order with Ghilotti Bros., Inc. in the amount of \$573,285.

BACKGROUND: Francisco Boulevard West is a frontage road that parallels the west side of Highway 101 between Second Street and Andersen Drive and connects downtown to the light-industrial area of southern San Rafael. In July 2018, the Sonoma-Marin Area Rail Transit District (SMART) realigned Francisco Boulevard West between Second Street and Rice Drive as part of the Larkspur Extension in order to reduce the number of at-grade railroad crossings. The realignment “flipped” the railroad tracks and roadway moving the roadway west of the tracks.

The SMART extension to Larkspur necessitates trains crossing Third and Second Streets. Second Street between Lincoln Avenue and Hetherton Street continues to be the most challenging segment with high vehicle volumes and multiple decision points. As a result, vehicles

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Disposition:

SAN RAFAEL CITY COUNCIL AGENDA REPORT / Page: 2

on Second Street often end up stopped on the railroad tracks. City staff and SMART staff have considered and implemented several improvements to increase driver awareness and to improve the overall efficiency of traffic flowing through the intersection of Second Street at Francisco Boulevard West, yet the problem persists.

City staff and SMART staff have worked to refine the operations of the new traffic signals at the railroad tracks; however, vehicles consistently stop on the railroad tracks, including vehicles that turn east from Francisco Boulevard West onto Second Street. Vehicles stopping on the tracks delay the train crossing into San Rafael which exacerbates the already difficult traffic problems in the Transit Center area and also requiring the sounding of the train horn, despite the Quiet Zone designation. It also presents a safety concern to other motorists, as well as the train operators and passengers.

Many of the vehicles stopping on the tracks originate from northbound Francisco Boulevard West turning right onto Second Street. This turning movement places drivers in a situation in which they quickly respond by stopping short of the tracks or continuing to the opposite side and clearing them altogether. Based on field observation and public feedback to staff, there appears to be confusion on the part of drivers about where to stop and drivers often end up on the tracks. This is both a safety issue and a traffic challenge because the train pre-emption is extended when cars impede the train's arrival into the central San Rafael station.

To remove this conflict, staff proposes to convert Francisco Boulevard West to a southbound one-way street between Second Street and Rice Drive. This proposed change in traffic flow will significantly improve safety at the Second Street railroad crossing while allowing motorists to continue accessing businesses from Downtown to Francisco Boulevard West, Irwin Street, and Rice Drive.

Converting Francisco Boulevard West to a one-way street also allows the Multi-Use Path (MUP) two-way protected cycle track to be constructed on the vacated travel lane. The MUP will be a fully separated Class 4 pathway extending the recently completed \$5.96 million Phase I path between Rice Drive and Andersen Drive to central San Rafael.

Environmental Clearance

When the MUP project was originally developed, the pathway was to be located outside of the roadway behind the existing concrete sidewalk, which necessitated a large amount of work to be performed in the creek. The revised design reduced in-creek work by approximately 80 percent and is more environmentally friendly.

With the MUP project, the northbound vehicle traffic from Francisco Boulevard West will be re-routed to Lincoln Avenue and Lindero Street. Traffic engineering analyses indicate the existing traffic control devices (i.e., traffic signals or all-way STOP intersections) will be able to accommodate the additional traffic without significant impact.

On [December 4, 2017](#), the City Council adopted an Initial Study/Mitigated Negative Declaration (IS/MND) pursuant to California Environmental Quality Act (CEQA) Guidelines thus clearing the project for construction from an environmental standpoint. The City's environmental consultant, LSA Associates, Inc. reviewed the new scope of work and has determined the revised design would not introduce new significant environmental effects. Therefore, no additional environmental work is required beyond the environmental Addendum (Attachment 1) to the previously approved IS/MND, and no additional City Council action is required.

The revised design is also supported by the California Department of Fish and Wildlife, who issued the City an amendment to the original permit for this project; no amendment is required by the Regional Water Quality Control Board.

ANALYSIS: The project was advertised in accordance with San Rafael's Municipal Code on May 15, 2020. On June 4, 2020, the following bids were received and read aloud:

<u>NAME OF BIDDER</u>	<u>Amount</u>
Ghilotti Bros., Inc	\$2,259,787
Maggiora & Ghilotti, Inc.	\$2,667,667

The construction bids have been reviewed by Public Works staff and the low bid of \$2,259,787 from Ghilotti Bros., Inc. was found to be responsive and responsible. The recommended Resolution (Attachment 2) awards the construction agreement to Ghilotti Bros., Inc.

The base bid of \$2,259,787, necessary contingency of \$253,498, and needed construction management and on-site inspection of various types, has caused the project to exceed available grant funding. To bring the project within budget, staff recommends that following execution of the contract with Ghilotti Bros., Inc., a deductive change order be issued, as set forth in Attachment 3 to this staff report. Staff worked with Ghilotti Bros., Inc. to develop a deductive change order that will reduce the total project cost by approximately \$573,000, thus resulting in a revised base contract value of \$1,686,502. With this adjustment to the contract, and the recommended construction contingency of \$253,498, the total project award will be \$1,940,000, which is within budget. Staff worked with Ghilotti Bros to eliminate pedestrian-scale street lighting, trees and tree wells separating the path from vehicular traffic, a new "trash rack" structure within the channel, and a methacrylate treatment of the existing bridge deck. It is important to note that the street already has street lights and significant new landscaping, including trees, that will be placed on the creek side of the path as a part of the project. The trash rack and bridge deck treatment can be accomplished at another time.

PUBLIC OUTREACH: City staff have performed the following public outreach to date as it relates to the MUP project as well as converting Francisco Boulevard West to a one-way street:

- March 7, 2020 – Presentation to Villa Real Homeowners Association at their annual meeting.
- March 10, 2020 – Staff presented the proposed one-way conversion to the San Rafael Chamber of Commerce Economic Vitality Committee.
- June 3, 2020 – Presentation to the Bicycle Pedestrian Advisory Committee

On April 3, 2020, City staff sent mailers (Attachment 5) to approximately 120 residents, tenants, and property owners adjacent to the project area notifying them of the proposed roadway changes and pending construction with a request to review the [City's website](#) for updated information on the project. Furthermore, staff have posted to Nextdoor to raise awareness of the project and engaged the San Rafael Chamber of Commerce to understand impacts to local businesses.

SAN RAFAEL CITY COUNCIL AGENDA REPORT / Page: 4

FISCAL IMPACT: The following tables summarize the project budget:

Project Budget:

Construction Funding Sources	Allocation
California Natural Resources Agency - Urban Greening Grant Program	\$1,200,000
Transportation Development Act (TDA) Article 3 Funds	\$308,400
Transportation Development Act (TDA) Article 4 Funds*	\$182,000
Transportation Authority of Marin Safe Pathways Program	\$400,000
Bay Area Air Quality Management District (Rollover from MUP Phase I Project)	\$150,000
Total Available Funds	\$2,240,400

*It is anticipated that funding for Article 4 will be available to the City in July 2020. The Metropolitan Transportation Commission has not finalized their budget for FY 2020/21, however, they anticipate revenue reductions as a result of the COVID-19 pandemic. For budgeting purposes, staff has already taken into account an assumed 30% reduction in TDA Article 4 funds, which is consistent with the City's approach to gas tax reductions.

Expenses:

Construction Expenses at Time of Award	Amount
Construction Award	
Contract Amount	\$2,259,787
Contingency (15% of post change order bid)	\$253,498
Total Construction Award	\$2,513,285
Multiple Contracts to Support Field Inspections, Materials Testing, Biological Assistance, and Construction Support	\$186,000
Total Estimated Construction Expenses	\$2,699,285

Construction Expenses Post Deductive Change Order	Amount
Construction Award	
Revised Contract Amount Post Deductive Change Order	\$1,686,502
Contingency (15% of post change order bid)	\$253,498
Revised Total Construction Award	\$1,940,000
Multiple Contracts to Support Field Inspections, Materials Testing, Biological Assistance, and Construction Support	\$186,000*
Revised Total Estimated Construction Expenses	\$2,126,000

In summary, staff recommend the City Council award the original base bid of \$2,259,787, approve a contingency amount of \$253,498, and approve issuance of a deductive change order in the amount of \$573,285 reducing the total appropriation for construction to \$1,940,000.

* Note: Construction support contracts will be awarded separately under the City Manager's authority.

SAN RAFAEL CITY COUNCIL AGENDA REPORT / Page: 5

OPTIONS: The City Council has the following options to consider relating to this matter:

1. Adopt the resolutions as presented, awarding the construction contract to Ghilotti Bros., Inc and immediately issuing a deductive change order to reduce the scope of work.
2. Do not award the contract and direct staff to rebid the project. If this option is chosen, rebidding will delay construction by approximately two months and likely result in the project not being completed before grant funding expires.
3. Do not award the contract and provide direction to staff.

RECOMMENDED ACTION:

1. Adopt the resolution awarding and authorizing the City Manager to execute a construction agreement with Ghilotti Bros., Inc. in the amount of \$2,259,787, and authorizing contingency funds in the amount of \$253,498.
2. Adopt the resolution authorizing the City Manager to execute a deductive change order with Ghilotti Bros., Inc. in the amount of \$573,285.

ATTACHMENT:

1. Environmental Addendum to the IS/MND
2. Resolution Awarding Construction Agreement to Ghilotti Bros., Inc.
3. Resolution Authorizing a Deductive Change Order be Executed
4. Draft Construction Agreement with Ghilotti Bros., Inc.
5. Public Outreach Mailer

MEMORANDUM

DATE: June 1, 2020

To: April Miller, City of San Rafael

FROM: Theresa Wallace, AICP Principal
Shanna Guiler, AICP, Associate/Senior Environmental Planner

SUBJECT: Addendum to the Initial Study/Mitigated Negative Declaration for the Francisco Boulevard West Multi-Use Pathway Project (SCH# 2017102079)

This memorandum, prepared pursuant to the California Environmental Quality Act (CEQA) describes the revisions to the Francisco Boulevard West Multi-Use Pathway Project (proposed project) evaluated in the October 2017 Initial Study/Mitigated Negative Declaration (2017 IS/MND) and provides a determination that the modifications to the project are within the scope of the 2017 IS/MND and no further environmental review is required. The IS/MND was adopted by the City of San Rafael City Council on December 14, 2017.

INTRODUCTION

The 2017 IS/MND evaluated the potential environmental impacts anticipated to result from construction and operation of the proposed project, which is part of the larger Sonoma Marin Area Rail Transit (SMART) Multi-Use Pathway (MUP) between Cloverdale and Larkspur. The purpose of the proposed project is to construct an approximately 4,500-foot multi-use pathway within City of San Rafael (City) and SMART right-of-way from Andersen Drive to the Mahon Creek pathway. The multi-use pathway would consist of an 8- to 10-foot paved pathway with associated 2-foot wide shoulders, a prefabricated bridge, drainage facilities, retaining walls, fencing, and other minor project elements (e.g. signage, pavement marking). The City of San Rafael is the Lead Agency for environmental review.

This Addendum is prepared pursuant to CEQA Guidelines Section 15164(b) which states: “An addendum to an adopted negative declaration may be prepared if only minor technical changes or additions are necessary or none of the conditions described in Section 15162 calling for preparation of a subsequent EIR or negative declaration have occurred” Section 15162 specifies that “no subsequent EIR [or MND] shall be prepared for that project unless the lead agency determines ... one or more of the following:

1. Substantial changes are proposed in the project which will require major revisions of the previous EIR [or MND] due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;

2. Substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous EIR [or MND] due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; or
3. New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR [or MND] was certified as complete was adopted, shows any of the following:
 - a. The project will have one or more significant effects not discussed in the previous EIR [or MND];
 - b. Significant effects previously examined will be substantially more severe than shown in the previous EIR [or MND];
 - c. Mitigation measures or alternatives previously found not to be feasible would in fact be feasible and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or
 - d. Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR [or MND] would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative.”

Pursuant to CEQA Guidelines Section 15164(e), this Addendum summarizes the changes to the proposed project evaluated in the 2017 IS/MND and the reasons for the City’s conclusion that changes to the proposed project and associated environmental effects do not meet the conditions described in CEQA Guidelines Section 15162 requiring preparation of a subsequent MND.

REVISED PROJECT

Since adoption of the 2017 IS/MND and approval of the proposed project on December 14, 2017, the City has refined the design for the proposed pathway between 2nd Street and Rice Drive. The original pathway design proposed construction of the trail behind the existing sidewalk and in some locations overhanging the creek. The City is now proposing to close the northbound lane of Francisco Boulevard and install the pathway within the roadway section, changing this segment of Francisco Boulevard West to a one-way road. The City is also proposing to conduct some nighttime construction in order to avoid road closures during the construction period. The proposed project, as modified, constitutes the “Revised Project.”

Project Background

Second Street is a one-way street in the eastbound direction and is a primary access between West Marin and US 101. Francisco Boulevard West is a two-way, two lane frontage road that generally runs parallel to US 101 from Second Street to its intersection with the US 101 southbound ramps. It provides access to a variety of businesses, including a grocery store, car dealerships, auto repair and tire shops, and other retail. The average daily traffic (ADT) on Francisco Boulevard West south of

Second Street is 6,500 vehicles and south of Rice Drive is 4,500 vehicles based on data collected in December 2019. The ADT on Lincoln Avenue is 6,400 vehicles.

In 2018, the roadway and the railroad tracks “swapped places” in order to minimize the number of rail crossings in the area. In summer 2019, the train extension to the City of Larkspur was completed, which included new traffic signals on Second and Third Streets at the railroad crossings.

With the completion of the Sonoma-Marín Area Rail Transit (SMART) extension to Larkspur, new challenges have surfaced at the intersection of Second Street and Tamalpais West Avenue-Francisco West Boulevard. The City and SMART staff have worked to refine the operations of the new traffic signals at the railroad crossings; however, vehicles consistently stop on the railroad tracks, including vehicles making a northbound right turn from Francisco Boulevard West onto Second Street. Vehicles stopping on the tracks delay the train crossing into San Rafael, exacerbating existing traffic conditions in and around the Transit Center. It also creates a safety concern for other motorists, as well as train operators and passengers.

City staff and consultants have implemented many changes over the past few months since SMART trains have started service, including:

- Modified traffic signal phasing in attempt to accommodate the northbound right-turning vehicles from Francisco Boulevard West;
- Adjusted traffic signal coordination to minimize the queuing of vehicles across the tracks;
- Coordinated with SMART staff to minimize delay for vehicles in the area and reduce the amount of time the traffic signals would be affected due to crossing trains, i.e., have the northbound and southbound trains “meet” between Second and Third Street.

While these modifications have improved conditions in the area slightly, the issue with the northbound right-turning vehicles from Francisco Boulevard West onto Second Street persists.

Revised Project

The City proposes to convert Francisco Boulevard West to a southbound one-way street between Second Street and Rice Drive. The proposed change in traffic flow would improve safety at the Second Street railroad crossing, while maintaining access to businesses between downtown San Rafael and Francisco Boulevard West, Irwin Street, and Rice Drive.

With conversion of Francisco Boulevard West to one-way southbound, the northbound vehicle traffic would be re-routed to parallel streets such as Lincoln Avenue, Du Bois Street, and Andersen Drive. Southbound vehicle traffic would be moved to the easternmost lane. Traffic engineering analyses indicate the existing traffic control devices (i.e., traffic signals or all-way STOP intersections) can accommodate the additional traffic without significant impact to traffic operations.

As originally proposed, the MUP would be constructed on the West side of the road, now located between the existing sidewalk and the roadway, along the west side of Francisco Boulevard, extending from the terminus of the existing pathway at Second Street to Rice Drive. With the

closure of the northbound lane, the MUP would be constructed within the vacated travel lane. For this segment of the trail, the MUP would consist of a two-way protected cycle track, separated from vehicular traffic using raised landscape planters. The sidewalk would remain for pedestrian travel. This approach would eliminate the need for retaining walls and reduce the impacts to the creek along this portion of the trail alignment, as identified for the proposed project.

The first phase of the MUP from Rice Drive to Andersen Drive was constructed from late summer 2018 to spring 2019. Construction of the second phase from Rice Drive to Second Street would commence in early summer 2020. Work completion is anticipated at the end of 2020. To minimize disruption to vehicular traffic, the City proposes to conduct some construction work during nighttime hours. Otherwise, construction methodology, equipment and staging, would be the same as identified for the proposed project.

COMPARISON TO THE CONDITIONS LISTED IN CEQA GUIDELINES SECTION 15162

The following includes an evaluation of the potential environmental effects of the Revised Project, compared to the impacts identified for implementation of the proposed project in the 2017 IS/MND.

Aesthetics

Section I of the 2017 IS/MND analyzed the visual conditions of the project area. Similar to the proposed project, the Revised Project would not substantially impact a scenic vista nor would it substantially damage scenic resources within a State scenic highway. Like the 2017 Project, implementation of the Revised Project would alter the view for travelers along local roadways, and from adjacent commercial and industrial uses; however, proposed facilities would be visually compatible with existing roadway infrastructure. Further, as part of the Revised Project, the City would install raised landscape planters to separate the proposed cycletrack from motor vehicles, which would result in a beneficial visual effect for this portion of the MUP. Therefore, the Revised Project would not have a substantial effect on scenic vistas or existing visual resources nor would it degrade the existing visual character or quality of the site. Similar to the proposed project, the Revised Project would include installation of pathway lighting to illuminate the proposed pathway. The lighting would be approximately 12-foot high, low-level, shielded light fixtures, which would direct the light downward onto the pathway. Such lighting would be consistent with existing lighting in the project area and would not create a new source of substantial light or glare that would adversely affect day or nighttime views. All temporary construction-related sources of light or glare (i.e., construction equipment headlights/safety lights) would cease following completion of construction. Therefore, implementation of the proposed project would not result in impacts associated with light or glare that would adversely affect day or nighttime views in the project area. ***No new impacts or increase in severity of impacts would occur.***

Agricultural Resources

Section II of the 2017 IS/MND analyzed impacts to agricultural resources. No impacts to agricultural resources were identified in the IS/MND. Similar to the proposed project, the Revised Project would not result in the conversion of agricultural land nor would it conflict with existing zoning for agricultural use or Williamson Act contract. ***No new impacts or increase in severity of impacts would occur.***

Air Quality

Section III of the 2017 IS/MND analyzed impacts to air quality. The IS/MND identified temporary short-term, construction-related impacts to air quality. No long-term operational impacts were identified. Similar to the proposed project, the Revised Project would not conflict with or obstruct implementation of the applicable air quality plan, violate air quality standards, or result in a cumulatively considerable net increase in any criteria pollutant. Construction of the Revised Project would utilize similar construction techniques identified in the 2017 IS/MND; therefore, no additional impacts or increase in the severity of air quality impacts would occur with implementation of the Revised Project. Implementation of Mitigation Measure AIR-1, identified in the 2017 IS/MND would ensure that impacts related to air quality would be reduced to less than significant levels. ***No new impacts or increase in severity of impacts would occur and no additional mitigation measures are required.***

Biological Resources

Section IV of the 2017 IS/MND analyzed impacts to biological resources associated with implementation of the proposed project. The 2017 IS/MND identified areas of potential impact, including adverse effects on special-status species, sensitive natural communities, nesting birds, and wetlands associated with the unnamed drainage channel and San Rafael Creek. The Revised Project would be located within the same area as the proposed project and would be subject to similar biological conditions. Therefore, impacts to biological resources would be similar to those analyzed for the proposed project in the 2017 IS/MND. Implementation of Mitigation Measures BIO-1a, BIO-1b, BIO-2a, BIO-2b, BIO-3a, BIO-3b, BIO-4, and BIO-5 identified in the 2017 IS/MND would ensure that impacts would be reduced to less than significant levels. ***No new impacts or increase in severity of impacts would occur and no additional mitigation measures are required.***

Cultural Resources

Section V of the 2005 IS/MND analyzed impacts to cultural resources associated with implementation of the proposed project. The IS/MND identified potential impacts to known historical and archaeological resources located within 0.25-mile of the project alignment, as well as previously unidentified archaeological and paleontological deposits as a result of ground disturbing activities. The Revised Project would modify the location of the trail alignment between Second Street and Rice Drive. However, the Revised Project would not impact any known or previously identified cultural resources. Similar to the proposed project, the Revised Project has the potential to encounter cultural deposits during construction activities. Implementation of Mitigation Measures CULT-1, CULT-2, CULT-3, and CULT-4 identified in the 2017 IS/MND would ensure that impacts would be reduced to less than significant levels. ***No new impacts or increase in severity of impacts would occur and no additional mitigation measures are required.***

Energy

Since adoption of the 2017 IS/MND, the CEQA Checklist has been updated to include a discussion of potential project impacts related to energy. As energy was not addressed in the 2017 IS/MND, the Revised Project's potential to result in a potentially significant environmental impact due to

wasteful, inefficient or unnecessary consumption of energy resources or to conflict with or obstruct a State or local plan for renewable energy or energy efficiency is described below.

Construction of the Revised Project would require the use of energy to fuel grading vehicles, trucks, and other construction vehicles. All or most of this energy would be derived from non-renewable resources. In order to increase energy efficiency on the site during project construction, the project would restrict equipment idling times to 5 minutes or less and would require construction workers to shut off idle equipment, as required by the BAAQMD's Basic Construction Mitigation Measures (Mitigation Measure AIR-1, identified in the 2017 IS/MND). In addition, construction activities are not anticipated to result in an inefficient use of energy as gasoline and diesel fuel would be supplied by construction contractors who would conserve the use of their supplies to minimize their costs on the project. Energy usage on the project site during construction would be temporary in nature and would be relatively small in comparison to the State's available energy sources. Therefore, construction energy impacts would be less than significant.

Typically, energy consumption is associated with fuel used for vehicle trips and natural gas and energy use. However, the proposed project would construct a MUP. Although the Revised Project would result in the elimination of the northbound lane on Francisco Boulevard West, elimination of this lane is not anticipated to significantly affect vehicular circulation in the vicinity of the project site. Vehicles using alternate routes around the one-way section of Francisco Boulevard West would continue to consume energy and it is anticipated that approximately the same number of vehicles would utilize these alternate routes as currently travel northbound on Francisco Boulevard West. Further, the Revised Project includes pedestrian and bicycle safety improvements to promote the use of alternative modes of transportation, which allow for a decreased dependence on nonrenewable energy resources. Operation of the Revised Project would not require the consumption of natural gas. Therefore, energy use consumed by the Revised Project would only be associated with minimal electricity consumption associated with lighting along the proposed pathway. Therefore, implementation of the Revised Project would not result in a long-term substantial demand for electricity and natural gas nor would the project require new service connections or construction of new off-site service lines or substations to serve the project. The nature of proposed improvements would not require substantial amounts of energy for either construction or maintenance purposes. Therefore, the Revised Project would not use non-renewable resources in a wasteful or inefficient manner.

As indicated above, energy usage on the project site during construction would be temporary in nature. In addition, energy usage associated with operation of the Revised Project would be relatively small in comparison to the State's available energy sources and energy impacts would be negligible at the regional level. Because California's energy conservation planning actions are conducted at a regional level, and because the project's total impact to regional energy supplies would be minor, the Revised Project would not conflict with California's energy conservation plans as described in the CEC's 2017 Integrated Energy Policy Report. Further, the Revised Project includes pedestrian and bicycle safety improvements to promote the use of alternative modes of transportation, which allow for a decreased dependence on nonrenewable energy resources. Thus, as shown above, the Revised Project would avoid or reduce the inefficient, wasteful, and unnecessary consumption of energy and not result in any irreversible or irretrievable commitments

of energy. Impacts would be less than significant. ***No new impacts or increase in severity of impacts would occur.***

Geology and Soils

Section VI of the 2017 IS/MND analyzed the geological, seismic, and soil conditions within the project area. Construction of the Revised Project would occur in the same vicinity as the proposed project and would be subject to similar geological and soil conditions. Like the proposed project, the Revised Project would include construction of a MUP and associated infrastructure (e.g., drainage facilities, lighting, retaining walls, signage, landscaping). No habitable structures would be constructed; however, installation of the MUP could increase use of the site. Like the proposed project, the Revised Project would be designed and constructed consistent with the most current version of the California Building Code (CBC) and City standards, which includes specifications for site preparation, such as compaction, foundation and bedding requirements. Compliance with these regulatory requirements would ensure that potential impacts related to geology and soils would be reduced to less than significant levels. ***No new impacts or increase in severity of impacts would occur.***

Greenhouse Gas Emissions

Similar to the proposed project, the Revised Project would not result in significant, long-term GHG emissions, as the Revised Project consists of pedestrian and bicycle improvements and would not generate vehicle trips and/or source emissions that would contribute to an increase in GHG emissions. The Revised Project would result in low levels of off-site emissions due to energy generation associated with lighting along the project segment. However, these emissions would be minimal and would not exceed the pollutant thresholds established by the BAAQMD.

As described in the 2017 IS/MND, the amortized construction emissions associated with the proposed project would be 20.4 metric tons of CO₂e per year, which is well below the annual operational threshold of 1,100 metric tons per year established by the BAAQMD. Construction of the Revised Project would utilize similar construction techniques identified in the 2017 IS/MND; therefore, construction emissions would be considered less than significant. Further, implementation of Mitigation Measure AIR-1, as discussed in the Air Quality Section, would reduce construction GHG emissions by limiting construction idling emissions.

The Revised Project would not generate significant greenhouse gas emissions, either directly or indirectly that would have a significant impact on the environment or conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. ***No new impacts or increase in severity of impacts would occur and no additional mitigation measures are required.***

Hazards and Hazardous Materials

Section VIII of the 2017 IS/MND analyzed impacts related to hazards and hazardous materials that would be associated with implementation of the proposed project. The 2017 IS/MND identified less than significant impacts related to routine transport, use, or disposal of hazardous materials, risk of upset of hazardous materials, handling hazardous materials near schools, hazardous materials sites,

and wildland fire hazards. Development of the proposed project would be subject to applicable State and federal procedures and regulations related to hazards and hazardous materials.

The 2017 IS/MND identified a potentially significant impact related to emergency response. Like the proposed project, construction activities associated with the Revised Project would require traffic controls as necessary for the proposed improvements, which could affect emergency response. Mitigation Measure T-1, identified Section XVI, Transportation/Traffic of the 2017 IS/MND, requires the preparation of a Transportation Management Plan (TMP) that would include advance notice to local emergency service providers regarding the timing, location, and duration of construction activities. With implementation of Mitigation Measure T-1, potential impacts to emergency response or emergency evacuation plans during construction would be reduced to a less-than-significant level. Mitigation Measure T-1, previously identified in the 2017 IS/MND, would remain applicable to the Revised Project.

The Revised Project would use similar construction techniques identified for the proposed project and would be subject to the same conditions with respect to hazards. Implementation of Mitigation Measure T-1 identified in the 2017 IS/MND would reduce impacts associated with emergency response to a less-than-significant level. ***No new impacts or increase in severity of impacts would occur and no additional mitigation measures are required.***

Hydrology and Water Quality

Section IX of the 2017 IS/MND analyzed impacts to hydrology and water quality associated with implementation of proposed project. The 2017 IS/MND determined that the proposed project would have a less than significant effect on water quality standards and waste discharge requirements. Like the proposed project, the Revised Project would result in a decrease in the amount of impervious surface area on the site, which would decrease the amount of pollutants discharged into downstream receiving waters compared to the existing condition. In addition, detention areas would be installed as part of the SMART Project on the east and west side of Francisco Boulevard, north of Rice Drive, adjacent to the project site. These detention areas would treat stormwater runoff, reduce volume and velocity of flow, and maintain the existing drainage pattern.

Like the proposed project, construction activities associated with the Revised Project would disturb site soils and could introduce pollutants into the stormwater. Preparation of an Erosion and Sediment Control Plan (ESCP) and implementation of construction BMPs would be required in compliance with the Statewide Phase II Permit (Water Quality Order No. 2013-0001-DWQ, NPDES General Permit No. CAS000004), and the City's Municipal Code Section 9.30.150, Erosion and Sediment Control Plan Requirements, as specified in Compliance Measure WQ-1, in the 2017 IS/MND. Adherence to regulatory requirements would ensure that potential impacts of the Revised Project are less than significant with respect to water quality.

Like the proposed project, the Revised Project would not require the use or extraction of groundwater. However, because groundwater would be encountered during construction activities, groundwater dewatering would be required. The disposal of dewatered groundwater could introduce total dissolved solids and other constituents to surface waters, impacting water quality. As

specified in Compliance Measure WQ-2, in the 2017 IS/MND, any groundwater dewatering during excavation would be conducted in accordance with the San Francisco Bay RWQCB's Groundwater General Permit, which would require testing and treatment (as necessary) of groundwater encountered during dewatering or groundwater well construction prior to release. Therefore, with implementation of Compliance Measure WQ-2, groundwater dewatering activities would not result in any impacts related to groundwater.

Similar to the proposed project, the Revised Project would not alter the course of a stream or river within the project site, or involve extensive earth-shaping operations or other activities that would alter the existing drainage or flooding pattern of the site. The project site is located within a 100-year flood hazard area. However, the Revised Project, like the proposed project, is a trail project intended to connect to existing pathways and provide a non-vehicular transportation option along Highway 101 within the public right-of-way. Implementation of the Revised Project would not include the development of any elevated structures that would impede or redirect flows compared to the existing conditions. Therefore, like the proposed project, localized flooding within the Revised Project site would not expose people or structures to a significant risk of loss, injury or death.

As discussed above, construction and operation of the Revised Project would be subject to State and regional requirements related to stormwater runoff. Required compliance with State and local regulations regarding stormwater and dewatering during construction and operation would ensure that impacts associated with hydrology and water quality would be less than significant. ***No new impacts or increase in severity of impacts would occur.***

Land Use

Section X of the 2017 IS/MND analyzed impacts to land use and planning associated with implementation of the proposed. The Revised Project would be constructed in the same vicinity as the proposed project and would be subject to the same land use plans discussed in the 2017 IS/MND, including the City of San Rafael General Plan. Similar to the proposed project, the Revised Project would not physically divide an established community or conflict with a habitat conservation plan or natural community conservation plan. The Revised Project, similar to the proposed project, is consistent with the goals and policies contained in the City of San Rafael General Plan 2020, Downtown San Rafael SMART Station Area Plan, and the City of San Rafael Municipal Code. Furthermore, the Revised Project would not change the City land use or zoning designations in the project area and is compatible with existing land uses along the alignment. ***No new impacts or increase in severity of impacts would occur.***

Mineral Resources

No impacts to mineral resources were identified in the 2017 IS/MND. Similar to the proposed project, the Revised Project would not result in the loss of availability of a known mineral resource or a locally-important mineral resource recovery site. ***No new impacts or increase in severity of impacts would occur.***

Noise

Section XII of the 2017 IS/MND analyzed noise impacts associated with the proposed project. The IS/MND identified temporary, short-term, noise impacts associated with construction of the

proposed project. Construction noise would result in a temporary or periodic increase in ambient noise levels in the project vicinity. However, it is expected that construction would result in noise levels that are lower than existing conditions due to existing vehicle traffic on the adjacent US 101 and would be similar to noise levels due to construction of the SMART project. To reduce any potential noise impact to off-site sensitive receptors, implementation of Mitigation Measure NOI-1, as identified in the 2017 IS/MND would reduce potential construction period noise impacts for the indicated sensitive receptors to less-than-significant levels.

Construction of the Revised Project would occur in the same vicinity using similar construction techniques. However, unlike the proposed project, as part of the Revised Project, the City may conduct work during nighttime hours to minimize impacts to traffic operations. Nighttime work hours would be between 8:00 p.m. and 5:00 a.m. Sunday through Thursday. Construction noise is permitted by the City when activities occur between the hours of 7:00 a.m. and 6:00 p.m., Monday through Friday and between the hours of 9:00 a.m. and 6:00 p.m. on Saturdays. Construction activity is not allowed on Sundays and holidays. Construction activities occurring outside of daytime hours may be permitted by the City if there are sufficient advantages to doing so (e.g., improved safety). The project encroachment permit will list the necessary conditions to be implemented in order to safeguard the interests of the public. Similar to the proposed project, construction noise associated with the Revised Project is not anticipated to exceed existing noise levels. However, Mitigation Measure NOI-1, as identified in the 2017 IS/MND has been modified to address potential nighttime construction work for the Revised Project. Double-underlined text represents language that has been added to the mitigation measure, and text with strikethrough represents language that has been deleted from the mitigation measure. Mitigation Measure NOI-1, as identified in the 2017 IS/MND and modified below, would remain applicable to the Revised Project.

Mitigation Measure NOI-1: The project contractor shall implement the following measures during construction of the project:

- Equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers consistent with manufacturers' standards.
- Place all stationary construction equipment so that emitted noise is directed away from sensitive receptors nearest the active project site.
- Locate equipment staging in areas that would create the greatest possible distance between construction-related noise sources and noise-sensitive receptors nearest the active project site during all project construction.
- Prohibit extended idling time of internal combustion engines.
- All noise producing construction activities shall be limited to the hours of 7:00 a.m. and 6:00 p.m. Monday through Friday and between the hours of 9:00 a.m. and 6:00 p.m. on Saturdays. No construction activity shall be allowed on Sundays and holidays. To conduct work outside of these hours, written permission from the City of San Rafael Public Works Director demonstrating sufficient cause shall be required prior to commencement of night work.

- Designate a “disturbance coordinator” who would be responsible for responding to any local complaints about construction noise. The disturbance coordinator would determine the cause of the noise complaint (e.g., starting too early, bad muffler) and would determine and implement reasonable measures warranted to correct the problem.

Implementation of Mitigation Measure NOISE-1 would reduce impacts to less than significant levels. ***No new impacts or increase in severity of impacts would occur and no additional mitigation measures that cannot be implemented by the project sponsor are required.***

Population and Housing

Section XIII of the 2017 IS/MND analyzed impacts to population and housing associated with the proposed project. No impacts to population and housing were identified in the 2017 IS/MND. Similar to the proposed project, the Revised Project would not induce substantial growth, displace any existing housing units or people, and would not necessitate the construction of replacement housing elsewhere. ***No new impacts or increase in severity of impacts would occur.***

Public Services

Section XIV of the 2017 IS/MND analyzed impacts to public services associated with the proposed project. No significant impacts were identified. Similar to the proposed project, the Revised Project would not require the construction of new or physically altered governmental facilities in order to maintain acceptable service ratios, response times, or other performance standards for fire protection, police protection, schools, parks, or other public facilities. Public services impacts would be less than significant. ***No new impacts or increase in severity of impacts would occur.***

Recreation

Section XV of the 2017 IS/MND analyzed impacts to recreation associated with the proposed project. Similar to the proposed project, implementation of the Revised Project would likely increase the use of existing and proposed trails. However, such an increase in use is not anticipated to result in a significant increase in use of recreation facilities such that substantial physical deterioration of the facility would occur or be facilitated. Like the proposed project, the Revised Project constitutes a recreation facility; implementation of the mitigation measures contained in the 2017 IS/MND would ensure that the Revised Project would not have an adverse physical effect on the environment. ***No new impacts or increase in severity of impacts would occur.***

Transportation

Section XVI of the 2017 IS/MND analyzed impacts to transportation/traffic associated with the proposed project. The IS/MND identified temporary impacts associated with traffic controls during construction that could incrementally increase emergency response times within the vicinity of the project site. Construction of the Revised Project would be located in the same location as the proposed project and would use similar construction techniques that could create impacts to emergency response times during construction. Like the proposed project, construction activities associated with the Revised Project would be conducted between the hours of 7:00 a.m. and 6:00 p.m., Monday through Friday and between the hours of 9:00 a.m. and 6:00 p.m. on Saturdays,

except when traffic or safety warrant alternate hours. Mitigation Measure T-1, identified in Section XVI, Transportation/Traffic of the 2017 IS/MND, requires the preparation of a Transportation Management Plan (TMP) that would include advance notice to local emergency service providers regarding the timing, location, and duration of construction activities. With implementation of 2014 EA Mitigation Measure T-1, potential impacts to emergency response or emergency evacuation plans during construction would be reduced to a less-than-significant level.

Unlike the proposed project, the Revised Project would result in the removal of the northbound lane of travel on Francisco Boulevard West and conversion of the northbound travel lane to a two-way cycle track with a raised landscape median. Traffic engineering analyses indicate the existing traffic control devices (i.e., traffic signals or all-way STOP intersections) can accommodate the additional traffic without significant impact to traffic operations. A *Summary of Traffic Impacts of Francisco Boulevard West One-Way Conversion* Memorandum (Traffic Analysis Memo) (City of San Rafael Public Works, May 2020) was prepared for the Revised Project to analyze the traffic impacts of eliminating the northbound travel lane on Francisco Boulevard West. The Traffic Analysis Memo is provided as an attachment to this memorandum.

To assess the potential effects of eliminating the northbound travel lane, the turning movements that would be eliminated with the conversion of Francisco Boulevard West to one-way were re-routed through the study area. Most of the re-routed trips were assumed to head north towards Second Street for a more conservative analysis, keeping re-routed vehicles in the study area. It is likely that drivers would eventually become familiar and use different routes such as staying on Andersen Drive northbound to get into the downtown area.

As shown in Table 3 in the Traffic Analysis Memo, the largest increases in vehicle delay are expected at Second Street/Lincoln Avenue and Du Bois Street/Rice Drive, where the delay for drivers is expected to increase by 4.8 seconds and 4.5 seconds respectively with the additional trips through the intersection. Decreases in delay are expected at Second Street/Francisco Boulevard West, Francisco Boulevard West/Rice Drive, and Francisco Boulevard West/Irwin Street. All intersections would operate acceptably at LOS C or above, both under existing conditions and with the conversion of Francisco Boulevard West to one-way southbound from Second Street to Rice Drive. This analysis indicates the adjacent intersections can accommodate the increase in traffic with minimal increases in delay. The Synchro analysis for all scenarios is provided as an attachment to the Traffic Analysis Memo. Therefore, traffic impacts associated with the removal of the northbound travel lane on Francisco Boulevard West would be less than significant.

Since adoption of the 2017 IS/MND, the CEQA Guidelines have been updated to remove vehicle delay and LOS have been removed from consideration under CEQA. With the current CEQA Guidelines, transportation impacts are to be evaluated based on a project's effect on vehicle miles traveled (VMT). Simultaneous with clearance of the revised *State CEQA Guidelines*, the Governor's Office of Planning and Research (OPR) released the *Technical Advisory for Evaluating Transportation Impacts under CEQA* (OPR, December 2018). Although the City has not yet adopted revised traffic

analysis guidelines, this State document provides sufficient guidance to permit the evaluation of project transportation impacts for the purposes of compliance with CEQA.

The *Technical Advisory on Evaluating Transportation Impacts under CEQA* provides examples of transportation projects unlikely to result in a substantial or measurable increase in vehicle travel. Among the examples provided are the following:

- A reduction in the number of through lanes
- The addition of new or enhanced bike or pedestrian facilities on existing streets or within existing public rights-of-way

The proposed project is consistent with the categories identified above. Therefore, the State's Technical Advisory identifies that the Revised Project is unlikely to result in a substantial or measurable increase in VMT, and the transportation impact for the purposes of CEQA would be less than significant.

Like the proposed project, the Revised Project would provide a new MUP to serve pedestrians and bicyclists. The MUP has been identified in numerous plans and policy documents as a future improvement, including the City of San Rafael Bicycle and Pedestrian Master Plan.¹ The Revised Project would not result in transportation impacts related to VMT nor would the removal of the northbound travel lane on Francisco Boulevard West result in traffic impacts to surrounding intersections. ***No new impacts or increase in severity of impacts would occur.***

Tribal Cultural Resources

Section XVII of the 2017 IS/MND analyzed impacts to tribal cultural resources associated with the proposed project. No significant impacts to tribal resources were identified. The CEQA process requires consultation with Native Americans under Assembly Bill (AB) 52. As stated in the 2017 IS/MND, the City of San Rafael invited interested Native American tribes that may be culturally or traditionally affiliated with the project site to conduct consultation. The City received no responses from the tribal representatives during the 30-day comment period. Implementation of Mitigation Measures CULT-1 and CULT-2, identified in the 2017 IS/MND would reduce any potential impacts to tribal cultural resources. ***No new impacts would occur and no additional mitigation measures are required.***

Utilities and Service Systems

Section XVIII of the 2017 IS/MND analyzed impacts to utilities and service systems associated with the proposed project. No potentially significant impacts were identified in the 2017 IS/MND. Similar to the proposed project, the Revised Project would not result in increased growth that would exceed wastewater treatment requirements, require the construction of new/expansion of existing water or wastewater treatment facilities, result in the construction or expansion of storm water drainage

¹ Alta Planning and Design, 2016. *City of San Rafael Bicycle and Pedestrian Master Plan 2011 Update*. November 18.

facilities, or generate substantial amounts of solid waste that would exceed landfill capacity. ***No new impacts or increase in severity of impacts would occur.***

Wildfire

Risks associated with wildfire were evaluate in Section VIII, Hazards and Hazardous Materials, of the 2017 IS/MND. Like the proposed project, the Revised Project is not located within a fire hazard severity zone and is located within Built and Planned Urban Land. The Revised Project would develop a MUP for pedestrians and bicyclists within existing rights-of-way. It would not introduce inappropriate uses or materials such as housing or a large amounts of fire-susceptible vegetation to the site that would increase the risk of wildland fire. ***No new impacts or increase in severity of impacts would occur.***

CONCLUSION

On the basis of the evaluation presented above, the Revised Project, if implemented, would not trigger any of the conditions listed under the CEQA Framework for Addendum section of this Addendum, requiring preparation of a subsequent or supplemental EIR. Thus, this Addendum satisfies the requirements of CEQA Guidelines Section 15162 and 15164. The changes to the MUP alignment, including the elimination of the northbound travel lane on Francisco Boulevard West to accommodate the MUP, would not introduce new significant environmental effects, substantially increase the severity of previously identified significant environmental effects, or demonstrate that mitigation measures or alternatives previously found not to be feasible would in fact be feasible. The proposed changes that would be implemented as part of the Revised Project would not alter the findings in the 2017 IS/MND. In addition, no change has occurred with respect to the circumstances surrounding the proposed project that would cause new or substantially more severe significant environmental effects than identified in the 2017 IS/MND, and no new information has become available that shows that the project would cause significant environmental effects not already analyzed in the 2017 IS/MND. Therefore, no further environmental review is required beyond this Addendum to the 2017 IS/MND.

Attachment: Updated Mitigation Monitoring and Reporting Program
Traffic Analysis Memo

MITIGATION MONITORING AND REPORTING PROGRAM

MITIGATION MONITORING AND REPORTING PROGRAM Francisco Boulevard West Multi-Use Pathway

Mitigation Measure	Implementation Procedure	Monitoring Responsibility	Monitoring / Reporting Action & Schedule	Non-Compliance Sanction/Activity	Monitoring Compliance Record (Name/Date)
III. AIR QUALITY					
<p><u>Mitigation Measure AIR-1</u>: Consistent with the Basic Construction Mitigation Measures required by the BAAQMD, the following actions shall be incorporated into construction contracts and specifications for the project:</p> <ul style="list-style-type: none"> • All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day. • All haul trucks transporting soil, sand, or other loose material off-site shall be covered. • All visible mud or dirt tracked-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited. • All vehicle speeds on unpaved roads shall be limited to 15 mph. • All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. • Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used. • Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the 	Require as a condition of approval	Planning Division	Incorporate as condition of project approval	Halt construction activities	
	Construction contractor to include construction specifications and materials in contract, and implement measures during duration of construction activities.	Building Division	Review construction specifications and materials, and retain administrative record Monitor during scheduled construction site inspections	Halt construction activities	

MITIGATION MONITORING AND REPORTING PROGRAM
Francisco Boulevard West Multi-Use Pathway

Mitigation Measure	Implementation Procedure	Monitoring Responsibility	Monitoring / Reporting Action & Schedule	Non-Compliance Sanction/Activity	Monitoring Compliance Record (Name/Date)
<p>California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.</p> <ul style="list-style-type: none"> • All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation. • A publicly-visible sign shall be posted with the telephone number and person to contact at the City of San Rafael regarding dust complaints. This person shall respond and take corrective action within 48 hours. The BAAQMD's phone number shall also be visible to ensure compliance with applicable regulations. 					
IV. BIOLOGICAL RESOURCES					
<p><u>Mitigation Measure BIO-1a:</u> In order to limit the potential for sediment laden or turbid runoff from discharges into San Rafael Creek and thence into San Pablo Bay downstream, in-water work should be restricted to low-flow periods between July 1 and November 30, unless otherwise specified by appropriate agencies. This window can be extended based on creek and river conditions, if approved in writing by the National Marine Fisheries Service (NMFS). Work from the banks, trestle, falsework, and inside closed coffer dams can occur year-round.</p>	Require as a condition of approval	Planning Division	Incorporate as condition of project approval	Deny project	
<p><u>Mitigation Measure BIO-1b:</u> A Storm Water Pollution Prevention Plan (SWPPP) should be prepared and</p> <p><i>Mitigation Monitoring and Reporting Program</i></p>	Require as a condition of	Planning Division	Incorporate as condition of project approval	Deny project	
		2	<p style="text-align: right;"><i>Francisco Boulevard West Multi-Use Pathway</i> <i>Anderson Drive to Mahon Creek Pathway</i></p>		

MITIGATION MONITORING AND REPORTING PROGRAM
Francisco Boulevard West Multi-Use Pathway

Mitigation Measure	Implementation Procedure	Monitoring Responsibility	Monitoring / Reporting Action & Schedule	Non-Compliance Sanction/Activity	Monitoring Compliance Record (Name/Date)
implemented in accordance with Regional Water Quality Control Board standards and requirements, as well as those of the City of San Rafael and Marin County.	approval Project sponsor obtains approvals from appropriate agencies prior to issuance of building permits	Building Division	Building Division verifies appropriate approvals obtained prior to issuance of building permit	Deny issuance of building permit	
<u>Mitigation Measure BIO-2a:</u> To the extent feasible, trees and shrubs in the construction zones should be trimmed or removed between September 1 and January 31 to reduce potential impacts on nesting birds. If tree and shrub removal, as well as initial ground disturbance work is conducted during the period from February 1 to August 31, a qualified wildlife biologist shall conduct preconstruction surveys for nesting birds. If tree/shrub removal or initial ground disturbance work does not commence within 10 days of the nesting bird surveys, or if such work does not commence in all areas of the project site within 10 days, then the nesting surveys will need to be repeated. If nesting birds are found, the biologist shall establish suitable buffer zones as described in Condition (b) below.	Contractor to implement BMPs during construction activities		Monitor during scheduled construction site inspections	Halt construction activities	
	Require as a condition of approval	Planning Division	Incorporate as condition of project approval	Deny project	
	Construction contractor to complete documentation prior to initiation of construction activities	Building Division	Verify appropriate documentation obtained prior to issuance of building permit. Review construction specifications and retain administrative record.	Deny issuance of building permit	
<u>Mitigation Measure BIO-2b:</u> A qualified biologist shall conduct a preconstruction survey for western pond turtle	Require as a condition of	Planning Division	Incorporate as condition of project approval	Deny project	

MITIGATION MONITORING AND REPORTING PROGRAM
Francisco Boulevard West Multi-Use Pathway

Mitigation Measure	Implementation Procedure	Monitoring Responsibility	Monitoring / Reporting Action & Schedule	Non-Compliance Sanction/Activity	Monitoring Compliance Record (Name/Date)
no more than 30 days prior to construction along the drainage ditch within the project corridor, including beneath all crossings. If the species is determined to be present in work areas, the biologist, with prior approval from the California Department of Fish and Wildlife (CDFW), may capture turtles prior to construction activities and relocate them to nearby, suitable habitat off site.	approval				
A qualified biologist shall conduct a preconstruction survey for roosting bats at all culvert and bridge crossings along and adjacent to the corridor. If the biologist determines that construction work has the potential to directly or indirectly disturb roosting bats, than CDFW shall be consulted as to appropriate impact avoidance and minimization measures. No work may occur within a 100-foot radius of a roosting site, until the CDFW consultation process has been completed and the agreed-upon avoidance/minimization measures have been implemented under the biologist's supervision.	Construction contractor to complete documentation prior to initiation of construction activities	Building Division	Verify appropriate documentation obtained prior to issuance of building permit. Review construction specifications and retain administrative record.	Deny issuance of building permit	
<u>Mitigation Measure 3a:</u> A detailed wetland Mitigation and Monitoring Plan (MMP) shall be prepared and submitted to the Corps of Engineers, Regional Water Quality Control Board, and CDFW as part of the required permit applications to these agencies under Sections 401 and 404 of the Federal Clean water Act and Section 1602 of the California Fish and Game Code. To off-set direct wetland impacts at a minimum 1:1 replacement ratio, the MMP shall provide detailed designs, performance criteria, and monitoring methods for drainage channel re-establishment at a driveway removal site. To off-set	Require as a condition of approval	Planning Division	Incorporate as condition of project approval	Deny project	
	Project sponsor obtains approvals from appropriate agencies prior to issuance of building permits	Building Division	Building Division verifies appropriate approvals obtained prior to issuance of building permit	Deny issuance of building permit	

MITIGATION MONITORING AND REPORTING PROGRAM
Francisco Boulevard West Multi-Use Pathway

Mitigation Measure	Implementation Procedure	Monitoring Responsibility	Monitoring / Reporting Action & Schedule	Non-Compliance Sanction/Activity	Monitoring Compliance Record (Name/Date)
potential indirect impacts from shading, the MMP shall include an appropriate shade-tolerant bank channel re-seeding plan for all channel bank areas disturbed by the cantilevered sections. The MUP shall also include a native riparian tree planting plan in selected locations encompassing at least 2,040 square feet of channel bank.					
<u>Mitigation Measure 3b:</u> To minimize the potential for indirect water quality impacts to wetlands in the ditch during construction, a Storm Water Pollution Prevention Plan (SWPPP) shall be prepared and implemented in accordance with Regional Water Quality Control Board standards and requirements, as well as those of the City of San Rafael and Marin County.	Require as a condition of approval	Planning Division	Incorporate as condition of project approval	Deny project	
	Project sponsor obtains approvals from appropriate agencies prior to issuance of building permits	Building Division	Building Division verifies appropriate approvals obtained prior to issuance of building permit	Deny issuance of building permit	
<u>Mitigation Measure BIO-4:</u> To the extent feasible, trees and shrubs in the construction zones shall be trimmed or removed between September 1 and January 31 to reduce potential impacts on nesting birds. If tree and shrub removal, as well as initial ground disturbance work is conducted during the period from February 1 to August 31, a qualified biologist shall conduct preconstruction surveys for nesting birds. If tree/shrub removal or initial ground disturbance work does not commence within 10 days of the nesting bird surveys, or if such work does not commence in all of the areas of the project site within 10 days, then the nesting surveys will need to be repeated.	Require as a condition of approval	Planning Division	Incorporate as condition of project approval	Deny project	
	Construction contractor to complete documentation prior to initiation of construction activities	Building Division	Verify appropriate documentation obtained prior to issuance of building permit. Review construction specifications and retain administrative record.	Deny issuance of building permit	
If an active nest is found, the bird shall be identified to species and the approximate distance from the closest work site to the nest estimated. No additional measures					

MITIGATION MONITORING AND REPORTING PROGRAM
Francisco Boulevard West Multi-Use Pathway

Mitigation Measure	Implementation Procedure	Monitoring Responsibility	Monitoring / Reporting Action & Schedule	Non-Compliance Sanction/Activity	Monitoring Compliance Record (Name/Date)
need be implemented if active nests are more than the following distances from the nearest work site: (a) 300 feet for raptors; or (b) 75 feet for other non-special-status bird species. If active nests are closer than those distances to the nearest work site and there is the potential for destruction of a nest or substantial disturbance to nesting birds due to construction activities, the biologist shall prepare a plan to establish an adequate buffer zone and to monitor nesting birds during construction. Disturbance of active nests shall be avoided to the extent possible until the biologist determines that the nests are no longer active.					
<u>Mitigation Measure BIO-5:</u> A tree planting plan entailing the planting of six native trees (resulting in a 3:1 replacement ratio) shall be prepared and implemented. The plan may include trees needed for implementation of mitigation measure d (1) above. The planted trees shall be monitored for three years following planting to verify that trees have successfully reestablished.	Require as a condition of approval	Planning Division	Incorporate as condition of project approval	Deny project	
	Project sponsor prepares plan prior issuance of a building permit. Implements plan and monitoring for three years following construction.	Building Division	Building Division reviews plan prior to issuance of building permit Verify annual monitoring to ensure trees have reestablished.	Deny issuance of building permit	
V. CULTURAL RESOURCES					
<u>Mitigation Measure CULT-1:</u> An archaeologist who meets the Secretary of the Interior's <i>Professional Qualifications Standards</i> for Archeology shall be onsite during construction-related ground disturbance activities (i.e., grading and excavation). Monitoring shall continue at this	Require as a condition of approval	Planning Division	Incorporate as condition of project approval	Deny project	
	Construction contractor to	Building Division	Review construction	Halt construction activities	
<i>Mitigation Monitoring and Reporting Program</i>		6			<i>Francisco Boulevard West Multi-Use Pathway Anderson Drive to Mahon Creek Pathway</i>

MITIGATION MONITORING AND REPORTING PROGRAM
Francisco Boulevard West Multi-Use Pathway

Mitigation Measure	Implementation Procedure	Monitoring Responsibility	Monitoring / Reporting Action & Schedule	Non-Compliance Sanction/Activity	Monitoring Compliance Record (Name/Date)
<p>location until the archaeologist determines that there is a low potential for subsurface archaeological deposits.</p> <p>Should an archaeological deposit be encountered during project subsurface construction, all ground-disturbing activities within 25 feet shall be redirected and the on-site archaeologist shall assess the deposit, consult with agencies as appropriate, and make recommendations for the treatment of the discovery. The City shall be notified by the construction contractor within 24 hours of the encounter. If found to be significant by the on-site archaeologist (i.e., eligible for listing in the California Register of Historical Resources), the City shall be responsible for funding and overseeing implementation of appropriate mitigation measures. Mitigation measures may include, but would not be limited to, recording the archaeological deposit, data recovery and analysis, and public outreach. Upon completion of the selected mitigations, a report documenting methods, findings, and recommendations shall be prepared and submitted to the City for review, and the final report shall be submitted to the Northwest Information Center at Sonoma State University. Significant archaeological materials shall be submitted to an appropriate local curation facility and used for future research and public interpretive displays, as appropriate.</p>	<p>include construction specifications and materials in contract, and implement measures during duration of construction activities.</p>		<p>specifications and materials, and retain administrative record</p> <p>Monitor during scheduled construction site inspections</p>		
<p><u>Mitigation/Compliance Measure CULT-2:</u> If unknown, precontact or historic-period archaeological materials are encountered during project activities that are not archaeologically monitored, all work within 25 feet of the find shall halt until a qualified archaeologist can evaluate</p>	<p>Require as a condition of approval</p>	<p>Planning Division</p>	<p>Incorporate as condition of project approval</p>	<p>Deny project</p>	
	<p>Construction contractor to</p>	<p>Building Division</p>	<p>Review construction</p>	<p>Halt construction activities</p>	

MITIGATION MONITORING AND REPORTING PROGRAM
Francisco Boulevard West Multi-Use Pathway

Mitigation Measure	Implementation Procedure	Monitoring Responsibility	Monitoring / Reporting Action & Schedule	Non-Compliance Sanction/Activity	Monitoring Compliance Record (Name/Date)
the find and make recommendations. Cultural resources materials may include pre-contact resources such as flaked and ground stone tools and debris, shell, bone, ceramics, and fire-affected rock, as well as historic resources such as glass, metal, wood, brick, or structural remnants. If the qualified archaeologist determines that the discovery represents a potentially significant cultural resource, additional investigations shall be required to mitigate adverse impacts from project implementation. These additional studies may include, but are not limited to, avoidance, test excavation, or other forms of significance evaluations.	include construction specifications and materials in contract, and implement measures during duration of construction activities.		specifications and materials, and retain administrative record Monitor during scheduled construction site inspections		
<u>Mitigation/Compliance Measure CULT-3:</u> If paleontological deposits are identified during project construction activity, all ground-disturbing activities within 25 feet shall be redirected and a qualified paleontologist shall be contacted to review the find. The project team, the City, and the paleontologist shall develop and implement a plan for impact avoidance. Should avoidance be infeasible due to engineering requirements, the project team shall develop and implement a plan to offset the loss of paleontological data through the implementation of a data recovery project, including paleontological recovery. If determined to be a unique paleontological resource, the potentially significant impacts caused by construction may be mitigated through monitoring during construction activity (beyond the area of the initial find), recovery and analysis of the deposit by the paleontologist, resource recordation, and report preparation.	Require as a condition of approval	Planning Division	Incorporate as condition of project approval	Deny project	
	Construction contractor to include construction specifications and materials in contract, and implement measures during duration of construction activities.	Building Division	Review construction specifications and materials, and retain administrative record Monitor during scheduled construction site inspections	Halt construction activities	

MITIGATION MONITORING AND REPORTING PROGRAM
Francisco Boulevard West Multi-Use Pathway

Mitigation Measure	Implementation Procedure	Monitoring Responsibility	Monitoring / Reporting Action & Schedule	Non-Compliance Sanction/Activity	Monitoring Compliance Record (Name/Date)
<u>Mitigation Measure CULT-4:</u> If human remains are identified during construction and cannot be preserved in place, the City shall fund: 1) the removal and documentation of the human remains from the project corridor by a qualified archaeologist meeting the Secretary of the Interior's <i>Professional Qualifications Standards</i> for Archeology, 2) the scientific analysis and of the remains by a qualified archaeologist, should such analysis be permitted by the Native American Most Likely Descendent, and 3) the reburial of the remains, as appropriate. All excavation, analysis, and reburial of Native American human remains shall be done in consultation with the Native American Most Likely Descendent, as identified by the California Native American Heritage Commission.	Require as a condition of approval	Planning Division	Incorporate as condition of project approval	Deny project	
	Construction contractor to include construction specifications and materials in contract, and implement measures during duration of construction activities.	Building Division	Review construction specifications and materials, and retain administrative record Monitor during scheduled construction site inspections	Halt construction activities	
IX. HYDROLOGY AND WATER QUALITY					
<u>Compliance Measure WQ-1:</u> Prior to the issuance of a building permit, the Construction Contractor shall prepare and submit an Erosion and Sediment Control Plan (ESCP) to the City of San Rafael Engineer, or appropriate designee for review and approval, as specified in the Statewide Phase II Permit (Water Quality Order No. 2013-0001-DWQ, NPDES General Permit No. CAS000004), and the City of San Rafael Municipal Code Section 9.30.150, Erosion and Sediment Control Plan Requirements. The ESCP will follow the most recent version of the Marin County Stormwater Pollution Prevention Program (MCSTOPPP) Construction Erosion and Sediment Control Plan package and include, at a minimum, the following: (1) description of the project and soil disturbing; (2) site	Require as a condition of approval	Planning Division	Incorporate as condition of project approval	Deny project	
	Project sponsor obtains approvals from appropriate agencies prior to issuance of building permits	Building Division	Building Division verifies appropriate approvals obtained prior to issuance of building permit	Deny issuance of building permit	

MITIGATION MONITORING AND REPORTING PROGRAM
Francisco Boulevard West Multi-Use Pathway

Mitigation Measure	Implementation Procedure	Monitoring Responsibility	Monitoring / Reporting Action & Schedule	Non-Compliance Sanction/Activity	Monitoring Compliance Record (Name/Date)
specific construction-phase Best Management Practices (BMPs); (3) rationale for selecting the BMPs; (4) list of applicable outside agency permits associated with the soil disturbing activity; (5) financial security that temporary measures will be implemented and maintained during construction; and (6) approved ESCP will be a condition of the issuance of the appropriate permit issued by the City for the proposed project.					
<u>Compliance Measure WQ-2:</u> All groundwater dewatering activities shall comply with the requirements of the General Waste Discharge Requirements for Discharge or Reuse of Extracted Brackish Groundwater, Reverse Osmosis Concentrate Resulting from Treated Brackish Groundwater, and Extracted Groundwater from Structure Dewatering Requiring Treatment (Order No. R2-2012-0060, National Pollutant Discharge Elimination System No. CAG912004), or subsequent permit. This compliance shall include submission of a Notice of Intent (NOI) for coverage under the permit to the San Francisco Bay Regional Water Quality Control Board at least 45 days prior to the start of dewatering and compliance with all applicable provisions in the permit, including water sampling, analysis, and reporting of dewatering-related discharges.	Require as a condition of approval	Planning Division	Incorporate as condition of project approval	Deny project	
	Project sponsor obtains approvals from appropriate agencies prior to issuance of building permits	Building Division	Building Division verifies appropriate approvals obtained prior to issuance of building permit	Deny issuance of building permit	
XII. NOISE					
<u>Mitigation Measure NOI-1:</u> The project contractor shall implement the following measures during construction of the project:	Require as a condition of approval	Planning Division	Incorporate as condition of project approval	Deny project	

MITIGATION MONITORING AND REPORTING PROGRAM
Francisco Boulevard West Multi-Use Pathway

Mitigation Measure	Implementation Procedure	Monitoring Responsibility	Monitoring / Reporting Action & Schedule	Non-Compliance Sanction/Activity	Monitoring Compliance Record (Name/Date)
<ul style="list-style-type: none"> • Equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers consistent with manufacturers' standards. • Place all stationary construction equipment so that emitted noise is directed away from sensitive receptors nearest the active project site. • Locate equipment staging in areas that would create the greatest possible distance between construction-related noise sources and noise-sensitive receptors nearest the active project site during all project construction. • Prohibit extended idling time of internal combustion engines. • All noise producing construction activities shall be limited to the hours of 7:00 a.m. and 6:00 p.m. Monday through Friday and between the hours of 9:00 a.m. and 6:00 p.m. on Saturdays. No construction activity shall be allowed on Sundays and holidays. <u>To conduct work outside of these hours, written permission from the City of San Rafael Public Works Director demonstrating sufficient cause shall be required prior to commencement of night work.</u> • Designate a "disturbance coordinator" who would be responsible for responding to any local complaints about construction noise. The disturbance coordinator would determine the cause of the noise complaint (e.g., starting too early, bad muffler) and would determine and implement reasonable measures warranted to 	Construction contractor to include construction specifications and materials in contract, and implement measures during duration of construction activities.	Building Division	<p>Review construction specifications and materials, and retain administrative record</p> <p>Monitor during scheduled construction site inspections</p>	Halt construction activities	

MITIGATION MONITORING AND REPORTING PROGRAM
Francisco Boulevard West Multi-Use Pathway

Mitigation Measure	Implementation Procedure	Monitoring Responsibility	Monitoring / Reporting Action & Schedule	Non-Compliance Sanction/Activity	Monitoring Compliance Record (Name/Date)
correct the problem.					
XVI. TRANSPORTATION/TRAFFIC					
<u>2014 EA Mitigation Measure T-1:</u> SMART will develop a construction phasing/sequencing and traffic management plan to be developed and implemented by the contractor to minimize Proposed Action effects during construction. This plan will define each construction operation, approximate duration, and the necessary traffic controls to maintain access for vehicles. The plan will require the movement of heavy equipment and transport materials during off-peak travel demand periods. To reduce the effect on parking supply, the plan will encourage workers to carpool and use public transit. To address safety issues, clearly defined access for non-motorized modes will be maintained during construction. Staging areas will be fenced and signed. Where roadways and sidewalks are impassable for bicycles and pedestrians, safe alternate routes and pathways will be signed and maintained during construction. This plan will be coordinated with the cities of San Rafael and Larkspur, local fire and police departments, and transit providers.	Require as a condition of approval	Planning Division	Incorporate as condition of project approval	Deny project	
	Project sponsor obtains approvals from appropriate agencies prior to issuance of building permits	Building Division	Building Division verifies appropriate approvals obtained prior to issuance of building permit	Deny issuance of building permit	



DEPARTMENT OF PUBLIC WORKS

Memorandum

DATE: May 12, 2020 DPW FILE NO: 18.06.52

TO: Bill Guerin, Director of Public Works
Paul Jensen, Director of Community Development

FROM: Rafat Raie, Deputy Director
Lauren Davini, Traffic Engineer

C: Hunter Young, Assistant Director – City Engineer
April Miller, Senior Engineer

RE: Summary of Traffic Impacts of Francisco Boulevard West One-Way Conversion

Executive Summary

The purpose of this memorandum is to document the conceptual traffic analyses of a project idea to convert Francisco Boulevard west from a two-way to a one-way operation between Second Street and Rice Drive. It is also to help the City with making the proper environmental findings to establish the conceptual plan.

The results of this traffic conversion showed minor changes in the level of service at two intersections during the afternoon peak hours. This change is below the threshold identified in the significance criteria of the 2020 City of San Rafael General Plan.

Background

Second Street is a one-way street in the eastbound direction and is a primary access between West Marin and US 101. Francisco Boulevard West is a two-way, two lane frontage road that generally runs parallel to US 101 from Second Street to its intersection with the US 101 southbound ramps. It provides access to a variety of businesses, including a grocery store, car dealerships, auto repair and tire shops, and other retail. In 2018, the roadway and the railroad tracks “swapped places” in order to minimize the number of rail crossings in the area. The average daily traffic (ADT) on Francisco Boulevard West south of Second Street is 6,500 and south of Rice Drive is 4,500 based on data collected December 2019. The ADT on Lincoln Avenue is 6,400.

With the completion of the Sonoma-Marín Area Rail Transit (SMART) extension to Larkspur, new challenges have surfaced at the intersection of Second Street and Tamalpais West Avenue-Francisco West Boulevard. The ADT on Second Street is 30,000 so the timing of the traffic signals in the eastbound

direction is prioritized over the north-south traffic. This has resulted in issues with the vehicles wishing to make a northbound right turn onto Second Street and stopping on the tracks because of the limited storage space between Francisco Boulevard West and the railroad tracks. Drivers in the northbound right turn lane continue to make the turn not realizing they do not have the room to clear the railroad tracks of Second Street due to the skewed intersection. Vehicles trapped on the tracks end up causing major delays that often gridlock a big portion of the downtown network and create potentially unsafe conditions. This can also affect southbound right-turning traffic from Tamalpais Avenue, which is an important exit route for some of the buses from the Transit Center.

City staff and consultants have implemented many changes over the past few months since SMART trains have started service, including:

- Modified traffic signal phasing in attempt to accommodate the northbound right-turning vehicles from Francisco Boulevard West;
- Adjusted traffic signal coordination to minimize the queuing of vehicles across the tracks;
- Coordinated with SMART staff to minimize delay for vehicles in the area and reduce the amount of time the traffic signals would be affected due to crossing trains, i.e., have the northbound and southbound trains “meet” between Second and Third Street.

While these modifications have improved conditions in the area slightly, the issue with the northbound right-turning vehicles from Francisco Boulevard West onto Second Street persists.

Project Scope

Because of the safety concerns stated previously, the City is contemplating the closure of Francisco Boulevard West to northbound traffic from Rice Drive to Second Street. This scenario would move southbound vehicle traffic to the eastern most lane.

The scope of the project was chosen to analyze the potential impact of the diverted northbound traffic to parallel facilities including eight intersections in the immediate area. Below is Figure 1, showing the project limits and adjacent intersections.

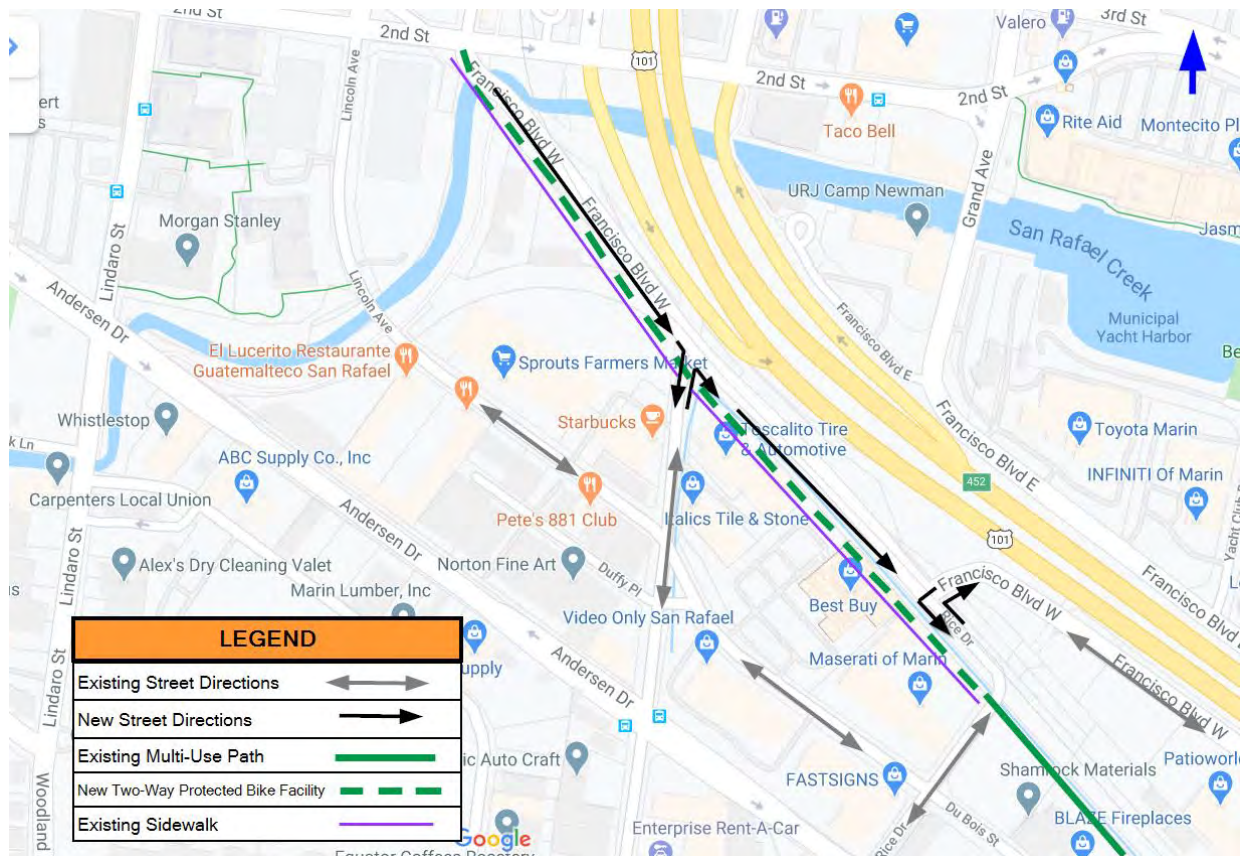


Figure 1 Project Limits and Adjacent Intersections

Traffic Analysis

Study Intersections

The eight intersections shown below in Table 1 were included in the traffic study. Peak traffic congestion in the region typically occurs during the commute peak periods between 7:00 a.m. and 9:00 a.m. and 4:00 p.m. and 6:00 p.m. The peak hour is defined as the highest one-hour volume counted during each of the two-hour time periods.

Table 1. Study Intersections

ID	Intersection
516	Second St/Lincoln Ave
524	Second St/Francisco W-Tamalpais
561	Du Bois St/Rice Dr
562	Du Bois St/Lincoln Ave-Irwin St
580	Andersen Dr/Irwin St
581	Franisco W/Rice Dr
813	Franisco W/Irwin St
1620	Andersen Dr/Rice Dr

Analysis Methodology

Intersection operating conditions are assessed through an evaluation of peak hour Levels of Service (LOS). The LOS methodology qualitatively characterizes traffic conditions through a measurement of overall congestion. There are six levels of operation or “grades,” ranging from LOS A to LOS F. LOS A represents free-flowing traffic conditions, where motorists are affected little by other motorists, and the level of comfort and convenience to the motorist is high. LOS F is characterized by congested conditions, where motorists usually experience discomfort, inconvenience, and long delays and have little, if any, freedom to choose speeds or lanes of travel. Table 2 shows the Level of Service criteria for signalized and unsignalized intersections.

Table 2. LOS Criteria for Signalized and Unsignalized Intersections			
LOS	Description	Overall Delay (seconds/vehicle)	
		Signalized Intersections	Unsignalized Intersections
A	Little or no delay	≤ 10.0	≤ 10.0
B	Short traffic delay	>10.0 and ≤ 20.0	>10.0 and ≤ 15.0
C	Average delay	>20.0 and ≤ 35.0	>15.0 and ≤ 25.0
D	Long delay	>35.0 and ≤ 55.0	>25.0 and ≤ 35.0
E	Very long delay	> 55.0 and ≤ 80.0	> 35.0 and ≤ 50.0
F	Extreme delay	> 80.0	> 50.0

Source: Highway Capacity Manual, Transportation Research Board, 2000.

For all study intersections (signalized and unsignalized), traffic conditions were evaluated using Synchro software and the 2000 Highway Capacity Manual (HCM) operations methodology. 2010 HCM operations methodology was not used because of challenges analyzing intersections with shared and exclusive lanes and signalized intersections with non-NEMA phasing. The delays presented in this document represent average delays for all vehicles entering a given intersection.

The Synchro 8 software package was used to analyze the operating conditions and LOS at the study intersections.

Level of Service Standards

The Circulation Element of the City of San Rafael General Plan 2020 establishes policies and standards for traffic levels of service. The LOS standard that applies to the study intersections would be that signalized intersections must maintain a LOS D during the peak hours of operation.

The General Plan 2020 Draft EIR states the following standards for unsignalized intersections:

- If an unsignalized intersection with baseline traffic volumes is operating at an acceptable LOS (LOS A, B, C, D, or E) and deteriorates to an unacceptable operation (LOS F), this impact is significant. *It should be noted that LOS is evaluated for intersections overall, and not by any single approach or movement.*
- If an unsignalized intersection with baseline traffic volumes is already operating at LOS F and there is an increase in the delay of five seconds or more, this impact is significant.

For signalized intersections, the following standards are used:

- If a signalized intersection with baseline traffic volumes is operating at an acceptable LOS and deteriorates to an unacceptable operation (LOS E or F), this impact is significant.
- If a signalized intersection with baseline traffic volumes is at an unacceptable LOS or already operating at LOS F and there is an increase in the delay of five seconds or more, this impact is significant.

Trip Distribution Assumptions

The turning movements that would be eliminated with the conversion of Francisco Boulevard West to one-way were rerouted through the study area. Most of the rerouted trips were assumed to head north towards Second Street for a more conservative analysis. This keeps the re-routed vehicles in the study area but it's likely that drivers will eventually become familiar and use different routes such as staying on Andersen Drive northbound to get into the downtown area. The attached exhibits show the anticipated additional traffic distributed at each of the study intersections.

Operational Analysis

Turning movement counts at the study intersections were collected Fall 2017 and December 2019. It should be noted that volumes in the first half of December are typically higher than other times of the year due to extra trips for holiday shopping, so this analysis is conservative.

Existing and One-Way Conversion Levels of Service

Table 3 shows the intersection operation under Existing volumes and lane geometry and Existing volumes with the proposed one-way conversion of Francisco Boulevard West from Second Street to Rice Drive and re-routed volumes.

Table 3. Existing and One-Way Conversion Peak Hour Intersection Levels of Service									
ID	Intersection	AM				PM			
		Existing		One-Way		Existing		One-Way	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
516	Second St/Lincoln Ave	19.6	B	19.4	B	20.0	B	24.8	C
524	Second St/Francisco W-Tamalpais	9.4	A	9.4	A	14.2	B	12.8	B
561	Du Bois St/Rice Dr	1.6	A	4.5	A	1.6	A	6.1	A
562	Du Bois St/Lincoln Ave-Irwin St	9.5	A	10.8	A	12.3	B	17.8	C
580	Andersen Dr/Irwin St	19.2	B	19.4	B	19.2	B	19.6	B
581	Francoisco W/Rice Dr	5.8	A	5.7	A	6.8	A	6.5	A
813	Francoisco W/Irwin St	8.8	A	7.4	A	10.7	A	9.2	A
1620	Andersen Dr/Rice Dr	0.2	A	0.9	A	0.2	A	1.4	A

Note: Delay is reported in seconds (s)

The largest increases are expected at Second Street/Lincoln Avenue and Du Bois Street/Rice Drive, where the delay for drivers is expected to increase by 4.8 seconds and 4.5 seconds respectively with the

additional trips through the intersection. Decreases in delay are expected at Second Street/Francisco Boulevard West, Francisco Boulevard West/Rice Drive, and Francisco Boulevard West/Irwin Street. The intersections operate acceptably at LOS C or better, both under existing conditions and with the conversion of Francisco Boulevard West to one-way southbound from Second Street to Rice Drive. This analysis indicates the adjacent intersections can accommodate the increase in traffic with minimal increases in delay. The Synchro analysis for all scenarios is enclosed.

Benefits and Conclusions

The benefits of the one-way conversions are obvious from a safety point of view because of the elimination of a major potential conflict and many hours of delays. By eliminating the northbound right turn from Francisco Boulevard West onto Second Street, the likelihood of vehicles getting stuck on the tracks is minimized. This benefits vehicles and buses making a southbound right from Tamalpais Avenue onto Second Street.

Another major consequential benefit is the availability of paved surface width that could accommodate pedestrian and bicycle traffic. It has been a long-range plan of the community and region to complete the North-South Greenway, which is a multi-use path (MUP) planned to generally follow the path of the Sonoma-Marín Area Rail Transit (SMART) line. The path has been completed to the south from Rice Drive to the Cal Park Tunnel (city limits) and north of downtown from Mission Avenue to the top of Lincoln Avenue.

One of the concerns from the business community is a decrease in business because of a potential decrease in pass-by traffic. This issue may be addressed with directional signing. With much of the guidance occurring through online applications, the City would contact all navigation systems such as Google and Yahoo to make this minor change to the existing street network.

Enclosures: Trip Re-route Assumptions
 Synchro Analysis

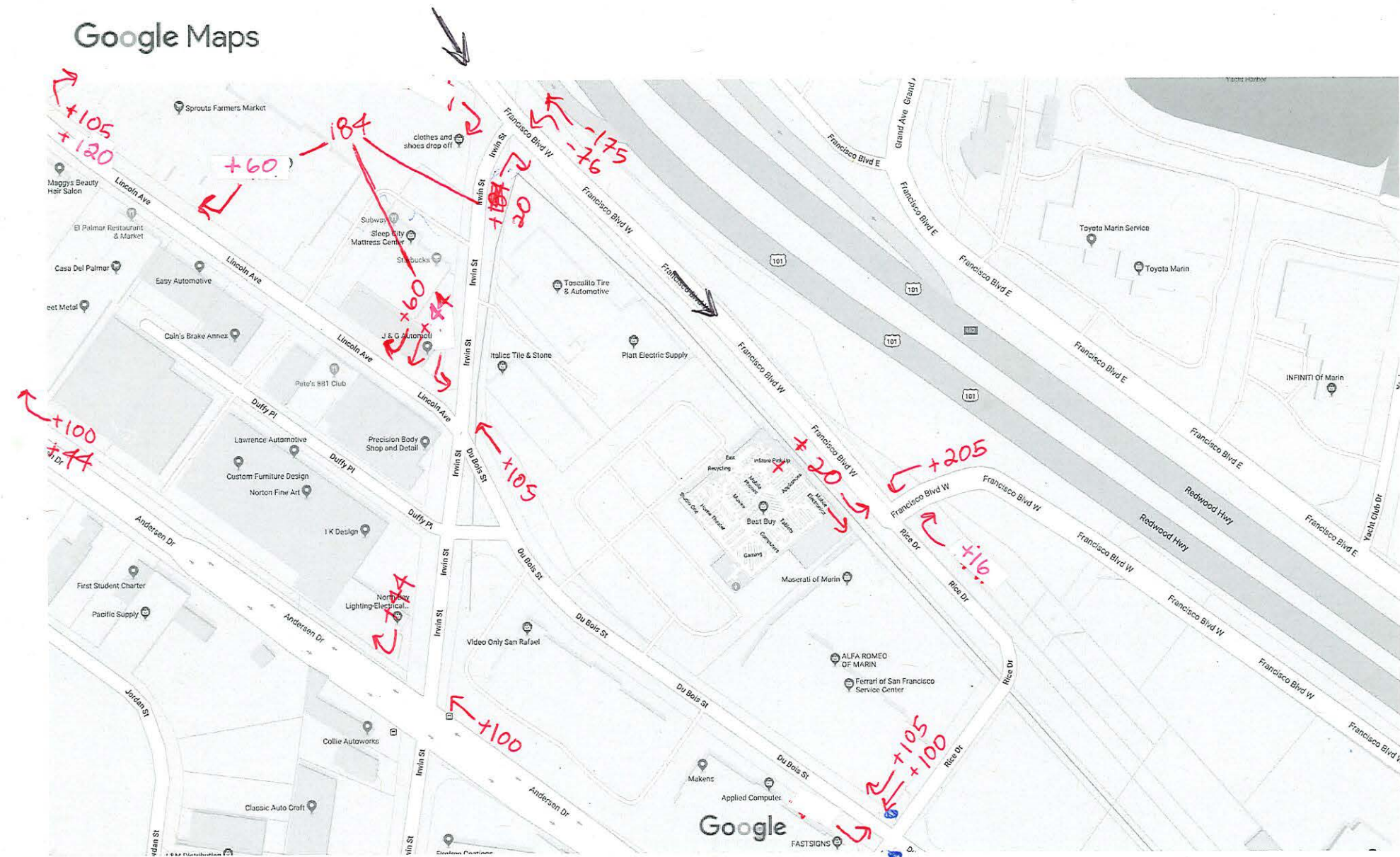
Google Maps



AM Reroute
SB only 2nd - Rice

Map data ©2020 50 ft

Google Maps



Map data ©2020 50 ft


















PM Reroute
SB only 2nd-Rice

$+100$

HCM Signalized Intersection Capacity Analysis

516: Lincoln & 2nd



















04/23/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	118	1598	37	0	0	0	0	86	44	115	225	0
Future Volume (vph)	118	1598	37	0	0	0	0	86	44	115	225	0
Ideal Flow (vphpl)	1600	1600	1600	1800	1800	1800	1800	1600	1600	1600	1600	1800
Lane Width	12	10	10	12	12	12	12	12	12	9	9	9
Total Lost time (s)		3.9	3.9					3.9	3.9		3.8	
Lane Util. Factor		0.86	1.00					1.00	1.00		0.95	
Frpb, ped/bikes		1.00	0.96					1.00	0.97		1.00	
Flpb, ped/bikes		1.00	1.00					1.00	1.00		1.00	
Frt		1.00	0.85					1.00	0.85		1.00	
Flt Protected		1.00	1.00					1.00	1.00		0.98	
Satd. Flow (prot)		4508	1071					1412	1168		2243	
Flt Permitted		1.00	1.00					1.00	1.00		0.81	
Satd. Flow (perm)		4508	1071					1412	1168		1854	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	131	1776	41	0	0	0	0	96	49	128	250	0
RTOR Reduction (vph)	0	0	18	0	0	0	0	0	16	0	0	0
Lane Group Flow (vph)	0	1907	23	0	0	0	0	96	33	0	378	0
Confl. Peds. (#/hr)	19		31						15			
Confl. Bikes (#/hr)			7						3			
Parking (#/hr)										2	2	
Turn Type	Perm	NA	Perm					NA	Perm	Perm	NA	
Protected Phases		2						4			8	
Permitted Phases	2		2						4	8		
Actuated Green, G (s)		49.9	49.9					29.9	29.9		30.0	
Effective Green, g (s)		51.1	51.1					31.1	31.1		31.2	
Actuated g/C Ratio		0.57	0.57					0.35	0.35		0.35	
Clearance Time (s)		5.1	5.1					5.1	5.1		5.0	
Lane Grp Cap (vph)		2559	608					487	403		642	
v/s Ratio Prot								0.07				
v/s Ratio Perm		0.42	0.02						0.03		c0.20	
v/c Ratio		0.75	0.04					0.20	0.08		0.59	
Uniform Delay, d1		14.6	8.6					20.7	19.8		24.1	
Progression Factor		1.00	1.00					1.00	1.00		1.00	
Incremental Delay, d2		2.0	0.1					0.9	0.4		3.9	
Delay (s)		16.6	8.7					21.6	20.2		28.1	
Level of Service		B	A					C	C		C	
Approach Delay (s)		16.4			0.0			21.1			28.1	
Approach LOS		B			A			C			C	
Intersection Summary												
HCM 2000 Control Delay			18.5		HCM 2000 Level of Service					B		
HCM 2000 Volume to Capacity ratio			0.69									
Actuated Cycle Length (s)			90.0		Sum of lost time (s)					7.8		
Intersection Capacity Utilization			62.2%		ICU Level of Service					B		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

542: Francisco W./Tamalpais & 2nd

















04/23/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	1672	48	0	0	0	0	46	232	88	190	0
Future Volume (vph)	37	1672	48	0	0	0	0	46	232	88	190	0
Ideal Flow (vphpl)	1600	1600	1600	1800	1800	1800	1800	1600	1600	1600	1600	1800
Lane Width	12	11	10	12	12	12	12	10	13	10	12	12
Total Lost time (s)		4.1	4.1					3.2	3.2	3.6	3.6	
Lane Util. Factor		0.86	1.00					1.00	1.00	1.00	1.00	
Frpb, ped/bikes		1.00	0.92					1.00	0.98	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	0.85	1.00	1.00	
Flt Protected		1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)		4678	1030					1318	1220	1105	1249	
Flt Permitted		1.00	1.00					1.00	1.00	0.72	1.00	
Satd. Flow (perm)		4678	1030					1318	1220	842	1249	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	41	1858	53	0	0	0	0	51	258	98	211	0
RTOR Reduction (vph)	0	0	22	0	0	0	0	0	21	0	0	0
Lane Group Flow (vph)	0	1899	31	0	0	0	0	51	237	98	211	0
Confl. Peds. (#/hr)	65		34						3	3		
Confl. Bikes (#/hr)			5						3			
Parking (#/hr)										3	3	
Turn Type	Perm	NA	Perm					NA	Perm	Perm	NA	
Protected Phases		2						4			8	
Permitted Phases	2		2						4	8		
Actuated Green, G (s)		50.4	50.4					29.3	29.3	28.9	28.9	
Effective Green, g (s)		51.9	51.9					30.8	30.8	30.4	30.4	
Actuated g/C Ratio		0.58	0.58					0.34	0.34	0.34	0.34	
Clearance Time (s)		5.6	5.6					4.7	4.7	5.1	5.1	
Lane Grp Cap (vph)		2697	593					451	417	284	421	
v/s Ratio Prot								0.04			0.17	
v/s Ratio Perm		0.41	0.03						0.19	0.12		
v/c Ratio		0.70	0.05					0.11	0.57	0.35	0.50	
Uniform Delay, d1		13.6	8.3					20.3	24.2	22.3	23.8	
Progression Factor		0.19	0.00					1.00	1.00	1.00	1.00	
Incremental Delay, d2		1.1	0.1					0.5	5.5	3.3	4.2	
Delay (s)		3.7	0.1					20.8	29.7	25.6	28.0	
Level of Service		A	A					C	C	C	C	
Approach Delay (s)		3.6			0.0			28.2			27.2	
Approach LOS		A			A			C			C	
Intersection Summary												
HCM 2000 Control Delay		9.4										
HCM 2000 Volume to Capacity ratio		0.66										
Actuated Cycle Length (s)		90.0										
Intersection Capacity Utilization		68.7%										
Analysis Period (min)		15										
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

561: Du Bois & Rice

















04/23/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	3	3	13	1	15	2	131	31	13	99	4
Future Volume (Veh/h)	5	3	3	13	1	15	2	131	31	13	99	4
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			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
Hourly flow rate (vph)	5	3	3	14	1	16	2	142	34	14	108	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)								1150				
pX, platoon unblocked												
vC, conflicting volume	318	318	110	306	303	159	112			176		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	318	318	110	306	303	159	112			176		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	99	100	98	100	98	100			99		
cM capacity (veh/h)	618	592	943	637	603	886	1478			1400		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	11	31	178	126								
Volume Left	5	14	2	14								
Volume Right	3	16	34	4								
cSH	673	743	1478	1400								
Volume to Capacity	0.02	0.04	0.00	0.01								
Queue Length 95th (ft)	1	3	0	1								
Control Delay (s)	10.4	10.1	0.1	0.9								
Lane LOS	B	B	A	A								
Approach Delay (s)	10.4	10.1	0.1	0.9								
Approach LOS	B	B										
Intersection Summary												
Average Delay			1.6									
Intersection Capacity Utilization			24.5%		ICU Level of Service					A		
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

562: Du Bois/Lincoln & Irwin.





















04/23/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	64	134	12	20	92	26	16	61	53	22	67	54
Future Volume (vph)	64	134	12	20	92	26	16	61	53	22	67	54
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
Hourly flow rate (vph)	70	146	13	22	100	28	17	66	58	24	73	59
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	229	150	141	156								
Volume Left (vph)	70	22	17	24								
Volume Right (vph)	13	28	58	59								
Hadj (s)	0.06	-0.05	-0.19	-0.16								
Departure Headway (s)	4.9	4.9	4.9	4.9								
Degree Utilization, x	0.31	0.20	0.19	0.21								
Capacity (veh/h)	685	674	672	671								
Control Delay (s)	10.1	9.2	9.0	9.2								
Approach Delay (s)	10.1	9.2	9.0	9.2								
Approach LOS	B	A	A	A								
Intersection Summary												
Delay	9.5											
Level of Service	A											
Intersection Capacity Utilization	38.0%			ICU Level of Service					A			
Analysis Period (min)	15											

HCM Signalized Intersection Capacity Analysis

579: Du Bois & Andersen

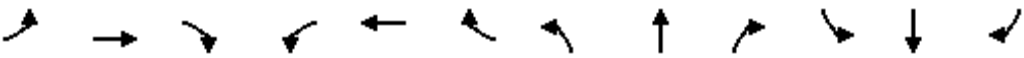








04/23/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	403	55	42	273	178	63	116	254	85	56	9
Future Volume (vph)	10	403	55	42	273	178	63	116	254	85	56	9
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	1900	1900	1900	1900	1900	1900
Lane Width	11	10	12	11	10	12	11	12	12	11	12	12
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	0.95		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.94		1.00	0.90		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1801	1786		1801	1684		1711	1594		1711	1815	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1801	1786		1801	1684		1711	1594		1711	1815	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	11	448	61	47	303	198	70	129	282	94	62	10
RTOR Reduction (vph)	0	5	0	0	24	0	0	88	0	0	6	0
Lane Group Flow (vph)	11	504	0	47	477	0	70	323	0	94	66	0
Confl. Peds. (#/hr)			15			16			25			6
Confl. Bikes (#/hr)			2			7			1			2
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	1.5	24.2		4.5	27.2		4.6	18.5		6.7	20.6	
Effective Green, g (s)	2.5	26.1		5.5	29.1		5.6	20.1		7.7	22.2	
Actuated g/C Ratio	0.04	0.37		0.08	0.41		0.08	0.28		0.11	0.31	
Clearance Time (s)	4.0	4.9		4.0	4.9		4.0	4.6		4.0	4.6	
Vehicle Extension (s)	2.0	3.0		2.0	3.0		2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	63	652		138	686		134	448		184	564	
v/s Ratio Prot	0.01	c0.28		c0.03	c0.28		0.04	c0.20		c0.05	0.04	
v/s Ratio Perm												
v/c Ratio	0.17	0.77		0.34	0.69		0.52	0.72		0.51	0.12	
Uniform Delay, d1	33.4	20.0		31.2	17.5		31.6	23.1		30.1	17.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	5.7		0.5	3.1		1.7	5.6		1.0	0.1	
Delay (s)	33.9	25.7		31.8	20.5		33.3	28.7		31.1	17.7	
Level of Service	C	C		C	C		C	C		C	B	
Approach Delay (s)		25.9			21.5			29.4			25.3	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			25.4			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.66									
Actuated Cycle Length (s)			71.4			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			72.3%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

580: Irwin. & Andersen






04/23/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	440	64	29	236	62	49	180	36	56	144	18
Future Volume (vph)	39	440	64	29	236	62	49	180	36	56	144	18
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	1900	1900	1900	1900	1900	1900
Lane Width	11	11	12	11	10	12	11	12	12	11	13	12
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		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	
Frt	1.00	0.98		1.00	0.97		1.00	0.97		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1801	1847		1801	1762		1711	1801		1711	1885	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1801	1847		1801	1762		1711	1801		1711	1885	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	43	489	71	32	262	69	54	200	40	62	160	20
RTOR Reduction (vph)	0	5	0	0	10	0	0	9	0	0	6	0
Lane Group Flow (vph)	43	555	0	32	321	0	54	231	0	62	174	0
Confl. Peds. (#/hr)			18			3			19			12
Confl. Bikes (#/hr)			2			4						1
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	3.8	25.2		2.2	23.6		4.6	14.0		4.6	14.0	
Effective Green, g (s)	4.8	27.1		3.2	25.5		5.6	15.2		5.6	15.2	
Actuated g/C Ratio	0.08	0.43		0.05	0.40		0.09	0.24		0.09	0.24	
Clearance Time (s)	4.0	4.9		4.0	4.9		4.0	4.2		4.0	4.2	
Vehicle Extension (s)	2.0	3.0		2.0	3.0		2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	137	793		91	712		151	433		151	454	
v/s Ratio Prot	c0.02	c0.30		0.02	0.18		0.03	c0.13		c0.04	0.09	
v/s Ratio Perm												
v/c Ratio	0.31	0.70		0.35	0.45		0.36	0.53		0.41	0.38	
Uniform Delay, d1	27.6	14.7		28.9	13.7		27.1	20.9		27.2	20.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	2.7		0.9	0.5		0.5	1.3		0.7	0.5	
Delay (s)	28.1	17.4		29.8	14.2		27.6	22.1		27.9	20.6	
Level of Service	C	B		C	B		C	C		C	C	
Approach Delay (s)		18.2			15.5			23.1			22.4	
Approach LOS		B			B			C			C	
Intersection Summary												
HCM 2000 Control Delay			19.2			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.60									
Actuated Cycle Length (s)			63.1			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			62.1%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

581: Rice Dr & Francisco W.










04/23/2020

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	22	74	4	67	121	5
Future Volume (vph)	22	74	4	67	121	5
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0		4.0	4.0		4.0
Lane Util. Factor	1.00		1.00	1.00		1.00
Frt	0.90		1.00	0.85		1.00
Flt Protected	0.99		1.00	1.00		0.95
Satd. Flow (prot)	1563		1765	1500		1684
Flt Permitted	0.99		1.00	1.00		0.73
Satd. Flow (perm)	1563		1765	1500		1291
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	24	80	4	73	132	5
RTOR Reduction (vph)	0	0	0	48	0	0
Lane Group Flow (vph)	104	0	4	25	0	137
Turn Type	Prot		NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases				2	6	
Actuated Green, G (s)	7.0		7.7	7.7		7.7
Effective Green, g (s)	7.0		7.7	7.7		7.7
Actuated g/C Ratio	0.31		0.34	0.34		0.34
Clearance Time (s)	4.0		4.0	4.0		4.0
Vehicle Extension (s)	3.0		3.0	3.0		3.0
Lane Grp Cap (vph)	481		598	508		437
v/s Ratio Prot	c0.07		0.00			
v/s Ratio Perm				0.02		c0.11
v/c Ratio	0.22		0.01	0.05		0.31
Uniform Delay, d1	5.8		5.0	5.0		5.5
Progression Factor	1.00		1.00	1.00		1.00
Incremental Delay, d2	0.2		0.0	0.0		0.4
Delay (s)	6.0		5.0	5.1		6.0
Level of Service	A		A	A		A
Approach Delay (s)	6.0		5.1			6.0
Approach LOS	A		A			A
Intersection Summary						
HCM 2000 Control Delay			5.8		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.27			
Actuated Cycle Length (s)			22.7		Sum of lost time (s)	8.0
Intersection Capacity Utilization			26.8%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

HCM Unsignalized Intersection Capacity Analysis

813: Francisco W. & Irwin

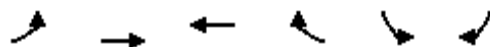
04/23/2020

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	152	72	46	28	52	102
Future Volume (vph)	152	72	46	28	52	102
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	165	78	50	30	57	111
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total (vph)	243	80	168			
Volume Left (vph)	165	50	0			
Volume Right (vph)	78	0	111			
Hadj (s)	-0.02	0.16	-0.36			
Departure Headway (s)	4.4	4.8	4.2			
Degree Utilization, x	0.30	0.11	0.20			
Capacity (veh/h)	767	699	799			
Control Delay (s)	9.3	8.4	8.3			
Approach Delay (s)	9.3	8.4	8.3			
Approach LOS	A	A	A			
Intersection Summary						
Delay			8.8			
Level of Service			A			
Intersection Capacity Utilization			37.3%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

1620: Andersen & Rice

04/23/2020





















Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↱			↗
Traffic Volume (veh/h)	0	500	307	38	0	20
Future Volume (Veh/h)	0	500	307	38	0	20
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	556	341	42	0	22
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)		676	1004			
pX, platoon unblocked					0.78	
vC, conflicting volume	383				918	362
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	383				755	362
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	97
cM capacity (veh/h)	1175				294	683
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	556	383	22			
Volume Left	0	0	0			
Volume Right	0	42	22			
cSH	1700	1700	683			
Volume to Capacity	0.33	0.23	0.03			
Queue Length 95th (ft)	0	0	2			
Control Delay (s)	0.0	0.0	10.4			
Lane LOS			B			
Approach Delay (s)	0.0	0.0	10.4			
Approach LOS			B			
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			31.1%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis

516: Lincoln & 2nd



















01/08/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	191	1674	47	0	0	0	0	180	126	114	152	0
Future Volume (vph)	191	1674	47	0	0	0	0	180	126	114	152	0
Ideal Flow (vphpl)	1600	1600	1600	1800	1800	1800	1800	1600	1600	1600	1600	1800
Lane Width	12	10	10	12	12	12	12	12	12	9	9	9
Total Lost time (s)		3.9	3.9					3.9	3.9		3.8	
Lane Util. Factor		0.86	1.00					1.00	1.00		0.95	
Frpb, ped/bikes		1.00	0.96					1.00	0.97		1.00	
Flpb, ped/bikes		1.00	1.00					1.00	1.00		1.00	
Frt		1.00	0.85					1.00	0.85		1.00	
Flt Protected		0.99	1.00					1.00	1.00		0.98	
Satd. Flow (prot)		4496	1071					1412	1168		2233	
Flt Permitted		0.99	1.00					1.00	1.00		0.71	
Satd. Flow (perm)		4496	1071					1412	1168		1624	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	212	1860	52	0	0	0	0	200	140	127	169	0
RTOR Reduction (vph)	0	0	22	0	0	0	0	0	16	0	0	0
Lane Group Flow (vph)	0	2072	30	0	0	0	0	200	124	0	296	0
Confl. Peds. (#/hr)	19		31						15			
Confl. Bikes (#/hr)			7						3			
Parking (#/hr)										2	2	
Turn Type	Perm	NA	Perm					NA	Perm	Perm	NA	
Protected Phases		2						4			8	
Permitted Phases	2		2						4	8		
Actuated Green, G (s)		49.9	49.9					29.9	29.9		30.0	
Effective Green, g (s)		51.1	51.1					31.1	31.1		31.2	
Actuated g/C Ratio		0.57	0.57					0.35	0.35		0.35	
Clearance Time (s)		5.1	5.1					5.1	5.1		5.0	
Lane Grp Cap (vph)		2552	608					487	403		562	
v/s Ratio Prot								0.14				
v/s Ratio Perm		0.46	0.03						0.11		c0.18	
v/c Ratio		0.81	0.05					0.41	0.31		0.53	
Uniform Delay, d1		15.6	8.6					22.5	21.6		23.5	
Progression Factor		1.00	1.00					1.00	1.00		1.00	
Incremental Delay, d2		2.9	0.2					2.6	2.0		3.5	
Delay (s)		18.5	8.8					25.0	23.5		27.0	
Level of Service		B	A					C	C		C	
Approach Delay (s)		18.3			0.0			24.4			27.0	
Approach LOS		B			A			C			C	
Intersection Summary												
HCM 2000 Control Delay			20.0		HCM 2000 Level of Service					B		
HCM 2000 Volume to Capacity ratio			0.70									
Actuated Cycle Length (s)			90.0		Sum of lost time (s)					7.8		
Intersection Capacity Utilization			68.3%		ICU Level of Service					C		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

542: Francisco W./Tamalpais & 2nd

















01/08/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	1771	109	0	0	0	0	131	332	74	187	0
Future Volume (vph)	34	1771	109	0	0	0	0	131	332	74	187	0
Ideal Flow (vphpl)	1600	1600	1600	1800	1800	1800	1800	1600	1600	1600	1600	1800
Lane Width	12	11	10	12	12	12	12	10	13	10	12	12
Total Lost time (s)		4.1	4.1					3.2	3.2	3.6	3.6	
Lane Util. Factor		0.86	1.00					1.00	1.00	1.00	1.00	
Frpb, ped/bikes		1.00	0.92					1.00	0.98	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	0.85	1.00	1.00	
Flt Protected		1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)		4680	1029					1318	1220	1105	1249	
Flt Permitted		1.00	1.00					1.00	1.00	0.63	1.00	
Satd. Flow (perm)		4680	1029					1318	1220	728	1249	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	38	1968	121	0	0	0	0	146	369	82	208	0
RTOR Reduction (vph)	0	0	54	0	0	0	0	0	20	0	0	0
Lane Group Flow (vph)	0	2006	67	0	0	0	0	146	349	82	208	0
Confl. Peds. (#/hr)	65		34						3	3		
Confl. Bikes (#/hr)			5						3			
Parking (#/hr)										3	3	
Turn Type	Perm	NA	Perm					NA	Perm	Perm	NA	
Protected Phases		2						4			8	
Permitted Phases	2		2						4	8		
Actuated Green, G (s)		48.4	48.4					31.3	31.3	30.9	30.9	
Effective Green, g (s)		49.9	49.9					32.8	32.8	32.4	32.4	
Actuated g/C Ratio		0.55	0.55					0.36	0.36	0.36	0.36	
Clearance Time (s)		5.6	5.6					4.7	4.7	5.1	5.1	
Lane Grp Cap (vph)		2594	570					480	444	262	449	
v/s Ratio Prot								0.11			0.17	
v/s Ratio Perm		0.43	0.07						0.29	0.11		
v/c Ratio		0.77	0.12					0.30	0.79	0.31	0.46	
Uniform Delay, d1		15.6	9.6					20.4	25.5	20.8	22.1	
Progression Factor		0.45	0.03					1.00	1.00	1.00	1.00	
Incremental Delay, d2		1.5	0.3					1.6	13.1	3.1	3.4	
Delay (s)		8.4	0.6					22.1	38.5	23.9	25.5	
Level of Service		A	A					C	D	C	C	
Approach Delay (s)		8.0			0.0			33.9			25.1	
Approach LOS		A			A			C			C	
Intersection Summary												
HCM 2000 Control Delay		14.2										
HCM 2000 Volume to Capacity ratio		0.78										
Actuated Cycle Length (s)		90.0										
Intersection Capacity Utilization		78.7%										
Analysis Period (min)		15										
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

561: Du Bois & Rice

















01/08/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	2	0	4	7	16	2	125	19	20	122	8
Future Volume (Veh/h)	5	2	0	4	7	16	2	125	19	20	122	8
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			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
Hourly flow rate (vph)	5	2	0	4	8	17	2	136	21	22	133	9
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None								None			
Median storage (veh)												
Upstream signal (ft)	1150											
pX, platoon unblocked												
vC, conflicting volume	353	342	138	333	336	146	142	157				
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	353	342	138	333	336	146	142	157				
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1	4.1				
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2	2.2				
p0 queue free %	99	100	100	99	99	98	100	98				
cM capacity (veh/h)	577	570	911	611	574	901	1441	1423				
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	7	29	159	164								
Volume Left	5	4	2	22								
Volume Right	0	17	21	9								
cSH	575	737	1441	1423								
Volume to Capacity	0.01	0.04	0.00	0.02								
Queue Length 95th (ft)	1	3	0	1								
Control Delay (s)	11.3	10.1	0.1	1.1								
Lane LOS	B	B	A	A								
Approach Delay (s)	11.3	10.1	0.1	1.1								
Approach LOS	B	B										
Intersection Summary												
Average Delay	1.6											
Intersection Capacity Utilization	30.1%			ICU Level of Service					A			
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis

562: Du Bois/Lincoln & Irwin.





















01/08/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	83	179	10	47	102	26	8	131	108	33	78	83
Future Volume (vph)	83	179	10	47	102	26	8	131	108	33	78	83
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
Hourly flow rate (vph)	90	195	11	51	111	28	9	142	117	36	85	90
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	296	190	268	211								
Volume Left (vph)	90	51	9	36								
Volume Right (vph)	11	28	117	90								
Hadj (s)	0.07	0.00	-0.22	-0.19								
Departure Headway (s)	5.7	5.8	5.5	5.6								
Degree Utilization, x	0.47	0.31	0.41	0.33								
Capacity (veh/h)	587	553	597	573								
Control Delay (s)	13.6	11.4	12.2	11.4								
Approach Delay (s)	13.6	11.4	12.2	11.4								
Approach LOS	B	B	B	B								
Intersection Summary												
Delay				12.3								
Level of Service				B								
Intersection Capacity Utilization				55.6%	ICU Level of Service	B						
Analysis Period (min)				15								

HCM Signalized Intersection Capacity Analysis

579: Du Bois & Andersen










01/08/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	403	55	42	273	178	63	116	254	85	56	9
Future Volume (vph)	10	403	55	42	273	178	63	116	254	85	56	9
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	1900	1900	1900	1900	1900	1900
Lane Width	11	10	12	11	10	12	11	12	12	11	12	12
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	0.95		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.94		1.00	0.90		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1801	1786		1801	1684		1711	1594		1711	1815	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1801	1786		1801	1684		1711	1594		1711	1815	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	11	448	61	47	303	198	70	129	282	94	62	10
RTOR Reduction (vph)	0	5	0	0	24	0	0	88	0	0	6	0
Lane Group Flow (vph)	11	504	0	47	477	0	70	323	0	94	66	0
Confl. Peds. (#/hr)			15			16			25			6
Confl. Bikes (#/hr)			2			7			1			2
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	1.5	24.2		4.5	27.2		4.6	18.5		6.7	20.6	
Effective Green, g (s)	2.5	26.1		5.5	29.1		5.6	20.1		7.7	22.2	
Actuated g/C Ratio	0.04	0.37		0.08	0.41		0.08	0.28		0.11	0.31	
Clearance Time (s)	4.0	4.9		4.0	4.9		4.0	4.6		4.0	4.6	
Vehicle Extension (s)	2.0	3.0		2.0	3.0		2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	63	652		138	686		134	448		184	564	
v/s Ratio Prot	0.01	c0.28		c0.03	c0.28		0.04	c0.20		c0.05	0.04	
v/s Ratio Perm												
v/c Ratio	0.17	0.77		0.34	0.69		0.52	0.72		0.51	0.12	
Uniform Delay, d1	33.4	20.0		31.2	17.5		31.6	23.1		30.1	17.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	5.7		0.5	3.1		1.7	5.6		1.0	0.1	
Delay (s)	33.9	25.7		31.8	20.5		33.3	28.7		31.1	17.7	
Level of Service	C	C		C	C		C	C		C	B	
Approach Delay (s)		25.9			21.5			29.4			25.3	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			25.4			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.66									
Actuated Cycle Length (s)			71.4			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			72.3%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

580: Irwin. & Andersen

01/08/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	440	64	29	236	62	49	180	36	56	144	18
Future Volume (vph)	39	440	64	29	236	62	49	180	36	56	144	18
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	1900	1900	1900	1900	1900	1900
Lane Width	11	11	12	11	10	12	11	12	12	11	13	12
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		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	
Frt	1.00	0.98		1.00	0.97		1.00	0.97		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1801	1847		1801	1762		1711	1801		1711	1885	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1801	1847		1801	1762		1711	1801		1711	1885	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	43	489	71	32	262	69	54	200	40	62	160	20
RTOR Reduction (vph)	0	5	0	0	10	0	0	9	0	0	6	0
Lane Group Flow (vph)	43	555	0	32	321	0	54	231	0	62	174	0
Confl. Peds. (#/hr)			18			3			19			12
Confl. Bikes (#/hr)			2			4						1
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	3.8	25.2		2.2	23.6		4.6	14.0		4.6	14.0	
Effective Green, g (s)	4.8	27.1		3.2	25.5		5.6	15.2		5.6	15.2	
Actuated g/C Ratio	0.08	0.43		0.05	0.40		0.09	0.24		0.09	0.24	
Clearance Time (s)	4.0	4.9		4.0	4.9		4.0	4.2		4.0	4.2	
Vehicle Extension (s)	2.0	3.0		2.0	3.0		2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	137	793		91	712		151	433		151	454	
v/s Ratio Prot	c0.02	c0.30		0.02	0.18		0.03	c0.13		c0.04	0.09	
v/s Ratio Perm												
v/c Ratio	0.31	0.70		0.35	0.45		0.36	0.53		0.41	0.38	
Uniform Delay, d1	27.6	14.7		28.9	13.7		27.1	20.9		27.2	20.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	2.7		0.9	0.5		0.5	1.3		0.7	0.5	
Delay (s)	28.1	17.4		29.8	14.2		27.6	22.1		27.9	20.6	
Level of Service	C	B		C	B		C	C		C	C	
Approach Delay (s)		18.2			15.5			23.1			22.4	
Approach LOS		B			B			C			C	
Intersection Summary												
HCM 2000 Control Delay			19.2			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.60									
Actuated Cycle Length (s)			63.1			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			62.1%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

581: Rice Dr & Francisco W.

01/08/2020




Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	18	205	16	32	122	11
Future Volume (vph)	18	205	16	32	122	11
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0		4.0	4.0		4.0
Lane Util. Factor	1.00		1.00	1.00		1.00
Frt	0.88		1.00	0.85		1.00
Flt Protected	1.00		1.00	1.00		0.96
Satd. Flow (prot)	1540		1765	1500		1687
Flt Permitted	1.00		1.00	1.00		0.73
Satd. Flow (perm)	1540		1765	1500		1291
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	20	223	17	35	133	12
RTOR Reduction (vph)	0	0	0	24	0	0
Lane Group Flow (vph)	243	0	17	11	0	145
Turn Type	Prot		NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases				2	6	
Actuated Green, G (s)	9.6		8.6	8.6		8.6
Effective Green, g (s)	9.6		8.6	8.6		8.6
Actuated g/C Ratio	0.37		0.33	0.33		0.33
Clearance Time (s)	4.0		4.0	4.0		4.0
Vehicle Extension (s)	3.0		3.0	3.0		3.0
Lane Grp Cap (vph)	564		579	492		423
v/s Ratio Prot	c0.16		0.01			
v/s Ratio Perm				0.01		c0.11
v/c Ratio	0.43		0.03	0.02		0.34
Uniform Delay, d1	6.2		6.0	6.0		6.7
Progression Factor	1.00		1.00	1.00		1.00
Incremental Delay, d2	0.5		0.0	0.0		0.5
Delay (s)	6.8		6.0	6.0		7.1
Level of Service	A		A	A		A
Approach Delay (s)	6.8		6.0			7.1
Approach LOS	A		A			A
Intersection Summary						
HCM 2000 Control Delay			6.8		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.39			
Actuated Cycle Length (s)			26.2		Sum of lost time (s)	8.0
Intersection Capacity Utilization			35.5%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

HCM Unsignalized Intersection Capacity Analysis

813: Francisco W. & Irwin

01/08/2020



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	184	77	76	175	65	107
Future Volume (vph)	184	77	76	175	65	107
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	200	84	83	190	71	116
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total (vph)	284	273	187			
Volume Left (vph)	200	83	0			
Volume Right (vph)	84	0	116			
Hadj (s)	0.00	0.09	-0.34			
Departure Headway (s)	5.0	5.0	4.7			
Degree Utilization, x	0.40	0.38	0.24			
Capacity (veh/h)	671	684	712			
Control Delay (s)	11.3	11.0	9.2			
Approach Delay (s)	11.3	11.0	9.2			
Approach LOS	B	B	A			
Intersection Summary						
Delay			10.7			
Level of Service			B			
Intersection Capacity Utilization			50.4%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

1620: Andersen & Rice

01/08/2020




















Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↱			↘
Traffic Volume (veh/h)	0	500	307	38	0	20
Future Volume (Veh/h)	0	500	307	38	0	20
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	556	341	42	0	22
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)		676	1004			
pX, platoon unblocked					0.78	
vC, conflicting volume	383				918	362
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	383				755	362
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	97
cM capacity (veh/h)	1175				294	683
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	556	383	22			
Volume Left	0	0	0			
Volume Right	0	42	22			
cSH	1700	1700	683			
Volume to Capacity	0.33	0.23	0.03			
Queue Length 95th (ft)	0	0	2			
Control Delay (s)	0.0	0.0	10.4			
Lane LOS			B			
Approach Delay (s)	0.0	0.0	10.4			
Approach LOS			B			
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			31.1%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis

516: Lincoln & 2nd

















04/23/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	118	1598	37	0	0	0	0	86	218	115	225	0
Future Volume (vph)	118	1598	37	0	0	0	0	86	218	115	225	0
Ideal Flow (vphpl)	1600	1600	1600	1800	1800	1800	1800	1600	1600	1600	1600	1800
Lane Width	12	10	10	12	12	12	12	12	12	9	9	9
Total Lost time (s)		3.9	3.9					3.9	3.9		3.8	
Lane Util. Factor		0.86	1.00					1.00	1.00		0.95	
Frpb, ped/bikes		1.00	0.96					1.00	0.97		1.00	
Flpb, ped/bikes		1.00	1.00					1.00	1.00		1.00	
Frt		1.00	0.85					1.00	0.85		1.00	
Flt Protected		1.00	1.00					1.00	1.00		0.98	
Satd. Flow (prot)		4508	1071					1412	1168		2243	
Flt Permitted		1.00	1.00					1.00	1.00		0.81	
Satd. Flow (perm)		4508	1071					1412	1168		1854	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	131	1776	41	0	0	0	0	96	242	128	250	0
RTOR Reduction (vph)	0	0	18	0	0	0	0	0	16	0	0	0
Lane Group Flow (vph)	0	1907	23	0	0	0	0	96	226	0	378	0
Confl. Peds. (#/hr)	19		31						15			
Confl. Bikes (#/hr)			7						3			
Parking (#/hr)										2	2	
Turn Type	Perm	NA	Perm					NA	Perm	Perm	NA	
Protected Phases		2						4			8	
Permitted Phases	2		2						4	8		
Actuated Green, G (s)		49.9	49.9					29.9	29.9		30.0	
Effective Green, g (s)		51.1	51.1					31.1	31.1		31.2	
Actuated g/C Ratio		0.57	0.57					0.35	0.35		0.35	
Clearance Time (s)		5.1	5.1					5.1	5.1		5.0	
Lane Grp Cap (vph)		2559	608					487	403		642	
v/s Ratio Prot								0.07				
v/s Ratio Perm		0.42	0.02						0.19		c0.20	
v/c Ratio		0.75	0.04					0.20	0.56		0.59	
Uniform Delay, d1		14.6	8.6					20.7	23.9		24.1	
Progression Factor		1.00	1.00					1.00	1.00		1.00	
Incremental Delay, d2		2.0	0.1					0.9	5.5		3.9	
Delay (s)		16.6	8.7					21.6	29.4		28.1	
Level of Service		B	A					C	C		C	
Approach Delay (s)		16.4			0.0			27.2			28.1	
Approach LOS		B			A			C			C	
Intersection Summary												
HCM 2000 Control Delay			19.4		HCM 2000 Level of Service					B		
HCM 2000 Volume to Capacity ratio			0.69									
Actuated Cycle Length (s)			90.0		Sum of lost time (s)					7.8		
Intersection Capacity Utilization			74.8%		ICU Level of Service					D		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

542: Francisco W./Tamalpais & 2nd

















04/23/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	1672	48	0	0	0	0	0	0	88	190	0
Future Volume (vph)	37	1672	48	0	0	0	0	0	0	88	190	0
Ideal Flow (vphpl)	1600	1600	1600	1800	1800	1800	1800	1600	1600	1600	1600	1800
Lane Width	12	11	10	12	12	12	12	10	13	10	12	12
Total Lost time (s)		4.1	4.1							3.6	3.6	
Lane Util. Factor		0.86	1.00							1.00	1.00	
Frpb, ped/bikes		1.00	0.92							1.00	1.00	
Flpb, ped/bikes		1.00	1.00							1.00	1.00	
Frt		1.00	0.85							1.00	1.00	
Flt Protected		1.00	1.00							0.95	1.00	
Satd. Flow (prot)		4678	1030							1105	1249	
Flt Permitted		1.00	1.00							0.95	1.00	
Satd. Flow (perm)		4678	1030							1105	1249	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	41	1858	53	0	0	0	0	0	0	98	211	0
RTOR Reduction (vph)	0	0	22	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1899	31	0	0	0	0	0	0	98	211	0
Confl. Peds. (#/hr)	65		34							3	3	
Confl. Bikes (#/hr)			5							3		
Parking (#/hr)										3	3	
Turn Type	Perm	NA	Perm							Perm	NA	
Protected Phases		2									8	
Permitted Phases	2		2							8		
Actuated Green, G (s)		50.4	50.4							28.9	28.9	
Effective Green, g (s)		51.9	51.9							30.4	30.4	
Actuated g/C Ratio		0.58	0.58							0.34	0.34	
Clearance Time (s)		5.6	5.6							5.1	5.1	
Lane Grp Cap (vph)		2697	593							373	421	
v/s Ratio Prot											c0.17	
v/s Ratio Perm		0.41	0.03							0.09		
v/c Ratio		0.70	0.05							0.26	0.50	
Uniform Delay, d1		13.6	8.3							21.7	23.8	
Progression Factor		0.42	0.07							1.00	1.00	
Incremental Delay, d2		1.1	0.1							1.7	4.2	
Delay (s)		6.8	0.7							23.4	28.0	
Level of Service		A	A							C	C	
Approach Delay (s)		6.6			0.0			0.0			26.5	
Approach LOS		A			A			A			C	
Intersection Summary												
HCM 2000 Control Delay			9.4		HCM 2000 Level of Service					A		
HCM 2000 Volume to Capacity ratio			0.63									
Actuated Cycle Length (s)			90.0		Sum of lost time (s)					7.7		
Intersection Capacity Utilization			52.7%		ICU Level of Service					A		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

561: Du Bois & Rice

















04/23/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	3	3	13	53	89	2	131	31	13	99	4
Future Volume (Veh/h)	5	3	3	13	53	89	2	131	31	13	99	4
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			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
Hourly flow rate (vph)	5	3	3	14	58	97	2	142	34	14	108	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)								1150				
pX, platoon unblocked												
vC, conflicting volume	427	318	110	306	303	159	112			176		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	427	318	110	306	303	159	112			176		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	99	100	98	90	89	100			99		
cM capacity (veh/h)	440	592	943	637	603	886	1478			1400		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	11	169	178	126								
Volume Left	5	14	2	14								
Volume Right	3	97	34	4								
cSH	561	743	1478	1400								
Volume to Capacity	0.02	0.23	0.00	0.01								
Queue Length 95th (ft)	1	22	0	1								
Control Delay (s)	11.5	11.3	0.1	0.9								
Lane LOS	B	B	A	A								
Approach Delay (s)	11.5	11.3	0.1	0.9								
Approach LOS	B	B										
Intersection Summary												
Average Delay			4.5									
Intersection Capacity Utilization			30.7%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

562: Du Bois/Lincoln & Irwin.





















04/23/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	64	134	12	20	122	76	16	135	53	22	67	54
Future Volume (vph)	64	134	12	20	122	76	16	135	53	22	67	54
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
Hourly flow rate (vph)	70	146	13	22	133	83	17	147	58	24	73	59
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	229	238	222	156								
Volume Left (vph)	70	22	17	24								
Volume Right (vph)	13	83	58	59								
Hadj (s)	0.06	-0.16	-0.11	-0.16								
Departure Headway (s)	5.4	5.2	5.3	5.4								
Degree Utilization, x	0.34	0.34	0.33	0.23								
Capacity (veh/h)	617	643	614	600								
Control Delay (s)	11.2	10.8	10.9	10.0								
Approach Delay (s)	11.2	10.8	10.9	10.0								
Approach LOS	B	B	B	B								
Intersection Summary												
Delay				10.8								
Level of Service				B								
Intersection Capacity Utilization				48.7%	ICU Level of Service	A						
Analysis Period (min)				15								

HCM Signalized Intersection Capacity Analysis

579: Du Bois & Andersen





















04/23/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	403	55	42	273	178	63	116	254	85	56	9
Future Volume (vph)	10	403	55	42	273	178	63	116	254	85	56	9
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	1900	1900	1900	1900	1900	1900
Lane Width	11	10	12	11	10	12	11	12	12	11	12	12
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	0.95		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.94		1.00	0.90		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1801	1786		1801	1684		1711	1594		1711	1815	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1801	1786		1801	1684		1711	1594		1711	1815	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	11	448	61	47	303	198	70	129	282	94	62	10
RTOR Reduction (vph)	0	5	0	0	24	0	0	88	0	0	6	0
Lane Group Flow (vph)	11	504	0	47	477	0	70	323	0	94	66	0
Confl. Peds. (#/hr)			15			16			25			6
Confl. Bikes (#/hr)			2			7			1			2
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	1.5	24.2		4.5	27.2		4.6	18.5		6.7	20.6	
Effective Green, g (s)	2.5	26.1		5.5	29.1		5.6	20.1		7.7	22.2	
Actuated g/C Ratio	0.04	0.37		0.08	0.41		0.08	0.28		0.11	0.31	
Clearance Time (s)	4.0	4.9		4.0	4.9		4.0	4.6		4.0	4.6	
Vehicle Extension (s)	2.0	3.0		2.0	3.0		2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	63	652		138	686		134	448		184	564	
v/s Ratio Prot	0.01	c0.28		c0.03	c0.28		0.04	c0.20		c0.05	0.04	
v/s Ratio Perm												
v/c Ratio	0.17	0.77		0.34	0.69		0.52	0.72		0.51	0.12	
Uniform Delay, d1	33.4	20.0		31.2	17.5		31.6	23.1		30.1	17.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	5.7		0.5	3.1		1.7	5.6		1.0	0.1	
Delay (s)	33.9	25.7		31.8	20.5		33.3	28.7		31.1	17.7	
Level of Service	C	C		C	C		C	C		C	B	
Approach Delay (s)		25.9			21.5			29.4			25.3	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			25.4			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.66									
Actuated Cycle Length (s)			71.4			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			72.3%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

580: Irwin. & Andersen





04/23/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	440	64	29	288	62	49	180	36	56	144	48
Future Volume (vph)	39	440	64	29	288	62	49	180	36	56	144	48
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	1900	1900	1900	1900	1900	1900
Lane Width	11	11	12	11	10	12	11	12	12	11	13	12
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	0.99		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	0.98		1.00	0.97		1.00	0.97		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1801	1847		1801	1772		1711	1801		1711	1836	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1801	1847		1801	1772		1711	1801		1711	1836	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	43	489	71	32	320	69	54	200	40	62	160	53
RTOR Reduction (vph)	0	5	0	0	8	0	0	9	0	0	15	0
Lane Group Flow (vph)	43	555	0	32	381	0	54	231	0	62	198	0
Confl. Peds. (#/hr)			18			3			19			12
Confl. Bikes (#/hr)			2			4						1
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	3.7	26.0		2.3	24.6		4.6	14.1		4.6	14.1	
Effective Green, g (s)	4.7	27.9		3.3	26.5		5.6	15.3		5.6	15.3	
Actuated g/C Ratio	0.07	0.44		0.05	0.41		0.09	0.24		0.09	0.24	
Clearance Time (s)	4.0	4.9		4.0	4.9		4.0	4.2		4.0	4.2	
Vehicle Extension (s)	2.0	3.0		2.0	3.0		2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	132	803		92	732		149	429		149	438	
v/s Ratio Prot	c0.02	c0.30		0.02	0.22		0.03	c0.13		c0.04	0.11	
v/s Ratio Perm												
v/c Ratio	0.33	0.69		0.35	0.52		0.36	0.54		0.42	0.45	
Uniform Delay, d1	28.2	14.6		29.4	14.1		27.6	21.3		27.7	20.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	2.6		0.8	0.7		0.5	1.3		0.7	0.7	
Delay (s)	28.7	17.2		30.2	14.7		28.1	22.6		28.4	21.6	
Level of Service	C	B		C	B		C	C		C	C	
Approach Delay (s)		18.0			15.9			23.6			23.1	
Approach LOS		B			B			C			C	
Intersection Summary												
HCM 2000 Control Delay			19.4			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.60									
Actuated Cycle Length (s)			64.1			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			62.1%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

581: Rice Dr & Francisco W.

04/23/2020



						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	96	0	0	71	143	5
Future Volume (vph)	96	0	0	71	143	5
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0			4.0		4.0
Lane Util. Factor	1.00			1.00		1.00
Frt	1.00			0.86		1.00
Flt Protected	0.95			1.00		0.95
Satd. Flow (prot)	1676			1526		1683
Flt Permitted	0.95			1.00		0.95
Satd. Flow (perm)	1676			1526		1683
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	104	0	0	77	155	5
RTOR Reduction (vph)	0	0	0	51	0	0
Lane Group Flow (vph)	104	0	0	26	0	160
Turn Type	Prot			Perm	Perm	NA
Protected Phases	8					6
Permitted Phases				2	6	
Actuated Green, G (s)	6.9			7.5		7.5
Effective Green, g (s)	6.9			7.5		7.5
Actuated g/C Ratio	0.31			0.33		0.33
Clearance Time (s)	4.0			4.0		4.0
Vehicle Extension (s)	3.0			3.0		3.0
Lane Grp Cap (vph)	516			510		563
v/s Ratio Prot	c0.06					
v/s Ratio Perm				0.02		0.10
v/c Ratio	0.20			0.05		0.28
Uniform Delay, d1	5.7			5.0		5.5
Progression Factor	1.00			1.00		1.00
Incremental Delay, d2	0.2			0.0		0.3
Delay (s)	5.9			5.1		5.8
Level of Service	A			A		A
Approach Delay (s)	5.9		5.1			5.8
Approach LOS	A		A			A
Intersection Summary						
HCM 2000 Control Delay			5.7		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.24			
Actuated Cycle Length (s)			22.4		Sum of lost time (s)	8.0
Intersection Capacity Utilization			20.9%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

HCM Unsignalized Intersection Capacity Analysis

813: Francisco W. & Irwin

04/23/2020

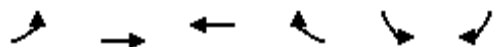


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	0	94	0	0	52	102
Future Volume (vph)	0	94	0	0	52	102
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	102	0	0	57	111
Direction, Lane #	EB 1	SB 1				
Volume Total (vph)	102	168				
Volume Left (vph)	0	0				
Volume Right (vph)	102	111				
Hadj (s)	-0.57	-0.36				
Departure Headway (s)	3.7	3.7				
Degree Utilization, x	0.10	0.17				
Capacity (veh/h)	938	932				
Control Delay (s)	7.1	7.5				
Approach Delay (s)	7.1	7.5				
Approach LOS	A	A				
Intersection Summary						
Delay			7.4			
Level of Service			A			
Intersection Capacity Utilization			22.3%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

1620: Andersen & Rice

04/23/2020




















Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↱			↗
Traffic Volume (veh/h)	0	500	307	38	0	72
Future Volume (Veh/h)	0	500	307	38	0	72
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	556	341	42	0	80
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)		676	1004			
pX, platoon unblocked					0.78	
vC, conflicting volume	383				918	362
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	383				757	362
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	88
cM capacity (veh/h)	1175				294	683
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	556	383	80			
Volume Left	0	0	0			
Volume Right	0	42	80			
cSH	1700	1700	683			
Volume to Capacity	0.33	0.23	0.12			
Queue Length 95th (ft)	0	0	10			
Control Delay (s)	0.0	0.0	11.0			
Lane LOS			B			
Approach Delay (s)	0.0	0.0	11.0			
Approach LOS			B			
Intersection Summary						
Average Delay			0.9			
Intersection Capacity Utilization			31.1%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis

516: Lincoln & 2nd


01/08/2020

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	191	1674	47	0	0	0	0	180	351	114	152	0	
Future Volume (vph)	191	1674	47	0	0	0	0	180	351	114	152	0	
Ideal Flow (vphpl)	1600	1600	1600	1800	1800	1800	1800	1600	1600	1600	1600	1800	
Lane Width	12	10	10	12	12	12	12	12	12	9	9	9	
Total Lost time (s)		3.9	3.9					3.9	3.9		3.8		
Lane Util. Factor		0.86	1.00					1.00	1.00		0.95		
Frpb, ped/bikes		1.00	0.96					1.00	0.97		1.00		
Flpb, ped/bikes		1.00	1.00					1.00	1.00		1.00		
Frt		1.00	0.85					1.00	0.85		1.00		
Flt Protected		0.99	1.00					1.00	1.00		0.98		
Satd. Flow (prot)		4496	1071					1412	1168		2233		
Flt Permitted		0.99	1.00					1.00	1.00		0.71		
Satd. Flow (perm)		4496	1071					1412	1168		1624		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
Adj. Flow (vph)	212	1860	52	0	0	0	0	200	390	127	169	0	
RTOR Reduction (vph)	0	0	22	0	0	0	0	0	16	0	0	0	
Lane Group Flow (vph)	0	2072	30	0	0	0	0	200	374	0	296	0	
Confl. Peds. (#/hr)	19		31						15				
Confl. Bikes (#/hr)			7						3				
Parking (#/hr)										2	2		
Turn Type	Perm	NA	Perm					NA	Perm	Perm	NA		
Protected Phases		2						4			8		
Permitted Phases	2		2						4	8			
Actuated Green, G (s)		49.9	49.9					29.9	29.9		30.0		
Effective Green, g (s)		51.1	51.1					31.1	31.1		31.2		
Actuated g/C Ratio		0.57	0.57					0.35	0.35		0.35		
Clearance Time (s)		5.1	5.1					5.1	5.1		5.0		
Lane Grp Cap (vph)		2552	608					487	403		562		
v/s Ratio Prot								0.14					
v/s Ratio Perm		0.46	0.03						0.32		0.18		
v/c Ratio		0.81	0.05					0.41	0.93		0.53		
Uniform Delay, d1		15.6	8.6					22.5	28.4		23.5		
Progression Factor		1.00	1.00					1.00	1.00		1.00		
Incremental Delay, d2		2.9	0.2					2.6	29.8		3.5		
Delay (s)		18.5	8.8					25.0	58.1		27.0		
Level of Service		B	A					C	E		C		
Approach Delay (s)		18.3			0.0			46.9			27.0		
Approach LOS		B			A			D			C		
Intersection Summary													
HCM 2000 Control Delay			24.8									HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.85										
Actuated Cycle Length (s)			90.0							7.8			
Intersection Capacity Utilization			85.9%							E			
Analysis Period (min)			15										
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis

542: Francisco W./Tamalpais & 2nd

















01/08/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4TTL	T							T	T	
Traffic Volume (vph)	34	1771	109	0	0	0	0	0	0	74	187	0
Future Volume (vph)	34	1771	109	0	0	0	0	0	0	74	187	0
Ideal Flow (vphpl)	1600	1600	1600	1800	1800	1800	1800	1600	1600	1600	1600	1800
Lane Width	12	11	10	12	12	12	12	10	13	10	12	12
Total Lost time (s)		4.1	4.1							3.6	3.6	
Lane Util. Factor		0.86	1.00							1.00	1.00	
Frpb, ped/bikes		1.00	0.92							1.00	1.00	
Flpb, ped/bikes		1.00	1.00							1.00	1.00	
Frt		1.00	0.85							1.00	1.00	
Flt Protected		1.00	1.00							0.95	1.00	
Satd. Flow (prot)		4680	1029							1105	1249	
Flt Permitted		1.00	1.00							0.95	1.00	
Satd. Flow (perm)		4680	1029							1105	1249	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	38	1968	121	0	0	0	0	0	0	82	208	0
RTOR Reduction (vph)	0	0	54	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	2006	67	0	0	0	0	0	0	82	208	0
Confl. Peds. (#/hr)	65		34							3	3	
Confl. Bikes (#/hr)			5							3		
Parking (#/hr)										3	3	
Turn Type	Perm	NA	Perm							Perm	NA	
Protected Phases		2									8	
Permitted Phases	2		2							8		
Actuated Green, G (s)		48.4	48.4							30.9	30.9	
Effective Green, g (s)		49.9	49.9							32.4	32.4	
Actuated g/C Ratio		0.55	0.55							0.36	0.36	
Clearance Time (s)		5.6	5.6							5.1	5.1	
Lane Grp Cap (vph)		2594	570							397	449	
v/s Ratio Prot										c0.17		
v/s Ratio Perm		0.43	0.07							0.07		
v/c Ratio		0.77	0.12							0.21	0.46	
Uniform Delay, d1		15.6	9.6							19.9	22.1	
Progression Factor		0.67	0.09							1.00	1.00	
Incremental Delay, d2		1.3	0.2							1.2	3.4	
Delay (s)		11.8	1.1							21.1	25.5	
Level of Service		B	A							C	C	
Approach Delay (s)		11.2			0.0			0.0			24.3	
Approach LOS		B			A			A			C	
Intersection Summary												
HCM 2000 Control Delay			12.8									HCM 2000 Level of Service B
HCM 2000 Volume to Capacity ratio			0.65									
Actuated Cycle Length (s)			90.0							7.7		
Intersection Capacity Utilization			54.3%								A	
ICU Level of Service												
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

561: Du Bois & Rice

















01/08/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	2	0	4	107	121	2	125	19	20	122	8
Future Volume (Veh/h)	5	2	0	4	107	121	2	125	19	20	122	8
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			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
Hourly flow rate (vph)	5	2	0	4	116	132	2	136	21	22	133	9
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)								1150				
pX, platoon unblocked												
vC, conflicting volume	522	342	138	333	336	146	142			157		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	522	342	138	333	336	146	142			157		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	100	100	99	80	85	100			98		
cM capacity (veh/h)	331	570	911	611	574	901	1441			1423		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	7	252	159	164								
Volume Left	5	4	2	22								
Volume Right	0	132	21	9								
cSH	376	710	1441	1423								
Volume to Capacity	0.02	0.36	0.00	0.02								
Queue Length 95th (ft)	1	40	0	1								
Control Delay (s)	14.7	12.8	0.1	1.1								
Lane LOS	B	B	A	A								
Approach Delay (s)	14.7	12.8	0.1	1.1								
Approach LOS	B	B										
Intersection Summary												
Average Delay			6.1									
Intersection Capacity Utilization			40.7%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

562: Du Bois/Lincoln & Irwin.





















01/08/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	83	179	10	47	146	86	8	236	108	33	78	83
Future Volume (vph)	83	179	10	47	146	86	8	236	108	33	78	83
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
Hourly flow rate (vph)	90	195	11	51	159	93	9	257	117	36	85	90
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	296	303	383	211								
Volume Left (vph)	90	51	9	36								
Volume Right (vph)	11	93	117	90								
Hadj (s)	0.07	-0.12	-0.14	-0.19								
Departure Headway (s)	6.7	6.5	6.3	6.7								
Degree Utilization, x	0.55	0.54	0.67	0.39								
Capacity (veh/h)	485	501	538	463								
Control Delay (s)	17.4	17.0	20.9	13.9								
Approach Delay (s)	17.4	17.0	20.9	13.9								
Approach LOS	C	C	C	B								
Intersection Summary												
Delay				17.8								
Level of Service				C								
Intersection Capacity Utilization				63.4%	ICU Level of Service	B						
Analysis Period (min)				15								

HCM Signalized Intersection Capacity Analysis

579: Du Bois & Andersen





















01/08/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	403	55	42	273	178	63	116	254	85	56	9
Future Volume (vph)	10	403	55	42	273	178	63	116	254	85	56	9
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	1900	1900	1900	1900	1900	1900
Lane Width	11	10	12	11	10	12	11	12	12	11	12	12
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	0.95		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.94		1.00	0.90		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1801	1786		1801	1684		1711	1594		1711	1815	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1801	1786		1801	1684		1711	1594		1711	1815	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	11	448	61	47	303	198	70	129	282	94	62	10
RTOR Reduction (vph)	0	5	0	0	24	0	0	88	0	0	6	0
Lane Group Flow (vph)	11	504	0	47	477	0	70	323	0	94	66	0
Confl. Peds. (#/hr)			15			16			25			6
Confl. Bikes (#/hr)			2			7			1			2
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	1.5	24.2		4.5	27.2		4.6	18.5		6.7	20.6	
Effective Green, g (s)	2.5	26.1		5.5	29.1		5.6	20.1		7.7	22.2	
Actuated g/C Ratio	0.04	0.37		0.08	0.41		0.08	0.28		0.11	0.31	
Clearance Time (s)	4.0	4.9		4.0	4.9		4.0	4.6		4.0	4.6	
Vehicle Extension (s)	2.0	3.0		2.0	3.0		2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	63	652		138	686		134	448		184	564	
v/s Ratio Prot	0.01	c0.28		c0.03	c0.28		0.04	c0.20		c0.05	0.04	
v/s Ratio Perm												
v/c Ratio	0.17	0.77		0.34	0.69		0.52	0.72		0.51	0.12	
Uniform Delay, d1	33.4	20.0		31.2	17.5		31.6	23.1		30.1	17.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	5.7		0.5	3.1		1.7	5.6		1.0	0.1	
Delay (s)	33.9	25.7		31.8	20.5		33.3	28.7		31.1	17.7	
Level of Service	C	C		C	C		C	C		C	B	
Approach Delay (s)		25.9			21.5			29.4			25.3	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			25.4			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.66									
Actuated Cycle Length (s)			71.4			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			72.3%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

580: Irwin. & Andersen





01/08/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	440	64	29	336	62	49	180	36	56	144	62
Future Volume (vph)	39	440	64	29	336	62	49	180	36	56	144	62
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	1900	1900	1900	1900	1900	1900
Lane Width	11	11	12	11	10	12	11	12	12	11	13	12
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		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	0.99		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	0.98		1.00	0.98		1.00	0.97		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1801	1847		1801	1779		1711	1801		1711	1817	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1801	1847		1801	1779		1711	1801		1711	1817	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	43	489	71	32	373	69	54	200	40	62	160	69
RTOR Reduction (vph)	0	5	0	0	6	0	0	9	0	0	20	0
Lane Group Flow (vph)	43	555	0	32	436	0	54	231	0	62	209	0
Confl. Peds. (#/hr)			18			3			19			12
Confl. Bikes (#/hr)			2			4						1
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	3.7	26.4		2.3	25.0		4.6	14.1		4.6	14.1	
Effective Green, g (s)	4.7	28.3		3.3	26.9		5.6	15.3		5.6	15.3	
Actuated g/C Ratio	0.07	0.44		0.05	0.42		0.09	0.24		0.09	0.24	
Clearance Time (s)	4.0	4.9		4.0	4.9		4.0	4.2		4.0	4.2	
Vehicle Extension (s)	2.0	3.0		2.0	3.0		2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	131	810		92	741		148	427		148	431	
v/s Ratio Prot	c0.02	c0.30		0.02	0.24		0.03	c0.13		c0.04	0.12	
v/s Ratio Perm												
v/c Ratio	0.33	0.69		0.35	0.59		0.36	0.54		0.42	0.49	
Uniform Delay, d1	28.4	14.5		29.6	14.5		27.8	21.5		27.9	21.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	2.4		0.8	1.2		0.6	1.4		0.7	0.9	
Delay (s)	28.9	16.9		30.4	15.7		28.3	22.9		28.6	22.1	
Level of Service	C	B		C	B		C	C		C	C	
Approach Delay (s)		17.8			16.7			23.9			23.5	
Approach LOS		B			B			C			C	
Intersection Summary												
HCM 2000 Control Delay			19.6			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.59									
Actuated Cycle Length (s)			64.5			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			62.7%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

581: Rice Dr & Francisco W.

01/08/2020

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	223	0	0	48	142	11
Future Volume (vph)	223	0	0	48	142	11
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0			4.0		4.0
Lane Util. Factor	1.00			1.00		1.00
Frt	1.00			0.86		1.00
Flt Protected	0.95			1.00		0.96
Satd. Flow (prot)	1676			1526		1686
Flt Permitted	0.95			1.00		0.96
Satd. Flow (perm)	1676			1526		1686
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	242	0	0	52	154	12
RTOR Reduction (vph)	0	0	0	35	0	0
Lane Group Flow (vph)	242	0	0	17	0	166
Turn Type	Prot			Perm	Perm	NA
Protected Phases	8					6
Permitted Phases				2	6	
Actuated Green, G (s)	9.0			8.1		8.1
Effective Green, g (s)	9.0			8.1		8.1
Actuated g/C Ratio	0.36			0.32		0.32
Clearance Time (s)	4.0			4.0		4.0
Vehicle Extension (s)	3.0			3.0		3.0
Lane Grp Cap (vph)	600			492		544
v/s Ratio Prot	c0.14					
v/s Ratio Perm				0.01		0.10
v/c Ratio	0.40			0.03		0.31
Uniform Delay, d1	6.0			5.8		6.4
Progression Factor	1.00			1.00		1.00
Incremental Delay, d2	0.4			0.0		0.3
Delay (s)	6.5			5.8		6.7
Level of Service	A			A		A
Approach Delay (s)	6.5		5.8			6.7
Approach LOS	A		A			A
Intersection Summary						
HCM 2000 Control Delay			6.5		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.36			
Actuated Cycle Length (s)			25.1		Sum of lost time (s)	8.0
Intersection Capacity Utilization			28.6%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

HCM Unsignalized Intersection Capacity Analysis

813: Francisco W. & Irwin

01/08/2020

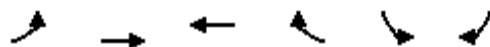


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	184	97	0	0	65	107
Future Volume (vph)	184	97	0	0	65	107
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	200	105	0	0	71	116
Direction, Lane #	EB 1	SB 1				
Volume Total (vph)	305	187				
Volume Left (vph)	200	0				
Volume Right (vph)	105	116				
Hadj (s)	-0.04	-0.34				
Departure Headway (s)	4.3	4.3				
Degree Utilization, x	0.36	0.22				
Capacity (veh/h)	814	793				
Control Delay (s)	9.7	8.5				
Approach Delay (s)	9.7	8.5				
Approach LOS	A	A				
Intersection Summary						
Delay			9.2			
Level of Service			A			
Intersection Capacity Utilization			Err%	ICU Level of Service		H
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

1620: Andersen & Rice

01/08/2020



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↱			↗
Traffic Volume (veh/h)	0	500	307	38	0	120
Future Volume (Veh/h)	0	500	307	38	0	120
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	556	341	42	0	133
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)		676	1004			
pX, platoon unblocked					0.78	
vC, conflicting volume	383				918	362
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	383				758	362
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	81
cM capacity (veh/h)	1175				294	683
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	556	383	133			
Volume Left	0	0	0			
Volume Right	0	42	133			
cSH	1700	1700	683			
Volume to Capacity	0.33	0.23	0.19			
Queue Length 95th (ft)	0	0	18			
Control Delay (s)	0.0	0.0	11.5			
Lane LOS			B			
Approach Delay (s)	0.0	0.0	11.5			
Approach LOS			B			
Intersection Summary						
Average Delay			1.4			
Intersection Capacity Utilization			34.0%	ICU Level of Service		A
Analysis Period (min)			15			

RESOLUTION NO.

RESOLUTION OF THE SAN RAFAEL CITY COUNCIL AWARDING AND AUTHORIZING THE CITY MANAGER TO EXECUTE A CONSTRUCTION AGREEMENT FOR THE FRANCISCO BOULEVARD WEST - RICE DRIVE TO SECOND STREET PROJECT, CITY PROJECT NO. 11364, TO GHILOTTI BROS., INC., IN THE AMOUNT OF \$2,259,787, AND AUTHORIZING CONTINGENCY FUNDS IN THE AMOUNT OF \$253,498 FOR A TOTAL APPROPRIATED AMOUNT OF \$2,513,285.

WHEREAS, on the 4th day of June 2020, pursuant to due and legal notice published in the manner provided by law, inviting sealed bids or proposals for the work hereinafter mentioned, as more fully appears from the Affidavit of Publication thereof on file in the office of the City Clerk of the City of San Rafael, California, the City Clerk of said City did publicly open, examine, and declare all sealed bids or proposals for doing the following work in said City, to wit:

“Francisco Boulevard West – Rice Drive to Second Street Project”

City Project No. 11364

in accordance with the plans and specifications therefor on file in the office of the Department of Public Works; and

WHEREAS, the bid of \$2,259,787 from Ghilotti Bros., Inc., at the unit prices stated in its bid, was and is the lowest and best bid for said work and said bidder is the lowest responsible bidder; and

WHEREAS, staff has recommended that the project budget include a contingency amount of \$253,498; and

WHEREAS, this project is a revised design for a portion of the Multi-Use Path Project for which the City Council adopted an Initial Study/Mitigated Negative Declaration (IS/MND) pursuant to California Environmental Quality Act (CEQA) on December 4, 2017. The City’s environmental consultant has determined that the revised design that is the subject of this award would not introduce new significant environmental effects and therefore, no additional environmental work is required. The consultant has prepared an Addendum to the previously approved IS/MND which has been considered by the City Council and placed in the City’s files for this project;

**NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF SAN RAFAEL
RESOLVES** as follows:

1. The bid of Ghilotti Bros., Inc. is hereby accepted at the unit prices stated in its bid, and the contract for said work and improvements is hereby awarded to Ghilotti Bros., Inc., at the stated unit prices.
2. The City Manager is authorized and directed to execute a contract with Ghilotti Bros., Inc., for the bid amount, subject to final approval as to form by the City Attorney, and to return the bidder's bond upon the execution of the contract.
3. Funds totaling \$1,940,000, which reflects the appropriated amount following the issuance of the recommended deductive change order, will be appropriated for this project from the various grants as outlined in the staff report.
4. The Director of Public Works is hereby authorized to take any and all such actions and make changes as may be necessary to accomplish the purpose of this resolution.

I, Lindsay Lara, Clerk of the City of San Rafael, hereby certify that the foregoing Resolution was duly and regularly introduced and adopted at a regular meeting of the City Council of said City held on Monday, the 15th day of June 2020 by the following vote, to wit:

AYES: COUNCILMEMBERS:

NOES: COUNCILMEMBERS:

ABSENT: COUNCILMEMBERS:

LINDSAY LARA, City Clerk

RESOLUTION NO.

RESOLUTION OF THE SAN RAFAEL CITY COUNCIL AUTHORIZING THE CITY MANAGER TO EXECUTE A DEDUCTIVE CHANGE ORDER FOR THE FRANCISCO BOULEVARD WEST - RICE DRIVE TO SECOND STREET PROJECT, CITY PROJECT NO. 11364, IN THE AMOUNT OF \$573,285.

WHEREAS, on the 4th day of June 2020, pursuant to due and legal notice published in the manner provided by law, inviting sealed bids or proposals for the work hereinafter mentioned, as more fully appears from the Affidavit of Publication thereof on file in the office of the City Clerk of the City of San Rafael, California, the City Clerk of said City did publicly open, examine, and declare all sealed bids or proposals for doing the following work in said City, to wit:

“Francisco Boulevard West – Rice Drive to Second Street Project”

City Project No. 11364

in accordance with the plans and specifications therefor on file in the office of the Department of Public Works; and

WHEREAS, the bid of \$2,259,787 from Ghilotti Bros., Inc., at the unit prices stated in its bid, was and is the lowest and best bid for said work and said bidder is the lowest responsible bidder; and

WHEREAS, on June 15, 2020, the City Council awarded a construction contract to Ghilotti Bros., Inc. at the bid amount of \$2,259,787; and

WHEREAS, the bid amount plus the contingency of \$253,498 exceeds the available budget and requires adjustment to bring anticipated project expenses to within budget; and

WHEREAS, City staff have negotiated a deductive change order with Ghilotti Bros., Inc. in the amount of \$573,285.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF SAN RAFAEL RESOLVES as follows:

1. The City Manager is hereby directed, following execution of the contract with Ghilotti Bros, Inc., to execute a deductive change order to that contract, at unit prices recommended by the Public Works Director and agreed to by Ghilotti Bros., Inc., in a total amount of \$573,285.

2. The City Manager is hereby authorized to take any and all such actions and make changes as may be necessary to accomplish the purpose of this resolution.

I, Lindsay Lara, Clerk of the City of San Rafael, hereby certify that the foregoing Resolution was duly and regularly introduced and adopted at a regular meeting of the City Council of said City held on Monday, the 15th day of June 2020 by the following vote, to wit:

AYES: COUNCILMEMBERS:

NOES: COUNCILMEMBERS:

ABSENT: COUNCILMEMBERS:

File No.: 16.01.291

LINDSAY LARA, City Clerk

Contract

This public works contract ("Contract") is entered into by and between the City of San Rafael ("City") and Ghilotti Bros., Inc. ("Contractor"), for work on the Francisco Boulevard West – Rice Drive to Second Street Project ("Project").

The parties agree as follows:

1. **Award of Contract.** In response to the Notice Inviting Bids, Contractor has submitted a Bid Proposal to perform the Work to construct the Project. On June 15, 2020, City authorized award of this Contract to Contractor for the amount set forth in Section 4, below.
2. **Contract Documents.** The Contract Documents incorporated into this Contract include and are comprised of all of the documents listed below. The definitions provided in Article 1 of the General Conditions apply to all of the Contract Documents, including this Contract.
 - 2.1 Notice Inviting Bids;
 - 2.2 Instructions to Bidders;
 - 2.3 Addenda, if any;
 - 2.4 Bid Proposal and attachments thereto;
 - 2.5 Contract;
 - 2.6 Payment and Performance Bonds;
 - 2.7 General Conditions;
 - 2.8 Special Conditions;
 - 2.9 Project Plans and Specifications;
 - 2.10 Change Orders, if any;
 - 2.11 Notice of Award;
 - 2.12 Notice to Proceed;
 - 2.13 Uniform Standards All Cities and County of Marin (available online at: <https://www.marincounty.org/-/media/files/departments/pw/engineering/2018-ucs-complete-set.pdf?la=en>); and
 - 2.14 The following: No Other Documents
3. **Contractor's Obligations.** Contractor will perform all of the Work required for the Project, as specified in the Contract Documents. Contractor must provide, furnish, and supply all things necessary and incidental for the timely performance and completion of the Work, including all necessary labor, materials, supplies, tools, equipment, transportation, onsite facilities, and utilities, unless otherwise specified in the Contract Documents. Contractor must use its best efforts to diligently prosecute and complete the Work in a professional and expeditious manner and to meet or exceed the performance standards required by the Contract Documents, and in full compliance with Laws.
4. **Payment.** As full and complete compensation for Contractor's timely performance and completion of the Work in strict accordance with the terms and conditions of the Contract Documents, City will pay Contractor \$1,686,502 ("Contract Price") for all of Contractor's direct and indirect costs to perform the Work, including all labor, materials, supplies, equipment, taxes, insurance, bonds and all overhead costs, in accordance with the payment provisions in the General Conditions.
5. **Time for Completion.** Contractor will fully complete the Work for the Project within 120 working days from the commencement date given in the Notice to Proceed ("Contract Time"). By signing below, Contractor expressly waives any claim for delayed early completion.
6. **Liquidated Damages.** If Contractor fails to complete the Work within the Contract Time, City will assess liquidated damages in the amount of \$500 per day for each day of unexcused delay in

completion, and such liquidated damages may be deducted from City's payments due or to become due to Contractor under this Contract.

7. Labor Code Compliance.

7.1 General. This Contract is subject to all applicable requirements of Chapter 1 of Part 7 of Division 2 of the Labor Code, including requirements pertaining to wages, working hours and workers' compensation insurance, as further specified in Article 9 of the General Conditions.

7.2 Prevailing Wages. This Project is subject to the prevailing wage requirements applicable to the locality in which the Work is to be performed for each craft, classification or type of worker needed to perform the Work, including employer payments for health and welfare, pension, vacation, apprenticeship and similar purposes. Copies of these prevailing rates are available online at <http://www.dir.ca.gov/DLSR>.

7.3 DIR Registration. City may not enter into the Contract with a bidder without proof that the bidder and its Subcontractors are registered with the California Department of Industrial Relations to perform public work pursuant to Labor Code § 1725.5, subject to limited legal exceptions.

8. Workers' Compensation Certification. Pursuant to Labor Code § 1861, by signing this Contract, Contractor certifies as follows: "I am aware of the provisions of Labor Code § 3700 which require every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that code, and I will comply with such provisions before commencing the performance of the Work on this Contract."

9. Conflicts of Interest. Contractor, its employees, Subcontractors and agents, may not have, maintain or acquire a conflict of interest in relation to this Contract in violation of any City ordinance or requirement, or in violation of any California law, including Government Code § 1090 et seq., or the Political Reform Act, as set forth in Government Code § 81000 et seq. and its accompanying regulations. Any violation of this Section constitutes a material breach of the Contract.

10. Independent Contractor. Contractor is an independent contractor under this Contract and will have control of the Work and the means and methods by which it is performed. Contractor and its Subcontractors are not employees of City and are not entitled to participate in any health, retirement, or any other employee benefits from City.

11. **Notice.** Any notice, billing, or payment required by or pursuant to the Contract Documents must be made in writing, signed, dated and sent to the other party by personal delivery, U.S. Mail, a reliable overnight delivery service, or by email as a PDF file. Notice is deemed effective upon delivery, except that service by U.S. Mail is deemed effective on the second working day after deposit for delivery. Notice for each party must be given as follows:

City:

City Clerk's Office
1400 Fifth Avenue, Room 209
San Rafael, CA 94901
Attn: City Clerk

Copy to: Director of Public Works
Email: Bill.Guerin@cityofsanrafael.org

Contractor:

Name: Ghilotti Bros. Inc.
Address: 525 Jacoby Street
City/State/Zip: San Rafael, CA 94901
Phone: 415-265-7011
Attn: Dennis Huette
Email: dennish@ghilottibros.com
Copy to: Debbie Petersen

12. **General Provisions.**

- 12.1 **Assignment and Successors.** Contractor may not assign its rights or obligations under this Contract, in part or in whole, without City's written consent. This Contract is binding on Contractor's and City's lawful heirs, successors and permitted assigns.
- 12.2 **Third Party Beneficiaries.** There are no intended third-party beneficiaries to this Contract.
- 12.3 **Governing Law and Venue.** This Contract will be governed by California law and venue will be in the Marin County Superior Court, and no other place. Contractor waives any right it may have pursuant to Code of Civil Procedure § 394, to file a motion to transfer any action arising from or relating to this Contract to a venue outside of Marin County, California.
- 12.4 **Amendment.** No amendment or modification of this Contract will be binding unless it is in a writing duly authorized and signed by the parties to this Contract.
- 12.5 **Integration.** This Contract and the Contract Documents incorporated herein, including authorized amendments or Change Orders thereto, constitute the final, complete, and exclusive terms of the agreement between City and Contractor.
- 12.6 **Severability.** If any provision of the Contract Documents is determined to be illegal, invalid, or unenforceable, in whole or in part, the remaining provisions of the Contract Documents will remain in full force and effect.
- 12.7 **Iran Contracting Act.** If the Contract Price exceeds \$1,000,000, Contractor certifies, by signing below, that it is not identified on a list created under the Iran Contracting Act, Public

Contract Code § 2200 et seq. (the "Act"), as a person engaging in investment activities in Iran, as defined in the Act, or is otherwise expressly exempt under the Act.

- 12.8 Authorization.** Each individual signing below warrants that he or she is authorized to do so by the party that he or she represents, and that this Contract is legally binding on that party. If Contractor is a corporation, signatures from two officers of the corporation are required pursuant to California Corporation Code § 313. If Contractor is a partnership, a signature from a general partner with authority to bind the partnership is required.

[Signatures are on the following page.]

The parties agree to this Contract as witnessed by the signatures below:

CITY:

Approved as to form:

s/ _____

s/ _____

Jim Schutz, City Manager

Robert F. Epstein, City Attorney

Date: _____

Date: _____

Attest:

s/ _____

Lindsay Lara, City Clerk

Date: _____

CONTRACTOR:

Business Name

s/ _____

Seal:

Name, Title

Date: _____

Second Signature (See Section 12.8):

s/ _____

Name, Title

Date: _____

Contractor's California License Number(s) and Expiration Date(s)

END OF CONTRACT

April 3, 2020



Dear San Rafael Resident/Property Owner,

This letter serves as notification of upcoming construction activities within the vicinity of Francisco Boulevard West. For safety reasons, the City will be converting Francisco Boulevard West into a one-way street for southbound vehicle traffic between 2nd Street and Rice Drive. South of Rice Drive, Francisco Boulevard West will remain a two-way street. This conversion is based on unforeseen traffic impacts introduced after the SMART train Larkspur extension opened.

Currently in the design stages, the conversion will include a two-way Class IV bike facility along the corridor which will connect to the Rice Drive to Andersen Drive multi-use path. Construction is planned to begin July 2020 and is expected to be completed in the Fall 2020. The project will try to limit impacts during construction by implementing a phased construction approach, however partial closures of Francisco Boulevard West may take place for up to two months during construction.

For more information on the project, please feel free to visit the City's Project website at the following address:

<https://www.cityofsanrafael.org/active-projects>

Francisco Blvd West One Way Conversion and Multi-Use Path

Please review the information on the website and contact me if you have any additional questions or concerns. I am available by phone 415-485-3409 or e-mail

Aprilm@cityofsanrafael.org.

Thank in advance for your patience and cooperation while this project is underway.

Sincerely,

April Miller, PE
Senior Civil Engineer

