City of San Leandro

Meeting Date: September 28, 2020

Staff Report

File Number: 20-421 **Agenda Section:** CONSENT CALENDAR

Agenda Number: 8.C.

TO: City Council

FROM: Jeff Kay
City Manager

BY: City Council

FINANCE REVIEW: Not Applicable

TITLE: Staff Report for a City of San Leandro City Council Resolution Supporting Proposition 15, Otherwise Known as the "The California Schools and Local Communities Funding Act of 2020" that will appear on the November 2020 statewide ballot

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LAO

Proposition 15

INCREASES FUNDING SOURCES FOR PUBLIC SCHOOLS, COMMUNITY COLLEGES, AND LOCAL GOVERNMENT SERVICES BY CHANGING TAX ASSESSMENT OF COMMERCIAL AND INDUSTRIAL PROPERTY. INITIATIVE CONSTITUTIONAL AMENDMENT.

ANALYSIS OF MEASURE

Background

Local Governments Tax Property. California cities, counties, schools, and special districts (such as a fire protection district) collect property taxes from property owners based on the value of their property. Property taxes raise around $65 billion each year for these local governments. Overall, about 60 percent of property taxes go to cities, counties, and special districts. The other 40 percent goes to schools and community colleges. These shares are different in different counties.

Property Includes Land, Buildings, Machinery, and Equipment. Property taxes apply to many kinds of property. Land and buildings are taxed. Businesses also pay property taxes on most other things they own. This includes equipment, machinery, computers, and furniture. We call these things "business equipment."

How Is a Property Tax Bill Calculated? Each property owner's annual property tax bill is equal to the taxable value of their property multiplied by their property tax rate. The typical property owner's property tax rate is 1.1 percent.

Taxable Value of Land and Buildings Is Based on Original Purchase Price. In the year a piece of land or a building is purchased, its taxable value typically is its purchase price. Each year after that, the property's taxable value is adjusted for inflation by up to 2 percent. When a property is sold again, its taxable value is reset to its new purchase price. The taxable value of most land and buildings is less than what they could be sold for. This is because the price most properties could be sold for grows faster than 2 percent per year.

Taxable Value of Business Equipment Is Based on How Much It Could Be Sold for. Unlike land and buildings, business equipment is taxed based on how much it could be sold for today.

Counties Manage the Property Tax. County assessors determine the taxable value of property. County tax collectors bill property owners. County auditors distribute tax revenue to local governments. Statewide, counties spend about $800 million each year on these activities.

Proposal

Tax Commercial and Industrial Land and Buildings Based on How Much They Could Be Sold for. The measure requires commercial and industrial (after this referred to simply as "commercial") land and buildings to be taxed based on how much they could be sold for instead of their original purchase price. This change is put in place over time starting in 2022. The change does not start before 2025 for properties used by California businesses that meet certain rules and have 50 or fewer employees. Housing and agricultural land continues to be taxed based on its original purchase price.

Some Lower Value Properties Not Included. This change does not apply if the owner has $3 million or less worth of commercial land and buildings in California (adjusted for inflation every two years). These properties continue to be taxed based on original purchase price.

Reduce Taxes on Business Equipment. The measure reduces the taxable value of each business's equipment by $500,000 starting in 2024. Businesses with less than $500,000 of equipment pay no taxes on those items. All property taxes on business equipment are eliminated for California businesses that meet certain rules and have 50 or fewer employees.

Fiscal Effects

Increased Taxes on Commercial Land and Buildings. Most owners of commercial land and buildings worth more than $3 million would pay higher property taxes. Only some of these property owners would start to pay higher taxes in 2022. By 2025, most of these property owners would pay higher taxes. Beginning in 2025, total property taxes from commercial land and buildings probably would be $8 billion to $12.5 billion higher in most years. The value of commercial property can change a lot from year to year. This means the amount of increased property taxes also could change a lot from year to year.

Decreased Taxes on Business Equipment. Property taxes on business equipment probably would be several hundred million dollars lower each year.

Money Set Aside to Pay Costs of the Measure. The measure sets aside money for various costs created by the measure. This includes giving **several hundred million dollars per year** to counties to pay for their costs of carrying out the measure. The measure would increase the amount of work county assessors do and could require changes in how they do their work. Counties could have costs from the measure before new money is available to cover these costs. The state would loan money to counties to cover these initial costs until new property tax revenue is available.

New Funding for Local Governments and Schools. Overall, $6.5 billion to $11.5 billion per year in new property taxes would go to local governments. 60 percent would go to cities, counties, and special districts. Each city, county, or special district's share of the money depends on several things including the amount of new taxes paid by commercial properties in that community. Not all governments would be guaranteed new money. Some in rural areas may end up losing money because of lower taxes on business equipment. The other 40 percent would increase funding for schools and community colleges. Each school or community college's share of the money is mostly based on how many students they have.

YES/NO STATEMENT

A **YES** vote on this measure means: Property taxes on most commercial properties worth more than $3 million would go up in order to provide new funding to local governments and schools.

A **NO** vote on this measure means: Property taxes on commercial properties would stay the same. Local governments and schools would not get new funding.

Summary of Legislative Analyst's Estimate of Net State and Local Government Fiscal Impact

- Increased property taxes on commercial properties worth more than $3 million providing $6.5 billion to $11.5 billion in new funding to local governments and schools.

Ballot Label

Fiscal Impact: Increased property taxes on commercial properties worth more than $3 million providing $6.5 billion to $11.5 billion in new funding to local governments and schools.

Estimated revenue generated by the Schools & Communities First Initiative

Alameda County

COUNTY

COUNTY GENERAL	$185,001,000
OTHER	$11,693,000

Counties provide:

- Health care services from fighting epidemics, like the coronavirus, to community clinics to mental health services
- Social services to reduce homelessness, help keep seniors living in their own homes, child nutrition, foster care, and park and recreation programs
- Firefighters and the equipment they need to effectively protect human life and limit damage from wildfires and natural disasters

CITY

CITY OF ALAMEDA	$7,329,000
CITY OF EMERYVILLE	$5,533,000
CITY OF FREMONT	$21,795,000
CITY OF HAYWARD	$16,016,000
CITY OF NEWARK	$4,769,000
CITY OF OAKLAND	$63,787,000
CITY OF PLEASANTON	$13,628,000
CITY OF SAN LEANDRO	$8,816,000
CITY OF UNION CITY	$5,944,000
CITY OF LIVERMORE	$8,669,000
CITY OF BERKELEY	$18,521,000
CITY OF ALBANY	$1,316,000
CITY OF DUBLIN	$6,409,000
CITY OF PIEDMONT	$442,000

Cities provide:

- Housing and homelessness prevention services
- Job training, youth programs, and domestic violence shelters
- Quality of life services from libraries to street and sidewalk repair, tree trimming, and parks

SPECIAL DISTRICTS

COUNTY LIBRARY	$4,526,000
ALAMEDA CO. FIRE DEPT.	$3,238,000
BAY AREA AIR QUALITY MANAGEMENT	$1,427,000
ALAMEDA CO. MOSQUITO ABATEMENT	$593,000
AC TRANSIT	$25,496,000
SF-BART	$4,191,000
EAST BAY REGIONAL PARK	$18,577,000
ALAMEDA COUNTY WATER	$1,287,000
E.B.M.U.D.	$6,924,000
HAYWARD AREA REC & PARK	$4,204,000
OAKLAND ZOO	$313,000
LIVERMORE AREA REC & PARK	$2,391,000

Special Districts focus on specific services such as:

- Fire safety
- Keeping drinking water safe and accessible
- Transportation, including roads, infrastructure and mass transit

K-12 SCHOOLS

ALAMEDA COUNTY OFFICE OF EDUCATION	$1,208,512
ENVISION ACADEMY FOR ARTS & TECHNOLOGY	$286,748
COMMUNITY SCHOOL FOR CREATIVE EDUCATION	$157,816
YU MING CHARTER	$245,760
URBAN MONTESSORI CHARTER	$235,052
OAKLAND UNITY MIDDLE SCHOOL	$116,008
CONNECTING WATERS CHARTER SCHOOL, EAST BAY	$199,200
OPPORTUNITY ACADEMY	$50,778
AURUM PREPARATORY ACADEMY	$56,698
COX ACADEMY	$408,018
LAZEAR CHARTER ACADEMY	$313,109
ALAMEDA UNIFIED	$5,600,001
NEA COMMUNITY LEARNING CENTER	$338,243

K-12 schools provide

- Teachers, classroom aides, books, computers, supplies for in-person and distance learning
- Breakfast and lunch for millions of students who otherwise would go hungry
- Nurses and health care services for students
- Special education, art, music, and sports programs

THE ACADEMY OF ALAMEDA	$269,139
ALAMEDA COMMUNITY LEARNING CENTER	$205,303
ALTERNATIVES IN ACTION	$141,882
THE ACADEMY OF ALAMEDA ELEMENTARY SCHOOL	$145,228
ALBANY CITY UNIFIED	$2,134,777
BERKELEY UNIFIED	$6,091,485
REALM CHARTER	$247,639
CASTRO VALLEY UNIFIED	$5,421,141
EMERY UNIFIED	$499,370
FREMONT UNIFIED	$20,788,079
CIRCLE OF INDEPENDENT LEARNING	$232,637
HAYWARD UNIFIED	$13,784,933
LEADERSHIP PUBLIC SCHOOLS - HAYWARD	$419,747
GOLDEN OAK MONTESSORI OF HAYWARD	$135,206
KNOWLEDGE ENLIGHTENS YOU (KEY) ACADEMY	$356,892
SILVER OAK HIGH PUBLIC MONTESSORI CHARTER	$148,284
IMPACT ACADEMY OF ARTS & TECHNOLOGY	$555,090
LIVERMORE VALLEY JOINT UNIFIED	$8,044,842
MOUNTAIN HOUSE ELEMENTARY	$1,789
NEWARK UNIFIED	$3,682,127
NEW HAVEN UNIFIED	$7,062,479
OAKLAND UNIFIED	$25,579,438
OAKLAND UNITY HIGH	$274,588
BAY AREA TECHNOLOGY	$208,774
LIGHTHOUSE COMMUNITY CHARTER HIGH	$208,860
ASPIRE BERKLEY MAYNARD ACADEMY	$373,885
ACHIEVE ACADEMY	$433,454
AMERICAN INDIAN PUBLIC HIGH	$301,278
AMERICAN INDIAN PUBLIC CHARTER SCHOOL II	$524,156
OAKLAND CHARTER HIGH	$352,999

KIPP BRIDGE ACADEMY	$326,986
ARISE HIGH	$238,665
CIVICORPS CORPSMEMBER ACADEMY	$41,937
LEARNING WITHOUT LIMITS	$286,035
ASPIRE GOLDEN STATE COLLEGE PREPARATORY ACADEMY	$442,440
ASPIRE ERES ACADEMY	$154,122
VINCENT ACADEMY	$154,374
LPS OAKLAND R & D CAMPUS	$362,214
ASPIRE COLLEGE ACADEMY	$188,789
EPIC CHARTER	$199,311
DOWNTOWN CHARTER ACADEMY	$195,977
EAST BAY INNOVATION ACADEMY	$316,496
OAKLAND MILITARY INSTITUTE, COLLEGE PREPARATORY ACADEMY	$524,049
LIGHTHOUSE COMMUNITY CHARTER	$332,437
ASPIRE LIONEL WILSON COLLEGE PREPARATORY ACADEMY	$381,667
ASPIRE TRIUMPH TECHNOLOGY ACADEMY	$188,029
ROSES IN CONCRETE	$212,392
FRANCOPHONE CHARTER SCHOOL OF OAKLAND	$128,385
CONSERVATORY OF VOCAL/INSTRUMENTAL ARTS HIGH SCHOOL	$50,578
LODESTAR: A LIGHTHOUSE COMMUNITY CHARTER PUBLIC	$311,661
OAKLAND SCHOOL FOR THE ARTS	$423,929
OAKLAND CHARTER ACADEMY	$154,587
AMERICAN INDIAN PUBLIC CHARTER	$103,890
ASPIRE MONARCH ACADEMY	$283,141
NORTH OAKLAND COMMUNITY CHARTER	$92,703
ASCEND	$325,239
PIEDMONT CITY UNIFIED	$1,461,465
SAN LEANDRO UNIFIED	$5,819,367
SAN LORENZO UNIFIED	$6,955,870

KIPP SUMMIT ACADEMY	$265,642
KIPP KING COLLEGIATE HIGH	$461,010
DUBLIN UNIFIED	$6,846,024
PLEASANTON UNIFIED	$8,555,392
SUNOL GLEN UNIFIED	$162,516
LATITUDE 37.8 HIGH	$38,784

COMMUNITY COLLEGES

CHABOT-LAS POSITAS CCD	$8,386,025
OHLONE CCD	$3,797,742
PERALTA CCD	$8,930,770

Community Colleges provide

- More than 75% of our nurses, firefighters and EMT's are trained through community colleges
- Nearly half of students earning a bachelor's degree from a University of California campus in science, technology, engineering and mathematics transferred from a California community college.
- Twenty-nine percent of University of California graduates and 51% of California State University graduates started at a community college.
- Academic counseling, financial aid, tutoring, child care

For Local Governments

The revenue estimates reflect the total amount of additional revenue from market value reassessment of commercial property (based on the highest end of the range estimated by the LAO) to be allocated to individual local jurisdictions. Amounts reflect the LAO's estimated reductions for additional assessor costs, personal property tax relief, and other offsets.

For Schools and Community Colleges

Revenue projections are based on $11.5 billion split 60/40 using 2018-19 funding ratios.

For K-12

The 2018-19 Second Principal (P-2) Average Daily Attendance.

City of San Leandro

Meeting Date: September 28, 2020

Resolution - Council

File Number:	20-422	**Agenda Section:**	CONSENT CALENDAR
		Agenda Number:	

TO: City Council

FROM: Jeff Kay
City Manager

BY: City Council

FINANCE REVIEW: Not Applicable

TITLE: RESOLUTION of the City of San Leandro City Council to Support Passage of Proposition 15, also known as the California Schools and Local Communities Funding Act of 2020

Whereas, California local public agencies, including cities, counties, schools, and special districts, levy property taxes on property owners based on the value of their property. Property taxes raise around $65 billion annually for local governments, about $2 billion of which is attributable to business personal property; and

Whereas, about 60 percent of statewide property tax revenue is allocated to cities, counties, and special districts, while the remaining 40 percent is allocated to schools and community colleges; and

Whereas, county assessors determine the taxable value of property, county tax collectors bill property owners, and county auditors distribute the revenue among local government; and

Whereas, each property owner's annual property tax bill is equal to the taxable value of their property multiplied by their property tax rate. Property tax rates are capped at 1 percent plus smaller voter approved rates to finance local infrastructure. A property's taxable value generally is based on its purchase price. When a property is purchased, the county assessor assigns a value to the property, typically its purchase price. Each year thereafter, the property's taxable value increases by 2 percent or the rate of inflation, whichever is lower. This process continues until the property is sold and again is taxed at its purchase price. In most years, the market value of most properties grows faster than 2 percent per year. As a result, under this system the taxable value of most properties is less than their fair market value; and

Whereas, partially as a result of the current property tax system cities and counties in California have experienced underinvestment and significant budgetary challenges over the past four decades that have impacted the critical services and infrastructure that residents rely upon; and

Whereas, California's current property tax system allows some commercial and industrial properties to avoid regular reassessment because changes in ownership have been hidden from transparent disclosure; and

Whereas, academic researchers at the University of Southern California (USC) demonstrated that a majority of commercial property owners in California already pay close to market value, making the current system inequitable among businesses, benefitting large owners who have held land for long periods of time; and

Whereas, such practices result in millions of dollars of forgone governmental revenue that would otherwise help to support the provision of essential services in local communities; and

Whereas, according to the California Legislative Analyst's Office, Proposition 15, otherwise known as the California Schools and Local Communities Funding Act of 2020, could reclaim up to $12.5 billion in property tax revenue every year by reassessing commercial and industrial properties at market rates; and

Whereas, if authorized by voters, Proposition 15 would not directly affect property taxes for homeowners or renters because it exempts residential property; and

Whereas, the measure would provide billions of dollars in new locally-controlled property tax funding yearly for cities, counties, and special districts, including potentially over $8 million in recurring annual revenue for the City of San Leandro once the measure is fully implemented; and

Whereas, the measure provides new tax incentives to spur new investment in small businesses by eliminating the business personal property tax on equipment for California's small businesses; and

Whereas, the measure provides billions for cities, counties, and special districts in locally controlled revenues that could be used for affordable housing, essential services and emergency response, health and human services, libraries, public infrastructure, and more; and

Whereas, the measure also exempts all small business owners whose property is worth less than $3 million;

Whereas, the measure levels the playing field for businesses and commercial property owners; and

Whereas, now more than ever, in light of the national and state economic crisis precipitated by the COVID-19 global pandemic, California's local communities need additional revenues for their continued provision of services.

NOW THEREFORE, the City of San Leandro City Council hereby RESOLVES that the City Council endorses the successful passage of Proposition 15: the California Schools and Local Communities Funding Act of 2020, a measure on the California ballot in November 2020, and encourages voters in San Leandro and across the State to support the measure and vote for its passage.

City of San Leandro

Meeting Date: September 28, 2020

Staff Report

File Number: 20-400

Agenda Section: CONSENT CALENDAR

Agenda Number: 8.D.

TO: City Council

FROM: Jeff Kay
City Manager

BY: Keith Cooke
Engineering & Transportation Director

FINANCE REVIEW: Susan Hsieh
Finance Director

TITLE: Staff Report for City of San Leandro City Council Resolutions to Approve a Reduction in the Number of Vehicle Travel Lanes from Three to Two and to Install Class IV Bicycle Lanes on Fairmont Drive from Hesperian Boulevard to East 14th Street, Approve a Funding Agreement with the Bay Area Air Quality Management District for Class IV Bike Lanes on Fairmont Drive, and Approve the Appropriation of $220,000 from the Transportation Fund for Clean Air Grant to Partially Pay for the Improvements

SUMMARY AND RECOMMENDATIONS

Staff studied reducing the number of vehicle travel lanes from three to two and installing Class IV bike lanes on Fairmont Drive from Hesperian Boulevard to East 14th Street and determined that the traffic impacts were within the City's General Plan goals for level of service. Class IV bike lanes are on-street bicycle facilities that are physically separated from vehicle traffic by a buffer zone with a vertical element such as delineator posts and are a desired feature for Fairmont Drive as identified in the City's 2018 Bicycle and Pedestrian Master Plan.

This Bay Area Air Quality Management District (BAAQMD) agreement provides funding and commits the City to the construction of Class IV bike lanes on Fairmont Drive from East 14th Street to Hesperian Boulevard.

Staff recommends approval of restriping Fairmont Drive from Hesperian Boulevard to East 14th Street such that there are two vehicle travel lanes and one class IV bicycle lane in each direction, and approval of a funding agreement and appropriation of Transportation Fund for Clean Air (TFCA) grant funds of $220,000 for construction of the improvements.

BACKGROUND

In 2013, the City Council adopted a complete streets policy. "Complete Streets" describes a comprehensive, integrated transportation network with infrastructure that allows for safe and convenient travel along and across streets for all users, including pedestrians, bicyclists, persons with disabilities, motorists, movers of commercial goods, public transportation, seniors, youth and families.

Fairmont Drive between Hesperian Boulevard and East 14th Street is listed in the City's 2018 Bicycle and Pedestrian Master Plan as recommended for the implementation of Class IV protected bicycle lanes. To corroborate the validity of the Master Plan recommendation, staff identified that additional analysis was needed to determine how they should be built, their impact on traffic and whether they will fit within the existing roadway.

Fairmont Drive is currently configured with three travel lanes in each direction, a concrete median from Hesperian Boulevard to East 14th Street and it has a 35 mph speed limit. East of the project limit at East 14th Street, and outside City limits, Fairmont Drive is configured with two travel lanes in each direction and bike lanes. West of the project limit at Hesperian Boulevard, the road is named Halcyon Drive and is configured with two travel lanes in each direction and intermittent bike lanes. The Alameda County Transportation Commission designated pedestrians as the highest priority user of Fairmont Drive followed by bicycles, transit, trucks, and finally autos.

With the help of a transportation consultant, a potential road diet or reduction of vehicle travel lanes to make room for improved bicycle facilities, was evaluated. A public meeting was held at Bay Fair Mall where the results of the evaluation were discussed, and the attendees were asked to vote on preferred alternatives. The public was also asked to vote on preferred alternatives at the 2018 Cherry Festival and given the opportunity to vote online. In total, approximately 250 responses were received. 38% of respondents preferred to leave Fairmont Drive in its current configuration and 62% preferred the road diet option with protected bicycle lanes.

In 2019, staff submitted an application to the Bay Area Air Quality Management District (BAAQMD) for a Transportation Fund for Clean Air (TFCA) grant to fund Class IV bike lanes on Fairmont. In 2020, BAAQMD proposed an agreement that would fund 90% of the project costs, up to $220,000. The terms of the agreement include a requirement that the facilities remain in service for at least 10 years.

Analysis

Implementation of a road diet on the Fairmont Drive segment will not reduce the level of service to unacceptable levels. The intersection of Fairmont Drive with Hesperian Boulevard receives the most impact. The existing peak demand level of service at this intersection is D. The City's General Plan sets a goal of D or better for intersection level of service (scale is rated from A to F). Implementing a road diet will not significantly increase the delay at the Hesperian intersection. Increases in traffic, such as are expected due to the Bay Fair Transit-Oriented Development Plan when combined with a road diet, will increase delay by 100% over the existing condition and the expected level of service will drop to E. However, a similar reduction in level of service is expected with or without the project, as projects accumulate over time.

The highest priority uses of Fairmont Drive are pedestrians and then bicycles. Implementing a road diet on the subject segment of Fairmont Drive such that the travel lanes are reduced from 3 to 2 in each direction will make it safer for pedestrians to cross the street and improve bicyclists' safety. Staff recommends implementation of a road diet on this road segment. This work can be combined with already planned sealing of the pavement on Fairmont to deliver the work in an efficient manner.

The terms of the agreement with BAAQMD are typical and reasonable; the City can comply with the terms without hardship. Staff recommends entering into the funding agreement and appropriating grant funds for the construction of the improvements.

Current Agency Policies

- Maintain and enhance San Leandro's infrastructure

Previous Actions

- On February 4, 2013, by Resolution No. 2013-018, the City Council approved a Complete Street Policy to be in compliance with future regional and County funding requirements.
- On March 19, 2018, by Resolution No. 2018-021, the City Council Approved and Adopted the 2018 Update to the Bicycle and Pedestrian Master Plan

Applicable General Plan Policies

- Land Use: LU-2.1.A Retrofitting Neighborhood Form
  Identify opportunities and pursue grants to "retrofit" neighborhoods that were originally designed for auto access and convenience in a manner that facilitates walking and bicycling and reduces dependence on motorized vehicles for short trips.

Environmental Review

Roadway alterations that add bicycle facilities and do not create additional automobile lanes are categorically exempt from environmental impact analysis per CEQA Guidelines section 15301(c).

Board/Commission Review and Actions

The Planning Commission voted at its September 3, 2020 regular meeting to recommend implementation of a road diet on Fairmont Drive.

Summary of Public Outreach Efforts

A survey was administered to 250 respondents at the Cherry Festival on June 2, 2018 and a community meeting was held at the Bay Fair Center on July 10, 2018.

Fiscal Impacts

Installation of Class IV bicycle lanes will cost $250,000 which is partially offset by $220,000 in grant funds.

The estimated cost of the seal project that will treat approximately 40 street segments and include the recommended road diet on Fairmont drive is described below:

Design	$100,000
Construction contract	$1,870,000
Contingencies	$600,000
Construction management and inspection	$150,000
Total	**$2,720,000**

Budget Authority

This work will be done as part of the street sealing project, which is funded as follows:

Account No.	Reso., Appropriation Dates & Source	Amount
210-38-418	FY 2020-21 Budget, General Funds	$600,000
144-38-418	FY 2020-21 Budget, Measure B LSR	$1,500,000
143-38-418	FY 2020-21 Budget, Vehicle Registration Fees	$400,000
	Sub Total	**$2,500,000**

Appropriations requested by this action:

Account No.	Source		Amount
150-38-451	TFCA Grant Funds		$220,000
		Total	**$2,720,000**

ATTACHMENTS

Attachments to Staff Report

- Fairmont Drive Bike Installation Technical Memorandum

Attachment to Related Legislative File

- Attached to Resolution for Grant funds:
  TFCA grant agreement project 20R15

PREPARED BY: Nick Thom, PE, City Engineer, Engineering and Transportation Department

DKS

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TECHNICAL MEMORANDUM

DATE:	November 2, 2018
TO:	Reh-Lin Chen, PE, PTOE, City of San Leandro Dean Hsiao, PhD, PE, PTOE, City of San Leandro
FROM:	David Mahama, PE Maria Tribelhorn, PE
SUBJECT:	Fairmont Drive Class IV Bike Lane Installation Project P# 18035-000

This memorandum summarizes the analysis undertaken for the installation of Class IV bike lanes along Fairmont Drive in the City of San Leandro.

HISTORICAL BACKGROUND

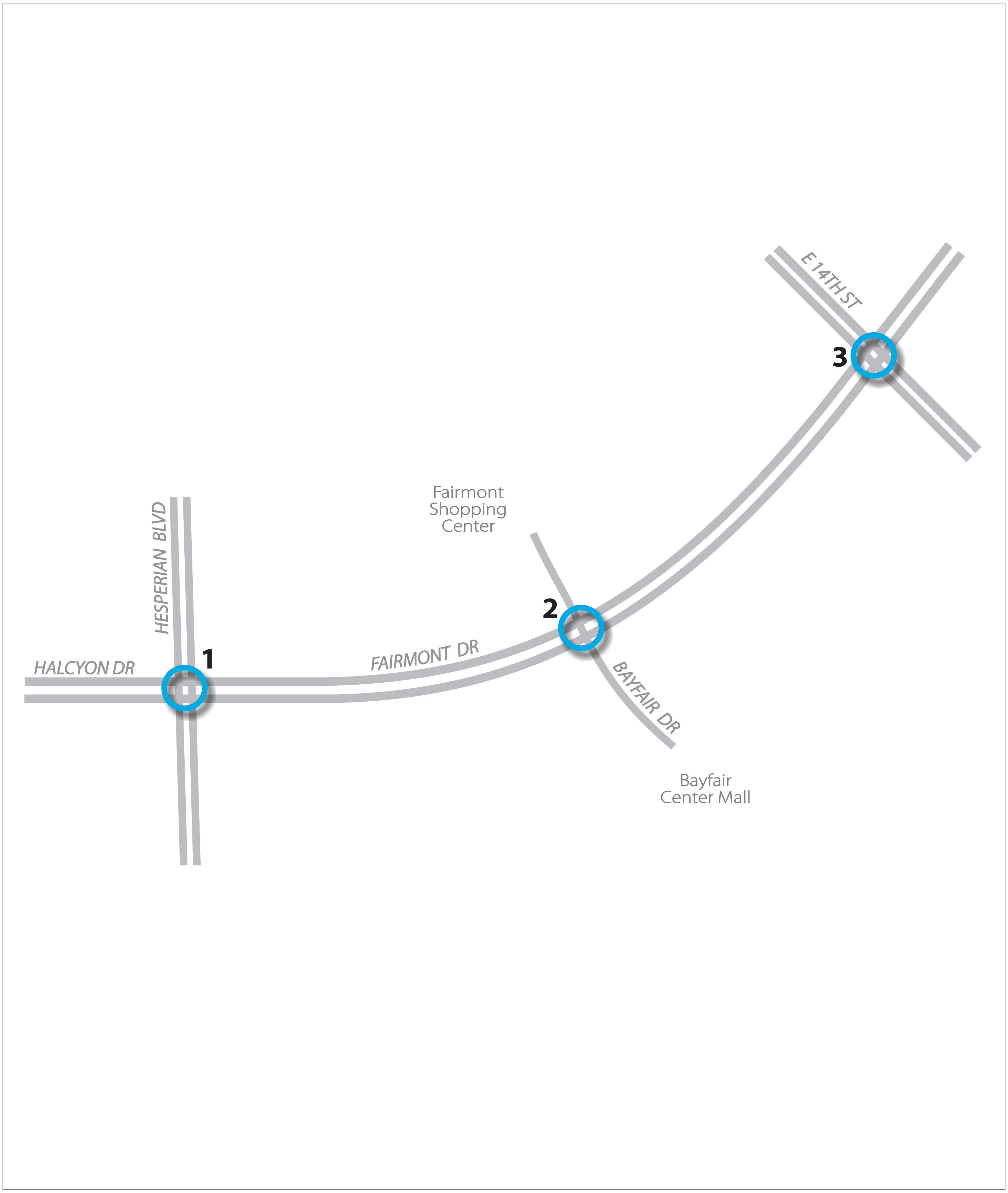
As recommended in the Bayfair Transit Oriented Development (TOD) Study and the City's Bicycle and Pedestrian Master Plan (adopted in March 2018), the City is interested in the installation of Class IV bike lane facilities on both sides of Fairmont Drive between Hesperian Boulevard and East 14th Street (SR 185). A Class IV separated bikeway, often referred to as cycle track or protected bike lane, is for exclusive use of bicycles, physically separated from motor vehicle traffic with a vertical feature. The separation may include, but is not limited to, grade separation, flexible posts, inflexible barriers, curb medians, or on-street parking.

Installation of a Class IV bikeway on the study corridor necessitates implementation of a road diet, which is a reduction in the number of travel lanes used for automobile traffic. The right lane, previously used for automobile traffic, would be reallocated to bicycle use on the separated bikeway. Currently, this segment of Fairmont Drive has three lanes in each direction. This road diet project would result in a reduction to two lanes in each direction.

The purpose of this memo is to present a conceptual design for the Class IV bikeway and to assess the potential traffic operational impacts of reducing the number of lanes as a result of the proposed project. DKS assessed the impact on the Fairmont Drive study corridor between Hesperian Boulevard and East 14th Street, for the existing year and the cumulative year. The analysis included both arterial level of service (LOS) analysis and signalized intersection LOS analysis. The signalized intersections included in this study are:

1. Fairmont Drive/Hesperian Boulevard
2. Fairmont Drive/Bayfair Drive
3. Fairmont Drive/East 14th Street (SR185)

Figure 1 illustrates the study area.



LEGEND

Study Intersection

DKS

No Scale

Figure 1

Study Area Map

CONCEPTUAL DESIGN

Class IV bike lanes are often implemented using barriers, such as curb medians, landscaping, or striping with flexible posts, to physically prevent automobiles from encroaching on the space reserved for bicycles. Two Class IV bikeway concept plans are presented in **Appendix A** and described below.

For the initial stages of this bikeway, DKS has developed a conceptual plan utilizing striping with flexible posts, shown in Plan 1 (Permissive Bicycle Treatment). Plan 1 corresponds to a cost-effective alternative which consists of permissive phasing for bicycles when crossing an intersection. The operational analysis in the following section is based on recommendations for this plan. Below are the recommendations for Plan 1:

- Road diet in the east-west direction along Fairmont Drive, reducing from three (3) through lanes to two (2) through lanes in each direction.
- Hatched striping and flexible posts are used rather than landscaping or concrete curbs to delineate the boundary between the bike lane and the vehicle travel lane.
- The minimum green time is updated to include the bicycle minimum green time for the east-west phases at all intersections. The minimum bicycle green time is calculated based on the standards documented in the California MUTCD 2014 Edition, Table 4D-109(CA).
- The designs standards for the bike lanes, bike lane transition through the intersections and driveways, bike waiting area, and bicycle signing and striping are based on the guidelines from the National Association of City Transportation Officials (NACTO) Urban Bikeway Design Guide and City of San Leandro Bicycle & Pedestrian Master Plan.
- A bicycle waiting area is provided at the intersections for two reasons: to facilitate the left turning bicycles and to help manage expected conflicts between bicycles and corresponding right turning vehicles at an intersection.
- Right turn conflicts at intersections are managed in two ways depending on the location:
    - At the Hesperian Boulevard and Bayfair Drive intersections, right turn conflicts are managed by implementing a bicycle waiting area at the intersection, which facilitates bicycles moving to the front of a traffic stream, where they are visible and have priority.
    - At the East 14th Street intersection, on the eastbound approach, right turn conflicts are managed by implementing a mixing zone, which moves bicycles to the left of right turning vehicles. The bike lane does not continue east of 14th Street, so the protected bikeway treatment must end. The mixing zone treatment communicates to bicycles that they are entering the general traffic stream and must be aware of potential conflicts. The abrupt right turn lane entrance, in combination with signage, discourages fast vehicle traffic and encourages awareness of bicycles.
- Addition of an eastbound through bike lane at the intersection of Hesperian Boulevard to facilitate the transition from a Class II to Class IV bikeway along Fairmont Drive. This treatment also manages the right turn conflict between vehicles and bicycles by moving right turning vehicles to the right of bicycles traveling through the intersection.

DKS also presents a possible longer-term solution which would provide for the safest intersection treatment for bicycles. Plan 2 (Protected Bicycle Signal Phase) presents this alternative, which consists of protected traffic signal phasing for bicycles when crossing an intersection. Automobile operations would be more heavily impacted with this plan as automobile and bicycle traffic would be served separately. However, this is included as a long-term idea rather than a realistic current solution, and therefore no operational analysis was completed. Below are some of the recommendations for Plan 2:

- Road diet in the east-west direction along Fairmont Drive, reducing from three (3) through lanes to two (2) through lanes in each direction.
- Striping and flexible posts, landscaping or concrete curbs could be used to delineate the boundary between the bike lane and vehicle travel lane. The ultimate plan for this bikeway is to use curb medians and landscaping for the barrier between automobiles and bicycles.
- A protected bicycle phase is proposed for safe passage of bicycles through an intersection. The automobile permitted right turn movement is controlled to avoid conflicts with bicycles at an intersection. The right turn permitted phase is allowed during all phases but is prohibited (by a red arrow on the right turn vehicle head) during the corresponding bicycle through phase.
- New mast arm traffic signal poles will be required along Fairmont Drive to withstand the additional load of the new signal equipment and signage. The signal equipment includes five (5) vehicle heads in the east-west direction along Fairmont Drive:
    - One head for left turn vehicle phasing,
    - Two heads for through vehicle phasing,
    - One head for right turn vehicle phasing, and
    - One head for bicycle signals.
- The design standards for the bike lanes, bike lane transition through the intersection and driveways, bike waiting area, and bicycle signing and striping are based on the guidelines from the National Association of City Transportation Officials (NACTO) Urban Bikeway Design Guide and City of San Leandro Bicycle & Pedestrian Master Plan.
- Conflicts between bicycles and corresponding right turning vehicles at an intersection are eliminated within the study area.
- A bicycle waiting area is provided at intersections to facilitate the left turning bicycle movement.

Table *1* summarizes the pros and cons for each of the conceptual designs. Plan 2 represents a more comprehensive, safer solution for bicycle treatment. However, it would also cost more and would result in increased delay compared to Plan 1.

Table 1: Pros and Cons for Design Alternatives

Element	Plan 1	Plan 2	Notes
Pros			
Enhances bicycle connectivity in San Leandro	✓	✓	
Bicycle safety - dedicated lane	✓	✓	Safer for bikes due to dedicated lane
Bicycle safety - dedicated lane with physical barrier		✓	Safer, more comfortable bike lane with permanent, physical barrier
Bike box	✓	✓	Safer conflict zones due to bike box
Exclusive bike phase		✓	Safer conflict zones with exclusive bike phase
Bicycle timing	✓	✓	Update minimum green time to serve bicycles
Use		✓	Higher perception of safety and comfort likely to lead to higher use
Attractiveness		✓	Permanent infrastructure more attractive
Cons			
Delay due to lane reduction	✓	✓	Lane reduction results in higher delay for vehicles
Vehicle delay due to bike phase		✓	Plan 2 higher impact to vehicle traffic due to added bicycle phase
Multimodal delay due to bike phase		✓	Plan 2 higher delays for all users due to added phase
Cost		✓	Plan 2 more expensive due to signal modifications and curb work
Construction		✓	Plan 2 more traffic impact during construction due to longer, more invasive construction period
Maintenance	✓		Plan 1 would include more temporary elements requiring more maintenance

PERFORMANCE ANALYSIS

This section includes the operational analysis completed for the Conceptual Plan 1 discussed in the previous section.

Level of Service Standards

Fairmont Drive is designated as an Arterial in the City's General Plan Transportation Element. It lies within an area that has been identified as the BayFair BART Transit Village Priority Development Area (PDA). PDAs are areas located around transit where development may occur without necessitating heavy automobile travel. Thus, these areas are currently being targeted for development.

In general, LOS along roadways in San Leandro shall be maintained at LOS D or better. However, roadways located within PDAs shall be maintained at LOS E or better. For this study, the LOS performance threshold used for Fairmont Drive is LOS E.

Existing Conditions Operational Analysis

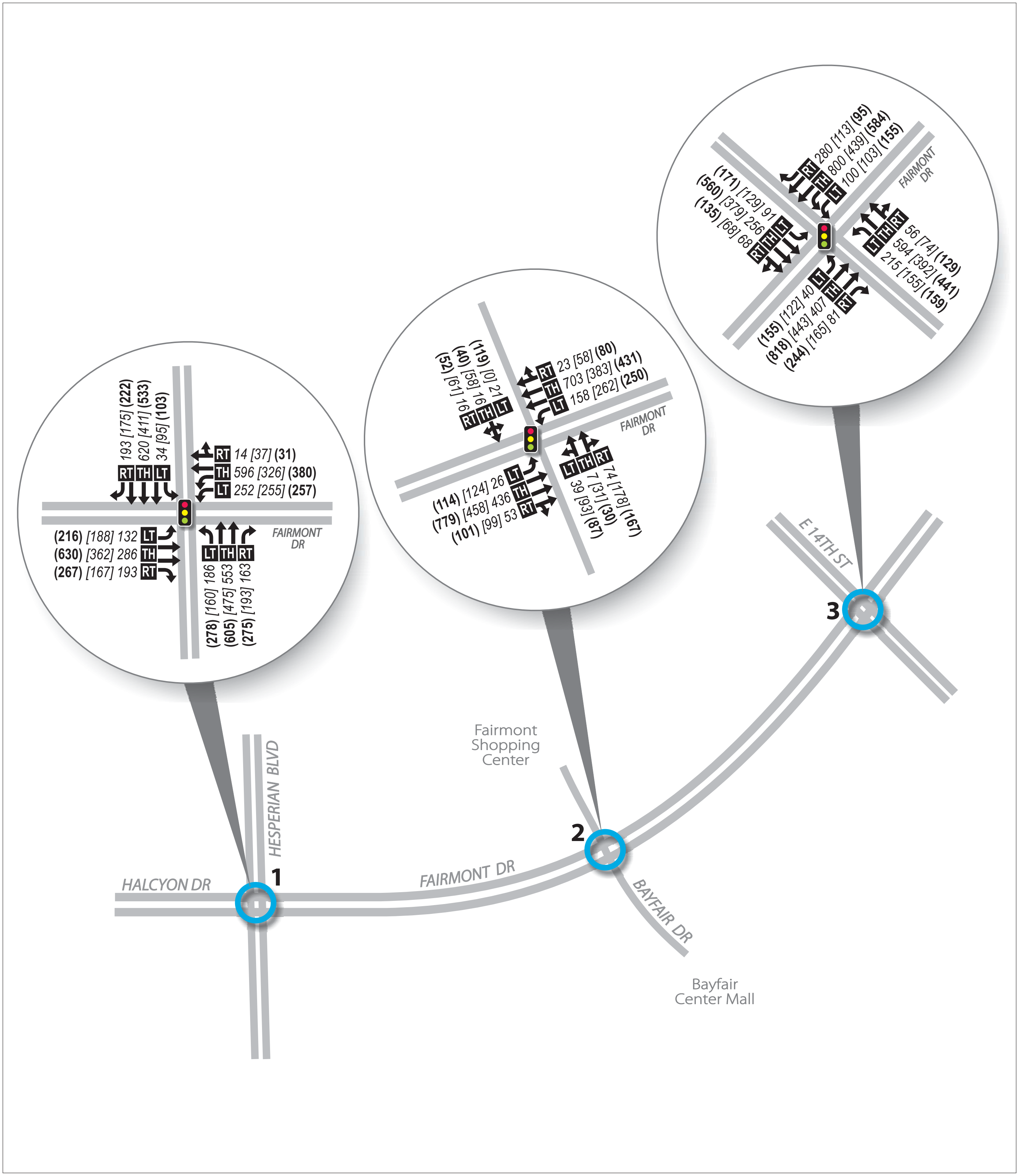
Existing traffic operations at the three study intersections and along the corridor were assessed using Synchro software. ADT counts and turn movement counts, including pedestrians and bicycles, were provided by the City of San Leandro. The AM and PM peak hour counts as well as roadway and intersection geometry for all three signalized intersections are illustrated in **Figure 2.**

DKS evaluated the existing network performance without the project for two scenarios – with the current signal timing and with optimized signal timing. As shown in **Table *2***, for the current signal timing all the study intersections currently operate at an acceptable level of service during the AM, midday and PM peak periods. The detailed reports from Synchro are included in **Appendix B**.

Table 2: Existing Intersection Delay (Seconds)/LOS

Study Intersection	Intersection Control	Current Timing			Optimized Timing		
		AM Peak	Midday Peak	PM Peak	AM Peak	Midday Peak	PM Peak
1) Fairmont Drive/Hesperian Boulevard	Signalized	37.0/D	38.5/D	44.2/D	35.7/D	39.8/D	38.4/D
2) Fairmont Drive/Bayfair Drive	Signalized	20.0/B	25.8/C	25.6/C	20.0/B	25.2/C	25.5/C
3) Fairmont Drive/E. 14th Street (SR 185)	Signalized	33.3/C	31.8/C	45.1/D	33.3/C	31.8/C	39.1/D

The signal timings were optimized based on traffic volumes. DKS assumed that the cycle lengths would not be modified in order not to disturb the coordination along the adjacent corridors of Hesperian Boulevard and East 14th Street. After optimizing the timing, all intersections are expected to perform at an acceptable level of service.



LEGEND

# (blue circle)	Study Intersection	←	Lane Configuration
(signal)	Traffic Signal	*AM [Midday]* **(PM)**	Peak Hour Traffic Volumes
		LT TH RT (Left•Thru•Right)	Volume Turn Movement

DKS

No Scale

Figure **2**

Existing Peak Hour Volumes & Lane Geometry

Fairmont Drive Class IV Bike Lane Installation – City of San Leandro

Note that the optimized timings were calculated using a method focusing on the three study intersections alone and do not account for corridor operations beyond the study segment. The calculated timings are not recommended timings for the network but rather optimized timings for the purpose of making an accurate comparison between the existing conditions and the plus project conditions. The developed timings do not account for corridor operations beyond the study segment.

Table *3* shows the Arterial LOS analysis results. As shown, with the current signal timings the corridor is currently operating at LOS F for all peak periods in the westbound direction and during the PM peak hour in the eastbound direction. With optimized timings, the network is expected to operate at LOS F for all peak periods in westbound direction and during the Midday and PM peak hour in the eastbound direction.

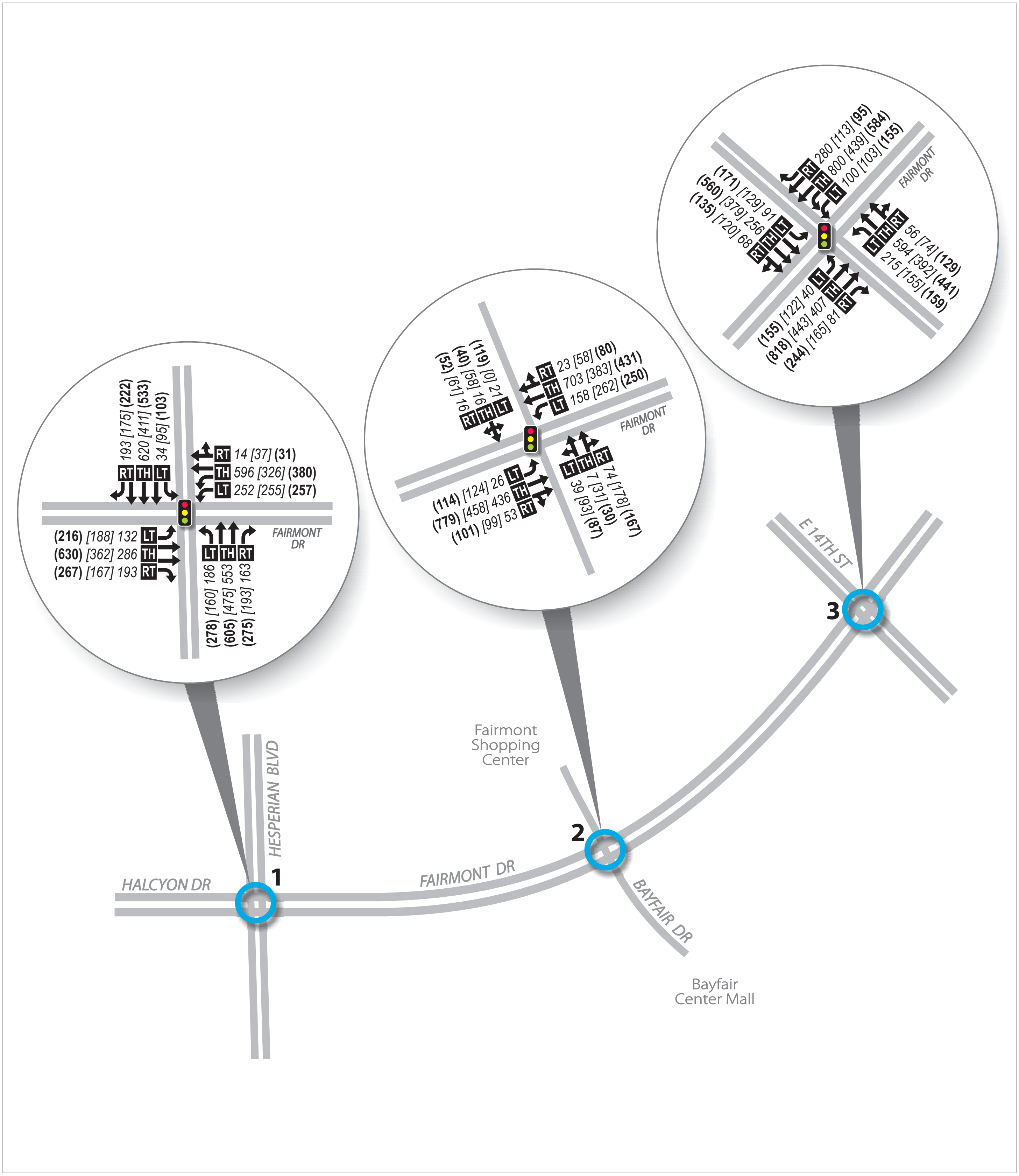
The degradation in operations during the Midday peak period is due to signal timing adjustment. Under the current timings, the maximum split allocated to the north-south movements at the Fairmont Drive/Bayfair Drive intersection is insufficient to serve pedestrians (although the controller would allocate the appropriate time if the push button is pushed). The optimized timings increase the maximum split for the north-south direction, which slightly reduces the estimated corridor speed (by 0.2 mph) in the east-west direction.

Table 3: Existing Arterial LOS

		Current Timings			Optimized Timings		
	Study Segment	Signal Delay (s)	Arterial Speed (mph)	Arterial LOS	Signal Delay (s)	Arterial Speed (mph)	Arterial LOS
AM	EB: Hesperian Boulevard to E.14th Street	56.6	10.4	E	56.8	10.4	E
AM	WB: E. 14th Street to Hesperian Boulevard	66.1	9.4	F	66.1	9.4	F
Mid day	EB: Hesperian Boulevard to E.14th Street	59.3	10.1	E	61.5	9.9	F
Mid day	WB: E. 14th Street to Hesperian Boulevard	73.1	8.8	F	72.7	8.8	F
PM	EB: Hesperian Boulevard to E.14th Street	100.0	6.9	F	67.6	9.1	F
PM	WB: E.14th Street to Hesperian Boulevard	67.0	9.1	F	66.8	9.1	F

Existing Plus Project Conditions Operational Analysis

DKS revised the roadway geometry in the Synchro models to test the effect of the lane reduction due to installation of the proposed Class IV bike lanes. The project would reduce the number of lanes from three lanes to two lanes in each direction along Fairmont Drive. **Figure 3** illustrates the intersection geometry for the plus project conditions. These results provide an approximation of expected operations.



LEGEND

- # Study Intersection
- Traffic Signal
- Lane Configuration
- *AM [Midday]* **(PM)** Peak Hour Traffic Volumes
- LT TH RT (Left•Thru•Right) Volume Turn Movement

DKS

No Scale

Figure 3

Existing Plus Project Peak Hour Volumes & Lane Geometry

Fairmont Drive Class IV Bike Lane Installation – City of San Leandro

As shown in **Table *4***, delay and LOS are expected to remain within acceptable limits after project implementation for all intersections. DKS assumed that signals would be retimed as part of this project (cycle lengths to remain the same), which resulted in an improvement in operations for the Hesperian Boulevard intersection as compared to existing conditions with the current timing plans. Compared to the existing conditions with optimized timings, delay increases at most locations but operations remain at acceptable LOS. The detailed reports from Synchro are included in **Appendix B**. **Appendix C** includes graphics showing the expected queues. Queuing is expected to increase somewhat along the corridor with the project addition.

Table 4: Existing Plus Project Delay (Seconds)/LOS

Study Intersection	Intersection Control	AM Peak	Midday Peak	PM Peak
1) Fairmont Drive/Hesperian Boulevard	Signalized	36.9/D	39.0/D	38.7/D
2) Fairmont Drive/Bayfair Drive	Signalized	21.9/C	27.0/C	34.6/D
3) Fairmont Drive/E. 14th Street (SR 185)	Signalized	35.6/D	31.6/C	42.8/D

Note: Signal retiming assumed for plus project condition. Reduction in delay compared to existing conditions is due to signal retiming.

Table *5* shows the Arterial LOS analysis results. As shown, the corridor is expected to operate at operate at LOS F for all peak periods in both the eastbound and westbound directions. This represents a degradation from LOS E to LOS F for the AM and Midday peak periods in the eastbound direction, correlated to an increase in delay of seven (7) seconds or less compared to the existing optimized conditions. For all other directions and peak periods, LOS F would be maintained.

It should be noted that coordination of the Fairmont Drive corridor would improve arterial operations. However, it is not possible to coordinate the Fairmont Drive corridor while maintaining current coordination patterns along Hesperian Boulevard and E. 14th Street, as the two corridors have different signal timings.

Table 5: Existing Plus Project Arterial LOS

	Study Segment	Signal Delay (s)	Arterial Speed (mph)	Arterial LOS
AM	EB: Hesperian Boulevard to E.14th Street	60.8	9.9	F
	WB: E. 14th Street to Hesperian Boulevard	69.0	9.1	F
Midday	EB: Hesperian Boulevard to E.14th Street	68.3	9.2	F
	WB: E. 14th Street to Hesperian Boulevard	74.1	8.7	F
PM	EB: Hesperian Boulevard to E.14th Street	95.1	7.1	F
	WB: E.14th Street to Hesperian Boulevard	67.9	9.0	F

CUMULATIVE CONDITIONS ANALYSIS

DKS also evaluated the operation of Fairmont Drive under the cumulative condition AM and PM peak periods. Forecast volumes for the Midday period were not available. The cumulative scenario assumes that the transit-oriented development has been constructed.

Cumulative Conditions Operational Analysis

Cumulative traffic operations at the three study intersections and along the corridor were assessed using Synchro software. Expected turn movement counts for the future year were provided by the City of San Leandro. The AM and PM peak hour counts as well as roadway and intersection geometry for all three signalized intersections are illustrated in **Figure 4**.

DKS assumed that the cycle length would change from existing conditions for the cumulative year. However, to be conservative it was assumed that coordination priority would remain on the Hesperian Boulevard corridor and the E. 14th Street corridor, as it is today. Therefore, individual intersection timings were optimized but the Fairmont Drive corridor was assumed to operate without coordination in the east-west direction.

As shown in **Table 6**, all study intersections are expected to operate at an acceptable LOS during the Cumulative AM and PM peak periods. The detailed reports from Synchro are included in **Appendix B**.

Table 7 shows the Arterial LOS analysis results. As shown, the corridor is expected to operate at acceptable LOS eastbound during the AM peak period. However, the arterial is expected to operate at LOS F westbound during the AM peak period and PM peak period and eastbound during the PM peak period. Arterial operation improvement in the westbound direction during the PM peak period as compared to existing conditions is due to signal timing modifications.

Table 6: Cumulative Delay (Seconds)/LOS

Study Intersection	Intersection Control	AM Peak	PM Peak
1) Fairmont Drive/Hesperian Boulevard	Signalized	60.4/E	75.9/E
2) Fairmont Drive/Bayfair Drive	Signalized	21.7/C	36.8/D
3) Fairmont Drive/E. 14th Street (SR 185)	Signalized	53.9/D	49.9/D

Note: Signal retiming assumed for Cumulative condition. Reduction in delay from existing conditions (current signal timing) is due to retiming.

Table 7: Cumulative Arterial LOS

	Study Segment	Signal Delay (s)	Arterial Speed (mph)	Arterial LOS
AM	EB: Hesperian Boulevard to E.14th Street	58.7	10.2	E
	WB: E. 14th Street to Hesperian Boulevard	149.3	5.1	F
PM	EB: Hesperian Boulevard to E.14th Street	92.9	7.3	F
	WB: E.14th Street to Hesperian Boulevard	59.2	9.9	F

Cumulative Plus Project Conditions Operational Analysis

DKS revised the roadway geometry in the Synchro models to test the effect of the lane reduction. **Figure 5** illustrates the roadway and intersection geometry for the plus project conditions. As shown in **Table 8**, delay and LOS would remain within acceptable limits after project implementation.

Table 9 shows the Arterial LOS analysis results. As shown, the corridor is expected to maintain the Cumulative (no project) LOS for most scenarios. However, it is expected to deteriorate to LOS F in the eastbound direction during the AM peak period.

It should be noted that coordination of the Fairmont Drive corridor would improve arterial operations. However, it was assumed that current coordination priorities along Hesperian Boulevard and E. 14th Street would be maintained. To be conservative, it was assumed that the two corridors would continue to have different cycle lengths, not allowing for the coordination of the Fairmont Drive corridor.

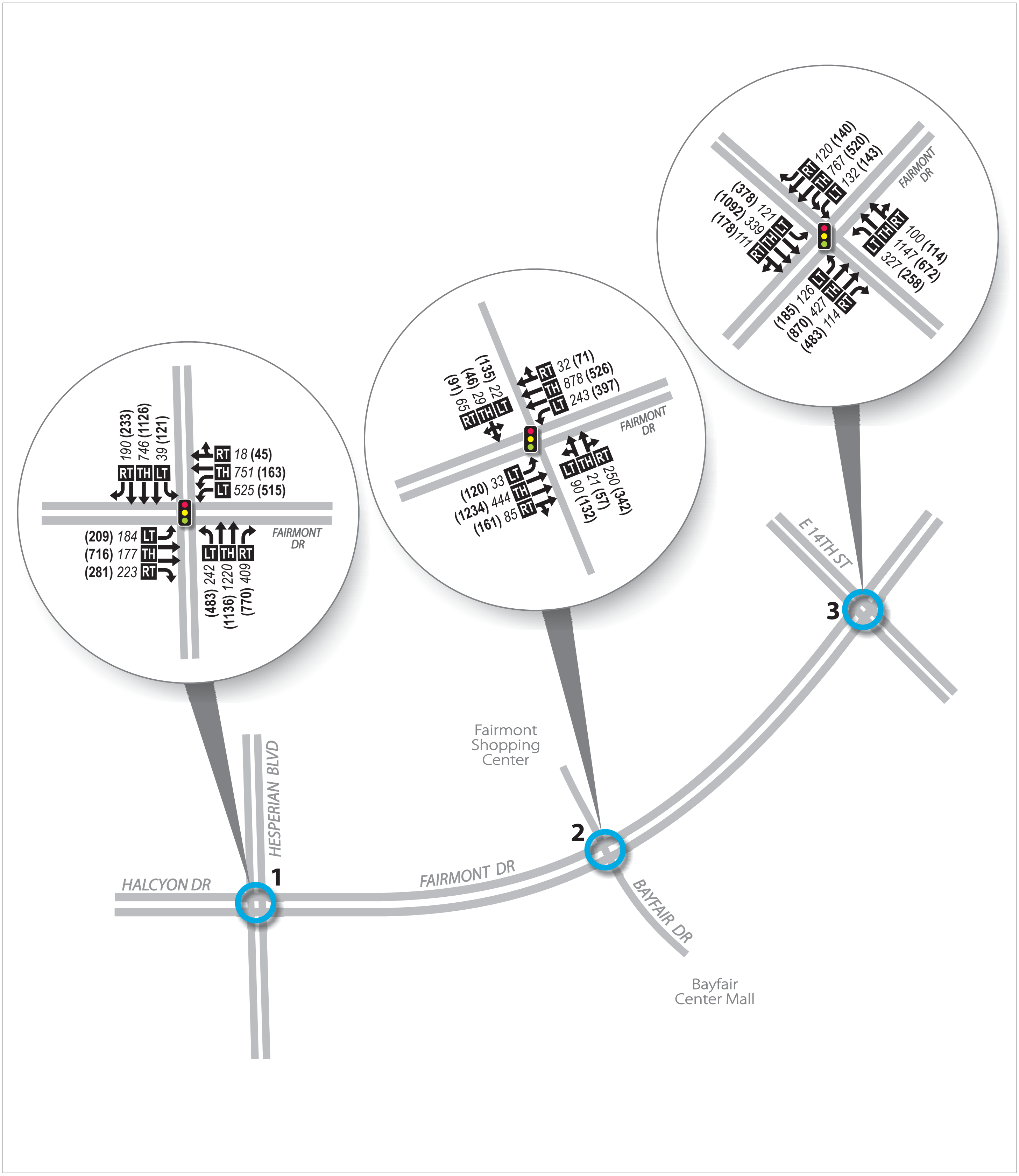
Appendix C shows the expected queuing for the Cumulative Plus Project conditions. In general, the project is expected to result in increased queuing. During the PM peak period the eastbound queue is expected to spill back from Bayfair Drive past Hesperian Boulevard.

Table 8: Cumulative Plus Project Delay (Seconds)/LOS

Study Intersection	Intersection Control	AM Peak	PM Peak
4) Fairmont Drive/Hesperian Boulevard	Signalized	51.6/D	72.9/E
5) Fairmont Drive/Bayfair Drive	Signalized	24.3/C	64.0/E
6) Fairmont Drive/E. 14th Street (SR 185)	Signalized	49.2/D	60.4/E

Table 9: Cumulative Plus Project Arterial LOS

	Study Segment	Signal Delay (s)	Arterial Speed (mph)	Arterial LOS
AM	EB: Hesperian Boulevard to E.14th Street	66.2	9.4	F
	WB: E. 14th Street to Hesperian Boulevard	113.9	6.4	F
PM	EB: Hesperian Boulevard to E.14th Street	175.9	4.4	F
	WB: E.14th Street to Hesperian Boulevard	59.7	9.8	F



LEGEND

Study Intersection

Traffic Signal

← Lane Configuration

AM **(PM)** Peak Hour Traffic Volumes

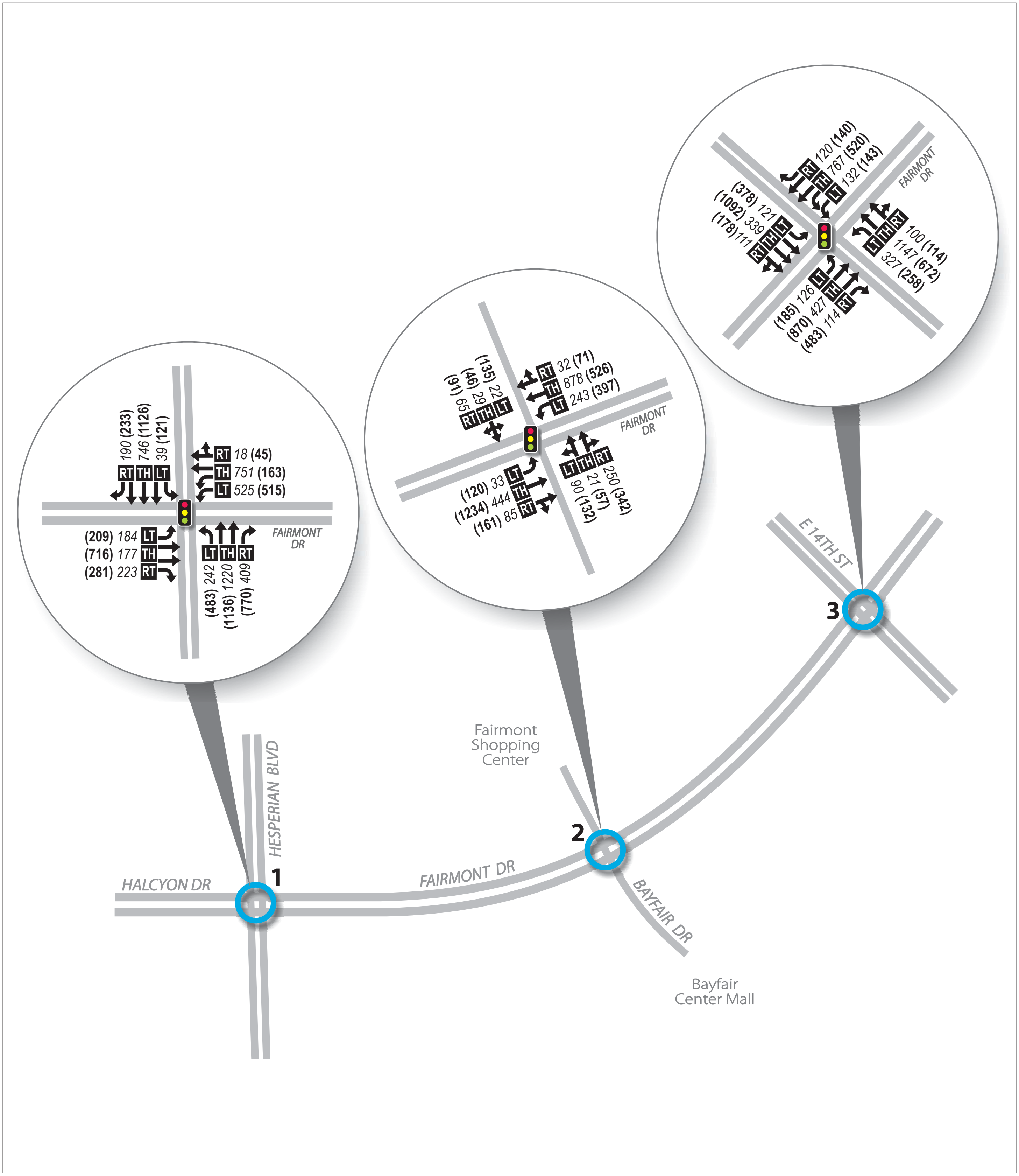
LT TH RT Volume Turn Movement
Left•Thru•Right

DKS

No Scale

Figure 4

Cumulative Peak Hour Volumes & Lane Geometry



LEGEND

\# Study Intersection

Traffic Signal

Lane Configuration

AM **(PM)** Peak Hour Traffic Volumes

LT TH RT (Left•Thru•Right) Volume Turn Movement

DKS

No Scale

Figure 5

Cumulative Plus Project Peak Hour Volumes & Lane Geometry

Fairmont Drive Class IV Bike Lane Installation – City of San Leandro

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Overall, the proposed road diet on Fairmont Drive from Hesperian Boulevard to East 14th Street is expected to have some impact on the roadway operations.

Existing Year

For the Existing scenario with current signal timings, the study intersections all operate at acceptable LOS E or better. The arterial currently operates at LOS F for all peak periods in the westbound direction and during the PM peak hour in the eastbound direction.

With optimized signal timings, all the study intersections are expected to operate at acceptable LOS. The study arterial is expected to operate at LOS F for all peak periods in the westbound direction and during the Midday and PM peak hour in the eastbound direction.

Installation of the proposed project is not expected to cause intersection operations to deteriorate below standard. However, assuming that study intersection cycle lengths will be maintained and that the Fairmont corridor will not be coordinated, arterial operations are expected to deteriorate below standard (to LOS F) in the eastbound direction during the AM and Midday and periods.

In summary, the road diet is expected to have a significant impact on arterial operations in the eastbound direction during the Midday and PM peak periods. Some increased queuing is expected.

Cumulative Year

For the Cumulative scenario (no project), all the study intersections are expected to operate at acceptable LOS. The corridor is expected to operate at acceptable LOS eastbound during the AM peak period. However, the arterial is expected to operate at LOS F westbound during the AM peak period and during the PM peak period in both directions.

Installation of the proposed project is not expected to cause intersection operations to deteriorate below standard. Assuming that the Fairmont Drive corridor will not be coordinated, the corridor is expected to deteriorate to LOS F in the eastbound direction during the AM peak period.

In general, queuing is expected to increase due to the project. During the PM peak period the eastbound queue is expected to spill back from Bayfair Drive past Hesperian Boulevard.

In summary, the project is expected to have a significant impact on arterial operations in the eastbound direction during the AM peak period. It is also expected to result in increased queuing.

Recommendations

Installation of the Class IV bikeway would reduce the number of travel lanes from three (3) lanes to two (2) lanes in both directions. In this memorandum DKS included two possible design alternatives. Plan 1 corresponds to a cost-effective alternative which consists of permissive phasing for bicycles when crossing an intersection.

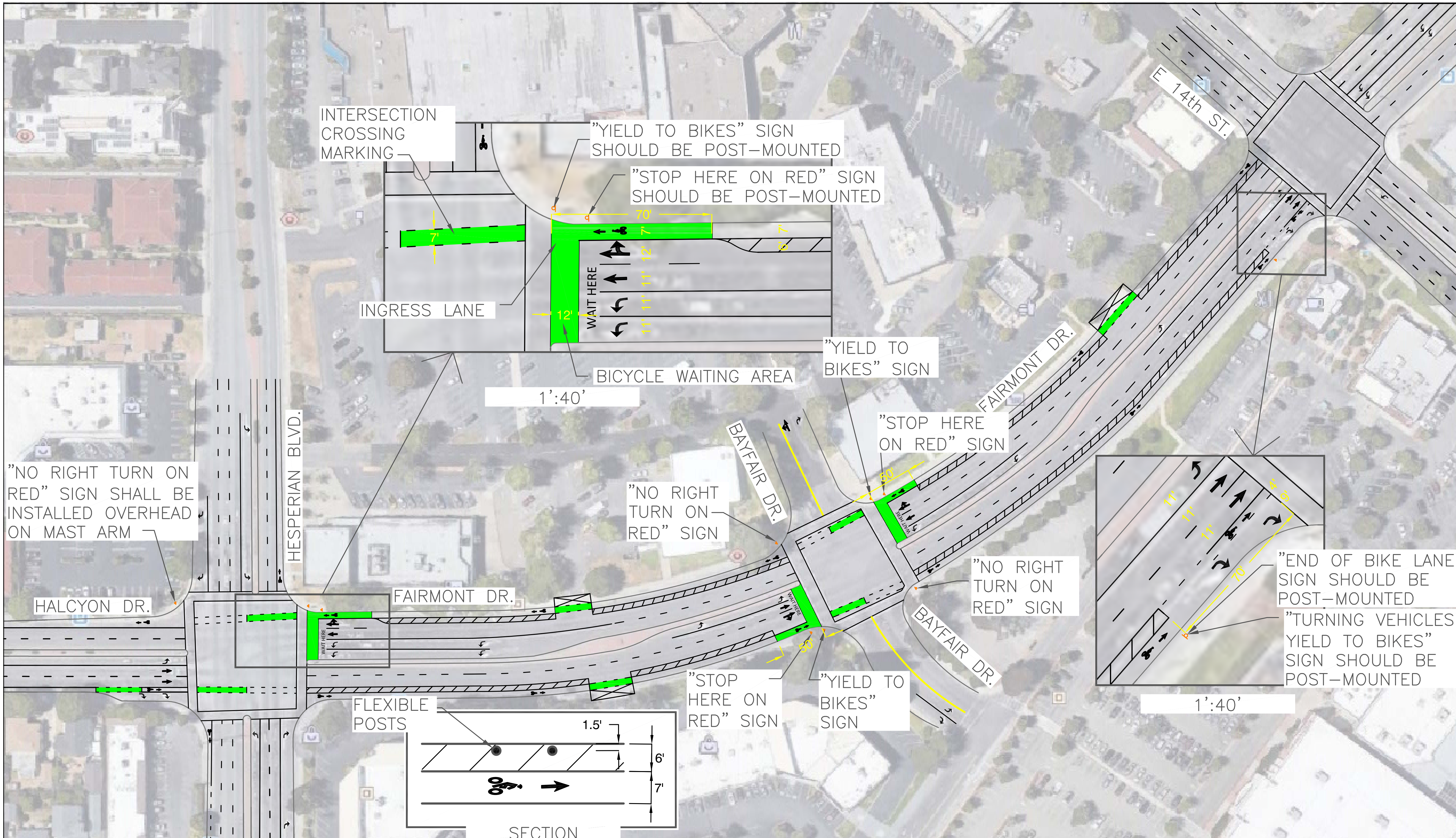
Plan 2 is recommended for the long term, safest bicycle treatment. This plan would provide for the safest intersection treatment for bicycles, consisting of protected traffic signal phasing for bicycles when crossing an intersection.

DKS recommends the following features for the Class IV bikeway under Plan 1:

- The bike lane shall be separated from the vehicle travel lane via hatched striping and flexible posts. A more permanent curb median would provide added safety for bicycles.
- The signal timings at all intersections shall be updated to include the bicycle minimum green times.
- The bicycle waiting area shall be provided to facilitate the left turning bicycles and help manage expected conflicts between bicycles and corresponding right turning vehicles at an intersection.
- The right turn conflicts at East 14th Street intersection shall be managed by implementing a mixing zone. This also helps warn the bicyclist of the termination of the Class IV bikeway.
- The installation of an eastbound through bike lane at the intersection of Hesperian Boulevard facilitates the transition from a Class II to Class IV bikeway along Fairmont Drive. It also manages the right turn vehicle conflicts.

In order to properly implement the cost-effective Plan 1, DKS has a few key recommendations. In pursuit of safety, the bicycle lanes should be separated from the vehicle travel lanes via hatched pavement markings, signal timing shall be adjusted to included bicycle minimum green times and left turning waiting areas shall be installed to help manage conflicts between right-turning vehicles. To manage right turn conflicts along Fairmont Drive and facilitate transition between Class II and Class IV bikeways, a mixing zone and an eastbound through bike lane shall be added to the East 14th Street and Hesperian Boulevard intersections, respectively.

APPENDIX A



GRAPHIC SCALE (IN FEET)

25' 50' 100' 200'

PREPARED BY:

DKS

DKS ASSOCIATES
1970 BROADWAY, SUITE # 740
OAKLAND, CA 94612
TEL: 510-763-2061

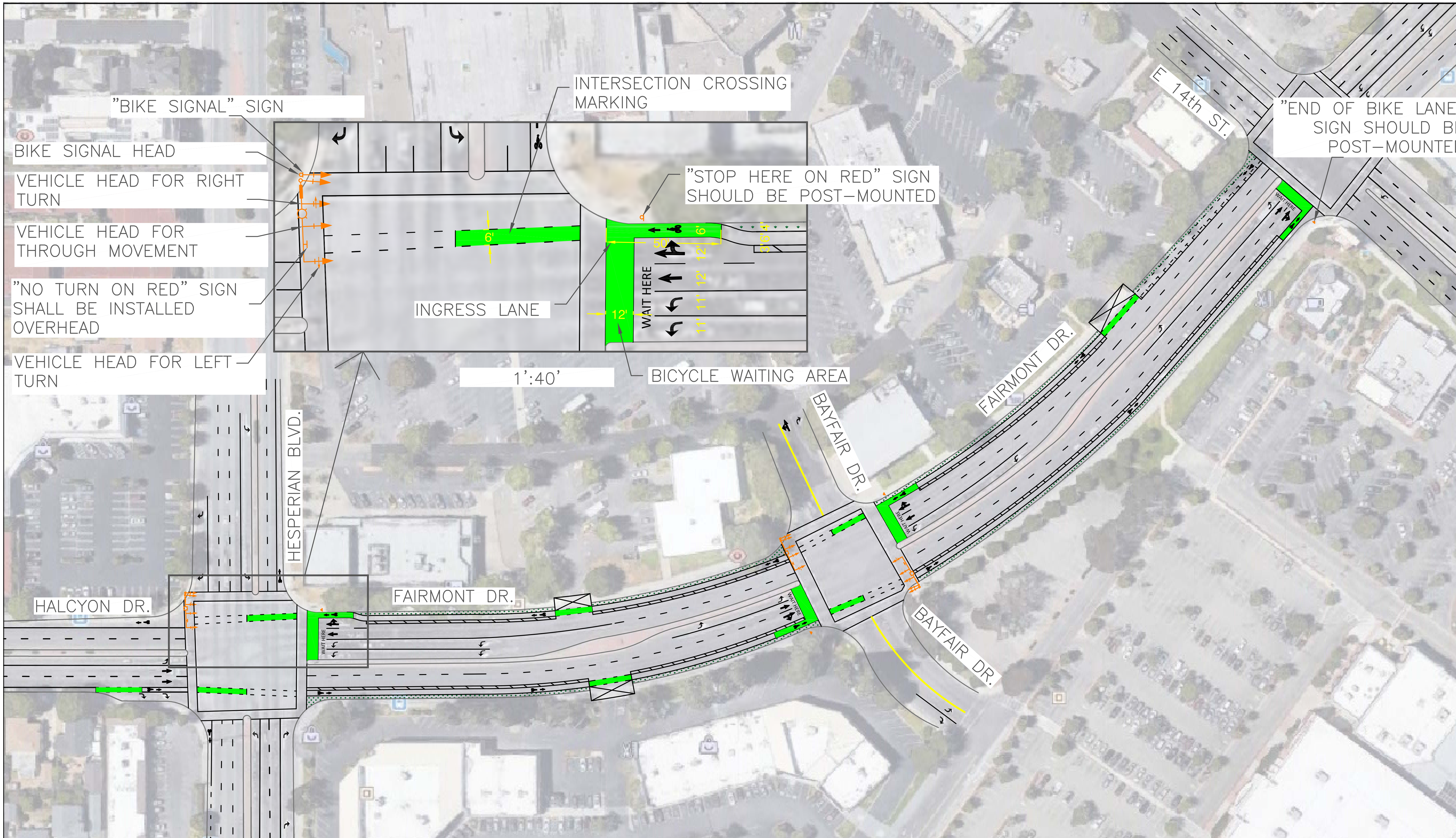
CIVIL ENGINEER	
RCE NO. ____	EXP. ____
CHECKED BY	MARIA TRIBELHORN
DESIGNED BY	YANA LOGINOVA
DRAWN BY	YANA LOGINOVA

No.	DATE	BY	REFERENCE

Fairmont Drive
Class IV Bike Lane Concept
Permissive Bicycle Treatment

DRAFT

SCALE: 1"=100'
HOR.
VERT.
DATE: APR 17, 2018
SHEET NO.
01 OF 02



GRAPHIC SCALE (IN FEET)

25' 50' 100' 200'

PREPARED BY:	CIVIL ENGINEER	No.	DATE	BY	REFERENCE			SCALE: 1"=100' HOR. VERT.
DKS DKS ASSOCIATES 1970 BROADWAY, SUITE # 740 OAKLAND, CA 94612 TEL: 510-763-2061	RCE NO. ______ EXP. ________					Fairmont Drive Class IV Bike Lane Concept Protected Bicycle Signal Phase	DRAFT	DATE: APR 17, 2018
	CHECKED BY MARIA TRIBELHORN							SHEET NO.
	DESIGNED BY YANA LOGINOVA							02 OF 02
	DRAWN BY YANA LOGINOVA							

APPENDIX B

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU
Lane Configurations												
Traffic Volume (vph)	132	286	193	1	251	596	14	1	185	553	163	11
Future Volume (vph)	132	286	193	1	251	596	14	1	185	553	163	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	13	11	11	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.6	4.6		4.0	4.9			4.0	4.9	4.9	
Lane Util. Factor	1.00	0.95	1.00		0.97	0.95			1.00	0.95	1.00	
Frpb, ped/bikes	1.00	1.00	0.97		1.00	1.00			1.00	1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00			1.00	1.00	1.00	
Frt	1.00	1.00	0.85		1.00	1.00			1.00	1.00	0.85	
Flt Protected	0.95	1.00	1.00		0.95	1.00			0.95	1.00	1.00	
Satd. Flow (prot)	1770	3539	1590		3319	3526			1770	3539	1554	
Flt Permitted	0.95	1.00	1.00		0.95	1.00			0.95	1.00	1.00	
Satd. Flow (perm)	1770	3539	1590		3319	3526			1770	3539	1554	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	140	304	205	1	267	634	15	1	197	588	173	12
RTOR Reduction (vph)	0	0	123	0	0	2	0	0	0	0	93	0
Lane Group Flow (vph)	140	304	82	0	268	647	0	0	198	588	80	0
Confl. Peds. (#/hr)			12				2				4	
Confl. Bikes (#/hr)			4				2				5	
Turn Type	Prot	NA	Perm	Prot	Prot	NA		Prot	Prot	NA	Perm	Prot
Protected Phases	3	8		7	7	4		1	1	6		5
Permitted Phases			8								6	
Actuated Green, G (s)	13.9	27.6	27.6		14.3	27.7			19.5	55.7	55.7	
Effective Green, g (s)	13.9	27.6	27.6		14.3	27.7			19.5	55.7	55.7	
Actuated g/C Ratio	0.12	0.23	0.23		0.12	0.23			0.16	0.46	0.46	
Clearance Time (s)	4.0	4.6	4.6		4.0	4.9			4.0	4.9	4.9	
Vehicle Extension (s)	3.0	4.0	4.0		4.0	3.0			2.0	6.0	6.0	
Lane Grp Cap (vph)	205	813	365		395	813			287	1642	721	
v/s Ratio Prot	0.08	0.09			c0.08	c0.18			c0.11	0.17		
v/s Ratio Perm			0.05								0.05	
v/c Ratio	0.68	0.37	0.22		0.68	0.80			0.69	0.36	0.11	
Uniform Delay, d1	50.9	38.9	37.5		50.6	43.5			47.4	20.7	18.2	
Progression Factor	1.00	1.00	1.00		1.00	1.00			0.92	0.73	1.71	
Incremental Delay, d2	9.0	0.4	0.4		5.0	5.4			5.3	0.4	0.2	
Delay (s)	60.0	39.3	37.9		55.6	48.9			49.1	15.5	31.3	
Level of Service	E	D	D		E	D			D	B	C	
Approach Delay (s)		43.3				50.9				25.3		
Approach LOS		D				D				C		

Intersection Summary			
HCM 2000 Control Delay	37.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	17.8
Intersection Capacity Utilization	78.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBL	SBT	SBR
Lane Configurations			
Traffic Volume (vph)	23	620	193
Future Volume (vph)	23	620	193
Ideal Flow (vphpl)	1900	1900	1900
Lane Width	12	12	15
Total Lost time (s)	4.0	4.9	4.9
Lane Util. Factor	1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00
Frt	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00
Satd. Flow (prot)	1770	5085	1701
Flt Permitted	0.95	1.00	1.00
Satd. Flow (perm)	1770	5085	1701
Peak-hour factor, PHF	0.94	0.94	0.94
Adj. Flow (vph)	24	660	205
RTOR Reduction (vph)	0	0	129
Lane Group Flow (vph)	36	660	76
Confl. Peds. (#/hr)			9
Confl. Bikes (#/hr)			3
Turn Type	Prot	NA	Perm
Protected Phases	5	2	
Permitted Phases			2
Actuated Green, G (s)	4.9	41.1	41.1
Effective Green, g (s)	4.9	41.1	41.1
Actuated g/C Ratio	0.04	0.34	0.34
Clearance Time (s)	4.0	4.9	4.9
Vehicle Extension (s)	2.0	6.0	6.0
Lane Grp Cap (vph)	72	1741	582
v/s Ratio Prot	c0.02	c0.13	
v/s Ratio Perm			0.04
v/c Ratio	0.50	0.38	0.13
Uniform Delay, d1	56.4	29.8	27.2
Progression Factor	1.00	1.00	1.00
Incremental Delay, d2	2.0	0.6	0.5
Delay (s)	58.3	30.4	27.6
Level of Service	E	C	C
Approach Delay (s)		30.9	
Approach LOS		C	

Intersection Summary

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	2	24	436	53	2	156	703	23	39	7	74	21
Future Volume (vph)	2	24	436	53	2	156	703	23	39	7	74	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	12	12	10	11	12	12	12	12	12
Total Lost time (s)		4.0	4.5			4.0	4.5			5.0		
Lane Util. Factor		1.00	0.91			1.00	0.91			0.95		
Frpb, ped/bikes		1.00	1.00			1.00	1.00			0.99		
Flpb, ped/bikes		1.00	1.00			1.00	1.00			1.00		
Frt		1.00	0.98			1.00	1.00			0.91		
Flt Protected		0.95	1.00			0.95	1.00			0.98		
Satd. Flow (prot)		1770	4827			1652	4890			3134		
Flt Permitted		0.95	1.00			0.95	1.00			0.86		
Satd. Flow (perm)		1770	4827			1652	4890			2751		
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	2	27	490	60	2	175	790	26	44	8	83	24
RTOR Reduction (vph)	0	0	15	0	0	0	3	0	0	53	0	0
Lane Group Flow (vph)	0	29	535	0	0	177	813	0	0	82	0	0
Confl. Peds. (#/hr)				2					3		1	1
Confl. Bikes (#/hr)				2				2				
Turn Type	Prot	Prot	NA		Prot	Prot	NA		Perm	NA		Perm
Protected Phases	1	1	5		6	6	2			4		
Permitted Phases									4			4
Actuated Green, G (s)		2.6	20.7			15.3	33.4			28.1		
Effective Green, g (s)		2.6	20.7			15.3	33.4			28.1		
Actuated g/C Ratio		0.03	0.27			0.20	0.43			0.36		
Clearance Time (s)		4.0	4.5			4.0	4.5			5.0		
Vehicle Extension (s)		2.0	6.0			2.0	6.0			2.0		
Lane Grp Cap (vph)		59	1287			325	2104			996		
v/s Ratio Prot		0.02	c0.11			c0.11	0.17					
v/s Ratio Perm										c0.03		
v/c Ratio		0.49	0.42			0.54	0.39			0.08		
Uniform Delay, d1		36.9	23.5			28.0	15.1			16.3		
Progression Factor		1.00	1.00			1.00	1.00			1.00		
Incremental Delay, d2		2.3	0.6			1.0	0.3			0.0		
Delay (s)		39.2	24.1			29.0	15.4			16.3		
Level of Service		D	C			C	B			B		
Approach Delay (s)			24.8				17.9			16.3		
Approach LOS			C				B			B		

Intersection Summary			
HCM 2000 Control Delay	20.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	77.6	Sum of lost time (s)	13.5
Intersection Capacity Utilization	59.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBT	SBR
Lane Configurations		
Traffic Volume (vph)	16	16
Future Volume (vph)	16	16
Ideal Flow (vphpl)	1900	1900
Lane Width	16	12
Total Lost time (s)	5.0	
Lane Util. Factor	0.95	
Frpb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.95	
Flt Protected	0.98	
Satd. Flow (prot)	3737	
Flt Permitted	0.86	
Satd. Flow (perm)	3259	
Peak-hour factor, PHF	0.89	0.89
Adj. Flow (vph)	18	18
RTOR Reduction (vph)	11	0
Lane Group Flow (vph)	49	0
Confl. Peds. (#/hr)		3
Confl. Bikes (#/hr)		2
Turn Type	NA	
Protected Phases	4	
Permitted Phases		
Actuated Green, G (s)	28.1	
Effective Green, g (s)	28.1	
Actuated g/C Ratio	0.36	
Clearance Time (s)	5.0	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	1180	
v/s Ratio Prot		
v/s Ratio Perm	0.01	
v/c Ratio	0.04	
Uniform Delay, d1	16.0	
Progression Factor	1.00	
Incremental Delay, d2	0.0	
Delay (s)	16.0	
Level of Service	B	
Approach Delay (s)	16.0	
Approach LOS	B	

Intersection Summary

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Traffic Volume (vph)	1	39	407	81	1	99	800	280	3	212	594	56
Future Volume (vph)	1	39	407	81	1	99	800	280	3	212	594	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	12	12	12	12	11	12	10	12	12
Total Lost time (s)		3.7	4.6	4.6		3.7	4.6	4.6		3.7	4.6	
Lane Util. Factor		1.00	0.95	1.00		0.97	0.95	1.00		1.00	0.95	
Frpb, ped/bikes		1.00	1.00	0.98		1.00	1.00	0.98		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	1.00	0.85		1.00	1.00	0.85		1.00	0.99	
Flt Protected		0.95	1.00	1.00		0.95	1.00	1.00		0.95	1.00	
Satd. Flow (prot)		1711	3539	1552		3433	3539	1502		1652	3488	
Flt Permitted		0.95	1.00	1.00		0.95	1.00	1.00		0.95	1.00	
Satd. Flow (perm)		1711	3539	1552		3433	3539	1502		1652	3488	
Peak-hour factor, PHF	0.92	0.95	0.95	0.95	0.92	0.95	0.95	0.95	0.92	0.95	0.95	0.95
Adj. Flow (vph)	1	41	428	85	1	104	842	295	3	223	625	59
RTOR Reduction (vph)	0	0	0	64	0	0	0	179	0	0	7	0
Lane Group Flow (vph)	0	42	428	21	0	105	842	116	0	226	677	0
Confl. Peds. (#/hr)				5				6				8
Confl. Bikes (#/hr)				2								
Turn Type	Prot	Prot	NA	Perm	Prot	Prot	NA	Perm	Prot	Prot	NA	
Protected Phases	3	3	8		7	7	4		1	1	6	
Permitted Phases				8				4				
Actuated Green, G (s)		2.8	23.0	23.0		5.4	25.6	25.6		17.9	42.0	
Effective Green, g (s)		2.8	23.0	23.0		5.4	25.6	25.6		17.9	42.0	
Actuated g/C Ratio		0.03	0.24	0.24		0.06	0.27	0.27		0.19	0.44	
Clearance Time (s)		3.7	4.6	4.6		3.7	4.6	4.6		3.7	4.6	
Vehicle Extension (s)		2.0	2.0	2.0		2.0	2.0	2.0		2.0	4.0	
Lane Grp Cap (vph)		50	856	375		195	953	404		311	1542	
v/s Ratio Prot		c0.02	0.12			0.03	c0.24			c0.14	c0.19	
v/s Ratio Perm				0.01				0.08				
v/c Ratio		0.84	0.50	0.05		0.54	0.88	0.29		0.73	0.44	
Uniform Delay, d1		45.9	31.0	27.7		43.6	33.3	27.5		36.2	18.3	
Progression Factor		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		67.6	0.2	0.0		1.4	9.5	0.1		7.0	0.9	
Delay (s)		113.5	31.2	27.7		45.0	42.8	27.6		43.2	19.3	
Level of Service		F	C	C		D	D	C		D	B	
Approach Delay (s)			36.9				39.4				25.2	
Approach LOS			D				D				C	

Intersection Summary			
HCM 2000 Control Delay	33.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	16.6
Intersection Capacity Utilization	76.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBU	SBL	SBT	SBR
Lane Configurations				
Traffic Volume (vph)	6	85	256	68
Future Volume (vph)	6	85	256	68
Ideal Flow (vphpl)	1900	1900	1900	1900
Lane Width	12	12	12	12
Total Lost time (s)		3.7	4.6	
Lane Util. Factor		1.00	0.91	
Frpb, ped/bikes		1.00	0.99	
Flpb, ped/bikes		1.00	1.00	
Frt		1.00	0.97	
Flt Protected		0.95	1.00	
Satd. Flow (prot)		1770	4899	
Flt Permitted		0.95	1.00	
Satd. Flow (perm)		1770	4899	
Peak-hour factor, PHF	0.92	0.95	0.95	0.95
Adj. Flow (vph)	7	89	269	72
RTOR Reduction (vph)	0	0	48	0
Lane Group Flow (vph)	0	96	293	0
Confl. Peds. (#/hr)				10
Confl. Bikes (#/hr)				4
Turn Type	Prot	Prot	NA	
Protected Phases	5	5	2	
Permitted Phases				
Actuated Green, G (s)		8.0	32.1	
Effective Green, g (s)		8.0	32.1	
Actuated g/C Ratio		0.08	0.34	
Clearance Time (s)		3.7	4.6	
Vehicle Extension (s)		2.0	4.0	
Lane Grp Cap (vph)		149	1655	
v/s Ratio Prot		c0.05	0.06	
v/s Ratio Perm				
v/c Ratio		0.64	0.18	
Uniform Delay, d1		42.1	22.1	
Progression Factor		1.00	1.00	
Incremental Delay, d2		7.0	0.2	
Delay (s)		49.1	22.4	
Level of Service		D	C	
Approach Delay (s)			28.2	
Approach LOS			C	

Intersection Summary

Arterial Level of Service: EB Fairmont Dr

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Bayfair Dr	III	35	17.0	22.7	39.7	0.13	12.1	E
E. 14th Street	III	35	16.2	33.9	50.1	0.13	9.1	F
Total	III		33.2	56.6	89.8	0.26	10.4	E

Arterial Level of Service: WB Fairmont Dr

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Bayfair Dr	III	35	16.2	15.2	31.4	0.13	14.5	D
	III	35	17.0	50.9	67.9	0.13	7.1	F
Total	III		33.2	66.1	99.3	0.26	9.4	F

Arterial Level of Service: NB Hesperian Blvd

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Drew St	II	40	13.0	13.9	26.9	0.11	15.1	E
Thornally Dr	II	40	24.0	36.8	60.8	0.21	12.4	F
Bayfair Dr	II	40	24.2	1.5	25.7	0.21	29.4	B
Fairmont Dr	II	40	13.5	16.9	30.4	0.12	13.9	E
Total	II		74.7	69.1	143.8	0.65	16.2	E

Arterial Level of Service: SB Hesperian Blvd

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Bayfair Dr	II	40	13.5	12.0	25.5	0.12	16.5	E
Thornally Dr	II	40	24.2	38.7	62.9	0.21	12.0	F
Drew St	II	40	24.0	20.0	44.0	0.21	17.1	D
Springlake Dr	II	40	13.0	27.4	40.4	0.11	10.0	F
Total	II		74.7	98.1	172.8	0.65	13.5	E

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Traffic Volume (vph)	6	210	630	267	6	251	380	31	3	275	605	275
Future Volume (vph)	6	210	630	267	6	251	380	31	3	275	605	275
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	13	12	11	12	12	12	12	12	15
Total Lost time (s)		4.0	4.6	4.6		4.0	4.9			4.0	4.9	4.9
Lane Util. Factor		1.00	0.95	1.00		0.97	0.95			1.00	0.95	1.00
Frpb, ped/bikes		1.00	1.00	0.98		1.00	1.00			1.00	1.00	0.98
Flpb, ped/bikes		1.00	1.00	1.00		1.00	1.00			1.00	1.00	1.00
Frt		1.00	1.00	0.85		1.00	0.99			1.00	1.00	0.85
Flt Protected		0.95	1.00	1.00		0.95	1.00			0.95	1.00	1.00
Satd. Flow (prot)		1770	3539	1595		3319	3490			1770	3539	1699
Flt Permitted		0.95	1.00	1.00		0.95	1.00			0.95	1.00	1.00
Satd. Flow (perm)		1770	3539	1595		3319	3490			1770	3539	1699
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	6	216	649	275	6	259	392	32	3	284	624	284
RTOR Reduction (vph)	0	0	0	65	0	0	5	0	0	0	0	167
Lane Group Flow (vph)	0	222	649	210	0	265	419	0	0	287	624	117
Confl. Peds. (#/hr)				9				18				9
Confl. Bikes (#/hr)				3				2				6
Turn Type	Prot	Prot	NA	Perm	Prot	Prot	NA		Prot	Prot	NA	Perm
Protected Phases	3	3	8		7	7	4		1	1	6	
Permitted Phases				8								6
Actuated Green, G (s)		20.4	30.5	30.5		16.2	26.0			24.6	53.6	53.6
Effective Green, g (s)		20.4	30.5	30.5		16.2	26.0			24.6	53.6	53.6
Actuated g/C Ratio		0.16	0.23	0.23		0.12	0.20			0.19	0.41	0.41
Clearance Time (s)		4.0	4.6	4.6		4.0	4.9			4.0	4.9	4.9
Vehicle Extension (s)		3.0	4.0	4.0		4.0	3.0			2.0	6.0	6.0
Lane Grp Cap (vph)		277	830	374		413	698			334	1459	700
v/s Ratio Prot		c0.13	c0.18			0.08	0.12			c0.16	c0.18	
v/s Ratio Perm				0.13								0.07
v/c Ratio		0.80	0.78	0.56		0.64	0.60			0.86	0.43	0.17
Uniform Delay, d1		52.8	46.6	43.9		54.1	47.3			51.0	27.3	24.1
Progression Factor		1.00	1.00	1.00		1.00	1.00			0.95	0.66	1.81
Incremental Delay, d2		15.2	5.1	2.3		3.8	1.5			16.4	0.5	0.3
Delay (s)		68.1	51.7	46.2		57.9	48.7			64.7	18.4	44.0
Level of Service		E	D	D		E	D			E	B	D
Approach Delay (s)			53.6				52.3				35.6	
Approach LOS			D				D				D	

Intersection Summary			
HCM 2000 Control Delay	44.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	17.8
Intersection Capacity Utilization	89.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBU	SBL	SBT	SBR
Lane Configurations				
Traffic Volume (vph)	32	71	533	222
Future Volume (vph)	32	71	533	222
Ideal Flow (vphpl)	1900	1900	1900	1900
Lane Width	12	12	12	15
Total Lost time (s)		4.0	4.9	4.9
Lane Util. Factor		1.00	0.91	1.00
Frpb, ped/bikes		1.00	1.00	0.97
Flpb, ped/bikes		1.00	1.00	1.00
Frt		1.00	1.00	0.85
Flt Protected		0.95	1.00	1.00
Satd. Flow (prot)		1770	5085	1682
Flt Permitted		0.95	1.00	1.00
Satd. Flow (perm)		1770	5085	1682
Peak-hour factor, PHF	0.97	0.97	0.97	0.97
Adj. Flow (vph)	33	73	549	229
RTOR Reduction (vph)	0	0	0	156
Lane Group Flow (vph)	0	106	549	73
Confl. Peds. (#/hr)				19
Confl. Bikes (#/hr)				1
Turn Type	Prot	Prot	NA	Perm
Protected Phases	5	5	2	
Permitted Phases				2
Actuated Green, G (s)		12.2	41.2	41.2
Effective Green, g (s)		12.2	41.2	41.2
Actuated g/C Ratio		0.09	0.32	0.32
Clearance Time (s)		4.0	4.9	4.9
Vehicle Extension (s)		2.0	6.0	6.0
Lane Grp Cap (vph)		166	1611	533
v/s Ratio Prot		0.06	0.11	
v/s Ratio Perm				0.04
v/c Ratio		0.64	0.34	0.14
Uniform Delay, d1		56.8	34.0	31.7
Progression Factor		1.00	1.00	1.00
Incremental Delay, d2		5.8	0.6	0.5
Delay (s)		62.6	34.6	32.2
Level of Service		E	C	C
Approach Delay (s)			37.3	
Approach LOS			D	

Intersection Summary

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	17	97	779	101	3	247	431	80	87	30	167	119
Future Volume (vph)	17	97	779	101	3	247	431	80	87	30	167	119
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	12	12	10	11	12	12	12	12	12
Total Lost time (s)		4.0	4.5			4.0	4.5			5.0		
Lane Util. Factor		1.00	0.91			1.00	0.91			0.95		
Frpb, ped/bikes		1.00	1.00			1.00	1.00			0.99		
Flpb, ped/bikes		1.00	1.00			1.00	1.00			1.00		
Frt		1.00	0.98			1.00	0.98			0.91		
Flt Protected		0.95	1.00			0.95	1.00			0.98		
Satd. Flow (prot)		1770	4823			1652	4785			3122		
Flt Permitted		0.95	1.00			0.95	1.00			0.79		
Satd. Flow (perm)		1770	4823			1652	4785			2493		
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	18	100	803	104	3	255	444	82	90	31	172	123
RTOR Reduction (vph)	0	0	16	0	0	0	23	0	0	115	0	0
Lane Group Flow (vph)	0	118	891	0	0	258	503	0	0	178	0	0
Confl. Peds. (#/hr)				1				7	18		13	13
Confl. Bikes (#/hr)				2				1			1	
Turn Type	Prot	Prot	NA		Prot	Prot	NA		Perm	NA		Perm
Protected Phases	1	1	5		6	6	2			4		
Permitted Phases									4			4
Actuated Green, G (s)		10.3	27.1			16.5	33.3			28.2		
Effective Green, g (s)		10.3	27.1			16.5	33.3			28.2		
Actuated g/C Ratio		0.12	0.32			0.19	0.39			0.33		
Clearance Time (s)		4.0	4.5			4.0	4.5			5.0		
Vehicle Extension (s)		2.0	6.0			2.0	6.0			2.0		
Lane Grp Cap (vph)		213	1532			319	1868			824		
v/s Ratio Prot		0.07	c0.18			c0.16	0.11					
v/s Ratio Perm										0.07		
v/c Ratio		0.55	0.58			0.81	0.27			0.22		
Uniform Delay, d1		35.3	24.4			32.9	17.7			20.6		
Progression Factor		1.00	1.00			1.00	1.00			1.00		
Incremental Delay, d2		1.8	1.1			13.2	0.2			0.0		
Delay (s)		37.1	25.4			46.1	17.9			20.6		
Level of Service		D	C			D	B			C		
Approach Delay (s)			26.8				27.2			20.6		
Approach LOS			C				C			C		

Intersection Summary			
HCM 2000 Control Delay	25.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	85.3	Sum of lost time (s)	13.5
Intersection Capacity Utilization	93.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBT	SBR
Lane Configurations	↰↑↱	
Traffic Volume (vph)	40	52
Future Volume (vph)	40	52
Ideal Flow (vphpl)	1900	1900
Lane Width	16	12
Total Lost time (s)	5.0	
Lane Util. Factor	0.95	
Frpb, ped/bikes	0.99	
Flpb, ped/bikes	1.00	
Frt	0.96	
Flt Protected	0.97	
Satd. Flow (prot)	3713	
Flt Permitted	0.67	
Satd. Flow (perm)	2571	
Peak-hour factor, PHF	0.97	0.97
Adj. Flow (vph)	41	54
RTOR Reduction (vph)	23	0
Lane Group Flow (vph)	195	0
Confl. Peds. (#/hr)		18
Confl. Bikes (#/hr)		
Turn Type	NA	
Protected Phases	4	
Permitted Phases		
Actuated Green, G (s)	28.2	
Effective Green, g (s)	28.2	
Actuated g/C Ratio	0.33	
Clearance Time (s)	5.0	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	849	
v/s Ratio Prot		
v/s Ratio Perm	c0.08	
v/c Ratio	0.23	
Uniform Delay, d1	20.7	
Progression Factor	1.00	
Incremental Delay, d2	0.1	
Delay (s)	20.7	
Level of Service	C	
Approach Delay (s)	20.7	
Approach LOS	C	

Intersection Summary

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU
Lane Configurations												
Traffic Volume (vph)	155	818	244	7	148	584	95	4	155	441	129	14
Future Volume (vph)	155	818	244	7	148	584	95	4	155	441	129	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	12	10	12	12	12
Total Lost time (s)	3.7	4.6	4.6		3.7	4.6	4.6		3.7	4.6		
Lane Util. Factor	1.00	0.95	1.00		0.97	0.95	1.00		1.00	0.95		
Frpb, ped/bikes	1.00	1.00	0.95		1.00	1.00	0.97		1.00	0.99		
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00		
Frt	1.00	1.00	0.85		1.00	1.00	0.85		1.00	0.97		
Flt Protected	0.95	1.00	1.00		0.95	1.00	1.00		0.95	1.00		
Satd. Flow (prot)	1770	3539	1510		3433	3539	1485		1652	3389		
Flt Permitted	0.95	1.00	1.00		0.95	1.00	1.00		0.95	1.00		
Satd. Flow (perm)	1770	3539	1510		3433	3539	1485		1652	3389		
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	158	835	249	7	151	596	97	4	158	450	132	14
RTOR Reduction (vph)	0	0	191	0	0	0	77	0	0	28	0	0
Lane Group Flow (vph)	158	835	58	0	158	596	20	0	162	554	0	0
Confl. Peds. (#/hr)			27				16				23	
Confl. Bikes (#/hr)			2								10	
Turn Type	Prot	NA	Perm	Prot	Prot	NA	Perm	Prot	Prot	NA		Prot
Protected Phases	3	8		7	7	4		1	1	6		5
Permitted Phases			8				4					
Actuated Green, G (s)	10.7	22.0	22.0		8.7	20.0	20.0		12.3	36.2		
Effective Green, g (s)	10.7	22.0	22.0		8.7	20.0	20.0		12.3	36.2		
Actuated g/C Ratio	0.11	0.23	0.23		0.09	0.21	0.21		0.13	0.38		
Clearance Time (s)	3.7	4.6	4.6		3.7	4.6	4.6		3.7	4.6		
Vehicle Extension (s)	2.0	2.0	2.0		2.0	2.0	2.0		2.0	4.0		
Lane Grp Cap (vph)	199	819	349		314	745	312		213	1291		
v/s Ratio Prot	c0.09	c0.24			0.05	0.17			c0.10	c0.16		
v/s Ratio Perm			0.04				0.01					
v/c Ratio	0.79	1.02	0.17		0.50	0.80	0.07		0.76	0.43		
Uniform Delay, d1	41.1	36.5	29.2		41.1	35.6	30.0		39.9	21.8		
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00		0.84	0.70		
Incremental Delay, d2	18.1	36.5	0.1		0.5	5.8	0.0		13.0	1.0		
Delay (s)	59.2	73.0	29.2		41.6	41.4	30.1		46.4	16.2		
Level of Service	E	E	C		D	D	C		D	B		
Approach Delay (s)		62.4				40.1				22.7		
Approach LOS		E				D				C		

Intersection Summary			
HCM 2000 Control Delay	45.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	16.6
Intersection Capacity Utilization	76.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBL	SBT	SBR
Lane Configurations			
Traffic Volume (vph)	157	560	135
Future Volume (vph)	157	560	135
Ideal Flow (vphpl)	1900	1900	1900
Lane Width	12	12	12
Total Lost time (s)	3.7	4.6	
Lane Util. Factor	1.00	0.91	
Frpb, ped/bikes	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	
Frt	1.00	0.97	
Flt Protected	0.95	1.00	
Satd. Flow (prot)	1770	4909	
Flt Permitted	0.95	1.00	
Satd. Flow (perm)	1770	4909	
Peak-hour factor, PHF	0.98	0.98	0.98
Adj. Flow (vph)	160	571	138
RTOR Reduction (vph)	0	43	0
Lane Group Flow (vph)	174	666	0
Confl. Peds. (#/hr)			15
Confl. Bikes (#/hr)			6
Turn Type	Prot	NA	
Protected Phases	5	2	
Permitted Phases			
Actuated Green, G (s)	11.5	35.4	
Effective Green, g (s)	11.5	35.4	
Actuated g/C Ratio	0.12	0.37	
Clearance Time (s)	3.7	4.6	
Vehicle Extension (s)	2.0	4.0	
Lane Grp Cap (vph)	214	1829	
v/s Ratio Prot	c0.10	0.14	
v/s Ratio Perm			
v/c Ratio	0.81	0.36	
Uniform Delay, d1	40.7	21.6	
Progression Factor	1.07	1.91	
Incremental Delay, d2	12.2	0.3	
Delay (s)	55.7	41.7	
Level of Service	E	D	
Approach Delay (s)		44.5	
Approach LOS		D	

Intersection Summary

Arterial Level of Service: EB Fairmont Dr

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Bayfair Dr	III	35	15.5	25.7	41.2	0.11	10.0	E
E. 14th Street	III	35	17.8	74.3	92.1	0.14	5.4	F
Total	III		33.3	100.0	133.3	0.25	6.9	F

Arterial Level of Service: WB Fairmont Dr

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Bayfair Dr	III	35	17.8	17.1	34.9	0.14	14.3	D
	III	35	15.5	49.9	65.4	0.11	6.3	F
Total	III		33.3	67.0	100.3	0.25	9.1	F

Arterial Level of Service: NB Hesperian Blvd

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Drew St	II	40	13.0	3.4	16.4	0.11	24.9	C
Thornally Dr	II	40	24.0	48.7	72.7	0.21	10.3	F
Bayfair Dr	II	40	24.2	28.9	53.1	0.21	14.3	E
Fairmont Dr	II	40	13.5	20.1	33.6	0.12	12.5	F
Total	II		74.7	101.1	175.8	0.65	13.3	E

Arterial Level of Service: SB Hesperian Blvd

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Bayfair Dr	II	40	13.5	19.5	33.0	0.12	12.8	F
Thornally Dr	II	40	24.2	42.6	66.8	0.21	11.3	F
Drew St	II	40	24.0	8.7	32.7	0.21	22.9	C
Springlake Dr	II	40	13.0	18.8	31.8	0.11	12.8	F
Total	II		74.7	89.6	164.3	0.65	14.2	E

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU
Lane Configurations												
Traffic Volume (vph)	132	286	193	1	251	596	14	1	185	553	163	11
Future Volume (vph)	132	286	193	1	251	596	14	1	185	553	163	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	13	11	11	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.6	4.6		4.0	4.9			4.0	4.9	4.9	
Lane Util. Factor	1.00	0.95	1.00		0.97	0.95			1.00	0.95	1.00	
Frpb, ped/bikes	1.00	1.00	0.97		1.00	1.00			1.00	1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00			1.00	1.00	1.00	
Frt	1.00	1.00	0.85		1.00	1.00			1.00	1.00	0.85	
Flt Protected	0.95	1.00	1.00		0.95	1.00			0.95	1.00	1.00	
Satd. Flow (prot)	1770	3539	1590		3319	3526			1770	3539	1554	
Flt Permitted	0.95	1.00	1.00		0.95	1.00			0.95	1.00	1.00	
Satd. Flow (perm)	1770	3539	1590		3319	3526			1770	3539	1554	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	140	304	205	1	267	634	15	1	197	588	173	12
RTOR Reduction (vph)	0	0	118	0	0	2	0	0	0	0	91	0
Lane Group Flow (vph)	140	304	87	0	268	647	0	0	198	588	82	0
Confl. Peds. (#/hr)			12				2				4	
Confl. Bikes (#/hr)			4				2				5	
Turn Type	Prot	NA	Perm	Prot	Prot	NA		Prot	Prot	NA	Perm	Prot
Protected Phases	3	8		7	7	4		1	1	6		5
Permitted Phases			8								6	
Actuated Green, G (s)	13.7	27.1	27.1		14.6	27.7			19.2	56.6	56.6	
Effective Green, g (s)	13.7	27.1	27.1		14.6	27.7			19.2	56.6	56.6	
Actuated g/C Ratio	0.11	0.23	0.23		0.12	0.23			0.16	0.47	0.47	
Clearance Time (s)	4.0	4.6	4.6		4.0	4.9			4.0	4.9	4.9	
Vehicle Extension (s)	3.0	4.0	4.0		4.0	3.0			2.0	6.0	6.0	
Lane Grp Cap (vph)	202	799	359		403	813			283	1669	732	
v/s Ratio Prot	0.08	0.09			c0.08	c0.18			c0.11	0.17		
v/s Ratio Perm			0.05								0.05	
v/c Ratio	0.69	0.38	0.24		0.67	0.80			0.70	0.35	0.11	
Uniform Delay, d1	51.1	39.3	38.1		50.4	43.5			47.7	20.1	17.7	
Progression Factor	1.00	1.00	1.00		1.00	1.00			0.81	0.55	1.31	
Incremental Delay, d2	9.8	0.4	0.5		4.5	5.4			5.9	0.4	0.2	
Delay (s)	61.0	39.8	38.5		54.9	48.9			44.7	11.4	23.4	
Level of Service	E	D	D		D	D			D	B	C	
Approach Delay (s)		43.9				50.7				20.5		
Approach LOS		D				D				C		

Intersection Summary			
HCM 2000 Control Delay	35.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	17.8
Intersection Capacity Utilization	78.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBL	SBT	SBR
Lane Configurations			
Traffic Volume (vph)	23	620	193
Future Volume (vph)	23	620	193
Ideal Flow (vphpl)	1900	1900	1900
Lane Width	12	12	15
Total Lost time (s)	4.0	4.9	4.9
Lane Util. Factor	1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00
Frt	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00
Satd. Flow (prot)	1770	5085	1701
Flt Permitted	0.95	1.00	1.00
Satd. Flow (perm)	1770	5085	1701
Peak-hour factor, PHF	0.94	0.94	0.94
Adj. Flow (vph)	24	660	205
RTOR Reduction (vph)	0	0	127
Lane Group Flow (vph)	36	660	78
Confl. Peds. (#/hr)			9
Confl. Bikes (#/hr)			3
Turn Type	Prot	NA	Perm
Protected Phases	5	2	
Permitted Phases			2
Actuated Green, G (s)	4.2	41.6	41.6
Effective Green, g (s)	4.2	41.6	41.6
Actuated g/C Ratio	0.04	0.35	0.35
Clearance Time (s)	4.0	4.9	4.9
Vehicle Extension (s)	2.0	6.0	6.0
Lane Grp Cap (vph)	61	1762	589
v/s Ratio Prot	c0.02	c0.13	
v/s Ratio Perm			0.05
v/c Ratio	0.59	0.37	0.13
Uniform Delay, d1	57.1	29.4	26.8
Progression Factor	1.00	1.00	1.00
Incremental Delay, d2	9.8	0.6	0.5
Delay (s)	66.8	30.0	27.3
Level of Service	E	C	C
Approach Delay (s)		30.9	
Approach LOS		C	

Intersection Summary

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	2	24	436	53	2	156	703	23	39	7	74	21
Future Volume (vph)	2	24	436	53	2	156	703	23	39	7	74	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	12	12	10	11	12	12	12	12	12
Total Lost time (s)		4.0	4.5			4.0	4.5			5.0		
Lane Util. Factor		1.00	0.91			1.00	0.91			0.95		
Frpb, ped/bikes		1.00	1.00			1.00	1.00			0.99		
Flpb, ped/bikes		1.00	1.00			1.00	1.00			1.00		
Frt		1.00	0.98			1.00	1.00			0.91		
Flt Protected		0.95	1.00			0.95	1.00			0.98		
Satd. Flow (prot)		1770	4827			1652	4890			3134		
Flt Permitted		0.95	1.00			0.95	1.00			0.86		
Satd. Flow (perm)		1770	4827			1652	4890			2750		
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	2	27	490	60	2	175	790	26	44	8	83	24
RTOR Reduction (vph)	0	0	13	0	0	0	3	0	0	53	0	0
Lane Group Flow (vph)	0	29	537	0	0	177	813	0	0	82	0	0
Confl. Peds. (#/hr)				2					3		1	1
Confl. Bikes (#/hr)				2				2				
Turn Type	Prot	Prot	NA		Prot	Prot	NA		Perm	NA		Perm
Protected Phases	1	1	5		6	6	2			4		
Permitted Phases									4			4
Actuated Green, G (s)		2.6	20.6			15.5	33.5			28.1		
Effective Green, g (s)		2.6	20.6			15.5	33.5			28.1		
Actuated g/C Ratio		0.03	0.27			0.20	0.43			0.36		
Clearance Time (s)		4.0	4.5			4.0	4.5			5.0		
Vehicle Extension (s)		2.0	6.0			2.0	6.0			2.0		
Lane Grp Cap (vph)		59	1279			329	2108			994		
v/s Ratio Prot		0.02	c0.11			c0.11	0.17					
v/s Ratio Perm										c0.03		
v/c Ratio		0.49	0.42			0.54	0.39			0.08		
Uniform Delay, d1		36.9	23.6			27.9	15.1			16.3		
Progression Factor		1.00	1.00			1.00	1.00			1.00		
Incremental Delay, d2		2.3	0.6			0.9	0.3			0.0		
Delay (s)		39.2	24.2			28.7	15.4			16.3		
Level of Service		D	C			C	B			B		
Approach Delay (s)			25.0				17.8			16.3		
Approach LOS			C				B			B		

Intersection Summary			
HCM 2000 Control Delay	20.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	77.7	Sum of lost time (s)	13.5
Intersection Capacity Utilization	59.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBT	SBR
Lane Configurations	↰↑↱	
Traffic Volume (vph)	16	16
Future Volume (vph)	16	16
Ideal Flow (vphpl)	1900	1900
Lane Width	16	12
Total Lost time (s)	5.0	
Lane Util. Factor	0.95	
Frpb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.95	
Flt Protected	0.98	
Satd. Flow (prot)	3737	
Flt Permitted	0.86	
Satd. Flow (perm)	3259	
Peak-hour factor, PHF	0.89	0.89
Adj. Flow (vph)	18	18
RTOR Reduction (vph)	11	0
Lane Group Flow (vph)	49	0
Confl. Peds. (#/hr)		3
Confl. Bikes (#/hr)		2
Turn Type	NA	
Protected Phases	4	
Permitted Phases		
Actuated Green, G (s)	28.1	
Effective Green, g (s)	28.1	
Actuated g/C Ratio	0.36	
Clearance Time (s)	5.0	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	1178	
v/s Ratio Prot		
v/s Ratio Perm	0.01	
v/c Ratio	0.04	
Uniform Delay, d1	16.1	
Progression Factor	1.00	
Incremental Delay, d2	0.0	
Delay (s)	16.1	
Level of Service	B	
Approach Delay (s)	16.1	
Approach LOS	B	

Intersection Summary

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Traffic Volume (vph)	1	39	407	81	1	99	800	280	3	212	594	56
Future Volume (vph)	1	39	407	81	1	99	800	280	3	212	594	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	12	12	12	12	11	12	10	12	12
Total Lost time (s)		3.7	4.6	4.6		3.7	4.6	4.6		3.7	4.6	
Lane Util. Factor		1.00	0.95	1.00		0.97	0.95	1.00		1.00	0.95	
Frpb, ped/bikes		1.00	1.00	0.98		1.00	1.00	0.98		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	1.00	0.85		1.00	1.00	0.85		1.00	0.99	
Flt Protected		0.95	1.00	1.00		0.95	1.00	1.00		0.95	1.00	
Satd. Flow (prot)		1711	3539	1552		3433	3539	1502		1652	3488	
Flt Permitted		0.95	1.00	1.00		0.95	1.00	1.00		0.95	1.00	
Satd. Flow (perm)		1711	3539	1552		3433	3539	1502		1652	3488	
Peak-hour factor, PHF	0.92	0.95	0.95	0.95	0.92	0.95	0.95	0.95	0.92	0.95	0.95	0.95
Adj. Flow (vph)	1	41	428	85	1	104	842	295	3	223	625	59
RTOR Reduction (vph)	0	0	0	64	0	0	0	179	0	0	7	0
Lane Group Flow (vph)	0	42	428	21	0	105	842	116	0	226	677	0
Confl. Peds. (#/hr)				5				6				8
Confl. Bikes (#/hr)				2								
Turn Type	Prot	Prot	NA	Perm	Prot	Prot	NA	Perm	Prot	Prot	NA	
Protected Phases	3	3	8		7	7	4		1	1	6	
Permitted Phases				8				4				
Actuated Green, G (s)		2.8	23.0	23.0		5.4	25.6	25.6		17.9	42.0	
Effective Green, g (s)		2.8	23.0	23.0		5.4	25.6	25.6		17.9	42.0	
Actuated g/C Ratio		0.03	0.24	0.24		0.06	0.27	0.27		0.19	0.44	
Clearance Time (s)		3.7	4.6	4.6		3.7	4.6	4.6		3.7	4.6	
Vehicle Extension (s)		2.0	2.0	2.0		2.0	2.0	2.0		2.0	4.0	
Lane Grp Cap (vph)		50	856	375		195	953	404		311	1542	
v/s Ratio Prot		c0.02	0.12			0.03	c0.24			c0.14	c0.19	
v/s Ratio Perm				0.01				0.08				
v/c Ratio		0.84	0.50	0.05		0.54	0.88	0.29		0.73	0.44	
Uniform Delay, d1		45.9	31.0	27.7		43.6	33.3	27.5		36.2	18.3	
Progression Factor		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		67.6	0.2	0.0		1.4	9.5	0.1		7.0	0.9	
Delay (s)		113.5	31.2	27.7		45.0	42.8	27.6		43.2	19.3	
Level of Service		F	C	C		D	D	C		D	B	
Approach Delay (s)			36.9				39.4				25.2	
Approach LOS			D				D				C	

Intersection Summary			
HCM 2000 Control Delay	33.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	16.6
Intersection Capacity Utilization	76.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBU	SBL	SBT	SBR
Lane Configurations				
Traffic Volume (vph)	6	85	256	68
Future Volume (vph)	6	85	256	68
Ideal Flow (vphpl)	1900	1900	1900	1900
Lane Width	12	12	12	12
Total Lost time (s)		3.7	4.6	
Lane Util. Factor		1.00	0.91	
Frpb, ped/bikes		1.00	0.99	
Flpb, ped/bikes		1.00	1.00	
Frt		1.00	0.97	
Flt Protected		0.95	1.00	
Satd. Flow (prot)		1770	4899	
Flt Permitted		0.95	1.00	
Satd. Flow (perm)		1770	4899	
Peak-hour factor, PHF	0.92	0.95	0.95	0.95
Adj. Flow (vph)	7	89	269	72
RTOR Reduction (vph)	0	0	48	0
Lane Group Flow (vph)	0	96	293	0
Confl. Peds. (#/hr)				10
Confl. Bikes (#/hr)				4
Turn Type	Prot	Prot	NA	
Protected Phases	5	5	2	
Permitted Phases				
Actuated Green, G (s)		8.0	32.1	
Effective Green, g (s)		8.0	32.1	
Actuated g/C Ratio		0.08	0.34	
Clearance Time (s)		3.7	4.6	
Vehicle Extension (s)		2.0	4.0	
Lane Grp Cap (vph)		149	1655	
v/s Ratio Prot		c0.05	0.06	
v/s Ratio Perm				
v/c Ratio		0.64	0.18	
Uniform Delay, d1		42.1	22.1	
Progression Factor		1.00	1.00	
Incremental Delay, d2		7.0	0.2	
Delay (s)		49.1	22.4	
Level of Service		D	C	
Approach Delay (s)			28.2	
Approach LOS			C	

Intersection Summary

Arterial Level of Service: EB Fairmont Dr

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Bayfair Dr	III	35	17.1	22.9	40.0	0.13	12.0	E
E. 14th Street	III	35	16.3	33.9	50.2	0.13	9.1	F
Total	III		33.4	56.8	90.2	0.26	10.4	E

Arterial Level of Service: WB Fairmont Dr

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Bayfair Dr	III	35	16.3	15.2	31.5	0.13	14.5	D
	III	35	17.1	50.9	68.0	0.13	7.1	F
Total	III		33.4	66.1	99.5	0.26	9.4	F

Arterial Level of Service: NB Hesperian Blvd

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Drew St	II	40	13.0	11.6	24.6	0.11	16.5	E
Thornally Dr	II	40	24.0	31.1	55.1	0.21	13.6	E
Bayfair Dr	II	40	24.2	1.7	25.9	0.21	29.2	B
Fairmont Dr	II	40	13.5	12.3	25.8	0.12	16.3	E
Total	II		74.7	56.7	131.4	0.65	17.8	D

Arterial Level of Service: SB Hesperian Blvd

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Bayfair Dr	II	40	13.5	5.3	18.8	0.12	22.4	C
Thornally Dr	II	40	24.2	29.4	53.6	0.21	14.1	E
Drew St	II	40	24.0	3.9	27.9	0.21	27.0	C
Springlake Dr	II	40	13.0	11.1	24.1	0.11	16.8	E
Total	II		74.7	49.7	124.4	0.65	18.8	D

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Traffic Volume (vph)	6	210	630	267	6	251	380	31	3	275	605	275
Future Volume (vph)	6	210	630	267	6	251	380	31	3	275	605	275
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	13	12	11	12	12	12	12	12	15
Total Lost time (s)		4.0	4.6	4.6		4.0	4.9			4.0	4.9	4.9
Lane Util. Factor		1.00	0.95	1.00		0.97	0.95			1.00	0.95	1.00
Frpb, ped/bikes		1.00	1.00	0.98		1.00	1.00			1.00	1.00	0.98
Flpb, ped/bikes		1.00	1.00	1.00		1.00	1.00			1.00	1.00	1.00
Frt		1.00	1.00	0.85		1.00	0.99			1.00	1.00	0.85
Flt Protected		0.95	1.00	1.00		0.95	1.00			0.95	1.00	1.00
Satd. Flow (prot)		1770	3539	1595		3319	3490			1770	3539	1699
Flt Permitted		0.95	1.00	1.00		0.95	1.00			0.95	1.00	1.00
Satd. Flow (perm)		1770	3539	1595		3319	3490			1770	3539	1699
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	6	216	649	275	6	259	392	32	3	284	624	284
RTOR Reduction (vph)	0	0	0	101	0	0	5	0	0	0	0	165
Lane Group Flow (vph)	0	222	649	174	0	265	419	0	0	287	624	119
Confl. Peds. (#/hr)				9				18				9
Confl. Bikes (#/hr)				3				2				6
Turn Type	Prot	Prot	NA	Perm	Prot	Prot	NA		Prot	Prot	NA	Perm
Protected Phases	3	3	8		7	7	4		1	1	6	
Permitted Phases				8								6
Actuated Green, G (s)		20.5	30.9	30.9		15.6	25.7			26.1	54.3	54.3
Effective Green, g (s)		20.5	30.9	30.9		15.6	25.7			26.1	54.3	54.3
Actuated g/C Ratio		0.16	0.24	0.24		0.12	0.20			0.20	0.42	0.42
Clearance Time (s)		4.0	4.6	4.6		4.0	4.9			4.0	4.9	4.9
Vehicle Extension (s)		3.0	4.0	4.0		4.0	3.0			2.0	6.0	6.0
Lane Grp Cap (vph)		279	841	379		398	689			355	1478	709
v/s Ratio Prot		0.13	c0.18			0.08	c0.12			c0.16	c0.18	
v/s Ratio Perm				0.11								0.07
v/c Ratio		0.80	0.77	0.46		0.67	0.61			0.81	0.42	0.17
Uniform Delay, d1		52.7	46.3	42.4		54.7	47.6			49.6	26.8	23.7
Progression Factor		1.00	1.00	1.00		1.00	1.00			0.59	0.42	0.16
Incremental Delay, d2		14.5	4.7	1.2		4.6	1.5			10.6	0.5	0.3
Delay (s)		67.2	50.9	43.6		59.3	49.1			39.9	11.6	4.1
Level of Service		E	D	D		E	D			D	B	A
Approach Delay (s)			52.3				53.0				16.6	
Approach LOS			D				D				B	

Intersection Summary			
HCM 2000 Control Delay	38.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	17.8
Intersection Capacity Utilization	89.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBU	SBL	SBT	SBR
Lane Configurations				
Traffic Volume (vph)	32	71	533	222
Future Volume (vph)	32	71	533	222
Ideal Flow (vphpl)	1900	1900	1900	1900
Lane Width	12	12	12	15
Total Lost time (s)		4.0	4.9	4.9
Lane Util. Factor		1.00	0.91	1.00
Frpb, ped/bikes		1.00	1.00	0.97
Flpb, ped/bikes		1.00	1.00	1.00
Frt		1.00	1.00	0.85
Flt Protected		0.95	1.00	1.00
Satd. Flow (prot)		1770	5085	1682
Flt Permitted		0.95	1.00	1.00
Satd. Flow (perm)		1770	5085	1682
Peak-hour factor, PHF	0.97	0.97	0.97	0.97
Adj. Flow (vph)	33	73	549	229
RTOR Reduction (vph)	0	0	0	159
Lane Group Flow (vph)	0	106	549	70
Confl. Peds. (#/hr)				19
Confl. Bikes (#/hr)				1
Turn Type	Prot	Prot	NA	Perm
Protected Phases	5	5	2	
Permitted Phases				2
Actuated Green, G (s)		11.7	39.9	39.9
Effective Green, g (s)		11.7	39.9	39.9
Actuated g/C Ratio		0.09	0.31	0.31
Clearance Time (s)		4.0	4.9	4.9
Vehicle Extension (s)		2.0	6.0	6.0
Lane Grp Cap (vph)		159	1560	516
v/s Ratio Prot		c0.06	0.11	
v/s Ratio Perm				0.04
v/c Ratio		0.67	0.35	0.14
Uniform Delay, d1		57.3	35.0	32.6
Progression Factor		1.00	1.00	1.00
Incremental Delay, d2		7.9	0.6	0.5
Delay (s)		65.2	35.6	33.1
Level of Service		E	D	C
Approach Delay (s)			38.5	
Approach LOS			D	

Intersection Summary

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	17	97	779	101	3	247	431	80	87	30	167	119
Future Volume (vph)	17	97	779	101	3	247	431	80	87	30	167	119
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	12	12	10	11	12	12	12	12	12
Total Lost time (s)		4.0	4.5			4.0	4.5			5.0		
Lane Util. Factor		1.00	0.91			1.00	0.91			0.95		
Frpb, ped/bikes		1.00	1.00			1.00	1.00			0.99		
Flpb, ped/bikes		1.00	1.00			1.00	1.00			1.00		
Frt		1.00	0.98			1.00	0.98			0.91		
Flt Protected		0.95	1.00			0.95	1.00			0.98		
Satd. Flow (prot)		1770	4823			1652	4784			3121		
Flt Permitted		0.95	1.00			0.95	1.00			0.79		
Satd. Flow (perm)		1770	4823			1652	4784			2489		
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	18	100	803	104	3	255	444	82	90	31	172	123
RTOR Reduction (vph)	0	0	14	0	0	0	24	0	0	116	0	0
Lane Group Flow (vph)	0	118	893	0	0	258	502	0	0	177	0	0
Confl. Peds. (#/hr)				1				7	18		13	13
Confl. Bikes (#/hr)				2				1			1	
Turn Type	Prot	Prot	NA		Prot	Prot	NA		Perm	NA		Perm
Protected Phases	1	1	5		6	6	2			4		
Permitted Phases									4			4
Actuated Green, G (s)		10.3	27.2			18.1	35.0			28.3		
Effective Green, g (s)		10.3	27.2			18.1	35.0			28.3		
Actuated g/C Ratio		0.12	0.31			0.21	0.40			0.32		
Clearance Time (s)		4.0	4.5			4.0	4.5			5.0		
Vehicle Extension (s)		2.0	6.0			2.0	6.0			2.0		
Lane Grp Cap (vph)		209	1506			343	1922			808		
v/s Ratio Prot		0.07	c0.19			c0.16	0.10					
v/s Ratio Perm										0.07		
v/c Ratio		0.56	0.59			0.75	0.26			0.22		
Uniform Delay, d1		36.3	25.3			32.4	17.4			21.4		
Progression Factor		1.00	1.00			1.00	1.00			1.00		
Incremental Delay, d2		2.1	1.2			8.0	0.2			0.0		
Delay (s)		38.4	26.4			40.4	17.6			21.4		
Level of Service		D	C			D	B			C		
Approach Delay (s)			27.8				25.1			21.4		
Approach LOS			C				C			C		

Intersection Summary			
HCM 2000 Control Delay	25.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	87.1	Sum of lost time (s)	13.5
Intersection Capacity Utilization	93.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBT	SBR
Lane Configurations	↰↑↱	
Traffic Volume (vph)	40	52
Future Volume (vph)	40	52
Ideal Flow (vphpl)	1900	1900
Lane Width	16	12
Total Lost time (s)	5.0	
Lane Util. Factor	0.95	
Frpb, ped/bikes	0.99	
Flpb, ped/bikes	1.00	
Frt	0.96	
Flt Protected	0.97	
Satd. Flow (prot)	3713	
Flt Permitted	0.67	
Satd. Flow (perm)	2564	
Peak-hour factor, PHF	0.97	0.97
Adj. Flow (vph)	41	54
RTOR Reduction (vph)	27	0
Lane Group Flow (vph)	191	0
Confl. Peds. (#/hr)		18
Confl. Bikes (#/hr)		
Turn Type	NA	
Protected Phases	4	
Permitted Phases		
Actuated Green, G (s)	28.3	
Effective Green, g (s)	28.3	
Actuated g/C Ratio	0.32	
Clearance Time (s)	5.0	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	833	
v/s Ratio Prot		
v/s Ratio Perm	c0.07	
v/c Ratio	0.23	
Uniform Delay, d1	21.4	
Progression Factor	1.00	
Incremental Delay, d2	0.1	
Delay (s)	21.5	
Level of Service	C	
Approach Delay (s)	21.5	
Approach LOS	C	

Intersection Summary

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU
Lane Configurations												
Traffic Volume (vph)	155	818	244	7	148	584	95	4	155	441	129	14
Future Volume (vph)	155	818	244	7	148	584	95	4	155	441	129	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	12	10	12	12	12
Total Lost time (s)	3.7	4.6	4.6		3.7	4.6	4.6		3.7	4.6		
Lane Util. Factor	1.00	0.95	1.00		0.97	0.95	1.00		1.00	0.95		
Frpb, ped/bikes	1.00	1.00	0.95		1.00	1.00	0.97		1.00	0.99		
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00		
Frt	1.00	1.00	0.85		1.00	1.00	0.85		1.00	0.97		
Flt Protected	0.95	1.00	1.00		0.95	1.00	1.00		0.95	1.00		
Satd. Flow (prot)	1770	3539	1510		3433	3539	1485		1652	3389		
Flt Permitted	0.95	1.00	1.00		0.95	1.00	1.00		0.95	1.00		
Satd. Flow (perm)	1770	3539	1510		3433	3539	1485		1652	3389		
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	158	835	249	7	151	596	97	4	158	450	132	14
RTOR Reduction (vph)	0	0	179	0	0	0	73	0	0	28	0	0
Lane Group Flow (vph)	158	835	70	0	158	596	24	0	162	554	0	0
Confl. Peds. (#/hr)			27				16				23	
Confl. Bikes (#/hr)			2								10	
Turn Type	Prot	NA	Perm	Prot	Prot	NA	Perm	Prot	Prot	NA		Prot
Protected Phases	3	8		7	7	4		1	1	6		5
Permitted Phases			8				4					
Actuated Green, G (s)	10.0	26.7	26.7		6.5	23.2	23.2		10.3	34.0		
Effective Green, g (s)	10.0	26.7	26.7		6.5	23.2	23.2		10.3	34.0		
Actuated g/C Ratio	0.11	0.28	0.28		0.07	0.24	0.24		0.11	0.36		
Clearance Time (s)	3.7	4.6	4.6		3.7	4.6	4.6		3.7	4.6		
Vehicle Extension (s)	2.0	2.0	2.0		2.0	2.0	2.0		2.0	4.0		
Lane Grp Cap (vph)	186	994	424		234	864	362		179	1212		
v/s Ratio Prot	c0.09	c0.24			0.05	0.17			c0.10	c0.16		
v/s Ratio Perm			0.05				0.02					
v/c Ratio	0.85	0.84	0.17		0.68	0.69	0.07		0.91	0.46		
Uniform Delay, d1	41.8	32.1	25.7		43.2	32.6	27.6		41.9	23.4		
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00		0.89	0.77		
Incremental Delay, d2	27.6	6.2	0.1		5.9	1.8	0.0		39.5	1.2		
Delay (s)	69.4	38.4	25.8		49.2	34.5	27.6		76.8	19.3		
Level of Service	E	D	C		D	C	C		E	B		
Approach Delay (s)		39.8				36.4				31.9		
Approach LOS		D				D				C		

Intersection Summary			
HCM 2000 Control Delay	39.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	16.6
Intersection Capacity Utilization	76.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBL	SBT	SBR
Lane Configurations			
Traffic Volume (vph)	157	560	135
Future Volume (vph)	157	560	135
Ideal Flow (vphpl)	1900	1900	1900
Lane Width	12	12	12
Total Lost time (s)	3.7	4.6	
Lane Util. Factor	1.00	0.91	
Frpb, ped/bikes	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	
Frt	1.00	0.97	
Flt Protected	0.95	1.00	
Satd. Flow (prot)	1770	4908	
Flt Permitted	0.95	1.00	
Satd. Flow (perm)	1770	4908	
Peak-hour factor, PHF	0.98	0.98	0.98
Adj. Flow (vph)	160	571	138
RTOR Reduction (vph)	0	41	0
Lane Group Flow (vph)	174	668	0
Confl. Peds. (#/hr)			15
Confl. Bikes (#/hr)			6
Turn Type	Prot	NA	
Protected Phases	5	2	
Permitted Phases			
Actuated Green, G (s)	11.2	34.9	
Effective Green, g (s)	11.2	34.9	
Actuated g/C Ratio	0.12	0.37	
Clearance Time (s)	3.7	4.6	
Vehicle Extension (s)	2.0	4.0	
Lane Grp Cap (vph)	208	1803	
v/s Ratio Prot	c0.10	0.14	
v/s Ratio Perm			
v/c Ratio	0.84	0.37	
Uniform Delay, d1	41.0	22.0	
Progression Factor	1.40	1.82	
Incremental Delay, d2	14.8	0.3	
Delay (s)	72.4	40.3	
Level of Service	E	D	
Approach Delay (s)		46.6	
Approach LOS		D	

Intersection Summary

Arterial Level of Service: EB Fairmont Dr

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Bayfair Dr	III	35	15.5	27.1	42.6	0.11	9.7	F
E. 14th Street	III	35	17.8	40.5	58.3	0.14	8.6	F
Total	III		33.3	67.6	100.9	0.25	9.1	F

Arterial Level of Service: WB Fairmont Dr

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Bayfair Dr	III	35	17.8	16.6	34.4	0.14	14.6	D
	III	35	15.5	50.2	65.7	0.11	6.3	F
Total	III		33.3	66.8	100.1	0.25	9.1	F

Arterial Level of Service: NB Hesperian Blvd

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Drew St	II	40	13.0	4.5	17.5	0.11	23.3	C
Thornally Dr	II	40	24.0	28.6	52.6	0.21	14.3	E
Bayfair Dr	II	40	24.2	6.9	31.1	0.21	24.3	C
Fairmont Dr	II	40	13.5	12.6	26.1	0.12	16.1	E
Total	II		74.7	52.6	127.3	0.65	18.3	D

Arterial Level of Service: SB Hesperian Blvd

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Bayfair Dr	II	40	13.5	8.5	22.0	0.12	19.2	D
Thornally Dr	II	40	24.2	8.9	33.1	0.21	22.9	C
Drew St	II	40	24.0	5.0	29.0	0.21	25.9	C
Springlake Dr	II	40	13.0	7.9	20.9	0.11	19.5	D
Total	II		74.7	30.3	105.0	0.65	22.2	C

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU
Lane Configurations												
Traffic Volume (vph)	132	286	193	1	251	596	14	1	185	553	163	11
Future Volume (vph)	132	286	193	1	251	596	14	1	185	553	163	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	12	10	11	11	11	10	10	10	12	14	12
Total Lost time (s)	4.0	4.6	4.6		4.0	4.9			4.0	4.9	4.9	
Lane Util. Factor	1.00	0.95	1.00		0.97	0.95			1.00	0.95	1.00	
Frpb, ped/bikes	1.00	1.00	0.97		1.00	1.00			1.00	1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00			1.00	1.00	1.00	
Frt	1.00	1.00	0.85		1.00	1.00			1.00	1.00	0.85	
Flt Protected	0.95	1.00	1.00		0.95	1.00			0.95	1.00	1.00	
Satd. Flow (prot)	1652	3539	1436		3319	3408			1652	3539	1657	
Flt Permitted	0.95	1.00	1.00		0.95	1.00			0.95	1.00	1.00	
Satd. Flow (perm)	1652	3539	1436		3319	3408			1652	3539	1657	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	140	304	205	1	267	634	15	1	197	588	173	12
RTOR Reduction (vph)	0	0	117	0	0	2	0	0	0	0	91	0
Lane Group Flow (vph)	140	304	88	0	268	647	0	0	198	588	82	0
Confl. Peds. (#/hr)			12				2				4	
Confl. Bikes (#/hr)			4				2				5	
Turn Type	Prot	NA	Perm	Prot	Prot	NA		Prot	Prot	NA	Perm	Prot
Protected Phases	3	8		7	7	4		1	1	6		5
Permitted Phases			8								6	
Actuated Green, G (s)	13.8	28.6	28.6		13.8	28.3			17.5	48.4	48.4	
Effective Green, g (s)	13.8	28.6	28.6		13.8	28.3			17.5	48.4	48.4	
Actuated g/C Ratio	0.12	0.24	0.24		0.12	0.24			0.15	0.40	0.40	
Clearance Time (s)	4.0	4.6	4.6		4.0	4.9			4.0	4.9	4.9	
Vehicle Extension (s)	3.0	4.0	4.0		4.0	3.0			2.0	6.0	6.0	
Lane Grp Cap (vph)	189	843	342		381	803			240	1427	668	
v/s Ratio Prot	c0.08	0.09			0.08	c0.19			c0.12	0.17		
v/s Ratio Perm			0.06								0.05	
v/c Ratio	0.74	0.36	0.26		0.70	0.81			0.82	0.41	0.12	
Uniform Delay, d1	51.4	38.1	37.1		51.1	43.3			49.8	25.6	22.5	
Progression Factor	1.00	1.00	1.00		1.00	1.00			0.73	0.53	0.69	
Incremental Delay, d2	14.4	0.4	0.5		6.2	5.9			18.6	0.5	0.2	
Delay (s)	65.8	38.4	37.6		57.3	49.2			55.1	14.1	15.8	
Level of Service	E	D	D		E	D			E	B	B	
Approach Delay (s)		44.1				51.6				22.9		
Approach LOS		D				D				C		

Intersection Summary			
HCM 2000 Control Delay	36.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	17.8
Intersection Capacity Utilization	80.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBL	SBT	SBR
Lane Configurations			
Traffic Volume (vph)	23	620	193
Future Volume (vph)	23	620	193
Ideal Flow (vphpl)	1900	1900	1900
Lane Width	12	12	15
Total Lost time (s)	4.0	4.9	4.9
Lane Util. Factor	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00
Frt	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1701
Flt Permitted	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1701
Peak-hour factor, PHF	0.94	0.94	0.94
Adj. Flow (vph)	24	660	205
RTOR Reduction (vph)	0	0	88
Lane Group Flow (vph)	36	660	117
Confl. Peds. (#/hr)			9
Confl. Bikes (#/hr)			3
Turn Type	Prot	NA	Perm
Protected Phases	5	2	
Permitted Phases			2
Actuated Green, G (s)	11.7	42.6	42.6
Effective Green, g (s)	11.7	42.6	42.6
Actuated g/C Ratio	0.10	0.36	0.36
Clearance Time (s)	4.0	4.9	4.9
Vehicle Extension (s)	2.0	6.0	6.0
Lane Grp Cap (vph)	334	1256	603
v/s Ratio Prot	0.01	c0.19	
v/s Ratio Perm			0.07
v/c Ratio	0.11	0.53	0.19
Uniform Delay, d1	49.4	30.7	26.8
Progression Factor	1.00	1.00	1.00
Incremental Delay, d2	0.1	1.6	0.7
Delay (s)	49.4	32.3	27.5
Level of Service	D	C	C
Approach Delay (s)		31.9	
Approach LOS		C	

Intersection Summary

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	2	24	436	53	2	156	703	23	39	7	74	21
Future Volume (vph)	2	24	436	53	2	156	703	23	39	7	74	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	11	12	12	10	11	12	12	12	12	12
Total Lost time (s)		4.0	4.5			4.0	4.5			5.0		
Lane Util. Factor		1.00	0.95			1.00	0.95			0.95		
Frpb, ped/bikes		1.00	1.00			1.00	1.00			0.99		
Flpb, ped/bikes		1.00	1.00			1.00	1.00			1.00		
Frt		1.00	0.98			1.00	1.00			0.91		
Flt Protected		0.95	1.00			0.95	1.00			0.98		
Satd. Flow (prot)		1711	3359			1652	3403			3134		
Flt Permitted		0.95	1.00			0.95	1.00			0.86		
Satd. Flow (perm)		1711	3359			1652	3403			2747		
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	2	27	490	60	2	175	790	26	44	8	83	24
RTOR Reduction (vph)	0	0	9	0	0	0	2	0	0	54	0	0
Lane Group Flow (vph)	0	29	541	0	0	177	814	0	0	81	0	0
Confl. Peds. (#/hr)				2					3		1	1
Confl. Bikes (#/hr)				2				2				
Turn Type	Prot	Prot	NA		Prot	Prot	NA		Perm	NA		Perm
Protected Phases	1	1	5		6	6	2			4		
Permitted Phases									4			4
Actuated Green, G (s)		3.3	22.3			16.2	35.2			28.2		
Effective Green, g (s)		3.3	22.3			16.2	35.2			28.2		
Actuated g/C Ratio		0.04	0.28			0.20	0.44			0.35		
Clearance Time (s)		4.0	4.5			4.0	4.5			5.0		
Vehicle Extension (s)		2.0	6.0			2.0	6.0			2.0		
Lane Grp Cap (vph)		70	933			333	1493			965		
v/s Ratio Prot		0.02	c0.16			0.11	c0.24					
v/s Ratio Perm										c0.03		
v/c Ratio		0.41	0.58			0.53	0.55			0.08		
Uniform Delay, d1		37.5	24.9			28.6	16.6			17.4		
Progression Factor		1.00	1.00			1.00	1.00			1.00		
Incremental Delay, d2		1.4	1.8			0.8	0.9			0.0		
Delay (s)		39.0	26.7			29.4	17.5			17.4		
Level of Service		D	C			C	B			B		
Approach Delay (s)			27.3				19.6			17.4		
Approach LOS			C				B			B		

Intersection Summary			
HCM 2000 Control Delay	21.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	80.2	Sum of lost time (s)	13.5
Intersection Capacity Utilization	62.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBT	SBR
Lane Configurations	↲↑↳	
Traffic Volume (vph)	16	16
Future Volume (vph)	16	16
Ideal Flow (vphpl)	1900	1900
Lane Width	16	12
Total Lost time (s)	5.0	
Lane Util. Factor	0.95	
Frpb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.95	
Flt Protected	0.98	
Satd. Flow (prot)	3737	
Flt Permitted	0.85	
Satd. Flow (perm)	3254	
Peak-hour factor, PHF	0.89	0.89
Adj. Flow (vph)	18	18
RTOR Reduction (vph)	12	0
Lane Group Flow (vph)	48	0
Confl. Peds. (#/hr)		3
Confl. Bikes (#/hr)		2
Turn Type	NA	
Protected Phases	4	
Permitted Phases		
Actuated Green, G (s)	28.2	
Effective Green, g (s)	28.2	
Actuated g/C Ratio	0.35	
Clearance Time (s)	5.0	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	1144	
v/s Ratio Prot		
v/s Ratio Perm	0.01	
v/c Ratio	0.04	
Uniform Delay, d1	17.1	
Progression Factor	1.00	
Incremental Delay, d2	0.0	
Delay (s)	17.1	
Level of Service	B	
Approach Delay (s)	17.1	
Approach LOS	B	

Intersection Summary

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Traffic Volume (vph)	1	39	407	81	1	99	800	280	3	212	594	56
Future Volume (vph)	1	39	407	81	1	99	800	280	3	212	594	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	12	12	12	11	12	10	12	12
Total Lost time (s)		3.7	4.6	4.6		3.7	4.6	4.6		3.7	4.6	
Lane Util. Factor		1.00	0.95	1.00		0.97	0.95	1.00		1.00	0.95	
Frpb, ped/bikes		1.00	1.00	0.98		1.00	1.00	0.98		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	1.00	0.85		1.00	1.00	0.85		1.00	0.99	
Flt Protected		0.95	1.00	1.00		0.95	1.00	1.00		0.95	1.00	
Satd. Flow (prot)		1711	3421	1500		3433	3539	1502		1652	3488	
Flt Permitted		0.95	1.00	1.00		0.95	1.00	1.00		0.95	1.00	
Satd. Flow (perm)		1711	3421	1500		3433	3539	1502		1652	3488	
Peak-hour factor, PHF	0.92	0.95	0.95	0.95	0.92	0.95	0.95	0.95	0.92	0.95	0.95	0.95
Adj. Flow (vph)	1	41	428	85	1	104	842	295	3	223	625	59
RTOR Reduction (vph)	0	0	0	65	0	0	0	176	0	0	6	0
Lane Group Flow (vph)	0	42	428	20	0	105	842	119	0	226	678	0
Confl. Peds. (#/hr)				5				6				8
Confl. Bikes (#/hr)				2								
Turn Type	Prot	Prot	NA	Perm	Prot	Prot	NA	Perm	Prot	Prot	NA	
Protected Phases	3	3	8		7	7	4		1	1	6	
Permitted Phases				8				4				
Actuated Green, G (s)		6.0	22.6	22.6		8.8	25.4	25.4		14.0	39.0	
Effective Green, g (s)		6.0	22.6	22.6		8.8	25.4	25.4		14.0	39.0	
Actuated g/C Ratio		0.06	0.24	0.24		0.09	0.27	0.27		0.15	0.41	
Clearance Time (s)		3.7	4.6	4.6		3.7	4.6	4.6		3.7	4.6	
Vehicle Extension (s)		2.0	2.0	2.0		2.0	2.0	2.0		2.0	4.0	
Lane Grp Cap (vph)		108	813	356		318	946	401		243	1431	
v/s Ratio Prot		0.02	0.13			c0.03	c0.24			c0.14	c0.19	
v/s Ratio Perm				0.01				0.08				
v/c Ratio		0.39	0.53	0.06		0.33	0.89	0.30		0.93	0.47	
Uniform Delay, d1		42.7	31.5	28.0		40.3	33.5	27.7		40.0	20.5	
Progression Factor		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.8	0.3	0.0		0.2	10.2	0.2		38.6	1.1	
Delay (s)		43.6	31.8	28.0		40.6	43.7	27.8		78.7	21.6	
Level of Service		D	C	C		D	D	C		E	C	
Approach Delay (s)			32.1				39.7				35.8	
Approach LOS			C				D				D	

Intersection Summary			
HCM 2000 Control Delay	35.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	16.6
Intersection Capacity Utilization	81.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBU	SBL	SBT	SBR
Lane Configurations				
Traffic Volume (vph)	6	85	256	68
Future Volume (vph)	6	85	256	68
Ideal Flow (vphpl)	1900	1900	1900	1900
Lane Width	12	12	12	12
Total Lost time (s)		3.7	4.6	
Lane Util. Factor		1.00	0.91	
Frpb, ped/bikes		1.00	0.99	
Flpb, ped/bikes		1.00	1.00	
Frt		1.00	0.97	
Flt Protected		0.95	1.00	
Satd. Flow (prot)		1770	4899	
Flt Permitted		0.95	1.00	
Satd. Flow (perm)		1770	4899	
Peak-hour factor, PHF	0.92	0.95	0.95	0.95
Adj. Flow (vph)	7	89	269	72
RTOR Reduction (vph)	0	0	47	0
Lane Group Flow (vph)	0	96	294	0
Confl. Peds. (#/hr)				10
Confl. Bikes (#/hr)				4
Turn Type	Prot	Prot	NA	
Protected Phases	5	5	2	
Permitted Phases				
Actuated Green, G (s)		8.0	33.0	
Effective Green, g (s)		8.0	33.0	
Actuated g/C Ratio		0.08	0.35	
Clearance Time (s)		3.7	4.6	
Vehicle Extension (s)		2.0	4.0	
Lane Grp Cap (vph)		149	1701	
v/s Ratio Prot		c0.05	0.06	
v/s Ratio Perm				
v/c Ratio		0.64	0.17	
Uniform Delay, d1		42.1	21.5	
Progression Factor		1.00	1.00	
Incremental Delay, d2		7.0	0.2	
Delay (s)		49.1	21.7	
Level of Service		D	C	
Approach Delay (s)			27.8	
Approach LOS			C	

Intersection Summary

Arterial Level of Service: EB Fairmont Dr

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Bayfair Dr	III	35	17.0	25.9	42.9	0.13	11.1	E
E. 14th Street	III	35	16.2	34.9	51.1	0.13	8.9	F
Total	III		33.2	60.8	94.0	0.26	9.9	F

Arterial Level of Service: WB Fairmont Dr

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Bayfair Dr	III	35	16.2	17.7	33.9	0.13	13.5	E
	III	35	17.0	51.3	68.3	0.13	7.0	F
Total	III		33.2	69.0	102.2	0.26	9.1	F

Arterial Level of Service: NB Hesperian Blvd

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Drew St	II	40	13.0	14.8	27.8	0.11	14.6	E
Thornally Dr	II	40	24.0	22.0	46.0	0.21	16.3	E
Bayfair Dr	II	40	24.2	1.7	25.9	0.21	29.2	B
Fairmont Dr	II	40	13.5	15.9	29.4	0.12	14.3	E
Total	II		74.7	54.4	129.1	0.65	18.1	D

Arterial Level of Service: SB Hesperian Blvd

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Bayfair Dr	II	40	13.5	10.2	23.7	0.12	17.8	D
Thornally Dr	II	40	24.2	13.6	37.8	0.21	20.0	D
Drew St	II	40	24.0	7.6	31.6	0.21	23.8	C
Springlake Dr	II	40	13.0	17.3	30.3	0.11	13.4	E
Total	II		74.7	48.7	123.4	0.65	18.9	D

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Traffic Volume (vph)	6	210	630	267	6	251	380	31	3	275	605	275
Future Volume (vph)	6	210	630	267	6	251	380	31	3	275	605	275
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	13	12	11	11	12	12	12	12	15
Total Lost time (s)		4.0	4.6	4.6		4.0	4.9			4.0	4.9	4.9
Lane Util. Factor		1.00	0.95	1.00		0.97	0.95			1.00	0.95	1.00
Frpb, ped/bikes		1.00	1.00	0.98		1.00	1.00			1.00	1.00	0.98
Flpb, ped/bikes		1.00	1.00	1.00		1.00	1.00			1.00	1.00	1.00
Frt		1.00	1.00	0.85		1.00	0.99			1.00	1.00	0.85
Flt Protected		0.95	1.00	1.00		0.95	1.00			0.95	1.00	1.00
Satd. Flow (prot)		1770	3539	1595		3319	3374			1770	3539	1699
Flt Permitted		0.95	1.00	1.00		0.95	1.00			0.95	1.00	1.00
Satd. Flow (perm)		1770	3539	1595		3319	3374			1770	3539	1699
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	6	216	649	275	6	259	392	32	3	284	624	284
RTOR Reduction (vph)	0	0	0	101	0	0	5	0	0	0	0	110
Lane Group Flow (vph)	0	222	649	174	0	265	419	0	0	287	624	174
Confl. Peds. (#/hr)				9				18				9
Confl. Bikes (#/hr)				3				2				6
Turn Type	Prot	Prot	NA	Perm	Prot	Prot	NA		Prot	Prot	NA	Perm
Protected Phases	3	3	8		7	7	4		1	1	6	
Permitted Phases				8								6
Actuated Green, G (s)		19.4	30.9	30.9		15.6	26.8			24.4	57.5	57.5
Effective Green, g (s)		19.4	30.9	30.9		15.6	26.8			24.4	57.5	57.5
Actuated g/C Ratio		0.15	0.24	0.24		0.12	0.21			0.19	0.44	0.44
Clearance Time (s)		4.0	4.6	4.6		4.0	4.9			4.0	4.9	4.9
Vehicle Extension (s)		3.0	4.0	4.0		4.0	3.0			2.0	6.0	6.0
Lane Grp Cap (vph)		264	841	379		398	695			332	1565	751
v/s Ratio Prot		c0.13	c0.18			c0.08	0.12			c0.16	0.18	
v/s Ratio Perm				0.11								0.10
v/c Ratio		0.84	0.77	0.46		0.67	0.60			0.86	0.40	0.23
Uniform Delay, d1		53.8	46.3	42.4		54.7	46.8			51.2	24.5	22.5
Progression Factor		1.00	1.00	1.00		1.00	1.00			0.56	0.37	0.11
Incremental Delay, d2		20.8	4.7	1.2		4.6	1.5			16.0	0.4	0.3
Delay (s)		74.6	50.9	43.6		59.3	48.3			44.8	9.5	2.8
Level of Service		E	D	D		E	D			D	A	A
Approach Delay (s)			53.8				52.5				16.4	
Approach LOS			D				D				B	

Intersection Summary			
HCM 2000 Control Delay	38.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	17.8
Intersection Capacity Utilization	89.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBU	SBL	SBT	SBR
Lane Configurations				
Traffic Volume (vph)	32	71	533	222
Future Volume (vph)	32	71	533	222
Ideal Flow (vphpl)	1900	1900	1900	1900
Lane Width	12	12	12	15
Total Lost time (s)		4.0	4.9	4.9
Lane Util. Factor		0.97	0.95	1.00
Frpb, ped/bikes		1.00	1.00	0.97
Flpb, ped/bikes		1.00	1.00	1.00
Frt		1.00	1.00	0.85
Flt Protected		0.95	1.00	1.00
Satd. Flow (prot)		3433	3539	1682
Flt Permitted		0.95	1.00	1.00
Satd. Flow (perm)		3433	3539	1682
Peak-hour factor, PHF	0.97	0.97	0.97	0.97
Adj. Flow (vph)	33	73	549	229
RTOR Reduction (vph)	0	0	0	112
Lane Group Flow (vph)	0	106	549	117
Confl. Peds. (#/hr)				19
Confl. Bikes (#/hr)				1
Turn Type	Prot	Prot	NA	Perm
Protected Phases	5	5	2	
Permitted Phases				2
Actuated Green, G (s)		8.5	41.6	41.6
Effective Green, g (s)		8.5	41.6	41.6
Actuated g/C Ratio		0.07	0.32	0.32
Clearance Time (s)		4.0	4.9	4.9
Vehicle Extension (s)		2.0	6.0	6.0
Lane Grp Cap (vph)		224	1132	538
v/s Ratio Prot		0.03	c0.16	
v/s Ratio Perm				0.07
v/c Ratio		0.47	0.48	0.22
Uniform Delay, d1		58.6	35.6	32.3
Progression Factor		1.00	1.00	1.00
Incremental Delay, d2		0.6	1.5	0.9
Delay (s)		59.2	37.1	33.2
Level of Service		E	D	C
Approach Delay (s)			38.7	
Approach LOS			D	

Intersection Summary

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	17	97	779	101	3	247	431	80	87	30	167	119
Future Volume (vph)	17	97	779	101	3	247	431	80	87	30	167	119
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	12	12	10	11	12	12	12	12	12
Total Lost time (s)		4.0	4.5			4.0	4.5			5.0		
Lane Util. Factor		1.00	0.95			1.00	0.95			0.95		
Frpb, ped/bikes		1.00	1.00			1.00	1.00			0.98		
Flpb, ped/bikes		1.00	1.00			1.00	1.00			1.00		
Frt		1.00	0.98			1.00	0.98			0.91		
Flt Protected		0.95	1.00			0.95	1.00			0.98		
Satd. Flow (prot)		1770	3357			1652	3328			3110		
Flt Permitted		0.95	1.00			0.95	1.00			0.77		
Satd. Flow (perm)		1770	3357			1652	3328			2425		
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	18	100	803	104	3	255	444	82	90	31	172	123
RTOR Reduction (vph)	0	0	9	0	0	0	13	0	0	124	0	0
Lane Group Flow (vph)	0	118	898	0	0	258	513	0	0	169	0	0
Confl. Peds. (#/hr)				1				7	18		13	13
Confl. Bikes (#/hr)				2				1			1	
Turn Type	Prot	Prot	NA		Prot	Prot	NA		Perm	NA		Perm
Protected Phases	1	1	5		6	6	2			4		
Permitted Phases									4			4
Actuated Green, G (s)		15.0	39.9			30.1	55.0			32.0		
Effective Green, g (s)		15.0	39.9			30.1	55.0			32.0		
Actuated g/C Ratio		0.13	0.35			0.26	0.48			0.28		
Clearance Time (s)		4.0	4.5			4.0	4.5			5.0		
Vehicle Extension (s)		2.0	6.0			2.0	6.0			2.0		
Lane Grp Cap (vph)		229	1159			430	1584			671		
v/s Ratio Prot		0.07	c0.27			c0.16	0.15					
v/s Ratio Perm										0.07		
v/c Ratio		0.52	0.78			0.60	0.32			0.25		
Uniform Delay, d1		46.9	33.8			37.4	18.7			32.4		
Progression Factor		1.00	1.00			1.00	1.00			1.00		
Incremental Delay, d2		8.1	5.1			6.1	0.5			0.9		
Delay (s)		54.9	38.9			43.5	19.3			33.3		
Level of Service		D	D			D	B			C		
Approach Delay (s)			40.7				27.2			33.3		
Approach LOS			D				C			C		

Intersection Summary			
HCM 2000 Control Delay	34.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	115.5	Sum of lost time (s)	13.5
Intersection Capacity Utilization	100.7%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBT	SBR
Lane Configurations	↰↑↱	
Traffic Volume (vph)	40	52
Future Volume (vph)	40	52
Ideal Flow (vphpl)	1900	1900
Lane Width	16	12
Total Lost time (s)	5.0	
Lane Util. Factor	0.95	
Frpb, ped/bikes	0.99	
Flpb, ped/bikes	0.99	
Frt	0.96	
Flt Protected	0.97	
Satd. Flow (prot)	3703	
Flt Permitted	0.65	
Satd. Flow (perm)	2477	
Peak-hour factor, PHF	0.97	0.97
Adj. Flow (vph)	41	54
RTOR Reduction (vph)	27	0
Lane Group Flow (vph)	191	0
Confl. Peds. (#/hr)		18
Confl. Bikes (#/hr)		
Turn Type	NA	
Protected Phases	4	
Permitted Phases		
Actuated Green, G (s)	32.0	
Effective Green, g (s)	32.0	
Actuated g/C Ratio	0.28	
Clearance Time (s)	5.0	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	686	
v/s Ratio Prot		
v/s Ratio Perm	c0.08	
v/c Ratio	0.28	
Uniform Delay, d1	32.7	
Progression Factor	1.00	
Incremental Delay, d2	1.0	
Delay (s)	33.7	
Level of Service	C	
Approach Delay (s)	33.7	
Approach LOS	C	

Intersection Summary

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU
Lane Configurations												
Traffic Volume (vph)	155	818	244	7	148	584	95	4	155	441	129	14
Future Volume (vph)	155	818	244	7	148	584	95	4	155	441	129	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	12	12	12	11	12	10	12	12	12
Total Lost time (s)	3.7	4.6	4.6		3.7	4.6	4.6		3.7	4.6		
Lane Util. Factor	1.00	0.95	1.00		0.97	0.95	1.00		1.00	0.95		
Frpb, ped/bikes	1.00	1.00	0.95		1.00	1.00	0.97		1.00	0.99		
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00		
Frt	1.00	1.00	0.85		1.00	1.00	0.85		1.00	0.97		
Flt Protected	0.95	1.00	1.00		0.95	1.00	1.00		0.95	1.00		
Satd. Flow (prot)	1711	3421	1460		3433	3539	1485		1652	3389		
Flt Permitted	0.95	1.00	1.00		0.95	1.00	1.00		0.95	1.00		
Satd. Flow (perm)	1711	3421	1460		3433	3539	1485		1652	3389		
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	158	835	249	7	151	596	97	4	158	450	132	14
RTOR Reduction (vph)	0	0	124	0	0	0	71	0	0	29	0	0
Lane Group Flow (vph)	158	835	125	0	158	596	26	0	162	553	0	0
Confl. Peds. (#/hr)			27				16				23	
Confl. Bikes (#/hr)			2								10	
Turn Type	Prot	NA	Perm	Prot	Prot	NA	Perm	Prot	Prot	NA		Prot
Protected Phases	3	8		7	7	4		1	1	6		5
Permitted Phases			8				4					
Actuated Green, G (s)	10.2	24.4	24.4		11.0	25.2	25.2		10.3	32.7		
Effective Green, g (s)	10.2	24.4	24.4		11.0	25.2	25.2		10.3	32.7		
Actuated g/C Ratio	0.11	0.26	0.26		0.12	0.27	0.27		0.11	0.34		
Clearance Time (s)	3.7	4.6	4.6		3.7	4.6	4.6		3.7	4.6		
Vehicle Extension (s)	2.0	2.0	2.0		2.0	2.0	2.0		2.0	4.0		
Lane Grp Cap (vph)	183	878	374		397	938	393		179	1166		
v/s Ratio Prot	0.09	c0.24			0.05	c0.17			c0.10	c0.16		
v/s Ratio Perm			0.09				0.02					
v/c Ratio	0.86	0.95	0.33		0.40	0.64	0.07		0.91	0.47		
Uniform Delay, d1	41.7	34.7	28.7		38.9	30.8	26.1		41.9	24.4		
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00		0.90	0.79		
Incremental Delay, d2	30.9	19.3	0.2		0.2	1.0	0.0		39.5	1.3		
Delay (s)	72.6	54.0	28.9		39.2	31.9	26.1		77.0	20.5		
Level of Service	E	D	C		D	C	C		E	C		
Approach Delay (s)		51.4				32.6				32.8		
Approach LOS		D				C				C		

Intersection Summary			
HCM 2000 Control Delay	42.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	16.6
Intersection Capacity Utilization	81.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBL	SBT	SBR
Lane Configurations			
Traffic Volume (vph)	157	560	135
Future Volume (vph)	157	560	135
Ideal Flow (vphpl)	1900	1900	1900
Lane Width	12	12	12
Total Lost time (s)	3.7	4.6	
Lane Util. Factor	1.00	0.91	
Frpb, ped/bikes	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	
Frt	1.00	0.97	
Flt Protected	0.95	1.00	
Satd. Flow (prot)	1770	4908	
Flt Permitted	0.95	1.00	
Satd. Flow (perm)	1770	4908	
Peak-hour factor, PHF	0.98	0.98	0.98
Adj. Flow (vph)	160	571	138
RTOR Reduction (vph)	0	43	0
Lane Group Flow (vph)	174	666	0
Confl. Peds. (#/hr)			15
Confl. Bikes (#/hr)			6
Turn Type	Prot	NA	
Protected Phases	5	2	
Permitted Phases			
Actuated Green, G (s)	10.3	32.7	
Effective Green, g (s)	10.3	32.7	
Actuated g/C Ratio	0.11	0.34	
Clearance Time (s)	3.7	4.6	
Vehicle Extension (s)	2.0	4.0	
Lane Grp Cap (vph)	191	1689	
v/s Ratio Prot	c0.10	0.14	
v/s Ratio Perm			
v/c Ratio	0.91	0.39	
Uniform Delay, d1	41.9	23.6	
Progression Factor	1.38	1.69	
Incremental Delay, d2	27.7	0.4	
Delay (s)	85.6	40.3	
Level of Service	F	D	
Approach Delay (s)		49.2	
Approach LOS		D	

Intersection Summary

Arterial Level of Service: EB Fairmont Dr

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Bayfair Dr	III	35	15.4	38.8	54.2	0.11	7.6	F
E. 14th Street	III	35	17.9	56.3	74.2	0.14	6.8	F
Total	III		33.3	95.1	128.4	0.25	7.1	F

Arterial Level of Service: WB Fairmont Dr

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Bayfair Dr	III	35	17.9	18.5	36.4	0.14	13.8	E
	III	35	15.4	49.4	64.8	0.11	6.4	F
Total	III		33.3	67.9	101.2	0.25	9.0	F

Arterial Level of Service: NB Hesperian Blvd

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Drew St	II	40	13.0	4.2	17.2	0.11	23.7	C
Thornally Dr	II	40	24.0	36.2	60.2	0.21	12.5	F
Bayfair Dr	II	40	24.2	5.2	29.4	0.21	25.7	C
Fairmont Dr	II	40	13.5	10.2	23.7	0.12	17.8	D
Total	II		74.7	55.8	130.5	0.65	17.9	D

Arterial Level of Service: SB Hesperian Blvd

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Bayfair Dr	II	40	13.5	5.7	19.2	0.12	21.9	D
Thornally Dr	II	40	24.2	24.6	48.8	0.21	15.5	E
Drew St	II	40	24.0	5.4	29.4	0.21	25.5	C
Springlake Dr	II	40	13.0	9.8	22.8	0.11	17.9	D
Total	II		74.7	45.5	120.2	0.65	19.4	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	184	177	223	525	751	18	242	1220	409	39	746	190
Future Volume (vph)	184	177	223	525	751	18	242	1220	409	39	746	190
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	4.6	4.6	4.9	4.9		4.0	4.9	4.9	4.0	4.9	4.9
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95		1.00	0.95	1.00	1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00		1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1608	3185	1334	3090	3166		1562	3094	1343	1577	4577	1383
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1608	3185	1334	3090	3166		1562	3094	1343	1577	4577	1383
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	198	190	240	565	808	19	260	1312	440	42	802	204
RTOR Reduction (vph)	0	0	197	0	1	0	0	0	153	0	0	85
Lane Group Flow (vph)	198	190	43	565	826	0	260	1312	287	42	802	119
Confl. Peds. (#/hr)	10		17	17		10	13		14	14		13
Confl. Bikes (#/hr)			2			1			1			1
Heavy Vehicles (%)	1%	2%	5%	2%	2%	11%	4%	5%	5%	3%	2%	2%
Turn Type	Split	NA	Perm	Split	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	8	8		4	4		1	6		5	2	
Permitted Phases			8						6			2
Actuated Green, G (s)	26.6	26.6	26.6	34.1	34.1		27.7	65.1	65.1	5.8	43.2	43.2
Effective Green, g (s)	26.6	26.6	26.6	34.1	34.1		27.7	65.1	65.1	5.8	43.2	43.2
Actuated g/C Ratio	0.18	0.18	0.18	0.23	0.23		0.18	0.43	0.43	0.04	0.29	0.29
Clearance Time (s)	4.6	4.6	4.6	4.9	4.9		4.0	4.9	4.9	4.0	4.9	4.9
Vehicle Extension (s)	4.0	4.0	4.0	3.0	3.0		2.0	6.0	6.0	2.0	6.0	6.0
Lane Grp Cap (vph)	285	564	236	702	719		288	1342	582	60	1318	398
v/s Ratio Prot	c0.12	0.06		0.18	c0.26		0.17	c0.42		0.03	c0.18	
v/s Ratio Perm			0.03						0.21			0.09
v/c Ratio	0.69	0.34	0.18	0.80	1.15		0.90	0.98	0.49	0.70	0.61	0.30
Uniform Delay, d1	57.9	54.0	52.4	54.8	58.0		59.8	41.7	30.6	71.2	46.1	41.6
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.61	0.45	0.07	1.00	1.00	1.00
Incremental Delay, d2	7.7	0.5	0.5	6.7	82.8		28.1	19.2	1.8	24.9	2.1	1.9
Delay (s)	65.6	54.5	52.9	61.5	140.7		64.6	37.9	4.0	96.2	48.2	43.5
Level of Service	E	D	D	E	F		E	D	A	F	D	D
Approach Delay (s)		57.4			108.5			34.0			49.2	
Approach LOS		E			F			C			D	

Intersection Summary			
HCM 2000 Control Delay	60.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	18.4
Intersection Capacity Utilization	94.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	444	85	243	878	32	90	21	250	22	29	65
Future Volume (vph)	33	444	85	243	878	32	90	21	250	22	29	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	10	11	12	12	12	12	12	16	12
Total Lost time (s)	4.0	4.5		4.0	4.5			5.0			5.0	
Lane Util. Factor	1.00	0.91		1.00	0.91			0.95			0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.98		1.00	0.99			0.90			0.92	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1770	4784		1652	4888			3103			3608	
Flt Permitted	0.95	1.00		0.95	1.00			0.83			0.85	
Satd. Flow (perm)	1770	4784		1652	4888			2615			3108	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	37	499	96	273	987	36	101	24	281	25	33	73
RTOR Reduction (vph)	0	23	0	0	4	0	0	185	0	0	48	0
Lane Group Flow (vph)	37	572	0	273	1019	0	0	221	0	0	83	0
Confl. Peds. (#/hr)			2				3		1	1		3
Confl. Bikes (#/hr)			2			2						2
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	1	5		6	2			4			4	
Permitted Phases							4			4		
Actuated Green, G (s)	4.0	21.4		19.6	37.0			28.2			28.2	
Effective Green, g (s)	4.0	21.4		19.6	37.0			28.2			28.2	
Actuated g/C Ratio	0.05	0.26		0.24	0.45			0.34			0.34	
Clearance Time (s)	4.0	4.5		4.0	4.5			5.0			5.0	
Vehicle Extension (s)	2.0	6.0		2.0	6.0			2.0			2.0	
Lane Grp Cap (vph)	85	1237		391	2186			891			1059	
v/s Ratio Prot	0.02	c0.12		c0.17	0.21							
v/s Ratio Perm								c0.08			0.03	
v/c Ratio	0.44	0.46		0.70	0.47			0.25			0.08	
Uniform Delay, d1	38.3	25.8		28.8	16.0			19.6			18.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	1.3	0.8		4.4	0.4			0.1			0.0	
Delay (s)	39.6	26.6		33.2	16.4			19.7			18.5	
Level of Service	D	C		C	B			B			B	
Approach Delay (s)		27.3			19.9			19.7			18.5	
Approach LOS		C			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	21.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	82.7	Sum of lost time (s)	13.5
Intersection Capacity Utilization	63.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	126	427	114	132	767	120	327	1147	100	121	339	111
Future Volume (vph)	126	427	114	132	767	120	327	1147	100	121	339	111
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	12	12	11	10	12	12	12	12	12
Total Lost time (s)	3.7	4.6	4.6	3.7	4.6	4.6	3.7	4.6		3.7	4.6	
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95		1.00	0.91	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1711	3539	1552	3433	3539	1502	1652	3491		1770	4868	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1711	3539	1552	3433	3539	1502	1652	3491		1770	4868	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	133	449	120	139	807	126	344	1207	105	127	357	117
RTOR Reduction (vph)	0	0	90	0	0	94	0	7	0	0	63	0
Lane Group Flow (vph)	133	449	30	139	807	32	344	1305	0	127	411	0
Confl. Peds. (#/hr)			5			6			8			10
Confl. Bikes (#/hr)			2									4
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8			4						
Actuated Green, G (s)	7.2	23.8	23.8	7.5	24.1	24.1	15.3	39.0		8.1	31.8	
Effective Green, g (s)	7.2	23.8	23.8	7.5	24.1	24.1	15.3	39.0		8.1	31.8	
Actuated g/C Ratio	0.08	0.25	0.25	0.08	0.25	0.25	0.16	0.41		0.09	0.33	
Clearance Time (s)	3.7	4.6	4.6	3.7	4.6	4.6	3.7	4.6		3.7	4.6	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	4.0		2.0	4.0	
Lane Grp Cap (vph)	129	886	388	271	897	381	266	1433		150	1629	
v/s Ratio Prot	c0.08	0.13		0.04	c0.23		c0.21	c0.37		c0.07	0.08	
v/s Ratio Perm			0.02			0.02						
v/c Ratio	1.03	0.51	0.08	0.51	0.90	0.08	1.29	0.91		0.85	0.25	
Uniform Delay, d1	43.9	30.6	27.2	42.0	34.3	27.0	39.9	26.4		42.8	23.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	87.7	0.2	0.0	0.7	11.5	0.0	157.0	10.2		32.2	0.4	
Delay (s)	131.6	30.7	27.2	42.7	45.8	27.1	196.9	36.6		75.0	23.3	
Level of Service	F	C	C	D	D	C	F	D		E	C	
Approach Delay (s)		49.3			43.2			69.9			34.3	
Approach LOS		D			D			E			C	

Intersection Summary			
HCM 2000 Control Delay	53.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	16.6
Intersection Capacity Utilization	85.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Arterial Level of Service: EB Fairmont Dr

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Bayfair Dr	III	35	17.0	25.5	42.5	0.13	11.3	E
E. 14th Street	III	35	16.2	33.2	49.4	0.13	9.2	F
Total	III		33.2	58.7	91.9	0.26	10.2	E

Arterial Level of Service: WB Fairmont Dr

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Bayfair Dr	III	35	16.2	16.4	32.6	0.13	14.0	E
Hesperian Bl	III	35	17.0	132.9	149.9	0.13	3.2	F
Total	III		33.2	149.3	182.5	0.26	5.1	F

Arterial Level of Service: NB Hesperian Blvd

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Drew St	II	40	13.0	18.7	31.7	0.11	12.8	F
Thornally Dr	II	40	24.0	23.1	47.1	0.21	16.0	E
Bayfair Dr	II	40	24.2	1.3	25.5	0.21	29.7	B
Fairmont Dr	II	40	13.5	38.7	52.2	0.12	8.1	F
Total	II		74.7	81.8	156.5	0.65	14.9	E

Arterial Level of Service: SB Hesperian Blvd

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Bayfair Dr	II	40	13.5	9.1	22.6	0.12	18.6	D
Thornally Dr	II	40	24.2	21.2	45.4	0.21	16.7	E
Drew St	II	40	24.0	5.7	29.7	0.21	25.3	C
Springlake Dr	II	40	13.0	17.5	30.5	0.11	13.3	E
Total	II		74.7	53.5	128.2	0.65	18.2	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	209	716	281	515	163	45	483	1136	770	121	1126	233
Future Volume (vph)	209	716	281	515	163	45	483	1136	770	121	1126	233
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.6	4.6	4.0	4.9		4.0	4.9	4.9	4.0	4.9	4.9
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95		1.00	0.95	1.00	1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	0.99		1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1608	3217	1387	3090	3104		1593	3185	1414	1608	4622	1398
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1608	3217	1387	3090	3104		1593	3185	1414	1608	4622	1398
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	215	738	290	531	168	46	498	1171	794	125	1161	240
RTOR Reduction (vph)	0	0	197	0	16	0	0	0	226	0	0	85
Lane Group Flow (vph)	215	738	93	531	198	0	498	1171	568	125	1161	155
Confl. Peds. (#/hr)	8		10	10		8	12		12	12		12
Confl. Bikes (#/hr)			2			1			1			1
Heavy Vehicles (%)	1%	1%	2%	2%	1%	0%	2%	2%	0%	1%	1%	1%
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8						6			2
Actuated Green, G (s)	21.1	34.0	34.0	22.0	34.6		40.0	64.3	64.3	12.2	36.5	36.5
Effective Green, g (s)	21.1	34.0	34.0	22.0	34.6		40.0	64.3	64.3	12.2	36.5	36.5
Actuated g/C Ratio	0.14	0.23	0.23	0.15	0.23		0.27	0.43	0.43	0.08	0.24	0.24
Clearance Time (s)	4.0	4.6	4.6	4.0	4.9		4.0	4.9	4.9	4.0	4.9	4.9
Vehicle Extension (s)	3.0	4.0	4.0	4.0	3.0		2.0	6.0	6.0	2.0	6.0	6.0
Lane Grp Cap (vph)	226	729	314	453	715		424	1365	606	130	1124	340
v/s Ratio Prot	0.13	c0.23		c0.17	0.06		c0.31	0.37		0.08	c0.25	
v/s Ratio Perm			0.07						0.40			0.11
v/c Ratio	0.95	1.01	0.30	1.17	0.28		1.17	0.86	0.94	0.96	1.03	0.46
Uniform Delay, d1	63.9	58.0	48.1	64.0	47.4		55.0	38.7	40.9	68.7	56.8	48.3
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.61	0.49	0.14	1.00	1.00	1.00
Incremental Delay, d2	46.1	36.4	0.7	98.7	0.2		96.5	5.0	19.4	66.4	35.7	4.4
Delay (s)	110.1	94.4	48.8	162.7	47.6		129.9	23.9	25.0	135.1	92.4	52.7
Level of Service	F	F	D	F	D		F	C	C	F	F	D
Approach Delay (s)		86.5			129.7			45.7			89.7	
Approach LOS		F			F			D			F	

Intersection Summary			
HCM 2000 Control Delay	75.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	17.8
Intersection Capacity Utilization	112.8%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	120	1234	161	397	526	71	132	57	342	135	46	91
Future Volume (vph)	120	1234	161	397	526	71	132	57	342	135	46	91
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	10	11	12	12	12	12	12	16	12
Total Lost time (s)	4.0	4.5		4.0	4.5			5.0			5.0	
Lane Util. Factor	1.00	0.91		1.00	0.91			0.95			0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.98			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.98		1.00	0.98			0.90			0.95	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1770	4822		1652	4815			3093			3667	
Flt Permitted	0.95	1.00		0.95	1.00			0.76			0.55	
Satd. Flow (perm)	1770	4822		1652	4815			2367			2071	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	124	1272	166	409	542	73	136	59	353	139	47	94
RTOR Reduction (vph)	0	13	0	0	13	0	0	259	0	0	59	0
Lane Group Flow (vph)	124	1425	0	409	602	0	0	289	0	0	221	0
Confl. Peds. (#/hr)			1			7	18		13	13		18
Confl. Bikes (#/hr)			2			1			1			
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	1	5		6	2			4			4	
Permitted Phases							4			4		
Actuated Green, G (s)	11.4	34.5		29.3	52.4			28.0			28.0	
Effective Green, g (s)	11.4	34.5		29.3	52.4			28.0			28.0	
Actuated g/C Ratio	0.11	0.33		0.28	0.50			0.27			0.27	
Clearance Time (s)	4.0	4.5		4.0	4.5			5.0			5.0	
Vehicle Extension (s)	2.0	6.0		2.0	6.0			2.0			2.0	
Lane Grp Cap (vph)	191	1579		459	2396			629			550	
v/s Ratio Prot	0.07	c0.30		c0.25	0.13							
v/s Ratio Perm								c0.12			0.11	
v/c Ratio	0.65	0.90		0.89	0.25			0.46			0.40	
Uniform Delay, d1	45.0	33.8		36.5	15.2			32.3			31.8	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	5.6	8.3		18.6	0.2			0.2			0.2	
Delay (s)	50.6	42.1		55.1	15.3			32.5			31.9	
Level of Service	D	D		E	B			C			C	
Approach Delay (s)		42.8			31.2			32.5			31.9	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	36.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	105.3	Sum of lost time (s)	13.5
Intersection Capacity Utilization	111.5%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	185	870	483	143	520	140	258	672	114	378	1092	178
Future Volume (vph)	185	870	483	143	520	140	258	672	114	378	1092	178
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	11	10	12	12	12	12	12
Total Lost time (s)	3.7	4.6	4.6	3.7	4.6	4.6	3.7	4.6		3.7	4.6	
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95		1.00	0.91	
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00	0.97	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3539	1505	3433	3539	1482	1652	3441		1770	4956	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3539	1505	3433	3539	1482	1652	3441		1770	4956	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	189	888	493	146	531	143	263	686	116	386	1114	182
RTOR Reduction (vph)	0	0	258	0	0	109	0	13	0	0	21	0
Lane Group Flow (vph)	189	888	235	146	531	34	263	789	0	386	1275	0
Confl. Peds. (#/hr)			27			16			23			15
Confl. Bikes (#/hr)			2						10			6
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8			4						
Actuated Green, G (s)	10.3	29.1	29.1	5.8	24.6	24.6	17.9	31.8		21.7	35.6	
Effective Green, g (s)	10.3	29.1	29.1	5.8	24.6	24.6	17.9	31.8		21.7	35.6	
Actuated g/C Ratio	0.10	0.28	0.28	0.06	0.23	0.23	0.17	0.30		0.21	0.34	
Clearance Time (s)	3.7	4.6	4.6	3.7	4.6	4.6	3.7	4.6		3.7	4.6	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	4.0		2.0	4.0	
Lane Grp Cap (vph)	173	980	417	189	829	347	281	1042		365	1680	
v/s Ratio Prot	c0.11	c0.25		0.04	c0.15		c0.16	0.23		c0.22	c0.26	
v/s Ratio Perm			0.16			0.02						
v/c Ratio	1.09	0.91	0.56	0.77	0.64	0.10	0.94	0.76		1.06	0.76	
Uniform Delay, d1	47.4	36.6	32.5	48.9	36.2	31.5	43.0	33.1		41.6	30.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	95.3	11.4	1.0	16.2	1.3	0.0	36.2	5.1		63.1	3.3	
Delay (s)	142.6	48.1	33.6	65.1	37.5	31.5	79.2	38.2		104.7	34.2	
Level of Service	F	D	C	E	D	C	E	D		F	C	
Approach Delay (s)		54.9			41.4			48.4			50.4	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	49.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	16.6
Intersection Capacity Utilization	90.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Arterial Level of Service: EB Fairmont Dr

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Bayfair Dr	III	35	15.5	42.6	58.1	0.11	7.1	F
E. 14th Street	III	35	17.9	50.3	68.2	0.14	7.4	F
Total	III		33.4	92.9	126.3	0.25	7.3	F

Arterial Level of Service: WB Fairmont Dr

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Bayfair Dr	III	35	17.9	15.2	33.1	0.14	15.2	D
Hesperian Bl	III	35	15.5	44.0	59.5	0.11	7.0	F
Total	III		33.4	59.2	92.6	0.25	9.9	F

Arterial Level of Service: NB Hesperian Blvd

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Drew St	II	40	13.0	2.1	15.1	0.11	27.0	C
Thornally Dr	II	40	24.0	35.3	59.3	0.21	12.6	F
Bayfair Dr	II	40	24.2	10.2	34.4	0.21	22.0	C
Fairmont Dr	II	40	13.5	24.9	38.4	0.12	11.0	F
Total	II		74.7	72.5	147.2	0.65	15.9	E

Arterial Level of Service: SB Hesperian Blvd

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Bayfair Dr	II	40	13.5	5.7	19.2	0.12	21.9	D
Thornally Dr	II	40	24.2	11.1	35.3	0.21	21.4	D
Drew St	II	40	24.0	2.8	26.8	0.21	28.0	C
Springlake Dr	II	40	13.0	14.1	27.1	0.11	15.0	E
Total	II		74.7	33.7	108.4	0.65	21.5	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	184	177	223	525	751	18	242	1220	409	39	746	190
Future Volume (vph)	184	177	223	525	751	18	242	1220	409	39	746	190
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	13	11	11	12	12	12	12	12	12	15
Total Lost time (s)	4.6	4.6	4.6	4.9	4.9		4.0	4.9	4.9	4.0	4.9	4.9
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95		1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00		1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1787	3539	1531	3319	3401		1736	3438	1492	3400	3539	1690
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1787	3539	1531	3319	3401		1736	3438	1492	3400	3539	1690
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	198	190	240	565	808	19	260	1312	440	42	802	204
RTOR Reduction (vph)	0	0	173	0	1	0	0	0	74	0	0	59
Lane Group Flow (vph)	198	190	67	565	826	0	260	1312	366	42	802	145
Confl. Peds. (#/hr)	10		17	17		10	13		14	14		13
Confl. Bikes (#/hr)			2			1			1			1
Heavy Vehicles (%)	1%	2%	5%	2%	2%	11%	4%	5%	5%	3%	2%	2%
Turn Type	Split	NA	Perm	Split	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	8	8		4	4		1	6		5	2	
Permitted Phases			8						6			2
Actuated Green, G (s)	25.8	25.8	25.8	35.5	35.5		25.0	65.2	65.2	5.1	45.3	45.3
Effective Green, g (s)	25.8	25.8	25.8	35.5	35.5		25.0	65.2	65.2	5.1	45.3	45.3
Actuated g/C Ratio	0.17	0.17	0.17	0.24	0.24		0.17	0.43	0.43	0.03	0.30	0.30
Clearance Time (s)	4.6	4.6	4.6	4.9	4.9		4.0	4.9	4.9	4.0	4.9	4.9
Vehicle Extension (s)	4.0	4.0	4.0	3.0	3.0		2.0	6.0	6.0	2.0	6.0	6.0
Lane Grp Cap (vph)	307	608	263	785	804		289	1494	648	115	1068	510
v/s Ratio Prot	c0.11	0.05		0.17	c0.24		0.15	c0.38		0.01	c0.23	
v/s Ratio Perm			0.04						0.25			0.09
v/c Ratio	0.64	0.31	0.25	0.72	1.03		0.90	0.88	0.56	0.37	0.75	0.29
Uniform Delay, d1	57.8	54.3	53.8	52.7	57.2		61.3	38.8	31.8	70.9	47.3	40.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.69	0.55	0.45	1.00	1.00	1.00
Incremental Delay, d2	5.1	0.4	0.7	3.2	39.0		26.3	6.5	2.2	0.7	4.9	1.4
Delay (s)	63.0	54.7	54.5	55.9	96.2		68.7	28.0	16.3	71.6	52.1	41.4
Level of Service	E	D	D	E	F		E	C	B	E	D	D
Approach Delay (s)		57.2			79.9			30.7			50.8	
Approach LOS		E			E			C			D	

Intersection Summary			
HCM 2000 Control Delay	51.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	18.4
Intersection Capacity Utilization	93.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	444	85	243	878	32	90	21	250	22	29	65
Future Volume (vph)	33	444	85	243	878	32	90	21	250	22	29	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	12	10	11	12	12	12	12	12	16	12
Total Lost time (s)	4.0	4.5		4.0	4.5			5.0			5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			0.95			0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.98		1.00	0.99			0.90			0.92	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1711	3330		1652	3402			3103			3608	
Flt Permitted	0.95	1.00		0.95	1.00			0.83			0.85	
Satd. Flow (perm)	1711	3330		1652	3402			2610			3100	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	37	499	96	273	987	36	101	24	281	25	33	73
RTOR Reduction (vph)	0	14	0	0	3	0	0	189	0	0	49	0
Lane Group Flow (vph)	37	581	0	273	1020	0	0	217	0	0	82	0
Confl. Peds. (#/hr)			2				3		1	1		3
Confl. Bikes (#/hr)			2			2						2
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	1	5		6	2			4			4	
Permitted Phases							4			4		
Actuated Green, G (s)	5.0	24.3		21.0	40.3			28.4			28.4	
Effective Green, g (s)	5.0	24.3		21.0	40.3			28.4			28.4	
Actuated g/C Ratio	0.06	0.28		0.24	0.46			0.33			0.33	
Clearance Time (s)	4.0	4.5		4.0	4.5			5.0			5.0	
Vehicle Extension (s)	2.0	6.0		2.0	6.0			2.0			2.0	
Lane Grp Cap (vph)	98	927		397	1572			850			1009	
v/s Ratio Prot	0.02	c0.17		0.17	c0.30							
v/s Ratio Perm								c0.08			0.03	
v/c Ratio	0.38	0.63		0.69	0.65			0.25			0.08	
Uniform Delay, d1	39.6	27.5		30.1	18.0			21.6			20.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.9	2.3		3.9	1.5			0.1			0.0	
Delay (s)	40.5	29.8		34.0	19.5			21.7			20.4	
Level of Service	D	C		C	B			C			C	
Approach Delay (s)		30.4			22.6			21.7			20.4	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	24.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	87.2	Sum of lost time (s)	13.5
Intersection Capacity Utilization	67.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	126	427	114	132	767	120	327	1147	100	121	339	111
Future Volume (vph)	126	427	114	132	767	120	327	1147	100	121	339	111
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	12	12	11	10	12	12	12	12	12
Total Lost time (s)	3.7	4.6	4.6	3.7	4.6	4.6	3.7	4.6		3.7	4.6	
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95		1.00	0.91	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1711	3421	1500	3433	3539	1501	1652	3491		1770	4867	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1711	3421	1500	3433	3539	1501	1652	3491		1770	4867	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	133	449	120	139	807	126	344	1207	105	127	357	117
RTOR Reduction (vph)	0	0	92	0	0	95	0	7	0	0	59	0
Lane Group Flow (vph)	133	449	28	139	807	31	344	1305	0	127	415	0
Confl. Peds. (#/hr)			5			6			8			10
Confl. Bikes (#/hr)			2									4
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8			4						
Actuated Green, G (s)	10.0	23.5	23.5	11.0	24.5	24.5	18.8	40.2		8.7	30.1	
Effective Green, g (s)	10.0	23.5	23.5	11.0	24.5	24.5	18.8	40.2		8.7	30.1	
Actuated g/C Ratio	0.10	0.24	0.24	0.11	0.24	0.24	0.19	0.40		0.09	0.30	
Clearance Time (s)	3.7	4.6	4.6	3.7	4.6	4.6	3.7	4.6		3.7	4.6	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	4.0		2.0	4.0	
Lane Grp Cap (vph)	171	803	352	377	867	367	310	1403		153	1464	
v/s Ratio Prot	c0.08	0.13		0.04	c0.23		c0.21	c0.37		c0.07	0.09	
v/s Ratio Perm			0.02			0.02						
v/c Ratio	0.78	0.56	0.08	0.37	0.93	0.08	1.11	0.93		0.83	0.28	
Uniform Delay, d1	43.9	33.7	29.8	41.3	36.9	29.1	40.6	28.6		44.9	26.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	18.1	0.5	0.0	0.2	16.1	0.0	83.9	12.3		28.9	0.5	
Delay (s)	62.0	34.2	29.9	41.5	53.0	29.1	124.5	40.9		73.9	27.2	
Level of Service	E	C	C	D	D	C	F	D		E	C	
Approach Delay (s)		38.7			48.7			58.3			37.1	
Approach LOS		D			D			E			D	

Intersection Summary			
HCM 2000 Control Delay	49.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.6
Intersection Capacity Utilization	87.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Arterial Level of Service: EB Fairmont Dr

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Bayfair Dr	III	35	17.0	29.5	46.5	0.13	10.3	E
E. 14th Street	III	35	16.3	36.7	53.0	0.13	8.7	F
Total	III		33.3	66.2	99.5	0.26	9.4	F

Arterial Level of Service: WB Fairmont Dr

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Bayfair Dr	III	35	16.3	19.9	36.2	0.13	12.7	E
Hesperian Bl	III	35	17.0	94.0	111.0	0.13	4.3	F
Total	III		33.3	113.9	147.2	0.26	6.4	F

Arterial Level of Service: NB Hesperian Blvd

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Drew St	II	40	13.0	21.4	34.4	0.11	11.8	F
Thornally Dr	II	40	24.0	34.7	58.7	0.21	12.8	F
Bayfair Dr	II	40	24.2	3.4	27.6	0.21	27.4	C
Fairmont Dr	II	40	13.5	29.9	43.4	0.12	9.7	F
Total	II		74.7	89.4	164.1	0.65	14.2	E

Arterial Level of Service: SB Hesperian Blvd

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Bayfair Dr	II	40	13.5	3.9	17.4	0.12	24.2	C
Thornally Dr	II	40	24.2	26.6	50.8	0.21	14.9	E
Drew St	II	40	24.0	9.1	33.1	0.21	22.7	C
Springlake Dr	II	40	13.0	22.4	35.4	0.11	11.5	F
Total	II		74.7	62.0	136.7	0.65	17.1	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	209	716	281	515	163	45	483	1136	770	121	1126	233
Future Volume (vph)	209	716	281	515	163	45	483	1136	770	121	1126	233
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	13	11	11	12	12	12	12	12	12	15
Total Lost time (s)	4.0	4.6	4.6	4.0	4.9		4.0	4.9	4.9	4.0	4.9	4.9
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95		1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	0.99		1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1787	3574	1592	3319	3334		1770	3539	1571	3467	3574	1709
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1787	3574	1592	3319	3334		1770	3539	1571	3467	3574	1709
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	215	738	290	531	168	46	498	1171	794	125	1161	240
RTOR Reduction (vph)	0	0	88	0	16	0	0	0	165	0	0	79
Lane Group Flow (vph)	215	738	202	531	198	0	498	1171	629	125	1161	161
Confl. Peds. (#/hr)	8		10	10		8	12		12	12		12
Confl. Bikes (#/hr)			2			1			1			1
Heavy Vehicles (%)	1%	1%	2%	2%	1%	0%	2%	2%	0%	1%	1%	1%
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8						6			2
Actuated Green, G (s)	19.0	33.9	33.9	20.1	34.7		34.0	71.7	71.7	6.8	44.5	44.5
Effective Green, g (s)	19.0	33.9	33.9	20.1	34.7		34.0	71.7	71.7	6.8	44.5	44.5
Actuated g/C Ratio	0.13	0.23	0.23	0.13	0.23		0.23	0.48	0.48	0.05	0.30	0.30
Clearance Time (s)	4.0	4.6	4.6	4.0	4.9		4.0	4.9	4.9	4.0	4.9	4.9
Vehicle Extension (s)	3.0	4.0	4.0	4.0	3.0		2.0	6.0	6.0	2.0	6.0	6.0
Lane Grp Cap (vph)	226	807	359	444	771		401	1691	750	157	1060	507
v/s Ratio Prot	0.12	c0.21		c0.16	0.06		c0.28	0.33		0.04	c0.32	
v/s Ratio Perm			0.13						0.40			0.09
v/c Ratio	0.95	0.91	0.56	1.20	0.26		1.24	0.69	0.84	0.80	1.10	0.32
Uniform Delay, d1	65.0	56.6	51.5	65.0	47.1		58.0	30.5	34.1	70.9	52.8	41.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.57	0.35	0.10	1.00	1.00	1.00
Incremental Delay, d2	46.1	15.0	2.4	108.3	0.2		114.7	0.5	2.7	22.3	57.4	1.6
Delay (s)	111.2	71.6	53.9	173.3	47.3		147.9	11.2	6.1	93.2	110.2	42.6
Level of Service	F	E	D	F	D		F	B	A	F	F	D
Approach Delay (s)		74.3			137.1			37.2			98.2	
Approach LOS		E			F			D			F	

Intersection Summary			
HCM 2000 Control Delay	72.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	17.8
Intersection Capacity Utilization	109.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	120	1234	161	397	526	71	132	57	342	135	46	91
Future Volume (vph)	120	1234	161	397	526	71	132	57	342	135	46	91
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	10	11	12	12	12	12	12	16	12
Total Lost time (s)	4.0	4.5		4.0	4.5			5.0			5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			0.95			0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.98			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.98		1.00	0.98			0.90			0.95	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1770	3356		1652	3350			3090			3665	
Flt Permitted	0.95	1.00		0.95	1.00			0.75			0.55	
Satd. Flow (perm)	1770	3356		1652	3350			2336			2079	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	124	1272	166	409	542	73	136	59	353	139	47	94
RTOR Reduction (vph)	0	8	0	0	8	0	0	266	0	0	56	0
Lane Group Flow (vph)	124	1430	0	409	607	0	0	282	0	0	224	0
Confl. Peds. (#/hr)			1			7	18		13	13		18
Confl. Bikes (#/hr)			2			1			1			
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	1	5		6	2			4			4	
Permitted Phases							4			4		
Actuated Green, G (s)	12.1	43.5		28.0	59.4			28.0			28.0	
Effective Green, g (s)	12.1	43.5		28.0	59.4			28.0			28.0	
Actuated g/C Ratio	0.11	0.38		0.25	0.53			0.25			0.25	
Clearance Time (s)	4.0	4.5		4.0	4.5			5.0			5.0	
Vehicle Extension (s)	2.0	6.0		2.0	6.0			2.0			2.0	
Lane Grp Cap (vph)	189	1291		409	1760			578			515	
v/s Ratio Prot	0.07	c0.43		c0.25	0.18							
v/s Ratio Perm								c0.12			0.11	
v/c Ratio	0.66	1.11		1.00	0.35			0.49			0.43	
Uniform Delay, d1	48.5	34.8		42.5	15.5			36.4			35.8	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	6.1	60.0		44.5	0.3			0.2			0.2	
Delay (s)	54.6	94.8		87.0	15.9			36.6			36.0	
Level of Service	D	F		F	B			D			D	
Approach Delay (s)		91.6			44.3			36.6			36.0	
Approach LOS		F			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	64.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	113.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	123.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	185	870	483	143	520	140	258	672	114	378	1092	178
Future Volume (vph)	185	870	483	143	520	140	258	672	114	378	1092	178
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	12	12	11	10	12	12	12	12	12
Total Lost time (s)	3.7	4.6	4.6	3.7	4.6	4.6	3.7	4.6		3.7	4.6	
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95		1.00	0.91	
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00	0.97	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1711	3421	1452	3433	3539	1481	1652	3441		1770	4955	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1711	3421	1452	3433	3539	1481	1652	3441		1770	4955	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	189	888	493	146	531	143	263	686	116	386	1114	182
RTOR Reduction (vph)	0	0	131	0	0	110	0	12	0	0	20	0
Lane Group Flow (vph)	189	888	362	146	531	33	263	790	0	386	1276	0
Confl. Peds. (#/hr)			27			16			23			15
Confl. Bikes (#/hr)			2						10			6
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8			4						
Actuated Green, G (s)	13.2	27.4	27.4	11.0	25.2	25.2	22.2	31.7		23.3	32.8	
Effective Green, g (s)	13.2	27.4	27.4	11.0	25.2	25.2	22.2	31.7		23.3	32.8	
Actuated g/C Ratio	0.12	0.25	0.25	0.10	0.23	0.23	0.20	0.29		0.21	0.30	
Clearance Time (s)	3.7	4.6	4.6	3.7	4.6	4.6	3.7	4.6		3.7	4.6	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	4.0		2.0	4.0	
Lane Grp Cap (vph)	205	852	361	343	810	339	333	991		374	1477	
v/s Ratio Prot	0.11	c0.26		0.04	c0.15		0.16	c0.23		c0.22	c0.26	
v/s Ratio Perm			0.25			0.02						
v/c Ratio	0.92	1.04	1.00	0.43	0.66	0.10	0.79	0.80		1.03	0.86	
Uniform Delay, d1	47.9	41.3	41.3	46.5	38.5	33.4	41.7	36.2		43.4	36.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	41.0	42.4	47.8	0.3	1.5	0.0	10.9	6.7		55.0	6.9	
Delay (s)	88.9	83.7	89.1	46.8	39.9	33.5	52.6	42.8		98.4	43.4	
Level of Service	F	F	F	D	D	C	D	D		F	D	
Approach Delay (s)		86.0			40.0			45.2			56.0	
Approach LOS		F			D			D			E	

Intersection Summary			
HCM 2000 Control Delay	60.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.6
Intersection Capacity Utilization	95.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Arterial Level of Service: EB Fairmont Dr

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Bayfair Dr	III	35	15.5	92.8	108.3	0.11	3.8	F
E. 14th Street	III	35	17.8	83.1	100.9	0.14	5.0	F
Total	III		33.3	175.9	209.2	0.25	4.4	F

Arterial Level of Service: WB Fairmont Dr

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Bayfair Dr	III	35	17.8	16.1	33.9	0.14	14.8	D
Hesperian Bl	III	35	15.5	43.6	59.1	0.11	7.0	F
Total	III		33.3	59.7	93.0	0.25	9.8	F

Arterial Level of Service: NB Hesperian Blvd

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Drew St	II	40	13.0	2.8	15.8	0.11	25.8	C
Thornally Dr	II	40	24.0	88.3	112.3	0.21	6.7	F
Bayfair Dr	II	40	24.2	151.7	175.9	0.21	4.3	F
Fairmont Dr	II	40	13.5	11.5	25.0	0.12	16.9	E
Total	II		74.7	254.3	329.0	0.65	7.1	F

Arterial Level of Service: SB Hesperian Blvd

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Bayfair Dr	II	40	13.5	4.4	17.9	0.12	23.5	C
Thornally Dr	II	40	24.2	33.5	57.7	0.21	13.1	E
Drew St	II	40	24.0	7.5	31.5	0.21	23.8	C
Springlake Dr	II	40	13.0	94.6	107.6	0.11	3.8	F
Total	II		74.7	140.0	214.7	0.65	10.9	F

APPENDIX C

GRAPHIC SCALE (IN FEET)

25' 50' 100' 200'

PREPARED BY:

DKS

DKS ASSOCIATES
1970 BROADWAY, SUITE # 740
OAKLAND, CA 94612
TEL: 510-763-2061

CIVIL ENGINEER

RCE NO. ______ EXP. ______

CHECKED BY MARIA TRIBELHORN

DESIGNED BY

DRAWN BY DANE RINI

No.	DATE	BY	REFERENCE

Fairmont Dr.
Corridor Queuing Diagram (95th Percentile)
Existing vs. Existing Plus Project AM

DRAFT

SCALE:
HOR.
VERT.
DATE: OCT 26, 2018
SHEET NO.
01 OF 04

FILENAME: Fairmont queuing 11-02-18 10:09am Dane.Rini II XREFS:I K<--

Last Saved By: Dane.Rini 11-02-18 10:05am

GRAPHIC SCALE (IN FEET)
25' 50' 100' 200'

PREPARED BY:
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Existing vs. Existing Plus Project PM

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RCE NO. ______ EXP. ______	
CHECKED BY	MARIA TRIBELHORN
DESIGNED BY	
DRAWN BY	DANE RINI

No.	DATE	BY	REFERENCE

Fairmont Dr.
Corridor Queuing Diagram (95th Percentile)
Cumulative vs. Cumulative Plus Project AM

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RCE NO. ______ EXP. ______

CHECKED BY MARIA TRIBELHORN

DESIGNED BY

DRAWN BY DANE RINI

No.	DATE	BY	REFERENCE

Fairmont Dr.
Corridor Queuing Diagram (95th Percentile)
Cumulative vs. Cumulative Plus Project PM

DRAFT

SCALE:
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VERT.
DATE: OCT 26, 2018
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04 OF 04

FILENAME: Fairmont queuing 11-02-18 10:09am Dane.Rini XREFS: K--

Last Saved By: Dane.Rini 11-02-18 10:05am

City of San Leandro

Meeting Date: September 28, 2020

Resolution - Council

File Number:	20-401	**Agenda Section:**	CONSENT CALENDAR
		Agenda Number:	

TO: City Council

FROM: Jeff Kay
City Manager

BY: Keith Cooke
Engineering & Transportation Director

FINANCE REVIEW: Susan Hsieh
Finance Director

TITLE: RESOLUTION of the City of San Leandro City Council to Approve a Transportation Fund for Clean Air Grant Funding Agreement with Bay Area Air Quality Management District for Class IV Bike Lanes on Fairmont Drive (Authorizes execution of an agreement for grant funds to be used to construct class IV bike lanes on Fairmont Drive between East 14th Street and Hesperian Boulevard)

WHEREAS, an agreement between the City of San Leandro and Bay Area Air Quality Management District, a copy of which is attached, was presented to this City Council; and

WHEREAS, the City Council is familiar with the contents thereof; and

WHEREAS, the City Manager recommends approval of said agreement.

NOW, THEREFORE, the City Council of the City of San Leandro does RESOLVE as follows:

That said agreement is hereby approved and execution by the City Manager is hereby authorized; and

That $220,000 in Transportation Fund for Clean Air grant funds shall be appropriated to account 150-38-451 for the project.

TRANSPORTATION FUND FOR CLEAN AIR FUNDING AGREEMENT

BETWEEN

THE BAY AREA AIR QUALITY MANAGEMENT DISTRICT

AND

CITY OF SAN LEANDRO

PROJECT NUMBER: 20R15

This funding agreement ("Agreement") is made and entered into between City of San Leandro, hereinafter referred to as "Project Sponsor," and the Bay Area Air Quality Management District, hereinafter referred to as the "Air District" (and hereinafter referred to jointly as the "Parties").

SECTION I
RECITALS

1) California Health and Safety Code Sections 44223 and 44225 authorize the Air District to levy a fee on motor vehicles registered within its jurisdiction and to use those fees to implement mobile source and transportation control projects that result in surplus emission reductions.

2) The Air District has established a grant fund, entitled the Transportation Fund for Clean Air ("TFCA") to implement such projects. Under the TFCA's Regional Fund Program, the Air District may issue TFCA funds to public agencies and, for certain vehicle-based projects, to other entities for projects within the Air District's jurisdiction ("TFCA Program").

3) California Health and Safety Code Section 44241 lists the permissible types of projects, all of which must conform to the transportation control measures and mobile source measures that are included in the Air District's air quality plan(s) adopted pursuant to California Health and Safety Code Sections 40233, 40717, and 40919 and are in effect as of the date of execution of this Agreement.

4) On May 1, 2019, the Air District's Board of Directors approved funding allocations for the TFCA Program for Fiscal Year Ending (FYE) 2020, under California Health and Safety Code Section 44241, and authorized the Executive Officer/Air Pollution Control Officer (APCO) to execute Grant Agreements for eligible projects funded by the TFCA Program, with individual grant awards up to $100,000.

5) On June 5, 2019, the Air District's Board of Directors approved the *FYE 2020 TFCA Regional Fund Program Policies ("Program Policies")*, which sets forth requirements for projects that are eligible for funding through the TFCA Program.

6) On August 6, 2019, the Air District released the *Application Guidance for Vehicle Trip Reduction Program for FYE 2020,* dated November 2019 *("Program Guidance*"), which includes the Program Policies and sets forth additional requirements for eligible trip reduction projects.

7) On January 29, 2020, the Air District's Board of Directors approved an award of TFCA Program funds to the Project Sponsor to implement an eligible mobile source or transportation control project to improve air quality in the San Francisco Bay Area Air Basin based on the Program Guidance and the information provided in Project Sponsor's application ("Project").

8) The Project Sponsor affirms that the Project has not commenced, would not have otherwise commenced without TFCA Program funding, and will result in surplus emission reductions.

9) The Parties desire to enter into this Agreement to implement the Project in accordance with the terms and conditions of this Agreement, including all attachments thereto.

NOW, THEREFORE, pursuant to California Health and Safety Code Section 44241, the Parties hereby agree as follows:

SECTION II
PROJECT SPONSOR OBLIGATIONS

1) The Project Sponsor hereby agrees to implement the Project, which is described in "Project Information" (Attachment A), in accordance with the costs, terms, and conditions in the "Project Budget and Payment Process" (Attachment B), and all applicable provisions of federal, state, and local law and regulations. Failure to implement the Project in accordance with the terms and conditions set forth in this Agreement and all attachments thereto shall be deemed a breach of this Agreement and may result in the Air District's enforcement of the Agreement, termination of the Agreement, a reduction in the amount of the Project's TFCA Funds Awarded that are specified in Attachment B, a required reimbursement from the Project Sponsor to the Air District of TFCA Funds already awarded, or other remedies sought by the Air District at its sole discretion.

2) The Project Sponsor shall be responsible for all Project costs necessary to complete the Project prior to submission of the Final Invoice to the Air District for reimbursement. Air District's funding obligation under this Agreement is limited to reimbursement of Eligible Costs, as specified in Attachment B, the amount of which shall not exceed the TFCA Funds Awarded, also as specified in Attachment B. The Project Sponsor shall be solely responsible for all costs that exceed the TFCA Funds Awarded.

3) The Project Sponsor is responsible for assuring that all funds received under this Agreement and Matching Funds are expended only in accordance with the requirements of the TFCA Program, this Agreement, and all applicable provisions of law and regulations.

4) The Project Sponsor shall allow the Air District and its authorized representatives to conduct performance and fiscal audits of the Project at any time during the Term of this Agreement. The Project Sponsor shall cooperate with such audits and shall make available to the Air District all records relating to Project performance and expenses incurred in the implementation of the Project.

   The Project Sponsor shall allow the Air District or its authorized representatives to inspect the Project at any time during the Project Operational Period. The Project Sponsor shall cooperate with such inspections.

5) The Project Sponsor shall prepare and maintain all necessary Project Records to document Project activities and performance, including invoicing documentation set forth in Section 5 of Attachment B, documentation to support the Project reporting requirements set forth in Attachment C, and insurance documentation set forth in Attachment D (all of which comprise "Project Records"). Project Records shall also include documentation that verifies compliance with the requirements set forth in Section II.8. The Project Sponsor shall keep Project Records in one central location for a period of three (3) years after the later of a) the date of the Air District's final payment, or b) the end of the Project Operational Period.

6) The Project Sponsor shall submit the reports specified in Attachment C to the Air District by the due dates specified in Attachment C. These reports are public documents. At its discretion, the Air District may accept and process a late-submitted report, without thereby waiving or amending the submission deadline of any or all subsequent reports.

7) The Project Sponsor shall implement and operate the Project for the duration of the Project Operational Period. The Project Sponsor may not make any changes to the operational status of the Project without the prior approval of the Air District. Failure to obtain prior approval is a breach of this Agreement.

   For purposes of this Agreement, a "change to the operational status" occurs whenever any portion of the Project is removed from active service other than for routine maintenance, relocated to a different location than what is specified in this Agreement (Attachment A), rendered inoperable, sold, or transferred to another entity, before full completion of the Project Operational Period.

   If the Project Sponsor intends to make a change to the Project's operational status, the Project Sponsor must seek a modification of this Agreement in advance to allow for a change pursuant to Section IV.3.

8) The Project Sponsor shall acknowledge, and require any third party that implements any portion of the Project ("Sub-awardee") to also acknowledge, the Air District as a Project funding source at all times throughout the Project Operational Period as specified in Attachment A. The Project Sponsor shall use, and

require any Sub-awardee to use, the Air District's approved logo for the Project. The required documentation and materials are specified in Attachment C.

9) Beginning when the Project starts and throughout the Project Operational Period, the Project Sponsor shall obtain, maintain, and comply, and require any Sub-awardee to also obtain, maintain, and comply, with the insurance coverage specified in Attachment D, "Insurance Requirements," and with all insurance requirements set forth therein, including the provision of documentation of said insurance coverage.

10) To the extent not otherwise prohibited by law, and to the extent required by the California Public Records Act (Government Code section 6250 et seq.), the Project Sponsor shall place in the public domain any software, written document, or other product developed with TFCA Program funds as part of the Project and shall require recipients of any TFCA Program funds, if any, to do the same.

11) The Project Sponsor shall use TFCA Program funds only for the implementation of a project that will result in surplus motor vehicle emission reductions and clean air benefits within the Air District's jurisdiction and be responsible for demonstrating the emission reductions and benefits achieved. Surplus emission reductions are those that exceed the requirements of applicable regulations or other legal obligations (including contracts) as of the Effective Date of this Agreement.

12) The Project Sponsor shall comply with all TFCA Program requirements set forth in the Air District's Application Guidance for Vehicle Trip Reduction Program for FYE 2020, dated November 2019 ("Program Guidance"), which are incorporated herein and made a part hereof by this reference as if fully set forth herein.

SECTION III
AIR DISTRICT OBLIGATIONS

1) The Air District will provide TFCA Program funds for this Project in an amount not to exceed the TFCA Funds Awarded, in accordance with the formula set forth in Attachment B. In the event that the Total Project Cost is less than the amount listed in Attachment B, the Air District shall recalculate its contribution to the Project in accordance with the provisions of Section 3 of Attachment B.

2) The Air District will endeavor to pay the undisputed amount of an approved invoice within thirty (30) calendar days of the date of Air District's approval of such invoice and in accordance with the Invoice and Payment Schedule set forth in Section 5 of Attachment B.

3) The Air District will provide timely notice to the Project Sponsor prior to conducting any audits of the Project. Also, the Air District makes reasonable efforts to conduct audits and inspections during normal business hours of the Project Sponsor.

4) The Air District will provide the Project Sponsor a copy of the fiscal audit of the Project as specified in California Health and Safety Code Section 44242.

5) The Air District will provide the Project Sponsor all applicable Air District-approved reporting and invoice forms.

6) The Air District will make its logo available to Project Sponsor solely for use to fulfill the Project Sponsor's obligation under Section II.8 of this Agreement.

SECTION IV
GENERAL PROVISIONS

1) Effective Date: The effective date of this Agreement is the date the Air District Executive Officer/Air Pollution Control Officer executes this Agreement ("Effective Date").

2) Term: The term of this Agreement shall commence on the Effective Date of this Agreement and end three (3) years from the later of either 1) the date of the Air District's final payment, or 2) the last day of the Project Operational Period, unless this Agreement is terminated or amended as provided below, or the Term is extended pursuant to Special Conditions, Attachment A.

3) Amendment: This Agreement may not be modified except in writing, signed by both Parties hereto, and any attempt at oral modification of this Agreement shall be void and of no effect. Any change in Project scope shall require an Amendment under this Agreement.

4) Project Liaison: Within thirty (30) calendar days from the Effective Date of this Agreement, the Project Sponsor shall notify the Air District of the Project Sponsor's Project Liaison and of the Liaison's address, telephone number, and email address. The Project Liaison shall be the liaison to the Air District pertaining to implementation of this Agreement and shall be the day-to-day contact about the Project. All correspondence shall be addressed to the Project Liaison. The Project Liaison shall notify the Air District of a change of Project Liaison or of the Liaison's contact information in writing no later than thirty (30) calendar days from the date of the change.

5) Notices: Any notice that may be required under this Agreement shall be in writing, shall be effective when received, and shall be given by personal service, by U.S. Postal Service first class mail, or by certified mail (return receipt requested). Within thirty (30) calendar days of the Effective Date of this Agreement, the Parties shall inform the other Party of the addressee for notice. Each Party shall promptly inform the other of any changes for notice. All correspondence shall reference the Project Number.

6) Project Due Dates: If any Project act or task must be performed by a specific deadline or date, which day falls on a Saturday or holiday (which includes Sunday), that act or task may be performed by the next business day, except where otherwise noted in Special Conditions, Attachment A.

7) Breach and Termination:

A. Voluntary. Either Party may terminate this Agreement by giving written notice to the other Party. The notice of termination shall specify the effective date of termination. The terminating party shall provide notice that is a minimum of forty-five (45) calendar days from the mailing date of the notice. However, if any payments are due to either party, this Agreement may not be terminated earlier than the date that all parties have received all payments they are due under this Agreement. In this circumstance, each party shall notify the other party of having received all payments due and the date of receipt. The notice of the termination shall be delivered as provided for in Section IV.5.

If the Project Sponsor terminates this Agreement, the Project Sponsor shall not be entitled to the full amount of the TFCA Funds Awarded. The Air District will calculate the amount of funds to which the Project Sponsor is entitled, based on the Air District's determination of what funds are Eligible Costs and the formula set forth in Attachment B, Section 3. If the Air District has paid the Project Sponsor more than the amount of funds to which the Project Sponsor is entitled, the Project Sponsor shall reimburse any funds owed to the Air District prior to the effective date of termination, which may include all or a portion of the TFCA funds that Project Sponsor has already received but is not entitled to retain.

If the Air District terminates this Agreement pursuant to this provision, any costs incurred on the Project following the effective date of termination shall be ineligible for reimbursement of TFCA funds, except costs for any work that the Air District has specified in the notice of termination that the Project Sponsor may continue to perform for the specified period of time. The Air District will reimburse Project Sponsor for all Eligible Costs that were expended prior to the date specified in the notice of termination based on the formula set forth in Attachment B.

The Agreement cannot be terminated unless all payments have been fully made.

B. Breach. In the case of Project Sponsor's breach of this Agreement, the Air District will deliver a written notice of breach. The notice will specify the nature of the breach and will direct the Project Sponsor to cease all work immediately upon receipt of the notice, except as specifically provided for in the notice. At its discretion, the Air District may allow the Project Sponsor to cure the breach; in that instance, the notice of breach will specify the date by which such breach must be cured ("Cure Period"). As one of its remedies, the Air District may terminate this Agreement. In that event, the notice of breach will specify the date of termination, which shall be no less than thirty (30) calendar days from the date of mailing of such notice of breach.