

APPENDIX A: APPROVED SCOPE OF WORK



SAN FRANCISCO PLANNING DEPARTMENT

TRANSPORTATION STUDY SCOPE OF WORK ***ACKNOWLEDGEMENT AND APPROVAL***

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Date: June 2, 2015

Transmittal To: Fehr & Peers, Transportation Consultants

The proposed scope of work for the 700-900 Innes Avenue (India Basin), Case No. 2014-002541ENV, dated May 2015 is hereby

- ☒ Approved as submitted
- ☐ Approved as revised and resubmitted
- ☐ Approved subject to comments below
- ☐ Not approved, pending modifications specified below and resubmitted

Signed:  
Transportation Planner Environmental Review Planner

Note: A copy of this approval and the final scope of work are to be appended to the transportation study. The Department advises consultants and project sponsors that review of the draft transportation report may identify issues or concerns of other City agencies not addressed in the scope of work hereby approved, and that the scope of work may need to be modified to accommodate such additional issues.

SCOPE OF WORK

Fehr & Peers has prepared this scope of work to perform a transportation impact study for the proposed mixed-use development at India Basin (Proposed Project). The Proposed Project, located in the Bayview Hunters Point neighborhood, is bounded by the San Francisco Bay on the north/northeast, Earl Street to the east, Innes Avenue to the south, and Hunters Point Boulevard and Hawes Street on the west/northwest. The 38.66-acre Project Site includes 16.94 acres of privately-owned land at 700 Innes, 14.2 acres of publicly-owned land at 900 Innes, India Basin Shoreline Park, and India Basin Open Space, and 7.52 acres of public right-of-way. The Proposed Project would construct a mixed-use, multi-phased master planned development on 22.71 acres of the total site while the San Francisco Recreation and Parks Department develops a 14.2-acre network of new and/or improved parkland and open space.

Specifically, the mixed-use, master planned portion of the proposed Project Site would add the following land uses (Proposed Project):

- 1,108 residential units with building heights of up to six stories (68')
- 116,070 sf of retail/commercial/R&D Lab/Clinical Care space
- 9.7 acres of open space and parks
- 1,447 vehicle and 1,108 bicycle parking spaces
- Mission Prep School – The K-8 school would start with 250 students in July 2017 and grow to 450 students adding 50 students per year over 4 years. In 5-7 years, the permanent school will be approximately 40,000 square feet and house 450 students.

The mixed-use, master planned portion of the Project Site has a project variant: the "Maximum Commercial Program Variant". Under this program, the 22.71 acres would have the following land uses:

- 706 residential units with building heights of up to six stories (68')
- 553,750 sf of retail/commercial/R&D Lab/Clinical Care space
- 9.74 acres of open space and parks
- 1,282 vehicle and 706 bicycle parking spaces
- Mission Prep School (unchanged from above)

Both the Proposed Project and the Maximum Commercial Variant will be described in Task 1: Project Description.

Fehr & Peers has tailored this scope of work based on the San Francisco Planning Department's *Transportation Impact Analysis Guidelines for Environmental Review*, published in October 2002 (SF

Guidelines). However, one of our first tasks will be to meet with the Planning Department's Environmental Planning (EP) section staff to confirm this scope and make revisions if needed. We have divided our scope into the following tasks:

TASK 0 – PROJECT SCOPING

Fehr & Peers will provide a draft scope of work to Planning Department staff for review. Fehr & Peers will attend one scoping meeting with Planning Department staff to review the scope and discuss modifications, if needed. At the scoping meeting, we will confirm the project description, transportation study area, analysis methodologies, analysis scenarios, and background assumptions (e.g., the level of future transit and roadway system improvements to be assumed).

Following the scoping meeting, Fehr & Peers will revise the scope of work based on Planning Department comments and submit a revised scope for review. We can begin work on subsequent tasks once the scope of work is approved by the Planning Department and a fully executed contract is in place.

TASK 1 – PROJECT DESCRIPTION

Fehr & Peers will describe the Proposed Project and the Maximum Commercial Project Variant in the Project Description section of the transportation impact study report. This section will include a brief description of the Proposed Project and variant, including the location, type of land uses proposed, the size of the project by land use, vehicular, transit, pedestrian, bicycle, loading and parking access and circulation, transportation improvements proposed as part of the project (e.g., new streets, sidewalks, and bicycle facilities), other programmed transportation improvements proposed in the area, and proposed on-site parking and loading facilities. We will provide a figure showing the existing site layout as well as a plan of the proposed project site that clearly describes on-site circulation, road classifications, and proposed land uses by type and size for the Proposed Project. We do not anticipate that the circulation network of the variant will be different enough to require separate review.

TASK 2 – DATA COLLECTION

Following approval of the scope of work, Fehr & Peers will collect the following data.

Traffic: Fehr & Peers will evaluate 17 study intersections for this study, as listed below. All of the intersections listed below except for five were studied in the Transportation Impact Analysis for the

adjacent Candlestick Point / Hunters Point Shipyard EIR. These additional intersections were selected to better capture freeway access locations based on recent direction from the Planning Department on other projects and to capture access to the site from the south.

1. 25th St/Pennsylvania Ave
2. 25th St/Indiana St
3. Cesar Chavez St/Pennsylvania St/I 280
4. Cesar Chavez St/Indiana St
5. Cesar Chavez St/Third St
6. Third St/Cargo Way
7. Cargo Way/Illinois St/Amador St
8. Evans Ave/Third St
9. Evans Ave/Jennings St
10. Third St/Jerrold Ave
11. Innes Ave/Griffith St
12. Innes Ave/Arelious Walker Drive
13. Innes Ave/Earl St
14. Bayshore Blvd/Oakdale Ave
15. Third St/Oakdale Ave
16. Palou Ave/Ingalls St
17. Third St/Paul St

Third St/Paul Ave Because the traffic counts from the Shipyard are somewhat outdated (i.e., from 2008 and 2009), we will collect new weekday AM (7:00am to 9:00am) and PM (4:00pm to 6:00pm) peak period intersection turning movement counts for all study intersections except for #1, #2, #3, #5, #11, and #13. For intersections #1, #2, #4, and #5, 2013 or 2014 counts are available from the Pier 70 Transportation Impact Analysis.. (New traffic counts will be taken at two of these four locations to ensure that the 2013/2014 counts from Pier 70 adequately represent current conditions.) Intersections #11 Innes Avenue/Griffith Street and #13 Innes Avenue/Earl Street will also not be counted because the cross-streets are currently very minor with nearly negligible amounts of traffic; instead, Fehr & Peers will make assumptions for existing conditions volumes on the cross streets based on spot check field observations.

This scope assumes that no freeway segments will be analyzed.

Transit: Fehr & Peers will compile data on all Muni bus routes and rail lines (including motor coach, trolley coach, and light rail and historic streetcar service) within approximately a half-mile of the proposed project site. This will include a description of each route's transit route service hours, peak and off-peak

period headways and nearest stop to the proposed project site. Fehr & Peers will prepare a map that presents nearby transit stops and routes graphically. The Muni transit lines which will be described are:

- 19-Polk (Assumed to be replaced by the 48-Quintara in the future)
- 23-Monterey
- 24-Divisadero
- 44-O-Shaughnessey
- 54-Felton
- T-Third

We will describe peak hour ridership and capacity utilization at the maximum load points (MLP) for the standard Downtown and regional transit screenlines. Fehr & Peers will use Muni weekday AM and PM peak hour ridership and capacity utilization at the MLP developed for the Transit Effectiveness Project (TEP) EIR, unless more recent data is provided by SFMTA. For the cumulative scenario, the proposed service planning changes outlined in the TEP will be assumed.

Fehr & Peers will also compile data on regional transit operators (BART, AC Transit, Golden Gate Transit bus and ferry service, SamTrans and Caltrain) including the nearest transit stop location within the study area boundary and the latest scheduled operations on weekdays. Weekday peak hour ridership and capacity utilization for the regional screenlines for the analysis periods identified will be obtained from the regional operators.

Pedestrian/Bicycle: Fehr & Peers will conduct a qualitative assessment of pedestrian and bicycle conditions in the vicinity of the project site. Bicycle conditions will be described as they relate to the proposed project site, including bicycle routes, bicycle connections to the SF Bay Trail, new park trails and adjacent open space, existing bicycle parking, safety and right-of-way issues, conflicts with traffic, and grade changes. Fehr & Peers will summarize proposed changes in the study area identified in the 2009 San Francisco *Bike Plan*. Pedestrian conditions will be described as they relate to safety and conflict issues at key crossing locations near the Project site, pedestrian routes between the Proposed Project and adjacent transit stops, pedestrian connections to the SF Bay Trail, other park trails, and open space, right-of-way conflicts, sidewalk widths, and compliance with ADA requirements. Much of this information can be summarized from recent planning work we have performed in the area.

Additionally, Fehr & Peers will collect weekday AM (7:00am to 9:00am) and PM (4:00pm to 6:00pm) peak period intersection bicycle turning movement and pedestrian crossing counts at the following four intersections:

1. Cargo Way/Illinois St/Amador St (traffic intersection #7)

2. Evans Ave/Jennings St (traffic intersection #9)
3. Third St/Oakdale Ave (traffic intersection #15)
4. Oakdale Ave/Quint St (not included in traffic intersection data collection)

Parking: Fehr & Peers will conduct counts of existing on-street and public off-street parking occupancy in a parking study area generally within a two- to three-block radius of the Proposed Project, bounded by Middle Point Road to the west, Innes Avenue to the south, Donahue Street to the east, and the waterfront to the north during the weekday midday period (1:30 to 3:00 PM) and evening period (6:30 to 8:00 PM). Current on-street parking regulations in the immediate vicinity of the Proposed Project will be noted. Fehr & Peers will include a brief qualitative discussion of proposed parking changes in the vicinity of the Project, if any.

Loading: Fehr & Peers will describe the size and location of off-street and on-street loading in the immediate vicinity of the Project site with regard to both commercial and passenger loading. Fehr & Peers will conduct a qualitative assessment of loading activities during AM and PM peak periods.

Emergency Vehicle Access: Fehr & Peers will qualitatively discuss emergency vehicle access to the Project Site.

TASK 3 – DOCUMENT EXISTING CONDITIONS

Using the data collected in Task 2, Fehr & Peers will document existing street traffic, circulation, parking, pedestrian, bicycle, loading, emergency vehicle access, and transit conditions in the vicinity of the project site, including:

- A base map for the study area describing the street designations, street names, number of lanes, and traffic flow directions;
- A description of existing uses and vehicular access to the project site;
- An assessment of existing parking activities, including hours of operation, supply and hourly utilization for the midday and evening peak hours;
- Graphics indicating the existing peak hour traffic volumes and lane configuration at the study intersections identified in Task 2;
- A map and discussion of Muni and regional transit services within the transportation study area, including bus routes and nearby bus stop locations for each route within a one-half mile radius of

the proposed project. The transit analysis will include weekday AM and PM peak hour capacity utilization analysis for the standard Downtown screenlines and the regional transit screenlines. Changes to Muni service in the area being proposed by the Transit Effectiveness Program (TEP) will also be described. We will also identify operational conflicts between buses or light rail vehicles and other vehicles, including bicycles;

- A qualitative assessment of existing bicycle and pedestrian conditions (conflicts, safety and operational issues) will be conducted;
- A description of changes to the bicycle network in the vicinity of the project site being considered by the San Francisco Bicycle Plan and other City proposals;
- A qualitative assessment of existing weekday commercial and passenger loading conditions within the transportation study area;
- A description of the existing emergency vehicle access routes to the project site, and
- A quantitative assessment of existing on- and off-street parking supply and utilization within the parking study area, and qualitative discussion of on-street parking regulations.

TASK 4 – DETERMINE TRAVEL DEMAND

TASK 4.1 BASELINE TRAVEL DEMAND

Trip Generation: Fehr & Peers will use the total number of new person- and vehicle-trips generated by anticipated near-term development projects on a typical weekday and during the AM and PM peak hours to develop a baseline conditions scenario with a horizon year of 2018. Anticipated near-term development projects in the vicinity of the Proposed Project are Hunters Point Shipyard Phase 1 and Hunter's View. Trip generation rates will be provided by the EIR documents of the respective development projects.

Trip Distribution/Mode Split: The vehicle trips generated by the baseline projects will be assigned to the study intersections based on the trip distributions provided, while transit trips will be assigned to transit routes in the area. The trip distribution and mode split percentages for the anticipated near-term development projects will be provided by the EIRs from the respective projects.

TASK 4.2 PROJECT TRAVEL DEMAND

Trip Generation: Fehr & Peers will estimate the total number of new person- and vehicle-trips generated by the Proposed Project on a typical weekday and during the AM and PM peak hours. The trip generation rates will be taken from the *SF Guidelines*. Fehr & Peers will prepare trip generation forecasts for the Proposed Project and the Project Variant.

Trip Distribution/Mode Split: Fehr & Peers will estimate the mode split percentages and trip distribution for person trips generated by the Proposed Project and Project Variant for two different conditions – near-term conditions with the existing levels of transit service and for long-term with substantial improvements to transit service expected to occur as part of the implementation of the adjacent Candlestick Point/Hunters Point Shipyard project. The increases in transit service expected to occur in the long-term are substantial enough to expect a meaningful change in mode split associated with the Proposed Project and Project Variant.

For the near term conditions, mode split forecasts will be based on the latest available Census mode split and place of employment information for the Census Tract surrounding the Proposed Project. We will use 2008-2012 American Community Survey data for mode split and trip distribution assumptions for the Proposed Project and Project Variant. A graphic showing vehicle-trip distribution and assignment for the Proposed Project and Project Variant will be included.

For the longer term conditions, Fehr & Peers will use previously-developed mode share forecasts for work and non-work trips based on the previously-proposed uses at the India Basin site. The methodology is identical to that developed for the Candlestick Point/Hunters Point Shipyard analysis, including uses at the India Basin site, and reflects the planned long-term level of transit service expected in the area.

Parking/Loading Demand: Fehr & Peers will forecast the parking and loading demand for the proposed uses based on the *SF Guidelines* methodology and describe the quantity and location of the changes to supply associated with the Proposed Project and Project Variant.

TASK 4.3 TRAVEL DEMAND DOCUMENTATION

Fehr & Peers will submit a Travel Demand Memo that includes project trip generation, trip distribution, and mode split for the Proposed Project and the Maximum Commercial Program Variant under both near-term conditions (with existing transit service) and long-term conditions (with substantial improvements to transit service). The memo will also include the trip generation, trip distribution, and mode split for the Hunters Point Shipyard Phase 1 and Hunter's View development projects that will be used to develop the baseline conditions scenario. This memo will be submitted to the Planning Department for review and

comment. Fehr & Peers will revise and resubmit the travel demand memorandum. Upon approval by the Planning Department, Fehr & Peers will incorporate this work into the analysis.

TASK 5 – IMPACT ANALYSIS

~~Although the remainder of the scope refers to the “Proposed Project,” t~~The impact analysis will be conducted for ~~either both~~ the Proposed Project ~~or and~~ the Project Variant, ~~whichever has greater trip generation, in consultation with the Planning Department.~~

~~Fehr & Peers will identify transportation-related impacts associated with the Proposed Project and the Project Variant.~~The effort will include impacts on the study intersections, transit operations, pedestrian and bicycle circulation, loading conditions, emergency vehicle access, construction activities, and parking. The methodology for assessing project impacts is described below.

Task 5.1 – Traffic: Fehr & Peers will calculate intersection LOS for the weekday AM and PM peak hours for all study intersections. The intersection LOS will be calculated for the following scenarios:

- Baseline (2018)
- Baseline plus Proposed Project
- Baseline plus Project Variant
- Baseline plus Proposed Project plus Transit Improvements
- Baseline plus Project Variant plus Transit Improvements
- Future Year 2040 Cumulative Plus Proposed Project
- Future Year 2040 Cumulative Plus Project Variant.

Baseline plus Project plus Transit Improvements

Should the Baseline plus Project scenarios identify significant transportation-related impacts, it is possible that some of them may be reduced with the planned transit improvements that the City has committed to in the area. Thus, those transit improvements may represent all or a portion of required mitigation measures for project-related impacts.

To calculate the degree to which the transit improvements may reduce significant project-related impacts, the long-term travel demand forecasts for the project described in Task 4 (which represent full implementation of the transit improvements) –will be applied to the baseline conditions. This analysis will isolate significant project impacts that cannot be addressed by the proposed transit improvements and will assist in developing additional project-related mitigation measures, if necessary.

Additionally Fehr & Peers will work with the Planning Department and the SFMTA to describe the feasibility of these transit improvements, including the status of funding, approval, and implementation timing relative to buildout of the Proposed Project.

Future Year 2040 Cumulative

For the Future Year 2040 Cumulative Conditions traffic analysis, future growth at the study intersections will be forecasted based on cumulative development and growth identified by the San Francisco County Transportation Authority (SFCTA) travel demand forecasting model, SF-CHAMP, using model output that represents existing conditions and model output that represent 2040 cumulative conditions. In order to estimate 2040 Cumulative plus Project conditions, the projected traffic volume growth between existing and 2040 cumulative conditions at the study intersections will be added to the traffic volumes for the 2040 cumulative conditions. 2040 cumulative conditions will include planned transportation infrastructure projects in the study area including the Hunters Point Shipyard Phases I and II.

Task 5.2 – Transit: Fehr & Peers will estimate the increase in weekday PM peak hour transit ridership for Muni and for regional transit providers as a result of the Proposed Project [and Project Variant](#). Fehr & Peers will conduct a quantitative assessment of the project-related impacts in terms of ridership and capacity utilization to existing and future transit service on the Downtown screenlines, based on the distribution of project-generated transit trips (determined in Task 4). Potential impacts to Muni operations will be described using transit screenlines and maximum load points, as described in the *SF Guidelines*.

Task 5.3 – Site Access: Fehr & Peers will review site access and identify issues related to site ingress and egress, and provide design recommendations where necessary.

Fehr & Peers will review the proposed site plan for the Mission Prep School to qualitatively assess the circulation of passenger vehicles, emergency vehicles, and delivery trucks into and within the site. We will provide an estimate of vehicular trip generation in the AM and PM peak hours. We will qualitatively assess the adequacy of the pick-up, drop-off capacity through a comparison with up to two similar existing schools in San Francisco. We will quantitatively assess anticipated pick-up and drop-off operations, pedestrian and bicycle circulation, and pedestrian access to the pick-up and drop-off location. We will assess the parking provided by the proposed project to the extent that it serves expected demand from

faculty and staff. Additionally, Fehr & Peers will review the proposed pedestrian and ADA circulation on site, and identify potential conflict areas and improvement opportunities. Bus loading operations will not be studied, and inclusion of such an analysis would require an additional study.

Task 5.4 – Loading: Fehr & Peers will conduct a loading supply/code/demand analysis for the Proposed Project and Project Variant. The proposed loading supply will be compared to the *Planning Code* requirements, and to the estimated demand generated by the Proposed Project. In addition, Fehr & Peers will assess the proposed loading facilities in terms of location and operational characteristics, including truck movement, internal loading circulation and clearance, location of trash storage/compactor, move-in/move-out procedures, and removal of garbage.

Task 5.5 – Pedestrian/Bicycles: Fehr & Peers will qualitatively assess pedestrian and bicycle conditions in the vicinity of the project site under existing and cumulative conditions, including changes that are anticipated as a result of the ongoing India Basin Corridor Transportation Study. Fehr & Peers will also qualitatively assess potential conflicts between project-generated vehicle traffic and pedestrian and bicycle circulation. *Planning Code* requirements for bicycle parking and related facilities will be identified and compared to the proposed supply. We will summarize proposed changes to the bicycling network near the project site as described in the San Francisco *Bike Plan*. Fehr & Peers will qualitatively discuss the adequacy of pedestrian routes from the Project site to the closest bus stops for routes described in Task 3. Fehr & Peers will qualitatively describe potential conflicts between vehicles entering and exiting Project driveways and other parking facilities and bicycle traffic along the adjacent streets.

Task 5.6 – Emergency Service Access: Fehr & Peers will qualitatively discuss impacts due to the Proposed Project with respect to emergency vehicle access to the Project Site.

Task 5.7 – Construction: Fehr & Peers will evaluate potential short-term construction impacts that would be generated by the Proposed Project. Construction impact evaluation will address the staging and duration of construction activity, differences in intensity between various stages of construction, truck routings, estimated daily truck volumes, street and/or sidewalk closures, impacts on Muni operations, and construction worker parking. Construction will likely overlap with several high-profile projects immediately adjacent to the Proposed Project, including the Hunters Point Shipyard, and therefore will require coordination with a variety of agencies and organizations including SFMTA and DPW. We will evaluate the temporary impacts that would result from concurrent construction of the Proposed Project and other projects identified by the Planning Department.

Task 5.8 – Parking: Fehr & Peers will conduct a parking supply/code/demand analysis for the Proposed Project and Project Variant. The proposed parking supply will be compared to the *Planning Code* requirement for the project. Exceptions to the *Planning Code* will be noted. The proposed parking supply

will also be compared to the estimated demand generated by the Proposed Project. ADA-Accessible and bicycle parking supply and requirements will be described. Deficiencies will be quantified and discussed in relation to the effect on the parking supply in the area surrounding the project to identify parking-related impacts under existing and cumulative conditions. Fehr & Peers will discuss the proposed entry/exit locations for the parking garage and the effects of this placement on circulation in the vicinity of the site.

Task 5.9 – Develop Mitigation/Improvement Measures: Fehr & Peers will work cooperatively with Planning Department staff to develop mitigation measures, if necessary [for both the Proposed Project and Project Variant](#). Mitigation measures to reduce the effect of potentially significant impacts will be proposed, as well as improvement measures aimed at reducing the effects of less than significant impacts. Where significant project-related impacts are identified, documentation of mitigation measures considered at each intersection or street segment will be included in the appendix of the transportation report. Furthermore, potential secondary effects, including potential LOS analysis, of any recommended mitigation measures or improvement measures will be analyzed and included in the transportation report.

[We will work with the Planning Department, and others as the Planning Department deems appropriate, to develop an appropriate mitigation implementation plan that incorporates the desired development flexibility and also ensures that mitigation measures are implemented at the appropriate time. One potential approach is as follows:](#)

- [For the measures that are held in common between the Proposed Project and Project Variant, we will identify the trip generation threshold at which the measure would be required under each bookend; the ultimate trigger for implementation could be the lower of the two thresholds.](#)
- [For mitigation measures that are dependent on one of the two bookend scenarios, we will identify the critical amount of development that “triggers” the need for the measure. The methodology for determining this will depend on the impact.](#)

We will attend a meeting with Planning Department and SFMTA staff prior to submittal of Administrative Draft 1 of the report to discuss potential mitigation measures for significant impacts.

TASK 6 – PREPARE TRANSPORTATION REPORT

Prepare Draft Report: Fehr & Peers will prepare an Administrative First Draft Transportation Impact Study, incorporating data, analysis, and conclusions from the above tasks. The draft report will be submitted to the Planning Department for review by the Planning Department and other City agencies. Technical appendices including background information used in the analysis (e.g., traffic counts) will be submitted to the Planning Department with the Administrative Draft Report.

Revisions to Draft Report: Fehr & Peers will incorporate comments from the City agencies, and prepare up to two additional draft reports (a Second Draft and a Screencheck Draft). We have budgeted for up to 40 hours of staff time to make these revisions. Comments from the City requiring additional technical analysis will be completed under an additional scope and fee.

Prepare Final Report: A Final Report will be prepared following the Planning Department EP staff's approval. We have budgeted for up to 16 hours of staff time to make these revisions. Comments from the City requiring additional technical analysis will be completed under an additional scope and fee.

Our scope of work and fee does not include preparation of or assistance with preparation of an EIR section or response to public comments on an EIR section.

TASK 7 – MEETINGS

Fehr & Peers will attend one scoping meeting with Planning Department staff to review the scope and discuss modifications, which is shown in Task 0. At the scoping meeting, Fehr & Peers will confirm the project description, transportation study area, analysis methodologies, analysis scenarios, and background assumptions (e.g., the level of future transit and roadway system improvements to be assumed). We have assumed up to ~~two~~five additional meetings (including the meeting in Task 5.9), for a total of ~~three~~six. We have not assumed attendance at any public hearings, although we are available to attend additional meetings (staff-level of public hearings) on a time and materials basis.

TASK 8 – UPLOAD INTERSECTION RESULTS TO FTP SITE

Fehr & Peers will upload vehicle delay and LOS data into the excel template and to the Planning Department FTP site upon completion of the TIS. We will follow the process described in the December 9, 2013 letter from the Planning Department to the transportation consultant list.

APPENDIX B: PROPOSED PROJECT PLANS

LOCATION MAP



AERIAL VIEW



MAXIMUM RESIDENTIAL SCHEME

PROPOSED SITE PLAN



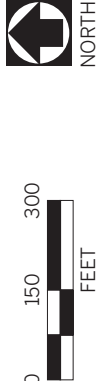
--- PROJECT SITE BOUNDARY

Maximum Residential



LEGEND

- PROJECT SITE BOUNDARY
- SCHOOL LOCATION
- RESIDENTIAL
- GROUND FLOOR COMMERCIAL
- TWO-LEVEL COMMERCIAL
- TWO-LEVEL COMMERCIAL W/ RESIDENTIAL
- RESEARCH AND DEVELOPMENT
- OPEN SPACE
- RECREATION AND PARKS DEPARTMENT



MAXIMUM RESIDENTIAL SCHEME

PROPOSED BUILDING HEIGHT



- PROJECT SITE BOUNDARY
- 2 STORIES (20' - 25')
- 3 STORIES (38' - 40')
- 4 STORIES (40' - 50')
- 5 STORIES (50' - 65')
- 6 STORIES (65' - 68')
- 7 STORIES (75' - 78')

PEDESTRIAN ACCESS

HUNTERS POINT BLVD

HAWES ST

HUDSON AVE

HAWES ST

NEW BRIFTH ST

NEW HUDSON ST

PUBLIC MARKET/
PLAZA

BIG
GREEN

FAIRFAX ST

SPRING ST

ARELIUS WALKER

NEW HUDSON ST

BEACH ST

EARL ST

LEGEND

PEDESTRIAN PATH

SECONDARY PEDESTRIAN PATH

SHARED USE PEDESTRIAN/BICYCLE PATH



NORTH

BICYCLE CIRCULATION



LEGEND

- CLASS 1 BICYCLE LANE
- CLASS 3 BICYCLE ROUTE
- RECREATIONAL PATH
- BAY TRAIL/BLUE GREENWAY

TRANSIT & PEDESTRIAN CROSSING



LEGEND

- TRANSIT ROUTE
- CROSSWALKS
- POTENTIAL BUS STOP LOCATION
- TRAFFIC LIGHT



NORTH

Note: Innes Avenue is being studied under a separate Transportation Corridor Study. Bus stop, pedestrian crossings, and traffic light locations are preliminary.

VEHICULAR CIRCULATION & GARAGE ENTRIES



Note: Innes Avenue is being studied under a separate Transportation Corridor Study. Bus stop, pedestrian crossings, and traffic light locations are preliminary.

LEGEND

RESIDENTIAL THROUGHWAY

NEIGHBORHOOD COMMERCIAL STREETS

SHARED WAY

GARAGE ENTRANCE

NORTH

ON-STREET PARKING



LEGEND

- PROJECT SITE BOUNDARY
- ON-STREET PARKING



TOTAL ON-STREET PARKING
PROVIDED:
30 SPACES

OFF-STREET PARKING



COVE PARKING GARAGE			
LEVELS	PUBLIC SPACES	PRIVATE SPACES	TOTAL
B2	76	169	245
B3	76	169	245
TOTAL	152	338	490

FLATS PARKING GARAGE			
LEVELS	PUBLIC SPACES	PRIVATE SPACES	TOTAL
B1	24	51	75
B2	59	130	189
TOTAL	83	181	264

HILLSIDE PARKING GARAGE			
LEVELS	PUBLIC SPACES	PRIVATE SPACES	TOTAL
B1	73	163	236
B2	132	292	424
B3	120	266	386
TOTAL	325	721	1046

LEGEND

- PROJECT SITE BOUNDARY
- PARKING GARAGES
- GARAGE ENTRANCE

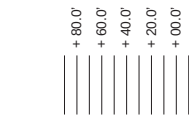
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NORTH

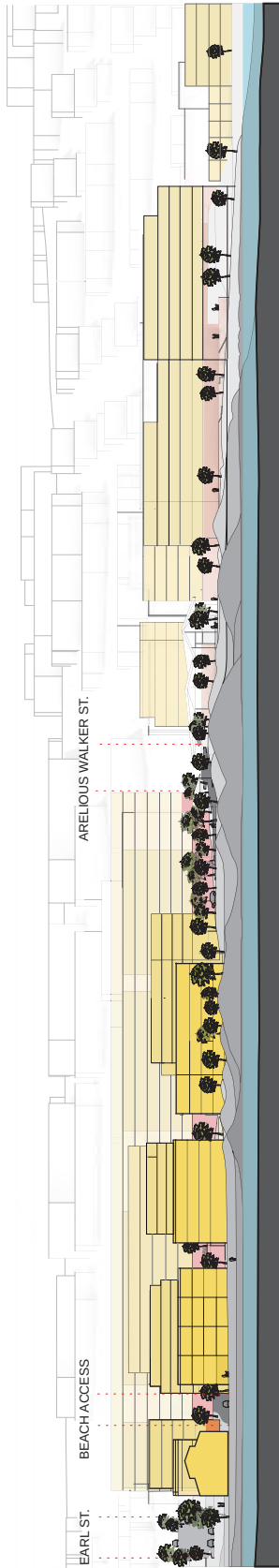
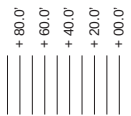
MAXIMUM RESIDENTIAL SCHEME

PROPOSED ELEVATIONS

- RESIDENTIAL
- RETAIL/COMMERCIAL



SOUTHWEST ELEVATION



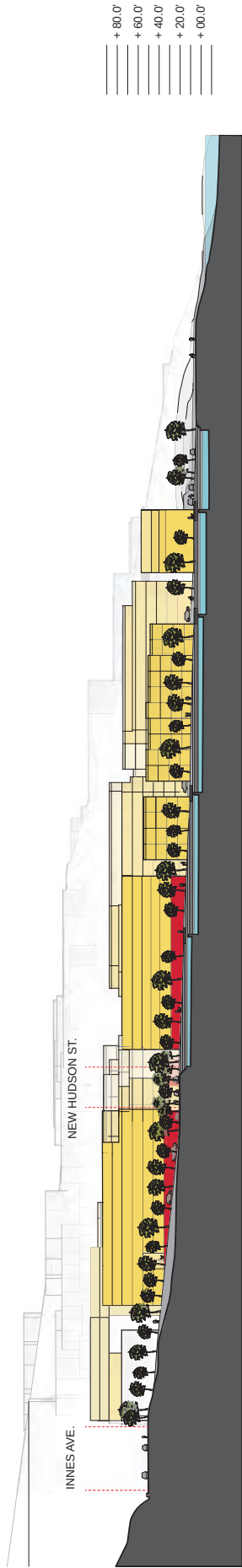
NORTHEAST ELEVATION



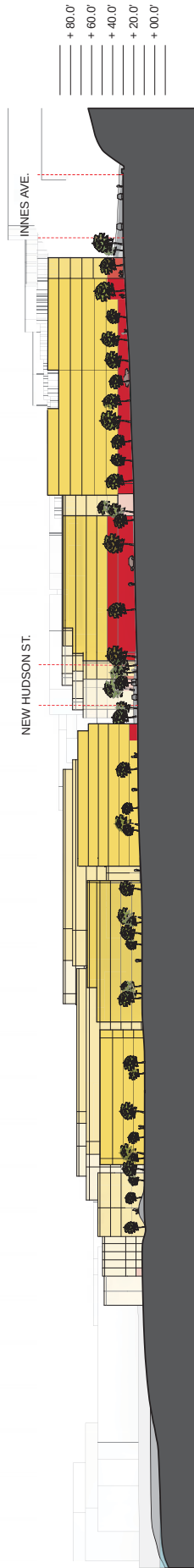
MAXIMUM RESIDENTIAL SCHEME

PROPOSED ELEVATIONS

- RESIDENTIAL
- RETAIL/COMMERCIAL



SOUTHEAST ELEVATION



NORTHWEST ELEVATION



MAXIMUM RESIDENTIAL SCHEME

PHASING DIAGRAM



MAXIMUM COMMERCIAL SCHEME

PROPOSED SITE PLAN



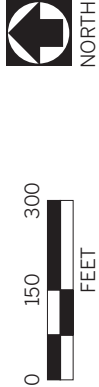
--- PROJECT SITE BOUNDARY

Maximum Commercial



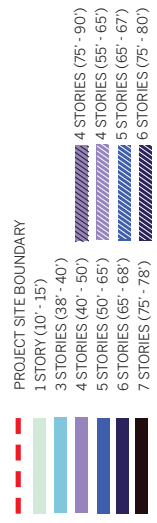
LEGEND

- PROJECT SITE BOUNDARY
- SCHOOL LOCATION
- RESIDENTIAL
- GROUND FLOOR COMMERCIAL
- TWO-LEVEL COMMERCIAL
- TWO-LEVEL COMMERCIAL W/ RESIDENTIAL
- OFFICE/COMMERCIAL
- OPEN SPACE
- RECREATION AND PARKS DEPARTMENT



MAXIMUM COMMERCIAL SCHEME

PROPOSED HEIGHTS



LOADING ZONES - COMMERCIAL VARIANT



LEGEND

- PROJECT SITE BOUNDARY
- PARKING GARAGES BELOW
- ON-STREET LOADING ZONES
- GARAGE ENTRANCE



ON-STREET PARKING - COMMERCIAL VARIANT



LEGEND

- PROJECT SITE BOUNDARY
- ON-STREET PARKING



TOTAL ON-STREET PARKING
PROVIDED:
30 SPACES

OFF-STREET PARKING - COMMERCIAL VARIANT

COVE PARKING GARAGE			
LEVELS	PUBLIC SPACES	PRIVATE SPACES	TOTAL
B2	192	68	260
B3	192	68	260
TOTAL	384	136	520

FLATS PARKING GARAGE			
LEVELS	PUBLIC SPACES	PRIVATE SPACES	TOTAL
B1	59	21	80
B2	148	52	200
TOTAL	207	73	280

HILLSIDE PARKING GARAGE			
LEVELS	PUBLIC SPACES	PRIVATE SPACES	TOTAL
B1	186	66	252
B2	332	118	450
B3	303	107	410
TOTAL	821	291	1112

LEGEND

PROJECT SITE BOUNDARY

PARKING GARAGES

GARAGE ENTRANCE

0

150

300

FEET

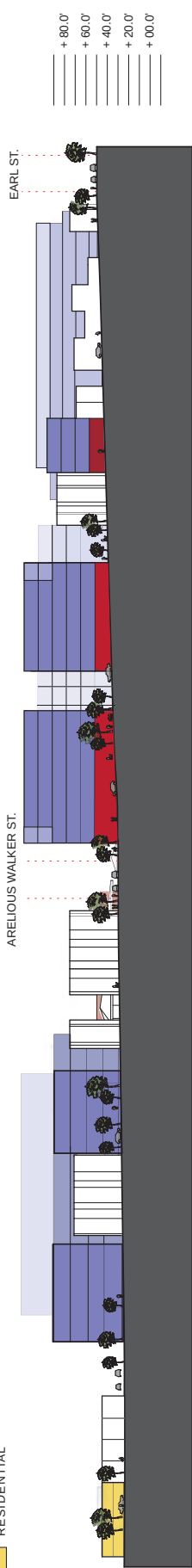
NORTH

The map illustrates the layout of three parking garages within a project site. The Cove Parking Garage is located near the waterfront, the Flats Parking Garage is adjacent to the Public Market Plaza, and the Hillside Parking Garage is situated further inland. Each garage is shown with its levels and the number of public and private spaces. The map also shows surrounding streets and a public market plaza. A legend in the bottom right corner provides symbols for the project site boundary, parking garages, and garage entrances, along with a scale bar and a north arrow.

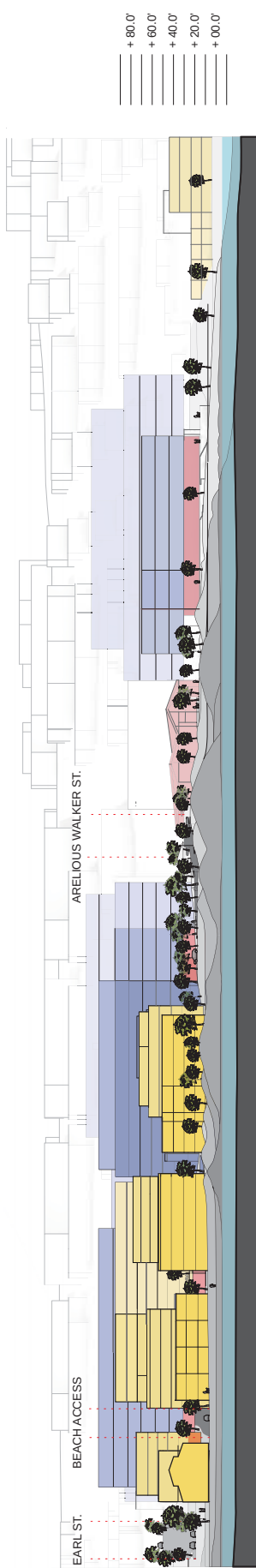
MAXIMUM COMMERCIAL SCHEME

PROPOSED ELEVATIONS

- COMMERCIAL/R&D
- RETAIL/COMMERCIAL
- RESIDENTIAL



SOUTHWEST ELEVATION



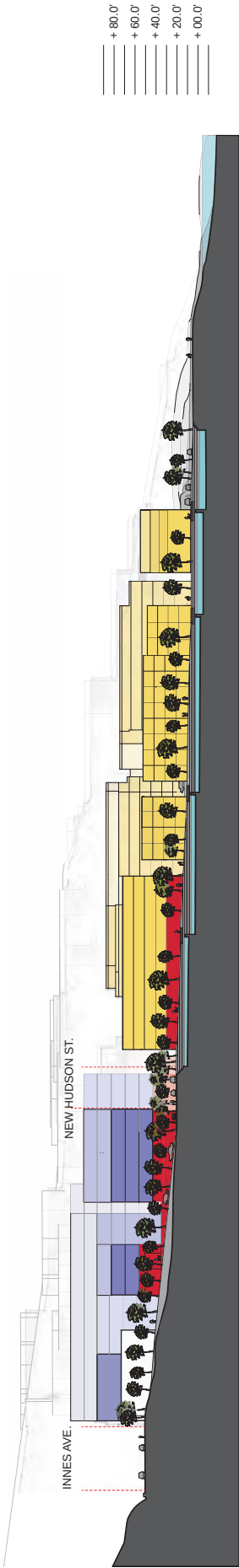
NORTHEAST ELEVATION



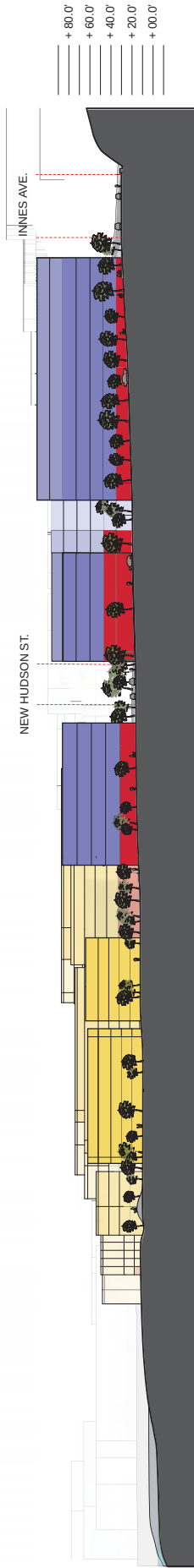
MAXIMUM COMMERCIAL SCHEME

PROPOSED ELEVATIONS

- COMMERCIAL/R&D
- RETAIL/COMMERCIAL
- RESIDENTIAL



SOUTHEAST ELEVATION



NORTHWEST ELEVATION



MAXIMUM COMMERCIAL SCHEME

PHASING DIAGRAM



- PROJECT SITE BOUNDARY
- PHASE 1A (TO BE RELOCATED IN PHASE 3B)
- PHASE 1B
- PHASE 2
- PHASE 3A
- PHASE 3B
- PHASE 3C
- PHASE 4
- PHASE 5
- PHASE 6
- PHASE 7

APPENDIX C: TDM CHECKLIST



SAN FRANCISCO PLANNING DEPARTMENT

Transportation Demand Management (TDM) Checklist: Development Projects

1650 Mission St.
Suite 400
San Francisco,
CA 94103-2479

Reception:
415.558.6378

Fax:
415.558.6409

Planning
Information:
415.558.6377

A. GENERAL PROJECT INFORMATION:

Date: _____ September 6, 2016 _____

Project Name: _____ India Basin _____ Case No: _____

Project Address and Block and Lot: _____ 700 Innes _____

TDM Checklist Prepared By: _____ Courtney Pash _____ on Date: _____ September 6, 2016 _____

Project Sponsor (name/phone/email): _Build, Courtney Pash, 415.551.7626 courtney@bldsf.com _____

B. CHECKLIST TABLE:

CATEGORY	MEASURE	DESCRIPTION ¹	SELECTED
ACTIVE-1	Improve Walking Conditions: Options A - B	Provide streetscape improvements to encourage walking	☒ Option:
ACTIVE-2	Bicycle Parking: Options A - D	Provide secure bicycle parking, more spaces given more points	☒ Option:
ACTIVE-3	Showers and Lockers	Provide on-site showers and lockers so commuters can travel by active modes	☒
ACTIVE-4	Bike Share Membership: Location A - B	Provide Bike Share memberships for residents and employees (1 point) Additional point if the project site is within the Bike Share network	☒ Option:
ACTIVE-5A	Bicycle Repair Station	Provide on-site tools and space for bicycle repair	☒
ACTIVE-5B	Bicycle Maintenance Services	Provide maintenance services through an on-call mechanic or vouchers to a local shop	☒
ACTIVE-6	Fleet of Bicycles	Provide an onsite fleet of bicycles for residents, employees, and/or guests to use	☒
ACTIVE-7			☒

¹ Please refer to Appendix A of the TDM Program Standards for TDM measure descriptions and specific applicability by land use category. Appendix A is available here: <http://sf-planning.org/shift-encourage-sustainable-travel>

CATEGORY	MEASURE	DESCRIPTION ¹	SELECTED
	Temporary Bicycle Valet Parking	For large events. Provide monitored bicycle parking for 20 percent of guests	
CSHARE-1	Car Share Options A - E	Several options for providing car-share parking and memberships, more points given for higher levels of participation	☒ Option:
DELIVERY-1	Delivery Supportive Amenities	Facilitate deliveries with a staffed reception desk, lockers, or other accommodations	☒
DELIVERY-2	Provide Delivery Services	Provide delivery of products (e.g., groceries) or services (e.g., dry cleaning)	☒
FAMILY-1	Family TDM-Amenities Options A - B	Provide storage for car seats near car-share parking, cargo bikes and shopping carts	☒ Option:
FAMILY-2	On-site Childcare	Provide an on-site childcare services	☒
FAMILY-3	Family TDM Package	Provide a combination of car-share parking and memberships and family amenities	☐
HOV-1	Contributions or Incentives for Sustainable Transportation Options A - D	25, 50, 75, or 100 percent subsidies for sustainable transportation use (e.g., Muni fast pass), more points given for higher rate of subsidy	☐ Option:
HOV-2	Shuttle Bus Service Options A - B	Provide shuttle bus services, more points given for more frequent service	☒ Option:
5/26/17 Edit: This is now an option within Mitigation Measure TR-1, not part of TDM Plan.			
HOV-3	Vanpool Program Options A - G	Provide vanpool services to employees, more points for serving larger projects	☐ Option:
INFO-1	Multimodal Wayfinding Signage	Provide directional signage for locating transportation services (shuttle stop) and amenities (bicycle parking)	☒
INFO-2	Real Time Transportation Information Displays	Large screen or monitor that displays, at a minimum, transit arrival and departure information	☒
INFO-3	Tailored Transportation	Provide residents and employees with information about travel options, more points given for providing more marketing services	☒ Option:

CATEGORY	MEASURE	DESCRIPTION ¹	SELECTED
	Marketing Services Options A - D		
LU-1	Healthy Food Retail in Underserved Area	Providing healthy food options (e.g., restaurants, grocery stores) in an area identified as underserved	☒
LU-2	On-Site Affordable Housing Options A - D	Providing on-site affordable housing as part of a residential project, more points given for a higher percentage of affordable units	☒ Option:
PKG-1	Unbundle Parking Locations A - E	Separating the cost of parking from the cost of rent, lease or ownership, more points given for projects located in areas where parking is more constrained	☒ Option:
PKG-2	Short Term Daily Parking Provision	No parking rates discounted beyond a daily pass, no weekly, monthly, or annual passes allowed.	☐
PKG-3	Parking Cash-Out: Non-residential Tenants	Employees who are provided free parking must also have the option to take the cash value of the space in lieu of the space, itself	☒
7/7/17 Edit: As no free parking will be provided, parking cash-out is not applicable			
PKG-4	Parking Supply Options A - K	Provide less accessory parking than the neighborhood parking rate, more points given for greater reductions	☐ Option:

APPENDIX D: ROADWAY NETWORK CLASSIFICATIONS (FROM SF GENERAL PLAN)

Roadway Classifications

The San Francisco Planning Department has developed a street hierarchy system for the City and County of San Francisco, in which the function and design of each street are consistent with the character and use of adjacent land. The major classifications in the Vehicle Circulation Plan of the San Francisco *General Plan* are:

- ③ **Freeways:** Limited access, very high capacity facilities; primary function is to carry intercity traffic; they may, as a result of route location, also serve the secondary function of providing for travel between distant sections in the city.
- ③ **Major Arterials:** Cross-town thoroughfares whose primary function is to link districts within the city and to distribute traffic from and to the freeways; these are routes generally of citywide significance; of varying capacity depending on the travel demand for the specific direction and adjacent land uses.
- ③ **Transit Conflict Streets:** Streets with a primary transit function which are not classified as major arterials but experience significant conflicts with automobile traffic.
- ③ **Secondary Arterials:** Primarily intra-district routes of varying capacity serving as collectors for the major thoroughfares; in some cases supplemental to the major arterial system.
- ③ **Recreational Streets:** A special category of street whose major function is to provide for slow pleasure drives and cyclist and pedestrian use; more highly valued for recreational use than for traffic movement. The order of priority for these streets should be to accommodate: 1) pedestrians, hiking trails or wilderness routes, as appropriate; 2) cyclists; 3) equestrians; 4) automobile scenic driving. This should be slow and consistent with the topography and nature of the area.
- ③ **Collector Streets:** Relatively low-capacity streets serving local distribution functions primarily in large, low-density areas, connecting to major and secondary arterials.
- ③ **Local Streets:** All other streets intended for access to abutting residential and other land uses, rather than for through traffic; generally of lowest capacity.

In addition to the San Francisco Planning Department's roadway classifications, the freeways, major arterials, and transit conflict streets are included in the Congestion Management Program (CMP) Network and Metropolitan Transportation System (MTS) Network (see below).

Transit Preferential Streets

The Transit Preferential Street network classification system takes into consideration all transportation functions, and identifies the major transit routes where general traffic should be routed away from. There are two classifications of transit preferential streets: Primary Transit Streets, which are either transit-oriented or transit-important; and Secondary Transit Streets.

- ③ **Primary Transit Street – Transit-Oriented:** Not major arterials, with either high transit ridership, a high frequency of service, or surface rail. Along these streets, the emphasis should be on moving transit vehicles, and impacts on automobile traffic should be of secondary concern.

- ③ **Primary Transit Street – Transit-Important:** Major arterials, with either high transit ridership, high frequency of service, or surface rail. Along these streets, the goal is to improve the balance between modes of transportation, and the emphasis should be on moving people and goods, rather than on moving vehicles.
- ③ **Secondary Transit Street:** Medium transit ridership and low-to-medium frequency of service, or medium frequency of service and low-to-medium transit ridership, or connects two or more major destinations.

In general, it is City policy that transit preferential treatments should be concentrated on the most important transit streets, and the treatments applied should respond to all transportation needs of the street. For example, on streets that are major arterials for transit and not for automobile traffic, treatments should emphasize transit priority; on streets that are major arterials for both transit and automobiles, treatments should emphasize a balance between the modes. It is also City policy that automobile facility features (such as driveways and loading docks) should be reduced, relocated or prohibited on transit preferential streets in order to avoid traffic conflicts and automobile congestion.

Citywide Pedestrian Network

The Citywide Pedestrian Network is a classification of streets throughout the City used to identify streets devoted to or primarily oriented to pedestrian use. The main classifications are:

- ③ **Citywide Pedestrian Network Street:** An inter-neighborhood connection with “citywide significance” includes both exclusive pedestrian and pedestrian-oriented vehicular streets. These streets include the Bay, Ridge, and Coast trails, are used by commuters, tourists, general public and recreaters, and connect major institutions with transit facilities.
- ③ **Neighborhood Network Street:** A neighborhood commercial, residential or transit street that serves pedestrians from the general vicinity. Some streets may be part of the Citywide network, but are generally oriented towards neighborhood-serving uses. Types include exclusive pedestrian and pedestrian-oriented vehicular streets. As part of the Neighborhood Network Street network, streets are classified as **Neighborhood Commercial Streets**, which are streets that are predominately commercial use with parking and loading conflicts, or **Neighborhood Network Connection Streets**, which are intra-neighborhood connection streets that connect neighborhood destinations.

In general, it is City policy that sufficient pedestrian movement space should be provided to minimize pedestrian congestion, sidewalks should be widened where intensive commercial, recreational or institutional activity is present, and efforts should be made to ensure convenient and safe pedestrian crossings at intersections.

Congestion Management Program (CMP) Network

The CMP Network is the network of freeways, state highways, major arterials and transit conflict streets (see Roadway Classifications, above) established in accordance with state Congestion Management legislation. As part of the CMP, the San Francisco County Transportation Authority is required to determine the level of service (LOS) for the CMP Network streets every two years. The LOS is based on the average travel speed for each

- ③ **Primary Transit Street – Transit-Important:** Major arterials, with either high transit ridership, high frequency of service, or surface rail. Along these streets, the goal is to improve the balance between modes of transportation, and the emphasis should be on moving people and goods, rather than on moving vehicles.
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roadway segment during both the AM and PM peak periods. The level of service standard is LOS E, except for roadway segments that operated at LOS F in 1991 (when the first study was performed). The CMP requires development of “Deficiency Plans” for any CMP-designated roadway that operate at LOS F. These plans include an analysis of the causes of the deficiency, a list of improvements that would have to be made to prevent the deficiency from occurring (including cost estimates), a list of improvements proposed as part of the plan, and an action plan for implementation of the improvements (including an implementation schedule).

Metropolitan Transportation System (MTS) Network

The MTS Network is defined by Metropolitan Transportation Commission (MTC) as part of its Regional Transportation Plan. The MTS is a regional network of roadways, transit corridors and transfer points, identified by the MTC on the basis of specific criteria. The criteria identified facilities that provide relief to congested corridors, improve connectivity, accommodate travel demand and serve a regional transportation function. The State highways and major thoroughfares designated in San Francisco’s CMP roadway network are all included in the regional MTS network. There are a few instances in which the local CMP network is not identical to the MTS network due to differences in the criteria used to define each network.

APPENDIX E: TRANSIT LINE CAPACITY CALCULATIONS

AM Transit Trip Assignment
Muni Downtown Screenlines

Region	SD-1		SD-2		SD-3		SD-4	
Direction (from project)	IN	OUT	IN	OUT	IN	OUT	IN	OUT
Baseline	1	6	1	4	3	16	0	2
Project (Max Res)	12	14	8	10	50	43	3	4
Variant (Max Com)	40	12	28	8	137	38	11	3
Project TI (Max Res)	25	28	17	19	160	86	7	8
Project TI (Max Com)	68	23	47	16	291	71	19	6
Kearny/Stockton ²	5%	0%	20%	0%	0%	0%	0%	0%
Other lines ³	0%	0%	10%	0%	0%	0%	0%	0%
Northeast Screenline Total	5%	0%	30%	0%	0%	0%	0%	0%
Geary ⁴	0%	0%	20%	0%	0%	0%	0%	0%
California ⁵	0%	0%	15%	0%	0%	0%	0%	0%
Sutter/Clement ⁶	0%	0%	15%	0%	0%	0%	0%	0%
Fulton/Hayes ⁷	0%	0%	10%	0%	0%	0%	0%	0%
Balboa ⁸	0%	0%	10%	0%	0%	0%	0%	0%
Northwest Screenline Total	0%	0%	70%	0%	0%	0%	0%	0%
Third Street ⁹	0%	80%	0%	80%	0%	5%	0%	15%
Mission ¹⁰	0%	0%	0%	0%	0%	0%	0%	0%
San Bruno/ Bayshore ¹¹	0%	10%	0%	10%	0%	0%	0%	0%
Other lines ¹²	0%	10%	0%	10%	0%	5%	0%	15%
Southeast Screenline Total	0%	100%	0%	100%	0%	10%	0%	30%
Subway lines ¹³	0%	0%	0%	0%	0%	0%	10%	0%
Haight/Noriega ¹⁴	0%	0%	0%	0%	0%	0%	20%	0%
Other lines ¹⁵	0%	0%	0%	0%	0%	0%	0%	0%
Southwest Screenline Total	0%	0%	0%	0%	0%	0%	30%	0%
Bart	0%	0%	0%	0%	0%	0%	0%	0%
Total All Screenlines	5%	100%	100%	100%	0%	10%	30%	30%

does not cross screenline

44 O'Shaughnessy Inbound (cumu)

44 O'Shaughnessy Outbound (cumu)

48 Quintara Inbound (cumu)

48 Quintara Outbound (cumu)

Trips cross in opposite direction of peak hour travel.

1. AM peak hour; inbound (i.e. towards Downtown) only
2. 8 Bayshore, 30 Stockton, 30X Marina Express, 41 Union, 45 Union-Stockton
3. F Market & Wharves, 10 Townsend, 12 Folsom-Pacific
4. 38 Geary, 38R Geary Rapid, 38AX Geary 'A' Express, 38BX Geary 'B' Express
5. 1 California, 1AX California 'A' Express, 1AX California 'B' Express
6. 2 Sutter, 3 Clement
7. 5 Fulton, 21 Hayes
8. 31 Balboa, 31AX Balboa 'A' Express, 31BX Balboa 'B' Express
9. **T Third Street**
10. 14 Mission, 14R Mission Rapid, 14X Mission Express, 49 Van Ness-Mission
11. 8AX Bayshore 'A' Express, 8BX Bayshore 'B' Express, 8 Bayshore, 9 San Bruno, 9L San Bruno Limited

Regional Screenline Trips

Region	East Bay		North Bay		South Bay	
Direction	IN	OUT	IN	OUT	IN	OUT
Baseline	1	4	0	1	2	6
Project (Max Res)	10	11	2	2	32	35
Variant (Max Com)	32	10	5	2	102	30
Project TI (Max Res)	20	22	3	4	76	70
Project TI (Max Com)	54	18	9	3	182	57
BART	100%	0%	0%	0%	0%	0%
AC Transit	0%	0%	0%	0%	0%	0%
Ferries	0%	0%	0%	0%	0%	0%
East Bay	100%	0%	0%	0%	0%	0%
Golden Gate Transit Buses	0%	0%	75%	0%	0%	0%
Ferries	0%	0%	25%	0%	0%	0%
North Bay	0%	0%	100%	0%	0%	0%
BART	0%	0%	0%	0%	30%	0%
Caltrain	0%	0%	0%	0%	70%	0%
SamTrans	0%	0%	0%	0%	0%	0%
South Bay	0%	0%	0%	0%	100%	0%
Regional Total	100%	0%	100%	0%	100%	0%

Trips cross in opposite direction of peak hour travel.

Take HPX to SD1/SD2

67%

away from project (westbound)

towards project (eastbound)

towards project (eastbound)

away from project (westbound)

Take T-Third to SD1/SD2

33%

- 12. J Church, 10 Townsend, 12 Folsom-Pacific, **19 Polk**, 27 Bryant
- 13. K Ingleside, L Taraval, M Ocean View, N Judah
- 14. 6 Haight-Parnassus, 7/7R Haight-Noriega/Limited, 7X Noriega Express, NX Judah Express
- 15. F Market & Wharves

PM Transit Trip Assignment
Muni Downtown Screenlines

Region	SD-1		SD-2		SD-3		SD-4	
Direction (from project)	IN	OUT	IN	OUT	IN	OUT	IN	OUT
Baseline	6	3	4	2	16	8	2	1
Project (Max Res)	23	11	16	8	73	39	7	3
Variant (Max Com)	14	46	10	31	45	146	4	13
Project TI (Max Res)	46	31	31	21	142	123	13	9
Project TI (Max Com)	34	80	23	55	106	278	10	23
Kearny/Stockton ²	0%	5%	0%	20%	0%	0%	0%	0%
Other lines ³	0%	0%	0%	10%	0%	0%	0%	0%
Northeast Screenline Total	0%	5%	0%	30%	0%	0%	0%	0%
Geary ⁴	0%	0%	0%	20%	0%	0%	0%	0%
California ⁵	0%	0%	0%	15%	0%	0%	0%	0%
Sutter/Clement ⁶	0%	0%	0%	15%	0%	0%	0%	0%
Fulton/Hayes ⁷	0%	0%	0%	10%	0%	0%	0%	0%
Balboa ⁸	0%	0%	0%	10%	0%	0%	0%	0%
Northwest Screenline Total	0%	0%	0%	70%	0%	0%	0%	0%
Third Street ⁹	80%	0%	80%	0%	5%	0%	15%	0%
Mission ¹⁰	0%	0%	0%	0%	0%	0%	0%	0%
San Bruno/ Bayshore ¹¹	10%	0%	10%	0%	0%	0%	0%	0%
Other lines ¹²	10%	0%	10%	0%	5%	0%	15%	0%
Southeast Screenline Total	100%	0%	100%	0%	10%	0%	30%	0%
Subway lines ¹³	0%	0%	0%	0%	0%	0%	0%	10%
Haight/Noriega ¹⁴	0%	0%	0%	0%	0%	0%	0%	20%
Other lines ¹⁵	0%	0%	0%	0%	0%	0%	0%	0%
Southwest Screenline Total	0%	0%	0%	0%	0%	0%	0%	30%
BART	0%	0%	0%	0%	0%	0%	0%	0%
Total All Screenlines	100%	5%	100%	100%	10%	0%	30%	30%

does not cross screenline

44 O'Shaughnessy Inbound (cumu)	0%	95%	0%	0%	90%	100%	70%	70%
44 O'Shaughnessy Outbound (cumu)	13%	40%	13%	40%	26%	28%	23%	28%
48 Quintara Inbound (cumu)	13%		13%		26%		23%	
48 Quintara Outbound (cumu)		40%	40%	40%	28%	28%		28%

Trips cross in opposite direction of peak hour travel.

1. PM peak hour; outbound (i.e. away from Downtown) only
2. 8 Bayshore, 30 Stockton, 30X Marina Express, 41 Union, 45 Union-Stockton
3. F Market & Wharves, 10 Townsend, 12 Folsom-Pacific
4. 38 Geary, 38R Geary Rapid, 38AX Geary 'A' Express, 38BX Geary 'B' Express
5. 1 California, 1AX California 'A' Express, 1AX California 'B' Express
6. 2 Sutter, 3 Clement
7. 5 Fulton, 21 Hayes
8. 31 Balboa, 31AX Balboa 'A' Express, 31BX Balboa 'B' Express
9. T Third Street
10. 14 Mission, 14R Mission Rapid, 14X Mission Express, 49 Van Ness-Mission
11. 8AX Bayshore 'A' Express, 8BX Bayshore 'B' Express, 8 Bayshore, 9 San Bruno, 9L San Bruno Limited

Regional Screenline Trips

Region	East Bay		North Bay		South Bay	
Direction	IN	OUT	IN	OUT	IN	OUT
Baseline	4	2	1	0	12	6
Project (Max Res)	19	9	3	1	59	29
Variant (Max Com)	12	37	2	6	36	115
Project TI (Max Res)	37	24	6	4	115	81
Project TI (Max Com)	27	64	4	10	85	206
BART	0%	100%	0%	0%	0%	0%
AC Transit	0%	0%	0%	0%	0%	0%
Ferries	0%	0%	0%	0%	0%	0%
East Bay	0%	100%	0%	0%	0%	0%
Golden Gate Transit Buses	0%	0%	0%	75%	0%	0%
Ferries	0%	0%	0%	25%	0%	0%
North Bay	0%	0%	0%	100%	0%	0%
BART	0%	0%	0%	0%	0%	30%
Caltrain	0%	0%	0%	0%	0%	70%
SamTrans	0%	0%	0%	0%	0%	0%
South Bay	0%	0%	0%	0%	0%	100%
Regional Total	0%	100%	0%	100%	0%	100%

does not cross screenline

Trips cross in opposite direction of peak hour travel.

Take HPX to SD1/SD2

67%

away from project (westbound)

towards project (eastbound)

towards project (eastbound)

away from project (westbound)

Take T-Third to SD1/SD2

33%

12. J Church, 10 Townsend, 12 Folsom-Pacific, 19 Polk, 27 Bryant
13. K Ingleside, L Taraval, M Ocean View, N Judah
14. 6 Haight-Parnassus, 7/7R Haight-Noriega/Limited, 7X Noriega Express, NX Judah Express
15. F Market & Wharves

Transit Trip Summary

	AM					PM				
	Baseline	Project	Variant	Project TI	Variant TI	Baseline	Project	Variant	Project TI	Variant TI
Region										
Kearny/Stockton ²	0	3	8	4	12	0	3	8	6	15
Other lines ³	0	1	3	2	5	0	1	3	2	6
Northeast Screenline Total	0	4	11	6	17	0	4	11	8	21
Geary ⁴	0	2	6	3	9	0	2	6	4	11
California ⁵	0	1	4	3	7	0	1	5	3	8
Sutter/Clement ⁶	0	1	4	3	7	0	1	5	3	8
Fulton/Hayes ⁷	0	1	3	2	5	0	1	3	2	6
Balboa ⁸	0	1	3	2	5	0	1	3	2	6
Northwest Screenline Total	0	6	20	13	33	0	6	22	14	39
Third Street ⁹	9	22	20	17	15	6	37	23	29	21
Mission ¹⁰	0	0	0	0	0	0	0	0	0	0
San Bruno/ Bayshore ¹¹	1	2	2	5	4	0	4	2	8	5
Other lines ¹²	2	5	5	10	9	1	9	5	17	11
Southeast Screenline Total	12	29	27	32	28	7	50	30	54	37
Subway lines ¹³	0	0	1	1	2	0	0	1	1	2
Haight/Noriega ¹⁴	0	1	2	1	4	0	1	3	2	5
Other lines ¹⁵	0	0	0	0	0	0	0	0	0	0
Southwest Screenline Total	0	1	3	2	6	0	1	4	3	7
Bart	0	0	0	0	0	0	0	0	0	0
Total All Screenlines	12	39	61	53	83	7	58	67	79	107
44 O'Shaughnessy Inbound				26	21				38	88
44 O'Shaughnessy Outbound				48	90				43	32
48 Quintara Inbound				48	90				43	32
48 Quintara Outbound				26	21				38	88
HPX				25	20				41	30

Region										
BART	1	10	32	20	54	2	9	37	24	64
AC Transit	0	0	0	0	0	0	0	0	0	0
Ferries	0	0	0	0	0	0	0	0	0	0
East Bay	1	10	32	20	54	2	9	37	24	64
Golden Gate Transit Buses	0	1	4	2	7	0	1	4	3	8
Ferries	0	0	1	1	2	0	0	1	1	3
North Bay	0	1	5	3	9	0	1	5	4	11
BART	1	10	31	23	55	2	9	35	24	62
Caltrain	2	23	72	53	127	4	21	81	56	144
SamTrans	0	0	0	0	0	0	0	0	0	0
South Bay	3	33	103	76	182	6	30	116	80	206
Regional Total	4	44	140	99	245	8	40	158	108	281

Total Transit Trips	16	83	201	152	328	15	98	225	187	388

FIGURE A-1
SFMTA SCREENLINES



— Muni Screenline



Municipal Transportation Agency

FALL 2013

Route Load and Capacity by Time Period and Direction of Travel

PM - Outbound (Muni Operations Direction)								PM - Inbound (Muni Operations Direction)								Route	
Line	100% capacity per vehicle	Headway (Mins)	Average Max Load	Peak Hour Load	MLP (Maximum Load Point)*	Peak Hour Capacity	Peak Hour Capacity Utilization	100% capacity per vehicle	Headway (Mins)	Average Max Load	Peak Hour Load	MLP (Maximum Load Point)*	Peak Hour Capacity	Peak Hour Capacity Utilization			
1	63	3.5	50	857	Sacramento/Powell	1,080	79%	63	6.0	29	290	California/Laurel	630	46%			
1AX*	63	11.5	42	219	Pine St/Montgomery St.	329	66%										
1BX*	63	11.0	45	245	Pine St/Montgomery St.	344	71%										
2	63	12.0	48	240	Sutter/Powell	315	76%	63	12.0	28	140	Post/Hyde	315	44%			
3	63	12.0	37	185	Sutter/Taylor	315	58%	63	12.0	27	135	Post/Hyde	315	42%			
5	63	8.0	66	495	McAllister/Lyon	473	104%	63	8.0	31	233	McAllister/Gough	473	49%			
5L	63	8.0	55	413	McAllister/Van Ness	473	87%	63	8.0	30	225	McAllister/Pierce	473	47%			
6	63	10.0	36	216	Market St/Van Ness Ave	378	57%	63	10.5	23	131	Steuart/Mission	360	36%			
8X								94	7.5	60	480	Geneva/Paris	752	63%			
8AX	94	7.5	71	568	Harrison/6th St	752	75%										
8BX	94	7.5	66	528	Stockton St/Sacramento St.	752	70%										
9	63	12.0	43	215	Potrero/16th St	315	68%	63	12.0	36	180	11th St/Howard	315	57%			
9L	63	12.0	45	225	Potrero/24th St	315	71%	63	12.0	35	175	11th St/Harrison	315	55%			
10	63	20.0	51	153	2nd/Townsend	189	80%	63	20.0	56	168	Pacific/Stockton	189	88%			
12	63	20.0	36	108	Harrison/7th St	189	57%	63	20.0	46	138	Pacific/Stockton	189	73%			
14	94	8.0	38	285	Mission/Precita	705	40%	63	8.0	31	233	Steuart/Mission	473	49%			
14L	94	9.0	70	467	Mission/24th St	627	74%	94	9.0	42	280	Mission/30th St	627	44%			
14X	94	10.0	53	318	6th/Harrison	564	56%										
16X	63	9.0	35	233	Fell/Gough	420	55%										
17	63	30.0	27	54	Craig/Vaneta	126	42%	63	30.0	16	32	W. Portal/Sloat	126	25%			
18	63	20.0	28	84	Balboa/37th Ave	189	44%	63	20.0	28	84	Lake Merced/Higuera	189	44%			
19	63	15.0	42	168	8th/Mission	252	66%	63	15.0	45	180	7th St/Howard	252	71%			
21	63	10.0	46	276	Hayes/Van Ness	378	73%	63	11.0	23	125	Market/9th St	344	36%			
22	63	8.0	37	278	Fillmore/Grove	473	58%	63	8.0	39	293	16th/Folsom	473	61%			
23	63	20.0	30	90	Diamond/Bosworth	189	47%	63	20.0	33	99	Diamond/Bosworth	189	52%			
24	63	10.0	40	240	Castro/19th St	378	63%	63	10.0	30	180	Castro/17th St	378	47%			
27	63	15.0	29	116	Harrison/8th St	252	46%	63	15.0	38	152	5th/Market	252	60%			
28	63	10.0	44	264	19th Ave/Judah	378	69%	63	10.0	48	288	19th Ave/Santiago	378	76%			
28L																	
29	63	10.5	45	257	Holloway/J. Serra	360	71%	63	12.0	47	235	Plymouth/Ocean	315	74%			
30	83	4.0	41	615	Stockton St/Sutter St	1,248	49%	82	4.0	41	615	Stockton/Washington	1,224	50%			
30X	63	7.0	54	463	Sansome/Washington St	540	85%										
31	63	14.0	45	193	Turk/Taylor	270	71%	63	15.0	27	108	Eddy St/Laguna	252	42%			
31AX	63	10.5	47	269	Pine St/Montgomery St.	360	74%										
31BX	63	11.0	30	164	Pine St/Montgomery St.	344	47%										
33	63	15.0	27	108	18th St/Dolores	252	42%	63	15.0	34	136	18th St/Church	252	53%			
35	45	20.0	24	72	Castro/19th St	135	53%	45	20.0	7	21	Eureka/21st St	135	15%			
36	45	30.0	15	30	Fowler/Portola Dr	90	33%	45	30.0	30	60	Laguna Honda/Clarendon	90	66%			
37	45	20.0	36	108	17th St/Diamond St	135	80%	45	20.0	21	63	14th/Sanchez	135	46%			
38	94	6.0	64	640	Geary Blvd/Taylor St	940	68%	94	7.0	57	489	Geary Blvd/Laguna St	806	60%			
38L	94	5.5	85	927	Geary Blvd/Leavenworth	1,025	90%	94	6.0	62	620	Geary Blvd/Laguna St	940	65%			
38AX	63	11.5	36	188	Pine St/Montgomery St.	329	57%										
38BX	63	11.5	40	209	Pine St/Montgomery St.	329	63%										
39	45	20.0	10	30	Powell/Fillbet	135	22%	45	20.0	5	15	225 Telegraph Hill Blvd	135	11%			
41	63	8.0	57	428	Union/Columbus	473	90%	63	8.0	16	120	Clay St/Montgomery St	473	25%			
43	63	12.0	43	215	Masonic Ave/Golden Gate Ave	315	68%	63	12.0	28	140	Masonic/Fulton	315	44%			
44	63	10.0	54	324	Silver Ave/Mission St	378	85%	63	10.0	36	216	Silver Ave/San Bruno	378	57%			
45	63	12.0	52	260	Stockton/Sutter	315	82%	63	12.5	39	187	Stockton/Sacramento	302	61%			
47	63	10.0	37	222	Van Ness/O'Farrell	378	58%	63	10.0	42	252	Van Ness/McAllister	378	66%			
48	63	12.0	41	205	24th St/Folsom St	315	65%	63	12.0	36	180	24th St/Mission	315	57%			
49	94	8.0	45	338	Van Ness Ave/McAllister	705	47%	94	8.0	46	345	Van Ness Ave/McAllister	705	48%			
52	63	20.0	27	81	Excelsior/Paris	189	42%	63	20.0	20	60	Diamond/Sussex	189	31%			
54	63	20.0	41	123	Howth/Geneva	189	65%	63	20.0	39	117	Geneva/Paris	189	61%			
56	45	30.0	7	14	Leland/Bayshore	90	15%	45	30.0	13	26	Wilde Ave/Girard St	90	28%			
66	45	20.0	14	42	9th Ave/Lawton St	135	31%	45	20.0	5	15	16th Ave/Lawton	135	11%			
67	63	20.0	29	87	Folsom/Bessie St	189	46%	63	20.0	10	30	24th/Folsom St	189	19%			
71								63	10.0	37	222	Haight/Buena Vista	378	58%			
71 L	63	10.0	47	282	Haight/Ocavia	378	74%										
80X																	
81X																	
82X	63	15.0	23	92	Beale/Howard	252	36%										
83X	63	22.0	12	33	8th Market	172	19%	63	22.0	13	35	9th Market	172	20%			
88	63	20.0	26	78	Geneva/Delano	189	41%										
108	63	15.0	30	120	Beale/Folsom	252	47%	63	15.0	26	104	Calif. St./Ave C	252	41%			
NX	63	10.0	41	246	Sutter St/Sansome St	378	65%										
NOTE: RAIL DATA COLLECTED MANUALLY																	
F	70	6.0	82	820	Steuart Loop (9/13)	700	117%	70	6.0	75	750	Steuart Loop (9/13)	700	107%	F		
J	119	9.0	100	667	Duboce and Church (9/13)	793	84%	119	9.0	45	300	Duboce and Church (9/13)	793	37%	J		
K/T	119	9.0	150	1,000	Van Ness Station (9/13)	793	126%	119	9.0	56	373	Van Ness Station (3/14)	793	47%	K		
L	238	9.0	260	1,733	Van Ness Station (9/13)	1,587	109%	238	9.0	80	533	Van Ness Station (10/13)	1,587	33%	L		
M	238	9.0	250	1,667	Van Ness Station (9/13)	1,587	105%	238	9.0	161	1,073	W.P. Station (9/13)	1,587	67%	M		
N	238	6.5	277	2,557	Van Ness Station (9/13)	2,197	116%	238	6.5	142	1,311	Duboce and Church (9/13)	2,197	59%	N		
T (K/T)	119	9.0	111	740	SB Embar & Harr (9/13) ¹	793	93%	119	9.0	118	787	NB Embar & Harr (9/13) ¹	793	99%	T (K/T)		

Notes:

1) Updated data provided by MTA, including updates to headways, vehicle capacity, average max load, and MLP. Rest of data calculated from those values.

2) MLP, maximum load point represents the stop along the route with the highest total load & may not be the same as the point with the most boardings.

3) Low Number of Samples

PM - Outbound Travel Analysis Cordon								
	Line	100% capacity per vehicle	Headway (Mins)	Average Max Load	Peak Hour Load	MLP	Peak Hour Capacity	Peak Hour Capacity Utilization
TOTAL					22,516		27,328	82%
NORTHEAST					3,301		4,405	75%
Keary/Stockton					2,245		3,327	67%
8X Bayshore Express (IB)	8X	94	7.5	60	480	Geneva/Paris	752	63%
30 Stockton	30	83	4.0	41	615	Stockton St/Sutter St	1,248	49%
30X Marina Express	30X	63	7.0	54	463	Sansome/Washington St	540	85%
41 Union	41	63	8.0	57	428	Union/Columbus	473	90%
45 Union-Stockton	45	63	12.0	52	260	Stockton/Sutter	315	82%
Other Lines					1,056		1,078	98%
F Market & Wharves (IB)	70	70	6.0	75	750	Stewart Loop (9/13)	700	107%
10 Townsend (IB)	10	63	20.0	56	168	Pacific/Stockton	189	88%
12 Folsom-Pacific (IB)	12	63	20.0	46	138	Pacific/Stockton	189	73%
NORTHWEST					5,519		7,302	76%
Geary					1,964		2,623	75%
38 Geary	38	94	6.0	64	640	Geary Blvd/Taylor St	940	68%
38L Geary Limited	38L	94	5.5	65	927	Geary Blvd/Leavenworth	1,025	90%
38AX Geary 'A' Express (OB)	38AX	63	11.5	36	186	Pine St/Montgomery St.	329	57%
38BX Geary 'B' Express (OB)	38BX	63	11.5	40	209	Pine St/Montgomery St.	329	63%
California					1,322		1,752	75%
1 California	1	63	3.5	50	857	Sacramento/Powell	1,080	79%
1AX California 'A' Express	1AX*	63	11.5	42	219	Pine St/Montgomery St.	329	66%
1AX California 'B' Express	1BX*	63	11.0	45	245	Pine St/Montgomery St.	344	71%
Sutter/Clement					425		630	67%
2 Clement	2	63	12.0	48	240	Sutter/Powell	315	76%
3 Jackson	3	63	12.0	37	185	Sutter/Taylor	315	58%
Fulton/Hayes					1,184		1,323	89%
5 Fulton	5	63	8.0	66	495	McAllister/Lyon	473	104%
5 Fulton Limited	5L	63	8.0	55	413	McAllister/Van Ness	473	87%
21 Hayes	21	63	10.0	46	276	Hayes/Van Ness	378	73%
Balboa					625		974	64%
31 Balboa	31	63	14.0	45	193	Turk/Taylor	270	71%
31AX Balboa 'A' Express	31AX	63	10.5	47	269	Pine St/Montgomery St.	360	74%
31BX Balboa 'B' Express	31BX	63	11.0	30	164	Pine St/Montgomery St.	344	47%
SOUTHEAST					4,942		7,203	69%
Third Street					787		793	99%
T Third Street (IB K/T)	T (K/T)	119	9.0	111	787	NB Embar & Harr (9/13) 3	793	99%
Mission					1,407		2,601	54%
14 Mission	14	94	8.0	38	285	Mission/Precita	705	40%
14L Mission Limited	14L	94	9.0	70	467	Mission/24th St.	627	74%
14X Mission Express	14X	94	10.0	53	318	6th/Harrison	564	56%
49 Van Ness-Mission	49	94	8.0	45	338	Van Ness Ave/McAllister	705	47%
San Bruno/Bayshore					1,536		2,134	72%
8X Bayshore Express (OB)	8X							
8AX Bayshore 'A' Express (OB)	8AX	94	7.5	71	568	Harrison/6th St	752	75%
8BX Bayshore 'B' Express (OB)	8BX	94	7.5	66	528	Stockton St/Sacramento St.	752	70%
9 San Bruno	9	63	12.0	43	215	Potrero/26th St	315	68%
9L San Bruno Limited	9L	63	12.0	45	225	Potrero/24th St	315	71%
Other Lines					1,212		1,675	72%
J Church	J	119	9.0	100	667	Duboce and Church (9/13)	793	84%
10 Townsend (OB)	10	63	20.0	51	153	2nd/Townsend	189	80%
12 Folsom-Pacific (OB)	12	63	20.0	36	108	Harrison/7th St	189	57%
19 Polk	19	63	15.0	42	168	8th/Mission	252	66%
27 Bryant	27	63	15.0	29	116	Harrison/6th St	252	46%
SOUTHWEST					8,754		8,418	104%
Subway Lines					6,957		6,164	113%
K Ingleside	K/T	119	9.0	150	1,000	Van Ness Station (9/13)	793	126%
L Taminal	L	238	9.0	260	1,733	Van Ness Station (9/13)	1,587	109%
M Ocean View	M	238	9.0	250	1,667	Van Ness Station (9/13)	1,587	105%
N Judah	N	238	6.5	277	2,557	Van Ness Station (9/13)	2,197	116%
Haight/Noriega					977		1,554	63%
6 Panamasus	6	63	10.0	36	216	Market St/Van Ness Ave	378	57%
71/71L Haight-Noriega	71 L	63	10.0	47	282	Haight/Octavia	378	74%
16X Noriega Express	16X	63	9.0	35	233	Fell/Gough	420	55%
NX Judah Express	NX	63	10.0	41	246	Sutter St/Sansome St	378	65%
Other Lines					820		700	117%
F Market & Wharves (OB)	F	70	6.0	82	820	Stewart Loop (9/13)	700	117%

FIGURE B-1
REGIONAL SCREENLINES



 Regional Screenline

Baseline Transit Trip Assignment to the 19 Polk and 44 O'Shaughnessy

These tables show the downtown screening trip assignment assumptions used in other parts of the study. The subsequent 19 Polk and 44 O'Shaughnessy route-specific trip assignments have been developed to be derivative of and consistent with these

AM Transit Trip Assignment

Muni Downtown Screenlines											
Origin/Destin Superdistrict Direction (relative to Project)	SD-1		SD-2		SD-3		SD-4		In	Out	Total
Background Growth	1	6	1	4	3	16	0	2	6	27	
Proposed Project	12	14	8	10	50	43	3	4	74	77	
Project Variant	40	12	28	8	137	38	11	3	216	61	
Background Growth	22%	22%	14%	14%	59%	59%	6%	6%	100%	100%	
Proposed Project	16%	20%	11%	14%	68%	61%	5%	6%	100%	100%	
Project Variant	19%	20%	13%	14%	63%	61%	5%	6%	100%	100%	
Southeast Screenline:											
Third Street ¹	0%	80%	0%	80%	0%	5%	0%	15%			
Mission ²	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
San Bruno/ Bayshore ³	0%	10%	0%	10%	0%	0%	0%	0%	0%	0%	
Other lines ⁴	0%	100%	0%	100%	0%	5%	0%	15%			
Total	0%	100%	0%	100%	0%	70%	0%	30%			

Notes:

1. T Third Street
2. 14 Mission, 14th Mission Rapid, 14X Mission Express, 49 Van Ness-Misior
3. BAX Bayshore A Express, 88X Bayshore B Express, 8 Bayshore, 9 San Bruno, 9L San Bruno Limited
4. J Church, 10 Townsend, 12 Folom-Pacific, 19 Polk, 27 Bryant

Pink shading indicates that trips cross in opposite direction of peak hour travel. As screenlines are only calculated for peak direction, these entries are zeroed out.

Source: India Basin Transit Capacity Impacts

Proportion of transit trips distributed to each Superdistrict which pass through Maximum Load Points

Route	Transit trips distributed to this Superdistrict which pass through LMLP ^{1,2}				Transit trips distributed to this Superdistrict which pass through GMLP ³			
	SD-1	SD-2	SD-3	SD-4	SD-1	SD-2	SD-3	SD-4
19 Polk	90%	90%	40%	30%	10%	10%	0%	15%
44 O'Shaughnessy					0%	0%	60%	70%

Notes:

Since AM and PM peak trip distribution in and out of the project site are similar to one another (i.e. within 10%), a single set of transit route proportions was used for both the AM and PM. In addition, the inbound and outbound directions were assumed to have the same proportion.

1. Local Maximum Load Point (LMLP) is the maximum load point between the Project site and the T Third, intended to capture capacity impacts resulting from project trips that transfer between the 19 Polk and the T Third (many are expected to do this, but these trips would not pass through the GMLP, therefore require separate study). The LMLP is assessed for the 19 Polk only and it is assumed at the stop at Brans Avenue/Newhall Street to the east of Evans Avenue/Third Street.

2. Include transfers to/from other routes, such as the T Third

3. Global Maximum Load Point method is used for all routes, consistent with typical Muni bus capacity analysis

AM Peak GMLP:
Route 19: 8th/Howard (outbound); Larkin/O'Farrell (inbound)
Route 44: Silver Ave/Darimouth Ave (outbound); O'Shaughnessy/Del Vale (inbound)
PM Peak GMLP:
Route 19: 8th/Mission (outbound); 7th/Howard (inbound)
Route 44: Silver Ave/Mission Street (outbound); Silver Ave/San Bruno (inbound)

The previously-prepared assumptions were made with respect to transit ridership proportions by screening, which only included routes which crossed the typical downtown screenlines used by the SFMTA. This only accounts for some of the transit trips which are made, but not all. Some transit trips may end before the route crosses the screenline and one of the routes analyzed (44 O'Shaughnessy) does not cross any of the screenlines. Therefore, the salmon-shaded cells have had further adjustments made to account for these trips.

Proportion of Transit Trip Assignment By Trip Generator and Route which Passes Through Each Maximum Load Point

Route	Outbound (SFMTA designation) ¹				Inbound (SFMTA designation) ¹			
	Background	Proposed Project	Project Variant		Background	Proposed Project	Project Variant	
19 Polk	LMLP	GMLP	LMLP	GMLP	LMLP	GMLP	LMLP	GMLP
44 O'Shaughnessy	-	4%	53%	3%	55%	4%	42%	
	-	39%	-	44%	-	-	-	
Route	Background	Proposed Project	Project Variant		Background	Proposed Project	Project Variant	
19 Polk	LMLP	GMLP	LMLP	GMLP	LMLP	GMLP	LMLP	GMLP
44 O'Shaughnessy	-	57%	4%	56%	4%	56%	4%	
	-	39%	-	41%	-	-	-	

Notes:

1. For 19 Polk: Inbound to Fisherman's Wharf, Outbound to Hunters Point. SFMTA Outbound designation is Inbound relative to Project and vice versa.
- For 44 O'Shaughnessy: Inbound to The Richmond, Outbound to Hunters Point. SFMTA Outbound designation is Inbound relative to Project and vice versa.

Route-Specific Baseline Transit Capacity Impact Analysis (Full Buildout)

Capacity Thresholds

Route	Direction (SFMTA designation)	Capacity per Bus ¹		Significance Threshold (85% Capacity Utilization)
		AM	PM	
19	Outbound ²	63	63	54
	Inbound ³			54
44	Outbound ³	63	63	54
	Inbound ³			54

Notes:

1. Source: San Francisco Planning Department's *Transit Data for Transportation Impact Studies* (May 2015).
2. Inbound to Fisherman's Wharf, Outbound to Hunters Point. SFMTA Outbound designation is inbound relative to Project and vice versa.
3. Inbound to The Richmond, Outbound to Hunters Point. SFMTA Outbound designation is inbound relative to Project and vice versa.

Trips Added per Bus by Route and Scenario

Trip Generator	Peak Hour	Transit Trips Generated ³		19 Polk (Local Maximum Load Point) ¹				19 Polk (Global Maximum Load Point) ²				44 O'Shaughnessy (Global Maximum Load Point)						
		Transit trip assignment on 19 Polk at LMLP ⁴		Frequency (min) ⁵	Buses per hour per direction		Transit trip assignment on 19 Polk at GMLP ⁴		Frequency (min) ⁵	Buses per hour per direction		Transit trip assignment on 44 O'Shaughnessy ⁴		Frequency (min) ⁵	Buses per hour per direction			
					Outbound ⁶	Inbound ⁶	Outbound ⁶	Inbound ⁶		Outbound ⁶	Inbound ⁶	Outbound ⁶	Inbound ⁶		Outbound ⁶	Inbound ⁶		
Proposed Project	AM	118	119	53%	56%	15	16	17	3%	4%	15	1	1	8	7.5	7		
	PM	200	102				27	14				2	1		9	6.7	13	6
	AM	355	103				49	14				4	1		8	7.5	20	6
	PM	123	394				17	55				1	4		9	6.7	8	24
Background Growth ⁷	AM	9	44	57%	57%	15	1	6	4%	4%	15	0	0	8	7.5	2		
	PM	44	21				6	3				0	0		9	6.7	3	1

Route-Specific Baseline Transit Capacity Impact Analysis (Phase 1 Only)

Capacity Thresholds

Route	Direction (SFMTA designation)	Capacity per Bus ¹		Significance Threshold (85% Capacity Utilization)	
		AM	PM	AM	PM
19	Outbound ²	63	63	54	54
	Inbound ²				
44	Outbound ³	63	63	54	54
	Inbound ³				

Notes:

1. Source: San Francisco Planning Department's *Transit Data for Transportation Impact Studies* (May 2015).
2. Inbound to Fisherman's Wharf, Outbound to Hunters Point. SFMTA Outbound designation is inbound relative to Project and vice versa.
3. Inbound to The Richmond, Outbound to Hunters Point. SFMTA Outbound designation is inbound relative to Project and vice versa.

Scenario	Phase	Residential (ksf)	Commercial (ksf)	School (ksf)	% of Total
Project	1	531.75	233	50	64%
	2	398.25	43	0	35%
	RPD	0	15	0	1%
	Total	930	297	50	
Variant	1	7.5	869	50	64%
	2	367.5	132	0	35%
	RPD	0	15	0	1%
	Total	375	1016	50	

0.75 ksf per DU

Trips Added per Bus by Route and Scenario

Trip Generator	Peak Hour	19 Polk (Local Maximum Load Point) ¹				19 Polk (Global Maximum Load Point) ²				44 O'Shaughnessy (Global Maximum Load Point)													
		Transit Trips Generated ³		Buses per hour per direction	Trips per bus	Transit trip assignment on 19 Polk at GMLP ⁴		Buses per hour per direction	Trips per bus	Transit trip assignment on 44 O'Shaughnessy ⁴		Frequency (min) ⁵	Buses per hour per direction	Trips per bus									
		Outbound ⁶	Inbound ⁶			Outbound ⁶	Inbound ⁶			Outbound ⁶	Inbound ⁶				Outbound ⁶	Inbound ⁶							
Proposed Project	AM	76	76	15	4	10	11	4	4	1	1	8	7.5	4									
	PM	128	65			17	9			1	1				41%	4							
Project Variant	AM	228	66			31	9			4%	4%				2	1	42%	41%	8	7.5	13		
	PM	79	253			11	35								1	3						5	
Background Growth ⁷	AM	9	44	15	4	1	6	4%	4%	0	0	8	7.5	0									
	PM	44	21			6	3			0	0				39%	3							
Proposed Project	AM	76	76			15	4	10	11	4	4	1	1	8	7.5	4							
	PM	128	65					17	9			1	1				41%	4					
Project Variant	AM	228	66					31	9			4%	4%				2	1	42%	41%	8	7.5	13
	PM	79	253					11	35								1	3					
Background Growth ⁷	AM	9	44	15	4	1	6	4%	4%	0	0	8	7.5	0									
	PM	44	21			6	3			0	0				39%	3							

Route-Specific Baseline Transit Capacity Mitigation Analysis (Proposed Project)

Mitigation Option 1: Accelerated CHPS Transportation Plan

Mitigations:
Increase Route 44 frequency to 6.5 minutes in AM and 6.5 minutes in PM (currently planned for 2024 under CHPS Transportation Plan)
No Change to Route 19/48

Assumptions:
Route 19 is replaced by Route 48 under CHPS Transportation Plan. Assumed to have same LMLP and GMLP loading as Route 19
Route 44 is re-routed to travel past India Basin to Hunters Point

Route	Direction (SFMTA designation)	Capacity per Bus ¹		Significance Threshold (85% Capacity Utilization)	
		AM	PM	AM	PM
19 / 48	Outbound ²	63	63	54	54
	Inbound ³				
44	Outbound ³	63	63	54	54
	Inbound ³				

- Notes:
- Source: San Francisco Planning Department's *Transit Data for Transportation Impact Studies* (May 2015).
 - Inbound to Fisherman's Wharf; Outbound to Hunters Point. SFMTA Outbound designation is inbound relative to Project and vice versa.
 - Inbound to The Richmond; Outbound to Hunters Point. SFMTA Outbound designation is inbound relative to Project and vice versa.

Trips Added per Bus by Route and Scenario

Trip Generator	Peak Hour	Transit Trips Generated ³		19 Polk / 48 Quintara (Local Maximum Load Point) ¹			19 Polk / 48 Quintara (Global Maximum Load Point) ²			44 O'Shaughnessy (Global Maximum Load Point)					
		Transit trip assignment at LMLP ⁶		Buses per hour per direction	Trips per bus		Transit trip assignment at GMLP ⁴	Buses per hour per direction	Trips per bus		Transit trip assignment on 44 O'Shaughnessy ⁴	Frequency (min) ⁵	Buses per hour per direction	Trips per bus	
		Outbound ⁶	Inbound ⁶		Outbound ⁶	Inbound ⁶			Outbound ⁶	Inbound ⁶				Outbound ⁶	Inbound ⁶
Proposed	AM	118	119	4	16	17	3%	4%	1	1	44%	6.5	9.2	6	5
Project	PM	200	102		27	14		2							
Background	AM	9	44	4	1	3	4%	4%	0	0	39%	6.5	9.2	0	2
Growth ⁷	PM	44	21		6	6		0							

- Notes:
- Local Maximum Load Point (LMLP) is the maximum load point between the Project site and the T Third, intended to capture capacity impacts resulting from project trips that transfer between the 19 Polk and the T Third (many are expected to do this, but these trips would not pass through the GMLP, therefore require separate study). The LMLP is assessed for the 19 Polk only and it is assumed at the stop at Evans Avenue/Newhall Street to the east of Evans Avenue/Third Street.
 - Global Maximum Load Point (GMLP) refers to the maximum load point across the entire route.

Proportion of transit trips distributed to each Superdistrict which pass through Maximum Load Points

- Route 19: 8th/Howard (outbound), Lukin/O'Farrell (inbound)
Route 44: Silver Ave/Darrrmouth Ave (outbound) O'Shaughnessy/Del Valle (inbound)
PM Peak GMLP location:
Route 19: 8th/Mission (outbound); 7th/Howard (inbound)
Route 44: Silver Ave/Mission Street (outbound); Silver Ave/San Bruno (inbound)

- Total added transit trips for the Proposed Project and Project Variant is based on methodology described in TIS Chapter 4 and presented in Section 4.3.4. Total added trips for the Background Growth is based on methodology described and presented in TIS Section 3.1.
- Proportion of trips using each route is based on a combination of trip distribution to each superdistrict and proportion of transit trips taking each route to each superdistrict (see accompanying "Transit Trip Assignment to the 19 Polk and 44 O'Shaughnessy" worksheet for detailed calculations)
- Source: San Francisco Planning Department's *Transit Data for Transportation Impact Studies* (May 2015).
- SFMTA designated direction, which is the opposite of Project-related perspective.
- Approved & Funded Scenario: 494 residential units approved as Phase 1 of the nearby Hunters Point Shipyard development that are currently under construction.

Capacity Impact Analysis (per Hour)

Route	Peak Hour	Outbound (SFMTA Designation) / Inbound (Project Designation)					Outbound (Project Designation)				
		Existing Load ¹	Background Growth	Project Load	Project-Added Trips	B + PP	Baseline No Project Load	Project-Added Trips	Project-Added Trips	B + PP	Significant Impact?
19/48 (LMLP)	AM	24	5	29	63	92	216	NO			
	PM	44	25	69	106	175	216	NO			
19/48 (GMLP)	AM	160	0	160	4	164	216	NO			
	PM	168	2	170	6	176	498	NO			
44 (GMLP)	AM	300	4	304	52	355	498	NO			
	PM	362	17	379	88	467	498	NO			
Route	Peak Hour	Inbound (SFMTA Designation) / Outbound (Project Designation)					Inbound (Project Designation)				
		Existing Load ¹	Background Growth	Project Load	Project-Added Trips	B + PP	Baseline No Project Load	Project-Added Trips	Project-Added Trips	B + PP	Significant Impact?
19/48 (LMLP)	AM	84	25	109	67	176	216	NO			
	PM	52	12	64	57	121	216	NO			
19/48 (GMLP)	AM	188	2	190	5	195	216	NO			
	PM	180	1	181	4	185	498	NO			
44 (GMLP)	AM	368	17	385	49	433	498	NO			
	PM	241	8	249	42	291	498	NO			

- Notes:
- GMLP Source: San Francisco Planning Department's *Transit Data for Transportation Impact Studies* (May 2015). LMLP Source: TEP route analysis (October 2011).

Route-Specific Baseline Transit Capacity Mitigation Analysis (Project Variant)

Mitigation Option 1: Accelerated CPHPs Transportation Plan

Mitigations:
Increase Route 48 frequency to 10 min in AM and PM (currently planned for 2024 under CPHPs Transportation Plan)
Increase Route 44 frequency to 6.5 min in AM and 7.5 min in PM (currently planned for 2023, 2024 respectively in CPHPs Transportation Plan)

Assumptions:
Route 19 is replaced by Route 48 under CPHPs Transportation Plan. Assumed to have same LMLP and GMLP loading as Route 19
Route 44 is re-routed to travel past India Basin to Hunters Point

Route	Direction (SFMTA designation)	Capacity per Bus ¹		Significance Threshold (85% Capacity Utilization)	
		AM	PM	AM	PM
19 / 48	Outbound ²	63	63	54	54
	Inbound ²				
44	Outbound ³	63	63	54	54
	Inbound ³				

- Notes:
- Source: San Francisco Planning Department's *Transit Data for Transportation Impact Studies* (May 2015).
 - Inbound to Fisherman's Wharf, Outbound to Hunters Point. SFMTA Outbound designation is inbound relative to Project and vice versa.
 - Inbound to The Richmond, Outbound to Hunters Point. SFMTA Outbound designation is inbound relative to Project and vice versa.

Trips Added per Bus by Route and Scenario

Trip Generator	Peak Hour	19 Polk / 48 Quintara Local Maximum Load Point ¹			19 Polk / 48 Quintara Global Maximum Load Point ²			44 O'Shaughnessy Global Maximum Load Point		
		Transit Trips Generated ³		Transit trip assignment at LMLP ⁴	Frequency (min) ⁵	Buses per hour per direction		Transit trip assignment on 44 O'Shaughnessy ⁶		Buses per hour per direction
Project Variant	AM	Outbound ⁶	Inbound ⁶	Outbound ⁷	Inbound ⁷	Outbound ⁸	Inbound ⁸	Outbound ⁸	Inbound ⁸	Outbound ⁸
		355	103	55%	56%	33	10	33	10	16
Background Growth ⁷	PM	123	394	57%	57%	11	37	11	3	6
		9	44	57%	57%	1	4	1	0	0
	PM	44	21			4	2	0	0	2
										1

- Notes:
- Local Maximum Load Point (LMLP) is the maximum load point between the Project site and the T Third, intended to capture capacity impacts resulting from project trips that transfer between the 19 Polk and the T Third (many are expected to do this, but these trips would not pass through the GMLP, therefore require separate study). The LMLP is assessed for the 19 Polk only and it is assumed that the stop at Evans Avenue/Newhall Street to the east of Evans Avenue/Third Street.
 - Global Maximum Load Point (GMLP) refers to the maximum load point across the entire route.
Proportion of transit trips distributed to each Superdistrict which pass through Maximum Load Points
Route 19: 8th/Howard (outbound) Larkin/O'Farrell (inbound)
Route 44: Silver Ave/Dairymouth Ave (outbound) O'Shaughnessy/Del Valle (inbound)
PM Peak GMLP location:
Route 19: 8th/Mission (outbound); 7th/Howard (inbound)
Route 44: Silver Ave/Mission Street (outbound); Silver Ave/San Bruno (inbound)
 - Total added transit trips for the Proposed Project and Project Variant is based on methodology described in TIS Chapter 4 and presented in Section 4.3.4. Total added trips for the Background Growth is based on methodology described and presented in TIS Section 3.1.
 - Proportion of trips using each route is based on a combination of trip distribution to each superdistrict and proportion of transit trips taking each route to each superdistrict (see accompanying "Transit Trip Assignment to the 19 Polk and 44 O'Shaughnessy" worksheet for detailed calculations)
 - Source: San Francisco Planning Department's *Transit Data for Transportation Impact Studies* (May 2015).
 - SFMTA designated direction, which is the opposite of Project-related perspective.
 - Approved & Funded Scenario: 494 residential units approved as Phase 1 of the nearby Hunters Point Shipyard development that are currently under construction.

Capacity Impact Analysis (per Hour)

Route	Peak Hour	Outbound (SFMTA Designation) / Inbound (Project Designation)					Outbound (SFMTA Designation) / Inbound (Project Designation)				
		Existing Load ¹	Background Growth	Baseline No Project	Variant-Added Trips	Passenger Load B + PV	Existing Load ¹	Background Growth	Baseline No Project	Variant-Added Trips	Passenger Load B + PV
19/48 (LMLP)	AM	24	5	29	195	224	24	5	29	195	224
	PM	44	25	69	68	137	44	25	69	68	137
19/48 (GMLP)	AM	160	0	160	14	175	160	0	160	14	175
	PM	168	2	170	5	175	168	2	170	5	175
44 (GMLP)	AM	300	4	304	149	453	300	4	304	149	453
	PM	362	17	379	52	431	362	17	379	52	431
Route	Peak Hour	Inbound (SFMTA Designation) / Outbound (Project Designation)					Inbound (SFMTA Designation) / Outbound (Project Designation)				
		Existing Load ¹	Background Growth	Baseline No Project	Variant-Added Trips	Passenger Load B + PV	Existing Load ¹	Background Growth	Baseline No Project	Variant-Added Trips	Passenger Load B + PV
19/48 (LMLP)	AM	84	25	109	58	167	84	25	109	58	167
	PM	52	12	64	221	285	52	12	64	221	285
19/48 (GMLP)	AM	188	2	190	4	194	188	2	190	4	194
	PM	180	1	181	16	197	180	1	181	16	197
44 (GMLP)	AM	368	17	385	42	427	368	17	385	42	427
	PM	241	8	249	162	411	241	8	249	162	411

- Notes:
- GMLP Source: San Francisco Planning Department's *Transit Data for Transportation Impact Studies* (May 2015). LMLP Source: TEP route analysis (October 2011).

Route-Specific Baseline Transit Capacity Mitigation Analysis

Mitigation Option 2: Provide Dedicated Shuttle

Mitigations: Proposed Project: Shuttle run every 15 min in AM and PM Project Variant: Shuttle run every 15 min in AM, 10 min in PM				
Assumptions: Shuttle would travel to 22nd Street Caltrain Station and 24th Street Mission BART. Trips destined for western neighborhoods would transfer to Route 48 Round trip travel time of 40 minutes (estimated via Google Maps) Shuttle vehicles would seat up to 25 people each Shuttle would serve the added demand from Project and Variant for those lines which are significantly impacted, thereby mitigating impact				
Capacity Thresholds				
Route	Direction (SFMTA designation)	Capacity per Bus ¹		Significance Threshold (85% Capacity Utilization)
		AM	PM	AM PM
19	Outbound ²	63	63	54 54
	Inbound ³			
44	Outbound ³	63	63	54 54
	Inbound ³			

Notes:

1. Source: San Francisco Planning Department's *Transit Data for Transportation Impact Studies* (May 2015).
2. Inbound to Fisherman's Wharf, Outbound to Hunters Point. SFMTA Outbound designation is Inbound relative to Project, and vice versa.
3. Inbound to The Richmond, Outbound to Hunters Point. SFMTA Outbound designation is Inbound relative to Project and vice versa.

Trips Added per Bus by Route and Scenario

Trip Generator	Peak Hour	Transit Trips Generated ³		19 Polk (Local Maximum Load Point) ¹			19 Polk (Global Maximum Load Point) ²			44 O'Shaughnessy (Global Maximum Load Point)								
		Outbound ⁴	Inbound ⁴	Transit trip assignment on 19 Polk at LIMP ⁵	Frequency (min) ⁶	Buses per hour per direction	Trips per bus	Transit trip assignment on 19 Polk at GMP ⁴	Frequency (min) ⁶	Buses per hour per direction	Trips per bus	Transit trip assignment on 44 O'Shaughnessy ⁴	Frequency (min) ⁶	Buses per hour per direction	Trips per bus	Outbound ⁴	Inbound ⁴	
Proposed Project	AM	118	119	53%	56%	4	16	17	3%	4%	4	1	1	44%	41%	8	7.5	7
	PM	200	102	53%	56%		27	14		2		1	6.7		13		6	
Project Variant	AM	355	103	55%	56%	15	49	14	4%	4%	15	4	1	42%	41%	9	7.5	20
	PM	123	394	57%	57%		17	55		1		4	6.7		8		24	
Background Growth ⁷	AM	9	44	57%	57%	4	1	3	4%	4%	0	0	0	39%	39%	8	7.5	0
	PM	44	21	57%	57%		6	3		0		0	6.7		3		1	

Notes:

1. Local Maximum Load Point (LIMP) is the maximum load point between the Project site and the T Third, intended to capture capacity impacts resulting from project trips that transfer between the 19 Polk and the T Third (many are expected to do this, but these trips would not pass through the GMLP, therefore require separate study). The LIMP is assessed for the 19 Polk only and it is assumed at the stop at Evans Avenue/Neenah Street to the east of Evans Avenue/Third Street.
2. Global Maximum Load Point (GMLP) refers to the maximum load point across the entire route.
Proportion of transit trips distributed to each Superdistrict which pass through Maximum Load Points
Route 19: 8th/Howard (outbound) Larkin/O'Farrell (inbound)
Route 44: Silver Ave/Diamond Ave (outbound) O'Shaughnessy/Dal' Vale (inbound)
PM Peak GMLP location:
Route 19: 8th/Mission (outbound); 7th/Howard (inbound)
Route 44: Silver Ave/Mission Street (outbound); Silver Ave/San Bruno (inbound)
3. Total added transit trips for the Proposed Project and Project Variant is based on methodology described in ITS Chapter 4 and presented in Section 4.3.4. Total added trips for the Background Growth is based on methodology described and presented in ITS Section 3.1.
4. Proportion of trips using each route is based on a combination of trip distribution to each superdistrict and proportion of transit trips taking each route to each superdistrict (see accompanying "Transit Trip Assignment to the 19 Polk and 44 O'Shaughnessy" worksheet for detailed calculations)
5. Source: San Francisco Planning Department's *Transit Data for Transportation Impact Studies* (May 2015).
6. SFMTA designated direction, which is the opposite of Project-related perspective.
7. Approved B: Funded Scenario: 84 residential units approved as Phase 1 of the nearby Hunters Point Shipyard development that are currently under construction.

Capacity Impact Analysis (per Hour)

Route	Peak Hour	Existing Load ¹	Outbound (SFMTA Designation) / Inbound (Project Designation)						Significant Impact?	
			Background Growth	Baseline No Project Load	Added Trips		Passenger Load		Project	Variant
19 (LIMP)	AM	24	5	29	Proposed	Project	B + PP	B + PV	Threshold	
	PM	44	25	69	63	195	92	224	216	NO YES
44 (GMLP)	AM	300	4	304	106	68	175	137	405	NO YES
	PM	360	17	377	88	52	465	429	360	YES YES
Route	Peak Hour	Existing Load ¹	Inbound (SFMTA Designation) / Outbound (Project Designation)						Significant Impact?	
			Background Growth	Baseline No Project Load	Added Trips		Passenger Load		Project	Variant
19 (LIMP)	AM	84	25	109	Proposed	Project	B + PP	B + PV	Threshold	NO NO
	PM	52	12	64	67	58	176	167	216	NO YES
44 (GMLP)	AM	368	17	385	57	221	121	285	405	YES YES
	PM	240	8	248	49	42	433	427	360	NO YES

Notes:

1. GMLP Source: San Francisco Planning Department's *Transit Data for Transportation Impact Studies* (May 2015). LIMP Source: TEP route analysis (October 2011).

20% Wiggle room factor (to accommodate induced demand, etc)
25 seats per shuttle
44 min round-trip travel time (includes 10% layover time)
Bold indicates selected shuttle frequency to serve demand

Peak Hour	Trips to Serve (per hour)	Shuttle Trips (Outbound)		Shuttle Route Capacity (trips/hour)		Number of Vehicles Required	
		Proposed Project	Project Variant	Proposed Project	Project Variant	Proposed Project	Project Variant
AM	No impact	67	N/A	N/A	75	N/A	3
PM	106	62	20	15	75	100	3

Peak Hour	Added Trips (per hour)	Shuttle Trips (Inbound)		Shuttle Route Capacity (trips/hour)		Number of Vehicles Required	
		Proposed Project	Project Variant	Proposed Project	Project Variant	Proposed Project	Project Variant
AM	34	26	20	75	75	3	3
PM	No impact	88	N/A	N/A	150	N/A	5

APPENDIX G: PARKING SUPPLY AND OCCUPANCY

City of San Francisco
Hunters Point - On-street Parking Survey
Tuesday, 5-5-2015

	Jennings St.		Wills St	W.Point St		Hare St.	Hawes St		Hawes St. n/o Innes		Arelious Walker		Donahue St		Innes Ave		Total
	West side	East Side	All	All	All	All	All	All	West side	East side	West side	East side	West side	East side	North side	South side	
Supply	14	24	23	22	21	18	8	9	40	15	14	9	119	157	533		
1:30 - 3:00 pm	0	3	20	23	18	4	0	2	0	3	13	8	48	41	188		
6:30 - 8:00 pm	0	5	25	29	16	0	0	1	0	1	0	0	46	38	164		

Notes:

The whole area w/o Middle Point Rd is under construction; Middle Point Rd is just one-way street s/o Wills;
Wills St., W. Point St. and Hare St. are just driveways to apartment complexes; cars park every which way out there; supply is approximate, it seems the whole area is going to be demolished.
Hudson Ave. is not really a street, it's just a driveway to scrap yard.
Hudson Ave. with an adjacent lot at Donahue St. serve as parking for construction employees, the area is fenced off and the gate was closed at 6:30 pm.
Whole area e/o Donahue St. is under construction, it seems Donahue St. also serves as parking for the construction crews.
Supply numbers on Innes Ave. and Arelious Walker are approximate.

APPENDIX G: CPHPS TRAVEL DEMAND MEMO



May 11, 2009

Mr. Bill Wycko
San Francisco Planning Department
1650 Mission Street, 4th Floor
San Francisco, CA 94103

Re: *Proposed Trip Generation, Distribution, and Transit Mode Split Forecasts for the Bayview Waterfront Project Transportation Study*

Dear Bill:

This letter report presents the methodology proposed for conducting trip generation, trip distribution, and mode split forecasts for the Bayview Waterfront Project Transportation Study. The results are also presented. The proposed trip generation forecasts were developed using methods developed by Fehr & Peers and others (known as the 4D's method) to estimate trip generation as a function of design variables, such as:

- Development Scale
- Density
- Diversity of uses
- Design of the street network to accommodate pedestrian and bicycle travel

A brief description of the proposed project and the resulting traffic generation forecasts follows.

Following the discussion of the project's trip generation, the tool used to estimate transit mode share is discussed. This is a tool that was developed specifically for this project's context and location. It assumes that travel times and travel costs between various San Francisco neighborhoods have the greatest influence on transit travel in the City.

1. BAYVIEW WATERFRONT PROJECT DEVELOPMENT

The Bayview Waterfront Project includes three areas: Candlestick Point, Hunters Point Shipyard, and India Basin. Lennar Urban is proposing a redevelopment plan for Candlestick Point/Hunters Point Shipyard that would include redeveloping most existing land in the area, which primarily consists of residential and heavy industrial development, into a new mixed-use development that includes housing, retail/commercial, recreational open space, and community facilities. India Basin is located adjacent to Hunters Point Shipyard and will be included in this analysis. A site plan is included in Appendix B.

Specifically, the proposed project would replace the existing uses on the site with the following:

- Up to 11,740 new dwelling units, broken down as follows:
 - 7,850 townhomes/condominium flats in Candlestick Point
 - 2,650 townhomes/condominium flats in Hunters Point
 - 1,240 townhomes/condominium flats in India Basin

- 30,000 square feet of artist space, not including the renovation of 225,000 square feet of existing studio space;
- 985,000 square feet of retail uses, including neighborhood-serving, lifestyle, and entertainment;
- 4,070,000 square feet of new office and research and development space;
- 220 hotel rooms;
- A 75,000 square foot arena (approximately 10,000 seats)
- A 69,000 seat football stadium;
- 335 acres of public recreational open space

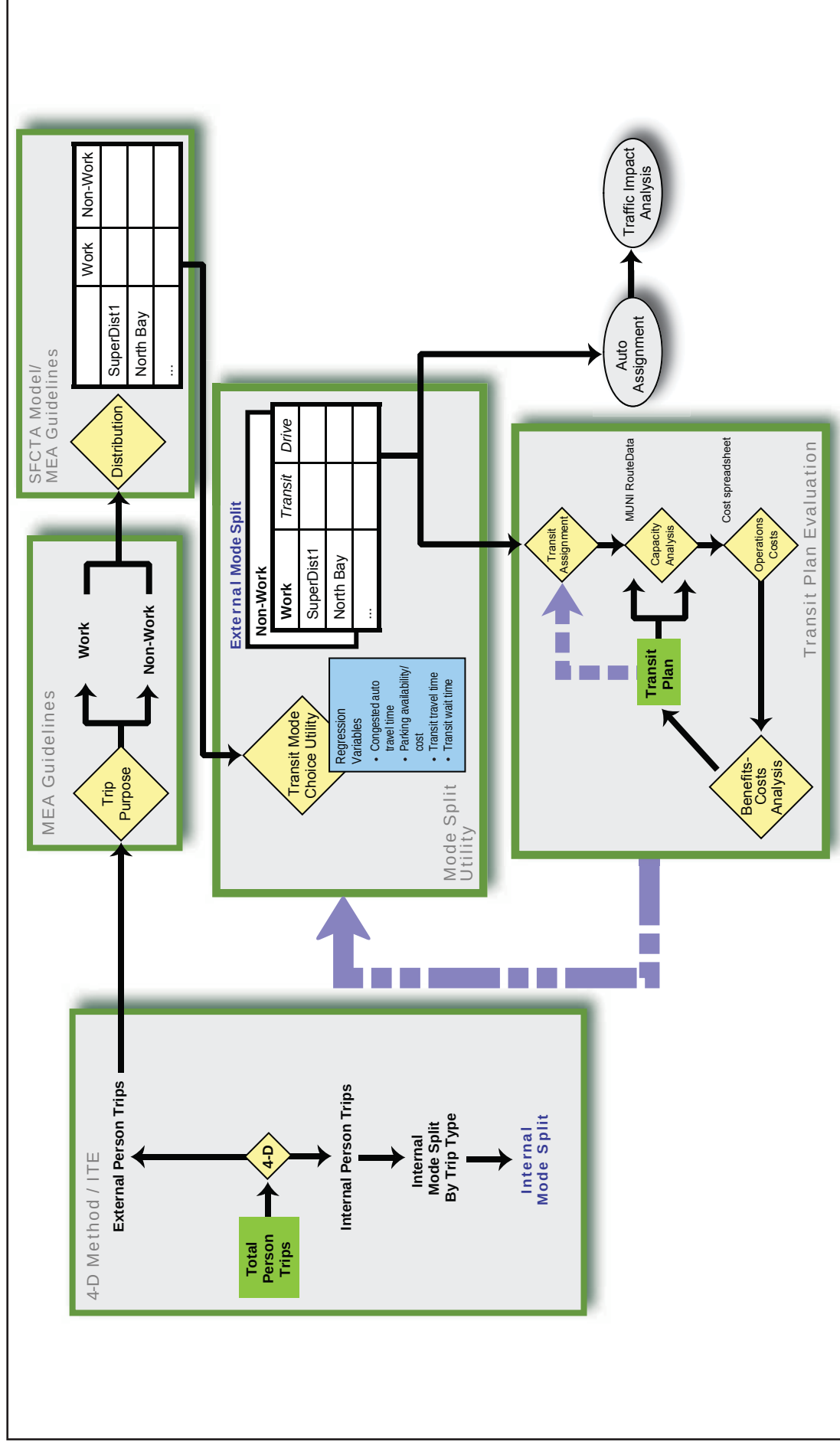
2. METHODOLOGY

The methodology used to estimate trip generation, distribution, and mode split for this project was based on the process outlined in the 2002 *Transportation Impact Analysis Guidelines for Environmental Review (SF Guidelines)*. However, because of the unique nature and location of this project, some project-specific modifications to the *SF Guidelines* methodology were required.

For purposes of estimating trip generation, Fehr & Peers based our analysis using tools used developed by leading industry researchers (including Fehr & Peers staff) and recommended for use by Caltrans for use in assessing the effects of various land development characteristics in travel demand forecasts. We have applied this process, known as the “4D’s” on other large-scale projects Fehr & Peers has worked on in the City of San Francisco. This approach, which deviates from the standard *SF Guidelines* methodology, is appropriate for this site because the proposed project:

- Is located in a relatively isolated area within the City and would redevelop an area comparable in size to a number of entire neighborhoods in other parts of San Francisco;
- Includes residential, employment, and recreational opportunities within the project;
- Follows a development pattern designed to facilitate walking and cycling for internal trips and bus service for external trips;
- Has streets designed to accommodate a variety of modes of travel and slow and moderate speeds and situated around small, pedestrian-oriented blocks;
- Locates all homes within a five-minute walk of a transit stop; and
- Proposes to make substantial investments in the transit system within the project site.

The methodology developed to analyze this type of project has the following five steps, as illustrated on Figure 1:



FEHR & PEERS
TRANSPORTATION CONSULTANTS

January 2009
SF08-0407/graphics0407-1 analysis methodology

Candlestick Point

ANALYSIS METHODOLOGY

FIGURE 1

The overall process is summarized in the following steps:

1. *Trip Generation – 4D/ITE*: The number of person trips generated by the development was calculated using the 4D methodology. This process calculates the number of person trips generated by the development and estimates the percentage of those trips that occur internal to the project. The remaining external trips are then taken and used in the project off-site impact analysis.
2. *Trip Purpose*: The external trips calculated in Step 1 are separated into work and non-work trips, as per *SF Guidelines*.
3. *Trip Distribution*: Once the trips are calculated by purpose, they are distributed to districts, or catchment areas, throughout the Bay area. These districts are defined within the San Francisco County CHAMP travel demand forecasting model, maintained by the San Francisco County Transportation Authority. To account for more nuanced trip patterns in San Francisco, the four superdistricts located within San Francisco identified in the *SF Guidelines* were subdivided into 13 smaller districts and Northern San Mateo County was divided into three new districts. The remaining Bay Area was divided into larger districts for trips to/from the North Bay, East Bay and South Bay.
4. *Transit Mode Utility*: Using drive and transit travel times between various districts through San Francisco, regression-based utility models were developed for work and non-work trips to determine the relationship between travel time and cost and transit mode share for each trip type. The input data for this regression model was obtained from the Bay Area Transportation Survey (BATS), conducted in year 2000. The resulting mode split models were used to predict the transit mode share the project would capture to and from each of the model districts, given the proposed investments towards public transit.
5. *Auto and Vehicle Trips*: Auto person trips are calculated by subtracting transit trips from all external person trips for each destination zone. The number of automobile trips is determined based on an average vehicle occupancy of 1.6.
6. *Project Transit Plan*: After estimating the transit mode share between Candlestick Point/Hunters Point Shipyard and each of the districts, the number of transit riders were assigned to specific transit routes serving or proposed to serve the area. With this refined information about transit travel to and from the project, the proposed transit plan can be analyzed to optimize route capacity and estimate route operational costs. This information can be used to refine the proposed plan and strategize investments to transit. Once the transit plan is revised, steps 4 and 5 will be iterated.

3. PERSON TRIP GENERATION

The methods commonly used for forecasting trip generation of projects in San Francisco are based on person-trip generation rates, trip distribution information, and mode split data described in the *SF Guidelines*. These data are based on a number of detailed travel behavior surveys conducted within San Francisco. The data in the *SF Guidelines* are generally accepted as more appropriate for use in the complex environs of San Francisco than more conventional methods because of the relatively unique mix of uses, density, availability of transit, and cost of parking commonly found in San Francisco. However, the methods described in the *SF Guidelines* cannot be directly applied to the proposed project because of its large scale, unique location, and distinctive character.

Similarly, standard vehicle-traffic generation rates, such as those provided by *Trip Generation*, 8th Edition, 2008, Institute of Transportation Engineers (ITE), would not be suitable for the Bayview Waterfront Project, unless appropriate adjustments were made to account for the project size, mix, and availability of transit. This trip generation report describes an exercise conducted by Fehr & Peers to estimate traffic generation of the proposed project using state-of-the-practice methods for adjusting standard traffic generation rates. This method was originally developed by Fehr & Peers and others for the US Environmental Protection Agency (EPA) and has been endorsed for use in project-specific and planning-level analyses by a number of jurisdictions, including the California Department of Transportation (Caltrans). This method is commonly referred to as the “4D” method, and generally accounts for the following factors that may influence traffic generation:

- **Development scale** – this “D” is the only one of the 4D’s that is used in virtually all transportation impact analyses and accounts for the fact that as development scale increases, trip generation increases.
- **Density of the project** – although trip generation increases with development scale, the higher the proposed project’s density, the less vehicular traffic generated per unit of development
- **Diversity of uses** – an appropriate mix of uses can lead to internalization of trips within a project
- **Design of project** – a walkable, pedestrian- and bicycle-oriented circulation system can help to reduce automobile dependence within a project site

This methodology was applied in the transportation study conducted for the redevelopment of Treasure Island, and a detailed description of how these factors can be used to adjust standard traffic generation rates was provided in a separate letter related to that project. That letter is attached as Appendix A. However, the general concept behind the 4D method is that projects that deviate from the base case (in this case, ITE methods) with respect to the four bulleted variables above exhibit different traffic generation patterns. Elasticities have been derived from travel behavior surveys to help estimate how traffic generation changes as a function of changes in the 4D’s.

Internal Trips

The first step in the 4D method is to define the base case. In this case, the ITE trip generation methodology was selected as the base case, as it represents typical suburban, automobile-oriented development. The estimated project traffic generation using ITE methods is shown below in Tables 1 and 2 for the AM and PM peak hours, respectively.

Land Use	Size	Units	ITE Land Use Code	Rate or Eqn. ²	AM Trip Generation		
					AM Trips	In	Out
Retail¹							
Neighborhood Serving + Ancillary	985.0	kSF					
Shopping Center – Candlestick	635.0	kSF	820	Eqn	1,293	789	504
Specialty Retail – Candlestick	125.0	kSF	814	Rate	237	104	133
Specialty Retail – Hunters Point Shipyard	125.0	kSF	814	Rate	237	104	133
Specialty Retail – India Basin	100.0	kSF	814	Rate	192	85	107
Commercial / Adaptive Reuse							
General Office + Arena	4,085.0	kSF					
General Office – Candlestick	150.0	kSF	710	Eqn	418	366	51
Arena – Candlestick	25.0	kSF	710	Eqn	101	88	13
Stadium/Artist Space – Hunters Point Shipyard	-- ³	kSF	710	Eqn	160	141	19
Research and Development – HPS	2,500.0	kSF	760	Eqn	3,392	2,814	578
General Office – India Basin	1,365.0	kSF	710	Eqn	2,430	2,138	293
Residential							
All	11,484	Units					
Townhomes + Flats (Net New)– Candlestick	7,594	Units	230	Rate	5,349	910	4,438
Townhomes – Hunters Point Shipyard	2,650	Units	230	Rate	1,867	318	1,549
Townhomes – India Basin	1,240	Units	230	Rate	874	149	725
Hotel							
Hotel Facilities	220	Rooms					
Full-Service Hotel – Candlestick	220	Rooms	310	Eqn	176	107	69
Institutional							
Miscellaneous Institutional Uses	335	kSF					
Recreational Open Space – Candlestick	97	Acres	412	Rate	3	2	2
Recreational Open Space – HPS	238	Acres	412	Rate	5	3	2
Grand Total					16,734	8,118	8,616
Notes:							
1. Vehicle trip generation for retail uses increased by 70 percent from ITE methodology based on evidence that retail uses in San Francisco generate approximately 70 percent more person-trips than typical suburban uses. This is a conservative assumption because a higher portion of the additional person trips generated by San Francisco retail uses are likely walk trips due to land use proximity.							
2. Trip Generation generally provides both average rates and fitted curve equations for forecasting trip generation. The choice of which method to use is described in the Trip Generation Handbook. The analysis described in this table is consistent with the ITE methodology.							
3. Equivalent ITE trip generation was derived for Artist's Space and weekday stadium use based on adjusted net square footage.							
Source: Institute of Transportation Engineers, <i>Trip Generation</i> , 7 th Edition (2003).							
Prepared by: Fehr & Peers, May 2009							

Table 2 Bayview Waterfront Project Person Trip Generation Estimates (ITE Methodology ¹) PM Peak Hour - Base Case							
Land Use	Size	Units	ITE Land Use Code	Rate or Eqn. ²	PM Trip Generation		
					PM Trips	In	Out
Retail¹							
Neighborhood Serving + Ancillary	985.0	ksf					
Shopping Center – Candlestick	635.0	ksf	820	Eqn	5,770	2,770	3,000
Specialty Retail – Candlestick	125.0	ksf	814	Rate	877	386	491
Specialty Retail – Hunters Point Shipyard	125.0	ksf	814	Rate	877	386	491
Specialty Retail – India Basin	100.0	ksf	814	Rate	712	314	398
Commercial / Adaptive Reuse							
General Office + Arena	4,085.0	ksf					
General Office – Candlestick	150.0	ksf	710	Eqn	395	67	328
Arena – Candlestick	25.0	ksf	710	Eqn	173	30	142
Stadium/Artist Space – Hunters Point Shipyard	-- ³	ksf	710	Eqn	208	35	173
Research and Development – HPS	2,500	ksf	760	Eqn	2,910	437	2,474
General Office – India Basin	1,365.0	ksf	710	Eqn	2,574	438	2,136
Residential							
All	11,484	Units					
Townhomes + Flats (Net New) – Candlestick	7,594	Units	230	Rate	6,320	4,234	2,086
Townhomes – Hunters Point Shipyard	2,650	Units	230	Rate	2,206	1,478	728
Townhomes – India Basin	1,240	Units	230	Rate	1,034	693	341
Hotel							
Hotel Facilities	220	Rooms					
Full-Service Hotel – Candlestick	220	Rooms	310	Eqn	210	110	99
Institutional							
Miscellaneous Institutional Uses	335	ksf					
Recreational Open Space – Candlestick	97	Acres	412	Rate	11	5	6
Recreational Open Space – HPS	238	Acres	412	Rate	24	10	14
Grand Total					24,301	11,393	12,907
Notes:							
1. Vehicle trip generation for retail uses increased by 70 percent from ITE methodology based on evidence that retail uses in San Francisco generate approximately 70 percent more person-trips than typical suburban uses. This is a conservative assumption because a higher portion of the additional person trips generated by San Francisco retail uses are likely walk trips due to land use proximity.							
2. Trip Generation generally provides both average rates and fitted curve equations for forecasting trip generation. The choice of which method to use is described in the Trip Generation Handbook. The analysis described in this table is consistent with the ITE methodology.							
3. Equivalent ITE trip generation was derived for Artist's Space and weekday stadium use based on adjusted net square footage.							
Source: Institute of Transportation Engineers, <i>Trip Generation</i> , 7 th Edition (2003).							
Prepared by: Fehr & Peers, May 2009							

Once the base case is defined, the next step in the 4D process is to define the application area (i.e., the catchment area for trip internalization). For purposes of this analysis, we assumed the Bayview Waterfront Project development would be contained within a three catchment areas (Candlestick Point, Hunters Point Shipyard, and India Basin). However, trips from one catchment area to another in the development could be internalized to the project area through bike, walk, transit, or auto trips.

The third step in the 4D process is to determine the characteristics of the proposed project, as they relate to the 4D variables described earlier. This process was done by comparing the project with typical suburban development patterns. The proposed project's percentage differences from typical developments were applied against elasticities developed from travel behavior surveys conducted by the Contra Costa Transportation Authority (CCTA)¹. The elasticities from the CCTA work are reasonable for application to this project as they represent typical, suburban development, similar to the ITE trip generation rates, but are also located in the Bay Area and account for regional differences between the Bay Area and the national average. The resulting output from the 4D analysis tool is provided in Appendix B. Generally, the 4D analysis found that approximately 34 percent of all AM peak hour trips and 30 percent of all PM peak hour trips would be internal to the development.

Comparison to Other High-Density, Mixed-Use Developments

The conclusion that between 34 and 30 percent of all peak hour person-trips generated by Bayview Waterfront Project development would be internal to the development is relatively high compared to typical reductions taken to account for trip internalization. Therefore, a comparison was made to other high-density, mixed-use development projects around the United States, including those that comprise the sample used to develop the methodology described in the *ITE Trip Generation Handbook*, to determine if this conclusion is reasonable. This comparison is summarized in Table 3.

As shown in Table 3, there are a number of sites with similar land use mixtures and densities where trip internalization rates between 30 and 50 percent have been observed. Additionally, all of the sites shown in Table 3 are smaller than that proposed at Candlestick Point, Hunters Point Shipyard and India Basin. As development sites grow in size, the rate of internalization increases, so the conclusion that the proposed project would have internalization rates similar to those observed at smaller sites appears reasonable. In addition, at the sample sites, application of the 4D method improved the accuracy of trip generation forecasting, with standard errors of +/- 25 percent, compared to typical standard errors of +/- 90 to +/- 140 percent for office and residential land uses, respectively, when estimated directly from the *ITE Trip Generation* manual.

In light of the above, the conclusion that approximately 34 to 41 percent of Candlestick Point/Hunters Point Shipyard and India Basin trips would be internal to the project appears reasonable.

¹ The CCTA travel demand model was refined to correct for accurate sidewalk cover and residential density in the region.

Table 3 Predicted Using 4D Method vs. Observed Internalization at Other Mixed-use Sites				
Site	Project Description	Internal % Count	Internal % 4D Estimate	Error
Large Sites (>300 acres)				
Moraga, California ¹	6,109 Acre Site: • 1,720 ksf Office • 180 ksf Retail • 0 Hotel Rooms • 6,000 Residential Units	47%	36%	-11%
South Davis, California ¹	791 Acre Site: • 550 ksf Office • 559 ksf Retail • 0 Hotel Rooms • 4,402 Residential Units	45%	50%	5%
Medium Sites (<300 acres, >100 acres)				
Boca del Mar ²	253 Acre Site: • 303 ksf Office • 198 ksf Retail • 0 Hotel Rooms • 1,144 Residential Units	33%	38%	5%
Galleria ¹	165 Acre Site: • 137 ksf Office • 1,150 ksf Retail • 229 Hotel Rooms • 722 Residential Units	38%	17%	-21%
Small Sites (<100 acres)				
Village Commons ²	72 Acre Site: • 293 ksf Office • 231 ksf Retail • 0 Hotel Rooms • 317 Residential Units	28%	46%	18%
Country Isles ²	61 Acre Site: • 59 ksf Office • 193 ksf Retail • 0 Hotel Rooms • 368 Residential Units	33%	42%	9%
Mizner ²	30 Acre Site: • 88 ksf Office • 163 ksf Retail • 0 Hotel Rooms • 136 Residential Units	40%	43%	3%
Crocker ²	26 Acre Site: • 209 ksf Office • 87 ksf Retail • 256 Hotel Rooms • 0 Residential Units	41%	18%	-23%
Notes: 1. Cordon counts conducted by Fehr & Peers 2. From mixed-use trip generation estimation methodology, <i>ITE Handbook</i> , Appendix C Fehr & Peers, October 2008				

4. TRIP PURPOSE

The internal trips for the project were subtracted from the overall trip generation and, per *SF Guidelines*, the external trips associated with the project were separated into trip purpose group – work and non-work trips. Table 4 summarizes the work/non-work splits for the land uses specific to the Bayview Waterfront Project

Table 4 Bayview Waterfront Project – Peak Hour Trip Purpose by Land Use		
Place of Trip Origin/Destination	% Work Trips	% Non-Work Trips
Retail (Shopping Center and Other Retail)	4%	96%
Office and R & D	83%	17%
Stadium and Arena	83%	17%
County Park	83%	17%
Hotel	60%	40%
Residential	50%	50%
Source: 2002 <i>Transportation Impact Analysis Guidelines for Environmental Review (SF Guidelines)</i> , San Francisco Planning Department.		

5. TRIP DISTRIBUTION

The next component of the analysis is an estimation of the trip distribution of external project trips by trip purpose. The proposed project trip distribution was determined using the San Francisco CHAMP travel demand forecasting model, maintained by the San Francisco County Transportation Authority (SFCTA).

The SF CHAMP model divides the city and region into “superdistricts” to which traffic is typically distributed. The City is divided into four superdistricts, with the surrounding region aggregated into larger geographical areas (North Bay, East Bay, South Bay). The Bayview Waterfront Project is located in Superdistrict 3. A map of the Superdistricts is located in Appendix C.

To confirm that the use of the SF CHAMP model was appropriate, the trip distribution percentages predicted by the SF CHAMP model for the traffic analysis zones containing the proposed project to each of the four San Francisco Superdistricts and the larger regional districts (North Bay, East Bay, and South Bay) were compared with the distribution percentages predicted by the MTC model, those contained in the *SF Guidelines*, and those from the 2000 Census Journey-to-Work data set for the same area. Table 5 summarizes these percentages.

Table 5 Bayview Waterfront Project PM Peak Period Trip Distribution for Project TAZ							
	SFCTA Work¹	MTC Work²	MEA Work³	Census Travel Flows⁴	SFCTA Non-Work¹	MTC Non-Work²	MEA Non-Work³
Superdistrict 1	20%	16%	12%	18%	7%	21%	9%
Superdistrict 2	11%	6%	13%	19%	6%	5%	11%
Superdistrict 3	29%	43%	26%	35%	44%	50%	57%
Superdistrict 4	4%	4%	12%	17%	3%	3%	5%
East Bay	12%	10%	24%	1%	6%	3%	4%
North Bay	2%	2%	0%	0%	1%	0%	2%
South Bay + Other	22%	19%	13%	2%	32%	18%	12%
Notes: 1. Source: SF CHAMP model, 2030 PM model run 2. Source: Metropolitan Transportation Commission, 2030 PM Model Run, Projections 2003. 3. Source: <i>SF Guidelines</i> , SF Planning Department, 2002. 4. Source: Census 2000 Journey-to-Work Travel Flows, Prepared by Fehr & Peers. Prepared by: Fehr & Peers, May 2009							

As shown in Table 5, the work-trip distribution percentages from the SF CHAMP model for the project site area are generally consistent with the census journey-to-work travel flows, and in most cases are closer to the census data than other sources. The primary difference between the SF CHAMP distribution and the census data is that the census indicates that there are currently a higher portion of work trips between the project area and superdistricts 2-4 (i.e. non-Downtown areas of San Francisco), and a lower percentage to regional locations such as the East Bay and South Bay. The SF CHAMP model predicts a higher portion of trips from the proposed project to/from Downtown San Francisco, the East Bay, and the South Bay.. Given that the proposed project intends to introduce land uses in the area that will likely be a more regional draw than existing land uses in the area (R&D space, office space, regional retail, etc.), the fact that the SF CHAMP model predicts a higher portion of trips to the East Bay than currently exists makes sense, and appears reasonable.

For non-work trips, all three sources (the SF CHAMP model, the MTC model, and the *SF Guidelines*) are all relatively consistent. The primary difference between the SF CHAMP model and the *SF Guidelines* trip distribution is the SF CHAMP model predicts a higher portion of the trips to the South Bay and lower portion to Superdistrict 3. Given the project's location at the southern edge of San Francisco, there are many uses classified in the "South Bay" category that may be closer and more convenient to the project site than those in Superdistrict 3. Thus, the discrepancies between the SF CHAMP model and *SF Guidelines* non-work trip distribution also appear reasonable.

Therefore, the SF CHAMP model should be considered an acceptable source for determining the work and non-work trip distribution for the Bayview Waterfront Project.

Model Refinement

In order to develop a more detailed transportation analysis, the SF CHAMP trip distribution information was disaggregated from four Superdistricts in San Francisco into 13 “super neighborhoods.” Northern San Mateo County was disaggregated into three zones. The remainder of the land uses remained in the North Bay, South Bay, and East Bay Superdistricts. Figure 2 illustrates the zone structure used in for this analysis. The SF CHAMP model output was then formatted into these 19 zones to determine the project’s trip distribution by purpose.

The trip distribution patterns from the SF CHAMP model were applied to the trip generation described earlier. Table 6 provides a summary of the project trip distribution from each zone. The percent distribution shown has been normalized to reflect the in-and-out percent splits in the trip generation table (i.e., inbound and outbound trip distribution may be slightly different from one another for a given origin-destination pair).

Table 6 Bayview Waterfront Development External Trip Distribution Patterns, PM Peak Hour					
Zone Number	Place of Trip Origin/Destination	% Work Trips ²	Work Trips	% Non-Work Trips ²	Non-Work Trips
1	Downtown	9%	666	4%	322
2	South of Market (SoMa)	5%	330	3%	208
3	North Beach / Chinatown	4%	293	2%	180
4	Western Market	6%	403	5%	370
5	Mission / Potrero Hill	9%	666	12%	860
6	Noe Valley / Glen Park / Bernal	3%	247	7%	483
7	Marina / Northern Heights	3%	228	3%	194
8	Richmond	2%	116	1%	64
9	Bayshore	8%	559	28%	2044
10	Outer Mission	3%	195	6%	447
11	Hill Districts	2%	126	3%	207
12	Sunset	4%	289	4%	274
13	South Bay	7%	485	6%	466
14	East Bay	14%	1029	8%	575
15	North Bay	2%	177	1%	82
16	Bayview Waterfront Project ³	1%	83	4%	305
17	Brisbane / Eastern Daly City	3%	230	14%	1041
18	Western Daly City / Colma	11%	824	14%	1046
19	San Bruno / South San Francisco	4%	306	9%	617
Total SF		58%	4199	60%	5960
Total EB		14%	1029	6%	575
Total SB		26%	1844	33%	3170
Total NB		2%	177	1%	82
Notes: 1. Trips within the Bayview Waterfront development are considered internal to the project; therefore, no trips were distributed to the zone in this step. 2. These percentages represent the total percentage of trips traveling to and from each zone to and from the project; however, the inbound and outbound split is not represented in this table. Appendix C contains a trip distribution matrix showing each origin-destination pair's distribution and should be referenced for the project's inbound and outbound split for each zone. 3. For the Bayview Waterfront Project area, “external trips” refers to trips between Candlestick Point, Hunters Point Shipyard, and India Basin. “Internal” trips were assumed to be within each site. Trips to/from Bayview Waterfront were reallocated from the Bayshore district trip percentage based on land use type. Source: Fehr & Peers, May 2009					



6. TRANSIT MODE SHARE UTILITY

The Bayview Waterfront Project has proposed substantial changes to the transit infrastructure in the neighborhood, including extending existing routes into the project site and establishing new transit routes. The proposed transit plan is specified in Appendix D.

The *SF Guidelines* provide a general transit mode share percentage by Superdistrict; however, the more refined zone structure used in this analysis allows prediction of transit mode share to be specific to neighborhoods and transit routes. For example, the original, SF CHAMP Superdistrict 2 included all neighborhoods in the northwestern quadrant of the City (generally north of Golden Gate Park and west of Van Ness Avenue) and was served by numerous major bus lines (e.g., Routes 38, 24, 45, N-Judah, 48). The more refined structure used in this analysis better delineates neighborhoods in the area (into the Richmond, Marina, and Western Market), so that the predicted transit mode share better reflects actual transit connectivity between the proposed project and a specific neighborhood.

Mode Choice Model Development

A statistical model was constructed to determine the correlation between a number of variables that may influence mode choice for the neighborhood zones and Superdistricts. The model was designed to predict transit mode shares. The data set used to construct the model was published in 2000 *Bay Area Travel Survey*, Public Data Release #3, Metropolitan Transportation Commission (MTC), March 2005, (BATS2000), as well as information mined from U.S. Census Journey-to-Work data.

Additionally, mode choice for work and non-work trips may be different for a given origin – destination pair. Therefore, unique models were developed to predict transit mode share for work and non-work trips.

Mode Choice Model Calibration

Five neighborhoods in San Francisco and their corresponding travel characteristics were used to construct the model. The neighborhoods used – Downtown, Richmond, Outer Mission, Hill Districts, Sunset – were chosen because they each are outlying areas like similar to the Bayview Waterfront Project. For each origin-destination (OD) pair, base year auto travel time data from the SF CHAMP model, transit travel time data from Muni, and known travel costs between zones (e.g., tolls, transit fares, and parking costs) were compiled. Using this data, the following variables were created:

Drive Time (Drive Time): Drive time was taken from the SF CHAMP model, and represents the PM peak hour average travel time between the central TAZ within each zone.

Parking Cost (Parking Cost): The cost to park in each zone was calculated by taking an hourly parking rate for that zone multiplied by the proportion of trips to that zone that pay for parking to obtain an average hourly parking rate for this zone. The SF CHAMP model land use file provides an hourly parking rate for work and for non-work trips. The average

hourly parking rate was then multiplied by 8 hours for a work trip and 2 hours for a non-work trip; assumptions of the average parking time.

Transit Average Wait Time (*TransitAvgWait*): The sum of half of the headway of each transit line taken between a particular origin/destination pair by transit.

Transit Transfers (*TransitXfers*): This is the number of transfers needed to take public transportation between the origin and destination.

Transit Travel Time (*TransitTime*): The average travel time taken by public transit between a given origin/destination pair. This data was taken from the 2006 Muni transit survey data.

This information was compiled into a series of matrices by origin-destination pair, entered into SPSS statistical software and used to perform a regression analysis. Appendix E includes the model input factors and Appendix F contains the model's validation statistics. Ultimately, the model showed that for work trips, only *DriveTime*, *DrivePkgCost*, *TransitAvgWait*, and *TransitXfers* affected the transit mode share. For non-work trips, *DriveTime*, *DrivePkgCost*, *TransitXfers*, and *TransitTime* affected the transit mode share. The following coefficients and equations were derived from the output:

Work Trips:

$$\text{Transit Mode Share} = 0.009 * (\text{DriveTime}) + 0.102 * (\text{DrivePkgCost}) - 0.008 * (\text{TransitAvgWait}) - 0.092 * (\text{TransitXfers}) + 0.028$$

Non-Work Trips:

$$\text{Transit Mode Share} = 0.012 * (\text{DriveTime}) + 0.079 * (\text{DrivePkgCost}) - 0.023 * (\text{TransitXfers}) - 0.002 * (\text{TransitTime}) - 0.095$$

Mode Choice Model Validation

Table 7 includes the sample origin/destination pairs used to develop the regression model, the actual transit mode share for that OD pair, and the corresponding mode share prediction from the mode choice model. The predicted mode share was compared to BATS data. Tables 7 & 8 and Figures 3 & 4 show the predicted versus actual (BATS) transit mode share for each origin-destination pair for work and non-work trips included in the model.

Table 7
Model Results by Origin - Destination Pair: Transit Mode Share for Daily Work Trips

Origin	Destination	BATS Mode Share ^{1, 2}	Predicted Mode Share ³	BATS-to-Model Difference
<i>Downtown</i>	<i>Richmond</i>	72%	73%	-1%
<i>Downtown</i>	<i>Outer Mission</i>	91%	75%	16%
<i>Downtown</i>	<i>Hill Districts</i>	58%	74%	-16%
<i>Downtown</i>	<i>Sunset</i>	64%	68%	-4%
<i>Richmond</i>	<i>Downtown</i>	76%	73%	4%
<i>Richmond</i>	<i>Outer Mission</i>	0%	13%	-13%
<i>Richmond</i>	<i>Hill Districts</i>	7%	7%	0%
<i>Richmond</i>	<i>Sunset</i>	25%	20%	6%
<i>Outer Mission</i>	<i>Downtown</i>	75%	75%	1%
<i>Outer Mission</i>	<i>Richmond</i>	26%	13%	13%
<i>Outer Mission</i>	<i>Hill Districts</i>	10%	14%	-5%
<i>Outer Mission</i>	<i>Sunset</i>	0%	9%	-9%
<i>Hill Districts</i>	<i>Downtown</i>	66%	74%	-8%
<i>Hill Districts</i>	<i>Richmond</i>	15%	7%	8%
<i>Hill Districts</i>	<i>Outer Mission</i>	2%	14%	-12%
<i>Hill Districts</i>	<i>Sunset</i>	7%	2%	6%
<i>Sunset</i>	<i>Downtown</i>	67%	68%	-1%
<i>Sunset</i>	<i>Richmond</i>	36%	20%	16%
<i>Sunset</i>	<i>Outer Mission</i>	0%	9%	-9%
<i>Sunset</i>	<i>Hill Districts</i>	6%	15%	-9%

Notes:

1. 2000 Bay Area Travel Survey, Public Data Release #3, Metropolitan Transportation Commission, March 2005.
2. Transit mode shares between inbound and outbound directions may be different depending on origin. Reverse O-D pairs may have different mode shares because travel characteristics such as time and route vary by direction.
3. Results of applying transit mode share prediction model.

Source: Fehr & Peers, May 2009

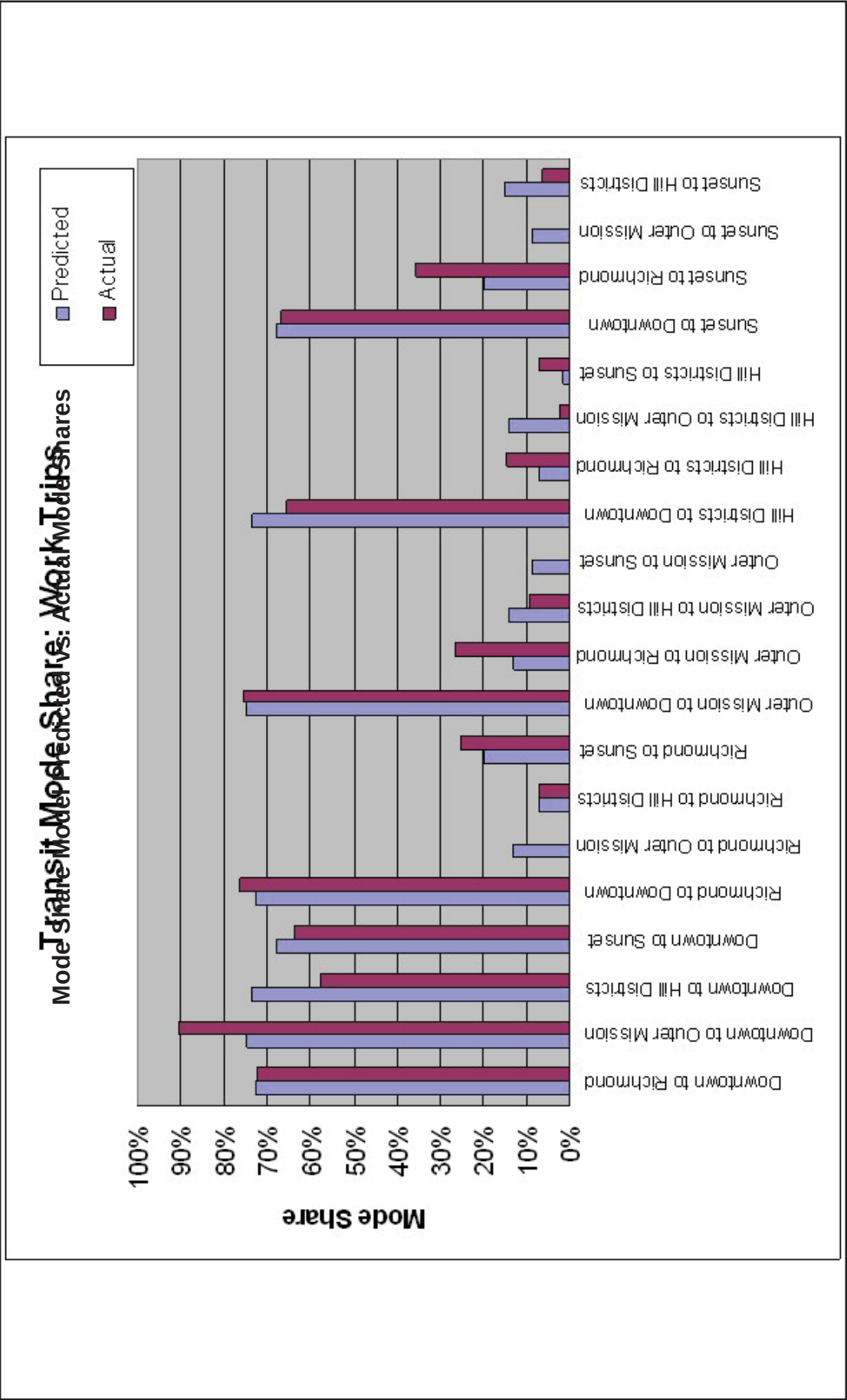
Table 8
Model Results by Origin - Destination Pair: Transit Mode Share for Daily Non-Work Trips

Origin	Destination	BATS Mode Share ^{1, 2}	Predicted Mode Share ³	BATS-to-Model Difference
<i>Downtown</i>	<i>Richmond</i>	31%	40%	9%
<i>Downtown</i>	<i>Outer Mission</i>	49%	44%	-5%
<i>Downtown</i>	<i>Hill Districts</i>	54%	46%	-8%
<i>Downtown</i>	<i>Sunset</i>	46%	46%	1%
<i>Richmond</i>	<i>Downtown</i>	33%	40%	7%
<i>Richmond</i>	<i>Outer Mission</i>	11%	8%	-3%
<i>Richmond</i>	<i>Hill Districts</i>	0%	4%	4%
<i>Richmond</i>	<i>Sunset</i>	3%	8%	4%
<i>Outer Mission</i>	<i>Downtown</i>	57%	44%	-13%
<i>Outer Mission</i>	<i>Richmond</i>	8%	8%	0%
<i>Outer Mission</i>	<i>Hill Districts</i>	3%	2%	-1%
<i>Outer Mission</i>	<i>Sunset</i>	10%	4%	-6%
<i>Hill Districts</i>	<i>Downtown</i>	45%	46%	1%
<i>Hill Districts</i>	<i>Richmond</i>	0%	4%	4%
<i>Hill Districts</i>	<i>Outer Mission</i>	4%	2%	-3%
<i>Hill Districts</i>	<i>Sunset</i>	6%	0%	-6%
<i>Sunset</i>	<i>Downtown</i>	44%	46%	3%
<i>Sunset</i>	<i>Richmond</i>	3%	8%	5%
<i>Sunset</i>	<i>Outer Mission</i>	7%	4%	-3%
<i>Sunset</i>	<i>Hill Districts</i>	6%	2%	-4%

Notes:

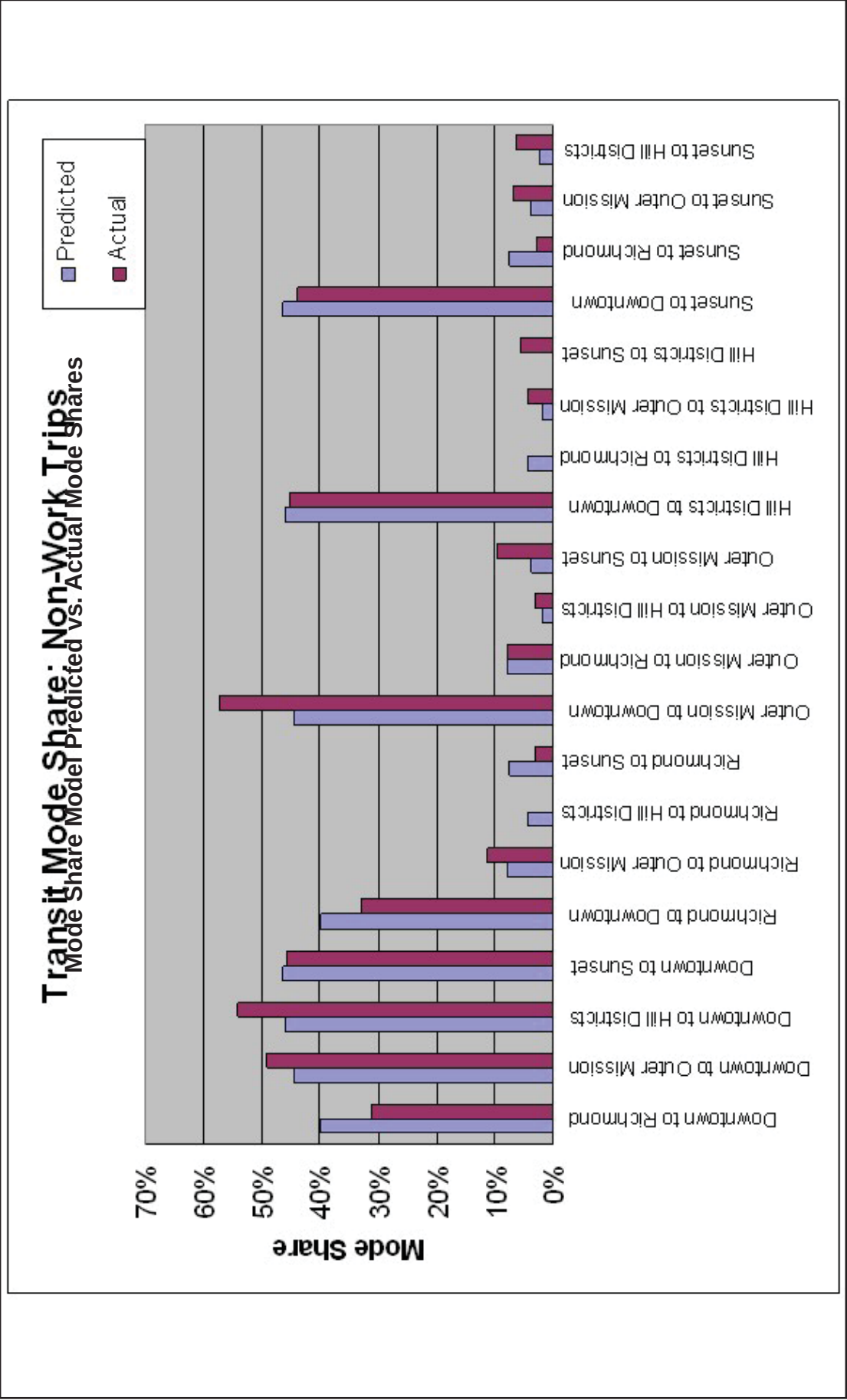
1. 2000 Bay Area Travel Survey, Public Data Release #3, Metropolitan Transportation Commission, March 2005.
2. Transit mode shares between inbound and outbound directions may be different depending on origin. Reverse OD pairs may have different mode shares because travel characteristics such as time and route vary by direction.
3. Results of applying transit mode share prediction model.

Source: Fehr & Peers, May 2009



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PREDICTED VS. ACTUAL DAILY TRANSIT MODE SHARE: WORK TRIPS



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PREDICTED VS. ACTUAL DAILY TRANSIT MODE SHARE: NON-WORK TRIPS

Comparison to SF CHAMP Model

To confirm the reasonableness of the mode choice model's predictions, its results were compared to transit mode share predicted by the SF CHAMP model and BATS survey data. Table 9 compares the mode choice model's predictions of transit mode share for trips between Downtown and the outer neighborhoods of San Francisco with mode share data from BATS and predictions from the SF CHAMP model. These neighborhoods have similar transportation characteristics as the southeastern portion of the city (Bayshore) – limited access to express transit routes, medium residential and job densities, and a location relatively remote from downtown.

Table 9 Daily Transit Mode Choice Utility Comparison			
Origin-Destination ¹	Mode Choice Model Predicted Mode Share ¹	SF CHAMP Mode Share ²	BATS Mode Share
Downtown – Sunset + Hill District + Richmond	55%	34%	52%
Sunset + Hill District + Richmond – Downtown	55%	39%	53%
Notes: 1. Sunset, Hill District, and Richmond were combined in this comparison to adjust for the small sample size in BATS surveys. 2. Source: SF CHAMP model, San Francisco County Transportation Authority, 2030 year model run. Percentage shows total percent of daily trips made to and from each zone on transit.			
Source: Fehr & Peers, May 2009			

As shown in Table 9, the transit mode share utility model predicts higher transit mode shares for some origin-destination pairs compared to the SF CHAMP model but similar mode shares as the BATS survey data. Given that BATS data represents actual surveys, the mode choice model appears to reasonably predict transit mode share for other outer areas of San Francisco and may be more accurate than the SF CHAMP model for uses in this area of San Francisco.

Project Mode Share

Since the model performed well for the selected origin-destination pairs during calibration and validation, the mode choice model was applied to the proposed project, assuming that the proposed transit improvements described in the project's Transportation Plan would be fully implemented.

As proposed, the Bayview Waterfront Project would provide a high level of transit service during peak hours. The transit plan can be found in Appendix D.

The mode choice model predictions for the proposed project's transit mode share and trip distribution are summarized in Tables 10 & 11. Appendix G contains the model inputs for the project's transit mode share. The transit mode shares for the project shown in the table reflect only external trips. The mode choice model was designed specifically for purposes of predicting transit ridership between given origin-destination pairs within San Francisco and northern San Mateo County zones in near proximity - including Brisbane, Daly City/Colma, and San Bruno/South San Francisco - which have fundamentally different transit characteristics than areas

further outside of San Francisco. The mode share for the North Bay, South Bay, and East Bay was estimated from the SF CHAMP and MTC model.

Table 10 PM Peak Hour Work Trips: Bayview Waterfront Project Transit Mode Share			
Trip Endpoint 1	Trip Endpoint 2	Predicted Transit Mode Share	Number of Transit Trips
Candlestick Point/Hunters Point Shipyard	Downtown	75%	501
	South of Market (SoMa)	73%	238
	North Beach/Chinatown	75% ¹	220
	Western Market	31%	125
	Mission / Potrero Hill	15%	103
	Noe Valley / Glen Park / Bernal	24%	59
	Marina / Northern Heights	31%	71
	Richmond	23%	27
	Bayshore	19%	106
	Outer Mission	22%	43
	Hill Districts	23%	29
	Sunset	33%	95
	Bayview Waterfront Project	19% ³	16
	South Bay ²	13%	63
	East Bay ²	8%	82
	North Bay ²	1%	2
	Brisbane	9%	21
	Daly City / Colma	17%	142
	San Bruno / S. San Francisco	13%	41
Notes: 1. Due to variables for trips between North-Beach/Chinatown that exceeded the range of values used in the model calibration the transit mode share between the project and this area was capped at 75%, the highest reported transit mode share in the BATS survey data used to develop the model. 2. Due to the distance from the project site and difference in transit characteristics for persons traveling to the North Bay, East Bay, and South Bay, transit mode share percentages were derived from BATS transit mode shares for the Bayshore District instead of using the Transit Mode Choice Utility. 3. Uses same transit mode share as Bayshore district. Source: Fehr & Peers, May 2009			

Table 11
PM Peak Period Non-Work Trips: Bayview Waterfront Project Transit Mode Share

Trip Endpoint 1	Trip Endpoint 2	Predicted Transit Mode Share	Number of Transit Trips
Candlestick Point/Hunters Point Shipyard	Downtown	42%	135
	South of Market (SoMa)	41%	86
	North Beach/Chinatown	41% ¹	74
	Western Market	21%	78
	Mission / Potrero Hill	13%	110
	Noe Valley / Glen Park / Bernal	15%	72
	Marina / Northern Heights	28%	55
	Richmond	26%	17
	Bayshore	13%	267
	Outer Mission	14%	64
	Hill Districts	13%	26
	Sunset	24%	66
	Bayview Waterfront Project	13% ³	40
	South Bay ²	13%	61
	East Bay ²	3%	17
	North Bay ²	5%	4
	Brisbane	8%	87
	Daly City / Colma	10%	106
	San Bruno / S. San Francisco	9%	56

Notes:

1. Due to variables for trips between North-Beach/Chinatown that exceeded the range of values used in the model calibration the transit mode share between the project and this area was capped at 41%, approximately the highest reported transit mode share in the BATS survey data used to develop the model.
2. Due to the distance from the project site and difference in transit characteristics for persons traveling to the North Bay, East Bay, and South Bay, transit mode share percentages were derived from BATS transit mode shares for the Bayshore District instead of using the Transit Mode Choice Utility.
3. Uses same transit mode share as Bayshore district.

Source: Fehr & Peers, May 2009

7. BAYVIEW WATERFRONT PRELIMINARY TRAVEL DEMAND SUMMARY

External person trips by auto and bicycling were calculated by subtracting transit person trips from total external person trips. BATS data for the Bayshore/Bayview neighborhood indicate that approximately two percent of trips are currently made by bicycle. Assuming a similar bicycle mode share for the proposed project, the number of external bike trips for the Bayview Waterfront Project was calculated. The remainder of external person trips was assumed to be vehicle (auto) person trips. A vehicle occupancy factor of 1.6 was used to convert person trips by auto into vehicle trips. The following tables summarize the PM peak hour mode split calculations and trip distribution patterns for the Bayview Waterfront Plan.

Table 12 Bayview Waterfront Project PM Peak Hour Trip Generation Summary							
	Net New	Person Trips					Vehicle Trips
		auto	transit	bicycle	internal	total	
Hunters Point Shipyard							
residential	2650 units	1,182	347	47	630	2206	739
retail	125 ksf	513	94	19	250	877	321
R&D	2500 ksf	1,533	484	62	831	2910	958
park	238 acres	12	4	1	7	24	8
stadium/artists	-- ¹	109	35	4	59	208	68
subtotal		3349	964	133	1778	6226	2093
mode split %		54%	15%	2%	29%		
mode split of external trips %		75%	22%	3%			
Candlestick							
residential	7594 units	3,409	1001	136	1773	6320	2131
retail	760 ksf	3,919	720	143	1,865	6646	2449
hotel	220 rooms	112	34	5	59	210	70
office/arena	150 ksf	301	96	12	159	568	188
park	97 acres	6	2	0	3	11	4
subtotal		7746	1853	297	3859	13755	4841
mode split %		56%	13%	2%	28%		
mode split of external trips %		78%	19%	3%			
India Basin							
residential	1240 units	483	142	19	389	1034	302
retail	100 ksf	364	67	13	268	712	227
office	1365 ksf	1,181	376	48	969	2574	738
subtotal		2028	585	81	1626	4320	1268
mode split %		47%	14%	2%	38%		
mode split of external trips %		75%	22%	3%			
TOTAL BWP		13124	3402	511	7264	24301	8203
mode split %		54%	14%	2%	30%		
mode split of external trips only%		77%	20%	3%			
Notes: 1. Equivalent ITE trip generation was derived for Artist's Space and weekday stadium use based on adjusted net square footage. Source: Fehr & Peers, May 2009							

Table 13 Bayview Waterfront Project PM Peak Hour Distribution for Work and Non-Work Trips						
	Person Trips		Transit Trips		Vehicle Trips	
	Work	Non-work	Work	Non-work	Work	Non-work
San Francisco						
Downtown	9%	3%	25%	10%	3%	2%
Rest of SD 1	9%	4%	23%	11%	3%	3%
SD 2	10%	6%	11%	11%	10%	6%
SD 3	26%	44%	17%	41%	29%	45%
SD 4	4%	3%	5%	5%	4%	3%
<i>Subtotal SF</i>	<i>58%</i>	<i>60%</i>	<i>82%</i>	<i>78%</i>	<i>49%</i>	<i>59%</i>
Brisbane, DC, Colma, SB, SSF	19%	28%	10%	16%	22%	29%
Rest of SB	7%	5%	3%	4%	8%	5%
EB	14%	6%	4%	1%	18%	7%
NB	2%	1%	0%	0%	3%	1%
Source: Fehr & Peers, 2009						

8. TRANSIT ASSIGNMENT

The total number of transit person trips during the PM peak hour between the project site and each of the 19 zones is summarized in Table 14. The number of transit trips shown is bi-directional.

Table 14 Bayview Waterfront Project: PM Peak Hour Transit Trip Distribution		
Trip Endpoint 1	Trip Endpoint2	Transit Person Trips
Candlestick Point/Hunters Point Shipyard	Downtown	636
	South of Market (SoMa)	323
	North Beach/Chinatown	293
	Western Market	203
	Mission / Potrero Hill	213
	Noe Valley / Glen Park / Bernal	131
	Marina / Northern Heights	126
	Richmond	44
	Bayshore	372
	Outer Mission	107
	Hill Districts	55
	Sunset	161
	Bayview Waterfront Project	55
	South Bay	124
	East Bay	100
	North Bay	6
	Brisbane	108
	Daly City / Colma	248
	San Bruno / S. San Francisco	97
Source: Fehr & Peers, May 2009		

The transit passengers for the Bayview Waterfront Project area were then split up into groups sharing similar travel patterns. For example, the Candlestick Point area is served by different transit routes than the Hunters Point Shipyard/India Basin area and was grouped accordingly. These groups of transit riders were assumed to use the same transit routes from their respective areas to the regional destinations. Using the person trips calculated for each development area, referenced in Table 2, the person trip group split was calculated at 41% of person trips for the Hunters Point Shipyard/India Basin area and 59% for Candlestick Point for the PM peak hour. Furthermore, inbound and outbound trips were calculated for the entire project. In all, 48% of person trips were inbound while 52% were outbound during the PM peak hour. Combining these factors, Table 15 shows the split by transit person trip travel pattern.

Table 15	
Bayview Waterfront Project Transit Travel Pattern for Each Origin-Destination	
Travel Pattern	Mode Choice Model Predicted Mode Share
Hunters Point Shipyard/India Basin Inbound	19%
Hunters Point Shipyard/India Basin Outbound	21%
Candlestick Point Inbound	28%
Candlestick Point Outbound	31%
Source: Fehr & Peers, January 2009	

Transit riders were assigned to specific transit routes for each origin-destination zone and for each travel pattern cohort. The transit assignment assumed an enhanced service scenario as described in Appendix D.

Since it is possible to use many different routes to get to the same destination, each travel pattern was further split up to reflect the choice transit riders have in traveling to their destination. Since large zones were used to determine mode choice and transit assignment, there is a diversity of destinations to reach within each zone; some destinations are better reached using different transit routes. Actual route preference is also a combination of many non-quantifiable factors. For the purposes of this exercise, probabilities were produced for each route of travel to and from each zone. The probabilities were subject to the following general conditions in descending order of importance: faster routes were always preferred, routes serving major activity centers such as business districts and transit hubs were more preferred to those not directly serving those areas, rail transportation was generally preferred when travel times were approximate to non-rail routes.

In order to aid the accounting of major travel patterns within each route, some routes were further disaggregated into discrete route segments for which large groups of passengers will follow the same travel pattern. Some passengers may ride a route for a short segment before transferring to another route. Others will continue on that route to other parts of San Francisco and potentially through the maximum load point of the entire route. For purposes of the capacity analysis, these segments were separated for some routes that carry groups of passengers to different destinations.

The transit assignment can be found in Appendix H.

The final step was to sum the transit passengers by route segment and analyze how ridership will affect the capacity of each transit line. Passengers traveling to and from Hunters Point Shipyard and Third Street, a major transfer point, are served by multiple routes that use similar streets to get there. Since such passengers would have no particular route preference, they were assigned to the routes in proportion to their frequency.

Year 2006 Muni transit route characteristics were obtained to determine the maximum existing loads, headways, and existing hourly capacity along each route segment. Since the transit proposal calls for reduced headways along some routes in the area, transit ridership would increase off-site as a result. An elasticity of 0.5 was used² for increased ridership as a function of increased capacity. This was multiplied by the existing peak load along the route segment and added to the route segment increased ridership. Table 16 presents a summary of the transit assignment.

Table 16
Bayview Waterfront Project: PM Peak Hour Transit Trip Assignment

Route (direction with respect to project site)	Route Segment	Existing Headway	Proposed Headway	Increased Service Capacity	Existing Hourly Max Load	Induced Ridership at Max Load ¹	BWP Transit Ridership at Max Load
CPX Inbound		0.0	10.0	0%	0	0	246
HPX Inbound		0.0	12.0	0%	0	0	163
Route 48 Inbound	From Noe Valley to Third	12.0	10.0	17%	160	13	28
	From Third to Project	12.0	10.0	17%	74	6	76
Route 28L Inbound	From Sunset to Balboa	0.0	10.0	0%	0	0	87
	From Balboa to Project	0.0	5.0	0%	0	0	460
	Between CP and HPS	0.0	5.0	0%	0	0	73
Route 29 Inbound	From Sunset to Balboa	10.0	10.0	0%	160	0	8
	From Balboa to Third	10.0	5.0	50%	123	31	17
	From Third to Project	10.0	5.0	50%	21	5	309
Route 44 Inbound	From Hill Districts to Third	7.5	6.0	20%	334	33	40
	From Third to Project	7.5	6.0	20%	84	8	162
T-Third Inbound	From Downtown to Mariposa	8.5	4.0	26%	333	44	340
	From Mariposa to Project	8.5	8.0	3%	330	5	340
Route 24 Inbound	From Third to Project	10.0	6.0	40%	15	3	165
	From Noe Valley to Third	10.0	6.0	40%	147	29	117
	From W. Market to Noe Valley	10.0	6.0	40%	215	43	80
Route 9 Inbound		7.5	10.0	0%	274	0	41
Route 45 Inbound		9.0	10.0	0%	316	0	40
Caltrain Inbound		60.0	60.0	0%	226	0	89
BART Inbound		3.0	3.0	0%	4230	0	196
GGT Inbound		20.0	20.0	0%	100	0	3
Route 43 Inbound		10.0	10.0	0%	229	0	15
SAM Inbound		7.5	7.5	0%	245	0	66

² Victoria Transport Policy Institute, <http://www.vtpi.org/tranelas.pdf>

Table 16
Bayview Waterfront Project: PM Peak Hour Transit Trip Assignment

Route (direction with respect to project site)	Route Segment	Existing Headway	Proposed Headway	Increased Service Capacity	Existing Hourly Max Load	Induced Ridership at Max Load ¹	BWP Transit Ridership at Max Load
CPX Outbound		0.0	10.0	0%	0	0	364
HPX Outbound		0.0	12.0	0%	0	0	173
Route 48 Outbound	From Third to Noe Valley	12.0	10.0	17%	180	15	31
	From Project to Third	12.0	10.0	17%	87	7	89
Route 28L Outbound	From Balboa to Sunset	0.0	10.0	0%	0	0	93
	From Project to Balboa	0.0	5.0	0%	0	0	524
	Between CP and HPS	0.0	5.0	0%	0	0	79
Route 29 Outbound	From Third to Sunset	10.0	10.0	0%	124	0	13
	From Third to Balboa Park	10.0	5.0	50%	101	25	22
	From Project to Third	10.0	5.0	50%	71	18	250
Route 44 Outbound	From Third to Hill Districts	7.5	6.0	20%	187	19	46
	From Project to Third	7.5	6.0	20%	114	11	187
T-Third Outbound	From Mariposa to Downtown	8.5	4.0	26%	369	49	364
	From Project to Mariposa	8.5	8.0	3%	278	4	364
Route 24 Outbound	From Project to Third	10.0	6.0	40%	15	3	180
	From Third to Noe Valley	10.0	6.0	40%	114	23	122
	From Noe Valley to W. Market	10.0	6.0	40%	144	29	84
Route 9 Outbound		7.5	10.0	0%	429	0	46
Route 45 Outbound		9.0	10.0	0%	300	0	46
Caltrain Outbound		60.0	60.0	0%	274	0	101
BART Outbound		3.0	3.0	0%	16000	0	219
GGT Outbound		20.0	20.0	0%	120	0	3
Route 43 Outbound		10.0	10.0	0%	152	0	17
SAM Outbound		7.5	7.5	0%	261	0	72
Notes:							
1. Assumes 0.5 elasticity of demand for ridership compared to percentage of hourly seat capacity increases based on proposed service enhancements. Source: Victoria Transport Policy Institute.							
Source: Fehr & Peers May 2009							

Additionally, analysis of cumulative transit ridership conditions were analyzed and are presented on Table 17. The SFCTA CHAMP model was used to extrapolate growth factors for cumulative background (no Bayview Waterfront Project) transit ridership between years 2005 and 2030. Project and induced transit trips were added to the cumulative background transit ridership to obtain cumulative “with project” transit ridership volumes. Additionally, several planned developments’ impacts on transit ridership in the area were taken into account. Forecasted transit ridership was obtained for planned projects at Visitacion Valley and Executive Park and were manually added to routes serving the Bayview Waterfront Project. Table 17 displays a summary of the capacity analysis by transit route.

Table 17
Bayview Waterfront Project PM Peak Hour Transit Line Capacity Analysis

Route (direction with respect to project site)	Route Segment	Existing Max Load (2006)	2005-2030 Background Growth Factor ²	Induced Ridership	BWP Ridership	Visitation Valley, Executive Park Ridership	Future Hourly Max Load (2030)	Existing Hourly Capacity	Future Hourly Capacity	Existing Load- Capacity Ratio ¹	With Project Load- Capacity Ratio ¹
CPX Inbound		0	0	0	246	32	278	0	324	0%	86%
HPX Inbound		0	+11	0	163	0	174	0	270	0%	64%
Route 48 Inbound	From Noe Valley to Third	160	1.36	13	28	0	260	270	324	59%	80%
	From Third to Project	74	1.36	6	76	0	183	270	324	27%	57%
Route 28L Inbound	From Sunset to Balboa	0	+524	0	87	59	670	0	480	0%	140%
	From Balboa to Project	0	+319	0	460	250	1029	0	960	0%	107%
	Between CP and HPS	0	0	0	73	17	90	0	960	0%	9%
	From Sunset to Balboa	160	1.20	0	8	0	199	324	324	49%	61%
Route 29 Inbound	From Balboa to Third	123	1.20	31	17	0	195	324	648	38%	30%
	From Third to Project	21	1.20	5	309	0	340	324	648	6%	52%
	From Hill Districts to Third	334	1.00	33	40	0	407	432	540	77%	75%
	From Third to Project	84	1.00	8	162	0	254	432	540	19%	47%
T-Third Inbound	From Downtown to Mariposa	333	2.57	44	340	13	1254	808	3030	41%	41%
	From Mariposa to Project	330	2.51	44	340	18	1190	808	1616	41%	74%
	From Third to Project	15	1.00	3	165	17	200	324	540	5%	37%
	From Noe Valley to Third	147	1.00	29	117	19	312	324	540	45%	58%
Route 9 Inbound	From W. Market to Noe Valley	215	1.00	43	80	19	357	324	540	66%	66%
		274	1.00	0	41	5	320	640	480	43%	67%
		316	1.00	0	40	0	356	378	324	84%	110%
		226	1.14	0	89	0	347	560	560	40%	62%
BART Inbound		4230	1.33	0	196	0	5821	16000	20000	26%	29%
GGT Inbound		100	1.00	0	3	0	103	162	162	62%	64%
Route 43 Inbound		229	1.00	0	15	0	244	324	324	71%	75%
SAM Inbound		245	1.10	0	66	0	336	320	320	77%	105%

Table 17
Bayview Waterfront Project PM Peak Hour Transit Line Capacity Analysis

Route (direction with respect to project site)	Route Segment	Existing Max Load (2006)	2005-2030 Background Growth Factor ²	Induced Ridership	BWP Ridership	Visitation Valley, Executive Park Ridership	Future Hourly Max Load (2030)	Existing Hourly Capacity	Future Hourly Capacity	Existing Load- Capacity Ratio ¹	With Project Load- Capacity Capacity ¹
CPX Outbound		0	1.00	0	364	22	386	0	324	0%	119%
HPX Outbound		0	+34	0	173	0	207	0	270	0%	77%
Route 48 Outbound	From Third to Noe Valley	180	1.23	15	31	0	267	270	324	67%	82%
	From Project to Third	87	1.23	7	89	0	203	270	324	32%	63%
Route 28L Outbound	From Balboa to Sunset	0	+297	0	93	43	433	0	480	0%	90%
	From Project to Balboa	0	+2	0	524	178	704	0	960	0%	73%
	Between CP and HPS	0	0	0	79	12	91	0	960	0%	9%
	From Third to Sunset	124	1.29	0	13	0	173	324	324	38%	53%
Route 29 Outbound	From Third to Balboa Park	101	1.29	25	22	0	177	330	660	31%	27%
	From Project to Third	71	1.29	18	250	0	359	324	648	22%	55%
	From Third to Hill Districts	187	1.08	19	46	0	266	432	540	43%	49%
	From Project to Third	114	1.08	11	187	0	321	432	540	26%	59%
T-Third Outbound	From Mariposa to Downtown	369	3.30	49	364	9	1639	808	3030	46%	54%
	From Project to Mariposa	278	2.82	49	364	12	1165	808	1616	34%	72%
	From Project to Third	15	1.14	3	180	12	212	324	540	5%	39%
Route 24 Outbound	From Third to Noe Valley	114	1.14	23	122	13	287	324	540	35%	53%
	From Noe Valley to W. Market	144	1.14	29	84	13	289	324	540	44%	54%
Route 9 Outbound		429	1.32	0	46	4	616	640	480	67%	128%
Route 45 Outbound		300	1.13	0	46	0	385	378	324	79%	119%
Caltrain Outbound		274	1.01	0	101	0	378	560	560	49%	67%
BART Outbound		16000	1.74	0	219	0	28059	16000	20000	100%	140%
GGT Outbound		120	1.00	0	3	0	3	162	162	74%	76%
Route 43 Outbound		152	1.00	0	17	0	169	324	324	47%	52%
SAM Outbound		261	1.10	0	72	0	359	320	320	82%	112%

Notes:

1. Uses SFMTA's 85% transit vehicle capacity standard for maximum permissible loads. The maximum vehicle passenger capacity (all seats and standing room spaces occupied) is multiplied by 0.85 to obtain the 85% threshold for maximum vehicle loads. SamTrans uses a seat capacity standard of 40 seats per standard 40 ft. bus; assumed BART capacity of 100 passengers per car; assumed Caltrain seat capacity standard of 112 seats per car.
2. SFCTA: 2005 CHAMP model, 2030 Baseline CHAMP model (no project: existing transit service); Growth Factors taken at each route's 2006 maximum load point. For routes that did not exist in 2005, background ridership was taken directly from the SF CHAMP model for areas outside the project limits. Executive Park area, and Visitation Valley development area.
3. Represents forecasted background ridership at the max load point for the 28L without BWP project trips.

Source: Fehr & Peers May 2009

As shown in Table 17, most transit lines do not exceed their proposed future capacity as a result of the Bayview Waterfront project. Exceptions include Route 28L inbound, the Candlestick Point Express outbound, Route 9 outbound, Route 45 inbound and outbound, and SamTrans inbound and outbound. Many of these routes are forecasted to exceed capacity due to background cumulative growth regardless of the project contribution to ridership growth.

CONCLUSION

The person trip generation forecasts developed using the 4D method and transit mode share utility are reasonable, and have similar internalization rates to other large, high-density, mixed-use sites observed by Fehr & Peers and ITE. Furthermore, the transit utility tool that was developed for the project predicted reasonable preliminary transit mode share percentages for the project, and can be used to analyze the impact the project will have on transit serving the site. We therefore recommend using the person-trip generation and mode split information described in this report.

This letter report is the product of a number of refinements and incorporates a number changes reflecting input from a variety of City agencies. Please feel free to call if you have any questions.

Sincerely,
FEHR & PEERS



Chris Mitchell, PE
Associate

SF08-0407

APPENDIX H: SF SUPERDISTRICT MAP

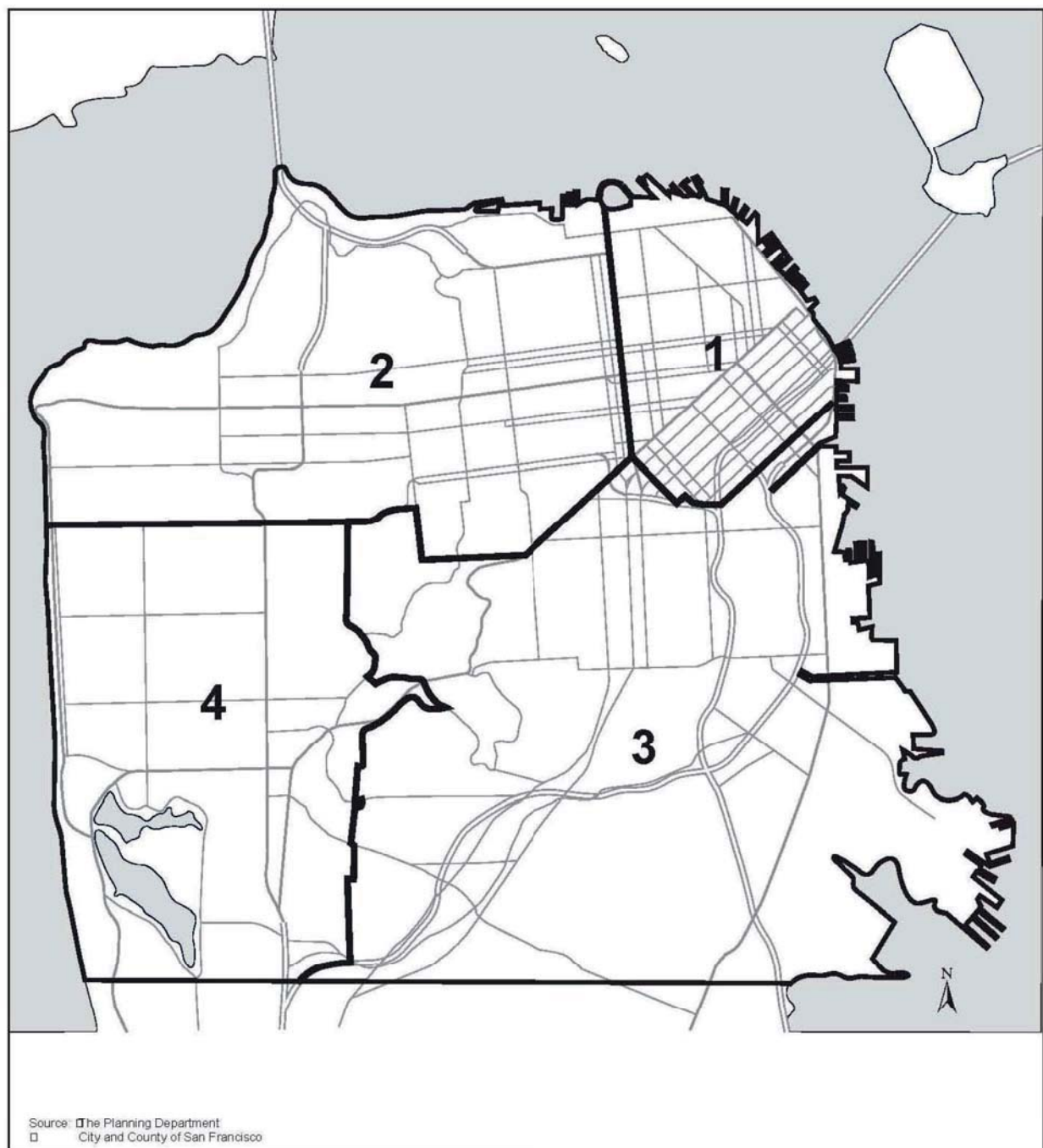


Figure A: Map of San Francisco Showing Superdistrict Boundaries

APPENDIX I: TRAVEL DEMAND ESTIMATES

Land Use Configuration

Source: India Basin Notice of Preparation of an Environmental Impact Report and Public Scoping Meeting, April 30, 2015, modified September 15, 2015 per Monica Melkesian's email dated September 10, 2015.

Land Use	Proposed Project	Maximum Commercial Variant	% unit breakdown	
			Proposed Project	Maximum Commercial Variant
RESIDENTIAL (units)	1,239	499		
Studio	198	50	16%	10%
1 BR	236	125	19%	25%
2 BR ¹	669	274	54%	55%
3+ BR	136	50	11%	10%
Senior Housing	-	-		
RETAIL (sf)	100,400	140,000		
General Retail	40,400	70,000		
Supermarket	25,000	25,000		
Sit-down Restaurant	15,000	25,000		
Composite Rate	20,000	20,000		
Fast Food	-	-		
OFFICE (sf)	174,930	860,000		
General	174,930	675,000		
Gov't - Admin	-	100,000		
Gov't - High Public Use	-	85,000		
R&D - India Basin	-			
OTHER	-			
School (students)	450	450		
Open Space (acres)	19.05	19.05		
Open Space (sf)	829,700	829,700		
Big Green open space	237,400	237,400		
India Basin Open Space	270,000	270,000		
900 Innes	78,400	78,400		
India Basin Shoreline Park	243,900	243,900		
PARKING (spaces)				
Vehicle Parking	1370	1912		
Bicycle Parking	1240	500		

1. This count does not include the 2-bedroom house on the existing site that will be part of the new project but will not generate new trips as compared to existing conditions.

Open Space Trip Generation Rate

ITE Trip Generation, 9th Edition¹

Data Collection

City of San Francisco
Heron's Head Park
Thursday, 6-25-2015

Size (acres): 22 ²

Rate Calculation

	ITE Name	ITE Code	Trips (per acre)		In	Out
AM	City Park	411	4.5		56%	44%
PM			3.5		57%	43%

Period	Start Time	Vehicle Trips		AVO ³	Auto Person Trips		Bicycles		Pedestrians		Person Trips	
		IN	OUT		IN	OUT	IN	OUT	IN	OUT	TOTAL	Hourly
AM	7:00	3	0	1.05	3	0	0	0	0	0	3	19
	7:15	4	3		4	3	0	0	0	0	7	20
	7:30	2	3		2	3	0	0	0	0	5	15
	7:45	2	1		2	1	0	0	0	0	3	17
	8:00	1	3		1	3	0	0	0	0	4	24
	8:15	2	0		2	0	0	0	0	0	2	
	8:30	4	1		4	1	2	0	0	0	7	
	8:45	6	2		6	2	1	0	1	0	10	
	8:59	2	0		2	0	0	0	0	0	2	
	Total	24	13		25	14	3	0	1	0	43	
PM	4:00	2	0	1.05	2	0	1	1	1	0	5	22
	4:15	0	0		0	0	0	2	1	0	3	22
	4:30	3	4		3	4	0	1	0	0	9	19
	4:45	0	1		0	1	0	0	0	0	1	16
	5:00	2	2		2	2	0	0	1	0	5	17
	5:15	1	2		1	2	0	0	0	0	3	
	5:30	3	2		3	1	1	0	0	0	6	
	5:45	0	1		0	2	0	0	0	0	2	
	Total	11	12		12	13	2	4	3	5	38	

Vehicle	Bicycle	Ped	Person Trip rate per acre ²		
			Total	% IN	% OUT
4.73	0.71	0.24	5.67	56%	44%
83%	13%	4%	100%		
3.68	0.88	1.75	6.30	57%	43%
58%	14%	28%	100%		

Notes:

- Source: ITE Trip Generation, 9th Edition
ITE Code 411 - City Park
AM: T = 4.5(X); Enter: 56%, Exit: 44%
PM: T = 3.5(X); Enter: 57%, Exit: 43%
ITE Code 412 - County Park
Daily: T = 2.28(X); Enter: 50%, Exit: 50%
PM: T = 0.59(X); Enter: 35%, Exit: 65%
- Source: <http://www.sport.com/index.aspx?page=210>
- AVO of 1.05 was observed based on 95% single occupancy and 5% 2-person occupancy
- Person trips were calculated by applying the mode split from the Heron's Head data collection to the ITE rates for City Park (411);

Heron's Head Data Collection:
All pedestrians and bicycles used the trail
Except for 3 vehicles, all others came to park with dogs during AM period
There is a total of 25 stalls available including 22 regular and 3 for handicapped
There was 1 car in the lot at 7 am, and 2 cars at 4 pm

ITE Land Use 412 - County Park¹

2.28 daily
0.59 PM peak hour of generator
Convert PM to daily factor:
3.86

DAILY Vehicle trip rate	DAILY Person Trip rate per acre		
	Vehicle	Bicycle	Ped
13.52	14.20	3.38	6.76
			24.34
			50%
			50%

AM 35 %	PM 35 %	AM 35 %
of Daily	of daily	of PM
	23%	26%
		90%

School Trip Generation Rate

Determining AM to PM and AM to Daily Conversion Rate

Land Use		Trip Generation (per student)		Conversion Rate PM as % of AM
ITE Name	ITE Code	AM	PM	Percent of AM
Elementary School	520	0.45	0.15	1.29
Middle School/Junior High	522	0.54	0.16	1.62
Average		0.50	0.16	31%

Determining Student Person Trip Generation Rates Using Data from Sacred Heart School

Student person trips												
	Mode split for students, not incl. parents ¹	AM peak hour - to campus			Student Mode Split	AVO ⁴	AM to PM conversion rate ⁵	PM peak hour - from campus			Daily	
		Total Trips per Student ^{2,3}	Trips In Per Student	Trips Out Per Student				Total Trips per Student	Trips In Per Student	Trips Out Per Student	Trips	In
Auto (One Student)	24%	3	2	1	92%	1.54		31%	0.94	0.31	0.63	
Auto (2+ Students)	59%		2	1.5	0.5			31%		0.16	0.47	
Walk	13%	1	1	0	6%			31%	0.31	0	0.31	
Transit	3%	1	1	0	1%			31%	0.31	0	0.31	
Other	1%	1	1	0	0%			31%	0.31	0	0.31	
Total	100%	8	6.5	1.5	100%				2.5	0.47	2.03	
Person trips per student, weighted by mode		2.1	1.5	0.5			31%	0.7	0.2	0.5	4.2	
			% In	% Out						% In	% Out	
Auto Mode ⁶			72%	28%						30%	70%	50%
Non-auto Modes			100%	0%						0%	100%	50%
All Modes			74%	26%	0%					26%	74%	50%
Auto mode split reduction as fewer drivers expected at this site than at Sacred Heart School												

PM as % of daily	PM as % of PM

15.7%	318.2%

Notes:

1. Observed student mode split from Table 7 of *Sacred Heart Campus Circulation Study*, by Fehr & Peers, dated April 24, 2015
2. Person trips for "Auto (One Student)" is 3 because it is 2 parent trips (one in, one out) plus 1 student trip.
3. Person trips for "Auto (2 Students)" is 1.5 because the two parent trips (1 in, 1 out) are distributed amongst the 2 students in the car. Plus 2 student trips in.
4. Automobile vehicle occupancy calculated by proportional average of Auto-1 Student and Auto-2 Student, factoring inbound and outbound trips.
5. AM to PM conversion rate taken from ITE assessment as per table above because PM peak hour data not available for Sacred Heart.
6. Auto mode has a different in/out split because there are parents making return leg in opposite direction. All other modes are not chapersoned and therefore do not have bidirectionality

Determining Staff Person Trip Generation Rates Using Data from Sacred Heart School

	Person trip rates ¹			PM as % of daily	AM as % of PM	Mode split ²
	staff	% in	% out			
AM		0.5	100%	25%	100%	Auto 100%
PM		0.5	0%			Walk 0%
Daily		2	50%			Transit 0%

Notes:

1. Observed staff trip rates from Table 4 of *Sacred Heart Campus Circulation Study*, by Fehr & Peers, dated April 24, 2015
2. Staff mode split was observed to be almost entirely automobile, and so mode split is slightly conservatively estimated to be 100% auto

PM to AM Conversion Factor

Land Use			Trip Generation				
Project	ITE Name	ITE Code	AM Peak		PM Peak		AM to PM Conversion factor
			Trips	% IN ¹	% OUT ¹	Trips	
Residential	Mid-Rise Apartment	223	0.3	31%	69%	0.39	77%
R&D Lab Area	Research and Development C	760	1.22	83%	17%	1.07	114%
Clinical Use	General Office Building	710	1.56	88%	12%	1.49	105%
Administrative Use	General Office Building	710	1.56	88%	12%	1.49	105%
General Office	General Office Building	710	1.56	88%	12%	1.49	105%
Restaurant	Quality Restaurant	931	0.81	82%	18%	7.49	11%
Café	High-Turnover (sit-down) res	932	10.81	55%	45%	9.85	110%
Supermarket	Supermarket	850	3.4	62%	38%	9.48	36%
General Retail	Shopping Center	820	0.96	62%	38%	3.71	26%
Alternates not used:							
Administrative Use ²	Government Office Complex	733	2.21			2.85	78%
General Office ³	Office Park	750	1.71			1.48	116%

Notes:

1. In/out splits are for peak hour of nearby traffic, except for Quality Restaurant where data not available and peak hour of generator was used instead
2. Not used because sample size unacceptably low
3. Not used because suburban land uses represented only - not applicable to project
4. Since all office types used in/out split for general office, they have been summed in that row

Weighted Average AM Conversion Factors and In/Out Splits

Land Use Type	Amount (units, ksf, etc)	Proposed Project		AWI - Weighted Average Out %	Maximum Commercial Variant			
		Weighted Average PM to AM Conversion Factor	Weighted Average In %		Amount (units, ksf, etc) ⁴	Weighted Average In %	Weighted Average Out %	
Residential	1239	77%	31%	69%	499	77%	31%	69%
	175	105%	88%	12%	0	105%	88%	12%
	0				860			
Office	0				0			
	0				0			
	15				0			
Retail	20	48%	64%	36%	25			
	20							
	25							
	40.4					41%	65%	35%

Purpose of this table:

In this table, weighted average AM/PM conversion factors and in/out splits are developed for use in vehicle trip generation in/out calculation for AM and PM. By the vehicle trip generation stage, some uses (such as retail, office, and residential) are aggregated for simplicity.

SF Guidelines Trip Generation Rates

Land Use Type	Unit	Rate	PM Peak Hour %	Employee Density	Notes
General	KSF	18.1	8.5%	276	
Gov't - Admin	KSF	36.4	16.2%	276	
Gov't - High Public Use	KSF	43.3	14.5%	276	
Studio	DU	7.5	17.3%		
1 BR	DU	7.5	17.3%		
2 BR	DU	10	17.3%		
3+ BR	DU	10	17.3%		
Senior Housing	DU	5	6.0%		
General Retail	KSF	150	9.0%	350	
Supermarket	KSF	297	7.3%	350	
Sit-down Restaurant	KSF	200	13.5%	350	
Composite Rate	KSF	600	13.5%	350	
Fast Food	KSF	1400	13.5%	240	
Hotel/Motel	Room	7	10.0%	0.9	
Manufacturing/Industrial	KSF	7.9	12.4%	567	
Athletic Club	KSF	57	10.5%		
Cineplex Theater	Seat	1.13	23.0%	0.023	employees/seat
Daycare Center	KSF	67	18.0%		

Source: *SF TIA Guidelines* Appendix C Table C-1

Work/Non-work Splits	Daily		PM Peak Hour	
	Work	Non-Work	Work	Non-Work
General	36%	64%	83%	17%
Government	20%	80%	83%	17%
Retail	4%	96%	4%	96%
Hotel/Motel	12%	88%	60%	40%
Manufacturing/Industrial	40%	60%	67%	33%
Residential	33%	67%	50%	50%

American Community Survey Mode Choice Calculations

Workplace mode - to be applied to residential trips

Census Tract 231.03

2009-2013 ACS 5-year estimates

B08301: MEANS OF TRANSPORTATION TO WORK - Universe: Workers 16 years and over

..\Data Collection\Census Data\ACS_13_5YR_B08301.xls

Car, truck, or van - drove alone:	379	50.9%
Car, truck, or van - carpooled	53	7.1%
Public Transportation (excluding taxicab):	247	33.2%
Walked:	7	0.9%
Taxicab, motorcycle, bicycle, or other means:	59	7.9%
Worked at home:	10	<- excluded from mode share
Total	755	100.0%

Calculate Vehicle Occupancy	People	Occupancy	Vehicles
Drove alone	379	1	379
In 2-person carpool	53	2	26.5
In 3-person carpool	0	3	0
In 4-person carpool	0	4	0
In 5- or 6-person carpool	0	5	0
In 7-or-more-person carpool	0	7	0
Total Vehicles:	432		405.5

Average Vehicle Occupancy: 1.0653514

Using CPHPS Memo to Determine Mode Split for Cumulative Scenario
& Applying Differences in 2015 and 2040 CHAMP Models to Arrive at Mode Split For Baseline

Mode	Central SoMa CHAMP Model Runs				SF Guidelines (SD-3) ³				CPHPS Memo (2009)			CPHPS - Cumulative		Convert...	CPHPS - Existing/Baseline (post CHAMP adjustment)	
	SD-3		TAZ 446		Aggregate based on Proposed Project	Non-Work: Retail	Non-Work: Other	Work	Aggregate	Work ¹	Non-work ¹	Work ²	Non-Work ²	2015 TAZ to 2040 TAZ	Work ²	Non-Work ²
	2015	2040	2015	2040												
Auto	58%	56%	64%	55%	64%	71%	64%	57%	75%	70%	83%	58%	69%	-8%	67%	78%
Transit	14%	17%	12%	20%	16%	20%	12%	19%	22%	27%	15%	23%	12%	8%	15%	4%
Walk	17%	19%	8%	19%	16%	6%	22%	16%				16%	16%	10%	16%	16%
Bike	2%	3%	3%	3%	-	-	-	-	3%	3%	3%	3%	3%	1%	2%	2%
Other	7%	5%	14%	2%	8%	3%	2%	8%						-11%		
Total						1008	1639	939				100.0%	100.0%		100.0%	100.0%
Trips						28%	46%	26%								
%																

Notes:

1. See "Deriving Aggregated Work and Non-Work Mode Splits from CPHPS Memo" Appendix sheet for derivation of these aggregate figures
2. Walk mode split fixed at 16% = Guidelines walk mode share for Project. This represents a fixed internalization rate
3. Source: *SF Guidelines*, 2002 Tables E-5, E-14, and E-15

Deriving Aggregated Work and Non-Work Mode Splits from CPHPS Memo

Zone #	Neighborhood	Total Work Trips ¹	Transit Work Trips ²	Bicycle Work Trips ³	Auto Work Trips	Total Non-work Trips ¹	Transit Non-work Trips ⁴	Bicycle Non-work Trips ³	Auto Non-work Trips
1	Downtown	666	501	20	145	322	135	10	177
2	SoMa	330	238	10	82	208	86	6	116
3	North Beach	293	220	9	64	180	74	5	101
4	Western Market	403	125	12	266	370	78	11	281
5	Mission	666	103	20	543	860	110	26	724
6	Noe Valley	247	59	7	181	483	72	14	397
7	Marina	228	71	7	150	194	55	6	133
8	Richmond	116	27	3	86	64	17	2	45
9	Bayshore	559	106	17	436	2044	267	61	1716
10	Outer Mission	195	43	6	146	447	64	13	370
11	Hill District	126	29	4	93	207	26	6	175
12	Sunset	289	95	9	185	274	66	8	200
16	Bayview Project	83	16	2	65	305	40	9	256
13, 17, 18, 19	South Bay	1845	267	55	1523	3170	310	95	2765
14	East Bay	1029	82	31	916	575	17	17	541
15	North Bay	177	2	5	170	82	4	2	76
	Total	7252	1984	217	5051	9785	1421	291	8073
			27%	3%	70%		15%	3%	83%

Source:

1. CPHPS Memo (2009) - Table 6
2. CPHPS Memo (2009) - Table 10
3. Assumed that 3% of all external trips are by bicycle, as shown in Table 12 of CPHPS Memo
4. CPHPS Memo (2009) - Table 11

American Community Survey Trip Distribution Calculations

Workplace locations - to be applied to residential trips

SF County v Non SF County work split

Census Tract 231.03

2009-2013 ACS 5-year estimates

B08130: MEANS OF TRANSPORTATION TO WORK BY PLACE OF WORK--STATE AND COUNTY LEVEL - Universe: Workers 16 years and over

..\\Data Collection\Census Data\ACS_13_5YR_B08130.xls

Worked in County of Residence	620	82.1%
Worked outside County of Residence:	135	17.9%
Total	755	100.0%

Total Distribution for Residential based work trips via census data

SD-1	49.3%
SD-2	10.9%
SD-3	10.9%
SD-4	10.9%
East Bay	4.7%
North Bay	1.6%
South Bay	10.9%
Other	0.7%

Summary:

SF/Non-SF work place was determined using 231.03 census tract data. SF work trips were split between superdistricts as per SF Guidelines with 60% working in SD-1 and the remaining 40% split uniformly between other superdistricts.

For Non-SF work trips, data was gathered from Bay Area Census for county-to-county commute flows. Work trips to SF County were excluded. Distribution of Non-SF work trips was then calculated for North Bay, East Bay, South Bay, and other. These % were applied to the Non-SF work trips above.

Out of SF County Place of Work Split

2006-2010 ACS County to County Commute Flows

<http://www.bayareacensus.ca.gov/transportation.htm>

..\\Data Collection\Census Data\2006-2010_ACS_Commute_Flows_Bay_Area_residence.xls

Bay Area Aggregates, Place of Work	Number	%
San Francisco County	330,965	76.2%
North Bay (Marin, Sonoma, Napa, Solano)	9,299	2.1%
East Bay (Alameda, Contra Costa)	26,860	6.2%
South Bay (San Mateo, Santa Clara)	62,510	14.4%
Other	4,040	0.9%
Total	433,674	100.0%

Bay Area Aggregates, EXCLUDING SF County

North Bay (Marin, Sonoma, Napa, Solano)	9,299	9.1%
East Bay (Alameda, Contra Costa)	26,860	26.2%
South Bay (San Mateo, Santa Clara)	62,510	60.9%
Other	4,040	3.9%
Total	102,709	100.0%

Proposed Project

Project Land Use Inputs										Proposed Project										Land Use Impacts										User Inputs Land Use Data																			
Project Land Use Inputs					Residential					Commercial					Industrial					Public					Other					Project Location:					Use Inputs Land Use Data														
Studio 1 BR 2 BR 3+ BR Senior Housing					Qty 138 236 609 136 1239					Type General Retail Supermarket Sit-down Restaurant Fast Food					Retail KSF 40.4 25 15 20 100.4					Type General Gov't - Admin Gov't - High Public Use R&D - Indus Basin					Office KSF 174.93 0 0 0 374.93					Type Hotel/Motel (Rooms) Manufacturing/Industrial (KSF) Athletic Club (KSF) Cinplex Theater (KSF) Daycare Center (KSF)					SD-3 Yellow shade indicates manual entry < for your reference														
Total					1239					Total					100.4					Total					374.93					Total					0					Land Use Impacts					Generate total person trips based on land use type * lookup of the daily rate from SFG_Tables tab.				
Daily Trip Generation Cals																																																	
Studio					Residential					Retail					Office					Hotel/Motel					Other					Daily Trip Generation, Trip Type, Trip Direction																			
1 BR					1,485					General Retail					General					Office					Manufacturing/Indu					Other					0					0									
2 BR					1,770					Supermarket					Gov't - Admin					Gov't - High Public Use					Manufacturing/Indu					Athletic Club					0					0									
3+ BR					6,690					Sit-down Restaurant					Gov't - High Public Use					Gov't - High Public Use					Athletic Club					0					0														
Senior Housing					1,360					Sit-down Restaurant					Gov't - High Public Use					Gov't - High Public Use					Athletic Club					0					0														
Total					11,305					Fast Food					Gov't - High Public Use					Gov't - High Public Use					Athletic Club					0					0					Total Daily Project Trip Generation: 34956.23									
Inbound					Outbound					Inbound					Outbound					Inbound					Outbound					Inbound					Outbound					Inbound					Outbound				
50%					50%					50%					50%					50%					50%					50%					50%					50%					50%				
IN					OUT					IN					OUT					IN					OUT					IN					OUT					IN					OUT				
Work Trips					1,865					Work Trips					410					Work Trips					569,92194					Work Trips					0					0									
Non-Work Trips					3,787					Non-Work Trips					9,833					Non-Work Trips					1013.13456					Non-Work Trips					0					0									
Total					5,652					Total					14,243					Total					1,083,11750					Total					0					Total Work Trips: 2844.947									
PM Peak Hour Trip Generation Cals																																																	
Studio					Residential					Retail					Office					Hotel/Motel					Other					Daily Trip Generation, Trip Type, Trip Direction																			
1 BR					257					General Retail					General					Office					Manufacturing/Indu					Other					0					0									
2 BR					306					Supermarket					Gov't - Admin					Gov't - High Public Use					Manufacturing/Indu					Athletic Club					0					0									
3+ BR					1,157					Sit-down Restaurant					Gov't - High Public Use					Gov't - High Public Use					Athletic Club					0					0														
Senior Housing					235					Sit-down Restaurant					Gov't - High Public Use					Gov't - High Public Use					Athletic Club					0					0														
Total					1,956					Fast Food					Gov't - High Public Use					Gov't - High Public Use					Athletic Club					0					0					Total PM Peak Project Trip Generation: 4257.22									
Inbound					Outbound					Inbound					Outbound					Inbound					Outbound					Inbound					Outbound					Inbound					Outbound				
100%					100%					0%					100%					0%					100%					0%					100%					100%									
IN					OUT					IN					OUT					IN					OUT					IN					OUT					IN					OUT				
Work Trips					928					Work Trips					976					Work Trips					0					Work Trips					0					0									
Non-Work Trips					323					Non-Work Trips					81					Non-Work Trips					22.87603243					Non-Work Trips					0					0									
Total					1251					Total					1057					Total					976					Total					0					Total Work Trips: 2844.947									
PM Peak Trip Generation, Trip Type, Trip Direction																																																	
Total PM Peak Trip Generation: 4401.7156 (Plus School, Open Space) * In/out distributions from SFG Table C.2																																																	
Total person trips is split into work/non-work and in/out matrix. e.g. work trip inbound = total trips*split of work trips *split of inbound trips Work/non-work split is based on a lookup of the PM Peak split according to land use from SFG_Tables tab. In/out distribution for PM Peak is based on text from Table C.2. Can be modified if need be.																																																	

Report Table: Project Person Trip Generation

Land Use	Size	Trip Generation Rates				Person Trips Generated		
		Daily Trip Rate	AM Peak Hour as % of Daily	PM Peak Hour as % of Daily	AM Peak Hour as % of PM	Daily	AM Peak Hour	PM Peak Hour
Proposed Project								
Residential	198 studio units	7.5 per unit	13.3%	17.3%	77%	1,485	198	257
	236 1-bedroom units	7.5 per unit	13.3%	17.3%	77%	1,770	235	306
	805 2+ bedroom units	10 per unit	13.3%	17.3%	77%	8,050	1,072	1,393
	Subtotal					11,305	1,505	1,956
Commercial	174,930 sf General Office	18.1 per ksf	8.9%	8.5%	105%	3,166	282	269
	Subtotal					3,166	282	269
Retail	15,000 sf Restaurant	200 per ksf	1.5%	13.5%	11%	3,000	44	405
	20,000 sf Café	200 per ksf	14.8%	13.5%	110%	4,000	593	540
	25,000 sf Supermarket	297 per ksf	2.6%	7.3%	36%	7,425	194	542
	40,400 sf General Retail	150 per ksf	2.3%	9.0%	26%	6,060	141	545
	Subtotal					20,485	972	2,032
Educational	450 students	4.2 per student	50.0%	15.7%	318%	1,890	945	297
	95 staff	2.0 per staff	25.0%	25.0%	100%	190	48	48
	Subtotal					2,080	993	345
Open Space	19.05 acres	24.3 per acre	23.3%	25.9%	90%	464	108	120
Total		--		--	--	37,500	3,860	4,722
Maximum Commercial Program Variant								
Residential	50 studio units	7.5 per unit	13.3%	17.3%	77%	375	50	65
	125 1-bedroom units	7.5 per unit	13.3%	17.3%	77%	938	125	162
	324 2+ bedroom units	10 per unit	13.3%	17.3%	77%	3,240	432	561
	Subtotal					4,553	607	788
Commercial	85,000 sf Clinical Use	43.3 per ksf	15.2%	14.5%	105%	3,681	559	534
	100,000 sf Administrative	36.4 per ksf	17.0%	16.2%	105%	3,640	618	590
	400,000 sf General Office & 275,000 sf R&D Lab Area	18.1 per ksf	8.9%	8.5%	105%	12,218	1,087	1,038
	Subtotal					19,539	2,264	2,162
Retail	25,000 sf Restaurant	200 per ksf	1.5%	13.5%	11%	5,000	73	675
	20,000 sf Café	200 per ksf	14.8%	13.5%	110%	4,000	593	540
	25,000 sf Supermarket	297 per ksf	2.6%	7.3%	36%	7,425	194	542
	70,000 sf General Retail	150 per ksf	2.3%	9.0%	26%	10,500	245	945
	Subtotal					26,925	1,105	2,702
Educational	450 students	4.2 per student	50.0%	15.7%	318%	1,890	945	297
	95 staff	2.0 per staff	25.0%	25.0%	100%	190	48	48
	Subtotal					2,080	993	345
Open Space	19.05 acres	24.3 per acre	23.3%	25.9%	90%	464	108	120
Total		--		--	--	53,561	5,077	6,117

Trip Generation By Mode

Retail Pass-by Rate 10%

PROPOSED PROJECT

Land Use	Net New Land Use	Person Trip Generation			Mode Share Percentage					Person Trip Generation (by Mode)				Vehicle Trip Generation				Transit Trips												
		Work Trips	Non-Work Trips	Total	Auto (Work)	Auto (Non-Work)	Transit (Work)	Transit (Non-Work)	Bike (Work)	Bike (Non-Work)	Walk (Work)	Walk (Non-Work)	Automobile	Transit	Bike	Walk	Total	In % ²	Out % ²	In	Out	Total ³	In % ⁴	Out % ⁴	In	Out	Total			
AM PEAK HOUR																														
Open Space	829.7 ksf	0	108	108	-	-	-	-	-	-	-	4%	90	0	14	5	109	56%	44%	48	38	86	100%	0%	0	0	0	0	0	
School	40 ksf	48	945	993	100%	92%	0%	0%	0%	0%	0%	6%	915	14	5	59	993	72%	28%	427	167	594	100%	0%	14	0	14	0	14	
Retail	100.4 ksf	39	933	972	67%	78%	15%	4%	3%	3%	15%	1%	754	43	29	146	972	64%	36%	253	143	398	63%	37%	27	16	43	37	43	
Office	174.93 ksf	234	48	282	63%	73%	14%	4%	2%	2%	21%	21%	194	37	8	42	281	88%	12%	122	17	139	89%	11%	33	4	37	37	43	
Residential	1,239 DU	752	752	1504	-	-	-	-	-	-	-	-	1091	143	45	226	1505	31%	69%	201	447	648	31%	69%	44	99	143	99	143	
Total	-	1073	2786	3859	-	-	-	-	-	-	-	-	3044	237	101	478	3860	56%	44%	1051	814	1865	50%	50%	118	119	237	118	237	
PM PEAK HOUR																														
Open Space	829.7 ksf	0	120	120	-	-	-	-	-	-	-	28%	70	0	17	33	120	57%	43%	38	29	67	100%	0%	0	0	0	0	0	
School	40 ksf	48	297	345	100%	92%	0%	1%	0%	0%	6%	6%	321	4	1	19	345	30%	70%	62	146	208	0%	100%	0	4	4	4	4	
Retail	100.4 ksf	81	1951	2032	63%	73%	14%	4%	2%	2%	21%	21%	1476	89	41	427	2032	48%	52%	376	403	779	44%	56%	39	50	89	39	50	
Office	174.93 ksf	223	46	269	63%	73%	14%	4%	2%	2%	21%	21%	175	33	5	57	270	10%	90%	12	113	125	3%	97%	1	32	32	32	33	
Residential	1,239 DU	978	978	1956	-	-	-	-	-	-	-	-	1330	176	39	411	1956	64%	36%	506	284	790	91%	9%	160	16	176	16	176	
Total	-	1331	3392	4722	-	-	-	-	-	-	-	-	3372	302	103	947	4724	50%	50%	994	975	1969	66%	34%	200	102	302	102	302	
Retail Pass-by Trips																														
										71%	6%	2%	20%	100%					38	40					66%	34%				
										Retail Pass-by Trips																				
										25				15				40												

Trip Generation By Mode

MAXIMUM COMMERCIAL VARIANT

Land Use	Net New Land Use	Person Trip Generation			Mode Share Percentage*					Person Trip Generation (by Mode)			Vehicle Trip Generation					Transit Trips									
		Work Trips	Non-Work Trips	Total	Auto (Work)	Auto (Non-Work)	Transit (Work)	Transit (Non-Work)	Bike (Work)	Bike (Non-Work)	Walk (Work)	Walk (Non-Work)	Automobile	Transit	Bike	Walk	Total	In % ²	Out % ²	In	Out	Total ³	In % ⁴	Out % ⁴	In	Out	Total
AM PEAK HOUR																											
Open Space	829.7 ksf	0	108	108		83%		0%		13%		4%	90	0	14	5	109	56%	44%	48	38	86	100%		0	0	0
School	40 ksf	48	945	993	100%	92%		1%		0%		6%	915	14	5	59	993	72%	28%	427	167	594	100%	0%	14	0	14
Retail	140 ksf	44	1060	1105						0%			901	60	33	110	1164	64%	36%	307	169	476	65%	35%	39	21	60
R&D/Office	860 ksf	1879	385	2263	71%	82%	16%			3%	10%		1649	320	68	226	2173	88%	12%	1039	142	1181	88%	12%	282	38	320
Residential	499 DU	303	303	606									463	64	18	61	606	31%	69%	85	190	275	31%	69%	20	44	64
Total				5075									4018	458	138	461	5075	73%	27%	1906	706	2612	78%	22%	355	103	458
79%																											
9%																											
3%																											
9%																											
100%																											
27%																											
79%																											
48																											
PM PEAK HOUR																											
Open Space	829.7 ksf	0	120	120		58%		0%		14%		28%	70	0	17	33	120	57%	43%	38	29	67		0	0	0	
School	40 ksf	48	297	345	100%	92%		1%		0%		6%	321	4	1	19	345	30%	70%	62	146	208	100%	0	4	4	
Retail	140 ksf	108	2594	2702						0%			2043	146	54	459	2702	49%	51%	534	545	1079	36%	64%	52	94	146
R&D/Office	860 ksf	1794	368	2162	66%		15%			2%	17%		1464	288	43	368	2162	10%	90%	100	948	1048	2%	98%	7	281	288
Residential	499 DU	394	394	788									559	79	16	134	788	64%	36%	213	119	332	81%	19%	14	15	79
Total		-	-	6116	-	-	-	-	-	-	-	-	4457	517	131	1043	6116	35%	65%	947	1787	2734	24%	76%	123	394	517
73%																											
8%																											
2%																											
17%																											
100%																											
65%																											
55																											
108																											
24%																											
76%																											

Notes:

1. Mode Share Percentages are taken from two sources:
 - For Open Space and School they are taken from observation data as documented in other appendices
 - For retail, office, and residential, they are taken from CP-HPS 2009 memo, with a fixed 17% walk mode split, and are adjusted based on difference between 2015 and 2040 CHAMP model to reflect absence of transit improvements that CPHPS assumed.
2. In/Out Rates are taken from two sources:
 - For Open Space and School they are taken from observation data as documented in other appendices
 - For retail, office, and residential, they are taken from SF Guidelines for PM (weighted by work/non-work percentages from CPHPS memo), and from ITE Trip Generation Handbook for AM
3. Vehicle Trip Generation Totals are taken from two sources:
 - For Open Space and School they are based off observation data (factoring in AVO and auto in/out percentages) as documented in other appendices
 - For retail, office, and residential, they are taken from a separate appendix spreadsheet, "Vehicle Trip Generation By Land Use Category", where SF-CHAMP trip distribution is combined with in/out splits (unique for each origin/destination) and AVOs from the SF Guidelines for each land use category.
4. Transit In/Out Rates are taken from two sources:
 - For Open Space and School they are taken from observation data as documented in other appendices
 - For retail, office, and residential, they are taken from SF Guidelines for PM by work/non-work (weighted by work/non-work transit percentages from SF CHAMP), and from ITE Trip Generation Handbook for AM
5. Retail Pass-By Rate
 - Taken from ITE for land use code 820 Shopping Center

Indicates numbers for Traffix

Trip Generation By Mode

Retail Pass-by Rate 10%

PROPOSED PROJECT (CUMULATIVE SCENARIO)

Land Use	Net New Land Use	Person Trip Generation			Mode Share Percentage*								Person Trip Generation (by Mode)				Vehicle Trip Generation				Transit Trips																
		Work Trips	Non-Work Trips	Total	Auto (Work)	Auto (Non-Work)	Transit (Work)	Transit (Non-Work)	Bike (Work)	Bike (Non-Work)	Walk (Work)	Walk (Non-Work)	Automobile	Transit	Bike	Walk	Total	In % ²	Out % ²	In	Out	Total ³	In % ⁴	Out % ⁴	In	Out	Total										
AM PEAK HOUR																																					
Open Space	829.7 ksf	0	108	108	0%	75%	0%	0%	0%	13%	0%	4%	81	9	14	5	109	56%	44%	43	34	77	50%	50%	5	5	5	93	0	93							
School	40 ksf	48	945	993	92%	84%	8%	9%	0%	0%	0%	6%	836	93	5	59	993	72%	28%	390	133	543	100%	0%	93	0	93	0	93								
Retail	100.4 ksf	39	933	972	92%	84%	8%	9%	0%	0%	0%	6%	976	121	29	146	972	64%	36%	227	108	357	64%	36%	77	44	121	44	121								
Office	174.93 ksf	234	48	282	59%	70%	23%	12%	3%	3%	15%	15%	172	60	8	42	282	88%	12%	108	15	123	88%	12%	53	7	60	7	60								
Residential	1,239 DU	752	1504	2256	-	-	-	-	-	-	-	-	397	263	45	226	1504	31%	69%	178	397	575	31%	69%	82	181	263	82	181								
Total	-	-	-	3859	-	-	-	-	-	-	-	-	2735	546	101	478	3860	56%	44%	946	729	1675	57%	43%	310	237	546	237	546								
																		Retail Pass-by Trips				56%				44%				57%				43%			
																						23				13				36							
PM PEAK HOUR																																					
Open Space	829.7 ksf	0	120	120	0%	50%	0%	0%	0%	14%	0%	28%	60	10	17	33	120	57%	43%	33	25	58	50%	50%	5	5	5	10	0	10							
School	40 ksf	48	297	345	92%	84%	8%	9%	0%	0%	0%	6%	293	32	1	19	345	30%	70%	57	133	190	0%	100%	0	32	32	32	32								
Retail	100.4 ksf	81	1951	2032	92%	84%	8%	9%	0%	0%	0%	6%	1313	252	41	427	2032	52%	48%	361	333	694	46%	54%	117	135	252	117	135								
Office	174.93 ksf	223	46	269	55%	65%	22%	12%	2%	2%	21%	21%	153	55	5	57	270	10%	90%	11	98	109	5%	95%	3	52	55	55	55								
Residential	1,239 DU	978	978	1956	-	-	-	-	-	-	-	-	1173	332	39	411	1955	68%	32%	476	219	695	80%	20%	264	68	332	264	332								
Total	-	-	-	4722	-	-	-	-	-	-	-	-	2992	681	103	947	4723	54%	46%	938	808	1746	57%	43%	389	369	681	369	681								
																		Retail Pass-by Trips				56%				44%				57%				43%			
																						36				33				69							

Trip Generation By Mode

PROJECT VARIANT (CUMULATIVE SCENARIO)

Land Use	Net New Land Use	Person Trip Generation			Mode Share Percentage ¹						Person Trip Generation (by Mode)				Vehicle Trip Generation				Transit Trips										
		Work Trips	Non-Work Trips	Total	Auto (Work)	Auto (Non-Work)	Transit (Work)	Transit (Non-Work)	Bike (Work)	Bike (Non-Work)	Walk (Work)	Walk (Non-Work)	Automobile	Transit	Bike	Walk	Total	In % ²	Out % ²	In	Out	In % ⁴	Out % ⁴	In	Out	Total			
AM PEAK HOUR																													
	829.7 ksf	0	108	108	0%	75%	0%	0%	8%	0%	13%	0%	4%	81	9	14	5	109	56%	44%	43	34	77	50%	50%	5	5	9	
Open Space	40 ksf	48	945	993	92%	84%	8%	9%	0%	0%	0%	6%	836	93	5	59	993	72%	28%	390	153	543	100%	0%	93	0	93		
Retail	140 ksf	44	1060	1103										813	148	33	110	1104	65%	35%	278	152	430	65%	35%	96	52	148	
R&D/Office	860 ksf	1879	385	2263	63%	74%	24%	13%	3%	10%	10%		1468	501	68	226	2263	88%	12%	924	126	1050	88%	12%	441	60	501		
Residential	499 DU	303	303	606										413	112	18	61	606	51%	69%	76	170	246	51%	69%	35	77	112	
Total	-	-	-	5075									3613	863	138	461	5075	73%	27%	1711	653	2346	73%	27%	670	194	863		
													71%	17%	3%	9%	100%			28	15	43		78%	22%				
PM PEAK HOUR																													
	829.7 ksf	0	120	120	0%	50%	0%	8%	0%	14%	0%	28%	60	10	17	33	120	57%	43%	33	25	58	50%	50%	5	5	10		
Open Space	40 ksf	48	297	345	92%	84%	8%	9%	0%	0%	0%	6%	293	32	1	19	345	30%	70%	57	133	190	0%	100%	0	32	32		
Retail	140 ksf	108	2594	2702									1827	362	54	459	2702	50%	50%	480	485	965	43%	57%	156	206	362		
R&D/Office	860 ksf	1794	368	2162	58%	68%	23%	13%	2%	17%	17%		1291	460	43	368	2162	10%	90%	92	831	923	5%	95%	22	438	460		
Residential	499 DU	394	394	788									496	142	16	134	788	65%	35%	191	103	294	75%	25%	106	36	142		
Total	-	-	-	6116									3967	1006	131	1013	6117	35%	65%	853	1577	2430	29%	71%	289	717	1006		
													65%	16%	2%	17%	100%			48	49	97		25%	71%				
Retail Pass-by Trips																													

Notes:

1. Mode Share Percentages are all adjusted using the same source:
 - For school and open space they are taken from CP-HPS 2009 memo, with all non-walk modes adjusted based on difference between 2015 and 2040 CHAMP model to reflect absence of transit improvements that CPHPS assumed.
 - For residential, retail, and office uses they are taken from CP-HPS 2009 memo, with a fixed 17% walk mode split, with all non-walk modes adjusted based on difference between 2015 and 2040 CHAMP model to reflect absence of transit improvements that CPHPS assumed.
2. In/Out Rates are taken from two sources:
 - For Open Space and School they are taken from observation data as documented in other appendices
 - For retail, office, and residential, they are taken from SF Guidelines for PM (weighted by work/non-work percentages from CPHPS memo), and from ITE Trip Generation Handbook for AM
3. Vehicle Trip Generation Totals are taken from two sources:
 - For Open Space and School they are based off observation data (factoring in AVO and auto in/out percentages) as documented in other appendices
 - For retail, office, and residential, they are taken from a separate appendix spreadsheet, "Vehicle Trip Generation By Land Use Category", where SF-CHAMP trip distribution is combined with in/out splits (unique for each origin/destination) and AVOs from the SF Guidelines for each land use category.
4. Transit In/Out Rates are taken from two sources:
 - For Open Space and School they are taken from observation data as documented in other appendices
 - For retail, office, and residential, they are taken from SF Guidelines for PM by work/non-work (weighted by work/non-work transit percentages from SF CHAMP), and from ITE Trip Generation Handbook for AM
5. Retail Pass-By Rate
 - Taken from ITE for land use code 820 Shopping Center

Vehicle Trip Generation By Land Use Category

Proposed Project (Cumulative Scenario) - AM Peak Hour - Residential

Total Automobile Trips	970
Auto Work Trips (All)	444
Auto Non-Work Retail Trips	0
Auto Non-Work Other Trips	527

Proposed Project (Cumulative Scenario) - PM Peak Hour - Residential

Total Automobile Trips	1173
Auto Work Trips (All)	538
Auto Non-Work Retail Trips	0
Auto Non-Work Other Trips	636

Project Variant (Cumulative Scenario) - AM Peak Hour - Residential

Total Automobile Trips	415
Auto Work Trips (All)	191
Auto Non-Work Retail Trips	0
Auto Non-Work Other Trips	224

Project Variant (Cumulative Scenario) - PM Peak Hour - Residential

Total Automobile Trips	496
Auto Work Trips (All)	228
Auto Non-Work Retail Trips	0
Auto Non-Work Other Trips	268

Trip Distribution (SF-CHAMP)				Auto Person Trip Distribution				Persons Per Auto (SF Guidelines)				Vehicle Trips			
Zone	Work	Non-Work		Auto Work	Auto Non-work	Auto Non-work	Auto Non-work	Work Trips	Retail	Other		Work Trips	Retail	Other	
SD-1	20%	7%		488	0.0	36.9	1.3	1.3	1.76	2.03		68	0	18	
SD-2	11%	6%		488	0.0	31.6	1.26	1.26	1.52	1.97		39	0	16	
SD-3	29%	44%		1288	0.0	231.9	1.25	2.04	2.04	2.43		103	0	95	
SD-4	4%	3%		178	0.0	15.8	1.48	1.78	1.78	2.51		12	0	6	
East Bay	12%	6%		53.3	0.0	31.6	1.61	1.77	1.77	2.59		33	0	12	
North Bay	2%	1%		8.9	0.0	5.3	1.44	1.44	1.44	2.11		6	0	2	
South Bay	22%	33%		97.7	0.0	173.9	1.13	1.98	1.98	2.28		86	0	76	
												348	0	227	

575 Total Vehicle Trips

Proposed Project (Cumulative Scenario) - PM Peak Hour - Residential

Trip Distribution (SF-CHAMP)				Auto Person Trip Distribution				Persons Per Auto (SF Guidelines)				Vehicle Trips			
Zone	Work	Non-Work		Auto Work	Auto Non-work	Auto Non-work	Auto Non-work	Work Trips	Retail	Other		Work Trips	Retail	Other	
SD-1	20%	7%		107.6	0.0	44.5	1.3	1.3	1.76	2.03		83	0	22	
SD-2	11%	6%		59.2	0.0	38.2	1.26	1.26	1.52	1.97		47	0	19	
SD-3	29%	44%		156.0	0.0	279.8	1.25	2.04	2.04	2.43		125	0	115	
SD-4	4%	3%		21.5	0.0	19.1	1.48	1.78	1.78	2.51		15	0	8	
East Bay	12%	6%		64.6	0.0	38.2	1.61	1.77	1.77	2.59		40	0	15	
North Bay	2%	1%		10.8	0.0	6.4	1.44	1.44	1.44	2.11		7	0	3	
South Bay	22%	33%		118.4	0.0	209.9	1.13	1.98	1.98	2.28		105	0	92	
												421	0	274	

695 Total Vehicle Trips

Project Variant (Cumulative Scenario) - AM Peak Hour - Residential

Trip Distribution (SF-CHAMP)				Auto Person Trip Distribution				Persons Per Auto (SF Guidelines)				Vehicle Trips			
Zone	Work	Non-Work		Auto Work	Auto Non-work	Auto Non-work	Auto Non-work	Work Trips	Retail	Other		Work Trips	Retail	Other	
SD-1	20%	7%		38.2	0.0	15.7	1.3	1.3	1.76	2.03		29	0	8	
SD-2	11%	6%		21.0	0.0	13.4	1.26	1.26	1.52	1.97		17	0	7	
SD-3	29%	44%		55.4	0.0	98.6	1.25	2.04	2.04	2.43		44	0	41	
SD-4	4%	3%		7.6	0.0	6.7	1.48	1.78	1.78	2.51		5	0	3	
East Bay	12%	6%		22.9	0.0	13.4	1.61	1.77	1.77	2.59		14	0	5	
North Bay	2%	1%		3.8	0.0	2.2	1.44	1.44	1.44	2.11		3	0	1	
South Bay	22%	33%		42.0	0.0	73.9	1.13	1.98	1.98	2.28		37	0	32	
												150	0	96	

246 Total Vehicle Trips

Project Variant (Cumulative Scenario) - PM Peak Hour - Residential

Trip Distribution (SF-CHAMP)				Auto Person Trip Distribution				Persons Per Auto (SF Guidelines)				Vehicle Trips			
Zone	Work	Non-Work		Auto Work	Auto Non-work	Auto Non-work	Auto Non-work	Work Trips	Retail	Other		Work Trips	Retail	Other	
SD-1	20%	7%		45.6	0.0	18.8	1.3	1.3	1.76	2.03		35	0	9	
SD-2	11%	6%		25.1	0.0	16.1	1.26	1.26	1.52	1.97		20	0	8	
SD-3	29%	44%		66.1	0.0	117.9	1.25	2.04	2.04	2.43		53	0	49	
SD-4	4%	3%		9.1	0.0	8.0	1.48	1.78	1.78	2.51		6	0	3	
East Bay	12%	6%		27.4	0.0	16.1	1.61	1.77	1.77	2.59		17	0	6	
North Bay	2%	1%		4.6	0.0	2.7	1.44	1.44	1.44	2.11		3	0	1	
South Bay	22%	33%		50.2	0.0	88.4	1.13	1.98	1.98	2.28		44	0	39	
												179	0	115	

294 Total Vehicle Trips

Vehicle Trip Generation By Land Use Category

Proposed Project - AM Peak Hour - Retail

Total Automobile Trips	754
Auto Work Trips (All)	26
Auto Non-Work: Retail Trips	728
Auto Non-Work: Other Trips	0

Proposed Project - PM Peak Hour - Retail

Total Automobile Trips	1476
Auto Work Trips (All)	51
Auto Non-Work: Retail Trips	1424
Auto Non-Work: Other Trips	0

Maximum Commercial Variant - AM Peak Hour - Retail

Total Automobile Trips	901
Auto Work Trips (All)	31
Auto Non-Work: Retail Trips	870
Auto Non-Work: Other Trips	0

Maximum Commercial Variant - PM Peak Hour - Retail

Total Automobile Trips	2043
Auto Work Trips (All)	71
Auto Non-Work: Retail Trips	1971
Auto Non-Work: Other Trips	0

[illegible]

398 Total Vehicle Trips

Trip Distribution (SF-CHAMP)			Auto Person Trip Distribution				Persons Per Auto (SF Guidelines)				Vehicle Trips			
Zone	Work	Non-Work	Auto Work	Auto Non-work	Auto Retail	Auto Non-work	Other	Work Trips	Non-work	Retail	Other	Work Trips	Non-work	Other
SD-1	20%	7%	10.6	997	0.0	1.3	176	203	8	57	0	57	0	0
SD-2	11%	6%	5.6	85.4	0.0	1.26	152	197	4	56	0	56	0	0
SD-3	29%	44%	14.8	626.6	0.0	1.25	204	243	12	307	0	307	0	0
SD-4	4%	3%	2.0	42.7	0.0	1.48	178	251	1	24	0	24	0	0
East Bay	12%	6%	6.1	85.4	0.0	1.61	177	259	4	48	0	48	0	0
North Bay	2%	1%	1.0	14.2	0.0	1.44	144	211	1	10	0	10	0	0
South Bay	22%	33%	11.2	469.9	0.0	1.13	198	228	10	237	0	237	0	0
												40	739	0

779 Total Vehicle Trips

Trip Distribution (SF-CHAMP)		Auto Person Trip Distribution				Persons Per Auto (SF Guidelines)		Vehicle Trips	
Zone	Work	Non-Work	Auto Work	Auto Non-work	Auto Non-work	Work Trips	Non-work	Work Trips	Non-work
SD-1	20%	7%	6.2	609	0.0	1.3	1.76	2.03	5
SD-2	11%	6%	5.2	34	0.0	1.26	1.52	1.97	3
SD-3	29%	44%	9.0	382.8	0.0	1.25	2.04	2.51	7
SD-4	4%	3%	1.2	26.1	0.0	1.48	1.78	2.51	1
East Bay	12%	6%	3.7	52.2	0.0	1.61	1.77	2.59	2
North Bay	2%	1%	0.6	8.7	0.0	1.44	1.44	2.11	6
South Bay	22%	33%	6.8	287.1	0.0	1.13	1.98	2.28	6
								6	145
								6	452
								24	0

476 Total Vehicle Trips

Trip Distribution (SF-CHAMP)													
Zone	Work	Non-Work	Auto Person Trip Distribution		Auto Person Trip Distribution		Persons Per Auto (SF Guidelines)			Vehicle Trips		Non-work:	
			Auto Work	Auto Non-work	work	Other	Work Trips	Non-work:	Other	Work Trips	Retail	Other	
SD-1	20%	7%	194	138.0	0.0	0.0	1.3	1.76	2.03	11	78	0	0
SD-2	11%	6%	78	118.3	7.8	0.0	1.26	1.52	1.97	6	78	0	0
SD-3	29%	44%	20.6	86.7	2.0	2.43	1.25	2.04	2.51	16	42.5	0	0
SD-4	4%	3%	2.8	59.1	0.0	1.48	1.78	2.51	2.33	2	33	0	0
East Bay	12%	6%	8.5	118.3	0.0	1.61	1.77	2.59	2.59	5	67	0	0
North Bay	2%	1%	1.4	19.7	0.0	1.44	1.44	2.11	2.11	1	14	0	0
South Bay	22%	33%	15.6	650.4	0.0	0.0	1.13	1.98	2.28	14	329	0	0
											56	1024	

1079 Total Vehicle Trips

Vehicle Trip Generation By Land Use Category
Proposed Project (Cumulative Scenario) - AM Peak Hour - Retail

Total Automobile Trips	676
Auto Work Trips (All)	23
Auto Non-Work Retail Trips	653
Auto Non-Work Other Trips	0

Trip Distribution (SF-CHAMP)				Auto Person Trip Distribution				Persons Per Auto (SF Guidelines)				Vehicle Trips			
Zone	Work	Non-Work		Auto Work	Auto Non-work	Auto Non-work	Other	Work Trips	Retail	Other		Work Trips	Retail	Non-work: Other	
SD-1	20%	7%		4.6	45.7	0.0	0.0	1.3	1.76	2.03		4	26	0	
SD-2	11%	6%		2.3	39.2	0.0	0.0	1.26	1.52	1.97		2	26	0	
SD-3	29%	44%		6.7	287.3	0.0	0.0	1.25	2.04	2.43		5	141	0	
SD-4	4%	3%		0.9	19.6	0.0	0.0	1.48	1.78	2.51		1	11	0	
East Bay	12%	6%		2.8	39.2	0.0	0.0	1.61	1.77	2.59		2	22	0	
North Bay	2%	1%		0.5	6.5	0.0	0.0	1.44	1.44	2.11		0	5	0	
South Bay	22%	33%		5.1	215.5	0.0	0.0	1.13	1.98	2.28		4	109	0	
												18	339	0	

357 Total Vehicle Trips

Proposed Project (Cumulative Scenario) - PM Peak Hour - Retail

Total Automobile Trips	1313
Auto Work Trips (All)	45
Auto Non-Work Retail Trips	1268
Auto Non-Work Other Trips	0

Trip Distribution (SF-CHAMP)				Auto Person Trip Distribution				Persons Per Auto (SF Guidelines)				Vehicle Trips			
Zone	Work	Non-Work		Auto Work	Auto Non-work	Auto Non-work	Other	Work Trips	Retail	Other		Work Trips	Retail	Non-work: Other	
SD-1	20%	7%		9.0	88.8	0.0	0.0	1.3	1.76	2.03		7	50	0	
SD-2	11%	6%		5.0	76.1	0.0	0.0	1.26	1.52	1.97		4	50	0	
SD-3	29%	44%		13.1	557.9	0.0	0.0	1.25	2.04	2.43		10	273	0	
SD-4	4%	3%		1.8	38.0	0.0	0.0	1.48	1.78	2.51		1	21	0	
East Bay	12%	6%		5.4	76.1	0.0	0.0	1.61	1.77	2.59		3	43	0	
North Bay	2%	1%		0.9	12.7	0.0	0.0	1.44	1.44	2.11		1	9	0	
South Bay	22%	33%		9.9	418.4	0.0	0.0	1.13	1.98	2.28		9	211	0	
												35	658	0	

694 Total Vehicle Trips

Project Variant (Cumulative Scenario) - AM Peak Hour - Retail

Total Automobile Trips	813
Auto Work Trips (All)	28
Auto Non-Work Retail Trips	785
Auto Non-Work Other Trips	0

Trip Distribution (SF-CHAMP)				Auto Person Trip Distribution				Persons Per Auto (SF Guidelines)				Vehicle Trips			
Zone	Work	Non-Work		Auto Work	Auto Non-work	Auto Non-work	Other	Work Trips	Retail	Other		Work Trips	Retail	Non-work: Other	
SD-1	20%	7%		5.6	55.0	0.0	0.0	1.3	1.76	2.03		4	31	0	
SD-2	11%	6%		3.1	47.1	0.0	0.0	1.26	1.52	1.97		2	31	0	
SD-3	29%	44%		8.1	345.4	0.0	0.0	1.25	2.04	2.43		6	169	0	
SD-4	4%	3%		1.1	23.6	0.0	0.0	1.48	1.78	2.51		1	13	0	
East Bay	12%	6%		3.4	47.1	0.0	0.0	1.61	1.77	2.59		2	27	0	
North Bay	2%	1%		0.6	7.9	0.0	0.0	1.44	1.44	2.11		0	5	0	
South Bay	22%	33%		6.2	259.1	0.0	0.0	1.13	1.98	2.28		5	131	0	
												22	408	0	

430 Total Vehicle Trips

Project Variant (Cumulative Scenario) - PM Peak Hour - Retail

Total Automobile Trips	1827
Auto Work Trips (All)	63
Auto Non-Work Retail Trips	1764
Auto Non-Work Other Trips	0

Trip Distribution (SF-CHAMP)				Auto Person Trip Distribution				Persons Per Auto (SF Guidelines)				Vehicle Trips			
Zone	Work	Non-Work		Auto Work	Auto Non-work	Auto Non-work	Other	Work Trips	Retail	Other		Work Trips	Retail	Non-work: Other	
SD-1	20%	7%		12.6	123.5	0.0	0.0	1.3	1.76	2.03		10	70	0	
SD-2	11%	6%		6.9	105.8	0.0	0.0	1.26	1.52	1.97		6	70	0	
SD-3	29%	44%		18.3	776.2	0.0	0.0	1.25	2.04	2.43		15	380	0	
SD-4	4%	3%		2.5	52.9	0.0	0.0	1.48	1.78	2.51		2	30	0	
East Bay	12%	6%		7.6	105.8	0.0	0.0	1.61	1.77	2.59		5	60	0	
North Bay	2%	1%		1.3	17.6	0.0	0.0	1.44	1.44	2.11		1	12	0	
South Bay	22%	33%		13.9	582.1	0.0	0.0	1.13	1.98	2.28		12	294	0	
												49	916	0	

965 Total Vehicle Trips

Vehicle Trip Generation By Land Use Category

Proposed Project - AM Peak Hour - Office

Total Automobile Trips	194
Auto Work Trips (All)	157
Auto Non-Work: Retail Trips	0
Auto Non-Work: Other Trips	37

Proposed Project - PM Peak Hour - Office

Total Automobile Trips	175
Auto Work Trips (All)	141
Auto Non-Work: Retail Trips	0
Auto Non-Work: Other Trips	33

Maximum Commercial Variant - AM Peak Hour - Office/R&D

Total Automobile Trips	1649
Auto Work Trips (All)	1334
Auto Non-Work: Retail Trips	0
Auto Non-Work: Other Trips	316

Maximum Commercial Variant - PM Peak Hour - Office/R&D

Total Automobile Trips	1464
Auto Work Trips (All)	1184
Auto Non-Work: Retail Trips	0
Auto Non-Work: Other Trips	279

Trip Distribution (SF+CHAMP)			Auto Person Trip Distribution			Persons Per Auto (SF Guidelines)			Vehicle Trips		
Zone	Work	Non-Work	Auto Work	Auto Non-work	Auto Non-work/Retail	Work Trips	Non-work/Retail	Other	Work Trips	Retail	Other
SD-1	20%	7%	314	0.0	2.6	1.3	1.76	2.03	24	0	1
SD-2	11%	6%	173	0.0	2.2	1.26	1.52	1.97	14	0	1
SD-3	29%	44%	455	0.0	16.3	1.25	2.04	2.43	36	0	7
SD-4	4%	3%	63	0.0	1.1	1.48	1.78	2.51	4	0	0
East Bay	12%	6%	188	0.0	2.2	1.61	1.77	2.59	12	0	1
North Bay	2%	1%	31	0.0	0.4	1.44	2.11	2.44	2	0	0
South Bay	22%	33%	345	0.0	12.2	1.13	1.98	2.28	31	1.13	5
									123	0	16
									139	Total Vehicle Trips	

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Trip Distribution (SF-CHAMP)			Auto Person Trip Distribution			Persons per Auto (SF Guidelines)			Vehicle Trips		
Zone	Work	Non-Work	Auto Work	Auto Non-work	Auto Retail	Work Trips	Non-work	Retail	Work Trips	Non-work	Retail
SD-1	20%	7%	18.5	0.0	2.3	1.3	1.76	2.03	22	0	1
SD-2	11%	6%	25.2	0.0	2.0	1.26	1.52	1.97	12	0	1
SD-3	29%	44%	40.9	0.0	14.5	1.25	2.04	2.43	33	0	6
SD-4	4%	3%	5.6	1.0	0.3	1.48	1.78	2.51	4	0	0
East Bay	12%	6%	16.9	0.0	2.0	1.61	1.77	2.59	11	0	1
North Bay	2%	1%	2.8	0.0	0.3	1.44	1.44	2.11	2	0	0
South Bay	22%	33%	31.0	0.0	10.9	1.13	1.98	2.28	27	0	5

125 Total Vehicle Trips

Trip Distribution (SF-CHAMP)			Auto Person Trip Distribution			Persons Per Auto (SF Guidelines)			Vehicle Trips		
	Work	Non-Work	Auto Work	Auto Non-work	Other	Work Trips	Non-work	Other	Work Trips	Non-work	Other
Zone											
SD-1	20%	7%	266.8	0.0	22.1	1.3	1.76	1.93	205	0	11
SD-2	11%	6%	146.7	0.0	19.0	1.26	1.52	1.97	116	0	10
SD-3	29%	44%	386.9	0.0	139.0	1.25	2.04	2.43	309	0	51
SD-4	4%	3%	53.4	0.0	9.5	1.48	1.78	2.51	36	0	4
East Bay	12%	6%	160.1	0.0	19.0	1.61	1.77	2.59	99	0	7
North Bay	2%	1%	26.7	0.0	3.2	1.44	1.44	2.11	19	0	1
South Bay	22%	33%	293.5	0.0	104.3	1.13	1.98	2.28	260	0	46

1181 Total Vehicle Trips

Trip Distribution (SF-CHAMP)				Auto Person Trip Distribution				Persons per Auto (SF Guidelines)				Vehicle Trips			
Zone		Work	Non-Work	Auto Work	Auto Non-work	Work	Non-work	Work Trips	Non-work	Other	Work Trips	Non-work	Other		
SD-1		20%	7%	236.8	0.0	19.5	1.3	1.76	1.97	182	0	10	0		
SD-2		11%	6%	130.2	0.0	16.7	1.26	1.52	2.03	103	0	18	0		
SD-3		29%	44%	343.4	0.0	122.8	1.25	2.04	2.43	275	0	51	0		
SD-4		4%	3%	47.4	0.0	8.4	1.48	1.78	2.51	32	0	3	0		
East Bay		12%	6%	142.1	0.0	16.7	1.61	1.77	2.59	88	0	6	0		
North Bay		2%	1%	23.7	0.0	2.8	1.44	1.44	2.11	16	0	1	0		
South Bay		22%	33%	260.5	0.0	92.1	1.13	1.98	2.28	231	0	40	0		

1048 Total Vehicle Trips

Vehicle Trip Generation By Land Use Category
Proposed Project (Cumulative Scenario) - AM Peak Hour - Office

Total Automobile Trips	172
Auto Work Trips (All)	138
Auto Non-Work Retail Trips	0
Auto Non-Work Other Trips	34

Trip Distribution (SF-CHAMP)				Auto Person Trip Distribution				Persons Per Auto (SF Guidelines)				Vehicle Trips								
Zone		Work		Non-Work		Auto Work		Auto Non-work-Retail		Auto Non-work-Other		Work Trips		Non-work-Retail		Work Trips		Non-work-Other		
SD-1		20%		7%		27.6		0.0		2.4		1.3		1.76		2.03		21		
SD-2		11%		6%		15.2		0.0		2.0		1.28		1.52		1.97		12		
SD-3		29%		44%		40.0		0.0		15.0		1.25		2.04		2.43		32		
SD-4		4%		3%		5.5		0.0		1.0		1.48		1.78		2.51		4		
East Bay		12%		6%		16.6		0.0		2.0		1.61		1.77		2.59		10		
North Bay		2%		1%		2.8		0.0		0.3		1.44		1.44		2.11		2		
South Bay		22%		33%		30.4		0.0		11.2		1.13		1.98		2.28		27		
																	108		0	
																	123		Total Vehicle Trips	

Proposed Project (Cumulative Scenario) - PM Peak Hour - Office

Total Automobile Trips	153
Auto Work Trips (All)	123
Auto Non-Work Retail Trips	0
Auto Non-Work Other Trips	29

Trip Distribution (SF-CHAMP)				Auto Person Trip Distribution				Persons Per Auto (SF Guidelines)				Vehicle Trips				
Zone	Work	Non-Work		Auto Work	Auto Non-work/Retail	Auto Non-work/Other		Work Trips	Non-work/Retail	Non-work/Other		Work Trips	Non-work/Retail	Non-work/Other		
SD-1		20%		24.6	0.0	2.0		1.3	1.76	2.03		19	0	1		
SD-2		11%		13.5	0.0	1.7		1.26	1.52	1.97		11	0	1		
SD-3		29%		35.7	0.0	12.8		1.25	2.04	2.43		29	0	5		
SD-4		4%		4.9	0.0	0.9		1.48	1.78	2.51		3	0	0		
East Bay		12%		14.8	0.0	1.7		1.61	1.77	2.59		9	0	1		
North Bay		2%		2.5	0.0	0.3		1.44	1.44	2.11		2	0	0		
South Bay		22%		27.1	0.0	9.6		1.13	1.98	2.28		24	0	4		
													96	0	12	

Project Variant (Cumulative Scenario) - AM Peak Hour - Office/R&D

Total Automobile Trips	1468
Auto Work Trips (All)	1184
Auto Non-Work Retail Trips	0
Auto Non-Work Other Trips	285

Trip Distribution (SF-CHAMP)				Auto Person Trip Distribution				Persons Per Auto (SF Guidelines)				Vehicle Trips								
Zone		Work		Non-Work		Auto Work		Auto Non-work-Retail		Auto Non-work-Other		Work Trips		Non-work-Retail		Work Trips		Non-work-Other		
SD-1		20%		7%		236.8		0.0		20.0		1.3		1.76		2.03		182		
SD-2		11%		6%		130.2		0.0		17.1		1.26		1.52		1.97		103		
SD-3		29%		44%		343.4		0.0		125.4		1.25		2.04		2.43		275		
SD-4		4%		3%		47.4		0.0		8.6		1.48		1.78		2.51		32		
East Bay		12%		6%		142.1		0.0		17.1		1.61		1.77		2.59		88		
North Bay		2%		1%		23.7		0.0		2.9		1.44		1.44		2.11		16		
South Bay		22%		33%		260.5		0.0		94.1		1.13		1.98		2.28		231		
																	927		0	
																	1050		Total Vehicle Trips	

Project Variant (Cumulative Scenario) - PM Peak Hour - Office/R&D

Total Automobile Trips	1291
Auto Work Trips (All)	1041
Auto Non-Work Retail Trips	0
Auto Non-Work Other Trips	250

Trip Distribution (SF-CHAMP)				Auto Person Trip Distribution				Persons Per Auto (SF Guidelines)				Vehicle Trips								
Zone		Work		Non-Work		Auto Work		Auto Non-work-Retail		Auto Non-work-Other		Work Trips		Non-work-Retail		Work Trips		Non-work-Other		
SD-1		20%		7%		208.2		0.0		17.5		1.3		1.76		2.03		160		
SD-2		11%		6%		114.5		0.0		15.0		1.26		1.52		1.97		91		
SD-3		29%		44%		301.9		0.0		110.0		1.25		2.04		2.43		242		
SD-4		4%		3%		41.6		0.0		7.5		1.48		1.78		2.51		28		
East Bay		12%		6%		124.9		0.0		15.0		1.61		1.77		2.59		78		
North Bay		2%		1%		20.8		0.0		2.5		1.44		1.44		2.11		14		
South Bay		22%		33%		229.0		0.0		82.5		1.13		1.98		2.28		203		
																	815		0	
																	923		Total Vehicle Trips	

Vehicle Trip Distribution By Land Use Category

Trip distribution (from Travel Demand Memo)

Zone	School	All other land uses	Baseline
SD-1		12%	13.5%
SD-2		8%	8.5%
SD-3	87%	37%	36.5%
SD-4		3%	3.5%
East Bay		9%	9.0%
North Bay		2%	1.5%
South Bay	13%	29%	27.5%

Proportion of trips to/from locations allocated to each gate

Zone	1	2	3	4	5	6	7	8	9	Check
SD-1	67.0%	16.7%	16.7%							100%
SD-2			75.0%	12.5%		12.5%				100%
SD-3	25.0%	10.0%	15.0%	25.0%	5.0%	5.0%	5.0%	5.0%	5.0%	100%
SD-4			10.0%	90.0%						100%
East Bay		10.0%	90.0%							100%
North Bay			75.0%	25.0%						100%
South Bay				20.0%	80.0%					100%

Trip Dist for Traffix

Land Use	1	2	3	4	5	6	7	8	9	
School	21.8%	8.7%	13.1%	24.4%	14.8%	4.4%	4.4%	4.4%	4.4%	100%
All Other LU	17.0%	6.5%	23.4%	19.4%	25.4%	2.8%	1.8%	1.8%	1.8%	100%
Baseline	18.2%	6.8%	23.7%	19.2%	23.8%	2.9%	1.8%	1.8%	1.8%	100%

Traffix Gates (outbound direction)

1	I-280 Northbound
2	Third Street Northbound
3	Cesar Chavez Westbound
4	I-280 Southbound
5	Third Street Southbound
6	Bayshore Boulevard Southbound
7	Hunters Point
8	Candlestick Park
9	Paul Avenue Westbound

**APPENDIX J: ELIGIBILITY CHECKLIST: CEQA SECTION 21099 –
MODERNIZATION OF TRANSPORTATION ANALYSIS**



SAN FRANCISCO PLANNING DEPARTMENT

Eligibility Checklist: CEQA Section 21099 – Modernization of Transportation Analysis

Date of Preparation: February 15, 2017
Case No.: **2014-002541ENV**
Project Title: **700 Innes Avenue, 900 Innes Avenue, India Basin Shoreline Park and India Basin Open Space Projects**
Zoning: P Use District
M-1 Use District
NC-2 Use District
OS Height and Bulk District
40-X Height and Bulk District
Block/Lot: 4644/Lots 001-018, 004, 004A, 005, 005S, 006, 006A, 007, 008, 009, 010, 010A, 010B, 010C, 011
4631/Lots 001, 002
4620/Lots 001, 002
4607/Lots 025, 024
4596/Lot 026
4597/Lot 026
4606/Lots 026, 100
4621/016, 018, 021, 100, 101
4630/005, 007, 100
4645/001, 003A, 004, 006, 007, 007A, 010, 010A, 011, 012, 013
4630/002
4629A/010, 011
4646/001, 002, 003, 003A, 019, 020
4629A/012, 013, 003, 004, 005, 006
4622/007, 008, 016, 017, 018, 019, 012, 013
4605/010,011,012,013,014,015,016,017,018,019
4645/Lots 014, 015
Lot Size: 38.84 acres (1,691,870 square feet)
Project Sponsors Courtney Pash, Build Inc.
(415) 551-7626 or courtney@bldsf.com
Nicole Avril, San Francisco Recreation and Parks
(415) 305-8438 or Nicole.Avril@sfgov.org
Lead Agency: San Francisco Planning Department
Staff Contact: Michael Li—(415) 575-9107
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This checklist is in response to California Environmental Quality Act (CEQA) Section 21099 – Modernization of Transportation Analysis for Transit Oriented Projects and Planning Commission Resolution 19579. CEQA Section 21099 allows for a determination that aesthetic and parking effects of a project need not be considered significant environmental effects. Planning Commission Resolution 19579

replaces automobile delay with vehicle miles traveled analysis. This checklist provides screening criteria for determining when detailed VMT analysis is required for a project.

Aesthetics and Parking

In accordance with California Environmental Quality Act (CEQA) Section 21099 – Modernization of Transportation Analysis for Transit Oriented Projects – aesthetics and parking shall not be considered in determining if a project has the potential to result in significant environmental effects, provided the project meets all of the following three criteria (Attachment A sets forth the definitions of the terms below):

- a) The project is residential, mixed-use residential, or an employment center; and
- b) The project is on an infill site; and
- c) The project is in a transit priority area.

Pursuant to Table 1 on page 3, while the proposed project described below satisfies criteria a) and c), it does not satisfy criterion b). A large portion of the site is vacant and it is surrounded on three sides by water. Therefore, it is not surrounded by parcels that are developed with qualified urban uses. Therefore, the proposed project does not qualify as an infill project for the purpose of CEQA Section 21099. Aesthetics and Parking shall be considered as topic areas for the environmental review of this project.

Automobile Delay and Vehicle Miles Traveled

In addition, CEQA Section 21099(b)(1) requires that the State Office of Planning and Research (OPR) develop revisions to the CEQA Guidelines establishing criteria for determining the significance of transportation impacts of projects that “promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses.” CEQA Section 21099(b)(2) states that upon certification of the revised guidelines for determining transportation impacts pursuant to Section 21099(b)(1), automobile delay, as described solely by level of service or similar measures of vehicular capacity or traffic congestion shall not be considered a significant impact on the environment under CEQA.

In January 2016, OPR published for public review and comment a [*Revised Proposal on Updates to the CEQA Guidelines on Evaluating Transportation Impacts in CEQA*](#) recommending that transportation impacts for projects be measured using a vehicle miles traveled (VMT) metric. On March 3, 2016, in anticipation of the future certification of the revised CEQA Guidelines, the San Francisco Planning Commission adopted OPR’s recommendation to use the VMT metric instead of automobile delay to evaluate the transportation impacts of projects. (Note: the VMT metric does not apply to the analysis of project impacts on non-automobile modes of travel such as riding transit, walking, and bicycling.)

The Planning Department has identified screening criteria to identify types, characteristics, or locations of projects and a list of transportation project types that would not result in significant transportation impacts under the VMT metric. These screening criteria are consistent with CEQA Section 21099 and the screening criteria recommended by OPR.

Project Description:

As co-project sponsors, Build Inc and the San Francisco Recreation and Parks Department (RPD) propose to redevelop their respective adjacent parcels along the India Basin shoreline of San Francisco Bay. The project would encompass publicly and privately owned parcels, including existing streets, totaling approximately 38.84 acres (referred to herein as the project site). The larger India Basin area also includes properties owned by Lennar, Pacific Gas & Electric Company, and the Port of San Francisco.

Build Inc would develop 17.12 acres of privately owned land plus 5.94 acres of developed and undeveloped public rights-of-way in phases with residential; retail; commercial; office; research and development/laboratory and clinical carespace; institutional; flex space; and recreational and art uses. Two Build Inc project options are being considered for the 700 Innes property: the proposed Residential Project or proposed project would include 1,240 dwelling units, 275,330 gross square feet (gsf) of ground-floor retail, commercial, or flex space; and 1,800 total parking spaces for all proposed uses. The Maximum Commercial Variant or proposed project variant would include up to 1,000,000 gsf of commercial/institutional uses and 500 dwelling units. The proposed development at 700 Innes would include residential units and commercial uses (including retail, office, R&D, laboratory and clinical care, and institutional), parking, and a shoreline network of publicly accessible open space.

As part of the proposed project and proposed project variant, RPD would improve 14.2 acres of publicly owned parcels along the shoreline plus 1.58 acres of unimproved paper streets¹ to create a publicly accessible network of new and/or improved parkland and open space. All of the project-related RPD properties (i.e., 900 Innes, India Basin Shoreline Park, India Basin Open Space) would be enhanced for park and open space use and would be combined to create a network of new and/or improved parkland and open space. This new shoreline network would extend the Blue Greenway/Bay Trail and would provide pedestrian and bicycle connections to and along the shoreline, fronting the San Francisco Bay.

Table 1: Transit-Oriented Infill Project Eligibility Checklist The project must meet all three criteria below for <u>aesthetics and parking</u> to be excluded from CEQA review. See Attachment A for definitions and other terms.	
☒	Criterion 1. Does the project consist of residential, mixed-use residential, or “employment center”² uses and Build Inc would develop 17.12 acres of privately owned land plus 5.94 acres of developed and undeveloped public rights-of-way in phases with residential; retail; commercial; office; research and development/laboratory and clinical carespace; institutional; flex space; and recreational and art uses. Two Build Inc project options are being considered for the 700 Innes property: the proposed Residential Project or proposed project (a residential-focused mixed-use development including 1,240 dwelling units and 275,330 gross square feet (gsf) of ground-floor retail, commercial, or flex space); and the Maximum Commercial Variant or proposed project variant (with up to 1,000,000 gsf of commercial/institutional uses and 500 dwelling units). The proposed development at 700 Innes would include residential units and commercial uses (including retail,

¹ Roadways that appear on maps but have not been built.

² See **Attachment A** for definitions.

	office, R&D, laboratory and clinical care, and institutional), parking, and a shoreline network of publicly accessible open space.
☐	Criterion 2. Is the proposed project located on an “infill site” and The 700 Innes property consists of 30 parcels, totaling 17.12 acres. The property generally is undeveloped, except for approximately six buildings and structures. One dilapidated, wood-framed storage structure sits on the concrete wharf that fronts a wood dock, in a western portion of the property that once was part of the Allemand Brothers Boat Yard. A second structure, at 702 Earl Street (also known as the Heerdt Building and Repair), built in 1935, is on the southwestern corner of the property. The building at 702 Earl Street is a timber-framed industrial building with two stories over a basement, a compound shed, and a shallow pitch gable roof. The 900 Innes property consists of seven parcels totaling 2.4 acres, 0.6 acre of which is submerged. It is located between India Basin Shoreline Park and India Basin Open Space (see Figure 2). The property is a former maritime industrial site that contains five buildings and structures, totaling approximately 7,760 square feet. A one-story, 900-square-foot wood-framed house is on the northwestern corner of Innes Avenue and the unimproved Griffith Street ROW. A large portion of the project site is undeveloped. In addition, the project site is surrounded by water on three sides. Therefore, project site does not meet the definition of an “infill site.”
☒	Criterion 3. Is the proposed project site located within a “transit priority area?” Map: See Attachment B. Muni Bus Line Stops: 19 Polk at Innes Avenue and Griffith Street; 44 O’Shaughnessy at Middle Point Road and Innes Avenue; 54 Felton at Northridge Road and Dormitory Road within ½ mile of the project site (with AM and PM headways of 15 minutes or less).

Table 2a: Vehicle Miles Traveled Analysis – Screening Criterion If a project meets the screening criterion listed below, then a detailed VMT analysis is not required. ³ See Attachment A for definitions and other terms.	
☒	Criterion 1. Is the proposed project site located within the “map-based screening” area? The proposed project site is located in transportation analysis zone (TAZ) 446. The proposed project would include 1,240 dwelling units, office and ground-floor retail space. <u>Residential</u>: Existing average daily VMT per capita is 9.0 for the transportation analysis zone 446. This is 38 percent below the existing regional average daily VMT per capita of 14.6. Future 2040 average daily VMT per capita is 8.9 for the transportation analysis zone 446. This is 35 percent below the future 2040 regional average daily VMT per capita of 13.7. <u>Office</u>: Existing average daily VMT per capita is 15.3 for the transportation analysis zone the project site is located in, 446. This is 6 percent below the existing regional average daily VMT per capita of 16.2. Future 2040 average daily VMT per capita is 13.4 for the transportation analysis zone 446. This is 8 percent below the future 2040 regional average daily VMT per capita of 14.5. <u>Retail</u>: Existing average daily VMT per retail employee is 8.1 for the transportation analysis zone 446. This is 36 percent below the existing regional average daily VMT per retail employee of 12.6. Future 2040 average daily VMT per retail employee is 8.8 for the transportation analysis zone 446. This is 30 percent below the future 2040 regional average daily work-related VMT per retail employee of 12.4.

Table 2b: Vehicle Miles Traveled Analysis – Additional Screening Criteria Identify whether a projects meets any of the additional screening criteria. See Attachment A for definitions and other terms.	
☐	Criterion 1. Does the proposed project qualify as a “small project”? or No
☒	Criterion 2. Proximity to Transit Stations (must meet all four sub-criteria) Is the proposed project site located within a half mile of an existing major transit stop; and Yes, as evidenced below: Map: See Attachment B. Muni Bus Line Stops: 19 Polk at Innes Avenue and Griffith Street; 44 O’Shaughnessy at Middle Point Road and Innes Avenue; 54 Felton at Northridge Road and Dormitory Road within ½ mile of the project site (with AM and PM headways of 15 minutes or less).

³ For projects that propose multiple land use types (e.g. residential, office, retail, etc.), each land use type must qualify under the three screening criterion in Table 2a.

Table 2b: Vehicle Miles Traveled Analysis – Additional Screening Criteria Identify whether a projects meets any of the additional screening criteria. See Attachment A for definitions and other terms.	
	Would the proposed project have a floor area ratio of greater than or equal to 0.75, and Yes. The combined gross floor area of the new buildings would be greater than 0.75 floor area ratio.
	Would the project result in an amount of parking that is less than or equal to that required or allowed by the Planning Code without a conditional use authorization, and Yes. The minimum required vehicle parking for the proposed project is zero spaces and the maximum allowed is one (1) space for each dwelling unit, plus car share spaces. The proposed project would include 1,240 dwelling units, 275,330 gross square feet (gsf) of ground-floor retail, commercial, or flex space; and 1,800 total parking spaces for all proposed uses within the allowable vehicle parking spaces for the NC-2 zoning district.
	Is the proposed project consistent with the Sustainable Communities Strategy?⁴ The project site is located in a priority development area in Plan Bay Area. The project would have a floor area ratio greater than 0.75, and is located in a priority development area identified in the Bay Area's sustainable community's strategy (Plan Bay Area).⁵ The project would not require a conditional use authorization for the amount of parking proposed.

⁴ A project is considered to be inconsistent with the Sustainable Communities Strategy if development is located outside of areas contemplated for development in the Sustainable Communities Strategy.

⁵ Sarah Dennis Phillips, San Francisco Planning Department. *Memorandum re: Plan Bay Area: Review and Comment on the draft Sustainable Communities Strategy*, May 2, 2013. Available online at: http://www.sf-planning.org/ftp/files/plans-and-programs/emerging_issues/scs/Plan-Bay-Area-Memo-5_02_13.pdf, accessed March 24, 2016.

Table 3: Induce Automobile Travel Analysis If a project contains transportation elements and fits within the general types of projects described below, then a detailed VMT analysis is not required. See Attachment A for definitions and other terms.	
☒	Project Type 1. Does the proposed project qualify as an “active transportation, rightsizing (aka Road Diet) and Transit Project”? or Yes. The proposed projects would include a network of new pedestrian pathways and Class I and II bicycle lanes, to enable a continuous Blue Greenway/Bay Trail as well as multiple points of access between the 700 Innes, 900 Innes, India Basin Open Space, and India Basin Shorelines Park properties. The proposed projects also would enable continuous access to the future Northside Park, which will be part of the Candlestick-Hunters Point Shipyard project, immediately to the east. These elements fit within the “infrastructure projects, including safety and accessibility improvements, for people walking or bicycling” category.
☒	Project Type 2. Does the proposed project qualify as an “other minor transportation project”? Yes. The proposed projects would include changes to the existing public ROWs. The roadway network would adhere to the standards outlined in the San Francisco Better Streets Plan. Primary accesses to the project site would continue to be from Innes Avenue and Hunters Point Boulevard. New roadways within the project site would provide access to the park and open space areas, and would allow circulation within the residential and commercial/retail areas. Hudson Street east and west of Arelious Walker Drive would be vacated and realigned through dedication to the City of a new alignment, generally north of the existing ROW. The realigned segment of Hudson Street would be named New Hudson Street. The vacated Hudson Street ROW east and west of Arelious Walker Drive would become part of the 700 Innes property development. The Arelious Walker Drive ROW immediately north of New Hudson Street would shift to the northeast, to connect to New Hudson Street, while the remainder of the Arelious Walker Drive ROW beyond the intersection of New Hudson Street would be vacated for new parkland. Earl Street would be re-graded to meet City standards for vehicular access, descending from Innes Avenue and connecting with New Hudson Street. The remainder of Earl Street along the eastern side of the project site would be vacated and converted to a publicly accessible pedestrian path and a stormwater-wetland treatment canal, called Earl Canal. New Hudson Street would serve as the neighborhood “spine,” providing a connection to the edge of the future Northside Park to the east and to the India Basin Cove to the west. The proposed project would include filling in curb cuts, adding new curb cuts, removing on-street parking, and adding new on-street loading zones. These elements fit within the “removal of off- or on-street parking spaces” and “adoption, removal, or modification of on-street parking or loading restrictions (including meters, time limits, accessible spaces, and preferential/reserved parking permit programs)” categories. In addition, the proposed project may include signalization of three new intersections along Innes Ave created to access the proposed project site. This element fits within the “Installation, removal, or reconfiguration of traffic control devices, including Transit Signal Priority (TSP) features” category.

ATTACHMENT A
DEFINITIONS

Active transportation, rightsizing (aka road diet) and transit project means any of the following:

- Reduction in number of through lanes
- Infrastructure projects, including safety and accessibility improvements, for people walking or bicycling
- Installation or reconfiguration of traffic calming devices
- Creation of new or expansion of existing transit service
- Creation of new or conversion of existing general purpose lanes (including vehicle ramps) to transit lanes
- Creation of new or addition of roadway capacity on local or collector streets, provided the project also substantially improves conditions for people walking, bicycling, and, if applicable, riding transit (e.g., by improving neighborhood connectivity or improving safety)

Employment center project means a project located on property zoned for commercial uses with a floor area ratio of no less than 0.75 and that is located within a transit priority area.

Floor area ratio means the ratio of gross building area of the development, excluding structured parking areas, proposed for the project divided by the net lot area.

Gross building area means the sum of all finished areas of all floors of a building included within the outside faces of its exterior walls.

Infill opportunity zone means a specific area designated by a city or county, pursuant to subdivision (c) of Section 65088.4, that is within one-half mile of a major transit stop or high-quality transit corridor included in a regional transportation plan. A major transit stop is as defined in Section 21064.3 of the Public Resources Code, except that, for purposes of this section, it also includes major transit stops that are included in the applicable regional transportation plan. For purposes of this section, a high-quality transit corridor means a corridor with fixed route bus service with service intervals no longer than 15 minutes during peak commute hours.

Infill site means a lot located within an urban area that has been previously developed, or on a vacant site where at least 75 percent of the perimeter of the site adjoins, or is separated only by an improved public right-of-way from, parcels that are developed with qualified urban uses.

Lot means all parcels utilized by the project.

Major transit stop is defined in CEQA Section 21064.3 as a rail transit station, a ferry terminal served by either a bus or rail transit service, or the intersection of two or more major bus routes with a frequency of service interval of 15 minutes or less during the morning and afternoon peak commute periods.

Map-based screening means the proposed project site is located within a transportation analysis zone that exhibits low levels of VMT.

Net lot area means the area of a lot, excluding publicly dedicated land and private streets that meet local standards, and other public use areas as determined by the local land use authority.

Other land use projects mean a land use other than residential, retail, and office. OPR has not provided proposed screening criteria or thresholds of significance for other types of land uses, other than those that meet the definition of a small project.

- Tourist hotels, student housing, single room occupancy hotels, and group housing land uses should be treated as residential for screening and analysis.
- Childcare, K-12 schools, post-secondary institutional (non-student housing), Medical, and production, distribution, and repair (PDR) land uses should be treated as office for screening and analysis.
- Grocery stores, local-serving entertainment venues, religious institutions, parks, and athletic clubs land uses should be treated as retail for screening and analysis.
- Public services (e.g., police, fire stations, public utilities) and do not generally generate VMT. Instead, these land uses are often built in response to development from other land uses (e.g., office and residential). Therefore, these land uses can be presumed to have less-than-significant impacts on VMT. However, this presumption would not apply if the project is sited in a location that would require employees or visitors to travel substantial distances and the project is not located within ½ mile of a major transit stop or does not meet the small project screening criterion.
- Event centers and regional-serving entertainment venues would most likely require a detailed VMT analysis. Therefore, no screening criterion is applicable.

Other minor transportation project means any of the following:

- Rehabilitation, maintenance, replacement and repair projects designed to improve the condition of existing transportation assets (e.g., highways, roadways, bridges, culverts, tunnels, transit systems, and bicycle and pedestrian facilities) and that do not add additional motor vehicle capacity
- Installation, removal, or reconfiguration of traffic lanes that are not for through traffic, such as left, right, and U-turn pockets, or emergency breakdown lanes that are not used as through lanes
- Conversion of existing general purpose lanes (including vehicle ramps) to managed lanes (e.g., HOV, HOT, or trucks) or transit lanes
- Grade separation to separate vehicles from rail, transit, pedestrians or bicycles, or to replace a lane in order to separate preferential vehicles (e.g. HOV, HOT, or trucks) from general vehicles
- Installation, removal, or reconfiguration of traffic control devices, including Transit Signal Priority (TSP) features
- Traffic metering systems
- Timing of signals to optimize vehicle, bicycle or pedestrian flow on local or collector streets
- Installation of roundabouts
- Adoption of or increase in tolls
- Conversion of streets from one-way to two-way operation with no net increase in number of traffic lanes
- Addition of transportation wayfinding signage
- Removal of off- or on-street parking spaces
- Adoption, removal, or modification of on-street parking or loading restrictions (including meters, time limits, accessible spaces, and preferential/reserved parking permit programs)

Small project means the project would not result in over 100 vehicle trips per day.

Transit priority area means an area within one-half mile of a major transit stop that is existing or planned, if the planned stop is scheduled to be completed within the planning horizon included in a Transportation Improvement Program adopted pursuant to Section 450.216 or 450.322 of Title 23 of the Code of Federal Regulations.

Vehicle miles traveled measures the amount and distance that a project might cause people to drive and accounts for the number of passengers per vehicle.

ATTACHMENT B
MAJOR TRANSIT STOPS

India Basin SB 743 Compliance Checklist



APPENDIX K: TRANSIT DELAY CALCULATIONS

APPENDIX L: TRAFFIC PERFORMANCE MEASURE CALCULATIONS

APPENDIX M: TRANSIT MODE SHIFT CALCULATIONS

APPENDIX N: LEVEL OF SERVICE CALCULATIONS

APPENDIX O: TRAFFIC VOLUME AND INTERSECTION TURNING MOVEMENT COUNTS

APPENDIX P: CUMULATIVE SCENARIO QUEUE LENGTHS – PLUS PROPOSED PROJECT AND PLUS PROJECT VARIANT

AM Transit Trip Assignment

Muni Downtown Screenlines

Region	SD-1		SD-2		SD-3		SD-4	
Direction (from project)	IN	OUT	IN	OUT	IN	OUT	IN	OUT
Baseline	1	6	1	4	3	16	0	2
Project (Max Res)	12	14	8	10	50	43	3	4
Variant (Max Com)	40	12	28	8	137	38	11	3
Baseline	22%	22%	14%	14%	59%	59%	6%	6%
Project (Max Res)	16%	20%	11%	14%	68%	61%	5%	6%
Variant (Max Com)	19%	20%	13%	14%	63%	61%	5%	6%
Third Street ⁹	0%	80%	0%	80%	0%	5%	0%	15%
Mission ¹⁰	0%	0%	0%	0%	0%	0%	0%	0%
San Bruno/ Bayshore ¹¹	0%	10%	0%	10%	0%	0%	0%	0%
Other lines ¹²	0%	10%	0%	10%	0%	5%	0%	15%
Southeast Screenline Total	0%	100%	0%	100%	0%	10%	0%	30%

Notes:

Source is Transit Impacts spreadsheet (N:\Projects\2015 Projects\SF15-0820_India_Basin_TIA\Analysis\Transit Impacts)

9. T Third Street

10. 14 Mission, 14R Mission Rapid, 14X Mission Express, 49 Van Ness-Mission

11. 8AX Bayshore 'A' Express, 8BX Bayshore 'B' Express, 8 Bayshore, 9 San Bruno, 9L San Bruno Limited

12. J Church, 10 Townsend, 12 Folsom-Pacific, 19 Polk, 27 Bryant

Trips cross in opposite direction of peak hour travel.

PM Transit Trip Assignment

Muni Downtown Screenlines

Region	SD-1		SD-2		SD-3		SD-4	
Direction (from project)	IN	OUT	IN	OUT	IN	OUT	IN	OUT
Baseline	6	3	4	2	16	8	2	1
Project (Max Res)	23	11	16	8	73	39	7	3
Variant (Max Com)	14	46	10	31	45	146	4	13
Baseline	22%	22%	14%	14%	59%	59%	6%	6%
Project (Max Res)	20%	19%	14%	13%	61%	63%	6%	5%
Variant (Max Com)	20%	19%	14%	13%	61%	62%	6%	5%
Third Street ⁹	80%	0%	80%	0%	5%	0%	15%	0%
Mission ¹⁰	0%	0%	0%	0%	0%	0%	0%	0%
San Bruno/ Bayshore ¹¹	10%	0%	10%	0%	0%	0%	0%	0%
Other lines ¹²	10%	0%	10%	0%	5%	0%	15%	0%
Southeast Screenline Total	100%	0%	100%	0%	10%	0%	30%	0%

does not cross any screenline

Route Proportions by Superdistrict at Local Maximum Load Point and Global Maximum Load Point

Route	Proportion at LMPL ¹				Proportion at GMLP ²			
	SD-1	SD-2	SD-3	SD-4	SD-1	SD-2	SD-3	SD-4
19 Polk	90%	90%	40%	30%	20%	10%	30%	15%
44 O'Shaughnessy					0%	10%	60%	70%
T Third					80%	80%	10%	15%
All other routes	10%	10%	60%	70%	0%	0%	0%	0%
Total	100%	100%	100%	100%	100%	100%	100%	100%

Notes:

Since AM and PM peak trip distribution in and out of the project site (calculated above) are similar to one another (i.e. within 10%), a single set of transit route proportions was used for both the AM and PM. In addition, the inbound and outbound directions were assumed to have the same proportion

1. Local Maximum Load Point method is for Route 19 only and is taken at the stop at Evans/Newhall east of Third Street

2. Global Maximum Load Point method is used for all routes, consistent with typical Muni bus capacity analysis

AM Peak GMLP:

Route 19: 8th/Howard (outbound) Larkin/O'Farrell (inbound)

Route 44: Silver Ave/Dartmouth Ave (outbound) O'Shaughnessy/Del Vale (inbound)

PM Peak GMLP:

Route 19: 8th/Mission (outbound); 7th/Howard (inbound)

Route 44: Silver Ave/Mission Street (outbound); Silver Ave/San Bruno (inbound)

The previously-prepared assumptions with respect to transit ridership proportions by screenline included only routes which crossed the typical downtown screenlines used by the SFMTA. This only accounts for some of the transit trips which are made, but not all. In addition, some transit trips may end before the route crosses the screenline and one of the routes analyzed (44 O'Shaughnessy) does not cross any of the screenlines. Therefore, the highlighted cells have had further adjustments made to account for these trips.

Proportion of Total Transit Trips by Route

		Outbound Direction (Transit) ¹					
		Baseline		Project		Variant	
		Total Proportion of Transit Trips					
Route		LMPL	GMLP	LMPL	GMLP	LMPL	GMLP
19 Polk		57%	24%	53%	25%	55%	25%
44 O'Shaughnessy		0%	41%	0%	45%	0%	43%
T Third		0%	35%	0%	30%	0%	32%
All other lines		43%	0%	47%	0%	45%	0%
Total		100%	100%	100%	100%	100%	100%

		Inbound Direction (Transit) ¹					
		Baseline		Project		Variant	
		Total Proportion of Transit Trips					
Route		LMPL	GMLP	LMPL	GMLP	LMPL	GMLP
19 Polk		57%	24%	56%	24%	56%	24%
44 O'Shaughnessy		0%	41%	0%	42%	0%	42%
T Third		0%	35%	0%	34%	0%	34%
All other lines		43%	0%	44%	0%	44%	0%
Total		100%	100%	100%	100%	100%	100%

Notes:

refers to trips headed towards downtown SF, consistent with the terminology the SFMTA uses. From the perspective of the project site, Outbound trips are headed to the project site, while Inbound trips are headed away from the project site.

Transit Delay Thresholds	Route	AM	PM
	Route 19	7.5 450	7.5 450
		minutes	seconds

Notes:

1. Transit delay impact thresholds half of the headway of the route being analyzed. Route 19 operates at 15 minute headways in the AM and PM peak. This is based on the SFMTA Transit Data Memorandum for TIS (May 2015) (N:\Reference\TIA Guidelines\San Francisco Transit Data)

Route									
AM Peak									
Round Trip Results									
					Baseline Plus Variant	Baseline Plus Variant			
Total Added Intersection Delay (sec)					22	45			
Total Added Boarding Delay (sec)					65	123			
Total Added Delay (sec)					86	168			
Threshold (sec)					450	450			
Impact?					NO	NO			
Outbound Direction (Eastbound) ¹									
Intersection Delay ²									
	Intersection	Control	Baseline	Plus Project/Variant Control	Baseline + Project (No TI)	Change (from Baseline)	Baseline + Variant (No TI)	Change (from Baseline)	
	Third Street	Signal	42.6	Signal	37.9	-5	38.9	-4	
	Mendell Street	Signal	42.6	Signal	37.9	-5	38.9	-4	
	Jennings/Evans	Signal	17.3	Signal	18	1	19.3	2	
	West Point Road ³	All-Way Stop	-	All-Way Stop	-	-	-	-	
	Ingalls Street ³	All-Way Stop	-	All-Way Stop	-	-	-	-	
	Innes Avenue	Side-Street Stop	8.9	Signal	19.4	11	30.5	22	
	Griffith Street	Side-Street Stop	0	Signal	2.1	2	1.5	2	
	Arelous Walker	Side-Street Stop	0	Signal	0.5	1	1	1	
	Earl Street	Side-Street Stop	0	Signal	1.9	2	0.5	1	
	Donahue Street	Signal	30.0	Signal	28.0	-2	29.1	-1	
	Outbound Intersection Delay			141.4	145.7	4	159.7	18	
Boarding Delay									
	Total Transit Trips ⁴			118				355	
	Percentage using 19 Polk ⁵			53%			4.0		
	Buses per Hour			16				47	
	Added Trips per Bus						2		
	Time per Pax (sec) ⁶			31				94	
Outbound Boarding Delay									
Inbound Direction (Westbound) ¹									
Intersection Delay ²									
	Intersection	Control	Baseline	Plus Project/Variant Control	Baseline + Project (No TI)	Change (from Baseline)	Baseline + Variant (No TI)	Change (from Baseline)	
	Donahue Street	Signal	23.4	Signal	18.1	-5	18.3	-5	
	Earl Street	Side-Street Stop	0	Signal	7.1	7	10.1	10	
	Arelous Walker	Side-Street Stop	0	Signal	15.7	16	24	24	
	Griffith Street	Side-Street Stop	0	Signal	3.3	3	2.5	3	
	Innes Avenue	Side-Street Stop	2.8	Signal	20.1	17	17.5	15	
	Ingalls Street ³	All-Way Stop	-	All-Way Stop	-	-	-	-	
	West Point Road ³	All-Way Stop	-	All-Way Stop	-	-	-	-	
	Jennings/Evans	Signal	8.6	Signal	8.1	-1	8.1	-1	
	Mendell Street	Signal	38.2	Signal	28.1	-10	28.5	-10	
	Third Street	Signal	38.2	Signal	28.1	-10	28.5	-10	
	Inbound Intersection Delay			111.2	128.6	17	137.5	26	
Boarding Delay									
	Total Transit Trips ⁴			119				103	
	Percentage using 19 Polk ⁵			56%			4.0		
	Buses per Hour			17				14	
	Added Trips per Bus						2		
	Time per Pax (sec) ⁶			33				29	
Inbound Boarding Delay									

Notes:

1. Outbound refers to trips headed away from downtown SF (Financial District, SoMa, Mission Bay), while inbound refers to trips headed towards downtown SF, consistent with the terminology the SHVTA uses. From the perspective of the project site, Outbound trips are headed **to** the project site, while Inbound trips are headed **away** from the project site.
2. Intersection delays are provided from Synchro LOS reports (N:\Projects\2015 Projects\SF15-0820_India_Basin_TIA Analysis\Synchro\Results)
3. Since the Project Variant would not add any vehicle trips at the West Point Road and Ingalls Street intersections, there would be no change in transit delay.
4. Total added transit trips for the Project and Variant is based on methodology described in Trip Generation Memo and summarized in Trip Generation summary spreadsheet (N:\Projects\2015 Projects\SF15-0820_India_Basin_TIA Analysis\Trip Gen and Assignment)
5. Proportion of trips using each route is based on a combination of trip distribution to each superdistrict and proportion of transit trips taking each route to each superdistrict (see "Proportions" tab for detailed calculations). Proportions used for the 19 Polk are for the Local Maximum Load Point, since the transit delay analysis is for the Evans Avenue corridor
6. Time per passenger represents the average amount of time needed per passenger to board the bus, which includes time to enter the bus and pay fare. The CPHHS EIR assumed an average of 2 seconds per passenger, so this analysis is consistent with that assumption

9 Polk

PM Peak									
Round Trip Results									
		Baseline Plus Variant		Baseline Plus Project		Baseline Plus Variant			
Total Added Intersection Delay (sec)		31		49					
Total Added Boarding Delay (sec)		82		143					
Total Added Delay (sec)		113		192					
Threshold (sec)		450		450					
Impact?		NO		NO					
Outbound Direction (Eastbound) ¹									
Intersection Delay ²									
Intersection	Control	Baseline	Plus Project/Variant	Baseline + Project (No TI)	Change (from Baseline)	Baseline + Variant (No TI)	Change (from Baseline)		
Third Street	Signal	40.4	Signal	35.7	-5	33.4	-7		
Mendell Street	Signal	40.4	Signal	35.7	-5	33.4	-7		
Jennings/Evans	Signal	19.9	Signal	20.7	1	18.2	-2		
West Point Road ³	All-Way Stop	-	All-Way Stop	-	-	-	-		
Ingalls Street ³	All-Way Stop	-	All-Way Stop	-	-	-	-		
Innes Avenue	Side-Street Stop	9.1	Signal	19.5	10	17.4	8		
Griffith Street	Side-Street Stop	0	Signal	2.3	2	1	1		
Arelous Walker	Side-Street Stop	0	Signal	0.8	1	1.3	1		
Earl Street	Side-Street Stop	0	Signal	1.9	2	0.7	1		
Donahue Street	Signal	30.2	Signal	28.2	-2	25.8	-4		
Outbound Intersection Delay		140.0		144.8		5		131.2 -9	
Boarding Delay									
Total Transit Trips ⁴		200		123					
Percentage using 19 Polk ⁵		53%		55%					
Buses per Hour		27		4.0					
Added Trips per Bus		2		16					
Time per Pax (sec) ⁶		53		2					
Outbound Boarding Delay		53		2				33	
Inbound Direction (Westbound) ¹									
Intersection Delay ²									
Intersection	Control	Baseline	Plus Project/Variant	Baseline + Project (No TI)	Change (from Baseline)	Baseline + Variant (No TI)	Change (from Baseline)		
Donahue Street	Signal	21.4	Signal	17.1	-4	17.8	-4		
Earl Street	Side-Street Stop	0	Signal	7.8	8	16.9	17		
Arelous Walker	Side-Street Stop	0	Signal	17.6	18	30.1	30		
Griffith Street	Side-Street Stop	0	Signal	4.1	4	4.3	4		
Innes Avenue	Side-Street Stop	3.6	Signal	21.6	18	28.8	25		
Ingalls Street ³	All-Way Stop	-	All-Way Stop	-	-	-	-		
West Point Road ³	All-Way Stop	-	All-Way Stop	-	-	-	-		
Jennings/Evans	Signal	8.6	Signal	8	-1	9.2	1		
Mendell Street	Signal	34.2	Signal	26.1	-8	26.4	-8		
Third Street	Signal	34.2	Signal	26.1	-8	26.4	-8		
Inbound Intersection Delay		102.0		128.4		26		159.9 58	
Boarding Delay									
Total Transit Trips ⁴		102		394					
Percentage using 19 Polk ⁵		56%		56%					
Buses per Hour		14		4.0					
Added Trips per Bus		14		55					
Time per Pax (sec) ⁶		29		2					
Inbound Boarding Delay		29		2				110	

Transit Delay Thresholds ¹	Route	
	AM	PM
	4	4.5
	240	270
		minutes
		seconds

Notes:

1. Transit delay impact thresholds half of the headway of the route being analyzed. Route 44 operates at 8 minute headways in the AM peak and 9 minute headways in the PM peak. This is based on the SFMTA Transit Data Memorandum for T15 (May 2015) (N:\Reference\T1A Guidelines\San Francisco\Transit Data)

Route 44 O'Shaughnessy											
AM Peak						PM Peak					
Round Trip Results						Round Trip Results					
			Baseline Plus Project	Baseline Plus Variant					Baseline Plus Project	Baseline Plus Variant	
Total Added Intersection Delay (sec)			15	18		Total Added Intersection Delay (sec)			14	27	
Total Added Boarding Delay (sec)			27	54		Total Added Boarding Delay (sec)			40	66	
Total Added Delay (sec)			42	72		Total Added Delay (sec)			54	93	
Threshold (sec)			240	240		Threshold (sec)			270	270	
Impact?			NO	NO		Impact?			NO	NO	
Outbound Direction (Eastbound) ¹						Outbound Direction (Eastbound) ¹					
Intersection Delay ²						Intersection Delay ²					
Intersection	Control	Baseline	Plus Project/Variant Control	Baseline + Project (No TI)	Change (from Baseline)	Intersection	Control	Baseline	Plus Project/Variant Control	Baseline + Project (No TI)	Change (from Baseline)
Third Street	Signal	32.7	Signal	47.8	15	Third Street	Signal	42.6	Signal	54.6	12
Mendell Street	Signal	42.6	Signal	37.9	-5	Mendell Street	Signal	40.4	Signal	35.7	-5
Jennings/Evans	Signal	17.3	Signal	18	1	Jennings/Evans	Signal	19.9	Signal	20.7	1
West Point Road ³	All-Way Stop	-	All-Way Stop	-	-	West Point Road ³	All-Way Stop	-	All-Way Stop	-	-
Ingalls Street ³	All-Way Stop	-	All-Way Stop	-	-	Ingalls Street ³	All-Way Stop	-	All-Way Stop	-	-
Outbound Intersection Delay		92.6	103.7		11	Outbound Intersection Delay		102.9	111.0		8
Boarding Delay						Boarding Delay					
Total Transit Trips ⁴		118	118		355	Total Transit Trips ⁴		200	200		123
Percentage using 44 O'Shaughnessy ⁵		45%	45%		43%	Percentage using 44 O'Shaughnessy ⁵		45%	45%		43%
Buses per Hour		7.5	7.5		21	Buses per Hour		6.7	6.7		8
Added Trips per Bus		7	7		21	Added Trips per Bus		14	14		8
Time per Pax (sec) ⁶		2	2		43	Time per Pax (sec) ⁶		2	2		17
Outbound Boarding Delay		14	14		43	Outbound Boarding Delay		27	27		17
Inbound Direction (Westbound) ¹						Inbound Direction (Westbound) ¹					
Intersection Delay ²						Intersection Delay ²					
Intersection	Control	Baseline	Plus Project/Variant Control	Baseline + Project (No TI)	Change (from Baseline)	Intersection	Control	Baseline	Plus Project/Variant Control	Baseline + Project (No TI)	Change (from Baseline)
Ingalls Street ³	All-Way Stop	-	All-Way Stop	-	-	Ingalls Street ³	All-Way Stop	-	All-Way Stop	-	-
West Point Road ³	All-Way Stop	-	All-Way Stop	-	-	West Point Road ³	All-Way Stop	-	All-Way Stop	-	-
Jennings/Evans	Signal	8.6	Signal	8.1	-1	Jennings/Evans	Signal	8.6	Signal	8.0	-1
Mendell Street	Signal	9.9	Signal	14.0	4	Mendell Street	Signal	9.8	Signal	16.4	7
Inbound Intersection Delay		18.5	22.1		4	Inbound Intersection Delay		18.4	24.4		6
Boarding Delay						Boarding Delay					
Total Transit Trips ⁴		119	119		103	Total Transit Trips ⁴		102	102		394
Percentage using 44 O'Shaughnessy ⁵		42%	42%		42%	Percentage using 44 O'Shaughnessy ⁵		42%	42%		42%
Buses per Hour		7.5	7.5		6	Buses per Hour		6.7	6.7		25
Added Trips per Bus		7	7		6	Added Trips per Bus		6	6		25
Time per Pax (sec) ⁶		2	2		12	Time per Pax (sec) ⁶		2	2		50
Inbound Boarding Delay		13	13		12	Inbound Boarding Delay		13	13		50

Notes:

1. Outbound refers to trips headed away from downtown SF (Financial District, SoMa, Mission Bay), while Inbound refers to trips headed towards downtown SF, consistent with the terminology the SFMTA uses. From the perspective of the project site, Outbound trips are headed to the project site, while Inbound trips are headed away from the project site.
2. Intersection delays are provided from Synchro LOS reports (N:\Projects\2015 Projects\SF15-0820_India_Basin_T1A\Analysis\Synchro\Results) (see "Proportions" tab for detailed calculations). Proportions used for the 19 Polk are for the Local Maximum Load Point, since the transit delay analysis is for the Evans Avenue corridor
3. Since the Project/Variant would not add any vehicle trips at the West Point Road and Ingalls Street Intersections, there would be no change in transit delay.
4. Total added transit trips for the Project and Variant is based on methodology described in Trip Generation Memo and summarized in Trip Generation summary spreadsheet (N:\Projects\2015 Projects\SF15-0820_India_Basin_T1A\Analysis\Trip Gen and Assignment)
5. Proportion of trips using each route is based on a combination of trip distribution to each superdistrict and proportion of transit trips taking each route to each superdistrict (see "Proportions" tab for detailed calculations). Proportions used for the 19 Polk are for the Local Maximum Load Point, since the transit delay analysis is for the Evans Avenue corridor
6. Time per passenger represents the average amount of time needed per passenger to board the bus, which includes time to enter the bus and pay fare. The CPHPS EIR assumed an average of 2 seconds per passenger, so this analysis is consistent with that assumption

Transit Delay Impacts By Year for Proposed Project

Year	IB Phase	India Basin Vehicle Trips as % of Full Proposed Project		CPHPS Major Phase	CPHPS Vehicle Trips as % of Full Project		India Basin Proposed Project Added Transit Delay (min:sec)		Half-Headway Threshold (min:sec)		Significant Impact Triggered?	
		AM	PM		AM	PM	AM	PM	AM	PM	AM	PM
2018		0%	0%		0%	0%	01:26	01:53	07:30	07:30	No	No
2019		0%	0%		0%	0%	01:35	01:44	07:30	07:30	No	No
2020		0%	0%		0%	0%	01:35	01:44	07:30	07:30	No	No
2021	1	80%	75%	1	32%	51%	03:41	04:30	07:30	07:30	No	No
2022	2	100%	100%		32%	51%	03:55	04:30	07:30	07:30	No	No
2023		100%	100%		32%	51%	03:55	04:59	03:45	03:45	YES	YES
2024		100%	100%		32%	51%	03:55	04:59	03:15	03:15	YES	YES
2025		100%	100%	2	54%	69%	05:10	07:17	03:15	03:15	YES	YES
2026		100%	100%		54%	69%	05:10	07:17	03:15	03:15	YES	YES
2027		100%	100%		54%	69%	05:10	07:17	03:15	03:15	YES	YES
2028		100%	100%		54%	69%	05:10	07:17	03:15	03:15	YES	YES
2029		100%	100%		54%	69%	05:10	07:17	03:15	03:15	YES	YES
2030		100%	100%		54%	69%	05:10	07:17	03:15	03:15	YES	YES
2031		100%	100%	3	82%	87%	07:01	10:40	03:15	03:15	YES	YES
2032		100%	100%		82%	87%	07:01	10:40	03:15	03:15	YES	YES
2033		100%	100%		82%	87%	07:01	10:40	03:15	03:15	YES	YES
2034		100%	100%	4	100%	100%	08:08	14:03	03:15	03:15	YES	YES
2035		100%	100%		100%	100%	08:08	14:03	03:15	03:15	YES	YES
2036		100%	100%		100%	100%	08:08	14:03	03:15	03:15	YES	YES
2037		100%	100%		100%	100%	08:08	14:03	03:15	03:15	YES	YES
2038		100%	100%		100%	100%	08:08	14:03	03:15	03:15	YES	YES
2039		100%	100%		100%	100%	08:08	14:03	03:15	03:15	YES	YES
2040		100%	100%		100%	100%	08:08	15:21	03:15	03:15	YES	YES

Notes:

1. Delay calculations for 2018, 2022, and 2040 are based on Synchro calculations/SimTraffic microsimulation and are **bolded**. Delay for other years is based on linear (AM) or exponential (PM) interpolation.
2. The half-headway significance threshold decreases in 2023 and 2024 because headways on the 44 O'Shaughnessy bus line are anticipated to decrease to 7.5 and 6.5 minutes, respectively, in those years, according to the CPHPS Transportation Plan.

Transit Delay Impacts By Year for Project Variant

Year	IB Phase	India Basin Vehicle Trips as % of Full Proposed Project		CPHPS Major Phase	CPHPS Vehicle Trips as % of Full Project		India Basin Proposed Project Added Transit Delay (min:sec)		Half-Headway Threshold (min:sec)		Significant Impact Triggered?	
		AM	PM		AM	PM	AM	PM	AM	PM	AM	PM
2018		0%	0%		0%	0%	02:48	03:12	07:30	07:30	No	No
2019		0%	0%		0%	0%	05:37	03:19	07:30	07:30	No	No
2020		0%	0%		0%	0%	05:37	03:19	07:30	07:30	No	No
2021	1	70%	47%	1	32%	51%	08:27	03:57	07:30	07:30	YES	No
2022	2	100%	100%		32%	51%	11:59	08:21	07:30	07:30	YES	YES

Notes:

1. Delay calculations for 2018 and 2022 are based on Synchro calculations/SimTraffic microsimulation and are **bolded**. Delay for other years is based on linear (AM) or exponential (PM) interpolation.

Route 44 O'Shaughnessy - CPP AM

Note: Route 44 was selected for this analysis because it will be the most frequent route along the corridor in the Cumulative scenario. As such, the threshold of significance is low, so if an identified significant impact is mitigated for this line, it is highly likely that the impact would be mitigated for other lines as well.

2040 No Project (CHPS)		
CHPS Headway	6.5 min	
Change	390 sec	
Sig Threshold	195 sec	

2040 Plus Project Averages		
Average Speed	9.1 mph	
Change	-6.9 mph	
Travel Time	1132 seconds	
Change	483 seconds	
Significant Impact?	YES	

2040 No Project AM - Eastbound Direction		
Travel Time Between Third-Jennings Speed 16 mph 23.5 ft/s Bus lane in place Distance 3080 ft Travel Time 131 seconds		
Dwell Time Due to Ridership Ridership 141 Source: SF-CHAMP CC Model Run Rld Time per Person 2 sec/pax Buses per Hour 9.2 buses Time 31 seconds		
Travel Time Between Jennings-Donahue Initial Speed 19 mph 27.9 ft/s From SimTraffic Model Distance 4480 ft Initial Time 161 seconds Added Time 31 due to ridership Travel Time 192 seconds Speed 15.9 mph		
Totals - Route 44 Total Travel Time 323 sec Total Distance 7560 ft Average Speed 16.0 mph		

2040 No Project AM - Westbound Direction		
Travel Time Between Third-Jennings Speed 16 mph 23.5 ft/s Bus lane in place Distance 3080 ft Travel Time 131 seconds		
Dwell Time Due to Ridership Ridership 165 Source: SF-CHAMP CC Model Run Rld Time per Person 2 sec/pax Buses per Hour 9.2 buses Time 37 seconds		
Travel Time Between Jennings-Donahue Initial Speed 20 mph 29.3 ft/s From SimTraffic Model Distance 4480 ft Initial Time 153 seconds Added Time 37 due to ridership Travel Time 190 seconds Speed 16.1 mph		
Totals - Route 44 Total Travel Time 321 sec Total Distance 7560 ft Average Speed 16.1 mph		

CPP - Eastbound Direction		
Travel Time Between Third-Jennings Speed 16 mph 23.5 ft/s Bus lane in place Distance 3080 ft Travel Time 131 seconds		
Dwell Time Due to Ridership Add'l Riders 217 Source: Transit Ridership Forecasts Time per Person 2 sec/pax Buses per Hour 9.2 buses Time 47 seconds		
Travel Time Between Jennings-Donahue Initial Speed 18 mph 26.4 ft/s From SimTraffic Model Distance 4480 ft Initial Time 170 seconds Added Time 47 seconds Travel Time 217 seconds Speed 14.1 mph		
Totals - Route 44, Eastbound Total Travel Time 348 sec Total Distance 7560 ft Average Speed 14.8 mph		

CPP - Westbound Direction		
Travel Time Between Third-Jennings Speed 16 mph 23.5 ft/s Bus lane in place Distance 3080 ft Travel Time 131 seconds		
Dwell Time Due to Ridership Add'l Riders 359 Source: Transit Ridership Forecasts Time per Person 2 sec/pax Buses per Hour 9.2 buses Time 42 seconds		
Travel Time Between Jennings-Donahue Initial Speed 9 mph 7.3 ft/s From SimTraffic Model Distance 4480 ft Initial Time 611 seconds Added Time 42 seconds Travel Time 653 seconds Speed 4.3 mph		
Totals - Route 44, Westbound Total Travel Time 784 sec Total Distance 7560 ft Average Speed 6.6 mph		

Route 44 O'Shaughnessy - CPP PM

Note: Route 44 was selected for this analysis because it will be the most frequent route along the corridor in the Cumulative scenario. As such, the threshold of significance is low, so if an identified significant impact is mitigated for this line, it is highly likely that the impact would be mitigated for other lines as well.

2040 No Project (CHPS)	
CHPS Headway	6.5 min
	390 sec
Sig Threshold	195 sec

2040 Plus Project Averages	
Average Speed	6.5 mph
Change	-8.9 mph
Travel Time	1500 seconds
Change	921 seconds
Significant Impact?	Yes

2040 No Project PM - Eastbound Direction	
Travel Time Between Third-Jennings Speed 16 mph 23.5 ft/s 3080 ft Distance 3080 ft Travel Time 131 seconds	
Dwell Time Due to Ridership Ridership 190 Source: SF-CHAMP CC Model Run Ridership Time per Person 2 sec/pax Buses per Hour 9.2 buses Time 41 seconds	
Travel Time Between Jennings-Donahue Initial Speed 18 mph 26.4 ft/s 4480 ft Distance 4480 ft Initial Time 170 seconds Added Time 41 due to ridership Travel Time 211 seconds Speed 14.5 mph	
Totals - Route 44 (average) Total Travel Time 342 sec Total Distance 7560 ft Average Speed 15.1 mph	

2040 No Project PM - Westbound Direction	
Travel Time Between Third-Jennings Speed 16 mph 23.5 ft/s 3080 ft Distance 3080 ft Travel Time 131 seconds	
Dwell Time Due to Ridership Ridership 234 Source: SF-CHAMP CC Model Run Ridership Time per Person 2 sec/pax Buses per Hour 9.2 buses Time 51 seconds	
Travel Time Between Jennings-Donahue Initial Speed 21 mph 30.8 ft/s 4480 ft Distance 4480 ft Initial Time 145 seconds Added Time 51 due to ridership Travel Time 196 seconds Speed 15.5 mph	
Totals - Route 44 (average) Total Travel Time 327 sec Total Distance 7560 ft Average Speed 15.7 mph	

CPP - Eastbound Direction	
Travel Time Between Third-Jennings Speed 16 mph 23.5 ft/s 3080 ft Distance 3080 ft Travel Time 131 seconds	
Dwell Time Due to Ridership Add'l Riders 273 Source: Transit Ridership Forecasts Time per Person 2 sec/pax Buses per Hour 9.2 buses Time 60 seconds	
Travel Time Between Jennings-Donahue Initial Speed 16 mph 23.5 ft/s 4480 ft Distance 4480 ft Initial Time 191 seconds Added Time 60 seconds Travel Time 251 seconds Speed 12.2 mph	
Totals - Route 44, Eastbound Total Travel Time 382 sec Total Distance 7560 ft Average Speed 19.5 mph	

CPP - Westbound Direction	
Travel Time Between Third-Jennings Speed 16 mph 23.5 ft/s 3080 ft Distance 3080 ft Travel Time 131 seconds	
Dwell Time Due to Ridership Add'l Riders 273 Source: Transit Ridership Forecasts Time per Person 2 sec/pax Buses per Hour 9.2 buses Time 59 seconds	
Travel Time Between Jennings-Donahue Initial Speed 3 mph 4.4 ft/s 4480 ft Distance 4480 ft Initial Time 1018 seconds Added Time 59 seconds Travel Time 1077 seconds Speed 2.8 mph	
Totals - Route 44, Westbound Total Travel Time 1208 sec Total Distance 7560 ft Average Speed 4.3 mph	

Route 44 O'Shaughnessy - CPP AM (Mitigated)

Note: Route 44 was selected for this analysis because it will be the most frequent route along the corridor in the Cumulative scenario. As such, the threshold of significance is low, so if an identified significant impact is mitigated for this line, it is highly likely that the impact would be mitigated for other lines as well.

2040 No Project (CHPS)	
CHPS Headway	6.5 min
CHPS Headway Change	390 sec
Sig Threshold	195 sec

2040 Plus Project Averages	
Average Speed	16.0 mph
Change	0.0 mph
Travel Time	644 seconds
Change	0 seconds
Significant Impact?	NO

2040 No Project AM - Eastbound Direction	
Speed	Travel Time Between Third-Jennings 16 mph Bus lane in place
Distance	23.5 ft/s 3080 ft
Travel Time	131 seconds
Dwell Time Due to Ridership 143 Source: SF-CHAMP CC Mode/Run Rid	
Ridership	2 sec/pax
Time per Person	9.2 buses
Buses per Hour	31 seconds
Time	
Travel Time Between Jennings-Donahue From SimTraffic Model	
Initial Speed	19 mph 27.9 ft/s
Distance	4480 ft
Initial Time	161 seconds
Added Time	31 due to ridership
Travel Time	193 seconds
Speed	15.8 mph
Totals - Route 44	
Total Travel Time	323 sec
Total Distance	7560 ft
Average Speed	16.0 mph

2040 No Project AM - Westbound Direction	
Speed	Travel Time Between Third-Jennings 16 mph Bus lane in place
Distance	23.5 ft/s 3080 ft
Travel Time	131 seconds
Dwell Time Due to Ridership 169 Source: SF-CHAMP CC Mode/Run Rid	
Ridership	2 sec/pax
Time per Person	9.2 buses
Buses per Hour	37 seconds
Time	
Travel Time Between Jennings-Donahue From SimTraffic Model	
Initial Speed	20 mph 29.3 ft/s
Distance	4480 ft
Initial Time	153 seconds
Added Time	37 due to ridership
Travel Time	190 seconds
Speed	16.1 mph
Totals - Route 44	
Total Travel Time	321 sec
Total Distance	7560 ft
Average Speed	16.1 mph

CPP - Eastbound Direction	
Speed	Travel Time Between Third-Donahue 16 mph Bus lane in place
Distance	23.5 ft/s 7560 ft
Travel Time	322 seconds
Totals - Route 44, Eastbound	
Total Travel Time	322 sec
Total Distance	7560 ft
Average Speed	16.0 mph

CPP - Westbound Direction	
Speed	Travel Time Between Third-Donahue 16 mph Bus lane in place
Distance	23.5 ft/s 7560 ft
Time	322 seconds
Totals - Route 44, Westbound	
Total Travel Time	322 sec
Total Distance	7560 ft
Average Speed	16.0 mph

Route 44 O'Shaughnessy - CPP PM (Mitigated)

Note: Route 44 was selected for this analysis because it will be the most frequent route along the corridor in the Cumulative scenario. As such, the threshold of significance is low, so if an identified significant impact is mitigated for this line, it is highly likely that the impact would be mitigated for other lines as well

2040 No Project (CHPS)	
CHPS Headway	6.5 min
Change	300 sec
Sig Threshold	195 sec

2040 Plus Project Averages	
Average Speed	16.0 mph
Change	0.6 mph
Travel Time	644 seconds
Change	-25 seconds
Significant Impact?	NO

2040 No Project PM - Eastbound Direction	
Travel Time Between Third-Jennings Bus lane in place	
Speed	16 mph
	23.5 ft/s
Distance	3080 ft
Travel Time	131 seconds

Dwell Time Due to Ridership	
190 Source: SF-CHAMP CC Model Run Rid	
Ridership	
Time per Person	2 sec/pax
Buses per Hour	9.2 buses
Time	41 seconds

Travel Time Between Jennings-Donahue	
From SimTraffic Model	
Initial Speed	18 mph
	26.4 ft/s
Distance	4480 ft
Initial Time	170 seconds
Added Time	41 due to ridership
Travel Time	211 seconds
Speed	14.5 mph

Totals - Route 44 (average)	
Total Travel Time	342 sec
Total Distance	7560 ft
Average Speed	15.1 mph

2040 No Project PM - Westbound Direction	
Travel Time Between Third-Jennings Bus lane in place	
Speed	16 mph
	23.5 ft/s
Distance	3080 ft
Travel Time	131 seconds

Dwell Time Due to Ridership	
234 Source: SF-CHAMP CC Model Run Rid	
Ridership	
Time per Person	2 sec/pax
Buses per Hour	9.2 buses
Time	51 seconds

Travel Time Between Jennings-Donahue	
From SimTraffic Model	
Initial Speed	21 mph
	30.8 ft/s
Distance	4480 ft
Initial Time	145 seconds
Added Time	51 due to ridership
Travel Time	196 seconds
Speed	15.5 mph

Totals - Route 44 (average)	
Total Travel Time	327 sec
Total Distance	7560 ft
Average Speed	15.7 mph

CPP - Eastbound Direction	
Travel Time Between Third-Donahue Bus lane in place	
Speed	16 mph
	23.5 ft/s
Distance	7560 ft
Travel Time	322 seconds

Totals - Route 44, Eastbound	
Total Travel Time	322 sec
Total Distance	7560 ft
Average Speed	16.0 mph

CPP - Westbound Direction	
Travel Time Between Third-Donahue Bus lane in place	
Speed	16 mph
	23.5 ft/s
Distance	7560 ft
Time	322 seconds

Totals - Route 44, Westbound	
Total Travel Time	322 sec
Total Distance	7560 ft
Average Speed	16.0 mph

Route 44 O'Shaughnessy - CPV AM

Note: Route 44 was selected for this analysis because it will be the most frequent route along the corridor in the Cumulative scenario. As such, the threshold of significance is low, so if an identified significant impact is mitigated for this line, it is highly likely that the impact would be mitigated for other lines as well.

2040 No Project (CHPS)	
CHPS Headway	6.5 min
	390 sec
Sig Threshold	195 sec

2040 Plus Project Averages	
Average Speed	7.9 mph
Change	-8.1 mph
Travel Time	1302 seconds
Change	658 seconds
Significant Impact?	Yes

2040 No Project AM - Eastbound Direction	
Travel Time Between Third-Jennings Speed 16 mph 23.5 ft/s Distance 3080 ft Travel Time 131 seconds	
Dwell Time Due to Ridership Ridership 143 Time per Person 2 sec/pax Buses per Hour 9.2 buses Time 31 seconds	Source: SF-CHAMP CC Model Run Rld
Travel Time Between Jennings-Donahue Initial Speed 19 mph Distance 4480 ft Initial Time 161 seconds Added Time 31 due to ridership Travel Time 192 seconds Speed 15.9 mph	From SimTraffic Model
Totals - Route 44 Total Travel Time 323 sec Total Distance 7560 ft Average Speed 16.0 mph	

2040 No Project AM - Westbound Direction	
Travel Time Between Third-Jennings Speed 16 mph 23.5 ft/s Distance 3080 ft Travel Time 131 seconds	
Dwell Time Due to Ridership Ridership 189 Time per Person 2 sec/pax Buses per Hour 9.2 buses Time 37 seconds	Source: SF-CHAMP CC Model Run Rld
Travel Time Between Jennings-Donahue Initial Speed 20 mph Distance 4480 ft Initial Time 153 seconds Added Time 37 due to ridership Travel Time 190 seconds Speed 16.1 mph	From SimTraffic Model
Totals - Route 44 Total Travel Time 321 sec Total Distance 7560 ft Average Speed 16.1 mph	

CPV - Eastbound Direction	
Travel Time Between Third-Jennings Speed 16 mph 23.5 ft/s Distance 3080 ft Travel Time 131 seconds	
Dwell Time Due to Ridership Add'l Riders 259 Time per Person 2 sec/pax Buses per Hour 9.2 buses Time 56 seconds	Source: Transit Ridership Forecasts
Travel Time Between Jennings-Donahue Initial Speed 17 mph Distance 4480 ft Initial Time 180 seconds Added Time 56 seconds Travel Time 236 seconds Speed 12.9 mph	From SimTraffic Model
Totals - Route 44, Eastbound Total Travel Time 367 sec Total Distance 7560 ft Average Speed 14.0 mph	

CPV - Westbound Direction	
Travel Time Between Third-Jennings Speed 16 mph 23.5 ft/s Distance 3080 ft Travel Time 131 seconds	
Dwell Time Due to Ridership Add'l Riders 198 Time per Person 2 sec/pax Buses per Hour 9.2 buses Time 41 seconds	Source: Transit Ridership Forecasts
Travel Time Between Jennings-Donahue Initial Speed 4 mph Distance 4480 ft Initial Time 763 seconds Added Time 41 seconds Travel Time 804 seconds Speed 3.8 mph	From SimTraffic Model
Totals - Route 44, Westbound Total Travel Time 935 sec Total Distance 7560 ft Average Speed 5.3 mph	

Route 44 O'Shaughnessy - CPV PM

Note: Route 44 was selected for this analysis because it will be the most frequent route along the corridor in the Cumulative scenario. As such, the threshold of significance is low, so if an identified significant impact is mitigated for this line, it is highly likely that the impact would be mitigated for other lines as well

2040 No Project (CHPS)		
CHPS Headway	6.5 min	
Average Travel Time	390 sec	
Sig Threshold	195 sec	

2040 Plus Project Averages		
Average Speed	6.3 mph	
Change	-9.1 mph	
Average Travel Time	1603 seconds	
Change	974 seconds	
Significant Impact?	YES	

2040 No Project PM - Eastbound Direction	
Travel Time Between Third-Jennings Speed 16 mph 23.5 ft/s 3080 ft Distance 131 seconds Travel Time	
Ridership Dwell Time Due to Ridership 190 Source: SF-CHAMP CC Mode/Run Ridership Time per Person 2 sec/pax Buses per Hour 9.2 buses Time 41 seconds	
Travel Time Between Jennings-Donahue Initial Speed 18 mph 26.4 ft/s 4480 ft Distance 170 seconds Initial Time 41 due to ridership Added Time 211 seconds Travel Time 14.5 mph Speed	
Totals - Route 44 (average) Total Travel Time 342 sec Total Distance 7560 ft Average Speed 15.1 mph	

2040 No Project PM - Westbound Direction	
Travel Time Between Third-Jennings Speed 16 mph 23.5 ft/s 3080 ft Distance 131 seconds Travel Time	
Ridership Dwell Time Due to Ridership 234 Source: SF-CHAMP CC Mode/Run Ridership Time per Person 2 sec/pax Buses per Hour 9.2 buses Time 51 seconds	
Travel Time Between Jennings-Donahue Initial Speed 21 mph 30.8 ft/s 4480 ft Distance 145 seconds Initial Time 51 due to ridership Added Time 196 seconds Travel Time 15.5 mph Speed	
Totals - Route 44 (average) Total Travel Time 327 sec Total Distance 7560 ft Average Speed 15.7 mph	

CPV - Eastbound Direction	
Travel Time Between Third-Jennings Speed 16 mph 23.5 ft/s 3080 ft Distance 131 seconds Travel Time	
Add'l Riders Dwell Time Due to Ridership 265 Source: Transit Ridership Forecasts Time per Person 2 sec/pax Buses per Hour 9.2 buses Time 58 seconds	
Travel Time Between Jennings-Donahue Initial Speed 13 mph 19.1 ft/s 4480 ft Distance 235 seconds Initial Time 58 seconds Added Time 283 seconds Travel Time 10.4 mph Speed	
Totals - Route 44, Eastbound Total Travel Time 424 sec Total Distance 7560 ft Average Speed 12.2 mph	

CPV - Westbound Direction	
Travel Time Between Third-Jennings Speed 16 mph 23.5 ft/s 3080 ft Distance 131 seconds Travel Time	
Add'l Riders Dwell Time Due to Ridership 322 Source: Transit Ridership Forecasts Time per Person 2 sec/pax Buses per Hour 9.2 buses Time 70 seconds	
Travel Time Between Jennings-Donahue Initial Speed 3 mph 4.4 ft/s 4480 ft Distance 1018 seconds Initial Time 70 seconds Added Time 1088 seconds Travel Time 2.8 mph Speed	
Totals - Route 44, Westbound Total Travel Time 1219 sec Total Distance 7560 ft Average Speed 4.2 mph	

Route 44 O'Shaughnessy - CPV AM (Mitigated)

Note: Route 44 was selected for this analysis because it will be the most frequent route along the corridor in the Cumulative scenario. As such, the threshold of significance is low, so if an identified significant impact is mitigated for this line, it is highly likely that the impact would be mitigated for other lines as well

2040 No Project (CHPS)	
CHPS Headway	6.5 min
Change	300 sec
Sig Threshold	195 sec

2040 Plus Project Averages	
Average Speed	16.0 mph
Change	0.0 mph
Travel Time	644 seconds
Change	0 seconds
Significant Impact?	NO

2040 No Project AM - Eastbound Direction	
Travel Time Between Third-Jennings 16 mph 23.5 ft/s 3080 ft 131 seconds	
Speed	
Distance	
Travel Time	

Dwell Time Due to Ridership	
Ridership	148
Time per Person	2 sec/pax
Buses per Hour	9.2 buses
Time	31 seconds

Travel Time Between Jennings-Donahue	
From SimTraffic Model	
Initial Speed	19 mph
Distance	4480 ft
Initial Time	161 seconds
Added Time	31 due to ridership
Travel Time	192 seconds
Speed	15.8 mph

Totals - Route 44	
Total Travel Time	323 sec
Total Distance	7560 ft
Average Speed	16.0 mph

2040 No Project AM - Westbound Direction	
Travel Time Between Third-Jennings 16 mph 23.5 ft/s 3080 ft 131 seconds	
Speed	
Distance	
Travel Time	

Dwell Time Due to Ridership	
Ridership	169
Time per Person	2 sec/pax
Buses per Hour	9.2 buses
Time	37 seconds

Travel Time Between Jennings-Donahue	
From SimTraffic Model	
Initial Speed	20 mph
Distance	4480 ft
Initial Time	153 seconds
Added Time	37 due to ridership
Travel Time	190 seconds
Speed	16.1 mph

Totals - Route 44	
Total Travel Time	321 sec
Total Distance	7560 ft
Average Speed	16.1 mph

CPV - Eastbound Direction	
Travel Time Between Third-Donahue 16 mph 23.5 ft/s 7560 ft 322 seconds	
Speed	
Distance	
Travel Time	

Totals - Route 44, Eastbound	
Total Travel Time	322 sec
Total Distance	7560 ft
Average Speed	16.0 mph

CPV - Westbound Direction	
Travel Time Between Third-Donahue 16 mph 23.5 ft/s 7560 ft 322 seconds	
Speed	
Distance	
Travel Time	

Totals - Route 44, Westbound	
Total Travel Time	322 sec
Total Distance	7560 ft
Average Speed	16.0 mph

Route 44 O'Shaughnessy - CPV PM (Mitigated)

Note: Route 44 was selected for this analysis because it will be the most frequent route along the corridor in the Cumulative scenario. As such, the threshold of significance is low, so if an identified significant impact is mitigated for this line, it is highly likely that the impact would be mitigated for other lines as well.

2040 No Project (CHPS)	
CHPS Headway	6.5 min
CHPS Headway	390 sec
Sig Threshold	195 sec

2040 Plus Project Averages	
Average Speed	16.0 mph
Change	0.6 mph
Travel Time	64 seconds
Change	-25 seconds
Significant Impact?	NO

2040 No Project PM - Eastbound Direction	
Travel Time Between Third-Jennings Bus lane in place	
Speed	16 mph
Distance	23.5 ft/s
Distance	3080 ft
Travel Time	131 seconds
Dwell Time Due to Ridership	
Ridership	190 Source: SF-CHAMP CC Model Run Rld
Time per Person	2 sec/pax
Buses per Hour	9.2 buses
Time	41 seconds
Travel Time Between Jennings-Donahue	
From SimTraffic Model	
Initial Speed	18 mph
Distance	26.4 ft/s
Distance	4480 ft
Initial Time	170 seconds
Added Time	41 due to ridership
Travel Time	211 seconds
Speed	14.5 mph
Totals - Route 44 (average)	
Total Travel Time	342 sec
Total Distance	7560 ft
Average Speed	15.1 mph

2040 No Project PM - Westbound Direction	
Travel Time Between Third-Jennings Bus lane in place	
Speed	16 mph
Distance	23.5 ft/s
Distance	3080 ft
Travel Time	131 seconds
Dwell Time Due to Ridership	
Ridership	234 Source: SF-CHAMP CC Model Run Rld
Time per Person	2 sec/pax
Buses per Hour	9.2 buses
Time	51 seconds
Travel Time Between Jennings-Donahue	
From SimTraffic Model	
Initial Speed	21 mph
Distance	30.8 ft/s
Distance	4480 ft
Initial Time	145 seconds
Added Time	51 due to ridership
Travel Time	196 seconds
Speed	15.5 mph
Totals - Route 44 (average)	
Total Travel Time	327 sec
Total Distance	7560 ft
Average Speed	15.7 mph

CPV - Eastbound Direction	
Travel Time Between Third-Donahue Bus lane in place	
Speed	16 mph
Distance	23.5 ft/s
Distance	7560 ft
Travel Time	322 seconds
Totals - Route 44, Eastbound	
Total Travel Time	322 sec
Total Distance	7560 ft
Average Speed	16.0 mph

CPV - Westbound Direction	
Travel Time Between Third-Donahue Bus lane in place	
Speed	16 mph
Distance	23.5 ft/s
Distance	7560 ft
Travel Time	322 seconds
Totals - Route 44, Westbound	
Total Travel Time	322 sec
Total Distance	7560 ft
Average Speed	16.0 mph

APPENDIX L: TRAFFIC PERFORMANCE MEASURE CALCULATIONS

BUILDOUT NO PROJECT

Arterial Level of Service: EB Innes Avenue

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Hawes Street	11	2.3	36.2	0.3	33
Hunters Point Boulev	9	0.3	6.9	0.1	40
Griffith Street	1	1.3	11.3	0.1	22
Arelious Walker Driv	2	0.5	15.9	0.1	29
Earl Street	3	0.2	15.7	0.1	29
Donahue Street	5	21.9	35.8	0.1	13
Total		26.6	121.8	0.9	25

Arterial Level of Service: WB Innes Avenue

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Earl Street	3	2.1	17.5	0.1	27
Arelious Walker Driv	2	0.3	15.7	0.1	29
Griffith Street	1	1.7	17.2	0.1	27
Hunters Point Boulev	9	0.7	8.1	0.1	31
Hawes Street	11	0.2	6.7	0.1	41
Jennings Street	6	11.9	46.7	0.3	25
Total		17.0	111.9	0.9	28

Queuing and Blocking Report
Buildout No Project AM Peak

01/26/2017

Intersection: 1: Griffith Street & Innes Avenue

Movement	EB	EB	WB	WB	NB	SB
Directions Served	LT	TR	LT	TR	LTR	LTR
Maximum Queue (ft)	52	53	75	91	46	50
Average Queue (ft)	10	9	18	22	18	18
95th Queue (ft)	34	34	54	62	45	45
Link Distance (ft)	309	309	621	621	869	917
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 2: Innes Avenue & Arelious Walker Drive

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	40	39
Average Queue (ft)	4	12
95th Queue (ft)	23	38
Link Distance (ft)	621	1203
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: Innes Avenue & Earl Street

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	33	37
Average Queue (ft)	2	8
95th Queue (ft)	16	32
Link Distance (ft)	620	1273
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Donahue Street & Innes Avenue

Movement	EB	EB	WB	NB	SB	SB
Directions Served	L	LTR	LTR	LTR	LTR	R
Maximum Queue (ft)	93	111	182	62	125	116
Average Queue (ft)	40	53	77	22	60	51
95th Queue (ft)	77	95	145	54	104	90
Link Distance (ft)	615	615	1320	711	1513	1513
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 6: Jennings Street & Evans Avenue/Innes Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	LT	T	R	LT	T	R	LTR	L	TR
Maximum Queue (ft)	94	68	49	131	155	89	30	32	55
Average Queue (ft)	49	28	15	68	78	16	5	6	17
95th Queue (ft)	81	63	41	112	127	54	23	25	43
Link Distance (ft)	3033	3033		1671	1671		1157		1110
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)			100			100		100	
Storage Blk Time (%)					2				
Queuing Penalty (veh)					1				

Intersection: 9: Innes Avenue & Hunters Point Boulevard

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	60	50
Average Queue (ft)	21	9
95th Queue (ft)	50	36
Link Distance (ft)	851	309
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 11: Innes Avenue & Hawes Street

Movement	EB
Directions Served	LR
Maximum Queue (ft)	64
Average Queue (ft)	27
95th Queue (ft)	56
Link Distance (ft)	897
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 1

5: Donahue Street & Innes Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.1
Total Delay (hr)	1.3	0.1	0.0	0.1	0.9	0.0	0.1	0.1	0.0	0.1	0.1	0.7
Total Del/Veh (s)	26.7	21.9	14.2	26.9	30.2	16.0	24.0	31.0	6.1	29.3	27.4	6.3
Stop Delay (hr)	1.2	0.1	0.0	0.1	0.8	0.0	0.1	0.1	0.0	0.1	0.1	0.6
Stop Del/Veh (s)	24.9	19.2	13.4	23.5	26.1	14.5	22.2	29.0	5.9	26.4	23.7	5.1
Total Stops	130	6	7	6	87	8	8	8	7	9	9	254
Stop/Veh	0.76	0.55	0.78	0.75	0.77	0.80	0.73	0.80	0.78	0.82	0.75	0.62
Travel Dist (mi)	21.7	1.3	1.2	2.1	28.0	2.5	1.4	1.3	1.2	3.2	3.3	116.4
Travel Time (hr)	2.1	0.1	0.1	0.1	1.9	0.1	0.1	0.1	0.1	0.2	0.2	5.7
Avg Speed (mph)	10	11	14	16	15	18	11	9	17	14	15	21
Fuel Used (gal)	0.7	0.0	0.0	0.1	0.9	0.1	0.1	0.1	0.0	0.1	0.1	3.0
Fuel Eff. (mpg)	29.1	29.4	36.9	33.7	30.5	34.5	27.6	24.6	38.0	33.1	32.5	38.7
HC Emissions (g)	6	1	0	0	10	0	0	0	0	0	0	29
CO Emissions (g)	124	17	3	11	253	14	7	6	3	11	11	678
NOx Emissions (g)	15	3	0	1	28	1	1	1	0	1	1	92
Vehicles Entered	170	11	9	8	112	10	11	10	9	11	12	405
Vehicles Exited	169	11	9	8	112	10	11	10	9	11	12	407
Hourly Exit Rate	169	11	9	8	112	10	11	10	9	11	12	407
Input Volume	172	11	10	10	110	10	10	10	10	10	10	402
% of Volume	98	98	88	78	102	98	107	98	88	107	117	101
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0
Density (ft/veh)												
Occupancy (veh)	2	0	0	0	2	0	0	0	0	0	0	6

5: Donahue Street & Innes Avenue Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.1
Total Delay (hr)	3.5
Total Del/Veh (s)	16.0
Stop Delay (hr)	3.1
Stop Del/Veh (s)	14.1
Total Stops	539
Stop/Veh	0.68
Travel Dist (mi)	183.6
Travel Time (hr)	10.9
Avg Speed (mph)	17
Fuel Used (gal)	5.2
Fuel Eff. (mpg)	35.2
HC Emissions (g)	48
CO Emissions (g)	1137
NOx Emissions (g)	145
Vehicles Entered	778
Vehicles Exited	779
Hourly Exit Rate	779
Input Volume	778
% of Volume	100
Denied Entry Before	0
Denied Entry After	0
Density (ft/veh)	589
Occupancy (veh)	11

6: Jennings Street & Evans Avenue/Innes Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.2	3.7	0.2	0.2	0.1
Total Delay (hr)	0.3	0.5	0.0	0.0	1.7	0.0	0.0	0.0	0.0	0.0	0.0	2.7
Total Del/Veh (s)	18.8	10.0	2.7	11.1	11.8	4.4	6.6	6.2	9.1	6.4	3.7	10.5
Stop Delay (hr)	0.2	0.3	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7
Stop Del/Veh (s)	15.9	6.5	2.0	7.7	6.9	2.2	5.2	5.1	7.7	4.8	3.4	6.8
Total Stops	45	88	23	7	265	17	6	1	7	5	23	487
Stop/Veh	0.85	0.51	0.55	0.64	0.52	0.53	0.46	0.33	0.54	0.42	0.49	0.53
Travel Dist (mi)	29.9	98.5	23.3	3.7	172.4	10.7	2.9	0.6	2.6	2.5	9.8	357.0
Travel Time (hr)	1.2	3.3	0.7	0.1	6.7	0.4	0.1	0.0	0.2	0.1	0.5	13.4
Avg Speed (mph)	25	30	31	25	26	28	20	21	18	21	21	27
Fuel Used (gal)	0.7	2.4	0.5	0.1	4.2	0.2	0.1	0.0	0.1	0.1	0.2	8.6
Fuel Eff. (mpg)	41.7	41.4	43.1	42.1	41.1	43.7	39.3	37.7	36.7	36.8	40.1	41.3
HC Emissions (g)	7	39	11	0	54	7	0	0	0	0	2	120
CO Emissions (g)	146	829	197	12	1109	118	8	2	9	9	55	2494
NOx Emissions (g)	24	125	33	2	177	19	1	0	1	1	8	391
Vehicles Entered	52	171	40	11	506	32	13	3	12	12	46	898
Vehicles Exited	52	172	40	11	508	31	13	3	12	12	47	901
Hourly Exit Rate	52	172	40	11	508	31	13	3	12	12	47	901
Input Volume	52	168	38	11	498	32	15	2	14	11	44	886
% of Volume	100	102	105	98	102	96	88	150	87	107	107	102
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0
Density (ft/veh)												1327
Occupancy (veh)	1	3	1	0	7	0	0	0	0	0	0	13

Arterial Level of Service: EB Innes Avenue

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Hawes Street	11	3.2	36.9	0.3	32
Hunters Point Boulev	9	0.5	7.1	0.1	39
Griffith Street	1	1.7	11.8	0.1	22
Arelious Walker Driv	2	0.8	16.3	0.1	28
Earl Street	3	0.5	15.9	0.1	29
Donahue Street	5	34.9	50.4	0.1	9
Total		41.6	138.3	0.9	22

Arterial Level of Service: WB Innes Avenue

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Earl Street	3	1.9	16.6	0.1	28
Arelious Walker Driv	2	0.3	15.7	0.1	29
Griffith Street	1	1.7	17.3	0.1	27
Hunters Point Boulev	9	0.7	8.2	0.1	31
Hawes Street	11	0.2	6.7	0.1	42
Jennings Street	6	11.3	46.3	0.3	26
Total		16.1	110.7	0.9	28

Intersection: 1: Griffith Street & Innes Avenue

Movement	EB	EB	WB	WB	NB	SB
Directions Served	LT	TR	LT	TR	LTR	LTR
Maximum Queue (ft)	61	75	62	66	44	46
Average Queue (ft)	15	18	17	19	17	17
95th Queue (ft)	45	52	49	55	45	45
Link Distance (ft)	309	309	621	621	869	917
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 2: Innes Avenue & Arelious Walker Drive

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	42	35
Average Queue (ft)	4	13
95th Queue (ft)	22	38
Link Distance (ft)	621	1203
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: Innes Avenue & Earl Street

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	35	2	38
Average Queue (ft)	4	0	11
95th Queue (ft)	20	2	37
Link Distance (ft)	620	615	1273
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 5: Donahue Street & Innes Avenue

Movement	EB	EB	WB	NB	SB	SB
Directions Served	L	LTR	LTR	LTR	LTR	R
Maximum Queue (ft)	168	201	101	66	124	115
Average Queue (ft)	90	123	37	23	56	49
95th Queue (ft)	150	186	82	55	100	90
Link Distance (ft)	615	615	1320	711	1513	1513
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 6: Jennings Street & Evans Avenue/Innes Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	LT	T	R	LT	T	R	LTR	L	TR
Maximum Queue (ft)	96	116	68	105	121	49	32	69	38
Average Queue (ft)	54	57	22	54	62	15	5	22	10
95th Queue (ft)	84	98	53	90	102	42	23	53	31
Link Distance (ft)	3033	3033		1671	1671		1157		1110
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)			100			100		100	
Storage Blk Time (%)		1			1			0	
Queuing Penalty (veh)		0			0			0	

Intersection: 9: Innes Avenue & Hunters Point Boulevard

Movement	EB	NB	NB
Directions Served	LR	LT	T
Maximum Queue (ft)	61	61	8
Average Queue (ft)	26	17	0
95th Queue (ft)	54	49	8
Link Distance (ft)	851	309	309
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 11: Innes Avenue & Hawes Street

Movement	EB
Directions Served	LR
Maximum Queue (ft)	49
Average Queue (ft)	20
95th Queue (ft)	49
Link Distance (ft)	897
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 1

5: Donahue Street & Innes Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.2	0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.1
Total Delay (hr)	2.6	0.9	0.1	0.1	0.3	0.0	0.1	0.1	0.0	0.1	0.1	0.6
Total Del/Veh (s)	30.0	34.8	23.8	30.7	28.0	13.3	28.2	31.7	8.5	31.4	29.3	6.3
Stop Delay (hr)	2.3	0.8	0.1	0.1	0.2	0.0	0.1	0.1	0.0	0.1	0.1	0.5
Stop Del/Veh (s)	27.0	29.7	21.9	28.1	24.7	12.6	26.5	29.4	7.9	28.7	26.2	5.1
Total Stops	248	78	12	9	27	10	8	10	7	10	8	233
Stop/Veh	0.80	0.83	0.92	0.90	0.75	0.83	0.80	0.83	0.78	0.83	0.80	0.63
Travel Dist (mi)	39.7	12.0	1.7	2.6	9.0	2.9	1.4	1.6	1.3	3.3	2.7	105.6
Travel Time (hr)	4.1	1.3	0.2	0.2	0.6	0.2	0.1	0.2	0.1	0.2	0.2	5.1
Avg Speed (mph)	10	9	11	15	15	19	10	10	16	14	14	21
Fuel Used (gal)	1.5	0.5	0.1	0.1	0.3	0.1	0.1	0.1	0.0	0.1	0.1	2.7
Fuel Eff. (mpg)	27.3	26.1	31.0	30.7	31.8	36.5	26.8	25.6	35.3	31.7	33.0	38.7
HC Emissions (g)	8	3	0	0	3	0	0	0	0	0	0	25
CO Emissions (g)	217	74	5	14	68	13	5	8	5	12	9	597
NOx Emissions (g)	25	9	1	1	8	1	1	1	1	1	1	80
Vehicles Entered	308	93	13	10	36	12	10	12	9	12	10	367
Vehicles Exited	308	93	13	10	36	11	10	12	9	11	9	366
Hourly Exit Rate	308	93	13	10	36	11	10	12	9	11	9	366
Input Volume	318	92	10	10	35	10	10	10	10	10	10	358
% of Volume	97	101	127	98	102	107	98	117	88	107	88	102
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0
Density (ft/veh)												
Occupancy (veh)	4	1	0	0	1	0	0	0	0	0	0	5

5: Donahue Street & Innes Avenue Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.1
Total Delay (hr)	5.0
Total Del/Veh (s)	20.2
Stop Delay (hr)	4.4
Stop Del/Veh (s)	17.8
Total Stops	660
Stop/Veh	0.73
Travel Dist (mi)	183.7
Travel Time (hr)	12.4
Avg Speed (mph)	15
Fuel Used (gal)	5.5
Fuel Eff. (mpg)	33.5
HC Emissions (g)	41
CO Emissions (g)	1028
NOx Emissions (g)	130
Vehicles Entered	892
Vehicles Exited	888
Hourly Exit Rate	888
Input Volume	886
% of Volume	100
Denied Entry Before	0
Denied Entry After	0
Density (ft/veh)	517
Occupancy (veh)	12

6: Jennings Street & Evans Avenue/Innes Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.2	3.6	0.4	0.2
Total Delay (hr)	0.1	1.1	0.1	0.1	1.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Total Del/Veh (s)	16.4	11.3	3.9	15.7	11.2	3.8	7.9	7.0	2.2	9.0	6.4	3.6
Stop Delay (hr)	0.1	0.7	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Stop Del/Veh (s)	12.7	6.9	2.3	13.1	6.9	2.1	6.5	5.6	2.0	7.3	4.9	3.3
Total Stops	18	196	33	10	189	18	5	1	1	29	7	8
Stop/Veh	0.75	0.54	0.59	0.77	0.52	0.56	0.56	0.33	0.50	0.54	0.41	0.53
Travel Dist (mi)	13.6	205.6	31.6	4.4	122.0	10.8	1.9	0.7	0.5	11.3	3.5	3.1
Travel Time (hr)	0.5	7.1	1.0	0.2	4.7	0.4	0.1	0.0	0.0	0.7	0.2	0.2
Avg Speed (mph)	26	29	31	23	26	28	19	20	22	19	21	21
Fuel Used (gal)	0.3	4.9	0.8	0.1	2.9	0.2	0.1	0.0	0.0	0.3	0.1	0.1
Fuel Eff. (mpg)	40.3	41.7	41.9	39.5	41.8	44.5	35.8	36.0	41.1	34.9	37.5	40.8
HC Emissions (g)	3	55	12	1	35	4	0	0	0	3	0	0
CO Emissions (g)	60	1251	247	15	712	71	5	2	1	61	12	9
NOx Emissions (g)	9	190	40	2	116	13	1	0	0	8	1	1
Vehicles Entered	24	357	55	13	357	32	9	3	2	54	17	15
Vehicles Exited	24	358	55	13	359	32	9	3	2	54	17	15
Hourly Exit Rate	24	358	55	13	359	32	9	3	2	54	17	15
Input Volume	24	374	54	12	351	29	10	4	2	51	18	16
% of Volume	100	96	102	106	102	110	88	75	100	106	96	95
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0
Density (ft/veh)												
Occupancy (veh)	1	7	1	0	5	0	0	0	0	1	0	0

6: Jennings Street & Evans Avenue/Innes Avenue Performance by movement

Movement	All
Denied Delay (hr)	0.1
Denied Del/Veh (s)	0.3
Total Delay (hr)	2.7
Total Del/Veh (s)	10.3
Stop Delay (hr)	1.8
Stop Del/Veh (s)	6.6
Total Stops	515
Stop/Veh	0.54
Travel Dist (mi)	409.1
Travel Time (hr)	15.0
Avg Speed (mph)	27
Fuel Used (gal)	9.9
Fuel Eff. (mpg)	41.4
HC Emissions (g)	113
CO Emissions (g)	2449
NOx Emissions (g)	383
Vehicles Entered	938
Vehicles Exited	941
Hourly Exit Rate	941
Input Volume	945
% of Volume	100
Denied Entry Before	0
Denied Entry After	0
Density (ft/veh)	1188
Occupancy (veh)	15

BUILDOUT + PROJECT

Arterial Level of Service: EB Innes Avenue

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Hawes Street	12	15.3	47.7	0.3	24
Hunters Point Boulev	10	15.4	22.5	0.1	13
Griffith Street	1	9.6	19.7	0.1	13
Arelious Walker Driv	2	5.2	21.6	0.1	22
Earl Street	3	5.6	21.0	0.1	22
Donahue Street	5	30.3	45.3	0.1	10
Total		81.4	177.7	0.9	17

Arterial Level of Service: WB Innes Avenue

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Earl Street	3	19.6	34.6	0.1	13
Arelious Walker Driv	2	14.4	29.7	0.1	16
New Griffith St	1	7.7	23.8	0.1	20
Hunters Point Boulev	10	11.8	19.5	0.1	14
Hawes Street	12	4.0	11.2	0.1	26
Jennings Street	6	12.2	45.5	0.3	25
Total		69.7	164.2	0.9	19

Intersection: 1: Griffith Street/New Griffith St & Innes Avenue

Movement	EB	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	T	TR	LT	TR	LTR	LT	R
Maximum Queue (ft)	215	299	163	260	262	58	70	209
Average Queue (ft)	100	165	53	105	119	16	11	101
95th Queue (ft)	187	284	122	203	217	47	48	177
Link Distance (ft)		310	310	634	634	499	1149	
Upstream Blk Time (%)		0						
Queuing Penalty (veh)		1						
Storage Bay Dist (ft)	160							200
Storage Blk Time (%)	1	7						0
Queuing Penalty (veh)	4	14						0

Intersection: 2: Arelious Walker Drive & Innes Avenue

Movement	EB	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	T	TR	L	R
Maximum Queue (ft)	384	239	84	296	310	77	242
Average Queue (ft)	200	41	18	154	172	14	113
95th Queue (ft)	348	152	58	250	274	43	205
Link Distance (ft)		634	634	606	606		1236
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	350					180	
Storage Blk Time (%)	1	0					2
Queuing Penalty (veh)	3	0					0

Intersection: 3: Earl Street & Innes Avenue

Movement	EB	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	T	TR	L	R
Maximum Queue (ft)	231	74	99	196	213	84	305
Average Queue (ft)	112	15	29	108	114	13	152
95th Queue (ft)	201	50	74	176	191	52	268
Link Distance (ft)		606	606	609	609		1334
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	390					160	
Storage Blk Time (%)							7
Queuing Penalty (veh)							1

Intersection: 5: Donahue Street & Innes Avenue

Movement	EB	EB	WB	NB	SB	SB
Directions Served	L	LTR	LTR	LTR	LTR	R
Maximum Queue (ft)	145	165	172	72	156	132
Average Queue (ft)	61	85	79	21	67	51
95th Queue (ft)	120	139	142	56	123	98
Link Distance (ft)	609	609	1421	794	1412	1412
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 6: Jennings Street & Evans Avenue/Innes Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	LT	T	R	LT	T	R	LTR	L	TR
Maximum Queue (ft)	285	259	70	199	232	160	37	159	316
Average Queue (ft)	137	105	14	94	106	66	9	123	73
95th Queue (ft)	241	212	50	174	197	137	32	175	224
Link Distance (ft)	3102	3102		1604	1604		1230		1087
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)			100			100		100	
Storage Blk Time (%)		4			6	0		19	0
Queuing Penalty (veh)		2			18	1		13	0

Intersection: 10: Innes Avenue & Hunters Point Boulevard

Movement	EB	NB	NB	NB	SB	SB
Directions Served	R	L	T	T	T	T
Maximum Queue (ft)	179	179	278	296	276	253
Average Queue (ft)	81	77	127	157	206	88
95th Queue (ft)	136	151	240	262	308	201
Link Distance (ft)	876		310	310	252	252
Upstream Blk Time (%)			0	0	6	0
Queuing Penalty (veh)			0	0	28	1
Storage Bay Dist (ft)		120				
Storage Blk Time (%)		1	4			
Queuing Penalty (veh)		5	7			

Intersection: 12: Innes Avenue & Hawes Street

Movement	EB	NB	NB	SB	SB
Directions Served	LR	T	T	T	TR
Maximum Queue (ft)	65	149	185	499	418
Average Queue (ft)	25	33	46	138	76
95th Queue (ft)	57	110	135	407	316
Link Distance (ft)	805	252	252	1604	1604
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Network Summary

Network wide Queuing Penalty: 99

5: Donahue Street & Innes Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.2	0.2	0.2	0.1	0.2	0.1	0.3	0.4	0.1
Total Delay (hr)	2.1	0.1	0.1	0.1	1.0	0.0	0.1	0.1	0.0	0.1	0.1	0.8
Total Del/Veh (s)	28.4	31.0	21.9	28.8	32.0	19.6	28.9	25.3	6.2	33.7	29.7	7.2
Stop Delay (hr)	1.9	0.1	0.1	0.1	0.9	0.0	0.1	0.1	0.0	0.1	0.1	0.7
Stop Del/Veh (s)	25.2	25.5	19.5	25.8	27.8	18.3	27.2	23.2	5.8	30.6	25.2	5.8
Total Stops	201	11	9	6	88	9	7	8	10	10	7	259
Stop/Veh	0.76	0.79	0.82	0.67	0.79	1.00	0.78	0.80	0.91	0.83	0.70	0.63
Travel Dist (mi)	33.3	1.8	1.3	2.3	29.3	2.5	1.3	1.5	1.7	3.2	2.6	107.8
Travel Time (hr)	3.3	0.2	0.1	0.2	2.0	0.1	0.1	0.1	0.1	0.2	0.2	4.8
Avg Speed (mph)	10	10	11	15	15	18	10	12	18	14	15	23
Fuel Used (gal)	1.3	0.1	0.0	0.1	1.0	0.1	0.0	0.0	0.0	0.1	0.1	2.7
Fuel Eff. (mpg)	25.0	25.0	27.0	32.2	30.6	35.4	27.0	30.2	39.5	31.7	33.6	40.1
HC Emissions (g)	14	0	0	0	10	0	0	0	0	0	0	36
CO Emissions (g)	397	14	8	12	242	12	6	6	5	12	11	780
NOx Emissions (g)	42	2	1	1	28	1	1	1	1	1	1	98
Vehicles Entered	262	14	10	9	109	9	9	10	11	12	10	402
Vehicles Exited	262	14	10	9	109	9	9	10	11	12	10	404
Hourly Exit Rate	262	14	10	9	109	9	9	10	11	12	10	404
Input Volume	264	15	10	10	106	10	10	10	10	10	10	410
% of Volume	99	92	98	88	103	88	88	98	107	117	98	99
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0
Density (ft/veh)												
Occupancy (veh)	3	0	0	0	2	0	0	0	0	0	0	5

5: Donahue Street & Innes Avenue Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.1
Total Delay (hr)	4.6
Total Del/Veh (s)	18.7
Stop Delay (hr)	4.0
Stop Del/Veh (s)	16.2
Total Stops	625
Stop/Veh	0.71
Travel Dist (mi)	188.6
Travel Time (hr)	11.4
Avg Speed (mph)	17
Fuel Used (gal)	5.6
Fuel Eff. (mpg)	33.9
HC Emissions (g)	62
CO Emissions (g)	1505
NOx Emissions (g)	177
Vehicles Entered	867
Vehicles Exited	869
Hourly Exit Rate	869
Input Volume	877
% of Volume	99
Denied Entry Before	0
Denied Entry After	0
Density (ft/veh)	559
Occupancy (veh)	11

6: Jennings Street & Evans Avenue/Innes Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.4
Denied Del/Veh (s)	0.2	0.2	0.2	0.0	0.0	0.0	0.1	0.1	3.4	1.3	1.1	0.6
Total Delay (hr)	0.6	3.4	0.1	0.1	2.8	0.7	0.1	0.0	2.1	0.1	0.1	10.0
Total Del/Veh (s)	39.5	17.1	5.2	23.4	12.1	9.5	13.8	12.2	23.1	15.7	9.3	15.4
Stop Delay (hr)	0.5	2.0	0.0	0.0	1.2	0.2	0.1	0.0	1.7	0.1	0.1	6.0
Stop Del/Veh (s)	33.3	10.3	1.7	18.7	5.4	2.3	12.3	9.8	19.2	11.8	7.3	9.3
Total Stops	52	360	16	8	341	131	10	1	280	17	35	1251
Stop/Veh	0.96	0.51	0.43	0.89	0.42	0.47	0.62	0.50	0.85	0.74	0.78	0.54
Travel Dist (mi)	30.1	410.6	21.3	2.9	262.2	89.7	3.8	0.5	66.6	4.7	9.3	901.8
Travel Time (hr)	1.5	15.3	0.7	0.1	10.3	3.6	0.2	0.0	5.2	0.3	0.5	37.8
Avg Speed (mph)	20	27	30	20	25	25	17	19	14	16	18	24
Fuel Used (gal)	0.8	10.4	0.5	0.1	6.9	2.3	0.1	0.0	2.3	0.1	0.3	23.8
Fuel Eff. (mpg)	37.3	39.4	41.5	34.5	37.8	39.4	36.5	35.3	29.6	33.0	35.8	37.9
HC Emissions (g)	9	132	8	0	94	27	0	0	18	1	4	293
CO Emissions (g)	190	3040	170	16	2201	621	10	2	464	32	91	6838
NOx Emissions (g)	28	439	26	2	317	94	1	0	58	3	12	982
Vehicles Entered	51	699	37	9	809	276	16	2	321	22	45	2287
Vehicles Exited	52	696	36	9	807	277	16	2	323	23	45	2286
Hourly Exit Rate	52	696	36	9	807	277	16	2	323	23	45	2286
Input Volume	52	687	38	11	808	275	15	2	325	23	44	2280
% of Volume	100	101	95	80	100	101	105	100	99	101	102	100
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0
Density (ft/veh)												474
Occupancy (veh)	1	15	1	0	10	4	0	0	5	0	1	37

Arterial Level of Service: EB Innes Avenue

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Hawes Street	12	21.2	53.4	0.3	21
Hunters Point Boulev	10	16.3	23.4	0.1	12
Griffith Street	1	11.2	21.3	0.1	12
Arelious Walker Driv	2	5.8	22.1	0.1	22
Earl Street	3	3.5	19.0	0.1	24
Donahue Street	5	40.1	55.4	0.1	8
Total		98.2	194.7	0.9	16

Arterial Level of Service: WB Innes Avenue

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Earl Street	3	20.1	35.4	0.1	13
Arelious Walker Driv	2	28.2	43.1	0.1	11
New Griffith St	1	11.5	27.5	0.1	17
Hunters Point Boulev	10	11.5	19.2	0.1	14
Hawes Street	12	3.5	10.7	0.1	27
Jennings Street	6	11.9	45.1	0.3	25
Total		86.8	181.1	0.9	17

Intersection: 1: Griffith Street/New Griffith St & Innes Avenue

Movement	EB	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	T	TR	LT	TR	LTR	LT	R
Maximum Queue (ft)	220	325	281	287	296	55	57	194
Average Queue (ft)	109	207	101	149	156	16	8	94
95th Queue (ft)	221	340	219	251	255	46	41	163
Link Distance (ft)		310	310	634	634	499	1149	
Upstream Blk Time (%)		1	0					
Queuing Penalty (veh)		5	0					
Storage Bay Dist (ft)	160							200
Storage Blk Time (%)	1	11						0
Queuing Penalty (veh)	4	19						0

Intersection: 2: Arelious Walker Drive & Innes Avenue

Movement	EB	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	T	TR	L	R
Maximum Queue (ft)	324	142	139	252	252	128	340
Average Queue (ft)	155	42	32	142	149	17	165
95th Queue (ft)	280	112	96	223	237	70	284
Link Distance (ft)		634	634	606	606		1236
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	350					180	
Storage Blk Time (%)	0						6
Queuing Penalty (veh)	1						1

Intersection: 3: Earl Street & Innes Avenue

Movement	EB	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	T	TR	L	R
Maximum Queue (ft)	171	78	110	133	141	48	278
Average Queue (ft)	72	12	23	65	64	11	128
95th Queue (ft)	131	48	72	112	119	37	229
Link Distance (ft)		606	606	609	609		1334
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	390					160	
Storage Blk Time (%)							5
Queuing Penalty (veh)							1

Intersection: 5: Donahue Street & Innes Avenue

Movement	EB	EB	WB	NB	SB	SB
Directions Served	L	LTR	LTR	LTR	LTR	R
Maximum Queue (ft)	206	236	87	72	123	85
Average Queue (ft)	100	134	34	22	51	34
95th Queue (ft)	179	213	72	57	93	66
Link Distance (ft)	609	609	1421	794	1412	1412
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 6: Jennings Street & Evans Avenue/Innes Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	LT	T	R	LT	T	R	LTR	L	TR
Maximum Queue (ft)	260	242	97	183	214	159	34	160	290
Average Queue (ft)	126	115	20	86	96	73	8	126	67
95th Queue (ft)	219	201	65	157	179	148	28	178	219
Link Distance (ft)	3102	3102		1604	1604		1230		1087
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)			100			100		100	
Storage Blk Time (%)		7	0		5	1		21	0
Queuing Penalty (veh)		4	0		18	2		10	0

Intersection: 10: Innes Avenue & Hunters Point Boulevard

Movement	EB	NB	NB	NB	SB	SB
Directions Served	R	L	T	T	T	T
Maximum Queue (ft)	190	179	294	296	276	271
Average Queue (ft)	95	99	118	147	218	125
95th Queue (ft)	162	176	233	248	310	246
Link Distance (ft)	876		310	310	252	252
Upstream Blk Time (%)			0	0	8	1
Queuing Penalty (veh)			0	1	46	3
Storage Bay Dist (ft)		120				
Storage Blk Time (%)		4	3			
Queuing Penalty (veh)		23	6			

Intersection: 12: Innes Avenue & Hawes Street

Movement	EB	NB	NB	SB	SB
Directions Served	LR	T	T	T	TR
Maximum Queue (ft)	42	147	195	511	472
Average Queue (ft)	19	22	36	181	120
95th Queue (ft)	46	88	125	589	521
Link Distance (ft)	805	252	252	1604	1604
Upstream Blk Time (%)			0		
Queuing Penalty (veh)			0		
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Network Summary

Network wide Queuing Penalty: 145

5: Donahue Street & Innes Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.2	0.2	0.1	0.1	0.2	0.1	0.2	0.3	0.1
Total Delay (hr)	3.1	1.0	0.1	0.1	0.2	0.0	0.1	0.1	0.0	0.1	0.1	0.5
Total Del/Veh (s)	32.5	40.0	28.1	26.8	27.6	13.8	29.3	25.7	7.6	32.0	29.2	5.8
Stop Delay (hr)	2.7	0.9	0.1	0.1	0.2	0.0	0.1	0.1	0.0	0.1	0.1	0.4
Stop Del/Veh (s)	28.5	33.4	24.1	24.6	24.4	13.1	27.7	23.5	7.0	29.0	25.2	4.8
Total Stops	267	83	10	8	22	10	8	7	10	8	8	174
Stop/Veh	0.79	0.88	0.83	0.80	0.76	0.91	0.80	0.70	0.83	0.89	0.80	0.62
Travel Dist (mi)	42.4	11.8	1.4	2.6	7.6	2.9	1.4	1.5	1.8	2.4	2.6	74.5
Travel Time (hr)	4.7	1.4	0.2	0.2	0.5	0.1	0.1	0.1	0.1	0.2	0.2	3.2
Avg Speed (mph)	9	8	9	16	16	20	10	11	17	15	15	23
Fuel Used (gal)	1.8	0.5	0.1	0.1	0.2	0.1	0.1	0.1	0.0	0.1	0.1	1.8
Fuel Eff. (mpg)	24.2	22.6	26.5	33.3	33.4	38.4	27.3	27.2	35.8	32.7	33.7	41.0
HC Emissions (g)	14	5	0	0	3	0	0	0	0	0	0	19
CO Emissions (g)	430	129	8	10	55	11	6	6	6	11	11	444
NOx Emissions (g)	43	15	1	1	7	1	1	1	1	1	1	53
Vehicles Entered	334	93	11	9	28	11	10	10	12	9	10	279
Vehicles Exited	335	93	11	9	28	11	9	10	12	9	10	278
Hourly Exit Rate	335	93	11	9	28	11	9	10	12	9	10	278
Input Volume	326	92	10	10	30	10	10	10	10	10	10	280
% of Volume	103	101	107	88	93	107	88	98	117	88	98	99
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0
Density (ft/veh)												
Occupancy (veh)	5	1	0	0	0	0	0	0	0	0	0	3

5: Donahue Street & Innes Avenue Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.1
Total Delay (hr)	5.3
Total Del/Veh (s)	23.3
Stop Delay (hr)	4.6
Stop Del/Veh (s)	20.2
Total Stops	615
Stop/Veh	0.75
Travel Dist (mi)	152.9
Travel Time (hr)	10.9
Avg Speed (mph)	14
Fuel Used (gal)	4.8
Fuel Eff. (mpg)	31.6
HC Emissions (g)	43
CO Emissions (g)	1128
NOx Emissions (g)	125
Vehicles Entered	816
Vehicles Exited	815
Hourly Exit Rate	815
Input Volume	810
% of Volume	101
Denied Entry Before	0
Denied Entry After	0
Density (ft/veh)	584
Occupancy (veh)	11

6: Jennings Street & Evans Avenue/Innes Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0
Denied Del/Veh (s)	0.2	0.2	0.2	0.0	0.0	0.0	0.1	0.1	0.1	3.4	1.2	1.1
Total Delay (hr)	0.3	3.7	0.1	0.1	2.3	0.9	0.0	0.0	0.0	2.2	0.1	0.0
Total Del/Veh (s)	34.8	15.0	5.9	20.9	11.8	9.9	10.8	10.3	3.8	22.5	15.1	6.6
Stop Delay (hr)	0.2	1.9	0.0	0.1	1.0	0.2	0.0	0.0	0.0	1.8	0.1	0.0
Stop Del/Veh (s)	28.3	7.8	1.7	16.9	5.4	2.3	9.4	8.6	3.7	18.3	11.6	4.4
Total Stops	24	424	24	11	294	153	6	3	1	298	22	9
Stop/Veh	0.92	0.48	0.44	0.92	0.42	0.45	0.60	0.60	0.33	0.84	0.65	0.64
Travel Dist (mi)	14.6	505.1	32.0	3.8	223.0	108.8	2.3	1.1	0.6	72.6	6.9	2.8
Travel Time (hr)	0.7	18.3	1.1	0.2	8.7	4.4	0.1	0.1	0.0	5.6	0.4	0.2
Avg Speed (mph)	21	28	30	20	26	25	19	19	21	14	16	19
Fuel Used (gal)	0.4	12.6	0.7	0.1	5.7	2.7	0.1	0.0	0.0	2.4	0.2	0.1
Fuel Eff. (mpg)	37.9	40.1	42.7	37.2	38.8	40.4	39.1	38.0	42.2	29.9	32.7	37.4
HC Emissions (g)	3	149	12	0	74	36	0	0	0	18	4	0
CO Emissions (g)	78	3437	259	17	1742	756	6	3	1	486	80	11
NOx Emissions (g)	12	503	40	2	253	120	1	0	0	60	11	1
Vehicles Entered	25	859	54	12	686	335	10	4	3	350	33	14
Vehicles Exited	25	859	54	12	689	335	10	5	3	350	34	14
Hourly Exit Rate	25	859	54	12	689	335	10	5	3	350	34	14
Input Volume	24	841	54	12	700	342	10	4	2	353	31	16
% of Volume	105	102	100	98	98	98	98	125	150	99	110	86
Denied Entry Before	0	0	0	0	0	0	0	0	0	1	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0
Density (ft/veh)												
Occupancy (veh)	1	18	1	0	9	4	0	0	0	5	0	0

6: Jennings Street & Evans Avenue/Innes Avenue Performance by movement

Movement	All
Denied Delay (hr)	0.4
Denied Del/Veh (s)	0.6
Total Delay (hr)	9.7
Total Del/Veh (s)	14.4
Stop Delay (hr)	5.4
Stop Del/Veh (s)	8.1
Total Stops	1269
Stop/Veh	0.52
Travel Dist (mi)	973.6
Travel Time (hr)	39.7
Avg Speed (mph)	25
Fuel Used (gal)	25.1
Fuel Eff. (mpg)	38.8
HC Emissions (g)	298
CO Emissions (g)	6877
NOx Emissions (g)	1003
Vehicles Entered	2385
Vehicles Exited	2390
Hourly Exit Rate	2390
Input Volume	2390
% of Volume	100
Denied Entry Before	1
Denied Entry After	0
Density (ft/veh)	451
Occupancy (veh)	39

BUILDOUT + VARIANT

Arterial Level of Service: EB Innes Avenue

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Hawes Street	12	152.8	182.6	0.3	6
Hunters Point Boulev	10	37.4	44.4	0.1	6
Griffith Street	1	30.4	40.6	0.1	7
Arelious Walker Driv	2	21.1	37.4	0.1	13
Earl Street	3	5.3	20.6	0.1	22
Donahue Street	5	30.1	44.7	0.1	10
Total		277.0	370.3	0.9	8

Arterial Level of Service: WB Innes Avenue

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Earl Street	3	32.2	47.3	0.1	10
Arelious Walker Driv	2	39.8	54.9	0.1	8
New Griffith St	1	34.9	50.7	0.1	9
Hunters Point Boulev	10	5.5	13.2	0.1	20
Hawes Street	12	1.1	8.3	0.1	35
Jennings Street	6	22.6	55.8	0.3	20
Total		136.1	230.3	0.9	13

Intersection: 1: Griffith Street/New Griffith St & Innes Avenue

Movement	EB	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	T	TR	LT	TR	LTR	LT	R
Maximum Queue (ft)	220	360	362	567	578	57	37	168
Average Queue (ft)	205	297	281	257	276	16	9	62
95th Queue (ft)	265	389	414	521	545	46	31	122
Link Distance (ft)		310	310	634	634	499	1149	
Upstream Blk Time (%)		9	7	0	0			
Queuing Penalty (veh)		77	58	1	1			
Storage Bay Dist (ft)	160							200
Storage Blk Time (%)	13	43						0
Queuing Penalty (veh)	93	137						0

Intersection: 2: Arelious Walker Drive & Innes Avenue

Movement	EB	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	T	TR	L	R
Maximum Queue (ft)	410	690	695	442	475	49	215
Average Queue (ft)	398	591	511	256	277	11	93
95th Queue (ft)	466	861	901	502	521	38	173
Link Distance (ft)		634	634	606	606		1236
Upstream Blk Time (%)		13	4	1	1		
Queuing Penalty (veh)		97	32	3	5		
Storage Bay Dist (ft)	350					180	
Storage Blk Time (%)	50	1					1
Queuing Penalty (veh)	197	9					0

Intersection: 3: Earl Street & Innes Avenue

Movement	EB	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	T	TR	L	R
Maximum Queue (ft)	431	284	74	305	316	41	189
Average Queue (ft)	219	20	24	165	178	10	84
95th Queue (ft)	389	155	61	309	324	35	165
Link Distance (ft)		606	606	609	609		1334
Upstream Blk Time (%)		0		0			
Queuing Penalty (veh)		0		0			
Storage Bay Dist (ft)	390					160	
Storage Blk Time (%)	1	0					1
Queuing Penalty (veh)	1	0					0

Intersection: 5: Donahue Street & Innes Avenue

Movement	EB	EB	WB	NB	SB	SB
Directions Served	L	LTR	LTR	LTR	LTR	R
Maximum Queue (ft)	108	124	186	78	159	141
Average Queue (ft)	32	58	89	23	72	59
95th Queue (ft)	78	105	159	59	129	106
Link Distance (ft)	609	609	1421	794	1412	1412
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 6: Jennings Street & Evans Avenue/Innes Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	LT	T	R	LT	T	R	LTR	L	TR
Maximum Queue (ft)	1159	1154	160	377	437	160	38	160	1021
Average Queue (ft)	505	516	52	169	192	96	8	158	673
95th Queue (ft)	1370	1370	164	319	361	194	27	171	1237
Link Distance (ft)	3102	3102		1604	1604		1230		1087
Upstream Blk Time (%)									22
Queuing Penalty (veh)									0
Storage Bay Dist (ft)			100			100		100	
Storage Blk Time (%)		53			21	0		60	0
Queuing Penalty (veh)		20			52	2		56	2

Intersection: 10: Innes Avenue & Hunters Point Boulevard

Movement	EB	NB	NB	NB	SB	SB
Directions Served	R	L	T	T	T	T
Maximum Queue (ft)	520	176	287	292	290	291
Average Queue (ft)	252	94	67	84	254	251
95th Queue (ft)	459	181	201	197	310	316
Link Distance (ft)	876		310	310	252	252
Upstream Blk Time (%)			0	0	28	23
Queuing Penalty (veh)			1	1	207	168
Storage Bay Dist (ft)		120				
Storage Blk Time (%)		9	0			
Queuing Penalty (veh)		50	0			

Intersection: 12: Innes Avenue & Hawes Street

Movement	EB	NB	NB	SB	SB
Directions Served	LR	T	T	T	TR
Maximum Queue (ft)	80	6	16	1629	1637
Average Queue (ft)	28	0	1	1006	1013
95th Queue (ft)	66	5	8	1999	2017
Link Distance (ft)	805	252	252	1604	1604
Upstream Blk Time (%)				3	3
Queuing Penalty (veh)				20	23
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Network Summary

Network wide Queuing Penalty: 1314

5: Donahue Street & Innes Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.2	0.2	0.2	0.1	0.2	0.1	0.3	0.4	0.1
Total Delay (hr)	1.2	0.1	0.0	0.1	1.2	0.1	0.1	0.1	0.0	0.1	0.1	1.0
Total Del/Veh (s)	26.8	31.5	16.0	29.1	32.6	18.9	25.7	30.7	8.7	27.4	32.6	7.3
Stop Delay (hr)	1.1	0.1	0.0	0.1	1.0	0.1	0.1	0.1	0.0	0.1	0.1	0.8
Stop Del/Veh (s)	24.2	26.5	14.5	25.4	28.3	17.1	24.1	28.6	8.2	24.0	27.5	5.6
Total Stops	118	6	8	7	105	9	10	8	9	7	9	321
Stop/Veh	0.73	0.75	0.80	0.78	0.79	0.82	0.83	0.80	0.82	0.78	0.82	0.64
Travel Dist (mi)	20.2	1.0	1.2	2.3	35.4	2.9	1.7	1.5	1.7	2.3	3.0	133.2
Travel Time (hr)	2.0	0.1	0.1	0.2	2.4	0.2	0.2	0.1	0.1	0.2	0.2	5.9
Avg Speed (mph)	10	10	13	15	15	18	11	10	17	15	15	23
Fuel Used (gal)	0.8	0.0	0.0	0.1	1.1	0.1	0.1	0.1	0.0	0.1	0.1	3.3
Fuel Eff. (mpg)	25.0	23.2	29.1	31.0	30.9	32.8	28.0	26.6	36.8	34.8	34.6	40.4
HC Emissions (g)	10	0	0	0	13	0	0	0	0	0	0	41
CO Emissions (g)	283	10	9	12	303	13	7	6	6	9	12	914
NOx Emissions (g)	29	1	1	1	36	1	1	1	1	1	1	113
Vehicles Entered	159	8	10	8	131	11	11	10	11	8	11	497
Vehicles Exited	159	8	10	8	131	11	11	10	11	8	11	497
Hourly Exit Rate	159	8	10	8	131	11	11	10	11	8	11	497
Input Volume	180	10	10	10	139	10	10	10	10	10	10	500
% of Volume	88	78	98	78	94	107	107	98	107	78	107	99
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0
Density (ft/veh)												
Occupancy (veh)	2	0	0	0	2	0	0	0	0	0	0	6

5: Donahue Street & Innes Avenue Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.1
Total Delay (hr)	4.0
Total Del/Veh (s)	16.4
Stop Delay (hr)	3.5
Stop Del/Veh (s)	14.1
Total Stops	617
Stop/Veh	0.70
Travel Dist (mi)	206.5
Travel Time (hr)	11.5
Avg Speed (mph)	18
Fuel Used (gal)	5.8
Fuel Eff. (mpg)	35.5
HC Emissions (g)	66
CO Emissions (g)	1585
NOx Emissions (g)	186
Vehicles Entered	875
Vehicles Exited	875
Hourly Exit Rate	875
Input Volume	912
% of Volume	96
Denied Entry Before	0
Denied Entry After	0
Density (ft/veh)	554
Occupancy (veh)	12

6: Jennings Street & Evans Avenue/Innes Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	2.4	0.2	0.2	2.9
Denied Del/Veh (s)	0.2	0.2	0.3	0.0	0.0	0.0	0.1	0.1	16.6	16.8	14.8	3.8
Total Delay (hr)	2.0	28.7	0.9	0.1	5.4	1.0	0.1	0.0	16.2	1.3	1.1	56.7
Total Del/Veh (s)	132.7	107.7	87.2	43.1	22.5	14.8	13.2	19.7	108.6	99.1	87.8	72.8
Stop Delay (hr)	1.9	26.5	0.9	0.1	3.3	0.4	0.1	0.0	14.9	1.2	1.1	50.3
Stop Del/Veh (s)	127.2	99.5	82.0	38.0	14.0	5.4	11.9	17.6	100.4	91.3	81.6	64.5
Total Stops	63	889	38	12	507	172	9	2	659	55	58	2464
Stop/Veh	1.17	0.93	1.00	1.00	0.59	0.72	0.56	1.00	1.23	1.20	1.23	0.88
Travel Dist (mi)	30.4	537.8	21.7	3.7	275.8	76.6	3.6	0.5	107.4	9.2	9.4	1076.2
Travel Time (hr)	2.9	44.2	1.6	0.3	13.4	3.4	0.2	0.0	23.1	1.8	1.7	92.7
Avg Speed (mph)	10	12	14	14	21	22	17	16	5	6	6	12
Fuel Used (gal)	1.1	18.4	0.7	0.1	7.4	1.9	0.1	0.0	6.9	0.6	0.5	37.7
Fuel Eff. (mpg)	26.9	29.3	31.0	33.1	37.3	41.4	34.9	34.2	15.6	16.3	17.6	28.6
HC Emissions (g)	6	175	15	0	86	20	0	0	40	2	6	350
CO Emissions (g)	166	4040	282	13	1889	407	10	2	1087	89	138	8123
NOx Emissions (g)	21	534	41	2	285	64	1	0	105	7	15	1075
Vehicles Entered	52	929	38	11	849	236	15	2	526	45	46	2749
Vehicles Exited	50	878	34	12	851	235	15	2	513	44	45	2679
Hourly Exit Rate	50	878	34	12	851	235	15	2	513	44	45	2679
Input Volume	52	947	38	11	857	242	15	2	522	49	44	2780
% of Volume	97	93	89	107	99	97	98	100	98	89	102	96
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	5	0	0	5
Density (ft/veh)												198
Occupancy (veh)	3	44	2	0	13	3	0	0	21	2	2	90

Arterial Level of Service: EB Innes Avenue

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Hawes Street	12	12.1	44.4	0.3	26
Hunters Point Boulev	10	13.2	20.3	0.1	14
Griffith Street	1	12.2	22.4	0.1	12
Arelious Walker Driv	2	4.6	21.0	0.1	23
Earl Street	3	8.2	23.5	0.1	20
Donahue Street	5	47.6	62.9	0.1	7
Total		97.8	194.5	0.9	16

Arterial Level of Service: WB Innes Avenue

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Earl Street	3	29.7	43.5	0.1	11
Arelious Walker Driv	2	87.5	101.6	0.1	5
New Griffith St	1	52.8	68.4	0.1	7
Hunters Point Boulev	10	17.2	24.9	0.1	11
Hawes Street	12	5.0	12.2	0.1	24
Jennings Street	6	16.1	49.4	0.3	23
Total		208.4	300.0	0.9	10

Intersection: 1: Griffith Street/New Griffith St & Innes Avenue

Movement	EB	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	T	TR	LT	TR	LTR	LT	R
Maximum Queue (ft)	220	326	290	632	643	56	529	260
Average Queue (ft)	121	218	114	436	457	17	193	206
95th Queue (ft)	231	363	235	664	678	47	551	303
Link Distance (ft)		310	310	634	634	499	1149	
Upstream Blk Time (%)		3	0	0	0			
Queuing Penalty (veh)		18	2	2	3			
Storage Bay Dist (ft)	160							200
Storage Blk Time (%)	6	13					1	33
Queuing Penalty (veh)	36	18					2	4

Intersection: 2: Arelious Walker Drive & Innes Avenue

Movement	EB	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	T	TR	L	R
Maximum Queue (ft)	410	610	78	597	616	240	1208
Average Queue (ft)	304	162	5	400	411	50	875
95th Queue (ft)	470	589	57	672	687	191	1483
Link Distance (ft)		634	634	606	606		1236
Upstream Blk Time (%)		2		4	8		27
Queuing Penalty (veh)		12		17	34		0
Storage Bay Dist (ft)	350					180	
Storage Blk Time (%)	15	0					45
Queuing Penalty (veh)	55	0					10

Intersection: 3: Earl Street & Innes Avenue

Movement	EB	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	T	TR	L	R
Maximum Queue (ft)	182	138	142	177	166	172	764
Average Queue (ft)	74	40	65	90	87	27	365
95th Queue (ft)	139	102	127	161	163	123	849
Link Distance (ft)		606	606	609	609		1334
Upstream Blk Time (%)							4
Queuing Penalty (veh)							0
Storage Bay Dist (ft)	390					160	
Storage Blk Time (%)							33
Queuing Penalty (veh)							6

Intersection: 5: Donahue Street & Innes Avenue

Movement	EB	EB	WB	NB	SB	SB
Directions Served	L	LTR	LTR	LTR	LTR	R
Maximum Queue (ft)	273	298	87	71	138	120
Average Queue (ft)	141	173	32	22	55	35
95th Queue (ft)	241	269	71	58	103	75
Link Distance (ft)	609	609	1421	794	1412	1412
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 6: Jennings Street & Evans Avenue/Innes Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	LT	T	R	LT	T	R	LTR	L	TR
Maximum Queue (ft)	537	540	160	277	335	160	30	159	271
Average Queue (ft)	210	196	38	137	151	124	6	115	51
95th Queue (ft)	448	447	127	234	271	187	24	170	174
Link Distance (ft)	3102	3102		1604	1604		1230		1087
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)			100			100		100	
Storage Blk Time (%)		19			12	5		14	0
Queuing Penalty (veh)		10			72	29		8	0

Intersection: 10: Innes Avenue & Hunters Point Boulevard

Movement	EB	NB	NB	NB	SB	SB
Directions Served	R	L	T	T	T	T
Maximum Queue (ft)	192	180	347	340	274	261
Average Queue (ft)	97	156	262	273	200	115
95th Queue (ft)	168	216	373	369	303	222
Link Distance (ft)	876		310	310	252	252
Upstream Blk Time (%)			2	3	6	0
Queuing Penalty (veh)			18	25	34	2
Storage Bay Dist (ft)		120				
Storage Blk Time (%)		19	14			
Queuing Penalty (veh)		158	39			

Intersection: 12: Innes Avenue & Hawes Street

Movement	EB	NB	NB	SB	SB
Directions Served	LR	T	T	T	TR
Maximum Queue (ft)	51	199	229	386	329
Average Queue (ft)	18	39	59	104	53
95th Queue (ft)	47	135	179	309	215
Link Distance (ft)	805	252	252	1604	1604
Upstream Blk Time (%)		0	0		
Queuing Penalty (veh)		0	0		
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Network Summary

Network wide Queuing Penalty: 613

5: Donahue Street & Innes Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1
Total Delay (hr)	4.4	1.5	0.1	0.1	0.2	0.0	0.1	0.1	0.0	0.1	0.1	0.5
Total Del/Veh (s)	37.8	47.1	36.2	24.8	28.7	10.9	25.5	31.8	9.5	30.2	31.7	6.7
Stop Delay (hr)	3.8	1.3	0.1	0.0	0.2	0.0	0.1	0.1	0.0	0.1	0.1	0.4
Stop Del/Veh (s)	32.4	39.0	31.3	22.5	25.5	10.2	23.7	29.9	9.1	27.4	27.5	5.6
Total Stops	362	110	11	6	23	9	8	8	10	8	10	174
Stop/Veh	0.86	0.94	0.92	0.75	0.77	0.90	0.73	0.80	0.83	0.80	0.83	0.63
Travel Dist (mi)	53.1	14.7	1.4	2.1	7.9	2.8	1.6	1.5	1.7	2.6	3.1	73.5
Travel Time (hr)	6.4	2.0	0.2	0.1	0.5	0.1	0.1	0.1	0.1	0.2	0.2	3.2
Avg Speed (mph)	8	7	8	16	16	21	11	10	16	15	15	23
Fuel Used (gal)	2.5	0.7	0.1	0.1	0.2	0.1	0.1	0.1	0.0	0.1	0.1	1.8
Fuel Eff. (mpg)	21.5	19.8	21.4	32.3	32.4	38.0	28.5	27.5	35.7	33.6	33.4	40.4
HC Emissions (g)	22	7	0	0	5	0	0	0	0	0	0	19
CO Emissions (g)	649	180	10	9	91	10	7	5	6	13	15	452
NOx Emissions (g)	70	22	1	1	12	1	1	1	1	1	1	54
Vehicles Entered	417	116	11	8	30	10	11	10	12	10	12	274
Vehicles Exited	417	114	11	8	30	10	11	10	12	10	12	275
Hourly Exit Rate	417	114	11	8	30	10	11	10	12	10	12	275
Input Volume	413	112	10	10	30	10	10	10	10	10	10	280
% of Volume	101	102	107	78	100	98	107	98	117	98	117	98
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0
Density (ft/veh)												
Occupancy (veh)	6	2	0	0	1	0	0	0	0	0	0	3

5: Donahue Street & Innes Avenue Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.1
Total Delay (hr)	7.3
Total Del/Veh (s)	28.3
Stop Delay (hr)	6.2
Stop Del/Veh (s)	24.2
Total Stops	739
Stop/Veh	0.80
Travel Dist (mi)	166.1
Travel Time (hr)	13.4
Avg Speed (mph)	12
Fuel Used (gal)	5.8
Fuel Eff. (mpg)	28.6
HC Emissions (g)	55
CO Emissions (g)	1448
NOx Emissions (g)	167
Vehicles Entered	921
Vehicles Exited	920
Hourly Exit Rate	920
Input Volume	917
% of Volume	100
Denied Entry Before	0
Denied Entry After	0
Density (ft/veh)	477
Occupancy (veh)	13

6: Jennings Street & Evans Avenue/Innes Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.4
Denied Del/Veh (s)	0.2	0.2	0.2	0.0	0.0	0.0	0.1	0.1	3.4	1.2	0.8	0.5
Total Delay (hr)	0.6	8.1	0.2	0.1	4.7	2.5	0.0	0.0	1.8	0.1	0.0	18.2
Total Del/Veh (s)	94.4	31.0	14.5	28.9	16.0	16.1	9.7	12.6	20.3	13.3	8.1	21.7
Stop Delay (hr)	0.6	5.7	0.1	0.1	2.0	0.7	0.0	0.0	1.5	0.1	0.0	10.8
Stop Del/Veh (s)	86.7	21.7	8.0	22.9	7.0	4.4	8.4	10.7	16.5	9.8	6.3	12.8
Total Stops	28	635	36	10	505	336	5	2	254	24	10	1845
Stop/Veh	1.22	0.67	0.68	1.00	0.48	0.60	0.50	0.50	0.79	0.63	0.62	0.61
Travel Dist (mi)	13.1	540.1	30.3	3.4	334.8	179.5	2.2	1.0	65.0	7.7	3.2	1180.3
Travel Time (hr)	1.0	23.8	1.1	0.2	14.3	8.3	0.1	0.1	4.8	0.5	0.2	54.3
Avg Speed (mph)	13	23	27	18	23	22	18	19	14	17	18	22
Fuel Used (gal)	0.4	14.4	0.7	0.1	9.2	4.7	0.1	0.0	2.1	0.2	0.1	32.1
Fuel Eff. (mpg)	29.9	37.4	40.6	36.2	36.5	38.1	37.2	34.3	30.3	33.6	37.8	36.7
HC Emissions (g)	3	161	10	0	115	56	0	0	18	4	0	369
CO Emissions (g)	82	3744	222	15	2839	1268	5	4	458	92	13	8743
NOx Emissions (g)	11	540	34	2	403	195	1	0	58	13	1	1259
Vehicles Entered	22	920	52	10	1031	553	10	4	314	37	15	2968
Vehicles Exited	23	913	51	10	1031	553	10	4	315	37	16	2963
Hourly Exit Rate	23	913	51	10	1031	553	10	4	315	37	16	2963
Input Volume	24	910	54	12	1065	576	10	4	319	38	16	3029
% of Volume	97	100	95	82	97	96	98	100	99	97	98	98
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0
Density (ft/veh)												329
Occupancy (veh)	1	24	1	0	14	8	0	0	5	0	0	54

BUILDOUT + VARIANT + BUS LANE

Arterial Level of Service: EB Innes Avenue

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Hawes Street	12	136.1	166.2	0.3	7
Hunters Point Boulev	10	21.6	29.1	0.1	10
Griffith Street	1	16.2	25.8	0.1	10
Arelious Walker Driv	2	15.7	32.0	0.1	15
Earl Street	3	7.6	23.0	0.1	20
Donahue Street	5	18.2	34.2	0.1	14
Total		215.3	310.3	0.9	10

Arterial Level of Service: WB Innes Avenue

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Earl Street	3	172.7	189.8	0.1	2
Arelious Walker Driv	2	90.1	104.9	0.1	4
New Griffith St	1	14.3	30.2	0.1	16
Hunters Point Boulev	10	6.8	14.6	0.1	18
Hawes Street	12	1.4	8.8	0.1	33
Jennings Street	6	32.2	65.2	0.3	17
Total		317.5	413.5	0.9	8

Intersection: 1: Griffith Street/New Griffith St & Innes Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	T	R	L	T	R	LTR	LT	R
Maximum Queue (ft)	220	336	101	55	504	120	58	42	160
Average Queue (ft)	173	294	6	12	243	10	17	8	69
95th Queue (ft)	264	367	55	41	412	62	47	31	129
Link Distance (ft)		316			634		502	1156	
Upstream Blk Time (%)		4			0				
Queuing Penalty (veh)		70			1				
Storage Bay Dist (ft)	160		100	10		100			200
Storage Blk Time (%)	14	25		11	39				0
Queuing Penalty (veh)	195	83		122	10				0

Intersection: 2: Arelious Walker Drive & Innes Avenue

Movement	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	R	L	R
Maximum Queue (ft)	391	510	660	160	47	237
Average Queue (ft)	308	243	628	38	11	115
95th Queue (ft)	437	541	714	142	37	202
Link Distance (ft)		634	605			1239
Upstream Blk Time (%)		1	22			
Queuing Penalty (veh)		16	193			
Storage Bay Dist (ft)	350			100	180	
Storage Blk Time (%)	14	0	59			2
Queuing Penalty (veh)	115	1	20			0

Intersection: 3: Earl Street & Innes Avenue

Movement	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	R	L	R
Maximum Queue (ft)	329	125	646	160	40	226
Average Queue (ft)	198	33	631	33	10	107
95th Queue (ft)	309	86	642	138	33	196
Link Distance (ft)		605	621			1336
Upstream Blk Time (%)			47			
Queuing Penalty (veh)			303			
Storage Bay Dist (ft)	390			100	160	
Storage Blk Time (%)	0		79			3
Queuing Penalty (veh)	0		16			0

Intersection: 5: Donahue Street & Innes Avenue

Movement	EB	EB	WB	NB	SB
Directions Served	L	TR	LTR	LTR	LTR
Maximum Queue (ft)	140	49	646	108	1474
Average Queue (ft)	63	11	356	32	1334
95th Queue (ft)	117	38	746	84	1776
Link Distance (ft)	621	621	1431	794	1424
Upstream Blk Time (%)					78
Queuing Penalty (veh)					0
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 6: Jennings Street & Evans Avenue/Innes Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	T	R	L	T	R	LTR	L	TR
Maximum Queue (ft)	230	3154	160	130	600	160	43	160	1143
Average Queue (ft)	99	3017	42	13	360	100	9	159	1026
95th Queue (ft)	263	3596	156	77	607	204	33	160	1371
Link Distance (ft)		3102			1604		1236		1093
Upstream Blk Time (%)		86							74
Queuing Penalty (veh)		0							0
Storage Bay Dist (ft)	170		100	170		100		100	
Storage Blk Time (%)		68			36	0		75	1
Queuing Penalty (veh)		61			90	1		70	3

Intersection: 10: Innes Avenue & Hunters Point Boulevard

Movement	EB	NB	NB	SB
Directions Served	R	L	T	T
Maximum Queue (ft)	948	171	293	294
Average Queue (ft)	905	84	135	268
95th Queue (ft)	1005	147	239	308
Link Distance (ft)	900		316	284
Upstream Blk Time (%)	90		0	7
Queuing Penalty (veh)	0		3	96
Storage Bay Dist (ft)		120		
Storage Blk Time (%)		3	9	
Queuing Penalty (veh)		28	13	

Intersection: 12: Innes Avenue & Hawes Street

Movement	EB	NB	SB	SB
Directions Served	LR	T	T	R
Maximum Queue (ft)	84	26	1608	130
Average Queue (ft)	29	2	1575	10
95th Queue (ft)	68	14	1642	73
Link Distance (ft)	817	284	1604	
Upstream Blk Time (%)			1	
Queuing Penalty (veh)			12	
Storage Bay Dist (ft)				100
Storage Blk Time (%)			36	
Queuing Penalty (veh)			3	

Network Summary

Network wide Queuing Penalty: 1526

5: Donahue Street & Innes Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	1.9	86.4
Denied Del/Veh (s)	0.0	0.0	0.0	0.2	0.3	0.2	0.2	0.1	0.1	629.3	625.5	610.9
Total Delay (hr)	0.7	0.0	0.0	0.9	10.4	0.7	0.3	0.2	0.1	0.8	1.1	48.9
Total Del/Veh (s)	19.8	16.6	5.9	259.1	268.3	244.5	132.3	50.3	30.8	487.2	496.2	550.7
Stop Delay (hr)	0.6	0.0	0.0	0.9	10.3	0.7	0.3	0.1	0.1	0.8	1.1	50.9
Stop Del/Veh (s)	17.0	13.8	5.0	256.9	265.2	243.9	130.4	48.1	30.3	506.3	514.0	572.7
Total Stops	89	5	8	12	142	10	9	8	8	2	2	100
Stop/Veh	0.69	0.56	0.89	1.00	1.01	0.91	1.00	0.73	0.73	0.33	0.25	0.31
Travel Dist (mi)	16.3	1.1	1.2	3.2	35.6	2.7	1.3	1.6	1.6	1.3	1.7	74.8
Travel Time (hr)	1.3	0.1	0.1	1.0	11.6	0.8	0.4	0.2	0.2	2.6	3.1	138.0
Avg Speed (mph)	12	14	19	3	3	3	3	7	10	2	1	1
Fuel Used (gal)	0.6	0.0	0.0	0.3	3.3	0.2	0.1	0.1	0.1	0.6	0.7	32.6
Fuel Eff. (mpg)	27.1	28.2	31.9	11.4	10.9	11.5	12.0	21.4	26.2	2.1	2.4	2.3
HC Emissions (g)	7	0	0	0	17	0	0	0	0	0	0	112
CO Emissions (g)	197	13	12	30	511	26	9	9	8	35	41	3142
NOx Emissions (g)	21	1	1	2	38	1	1	1	1	1	1	132
Vehicles Entered	128	9	9	12	135	10	9	10	11	5	7	299
Vehicles Exited	127	9	9	11	122	10	9	11	11	5	6	263
Hourly Exit Rate	127	9	9	11	122	10	9	11	11	5	6	263
Input Volume	180	10	10	10	139	10	10	10	10	10	10	500
% of Volume	70	88	88	107	88	98	88	107	107	49	59	53
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	5	4	210
Density (ft/veh)												
Occupancy (veh)	1	0	0	1	12	1	0	0	0	1	1	52

5: Donahue Street & Innes Avenue Performance by movement

Movement	All
Denied Delay (hr)	90.0
Denied Del/Veh (s)	375.6
Total Delay (hr)	64.3
Total Del/Veh (s)	342.7
Stop Delay (hr)	66.0
Stop Del/Veh (s)	352.2
Total Stops	395
Stop/Veh	0.59
Travel Dist (mi)	142.5
Travel Time (hr)	159.4
Avg Speed (mph)	2
Fuel Used (gal)	38.7
Fuel Eff. (mpg)	3.7
HC Emissions (g)	137
CO Emissions (g)	4034
NOx Emissions (g)	200
Vehicles Entered	644
Vehicles Exited	593
Hourly Exit Rate	593
Input Volume	912
% of Volume	65
Denied Entry Before	0
Denied Entry After	219
Density (ft/veh)	72
Occupancy (veh)	69

6: Jennings Street & Evans Avenue/Innes Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	All
Denied Delay (hr)	6.8	145.4	6.2	0.0	0.0	0.0	0.0	0.0	41.2	3.8	3.5	206.9
Denied Del/Veh (s)	512.7	543.1	570.4	0.0	0.0	0.0	0.1	0.1	282.0	281.8	267.9	289.3
Total Delay (hr)	4.9	92.5	3.6	0.1	6.2	1.1	0.1	0.0	28.4	2.4	2.2	141.6
Total Del/Veh (s)	494.1	471.5	462.1	49.0	32.3	20.2	22.0	21.6	221.6	195.6	189.5	227.9
Stop Delay (hr)	5.0	93.7	3.7	0.1	3.7	0.5	0.1	0.0	28.1	2.4	2.1	139.4
Stop Del/Veh (s)	501.5	477.6	472.4	37.8	19.3	9.7	20.5	19.7	219.1	193.4	188.4	224.5
Total Stops	42	438	15	10	461	162	9	2	384	34	34	1591
Stop/Veh	1.17	0.62	0.54	1.25	0.67	0.80	0.69	0.67	0.83	0.77	0.83	0.71
Travel Dist (mi)	18.4	358.6	14.4	2.7	220.2	64.1	3.1	0.7	89.9	8.5	7.9	788.6
Travel Time (hr)	12.3	248.2	10.2	0.2	12.6	3.2	0.2	0.0	73.4	6.5	6.0	372.9
Avg Speed (mph)	3	3	4	14	17	20	15	15	3	3	3	5
Fuel Used (gal)	3.0	60.7	2.5	0.1	6.1	1.6	0.1	0.0	18.2	1.6	1.5	95.4
Fuel Eff. (mpg)	6.1	5.9	5.8	34.1	36.2	40.8	32.7	33.6	4.9	5.2	5.3	8.3
HC Emissions (g)	3	195	21	0	65	19	0	0	65	8	13	389
CO Emissions (g)	227	5903	405	11	1320	386	9	3	1864	211	263	10602
NOx Emissions (g)	7	240	22	1	199	58	1	0	100	12	18	658
Vehicles Entered	32	643	25	8	681	198	13	3	442	41	39	2125
Vehicles Exited	32	597	24	8	682	199	13	3	429	41	38	2066
Hourly Exit Rate	32	597	24	8	682	199	13	3	429	41	38	2066
Input Volume	52	947	38	11	857	242	15	2	522	49	44	2780
% of Volume	62	63	63	71	80	82	85	150	82	83	86	74
Denied Entry Before	0	0	0	0	0	0	0	0	1	0	0	1
Denied Entry After	16	321	14	0	0	0	0	0	84	7	8	450
Density (ft/veh)												106
Occupancy (veh)	5	103	4	0	13	3	0	0	32	3	3	166

Arterial Level of Service: EB Innes Avenue

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Hawes Street	12	134.3	165.3	0.3	7
Hunters Point Boulev	10	23.2	30.7	0.1	9
Griffith Street	1	18.9	28.5	0.1	9
Arelious Walker Driv	2	15.3	31.6	0.1	15
Earl Street	3	8.7	24.2	0.1	19
Donahue Street	5	16.2	31.6	0.1	15
Total		216.6	311.8	0.9	10

Arterial Level of Service: WB Innes Avenue

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Earl Street	3	65.0	78.7	0.1	6
Arelious Walker Driv	2	119.0	136.1	0.1	3
New Griffith St	1	65.3	84.0	0.1	6
Hunters Point Boulev	10	13.9	21.6	0.1	12
Hawes Street	12	3.4	10.8	0.1	27
Jennings Street	6	20.9	53.9	0.3	21
Total		287.5	385.2	0.9	8

Intersection: 1: Griffith Street/New Griffith St & Innes Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	T	R	L	T	R	LTR	LT	R
Maximum Queue (ft)	220	335	117	56	661	85	138	463	260
Average Queue (ft)	127	310	7	11	649	6	42	106	183
95th Queue (ft)	254	359	56	40	660	52	125	414	284
Link Distance (ft)		316			634		502	1156	
Upstream Blk Time (%)		6			22				
Queuing Penalty (veh)		78			359				
Storage Bay Dist (ft)	160		100	10		100			200
Storage Blk Time (%)	2	30		17	39			0	18
Queuing Penalty (veh)	24	46		278	7			1	2

Intersection: 2: Arelious Walker Drive & Innes Avenue

Movement	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	R	L	R
Maximum Queue (ft)	408	596	648	134	240	1289
Average Queue (ft)	310	215	627	15	45	1261
95th Queue (ft)	440	506	639	88	188	1278
Link Distance (ft)		634	605			1239
Upstream Blk Time (%)		1	49			100
Queuing Penalty (veh)		11	436			0
Storage Bay Dist (ft)	350			100	180	
Storage Blk Time (%)	15	0	66			83
Queuing Penalty (veh)	111	1	8			18

Intersection: 3: Earl Street & Innes Avenue

Movement	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	R	L	R
Maximum Queue (ft)	163	174	468	160	220	1387
Average Queue (ft)	70	84	242	23	36	1358
95th Queue (ft)	131	147	436	109	170	1376
Link Distance (ft)		605	621			1336
Upstream Blk Time (%)			0			99
Queuing Penalty (veh)			0			0
Storage Bay Dist (ft)	390			100	160	
Storage Blk Time (%)			59			95
Queuing Penalty (veh)			6			17

Intersection: 5: Donahue Street & Innes Avenue

Movement	EB	EB	WB	NB	SB
Directions Served	L	TR	LTR	LTR	LTR
Maximum Queue (ft)	345	119	92	66	190
Average Queue (ft)	171	48	29	22	79
95th Queue (ft)	293	101	71	54	141
Link Distance (ft)	621	621	1431	794	1424
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 6: Jennings Street & Evans Avenue/Innes Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	T	R	L	T	R	LTR	L	TR
Maximum Queue (ft)	229	3154	160	96	486	160	46	160	601
Average Queue (ft)	54	2273	60	10	270	118	11	151	297
95th Queue (ft)	193	4116	183	58	500	206	35	181	692
Link Distance (ft)		3102			1604		1236		1093
Upstream Blk Time (%)		56							1
Queuing Penalty (veh)		0							0
Storage Bay Dist (ft)	170		100	170		100		100	
Storage Blk Time (%)		56	0		21	0		61	0
Queuing Penalty (veh)		43	0		122	5		33	1

Intersection: 10: Innes Avenue & Hunters Point Boulevard

Movement	EB	NB	NB	SB
Directions Served	R	L	T	T
Maximum Queue (ft)	375	180	346	297
Average Queue (ft)	193	139	295	279
95th Queue (ft)	368	215	377	304
Link Distance (ft)	900		316	284
Upstream Blk Time (%)			5	8
Queuing Penalty (veh)			87	99
Storage Bay Dist (ft)		120		
Storage Blk Time (%)		10	21	
Queuing Penalty (veh)		165	61	

Intersection: 12: Innes Avenue & Hawes Street

Movement	EB	NB	SB	SB
Directions Served	LR	T	T	R
Maximum Queue (ft)	68	66	1604	160
Average Queue (ft)	23	4	1516	29
95th Queue (ft)	57	30	1889	129
Link Distance (ft)	817	284	1604	
Upstream Blk Time (%)			1	
Queuing Penalty (veh)			9	
Storage Bay Dist (ft)				100
Storage Blk Time (%)			38	0
Queuing Penalty (veh)			13	0

Network Summary

Network wide Queuing Penalty: 2044

5: Donahue Street & Innes Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.2	0.1	0.1	0.1	0.1	0.2	0.4	0.3	0.3
Total Delay (hr)	2.3	0.4	0.0	0.0	0.2	0.0	0.1	0.1	0.0	0.1	0.1	0.7
Total Del/Veh (s)	23.4	16.2	9.9	17.9	19.0	10.3	31.1	20.4	7.2	22.3	22.0	9.0
Stop Delay (hr)	1.7	0.3	0.0	0.0	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.5
Stop Del/Veh (s)	18.1	12.9	8.5	15.8	16.1	9.5	29.3	18.5	6.7	18.4	17.6	6.9
Total Stops	250	54	6	7	20	8	9	8	9	7	6	222
Stop/Veh	0.72	0.60	0.67	0.70	0.65	0.80	0.90	0.73	0.82	0.78	0.67	0.80
Travel Dist (mi)	43.8	11.4	1.1	2.5	8.2	2.7	1.5	1.7	1.6	2.4	2.3	73.6
Travel Time (hr)	3.9	0.8	0.1	0.1	0.4	0.1	0.1	0.1	0.1	0.1	0.1	3.4
Avg Speed (mph)	11	14	16	18	19	21	10	13	17	17	17	22
Fuel Used (gal)	1.7	0.4	0.0	0.1	0.2	0.1	0.1	0.1	0.0	0.1	0.1	1.8
Fuel Eff. (mpg)	26.4	28.0	30.3	39.0	35.4	39.3	27.5	30.3	36.1	38.1	35.8	40.3
HC Emissions (g)	18	5	0	0	2	0	0	0	0	0	0	20
CO Emissions (g)	487	164	13	10	53	10	6	7	6	9	11	443
NOx Emissions (g)	57	15	1	1	7	1	1	1	1	1	1	55
Vehicles Entered	342	89	9	9	31	10	10	11	10	9	8	272
Vehicles Exited	342	89	9	9	30	10	10	11	11	9	8	273
Hourly Exit Rate	342	89	9	9	30	10	10	11	11	9	8	273
Input Volume	413	112	10	10	30	10	10	10	10	10	10	280
% of Volume	83	79	88	88	100	98	98	107	107	88	78	98
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0
Density (ft/veh)												
Occupancy (veh)	4	1	0	0	0	0	0	0	0	0	0	3

5: Donahue Street & Innes Avenue Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.1
Total Delay (hr)	3.9
Total Del/Veh (s)	17.1
Stop Delay (hr)	3.1
Stop Del/Veh (s)	13.5
Total Stops	606
Stop/Veh	0.74
Travel Dist (mi)	152.9
Travel Time (hr)	9.5
Avg Speed (mph)	16
Fuel Used (gal)	4.6
Fuel Eff. (mpg)	33.4
HC Emissions (g)	47
CO Emissions (g)	1220
NOx Emissions (g)	141
Vehicles Entered	810
Vehicles Exited	811
Hourly Exit Rate	811
Input Volume	917
% of Volume	88
Denied Entry Before	0
Denied Entry After	0
Density (ft/veh)	530
Occupancy (veh)	9

6: Jennings Street & Evans Avenue/Innes Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	All
Denied Delay (hr)	1.1	37.4	2.1	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	41.0
Denied Del/Veh (s)	160.9	146.5	150.4	0.0	0.0	0.0	0.1	0.1	3.9	1.2	1.5	61.0
Total Delay (hr)	1.8	65.5	3.4	0.1	4.0	1.4	0.1	0.0	7.9	0.7	0.3	85.2
Total Del/Veh (s)	285.8	284.8	271.2	39.2	20.9	14.1	26.2	26.6	88.5	63.0	58.0	130.6
Stop Delay (hr)	1.8	62.6	3.3	0.1	1.8	0.5	0.1	0.0	7.5	0.6	0.2	78.5
Stop Del/Veh (s)	277.7	272.3	262.4	29.3	9.5	4.6	24.8	24.4	84.3	58.1	54.6	120.4
Total Stops	31	684	35	8	332	210	10	4	353	43	18	1728
Stop/Veh	1.35	0.83	0.78	1.00	0.48	0.58	0.77	1.00	1.10	1.08	1.12	0.74
Travel Dist (mi)	11.9	450.3	24.5	2.4	218.2	114.2	3.0	1.0	64.9	8.2	3.2	901.9
Travel Time (hr)	3.3	115.8	6.3	0.2	10.3	5.1	0.2	0.1	10.9	1.0	0.4	153.6
Avg Speed (mph)	5	6	6	15	21	23	14	14	6	8	8	8
Fuel Used (gal)	0.9	31.8	1.7	0.1	5.8	2.7	0.1	0.0	3.5	0.4	0.1	47.2
Fuel Eff. (mpg)	13.1	14.2	14.3	33.8	37.4	42.0	31.9	32.8	18.5	21.8	22.2	19.1
HC Emissions (g)	1	165	17	0	61	30	0	0	17	4	0	297
CO Emissions (g)	82	4171	343	9	1386	610	9	3	532	106	19	7270
NOx Emissions (g)	4	288	29	1	209	100	1	0	52	12	2	698
Vehicles Entered	22	807	43	8	676	354	13	4	314	40	16	2297
Vehicles Exited	19	728	40	8	676	353	13	4	307	39	16	2203
Hourly Exit Rate	19	728	40	8	676	353	13	4	307	39	16	2203
Input Volume	24	910	54	12	1065	576	10	4	319	38	16	3029
% of Volume	80	80	74	65	63	61	127	100	96	103	98	73
Denied Entry Before	0	1	0	0	0	0	0	0	0	0	0	1
Denied Entry After	3	111	8	0	0	0	0	0	0	0	0	122
Density (ft/veh)												157
Occupancy (veh)	2	78	4	0	10	5	0	0	11	1	0	113

CUMULATIVE NO PROJECT

Arterial Level of Service: EB Innes Avenue

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Hawes Street	6	2.8	36.9	0.3	32
Hunters Point Boulev	4	4.3	10.7	0.1	25
Griffith Street	11	2.9	19.0	0.1	23
Arelious Walker Driv	12	1.0	10.9	0.1	27
Earl Street	13	1.0	16.7	0.1	28
	1	51.2	66.4	0.1	7
Total		63.1	160.5	0.9	19

Arterial Level of Service: WB Innes Avenue

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Donahue Avenue	1	34.6	61.7	0.2	11
Earl Street	13	1.9	17.8	0.1	26
Arelious Walker Driv	12	0.6	16.3	0.1	29
New Griffith St	11	1.4	11.3	0.1	26
Hunters Point Boulev	4	4.8	17.3	0.1	25
Hawes Street	6	1.5	8.2	0.1	33
Jennings Street	9	25.1	59.8	0.3	20
Total		69.9	192.4	1.1	20

Queuing and Blocking Report
Cumulative No Project AM Peak

01/24/2017

Intersection: 1: Innes Avenue & Donahue Avenue

Movement	EB	EB	WB	NB	SB	SB
Directions Served	L	LTR	LTR	LTR	LTR	R
Maximum Queue (ft)	395	424	203	75	150	152
Average Queue (ft)	239	258	101	26	71	72
95th Queue (ft)	366	387	171	63	124	124
Link Distance (ft)	615	615	988	557	1924	1924
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 4: Innes Avenue & Hunters Point Boulevard

Movement	EB	NB	NB	NB	SB	SB
Directions Served	R	L	T	T	T	TR
Maximum Queue (ft)	49	60	162	114	141	151
Average Queue (ft)	18	22	58	40	57	63
95th Queue (ft)	47	51	123	93	118	133
Link Distance (ft)	1190		572	572	217	217
Upstream Blk Time (%)					0	
Queuing Penalty (veh)					0	
Storage Bay Dist (ft)		120				
Storage Blk Time (%)			1			
Queuing Penalty (veh)			0			

Intersection: 6: Innes Avenue & Hawes Street

Movement	EB
Directions Served	LR
Maximum Queue (ft)	40
Average Queue (ft)	11
95th Queue (ft)	36
Link Distance (ft)	794
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Queuing and Blocking Report
Cumulative No Project AM Peak

01/24/2017

Intersection: 9: Jennings Street & Evans Avenue/Innes Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	T	R	L	T	R	LTR	L	TR
Maximum Queue (ft)	229	518	136	195	535	131	94	56	108
Average Queue (ft)	126	190	16	30	256	18	40	13	39
95th Queue (ft)	222	400	69	117	469	92	77	40	78
Link Distance (ft)		1547			1693	1693	452		669
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	170		100	170				100	
Storage Blk Time (%)	3	13	0		17				0
Queuing Penalty (veh)	23	30	0		3				0

Intersection: 11: Griffith Street/New Griffith St & Innes Avenue

Movement	EB	EB	WB	WB	NB	SB
Directions Served	LT	TR	LT	TR	LTR	LTR
Maximum Queue (ft)	109	117	75	89	52	54
Average Queue (ft)	25	31	24	25	19	17
95th Queue (ft)	74	92	63	68	49	47
Link Distance (ft)	572	572	379	379	457	1535
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 12: Innes Avenue & Arelious Walker Drive

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	50	47
Average Queue (ft)	7	22
95th Queue (ft)	32	50
Link Distance (ft)	379	1627
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Queuing and Blocking Report
Cumulative No Project AM Peak

01/24/2017

Intersection: 13: Innes Avenue & Earl Street

Movement	EB	EB	SB
Directions Served	LT	T	LR
Maximum Queue (ft)	53	5	46
Average Queue (ft)	6	0	18
95th Queue (ft)	30	0	45
Link Distance (ft)	635	635	1738
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 56

1: Innes Avenue & Donahue Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.2	0.2	0.3	0.1	0.1	0.1	0.2	0.3	0.1
Total Delay (hr)	9.3	0.6	0.1	0.1	1.4	0.1	0.1	0.1	0.0	0.1	0.1	1.3
Total Del/Veh (s)	43.4	51.6	45.4	34.7	34.6	24.7	34.6	33.8	8.2	33.3	36.0	7.5
Stop Delay (hr)	8.0	0.5	0.1	0.1	1.2	0.1	0.1	0.1	0.0	0.1	0.1	0.9
Stop Del/Veh (s)	37.1	43.0	39.2	32.2	31.3	23.5	33.0	31.5	7.7	29.7	30.8	5.3
Total Stops	708	40	11	7	116	10	9	10	9	8	9	355
Stop/Veh	0.92	1.00	1.00	0.78	0.81	0.91	0.82	0.83	0.90	0.80	0.82	0.58
Travel Dist (mi)	97.2	5.0	1.4	1.6	26.4	2.0	1.1	1.3	1.1	3.4	3.9	218.3
Travel Time (hr)	12.9	0.7	0.2	0.2	2.5	0.2	0.2	0.2	0.1	0.2	0.2	9.1
Avg Speed (mph)	8	7	7	10	11	12	7	8	15	16	16	24
Fuel Used (gal)	4.3	0.2	0.1	0.1	1.0	0.1	0.1	0.1	0.0	0.1	0.1	5.3
Fuel Eff. (mpg)	22.6	21.4	22.7	25.5	26.0	29.2	21.7	21.7	35.3	34.7	35.7	40.9
HC Emissions (g)	29	3	0	0	9	0	0	0	0	0	0	63
CO Emissions (g)	731	64	6	7	227	9	6	8	4	12	14	1303
NOx Emissions (g)	82	8	1	1	27	1	1	1	0	1	2	175
Vehicles Entered	757	39	11	8	140	10	11	12	10	10	10	597
Vehicles Exited	763	40	11	9	141	11	11	12	10	10	10	599
Hourly Exit Rate	763	40	11	9	141	11	11	12	10	10	10	599
Input Volume	763	40	10	10	137	10	10	10	10	10	10	587
% of Volume	100	101	110	90	103	110	110	120	100	100	100	102
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0
Density (ft/veh)												
Occupancy (veh)	13	1	0	0	2	0	0	0	0	0	0	9

1: Innes Avenue & Donahue Avenue Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.1
Total Delay (hr)	13.3
Total Del/Veh (s)	29.0
Stop Delay (hr)	11.3
Stop Del/Veh (s)	24.6
Total Stops	1292
Stop/Veh	0.78
Travel Dist (mi)	362.7
Travel Time (hr)	26.6
Avg Speed (mph)	14
Fuel Used (gal)	11.4
Fuel Eff. (mpg)	31.7
HC Emissions (g)	106
CO Emissions (g)	2391
NOx Emissions (g)	298
Vehicles Entered	1615
Vehicles Exited	1627
Hourly Exit Rate	1627
Input Volume	1606
% of Volume	101
Denied Entry Before	0
Denied Entry After	0
Density (ft/veh)	254
Occupancy (veh)	27

9: Jennings Street & Evans Avenue/Innes Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.2	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	3.4	2.1	3.4	0.0	0.0	0.0	0.1	0.1	0.2	3.9	0.2	0.2
Total Delay (hr)	2.1	3.2	0.1	0.2	4.8	0.0	0.3	0.1	0.0	0.1	0.1	0.3
Total Del/Veh (s)	41.1	14.8	9.0	46.8	25.1	4.3	29.3	29.2	12.2	27.6	25.1	13.5
Stop Delay (hr)	1.7	1.1	0.0	0.2	2.6	0.0	0.3	0.1	0.0	0.1	0.1	0.3
Stop Del/Veh (s)	32.6	5.2	2.2	36.7	13.5	3.4	27.3	26.5	11.4	25.8	22.6	13.0
Total Stops	184	269	14	22	415	16	32	9	8	15	16	58
Stop/Veh	0.98	0.34	0.35	1.16	0.61	0.52	0.84	0.90	0.89	0.79	0.76	0.82
Travel Dist (mi)	53.9	226.9	11.7	6.4	227.8	10.5	3.2	0.9	0.8	2.4	2.7	9.0
Travel Time (hr)	4.0	10.2	0.5	0.4	11.3	0.4	0.4	0.1	0.1	0.3	0.3	0.7
Avg Speed (mph)	14	23	25	14	20	29	7	8	12	10	11	13
Fuel Used (gal)	1.7	5.9	0.3	0.2	6.3	0.2	0.2	0.0	0.0	0.1	0.1	0.3
Fuel Eff. (mpg)	31.6	38.2	41.3	31.4	36.2	42.7	21.1	22.3	28.3	24.1	26.6	31.2
HC Emissions (g)	14	79	6	1	65	7	1	0	0	0	0	3
CO Emissions (g)	388	1802	127	29	1495	126	33	6	5	15	15	72
NOx Emissions (g)	44	244	18	4	233	20	3	0	0	1	1	8
Vehicles Entered	183	773	40	19	672	31	38	10	9	19	21	70
Vehicles Exited	185	774	40	19	669	31	38	10	9	19	21	70
Hourly Exit Rate	185	774	40	19	669	31	38	10	9	19	21	70
Input Volume	186	783	39	19	666	29	39	10	10	19	19	68
% of Volume	100	99	102	99	100	106	97	100	90	99	109	102
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0
Density (ft/veh)												
Occupancy (veh)	4	10	0	0	11	0	0	0	0	0	0	1

9: Jennings Street & Evans Avenue/Innes Avenue Performance by movement

Movement	All
Denied Delay (hr)	0.7
Denied Del/Veh (s)	1.3
Total Delay (hr)	11.5
Total Del/Veh (s)	21.6
Stop Delay (hr)	6.5
Stop Del/Veh (s)	12.3
Total Stops	1058
Stop/Veh	0.55
Travel Dist (mi)	556.2
Travel Time (hr)	28.7
Avg Speed (mph)	20
Fuel Used (gal)	15.4
Fuel Eff. (mpg)	36.2
HC Emissions (g)	177
CO Emissions (g)	4114
NOx Emissions (g)	576
Vehicles Entered	1885
Vehicles Exited	1885
Hourly Exit Rate	1885
Input Volume	1888
% of Volume	100
Denied Entry Before	0
Denied Entry After	0
Density (ft/veh)	419
Occupancy (veh)	28

Arterial Level of Service: EB Innes Avenue

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Hawes Street	6	2.5	36.7	0.3	33
Hunters Point Boulev	4	4.1	10.5	0.1	25
Griffith Street	11	2.9	19.1	0.1	23
Arelious Walker Driv	12	1.1	11.0	0.1	26
Earl Street	13	1.1	16.8	0.1	28
	1	60.5	75.8	0.1	6
Total		72.2	169.9	0.9	18

Arterial Level of Service: WB Innes Avenue

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Donahue Avenue	1	29.2	56.3	0.2	12
Earl Street	13	1.9	16.9	0.1	28
Arelious Walker Driv	12	0.8	16.6	0.1	28
New Griffith St	11	1.7	11.7	0.1	25
Hunters Point Boulev	4	6.4	19.0	0.1	23
Hawes Street	6	2.1	8.8	0.1	30
Jennings Street	9	21.9	56.7	0.3	21
Total		64.2	185.9	1.1	21

Intersection: 1: Innes Avenue & Donahue Avenue

Movement	EB	EB	WB	NB	SB	SB
Directions Served	L	LTR	LTR	LTR	LTR	R
Maximum Queue (ft)	373	408	148	60	232	234
Average Queue (ft)	212	247	62	21	113	121
95th Queue (ft)	356	385	120	52	198	203
Link Distance (ft)	615	615	988	557	1924	1924
Upstream Blk Time (%)	0	1				
Queuing Penalty (veh)	1	2				
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 4: Innes Avenue & Hunters Point Boulevard

Movement	EB	NB	NB	NB	SB	SB
Directions Served	R	L	T	T	T	TR
Maximum Queue (ft)	57	98	202	196	130	143
Average Queue (ft)	23	32	90	70	52	53
95th Queue (ft)	51	73	166	150	104	114
Link Distance (ft)	1190		572	572	217	217
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		120				
Storage Blk Time (%)			2			
Queuing Penalty (veh)			1			

Intersection: 6: Innes Avenue & Hawes Street

Movement	EB	NB
Directions Served	LR	T
Maximum Queue (ft)	40	5
Average Queue (ft)	9	0
95th Queue (ft)	33	4
Link Distance (ft)	794	217
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 9: Jennings Street & Evans Avenue/Innes Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	T	R	L	T	R	LTR	L	TR
Maximum Queue (ft)	203	494	160	194	634	119	98	93	159
Average Queue (ft)	86	164	57	36	264	10	34	31	64
95th Queue (ft)	178	480	141	111	559	82	77	72	127
Link Distance (ft)		1547			1693	1693	452		669
Upstream Blk Time (%)		0							
Queuing Penalty (veh)		0							
Storage Bay Dist (ft)	170		100	170				100	
Storage Blk Time (%)	5	8	0		12			0	3
Queuing Penalty (veh)	41	24	1		5			0	1

Intersection: 11: Griffith Street/New Griffith St & Innes Avenue

Movement	EB	EB	WB	WB	NB	SB
Directions Served	LT	TR	LT	TR	LTR	LTR
Maximum Queue (ft)	83	104	108	107	57	58
Average Queue (ft)	27	29	31	32	17	19
95th Queue (ft)	69	81	77	82	47	50
Link Distance (ft)	572	572	379	379	438	1535
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 12: Innes Avenue & Arelious Walker Drive

Movement	EB	EB	WB	WB	SB
Directions Served	LT	T	T	TR	LR
Maximum Queue (ft)	74	24	5	2	59
Average Queue (ft)	16	1	0	0	23
95th Queue (ft)	54	18	5	2	54
Link Distance (ft)	379	379	635	635	1627
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Queuing and Blocking Report
Cumulative No Project PM Peak

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Intersection: 13: Innes Avenue & Earl Street

Movement	EB	EB	SB
Directions Served	LT	T	LR
Maximum Queue (ft)	54	15	52
Average Queue (ft)	8	2	18
95th Queue (ft)	38	25	45
Link Distance (ft)	635	635	1738
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 76

1: Innes Avenue & Donahue Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.1	0.2	0.1	0.1	0.1	0.2	0.3	0.2
Total Delay (hr)	7.7	2.6	0.2	0.1	0.7	0.1	0.1	0.1	0.0	0.1	0.1	3.2
Total Del/Veh (s)	49.9	60.6	55.2	29.4	29.2	19.0	26.5	31.3	6.7	39.5	33.7	11.7
Stop Delay (hr)	6.8	2.2	0.1	0.1	0.6	0.1	0.1	0.1	0.0	0.1	0.1	2.1
Stop Del/Veh (s)	44.0	52.4	49.6	27.3	26.5	18.2	24.9	29.2	6.2	33.7	27.4	7.8
Total Stops	571	173	11	8	63	12	6	8	9	8	8	684
Stop/Veh	1.03	1.13	1.10	0.80	0.77	1.00	0.75	0.80	0.90	0.89	0.80	0.70
Travel Dist (mi)	69.9	19.2	1.3	1.8	15.2	2.3	0.8	1.0	1.0	3.3	3.4	352.4
Travel Time (hr)	10.3	3.2	0.2	0.2	1.3	0.2	0.1	0.1	0.1	0.2	0.2	15.9
Avg Speed (mph)	7	6	6	12	12	14	8	8	16	16	16	22
Fuel Used (gal)	3.4	1.0	0.1	0.1	0.5	0.1	0.0	0.0	0.0	0.1	0.1	8.8
Fuel Eff. (mpg)	20.8	19.1	20.5	27.5	27.9	31.9	23.5	23.4	35.6	32.9	34.7	39.9
HC Emissions (g)	19	7	0	0	5	0	0	0	0	0	0	109
CO Emissions (g)	526	163	5	9	132	11	4	5	4	13	13	2228
NOx Emissions (g)	56	18	0	1	16	1	0	0	0	1	1	299
Vehicles Entered	547	150	10	10	81	12	7	10	10	9	9	964
Vehicles Exited	543	149	10	10	81	12	7	10	10	9	10	966
Hourly Exit Rate	543	149	10	10	81	12	7	10	10	9	10	966
Input Volume	542	148	10	10	79	10	10	10	10	10	10	967
% of Volume	100	100	100	100	102	120	70	100	100	90	100	100
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0
Density (ft/veh)												
Occupancy (veh)	10	3	0	0	1	0	0	0	0	0	0	16

1: Innes Avenue & Donahue Avenue Performance by movement

Movement	All
Denied Delay (hr)	0.1
Denied Del/Veh (s)	0.1
Total Delay (hr)	14.8
Total Del/Veh (s)	28.8
Stop Delay (hr)	12.4
Stop Del/Veh (s)	24.1
Total Stops	1561
Stop/Veh	0.84
Travel Dist (mi)	471.7
Travel Time (hr)	31.9
Avg Speed (mph)	15
Fuel Used (gal)	14.2
Fuel Eff. (mpg)	33.1
HC Emissions (g)	143
CO Emissions (g)	3113
NOx Emissions (g)	396
Vehicles Entered	1819
Vehicles Exited	1817
Hourly Exit Rate	1817
Input Volume	1818
% of Volume	100
Denied Entry Before	0
Denied Entry After	0
Density (ft/veh)	211
Occupancy (veh)	32

9: Jennings Street & Evans Avenue/Innes Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.1	0.4	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	3.4	2.0	3.3	0.0	0.0	0.0	0.1	0.2	0.1	4.0	0.4	0.3
Total Delay (hr)	1.9	2.5	0.4	0.3	5.8	0.0	0.2	0.1	0.0	0.4	0.5	0.4
Total Del/Veh (s)	76.7	13.7	8.4	31.0	21.9	2.5	30.2	27.1	7.7	31.7	30.6	23.3
Stop Delay (hr)	1.8	0.9	0.1	0.2	1.8	0.0	0.2	0.1	0.0	0.4	0.5	0.4
Stop Del/Veh (s)	70.4	5.2	2.8	17.3	6.9	1.3	28.2	24.9	6.8	29.5	27.6	22.2
Total Stops	90	210	72	36	420	9	24	7	8	37	48	53
Stop/Veh	1.00	0.32	0.38	0.90	0.44	0.31	0.86	0.78	0.73	0.82	0.81	0.83
Travel Dist (mi)	25.7	189.4	55.5	13.2	316.3	9.7	2.4	0.8	0.9	5.7	7.5	8.0
Travel Time (hr)	2.8	8.3	2.4	0.7	14.9	0.3	0.3	0.1	0.1	0.7	0.8	0.8
Avg Speed (mph)	9	24	25	18	21	30	7	8	14	9	9	10
Fuel Used (gal)	1.0	5.0	1.3	0.4	8.8	0.2	0.1	0.0	0.0	0.3	0.3	0.3
Fuel Eff. (mpg)	25.2	37.7	41.8	33.9	35.8	42.4	20.7	21.8	32.5	22.4	24.2	26.4
HC Emissions (g)	6	58	18	3	109	6	2	0	0	2	2	3
CO Emissions (g)	185	1473	413	75	2483	128	38	5	6	58	64	88
NOx Emissions (g)	19	185	55	11	377	19	4	0	0	6	7	10
Vehicles Entered	88	645	189	39	930	28	28	9	11	44	59	63
Vehicles Exited	88	646	189	39	931	29	28	9	11	44	59	62
Hourly Exit Rate	88	646	189	39	931	29	28	9	11	44	59	62
Input Volume	88	642	197	39	928	29	29	10	10	49	59	59
% of Volume	99	101	96	99	100	99	96	90	110	89	100	105
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0
Density (ft/veh)												
Occupancy (veh)	3	8	2	1	15	0	0	0	0	1	1	1

9: Jennings Street & Evans Avenue/Innes Avenue Performance by movement

Movement	All
Denied Delay (hr)	0.7
Denied Del/Veh (s)	1.2
Total Delay (hr)	12.6
Total Del/Veh (s)	21.0
Stop Delay (hr)	6.4
Stop Del/Veh (s)	10.6
Total Stops	1014
Stop/Veh	0.47
Travel Dist (mi)	635.1
Travel Time (hr)	32.3
Avg Speed (mph)	20
Fuel Used (gal)	17.9
Fuel Eff. (mpg)	35.6
HC Emissions (g)	208
CO Emissions (g)	5016
NOx Emissions (g)	693
Vehicles Entered	2133
Vehicles Exited	2135
Hourly Exit Rate	2135
Input Volume	2141
% of Volume	100
Denied Entry Before	0
Denied Entry After	0
Density (ft/veh)	371
Occupancy (veh)	32

CUMULATIVE + PROJECT

Arterial Level of Service: EB Innes Avenue

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Hawes Street	7	8.8	41.8	0.3	28
Hunters Point Boulev	5	9.5	15.7	0.1	17
Griffith Street	11	11.2	22.6	0.1	13
	12	4.3	19.7	0.1	23
	13	3.3	19.1	0.1	25
Donahue Street	1	35.7	54.1	0.1	9
Total		72.9	173.0	0.9	18

Arterial Level of Service: WB Innes Avenue

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Earl Street	13	66.9	79.2	0.1	6
Arelious Walker Driv	12	82.8	97.7	0.1	5
New Griffith Street	11	61.9	76.9	0.1	6
Hunters Point Boulev	5	41.2	49.5	0.1	6
Hawes Street	7	24.8	31.0	0.1	9
Jennings Street	9	261.5	293.7	0.3	4
Total		539.1	628.1	0.9	5

Intersection: 1: Donahue Street & Innes Avenue

Movement	EB	EB	WB	NB	SB	SB
Directions Served	L	LTR	LTR	LTR	LTR	R
Maximum Queue (ft)	295	325	462	81	592	573
Average Queue (ft)	170	190	148	25	147	144
95th Queue (ft)	271	290	389	62	477	471
Link Distance (ft)	615	615	988	557	1924	1924
Upstream Blk Time (%)			0			
Queuing Penalty (veh)			0			
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 5: Innes Avenue & Hunters Point Boulevard

Movement	EB	NB	NB	NB	SB	SB
Directions Served	R	L	T	T	T	TR
Maximum Queue (ft)	147	180	373	375	207	204
Average Queue (ft)	70	132	281	289	146	112
95th Queue (ft)	120	230	454	451	222	199
Link Distance (ft)	869		349	349	189	189
Upstream Blk Time (%)			8	11	3	1
Queuing Penalty (veh)			56	73	22	6
Storage Bay Dist (ft)		120				
Storage Blk Time (%)		2	49			
Queuing Penalty (veh)		11	77			

Intersection: 7: Innes Avenue & Hawes Street

Movement	EB	NB	NB	SB	SB
Directions Served	LR	LT	T	T	TR
Maximum Queue (ft)	38	215	226	273	200
Average Queue (ft)	8	161	166	109	68
95th Queue (ft)	32	267	268	236	169
Link Distance (ft)	777	189	189	1641	1641
Upstream Blk Time (%)		11	13		
Queuing Penalty (veh)		69	78		
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 9: Jennings Street & Evans Avenue/Innes Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	T	R	L	T	R	LTR	L	TR
Maximum Queue (ft)	230	1601	146	229	1663	1667	99	160	531
Average Queue (ft)	168	1562	19	39	1552	1529	37	151	263
95th Queue (ft)	281	1655	93	159	1866	1930	82	180	504
Link Distance (ft)		1547			1641	1641	452		667
Upstream Blk Time (%)		53			13	10			0
Queuing Penalty (veh)		0			78	63			0
Storage Bay Dist (ft)	170		100	170				100	
Storage Blk Time (%)	13	33			50			53	2
Queuing Penalty (veh)	175	75			10			53	7

Intersection: 11: Griffith Street/New Griffith Street & Innes Avenue

Movement	EB	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	T	TR	LT	TR	LTR	LT	R
Maximum Queue (ft)	219	313	267	634	628	46	183	236
Average Queue (ft)	120	174	126	396	404	13	25	111
95th Queue (ft)	214	298	239	738	743	41	120	204
Link Distance (ft)		349	349	606	606	912	1508	
Upstream Blk Time (%)		0	0	3	4			
Queuing Penalty (veh)		0	0	18	24			
Storage Bay Dist (ft)	160							200
Storage Blk Time (%)	3	7					0	3
Queuing Penalty (veh)	26	14					0	0

Intersection: 12: Innes Avenue & Arelious Walker Drive

Movement	EB	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	T	TR	L	R
Maximum Queue (ft)	377	286	107	645	647	75	234
Average Queue (ft)	208	45	30	424	431	18	109
95th Queue (ft)	344	192	78	727	727	56	203
Link Distance (ft)		606	606	623	623		1621
Upstream Blk Time (%)		0		12	14		
Queuing Penalty (veh)		0		58	72		
Storage Bay Dist (ft)	350					180	
Storage Blk Time (%)	2	0					2
Queuing Penalty (veh)	12	0					0

Queuing and Blocking Report
Cumulative Plus Project AM Peak

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Intersection: 13: Innes Avenue & Earl Street

Movement	EB	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	T	TR	L	R
Maximum Queue (ft)	277	94	103	605	601	187	383
Average Queue (ft)	131	21	30	269	274	25	169
95th Queue (ft)	229	63	75	620	620	102	319
Link Distance (ft)		623	623	615	615		1733
Upstream Blk Time (%)				13	14		
Queuing Penalty (veh)				47	49		
Storage Bay Dist (ft)	390					160	
Storage Blk Time (%)	0						13
Queuing Penalty (veh)	0						2

Network Summary

Network wide Queuing Penalty: 1178

1: Donahue Street & Innes Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.7	0.3	0.1	0.1	0.1	0.1	0.2	0.1
Total Delay (hr)	5.7	0.3	0.1	0.2	3.4	0.2	0.1	0.1	0.0	0.2	0.2	7.0
Total Del/Veh (s)	32.2	35.9	27.3	66.9	86.1	70.4	58.4	29.8	16.3	76.7	79.9	45.7
Stop Delay (hr)	5.0	0.3	0.1	0.2	3.3	0.2	0.1	0.1	0.0	0.2	0.2	6.8
Stop Del/Veh (s)	28.0	29.7	23.9	64.3	83.0	69.0	56.6	27.8	15.9	74.0	75.4	44.3
Total Stops	495	28	6	8	120	9	8	7	8	9	9	379
Stop/Veh	0.77	0.80	0.75	0.80	0.85	0.90	0.89	0.70	0.89	0.82	0.90	0.69
Travel Dist (mi)	81.0	4.5	0.9	1.6	25.2	1.9	1.0	1.0	1.0	3.9	3.5	194.5
Travel Time (hr)	9.2	0.5	0.1	0.3	4.4	0.3	0.2	0.1	0.1	0.4	0.3	14.0
Avg Speed (mph)	9	8	9	6	6	7	5	8	11	10	10	14
Fuel Used (gal)	3.4	0.2	0.0	0.1	1.4	0.1	0.1	0.0	0.0	0.1	0.1	6.1
Fuel Eff. (mpg)	24.1	23.1	25.7	19.1	17.4	20.2	16.9	23.6	28.5	27.5	27.4	31.9
HC Emissions (g)	26	2	0	0	11	0	0	0	0	0	0	58
CO Emissions (g)	676	42	4	10	281	11	6	6	4	14	16	1288
NOx Emissions (g)	83	5	0	1	30	1	0	0	0	1	2	159
Vehicles Entered	632	35	7	9	139	10	9	10	9	11	10	542
Vehicles Exited	632	35	8	8	127	10	9	9	9	10	9	502
Hourly Exit Rate	632	35	8	8	127	10	9	9	9	10	9	502
Input Volume	794	40	10	10	138	10	10	10	10	10	10	550
% of Volume	80	88	80	80	92	100	90	90	90	100	90	91
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	1	0	0	0	0	0	0	0
Density (ft/veh)												
Occupancy (veh)	9	1	0	0	4	0	0	0	0	0	0	14

1: Donahue Street & Innes Avenue Performance by movement

Movement	All
Denied Delay (hr)	0.1
Denied Del/Veh (s)	0.1
Total Delay (hr)	17.6
Total Del/Veh (s)	44.0
Stop Delay (hr)	16.4
Stop Del/Veh (s)	41.0
Total Stops	1086
Stop/Veh	0.75
Travel Dist (mi)	319.8
Travel Time (hr)	29.8
Avg Speed (mph)	11
Fuel Used (gal)	11.7
Fuel Eff. (mpg)	27.3
HC Emissions (g)	99
CO Emissions (g)	2357
NOx Emissions (g)	283
Vehicles Entered	1423
Vehicles Exited	1368
Hourly Exit Rate	1368
Input Volume	1602
% of Volume	85
Denied Entry Before	0
Denied Entry After	1
Density (ft/veh)	226
Occupancy (veh)	30

9: Jennings Street & Evans Avenue/Innes Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	33.9	236.5	7.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0
Denied Del/Veh (s)	642.4	648.4	629.6	0.0	0.0	0.0	0.1	0.1	0.2	3.7	1.2	1.3
Total Delay (hr)	7.1	32.1	0.9	1.6	64.0	11.7	0.3	0.1	0.0	5.5	0.4	0.7
Total Del/Veh (s)	183.5	122.4	113.3	306.6	261.9	172.0	29.4	29.7	10.6	59.5	47.5	38.1
Stop Delay (hr)	5.4	20.2	0.6	1.6	59.5	11.0	0.3	0.1	0.0	5.0	0.4	0.7
Stop Del/Veh (s)	140.0	77.2	70.8	296.0	243.3	162.0	27.5	27.4	9.9	53.5	41.6	34.1
Total Stops	330	1522	45	44	1672	448	28	7	7	367	35	79
Stop/Veh	2.36	1.61	1.61	2.32	1.90	1.84	0.76	0.70	0.70	1.10	1.06	1.13
Travel Dist (mi)	39.2	265.0	7.9	5.7	272.9	77.2	3.1	0.9	0.8	41.8	4.1	8.9
Travel Time (hr)	42.2	276.2	8.1	1.8	71.9	14.1	0.4	0.1	0.1	7.6	0.6	1.2
Avg Speed (mph)	5	7	7	3	4	5	7	7	12	6	7	8
Fuel Used (gal)	10.5	68.9	2.0	0.5	21.2	4.8	0.1	0.0	0.0	2.5	0.2	0.4
Fuel Eff. (mpg)	3.7	3.8	3.9	11.3	12.9	16.2	20.7	20.4	29.7	16.7	19.2	21.5
HC Emissions (g)	36	257	17	0	127	35	1	0	0	18	3	4
CO Emissions (g)	1010	7051	316	53	3516	1329	36	8	5	511	70	104
NOx Emissions (g)	52	392	21	4	351	109	4	1	0	52	8	11
Vehicles Entered	132	904	27	18	842	236	36	10	10	328	32	69
Vehicles Exited	134	902	27	16	801	228	36	10	10	327	32	69
Hourly Exit Rate	134	902	27	16	801	228	36	10	10	327	32	69
Input Volume	188	1256	39	20	950	269	39	10	10	326	31	69
% of Volume	71	72	69	80	84	85	92	100	100	100	102	100
Denied Entry Before	9	60	2	0	0	0	0	0	0	0	0	0
Denied Entry After	58	409	13	0	0	0	0	0	0	0	0	0
Density (ft/veh)												
Occupancy (veh)	8	40	1	2	72	14	0	0	0	7	1	1

9: Jennings Street & Evans Avenue/Innes Avenue Performance by movement

Movement	All
Denied Delay (hr)	277.8
Denied Del/Veh (s)	320.1
Total Delay (hr)	124.5
Total Del/Veh (s)	163.0
Stop Delay (hr)	104.6
Stop Del/Veh (s)	137.0
Total Stops	4584
Stop/Veh	1.67
Travel Dist (mi)	727.5
Travel Time (hr)	424.4
Avg Speed (mph)	5
Fuel Used (gal)	111.2
Fuel Eff. (mpg)	6.5
HC Emissions (g)	497
CO Emissions (g)	14008
NOx Emissions (g)	1005
Vehicles Entered	2644
Vehicles Exited	2592
Hourly Exit Rate	2592
Input Volume	3208
% of Volume	81
Denied Entry Before	71
Denied Entry After	480
Density (ft/veh)	79
Occupancy (veh)	147

Arterial Level of Service: EB Innes Avenue

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Hawes Street	7	9.0	41.9	0.3	28
Hunters Point Boulev	5	9.2	15.4	0.1	17
Griffith Street	11	13.1	24.4	0.1	12
	12	5.3	20.8	0.1	22
	13	6.8	22.5	0.1	21
Donahue Street	1	49.0	67.2	0.1	7
Total		92.5	192.3	0.9	16

Arterial Level of Service: WB Innes Avenue

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Earl Street	13	215.3	236.3	0.1	2
Arelious Walker Driv	12	169.6	184.0	0.1	3
New Griffith Street	11	109.4	125.2	0.1	4
Hunters Point Boulev	5	55.4	63.7	0.1	5
Hawes Street	7	30.8	37.0	0.1	7
Jennings Street	9	267.3	300.2	0.3	4
Total		847.9	946.4	0.9	3

Queuing and Blocking Report
Cumulative Plus Project PM Peak

01/24/2017

Intersection: 1: Donahue Street & Innes Avenue

Movement	EB	EB	WB	NB	SB	SB
Directions Served	L	LTR	LTR	LTR	LTR	R
Maximum Queue (ft)	292	308	861	110	1972	1965
Average Queue (ft)	162	197	399	31	1531	1526
95th Queue (ft)	259	286	943	84	2666	2657
Link Distance (ft)	615	615	988	557	1924	1924
Upstream Blk Time (%)			9		67	66
Queuing Penalty (veh)			0		0	0
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 5: Innes Avenue & Hunters Point Boulevard

Movement	EB	NB	NB	NB	SB	SB
Directions Served	R	L	T	T	T	TR
Maximum Queue (ft)	190	180	379	379	208	199
Average Queue (ft)	86	164	354	355	148	98
95th Queue (ft)	149	232	384	391	218	177
Link Distance (ft)	869		349	349	189	189
Upstream Blk Time (%)			13	18	4	1
Queuing Penalty (veh)			129	181	32	8
Storage Bay Dist (ft)		120				
Storage Blk Time (%)		3	69			
Queuing Penalty (veh)		23	143			

Intersection: 7: Innes Avenue & Hawes Street

Movement	EB	NB	NB	SB	SB
Directions Served	LR	LT	T	T	TR
Maximum Queue (ft)	38	218	221	274	212
Average Queue (ft)	11	190	193	69	43
95th Queue (ft)	36	228	225	337	284
Link Distance (ft)	777	189	189	1641	1641
Upstream Blk Time (%)		10	12		
Queuing Penalty (veh)		83	107		
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 9: Jennings Street & Evans Avenue/Innes Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	T	R	L	T	R	LTR	L	TR
Maximum Queue (ft)	230	1601	160	229	1667	1677	92	160	689
Average Queue (ft)	107	1566	92	50	1647	1648	36	156	432
95th Queue (ft)	237	1655	202	175	1685	1684	79	173	748
Link Distance (ft)		1547			1641	1641	452		667
Upstream Blk Time (%)		53			20	15			14
Queuing Penalty (veh)		0			172	135			0
Storage Bay Dist (ft)	170		100	170				100	
Storage Blk Time (%)	0	35	0		45			65	5
Queuing Penalty (veh)	2	99	1		18			85	17

Intersection: 11: Griffith Street/New Griffith Street & Innes Avenue

Movement	EB	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	T	TR	LT	TR	LTR	LT	R
Maximum Queue (ft)	219	355	327	639	640	72	1354	260
Average Queue (ft)	135	205	127	596	596	23	797	253
95th Queue (ft)	229	351	258	722	720	60	1552	296
Link Distance (ft)		349	349	606	606	912	1508	
Upstream Blk Time (%)		2	0	9	14		13	
Queuing Penalty (veh)		19	3	77	118		0	
Storage Bay Dist (ft)	160							200
Storage Blk Time (%)	9	12					0	84
Queuing Penalty (veh)	65	22					1	22

Intersection: 12: Innes Avenue & Arelious Walker Drive

Movement	EB	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	T	TR	L	R
Maximum Queue (ft)	401	517	124	660	651	167	396
Average Queue (ft)	314	185	20	630	628	33	185
95th Queue (ft)	456	596	83	694	686	114	336
Link Distance (ft)		606	606	623	623		1621
Upstream Blk Time (%)		2		20	29		
Queuing Penalty (veh)		16		138	201		
Storage Bay Dist (ft)	350					180	
Storage Blk Time (%)	18	0					11
Queuing Penalty (veh)	92	0					3

Intersection: 13: Innes Avenue & Earl Street

Movement	EB	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	T	TR	L	R
Maximum Queue (ft)	337	184	158	661	652	129	369
Average Queue (ft)	163	48	70	598	599	18	175
95th Queue (ft)	294	143	133	770	759	80	316
Link Distance (ft)		623	623	615	615		1733
Upstream Blk Time (%)				60	64		
Queuing Penalty (veh)				325	342		
Storage Bay Dist (ft)	390					160	
Storage Blk Time (%)	0						16
Queuing Penalty (veh)	1						3

Network Summary

Network wide Queuing Penalty: 2681

1: Donahue Street & Innes Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.3	0.1	0.0	0.0	0.0	1.5	1.6	152.8
Denied Del/Veh (s)	0.0	0.0	0.0	15.8	13.5	23.9	0.1	0.1	0.1	556.6	520.6	556.6
Total Delay (hr)	5.0	1.8	0.1	1.2	12.4	1.3	0.3	0.2	0.1	0.9	1.4	118.3
Total Del/Veh (s)	38.6	49.2	35.8	460.8	524.5	531.0	113.0	63.0	25.2	674.0	733.6	761.7
Stop Delay (hr)	4.4	1.6	0.1	1.2	12.4	1.3	0.3	0.2	0.1	1.0	1.5	120.8
Stop Del/Veh (s)	34.2	43.0	32.1	461.4	524.9	532.3	111.1	60.4	24.5	688.7	748.1	778.2
Total Stops	419	134	8	8	81	9	10	8	7	3	4	317
Stop/Veh	0.90	1.00	1.00	0.89	0.95	1.00	1.00	0.80	0.78	0.60	0.57	0.57
Travel Dist (mi)	59.1	16.9	1.1	1.5	13.6	1.5	1.1	1.1	0.9	1.4	2.1	170.5
Travel Time (hr)	7.5	2.5	0.1	1.3	13.3	1.5	0.4	0.2	0.1	2.5	3.1	277.1
Avg Speed (mph)	8	7	8	1	1	1	3	5	9	1	1	1
Fuel Used (gal)	2.8	0.9	0.0	0.3	3.3	0.4	0.1	0.1	0.0	0.6	0.7	66.5
Fuel Eff. (mpg)	21.3	19.4	23.7	4.6	4.1	4.2	10.6	15.6	24.9	2.3	2.8	2.6
HC Emissions (g)	20	7	0	0	21	0	0	0	0	0	0	228
CO Emissions (g)	543	175	5	23	466	25	9	8	5	34	44	6485
NOx Emissions (g)	66	22	0	1	30	1	1	1	0	1	2	336
Vehicles Entered	460	132	8	9	84	9	10	10	9	5	6	538
Vehicles Exited	461	132	8	7	56	7	10	10	9	3	5	403
Hourly Exit Rate	461	132	8	7	56	7	10	10	9	3	5	403
Input Volume	560	148	10	10	79	10	10	10	10	10	10	986
% of Volume	82	89	80	70	71	70	100	100	90	30	50	41
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	2	0	0	0	0	5	5	450
Density (ft/veh)												
Occupancy (veh)	8	3	0	1	13	1	0	0	0	1	1	124

1: Donahue Street & Innes Avenue Performance by movement

Movement	All
Denied Delay (hr)	156.3
Denied Del/Veh (s)	323.0
Total Delay (hr)	143.0
Total Del/Veh (s)	391.4
Stop Delay (hr)	144.8
Stop Del/Veh (s)	396.4
Total Stops	1008
Stop/Veh	0.77
Travel Dist (mi)	270.6
Travel Time (hr)	309.5
Avg Speed (mph)	2
Fuel Used (gal)	75.7
Fuel Eff. (mpg)	3.6
HC Emissions (g)	277
CO Emissions (g)	7823
NOx Emissions (g)	461
Vehicles Entered	1280
Vehicles Exited	1111
Hourly Exit Rate	1111
Input Volume	1854
% of Volume	60
Denied Entry Before	0
Denied Entry After	462
Density (ft/veh)	44
Occupancy (veh)	153

9: Jennings Street & Evans Avenue/Innes Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	12.5	162.3	29.1	0.0	0.2	0.0	0.0	0.0	0.0	1.1	0.2	0.2
Denied Del/Veh (s)	505.5	513.0	511.0	0.0	1.0	0.0	0.2	0.2	0.1	10.9	8.4	8.7
Total Delay (hr)	3.2	30.0	4.9	2.2	70.3	12.0	0.3	0.1	0.0	9.5	1.5	1.4
Total Del/Veh (s)	163.7	121.6	112.6	322.5	267.3	192.7	30.5	25.0	14.0	94.6	79.5	77.3
Stop Delay (hr)	2.4	19.0	3.1	2.1	66.1	11.6	0.2	0.1	0.0	8.8	1.4	1.2
Stop Del/Veh (s)	122.0	77.0	70.2	312.2	251.5	187.0	28.6	22.7	13.1	86.9	71.9	71.2
Total Stops	159	1481	275	58	1756	393	25	7	10	467	86	85
Stop/Veh	2.27	1.67	1.75	2.42	1.85	1.75	0.81	0.64	0.83	1.29	1.25	1.35
Travel Dist (mi)	19.2	250.1	44.3	7.6	292.3	70.6	2.6	0.9	1.0	44.3	8.5	7.8
Travel Time (hr)	16.3	199.5	35.4	2.4	79.0	14.2	0.4	0.1	0.1	12.5	2.0	1.9
Avg Speed (mph)	5	7	7	3	4	5	7	8	11	4	5	5
Fuel Used (gal)	4.1	50.9	8.9	0.7	23.3	4.7	0.1	0.0	0.0	3.7	0.6	0.6
Fuel Eff. (mpg)	4.7	4.9	5.0	11.3	12.5	15.2	20.6	22.3	27.9	11.9	13.6	13.8
HC Emissions (g)	10	222	37	0	143	34	2	0	0	21	4	4
CO Emissions (g)	362	5912	967	69	3871	1283	38	8	8	607	117	117
NOx Emissions (g)	18	371	59	6	379	105	4	1	1	57	11	11
Vehicles Entered	66	852	150	22	875	211	30	11	12	350	66	61
Vehicles Exited	66	849	151	22	867	211	30	11	12	347	67	60
Hourly Exit Rate	66	849	151	22	867	211	30	11	12	347	67	60
Input Volume	88	1110	197	39	1367	338	29	10	10	348	72	59
% of Volume	75	76	77	56	63	62	103	110	120	100	93	101
Denied Entry Before	2	42	8	0	0	0	0	0	0	1	0	0
Denied Entry After	23	287	55	0	0	0	0	0	0	6	1	1
Density (ft/veh)												
Occupancy (veh)	4	37	6	2	79	14	0	0	0	11	2	2

9: Jennings Street & Evans Avenue/Innes Avenue Performance by movement

Movement	All
Denied Delay (hr)	205.5
Denied Del/Veh (s)	240.3
Total Delay (hr)	135.4
Total Del/Veh (s)	170.6
Stop Delay (hr)	116.0
Stop Del/Veh (s)	146.2
Total Stops	4802
Stop/Veh	1.68
Travel Dist (mi)	749.2
Travel Time (hr)	363.8
Avg Speed (mph)	5
Fuel Used (gal)	97.7
Fuel Eff. (mpg)	7.7
HC Emissions (g)	479
CO Emissions (g)	13360
NOx Emissions (g)	1022
Vehicles Entered	2706
Vehicles Exited	2693
Hourly Exit Rate	2693
Input Volume	3669
% of Volume	73
Denied Entry Before	53
Denied Entry After	373
Density (ft/veh)	73
Occupancy (veh)	158

CUMULATIVE + PROJECT + BUS LANE

Arterial Level of Service
Cumulative Plus Project Plus Bus Lane AM Peak

01/24/2017

Arterial Level of Service: EB Innes Avenue

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Hawes Street	7	186.4	217.0	0.3	5
Hunters Point Boulev	5	23.3	30.1	0.1	9
Griffith Street	11	17.1	27.8	0.1	10
	12	5.9	21.3	0.1	21
	13	2.0	17.7	0.1	27
Donahue Street	1	15.4	33.4	0.1	14
Total		250.1	347.2	0.9	9

Arterial Level of Service: WB Innes Avenue

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Earl Street	13	166.1	185.1	0.1	3
Arelious Walker Driv	12	119.7	134.7	0.1	3
New Griffith Street	11	53.8	69.0	0.1	7
Hunters Point Boulev	5	16.1	24.5	0.1	12
Hawes Street	7	7.2	13.8	0.1	19
Jennings Street	9	32.5	66.2	0.3	18
Total		395.4	493.2	0.9	6

Queuing and Blocking Report
Cumulative Plus Project Plus Bus Lane AM Peak

01/24/2017

Intersection: 1: Donahue Street & Innes Avenue

Movement	EB	EB	WB	NB	SB
Directions Served	L	TR	LTR	LTR	LTR
Maximum Queue (ft)	390	68	699	144	1988
Average Queue (ft)	227	18	390	52	1873
95th Queue (ft)	356	51	801	135	2266
Link Distance (ft)	627	627	999	557	1936
Upstream Blk Time (%)			4		84
Queuing Penalty (veh)			0		0
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 5: Innes Avenue & Hunters Point Boulevard

Movement	EB	NB	NB	SB
Directions Served	R	L	T	T
Maximum Queue (ft)	184	180	367	259
Average Queue (ft)	81	89	266	243
95th Queue (ft)	145	190	393	282
Link Distance (ft)	902		354	244
Upstream Blk Time (%)			1	13
Queuing Penalty (veh)			15	208
Storage Bay Dist (ft)		120		
Storage Blk Time (%)		0	21	
Queuing Penalty (veh)		3	34	

Intersection: 7: Innes Avenue & Hawes Street

Movement	EB	NB	SB	SB
Directions Served	LR	T	T	R
Maximum Queue (ft)	40	254	1651	160
Average Queue (ft)	7	103	1636	28
95th Queue (ft)	30	262	1653	126
Link Distance (ft)	803	244	1641	
Upstream Blk Time (%)		1	5	
Queuing Penalty (veh)		11	79	
Storage Bay Dist (ft)				100
Storage Blk Time (%)			51	
Queuing Penalty (veh)			15	

Queuing and Blocking Report
Cumulative Plus Project Plus Bus Lane AM Peak

01/24/2017

Intersection: 9: Jennings Street & Evans Avenue/Innes Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	T	R	L	T	R	LTR	L	TR
Maximum Queue (ft)	230	1601	160	175	601	160	102	160	720
Average Queue (ft)	188	1575	49	21	344	115	35	159	655
95th Queue (ft)	309	1600	169	95	551	212	78	160	820
Link Distance (ft)		1547			1641		451		667
Upstream Blk Time (%)		95							78
Queuing Penalty (veh)		0							0
Storage Bay Dist (ft)	170		100	170		100		100	
Storage Blk Time (%)	1	80	0		35	0		89	1
Queuing Penalty (veh)	18	181	0		101	2		90	3

Intersection: 11: Griffith Street/New Griffith Street & Innes Avenue

Movement	EB	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	T	R	T	R	LTR	LT	R
Maximum Queue (ft)	220	361	103	625	133	57	127	223
Average Queue (ft)	126	273	6	532	9	14	16	99
95th Queue (ft)	236	389	52	705	64	40	72	182
Link Distance (ft)		354		605		910	1509	
Upstream Blk Time (%)		0		3				
Queuing Penalty (veh)		8		36				
Storage Bay Dist (ft)	160		100		100			200
Storage Blk Time (%)	1	21		45			0	0
Queuing Penalty (veh)	20	43		8			0	0

Intersection: 12: Innes Avenue & Arelious Walker Drive

Movement	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	R	L	R
Maximum Queue (ft)	321	139	650	160	70	243
Average Queue (ft)	174	59	637	42	20	114
95th Queue (ft)	298	112	649	154	52	204
Link Distance (ft)		605	622			1620
Upstream Blk Time (%)			39			
Queuing Penalty (veh)			385			
Storage Bay Dist (ft)	350			100	180	
Storage Blk Time (%)	0		71	0		2
Queuing Penalty (veh)	3		21	0		0

Queuing and Blocking Report
Cumulative Plus Project Plus Bus Lane AM Peak

01/24/2017

Intersection: 13: Innes Avenue & Earl Street

Movement	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	R	L	R
Maximum Queue (ft)	214	88	654	160	220	1781
Average Queue (ft)	106	19	636	47	44	1625
95th Queue (ft)	184	57	648	166	187	2102
Link Distance (ft)		622	627			1732
Upstream Blk Time (%)			40			78
Queuing Penalty (veh)			275			0
Storage Bay Dist (ft)	390			100	160	
Storage Blk Time (%)			88			98
Queuing Penalty (veh)			17			18

Network Summary

Network wide Queuing Penalty: 1591

SimTraffic Performance Report
Cumulative Plus Project Plus Bus Lane AM Peak

01/24/2017

1: Donahue Street & Innes Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	2.0	1.7	97.2
Denied Del/Veh (s)	0.0	0.0	0.0	6.5	9.5	13.7	0.1	0.1	0.1	588.2	540.9	630.5
Total Delay (hr)	3.2	0.1	0.0	0.9	11.6	0.9	0.7	0.4	0.3	1.4	1.6	69.5
Total Del/Veh (s)	24.3	15.6	3.1	314.8	303.9	273.2	215.3	122.8	85.7	716.3	707.4	692.8
Stop Delay (hr)	2.6	0.1	0.0	0.9	11.6	0.9	0.7	0.4	0.3	1.5	1.6	72.6
Stop Del/Veh (s)	19.8	14.0	2.9	315.5	304.1	274.8	213.9	120.9	85.2	747.3	735.7	724.3
Total Stops	344	15	3	9	131	11	11	9	11	2	2	93
Stop/Veh	0.72	0.62	0.60	0.90	0.96	0.92	1.00	0.82	0.85	0.29	0.25	0.26
Travel Dist (mi)	60.2	3.1	0.6	1.7	23.7	2.1	1.1	1.1	1.3	2.2	2.4	108.6
Travel Time (hr)	5.7	0.2	0.0	1.0	12.9	1.0	0.7	0.4	0.4	3.4	3.3	170.5
Avg Speed (mph)	10	14	20	2	2	2	2	3	4	1	1	1
Fuel Used (gal)	2.1	0.1	0.0	0.3	3.4	0.3	0.2	0.1	0.1	0.8	0.8	40.4
Fuel Eff. (mpg)	28.2	32.2	38.6	6.8	7.0	7.4	6.3	9.3	12.3	2.7	3.0	2.7
HC Emissions (g)	17	1	0	0	22	0	0	0	0	0	0	123
CO Emissions (g)	402	28	2	20	523	23	15	12	12	47	47	3780
NOx Emissions (g)	51	4	0	1	36	1	1	1	1	2	2	170
Vehicles Entered	468	24	5	9	132	12	11	10	12	7	7	323
Vehicles Exited	467	24	5	9	116	10	11	10	13	5	6	284
Hourly Exit Rate	467	24	5	9	116	10	11	10	13	5	6	284
Input Volume	794	40	10	10	138	10	10	10	10	10	10	540
% of Volume	59	60	50	90	84	100	110	100	130	50	60	53
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	1	0	0	0	0	5	4	232
Density (ft/veh)												
Occupancy (veh)	6	0	0	1	13	1	1	0	0	1	2	73

1: Donahue Street & Innes Avenue Performance by movement

Movement	All
Denied Delay (hr)	101.2
Denied Del/Veh (s)	288.8
Total Delay (hr)	90.4
Total Del/Veh (s)	303.5
Stop Delay (hr)	93.1
Stop Del/Veh (s)	312.4
Total Stops	641
Stop/Veh	0.60
Travel Dist (mi)	208.2
Travel Time (hr)	199.6
Avg Speed (mph)	2
Fuel Used (gal)	48.5
Fuel Eff. (mpg)	4.3
HC Emissions (g)	164
CO Emissions (g)	4913
NOx Emissions (g)	269
Vehicles Entered	1020
Vehicles Exited	960
Hourly Exit Rate	960
Input Volume	1592
% of Volume	60
Denied Entry Before	0
Denied Entry After	242
Density (ft/veh)	49
Occupancy (veh)	98

9: Jennings Street & Evans Avenue/Innes Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	63.0	411.3	13.5	0.0	0.0	0.0	0.0	0.0	0.0	21.3	2.0	4.5
Denied Del/Veh (s)	1122.3	1116.7	1133.5	0.0	0.0	0.0	0.2	0.2	0.2	232.2	218.4	235.8
Total Delay (hr)	7.2	43.6	1.2	0.2	6.0	1.1	0.3	0.1	0.1	18.7	1.5	2.9
Total Del/Veh (s)	266.1	253.7	221.7	58.3	32.4	20.6	26.9	28.7	20.7	232.5	187.6	168.2
Stop Delay (hr)	7.0	42.2	1.1	0.2	3.3	0.5	0.3	0.1	0.1	18.7	1.5	2.9
Stop Del/Veh (s)	257.6	245.8	215.8	45.5	18.1	8.5	25.1	26.3	20.3	232.8	186.2	168.4
Total Stops	117	324	10	16	444	154	32	7	10	214	26	54
Stop/Veh	1.19	0.52	0.53	1.23	0.67	0.77	0.74	0.78	0.83	0.74	0.90	0.87
Travel Dist (mi)	26.1	166.9	5.0	4.1	216.8	65.6	3.7	0.8	1.0	34.7	3.5	7.4
Travel Time (hr)	71.0	459.7	14.9	0.3	12.3	3.2	0.5	0.1	0.1	41.5	3.7	7.8
Avg Speed (mph)	3	3	4	12	18	20	8	8	9	2	2	2
Fuel Used (gal)	16.9	108.6	3.5	0.1	6.5	1.7	0.2	0.0	0.0	10.1	0.9	1.9
Fuel Eff. (mpg)	1.5	1.5	1.4	29.1	33.1	37.5	21.6	21.4	23.0	3.4	3.9	3.9
HC Emissions (g)	28	395	33	0	73	23	1	0	0	39	3	8
CO Emissions (g)	1188	10103	564	21	1612	483	43	6	7	1054	102	218
NOx Emissions (g)	32	353	27	3	252	76	5	0	1	53	6	12
Vehicles Entered	88	570	18	12	655	198	42	9	12	279	28	59
Vehicles Exited	91	570	16	12	655	199	43	9	12	268	27	58
Hourly Exit Rate	91	570	16	12	655	199	43	9	12	268	27	58
Input Volume	188	1256	39	20	950	269	39	10	10	326	31	69
% of Volume	48	45	41	60	69	74	110	90	120	82	86	84
Denied Entry Before	15	72	2	0	0	0	0	0	0	1	0	0
Denied Entry After	114	756	25	0	0	0	0	0	0	52	5	10
Density (ft/veh)												
Occupancy (veh)	8	48	1	0	12	3	0	0	0	20	2	3

9: Jennings Street & Evans Avenue/Innes Avenue Performance by movement

Movement	All
Denied Delay (hr)	515.7
Denied Del/Veh (s)	633.2
Total Delay (hr)	82.9
Total Del/Veh (s)	144.9
Stop Delay (hr)	77.8
Stop Del/Veh (s)	136.1
Total Stops	1408
Stop/Veh	0.68
Travel Dist (mi)	535.7
Travel Time (hr)	615.0
Avg Speed (mph)	5
Fuel Used (gal)	150.7
Fuel Eff. (mpg)	3.6
HC Emissions (g)	603
CO Emissions (g)	15401
NOx Emissions (g)	820
Vehicles Entered	1970
Vehicles Exited	1960
Hourly Exit Rate	1960
Input Volume	3208
% of Volume	61
Denied Entry Before	90
Denied Entry After	962
Density (ft/veh)	115
Occupancy (veh)	99

Arterial Level of Service
Cumulative Plus Project Plus Bus Lane PM Peak

01/26/2017

Arterial Level of Service: EB Innes Avenue

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Hawes Street	7	184.2	214.8	0.3	5
Hunters Point Boulev	5	26.6	33.8	0.1	8
Griffith Street	11	19.7	30.3	0.1	10
	12	5.5	20.9	0.1	22
	13	9.2	24.9	0.1	19
Donahue Street	1	28.8	47.2	0.1	10
Total		274.0	372.0	0.9	8

Arterial Level of Service: WB Innes Avenue

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Earl Street	13	365.7	378.5	0.1	1
Arelious Walker Driv	12	133.5	146.6	0.1	3
New Griffith Street	11	60.2	75.6	0.1	6
Hunters Point Boulev	5	14.8	23.3	0.1	12
Hawes Street	7	4.2	10.9	0.1	24
Jennings Street	9	32.0	65.7	0.3	18
Total		610.4	700.5	0.9	4

Queuing and Blocking Report
Cumulative Plus Project Plus Bus Lane PM Peak

01/26/2017

Intersection: 1: Donahue Street & Innes Avenue

Movement	EB	EB	WB	NB	SB
Directions Served	L	TR	LTR	LTR	LTR
Maximum Queue (ft)	380	150	1026	271	1986
Average Queue (ft)	232	66	846	100	1952
95th Queue (ft)	357	124	1266	269	1970
Link Distance (ft)	627	627	999	557	1936
Upstream Blk Time (%)			57		100
Queuing Penalty (veh)			0		0
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 5: Innes Avenue & Hunters Point Boulevard

Movement	EB	NB	NB	SB
Directions Served	R	L	T	T
Maximum Queue (ft)	217	179	370	261
Average Queue (ft)	107	89	268	250
95th Queue (ft)	186	185	396	261
Link Distance (ft)	902		354	244
Upstream Blk Time (%)			1	20
Queuing Penalty (veh)			25	291
Storage Bay Dist (ft)		120		
Storage Blk Time (%)		0	19	
Queuing Penalty (veh)		8	40	

Intersection: 7: Innes Avenue & Hawes Street

Movement	EB	NB	SB	SB
Directions Served	LR	T	T	R
Maximum Queue (ft)	33	216	1652	160
Average Queue (ft)	10	41	1633	40
95th Queue (ft)	35	152	1665	153
Link Distance (ft)	803	244	1641	
Upstream Blk Time (%)		0	4	
Queuing Penalty (veh)		1	63	
Storage Bay Dist (ft)				100
Storage Blk Time (%)			53	0
Queuing Penalty (veh)			21	0

Queuing and Blocking Report
Cumulative Plus Project Plus Bus Lane PM Peak

01/26/2017

Intersection: 9: Jennings Street & Evans Avenue/Innes Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	T	R	L	T	R	LTR	L	TR
Maximum Queue (ft)	230	1601	160	229	651	160	76	160	721
Average Queue (ft)	127	1576	127	32	378	103	27	159	674
95th Queue (ft)	288	1601	230	124	643	209	62	160	764
Link Distance (ft)		1547			1641		451		667
Upstream Blk Time (%)		92							87
Queuing Penalty (veh)		0							0
Storage Bay Dist (ft)	170		100	170		100		100	
Storage Blk Time (%)		72	0		32	0		89	3
Queuing Penalty (veh)		207	0		121	1		117	10

Intersection: 11: Griffith Street/New Griffith Street & Innes Avenue

Movement	EB	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	T	R	T	R	LTR	LT	R
Maximum Queue (ft)	220	370	119	625	77	68	466	260
Average Queue (ft)	127	313	6	576	5	19	159	200
95th Queue (ft)	240	410	50	692	50	55	500	297
Link Distance (ft)		354		605		910	1509	
Upstream Blk Time (%)		2		5				
Queuing Penalty (veh)		27		85				
Storage Bay Dist (ft)	160		100		100			200
Storage Blk Time (%)	2	24		46			1	30
Queuing Penalty (veh)	25	45		7			2	5

Intersection: 12: Innes Avenue & Arelious Walker Drive

Movement	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	R	L	R
Maximum Queue (ft)	272	153	645	160	173	333
Average Queue (ft)	151	47	632	37	29	159
95th Queue (ft)	243	111	642	146	103	272
Link Distance (ft)		605	622			1620
Upstream Blk Time (%)			43			
Queuing Penalty (veh)			592			
Storage Bay Dist (ft)	350			100	180	
Storage Blk Time (%)	0		81	0		6
Queuing Penalty (veh)	1		28	0		2

Queuing and Blocking Report
Cumulative Plus Project Plus Bus Lane PM Peak

01/26/2017

Intersection: 13: Innes Avenue & Earl Street

Movement	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	R	L	R
Maximum Queue (ft)	233	213	644	112	202	612
Average Queue (ft)	118	118	633	9	37	298
95th Queue (ft)	200	200	640	68	158	594
Link Distance (ft)		622	627			1732
Upstream Blk Time (%)			83			
Queuing Penalty (veh)			882			
Storage Bay Dist (ft)	390			100	160	
Storage Blk Time (%)			99			44
Queuing Penalty (veh)			19			7

Network Summary

Network wide Queuing Penalty: 2631

SimTraffic Performance Report
Cumulative Plus Project Plus Bus Lane PM Peak

01/26/2017

1: Donahue Street & Innes Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	1.7	12.7	1.8	0.0	0.0	0.0	5.2	4.8	558.8
Denied Del/Veh (s)	0.0	0.0	0.0	616.8	573.6	510.5	0.1	0.2	0.1	1877.4	1734.3	1832.1
Total Delay (hr)	4.4	0.8	0.0	3.0	28.0	4.2	1.1	1.0	1.5	1.2	1.2	77.1
Total Del/Veh (s)	42.4	28.6	12.2	1822.3	1904.4	1892.5	489.0	390.9	435.2	2157.0	2119.1	1768.8
Stop Delay (hr)	3.9	0.7	0.0	3.0	28.1	4.2	1.1	1.0	1.4	1.2	1.2	78.1
Stop Del/Veh (s)	37.2	26.0	11.3	1826.6	1908.5	1897.5	486.7	388.2	433.7	2184.0	2146.0	1791.9
Total Stops	331	73	5	4	32	5	8	8	11	0	0	0
Stop/Veh	0.89	0.72	0.71	0.67	0.60	0.62	1.00	0.89	0.92	0.00	0.00	0.00
Travel Dist (mi)	47.4	12.8	0.9	0.6	5.3	0.8	0.8	0.9	1.2	0.4	0.5	28.9
Travel Time (hr)	6.4	1.3	0.1	4.8	41.0	6.1	1.1	1.0	1.5	6.4	6.0	637.0
Avg Speed (mph)	7	10	14	0	0	0	1	1	1	0	0	0
Fuel Used (gal)	2.3	0.5	0.0	1.1	9.6	1.4	0.3	0.3	0.4	1.5	1.4	148.5
Fuel Eff. (mpg)	20.9	24.5	32.0	0.5	0.5	0.5	2.8	3.5	3.2	0.3	0.3	0.2
HC Emissions (g)	16	7	0	0	30	0	0	0	0	0	0	510
CO Emissions (g)	443	159	4	56	828	72	18	17	26	73	69	13086
NOx Emissions (g)	53	19	0	1	27	1	1	1	1	1	1	416
Vehicles Entered	368	99	7	5	42	7	8	9	12	1	1	80
Vehicles Exited	367	100	7	2	19	3	6	7	10	1	2	79
Hourly Exit Rate	367	100	7	2	19	3	6	7	10	1	2	79
Input Volume	560	148	10	10	79	10	10	10	10	10	10	976
% of Volume	65	67	70	20	24	30	60	70	100	10	20	8
Denied Entry Before	0	0	0	0	0	0	0	0	0	1	1	97
Denied Entry After	0	0	0	5	38	6	0	0	0	9	9	1018
Density (ft/veh)												
Occupancy (veh)	6	1	0	3	28	4	1	1	2	1	1	78

1: Donahue Street & Innes Avenue Performance by movement

Movement	All
Denied Delay (hr)	585.1
Denied Del/Veh (s)	1221.8
Total Delay (hr)	123.5
Total Del/Veh (s)	602.6
Stop Delay (hr)	124.0
Stop Del/Veh (s)	605.0
Total Stops	477
Stop/Veh	0.65
Travel Dist (mi)	100.3
Travel Time (hr)	712.7
Avg Speed (mph)	1
Fuel Used (gal)	167.3
Fuel Eff. (mpg)	0.6
HC Emissions (g)	563
CO Emissions (g)	14852
NOx Emissions (g)	520
Vehicles Entered	639
Vehicles Exited	603
Hourly Exit Rate	603
Input Volume	1844
% of Volume	33
Denied Entry Before	99
Denied Entry After	1085
Density (ft/veh)	38
Occupancy (veh)	128

9: Jennings Street & Evans Avenue/Innes Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	24.5	307.6	54.4	0.0	0.0	0.0	0.0	0.0	0.0	40.6	8.3	7.3
Denied Del/Veh (s)	947.4	960.4	964.0	0.0	0.0	0.0	0.1	0.2	0.1	413.0	438.4	400.7
Total Delay (hr)	3.5	40.0	6.2	0.3	6.7	1.1	0.2	0.1	0.1	18.9	3.0	2.6
Total Del/Veh (s)	242.7	228.7	206.6	58.4	32.0	21.6	27.7	26.8	22.7	236.5	197.0	182.9
Stop Delay (hr)	3.3	37.3	5.8	0.2	3.5	0.5	0.2	0.1	0.1	18.8	2.9	2.6
Stop Del/Veh (s)	228.2	213.7	193.4	45.4	16.7	8.9	26.1	24.5	22.4	235.7	194.6	181.9
Total Stops	67	458	71	23	504	142	21	8	8	217	47	50
Stop/Veh	1.29	0.73	0.66	1.21	0.66	0.75	0.75	0.73	0.80	0.76	0.87	0.96
Travel Dist (mi)	14.0	171.0	29.6	5.9	246.5	61.4	2.4	0.9	0.9	34.3	6.6	6.4
Travel Time (hr)	28.4	352.5	61.5	0.5	13.9	3.1	0.3	0.1	0.1	60.9	11.5	10.3
Avg Speed (mph)	4	4	4	12	18	20	8	8	8	2	2	2
Fuel Used (gal)	6.8	84.0	14.7	0.2	7.1	1.6	0.1	0.0	0.0	14.7	2.8	2.5
Fuel Eff. (mpg)	2.1	2.0	2.0	30.1	34.8	38.7	22.0	21.8	23.6	2.3	2.3	2.6
HC Emissions (g)	17	269	58	1	78	21	1	0	0	36	5	6
CO Emissions (g)	567	7463	1449	25	1630	424	29	8	6	1222	228	220
NOx Emissions (g)	20	265	57	3	264	68	3	1	0	49	10	10
Vehicles Entered	48	583	101	18	746	186	28	10	10	274	52	51
Vehicles Exited	48	583	101	18	744	186	27	11	10	266	51	49
Hourly Exit Rate	48	583	101	18	744	186	27	11	10	266	51	49
Input Volume	88	1110	197	39	1367	338	29	10	10	348	72	59
% of Volume	54	53	51	46	54	55	92	110	100	77	71	83
Denied Entry Before	4	48	8	0	0	0	0	0	0	2	0	0
Denied Entry After	45	570	102	0	0	0	0	0	0	80	16	15
Density (ft/veh)												
Occupancy (veh)	4	45	7	0	14	3	0	0	0	20	3	3

9: Jennings Street & Evans Avenue/Innes Avenue Performance by movement

Movement	All
Denied Delay (hr)	442.7
Denied Del/Veh (s)	543.0
Total Delay (hr)	82.7
Total Del/Veh (s)	135.5
Stop Delay (hr)	75.3
Stop Del/Veh (s)	123.5
Total Stops	1616
Stop/Veh	0.74
Travel Dist (mi)	580.1
Travel Time (hr)	543.1
Avg Speed (mph)	6
Fuel Used (gal)	134.5
Fuel Eff. (mpg)	4.3
HC Emissions (g)	494
CO Emissions (g)	13269
NOx Emissions (g)	749
Vehicles Entered	2107
Vehicles Exited	2094
Hourly Exit Rate	2094
Input Volume	3669
% of Volume	57
Denied Entry Before	62
Denied Entry After	828
Density (ft/veh)	114
Occupancy (veh)	100

CUMULATIVE + VARIANT

Arterial Level of Service: EB Innes Avenue

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Hawes Street	7	17.9	50.7	0.3	23
Hunters Point Boulev	5	11.0	17.2	0.1	15
Griffith Street	11	11.1	22.5	0.1	13
	12	3.1	18.5	0.1	25
	13	4.8	20.5	0.1	23
Donahue Street	1	34.3	52.7	0.1	9
Total		82.2	182.1	0.9	17

Arterial Level of Service: WB Innes Avenue

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Earl Street	13	66.8	80.0	0.1	6
Arelious Walker Driv	12	92.3	106.9	0.1	4
New Griffith Street	11	83.7	99.4	0.1	5
Hunters Point Boulev	5	41.7	50.1	0.1	6
Hawes Street	7	30.0	36.2	0.1	7
Jennings Street	9	297.4	329.4	0.3	4
Total		612.0	702.0	0.9	4

Queuing and Blocking Report
Cumulative Plus Variant AM Peak

01/24/2017

Intersection: 1: Donahue Street & Innes Avenue

Movement	EB	EB	WB	NB	SB	SB
Directions Served	L	LTR	LTR	LTR	LTR	R
Maximum Queue (ft)	249	273	594	74	788	776
Average Queue (ft)	135	153	182	25	189	187
95th Queue (ft)	222	243	526	61	651	639
Link Distance (ft)	615	615	988	557	1924	1924
Upstream Blk Time (%)			2			
Queuing Penalty (veh)			0			
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 5: Innes Avenue & Hunters Point Boulevard

Movement	EB	NB	NB	NB	SB	SB
Directions Served	R	L	T	T	T	TR
Maximum Queue (ft)	867	180	374	380	211	214
Average Queue (ft)	748	132	237	244	171	121
95th Queue (ft)	1104	225	459	464	244	218
Link Distance (ft)	869		349	349	189	189
Upstream Blk Time (%)	57		5	10	9	2
Queuing Penalty (veh)	0		29	61	94	16
Storage Bay Dist (ft)		120				
Storage Blk Time (%)		7	49			
Queuing Penalty (veh)		40	68			

Intersection: 7: Innes Avenue & Hawes Street

Movement	EB	NB	NB	SB	SB
Directions Served	LR	LT	T	T	TR
Maximum Queue (ft)	51	218	223	566	506
Average Queue (ft)	10	159	163	218	136
95th Queue (ft)	37	272	273	484	394
Link Distance (ft)	777	189	189	1641	1641
Upstream Blk Time (%)		17	19		
Queuing Penalty (veh)		98	109		
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 9: Jennings Street & Evans Avenue/Innes Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	T	R	L	T	R	LTR	L	TR
Maximum Queue (ft)	230	1601	159	228	1667	1671	103	160	721
Average Queue (ft)	142	1575	22	35	1576	1544	39	159	689
95th Queue (ft)	268	1599	106	143	1840	1930	87	160	714
Link Distance (ft)		1547			1641	1641	452		667
Upstream Blk Time (%)		69			18	15			82
Queuing Penalty (veh)		0			102	86			0
Storage Bay Dist (ft)	170		100	170				100	
Storage Blk Time (%)	4	41			54			70	2
Queuing Penalty (veh)	60	93			11			88	12

Intersection: 11: Griffith Street/New Griffith Street & Innes Avenue

Movement	EB	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	T	TR	LT	TR	LTR	LT	R
Maximum Queue (ft)	220	368	304	635	639	57	189	225
Average Queue (ft)	196	245	81	512	517	17	37	108
95th Queue (ft)	251	397	201	772	770	46	197	208
Link Distance (ft)		349	349	606	606	912	1508	
Upstream Blk Time (%)		3	0	6	7			
Queuing Penalty (veh)		41	2	35	39			
Storage Bay Dist (ft)	160							200
Storage Blk Time (%)	30	6					0	6
Queuing Penalty (veh)	271	33					1	1

Intersection: 12: Innes Avenue & Arelious Walker Drive

Movement	EB	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	T	TR	L	R
Maximum Queue (ft)	358	196	132	650	651	100	282
Average Queue (ft)	174	32	21	429	432	23	118
95th Queue (ft)	291	137	77	761	757	69	215
Link Distance (ft)		606	606	623	623		1621
Upstream Blk Time (%)		0		10	13		
Queuing Penalty (veh)		0		47	58		
Storage Bay Dist (ft)	350					180	
Storage Blk Time (%)	1						2
Queuing Penalty (veh)	4						0

Queuing and Blocking Report
Cumulative Plus Variant AM Peak

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Intersection: 13: Innes Avenue & Earl Street

Movement	EB	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	T	TR	L	R
Maximum Queue (ft)	377	111	120	640	648	60	237
Average Queue (ft)	187	33	49	304	314	16	104
95th Queue (ft)	309	88	107	650	650	48	197
Link Distance (ft)		623	623	615	615		1733
Upstream Blk Time (%)				15	16		
Queuing Penalty (veh)				52	56		
Storage Bay Dist (ft)	390					160	
Storage Blk Time (%)	0						3
Queuing Penalty (veh)	1						0

Network Summary

Network wide Queuing Penalty: 1607

1: Donahue Street & Innes Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	2.0	2.6	9.5	0.1	0.1	0.1	0.2	0.2	0.1
Total Delay (hr)	4.2	0.3	0.0	0.3	4.6	0.3	0.1	0.1	0.0	0.2	0.3	10.1
Total Del/Veh (s)	29.0	33.7	18.8	119.4	118.2	114.4	50.0	41.5	13.2	88.3	93.4	62.7
Stop Delay (hr)	3.6	0.2	0.0	0.3	4.5	0.3	0.1	0.1	0.0	0.2	0.2	10.0
Stop Del/Veh (s)	25.3	28.4	15.9	117.2	115.4	113.2	48.2	39.3	12.8	85.4	89.5	61.6
Total Stops	392	21	5	8	117	9	7	9	8	8	8	414
Stop/Veh	0.76	0.78	0.71	0.89	0.83	1.00	0.78	0.82	0.89	0.80	0.80	0.71
Travel Dist (mi)	65.4	3.4	0.9	1.6	24.5	1.6	0.9	1.2	1.0	3.5	3.5	203.4
Travel Time (hr)	6.9	0.4	0.1	0.4	5.7	0.4	0.2	0.2	0.1	0.4	0.4	17.4
Avg Speed (mph)	9	9	11	4	4	4	6	7	13	9	9	12
Fuel Used (gal)	2.7	0.1	0.0	0.1	1.7	0.1	0.1	0.1	0.0	0.1	0.1	7.0
Fuel Eff. (mpg)	24.4	22.7	29.1	14.3	14.1	14.1	17.4	20.2	31.6	25.3	24.6	29.0
HC Emissions (g)	23	3	0	0	9	0	0	0	0	0	0	65
CO Emissions (g)	589	59	3	12	272	11	6	6	4	17	16	1461
NOx Emissions (g)	73	8	0	1	26	1	0	1	0	2	2	172
Vehicles Entered	511	26	7	9	137	9	9	11	9	10	10	571
Vehicles Exited	511	26	7	8	121	8	8	11	9	9	9	521
Hourly Exit Rate	511	26	7	8	121	8	8	11	9	9	9	521
Input Volume	788	40	10	10	138	10	10	10	10	10	10	562
% of Volume	65	65	70	80	87	80	80	110	90	90	90	93
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	1	0	0	0	0	0	0	0
Density (ft/veh)												
Occupancy (veh)	7	0	0	0	6	0	0	0	0	0	0	17

1: Donahue Street & Innes Avenue Performance by movement

Movement	All
Denied Delay (hr)	0.2
Denied Del/Veh (s)	0.4
Total Delay (hr)	20.6
Total Del/Veh (s)	55.2
Stop Delay (hr)	19.7
Stop Del/Veh (s)	52.8
Total Stops	1006
Stop/Veh	0.75
Travel Dist (mi)	310.8
Travel Time (hr)	32.4
Avg Speed (mph)	10
Fuel Used (gal)	12.3
Fuel Eff. (mpg)	25.4
HC Emissions (g)	102
CO Emissions (g)	2456
NOx Emissions (g)	285
Vehicles Entered	1319
Vehicles Exited	1248
Hourly Exit Rate	1248
Input Volume	1608
% of Volume	78
Denied Entry Before	0
Denied Entry After	1
Density (ft/veh)	209
Occupancy (veh)	32

9: Jennings Street & Evans Avenue/Innes Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	60.7	549.9	13.7	0.0	0.0	0.0	0.0	0.0	0.0	47.1	5.3	6.6
Denied Del/Veh (s)	1104.1	1110.3	1122.7	0.0	0.0	0.0	0.2	0.1	0.3	320.7	314.9	323.2
Total Delay (hr)	5.6	36.4	0.8	1.6	67.6	11.4	0.3	0.1	0.0	18.0	1.9	2.1
Total Del/Veh (s)	192.6	147.4	136.5	329.8	297.9	196.7	25.6	24.8	10.9	144.3	129.3	120.7
Stop Delay (hr)	4.5	26.6	0.6	1.6	63.7	10.9	0.3	0.1	0.0	16.7	1.7	2.0
Stop Del/Veh (s)	155.9	108.0	99.8	320.4	280.7	188.2	23.7	22.3	10.0	133.7	119.4	111.8
Total Stops	221	1305	34	39	1575	400	29	8	7	535	60	78
Stop/Veh	2.12	1.47	1.62	2.17	1.93	1.91	0.74	0.67	0.64	1.19	1.15	1.24
Travel Dist (mi)	28.4	248.3	5.9	5.2	252.2	65.7	3.3	1.0	0.9	54.9	6.4	7.9
Travel Time (hr)	67.2	593.4	14.7	1.8	74.9	13.5	0.4	0.1	0.1	67.5	7.5	9.0
Avg Speed (mph)	4	6	6	3	3	5	8	8	12	3	3	3
Fuel Used (gal)	16.1	142.1	3.5	0.5	21.5	4.3	0.1	0.0	0.0	16.7	1.9	2.2
Fuel Eff. (mpg)	1.8	1.7	1.7	10.5	11.7	15.1	22.3	20.7	29.3	3.3	3.4	3.5
HC Emissions (g)	57	461	14	0	117	35	2	0	0	54	13	5
CO Emissions (g)	1498	12681	336	52	3361	1229	40	10	6	1573	277	205
NOx Emissions (g)	62	503	12	4	321	101	5	1	0	85	18	11
Vehicles Entered	97	846	20	16	776	204	38	12	10	431	49	61
Vehicles Exited	97	845	20	16	739	192	38	12	11	430	50	61
Hourly Exit Rate	97	845	20	16	739	192	38	12	11	430	50	61
Input Volume	188	1606	39	20	886	237	39	10	10	521	57	69
% of Volume	52	53	51	80	83	81	97	120	110	82	87	88
Denied Entry Before	17	162	4	0	0	0	0	0	0	10	2	2
Denied Entry After	101	937	24	0	0	0	0	0	0	98	12	12
Density (ft/veh)												
Occupancy (veh)	6	44	1	2	75	14	0	0	0	20	2	2

9: Jennings Street & Evans Avenue/Innes Avenue Performance by movement

Movement	All
Denied Delay (hr)	683.4
Denied Del/Veh (s)	657.1
Total Delay (hr)	145.8
Total Del/Veh (s)	195.8
Stop Delay (hr)	128.7
Stop Del/Veh (s)	172.9
Total Stops	4291
Stop/Veh	1.60
Travel Dist (mi)	680.2
Travel Time (hr)	850.1
Avg Speed (mph)	4
Fuel Used (gal)	209.0
Fuel Eff. (mpg)	3.3
HC Emissions (g)	758
CO Emissions (g)	21270
NOx Emissions (g)	1123
Vehicles Entered	2560
Vehicles Exited	2511
Hourly Exit Rate	2511
Input Volume	3683
% of Volume	68
Denied Entry Before	197
Denied Entry After	1184
Density (ft/veh)	70
Occupancy (veh)	167

Arterial Level of Service: EB Innes Avenue

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Hawes Street	7	56.9	89.3	0.3	13
Hunters Point Boulev	5	17.7	23.9	0.1	11
Griffith Street	11	17.4	28.7	0.1	10
	12	6.9	22.3	0.1	20
	13	9.9	25.5	0.1	18
Donahue Street	1	36.9	55.2	0.1	8
Total		145.7	244.9	0.9	13

Arterial Level of Service: WB Innes Avenue

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Earl Street	13	223.7	238.3	0.1	2
Arelious Walker Driv	12	210.9	229.4	0.1	2
New Griffith Street	11	100.0	115.6	0.1	4
Hunters Point Boulev	5	42.3	50.6	0.1	6
Hawes Street	7	25.0	31.2	0.1	9
Jennings Street	9	236.4	268.8	0.3	4
Total		838.3	933.9	0.9	3

Queuing and Blocking Report
Cumulative Plus Variant PM Peak

01/24/2017

Intersection: 1: Donahue Street & Innes Avenue

Movement	EB	EB	WB	NB	SB	SB
Directions Served	L	LTR	LTR	LTR	LTR	R
Maximum Queue (ft)	274	298	1006	285	1970	1970
Average Queue (ft)	153	182	710	116	1866	1862
95th Queue (ft)	249	277	1226	343	2255	2260
Link Distance (ft)	615	615	988	557	1924	1924
Upstream Blk Time (%)			41	2	87	86
Queuing Penalty (veh)			0	0	0	0
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 5: Innes Avenue & Hunters Point Boulevard

Movement	EB	NB	NB	NB	SB	SB
Directions Served	R	L	T	T	T	TR
Maximum Queue (ft)	703	180	390	380	223	235
Average Queue (ft)	357	166	319	319	179	134
95th Queue (ft)	848	219	446	459	235	243
Link Distance (ft)	869		349	349	189	189
Upstream Blk Time (%)	15		4	6	27	6
Queuing Penalty (veh)	0		48	74	180	44
Storage Bay Dist (ft)		120				
Storage Blk Time (%)		21	60			
Queuing Penalty (veh)		238	185			

Intersection: 7: Innes Avenue & Hawes Street

Movement	EB	NB	NB	SB	SB
Directions Served	LR	LT	T	T	TR
Maximum Queue (ft)	36	217	220	937	877
Average Queue (ft)	9	179	184	439	380
95th Queue (ft)	33	249	253	1178	1119
Link Distance (ft)	777	189	189	1641	1641
Upstream Blk Time (%)		7	10		
Queuing Penalty (veh)		76	115		
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 9: Jennings Street & Evans Avenue/Innes Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	T	R	L	T	R	LTR	L	TR
Maximum Queue (ft)	230	1601	160	212	1662	1673	101	160	640
Average Queue (ft)	121	1547	98	42	1633	1634	36	152	370
95th Queue (ft)	248	1719	207	155	1723	1734	81	182	719
Link Distance (ft)		1547			1641	1641	452		667
Upstream Blk Time (%)		44			11	10			11
Queuing Penalty (veh)		0			125	120			0
Storage Bay Dist (ft)	170		100	170				100	
Storage Blk Time (%)	3	32	0		42			60	6
Queuing Penalty (veh)	38	91	0		17			83	19

Intersection: 11: Griffith Street/New Griffith Street & Innes Avenue

Movement	EB	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	T	TR	LT	TR	LTR	LT	R
Maximum Queue (ft)	220	378	386	645	635	66	1540	260
Average Queue (ft)	211	323	172	619	616	21	1264	259
95th Queue (ft)	244	453	372	635	630	54	1882	269
Link Distance (ft)		349	349	606	606	912	1508	
Upstream Blk Time (%)		24	3	16	19		53	
Queuing Penalty (veh)		180	24	182	210		0	
Storage Bay Dist (ft)	160							200
Storage Blk Time (%)	61	7						88
Queuing Penalty (veh)	371	21						25

Intersection: 12: Innes Avenue & Arelious Walker Drive

Movement	EB	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	T	TR	L	R
Maximum Queue (ft)	400	501	296	656	658	240	1653
Average Queue (ft)	242	142	55	636	637	93	1561
95th Queue (ft)	433	492	181	650	650	266	1855
Link Distance (ft)		606	606	623	623		1621
Upstream Blk Time (%)		2		24	47		74
Queuing Penalty (veh)		15		201	397		0
Storage Bay Dist (ft)	350					180	
Storage Blk Time (%)	15	0				0	67
Queuing Penalty (veh)	70	0				0	27

Queuing and Blocking Report
Cumulative Plus Variant PM Peak

01/24/2017

Intersection: 13: Innes Avenue & Earl Street

Movement	EB	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	T	TR	L	R
Maximum Queue (ft)	307	194	191	653	651	220	1782
Average Queue (ft)	149	73	86	633	629	62	1554
95th Queue (ft)	283	192	154	647	643	221	2221
Link Distance (ft)		623	623	615	615		1733
Upstream Blk Time (%)				75	79		74
Queuing Penalty (veh)				402	425		0
Storage Bay Dist (ft)	390					160	
Storage Blk Time (%)	1						88
Queuing Penalty (veh)	4						21

Network Summary

Network wide Queuing Penalty: 4029

1: Donahue Street & Innes Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.5	6.4	0.9	0.0	0.0	0.0	2.8	3.1	271.9
Denied Del/Veh (s)	0.0	0.0	0.0	282.2	291.8	269.3	13.6	0.1	0.1	1006.3	1015.0	997.8
Total Delay (hr)	4.5	1.3	0.1	2.0	23.3	3.6	1.4	1.2	1.8	1.2	1.8	147.4
Total Del/Veh (s)	32.7	37.0	29.9	1475.8	1329.6	1280.9	568.5	477.6	531.2	1120.7	1319.8	1269.6
Stop Delay (hr)	4.0	1.1	0.1	2.1	23.3	3.6	1.4	1.2	1.8	1.3	1.9	150.4
Stop Del/Veh (s)	28.6	31.0	25.3	1480.5	1333.9	1286.7	566.6	475.0	529.9	1144.8	1346.7	1295.1
Total Stops	378	97	8	4	47	7	8	8	12	2	2	149
Stop/Veh	0.76	0.77	0.80	0.80	0.75	0.70	0.89	0.89	1.00	0.50	0.40	0.36
Travel Dist (mi)	63.2	15.9	1.2	0.7	7.7	1.2	0.7	0.8	1.1	1.1	1.4	105.9
Travel Time (hr)	7.2	1.9	0.1	2.6	30.0	4.5	1.5	1.2	1.8	4.1	5.0	423.1
Avg Speed (mph)	9	8	9	0	0	0	1	1	1	1	1	1
Fuel Used (gal)	2.8	0.7	0.1	0.6	7.1	1.1	0.4	0.3	0.4	1.0	1.2	99.6
Fuel Eff. (mpg)	22.7	21.8	23.5	1.1	1.1	1.1	2.1	2.8	2.5	1.1	1.2	1.1
HC Emissions (g)	23	7	0	0	35	0	0	0	0	0	0	332
CO Emissions (g)	613	159	6	34	787	58	22	20	28	52	64	9293
NOx Emissions (g)	76	21	1	1	34	1	1	1	1	2	2	423
Vehicles Entered	494	124	10	5	57	9	8	9	12	3	5	351
Vehicles Exited	493	124	10	2	30	5	6	6	8	2	4	260
Hourly Exit Rate	493	124	10	2	30	5	6	6	8	2	4	260
Input Volume	576	148	10	10	79	10	10	10	10	10	10	984
% of Volume	86	84	100	20	38	50	60	60	80	20	40	26
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	2	22	3	0	0	0	7	6	630
Density (ft/veh)												
Occupancy (veh)	7	2	0	2	24	4	1	1	2	1	2	151

1: Donahue Street & Innes Avenue Performance by movement

Movement	All
Denied Delay (hr)	285.7
Denied Del/Veh (s)	585.3
Total Delay (hr)	189.7
Total Del/Veh (s)	582.6
Stop Delay (hr)	192.0
Stop Del/Veh (s)	589.7
Total Stops	722
Stop/Veh	0.62
Travel Dist (mi)	201.0
Travel Time (hr)	483.1
Avg Speed (mph)	1
Fuel Used (gal)	115.2
Fuel Eff. (mpg)	1.7
HC Emissions (g)	398
CO Emissions (g)	11137
NOx Emissions (g)	562
Vehicles Entered	1087
Vehicles Exited	950
Hourly Exit Rate	950
Input Volume	1868
% of Volume	51
Denied Entry Before	0
Denied Entry After	670
Density (ft/veh)	34
Occupancy (veh)	197

9: Jennings Street & Evans Avenue/Innes Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	9.3	111.3	20.5	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.2	0.2
Denied Del/Veh (s)	364.7	368.5	359.2	0.0	0.0	0.0	0.1	0.1	0.1	11.1	10.8	9.3
Total Delay (hr)	3.8	28.4	5.0	1.8	64.5	15.1	0.3	0.1	0.0	8.2	1.6	1.2
Total Del/Veh (s)	174.8	111.6	105.0	272.2	236.4	170.5	35.3	33.3	12.8	92.3	79.5	71.3
Stop Delay (hr)	2.9	16.2	2.8	1.7	59.8	14.4	0.3	0.1	0.0	7.6	1.5	1.1
Stop Del/Veh (s)	129.9	63.5	58.8	261.1	219.1	163.5	33.4	31.0	12.0	85.3	72.6	66.1
Total Stops	181	1557	314	56	1848	546	24	8	9	405	88	80
Stop/Veh	2.29	1.70	1.85	2.33	1.88	1.72	0.83	0.80	0.82	1.26	1.19	1.29
Travel Dist (mi)	21.6	257.8	48.5	7.2	306.4	100.8	2.5	0.9	0.9	39.7	9.1	7.8
Travel Time (hr)	13.8	147.1	27.0	2.0	73.3	18.3	0.4	0.1	0.1	10.9	2.2	1.7
Avg Speed (mph)	5	7	7	4	4	6	6	7	11	4	5	5
Fuel Used (gal)	3.6	39.0	7.0	0.6	22.1	6.1	0.1	0.0	0.0	3.2	0.7	0.5
Fuel Eff. (mpg)	6.1	6.6	6.9	12.3	13.9	16.5	19.0	19.7	29.0	12.3	13.4	14.6
HC Emissions (g)	17	169	38	1	112	57	1	0	0	20	6	4
CO Emissions (g)	429	4764	902	70	3393	1834	35	9	7	559	149	107
NOx Emissions (g)	28	336	65	6	337	160	4	1	1	53	15	11
Vehicles Entered	74	879	165	22	927	305	29	10	11	312	72	61
Vehicles Exited	76	878	165	21	907	299	29	10	11	311	70	60
Hourly Exit Rate	76	878	165	21	907	299	29	10	11	311	70	60
Input Volume	88	1056	197	39	1696	570	29	10	10	314	79	59
% of Volume	86	83	84	54	53	53	99	100	110	99	88	101
Denied Entry Before	1	20	4	0	0	0	0	0	0	1	0	0
Denied Entry After	18	208	40	0	0	0	0	0	0	2	1	1
Density (ft/veh)												
Occupancy (veh)	5	36	7	2	73	18	0	0	0	10	2	2

9: Jennings Street & Evans Avenue/Innes Avenue Performance by movement

Movement	All
Denied Delay (hr)	142.4
Denied Del/Veh (s)	163.4
Total Delay (hr)	130.1
Total Del/Veh (s)	156.2
Stop Delay (hr)	108.4
Stop Del/Veh (s)	130.2
Total Stops	5116
Stop/Veh	1.71
Travel Dist (mi)	803.3
Travel Time (hr)	296.9
Avg Speed (mph)	5
Fuel Used (gal)	83.0
Fuel Eff. (mpg)	9.7
HC Emissions (g)	425
CO Emissions (g)	12257
NOx Emissions (g)	1015
Vehicles Entered	2867
Vehicles Exited	2837
Hourly Exit Rate	2837
Input Volume	4148
% of Volume	68
Denied Entry Before	26
Denied Entry After	270
Density (ft/veh)	75
Occupancy (veh)	155

CUMULATIVE + VARIANT + BUS LANE

Arterial Level of Service
Cumulative Plus Variant Plus Bus Lane AM Peak

01/26/2017

Arterial Level of Service: EB Innes Avenue

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Hawes Street	7	170.3	200.8	0.3	6
Hunters Point Boulev	5	21.2	28.0	0.1	10
Griffith Street	11	18.7	29.3	0.1	10
	12	3.4	18.9	0.1	24
	13	7.2	22.9	0.1	21
Donahue Street	1	15.7	34.4	0.1	14
Total		236.5	334.3	0.9	9

Arterial Level of Service: WB Innes Avenue

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Earl Street	13	260.1	296.6	0.1	2
Arelious Walker Driv	12	131.6	146.3	0.1	3
New Griffith Street	11	66.9	82.3	0.1	6
Hunters Point Boulev	5	8.5	16.9	0.1	17
Hawes Street	7	5.6	12.3	0.1	22
Jennings Street	9	30.7	64.5	0.3	18
Total		503.3	619.1	0.9	5

Queuing and Blocking Report
Cumulative Plus Variant Plus Bus Lane AM Peak

01/26/2017

Intersection: 1: Donahue Street & Innes Avenue

Movement	EB	EB	WB	NB	SB
Directions Served	L	TR	LTR	LTR	LTR
Maximum Queue (ft)	329	62	1029	164	1982
Average Queue (ft)	185	16	797	65	1941
95th Queue (ft)	284	47	1267	199	2063
Link Distance (ft)	627	627	999	557	1936
Upstream Blk Time (%)			48		94
Queuing Penalty (veh)			0		0
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 5: Innes Avenue & Hunters Point Boulevard

Movement	EB	NB	NB	SB
Directions Served	R	L	T	T
Maximum Queue (ft)	906	169	293	259
Average Queue (ft)	663	77	80	246
95th Queue (ft)	1033	136	213	270
Link Distance (ft)	902		354	244
Upstream Blk Time (%)	22		0	16
Queuing Penalty (veh)	0		1	328
Storage Bay Dist (ft)		120		
Storage Blk Time (%)		4	3	
Queuing Penalty (veh)		41	4	

Intersection: 7: Innes Avenue & Hawes Street

Movement	EB	NB	SB	SB
Directions Served	LR	T	T	R
Maximum Queue (ft)	53	254	1652	160
Average Queue (ft)	9	83	1635	9
95th Queue (ft)	35	245	1658	69
Link Distance (ft)	803	244	1641	
Upstream Blk Time (%)		1	5	
Queuing Penalty (veh)		12	101	
Storage Bay Dist (ft)				100
Storage Blk Time (%)			46	
Queuing Penalty (veh)			14	

Queuing and Blocking Report
Cumulative Plus Variant Plus Bus Lane AM Peak

01/26/2017

Intersection: 9: Jennings Street & Evans Avenue/Innes Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	T	R	L	T	R	LTR	L	TR
Maximum Queue (ft)	230	1601	160	156	586	160	84	160	719
Average Queue (ft)	160	1573	39	18	289	90	30	159	690
95th Queue (ft)	313	1596	151	77	532	198	68	160	710
Link Distance (ft)		1547			1641		451		667
Upstream Blk Time (%)		98							94
Queuing Penalty (veh)		0							0
Storage Bay Dist (ft)	170		100	170		100		100	
Storage Blk Time (%)	1	78	0		32	0		84	1
Queuing Penalty (veh)	8	177	0		82	0		107	7

Intersection: 11: Griffith Street/New Griffith Street & Innes Avenue

Movement	EB	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	T	R	LT	R	LTR	LT	R
Maximum Queue (ft)	220	368	101	625	134	50	46	160
Average Queue (ft)	190	306	4	579	13	13	13	76
95th Queue (ft)	257	422	42	688	76	36	41	140
Link Distance (ft)		354		605		910	1509	
Upstream Blk Time (%)		2		5				
Queuing Penalty (veh)		59		59				
Storage Bay Dist (ft)	160		100		100			200
Storage Blk Time (%)	15	20		54				0
Queuing Penalty (veh)	276	110		10				0

Intersection: 12: Innes Avenue & Arelious Walker Drive

Movement	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	R	L	R
Maximum Queue (ft)	258	104	644	160	57	230
Average Queue (ft)	151	24	627	48	18	109
95th Queue (ft)	242	67	666	167	48	198
Link Distance (ft)		605	622			1620
Upstream Blk Time (%)			27			
Queuing Penalty (veh)			249			
Storage Bay Dist (ft)	350			100	180	
Storage Blk Time (%)	0		78	0		2
Queuing Penalty (veh)	1		28	0		0

Queuing and Blocking Report
Cumulative Plus Variant Plus Bus Lane AM Peak

01/26/2017

Intersection: 13: Innes Avenue & Earl Street

Movement	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	R	L	R
Maximum Queue (ft)	251	174	646	160	87	289
Average Queue (ft)	127	81	634	37	14	120
95th Queue (ft)	216	160	643	147	52	238
Link Distance (ft)		622	627			1732
Upstream Blk Time (%)			62			
Queuing Penalty (veh)			435			
Storage Bay Dist (ft)	390			100	160	
Storage Blk Time (%)			93	0		7
Queuing Penalty (veh)			23	0		1

Network Summary

Network wide Queuing Penalty: 2133

SimTraffic Performance Report
Cumulative Plus Variant Plus Bus Lane AM Peak

01/26/2017

1: Donahue Street & Innes Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.5	8.9	0.6	0.0	0.0	0.0	3.1	3.4	160.8
Denied Del/Veh (s)	0.0	0.0	0.0	194.2	225.0	234.3	0.2	0.1	0.1	1100.6	1103.5	1062.1
Total Delay (hr)	2.7	0.1	0.0	1.9	28.1	1.7	0.8	0.6	0.6	1.2	1.5	75.1
Total Del/Veh (s)	24.2	14.9	4.9	761.7	904.7	880.5	311.0	182.4	201.6	1043.3	1323.2	1060.1
Stop Delay (hr)	2.2	0.1	0.0	1.9	28.4	1.7	0.8	0.6	0.6	1.2	1.5	77.2
Stop Del/Veh (s)	20.0	13.2	4.4	766.7	911.9	888.9	309.6	180.4	201.5	1072.4	1357.3	1090.0
Total Stops	292	12	4	7	80	5	9	9	10	1	0	32
Stop/Veh	0.74	0.57	0.80	0.78	0.71	0.71	1.00	0.82	0.91	0.25	0.00	0.13
Travel Dist (mi)	50.2	2.6	0.7	1.4	16.8	1.1	0.9	1.2	1.2	1.1	1.2	65.7
Travel Time (hr)	4.8	0.2	0.0	2.5	37.7	2.3	0.8	0.6	0.7	4.3	4.9	238.2
Avg Speed (mph)	11	14	18	1	1	1	1	2	2	1	1	1
Fuel Used (gal)	1.9	0.1	0.0	0.6	9.0	0.6	0.2	0.2	0.2	1.0	1.2	55.9
Fuel Eff. (mpg)	26.4	29.7	36.1	2.3	1.9	1.9	4.6	7.2	6.6	1.1	1.1	1.2
HC Emissions (g)	19	1	0	0	28	0	0	0	0	0	0	172
CO Emissions (g)	447	28	5	35	827	32	15	15	16	52	60	4971
NOx Emissions (g)	59	3	0	1	35	1	1	1	1	1	1	196
Vehicles Entered	390	20	5	8	106	7	9	11	11	3	4	195
Vehicles Exited	390	20	5	6	75	5	9	11	11	3	3	178
Hourly Exit Rate	390	20	5	6	75	5	9	11	11	3	3	178
Input Volume	788	40	10	10	138	10	10	10	10	10	10	552
% of Volume	49	50	50	60	54	50	90	110	110	30	30	32
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	2	36	2	0	0	0	7	7	350
Density (ft/veh)												
Occupancy (veh)	5	0	0	2	29	2	1	1	1	1	2	77

1: Donahue Street & Innes Avenue Performance by movement

Movement	All
Denied Delay (hr)	177.2
Denied Del/Veh (s)	543.9
Total Delay (hr)	114.2
Total Del/Veh (s)	488.2
Stop Delay (hr)	116.1
Stop Del/Veh (s)	496.6
Total Stops	461
Stop/Veh	0.55
Travel Dist (mi)	144.1
Travel Time (hr)	297.0
Avg Speed (mph)	1
Fuel Used (gal)	70.7
Fuel Eff. (mpg)	2.0
HC Emissions (g)	221
CO Emissions (g)	6504
NOx Emissions (g)	301
Vehicles Entered	769
Vehicles Exited	716
Hourly Exit Rate	716
Input Volume	1598
% of Volume	45
Denied Entry Before	0
Denied Entry After	404
Density (ft/veh)	41
Occupancy (veh)	120

9: Jennings Street & Evans Avenue/Innes Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	78.6	708.9	15.5	0.0	0.0	0.0	0.0	0.0	0.0	109.0	12.2	15.3
Denied Del/Veh (s)	1401.4	1422.5	1398.7	0.0	0.0	0.0	0.2	0.2	0.2	737.5	733.8	734.4
Total Delay (hr)	5.3	46.8	1.0	0.2	5.2	0.8	0.3	0.1	0.1	19.9	1.8	2.1
Total Del/Veh (s)	296.1	282.1	263.3	58.7	30.7	18.7	23.6	25.3	19.6	201.5	165.2	152.7
Stop Delay (hr)	5.2	45.8	0.9	0.2	3.0	0.4	0.2	0.1	0.1	19.7	1.8	2.1
Stop Del/Veh (s)	292.0	276.3	260.6	47.5	17.8	8.2	21.8	22.9	19.2	199.1	161.6	150.8
Total Stops	69	259	6	13	373	116	28	7	9	255	29	38
Stop/Veh	1.08	0.43	0.46	1.08	0.62	0.72	0.70	0.70	0.82	0.72	0.72	0.76
Travel Dist (mi)	17.2	160.4	3.6	3.9	197.5	53.0	3.4	0.9	1.0	42.5	4.9	6.1
Travel Time (hr)	84.4	760.3	16.6	0.3	10.9	2.5	0.4	0.1	0.1	130.7	14.3	17.7
Avg Speed (mph)	3	3	3	12	18	21	8	8	9	2	2	3
Fuel Used (gal)	19.9	178.5	3.9	0.1	5.8	1.4	0.1	0.0	0.0	31.0	3.4	4.2
Fuel Eff. (mpg)	0.9	0.9	0.9	30.2	34.3	38.4	23.2	22.5	24.1	1.4	1.4	1.4
HC Emissions (g)	75	587	21	0	59	16	1	0	0	94	10	12
CO Emissions (g)	1861	15572	436	19	1299	339	34	7	7	2672	304	364
NOx Emissions (g)	62	481	16	2	207	54	3	1	1	96	11	14
Vehicles Entered	59	547	12	12	597	160	39	10	11	332	38	47
Vehicles Exited	58	546	12	12	597	161	39	10	11	333	38	48
Hourly Exit Rate	58	546	12	12	597	161	39	10	11	333	38	48
Input Volume	188	1606	39	20	886	237	39	10	10	521	57	69
% of Volume	31	34	31	60	67	68	99	100	110	64	66	69
Denied Entry Before	21	187	4	0	0	0	0	0	0	16	2	2
Denied Entry After	143	1247	28	0	0	0	0	0	0	200	22	28
Density (ft/veh)												
Occupancy (veh)	6	51	1	0	11	3	0	0	0	22	2	2

9: Jennings Street & Evans Avenue/Innes Avenue Performance by movement

Movement	All
Denied Delay (hr)	939.6
Denied Del/Veh (s)	957.7
Total Delay (hr)	83.5
Total Del/Veh (s)	153.2
Stop Delay (hr)	79.4
Stop Del/Veh (s)	145.8
Total Stops	1202
Stop/Veh	0.61
Travel Dist (mi)	494.3
Travel Time (hr)	1038.3
Avg Speed (mph)	5
Fuel Used (gal)	248.4
Fuel Eff. (mpg)	2.0
HC Emissions (g)	875
CO Emissions (g)	22915
NOx Emissions (g)	948
Vehicles Entered	1864
Vehicles Exited	1865
Hourly Exit Rate	1865
Input Volume	3683
% of Volume	51
Denied Entry Before	232
Denied Entry After	1668
Density (ft/veh)	116
Occupancy (veh)	99

Arterial Level of Service
Cumulative Plus Variant Plus Bus Lane PM Peak

01/24/2017

Arterial Level of Service: EB Innes Avenue

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Hawes Street	7	172.5	203.3	0.3	6
Hunters Point Boulev	5	24.2	31.0	0.1	9
Griffith Street	11	22.5	33.1	0.1	9
	12	5.7	21.2	0.1	21
	13	3.4	19.1	0.1	25
Donahue Street	1	22.2	40.7	0.1	12
Total		250.6	348.5	0.9	9

Arterial Level of Service: WB Innes Avenue

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Earl Street	13	267.7	300.0	0.1	2
Arelious Walker Driv	12	188.8	202.9	0.1	2
New Griffith Street	11	73.8	91.4	0.1	5
Hunters Point Boulev	5	13.0	21.4	0.1	14
Hawes Street	7	4.0	10.6	0.1	25
Jennings Street	9	25.3	59.0	0.3	20
Total		572.5	685.3	0.9	5

Queuing and Blocking Report
Cumulative Plus Variant Plus Bus Lane PM Peak

01/24/2017

Intersection: 1: Donahue Street & Innes Avenue

Movement	EB	EB	WB	NB	SB
Directions Served	L	TR	LTR	LTR	LTR
Maximum Queue (ft)	388	120	1024	218	1985
Average Queue (ft)	218	57	820	77	1955
95th Queue (ft)	344	107	1215	203	1969
Link Distance (ft)	627	627	999	557	1936
Upstream Blk Time (%)			47		100
Queuing Penalty (veh)			0		0
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 5: Innes Avenue & Hunters Point Boulevard

Movement	EB	NB	NB	SB
Directions Served	R	L	T	T
Maximum Queue (ft)	348	179	346	260
Average Queue (ft)	149	103	198	249
95th Queue (ft)	307	178	379	260
Link Distance (ft)	902		354	244
Upstream Blk Time (%)			1	21
Queuing Penalty (veh)			15	283
Storage Bay Dist (ft)		120		
Storage Blk Time (%)		6	9	
Queuing Penalty (veh)		142	27	

Intersection: 7: Innes Avenue & Hawes Street

Movement	EB	NB	SB	SB
Directions Served	LR	T	T	R
Maximum Queue (ft)	43	200	1652	160
Average Queue (ft)	11	40	1628	30
95th Queue (ft)	38	153	1696	132
Link Distance (ft)	803	244	1641	
Upstream Blk Time (%)		0	5	
Queuing Penalty (veh)		1	68	
Storage Bay Dist (ft)				100
Storage Blk Time (%)			49	0
Queuing Penalty (veh)			19	0

Queuing and Blocking Report
Cumulative Plus Variant Plus Bus Lane PM Peak

01/24/2017

Intersection: 9: Jennings Street & Evans Avenue/Innes Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	T	R	L	T	R	LTR	L	TR
Maximum Queue (ft)	230	1601	160	193	609	160	80	160	715
Average Queue (ft)	140	1573	129	28	294	98	28	159	644
95th Queue (ft)	294	1621	227	114	557	202	66	168	822
Link Distance (ft)		1547			1641		451		667
Upstream Blk Time (%)		87							72
Queuing Penalty (veh)		0							0
Storage Bay Dist (ft)	170		100	170		100		100	
Storage Blk Time (%)	1	67	0		24	0		86	5
Queuing Penalty (veh)	8	190	1		145	2		119	16

Intersection: 11: Griffith Street/New Griffith Street & Innes Avenue

Movement	EB	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	T	R	LT	R	LTR	LT	R
Maximum Queue (ft)	220	371	101	632	130	120	1439	260
Average Queue (ft)	195	350	7	618	9	40	1090	260
95th Queue (ft)	260	389	53	630	66	102	1766	265
Link Distance (ft)		354		605		910	1509	
Upstream Blk Time (%)		7		30			28	
Queuing Penalty (veh)		104		662			0	
Storage Bay Dist (ft)	160		100		100			200
Storage Blk Time (%)	20	25		54			0	82
Queuing Penalty (veh)	246	75		9			2	23

Intersection: 12: Innes Avenue & Arelious Walker Drive

Movement	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	R	L	R
Maximum Queue (ft)	372	426	648	160	240	1671
Average Queue (ft)	246	115	636	33	91	1641
95th Queue (ft)	421	440	645	136	274	1675
Link Distance (ft)		605	622			1620
Upstream Blk Time (%)		1	55			98
Queuing Penalty (veh)		11	919			0
Storage Bay Dist (ft)	350			100	180	
Storage Blk Time (%)	12	0	88			81
Queuing Penalty (veh)	118	0	36			32

Queuing and Blocking Report

Cumulative Plus Variant Plus Bus Lane PM Peak

01/24/2017

Intersection: 13: Innes Avenue & Earl Street

Movement	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	R	L	R
Maximum Queue (ft)	281	122	645	144	220	1781
Average Queue (ft)	144	35	633	10	43	1753
95th Queue (ft)	254	109	641	73	187	1769
Link Distance (ft)		622	627			1732
Upstream Blk Time (%)			70			100
Queuing Penalty (veh)			748			0
Storage Bay Dist (ft)	390			100	160	
Storage Blk Time (%)	0		100			98
Queuing Penalty (veh)	2		17			24

Network Summary

Network wide Queuing Penalty: 4065

SimTraffic Performance Report
Cumulative Plus Variant Plus Bus Lane PM Peak

01/24/2017

1: Donahue Street & Innes Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.8	6.8	0.7	0.0	0.0	0.0	6.1	6.3	506.4
Denied Del/Veh (s)	0.0	0.0	0.0	334.8	297.7	233.6	0.1	0.1	0.1	1842.8	1880.0	1713.5
Total Delay (hr)	3.4	0.6	0.0	2.8	26.6	3.7	1.0	0.6	0.8	0.8	0.6	77.9
Total Del/Veh (s)	31.5	22.2	7.7	1464.3	1453.5	1470.9	316.8	200.7	247.3	1428.3	1090.1	1240.7
Stop Delay (hr)	2.9	0.6	0.0	2.9	26.8	3.7	1.0	0.6	0.8	0.8	0.6	79.8
Stop Del/Veh (s)	27.1	20.0	7.0	1471.9	1461.1	1479.4	315.5	198.7	246.5	1460.7	1113.7	1271.0
Total Stops	315	68	5	5	42	6	10	9	10	0	0	0
Stop/Veh	0.81	0.67	0.71	0.71	0.64	0.67	0.91	0.82	0.83	0.00	0.00	0.00
Travel Dist (mi)	48.8	12.8	0.9	0.9	7.8	1.1	1.0	1.1	1.2	0.5	0.4	53.9
Travel Time (hr)	5.4	1.1	0.1	3.7	33.7	4.4	1.0	0.7	0.9	7.0	6.9	586.2
Avg Speed (mph)	9	11	16	0	0	0	1	2	1	1	1	1
Fuel Used (gal)	1.9	0.4	0.0	0.9	7.9	1.1	0.3	0.2	0.2	1.6	1.6	136.9
Fuel Eff. (mpg)	25.1	28.8	36.4	1.0	1.0	1.0	4.0	6.3	5.2	0.3	0.3	0.4
HC Emissions (g)	15	3	0	0	36	0	0	0	0	0	0	395
CO Emissions (g)	361	82	3	47	840	57	19	16	21	79	77	11317
NOx Emissions (g)	44	10	0	1	34	1	1	1	1	1	1	355
Vehicles Entered	379	99	7	6	56	8	10	10	11	1	1	147
Vehicles Exited	379	99	7	4	33	4	10	10	11	1	1	147
Hourly Exit Rate	379	99	7	4	33	4	10	10	11	1	1	147
Input Volume	576	148	10	10	79	10	10	10	10	10	10	974
% of Volume	66	67	70	40	42	40	100	100	110	10	10	15
Denied Entry Before	0	0	0	0	0	0	0	0	0	1	0	91
Denied Entry After	0	0	0	3	26	3	0	0	0	11	11	917
Density (ft/veh)												
Occupancy (veh)	5	1	0	3	27	4	1	1	1	1	1	80

1: Donahue Street & Innes Avenue Performance by movement

Movement	All
Denied Delay (hr)	527.2
Denied Del/Veh (s)	1112.4
Total Delay (hr)	118.9
Total Del/Veh (s)	508.3
Stop Delay (hr)	120.5
Stop Del/Veh (s)	515.0
Total Stops	470
Stop/Veh	0.56
Travel Dist (mi)	130.4
Travel Time (hr)	651.2
Avg Speed (mph)	1
Fuel Used (gal)	153.1
Fuel Eff. (mpg)	0.9
HC Emissions (g)	450
CO Emissions (g)	12918
NOx Emissions (g)	449
Vehicles Entered	735
Vehicles Exited	706
Hourly Exit Rate	706
Input Volume	1858
% of Volume	38
Denied Entry Before	92
Denied Entry After	971
Density (ft/veh)	39
Occupancy (veh)	124

9: Jennings Street & Evans Avenue/Innes Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	21.7	249.4	48.5	0.0	0.0	0.0	0.0	0.0	0.0	20.1	4.3	4.1
Denied Del/Veh (s)	823.8	827.6	823.7	0.0	0.0	0.0	0.2	0.1	0.1	231.0	203.0	253.8
Total Delay (hr)	4.1	37.5	6.5	0.3	5.0	1.1	0.3	0.1	0.1	17.1	3.4	2.3
Total Del/Veh (s)	238.6	204.4	183.1	61.5	25.3	17.4	30.8	32.2	30.6	217.0	180.1	161.7
Stop Delay (hr)	3.8	33.6	5.8	0.2	2.3	0.4	0.3	0.1	0.1	16.8	3.3	2.3
Stop Del/Veh (s)	221.1	183.3	164.7	49.7	11.8	5.8	29.2	29.7	30.5	213.7	175.4	158.5
Total Stops	89	604	107	19	374	142	23	7	9	278	74	54
Stop/Veh	1.44	0.91	0.84	1.19	0.53	0.60	0.74	0.78	0.90	0.98	1.10	1.04
Travel Dist (mi)	16.7	181.7	34.9	5.2	230.6	76.6	2.7	0.8	0.9	34.2	8.3	6.4
Travel Time (hr)	26.4	292.2	56.1	0.4	11.6	3.6	0.4	0.1	0.1	38.7	8.0	6.7
Avg Speed (mph)	4	4	5	12	20	21	7	7	7	2	2	2
Fuel Used (gal)	6.4	70.2	13.5	0.2	6.4	1.9	0.1	0.0	0.0	9.5	2.0	1.7
Fuel Eff. (mpg)	2.6	2.6	2.6	28.8	36.1	39.6	20.7	20.0	21.1	3.6	4.1	3.8
HC Emissions (g)	20	234	49	2	64	25	1	0	0	30	10	10
CO Emissions (g)	578	6421	1303	51	1398	499	31	7	7	912	269	227
NOx Emissions (g)	23	250	54	7	228	82	3	1	1	46	19	15
Vehicles Entered	57	622	119	16	700	232	31	9	10	274	66	50
Vehicles Exited	58	619	119	16	699	232	31	9	10	264	64	49
Hourly Exit Rate	58	619	119	16	699	232	31	9	10	264	64	49
Input Volume	88	1056	197	39	1696	570	29	10	10	314	79	59
% of Volume	66	59	60	41	41	41	106	90	100	84	81	83
Denied Entry Before	3	36	7	0	0	0	0	0	0	1	0	0
Denied Entry After	38	463	93	0	0	0	0	0	0	40	10	8
Density (ft/veh)												
Occupancy (veh)	5	43	8	0	12	4	0	0	0	19	4	3

9: Jennings Street & Evans Avenue/Innes Avenue Performance by movement

Movement	All
Denied Delay (hr)	348.2
Denied Del/Veh (s)	441.7
Total Delay (hr)	77.7
Total Del/Veh (s)	123.4
Stop Delay (hr)	69.0
Stop Del/Veh (s)	109.5
Total Stops	1780
Stop/Veh	0.79
Travel Dist (mi)	598.9
Travel Time (hr)	444.3
Avg Speed (mph)	6
Fuel Used (gal)	111.9
Fuel Eff. (mpg)	5.4
HC Emissions (g)	446
CO Emissions (g)	11704
NOx Emissions (g)	728
Vehicles Entered	2186
Vehicles Exited	2170
Hourly Exit Rate	2170
Input Volume	4148
% of Volume	52
Denied Entry Before	47
Denied Entry After	652
Density (ft/veh)	119
Occupancy (veh)	96

APPENDIX M: TRANSIT MODE SHIFT CALCULATIONS

Model Limitations

The transit delay impact analysis is based primarily on microsimulation of traffic flow conducted using SimTraffic software. Intersection geometries and vehicle turning movement volumes were used to estimate congestion and travel time along the Evans Avenue–Hunters Point Boulevard–Innes Avenue corridor.

A limitation of this modeling approach is that vehicle travel demand is not responsive to changing levels of congestion along the corridor. In reality, it is reasonable to assume that individual travelers would select their mode of travel based upon the attributes of each transportation mode available, including travel time. In theory, if one mode's attributes improve in comparison to another mode's, travelers would be more likely to use the improved mode. Congestion due to high vehicle volumes can have the effect of increasing driving travel time, in turn reducing the comparable attractiveness of driving. If such a change would result in a shift from driving to transit, walking, or bicycling trips, this dynamic could effectively decrease the vehicle travel demand used as an input to microsimulation analysis.

This dynamic is potentially relevant to the analysis of the Proposed Project. Especially in the mitigated Cumulative Plus Project Variant Scenario, where a dedicated bus lane along Evans Avenue, Hunters Point Boulevard, Innes Avenue, and Donahue Street would increase transit vehicles' speed relative to general automobile traffic, it is likely that the longer driving travel time and shorter transit travel time would cause a mode shift of some magnitude away from driving and toward transit. This mode shift would cause vehicle volumes to decrease throughout the network, potentially reducing vehicular congestion.

The analytical methodology generally used in Transportation Impact Studies does not incorporate this potential mode shift dynamic. Instead, vehicle turning movement volumes are treated as a fixed input resulting in fixed outputs of congestion, queueing, and delay. It would be prohibitively difficult to fully address this consideration within the TIS context because of the iterative nature of the analysis, which would have to alternate between calculating the mode split, determining demand volumes, analyzing congestion and travel delay, calculating the impact of delay on mode split, and so forth. Furthermore, an iterative mode split analysis is relevant only where alternative modes of travel are readily available, and where those alternative modes' attributes are divergent from the attributes of driving. Most TIS contexts do not include a dedicated transit lane. Without such a facility, transit vehicles and automobiles would share the congested roadway and their travel speeds would be approximately equal, eliminating the need for an iterative mode split analysis.

However, it is feasible to evaluate the potential mode shift associated with implementation of a dedicated bus lane mitigation measure on Innes Avenue. In 2009, Fehr & Peers prepared a memorandum (included as **Appendix G**) connected with the CPHPS project that used a statistical model to predict transit mode shares based on a range of travel mode attributes. Regression models were developed using Bay Area Travel Survey data from 2000 to predict transit mode share for work and non-work trips; each model was found to be highly accurate in its transit mode share predictions. Variables found to be significant in this analysis include drive time, parking cost, and three measures of transit speed (transit average wait time, number of transfers, and transit travel time), as shown on page 15 of **Appendix G**.

Comparing the Cumulative Plus Project Variant and mitigated Cumulative Plus Project Variant Scenarios (selected as the worst case), parking cost, transit average wait time, and number of transfers remain consistent between scenarios, while drive time and transit travel time change with the introduction of the bus lane mitigation. A mode shift analysis was performed using the 2009 CPHPS methodology, using travel time outputs from a road network including no bus lanes and a road network including bus lanes along the entire Evans–Hunters Point Boulevard–Innes corridor. This mode shift analysis examined the average driving

and transit travel time between Jennings Street and Donahue Street in the PM peak hour. In addition to SimTraffic travel time outputs, the mode shift analysis estimated the effect of additional delay associated with queues outside the modeled network that would accumulate as vehicles wait to enter the restricted-capacity network with bus lanes.

Based on the regression methodology outlined in the 2009 CPHPS memorandum, the addition of a bus lane along the entire Evans Avenue–Hunters Point Boulevard–Innes Avenue corridor could result in a 4.5 percentage point increase in transit mode share for work trips and a 6.6 percentage point increase in transit mode share for non-work trips. Based on the assumption of work trips representing 38 percent of all project trips in the PM peak hour, this equates to an overall 5.8 percentage point increase in transit mode share and a corresponding 5.8 percentage point decrease in driving mode share. Such a mode shift could reduce India Basin PM peak hour project vehicle trips from 2,734 to 2,516, a decrease of 218 vehicle trips. Furthermore, this mode shift would likely apply to all trips along the study corridor, not only trips associated with the Proposed Project (although only Project trips are considered here). As this is the worst case, the mode shift for other times of day and project configurations would be lower although at the same order of magnitude.

The calculations underpinning this estimated mode shift are presented on the next page. The effect of this reduction in vehicle volumes on vehicular congestion and delay was not analyzed.

Transit Mode Shift Calculations

Regression Model Source

Work Trips:

$$\text{Transit Mode Share} = 0.009 * (\text{DriveTime}) + 0.102 * (\text{DrivePkgCost}) - 0.008 * (\text{TransitAvgWait}) - 0.092 * (\text{TransitXfers}) + 0.028$$

Non-Work Trips:

$$\text{Transit Mode Share} = 0.012 * (\text{DriveTime}) + 0.079 * (\text{DrivePkgCost}) - 0.023 * (\text{TransitXfers}) - 0.002 * (\text{TransitTime}) - 0.095$$

Proposed Trip Generation, Distribution, and Transit Mode Split Forecasts for the Bayview Waterfront Project Transportation Study

5/11/2009

Fehr & Peers Memorandum

Change in Travel Time

	Cumulative Plus Variant (No Bus Lanes) PM	Cumulative Plus Variant Plus Bus Lanes PM	Difference
Corridor Distance (ft)	7560	7560	
Westbound Drive Time (min)	11.4	14.8	
Eastbound Drive Time (min)	5.8	12.2	
Average Drive Time (min)	8.6	13.6	5.0
Transit Speed (mph)	-	16	
Westbound Transit Time (min)	11.4	5.4	
Eastbound Transit Time (min)	5.8	5.4	
Average Transit Time (min)	8.6	5.4	-3.2
Delta Transit Mode Share (%) for Work Trips	4.50%		
Delta Transit Mode Share (%) for Non-Work Trips	6.65%		
% of Project Trips that are Work Trips	38%		
Weighted Average Delta Transit Mode Share (%)	5.83%		

Change in Project Variant Trips

Scenario	Mode share	Vehicle trips
No bus lanes	73.0%	2,734
Bus lanes	67.2%	2,516
Difference	-5.8%	-218

Notes:

"Cumulative Plus Variant (No Bus Lanes)" refers to a scenario with no bus lanes anywhere along Innes Avenue, Hunters Point Boulevard, or Evans Avenue. Such a scenario will not exist in the Cumulative year 2040, because the CPHPS Transportation Plan calls for the installation of bus lanes on Evans Avenue between Napoleon and Jennings Streets before 2040. However, this scenario enables examination of the impact of the full complement of bus lanes from Napoleon to Donahue Streets on transit mode share.

Drive Time and Transit Time (no bus lane) are based on SimTraffic model travel time outputs. Transit Time (bus lane) is based on corridor distance divided by average transit vehicle speed in dedicated bus lanes.

Change in Average Drive Time is fixed at 5 minutes, as the SimTraffic model is unable to accurately model the eastbound upstream bottleneck as the start of the bus lane is outside of the model. Five minutes was selected by engineering judgment as an approximation of total additional delay.

The percentage of project trips that are work trips, total project vehicle trips, and project drive mode share were derived from India Basin Project Variant Master Trip Generation calculations.

APPENDIX N: LEVEL OF SERVICE CALCULATIONS

Existing Conditions

HCM Signalized Intersection Capacity Analysis

1: Third Street & Evans Avenue

9/9/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	55	247	34	38	214	128	121	581	41	129	222	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.98		1.00	1.00	0.85	1.00	0.99		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1540	2976		1540	3079	1028	1540	3028		1540	2972	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1540	2976		1540	3079	1028	1540	3028		1540	2972	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	60	271	37	42	235	141	133	638	45	142	244	33
RTOR Reduction (vph)	0	12	0	0	0	122	0	5	0	0	9	0
Lane Group Flow (vph)	60	296	0	42	235	19	133	678	0	142	268	0
Confl. Peds. (#/hr)	100		100	100		100	100		100	100		100
Confl. Bikes (#/hr)			10			10			10			10
Parking (#/hr)						5						
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	9.4	17.5		5.5	13.6	13.6	14.1	43.3		13.7	42.9	
Effective Green, g (s)	9.4	17.5		5.5	13.6	13.6	14.1	43.3		13.7	42.9	
Actuated g/C Ratio	0.09	0.18		0.06	0.14	0.14	0.14	0.43		0.14	0.43	
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	144	520		84	418	139	217	1311		210	1274	
v/s Ratio Prot	0.04	c0.10		0.03	c0.08		c0.09	c0.22		c0.09	0.09	
v/s Ratio Perm						0.02						
v/c Ratio	0.42	0.57		0.50	0.56	0.14	0.61	0.52		0.68	0.21	
Uniform Delay, d1	42.7	37.8		45.9	40.4	38.0	40.4	20.7		41.0	17.9	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.58		1.26	1.33	
Incremental Delay, d2	1.9	1.4		4.6	1.7	0.5	5.0	1.4		8.1	0.4	
Delay (s)	44.7	39.2		50.5	42.1	38.5	45.5	34.2		60.0	24.3	
Level of Service	D	D		D	D	D	D	C		E	C	
Approach Delay (s)		40.1			41.8			36.0			36.4	
Approach LOS		D			D			D			D	
Intersection Summary												
HCM 2000 Control Delay		38.0										
HCM 2000 Volume to Capacity ratio		0.58										
Actuated Cycle Length (s)		100.0										
Intersection Capacity Utilization		78.3%										
Analysis Period (min)		15										
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

2: Jennings Street & Evans Avenue/Hunters Point Boulevard

9/9/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	52	111	38	11	193	20	15	2	0	12	11	44
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	55	117	40	12	203	21	16	2	0	13	12	46
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total (vph)	113	98	113	123	18	71						
Volume Left (vph)	55	0	12	0	16	13						
Volume Right (vph)	0	40	0	21	0	46						
Hadj (s)	0.28	-0.25	0.09	-0.09	0.21	-0.32						
Departure Headway (s)	5.2	4.7	5.0	4.8	5.2	4.6						
Degree Utilization, x	0.16	0.13	0.16	0.16	0.03	0.09						
Capacity (veh/h)	676	746	698	726	636	719						
Control Delay (s)	8.0	7.2	7.7	7.6	8.3	8.0						
Approach Delay (s)	7.6		7.6		8.3	8.0						
Approach LOS	A		A		A	A						
Intersection Summary												
Delay			7.7									
Level of Service			A									
Intersection Capacity Utilization			30.8%		ICU Level of Service					A		
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

3: Hunters Point Boulevard & Hawes Street

9/9/2016



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	32	0	1	110	99	8
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	35	0	1	120	108	9
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	174	58	116			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	174	58	116			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	96	100	100			
cM capacity (veh/h)	799	996	1470			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	35	41	80	72	45	
Volume Left	35	1	0	0	0	
Volume Right	0	0	0	0	9	
cSH	799	1470	1700	1700	1700	
Volume to Capacity	0.04	0.00	0.05	0.04	0.03	
Queue Length 95th (ft)	3	0	0	0	0	
Control Delay (s)	9.7	0.2	0.0	0.0	0.0	
Lane LOS	A	A				
Approach Delay (s)	9.7	0.1		0.0		
Approach LOS	A					
Intersection Summary						
Average Delay			1.3			
Intersection Capacity Utilization			14.2%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

4: Innes Avenue & Hunters Point Boulevard

9/9/2016

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	2	24	21	109	98	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	2	26	22	116	104	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	207	53	105			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	207	53	105			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	97	98			
cM capacity (veh/h)	750	1004	1484			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	28	61	77	70	36	
Volume Left	2	22	0	0	0	
Volume Right	26	0	0	0	1	
cSH	978	1484	1700	1700	1700	
Volume to Capacity	0.03	0.02	0.05	0.04	0.02	
Queue Length 95th (ft)	2	1	0	0	0	
Control Delay (s)	8.8	2.8	0.0	0.0	0.0	
Lane LOS	A	A				
Approach Delay (s)	8.8	1.2		0.0		
Approach LOS	A					
Intersection Summary						
Average Delay			1.5			
Intersection Capacity Utilization			18.0%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

5: Griffith Street & Innes Avenue

9/9/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	105	5	5	97	5	5	0	5	5	0	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	114	5	5	105	5	5	0	5	5	0	5
Pedestrians					100			100			100	
Lane Width (ft)					11.0			11.0			11.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					8			8			8	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	211			220			297	449	260	392	449	155
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	211			220			297	449	260	392	449	155
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			99	100	99	99	100	99
cM capacity (veh/h)	1253			1244			512	426	630	404	426	797
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	62	62	58	58	11	11						
Volume Left	5	0	5	0	5	5						
Volume Right	0	5	0	5	5	5						
cSH	1253	1700	1244	1700	565	536						
Volume to Capacity	0.00	0.04	0.00	0.03	0.02	0.02						
Queue Length 95th (ft)	0	0	0	0	1	2						
Control Delay (s)	0.7	0.0	0.8	0.0	11.5	11.9						
Lane LOS	A		A		B	B						
Approach Delay (s)	0.4		0.4		11.5	11.9						
Approach LOS					B	B						
Intersection Summary												
Average Delay			1.3									
Intersection Capacity Utilization			32.8%		ICU Level of Service		A					
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

6: Innes Avenue & Arelious Walker Drive

9/9/2016



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑↑	
Volume (veh/h)	9	106	92	0	1	15
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	10	118	102	0	1	17
Pedestrians					100	
Lane Width (ft)					11.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					8	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	202				281	151
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	202				281	151
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				100	98
cM capacity (veh/h)	1263				628	802
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	49	79	68	34	18	
Volume Left	10	0	0	0	1	
Volume Right	0	0	0	0	17	
cSH	1263	1700	1700	1700	788	
Volume to Capacity	0.01	0.05	0.04	0.02	0.02	
Queue Length 95th (ft)	1	0	0	0	2	
Control Delay (s)	1.6	0.0	0.0	0.0	9.7	
Lane LOS	A				A	
Approach Delay (s)	0.6		0.0		9.7	
Approach LOS					A	
Intersection Summary						
Average Delay			1.0			
Intersection Capacity Utilization			23.0%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

7: Innes Avenue & Earl Street

9/9/2016



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑↑	
Volume (veh/h)	5	102	87	5	5	5
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	111	95	5	5	5
Pedestrians					100	
Lane Width (ft)					11.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					8	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	200				264	150
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	200				264	150
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	99
cM capacity (veh/h)	1265				647	803
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	42	74	63	37	11	
Volume Left	5	0	0	0	5	
Volume Right	0	0	0	5	5	
cSH	1265	1700	1700	1700	716	
Volume to Capacity	0.00	0.04	0.04	0.02	0.02	
Queue Length 95th (ft)	0	0	0	0	1	
Control Delay (s)	1.0	0.0	0.0	0.0	10.1	
Lane LOS	A				B	
Approach Delay (s)	0.4		0.0		10.1	
Approach LOS					B	
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization			23.0%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis

1: Third Street & Evans Avenue

9/9/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	36	198	32	51	241	134	110	391	46	150	441	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.98		1.00	1.00	0.86	1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1540	2960		1540	3079	1031	1540	2996		1540	3025	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1540	2960		1540	3079	1031	1540	2996		1540	3025	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	40	218	35	56	265	147	121	430	51	165	485	31
RTOR Reduction (vph)	0	15	0	0	0	122	0	9	0	0	4	0
Lane Group Flow (vph)	40	238	0	56	265	25	121	472	0	165	512	0
Confl. Peds. (#/hr)	100		100	100		100	100		100	100		100
Confl. Bikes (#/hr)			10			10			10			10
Parking (#/hr)						5						
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	5.7	15.1		7.4	16.8	16.8	13.3	38.7		18.8	44.2	
Effective Green, g (s)	5.7	15.1		7.4	16.8	16.8	13.3	38.7		18.8	44.2	
Actuated g/C Ratio	0.06	0.15		0.07	0.17	0.17	0.13	0.39		0.19	0.44	
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	87	446		113	517	173	204	1159		289	1337	
v/s Ratio Prot	0.03	c0.08		0.04	c0.09		c0.08	c0.16		c0.11	0.17	
v/s Ratio Perm						0.02						
v/c Ratio	0.46	0.53		0.50	0.51	0.14	0.59	0.41		0.57	0.38	
Uniform Delay, d1	45.7	39.2		44.5	37.9	35.5	40.8	22.3		36.9	18.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	0.95	1.55		1.25	1.30	
Incremental Delay, d2	3.8	1.2		3.4	0.9	0.4	4.4	1.0		2.6	0.8	
Delay (s)	49.5	40.4		47.9	38.7	35.8	43.1	35.6		48.9	25.1	
Level of Service	D	D		D	D	D	D	D		D	C	
Approach Delay (s)		41.7			38.9			37.1			30.9	
Approach LOS		D			D			D			C	
Intersection Summary												
HCM 2000 Control Delay		36.1				HCM 2000 Level of Service		D				
HCM 2000 Volume to Capacity ratio		0.51										
Actuated Cycle Length (s)		100.0				Sum of lost time (s)		20.0				
Intersection Capacity Utilization		79.6%				ICU Level of Service		D				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

2: Jennings Street & Evans Avenue/Hunters Point Boulevard

9/9/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	24	87	54	12	225	23	10	4	2	16	18	39
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	25	92	57	13	237	24	11	4	2	17	19	41
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total (vph)	71	103	131	143	17	77						
Volume Left (vph)	25	0	13	0	11	17						
Volume Right (vph)	0	57	0	24	2	41						
Hadj (s)	0.21	-0.35	0.08	-0.08	0.08	-0.24						
Departure Headway (s)	5.2	4.6	5.0	4.8	5.1	4.7						
Degree Utilization, x	0.10	0.13	0.18	0.19	0.02	0.10						
Capacity (veh/h)	676	753	702	730	653	711						
Control Delay (s)	7.6	7.1	7.9	7.7	8.2	8.2						
Approach Delay (s)	7.3		7.8		8.2	8.2						
Approach LOS	A		A		A	A						
Intersection Summary												
Delay			7.7									
Level of Service			A									
Intersection Capacity Utilization			30.6%		ICU Level of Service		A					
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

3: Hunters Point Boulevard & Hawes Street

9/9/2016



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	22	2	0	132	83	33
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	26	2	0	155	98	39
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	195	68	136			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	195	68	136			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	100	100			
cM capacity (veh/h)	776	981	1445			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	28	52	104	65	71	
Volume Left	26	0	0	0	0	
Volume Right	2	0	0	0	39	
cSH	790	1445	1700	1700	1700	
Volume to Capacity	0.04	0.00	0.06	0.04	0.04	
Queue Length 95th (ft)	3	0	0	0	0	
Control Delay (s)	9.7	0.0	0.0	0.0	0.0	
Lane LOS	A					
Approach Delay (s)	9.7	0.0		0.0		
Approach LOS	A					
Intersection Summary						
Average Delay			0.9			
Intersection Capacity Utilization			14.1%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

4: Innes Avenue & Hunters Point Boulevard

9/9/2016



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	2	26	39	128	83	2
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	2	27	41	133	86	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	235	44	89			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	235	44	89			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	97	97			
cM capacity (veh/h)	712	1016	1505			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	29	85	89	58	31	
Volume Left	2	41	0	0	0	
Volume Right	27	0	0	0	2	
cSH	986	1505	1700	1700	1700	
Volume to Capacity	0.03	0.03	0.05	0.03	0.02	
Queue Length 95th (ft)	2	2	0	0	0	
Control Delay (s)	8.8	3.7	0.0	0.0	0.0	
Lane LOS	A	A				
Approach Delay (s)	8.8	1.8		0.0		
Approach LOS	A					
Intersection Summary						
Average Delay			1.9			
Intersection Capacity Utilization			19.1%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

5: Griffith Street & Innes Avenue

9/9/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	76	5	5	133	5	5	0	5	5	0	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	83	5	5	145	5	5	0	5	5	0	5
Pedestrians					100			100			100	
Lane Width (ft)					11.0			11.0			11.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					8			8			8	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	250			188			285	457	244	416	457	175
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	250			188			285	457	244	416	457	175
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			99	100	99	99	100	99
cM capacity (veh/h)	1212			1278			522	421	645	389	421	774
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	47	47	78	78	11	11						
Volume Left	5	0	5	0	5	5						
Volume Right	0	5	0	5	5	5						
cSH	1212	1700	1278	1700	577	517						
Volume to Capacity	0.00	0.03	0.00	0.05	0.02	0.02						
Queue Length 95th (ft)	0	0	0	0	1	2						
Control Delay (s)	1.0	0.0	0.6	0.0	11.4	12.1						
Lane LOS	A		A		B	B						
Approach Delay (s)	0.5		0.3		11.4	12.1						
Approach LOS					B	B						
Intersection Summary												
Average Delay			1.3									
Intersection Capacity Utilization			32.8%		ICU Level of Service		A					
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

6: Innes Avenue & Arelious Walker Drive

9/9/2016



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑↑	
Volume (veh/h)	13	73	132	0	2	11
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	14	81	147	0	2	12
Pedestrians					100	
Lane Width (ft)					11.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					8	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	247				316	173
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	247				316	173
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				100	98
cM capacity (veh/h)	1216				595	776
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	41	54	98	49	14	
Volume Left	14	0	0	0	2	
Volume Right	0	0	0	0	12	
cSH	1216	1700	1700	1700	741	
Volume to Capacity	0.01	0.03	0.06	0.03	0.02	
Queue Length 95th (ft)	1	0	0	0	1	
Control Delay (s)	2.8	0.0	0.0	0.0	10.0	
Lane LOS	A				A	
Approach Delay (s)	1.2		0.0		10.0	
Approach LOS					A	
Intersection Summary						
Average Delay			1.0			
Intersection Capacity Utilization			23.1%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

7: Innes Avenue & Earl Street

9/9/2016



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑↑	
Volume (veh/h)	5	70	127	5	5	5
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	76	138	5	5	5
Pedestrians					100	
Lane Width (ft)					11.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					8	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	243				290	172
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	243				290	172
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	99
cM capacity (veh/h)	1219				623	778
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	31	51	92	51	11	
Volume Left	5	0	0	0	5	
Volume Right	0	0	0	5	5	
cSH	1219	1700	1700	1700	692	
Volume to Capacity	0.00	0.03	0.05	0.03	0.02	
Queue Length 95th (ft)	0	0	0	0	1	
Control Delay (s)	1.4	0.0	0.0	0.0	10.3	
Lane LOS	A				B	
Approach Delay (s)	0.5		0.0		10.3	
Approach LOS					B	
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization			23.0%		ICU Level of Service	A
Analysis Period (min)			15			

Baseline Conditions

HCM Signalized Intersection Capacity Analysis

1: Third Street & Evans Avenue

9/9/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	55	250	34	53	229	166	121	581	44	137	222	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.98		1.00	1.00	0.85	1.00	0.99		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1540	2977		1540	3079	1028	1540	3025		1540	2973	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1540	2977		1540	3079	1028	1540	3025		1540	2973	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	56	253	34	54	231	168	122	587	44	138	224	30
RTOR Reduction (vph)	0	12	0	0	0	145	0	4	0	0	8	0
Lane Group Flow (vph)	56	275	0	54	231	23	122	627	0	138	246	0
Confl. Peds. (#/hr)	100		100	100		100	100		100	100		100
Confl. Bikes (#/hr)			10			10			10			10
Parking (#/hr)						5						
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	8.6	14.9		7.3	13.6	13.6	13.3	43.8		14.0	44.5	
Effective Green, g (s)	8.6	14.9		7.3	13.6	13.6	13.3	43.8		14.0	44.5	
Actuated g/C Ratio	0.09	0.15		0.07	0.14	0.14	0.13	0.44		0.14	0.44	
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	132	443		112	418	139	204	1324		215	1322	
v/s Ratio Prot	0.04	c0.09		0.04	c0.08		c0.08	c0.21		c0.09	0.08	
v/s Ratio Perm						0.02						
v/c Ratio	0.42	0.62		0.48	0.55	0.16	0.60	0.47		0.64	0.19	
Uniform Delay, d1	43.4	39.9		44.5	40.4	38.2	40.8	19.9		40.6	16.8	
Progression Factor	1.00	1.00		0.93	0.91	1.58	0.98	1.58		1.26	1.31	
Incremental Delay, d2	2.2	2.7		3.2	1.6	0.6	4.6	1.2		6.3	0.3	
Delay (s)	45.5	42.6		44.5	38.2	60.9	44.5	32.7		57.4	22.4	
Level of Service	D	D		D	D	E	D	C		E	C	
Approach Delay (s)		43.1			47.4			34.6			34.7	
Approach LOS		D			D			C			C	
Intersection Summary												
HCM 2000 Control Delay		39.1				HCM 2000 Level of Service		D				
HCM 2000 Volume to Capacity ratio		0.56										
Actuated Cycle Length (s)		100.0				Sum of lost time (s)		20.0				
Intersection Capacity Utilization		78.8%				ICU Level of Service		D				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

2: Jennings Street & Evans Avenue/Hunters Point Boulevard

9/9/2016

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Volume (vph)	52	124	38	11	260	32	15	2	0	14	11	44	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.0	4.0		4.0	4.0		4.0			4.0		
Lane Util. Factor		0.95	1.00		0.95	1.00		1.00			1.00		
Frpb, ped/bikes		1.00	0.98		1.00	0.98		1.00			1.00		
Flpb, ped/bikes		1.00	1.00		1.00	1.00		1.00			1.00		
Frt		1.00	0.85		1.00	0.85		1.00			0.91		
Flt Protected		0.99	1.00		1.00	1.00		0.96			0.99		
Satd. Flow (prot)		3006	1320		3073	1347		1551			1282		
Flt Permitted		0.83	1.00		0.94	1.00		0.85			0.96		
Satd. Flow (perm)		2541	1320		2908	1347		1381			1247		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
Growth Factor (vph)	90%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Adj. Flow (vph)	52	138	42	12	289	36	17	2	0	16	12	49	
RTOR Reduction (vph)	0	0	24	0	0	21	0	0	0	0	28	0	
Lane Group Flow (vph)	0	190	18	0	301	15	0	19	0	0	49	0	
Confl. Peds. (#/hr)	1		2	2		1			7	7			
Confl. Bikes (#/hr)						1							
Bus Blockages (#/hr)	0	5	5	0	0	0	0	0	0	0	0	0	
Parking (#/hr)										5	5	5	
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA		
Protected Phases		4			8			2			6		
Permitted Phases	4		4	8		8	2			6			
Actuated Green, G (s)		21.0	21.0		21.0	21.0		21.0			21.0		
Effective Green, g (s)		21.0	21.0		21.0	21.0		21.0			21.0		
Actuated g/C Ratio		0.42	0.42		0.42	0.42		0.42			0.42		
Clearance Time (s)		4.0	4.0		4.0	4.0		4.0			4.0		
Lane Grp Cap (vph)		1067	554		1221	565		580			523		
v/s Ratio Prot													
v/s Ratio Perm		0.07	0.01		c0.10	0.01		0.01			c0.04		
v/c Ratio		0.18	0.03		0.25	0.03		0.03			0.09		
Uniform Delay, d1		9.1	8.5		9.4	8.5		8.5			8.8		
Progression Factor		1.12	2.02		1.00	1.00		1.00			1.00		
Incremental Delay, d2		0.3	0.1		0.5	0.1		0.1			0.4		
Delay (s)		10.5	17.3		9.9	8.6		8.6			9.1		
Level of Service		B	B		A	A		A			A		
Approach Delay (s)		11.7			9.7			8.6			9.1		
Approach LOS		B			A			A			A		
Intersection Summary													
HCM 2000 Control Delay			10.3									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.17										
Actuated Cycle Length (s)			50.0								8.0		
Intersection Capacity Utilization			60.0%									ICU Level of Service	B
Analysis Period (min)			15										
c Critical Lane Group													

HCM Unsignalized Intersection Capacity Analysis

3: Hunters Point Boulevard & Hawes Street

9/9/2016



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	32	0	1	189	115	8
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	35	0	1	205	125	9
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	234	67	134			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	234	67	134			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	100	100			
cM capacity (veh/h)	733	983	1449			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	35	70	137	83	50	
Volume Left	35	1	0	0	0	
Volume Right	0	0	0	0	9	
cSH	733	1449	1700	1700	1700	
Volume to Capacity	0.05	0.00	0.08	0.05	0.03	
Queue Length 95th (ft)	4	0	0	0	0	
Control Delay (s)	10.2	0.1	0.0	0.0	0.0	
Lane LOS	B	A				
Approach Delay (s)	10.2	0.0		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			1.0			
Intersection Capacity Utilization			16.6%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

4: Innes Avenue & Hunters Point Boulevard

9/9/2016



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	2	27	35	188	114	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	2	29	37	200	121	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	296	61	122			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	296	61	122			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	97	97			
cM capacity (veh/h)	654	991	1463			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	31	104	133	81	41	
Volume Left	2	37	0	0	0	
Volume Right	29	0	0	0	1	
cSH	957	1463	1700	1700	1700	
Volume to Capacity	0.03	0.03	0.08	0.05	0.02	
Queue Length 95th (ft)	2	2	0	0	0	
Control Delay (s)	8.9	2.8	0.0	0.0	0.0	
Lane LOS	A	A				
Approach Delay (s)	8.9	1.2		0.0		
Approach LOS	A					
Intersection Summary						
Average Delay			1.5			
Intersection Capacity Utilization			20.2%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

5: Griffith Street & Innes Avenue

9/9/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	124	0	0	190	5	0	0	0	5	0	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	135	0	0	207	5	0	0	0	5	0	5
Pedestrians					100			100			100	
Lane Width (ft)					11.0			11.0			11.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					8			8			8	
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	312			235			354	558	267	488	555	206
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	312			235			354	558	267	488	555	206
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	98	100	99
cM capacity (veh/h)	1150			1228			467	371	623	349	372	739
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	73	67	103	109	0	11						
Volume Left	5	0	0	0	0	5						
Volume Right	0	0	0	5	0	5						
cSH	1150	1700	1228	1700	1700	474						
Volume to Capacity	0.00	0.04	0.00	0.06	0.00	0.02						
Queue Length 95th (ft)	0	0	0	0	0	2						
Control Delay (s)	0.6	0.0	0.0	0.0	0.0	12.8						
Lane LOS	A				A	B						
Approach Delay (s)	0.3		0.0		0.0	12.8						
Approach LOS					A	B						
Intersection Summary												
Average Delay			0.5									
Intersection Capacity Utilization			32.8%	ICU Level of Service				A				
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

6: Innes Avenue & Arelious Walker Drive

9/9/2016



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑↑	
Volume (veh/h)	9	125	185	0	1	15
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	10	139	206	0	1	17
Pedestrians					100	
Lane Width (ft)					11.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					8	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	306				395	203
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	306				395	203
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				100	98
cM capacity (veh/h)	1156				533	743
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	56	93	137	69	18	
Volume Left	10	0	0	0	1	
Volume Right	0	0	0	0	17	
cSH	1156	1700	1700	1700	725	
Volume to Capacity	0.01	0.05	0.08	0.04	0.02	
Queue Length 95th (ft)	1	0	0	0	2	
Control Delay (s)	1.5	0.0	0.0	0.0	10.1	
Lane LOS	A				B	
Approach Delay (s)	0.6		0.0		10.1	
Approach LOS					B	
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization			23.1%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

7: Innes Avenue & Earl Street

9/9/2016



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑↑	
Volume (veh/h)	5	121	180	5	5	5
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	132	196	5	5	5
Pedestrians					100	
Lane Width (ft)					11.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					8	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	301				375	201
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	301				375	201
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	99
cM capacity (veh/h)	1161				551	745
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	49	88	130	71	11	
Volume Left	5	0	0	0	5	
Volume Right	0	0	0	5	5	
cSH	1161	1700	1700	1700	633	
Volume to Capacity	0.00	0.05	0.08	0.04	0.02	
Queue Length 95th (ft)	0	0	0	0	1	
Control Delay (s)	0.9	0.0	0.0	0.0	10.8	
Lane LOS	A				B	
Approach Delay (s)	0.3		0.0		10.8	
Approach LOS					B	
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization			23.1%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis

1: Third Street & Evans Avenue

9/9/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	36	212	32	58	248	152	110	391	60	187	441	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.98		1.00	1.00	0.86	1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1540	2967		1540	3079	1031	1540	2975		1540	3025	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1540	2967		1540	3079	1031	1540	2975		1540	3025	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	40	233	35	64	273	167	121	430	66	205	485	31
RTOR Reduction (vph)	0	14	0	0	0	138	0	12	0	0	4	0
Lane Group Flow (vph)	40	254	0	64	273	29	121	484	0	205	512	0
Confl. Peds. (#/hr)	100		100	100		100	100		100	100		100
Confl. Bikes (#/hr)			10			10			10			10
Parking (#/hr)						5						
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	5.7	15.6		7.5	17.4	17.4	13.2	33.4		23.5	43.7	
Effective Green, g (s)	5.7	15.6		7.5	17.4	17.4	13.2	33.4		23.5	43.7	
Actuated g/C Ratio	0.06	0.16		0.08	0.17	0.17	0.13	0.33		0.24	0.44	
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	87	462		115	535	179	203	993		361	1321	
v/s Ratio Prot	0.03	c0.09		0.04	c0.09		c0.08	c0.16		c0.13	0.17	
v/s Ratio Perm						0.03						
v/c Ratio	0.46	0.55		0.56	0.51	0.16	0.60	0.49		0.57	0.39	
Uniform Delay, d1	45.7	39.0		44.6	37.4	35.1	40.9	26.5		33.8	19.1	
Progression Factor	1.00	1.00		0.89	0.89	1.46	1.01	1.54		1.34	1.43	
Incremental Delay, d2	3.8	1.4		5.7	0.8	0.4	4.5	1.7		2.0	0.8	
Delay (s)	49.5	40.4		45.6	34.2	51.8	45.9	42.6		47.2	28.1	
Level of Service	D	D		D	C	D	D	D		D	C	
Approach Delay (s)		41.6			41.5			43.2			33.5	
Approach LOS		D			D			D			C	
Intersection Summary												
HCM 2000 Control Delay			39.3			HCM 2000 Level of Service			D			
HCM 2000 Volume to Capacity ratio			0.54									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			20.0			
Intersection Capacity Utilization			81.8%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

2: Jennings Street & Evans Avenue/Hunters Point Boulevard

9/9/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	24	153	54	12	257	29	10	4	2	51	18	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0		4.0			4.0	
Lane Util. Factor		0.95	1.00		0.95	1.00		1.00			1.00	
Frpb, ped/bikes		1.00	0.97		1.00	0.98		1.00			1.00	
Flpb, ped/bikes		1.00	1.00		1.00	1.00		1.00			1.00	
Frt		1.00	0.85		1.00	0.85		0.98			0.97	
Flt Protected		0.99	1.00		1.00	1.00		0.97			0.97	
Satd. Flow (prot)		3027	1313		3071	1347		1540			1334	
Flt Permitted		0.90	1.00		0.94	1.00		0.89			0.86	
Satd. Flow (perm)		2753	1313		2902	1347		1423			1187	
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)	25	161	57	13	271	31	11	4	2	54	19	17
RTOR Reduction (vph)	0	0	33	0	0	18	0	1	0	0	10	0
Lane Group Flow (vph)	0	186	24	0	284	13	0	16	0	0	80	0
Confl. Peds. (#/hr)	2		5	5		2	2		7	7		2
Confl. Bikes (#/hr)			1									
Bus Blockages (#/hr)	0	5	5	0	0	0	0	0	0	0	0	0
Parking (#/hr)										5	5	5
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)		21.0	21.0		21.0	21.0		21.0			21.0	
Effective Green, g (s)		21.0	21.0		21.0	21.0		21.0			21.0	
Actuated g/C Ratio		0.42	0.42		0.42	0.42		0.42			0.42	
Clearance Time (s)		4.0	4.0		4.0	4.0		4.0			4.0	
Lane Grp Cap (vph)		1156	551		1218	565		597			498	
v/s Ratio Prot												
v/s Ratio Perm		0.07	0.02		c0.10	0.01		0.01			c0.07	
v/c Ratio		0.16	0.04		0.23	0.02		0.03			0.16	
Uniform Delay, d1		9.0	8.6		9.3	8.5		8.5			9.0	
Progression Factor		1.15	2.31		1.00	1.00		1.00			1.00	
Incremental Delay, d2		0.3	0.1		0.4	0.1		0.1			0.7	
Delay (s)		10.6	19.9		9.8	8.6		8.6			9.7	
Level of Service		B	B		A	A		A			A	
Approach Delay (s)		12.8			9.7			8.6			9.7	
Approach LOS		B			A			A			A	
Intersection Summary												
HCM 2000 Control Delay		10.8			HCM 2000 Level of Service			B				
HCM 2000 Volume to Capacity ratio		0.20										
Actuated Cycle Length (s)		50.0			Sum of lost time (s)			8.0				
Intersection Capacity Utilization		60.0%			ICU Level of Service			B				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

3: Hunters Point Boulevard & Hawes Street

9/9/2016



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	22	2	0	170	160	33
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	26	2	0	200	188	39
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	308	114	227			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	308	114	227			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	96	100	100			
cM capacity (veh/h)	660	918	1338			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	28	67	133	125	102	
Volume Left	26	0	0	0	0	
Volume Right	2	0	0	0	39	
cSH	676	1338	1700	1700	1700	
Volume to Capacity	0.04	0.00	0.08	0.07	0.06	
Queue Length 95th (ft)	3	0	0	0	0	
Control Delay (s)	10.6	0.0	0.0	0.0	0.0	
Lane LOS	B					
Approach Delay (s)	10.6	0.0		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization			16.1%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

4: Innes Avenue & Hunters Point Boulevard

9/9/2016



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	2	40	46	166	160	2
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	2	42	48	173	167	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	350	84	169			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	350	84	169			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	96	97			
cM capacity (veh/h)	600	958	1406			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	44	106	115	111	58	
Volume Left	2	48	0	0	0	
Volume Right	42	0	0	0	2	
cSH	931	1406	1700	1700	1700	
Volume to Capacity	0.05	0.03	0.07	0.07	0.03	
Queue Length 95th (ft)	4	3	0	0	0	
Control Delay (s)	9.1	3.6	0.0	0.0	0.0	
Lane LOS	A	A				
Approach Delay (s)	9.1	1.7		0.0		
Approach LOS	A					
Intersection Summary						
Average Delay			1.8			
Intersection Capacity Utilization			24.9%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

5: Griffith Street & Innes Avenue

9/9/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	167	0	0	178	5	0	0	0	5	0	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	182	0	0	193	5	0	0	0	5	0	5
Pedestrians					100			100			100	
Lane Width (ft)					11.0			11.0			11.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					8			8			8	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	299			282			395	591	291	498	589	199
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	299			282			395	591	291	498	589	199
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	98	100	99
cM capacity (veh/h)	1163			1180			437	355	602	343	356	746
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	96	91	97	102	0	11						
Volume Left	5	0	0	0	0	5						
Volume Right	0	0	0	5	0	5						
cSH	1163	1700	1180	1700	1700	470						
Volume to Capacity	0.00	0.05	0.00	0.06	0.00	0.02						
Queue Length 95th (ft)	0	0	0	0	0	2						
Control Delay (s)	0.5	0.0	0.0	0.0	0.0	12.8						
Lane LOS	A				A	B						
Approach Delay (s)	0.3		0.0		0.0	12.8						
Approach LOS					A	B						
Intersection Summary												
Average Delay			0.5									
Intersection Capacity Utilization			32.8%		ICU Level of Service			A				
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

6: Innes Avenue & Arelious Walker Drive

9/9/2016



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑↑	
Volume (veh/h)	13	164	177	0	2	11
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	14	182	197	0	2	12
Pedestrians					100	
Lane Width (ft)					11.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					8	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	297				417	198
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	297				417	198
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				100	98
cM capacity (veh/h)	1165				515	748
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	75	121	131	66	14	
Volume Left	14	0	0	0	2	
Volume Right	0	0	0	0	12	
cSH	1165	1700	1700	1700	699	
Volume to Capacity	0.01	0.07	0.08	0.04	0.02	
Queue Length 95th (ft)	1	0	0	0	2	
Control Delay (s)	1.6	0.0	0.0	0.0	10.3	
Lane LOS	A				B	
Approach Delay (s)	0.6		0.0		10.3	
Approach LOS					B	
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization			26.1%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

7: Innes Avenue & Earl Street

9/9/2016



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑↑	
Volume (veh/h)	5	161	172	5	5	5
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	175	187	5	5	5
Pedestrians					100	
Lane Width (ft)					11.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					8	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	292				388	196
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	292				388	196
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	99
cM capacity (veh/h)	1169				541	750
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	64	117	125	68	11	
Volume Left	5	0	0	0	5	
Volume Right	0	0	0	5	5	
cSH	1169	1700	1700	1700	628	
Volume to Capacity	0.00	0.07	0.07	0.04	0.02	
Queue Length 95th (ft)	0	0	0	0	1	
Control Delay (s)	0.7	0.0	0.0	0.0	10.8	
Lane LOS	A				B	
Approach Delay (s)	0.3		0.0		10.8	
Approach LOS					B	
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			23.1%		ICU Level of Service	A
Analysis Period (min)			15			

Baseline Plus Project Conditions

HCM Signalized Intersection Capacity Analysis

1: Third Street & Evans Avenue

9/9/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	55	296	34	180	279	371	121	581	192	410	222	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.86	1.00	0.97		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.96		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1540	2992		1540	3079	1033	1540	2886		1540	2973	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1540	2992		1540	3079	1033	1540	2886		1540	2973	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	56	299	34	182	282	375	122	587	194	414	224	30
RTOR Reduction (vph)	0	10	0	0	0	268	0	31	0	0	9	0
Lane Group Flow (vph)	56	323	0	182	282	107	122	750	0	414	245	0
Confl. Peds. (#/hr)	100		100	100		100	100		100	100		100
Confl. Bikes (#/hr)			10			10			10			10
Parking (#/hr)						5						
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	7.8	19.2		10.0	21.4	21.4	12.1	35.9		14.9	38.7	
Effective Green, g (s)	7.8	19.2		10.0	21.4	21.4	12.1	35.9		14.9	38.7	
Actuated g/C Ratio	0.08	0.19		0.10	0.21	0.21	0.12	0.36		0.15	0.39	
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	120	574		154	658	221	186	1036		229	1150	
v/s Ratio Prot	0.04	c0.11		c0.12	0.09		0.08	c0.26		c0.27	0.08	
v/s Ratio Perm						0.10						
v/c Ratio	0.47	0.56		1.18	0.43	0.48	0.66	0.72		1.81	0.21	
Uniform Delay, d1	44.1	36.6		45.0	34.0	34.5	42.0	27.8		42.5	20.5	
Progression Factor	1.00	1.00		0.83	0.82	1.94	0.89	1.57		0.99	0.77	
Incremental Delay, d2	2.9	1.3		124.6	0.4	1.4	7.6	4.2		379.1	0.4	
Delay (s)	47.0	37.9		161.9	28.1	68.4	45.0	47.8		421.4	16.2	
Level of Service	D	D		F	C	E	D	D		F	B	
Approach Delay (s)		39.2			75.1			47.4			267.4	
Approach LOS		D			E			D			F	
Intersection Summary												
HCM 2000 Control Delay		107.1				HCM 2000 Level of Service		F				
HCM 2000 Volume to Capacity ratio		0.94										
Actuated Cycle Length (s)		100.0				Sum of lost time (s)		20.0				
Intersection Capacity Utilization		102.6%				ICU Level of Service		G				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

2: Jennings Street & Evans Avenue/Hunters Point Blvd

9/9/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	52	592	38	11	642	305	15	2	0	361	24	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0		4.0			4.0	
Lane Util. Factor		0.95	1.00		0.95	1.00		1.00			1.00	
Frpb, ped/bikes		1.00	0.97		1.00	0.98		1.00			1.00	
Flpb, ped/bikes		1.00	1.00		1.00	1.00		1.00			1.00	
Frt		1.00	0.85		1.00	0.85		1.00			0.99	
Flt Protected		1.00	1.00		1.00	1.00		0.96			0.96	
Satd. Flow (prot)		3036	1313		3076	1347		1551			1334	
Flt Permitted		0.86	1.00		0.94	1.00		0.76			0.75	
Satd. Flow (perm)		2625	1313		2901	1347		1232			1039	
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)	55	623	40	12	676	321	16	2	0	380	25	46
RTOR Reduction (vph)	0	0	24	0	0	193	0	0	0	0	8	0
Lane Group Flow (vph)	0	678	16	0	688	128	0	18	0	0	443	0
Confl. Peds. (#/hr)	2		5	5		2	2		7	7		2
Confl. Bikes (#/hr)			1									
Bus Blockages (#/hr)	0	5	5	0	0	0	0	0	0	0	0	0
Parking (#/hr)										5	5	5
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)		20.0	20.0		20.0	20.0		22.0			22.0	
Effective Green, g (s)		20.0	20.0		20.0	20.0		22.0			22.0	
Actuated g/C Ratio		0.40	0.40		0.40	0.40		0.44			0.44	
Clearance Time (s)		4.0	4.0		4.0	4.0		4.0			4.0	
Lane Grp Cap (vph)		1050	525		1160	538		542			457	
v/s Ratio Prot												
v/s Ratio Perm		c0.26	0.01		0.24	0.10		0.01			c0.43	
v/c Ratio		0.65	0.03		0.59	0.24		0.03			0.97	
Uniform Delay, d1		12.1	9.1		11.8	9.9		8.0			13.7	
Progression Factor		1.26	1.97		1.00	1.00		1.00			1.00	
Incremental Delay, d2		0.3	0.0		2.2	1.0		0.1			34.9	
Delay (s)		15.6	18.0		14.0	11.0		8.1			48.6	
Level of Service		B	B		B	B		A			D	
Approach Delay (s)		15.7			13.1			8.1			48.6	
Approach LOS		B			B			A			D	
Intersection Summary												
HCM 2000 Control Delay			21.2				HCM 2000 Level of Service				C	
HCM 2000 Volume to Capacity ratio			0.81									
Actuated Cycle Length (s)			50.0				Sum of lost time (s)			8.0		
Intersection Capacity Utilization			77.0%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

3: Hunters Point Blvd & Hawes Street

9/9/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	32	0	0	0	0	0	1	856	0	0	964	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0						5.0			5.0	
Lane Util. Factor		1.00						0.95			0.95	
Frt		1.00						1.00			1.00	
Flt Protected		0.95						1.00			1.00	
Satd. Flow (prot)		1540						3079			3075	
Flt Permitted		0.76						0.95			1.00	
Satd. Flow (perm)		1227						2938			3075	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	35	0	0	0	0	0	1	930	0	0	1048	9
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	35	0	0	0	0	0	931	0	0	1056	0
Turn Type	custom	NA					Perm	NA			NA	
Protected Phases					8			2			6	
Permitted Phases	4	4		8			2					
Actuated Green, G (s)		18.0						32.0			32.0	
Effective Green, g (s)		18.0						32.0			32.0	
Actuated g/C Ratio		0.30						0.53			0.53	
Clearance Time (s)		5.0						5.0			5.0	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		368						1566			1640	
v/s Ratio Prot											c0.34	
v/s Ratio Perm		c0.03						0.32				
v/c Ratio		0.10						0.59			0.64	
Uniform Delay, d1		15.1						9.6			10.0	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		0.5						1.7			0.9	
Delay (s)		15.6						11.2			10.8	
Level of Service		B						B			B	
Approach Delay (s)		15.6			0.0			11.2			10.8	
Approach LOS		B			A			B			B	
Intersection Summary												
HCM 2000 Control Delay		11.1						HCM 2000 Level of Service			B	
HCM 2000 Volume to Capacity ratio		0.45										
Actuated Cycle Length (s)		60.0						Sum of lost time (s)		10.0		
Intersection Capacity Utilization		41.6%						ICU Level of Service		A		
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

4: Innes Avenue & Hunters Point Blvd

9/9/2016



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	184	158	855	963	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0	5.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	
Frt		0.86	1.00	1.00	1.00	
Flt Protected		1.00	0.95	1.00	1.00	
Satd. Flow (prot)		1402	1540	3079	3079	
Flt Permitted		1.00	0.95	1.00	1.00	
Satd. Flow (perm)		1402	1540	3079	3079	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	196	168	910	1024	1
RTOR Reduction (vph)	0	67	0	0	0	0
Lane Group Flow (vph)	0	129	168	910	1025	0
Turn Type		Perm	Prot	NA	NA	
Protected Phases			4	2	6	
Permitted Phases		4				
Actuated Green, G (s)		11.3	11.3	32.2	32.2	
Effective Green, g (s)		11.3	11.3	32.2	32.2	
Actuated g/C Ratio		0.21	0.21	0.60	0.60	
Clearance Time (s)		5.0	5.0	5.0	5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		296	325	1853	1853	
v/s Ratio Prot			c0.11	0.30	c0.33	
v/s Ratio Perm		0.09				
v/c Ratio		0.44	0.52	0.49	0.55	
Uniform Delay, d1		18.3	18.7	6.0	6.4	
Progression Factor		1.00	1.00	1.00	1.00	
Incremental Delay, d2		1.0	1.4	0.9	0.4	
Delay (s)		19.4	20.1	7.0	6.7	
Level of Service		B	C	A	A	
Approach Delay (s)	19.4			9.0	6.7	
Approach LOS	B			A	A	
Intersection Summary						
HCM 2000 Control Delay			8.9		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.54			
Actuated Cycle Length (s)			53.5		Sum of lost time (s)	10.0
Intersection Capacity Utilization			50.6%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

5: Innes Avenue & New Griffith St

9/9/2016



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	214	921	813	15	10	172
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	1.00		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1711	3421	3412		1711	1531
Flt Permitted	0.27	1.00	1.00		0.95	1.00
Satd. Flow (perm)	495	3421	3412		1711	1531
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	233	1001	884	16	11	187
RTOR Reduction (vph)	0	0	1	0	0	172
Lane Group Flow (vph)	233	1001	899	0	11	15
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2					8
Actuated Green, G (s)	84.2	84.2	71.9		7.8	7.8
Effective Green, g (s)	84.2	84.2	71.9		7.8	7.8
Actuated g/C Ratio	0.84	0.84	0.72		0.08	0.08
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	517	2880	2453		133	119
v/s Ratio Prot	c0.04	0.29	0.26		0.01	
v/s Ratio Perm	c0.34					c0.01
v/c Ratio	0.45	0.35	0.37		0.08	0.12
Uniform Delay, d1	2.3	1.8	5.4		42.8	42.9
Progression Factor	1.00	1.00	0.54		1.00	1.00
Incremental Delay, d2	0.6	0.3	0.4		0.3	0.5
Delay (s)	2.9	2.1	3.3		43.0	43.4
Level of Service	A	A	A		D	D
Approach Delay (s)		2.3	3.3		43.4	
Approach LOS		A	A		D	

Intersection Summary

HCM 2000 Control Delay	6.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	48.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

6: Innes Avenue & Arelious Walker Drive

9/9/2016



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	488	448	531	34	13	302
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.5	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.97		1.00	1.00
Flpb, ped/bikes	0.98	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1501	2887	2757		1347	1203
Flt Permitted	0.32	1.00	1.00		0.95	1.00
Satd. Flow (perm)	506	2887	2757		1347	1203
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	567	521	617	40	15	351
RTOR Reduction (vph)	0	0	3	0	0	10
Lane Group Flow (vph)	567	521	654	0	15	341
Confl. Peds. (#/hr)	100			100		
Confl. Bikes (#/hr)				10		10
Bus Blockages (#/hr)	0	0	5	5	0	0
Parking (#/hr)		5	5		5	5
Turn Type	pm+pt	NA	NA		Prot	pm+ov
Protected Phases	5	2	6		4	5
Permitted Phases	2					8
Actuated Green, G (s)	88.3	88.3	52.0		3.2	36.0
Effective Green, g (s)	88.3	88.3	52.0		3.2	36.0
Actuated g/C Ratio	0.88	0.88	0.52		0.03	0.36
Clearance Time (s)	4.0	4.0	4.0		4.5	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	768	2549	1433		43	481
v/s Ratio Prot	0.24	0.18	0.24		0.01	c0.23
v/s Ratio Perm	c0.41					0.05
v/c Ratio	0.74	0.20	0.46		0.35	0.71
Uniform Delay, d1	6.9	0.8	15.1		47.4	27.5
Progression Factor	0.72	0.38	0.97		1.00	1.00
Incremental Delay, d2	3.6	0.2	1.0		4.9	4.8
Delay (s)	8.6	0.5	15.7		52.2	32.3
Level of Service	A	A	B		D	C
Approach Delay (s)		4.7	15.7		33.1	
Approach LOS		A	B		C	

Intersection Summary

HCM 2000 Control Delay	13.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	61.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

7: Innes Avenue & Earl Street

9/9/2016



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	340	121	198	15	14	367
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.97		1.00	0.97
Flpb, ped/bikes	0.86	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1326	2858	2771		1347	1167
Flt Permitted	0.57	1.00	1.00		0.95	1.00
Satd. Flow (perm)	799	2858	2771		1347	1167
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	370	132	215	16	15	399
RTOR Reduction (vph)	0	0	2	0	0	354
Lane Group Flow (vph)	370	132	229	0	15	45
Confl. Peds. (#/hr)	100			100		
Confl. Bikes (#/hr)				10		10
Bus Blockages (#/hr)	0	5	0	0	0	0
Parking (#/hr)		5	5		5	5
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		8	
Permitted Phases	2					8
Actuated Green, G (s)	80.8	80.8	64.3		11.2	11.2
Effective Green, g (s)	80.8	80.8	64.3		11.2	11.2
Actuated g/C Ratio	0.81	0.81	0.64		0.11	0.11
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	711	2309	1781		150	130
v/s Ratio Prot	c0.06	0.05	0.08		0.01	
v/s Ratio Perm	c0.36					c0.04
v/c Ratio	0.52	0.06	0.13		0.10	0.34
Uniform Delay, d1	2.7	1.9	6.9		39.9	41.0
Progression Factor	1.49	0.96	1.00		1.00	1.00
Incremental Delay, d2	0.7	0.0	0.1		0.3	1.6
Delay (s)	4.7	1.9	7.1		40.2	42.6
Level of Service	A	A	A		D	D
Approach Delay (s)		4.0	7.1		42.5	
Approach LOS		A	A		D	
Intersection Summary						
HCM 2000 Control Delay			18.5		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.52			
Actuated Cycle Length (s)			100.0		Sum of lost time (s)	12.0
Intersection Capacity Utilization			44.3%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

1: Third Street & Evans Avenue

9/9/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	36	321	32	225	341	411	110	391	237	449	441	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.86	1.00	0.96		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	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.94		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1540	3002		1540	3079	1035	1540	2788		1540	3025	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1540	3002		1540	3079	1035	1540	2788		1540	3025	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	40	353	35	247	375	452	121	430	260	493	485	31
RTOR Reduction (vph)	0	8	0	0	0	282	0	95	0	0	4	0
Lane Group Flow (vph)	40	380	0	247	375	170	121	595	0	493	512	0
Confl. Peds. (#/hr)	100		100	100		100	100		100	100		100
Confl. Bikes (#/hr)			10			10			10			10
Parking (#/hr)						5						
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	4.8	22.3		10.0	27.5	27.5	11.3	30.4		17.3	36.4	
Effective Green, g (s)	4.8	22.3		10.0	27.5	27.5	11.3	30.4		17.3	36.4	
Actuated g/C Ratio	0.05	0.22		0.10	0.28	0.28	0.11	0.30		0.17	0.36	
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	73	669		154	846	284	174	847		266	1101	
v/s Ratio Prot	0.03	c0.13		c0.16	0.12		0.08	c0.21		c0.32	0.17	
v/s Ratio Perm						c0.16						
v/c Ratio	0.55	0.57		1.60	0.44	0.60	0.70	0.70		1.85	0.46	
Uniform Delay, d1	46.5	34.6		45.0	29.9	31.5	42.7	30.8		41.4	24.3	
Progression Factor	1.00	1.00		0.87	0.86	1.97	0.91	1.62		1.00	0.86	
Incremental Delay, d2	8.2	1.1		295.6	0.3	2.8	10.7	4.5		397.1	1.3	
Delay (s)	54.7	35.7		334.8	26.1	64.8	49.7	54.6		438.4	22.1	
Level of Service	D	D		F	C	E	D	D		F	C	
Approach Delay (s)		37.5			113.4			53.8			225.5	
Approach LOS		D			F			D			F	
Intersection Summary												
HCM 2000 Control Delay		123.1				HCM 2000 Level of Service		F				
HCM 2000 Volume to Capacity ratio		1.03										
Actuated Cycle Length (s)		100.0				Sum of lost time (s)		20.0				
Intersection Capacity Utilization		107.8%				ICU Level of Service		G				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

2: Jennings Street & Evans Avenue/Hunters Point Blvd

9/9/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	24	701	54	12	776	381	10	4	2	391	33	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0		4.0			4.0	
Lane Util. Factor		0.95	1.00		0.95	1.00		1.00			1.00	
Frpb, ped/bikes		1.00	0.97		1.00	0.98		1.00			1.00	
Flpb, ped/bikes		1.00	1.00		1.00	1.00		1.00			1.00	
Frt		1.00	0.85		1.00	0.85		0.98			1.00	
Flt Protected		1.00	1.00		1.00	1.00		0.97			0.96	
Satd. Flow (prot)		3043	1313		3077	1347		1541			1344	
Flt Permitted		0.92	1.00		0.94	1.00		0.82			0.74	
Satd. Flow (perm)		2794	1313		2898	1347		1301			1036	
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)	25	738	57	13	817	401	11	4	2	412	35	17
RTOR Reduction (vph)	0	0	34	0	0	241	0	1	0	0	3	0
Lane Group Flow (vph)	0	763	23	0	830	160	0	16	0	0	461	0
Confl. Peds. (#/hr)	2		5	5		2	2		7	7		2
Confl. Bikes (#/hr)			1									
Bus Blockages (#/hr)	0	5	5	0	0	0	0	0	0	0	0	0
Parking (#/hr)										5	5	5
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)		20.0	20.0		20.0	20.0		22.0			22.0	
Effective Green, g (s)		20.0	20.0		20.0	20.0		22.0			22.0	
Actuated g/C Ratio		0.40	0.40		0.40	0.40		0.44			0.44	
Clearance Time (s)		4.0	4.0		4.0	4.0		4.0			4.0	
Lane Grp Cap (vph)		1117	525		1159	538		572			455	
v/s Ratio Prot												
v/s Ratio Perm		0.27	0.02		0.29	0.12		0.01			0.45	
v/c Ratio		0.68	0.04		0.72	0.30		0.03			1.01	
Uniform Delay, d1		12.4	9.2		12.6	10.2		7.9			14.0	
Progression Factor		1.27	2.26		1.00	1.00		1.00			1.00	
Incremental Delay, d2		0.3	0.0		3.8	1.4		0.1			45.7	
Delay (s)		16.1	20.7		16.4	11.6		8.0			59.7	
Level of Service		B	C		B	B		A			E	
Approach Delay (s)		16.4			14.9			8.0			59.7	
Approach LOS		B			B			A			E	
Intersection Summary												
HCM 2000 Control Delay		23.5										
HCM 2000 Volume to Capacity ratio		0.87										
Actuated Cycle Length (s)		50.0										
Intersection Capacity Utilization		81.3%										
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

3: Hunters Point Blvd & Hawes Street

9/9/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	22	0	2	0	0	0	0	1053	0	0	1072	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0						5.0			5.0	
Lane Util. Factor		1.00						0.95			0.95	
Frt		0.99						1.00			1.00	
Flt Protected		0.96						1.00			1.00	
Satd. Flow (prot)		1534						3079			3065	
Flt Permitted		0.82						1.00			1.00	
Satd. Flow (perm)		1324						3079			3065	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	26	0	2	0	0	0	0	1239	0	0	1261	39
RTOR Reduction (vph)	0	20	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	8	0	0	0	0	0	1239	0	0	1296	0
Turn Type	custom	NA						NA			NA	
Protected Phases					8			2			6	
Permitted Phases	4	4		8			2					
Actuated Green, G (s)		18.0						32.0			32.0	
Effective Green, g (s)		18.0						32.0			32.0	
Actuated g/C Ratio		0.30						0.53			0.53	
Clearance Time (s)		5.0						5.0			5.0	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		397						1642			1634	
v/s Ratio Prot								0.40			c0.42	
v/s Ratio Perm		c0.01										
v/c Ratio		0.02						0.75			0.79	
Uniform Delay, d1		14.8						10.9			11.3	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		0.1						3.3			2.7	
Delay (s)		14.9						14.2			14.1	
Level of Service		B						B			B	
Approach Delay (s)		14.9			0.0			14.2			14.1	
Approach LOS		B			A			B			B	
Intersection Summary												
HCM 2000 Control Delay		14.1						HCM 2000 Level of Service			B	
HCM 2000 Volume to Capacity ratio		0.52										
Actuated Cycle Length (s)		60.0						Sum of lost time (s)		10.0		
Intersection Capacity Utilization		45.8%						ICU Level of Service		A		
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

4: Innes Avenue & Hunters Point Blvd

9/9/2016



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	202	203	1049	1072	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0	5.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	
Frt		0.86	1.00	1.00	1.00	
Flt Protected		1.00	0.95	1.00	1.00	
Satd. Flow (prot)		1402	1540	3079	3078	
Flt Permitted		1.00	0.95	1.00	1.00	
Satd. Flow (perm)		1402	1540	3079	3078	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	210	211	1093	1117	2
RTOR Reduction (vph)	0	52	0	0	0	0
Lane Group Flow (vph)	0	158	211	1093	1119	0
Turn Type		Perm	Prot	NA	NA	
Protected Phases			4	2	6	
Permitted Phases		4				
Actuated Green, G (s)		12.5	12.5	32.1	32.1	
Effective Green, g (s)		12.5	12.5	32.1	32.1	
Actuated g/C Ratio		0.23	0.23	0.59	0.59	
Clearance Time (s)		5.0	5.0	5.0	5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		320	352	1810	1809	
v/s Ratio Prot			c0.14	0.35	c0.36	
v/s Ratio Perm		0.11				
v/c Ratio		0.49	0.60	0.60	0.62	
Uniform Delay, d1		18.3	18.8	7.2	7.3	
Progression Factor		1.00	1.00	1.00	1.00	
Incremental Delay, d2		1.2	2.7	1.5	0.6	
Delay (s)		19.5	21.6	8.7	7.9	
Level of Service		B	C	A	A	
Approach Delay (s)	19.5			10.8	7.9	
Approach LOS	B			B	A	
Intersection Summary						
HCM 2000 Control Delay			10.3		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.61			
Actuated Cycle Length (s)			54.6		Sum of lost time (s)	10.0
Intersection Capacity Utilization			55.2%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

5: Innes Avenue & New Griffith St

9/9/2016



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	197	1049	1035	9	10	188
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	1.00		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1711	3421	3417		1711	1531
Flt Permitted	0.20	1.00	1.00		0.95	1.00
Satd. Flow (perm)	363	3421	3417		1711	1531
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	214	1140	1125	10	11	204
RTOR Reduction (vph)	0	0	0	0	0	188
Lane Group Flow (vph)	214	1140	1135	0	11	16
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2					8
Actuated Green, G (s)	84.1	84.1	70.7		7.9	7.9
Effective Green, g (s)	84.1	84.1	70.7		7.9	7.9
Actuated g/C Ratio	0.84	0.84	0.71		0.08	0.08
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	431	2877	2415		135	120
v/s Ratio Prot	c0.05	0.33	0.33		0.01	
v/s Ratio Perm	c0.37					c0.01
v/c Ratio	0.50	0.40	0.47		0.08	0.13
Uniform Delay, d1	3.5	1.9	6.4		42.7	42.9
Progression Factor	1.00	1.00	0.58		1.00	1.00
Incremental Delay, d2	0.9	0.4	0.4		0.3	0.5
Delay (s)	4.4	2.3	4.1		42.9	43.4
Level of Service	A	A	A		D	D
Approach Delay (s)		2.6	4.1		43.4	
Approach LOS		A	A		D	
Intersection Summary						
HCM 2000 Control Delay			6.5		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.48			
Actuated Cycle Length (s)			100.0		Sum of lost time (s)	12.0
Intersection Capacity Utilization			53.1%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

6: Innes Avenue & Arellious Walker Drive

9/9/2016



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	481	583	521	12	20	528
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.5	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.99		1.00	1.00
Flpb, ped/bikes	0.97	1.00	1.00		1.00	1.00
Frt	1.00	1.00	1.00		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1494	2887	2821		1347	1203
Flt Permitted	0.33	1.00	1.00		0.95	1.00
Satd. Flow (perm)	527	2887	2821		1347	1203
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	534	648	579	13	22	587
RTOR Reduction (vph)	0	0	1	0	0	13
Lane Group Flow (vph)	534	648	591	0	22	574
Confl. Peds. (#/hr)	100			100		
Confl. Bikes (#/hr)				10		10
Bus Blockages (#/hr)	0	0	5	5	0	0
Parking (#/hr)		5	5		5	5
Turn Type	pm+pt	NA	NA		Prot	pm+ov
Protected Phases	5	2	6		4	5
Permitted Phases	2					8
Actuated Green, G (s)	87.9	87.9	46.9		3.6	41.1
Effective Green, g (s)	87.9	87.9	46.9		3.6	41.1
Actuated g/C Ratio	0.88	0.88	0.47		0.04	0.41
Clearance Time (s)	4.0	4.0	4.0		4.5	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	821	2537	1323		48	542
v/s Ratio Prot	0.24	0.22	0.21		0.02	c0.39
v/s Ratio Perm	c0.33					0.09
v/c Ratio	0.65	0.26	0.45		0.46	1.06
Uniform Delay, d1	4.2	0.9	17.8		47.2	29.4
Progression Factor	0.72	0.56	0.93		1.00	1.00
Incremental Delay, d2	1.7	0.2	1.0		6.8	55.3
Delay (s)	4.8	0.8	17.6		54.0	84.7
Level of Service	A	A	B		D	F
Approach Delay (s)		2.6	17.6		83.6	
Approach LOS		A	B		F	

Intersection Summary

HCM 2000 Control Delay	27.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	59.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

7: Innes Avenue & Earl Street

9/9/2016



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	421	182	186	13	12	347
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.97		1.00	0.97
Flpb, ped/bikes	0.86	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1319	2858	2779		1347	1166
Flt Permitted	0.58	1.00	1.00		0.95	1.00
Satd. Flow (perm)	804	2858	2779		1347	1166
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	458	198	202	14	13	377
RTOR Reduction (vph)	0	0	3	0	0	336
Lane Group Flow (vph)	458	198	213	0	13	41
Confl. Peds. (#/hr)	100			100		
Confl. Bikes (#/hr)				10		10
Bus Blockages (#/hr)	0	5	0	0	0	0
Parking (#/hr)		5	5		5	5
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		8	
Permitted Phases	2					8
Actuated Green, G (s)	81.2	81.2	62.4		10.8	10.8
Effective Green, g (s)	81.2	81.2	62.4		10.8	10.8
Actuated g/C Ratio	0.81	0.81	0.62		0.11	0.11
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	729	2320	1734		145	125
v/s Ratio Prot	c0.09	0.07	0.08		0.01	
v/s Ratio Perm	c0.42					c0.03
v/c Ratio	0.63	0.09	0.12		0.09	0.33
Uniform Delay, d1	2.9	1.9	7.7		40.2	41.2
Progression Factor	1.99	0.97	1.00		1.00	1.00
Incremental Delay, d2	1.7	0.1	0.1		0.3	1.5
Delay (s)	7.4	1.9	7.8		40.4	42.8
Level of Service	A	A	A		D	D
Approach Delay (s)		5.8	7.8		42.7	
Approach LOS		A	A		D	
Intersection Summary						
HCM 2000 Control Delay			17.5		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.62			
Actuated Cycle Length (s)			100.0		Sum of lost time (s)	12.0
Intersection Capacity Utilization			49.2%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

Baseline Plus Variant Conditions

HCM Signalized Intersection Capacity Analysis

1: Third Street & Evans Avenue

9/9/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	55	364	34	159	260	343	121	581	316	589	222	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.86	1.00	0.96		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.95		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1540	3007		1540	3079	1033	1540	2808		1540	2973	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1540	3007		1540	3079	1033	1540	2808		1540	2973	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	56	368	34	161	263	346	122	587	319	595	224	30
RTOR Reduction (vph)	0	7	0	0	0	270	0	67	0	0	9	0
Lane Group Flow (vph)	56	395	0	161	263	76	122	839	0	595	245	0
Confl. Peds. (#/hr)	100		100	100		100	100		100	100		100
Confl. Bikes (#/hr)			10			10			10			10
Parking (#/hr)						5						
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	9.4	20.3		10.0	20.9	20.9	12.1	37.8		11.9	37.6	
Effective Green, g (s)	9.4	20.3		10.0	20.9	20.9	12.1	37.8		11.9	37.6	
Actuated g/C Ratio	0.09	0.20		0.10	0.21	0.21	0.12	0.38		0.12	0.38	
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	144	610		154	643	215	186	1061		183	1117	
v/s Ratio Prot	0.04	c0.13		c0.10	0.09		0.08	c0.30		c0.39	0.08	
v/s Ratio Perm						0.07						
v/c Ratio	0.39	0.65		1.05	0.41	0.35	0.66	0.79		3.25	0.22	
Uniform Delay, d1	42.6	36.6		45.0	34.2	33.8	42.0	27.6		44.0	21.2	
Progression Factor	1.00	1.00		0.82	0.82	2.29	0.91	1.57		0.99	0.78	
Incremental Delay, d2	1.7	2.4		80.1	0.4	0.9	7.8	5.8		1026.1	0.4	
Delay (s)	44.3	38.9		117.2	28.5	78.4	46.1	49.0		1069.8	17.0	
Level of Service	D	D		F	C	E	D	D		F	B	
Approach Delay (s)		39.6			69.5			48.7			754.9	
Approach LOS		D			E			D			F	
Intersection Summary												
HCM 2000 Control Delay		245.6				HCM 2000 Level of Service		F				
HCM 2000 Volume to Capacity ratio		1.15										
Actuated Cycle Length (s)		100.0				Sum of lost time (s)		20.0				
Intersection Capacity Utilization		116.1%				ICU Level of Service		H				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

2: Jennings Street & Evans Avenue/Hunters Point Blvd

9/9/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	52	962	38	11	574	267	15	2	0	584	54	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0		4.0			4.0	
Lane Util. Factor		0.95	1.00		0.95	1.00		1.00			1.00	
Frpb, ped/bikes		1.00	0.97		1.00	0.98		1.00			1.00	
Flpb, ped/bikes		1.00	1.00		1.00	1.00		1.00			1.00	
Frt		1.00	0.85		1.00	0.85		1.00			0.99	
Flt Protected		1.00	1.00		1.00	1.00		0.96			0.96	
Satd. Flow (prot)		3040	1313		3076	1347		1551			1341	
Flt Permitted		0.90	1.00		0.93	1.00		0.71			0.74	
Satd. Flow (perm)		2731	1313		2866	1347		1151			1040	
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)	55	1013	40	12	604	281	16	2	0	615	57	46
RTOR Reduction (vph)	0	0	24	0	0	169	0	0	0	0	5	0
Lane Group Flow (vph)	0	1068	16	0	616	112	0	18	0	0	713	0
Confl. Peds. (#/hr)	2		5	5		2	2		7	7		2
Confl. Bikes (#/hr)			1									
Bus Blockages (#/hr)	0	5	5	0	0	0	0	0	0	0	0	0
Parking (#/hr)										5	5	5
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)		20.0	20.0		20.0	20.0		22.0			22.0	
Effective Green, g (s)		20.0	20.0		20.0	20.0		22.0			22.0	
Actuated g/C Ratio		0.40	0.40		0.40	0.40		0.44			0.44	
Clearance Time (s)		4.0	4.0		4.0	4.0		4.0			4.0	
Lane Grp Cap (vph)		1092	525		1146	538		506			457	
v/s Ratio Prot												
v/s Ratio Perm		c0.39	0.01		0.21	0.08		0.02			c0.69	
v/c Ratio		0.98	0.03		0.54	0.21		0.04			1.56	
Uniform Delay, d1		14.8	9.1		11.5	9.8		8.0			14.0	
Progression Factor		1.60	2.12		1.00	1.00		1.00			1.00	
Incremental Delay, d2		4.5	0.0		1.8	0.9		0.1			262.6	
Delay (s)		28.1	19.3		13.3	10.7		8.1			276.6	
Level of Service		C	B		B	B		A			F	
Approach Delay (s)		27.8			12.5			8.1			276.6	
Approach LOS		C			B			A			F	
Intersection Summary												
HCM 2000 Control Delay			87.8				HCM 2000 Level of Service				F	
HCM 2000 Volume to Capacity ratio			1.28									
Actuated Cycle Length (s)			50.0				Sum of lost time (s)			8.0		
Intersection Capacity Utilization			102.1%				ICU Level of Service			G		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

3: Hunters Point Blvd & Hawes Street

9/9/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	32	0	0	0	0	0	1	748	0	0	1592	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0						5.0			5.0	
Lane Util. Factor		1.00						0.95			0.95	
Frt		1.00						1.00			1.00	
Flt Protected		0.95						1.00			1.00	
Satd. Flow (prot)		1540						3079			3077	
Flt Permitted		0.76						0.95			1.00	
Satd. Flow (perm)		1227						2935			3077	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	35	0	0	0	0	0	1	813	0	0	1730	9
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	35	0	0	0	0	0	814	0	0	1739	0
Turn Type	custom	NA					Perm	NA			NA	
Protected Phases					8			2			6	
Permitted Phases	4	4		8			2					
Actuated Green, G (s)		18.0						32.0			32.0	
Effective Green, g (s)		18.0						32.0			32.0	
Actuated g/C Ratio		0.30						0.53			0.53	
Clearance Time (s)		5.0						5.0			5.0	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		368						1565			1641	
v/s Ratio Prot											c0.57	
v/s Ratio Perm		c0.03						0.28				
v/c Ratio		0.10						0.52			1.06	
Uniform Delay, d1		15.1						9.0			14.0	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		0.5						1.2			39.9	
Delay (s)		15.6						10.3			53.9	
Level of Service		B						B			D	
Approach Delay (s)		15.6			0.0			10.3			53.9	
Approach LOS		B			A			B			D	
Intersection Summary												
HCM 2000 Control Delay			39.6					HCM 2000 Level of Service			D	
HCM 2000 Volume to Capacity ratio			0.71									
Actuated Cycle Length (s)			60.0					Sum of lost time (s)		10.0		
Intersection Capacity Utilization			60.8%					ICU Level of Service		B		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

4: Innes Avenue & Hunters Point Blvd

9/9/2016



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	295	140	747	1591	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0	5.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	
Frt		0.86	1.00	1.00	1.00	
Flt Protected		1.00	0.95	1.00	1.00	
Satd. Flow (prot)		1402	1540	3079	3079	
Flt Permitted		1.00	0.95	1.00	1.00	
Satd. Flow (perm)		1402	1540	3079	3079	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	314	149	795	1693	1
RTOR Reduction (vph)	0	10	0	0	0	0
Lane Group Flow (vph)	0	304	149	795	1694	0
Turn Type		Perm	Prot	NA	NA	
Protected Phases			4	2	6	
Permitted Phases		4				
Actuated Green, G (s)		15.8	15.8	32.1	32.1	
Effective Green, g (s)		15.8	15.8	32.1	32.1	
Actuated g/C Ratio		0.27	0.27	0.55	0.55	
Clearance Time (s)		5.0	5.0	5.0	5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		382	420	1707	1707	
v/s Ratio Prot			0.10	0.26	c0.55	
v/s Ratio Perm		c0.22				
v/c Ratio		0.80	0.35	0.47	0.99	
Uniform Delay, d1		19.5	16.9	7.7	12.8	
Progression Factor		1.00	1.00	1.00	1.00	
Incremental Delay, d2		10.9	0.5	0.9	19.9	
Delay (s)		30.5	17.5	8.7	32.7	
Level of Service		C	B	A	C	
Approach Delay (s)	30.5			10.1	32.7	
Approach LOS	C			B	C	
Intersection Summary						
HCM 2000 Control Delay			25.2		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.93			
Actuated Cycle Length (s)			57.9		Sum of lost time (s)	10.0
Intersection Capacity Utilization			77.5%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

5: Innes Avenue & New Griffith St

9/9/2016



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	352	1522	718	17	10	141
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	1.00		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1711	3421	3410		1711	1531
Flt Permitted	0.32	1.00	1.00		0.95	1.00
Satd. Flow (perm)	567	3421	3410		1711	1531
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	383	1654	780	18	11	153
RTOR Reduction (vph)	0	0	1	0	0	66
Lane Group Flow (vph)	383	1654	797	0	11	87
Turn Type	pm+pt	NA	NA		Prot	pm+ov
Protected Phases	5	2	6		4	5
Permitted Phases	2					4
Actuated Green, G (s)	90.5	90.5	74.3		1.5	13.7
Effective Green, g (s)	90.5	90.5	74.3		1.5	13.7
Actuated g/C Ratio	0.90	0.90	0.74		0.02	0.14
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	652	3096	2533		25	270
v/s Ratio Prot	c0.07	0.48	0.23		0.01	c0.04
v/s Ratio Perm	c0.46					0.02
v/c Ratio	0.59	0.53	0.31		0.44	0.32
Uniform Delay, d1	1.4	0.9	4.3		48.8	39.0
Progression Factor	1.00	1.00	0.52		1.00	1.00
Incremental Delay, d2	1.4	0.7	0.3		11.9	0.7
Delay (s)	2.7	1.5	2.5		60.7	39.7
Level of Service	A	A	A		E	D
Approach Delay (s)		1.8	2.5		41.1	
Approach LOS		A	A		D	

Intersection Summary

HCM 2000 Control Delay	4.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

6: Innes Avenue & Arelious Walker Drive

9/9/2016



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	744	793	432	39	13	308
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.5	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.96		1.00	1.00
Flpb, ped/bikes	0.97	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1487	2887	2722		1347	1204
Flt Permitted	0.35	1.00	1.00		0.95	1.00
Satd. Flow (perm)	547	2887	2722		1347	1204
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	865	922	502	45	15	358
RTOR Reduction (vph)	0	0	5	0	0	11
Lane Group Flow (vph)	865	922	542	0	15	347
Confl. Peds. (#/hr)	100			100		
Confl. Bikes (#/hr)				10		10
Bus Blockages (#/hr)	0	0	5	5	0	0
Parking (#/hr)		5	5		5	5
Turn Type	pm+pt	NA	NA		Prot	pm+ov
Protected Phases	5	2	6		4	5
Permitted Phases	2					8
Actuated Green, G (s)	88.3	88.3	44.3		3.2	43.7
Effective Green, g (s)	88.3	88.3	44.3		3.2	43.7
Actuated g/C Ratio	0.88	0.88	0.44		0.03	0.44
Clearance Time (s)	4.0	4.0	4.0		4.5	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	859	2549	1205		43	574
v/s Ratio Prot	c0.40	0.32	0.20		0.01	c0.24
v/s Ratio Perm	c0.49					0.05
v/c Ratio	1.01	0.36	0.45		0.35	0.60
Uniform Delay, d1	14.5	1.0	19.4		47.4	21.5
Progression Factor	0.94	0.65	1.18		1.00	1.00
Incremental Delay, d2	30.9	0.4	1.2		4.9	1.8
Delay (s)	44.5	1.0	24.0		52.2	23.3
Level of Service	D	A	C		D	C
Approach Delay (s)		22.1	24.0		24.5	
Approach LOS		C	C		C	
Intersection Summary						
HCM 2000 Control Delay			22.8		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			1.04			
Actuated Cycle Length (s)			100.0		Sum of lost time (s)	12.5
Intersection Capacity Utilization			74.7%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

7: Innes Avenue & Earl Street

9/9/2016



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	685	121	205	21	12	266
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.96		1.00	1.00
Flpb, ped/bikes	0.87	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1336	2858	2731		1347	1204
Flt Permitted	0.56	1.00	1.00		0.95	1.00
Satd. Flow (perm)	787	2858	2731		1347	1204
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	745	132	223	23	13	289
RTOR Reduction (vph)	0	0	4	0	0	74
Lane Group Flow (vph)	745	132	242	0	13	215
Confl. Peds. (#/hr)	100			100		
Confl. Bikes (#/hr)				10		10
Bus Blockages (#/hr)	0	5	0	0	0	0
Parking (#/hr)		5	5		5	5
Turn Type	pm+pt	NA	NA		Prot	pm+ov
Protected Phases	5	2	6		8	5
Permitted Phases	2					8
Actuated Green, G (s)	90.3	90.3	57.5		1.7	30.5
Effective Green, g (s)	90.3	90.3	57.5		1.7	30.5
Actuated g/C Ratio	0.90	0.90	0.58		0.02	0.30
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	868	2580	1570		22	415
v/s Ratio Prot	c0.25	0.05	0.09		0.01	c0.15
v/s Ratio Perm	c0.53					0.03
v/c Ratio	0.86	0.05	0.15		0.59	0.52
Uniform Delay, d1	1.8	0.5	9.9		48.8	28.7
Progression Factor	2.22	0.99	1.00		1.00	1.00
Incremental Delay, d2	8.1	0.0	0.2		36.0	1.1
Delay (s)	12.0	0.5	10.1		84.8	29.8
Level of Service	B	A	B		F	C
Approach Delay (s)		10.3	10.1		32.2	
Approach LOS		B	B		C	
Intersection Summary						
HCM 2000 Control Delay			14.9		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.89			
Actuated Cycle Length (s)			100.0		Sum of lost time (s)	12.0
Intersection Capacity Utilization			65.5%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

1: Third Street & Evans Avenue

9/9/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	36	303	32	354	410	598	110	391	219	425	441	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.86	1.00	0.96		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	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.95		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1540	2998		1540	3079	1036	1540	2801		1540	3025	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1540	2998		1540	3079	1036	1540	2801		1540	3025	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	40	333	35	389	451	657	121	430	241	467	485	31
RTOR Reduction (vph)	0	8	0	0	0	276	0	82	0	0	5	0
Lane Group Flow (vph)	40	360	0	389	451	381	121	589	0	467	511	0
Confl. Peds. (#/hr)	100		100	100		100	100		100	100		100
Confl. Bikes (#/hr)			10			10			10			10
Parking (#/hr)						5						
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	4.8	24.0		10.0	29.2	29.2	11.1	29.1		16.9	34.9	
Effective Green, g (s)	4.8	24.0		10.0	29.2	29.2	11.1	29.1		16.9	34.9	
Actuated g/C Ratio	0.05	0.24		0.10	0.29	0.29	0.11	0.29		0.17	0.35	
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	73	719		154	899	302	170	815		260	1055	
v/s Ratio Prot	0.03	c0.12		c0.25	0.15		0.08	c0.21		c0.30	0.17	
v/s Ratio Perm						c0.37						
v/c Ratio	0.55	0.50		2.53	0.50	1.26	0.71	0.72		1.80	0.48	
Uniform Delay, d1	46.5	32.8		45.0	29.4	35.4	42.9	31.8		41.5	25.5	
Progression Factor	1.00	1.00		0.91	0.89	1.61	0.94	1.60		1.00	0.87	
Incremental Delay, d2	8.2	0.5		697.7	0.3	132.3	12.4	5.2		372.1	1.5	
Delay (s)	54.7	33.4		738.6	26.4	189.3	52.8	55.9		413.6	23.6	
Level of Service	D	C		F	C	F	D	E		F	C	
Approach Delay (s)		35.5			283.0			55.5			208.9	
Approach LOS		D			F			E			F	
Intersection Summary												
HCM 2000 Control Delay		186.8				HCM 2000 Level of Service		F				
HCM 2000 Volume to Capacity ratio		1.27										
Actuated Cycle Length (s)		100.0				Sum of lost time (s)		20.0				
Intersection Capacity Utilization		114.2%				ICU Level of Service		H				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

2: Jennings Street & Evans Avenue/Hunters Point Blvd

9/9/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	24	640	54	12	1161	646	10	4	2	353	41	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0		4.0			4.0	
Lane Util. Factor		0.95	1.00		0.95	1.00		1.00			1.00	
Frpb, ped/bikes		1.00	0.97		1.00	0.98		1.00			1.00	
Flpb, ped/bikes		1.00	1.00		1.00	1.00		1.00			1.00	
Frt		1.00	0.85		1.00	0.85		0.98			0.99	
Flt Protected		1.00	1.00		1.00	1.00		0.97			0.96	
Satd. Flow (prot)		3043	1314		3077	1347		1541			1346	
Flt Permitted		0.87	1.00		0.95	1.00		0.82			0.74	
Satd. Flow (perm)		2649	1314		2915	1347		1298			1044	
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)	25	674	57	13	1222	680	11	4	2	372	43	17
RTOR Reduction (vph)	0	0	32	0	0	377	0	1	0	0	3	0
Lane Group Flow (vph)	0	699	25	0	1235	303	0	16	0	0	429	0
Confl. Peds. (#/hr)	2		5	5		2	2		7	7		2
Confl. Bikes (#/hr)			1									
Bus Blockages (#/hr)	0	5	5	0	0	0	0	0	0	0	0	0
Parking (#/hr)										5	5	5
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)		22.0	22.0		22.0	22.0		20.0			20.0	
Effective Green, g (s)		22.0	22.0		22.0	22.0		20.0			20.0	
Actuated g/C Ratio		0.44	0.44		0.44	0.44		0.40			0.40	
Clearance Time (s)		4.0	4.0		4.0	4.0		4.0			4.0	
Lane Grp Cap (vph)		1165	578		1282	592		519			417	
v/s Ratio Prot												
v/s Ratio Perm		0.26	0.02		0.42	0.23		0.01			0.41	
v/c Ratio		0.60	0.04		0.96	0.51		0.03			1.03	
Uniform Delay, d1		10.7	8.0		13.6	10.1		9.1			15.0	
Progression Factor		1.21	2.27		1.00	1.00		1.00			1.00	
Incremental Delay, d2		0.2	0.0		17.8	3.1		0.1			51.6	
Delay (s)		13.1	18.2		31.4	13.3		9.2			66.6	
Level of Service		B	B		C	B		A			E	
Approach Delay (s)		13.5			24.9			9.2			66.6	
Approach LOS		B			C			A			E	
Intersection Summary												
HCM 2000 Control Delay			27.9									
HCM 2000 Volume to Capacity ratio			0.99									
Actuated Cycle Length (s)			50.0									
Intersection Capacity Utilization			91.8%									
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

3: Hunters Point Blvd & Hawes Street

9/9/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	22	0	2	0	0	0	0	1706	0	0	980	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0						5.0			5.0	
Lane Util. Factor		1.00						0.95			0.95	
Frt		0.99						1.00			1.00	
Flt Protected		0.96						1.00			1.00	
Satd. Flow (prot)		1534						3079			3064	
Flt Permitted		0.82						1.00			1.00	
Satd. Flow (perm)		1324						3079			3064	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	26	0	2	0	0	0	0	2007	0	0	1153	39
RTOR Reduction (vph)	0	20	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	8	0	0	0	0	0	2007	0	0	1188	0
Turn Type	custom	NA						NA			NA	
Protected Phases					8			2			6	
Permitted Phases	4	4		8			2					
Actuated Green, G (s)		18.0						32.0			32.0	
Effective Green, g (s)		18.0						32.0			32.0	
Actuated g/C Ratio		0.30						0.53			0.53	
Clearance Time (s)		5.0						5.0			5.0	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		397						1642			1634	
v/s Ratio Prot								c0.65			0.39	
v/s Ratio Perm		c0.01										
v/c Ratio		0.02						1.22			0.73	
Uniform Delay, d1		14.8						14.0			10.7	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		0.1						105.7			1.6	
Delay (s)		14.9						119.7			12.3	
Level of Service		B						F			B	
Approach Delay (s)		14.9			0.0			119.7			12.3	
Approach LOS		B			A			F			B	
Intersection Summary												
HCM 2000 Control Delay		79.1						HCM 2000 Level of Service		E		
HCM 2000 Volume to Capacity ratio		0.79										
Actuated Cycle Length (s)		60.0						Sum of lost time (s)		10.0		
Intersection Capacity Utilization		64.1%						ICU Level of Service		C		
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

4: Innes Avenue & Hunters Point Blvd

9/9/2016



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗	↗	↕↗	↕↗	
Volume (vph)	0	185	319	1702	980	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0	5.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	
Frt		0.86	1.00	1.00	1.00	
Flt Protected		1.00	0.95	1.00	1.00	
Satd. Flow (prot)		1402	1540	3079	3078	
Flt Permitted		1.00	0.95	1.00	1.00	
Satd. Flow (perm)		1402	1540	3079	3078	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	193	332	1773	1021	2
RTOR Reduction (vph)	0	62	0	0	0	0
Lane Group Flow (vph)	0	131	332	1773	1023	0
Turn Type		Perm	Prot	NA	NA	
Protected Phases			4	2	6	
Permitted Phases		4				
Actuated Green, G (s)		15.9	15.9	32.1	32.1	
Effective Green, g (s)		15.9	15.9	32.1	32.1	
Actuated g/C Ratio		0.27	0.27	0.55	0.55	
Clearance Time (s)		5.0	5.0	5.0	5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		384	422	1704	1703	
v/s Ratio Prot			c0.22	c0.58	0.33	
v/s Ratio Perm		0.09				
v/c Ratio		0.34	0.79	1.04	0.60	
Uniform Delay, d1		16.9	19.5	12.9	8.7	
Progression Factor		1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.5	9.3	33.1	0.6	
Delay (s)		17.4	28.8	46.1	9.3	
Level of Service		B	C	D	A	
Approach Delay (s)	17.4			43.4	9.3	
Approach LOS	B			D	A	
Intersection Summary						
HCM 2000 Control Delay			31.4		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.96			
Actuated Cycle Length (s)			58.0		Sum of lost time (s)	10.0
Intersection Capacity Utilization			58.1%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

5: Innes Avenue & New Griffith St

9/9/2016



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	158	979	1670	8	13	322
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	1.00		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1711	3421	3419		1711	1531
Flt Permitted	0.08	1.00	1.00		0.95	1.00
Satd. Flow (perm)	145	3421	3419		1711	1531
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	172	1064	1815	9	14	350
RTOR Reduction (vph)	0	0	0	0	0	12
Lane Group Flow (vph)	172	1064	1824	0	14	338
Turn Type	pm+pt	NA	NA		Prot	pm+ov
Protected Phases	5	2	6		4	5
Permitted Phases	2					4
Actuated Green, G (s)	90.4	90.4	75.4		1.6	12.6
Effective Green, g (s)	90.4	90.4	75.4		1.6	12.6
Actuated g/C Ratio	0.90	0.90	0.75		0.02	0.13
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	303	3092	2577		27	254
v/s Ratio Prot	0.06	0.31	c0.53		0.01	c0.15
v/s Ratio Perm	0.45					0.07
v/c Ratio	0.57	0.34	0.71		0.52	1.33
Uniform Delay, d1	16.3	0.7	6.5		48.8	43.7
Progression Factor	1.00	1.00	0.64		1.00	1.00
Incremental Delay, d2	2.4	0.3	0.2		15.8	172.9
Delay (s)	18.8	1.0	4.3		64.6	216.6
Level of Service	B	A	A		E	F
Approach Delay (s)		3.4	4.3		210.8	
Approach LOS		A	A		F	

Intersection Summary

HCM 2000 Control Delay	25.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	73.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

6: Innes Avenue & Arellious Walker Drive

9/9/2016



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	559	438	828	13	26	855
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.5	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.99		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	1.00		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1540	2887	2833		1347	1202
Flt Permitted	0.19	1.00	1.00		0.95	1.00
Satd. Flow (perm)	303	2887	2833		1347	1202
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	621	487	920	14	29	950
RTOR Reduction (vph)	0	0	1	0	0	3
Lane Group Flow (vph)	621	487	933	0	29	947
Confl. Peds. (#/hr)	100			100		
Confl. Bikes (#/hr)				10		10
Bus Blockages (#/hr)	0	0	5	5	0	0
Parking (#/hr)		5	5		5	5
Turn Type	pm+pt	NA	NA		Prot	pm+ov
Protected Phases	5	2	6		4	5
Permitted Phases	2					8
Actuated Green, G (s)	86.1	86.1	47.1		5.4	40.9
Effective Green, g (s)	86.1	86.1	47.1		5.4	40.9
Actuated g/C Ratio	0.86	0.86	0.47		0.05	0.41
Clearance Time (s)	4.0	4.0	4.0		4.5	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	693	2485	1334		72	539
v/s Ratio Prot	0.31	0.17	0.33		0.02	c0.61
v/s Ratio Perm	c0.46					0.17
v/c Ratio	0.90	0.20	0.70		0.40	1.76
Uniform Delay, d1	19.2	1.2	20.9		45.7	29.6
Progression Factor	0.96	0.96	1.40		1.00	1.00
Incremental Delay, d2	13.8	0.2	1.0		3.7	348.3
Delay (s)	32.2	1.3	30.1		49.4	377.8
Level of Service	C	A	C		D	F
Approach Delay (s)		18.6	30.1		368.1	
Approach LOS		B	C		F	
Intersection Summary						
HCM 2000 Control Delay		135.4		HCM 2000 Level of Service		F
HCM 2000 Volume to Capacity ratio		1.41				
Actuated Cycle Length (s)		100.0		Sum of lost time (s)	12.5	
Intersection Capacity Utilization		91.5%		ICU Level of Service		F
Analysis Period (min)		15				
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

7: Innes Avenue & Earl Street

9/9/2016



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	273	191	186	10	18	655
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98		1.00	1.00
Flpb, ped/bikes	0.86	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1323	2858	2800		1347	1204
Flt Permitted	0.57	1.00	1.00		0.95	1.00
Satd. Flow (perm)	790	2858	2800		1347	1204
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	297	208	202	11	20	712
RTOR Reduction (vph)	0	0	3	0	0	67
Lane Group Flow (vph)	297	208	210	0	20	645
Confl. Peds. (#/hr)	100			100		
Confl. Bikes (#/hr)				10		10
Bus Blockages (#/hr)	0	5	0	0	0	0
Parking (#/hr)		5	5		5	5
Turn Type	pm+pt	NA	NA		Prot	pm+ov
Protected Phases	5	2	6		8	5
Permitted Phases	2					8
Actuated Green, G (s)	88.5	88.5	44.5		3.5	43.5
Effective Green, g (s)	88.5	88.5	44.5		3.5	43.5
Actuated g/C Ratio	0.88	0.88	0.44		0.04	0.44
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	912	2529	1246		47	571
v/s Ratio Prot	0.13	0.07	0.08		0.01	c0.45
v/s Ratio Perm	c0.16					0.08
v/c Ratio	0.33	0.08	0.17		0.43	1.13
Uniform Delay, d1	1.0	0.7	16.7		47.3	28.2
Progression Factor	1.61	0.93	1.00		1.00	1.00
Incremental Delay, d2	0.2	0.1	0.3		6.1	78.5
Delay (s)	1.8	0.7	16.9		53.4	106.8
Level of Service	A	A	B		D	F
Approach Delay (s)		1.3	16.9		105.3	
Approach LOS		A	B		F	

Intersection Summary

HCM 2000 Control Delay	56.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

**Baseline Plus Project Conditions (Transit Improvements
Scenario)**

HCM Signalized Intersection Capacity Analysis

1: Third Street & Evans Avenue

9/9/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	55	290	34	166	274	349	121	581	177	382	222	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.86	1.00	0.98		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.96		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1540	2990		1540	3079	1033	1540	2897		1540	2973	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1540	2990		1540	3079	1033	1540	2897		1540	2973	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	56	293	34	168	277	353	122	587	179	386	224	30
RTOR Reduction (vph)	0	10	0	0	0	270	0	27	0	0	9	0
Lane Group Flow (vph)	56	317	0	168	277	83	122	739	0	386	245	0
Confl. Peds. (#/hr)	100		100	100		100	100		100	100		100
Confl. Bikes (#/hr)			10			10			10			10
Parking (#/hr)						5						
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	7.7	18.4		10.0	20.7	20.7	12.1	36.5		15.1	39.5	
Effective Green, g (s)	7.7	18.4		10.0	20.7	20.7	12.1	36.5		15.1	39.5	
Actuated g/C Ratio	0.08	0.18		0.10	0.21	0.21	0.12	0.36		0.15	0.40	
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	118	550		154	637	213	186	1057		232	1174	
v/s Ratio Prot	0.04	c0.11		c0.11	0.09		0.08	c0.25		c0.25	0.08	
v/s Ratio Perm						0.08						
v/c Ratio	0.47	0.58		1.09	0.43	0.39	0.66	0.70		1.66	0.21	
Uniform Delay, d1	44.2	37.2		45.0	34.6	34.2	42.0	27.1		42.5	19.9	
Progression Factor	1.00	1.00		0.83	0.82	2.18	0.87	1.58		0.99	0.76	
Incremental Delay, d2	3.0	1.5		94.5	0.4	1.0	7.6	3.6		315.7	0.4	
Delay (s)	47.2	38.7		131.7	28.6	75.7	44.2	46.4		357.8	15.6	
Level of Service	D	D		F	C	E	D	D		F	B	
Approach Delay (s)		40.0			71.1			46.1			222.0	
Approach LOS		D			E			D			F	
Intersection Summary												
HCM 2000 Control Delay			94.2									HCM 2000 Level of Service F
HCM 2000 Volume to Capacity ratio			0.90									
Actuated Cycle Length (s)			100.0									Sum of lost time (s) 20.0
Intersection Capacity Utilization			100.0%									ICU Level of Service F
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

2: Jennings Street & Evans Avenue/Hunters Point Blvd

9/9/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	52	541	38	11	601	275	15	2	0	325	23	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0		4.0			4.0	
Lane Util. Factor		0.95	1.00		0.95	1.00		1.00			1.00	
Frpb, ped/bikes		1.00	0.97		1.00	0.98		1.00			1.00	
Flpb, ped/bikes		1.00	1.00		1.00	1.00		1.00			1.00	
Frt		1.00	0.85		1.00	0.85		1.00			0.98	
Flt Protected		1.00	1.00		1.00	1.00		0.96			0.96	
Satd. Flow (prot)		3035	1313		3076	1347		1551			1333	
Flt Permitted		0.86	1.00		0.94	1.00		0.77			0.75	
Satd. Flow (perm)		2624	1313		2902	1347		1246			1041	
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)	55	569	40	12	633	289	16	2	0	342	24	46
RTOR Reduction (vph)	0	0	24	0	0	173	0	0	0	0	9	0
Lane Group Flow (vph)	0	624	16	0	645	116	0	18	0	0	403	0
Confl. Peds. (#/hr)	2		5	5		2	2		7	7		2
Confl. Bikes (#/hr)			1									
Bus Blockages (#/hr)	0	5	5	0	0	0	0	0	0	0	0	0
Parking (#/hr)										5	5	5
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)		20.0	20.0		20.0	20.0		22.0			22.0	
Effective Green, g (s)		20.0	20.0		20.0	20.0		22.0			22.0	
Actuated g/C Ratio		0.40	0.40		0.40	0.40		0.44			0.44	
Clearance Time (s)		4.0	4.0		4.0	4.0		4.0			4.0	
Lane Grp Cap (vph)		1049	525		1160	538		548			458	
v/s Ratio Prot												
v/s Ratio Perm		c0.24	0.01		0.22	0.09		0.01			c0.39	
v/c Ratio		0.59	0.03		0.56	0.21		0.03			0.88	
Uniform Delay, d1		11.8	9.1		11.6	9.8		8.0			12.8	
Progression Factor		1.22	1.98		1.00	1.00		1.00			1.00	
Incremental Delay, d2		0.2	0.0		1.9	0.9		0.1			20.8	
Delay (s)		14.7	18.0		13.5	10.8		8.1			33.6	
Level of Service		B	B		B	B		A			C	
Approach Delay (s)		14.9			12.7			8.1			33.6	
Approach LOS		B			B			A			C	
Intersection Summary												
HCM 2000 Control Delay			17.6				HCM 2000 Level of Service				B	
HCM 2000 Volume to Capacity ratio			0.74									
Actuated Cycle Length (s)			50.0				Sum of lost time (s)			8.0		
Intersection Capacity Utilization			71.8%				ICU Level of Service			C		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

3: Hunters Point Blvd & Hawes Street

9/9/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	32	0	0	0	0	0	1	782	0	0	873	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0						5.0			5.0	
Lane Util. Factor		1.00						0.95			0.95	
Frt		1.00						1.00			1.00	
Flt Protected		0.95						1.00			1.00	
Satd. Flow (prot)		1540						3079			3075	
Flt Permitted		0.76						0.95			1.00	
Satd. Flow (perm)		1227						2939			3075	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	35	0	0	0	0	0	1	850	0	0	949	9
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	35	0	0	0	0	0	851	0	0	957	0
Turn Type	custom	NA					Perm	NA			NA	
Protected Phases					8			2			6	
Permitted Phases	4	4		8			2					
Actuated Green, G (s)		18.0						32.0			32.0	
Effective Green, g (s)		18.0						32.0			32.0	
Actuated g/C Ratio		0.30						0.53			0.53	
Clearance Time (s)		5.0						5.0			5.0	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		368						1567			1640	
v/s Ratio Prot											c0.31	
v/s Ratio Perm		c0.03						0.29				
v/c Ratio		0.10						0.54			0.58	
Uniform Delay, d1		15.1						9.2			9.5	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		0.5						1.4			0.5	
Delay (s)		15.6						10.6			10.0	
Level of Service		B						B			B	
Approach Delay (s)		15.6			0.0			10.6			10.0	
Approach LOS		B			A			B			B	
Intersection Summary												
HCM 2000 Control Delay		10.4						HCM 2000 Level of Service			B	
HCM 2000 Volume to Capacity ratio		0.41										
Actuated Cycle Length (s)		60.0						Sum of lost time (s)		10.0		
Intersection Capacity Utilization		38.8%						ICU Level of Service		A		
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

4: Innes Avenue & Hunters Point Blvd

9/9/2016



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	168	145	781	872	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0	5.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	
Frt		0.86	1.00	1.00	1.00	
Flt Protected		1.00	0.95	1.00	1.00	
Satd. Flow (prot)		1402	1540	3079	3079	
Flt Permitted		1.00	0.95	1.00	1.00	
Satd. Flow (perm)		1402	1540	3079	3079	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	179	154	831	928	1
RTOR Reduction (vph)	0	73	0	0	0	0
Lane Group Flow (vph)	0	106	154	831	929	0
Turn Type		Perm	Prot	NA	NA	
Protected Phases			4	2	6	
Permitted Phases		4				
Actuated Green, G (s)		10.7	10.7	30.2	30.2	
Effective Green, g (s)		10.7	10.7	30.2	30.2	
Actuated g/C Ratio		0.21	0.21	0.59	0.59	
Clearance Time (s)		5.0	5.0	5.0	5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		294	323	1826	1826	
v/s Ratio Prot			c0.10	0.27	c0.30	
v/s Ratio Perm		0.08				
v/c Ratio		0.36	0.48	0.46	0.51	
Uniform Delay, d1		17.2	17.6	5.8	6.0	
Progression Factor		1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.8	1.1	0.8	0.2	
Delay (s)		17.9	18.8	6.6	6.3	
Level of Service		B	B	A	A	
Approach Delay (s)	17.9			8.5	6.3	
Approach LOS	B			A	A	
Intersection Summary						
HCM 2000 Control Delay			8.3		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.50			
Actuated Cycle Length (s)			50.9		Sum of lost time (s)	10.0
Intersection Capacity Utilization			46.7%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

5: Innes Avenue & New Griffith St

9/9/2016



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	192	836	744	14	10	154
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	1.00		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1711	3421	3412		1711	1531
Flt Permitted	0.30	1.00	1.00		0.95	1.00
Satd. Flow (perm)	545	3421	3412		1711	1531
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	209	909	809	15	11	167
RTOR Reduction (vph)	0	0	1	0	0	154
Lane Group Flow (vph)	209	909	823	0	11	13
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2					8
Actuated Green, G (s)	84.4	84.4	72.6		7.6	7.6
Effective Green, g (s)	84.4	84.4	72.6		7.6	7.6
Actuated g/C Ratio	0.84	0.84	0.73		0.08	0.08
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	550	2887	2477		130	116
v/s Ratio Prot	c0.03	0.27	0.24		0.01	
v/s Ratio Perm	c0.29					c0.01
v/c Ratio	0.38	0.31	0.33		0.08	0.11
Uniform Delay, d1	2.0	1.7	4.9		43.0	43.0
Progression Factor	1.00	1.00	0.68		1.00	1.00
Incremental Delay, d2	0.4	0.3	0.3		0.3	0.4
Delay (s)	2.4	1.9	3.7		43.2	43.5
Level of Service	A	A	A		D	D
Approach Delay (s)		2.0	3.7		43.5	
Approach LOS		A	A		D	

Intersection Summary

HCM 2000 Control Delay	6.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	45.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

6: Innes Avenue & Arelious Walker Drive

9/9/2016



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	438	413	492	30	13	271
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.5	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98		1.00	1.00
Flpb, ped/bikes	0.96	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1484	2887	2763		1347	1202
Flt Permitted	0.36	1.00	1.00		0.95	1.00
Satd. Flow (perm)	561	2887	2763		1347	1202
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	509	480	572	35	15	315
RTOR Reduction (vph)	0	0	3	0	0	24
Lane Group Flow (vph)	509	480	604	0	15	291
Confl. Peds. (#/hr)	100			100		
Confl. Bikes (#/hr)				10		10
Bus Blockages (#/hr)	0	0	5	5	0	0
Parking (#/hr)		5	5		5	5
Turn Type	pm+pt	NA	NA		Prot	pm+ov
Protected Phases	5	2	6		4	5
Permitted Phases	2					8
Actuated Green, G (s)	88.3	88.3	57.5		3.2	30.5
Effective Green, g (s)	88.3	88.3	57.5		3.2	30.5
Actuated g/C Ratio	0.88	0.88	0.58		0.03	0.30
Clearance Time (s)	4.0	4.0	4.0		4.5	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	742	2549	1588		43	414
v/s Ratio Prot	0.18	0.17	0.22		0.01	c0.19
v/s Ratio Perm	c0.42					0.05
v/c Ratio	0.69	0.19	0.38		0.35	0.70
Uniform Delay, d1	2.9	0.8	11.6		47.4	30.8
Progression Factor	0.59	0.25	0.92		1.00	1.00
Incremental Delay, d2	2.6	0.2	0.7		4.9	5.4
Delay (s)	4.3	0.4	11.3		52.2	36.1
Level of Service	A	A	B		D	D
Approach Delay (s)		2.4	11.3		36.8	
Approach LOS		A	B		D	
Intersection Summary						
HCM 2000 Control Delay			11.1		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.75			
Actuated Cycle Length (s)			100.0		Sum of lost time (s)	12.5
Intersection Capacity Utilization			57.2%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

7: Innes Avenue & Earl Street

9/9/2016



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	304	122	195	15	13	327
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.97		1.00	0.97
Flpb, ped/bikes	0.86	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1324	2858	2770		1347	1166
Flt Permitted	0.57	1.00	1.00		0.95	1.00
Satd. Flow (perm)	801	2858	2770		1347	1166
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	330	133	212	16	14	355
RTOR Reduction (vph)	0	0	3	0	0	317
Lane Group Flow (vph)	330	133	225	0	14	38
Confl. Peds. (#/hr)	100			100		
Confl. Bikes (#/hr)				10		10
Bus Blockages (#/hr)	0	5	0	0	0	0
Parking (#/hr)		5	5		5	5
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		8	
Permitted Phases	2					8
Actuated Green, G (s)	81.4	81.4	66.1		10.6	10.6
Effective Green, g (s)	81.4	81.4	66.1		10.6	10.6
Actuated g/C Ratio	0.81	0.81	0.66		0.11	0.11
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	711	2326	1830		142	123
v/s Ratio Prot	c0.05	0.05	0.08		0.01	
v/s Ratio Perm	c0.33					c0.03
v/c Ratio	0.46	0.06	0.12		0.10	0.31
Uniform Delay, d1	2.4	1.8	6.3		40.4	41.3
Progression Factor	1.23	0.96	1.00		1.00	1.00
Incremental Delay, d2	0.5	0.0	0.1		0.3	1.4
Delay (s)	3.5	1.8	6.4		40.7	42.7
Level of Service	A	A	A		D	D
Approach Delay (s)		3.0	6.4		42.6	
Approach LOS		A	A		D	
Intersection Summary						
HCM 2000 Control Delay			17.5		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.46			
Actuated Cycle Length (s)			100.0		Sum of lost time (s)	12.0
Intersection Capacity Utilization			42.0%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

1: Third Street & Evans Avenue

9/9/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	36	307	32	206	330	382	110	391	217	419	441	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.86	1.00	0.96		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	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.95		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1540	2999		1540	3079	1035	1540	2803		1540	3025	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1540	2999		1540	3079	1035	1540	2803		1540	3025	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	40	337	35	226	363	420	121	430	238	460	485	31
RTOR Reduction (vph)	0	9	0	0	0	288	0	77	0	0	4	0
Lane Group Flow (vph)	40	363	0	226	363	132	121	591	0	460	512	0
Confl. Peds. (#/hr)	100		100	100		100	100		100	100		100
Confl. Bikes (#/hr)			10			10			10			10
Parking (#/hr)						5						
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	5.0	21.0		10.0	26.0	26.0	12.1	31.1		17.9	36.9	
Effective Green, g (s)	5.0	21.0		10.0	26.0	26.0	12.1	31.1		17.9	36.9	
Actuated g/C Ratio	0.05	0.21		0.10	0.26	0.26	0.12	0.31		0.18	0.37	
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	77	629		154	800	269	186	871		275	1116	
v/s Ratio Prot	0.03	c0.12		c0.15	0.12		0.08	c0.21		c0.30	0.17	
v/s Ratio Perm						0.13						
v/c Ratio	0.52	0.58		1.47	0.45	0.49	0.65	0.68		1.67	0.46	
Uniform Delay, d1	46.3	35.5		45.0	31.0	31.4	41.9	30.1		41.0	24.0	
Progression Factor	1.00	1.00		0.86	0.85	2.04	0.90	1.59		1.00	0.85	
Incremental Delay, d2	5.8	1.3		238.6	0.4	1.2	7.4	4.0		317.1	1.3	
Delay (s)	52.1	36.8		277.1	26.7	65.2	45.0	51.8		357.9	21.6	
Level of Service	D	D		F	C	E	D	D		F	C	
Approach Delay (s)		38.3			98.8			50.7			180.1	
Approach LOS		D			F			D			F	
Intersection Summary												
HCM 2000 Control Delay		104.0				HCM 2000 Level of Service		F				
HCM 2000 Volume to Capacity ratio		0.97										
Actuated Cycle Length (s)		100.0				Sum of lost time (s)		20.0				
Intersection Capacity Utilization		104.7%				ICU Level of Service		G				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

2: Jennings Street & Evans Avenue/Hunters Point Blvd

9/9/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	24	637	54	12	717	342	10	4	2	353	31	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0		4.0			4.0	
Lane Util. Factor		0.95	1.00		0.95	1.00		1.00			1.00	
Frpb, ped/bikes		1.00	0.97		1.00	0.98		1.00			1.00	
Flpb, ped/bikes		1.00	1.00		1.00	1.00		1.00			1.00	
Frt		1.00	0.85		1.00	0.85		0.98			0.99	
Flt Protected		1.00	1.00		1.00	1.00		0.97			0.96	
Satd. Flow (prot)		3043	1313		3076	1347		1541			1344	
Flt Permitted		0.92	1.00		0.94	1.00		0.83			0.74	
Satd. Flow (perm)		2795	1313		2900	1347		1313			1037	
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)	25	671	57	13	755	360	11	4	2	372	33	17
RTOR Reduction (vph)	0	0	34	0	0	216	0	1	0	0	3	0
Lane Group Flow (vph)	0	696	23	0	768	144	0	16	0	0	419	0
Confl. Peds. (#/hr)	2		5	5		2	2		7	7		2
Confl. Bikes (#/hr)			1									
Bus Blockages (#/hr)	0	5	5	0	0	0	0	0	0	0	0	0
Parking (#/hr)										5	5	5
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2		6			
Actuated Green, G (s)		20.0	20.0		20.0	20.0		22.0			22.0	
Effective Green, g (s)		20.0	20.0		20.0	20.0		22.0			22.0	
Actuated g/C Ratio		0.40	0.40		0.40	0.40		0.44			0.44	
Clearance Time (s)		4.0	4.0		4.0	4.0		4.0			4.0	
Lane Grp Cap (vph)		1118	525		1160	538		577			456	
v/s Ratio Prot												
v/s Ratio Perm		0.25	0.02		0.26	0.11		0.01			0.40	
v/c Ratio		0.62	0.04		0.66	0.27		0.03			0.92	
Uniform Delay, d1		12.0	9.2		12.2	10.1		7.9			13.2	
Progression Factor		1.25	2.25		1.00	1.00		1.00			1.00	
Incremental Delay, d2		0.2	0.0		3.0	1.2		0.1			26.1	
Delay (s)		15.2	20.6		15.2	11.3		8.0			39.3	
Level of Service		B	C		B	B		A			D	
Approach Delay (s)		15.6			14.0			8.0			39.3	
Approach LOS		B			B			A			D	
Intersection Summary												
HCM 2000 Control Delay		19.1			HCM 2000 Level of Service			B				
HCM 2000 Volume to Capacity ratio		0.80										
Actuated Cycle Length (s)		50.0			Sum of lost time (s)			8.0				
Intersection Capacity Utilization		77.0%			ICU Level of Service			D				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

3: Hunters Point Blvd & Hawes Street

9/9/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	22	0	2	0	0	0	0	953	0	0	967	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0						5.0			5.0	
Lane Util. Factor		1.00						0.95			0.95	
Frt		0.99						1.00			1.00	
Flt Protected		0.96						1.00			1.00	
Satd. Flow (prot)		1534						3079			3064	
Flt Permitted		0.82						1.00			1.00	
Satd. Flow (perm)		1324						3079			3064	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	26	0	2	0	0	0	0	1121	0	0	1138	39
RTOR Reduction (vph)	0	20	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	8	0	0	0	0	0	1121	0	0	1173	0
Turn Type	custom	NA						NA			NA	
Protected Phases					8			2			6	
Permitted Phases	4	4		8			2					
Actuated Green, G (s)		18.0						32.0			32.0	
Effective Green, g (s)		18.0						32.0			32.0	
Actuated g/C Ratio		0.30						0.53			0.53	
Clearance Time (s)		5.0						5.0			5.0	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		397						1642			1634	
v/s Ratio Prot								0.36			c0.38	
v/s Ratio Perm		c0.01										
v/c Ratio		0.02						0.68			0.72	
Uniform Delay, d1		14.8						10.3			10.6	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		0.1						2.3			1.5	
Delay (s)		14.9						12.6			12.1	
Level of Service		B						B			B	
Approach Delay (s)		14.9			0.0			12.6			12.1	
Approach LOS		B			A			B			B	
Intersection Summary												
HCM 2000 Control Delay		12.4						HCM 2000 Level of Service			B	
HCM 2000 Volume to Capacity ratio		0.47										
Actuated Cycle Length (s)		60.0						Sum of lost time (s)		10.0		
Intersection Capacity Utilization		42.5%						ICU Level of Service		A		
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

4: Innes Avenue & Hunters Point Blvd

9/9/2016



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	183	186	949	967	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0	5.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	
Frt		0.86	1.00	1.00	1.00	
Flt Protected		1.00	0.95	1.00	1.00	
Satd. Flow (prot)		1402	1540	3079	3078	
Flt Permitted		1.00	0.95	1.00	1.00	
Satd. Flow (perm)		1402	1540	3079	3078	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	191	194	989	1007	2
RTOR Reduction (vph)	0	63	0	0	0	0
Lane Group Flow (vph)	0	128	194	989	1009	0
Turn Type		Perm	Prot	NA	NA	
Protected Phases			4	2	6	
Permitted Phases		4				
Actuated Green, G (s)		11.9	11.9	31.2	31.2	
Effective Green, g (s)		11.9	11.9	31.2	31.2	
Actuated g/C Ratio		0.22	0.22	0.59	0.59	
Clearance Time (s)		5.0	5.0	5.0	5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		314	345	1809	1808	
v/s Ratio Prot			c0.13	0.32	c0.33	
v/s Ratio Perm		0.09				
v/c Ratio		0.41	0.56	0.55	0.56	
Uniform Delay, d1		17.6	18.3	6.7	6.7	
Progression Factor		1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.9	2.1	1.2	0.4	
Delay (s)		18.5	20.4	7.8	7.1	
Level of Service		B	C	A	A	
Approach Delay (s)	18.5			9.9	7.1	
Approach LOS	B			A	A	

Intersection Summary

HCM 2000 Control Delay	9.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	53.1	Sum of lost time (s)	10.0
Intersection Capacity Utilization	50.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

5: Innes Avenue & New Griffith St

9/9/2016



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	176	946	939	9	10	167
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	1.00		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1711	3421	3416		1711	1531
Flt Permitted	0.23	1.00	1.00		0.95	1.00
Satd. Flow (perm)	422	3421	3416		1711	1531
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	191	1028	1021	10	11	182
RTOR Reduction (vph)	0	0	0	0	0	168
Lane Group Flow (vph)	191	1028	1031	0	11	14
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2					8
Actuated Green, G (s)	84.3	84.3	72.3		7.7	7.7
Effective Green, g (s)	84.3	84.3	72.3		7.7	7.7
Actuated g/C Ratio	0.84	0.84	0.72		0.08	0.08
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	458	2883	2469		131	117
v/s Ratio Prot	c0.03	0.30	0.30		0.01	
v/s Ratio Perm	c0.32					c0.01
v/c Ratio	0.42	0.36	0.42		0.08	0.12
Uniform Delay, d1	2.5	1.8	5.5		42.9	43.0
Progression Factor	1.00	1.00	0.56		1.00	1.00
Incremental Delay, d2	0.6	0.3	0.4		0.3	0.5
Delay (s)	3.2	2.1	3.4		43.2	43.5
Level of Service	A	A	A		D	D
Approach Delay (s)		2.3	3.4		43.4	
Approach LOS		A	A		D	

Intersection Summary

HCM 2000 Control Delay	6.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	49.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

6: Innes Avenue & Arellious Walker Drive

9/9/2016



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	427	534	482	10	16	471
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.5	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.99		1.00	1.00
Flpb, ped/bikes	0.96	1.00	1.00		1.00	1.00
Frt	1.00	1.00	1.00		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1482	2887	2824		1347	1203
Flt Permitted	0.36	1.00	1.00		0.95	1.00
Satd. Flow (perm)	565	2887	2824		1347	1203
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	474	593	536	11	18	523
RTOR Reduction (vph)	0	0	1	0	0	16
Lane Group Flow (vph)	474	593	546	0	18	507
Confl. Peds. (#/hr)	100			100		
Confl. Bikes (#/hr)				10		10
Bus Blockages (#/hr)	0	0	5	5	0	0
Parking (#/hr)		5	5		5	5
Turn Type	pm+pt	NA	NA		Prot	pm+ov
Protected Phases	5	2	6		4	5
Permitted Phases	2					8
Actuated Green, G (s)	88.1	88.1	48.0		3.4	40.0
Effective Green, g (s)	88.1	88.1	48.0		3.4	40.0
Actuated g/C Ratio	0.88	0.88	0.48		0.03	0.40
Clearance Time (s)	4.0	4.0	4.0		4.5	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	828	2543	1355		45	529
v/s Ratio Prot	0.21	0.21	0.19		0.01	c0.35
v/s Ratio Perm	c0.30					0.08
v/c Ratio	0.57	0.23	0.40		0.40	0.96
Uniform Delay, d1	2.6	0.9	16.8		47.3	29.2
Progression Factor	0.58	0.53	0.94		1.00	1.00
Incremental Delay, d2	0.9	0.2	0.8		5.7	28.5
Delay (s)	2.4	0.7	16.6		53.0	57.7
Level of Service	A	A	B		D	E
Approach Delay (s)		1.4	16.6		57.5	
Approach LOS		A	B		E	
Intersection Summary						
HCM 2000 Control Delay			19.4		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.81			
Actuated Cycle Length (s)			100.0		Sum of lost time (s)	12.5
Intersection Capacity Utilization			55.3%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

7: Innes Avenue & Earl Street

9/9/2016



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	372	178	184	12	12	308
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.97		1.00	0.97
Flpb, ped/bikes	0.86	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1317	2858	2785		1347	1165
Flt Permitted	0.58	1.00	1.00		0.95	1.00
Satd. Flow (perm)	807	2858	2785		1347	1165
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	404	193	200	13	13	335
RTOR Reduction (vph)	0	0	2	0	0	300
Lane Group Flow (vph)	404	193	211	0	13	35
Confl. Peds. (#/hr)	100			100		
Confl. Bikes (#/hr)				10		10
Bus Blockages (#/hr)	0	5	0	0	0	0
Parking (#/hr)		5	5		5	5
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		8	
Permitted Phases	2					8
Actuated Green, G (s)	81.7	81.7	64.8		10.3	10.3
Effective Green, g (s)	81.7	81.7	64.8		10.3	10.3
Actuated g/C Ratio	0.82	0.82	0.65		0.10	0.10
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	725	2334	1804		138	119
v/s Ratio Prot	c0.07	0.07	0.08		0.01	
v/s Ratio Perm	c0.38					c0.03
v/c Ratio	0.56	0.08	0.12		0.09	0.29
Uniform Delay, d1	2.6	1.8	6.7		40.6	41.5
Progression Factor	1.85	0.96	1.00		1.00	1.00
Incremental Delay, d2	0.9	0.1	0.1		0.3	1.4
Delay (s)	5.7	1.8	6.8		40.9	42.8
Level of Service	A	A	A		D	D
Approach Delay (s)		4.4	6.8		42.8	
Approach LOS		A	A		D	
Intersection Summary						
HCM 2000 Control Delay			16.4		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.55			
Actuated Cycle Length (s)			100.0		Sum of lost time (s)	12.0
Intersection Capacity Utilization			46.2%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

**Baseline Plus Variant Conditions (Transit Improvements
Scenario)**

HCM Signalized Intersection Capacity Analysis

1: Third Street & Evans Avenue

9/9/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	55	350	34	147	257	323	121	581	286	540	222	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.86	1.00	0.96		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.95		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1540	3004		1540	3079	1033	1540	2824		1540	2973	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1540	3004		1540	3079	1033	1540	2824		1540	2973	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	56	354	34	148	260	326	122	587	289	545	224	30
RTOR Reduction (vph)	0	8	0	0	0	260	0	56	0	0	9	0
Lane Group Flow (vph)	56	380	0	148	260	66	122	820	0	545	245	0
Confl. Peds. (#/hr)	100		100	100		100	100		100	100		100
Confl. Bikes (#/hr)			10			10			10			10
Parking (#/hr)						5						
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	9.7	19.8		10.0	20.1	20.1	12.1	37.7		12.5	38.1	
Effective Green, g (s)	9.7	19.8		10.0	20.1	20.1	12.1	37.7		12.5	38.1	
Actuated g/C Ratio	0.10	0.20		0.10	0.20	0.20	0.12	0.38		0.12	0.38	
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	149	594		154	618	207	186	1064		192	1132	
v/s Ratio Prot	0.04	c0.13		c0.10	0.08		0.08	c0.29		c0.35	0.08	
v/s Ratio Perm						0.06						
v/c Ratio	0.38	0.64		0.96	0.42	0.32	0.66	0.77		2.84	0.22	
Uniform Delay, d1	42.3	36.8		44.8	34.9	34.1	42.0	27.4		43.8	20.9	
Progression Factor	1.00	1.00		0.82	0.83	2.29	0.90	1.58		1.00	0.78	
Incremental Delay, d2	1.6	2.3		56.8	0.4	0.8	7.7	5.2		840.5	0.4	
Delay (s)	43.9	39.1		93.6	29.2	78.8	45.7	48.3		884.1	16.7	
Level of Service	D	D		F	C	E	D	D		F	B	
Approach Delay (s)		39.7			64.2			48.0			608.3	
Approach LOS		D			E			D			F	
Intersection Summary												
HCM 2000 Control Delay		201.3				HCM 2000 Level of Service		F				
HCM 2000 Volume to Capacity ratio		1.08										
Actuated Cycle Length (s)		100.0				Sum of lost time (s)		20.0				
Intersection Capacity Utilization		111.1%				ICU Level of Service		H				
Analysis Period (min)		15										

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

2: Jennings Street & Evans Avenue/Hunters Point Blvd

9/9/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	52	869	38	11	540	242	15	2	0	522	49	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0		4.0			4.0	
Lane Util. Factor		0.95	1.00		0.95	1.00		1.00			1.00	
Frbp, ped/bikes		1.00	0.97		1.00	0.98		1.00			1.00	
Flpb, ped/bikes		1.00	1.00		1.00	1.00		1.00			1.00	
Frt		1.00	0.85		1.00	0.85		1.00			0.99	
Flt Protected		1.00	1.00		1.00	1.00		0.96			0.96	
Satd. Flow (prot)		3040	1313		3076	1347		1551			1340	
Flt Permitted		0.89	1.00		0.93	1.00		0.72			0.75	
Satd. Flow (perm)		2727	1313		2871	1347		1171			1042	
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)	55	915	40	12	568	255	16	2	0	549	52	46
RTOR Reduction (vph)	0	0	24	0	0	153	0	0	0	0	6	0
Lane Group Flow (vph)	0	970	16	0	580	102	0	18	0	0	641	0
Confl. Peds. (#/hr)	2		5	5		2	2		7	7		2
Confl. Bikes (#/hr)			1									
Bus Blockages (#/hr)	0	5	5	0	0	0	0	0	0	0	0	0
Parking (#/hr)										5	5	5
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)		20.0	20.0		20.0	20.0		22.0			22.0	
Effective Green, g (s)		20.0	20.0		20.0	20.0		22.0			22.0	
Actuated g/C Ratio		0.40	0.40		0.40	0.40		0.44			0.44	
Clearance Time (s)		4.0	4.0		4.0	4.0		4.0			4.0	
Lane Grp Cap (vph)		1090	525		1148	538		515			458	
v/s Ratio Prot												
v/s Ratio Perm		c0.36	0.01		0.20	0.08		0.02			c0.62	
v/c Ratio		0.89	0.03		0.51	0.19		0.03			1.40	
Uniform Delay, d1		14.0	9.1		11.3	9.7		8.0			14.0	
Progression Factor		1.51	2.10		1.00	1.00		1.00			1.00	
Incremental Delay, d2		1.2	0.0		1.6	0.8		0.1			193.0	
Delay (s)		22.3	19.1		12.9	10.5		8.1			207.0	
Level of Service		C	B		B	B		A			F	
Approach Delay (s)		22.2			12.2			8.1			207.0	
Approach LOS		C			B			A			F	
Intersection Summary												
HCM 2000 Control Delay			66.4				HCM 2000 Level of Service			E		
HCM 2000 Volume to Capacity ratio			1.16									
Actuated Cycle Length (s)			50.0				Sum of lost time (s)			8.0		
Intersection Capacity Utilization			93.9%				ICU Level of Service			F		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

3: Hunters Point Blvd & Hawes Street

9/9/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	32	0	0	0	0	0	1	688	0	0	1429	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0						5.0			5.0	
Lane Util. Factor		1.00						0.95			0.95	
Frt		1.00						1.00			1.00	
Flt Protected		0.95						1.00			1.00	
Satd. Flow (prot)		1540						3079			3076	
Flt Permitted		0.76						0.95			1.00	
Satd. Flow (perm)		1227						2936			3076	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	35	0	0	0	0	0	1	748	0	0	1553	9
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	35	0	0	0	0	0	749	0	0	1562	0
Turn Type	custom	NA					Perm	NA			NA	
Protected Phases					8			2			6	
Permitted Phases	4	4		8			2					
Actuated Green, G (s)		18.0						32.0			32.0	
Effective Green, g (s)		18.0						32.0			32.0	
Actuated g/C Ratio		0.30						0.53			0.53	
Clearance Time (s)		5.0						5.0			5.0	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		368						1565			1640	
v/s Ratio Prot											c0.51	
v/s Ratio Perm		c0.03						0.26				
v/c Ratio		0.10						0.48			0.95	
Uniform Delay, d1		15.1						8.8			13.3	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		0.5						1.1			12.7	
Delay (s)		15.6						9.8			25.9	
Level of Service		B						A			C	
Approach Delay (s)		15.6			0.0			9.8			25.9	
Approach LOS		B			A			A			C	
Intersection Summary												
HCM 2000 Control Delay		20.6						HCM 2000 Level of Service			C	
HCM 2000 Volume to Capacity ratio		0.64										
Actuated Cycle Length (s)		60.0						Sum of lost time (s)		10.0		
Intersection Capacity Utilization		55.8%						ICU Level of Service		B		
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

4: Innes Avenue & Hunters Point Blvd

9/9/2016



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	266	128	687	1428	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0	5.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	
Frt		0.86	1.00	1.00	1.00	
Flt Protected		1.00	0.95	1.00	1.00	
Satd. Flow (prot)		1402	1540	3079	3079	
Flt Permitted		1.00	0.95	1.00	1.00	
Satd. Flow (perm)		1402	1540	3079	3079	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	283	136	731	1519	1
RTOR Reduction (vph)	0	17	0	0	0	0
Lane Group Flow (vph)	0	266	136	731	1520	0
Turn Type		Perm	Prot	NA	NA	
Protected Phases			4	2	6	
Permitted Phases		4				
Actuated Green, G (s)		14.6	14.6	32.1	32.1	
Effective Green, g (s)		14.6	14.6	32.1	32.1	
Actuated g/C Ratio		0.26	0.26	0.57	0.57	
Clearance Time (s)		5.0	5.0	5.0	5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		361	396	1743	1743	
v/s Ratio Prot			0.09	0.24	c0.49	
v/s Ratio Perm		c0.19				
v/c Ratio		0.74	0.34	0.42	0.87	
Uniform Delay, d1		19.3	17.1	7.0	10.5	
Progression Factor		1.00	1.00	1.00	1.00	
Incremental Delay, d2		7.6	0.5	0.7	5.1	
Delay (s)		26.9	17.7	7.7	15.7	
Level of Service		C	B	A	B	
Approach Delay (s)	26.9			9.3	15.7	
Approach LOS	C			A	B	
Intersection Summary						
HCM 2000 Control Delay			14.8		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.83			
Actuated Cycle Length (s)			56.7		Sum of lost time (s)	10.0
Intersection Capacity Utilization			70.5%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

5: Innes Avenue & New Griffith St

9/9/2016



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	314	1368	661	16	9	126
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	1.00		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1711	3421	3409		1711	1531
Flt Permitted	0.34	1.00	1.00		0.95	1.00
Satd. Flow (perm)	615	3421	3409		1711	1531
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	341	1487	718	17	10	137
RTOR Reduction (vph)	0	0	1	0	0	67
Lane Group Flow (vph)	341	1487	734	0	10	70
Turn Type	pm+pt	NA	NA		Prot	pm+ov
Protected Phases	5	2	6		4	5
Permitted Phases	2					4
Actuated Green, G (s)	90.5	90.5	75.9		1.5	12.1
Effective Green, g (s)	90.5	90.5	75.9		1.5	12.1
Actuated g/C Ratio	0.90	0.90	0.76		0.02	0.12
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	672	3096	2587		25	246
v/s Ratio Prot	0.05	c0.43	0.22		0.01	c0.03
v/s Ratio Perm	c0.40					0.02
v/c Ratio	0.51	0.48	0.28		0.40	0.29
Uniform Delay, d1	1.0	0.8	3.7		48.8	40.0
Progression Factor	1.00	1.00	0.54		1.00	1.00
Incremental Delay, d2	0.6	0.5	0.2		10.2	0.6
Delay (s)	1.6	1.3	2.2		59.0	40.7
Level of Service	A	A	A		E	D
Approach Delay (s)		1.4	2.2		41.9	
Approach LOS		A	A		D	

Intersection Summary

HCM 2000 Control Delay	3.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	49.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

6: Innes Avenue & Arelious Walker Drive

9/9/2016



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	665	717	405	34	13	277
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.5	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.97		1.00	1.00
Flpb, ped/bikes	0.96	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1477	2887	2728		1347	1204
Flt Permitted	0.37	1.00	1.00		0.95	1.00
Satd. Flow (perm)	575	2887	2728		1347	1204
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	773	834	471	40	15	322
RTOR Reduction (vph)	0	0	4	0	0	14
Lane Group Flow (vph)	773	834	507	0	15	308
Confl. Peds. (#/hr)	100			100		
Confl. Bikes (#/hr)				10		10
Bus Blockages (#/hr)	0	0	5	5	0	0
Parking (#/hr)		5	5		5	5
Turn Type	pm+pt	NA	NA		Prot	pm+ov
Protected Phases	5	2	6		4	5
Permitted Phases	2					8
Actuated Green, G (s)	88.3	88.3	44.3		3.2	43.7
Effective Green, g (s)	88.3	88.3	44.3		3.2	43.7
Actuated g/C Ratio	0.88	0.88	0.44		0.03	0.44
Clearance Time (s)	4.0	4.0	4.0		4.5	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	868	2549	1208		43	574
v/s Ratio Prot	c0.36	0.29	0.19		0.01	c0.21
v/s Ratio Perm	c0.43					0.04
v/c Ratio	0.89	0.33	0.42		0.35	0.54
Uniform Delay, d1	10.1	1.0	19.1		47.4	20.7
Progression Factor	0.93	0.61	1.20		1.00	1.00
Incremental Delay, d2	10.6	0.3	1.0		4.9	1.0
Delay (s)	20.0	0.9	23.9		52.2	21.7
Level of Service	B	A	C		D	C
Approach Delay (s)		10.1	23.9		23.0	
Approach LOS		B	C		C	
Intersection Summary						
HCM 2000 Control Delay			14.7		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.92			
Actuated Cycle Length (s)			100.0		Sum of lost time (s)	12.5
Intersection Capacity Utilization			68.8%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

7: Innes Avenue & Earl Street

9/9/2016



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	609	121	201	21	11	238
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.96		1.00	1.00
Flpb, ped/bikes	0.86	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1331	2858	2728		1347	1203
Flt Permitted	0.57	1.00	1.00		0.95	1.00
Satd. Flow (perm)	794	2858	2728		1347	1203
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	662	132	218	23	12	259
RTOR Reduction (vph)	0	0	4	0	0	83
Lane Group Flow (vph)	662	132	237	0	12	176
Confl. Peds. (#/hr)	100			100		
Confl. Bikes (#/hr)				10		10
Bus Blockages (#/hr)	0	5	0	0	0	0
Parking (#/hr)		5	5		5	5
Turn Type	pm+pt	NA	NA		Prot	pm+ov
Protected Phases	5	2	6		8	5
Permitted Phases	2					8
Actuated Green, G (s)	90.3	90.3	64.5		1.7	23.5
Effective Green, g (s)	90.3	90.3	64.5		1.7	23.5
Actuated g/C Ratio	0.90	0.90	0.64		0.02	0.24
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	834	2580	1759		22	330
v/s Ratio Prot	c0.17	0.05	0.09		0.01	c0.12
v/s Ratio Perm	c0.54					0.03
v/c Ratio	0.79	0.05	0.13		0.55	0.53
Uniform Delay, d1	1.3	0.5	6.9		48.8	33.4
Progression Factor	2.98	0.99	1.00		1.00	1.00
Incremental Delay, d2	5.1	0.0	0.2		24.9	1.6
Delay (s)	9.0	0.5	7.1		73.6	35.1
Level of Service	A	A	A		E	D
Approach Delay (s)		7.6	7.1		36.8	
Approach LOS		A	A		D	

Intersection Summary

HCM 2000 Control Delay	13.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	60.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

1: Third Street & Evans Avenue

9/9/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	36	291	32	320	392	548	110	391	201	398	441	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.86	1.00	0.96		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	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.95		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1540	2995		1540	3079	1036	1540	2816		1540	3025	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1540	2995		1540	3079	1036	1540	2816		1540	3025	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	40	320	35	352	431	602	121	430	221	437	485	31
RTOR Reduction (vph)	0	8	0	0	0	276	0	69	0	0	5	0
Lane Group Flow (vph)	40	347	0	352	431	326	121	582	0	437	511	0
Confl. Peds. (#/hr)	100		100	100		100	100		100	100		100
Confl. Bikes (#/hr)			10			10			10			10
Parking (#/hr)						5						
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	4.8	24.0		10.0	29.2	29.2	11.1	28.8		17.2	34.9	
Effective Green, g (s)	4.8	24.0		10.0	29.2	29.2	11.1	28.8		17.2	34.9	
Actuated g/C Ratio	0.05	0.24		0.10	0.29	0.29	0.11	0.29		0.17	0.35	
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	73	718		154	899	302	170	811		264	1055	
v/s Ratio Prot	0.03	c0.12		c0.23	0.14		0.08	c0.21		c0.28	0.17	
v/s Ratio Perm						c0.31						
v/c Ratio	0.55	0.48		2.29	0.48	1.08	0.71	0.72		1.66	0.48	
Uniform Delay, d1	46.5	32.7		45.0	29.1	35.4	42.9	31.9		41.4	25.5	
Progression Factor	1.00	1.00		0.91	0.88	1.67	0.94	1.56		1.00	0.87	
Incremental Delay, d2	8.2	0.5		591.5	0.3	64.3	12.4	5.1		310.0	1.5	
Delay (s)	54.7	33.2		632.5	25.8	123.4	52.8	55.0		351.2	23.6	
Level of Service	D	C		F	C	F	D	D		F	C	
Approach Delay (s)		35.4			222.4			54.6			173.8	
Approach LOS		D			F			D			F	
Intersection Summary												
HCM 2000 Control Delay		151.2				HCM 2000 Level of Service		F				
HCM 2000 Volume to Capacity ratio		1.17										
Actuated Cycle Length (s)		100.0				Sum of lost time (s)		20.0				
Intersection Capacity Utilization		110.4%				ICU Level of Service		H				
Analysis Period (min)		15										

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

2: Jennings Street & Evans Avenue/Hunters Point Blvd

9/9/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	24	584	54	12	1059	576	10	4	2	319	38	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0		4.0			4.0	
Lane Util. Factor		0.95	1.00		0.95	1.00		1.00			1.00	
Frpb, ped/bikes		1.00	0.97		1.00	0.98		1.00			1.00	
Flpb, ped/bikes		1.00	1.00		1.00	1.00		1.00			1.00	
Frt		1.00	0.85		1.00	0.85		0.98			0.99	
Flt Protected		1.00	1.00		1.00	1.00		0.97			0.96	
Satd. Flow (prot)		3042	1313		3077	1347		1541			1345	
Flt Permitted		0.89	1.00		0.95	1.00		0.83			0.74	
Satd. Flow (perm)		2701	1313		2915	1347		1316			1045	
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)	25	615	57	13	1115	606	11	4	2	336	40	17
RTOR Reduction (vph)	0	0	33	0	0	351	0	1	0	0	3	0
Lane Group Flow (vph)	0	640	24	0	1128	255	0	16	0	0	390	0
Confl. Peds. (#/hr)	2		5	5		2	2		7	7		2
Confl. Bikes (#/hr)			1									
Bus Blockages (#/hr)	0	5	5	0	0	0	0	0	0	0	0	0
Parking (#/hr)										5	5	5
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)		21.0	21.0		21.0	21.0		21.0			21.0	
Effective Green, g (s)		21.0	21.0		21.0	21.0		21.0			21.0	
Actuated g/C Ratio		0.42	0.42		0.42	0.42		0.42			0.42	
Clearance Time (s)		4.0	4.0		4.0	4.0		4.0			4.0	
Lane Grp Cap (vph)		1134	551		1224	565		552			438	
v/s Ratio Prot												
v/s Ratio Perm		0.24	0.02		0.39	0.19		0.01			0.37	
v/c Ratio		0.56	0.04		0.92	0.45		0.03			0.89	
Uniform Delay, d1		11.0	8.6		13.7	10.4		8.5			13.4	
Progression Factor		1.18	2.20		1.00	1.00		1.00			1.00	
Incremental Delay, d2		0.2	0.0		12.7	2.6		0.1			22.7	
Delay (s)		13.2	18.9		26.4	13.0		8.6			36.1	
Level of Service		B	B		C	B		A			D	
Approach Delay (s)		13.6			21.7			8.6			36.1	
Approach LOS		B			C			A			D	
Intersection Summary												
HCM 2000 Control Delay			21.7									
HCM 2000 Volume to Capacity ratio			0.90									
Actuated Cycle Length (s)			50.0									
Intersection Capacity Utilization			85.2%									
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

3: Hunters Point Blvd & Hawes Street

9/9/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	22	0	2	0	0	0	0	1534	0	0	888	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0						5.0			5.0	
Lane Util. Factor		1.00						0.95			0.95	
Frt		0.99						1.00			0.99	
Flt Protected		0.96						1.00			1.00	
Satd. Flow (prot)		1534						3079			3063	
Flt Permitted		0.82						1.00			1.00	
Satd. Flow (perm)		1324						3079			3063	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	26	0	2	0	0	0	0	1805	0	0	1045	39
RTOR Reduction (vph)	0	20	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	8	0	0	0	0	0	1805	0	0	1080	0
Turn Type	custom	NA						NA			NA	
Protected Phases					8			2			6	
Permitted Phases	4	4		8			2					
Actuated Green, G (s)		18.0						32.0			32.0	
Effective Green, g (s)		18.0						32.0			32.0	
Actuated g/C Ratio		0.30						0.53			0.53	
Clearance Time (s)		5.0						5.0			5.0	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		397						1642			1633	
v/s Ratio Prot								c0.59			0.35	
v/s Ratio Perm		c0.01										
v/c Ratio		0.02						1.10			0.66	
Uniform Delay, d1		14.8						14.0			10.1	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		0.1						54.6			1.0	
Delay (s)		14.9						68.6			11.1	
Level of Service		B						E			B	
Approach Delay (s)		14.9			0.0			68.6			11.1	
Approach LOS		B			A			E			B	
Intersection Summary												
HCM 2000 Control Delay		46.7						HCM 2000 Level of Service			D	
HCM 2000 Volume to Capacity ratio		0.71										
Actuated Cycle Length (s)		60.0						Sum of lost time (s)		10.0		
Intersection Capacity Utilization		58.8%						ICU Level of Service		B		
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

4: Innes Avenue & Hunters Point Blvd

9/9/2016

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	169	288	1530	888	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0	5.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	
Frt		0.86	1.00	1.00	1.00	
Flt Protected		1.00	0.95	1.00	1.00	
Satd. Flow (prot)		1402	1540	3079	3078	
Flt Permitted		1.00	0.95	1.00	1.00	
Satd. Flow (perm)		1402	1540	3079	3078	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	176	300	1594	925	2
RTOR Reduction (vph)	0	81	0	0	0	0
Lane Group Flow (vph)	0	95	300	1594	927	0
Turn Type		Perm	Prot	NA	NA	
Protected Phases			4	2	6	
Permitted Phases		4				
Actuated Green, G (s)		14.9	14.9	32.1	32.1	
Effective Green, g (s)		14.9	14.9	32.1	32.1	
Actuated g/C Ratio		0.26	0.26	0.56	0.56	
Clearance Time (s)		5.0	5.0	5.0	5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		366	402	1733	1733	
v/s Ratio Prot			c0.19	c0.52	0.30	
v/s Ratio Perm		0.07				
v/c Ratio		0.26	0.75	0.92	0.53	
Uniform Delay, d1		16.7	19.3	11.3	7.8	
Progression Factor		1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.4	7.4	9.4	0.3	
Delay (s)		17.1	26.7	20.7	8.1	
Level of Service		B	C	C	A	
Approach Delay (s)	17.1			21.7	8.1	
Approach LOS	B			C	A	
Intersection Summary						
HCM 2000 Control Delay			17.2		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.86			
Actuated Cycle Length (s)			57.0		Sum of lost time (s)	10.0
Intersection Capacity Utilization			53.4%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

5: Innes Avenue & New Griffith St

9/9/2016



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	142	887	1503	8	12	286
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	1.00		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1711	3421	3418		1711	1531
Flt Permitted	0.10	1.00	1.00		0.95	1.00
Satd. Flow (perm)	184	3421	3418		1711	1531
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	154	964	1634	9	13	311
RTOR Reduction (vph)	0	0	0	0	0	16
Lane Group Flow (vph)	154	964	1643	0	13	295
Turn Type	pm+pt	NA	NA		Prot	pm+ov
Protected Phases	5	2	6		4	5
Permitted Phases	2					4
Actuated Green, G (s)	90.4	90.4	73.4		1.6	14.6
Effective Green, g (s)	90.4	90.4	73.4		1.6	14.6
Actuated g/C Ratio	0.90	0.90	0.73		0.02	0.15
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	364	3092	2508		27	284
v/s Ratio Prot	0.05	0.28	c0.48		0.01	c0.13
v/s Ratio Perm	0.33					0.06
v/c Ratio	0.42	0.31	0.65		0.48	1.04
Uniform Delay, d1	7.6	0.6	6.8		48.8	42.7
Progression Factor	1.00	1.00	0.53		1.00	1.00
Incremental Delay, d2	0.8	0.3	0.1		12.9	63.6
Delay (s)	8.3	0.9	3.7		61.7	106.3
Level of Service	A	A	A		E	F
Approach Delay (s)		1.9	3.7		104.5	
Approach LOS		A	A		F	

Intersection Summary

HCM 2000 Control Delay	13.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	66.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

6: Innes Avenue & Arellious Walker Drive

9/9/2016



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	498	406	754	12	22	762
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.5	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.99		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	1.00		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1540	2887	2832		1347	1203
Flt Permitted	0.22	1.00	1.00		0.95	1.00
Satd. Flow (perm)	352	2887	2832		1347	1203
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	553	451	838	13	24	847
RTOR Reduction (vph)	0	0	1	0	0	3
Lane Group Flow (vph)	553	451	850	0	24	844
Confl. Peds. (#/hr)	100			100		
Confl. Bikes (#/hr)				10		10
Bus Blockages (#/hr)	0	0	5	5	0	0
Parking (#/hr)		5	5		5	5
Turn Type	pm+pt	NA	NA		Prot	pm+ov
Protected Phases	5	2	6		4	5
Permitted Phases	2					8
Actuated Green, G (s)	87.9	87.9	46.9		3.6	41.1
Effective Green, g (s)	87.9	87.9	46.9		3.6	41.1
Actuated g/C Ratio	0.88	0.88	0.47		0.04	0.41
Clearance Time (s)	4.0	4.0	4.0		4.5	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	748	2537	1328		48	542
v/s Ratio Prot	0.27	0.16	0.30		0.02	c0.58
v/s Ratio Perm	c0.38					0.13
v/c Ratio	0.74	0.18	0.64		0.50	1.56
Uniform Delay, d1	13.1	0.9	20.2		47.3	29.4
Progression Factor	0.94	0.97	1.39		1.00	1.00
Incremental Delay, d2	3.8	0.1	1.3		8.0	259.7
Delay (s)	16.2	1.0	29.2		55.3	289.2
Level of Service	B	A	C		E	F
Approach Delay (s)		9.3	29.2		282.7	
Approach LOS		A	C		F	

Intersection Summary

HCM 2000 Control Delay	102.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.22		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	82.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

7: Innes Avenue & Earl Street

9/9/2016



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	242	186	185	10	18	581
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98		1.00	1.00
Flpb, ped/bikes	0.86	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1322	2858	2800		1347	1204
Flt Permitted	0.57	1.00	1.00		0.95	1.00
Satd. Flow (perm)	792	2858	2800		1347	1204
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	263	202	201	11	20	632
RTOR Reduction (vph)	0	0	3	0	0	69
Lane Group Flow (vph)	263	202	209	0	20	563
Confl. Peds. (#/hr)	100			100		
Confl. Bikes (#/hr)				10		10
Bus Blockages (#/hr)	0	5	0	0	0	0
Parking (#/hr)		5	5		5	5
Turn Type	pm+pt	NA	NA		Prot	pm+ov
Protected Phases	5	2	6		8	5
Permitted Phases	2					8
Actuated Green, G (s)	88.5	88.5	45.4		3.5	42.6
Effective Green, g (s)	88.5	88.5	45.4		3.5	42.6
Actuated g/C Ratio	0.88	0.88	0.45		0.04	0.43
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	908	2529	1271		47	561
v/s Ratio Prot	0.11	0.07	0.07		0.01	c0.39
v/s Ratio Perm	c0.14					0.08
v/c Ratio	0.29	0.08	0.16		0.43	1.00
Uniform Delay, d1	0.9	0.7	16.1		47.3	28.7
Progression Factor	1.36	0.93	1.00		1.00	1.00
Incremental Delay, d2	0.2	0.1	0.3		6.1	38.9
Delay (s)	1.5	0.7	16.4		53.4	67.6
Level of Service	A	A	B		D	E
Approach Delay (s)		1.1	16.4		67.2	
Approach LOS		A	B		E	
Intersection Summary						
HCM 2000 Control Delay			36.0		HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio			0.69			
Actuated Cycle Length (s)			100.0		Sum of lost time (s)	12.0
Intersection Capacity Utilization			56.6%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

Cumulative Conditions (No Project)

HCM Signalized Intersection Capacity Analysis

1: Third Street & Evans Avenue

9/9/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	100	870	40	50	760	190	260	970	70	270	230	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.86	1.00	0.99		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	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.99		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1540	3042		1540	3079	1035	1540	3026		1540	2892	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1540	3042		1540	3079	1035	1540	3026		1540	2892	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	101	879	40	51	768	192	263	980	71	273	232	61
RTOR Reduction (vph)	0	3	0	0	0	137	0	5	0	0	24	0
Lane Group Flow (vph)	101	916	0	51	768	55	263	1046	0	273	269	0
Confl. Peds. (#/hr)	100		100	100		100	100		100	100		100
Confl. Bikes (#/hr)			10			10			10			10
Parking (#/hr)						5						
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	8.0	29.2		4.8	26.0	26.0	19.7	34.0		12.0	26.3	
Effective Green, g (s)	8.0	29.2		4.8	26.0	26.0	19.7	34.0		12.0	26.3	
Actuated g/C Ratio	0.08	0.29		0.05	0.26	0.26	0.20	0.34		0.12	0.26	
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	123	888		73	800	269	303	1028		184	760	
v/s Ratio Prot	0.07	c0.30		0.03	c0.25		0.17	c0.35		c0.18	0.09	
v/s Ratio Perm						0.05						
v/c Ratio	0.82	1.03		0.70	0.96	0.20	0.87	1.02		1.48	0.35	
Uniform Delay, d1	45.3	35.4		46.9	36.5	28.9	38.9	33.0		44.0	30.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.12	1.27		1.01	0.94	
Incremental Delay, d2	33.7	38.6		25.3	22.2	0.4	21.8	32.2		242.5	1.2	
Delay (s)	79.0	74.0		72.1	58.7	29.3	65.2	74.1		286.9	29.4	
Level of Service	E	E		E	E	C	E	E		F	C	
Approach Delay (s)		74.5			53.8			72.3			153.6	
Approach LOS		E			D			E			F	
Intersection Summary												
HCM 2000 Control Delay		79.9				HCM 2000 Level of Service		E				
HCM 2000 Volume to Capacity ratio		1.12										
Actuated Cycle Length (s)		100.0				Sum of lost time (s)		20.0				
Intersection Capacity Utilization		98.5%				ICU Level of Service		F				
Analysis Period (min)		15										

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

2: Jennings Street & Evans Avenue/Hunters Point Blvd

9/9/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	190	760	40	20	710	30	40	10	10	20	20	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0		4.0		4.0	4.0	
Lane Util. Factor		0.95	1.00		0.95	1.00		1.00		1.00	1.00	
Frpb, ped/bikes		1.00	0.97		1.00	0.98		1.00		1.00	0.99	
Flpb, ped/bikes		1.00	1.00		1.00	1.00		1.00		0.99	1.00	
Frt		1.00	0.85		1.00	0.85		0.98		1.00	0.88	
Flt Protected		0.99	1.00		1.00	1.00		0.97		0.95	1.00	
Satd. Flow (prot)		3017	1307		3075	1344		1525		1336	1238	
Flt Permitted		0.63	1.00		0.91	1.00		0.81		0.75	1.00	
Satd. Flow (perm)		1916	1307		2816	1344		1277		1054	1238	
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)	200	800	42	21	747	32	42	11	11	21	21	74
RTOR Reduction (vph)	0	0	16	0	0	12	0	8	0	0	53	0
Lane Group Flow (vph)	0	1000	26	0	768	20	0	56	0	21	42	0
Confl. Peds. (#/hr)	2		5	5		2	2		7	7		2
Confl. Bikes (#/hr)			1									
Bus Blockages (#/hr)	0	5	5	0	0	0	0	0	0	0	0	0
Parking (#/hr)										5	5	5
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)		56.0	56.0		56.0	56.0		26.0		26.0	26.0	
Effective Green, g (s)		56.0	56.0		56.0	56.0		26.0		26.0	26.0	
Actuated g/C Ratio		0.62	0.62		0.62	0.62		0.29		0.29	0.29	
Clearance Time (s)		4.0	4.0		4.0	4.0		4.0		4.0	4.0	
Lane Grp Cap (vph)		1192	813		1752	836		368		304	357	
v/s Ratio Prot											0.03	
v/s Ratio Perm		c0.52	0.02		0.27	0.01		c0.04		0.02		
v/c Ratio		0.84	0.03		0.44	0.02		0.15		0.07	0.12	
Uniform Delay, d1		13.4	6.6		8.8	6.5		23.8		23.2	23.6	
Progression Factor		1.00	1.00		1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2		7.2	0.1		0.8	0.1		0.9		0.4	0.7	
Delay (s)		20.6	6.6		9.6	6.6		24.7		23.7	24.2	
Level of Service		C	A		A	A		C		C	C	
Approach Delay (s)		20.0			9.5			24.7			24.1	
Approach LOS		C			A			C			C	
Intersection Summary												
HCM 2000 Control Delay		16.3			HCM 2000 Level of Service			B				
HCM 2000 Volume to Capacity ratio		0.62										
Actuated Cycle Length (s)		90.0			Sum of lost time (s)			8.0				
Intersection Capacity Utilization		78.6%			ICU Level of Service			D				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

3: Hunters Point Blvd & Hawes Street

9/9/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	0	0	0	0	0	0	640	0	0	810	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0						5.0			5.0	
Lane Util. Factor		1.00						0.95			0.95	
Frt		1.00						1.00			1.00	
Flt Protected		0.95						1.00			1.00	
Satd. Flow (prot)		1540						3079			3068	
Flt Permitted		0.76						1.00			1.00	
Satd. Flow (perm)		1227						3079			3068	
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)	11	0	0	0	0	0	0	674	0	0	853	21
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	11	0	0	0	0	0	674	0	0	871	0
Turn Type	custom	NA						NA			NA	
Protected Phases					8			2			6	
Permitted Phases	4	4		8			2					
Actuated Green, G (s)		18.0						32.0			32.0	
Effective Green, g (s)		18.0						32.0			32.0	
Actuated g/C Ratio		0.30						0.53			0.53	
Clearance Time (s)		5.0						5.0			5.0	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		368						1642			1636	
v/s Ratio Prot								0.22			c0.28	
v/s Ratio Perm		c0.01										
v/c Ratio		0.03						0.41			0.53	
Uniform Delay, d1		14.8						8.4			9.1	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		0.2						0.8			0.3	
Delay (s)		15.0						9.1			9.5	
Level of Service		B						A			A	
Approach Delay (s)		15.0			0.0			9.1			9.5	
Approach LOS		B			A			A			A	
Intersection Summary												
HCM 2000 Control Delay		9.4						HCM 2000 Level of Service		A		
HCM 2000 Volume to Capacity ratio		0.35										
Actuated Cycle Length (s)		60.0						Sum of lost time (s)		10.0		
Intersection Capacity Utilization		37.3%						ICU Level of Service		A		
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

4: Innes Avenue & Hunters Point Blvd

9/9/2016



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	30	40	640	800	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0	5.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	
Frt		0.86	1.00	1.00	1.00	
Flt Protected		1.00	0.95	1.00	1.00	
Satd. Flow (prot)		1402	1540	3079	3073	
Flt Permitted		1.00	0.95	1.00	1.00	
Satd. Flow (perm)		1402	1540	3079	3073	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	32	42	674	842	11
RTOR Reduction (vph)	0	28	0	0	1	0
Lane Group Flow (vph)	0	4	42	674	852	0
Turn Type		Perm	Prot	NA	NA	
Protected Phases			4	2	6	
Permitted Phases		4				
Actuated Green, G (s)		6.2	6.2	38.2	38.2	
Effective Green, g (s)		6.2	6.2	38.2	38.2	
Actuated g/C Ratio		0.11	0.11	0.70	0.70	
Clearance Time (s)		5.0	5.0	5.0	5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		159	175	2162	2157	
v/s Ratio Prot			c0.03	0.22	c0.28	
v/s Ratio Perm		0.00				
v/c Ratio		0.02	0.24	0.31	0.40	
Uniform Delay, d1		21.4	22.0	3.1	3.3	
Progression Factor		1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.1	0.7	0.4	0.1	
Delay (s)		21.5	22.7	3.5	3.5	
Level of Service		C	C	A	A	
Approach Delay (s)	21.5			4.6	3.5	
Approach LOS	C			A	A	
Intersection Summary						
HCM 2000 Control Delay			4.3	HCM 2000 Level of Service		A
HCM 2000 Volume to Capacity ratio			0.37			
Actuated Cycle Length (s)			54.4	Sum of lost time (s)		10.0
Intersection Capacity Utilization			36.6%	ICU Level of Service		A
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

5: Innes Avenue & New Griffith St

9/9/2016



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	10	820	670	10	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	1.00		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1711	3421	3413		1711	1531
Flt Permitted	0.36	1.00	1.00		0.95	1.00
Satd. Flow (perm)	653	3421	3413		1711	1531
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	863	705	11	11	11
RTOR Reduction (vph)	0	0	0	0	0	11
Lane Group Flow (vph)	11	863	716	0	11	0
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2					8
Actuated Green, G (s)	90.5	90.5	85.3		1.5	1.5
Effective Green, g (s)	90.5	90.5	85.3		1.5	1.5
Actuated g/C Ratio	0.90	0.90	0.85		0.02	0.02
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	603	3096	2911		25	22
v/s Ratio Prot	0.00	c0.25	0.21		c0.01	
v/s Ratio Perm	0.02					0.00
v/c Ratio	0.02	0.28	0.25		0.44	0.01
Uniform Delay, d1	0.5	0.6	1.4		48.8	48.5
Progression Factor	1.00	1.00	0.08		1.00	1.00
Incremental Delay, d2	0.0	0.2	0.2		11.9	0.1
Delay (s)	0.5	0.8	0.3		60.7	48.7
Level of Service	A	A	A		E	D
Approach Delay (s)		0.8	0.3		54.7	
Approach LOS		A	A		D	
Intersection Summary						
HCM 2000 Control Delay			1.3		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.29			
Actuated Cycle Length (s)			100.0		Sum of lost time (s)	12.0
Intersection Capacity Utilization			32.7%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

6: Innes Avenue & Arelious Walker Drive

9/9/2016



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	10	830	670	10	10	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.5	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.99		1.00	0.98
Flpb, ped/bikes	0.96	1.00	1.00		1.00	1.00
Frt	1.00	1.00	1.00		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1477	2887	2832		1347	1182
Flt Permitted	0.36	1.00	1.00		0.95	1.00
Satd. Flow (perm)	558	2887	2832		1347	1182
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	874	705	11	11	21
RTOR Reduction (vph)	0	0	1	0	0	20
Lane Group Flow (vph)	11	874	715	0	11	1
Confl. Peds. (#/hr)	100			100		
Confl. Bikes (#/hr)				10		10
Bus Blockages (#/hr)	0	0	5	5	0	0
Parking (#/hr)		5	5		5	5
Turn Type	pm+pt	NA	NA		Prot	pm+ov
Protected Phases	5	2	6		4	5
Permitted Phases	2					8
Actuated Green, G (s)	89.9	89.9	82.4		1.6	5.6
Effective Green, g (s)	89.9	89.9	82.4		1.6	5.6
Actuated g/C Ratio	0.90	0.90	0.82		0.02	0.06
Clearance Time (s)	4.0	4.0	4.0		4.5	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	533	2595	2333		21	113
v/s Ratio Prot	0.00	c0.30	0.25		c0.01	0.00
v/s Ratio Perm	0.02					0.00
v/c Ratio	0.02	0.34	0.31		0.52	0.01
Uniform Delay, d1	0.6	0.7	2.1		48.8	44.6
Progression Factor	0.99	0.90	0.31		1.00	1.00
Incremental Delay, d2	0.0	0.3	0.3		21.6	0.0
Delay (s)	0.6	1.0	1.0		70.4	44.6
Level of Service	A	A	A		E	D
Approach Delay (s)		1.0	1.0		53.5	
Approach LOS		A	A		D	
Intersection Summary						
HCM 2000 Control Delay			2.0		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.36			
Actuated Cycle Length (s)			100.0		Sum of lost time (s)	12.5
Intersection Capacity Utilization			35.9%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

7: Innes Avenue & Earl Street

9/9/2016



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	10	830	670	10	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.99		1.00	0.91
Flpb, ped/bikes	0.96	1.00	1.00		1.00	1.00
Frt	1.00	1.00	1.00		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1476	2858	2861		1347	1102
Flt Permitted	0.36	1.00	1.00		0.95	1.00
Satd. Flow (perm)	561	2858	2861		1347	1102
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	874	705	11	11	11
RTOR Reduction (vph)	0	0	0	0	0	11
Lane Group Flow (vph)	11	874	716	0	11	0
Confl. Peds. (#/hr)	100			100		
Confl. Bikes (#/hr)				10		10
Bus Blockages (#/hr)	0	5	0	0	0	0
Parking (#/hr)		5	5		5	5
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		8	
Permitted Phases	2					8
Actuated Green, G (s)	89.0	89.0	83.8		3.0	3.0
Effective Green, g (s)	89.0	89.0	83.8		3.0	3.0
Actuated g/C Ratio	0.89	0.89	0.84		0.03	0.03
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	510	2543	2397		40	33
v/s Ratio Prot	0.00	c0.31	0.25		c0.01	
v/s Ratio Perm	0.02					0.00
v/c Ratio	0.02	0.34	0.30		0.28	0.01
Uniform Delay, d1	0.7	0.9	1.7		47.4	47.1
Progression Factor	1.00	0.97	1.00		1.00	1.00
Incremental Delay, d2	0.0	0.4	0.3		3.7	0.1
Delay (s)	0.7	1.2	2.1		51.1	47.2
Level of Service	A	A	A		D	D
Approach Delay (s)		1.2	2.1		49.2	
Approach LOS		A	A		D	
Intersection Summary						
HCM 2000 Control Delay			2.2		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.36			
Actuated Cycle Length (s)			100.0		Sum of lost time (s)	12.0
Intersection Capacity Utilization			35.5%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

1: Third Street & Evans Avenue

9/9/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	100	680	100	60	840	250	240	710	60	200	750	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.98		1.00	1.00	0.86	1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1540	2971		1540	3079	1036	1540	3018		1540	3002	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1540	2971		1540	3079	1036	1540	3018		1540	3002	
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)	105	716	105	63	884	263	253	747	63	211	789	74
RTOR Reduction (vph)	0	11	0	0	0	134	0	6	0	0	7	0
Lane Group Flow (vph)	105	810	0	63	884	129	253	804	0	211	856	0
Confl. Peds. (#/hr)	100		100	100		100	100		100	100		100
Confl. Bikes (#/hr)			10			10			10			10
Parking (#/hr)						5						
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	6.0	29.4		5.6	29.0	29.0	16.0	30.8		14.2	29.0	
Effective Green, g (s)	6.0	29.4		5.6	29.0	29.0	16.0	30.8		14.2	29.0	
Actuated g/C Ratio	0.06	0.29		0.06	0.29	0.29	0.16	0.31		0.14	0.29	
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	92	873		86	892	300	246	929		218	870	
v/s Ratio Prot	0.07	c0.27		0.04	c0.29		c0.16	0.27		0.14	c0.29	
v/s Ratio Perm						0.12						
v/c Ratio	1.14	0.93		0.73	0.99	0.43	1.03	0.87		0.97	0.98	
Uniform Delay, d1	47.0	34.3		46.5	35.4	28.8	42.0	32.6		42.7	35.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.10	1.41		1.00	1.00	
Incremental Delay, d2	137.0	15.6		27.2	27.8	1.0	63.9	10.3		49.1	25.7	
Delay (s)	184.0	49.8		73.7	63.2	29.8	110.3	56.1		91.8	61.1	
Level of Service	F	D		E	E	C	F	E		F	E	
Approach Delay (s)		65.0			56.5			69.0			67.1	
Approach LOS		E			E			E			E	
Intersection Summary												
HCM 2000 Control Delay		64.1				HCM 2000 Level of Service		E				
HCM 2000 Volume to Capacity ratio		1.02										
Actuated Cycle Length (s)		100.0				Sum of lost time (s)		20.0				
Intersection Capacity Utilization		89.4%				ICU Level of Service		E				
Analysis Period (min)		15										

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

2: Jennings Street & Evans Avenue/Hunters Point Blvd

9/9/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	90	520	200	40	990	30	30	10	10	50	60	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0		4.0		4.0	4.0	
Lane Util. Factor		0.95	1.00		0.95	1.00		1.00		1.00	1.00	
Frpb, ped/bikes		1.00	0.97		1.00	0.98		1.00		1.00	0.99	
Flpb, ped/bikes		1.00	1.00		1.00	1.00		1.00		0.99	1.00	
Frt		1.00	0.85		1.00	0.85		0.97		1.00	0.93	
Flt Protected		0.99	1.00		1.00	1.00		0.97		0.95	1.00	
Satd. Flow (prot)		3026	1307		3073	1344		1522		1335	1302	
Flt Permitted		0.65	1.00		0.91	1.00		0.83		0.77	1.00	
Satd. Flow (perm)		1980	1307		2789	1344		1303		1076	1302	
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)	95	547	211	42	1042	32	32	11	11	53	63	63
RTOR Reduction (vph)	0	0	87	0	0	11	0	7	0	0	40	0
Lane Group Flow (vph)	0	642	124	0	1084	21	0	47	0	53	86	0
Confl. Peds. (#/hr)	2		5	5		2	2		7	7		2
Confl. Bikes (#/hr)			1									
Bus Blockages (#/hr)	0	5	5	0	0	0	0	0	0	0	0	0
Parking (#/hr)										5	5	5
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)		53.0	53.0		53.0	53.0		29.0		29.0	29.0	
Effective Green, g (s)		53.0	53.0		53.0	53.0		29.0		29.0	29.0	
Actuated g/C Ratio		0.59	0.59		0.59	0.59		0.32		0.32	0.32	
Clearance Time (s)		4.0	4.0		4.0	4.0		4.0		4.0	4.0	
Lane Grp Cap (vph)		1166	769		1642	791		419		346	419	
v/s Ratio Prot											c0.07	
v/s Ratio Perm		0.32	0.10		c0.39	0.02		0.04		0.05		
v/c Ratio		0.55	0.16		0.66	0.03		0.11		0.15	0.21	
Uniform Delay, d1		11.3	8.4		12.4	7.7		21.4		21.7	22.1	
Progression Factor		1.00	1.00		1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2		1.9	0.5		2.1	0.1		0.5		0.9	1.1	
Delay (s)		13.1	8.9		14.5	7.8		22.0		22.7	23.2	
Level of Service		B	A		B	A		C		C	C	
Approach Delay (s)		12.1			14.3			22.0			23.1	
Approach LOS		B			B			C			C	
Intersection Summary												
HCM 2000 Control Delay		14.4			HCM 2000 Level of Service			B				
HCM 2000 Volume to Capacity ratio		0.50										
Actuated Cycle Length (s)		90.0			Sum of lost time (s)			8.0				
Intersection Capacity Utilization		77.2%			ICU Level of Service			D				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

3: Hunters Point Blvd & Hawes Street

9/9/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	10	0	0	0	0	1010	0	0	670	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0						5.0			5.0	
Lane Util. Factor		1.00						0.95			0.95	
Frt		0.86						1.00			0.99	
Flt Protected		1.00						1.00			1.00	
Satd. Flow (prot)		1402						3079			3059	
Flt Permitted		1.00						1.00			1.00	
Satd. Flow (perm)		1402						3079			3059	
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)	0	0	11	0	0	0	0	1063	0	0	705	32
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	3	0	0	0	0	0	1063	0	0	731	0
Turn Type		NA						NA			NA	
Protected Phases					8			2			6	
Permitted Phases	4	4		8			2					
Actuated Green, G (s)		18.0						32.0			32.0	
Effective Green, g (s)		18.0						32.0			32.0	
Actuated g/C Ratio		0.30						0.53			0.53	
Clearance Time (s)		5.0						5.0			5.0	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		420						1642			1631	
v/s Ratio Prot								c0.35			0.24	
v/s Ratio Perm		c0.00										
v/c Ratio		0.01						0.65			0.45	
Uniform Delay, d1		14.7						10.0			8.6	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		0.0						2.0			0.2	
Delay (s)		14.8						12.0			8.8	
Level of Service		B						B			A	
Approach Delay (s)		14.8			0.0			12.0			8.8	
Approach LOS		B			A			B			A	
Intersection Summary												
HCM 2000 Control Delay			10.7					HCM 2000 Level of Service			B	
HCM 2000 Volume to Capacity ratio			0.42									
Actuated Cycle Length (s)			60.0					Sum of lost time (s)			10.0	
Intersection Capacity Utilization			42.7%					ICU Level of Service			A	
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

4: Innes Avenue & Hunters Point Blvd

9/9/2016



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↰	↰	↱↱	↱↱	
Volume (vph)	0	40	70	1000	670	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0	5.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	
Frt		0.86	1.00	1.00	1.00	
Flt Protected		1.00	0.95	1.00	1.00	
Satd. Flow (prot)		1402	1540	3079	3073	
Flt Permitted		1.00	0.95	1.00	1.00	
Satd. Flow (perm)		1402	1540	3079	3073	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	42	73	1042	698	10
RTOR Reduction (vph)	0	37	0	0	1	0
Lane Group Flow (vph)	0	5	73	1042	707	0
Turn Type		Perm	Prot	NA	NA	
Protected Phases			4	2	6	
Permitted Phases		4				
Actuated Green, G (s)		6.6	6.6	38.0	38.0	
Effective Green, g (s)		6.6	6.6	38.0	38.0	
Actuated g/C Ratio		0.12	0.12	0.70	0.70	
Clearance Time (s)		5.0	5.0	5.0	5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		169	186	2142	2138	
v/s Ratio Prot			c0.05	c0.34	0.23	
v/s Ratio Perm		0.00				
v/c Ratio		0.03	0.39	0.49	0.33	
Uniform Delay, d1		21.2	22.1	3.8	3.3	
Progression Factor		1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.1	1.4	0.8	0.1	
Delay (s)		21.2	23.5	4.6	3.4	
Level of Service		C	C	A	A	
Approach Delay (s)	21.2			5.8	3.4	
Approach LOS	C			A	A	
Intersection Summary						
HCM 2000 Control Delay			5.3		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.47			
Actuated Cycle Length (s)			54.6		Sum of lost time (s)	10.0
Intersection Capacity Utilization			34.9%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

5: Innes Avenue & New Griffith St

9/9/2016



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	10	700	1060	10	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	1.00		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1711	3421	3416		1711	1531
Flt Permitted	0.23	1.00	1.00		0.95	1.00
Satd. Flow (perm)	418	3421	3416		1711	1531
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	737	1116	11	11	11
RTOR Reduction (vph)	0	0	0	0	0	11
Lane Group Flow (vph)	11	737	1127	0	11	0
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2					8
Actuated Green, G (s)	90.5	90.5	85.3		1.5	1.5
Effective Green, g (s)	90.5	90.5	85.3		1.5	1.5
Actuated g/C Ratio	0.90	0.90	0.85		0.02	0.02
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	393	3096	2913		25	22
v/s Ratio Prot	0.00	c0.22	c0.33		c0.01	
v/s Ratio Perm	0.02					0.00
v/c Ratio	0.03	0.24	0.39		0.44	0.01
Uniform Delay, d1	0.7	0.6	1.6		48.8	48.5
Progression Factor	1.00	1.00	0.15		1.00	1.00
Incremental Delay, d2	0.0	0.2	0.4		11.9	0.1
Delay (s)	0.8	0.8	0.6		60.7	48.7
Level of Service	A	A	A		E	D
Approach Delay (s)		0.8	0.6		54.7	
Approach LOS		A	A		D	

Intersection Summary

HCM 2000 Control Delay	1.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	39.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

6: Innes Avenue & Arelious Walker Drive

9/9/2016



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	20	700	1060	10	10	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.5	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00		1.00	0.97
Flpb, ped/bikes	0.99	1.00	1.00		1.00	1.00
Frt	1.00	1.00	1.00		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1523	2887	2842		1347	1171
Flt Permitted	0.23	1.00	1.00		0.95	1.00
Satd. Flow (perm)	367	2887	2842		1347	1171
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	21	737	1116	11	11	21
RTOR Reduction (vph)	0	0	0	0	0	20
Lane Group Flow (vph)	21	737	1127	0	11	1
Confl. Peds. (#/hr)	100			100		
Confl. Bikes (#/hr)				10		10
Bus Blockages (#/hr)	0	0	5	5	0	0
Parking (#/hr)		5	5		5	5
Turn Type	pm+pt	NA	NA		Prot	pm+ov
Protected Phases	5	2	6		4	5
Permitted Phases	2					8
Actuated Green, G (s)	89.9	89.9	83.5		1.6	4.5
Effective Green, g (s)	89.9	89.9	83.5		1.6	4.5
Actuated g/C Ratio	0.90	0.90	0.84		0.02	0.04
Clearance Time (s)	4.0	4.0	4.0		4.5	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	357	2595	2373		21	99
v/s Ratio Prot	0.00	c0.26	c0.40		c0.01	0.00
v/s Ratio Perm	0.05					0.00
v/c Ratio	0.06	0.28	0.47		0.52	0.01
Uniform Delay, d1	0.9	0.7	2.3		48.8	45.6
Progression Factor	0.95	0.83	0.30		1.00	1.00
Incremental Delay, d2	0.1	0.3	0.6		21.6	0.0
Delay (s)	0.9	0.8	1.3		70.4	45.7
Level of Service	A	A	A		E	D
Approach Delay (s)		0.8	1.3		54.2	
Approach LOS		A	A		D	

Intersection Summary

HCM 2000 Control Delay	2.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	43.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

7: Innes Avenue & Earl Street

9/9/2016



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	10	700	1060	10	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00		1.00	0.91
Flpb, ped/bikes	0.99	1.00	1.00		1.00	1.00
Frt	1.00	1.00	1.00		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1522	2858	2870		1347	1102
Flt Permitted	0.23	1.00	1.00		0.95	1.00
Satd. Flow (perm)	369	2858	2870		1347	1102
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	737	1116	11	11	11
RTOR Reduction (vph)	0	0	0	0	0	11
Lane Group Flow (vph)	11	737	1127	0	11	0
Confl. Peds. (#/hr)	100			100		
Confl. Bikes (#/hr)				10		10
Bus Blockages (#/hr)	0	5	0	0	0	0
Parking (#/hr)		5	5		5	5
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		8	
Permitted Phases	2					8
Actuated Green, G (s)	89.0	89.0	84.2		3.0	3.0
Effective Green, g (s)	89.0	89.0	84.2		3.0	3.0
Actuated g/C Ratio	0.89	0.89	0.84		0.03	0.03
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	337	2543	2416		40	33
v/s Ratio Prot	0.00	c0.26	c0.39		c0.01	
v/s Ratio Perm	0.03					0.00
v/c Ratio	0.03	0.29	0.47		0.28	0.01
Uniform Delay, d1	0.9	0.8	2.1		47.4	47.1
Progression Factor	1.00	0.96	1.00		1.00	1.00
Incremental Delay, d2	0.0	0.3	0.6		3.7	0.1
Delay (s)	1.0	1.1	2.7		51.1	47.2
Level of Service	A	A	A		D	D
Approach Delay (s)		1.1	2.7		49.2	
Approach LOS		A	A		D	
Intersection Summary						
HCM 2000 Control Delay			2.6		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.46			
Actuated Cycle Length (s)			100.0		Sum of lost time (s)	12.0
Intersection Capacity Utilization			43.0%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

Cumulative Plus Project Conditions

HCM Signalized Intersection Capacity Analysis

1: Third Street & Evans Avenue

9/9/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	100	910	40	163	810	373	260	970	203	515	230	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.86	1.00	0.98		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	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.97		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1540	3044		1540	3079	1035	1540	2944		1540	2892	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1540	3044		1540	3079	1035	1540	2944		1540	2892	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	101	919	40	165	818	377	263	980	205	520	232	61
RTOR Reduction (vph)	0	3	0	0	0	208	0	18	0	0	23	0
Lane Group Flow (vph)	101	956	0	165	818	169	263	1167	0	520	270	0
Confl. Peds. (#/hr)	100		100	100		100	100		100	100		100
Confl. Bikes (#/hr)			10			10			10			10
Parking (#/hr)						5						
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	7.0	27.0		6.0	26.0	26.0	19.7	35.0		12.0	27.3	
Effective Green, g (s)	7.0	27.0		6.0	26.0	26.0	19.7	35.0		12.0	27.3	
Actuated g/C Ratio	0.07	0.27		0.06	0.26	0.26	0.20	0.35		0.12	0.27	
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	107	821		92	800	269	303	1030		184	789	
v/s Ratio Prot	0.07	c0.31		c0.11	0.27		0.17	c0.40		c0.34	0.09	
v/s Ratio Perm						0.16						
v/c Ratio	0.94	1.16		1.79	1.02	0.63	0.87	1.13		2.83	0.34	
Uniform Delay, d1	46.3	36.5		47.0	37.0	32.7	38.9	32.5		44.0	29.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.11	1.23		1.01	0.94	
Incremental Delay, d2	68.7	87.2		396.9	37.6	4.5	21.8	72.2		835.5	1.1	
Delay (s)	115.0	123.7		443.9	74.6	37.3	64.9	112.3		880.0	28.6	
Level of Service	F	F		F	E	D	E	F		F	C	
Approach Delay (s)		122.9			109.1			103.7			573.2	
Approach LOS		F			F			F			F	
Intersection Summary												
HCM 2000 Control Delay		191.1				HCM 2000 Level of Service		F				
HCM 2000 Volume to Capacity ratio		1.44										
Actuated Cycle Length (s)		100.0				Sum of lost time (s)		20.0				
Intersection Capacity Utilization		126.0%				ICU Level of Service		H				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

2: Jennings Street & Evans Avenue/Hunters Point Blvd

9/9/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	190	1177	40	20	1056	273	40	10	10	331	32	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0		4.0		4.0	4.0	
Lane Util. Factor		0.95	1.00		0.95	1.00		1.00		1.00	1.00	
Frpb, ped/bikes		1.00	0.97		1.00	0.98		1.00		1.00	0.99	
Flpb, ped/bikes		1.00	1.00		1.00	1.00		1.00		0.99	1.00	
Frt		1.00	0.85		1.00	0.85		0.98		1.00	0.90	
Flt Protected		0.99	1.00		1.00	1.00		0.97		0.95	1.00	
Satd. Flow (prot)		3027	1307		3076	1344		1525		1336	1260	
Flt Permitted		0.57	1.00		0.91	1.00		0.81		0.75	1.00	
Satd. Flow (perm)		1729	1307		2794	1344		1268		1054	1260	
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)	200	1239	42	21	1112	287	42	11	11	348	34	74
RTOR Reduction (vph)	0	0	11	0	0	96	0	8	0	0	53	0
Lane Group Flow (vph)	0	1439	31	0	1133	191	0	56	0	348	55	0
Confl. Peds. (#/hr)	2		5	5		2	2		7	7		2
Confl. Bikes (#/hr)			1									
Bus Blockages (#/hr)	0	5	5	0	0	0	0	0	0	0	0	0
Parking (#/hr)										5	5	5
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)		56.0	56.0		56.0	56.0		26.0		26.0	26.0	
Effective Green, g (s)		56.0	56.0		56.0	56.0		26.0		26.0	26.0	
Actuated g/C Ratio		0.62	0.62		0.62	0.62		0.29		0.29	0.29	
Clearance Time (s)		4.0	4.0		4.0	4.0		4.0		4.0	4.0	
Lane Grp Cap (vph)		1075	813		1738	836		366		304	364	
v/s Ratio Prot											0.04	
v/s Ratio Perm		c0.83	0.02		0.41	0.14		0.04		c0.33		
v/c Ratio		1.34	0.04		0.65	0.23		0.15		1.14	0.15	
Uniform Delay, d1		17.0	6.6		10.8	7.5		23.8		32.0	23.8	
Progression Factor		1.00	1.00		1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2		158.7	0.1		1.9	0.6		0.9		96.7	0.9	
Delay (s)		175.7	6.7		12.7	8.1		24.7		128.7	24.7	
Level of Service		F	A		B	A		C		F	C	
Approach Delay (s)		170.9			11.8			24.7			104.1	
Approach LOS		F			B			C			F	
Intersection Summary												
HCM 2000 Control Delay			93.2		HCM 2000 Level of Service					F		
HCM 2000 Volume to Capacity ratio			1.28									
Actuated Cycle Length (s)			90.0		Sum of lost time (s)					8.0		
Intersection Capacity Utilization			112.4%		ICU Level of Service					H		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

3: Hunters Point Blvd & Hawes Street

9/9/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	0	0	0	0	0	10	1238	0	0	1568	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0						5.0			5.0	
Lane Util. Factor		1.00						0.95			0.95	
Frt		1.00						1.00			1.00	
Flt Protected		0.95						1.00			1.00	
Satd. Flow (prot)		1540						3078			3073	
Flt Permitted		0.76						0.90			1.00	
Satd. Flow (perm)		1227						2782			3073	
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)	11	0	0	0	0	0	11	1303	0	0	1651	21
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	11	0	0	0	0	0	1314	0	0	1671	0
Turn Type	custom	NA					Perm	NA			NA	
Protected Phases					8			2			6	
Permitted Phases	4	4		8			2					
Actuated Green, G (s)		18.0						32.0			32.0	
Effective Green, g (s)		18.0						32.0			32.0	
Actuated g/C Ratio		0.30						0.53			0.53	
Clearance Time (s)		5.0						5.0			5.0	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		368						1483			1638	
v/s Ratio Prot											c0.54	
v/s Ratio Perm		c0.01						0.47				
v/c Ratio		0.03						0.89			1.02	
Uniform Delay, d1		14.8						12.4			14.0	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		0.2						8.1			27.4	
Delay (s)		15.0						20.5			41.4	
Level of Service		B						C			D	
Approach Delay (s)		15.0			0.0			20.5			41.4	
Approach LOS		B			A			C			D	
Intersection Summary												
HCM 2000 Control Delay		32.1						HCM 2000 Level of Service			C	
HCM 2000 Volume to Capacity ratio		0.66										
Actuated Cycle Length (s)		60.0						Sum of lost time (s)		10.0		
Intersection Capacity Utilization		60.5%						ICU Level of Service		B		
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

4: Innes Avenue & Hunters Point Blvd

9/9/2016



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	171	150	1238	1558	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0	5.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	
Frt		0.86	1.00	1.00	1.00	
Flt Protected		1.00	0.95	1.00	1.00	
Satd. Flow (prot)		1402	1540	3079	3076	
Flt Permitted		1.00	0.95	1.00	1.00	
Satd. Flow (perm)		1402	1540	3079	3076	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	180	158	1303	1640	11
RTOR Reduction (vph)	0	13	0	0	1	0
Lane Group Flow (vph)	0	167	158	1303	1650	0
Turn Type		Perm	Prot	NA	NA	
Protected Phases			4	2	6	
Permitted Phases		4				
Actuated Green, G (s)		11.6	11.6	32.2	32.2	
Effective Green, g (s)		11.6	11.6	32.2	32.2	
Actuated g/C Ratio		0.22	0.22	0.60	0.60	
Clearance Time (s)		5.0	5.0	5.0	5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		302	332	1842	1841	
v/s Ratio Prot			0.10	0.42	c0.54	
v/s Ratio Perm		c0.12				
v/c Ratio		0.55	0.48	0.71	0.90	
Uniform Delay, d1		18.8	18.4	7.5	9.4	
Progression Factor		1.00	1.00	1.00	1.00	
Incremental Delay, d2		2.2	1.1	2.3	6.2	
Delay (s)		21.0	19.5	9.8	15.5	
Level of Service		C	B	A	B	
Approach Delay (s)	21.0			10.9	15.5	
Approach LOS	C			B	B	
Intersection Summary						
HCM 2000 Control Delay			13.8		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.81			
Actuated Cycle Length (s)			53.8		Sum of lost time (s)	10.0
Intersection Capacity Utilization			68.3%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

5: Innes Avenue & New Griffith St

9/9/2016



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	197	1532	1229	18	15	159
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	1.00		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1711	3421	3414		1711	1531
Flt Permitted	0.16	1.00	1.00		0.95	1.00
Satd. Flow (perm)	281	3421	3414		1711	1531
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	207	1613	1294	19	16	167
RTOR Reduction (vph)	0	0	1	0	0	154
Lane Group Flow (vph)	207	1613	1312	0	16	13
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2					8
Actuated Green, G (s)	84.3	84.3	69.8		7.7	7.7
Effective Green, g (s)	84.3	84.3	69.8		7.7	7.7
Actuated g/C Ratio	0.84	0.84	0.70		0.08	0.08
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	387	2883	2382		131	117
v/s Ratio Prot	0.06	c0.47	0.38		c0.01	
v/s Ratio Perm	0.39					0.01
v/c Ratio	0.53	0.56	0.55		0.12	0.11
Uniform Delay, d1	5.3	2.3	7.4		43.0	43.0
Progression Factor	1.00	1.00	0.31		1.00	1.00
Incremental Delay, d2	1.4	0.8	0.7		0.4	0.4
Delay (s)	6.8	3.1	2.9		43.4	43.4
Level of Service	A	A	A		D	D
Approach Delay (s)		3.5	2.9		43.4	
Approach LOS		A	A		D	

Intersection Summary

HCM 2000 Control Delay	5.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	58.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

6: Innes Avenue & Arelious Walker Drive

9/9/2016



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	443	1114	983	35	24	274
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.5	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.99		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1540	2887	2801		1347	1202
Flt Permitted	0.18	1.00	1.00		0.95	1.00
Satd. Flow (perm)	298	2887	2801		1347	1202
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	466	1173	1035	37	25	288
RTOR Reduction (vph)	0	0	2	0	0	9
Lane Group Flow (vph)	466	1173	1070	0	25	279
Confl. Peds. (#/hr)	100			100		
Confl. Bikes (#/hr)				10		10
Bus Blockages (#/hr)	0	0	5	5	0	0
Parking (#/hr)		5	5		5	5
Turn Type	pm+pt	NA	NA		Prot	pm+ov
Protected Phases	5	2	6		4	5
Permitted Phases	2					8
Actuated Green, G (s)	87.8	87.8	57.8		3.7	30.2
Effective Green, g (s)	87.8	87.8	57.8		3.7	30.2
Actuated g/C Ratio	0.88	0.88	0.58		0.04	0.30
Clearance Time (s)	4.0	4.0	4.0		4.5	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	584	2534	1618		49	411
v/s Ratio Prot	c0.21	0.41	0.38		0.02	c0.18
v/s Ratio Perm	c0.49					0.06
v/c Ratio	0.80	0.46	0.66		0.51	0.68
Uniform Delay, d1	16.8	1.3	14.4		47.3	30.6
Progression Factor	1.13	0.63	1.04		1.00	1.00
Incremental Delay, d2	6.4	0.5	1.9		8.7	4.4
Delay (s)	25.3	1.3	16.9		55.9	35.1
Level of Service	C	A	B		E	D
Approach Delay (s)		8.1	16.9		36.7	
Approach LOS		A	B		D	
Intersection Summary						
HCM 2000 Control Delay			14.2		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.83			
Actuated Cycle Length (s)			100.0		Sum of lost time (s)	12.5
Intersection Capacity Utilization			72.7%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

7: Innes Avenue & Earl Street

9/9/2016



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	310	828	686	19	18	332
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.99		1.00	0.97
Flpb, ped/bikes	0.98	1.00	1.00		1.00	1.00
Frt	1.00	1.00	1.00		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1501	2858	2842		1347	1166
Flt Permitted	0.32	1.00	1.00		0.95	1.00
Satd. Flow (perm)	501	2858	2842		1347	1166
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	326	872	722	20	19	349
RTOR Reduction (vph)	0	0	1	0	0	312
Lane Group Flow (vph)	326	872	741	0	19	37
Confl. Peds. (#/hr)	100			100		
Confl. Bikes (#/hr)				10		10
Bus Blockages (#/hr)	0	5	0	0	0	0
Parking (#/hr)		5	5		5	5
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		8	
Permitted Phases	2					8
Actuated Green, G (s)	81.4	81.4	64.7		10.6	10.6
Effective Green, g (s)	81.4	81.4	64.7		10.6	10.6
Actuated g/C Ratio	0.81	0.81	0.65		0.11	0.11
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	534	2326	1838		142	123
v/s Ratio Prot	c0.08	0.31	0.26		0.01	
v/s Ratio Perm	c0.42					c0.03
v/c Ratio	0.61	0.37	0.40		0.13	0.30
Uniform Delay, d1	3.3	2.5	8.4		40.5	41.3
Progression Factor	2.10	0.88	1.00		1.00	1.00
Incremental Delay, d2	1.9	0.4	0.7		0.4	1.4
Delay (s)	8.8	2.6	9.1		41.0	42.7
Level of Service	A	A	A		D	D
Approach Delay (s)		4.3	9.1		42.6	
Approach LOS		A	A		D	
Intersection Summary						
HCM 2000 Control Delay			11.9		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.59			
Actuated Cycle Length (s)			100.0		Sum of lost time (s)	12.0
Intersection Capacity Utilization			54.3%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

1: Third Street & Evans Avenue

9/9/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	100	775	100	208	922	480	240	710	217	432	750	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.86	1.00	0.98		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	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.96		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1540	2982		1540	3079	1036	1540	2897		1540	3002	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1540	2982		1540	3079	1036	1540	2897		1540	3002	
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)	105	816	105	219	971	505	253	747	228	455	789	74
RTOR Reduction (vph)	0	10	0	0	0	218	0	29	0	0	7	0
Lane Group Flow (vph)	105	911	0	219	971	287	253	946	0	455	856	0
Confl. Peds. (#/hr)	100		100	100		100	100		100	100		100
Confl. Bikes (#/hr)			10			10			10			10
Parking (#/hr)						5						
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	5.0	27.0		7.0	29.0	29.0	16.0	34.0		12.0	30.0	
Effective Green, g (s)	5.0	27.0		7.0	29.0	29.0	16.0	34.0		12.0	30.0	
Actuated g/C Ratio	0.05	0.27		0.07	0.29	0.29	0.16	0.34		0.12	0.30	
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	77	805		107	892	300	246	984		184	900	
v/s Ratio Prot	0.07	c0.31		c0.14	0.32		0.16	c0.33		c0.30	0.29	
v/s Ratio Perm						0.28						
v/c Ratio	1.36	1.13		2.05	1.09	0.96	1.03	0.96		2.47	0.95	
Uniform Delay, d1	47.5	36.5		46.5	35.5	34.9	42.0	32.4		44.0	34.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.09	1.30		1.01	1.00	
Incremental Delay, d2	226.9	74.4		501.9	57.2	40.0	64.3	20.4		678.2	19.7	
Delay (s)	274.4	110.9		548.4	92.7	74.9	109.9	62.5		722.6	54.0	
Level of Service	F	F		F	F	E	F	E		F	D	
Approach Delay (s)		127.7			146.2			72.2			284.8	
Approach LOS		F			F			E			F	
Intersection Summary												
HCM 2000 Control Delay		160.0				HCM 2000 Level of Service		F				
HCM 2000 Volume to Capacity ratio		1.34										
Actuated Cycle Length (s)		100.0				Sum of lost time (s)		20.0				
Intersection Capacity Utilization		115.0%				ICU Level of Service		H				
Analysis Period (min)		15										

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

2: Jennings Street & Evans Avenue/Hunters Point Blvd

9/9/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	90	1004	200	40	1450	343	30	10	10	352	73	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0		4.0		4.0	4.0	
Lane Util. Factor		0.95	1.00		0.95	1.00		1.00		1.00	1.00	
Frpb, ped/bikes		1.00	0.97		1.00	0.98		1.00		1.00	0.99	
Flpb, ped/bikes		1.00	1.00		1.00	1.00		1.00		0.99	1.00	
Frt		1.00	0.85		1.00	0.85		0.97		1.00	0.93	
Flt Protected		1.00	1.00		1.00	1.00		0.97		0.95	1.00	
Satd. Flow (prot)		3036	1307		3075	1344		1522		1335	1314	
Flt Permitted		0.59	1.00		0.88	1.00		0.83		0.77	1.00	
Satd. Flow (perm)		1791	1307		2721	1344		1296		1076	1314	
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)	95	1057	211	42	1526	361	32	11	11	371	77	63
RTOR Reduction (vph)	0	0	69	0	0	88	0	7	0	0	22	0
Lane Group Flow (vph)	0	1152	142	0	1568	273	0	47	0	371	118	0
Confl. Peds. (#/hr)	2		5	5		2	2		7	7		2
Confl. Bikes (#/hr)			1									
Bus Blockages (#/hr)	0	5	5	0	0	0	0	0	0	0	0	0
Parking (#/hr)										5	5	5
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)		53.0	53.0		53.0	53.0		29.0		29.0	29.0	
Effective Green, g (s)		53.0	53.0		53.0	53.0		29.0		29.0	29.0	
Actuated g/C Ratio		0.59	0.59		0.59	0.59		0.32		0.32	0.32	
Clearance Time (s)		4.0	4.0		4.0	4.0		4.0		4.0	4.0	
Lane Grp Cap (vph)		1054	769		1602	791		417		346	423	
v/s Ratio Prot											0.09	
v/s Ratio Perm		c0.64	0.11		0.58	0.20		0.04		c0.34		
v/c Ratio		1.30dl	0.18		0.98	0.35		0.11		1.07	0.28	
Uniform Delay, d1		18.5	8.5		18.0	9.5		21.4		30.5	22.7	
Progression Factor		1.00	1.00		1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2		56.7	0.5		18.0	1.2		0.5		68.9	1.6	
Delay (s)		75.2	9.1		35.9	10.7		22.0		99.4	24.3	
Level of Service		E	A		D	B		C		F	C	
Approach Delay (s)		64.9			31.2			22.0			78.9	
Approach LOS		E			C			C			E	
Intersection Summary												
HCM 2000 Control Delay			49.3				HCM 2000 Level of Service			D		
HCM 2000 Volume to Capacity ratio			1.08									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)			8.0		
Intersection Capacity Utilization			121.4%				ICU Level of Service			H		
Analysis Period (min)			15									
dl Defacto Left Lane. Recode with 1 though lane as a left lane.												
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

3: Hunters Point Blvd & Hawes Street

9/9/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	10	0	0	0	0	1793	0	0	1477	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0						5.0			5.0	
Lane Util. Factor		1.00						0.95			0.95	
Frt		0.86						1.00			1.00	
Flt Protected		1.00						1.00			1.00	
Satd. Flow (prot)		1402						3079			3070	
Flt Permitted		1.00						1.00			1.00	
Satd. Flow (perm)		1402						3079			3070	
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)	0	0	11	0	0	0	0	1887	0	0	1555	32
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	3	0	0	0	0	0	1887	0	0	1585	0
Turn Type		NA						NA			NA	
Protected Phases					8			2			6	
Permitted Phases	4	4		8			2					
Actuated Green, G (s)		18.0						32.0			32.0	
Effective Green, g (s)		18.0						32.0			32.0	
Actuated g/C Ratio		0.30						0.53			0.53	
Clearance Time (s)		5.0						5.0			5.0	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		420						1642			1637	
v/s Ratio Prot								c0.61			0.52	
v/s Ratio Perm		c0.00										
v/c Ratio		0.01						1.15			0.97	
Uniform Delay, d1		14.7						14.0			13.5	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		0.0						74.7			15.2	
Delay (s)		14.8						88.7			28.7	
Level of Service		B						F			C	
Approach Delay (s)		14.8			0.0			88.7			28.7	
Approach LOS		B			A			F			C	
Intersection Summary												
HCM 2000 Control Delay		61.1						HCM 2000 Level of Service		E		
HCM 2000 Volume to Capacity ratio		0.74										
Actuated Cycle Length (s)		60.0						Sum of lost time (s)		10.0		
Intersection Capacity Utilization		66.7%						ICU Level of Service		C		
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

4: Innes Avenue & Hunters Point Blvd

9/9/2016



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	183	210	1783	1477	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0	5.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	
Frt		0.86	1.00	1.00	1.00	
Flt Protected		1.00	0.95	1.00	1.00	
Satd. Flow (prot)		1402	1540	3079	3076	
Flt Permitted		1.00	0.95	1.00	1.00	
Satd. Flow (perm)		1402	1540	3079	3076	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	191	219	1857	1539	10
RTOR Reduction (vph)	0	17	0	0	1	0
Lane Group Flow (vph)	0	174	219	1857	1548	0
Turn Type		Perm	Prot	NA	NA	
Protected Phases			4	2	6	
Permitted Phases		4				
Actuated Green, G (s)		12.7	12.7	32.1	32.1	
Effective Green, g (s)		12.7	12.7	32.1	32.1	
Actuated g/C Ratio		0.23	0.23	0.59	0.59	
Clearance Time (s)		5.0	5.0	5.0	5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		324	356	1803	1801	
v/s Ratio Prot			c0.14	c0.60	0.50	
v/s Ratio Perm		0.12				
v/c Ratio		0.54	0.62	1.03	0.86	
Uniform Delay, d1		18.5	18.9	11.3	9.5	
Progression Factor		1.00	1.00	1.00	1.00	
Incremental Delay, d2		1.7	3.1	29.3	4.4	
Delay (s)		20.2	22.0	40.6	13.8	
Level of Service		C	C	D	B	
Approach Delay (s)	20.2			38.7	13.8	
Approach LOS	C			D	B	
Intersection Summary						
HCM 2000 Control Delay			27.7		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.91			
Actuated Cycle Length (s)			54.8		Sum of lost time (s)	10.0
Intersection Capacity Utilization			67.0%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

5: Innes Avenue & New Griffith St

9/9/2016



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	181	1479	1821	14	15	172
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	1.00		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1711	3421	3417		1711	1531
Flt Permitted	0.06	1.00	1.00		0.95	1.00
Satd. Flow (perm)	99	3421	3417		1711	1531
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	191	1557	1917	15	16	181
RTOR Reduction (vph)	0	0	0	0	0	132
Lane Group Flow (vph)	191	1557	1932	0	16	49
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2					8
Actuated Green, G (s)	82.9	82.9	70.9		9.1	9.1
Effective Green, g (s)	82.9	82.9	70.9		9.1	9.1
Actuated g/C Ratio	0.83	0.83	0.71		0.09	0.09
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	211	2836	2422		155	139
v/s Ratio Prot	c0.07	0.46	0.57		0.01	
v/s Ratio Perm	c0.68					c0.03
v/c Ratio	0.91	0.55	0.80		0.10	0.35
Uniform Delay, d1	30.2	2.7	9.7		41.7	42.7
Progression Factor	1.00	1.00	0.75		1.00	1.00
Incremental Delay, d2	36.8	0.8	0.3		0.3	1.6
Delay (s)	66.9	3.5	7.5		42.0	44.2
Level of Service	E	A	A		D	D
Approach Delay (s)		10.4	7.5		44.1	
Approach LOS		B	A		D	
Intersection Summary						
HCM 2000 Control Delay			10.7		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.87			
Actuated Cycle Length (s)			100.0		Sum of lost time (s)	12.0
Intersection Capacity Utilization			74.1%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

6: Innes Avenue & Arellious Walker Drive

9/9/2016



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	434	1070	1364	21	23	481
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.5	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.99		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	1.00		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1540	2887	2833		1347	1201
Flt Permitted	0.11	1.00	1.00		0.95	1.00
Satd. Flow (perm)	177	2887	2833		1347	1201
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	457	1126	1436	22	24	506
RTOR Reduction (vph)	0	0	1	0	0	5
Lane Group Flow (vph)	457	1126	1457	0	24	501
Confl. Peds. (#/hr)	100			100		
Confl. Bikes (#/hr)				10		10
Bus Blockages (#/hr)	0	0	5	5	0	0
Parking (#/hr)		5	5		5	5
Turn Type	pm+pt	NA	NA		Prot	pm+ov
Protected Phases	5	2	6		4	5
Permitted Phases	2					8
Actuated Green, G (s)	87.9	87.9	63.9		3.6	24.1
Effective Green, g (s)	87.9	87.9	63.9		3.6	24.1
Actuated g/C Ratio	0.88	0.88	0.64		0.04	0.24
Clearance Time (s)	4.0	4.0	4.0		4.5	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	428	2537	1810		48	337
v/s Ratio Prot	0.21	0.39	0.51		0.02	c0.30
v/s Ratio Perm	c0.72					0.12
v/c Ratio	1.07	0.44	0.81		0.50	1.49
Uniform Delay, d1	28.0	1.2	13.4		47.3	38.0
Progression Factor	1.48	0.78	0.35		1.00	1.00
Incremental Delay, d2	59.4	0.5	2.8		8.0	234.8
Delay (s)	100.8	1.4	7.5		55.3	272.8
Level of Service	F	A	A		E	F
Approach Delay (s)		30.1	7.5		262.9	
Approach LOS		C	A		F	
Intersection Summary						
HCM 2000 Control Delay			55.4		HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio			1.29			
Actuated Cycle Length (s)			100.0		Sum of lost time (s)	12.5
Intersection Capacity Utilization			83.2%		ICU Level of Service	E
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

7: Innes Avenue & Earl Street

9/9/2016



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	377	716	1072	17	16	313
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.99		1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	1.00		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1540	2858	2860		1347	1165
Flt Permitted	0.16	1.00	1.00		0.95	1.00
Satd. Flow (perm)	251	2858	2860		1347	1165
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	397	754	1128	18	17	329
RTOR Reduction (vph)	0	0	1	0	0	295
Lane Group Flow (vph)	397	754	1145	0	17	34
Confl. Peds. (#/hr)	100			100		
Confl. Bikes (#/hr)				10		10
Bus Blockages (#/hr)	0	5	0	0	0	0
Parking (#/hr)		5	5		5	5
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		8	
Permitted Phases	2					8
Actuated Green, G (s)	81.7	81.7	55.7		10.3	10.3
Effective Green, g (s)	81.7	81.7	55.7		10.3	10.3
Actuated g/C Ratio	0.82	0.82	0.56		0.10	0.10
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	488	2334	1593		138	119
v/s Ratio Prot	c0.18	0.26	0.40		0.01	
v/s Ratio Perm	c0.48					c0.03
v/c Ratio	0.81	0.32	0.72		0.12	0.28
Uniform Delay, d1	19.2	2.3	16.4		40.7	41.4
Progression Factor	1.36	0.89	1.00		1.00	1.00
Incremental Delay, d2	9.4	0.3	2.8		0.4	1.3
Delay (s)	35.5	2.4	19.2		41.2	42.8
Level of Service	D	A	B		D	D
Approach Delay (s)		13.8	19.2		42.7	
Approach LOS		B	B		D	
Intersection Summary						
HCM 2000 Control Delay			19.9		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.78			
Actuated Cycle Length (s)			100.0		Sum of lost time (s)	12.0
Intersection Capacity Utilization			70.2%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

Cumulative Plus Variant Conditions

HCM Signalized Intersection Capacity Analysis

1: Third Street & Evans Avenue

9/9/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	100	970	40	144	793	347	260	970	312	673	230	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	11	11	11	11
Total Lost time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.86	1.00	0.97		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	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.96		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1540	3046		1540	3079	1035	1540	2890		1540	2892	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1540	3046		1540	3079	1035	1540	2890		1540	2892	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	101	980	40	145	801	351	263	980	315	680	232	61
RTOR Reduction (vph)	0	3	0	0	0	197	0	31	0	0	23	0
Lane Group Flow (vph)	101	1017	0	145	801	154	263	1264	0	680	270	0
Confl. Peds. (#/hr)	100		100	100		100	100		100	100		100
Confl. Bikes (#/hr)			10			10			10			10
Parking (#/hr)						5						
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	7.0	27.0		5.0	25.0	25.0	18.6	36.0		12.0	29.4	
Effective Green, g (s)	7.0	27.0		5.0	25.0	25.0	18.6	36.0		12.0	29.4	
Actuated g/C Ratio	0.07	0.27		0.05	0.25	0.25	0.19	0.36		0.12	0.29	
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	107	822		77	769	258	286	1040		184	850	
v/s Ratio Prot	0.07	c0.33		c0.09	0.26		0.17	c0.44		c0.44	0.09	
v/s Ratio Perm						0.15						
v/c Ratio	0.94	1.24		1.88	1.04	0.60	0.92	1.22		3.70	0.32	
Uniform Delay, d1	46.3	36.5		47.5	37.5	33.0	40.0	32.0		44.0	27.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	0.84	0.88		0.74	0.58	
Incremental Delay, d2	68.7	117.2		442.2	43.8	3.7	32.2	105.9		1225.4	0.9	
Delay (s)	115.0	153.7		489.7	81.3	36.7	65.6	134.1		1258.0	17.0	
Level of Service	F	F		F	F	D	E	F		F	B	
Approach Delay (s)		150.2			114.9			122.5			884.3	
Approach LOS		F			F			F			F	
Intersection Summary												
HCM 2000 Control Delay		276.6				HCM 2000 Level of Service		F				
HCM 2000 Volume to Capacity ratio		1.63										
Actuated Cycle Length (s)		100.0				Sum of lost time (s)		20.0				
Intersection Capacity Utilization		140.7%				ICU Level of Service		H				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

2: Jennings Street & Evans Avenue/Hunters Point Blvd

9/9/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	190	1505	40	20	995	240	40	10	10	528	58	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0		4.0		4.0	4.0	
Lane Util. Factor		0.95	1.00		0.95	1.00		1.00		1.00	1.00	
Frpb, ped/bikes		1.00	0.97		1.00	0.98		1.00		1.00	0.99	
Flpb, ped/bikes		1.00	1.00		1.00	1.00		1.00		0.99	1.00	
Frt		1.00	0.85		1.00	0.85		0.98		1.00	0.92	
Flt Protected		0.99	1.00		1.00	1.00		0.97		0.95	1.00	
Satd. Flow (prot)		3031	1307		3076	1344		1525		1336	1291	
Flt Permitted		0.58	1.00		0.78	1.00		0.80		0.75	1.00	
Satd. Flow (perm)		1782	1307		2390	1344		1263		1052	1291	
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)	200	1584	42	21	1047	253	42	11	11	556	61	74
RTOR Reduction (vph)	0	0	9	0	0	90	0	7	0	0	48	0
Lane Group Flow (vph)	0	1784	33	0	1068	163	0	57	0	556	87	0
Confl. Peds. (#/hr)	2		5	5		2	2		7	7		2
Confl. Bikes (#/hr)			1									
Bus Blockages (#/hr)	0	5	5	0	0	0	0	0	0	0	0	0
Parking (#/hr)										5	5	5
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)		50.0	50.0		50.0	50.0		32.0		32.0	32.0	
Effective Green, g (s)		50.0	50.0		50.0	50.0		32.0		32.0	32.0	
Actuated g/C Ratio		0.56	0.56		0.56	0.56		0.36		0.36	0.36	
Clearance Time (s)		4.0	4.0		4.0	4.0		4.0		4.0	4.0	
Lane Grp Cap (vph)		990	726		1327	746		449		374	459	
v/s Ratio Prot											0.07	
v/s Ratio Perm		c1.00	0.03		0.45	0.12		0.05		c0.53		
v/c Ratio		1.80	0.05		0.80	0.22		0.13		1.49	0.19	
Uniform Delay, d1		20.0	9.1		16.1	10.1		19.6		29.0	20.0	
Progression Factor		1.00	1.00		1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2		364.9	0.1		5.3	0.7		0.6		232.8	0.9	
Delay (s)		384.9	9.2		21.4	10.8		20.2		261.8	21.0	
Level of Service		F	A		C	B		C		F	C	
Approach Delay (s)		376.3			19.3			20.2			214.8	
Approach LOS		F			B			C			F	
Intersection Summary												
HCM 2000 Control Delay		221.0			HCM 2000 Level of Service			F				
HCM 2000 Volume to Capacity ratio		1.68										
Actuated Cycle Length (s)		90.0			Sum of lost time (s)			8.0				
Intersection Capacity Utilization		135.1%			ICU Level of Service			H				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

3: Hunters Point Blvd & Hawes Street

9/9/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	0	0	0	0	0	10	1144	0	0	2124	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		1.00						0.95			0.95	
Frt		1.00						1.00			1.00	
Flt Protected		0.95						1.00			1.00	
Satd. Flow (prot)		1711						3420			3416	
Flt Permitted		0.76						0.77			1.00	
Satd. Flow (perm)		1363						2627			3416	
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)	11	0	0	0	0	0	11	1204	0	0	2236	21
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	11	0	0	0	0	0	1215	0	0	2256	0
Turn Type	custom	NA					Perm	NA			NA	
Protected Phases					8			2			6	
Permitted Phases	4	4		8			2					
Actuated Green, G (s)		18.0						32.0			32.0	
Effective Green, g (s)		19.0						33.0			33.0	
Actuated g/C Ratio		0.32						0.55			0.55	
Clearance Time (s)		5.0						5.0			5.0	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		431						1444			1878	
v/s Ratio Prot											c0.66	
v/s Ratio Perm		c0.01						0.46				
v/c Ratio		0.03						0.84			1.20	
Uniform Delay, d1		14.1						11.3			13.5	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		0.1						6.1			96.0	
Delay (s)		14.2						17.4			109.5	
Level of Service		B						B			F	
Approach Delay (s)		14.2			0.0			17.4			109.5	
Approach LOS		B			A			B			F	
Intersection Summary												
HCM 2000 Control Delay		77.1						HCM 2000 Level of Service			E	
HCM 2000 Volume to Capacity ratio		0.79										
Actuated Cycle Length (s)		60.0						Sum of lost time (s)		9.0		
Intersection Capacity Utilization		69.3%						ICU Level of Service		C		
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

4: Innes Avenue & Hunters Point Blvd

9/9/2016



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	269	133	1144	2114	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	
Frt		0.86	1.00	1.00	1.00	
Flt Protected		1.00	0.95	1.00	1.00	
Satd. Flow (prot)		1558	1711	3421	3419	
Flt Permitted		1.00	0.95	1.00	1.00	
Satd. Flow (perm)		1558	1711	3421	3419	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	283	140	1204	2225	11
RTOR Reduction (vph)	0	3	0	0	0	0
Lane Group Flow (vph)	0	280	140	1204	2236	0
Turn Type		Perm	Prot	NA	NA	
Protected Phases			4	2	6	
Permitted Phases		4				
Actuated Green, G (s)		14.3	14.3	32.1	32.1	
Effective Green, g (s)		15.3	15.3	33.1	33.1	
Actuated g/C Ratio		0.27	0.27	0.59	0.59	
Clearance Time (s)		5.0	5.0	5.0	5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		422	464	2007	2006	
v/s Ratio Prot			0.08	0.35	c0.65	
v/s Ratio Perm		c0.18				
v/c Ratio		0.66	0.30	0.60	1.11	
Uniform Delay, d1		18.3	16.3	7.4	11.6	
Progression Factor		1.00	1.00	1.00	1.00	
Incremental Delay, d2		3.9	0.4	1.3	59.1	
Delay (s)		22.2	16.7	8.8	70.8	
Level of Service		C	B	A	E	
Approach Delay (s)	22.2			9.6	70.8	
Approach LOS	C			A	E	
Intersection Summary						
HCM 2000 Control Delay			45.9		HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio			0.97			
Actuated Cycle Length (s)			56.4		Sum of lost time (s)	8.0
Intersection Capacity Utilization			82.1%		ICU Level of Service	E
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

5: Innes Avenue & New Griffith St

9/9/2016



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	319	2064	1146	20	14	131
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	1.00		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1711	3421	3412		1711	1531
Flt Permitted	0.18	1.00	1.00		0.95	1.00
Satd. Flow (perm)	315	3421	3412		1711	1531
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	336	2173	1206	21	15	138
RTOR Reduction (vph)	0	0	1	0	0	28
Lane Group Flow (vph)	336	2173	1226	0	15	110
Turn Type	pm+pt	NA	NA		Prot	pm+ov
Protected Phases	5	2	6		4	5
Permitted Phases	2					4
Actuated Green, G (s)	89.0	89.0	69.4		3.0	18.6
Effective Green, g (s)	89.0	89.0	69.4		3.0	18.6
Actuated g/C Ratio	0.89	0.89	0.69		0.03	0.19
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	498	3044	2367		51	346
v/s Ratio Prot	0.11	c0.64	0.36		0.01	c0.05
v/s Ratio Perm	0.49					0.02
v/c Ratio	0.67	0.71	0.52		0.29	0.32
Uniform Delay, d1	8.9	1.7	7.3		47.5	35.2
Progression Factor	1.00	1.00	0.39		1.00	1.00
Incremental Delay, d2	3.6	1.5	0.7		3.2	0.5
Delay (s)	12.5	3.1	3.5		50.7	35.8
Level of Service	B	A	A		D	D
Approach Delay (s)		4.4	3.5		37.2	
Approach LOS		A	A		D	

Intersection Summary

HCM 2000 Control Delay	5.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	67.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

6: Innes Avenue & Arelious Walker Drive

9/9/2016



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	670	1418	896	39	24	280
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1711	3207	3099		1497	1337
Flt Permitted	0.19	1.00	1.00		0.95	1.00
Satd. Flow (perm)	336	3207	3099		1497	1337
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	705	1493	943	41	25	295
RTOR Reduction (vph)	0	0	2	0	0	4
Lane Group Flow (vph)	705	1493	982	0	25	291
Confl. Peds. (#/hr)	100			100		
Confl. Bikes (#/hr)				10		10
Bus Blockages (#/hr)	0	0	5	5	0	0
Parking (#/hr)		5	5		5	5
Turn Type	pm+pt	NA	NA		Prot	pm+ov
Protected Phases	5	2	6		4	5
Permitted Phases	2					8
Actuated Green, G (s)	88.0	88.0	51.0		3.5	37.0
Effective Green, g (s)	88.0	88.0	51.0		4.0	37.0
Actuated g/C Ratio	0.88	0.88	0.51		0.04	0.37
Clearance Time (s)	4.0	4.0	4.0		4.5	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	749	2822	1580		59	548
v/s Ratio Prot	c0.31	0.47	0.32		0.02	c0.17
v/s Ratio Perm	c0.52					0.04
v/c Ratio	0.94	0.53	0.62		0.42	0.53
Uniform Delay, d1	20.5	1.3	17.6		46.9	24.7
Progression Factor	1.02	0.48	0.81		1.00	1.00
Incremental Delay, d2	16.0	0.5	1.7		4.8	1.0
Delay (s)	36.9	1.2	15.8		51.7	25.7
Level of Service	D	A	B		D	C
Approach Delay (s)		12.6	15.8		27.7	
Approach LOS		B	B		C	
Intersection Summary						
HCM 2000 Control Delay		14.9		HCM 2000 Level of Service		B
HCM 2000 Volume to Capacity ratio		0.96				
Actuated Cycle Length (s)		100.0		Sum of lost time (s)		12.0
Intersection Capacity Utilization		76.7%		ICU Level of Service		D
Analysis Period (min)		15				
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

7: Innes Avenue & Earl Street

9/9/2016



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	615	827	692	25	16	243
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.99		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1711	3175	3143		1497	1337
Flt Permitted	0.28	1.00	1.00		0.95	1.00
Satd. Flow (perm)	497	3175	3143		1497	1337
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	647	871	728	26	17	256
RTOR Reduction (vph)	0	0	2	0	0	8
Lane Group Flow (vph)	647	871	752	0	17	248
Confl. Peds. (#/hr)	100			100		
Confl. Bikes (#/hr)				10		10
Bus Blockages (#/hr)	0	5	0	0	0	0
Parking (#/hr)		5	5		5	5
Turn Type	pm+pt	NA	NA		Prot	pm+ov
Protected Phases	5	2	6		8	5
Permitted Phases	2					8
Actuated Green, G (s)	88.8	88.8	51.7		3.2	36.3
Effective Green, g (s)	88.8	88.8	51.7		3.2	36.3
Actuated g/C Ratio	0.89	0.89	0.52		0.03	0.36
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	843	2819	1624		47	538
v/s Ratio Prot	c0.25	0.27	0.24		0.01	c0.15
v/s Ratio Perm	c0.43					0.03
v/c Ratio	0.77	0.31	0.46		0.36	0.46
Uniform Delay, d1	10.4	0.9	15.3		47.4	24.4
Progression Factor	1.39	1.11	1.00		1.00	1.00
Incremental Delay, d2	3.7	0.3	1.0		4.7	0.6
Delay (s)	18.2	1.2	16.3		52.1	25.0
Level of Service	B	A	B		D	C
Approach Delay (s)		8.4	16.3		26.7	
Approach LOS		A	B		C	
Intersection Summary						
HCM 2000 Control Delay			12.7		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.79			
Actuated Cycle Length (s)			100.0		Sum of lost time (s)	12.0
Intersection Capacity Utilization			67.5%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

1: Third Street & Evans Avenue

9/9/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	100	759	100	322	984	646	240	710	201	411	750	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.86	1.00	0.98		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	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1540	2981		1540	3079	1036	1540	2907		1540	3002	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1540	2981		1540	3079	1036	1540	2907		1540	3002	
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)	105	799	105	339	1036	680	253	747	212	433	789	74
RTOR Reduction (vph)	0	10	0	0	0	188	0	26	0	0	7	0
Lane Group Flow (vph)	105	894	0	339	1036	492	253	933	0	433	856	0
Confl. Peds. (#/hr)	100		100	100		100	100		100	100		100
Confl. Bikes (#/hr)			10			10			10			10
Parking (#/hr)						5						
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	5.0	27.0		9.0	31.0	31.0	15.0	34.0		10.0	29.0	
Effective Green, g (s)	5.0	27.0		9.0	31.0	31.0	15.0	34.0		10.0	29.0	
Actuated g/C Ratio	0.05	0.27		0.09	0.31	0.31	0.15	0.34		0.10	0.29	
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	77	804		138	954	321	231	988		154	870	
v/s Ratio Prot	0.07	c0.30		c0.22	0.34		0.16	c0.32		c0.28	c0.29	
v/s Ratio Perm						c0.48						
v/c Ratio	1.36	1.11		2.46	1.09	1.53	1.10	0.94		2.81	0.98	
Uniform Delay, d1	47.5	36.5		45.5	34.5	34.5	42.5	32.1		45.0	35.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.07	1.30		0.98	0.97	
Incremental Delay, d2	226.9	67.0		676.7	55.3	255.3	86.3	17.7		832.3	26.2	
Delay (s)	274.4	103.5		722.2	89.8	289.8	131.9	59.5		876.5	60.3	
Level of Service	F	F		F	F	F	F	E		F	E	
Approach Delay (s)		121.3			260.3			74.6			333.0	
Approach LOS		F			F			E			F	
Intersection Summary												
HCM 2000 Control Delay		211.7				HCM 2000 Level of Service		F				
HCM 2000 Volume to Capacity ratio		1.51										
Actuated Cycle Length (s)		100.0				Sum of lost time (s)		20.0				
Intersection Capacity Utilization		119.6%				ICU Level of Service		H				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

2: Jennings Street & Evans Avenue/Hunters Point Blvd

9/9/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	90	951	200	40	1792	577	30	10	10	318	80	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0		4.0		4.0	4.0	
Lane Util. Factor		0.95	1.00		0.95	1.00		1.00		1.00	1.00	
Frpb, ped/bikes		1.00	0.97		1.00	0.98		1.00		1.00	0.99	
Flpb, ped/bikes		1.00	1.00		1.00	1.00		1.00		0.99	1.00	
Frt		1.00	0.85		1.00	0.85		0.97		1.00	0.94	
Flt Protected		1.00	1.00		1.00	1.00		0.97		0.95	1.00	
Satd. Flow (prot)		3035	1307		3076	1344		1522		1335	1319	
Flt Permitted		0.55	1.00		0.90	1.00		0.82		0.77	1.00	
Satd. Flow (perm)		1672	1307		2768	1344		1283		1079	1319	
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)	95	1001	211	42	1886	607	32	11	11	335	84	63
RTOR Reduction (vph)	0	0	73	0	0	120	0	8	0	0	14	0
Lane Group Flow (vph)	0	1096	138	0	1928	487	0	46	0	335	133	0
Confl. Peds. (#/hr)	2		5	5		2	2		7	7		2
Confl. Bikes (#/hr)			1									
Bus Blockages (#/hr)	0	5	5	0	0	0	0	0	0	0	0	0
Parking (#/hr)										5	5	5
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)		57.0	57.0		57.0	57.0		25.0		25.0	25.0	
Effective Green, g (s)		57.0	57.0		57.0	57.0		25.0		25.0	25.0	
Actuated g/C Ratio		0.63	0.63		0.63	0.63		0.28		0.28	0.28	
Clearance Time (s)		4.0	4.0		4.0	4.0		4.0		4.0	4.0	
Lane Grp Cap (vph)		1058	827		1753	851		356		299	366	
v/s Ratio Prot											0.10	
v/s Ratio Perm		0.66	0.11		c0.70	0.36		0.04		c0.31		
v/c Ratio		1.36dl	0.17		1.10	0.57		0.13		1.12	0.36	
Uniform Delay, d1		16.5	6.8		16.5	9.5		24.3		32.5	26.1	
Progression Factor		1.00	1.00		1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2		37.4	0.4		54.3	2.8		0.7		88.5	2.8	
Delay (s)		53.9	7.2		70.8	12.3		25.1		121.0	28.9	
Level of Service		D	A		E	B		C		F	C	
Approach Delay (s)		46.3			56.8			25.1			92.9	
Approach LOS		D			E			C			F	
Intersection Summary												
HCM 2000 Control Delay		57.2			HCM 2000 Level of Service			E				
HCM 2000 Volume to Capacity ratio		1.11										
Actuated Cycle Length (s)		90.0			Sum of lost time (s)			8.0				
Intersection Capacity Utilization		130.3%			ICU Level of Service			H				
Analysis Period (min)		15										
dl Defacto Left Lane. Recode with 1 though lane as a left lane.												
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

3: Hunters Point Blvd & Hawes Street

9/9/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	10	0	0	0	0	2374	0	0	1398	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0						5.0			5.0	
Lane Util. Factor		1.00						0.95			0.95	
Frt		0.86						1.00			1.00	
Flt Protected		1.00						1.00			1.00	
Satd. Flow (prot)		1402						3079			3069	
Flt Permitted		1.00						1.00			1.00	
Satd. Flow (perm)		1402						3079			3069	
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)	0	0	11	0	0	0	0	2499	0	0	1472	32
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	3	0	0	0	0	0	2499	0	0	1502	0
Turn Type		NA						NA			NA	
Protected Phases					8			2			6	
Permitted Phases	4	4		8			2					
Actuated Green, G (s)		18.0						32.0			32.0	
Effective Green, g (s)		18.0						32.0			32.0	
Actuated g/C Ratio		0.30						0.53			0.53	
Clearance Time (s)		5.0						5.0			5.0	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		420						1642			1636	
v/s Ratio Prot								c0.81			0.49	
v/s Ratio Perm		c0.00										
v/c Ratio		0.01						1.52			0.92	
Uniform Delay, d1		14.7						14.0			12.8	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		0.0						238.0			8.5	
Delay (s)		14.8						252.0			21.3	
Level of Service		B						F			C	
Approach Delay (s)		14.8			0.0			252.0			21.3	
Approach LOS		B			A			F			C	
Intersection Summary												
HCM 2000 Control Delay		164.9						HCM 2000 Level of Service			F	
HCM 2000 Volume to Capacity ratio		0.98										
Actuated Cycle Length (s)		60.0						Sum of lost time (s)		10.0		
Intersection Capacity Utilization		84.6%						ICU Level of Service		E		
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

4: Innes Avenue & Hunters Point Blvd

9/9/2016



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	169	312	2364	1398	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0	5.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	
Frt		0.86	1.00	1.00	1.00	
Flt Protected		1.00	0.95	1.00	1.00	
Satd. Flow (prot)		1402	1540	3079	3076	
Flt Permitted		1.00	0.95	1.00	1.00	
Satd. Flow (perm)		1402	1540	3079	3076	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	176	325	2462	1456	10
RTOR Reduction (vph)	0	20	0	0	1	0
Lane Group Flow (vph)	0	156	325	2462	1465	0
Turn Type		Perm	Prot	NA	NA	
Protected Phases			4	2	6	
Permitted Phases		4				
Actuated Green, G (s)		15.7	15.7	32.1	32.1	
Effective Green, g (s)		15.7	15.7	32.1	32.1	
Actuated g/C Ratio		0.27	0.27	0.56	0.56	
Clearance Time (s)		5.0	5.0	5.0	5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		380	418	1709	1708	
v/s Ratio Prot			c0.21	c0.80	0.48	
v/s Ratio Perm		0.11				
v/c Ratio		0.41	0.78	1.44	0.86	
Uniform Delay, d1		17.3	19.4	12.8	10.9	
Progression Factor		1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.7	8.8	201.7	4.5	
Delay (s)		18.0	28.3	214.5	15.4	
Level of Service		B	C	F	B	
Approach Delay (s)	18.0			192.8	15.4	
Approach LOS	B			F	B	
Intersection Summary						
HCM 2000 Control Delay		127.1		HCM 2000 Level of Service	F	
HCM 2000 Volume to Capacity ratio		1.22				
Actuated Cycle Length (s)		57.8		Sum of lost time (s)	10.0	
Intersection Capacity Utilization		76.8%		ICU Level of Service	D	
Analysis Period (min)		15				
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

5: Innes Avenue & New Griffith St

9/9/2016



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	147	1420	2385	13	17	291
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	1.00		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1711	3421	3418		1711	1531
Flt Permitted	0.05	1.00	1.00		0.95	1.00
Satd. Flow (perm)	85	3421	3418		1711	1531
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	155	1495	2511	14	18	306
RTOR Reduction (vph)	0	0	0	0	0	5
Lane Group Flow (vph)	155	1495	2525	0	18	301
Turn Type	pm+pt	NA	NA		Prot	pm+ov
Protected Phases	5	2	6		4	5
Permitted Phases	2					4
Actuated Green, G (s)	88.9	88.9	80.9		3.1	7.1
Effective Green, g (s)	88.9	88.9	80.9		3.1	7.1
Actuated g/C Ratio	0.89	0.89	0.81		0.03	0.07
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	140	3041	2765		53	169
v/s Ratio Prot	0.04	0.44	0.74		0.01	c0.07
v/s Ratio Perm	c0.94					0.13
v/c Ratio	1.11	0.49	0.91		0.34	1.78
Uniform Delay, d1	33.3	1.1	7.0		47.4	46.5
Progression Factor	1.00	1.00	0.81		1.00	1.00
Incremental Delay, d2	107.7	0.6	0.6		3.8	375.2
Delay (s)	141.0	1.7	6.2		51.2	421.7
Level of Service	F	A	A		D	F
Approach Delay (s)		14.8	6.2		401.1	
Approach LOS		B	A		F	

Intersection Summary

HCM 2000 Control Delay	37.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.27		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	91.0%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

6: Innes Avenue & Arelious Walker Drive

9/9/2016



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	505	942	1636	23	29	772
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.5	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.99		1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	1.00		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1540	2887	2835		1347	1199
Flt Permitted	0.06	1.00	1.00		0.95	1.00
Satd. Flow (perm)	97	2887	2835		1347	1199
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	532	992	1722	24	31	813
RTOR Reduction (vph)	0	0	1	0	0	2
Lane Group Flow (vph)	532	992	1745	0	31	811
Confl. Peds. (#/hr)	100			100		
Confl. Bikes (#/hr)				10		10
Bus Blockages (#/hr)	0	0	5	5	0	0
Parking (#/hr)		5	5		5	5
Turn Type	pm+pt	NA	NA		Prot	pm+ov
Protected Phases	5	2	6		4	5
Permitted Phases	2					8
Actuated Green, G (s)	86.0	86.0	63.0		5.5	25.0
Effective Green, g (s)	86.0	86.0	63.0		5.5	25.0
Actuated g/C Ratio	0.86	0.86	0.63		0.06	0.25
Clearance Time (s)	4.0	4.0	4.0		4.5	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	357	2482	1786		74	347
v/s Ratio Prot	0.28	0.34	0.62		0.02	c0.44
v/s Ratio Perm	c1.00					0.23
v/c Ratio	1.49	0.40	0.98		0.42	2.34
Uniform Delay, d1	33.6	1.5	17.8		45.7	37.5
Progression Factor	1.11	0.85	1.09		1.00	1.00
Incremental Delay, d2	233.7	0.4	3.0		3.8	610.3
Delay (s)	270.9	1.7	22.5		49.5	647.8
Level of Service	F	A	C		D	F
Approach Delay (s)		95.7	22.5		625.9	
Approach LOS		F	C		F	
Intersection Summary						
HCM 2000 Control Delay			173.4		HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio			1.89			
Actuated Cycle Length (s)			100.0		Sum of lost time (s)	12.5
Intersection Capacity Utilization			110.9%		ICU Level of Service	H
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

7: Innes Avenue & Earl Street

9/9/2016



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	247	724	1073	15	22	586
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.99		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	1.00		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1540	2858	2863		1347	1202
Flt Permitted	0.16	1.00	1.00		0.95	1.00
Satd. Flow (perm)	267	2858	2863		1347	1202
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	260	762	1129	16	23	617
RTOR Reduction (vph)	0	0	1	0	0	6
Lane Group Flow (vph)	260	762	1144	0	23	611
Confl. Peds. (#/hr)	100			100		
Confl. Bikes (#/hr)				10		10
Bus Blockages (#/hr)	0	5	0	0	0	0
Parking (#/hr)		5	5		5	5
Turn Type	pm+pt	NA	NA		Prot	pm+ov
Protected Phases	5	2	6		8	5
Permitted Phases	2					8
Actuated Green, G (s)	88.4	88.4	58.4		3.6	29.6
Effective Green, g (s)	88.4	88.4	58.4		3.6	29.6
Actuated g/C Ratio	0.88	0.88	0.58		0.04	0.30
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	567	2526	1671		48	403
v/s Ratio Prot	0.12	0.27	c0.40		0.02	c0.39
v/s Ratio Perm	0.29					0.11
v/c Ratio	0.46	0.30	0.68		0.48	1.52
Uniform Delay, d1	7.0	0.9	14.4		47.3	35.2
Progression Factor	2.52	0.94	1.00		1.00	1.00
Incremental Delay, d2	0.6	0.3	2.3		7.4	244.3
Delay (s)	18.3	1.2	16.7		54.6	279.5
Level of Service	B	A	B		D	F
Approach Delay (s)		5.5	16.7		271.5	
Approach LOS		A	B		F	
Intersection Summary						
HCM 2000 Control Delay			70.7		HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio			1.03			
Actuated Cycle Length (s)			100.0		Sum of lost time (s)	12.0
Intersection Capacity Utilization			80.6%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

APPENDIX O: TRAFFIC VOLUME AND INTERSECTION TURNING MOVEMENT COUNTS

[illegible]

Traffic Data Service

Campbell, CA

(408) 377-2988

tdsbay@cs.com

File Name : 12PM FINAL 1

Site Code : 00000012

Start Date : 6/12/2013

Page No : 1

Groups Printed- Vehicles

	PENNSYLVANIA ST Southbound					25TH ST Westbound					PENNSYLVANIA ST Northbound					25TH ST Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	10	181	20	2	213	13	3	64	2	82	10	38	11	0	59	31	7	4	5	47	401
04:15 PM	10	141	45	4	200	13	3	53	1	70	9	48	8	0	65	24	15	5	1	45	380
04:30 PM	14	164	21	2	201	11	3	59	0	73	7	36	10	1	54	26	14	3	4	47	375
04:45 PM	5	149	31	2	187	7	10	49	0	66	11	54	7	0	72	22	12	5	1	40	365
Total	39	635	117	10	801	44	19	225	3	291	37	176	36	1	250	103	48	17	11	179	1521
05:00 PM	8	177	19	0	204	7	3	69	1	80	5	51	11	0	67	18	12	7	2	39	390
05:15 PM	10	179	14	0	203	3	8	67	1	79	7	50	16	1	74	25	9	7	5	46	402
05:30 PM	5	157	5	0	167	5	1	53	3	62	11	42	8	0	61	18	9	3	2	32	322
05:45 PM	4	150	6	1	161	3	12	39	1	55	9	44	14	9	76	20	8	4	2	34	326
Total	27	663	44	1	735	18	24	228	6	276	32	187	49	10	278	81	38	21	11	151	1440
Grand Total	66	1298	161	11	1536	62	43	453	9	567	69	363	85	11	528	184	86	38	22	330	2961
Apprch %	4.3	84.5	10.5	0.7		10.9	7.6	79.9	1.6		13.1	68.8	16.1	2.1		55.8	26.1	11.5	6.7		
Total %	2.2	43.8	5.4	0.4	51.9	2.1	1.5	15.3	0.3	19.1	2.3	12.3	2.9	0.4	17.8	6.2	2.9	1.3	0.7	11.1	

	PENNSYLVANIA ST Southbound				25TH ST Westbound				PENNSYLVANIA ST Northbound				25TH ST Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	14	164	21	199	11	3	59	73	7	36	10	53	26	14	3	43	368
04:45 PM	5	149	31	185	7	10	49	66	11	54	7	72	22	12	5	39	362
05:00 PM	8	177	19	204	7	3	69	79	5	51	11	67	18	12	7	37	387
05:15 PM	10	179	14	203	3	8	67	78	7	50	16	73	25	9	7	41	395
Total Volume	37	669	85	791	28	24	244	296	30	191	44	265	91	47	22	160	1512
% App. Total	4.7	84.6	10.7		9.5	8.1	82.4		11.3	72.1	16.6		56.9	29.4	13.8		
PHF	.661	.934	.685	.969	.636	.600	.884	.937	.682	.884	.688	.908	.875	.839	.786	.930	.957

Traffic Data Service

Campbell, CA

(408) 377-2988

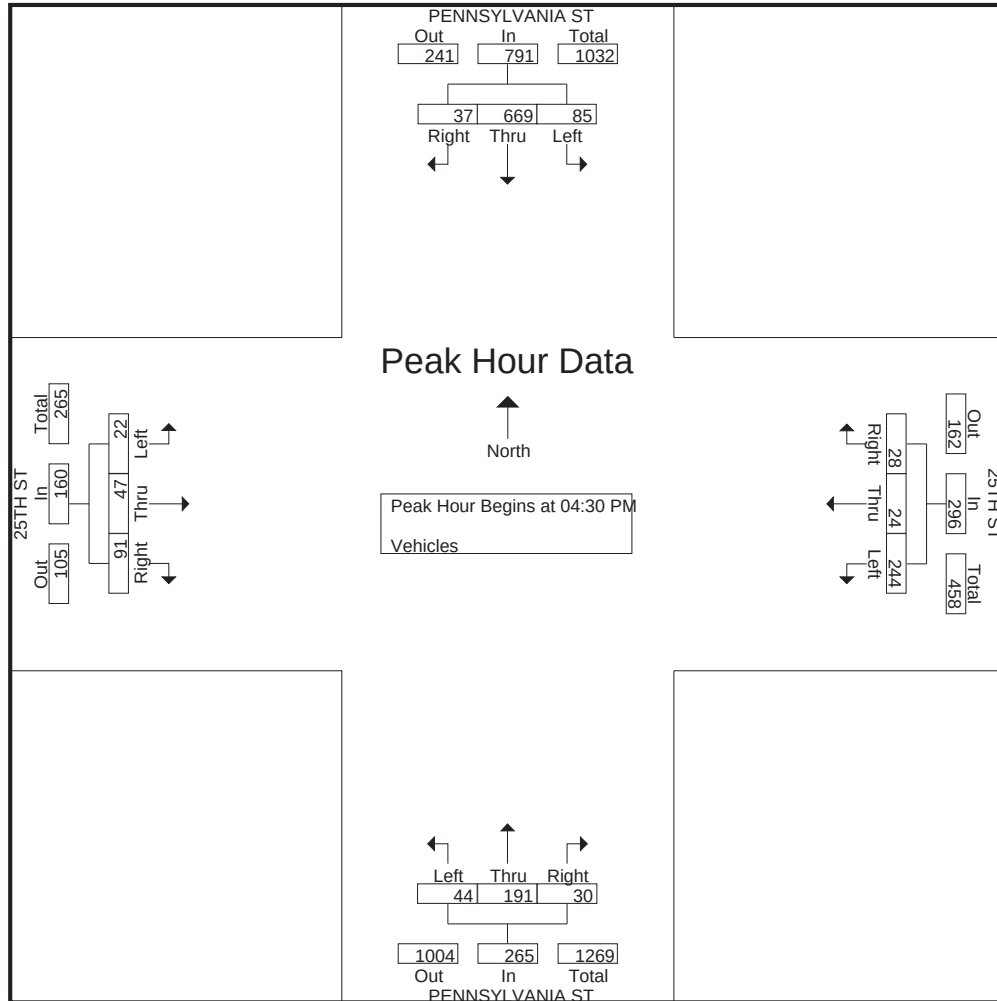
tdsbay@cs.com

File Name : 12PM FINAL 1

Site Code : 00000012

Start Date : 6/12/2013

Page No : 2



DESCRIPTION	TIME BEGIN	TIME END	NBL	NBLT	NBT	NBTR	NBLR	EBL	EBT	EBTR	EBLR	EBU	SBL	SBT	SBTR	SBR	SBLR	WBL	WBT	WBLTR	WBTR	WBLR
Control		0:00																				
Lanes		0:00																				
Signal Phasing		0:00																				
MODE	TIME BEGIN	TIME END	NBL	NBL2	NBT	NBR	NBU	EBL	EBT	EBR	EBU	EBU2	SBL	SBT	SBR	SBR2	SBU	WBL	WBT	WBT2	WBR	WBU
Vehicle	7:00	7:15	7	27	12	6	0	4	28	0	0	15	0	0	0	0	0	0	17	12	2	0
Vehicle	7:15	7:30	0	30	19	6	0	3	35	0	0	7	0	0	0	0	0	0	16	8	2	0
Vehicle	7:30	7:45	4	27	20	11	0	8	41	0	0	5	0	0	0	0	0	0	17	18	3	0
Vehicle	7:45	8:00	7	18	23	9	0	5	52	0	0	5	0	0	0	0	0	0	20	11	1	0
Vehicle	8:00	8:15	5	19	13	10	0	6	35	0	0	6	0	0	0	0	0	0	37	15	3	0
Vehicle	8:15	8:30	5	21	23	12	0	4	31	0	0	1	0	0	0	0	0	0	15	11	3	0
Vehicle	8:30	8:45	1	25	26	4	0	7	31	0	0	5	0	0	0	0	0	0	25	9	2	0
Vehicle	8:45	9:00	1	24	24	7	0	8	33	0	0	9	0	0	0	0	0	0	27	10	1	0
Vehicle	16:00	16:15	5	45	20	6	0	2	38	0	0	27	0	0	0	0	0	0	54	12	2	0
Vehicle	16:15	16:30	9	48	22	4	0	0	32	0	0	12	0	0	0	0	0	0	43	23	0	0
Vehicle	16:30	16:45	5	51	13	8	0	2	32	0	0	7	0	0	0	0	0	0	67	23	1	0
Vehicle	16:45	17:00	3	50	14	1	0	1	40	0	0	9	0	0	0	0	0	0	55	19	6	0
Vehicle	17:00	17:15	8	58	15	7	0	2	36	0	0	13	0	0	0	0	0	0	64	18	1	0
Vehicle	17:15	17:30	4	44	25	4	0	2	35	0	0	7	0	0	0	0	0	0	47	22	4	0
Vehicle	17:30	17:45	5	37	25	2	0	2	23	0	0	11	0	0	0	0	0	0	41	19	2	0
Vehicle	17:45	18:00	4	33	22	4	0	4	10	0	0	15	0	0	0	0	0	0	33	18	2	0
Bicycle	7:00	7:15	2		5	1	0	0	0	0			0	0	0			0	0		0	0
Bicycle	7:15	7:30	1		0	0		0	0	0			0	0	0			0	0		0	0
Bicycle	7:30	7:45	7		1	0		0	1	0			0	1	0			0	1		0	0
Bicycle	7:45	8:00	7		4	0		0	0	0			0	0	0			0	0		0	0
Bicycle	8:00	8:15	4		3	0		0	1	0			0	0	0			0	0		0	0
Bicycle	8:15	8:30	4		0	0		0	0	0			0	0	0			0	0		0	0
Bicycle	8:30	8:45	6		1	0		0	1	0			0	0	1			0	0		0	0
Bicycle	8:45	9:00	5		2	0																

MARKS TRAFFIC DATA

mietekm@comcast.net
916.806.0250

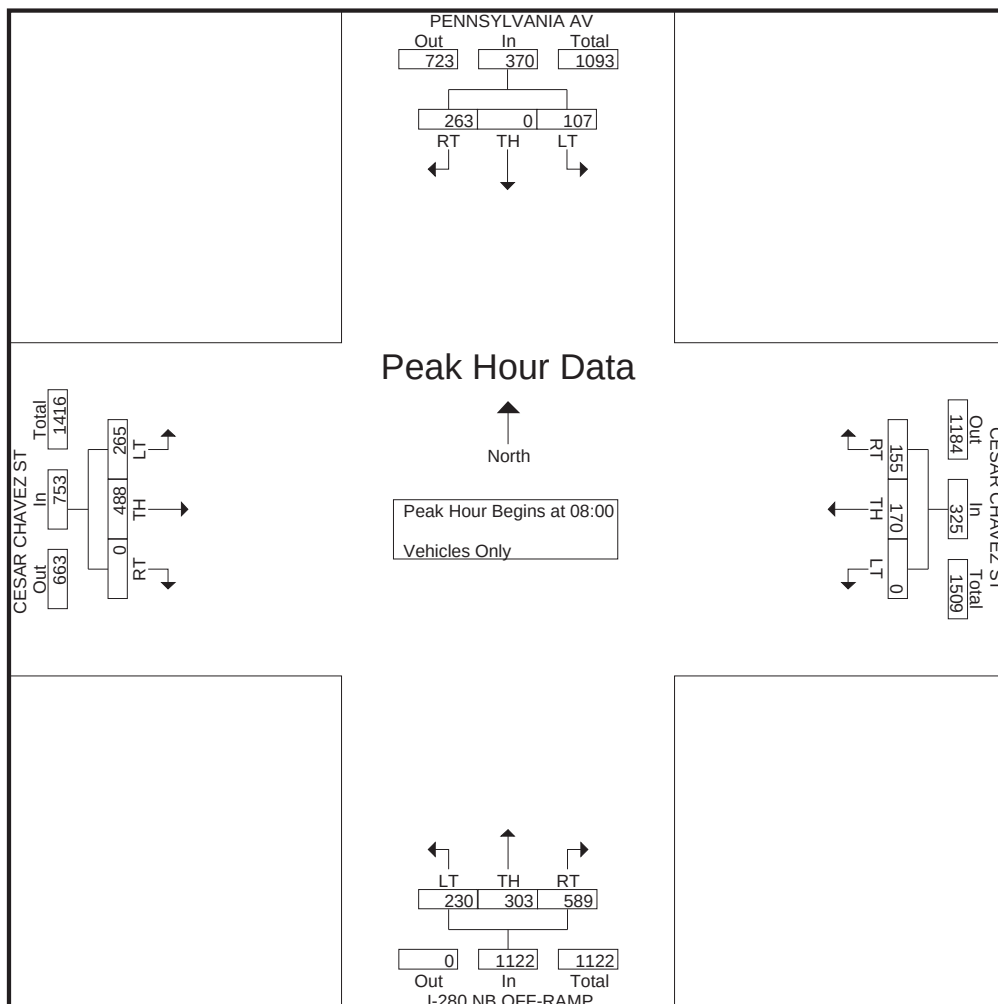
CITY OF SAN FRANCISCO

File Name : pennsylvania-280 nb off-a
Site Code : 3
Start Date : 5/12/2015
Page No : 1

Groups Printed- Vehicles Only

	PENNSYLVANIA AV Southbound				CESAR CHAVEZ ST Westbound				I-280 NB OFF-RAMP Northbound				CESAR CHAVEZ ST Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
07:00	39	0	21	60	53	29	0	82	145	53	57	255	0	94	49	143	540
07:15	58	0	17	75	52	31	0	83	136	42	42	220	0	100	52	152	530
07:30	46	0	17	63	57	46	0	103	142	47	56	245	0	99	50	149	560
07:45	62	0	17	79	41	28	0	69	170	72	58	300	0	108	59	167	615
Total	205	0	72	277	203	134	0	337	593	214	213	1020	0	401	210	611	2245
08:00	59	0	26	85	39	40	0	79	129	62	52	243	0	103	63	166	573
08:15	54	0	22	76	30	39	0	69	140	70	56	266	0	132	67	199	610
08:30	64	0	27	91	53	47	0	100	148	77	63	288	0	147	69	216	695
08:45	86	0	32	118	33	44	0	77	172	94	59	325	0	106	66	172	692
Total	263	0	107	370	155	170	0	325	589	303	230	1122	0	488	265	753	2570
Grand Total	468	0	179	647	358	304	0	662	1182	517	443	2142	0	889	475	1364	4815
Apprch %	72.3	0	27.7		54.1	45.9	0		55.2	24.1	20.7		0	65.2	34.8		
Total %	9.7	0	3.7	13.4	7.4	6.3	0	13.7	24.5	10.7	9.2	44.5	0	18.5	9.9	28.3	

	PENNSYLVANIA AV Southbound				CESAR CHAVEZ ST Westbound				I-280 NB OFF-RAMP Northbound				CESAR CHAVEZ ST Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00																	
08:00	59	0	26	85	39	40	0	79	129	62	52	243	0	103	63	166	573
08:15	54	0	22	76	30	39	0	69	140	70	56	266	0	132	67	199	610
08:30	64	0	27	91	53	47	0	100	148	77	63	288	0	147	69	216	695
08:45	86	0	32	118	33	44	0	77	172	94	59	325	0	106	66	172	692
Total Volume	263	0	107	370	155	170	0	325	589	303	230	1122	0	488	265	753	2570
% App. Total	71.1	0	28.9		47.7	52.3	0		52.5	27	20.5		0	64.8	35.2		
PHF	.765	.000	.836	.784	.731	.904	.000	.813	.856	.806	.913	.863	.000	.830	.960	.872	.924



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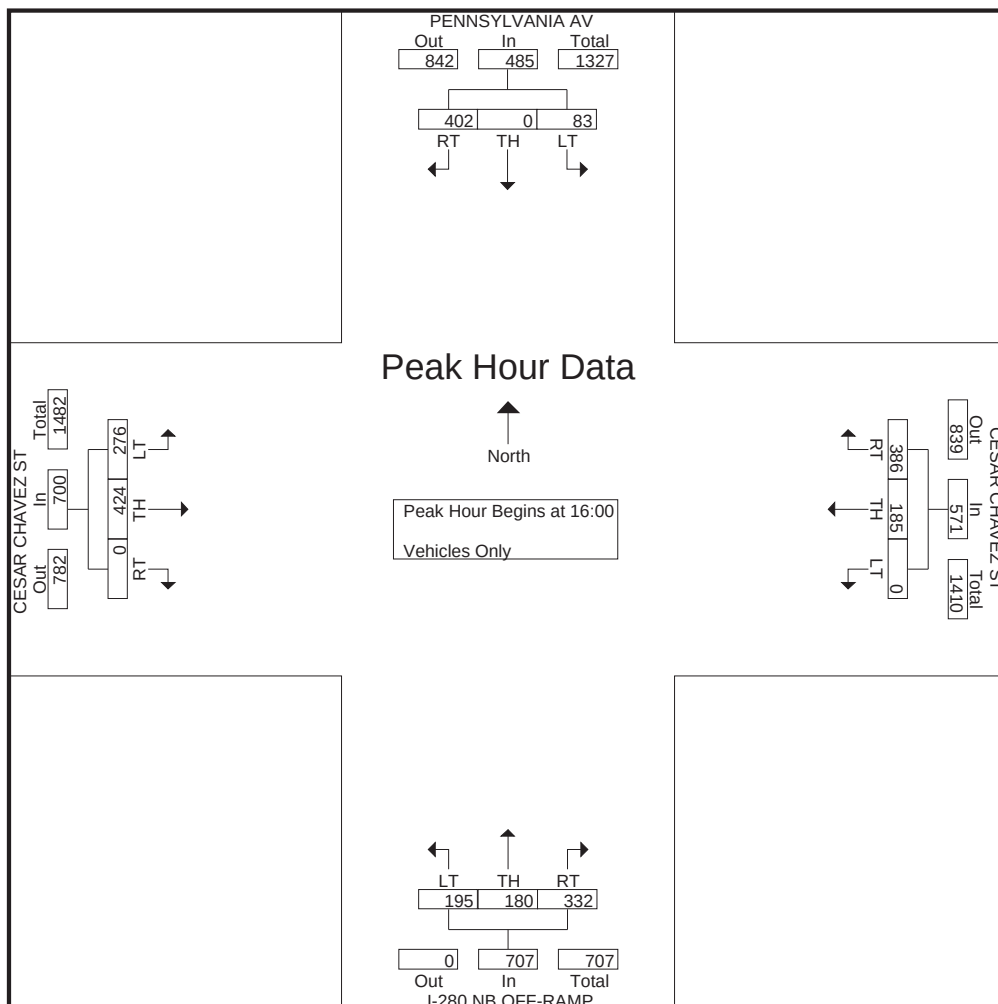
CITY OF SAN FRANCISCO

File Name : pennsylvania-280 nb off-p
Site Code : 3
Start Date : 5/12/2015
Page No : 1

Groups Printed- Vehicles Only

	PENNSYLVANIA AV Southbound				CESAR CHAVEZ ST Westbound				I-280 NB OFF-RAMP Northbound				CESAR CHAVEZ ST Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	109	0	19	128	104	41	0	145	87	42	39	168	0	127	81	208	649
16:15	104	0	18	122	83	47	0	130	90	61	55	206	0	100	66	166	624
16:30	95	0	28	123	120	43	0	163	80	33	47	160	0	101	64	165	611
16:45	94	0	18	112	79	54	0	133	75	44	54	173	0	96	65	161	579
Total	402	0	83	485	386	185	0	571	332	180	195	707	0	424	276	700	2463
17:00	80	0	20	100	106	67	0	173	87	56	37	180	0	90	71	161	614
17:15	93	0	13	106	96	71	0	167	100	52	36	188	0	106	70	176	637
17:30	91	0	9	100	103	63	0	166	105	49	39	193	0	65	50	115	574
17:45	96	0	15	111	73	65	0	138	105	53	35	193	0	62	44	106	548
Total	360	0	57	417	378	266	0	644	397	210	147	754	0	323	235	558	2373
Grand Total	762	0	140	902	764	451	0	1215	729	390	342	1461	0	747	511	1258	4836
Apprch %	84.5	0	15.5		62.9	37.1	0		49.9	26.7	23.4		0	59.4	40.6		
Total %	15.8	0	2.9	18.7	15.8	9.3	0	25.1	15.1	8.1	7.1	30.2	0	15.4	10.6	26	

	PENNSYLVANIA AV Southbound				CESAR CHAVEZ ST Westbound				I-280 NB OFF-RAMP Northbound				CESAR CHAVEZ ST Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:00																	
16:00	109	0	19	128	104	41	0	145	87	42	39	168	0	127	81	208	649
16:15	104	0	18	122	83	47	0	130	90	61	55	206	0	100	66	166	624
16:30	95	0	28	123	120	43	0	163	80	33	47	160	0	101	64	165	611
16:45	94	0	18	112	79	54	0	133	75	44	54	173	0	96	65	161	579
Total Volume	402	0	83	485	386	185	0	571	332	180	195	707	0	424	276	700	2463
% App. Total	82.9	0	17.1		67.6	32.4	0		47	25.5	27.6		0	60.6	39.4		
PHF	.922	.000	.741	.947	.804	.856	.000	.876	.922	.738	.886	.858	.000	.835	.852	.841	.949



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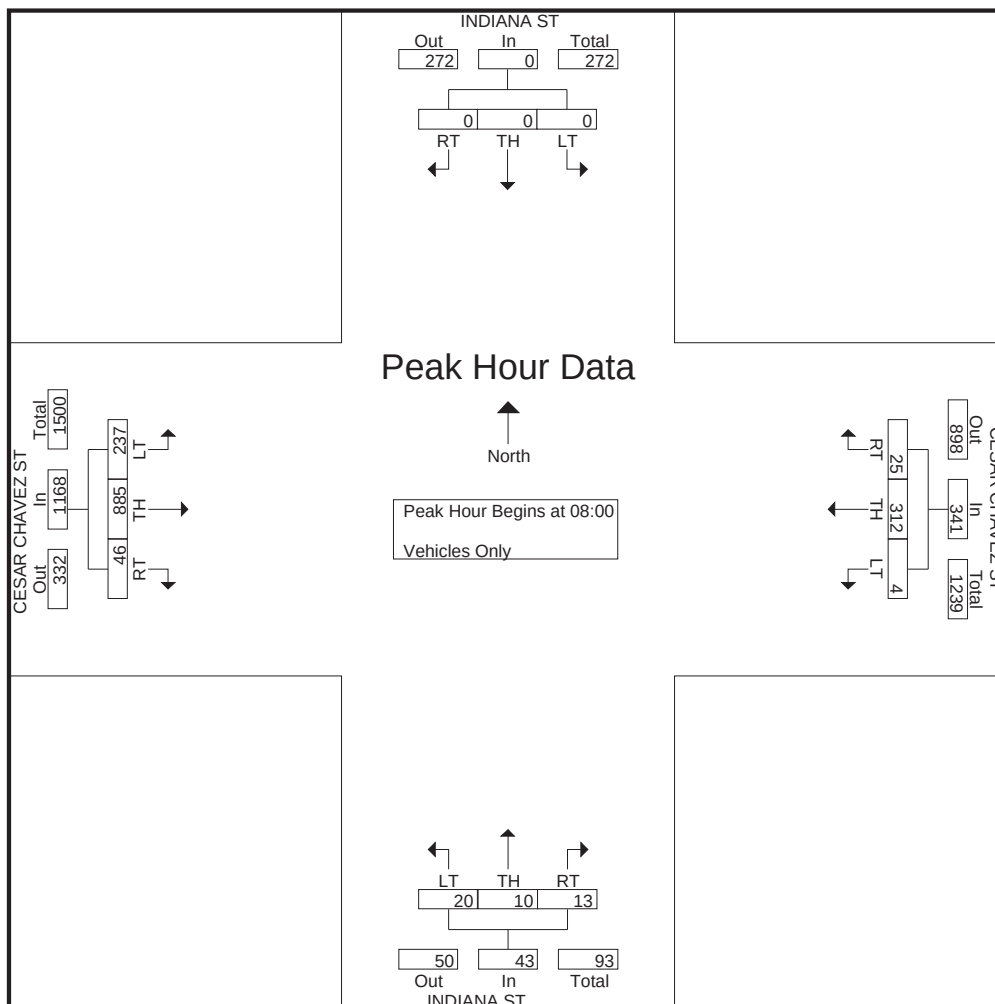
CITY OF SAN FRANCISCO

File Name : indiana-chavez-a
Site Code : 4
Start Date : 5/12/2015
Page No : 1

Groups Printed- Vehicles Only

	INDIANA ST Southbound				CESAR CHAVEZ ST Westbound				INDIANA ST Northbound				CESAR CHAVEZ ST Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
07:00	0	0	0	0	10	82	2	94	1	4	7	12	7	211	46	264	370
07:15	0	0	0	0	3	82	3	88	1	2	3	6	10	184	56	250	344
07:30	0	0	0	0	13	99	0	112	2	3	6	11	5	194	55	254	377
07:45	0	0	0	0	8	72	1	81	1	8	3	12	8	228	59	295	388
Total	0	0	0	0	34	335	6	375	5	17	19	41	30	817	216	1063	1479
08:00	0	0	0	0	5	75	2	82	3	3	8	14	14	200	53	267	363
08:15	0	0	0	0	7	68	1	76	4	4	3	11	14	205	58	277	364
08:30	0	0	0	0	8	98	0	106	5	1	5	11	9	242	68	319	436
08:45	0	0	0	0	5	71	1	77	1	2	4	7	9	238	58	305	389
Total	0	0	0	0	25	312	4	341	13	10	20	43	46	885	237	1168	1552
Grand Total	0	0	0	0	59	647	10	716	18	27	39	84	76	1702	453	2231	3031
Apprch %	0	0	0		8.2	90.4	1.4		21.4	32.1	46.4		3.4	76.3	20.3		
Total %	0	0	0		1.9	21.3	0.3	23.6	0.6	0.9	1.3	2.8	2.5	56.2	14.9	73.6	

	INDIANA ST Southbound				CESAR CHAVEZ ST Westbound				INDIANA ST Northbound				CESAR CHAVEZ ST Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00																	
08:00	0	0	0	0	5	75	2	82	3	3	8	14	14	200	53	267	363
08:15	0	0	0	0	7	68	1	76	4	4	3	11	14	205	58	277	364
08:30	0	0	0	0	8	98	0	106	5	1	5	11	9	242	68	319	436
08:45	0	0	0	0	5	71	1	77	1	2	4	7	9	238	58	305	389
Total Volume	0	0	0	0	25	312	4	341	13	10	20	43	46	885	237	1168	1552
% App. Total	0	0	0		7.3	91.5	1.2		30.2	23.3	46.5		3.9	75.8	20.3		
PHF	.000	.000	.000	.000	.781	.796	.500	.804	.650	.625	.625	.768	.821	.914	.871	.915	.890



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File Name : indiana-chavez-p

Site Code : 4

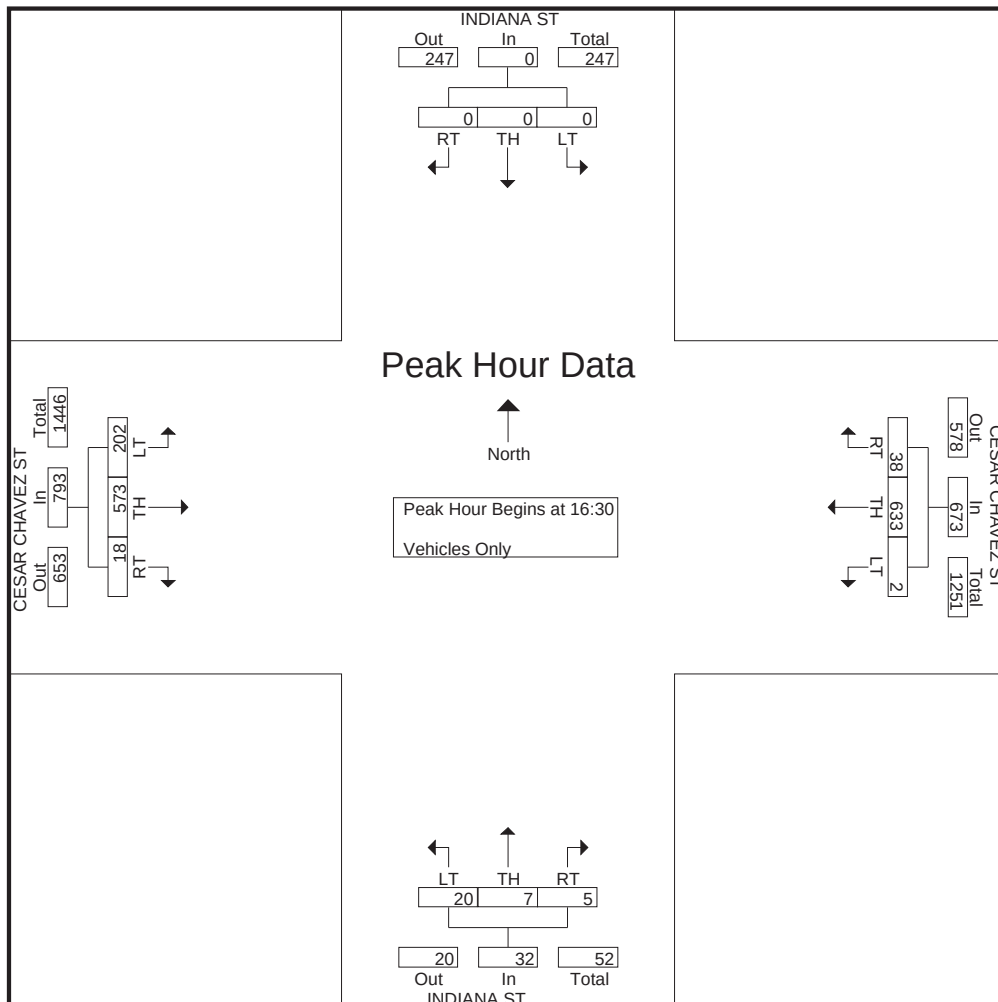
Start Date : 5/12/2015

Page No : 1

Groups Printed- Vehicles Only

	INDIANA ST Southbound				CESAR CHAVEZ ST Westbound				INDIANA ST Northbound				CESAR CHAVEZ ST Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	0	0	0	0	7	143	1	151	1	2	2	5	9	167	50	226	382
16:15	0	0	0	0	7	121	2	130	0	2	8	10	1	154	51	206	346
16:30	0	0	0	0	12	156	0	168	1	3	7	11	9	145	50	204	383
16:45	0	0	0	0	10	129	0	139	2	3	6	11	3	149	42	194	344
Total	0	0	0	0	36	549	3	588	4	10	23	37	22	615	193	830	1455
17:00	0	0	0	0	6	170	2	178	2	1	3	6	3	136	54	193	377
17:15	0	0	0	0	10	178	0	188	0	0	4	4	3	143	56	202	394
17:30	0	0	0	0	8	145	0	153	0	0	1	1	4	127	45	176	330
17:45	0	0	0	0	7	132	1	140	1	1	7	9	3	141	38	182	331
Total	0	0	0	0	31	625	3	659	3	2	15	20	13	547	193	753	1432
Grand Total	0	0	0	0	67	1174	6	1247	7	12	38	57	35	1162	386	1583	2887
Apprch %	0	0	0		5.4	94.1	0.5		12.3	21.1	66.7		2.2	73.4	24.4		
Total %	0	0	0		2.3	40.7	0.2	43.2	0.2	0.4	1.3	2	1.2	40.2	13.4	54.8	

	INDIANA ST Southbound				CESAR CHAVEZ ST Westbound				INDIANA ST Northbound				CESAR CHAVEZ ST Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:30																	
16:30	0	0	0	0	12	156	0	168	1	3	7	11	9	145	50	204	383
16:45	0	0	0	0	10	129	0	139	2	3	6	11	3	149	42	194	344
17:00	0	0	0	0	6	170	2	178	2	1	3	6	3	136	54	193	377
17:15	0	0	0	0	10	178	0	188	0	0	4	4	3	143	56	202	394
Total Volume	0	0	0	0	38	633	2	673	5	7	20	32	18	573	202	793	1498
% App. Total	0	0	0		5.6	94.1	0.3		15.6	21.9	62.5		2.3	72.3	25.5		
PHF	.000	.000	.000	.000	.792	.889	.250	.895	.625	.583	.714	.727	.500	.961	.902	.972	.951



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CITY OF SAN FRANCISCO

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Site Code : 5
Start Date : 5/12/2015
Page No : 1

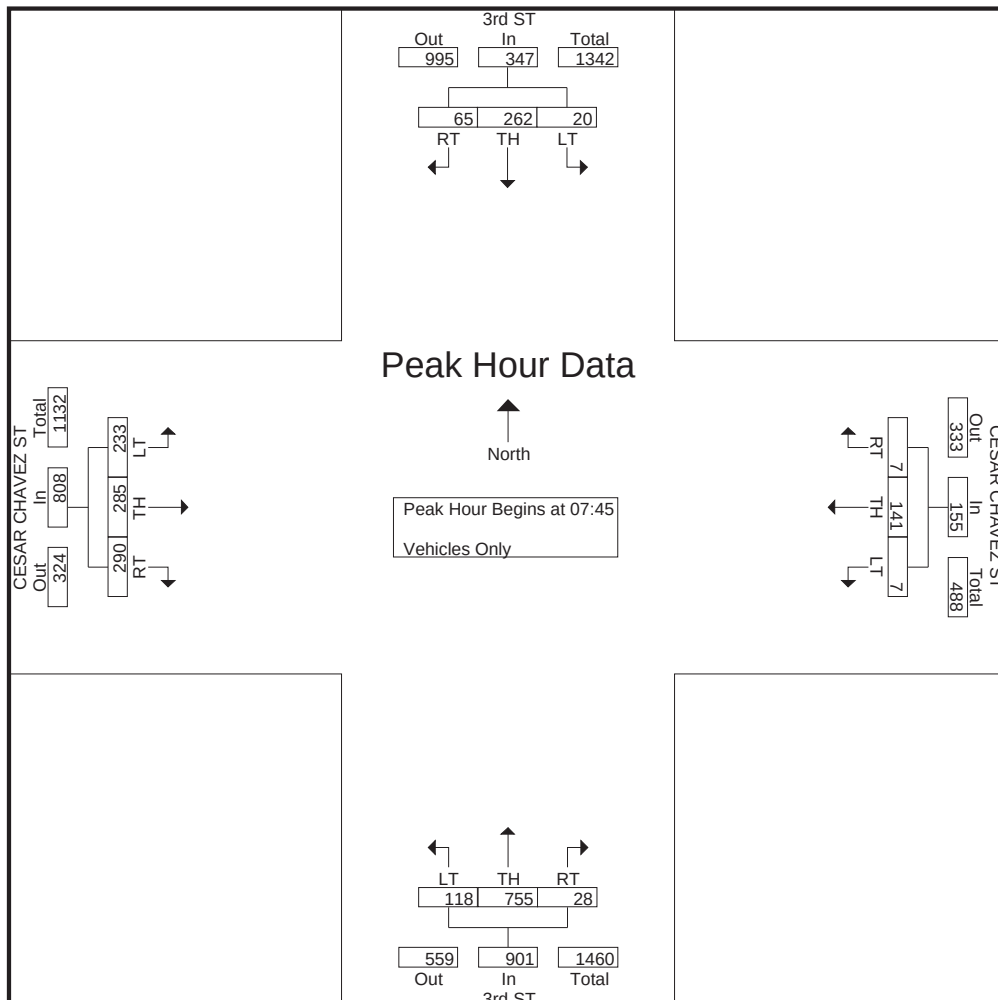
Groups Printed- Vehicles Only

	3rd ST Southbound				CESAR CHAVEZ ST Westbound				3rd ST Northbound				CESAR CHAVEZ ST Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
07:00	10	43	3	56	3	36	1	40	2	102	35	139	63	104	38	205	440
07:15	14	60	4	78	2	45	2	49	5	129	20	154	65	79	27	171	452
07:30	15	51	1	67	3	43	0	46	8	171	59	238	56	85	35	176	527
07:45	18	58	6	82	1	33	3	37	6	194	32	232	73	85	44	202	553
Total	57	212	14	283	9	157	6	172	21	596	146	763	257	353	144	754	1972
08:00	17	60	6	83	3	32	0	35	6	181	23	210	72	57	61	190	518
08:15	11	73	6	90	2	44	3	49	11	202	14	227	72	59	60	191	557
08:30	19	71	2	92	1	32	1	34	5	178	49	232	73	84	68	225	583
08:45	15	70	3	88	4	36	3	43	3	159	26	188	40	93	65	198	517
Total	62	274	17	353	10	144	7	161	25	720	112	857	257	293	254	804	2175
Grand Total	119	486	31	636	19	301	13	333	46	1316	258	1620	514	646	398	1558	4147
Apprch %	18.7	76.4	4.9		5.7	90.4	3.9		2.8	81.2	15.9		33	41.5	25.5		
Total %	2.9	11.7	0.7	15.3	0.5	7.3	0.3	8	1.1	31.7	6.2	39.1	12.4	15.6	9.6	37.6	

	3rd ST Southbound				CESAR CHAVEZ ST Westbound				3rd ST Northbound				CESAR CHAVEZ ST Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
07:45	18	58	6	82	1	33	3	37	6	194	32	232	73	85	44	202	553
08:00	17	60	6	83	3	32	0	35	6	181	23	210	72	57	61	190	518
08:15	11	73	6	90	2	44	3	49	11	202	14	227	72	59	60	191	557
08:30	19	71	2	92	1	32	1	34	5	178	49	232	73	84	68	225	583
Total Volume	65	262	20	347	7	141	7	155	28	755	118	901	290	285	233	808	2211
% App. Total	18.7	75.5	5.8		4.5	91	4.5		3.1	83.8	13.1		35.9	35.3	28.8		
PHF	.855	.897	.833	.943	.583	.801	.583	.791	.636	.934	.602	.971	.993	.838	.857	.898	.948

Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 07:45



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File Name : 3-chavez-p
Site Code : 5
Start Date : 5/12/2015
Page No : 1

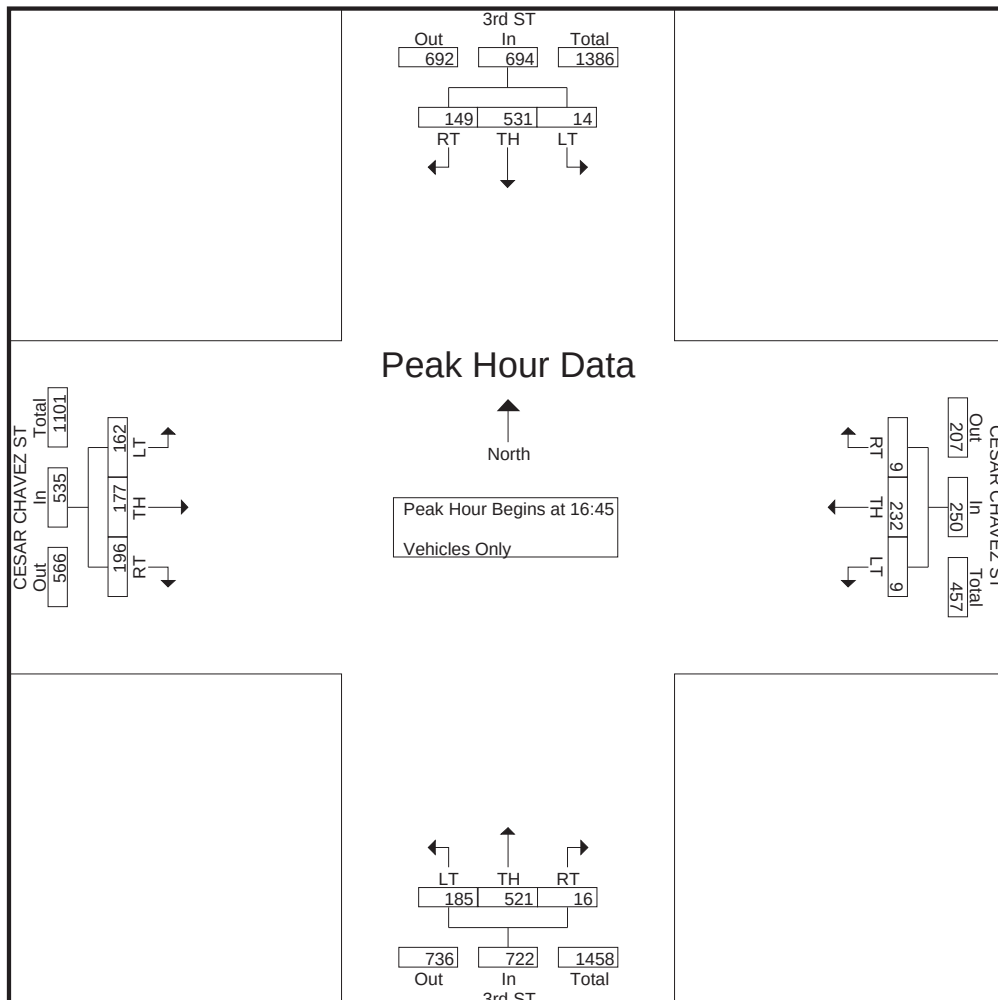
Groups Printed- Vehicles Only

	3rd ST Southbound				CESAR CHAVEZ ST Westbound				3rd ST Northbound				CESAR CHAVEZ ST Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	24	98	6	128	3	56	2	61	2	179	50	231	55	48	46	149	569
16:15	24	86	5	115	0	55	4	59	3	151	46	200	54	48	38	140	514
16:30	23	94	6	123	3	68	1	72	6	138	58	202	44	49	36	129	526
16:45	15	131	4	150	4	41	1	46	2	114	55	171	54	46	46	146	513
Total	86	409	21	516	10	220	8	238	13	582	209	804	207	191	166	564	2122
17:00	31	86	1	118	3	73	1	77	5	160	48	213	53	31	37	121	529
17:15	59	148	4	211	0	63	3	66	4	132	44	180	45	55	49	149	606
17:30	44	166	5	215	2	55	4	61	5	115	38	158	44	45	30	119	553
17:45	51	89	6	146	1	46	1	48	4	113	35	152	51	42	33	126	472
Total	185	489	16	690	6	237	9	252	18	520	165	703	193	173	149	515	2160
Grand Total	271	898	37	1206	16	457	17	490	31	1102	374	1507	400	364	315	1079	4282
Apprch %	22.5	74.5	3.1		3.3	93.3	3.5		2.1	73.1	24.8		37.1	33.7	29.2		
Total %	6.3	21	0.9	28.2	0.4	10.7	0.4	11.4	0.7	25.7	8.7	35.2	9.3	8.5	7.4	25.2	

	3rd ST Southbound				CESAR CHAVEZ ST Westbound				3rd ST Northbound				CESAR CHAVEZ ST Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:45	15	131	4	150	4	41	1	46	2	114	55	171	54	46	46	146	513
17:00	31	86	1	118	3	73	1	77	5	160	48	213	53	31	37	121	529
17:15	59	148	4	211	0	63	3	66	4	132	44	180	45	55	49	149	606
17:30	44	166	5	215	2	55	4	61	5	115	38	158	44	45	30	119	553
Total Volume	149	531	14	694	9	232	9	250	16	521	185	722	196	177	162	535	2201
% App. Total	21.5	76.5	2		3.6	92.8	3.6		2.2	72.2	25.6		36.6	33.1	30.3		
PHF	.631	.800	.700	.807	.563	.795	.563	.812	.800	.814	.841	.847	.907	.805	.827	.898	.908

Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 16:45



MARKS TRAFFIC DATA

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File Name : 3-cargo-a
Site Code : 6
Start Date : 5/12/2015
Page No : 1

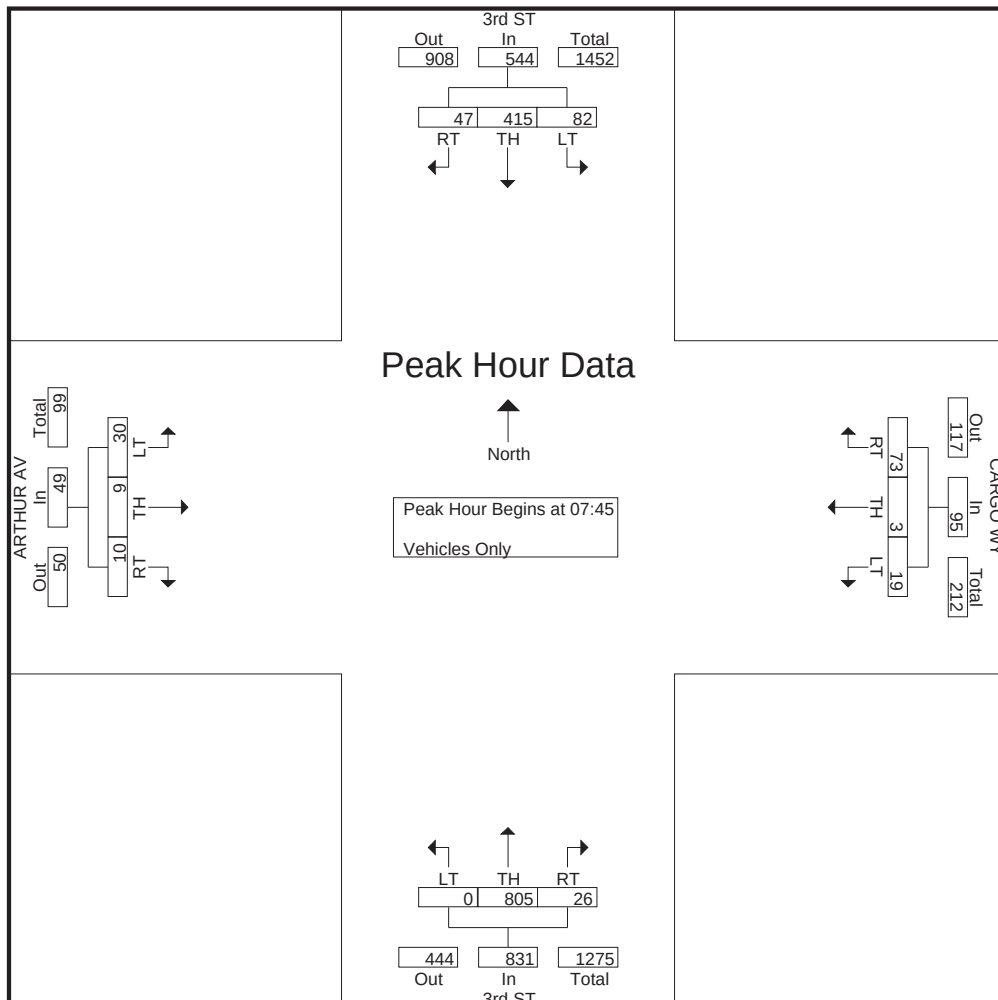
Groups Printed- Vehicles Only

	3rd ST Southbound				CARGO WY Westbound				3rd ST Northbound				ARTHUR AV Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
07:00	10	82	14	106	28	2	4	34	2	121	0	123	2	3	4	9	272
07:15	10	95	20	125	16	1	4	21	6	155	0	161	1	0	10	11	318
07:30	12	82	16	110	22	0	6	28	6	190	0	196	5	6	9	20	354
07:45	13	103	22	138	16	0	1	17	7	201	0	208	2	1	11	14	377
Total	45	362	72	479	82	3	15	100	21	667	0	688	10	10	34	54	1321
08:00	9	101	15	125	22	1	5	28	6	193	0	199	1	3	3	7	359
08:15	11	108	25	144	13	1	8	22	9	205	0	214	3	0	6	9	389
08:30	14	103	20	137	22	1	5	28	4	206	0	210	4	5	10	19	394
08:45	7	112	13	132	11	0	9	20	3	183	0	186	4	2	9	15	353
Total	41	424	73	538	68	3	27	98	22	787	0	809	12	10	28	50	1495
Grand Total	86	786	145	1017	150	6	42	198	43	1454	0	1497	22	20	62	104	2816
Apprch %	8.5	77.3	14.3		75.8	3	21.2		2.9	97.1	0		21.2	19.2	59.6		
Total %	3.1	27.9	5.1	36.1	5.3	0.2	1.5	7	1.5	51.6	0	53.2	0.8	0.7	2.2	3.7	

	3rd ST Southbound				CARGO WY Westbound				3rd ST Northbound				ARTHUR AV Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
07:45	13	103	22	138	16	0	1	17	7	201	0	208	2	1	11	14	377
08:00	9	101	15	125	22	1	5	28	6	193	0	199	1	3	3	7	359
08:15	11	108	25	144	13	1	8	22	9	205	0	214	3	0	6	9	389
08:30	14	103	20	137	22	1	5	28	4	206	0	210	4	5	10	19	394
Total Volume	47	415	82	544	73	3	19	95	26	805	0	831	10	9	30	49	1519
% App. Total	8.6	76.3	15.1		76.8	3.2	20		3.1	96.9	0		20.4	18.4	61.2		
PHF	.839	.961	.820	.944	.830	.750	.594	.848	.722	.977	.000	.971	.625	.450	.682	.645	.964

Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 07:45



MARKS TRAFFIC DATA

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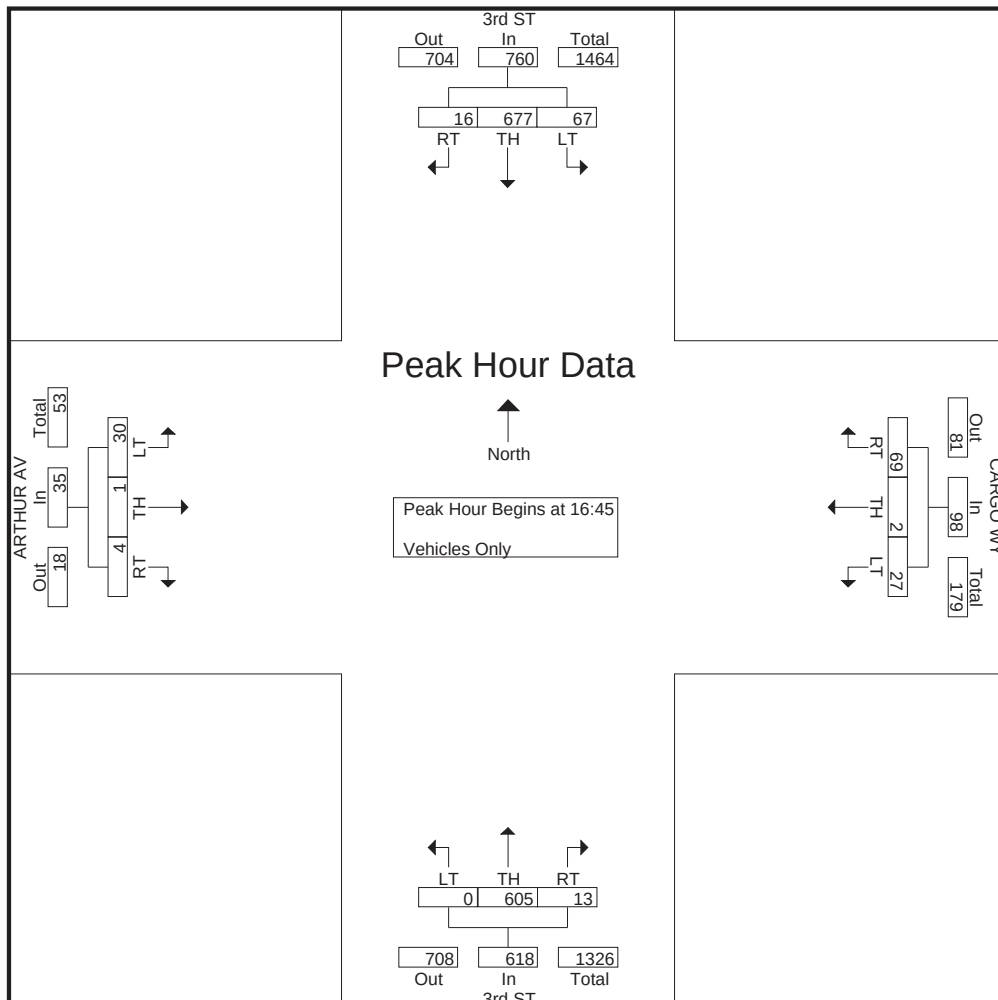
CITY OF SAN FRANCISCO

File Name : 3-cargo-p
Site Code : 6
Start Date : 5/12/2015
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Groups Printed- Vehicles Only

	3rd ST Southbound				CARGO WY Westbound				3rd ST Northbound				ARTHUR AV Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	4	124	16	144	28	0	5	33	1	188	0	189	1	1	16	18	384
16:15	3	124	18	145	16	0	7	23	3	179	0	182	3	2	8	13	363
16:30	2	129	20	151	27	1	9	37	6	160	0	166	2	1	9	12	366
16:45	4	157	16	177	20	1	6	27	3	149	0	152	2	0	5	7	363
Total	13	534	70	617	91	2	27	120	13	676	0	689	8	4	38	50	1476
17:00	3	144	14	161	23	0	4	27	2	160	0	162	1	0	10	11	361
17:15	2	184	15	201	20	0	6	26	5	155	0	160	1	0	5	6	393
17:30	7	192	22	221	6	1	11	18	3	141	0	144	0	1	10	11	394
17:45	4	137	9	150	12	0	3	15	3	124	0	127	2	1	8	11	303
Total	16	657	60	733	61	1	24	86	13	580	0	593	4	2	33	39	1451
Grand Total	29	1191	130	1350	152	3	51	206	26	1256	0	1282	12	6	71	89	2927
Apprch %	2.1	88.2	9.6		73.8	1.5	24.8		2	98	0		13.5	6.7	79.8		
Total %	1	40.7	4.4	46.1	5.2	0.1	1.7	7	0.9	42.9	0	43.8	0.4	0.2	2.4	3	

	3rd ST Southbound				CARGO WY Westbound				3rd ST Northbound				ARTHUR AV Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:45																	
16:45	4	157	16	177	20	1	6	27	3	149	0	152	2	0	5	7	363
17:00	3	144	14	161	23	0	4	27	2	160	0	162	1	0	10	11	361
17:15	2	184	15	201	20	0	6	26	5	155	0	160	1	0	5	6	393
17:30	7	192	22	221	6	1	11	18	3	141	0	144	0	1	10	11	394
Total Volume	16	677	67	760	69	2	27	98	13	605	0	618	4	1	30	35	1511
% App. Total	2.1	89.1	8.8		70.4	2	27.6		2.1	97.9	0		11.4	2.9	85.7		
PHF	.571	.882	.761	.860	.750	.500	.614	.907	.650	.945	.000	.954	.500	.250	.750	.795	.959



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CITY OF SAN FRANCISCO

File Name : illinois-cargo-a
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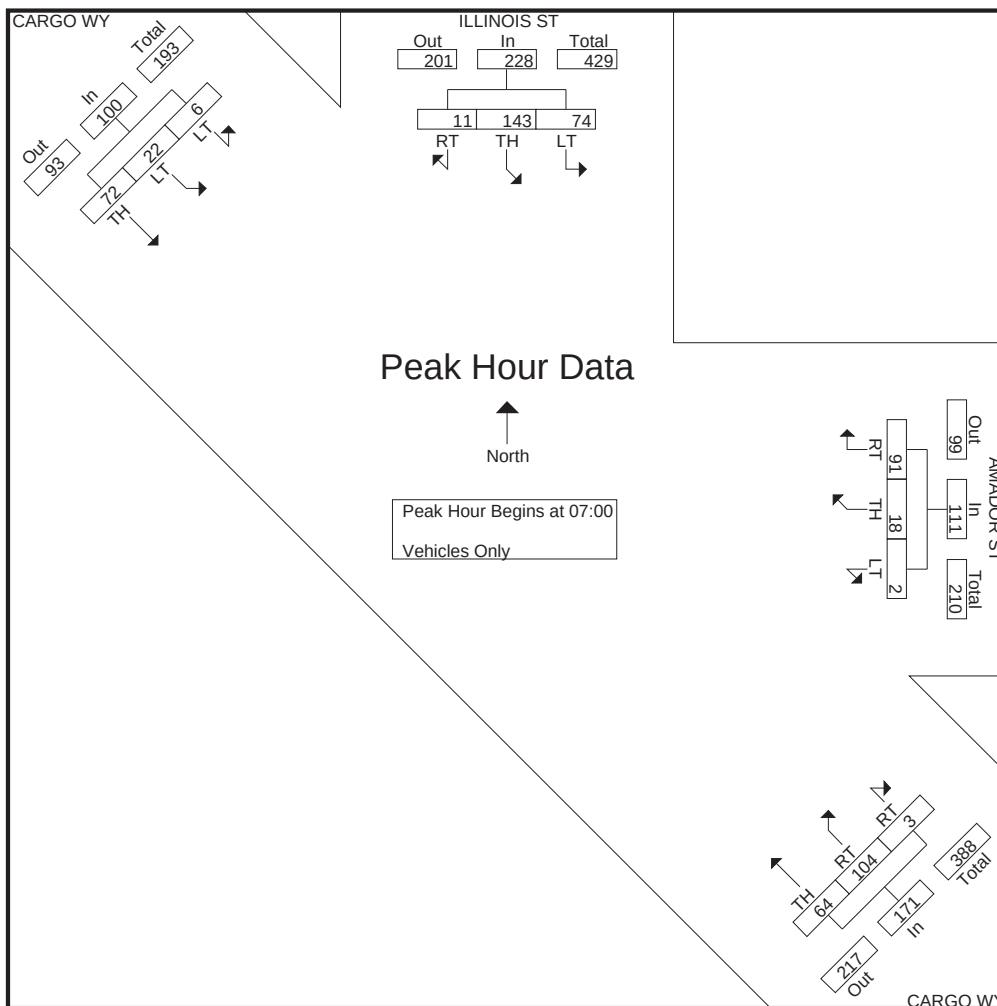
Groups Printed- Vehicles Only

	ILLINOIS ST Southbound				AMADOR ST Westbound				CARGO WY Northwestbound				CARGO WY Southeastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	RT	TH	App. Total	TH	LT	LT	App. Total	Int. Total
07:00	2	36	23	61	15	10	1	26	1	22	15	38	11	7	1	19	144
07:15	3	40	17	60	31	4	0	35	0	18	14	32	21	3	1	25	152
07:30	5	40	22	67	25	2	0	27	2	36	20	58	21	3	3	27	179
07:45	1	27	12	40	20	2	1	23	0	28	15	43	19	9	1	29	135
Total	11	143	74	228	91	18	2	111	3	104	64	171	72	22	6	100	610
08:00	6	22	8	36	21	4	1	26	3	24	18	45	19	5	2	26	133
08:15	4	29	14	47	19	3	0	22	1	32	15	48	30	4	1	35	152
08:30	2	34	10	46	20	4	0	24	2	27	21	50	19	8	2	29	149
08:45	3	31	8	42	18	3	0	21	1	24	15	40	11	5	1	17	120
Total	15	116	40	171	78	14	1	93	7	107	69	183	79	22	6	107	554
Grand Total	26	259	114	399	169	32	3	204	10	211	133	354	151	44	12	207	1164
Apprch %	6.5	64.9	28.6		82.8	15.7	1.5		2.8	59.6	37.6		72.9	21.3	5.8		
Total %	2.2	22.3	9.8	34.3	14.5	2.7	0.3	17.5	0.9	18.1	11.4	30.4	13	3.8	1	17.8	

	ILLINOIS ST Southbound				AMADOR ST Westbound				CARGO WY Northwestbound				CARGO WY Southeastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	RT	TH	App. Total	TH	LT	LT	App. Total	Int. Total
07:00	2	36	23	61	15	10	1	26	1	22	15	38	11	7	1	19	144
07:15	3	40	17	60	31	4	0	35	0	18	14	32	21	3	1	25	152
07:30	5	40	22	67	25	2	0	27	2	36	20	58	21	3	3	27	179
07:45	1	27	12	40	20	2	1	23	0	28	15	43	19	9	1	29	135
Total Volume	11	143	74	228	91	18	2	111	3	104	64	171	72	22	6	100	610
% App. Total	4.8	62.7	32.5		82	16.2	1.8		1.8	60.8	37.4		72	22	6		
PHF	.550	.894	.804	.851	.734	.450	.500	.793	.375	.722	.800	.737	.857	.611	.500	.862	.852

Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 07:00



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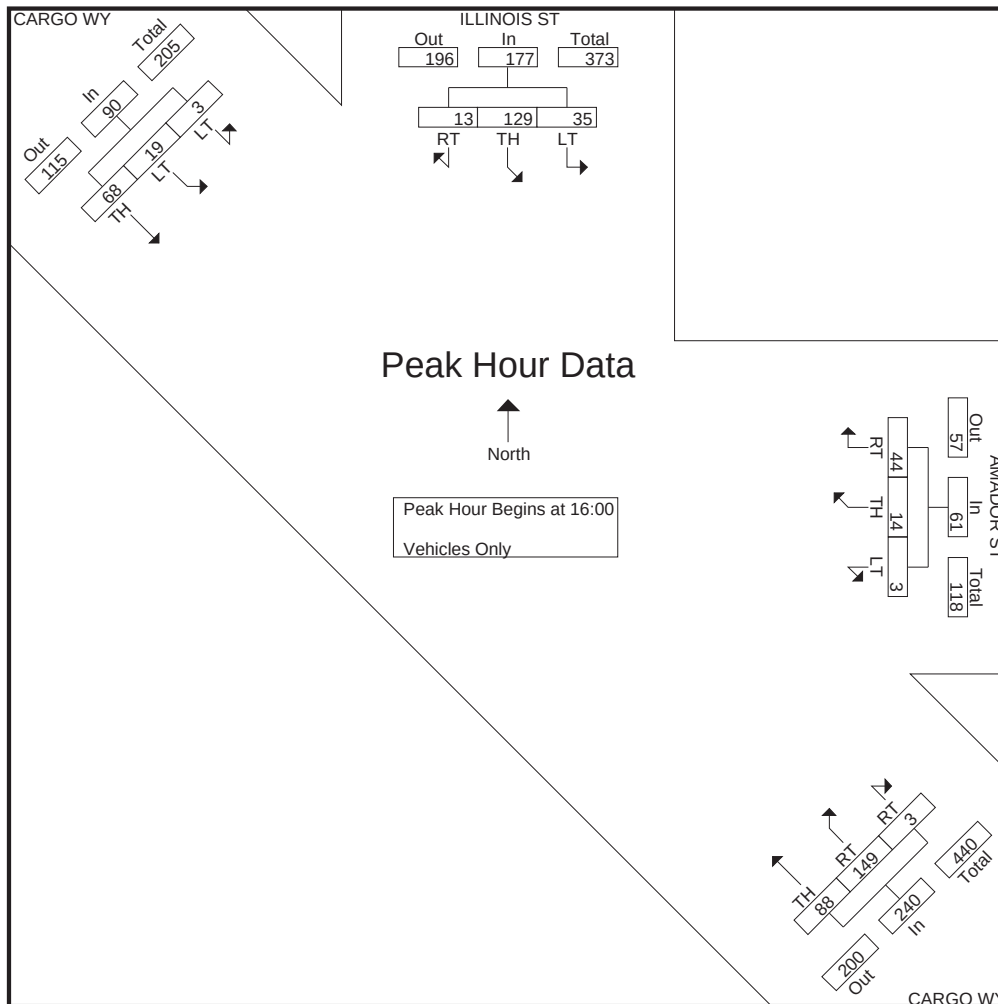
CITY OF SAN FRANCISCO

File Name : illinois-cargo-p
Site Code : 7
Start Date : 5/13/2015
Page No : 1

Groups Printed- Vehicles Only

	ILLINOIS ST Southbound				AMADOR ST Westbound				CARGO WY Northwestbound				CARGO WY Southeastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	RT	TH	App. Total	TH	LT	LT	App. Total	Int. Total
16:00	5	32	10	47	15	4	2	21	1	43	23	67	14	4	0	18	153
16:15	4	26	13	43	11	5	0	16	0	28	15	43	15	5	1	21	123
16:30	3	33	8	44	9	4	0	13	1	51	26	78	24	6	0	30	165
16:45	1	38	4	43	9	1	1	11	1	27	24	52	15	4	2	21	127
Total	13	129	35	177	44	14	3	61	3	149	88	240	68	19	3	90	568
17:00	3	37	6	46	7	2	1	10	1	35	22	58	10	0	0	10	124
17:15	5	48	4	57	9	1	0	10	0	40	21	61	16	4	0	20	148
17:30	5	45	5	55	11	6	0	17	3	30	9	42	23	0	0	23	137
17:45	2	41	14	57	16	2	0	18	1	27	12	40	12	0	0	12	127
Total	15	171	29	215	43	11	1	55	5	132	64	201	61	4	0	65	536
Grand Total	28	300	64	392	87	25	4	116	8	281	152	441	129	23	3	155	1104
Apprch %	7.1	76.5	16.3		75	21.6	3.4		1.8	63.7	34.5		83.2	14.8	1.9		
Total %	2.5	27.2	5.8	35.5	7.9	2.3	0.4	10.5	0.7	25.5	13.8	39.9	11.7	2.1	0.3	14	

	ILLINOIS ST Southbound				AMADOR ST Westbound				CARGO WY Northwestbound				CARGO WY Southeastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	RT	TH	App. Total	TH	LT	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:00																	
16:00	5	32	10	47	15	4	2	21	1	43	23	67	14	4	0	18	153
16:15	4	26	13	43	11	5	0	16	0	28	15	43	15	5	1	21	123
16:30	3	33	8	44	9	4	0	13	1	51	26	78	24	6	0	30	165
16:45	1	38	4	43	9	1	1	11	1	27	24	52	15	4	2	21	127
Total Volume	13	129	35	177	44	14	3	61	3	149	88	240	68	19	3	90	568
% App. Total	7.3	72.9	19.8		72.1	23	4.9		1.2	62.1	36.7		75.6	21.1	3.3		
PHF	.650	.849	.673	.941	.733	.700	.375	.726	.750	.730	.846	.769	.708	.792	.375	.750	.861



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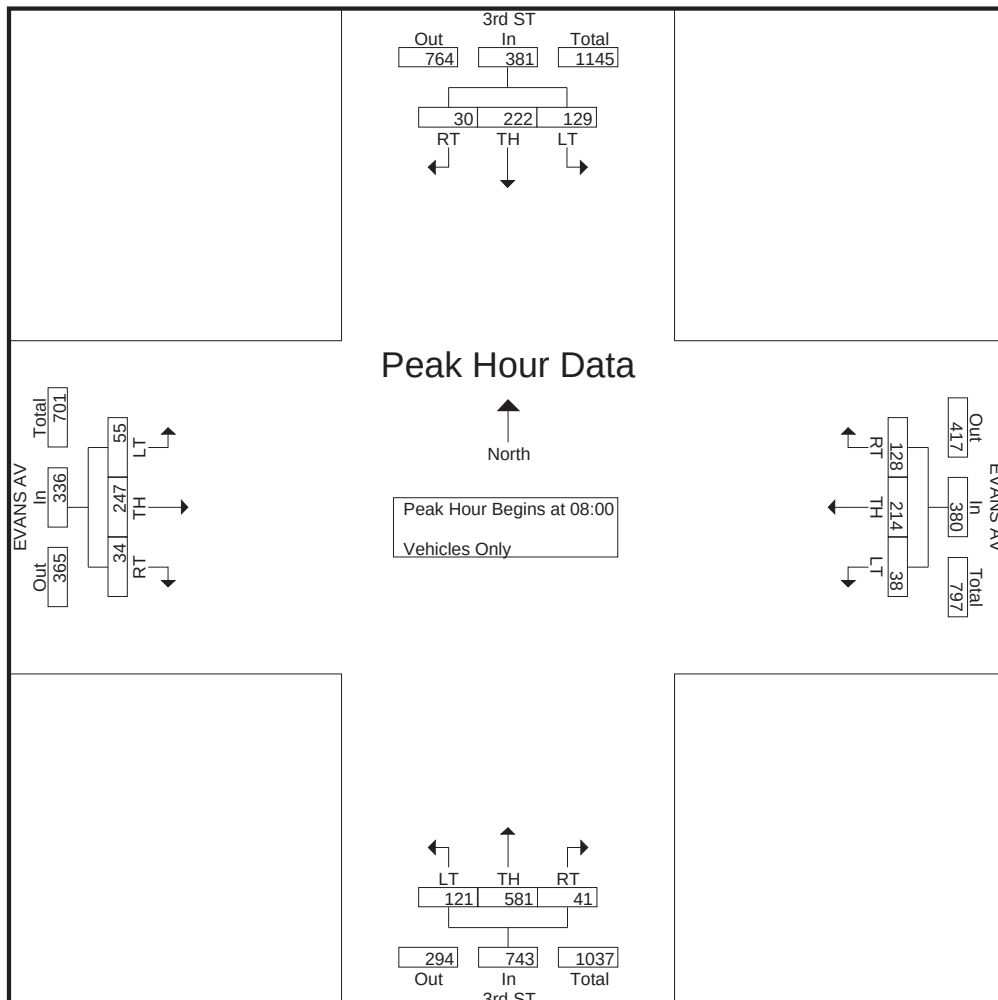
CITY OF SAN FRANCISCO

File Name : 3-evans-a
Site Code : 8
Start Date : 5/12/2015
Page No : 1

Groups Printed- Vehicles Only

	3rd ST Southbound				EVANS AV Westbound				3rd ST Northbound				EVANS AV Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
07:00	1	43	33	77	30	68	8	106	11	69	19	99	5	65	10	80	362
07:15	7	42	31	80	26	53	7	86	10	104	21	135	5	67	17	89	390
07:30	3	33	29	65	27	67	11	105	13	142	33	188	11	66	15	92	450
07:45	3	45	27	75	43	45	9	97	10	151	28	189	8	55	15	78	439
Total	14	163	120	297	126	233	35	394	44	466	101	611	29	253	57	339	1641
08:00	5	45	37	87	40	51	6	97	11	136	36	183	6	55	16	77	444
08:15	8	58	28	94	36	56	11	103	7	155	28	190	9	53	14	76	463
08:30	10	59	34	103	31	55	8	94	10	148	28	186	5	65	13	83	466
08:45	7	60	30	97	21	52	13	86	13	142	29	184	14	74	12	100	467
Total	30	222	129	381	128	214	38	380	41	581	121	743	34	247	55	336	1840
Grand Total	44	385	249	678	254	447	73	774	85	1047	222	1354	63	500	112	675	3481
Apprch %	6.5	56.8	36.7		32.8	57.8	9.4		6.3	77.3	16.4		9.3	74.1	16.6		
Total %	1.3	11.1	7.2	19.5	7.3	12.8	2.1	22.2	2.4	30.1	6.4	38.9	1.8	14.4	3.2	19.4	

	3rd ST Southbound				EVANS AV Westbound				3rd ST Northbound				EVANS AV Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00																	
08:00	5	45	37	87	40	51	6	97	11	136	36	183	6	55	16	77	444
08:15	8	58	28	94	36	56	11	103	7	155	28	190	9	53	14	76	463
08:30	10	59	34	103	31	55	8	94	10	148	28	186	5	65	13	83	466
08:45	7	60	30	97	21	52	13	86	13	142	29	184	14	74	12	100	467
Total Volume	30	222	129	381	128	214	38	380	41	581	121	743	34	247	55	336	1840
% App. Total	7.9	58.3	33.9		33.7	56.3	10		5.5	78.2	16.3		10.1	73.5	16.4		
PHF	.750	.925	.872	.925	.800	.955	.731	.922	.788	.937	.840	.978	.607	.834	.859	.840	.985



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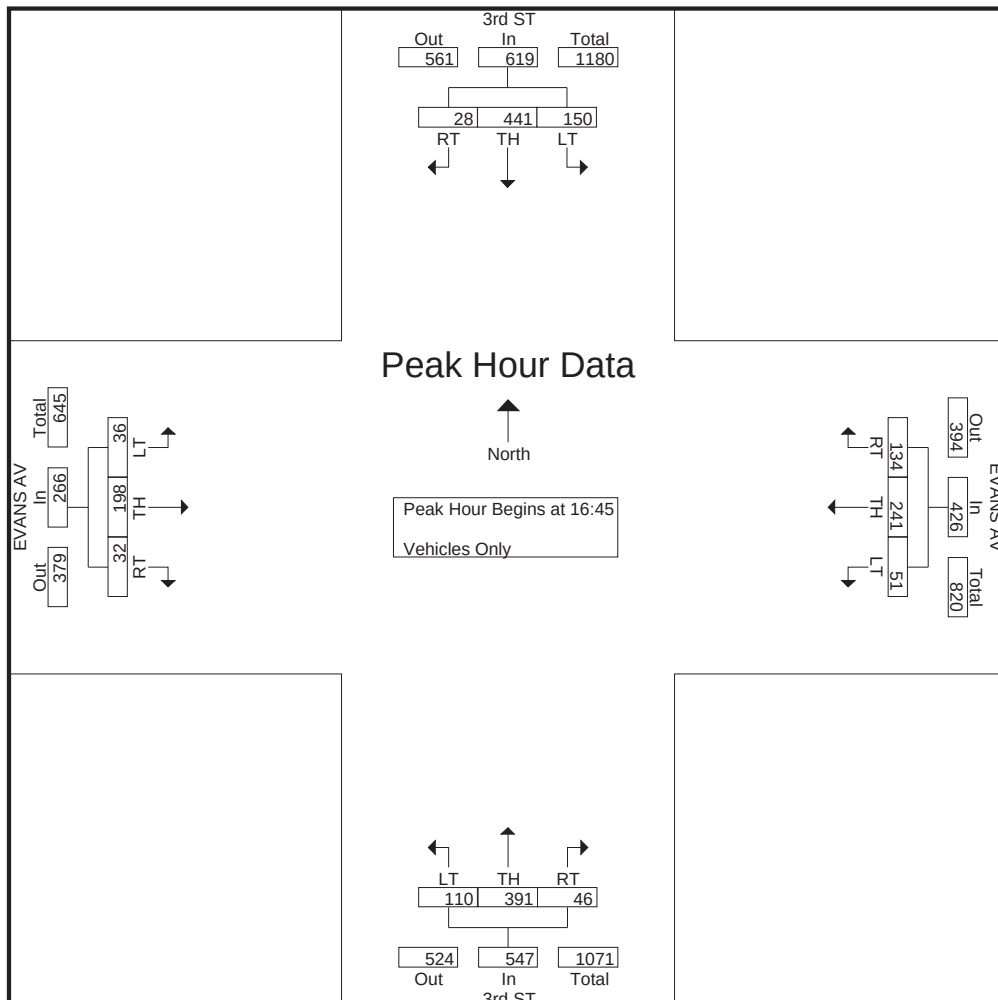
CITY OF SAN FRANCISCO

File Name : 3-evans-p
Site Code : 8
Start Date : 5/12/2015
Page No : 1

Groups Printed- Vehicles Only

	3rd ST Southbound				EVANS AV Westbound				3rd ST Northbound				EVANS AV Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	3	83	44	130	34	63	16	113	8	126	32	166	9	51	16	76	485
16:15	1	75	36	112	37	50	9	96	5	114	33	152	9	42	12	63	423
16:30	4	93	39	136	37	62	18	117	4	101	26	131	7	41	9	57	441
16:45	4	100	38	142	33	60	9	102	11	98	29	138	10	49	8	67	449
Total	12	351	157	520	141	235	52	428	28	439	120	587	35	183	45	263	1798
17:00	7	88	32	127	33	65	14	112	11	95	28	134	8	48	10	66	439
17:15	11	125	43	179	32	68	14	114	10	108	29	147	8	53	12	73	513
17:30	6	128	37	171	36	48	14	98	14	90	24	128	6	48	6	60	457
17:45	5	97	43	145	40	43	13	96	9	74	23	106	8	56	6	70	417
Total	29	438	155	622	141	224	55	420	44	367	104	515	30	205	34	269	1826
Grand Total	41	789	312	1142	282	459	107	848	72	806	224	1102	65	388	79	532	3624
Apprch %	3.6	69.1	27.3		33.3	54.1	12.6		6.5	73.1	20.3		12.2	72.9	14.8		
Total %	1.1	21.8	8.6	31.5	7.8	12.7	3	23.4	2	22.2	6.2	30.4	1.8	10.7	2.2	14.7	

	3rd ST Southbound				EVANS AV Westbound				3rd ST Northbound				EVANS AV Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:45																	
16:45	4	100	38	142	33	60	9	102	11	98	29	138	10	49	8	67	449
17:00	7	88	32	127	33	65	14	112	11	95	28	134	8	48	10	66	439
17:15	11	125	43	179	32	68	14	114	10	108	29	147	8	53	12	73	513
17:30	6	128	37	171	36	48	14	98	14	90	24	128	6	48	6	60	457
Total Volume	28	441	150	619	134	241	51	426	46	391	110	547	32	198	36	266	1858
% App. Total	4.5	71.2	24.2		31.5	56.6	12		8.4	71.5	20.1		12	74.4	13.5		
PHF	.636	.861	.872	.865	.931	.886	.911	.934	.821	.905	.948	.930	.800	.934	.750	.911	.905



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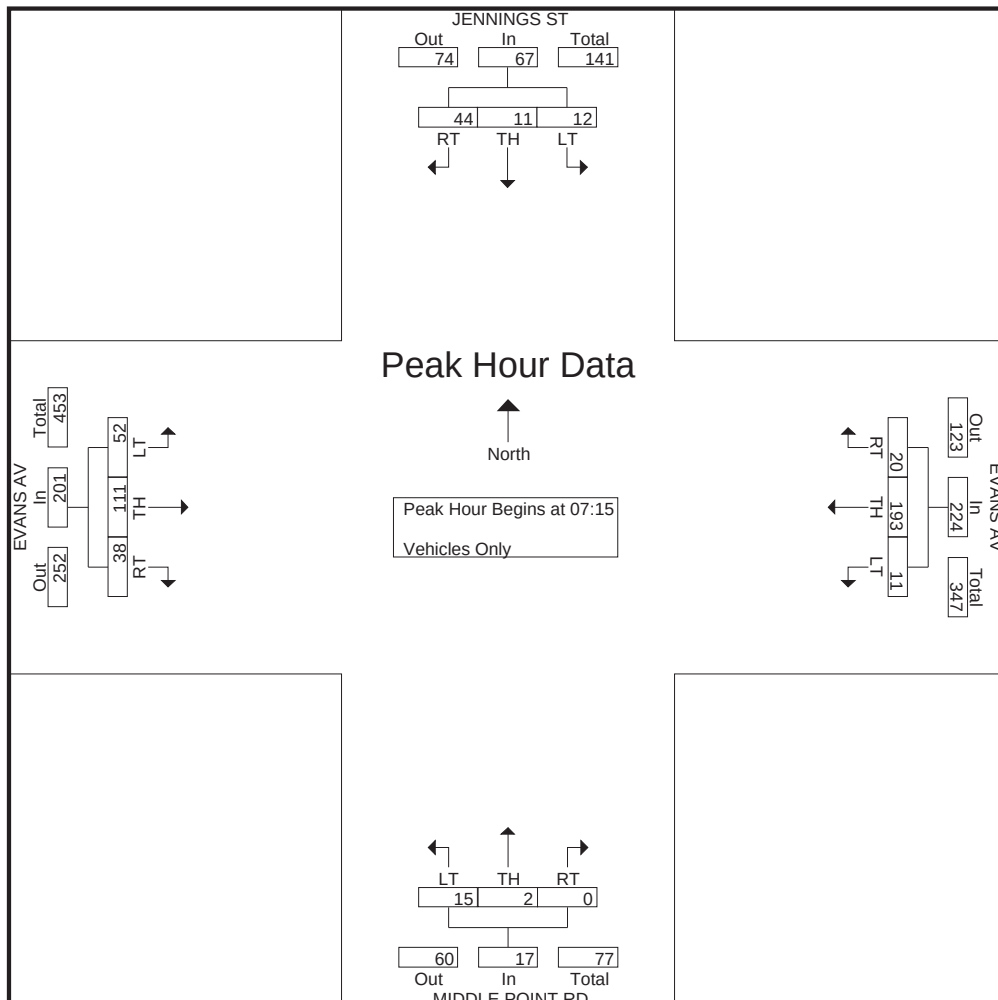
CITY OF SAN FRANCISCO

File Name : jennings-evans-a
Site Code : 9
Start Date : 5/13/2015
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Groups Printed- Vehicles Only

	JENNINGS ST Southbound				EVANS AV Westbound				MIDDLE POINT RD Northbound				EVANS AV Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
07:00	5	3	5	13	6	22	1	29	0	0	1	1	8	22	9	39	82
07:15	14	5	3	22	4	48	4	56	0	1	3	4	10	39	11	60	142
07:30	7	3	2	12	4	52	1	57	0	1	3	4	7	27	15	49	122
07:45	12	2	3	17	7	51	3	61	0	0	4	4	12	21	16	49	131
Total	38	13	13	64	21	173	9	203	0	2	11	13	37	109	51	197	477
08:00	11	1	4	16	5	42	3	50	0	0	5	5	9	24	10	43	114
08:15	15	1	6	22	8	39	4	51	0	0	0	0	18	32	13	63	136
08:30	7	2	2	11	5	48	1	54	0	0	1	1	16	15	8	39	105
08:45	11	4	7	22	5	35	4	44	1	0	1	2	13	25	13	51	119
Total	44	8	19	71	23	164	12	199	1	0	7	8	56	96	44	196	474
Grand Total	82	21	32	135	44	337	21	402	1	2	18	21	93	205	95	393	951
Apprch %	60.7	15.6	23.7		10.9	83.8	5.2		4.8	9.5	85.7		23.7	52.2	24.2		
Total %	8.6	2.2	3.4	14.2	4.6	35.4	2.2	42.3	0.1	0.2	1.9	2.2	9.8	21.6	10	41.3	

	JENNINGS ST Southbound				EVANS AV Westbound				MIDDLE POINT RD Northbound				EVANS AV Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15																	
07:15	14	5	3	22	4	48	4	56	0	1	3	4	10	39	11	60	142
07:30	7	3	2	12	4	52	1	57	0	1	3	4	7	27	15	49	122
07:45	12	2	3	17	7	51	3	61	0	0	4	4	12	21	16	49	131
08:00	11	1	4	16	5	42	3	50	0	0	5	5	9	24	10	43	114
Total Volume	44	11	12	67	20	193	11	224	0	2	15	17	38	111	52	201	509
% App. Total	65.7	16.4	17.9		8.9	86.2	4.9		0	11.8	88.2		18.9	55.2	25.9		
PHF	.786	.550	.750	.761	.714	.928	.688	.918	.000	.500	.750	.850	.792	.712	.813	.838	.896



MARKS TRAFFIC DATA

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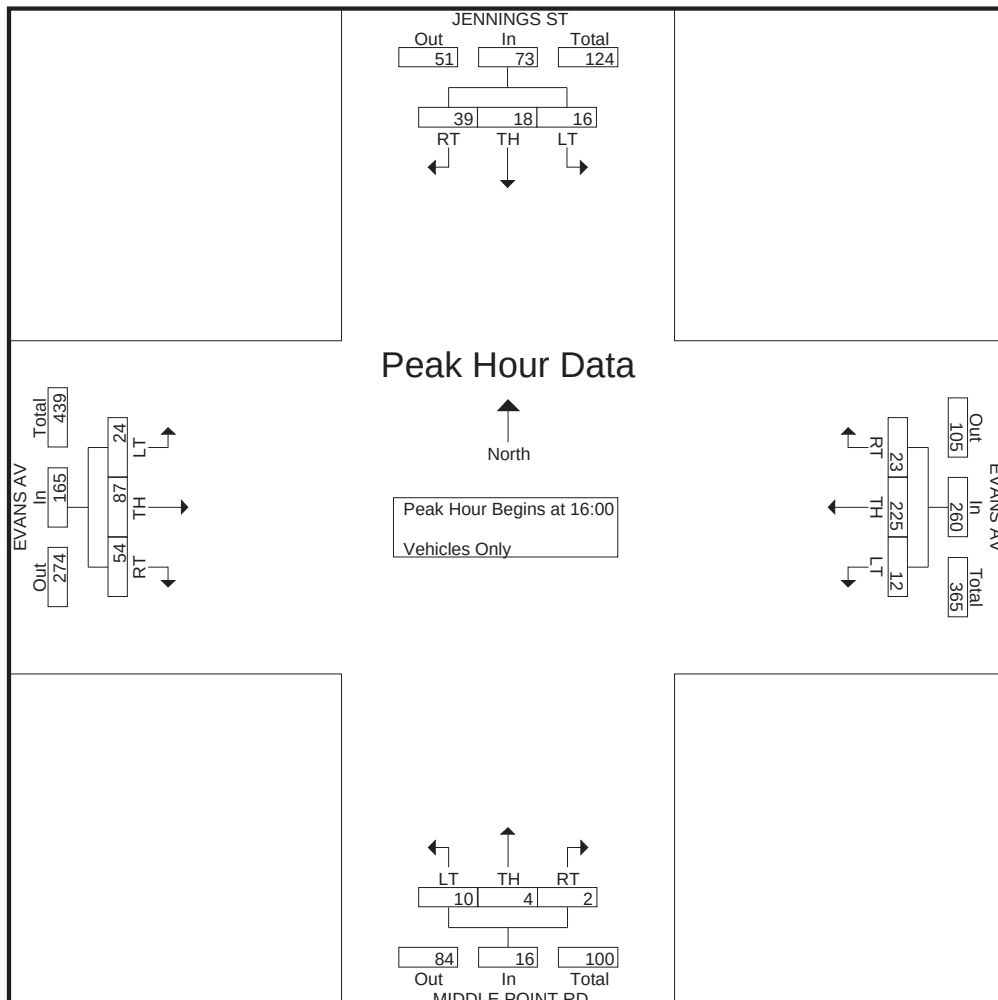
CITY OF SAN FRANCISCO

File Name : jennings-evans-p
Site Code : 9
Start Date : 5/13/2015
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Groups Printed- Vehicles Only

	JENNINGS ST Southbound				EVANS AV Westbound				MIDDLE POINT RD Northbound				EVANS AV Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	12	7	4	23	8	53	3	64	1	0	2	3	21	20	5	46	136
16:15	9	6	4	19	5	54	4	63	0	2	4	6	13	21	10	44	132
16:30	8	2	3	13	6	53	2	61	1	1	2	4	10	23	6	39	117
16:45	10	3	5	18	4	65	3	72	0	1	2	3	10	23	3	36	129
Total	39	18	16	73	23	225	12	260	2	4	10	16	54	87	24	165	514
17:00	12	4	5	21	4	42	2	48	0	1	5	6	19	26	7	52	127
17:15	10	4	4	18	4	30	5	39	1	0	2	3	9	25	5	39	99
17:30	5	2	3	10	4	42	4	50	1	0	3	4	18	31	7	56	120
17:45	8	2	3	13	3	38	6	47	0	0	8	8	13	27	7	47	115
Total	35	12	15	62	15	152	17	184	2	1	18	21	59	109	26	194	461
Grand Total	74	30	31	135	38	377	29	444	4	5	28	37	113	196	50	359	975
Apprch %	54.8	22.2	23		8.6	84.9	6.5		10.8	13.5	75.7		31.5	54.6	13.9		
Total %	7.6	3.1	3.2	13.8	3.9	38.7	3	45.5	0.4	0.5	2.9	3.8	11.6	20.1	5.1	36.8	

	JENNINGS ST Southbound				EVANS AV Westbound				MIDDLE POINT RD Northbound				EVANS AV Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:00																	
16:00	12	7	4	23	8	53	3	64	1	0	2	3	21	20	5	46	136
16:15	9	6	4	19	5	54	4	63	0	2	4	6	13	21	10	44	132
16:30	8	2	3	13	6	53	2	61	1	1	2	4	10	23	6	39	117
16:45	10	3	5	18	4	65	3	72	0	1	2	3	10	23	3	36	129
Total Volume	39	18	16	73	23	225	12	260	2	4	10	16	54	87	24	165	514
% App. Total	53.4	24.7	21.9		8.8	86.5	4.6		12.5	25	62.5		32.7	52.7	14.5		
PHF	.813	.643	.800	.793	.719	.865	.750	.903	.500	.500	.625	.667	.643	.946	.600	.897	.945



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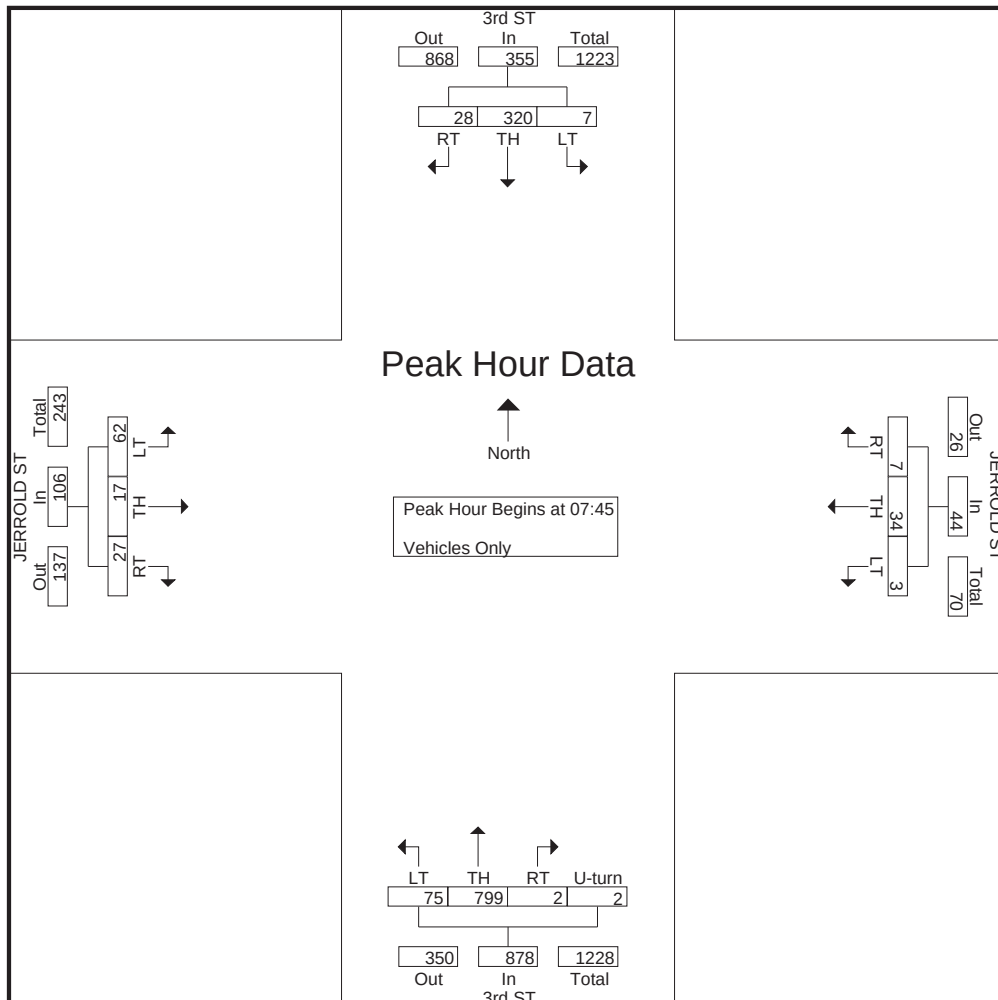
CITY OF SAN FRANCISCO

File Name : 3-jerrold-a
Site Code : 10
Start Date : 5/12/2015
Page No : 1

Groups Printed- Vehicles Only

	3rd ST Southbound				JERROLD ST Westbound				3rd ST Northbound					JERROLD ST Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	Int. Total
07:00	4	54	1	59	4	11	0	15	1	105	14	0	120	6	1	14	21	215
07:15	3	70	2	75	3	8	0	11	0	133	15	0	148	8	4	15	27	261
07:30	11	50	0	61	2	12	1	15	3	188	15	0	206	9	4	13	26	308
07:45	7	75	2	84	2	8	1	11	0	205	18	0	223	6	5	19	30	348
Total	25	249	5	279	11	39	2	52	4	631	62	0	697	29	14	61	104	1132
08:00	6	69	0	75	1	8	1	10	0	204	22	1	227	8	3	13	24	336
08:15	7	92	0	99	2	12	0	14	1	192	20	0	213	7	4	12	23	349
08:30	8	84	5	97	2	6	1	9	1	198	15	1	215	6	5	18	29	350
08:45	7	80	3	90	0	11	0	11	2	190	21	2	215	5	4	18	27	343
Total	28	325	8	361	5	37	2	44	4	784	78	4	870	26	16	61	103	1378
Grand Total	53	574	13	640	16	76	4	96	8	1415	140	4	1567	55	30	122	207	2510
Apprch %	8.3	89.7	2		16.7	79.2	4.2		0.5	90.3	8.9	0.3		26.6	14.5	58.9		
Total %	2.1	22.9	0.5	25.5	0.6	3	0.2	3.8	0.3	56.4	5.6	0.2	62.4	2.2	1.2	4.9	8.2	

	3rd ST Southbound				JERROLD ST Westbound				3rd ST Northbound					JERROLD ST Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																		
Peak Hour for Entire Intersection Begins at 07:45																		
07:45	7	75	2	84	2	8	1	11	0	205	18	0	223	6	5	19	30	348
08:00	6	69	0	75	1	8	1	10	0	204	22	1	227	8	3	13	24	336
08:15	7	92	0	99	2	12	0	14	1	192	20	0	213	7	4	12	23	349
08:30	8	84	5	97	2	6	1	9	1	198	15	1	215	6	5	18	29	350
Total Volume	28	320	7	355	7	34	3	44	2	799	75	2	878	27	17	62	106	1383
% App. Total	7.9	90.1	2		15.9	77.3	6.8		0.2	91	8.5	0.2		25.5	16	58.5		
PHF	.875	.870	.350	.896	.875	.708	.750	.786	.500	.974	.852	.500	.967	.844	.850	.816	.883	.988



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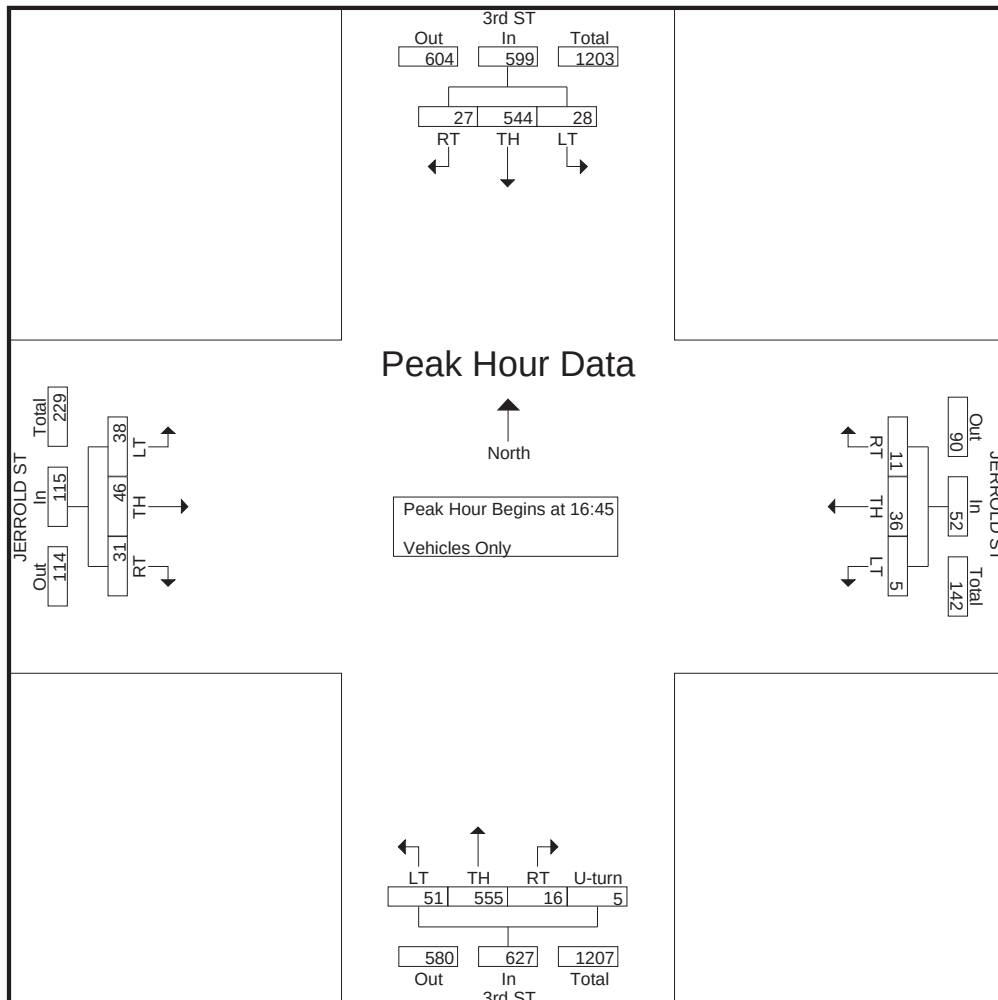
CITY OF SAN FRANCISCO

File Name : 3-jerrold-p
Site Code : 10
Start Date : 5/12/2015
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Groups Printed- Vehicles Only

	3rd ST Southbound				JERROLD ST Westbound				3rd ST Northbound					JERROLD ST Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	8	113	9	130	2	8	0	10	2	155	23	2	182	12	13	18	43	365
16:15	4	103	4	111	1	11	1	13	5	141	13	3	162	8	4	17	29	315
16:30	5	112	5	122	0	14	2	16	2	135	9	1	147	10	16	13	39	324
16:45	5	120	10	135	0	6	0	6	4	153	11	0	168	6	14	10	30	339
Total	22	448	28	498	3	39	3	45	13	584	56	6	659	36	47	58	141	1343
17:00	9	114	4	127	3	13	1	17	2	145	17	1	165	5	12	12	29	338
17:15	7	173	6	186	3	5	3	11	2	145	9	2	158	7	4	6	17	372
17:30	6	137	8	151	5	12	1	18	8	112	14	2	136	13	16	10	39	344
17:45	3	133	8	144	1	10	5	16	4	123	7	4	138	5	14	7	26	324
Total	25	557	26	608	12	40	10	62	16	525	47	9	597	30	46	35	111	1378
Grand Total	47	1005	54	1106	15	79	13	107	29	1109	103	15	1256	66	93	93	252	2721
Apprch %	4.2	90.9	4.9		14	73.8	12.1		2.3	88.3	8.2	1.2		26.2	36.9	36.9		
Total %	1.7	36.9	2	40.6	0.6	2.9	0.5	3.9	1.1	40.8	3.8	0.6	46.2	2.4	3.4	3.4	9.3	

	3rd ST Southbound				JERROLD ST Westbound				3rd ST Northbound					JERROLD ST Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																		
Peak Hour for Entire Intersection Begins at 16:45																		
16:45	5	120	10	135	0	6	0	6	4	153	11	0	168	6	14	10	30	339
17:00	9	114	4	127	3	13	1	17	2	145	17	1	165	5	12	12	29	338
17:15	7	173	6	186	3	5	3	11	2	145	9	2	158	7	4	6	17	372
17:30	6	137	8	151	5	12	1	18	8	112	14	2	136	13	16	10	39	344
Total Volume	27	544	28	599	11	36	5	52	16	555	51	5	627	31	46	38	115	1393
% App. Total	4.5	90.8	4.7		21.2	69.2	9.6		2.6	88.5	8.1	0.8		27	40	33		
PHF	.750	.786	.700	.805	.550	.692	.417	.722	.500	.907	.750	.625	.933	.596	.719	.792	.737	.936



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Site Code : 12

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Page No : 1

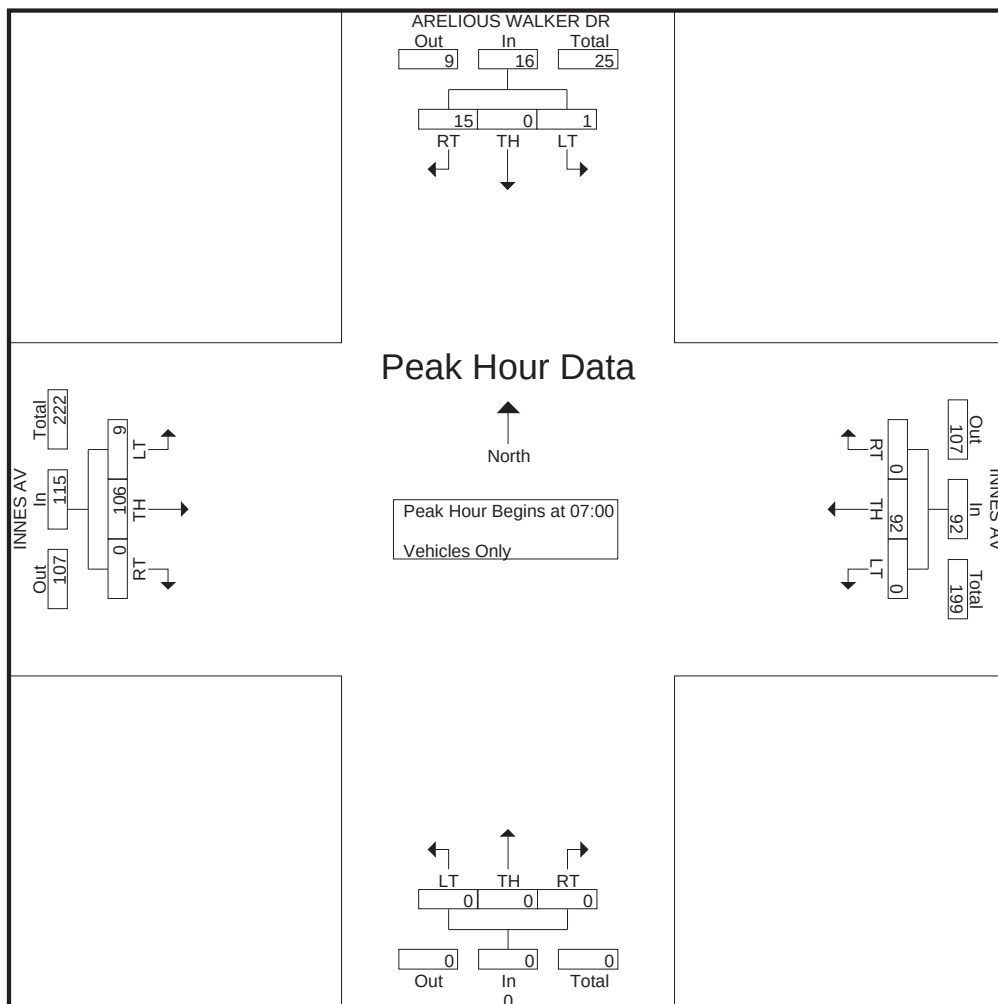
Groups Printed- Vehicles Only

	ARELIIOUS WALKER DR Southbound				INNES AV Westbound				0 Northbound				INNES AV Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
07:00	2	0	0	2	0	14	0	14	0	0	0	0	0	24	4	28	44
07:15	5	0	0	5	0	27	0	27	0	0	0	0	0	31	2	33	65
07:30	5	0	0	5	0	27	0	27	0	0	0	0	0	30	1	31	63
07:45	3	0	1	4	0	24	0	24	0	0	0	0	0	21	2	23	51
Total	15	0	1	16	0	92	0	92	0	0	0	0	0	106	9	115	223
08:00	0	0	0	0	0	11	0	11	0	0	0	0	0	10	0	10	21
08:15	4	0	0	4	0	19	0	19	0	0	0	0	0	33	3	36	59
08:30	1	0	0	1	0	22	0	22	0	0	0	0	0	15	4	19	42
08:45	4	0	2	6	0	18	0	18	0	0	0	0	0	29	3	32	56
Total	9	0	2	11	0	70	0	70	0	0	0	0	0	87	10	97	178
Grand Total	24	0	3	27	0	162	0	162	0	0	0	0	0	193	19	212	401
Apprch %	88.9	0	11.1		0	100	0		0	0	0		0	91	9		
Total %	6	0	0.7	6.7	0	40.4	0	40.4	0	0	0	0	0	48.1	4.7	52.9	

	ARELIIOUS WALKER DR Southbound				INNES AV Westbound				0 Northbound				INNES AV Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
07:00	2	0	0	2	0	14	0	14	0	0	0	0	0	24	4	28	44
07:15	5	0	0	5	0	27	0	27	0	0	0	0	0	31	2	33	65
07:30	5	0	0	5	0	27	0	27	0	0	0	0	0	30	1	31	63
07:45	3	0	1	4	0	24	0	24	0	0	0	0	0	21	2	23	51
Total Volume	15	0	1	16	0	92	0	92	0	0	0	0	0	106	9	115	223
% App. Total	93.8	0	6.2		0	100	0		0	0	0		0	92.2	7.8		
PHF	.750	.000	.250	.800	.000	.852	.000	.852	.000	.000	.000	.000	.000	.855	.563	.871	.858

Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 07:00



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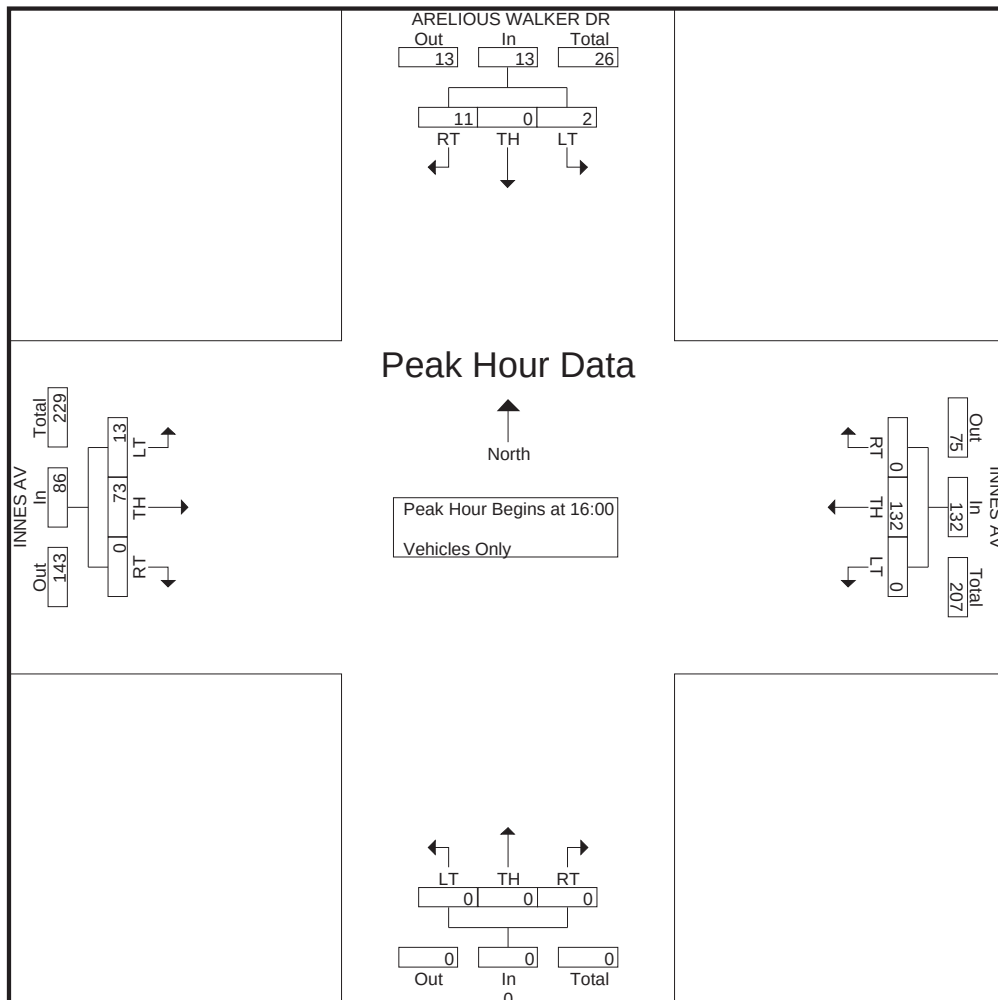
CITY OF SAN FRANCISCO

File Name : arelious walker-innes-p
Site Code : 12
Start Date : 5/13/2015
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	ARELIOUS WALKER DR Southbound				INNES AV Westbound				0 Northbound				INNES AV Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	1	0	1	2	0	30	0	30	0	0	0	0	0	18	2	20	52
16:15	2	0	1	3	0	33	0	33	0	0	0	0	0	12	5	17	53
16:30	5	0	0	5	0	30	0	30	0	0	0	0	0	25	2	27	62
16:45	3	0	0	3	0	39	0	39	0	0	0	0	0	18	4	22	64
Total	11	0	2	13	0	132	0	132	0	0	0	0	0	73	13	86	231
17:00	2	0	0	2	0	20	0	20	0	0	0	0	0	22	4	26	48
17:15	0	0	0	0	0	13	0	13	0	0	0	0	0	10	3	13	26
17:30	14	0	0	14	0	19	0	19	0	0	0	0	0	24	3	27	60
17:45	2	0	1	3	0	15	0	15	0	0	0	0	0	23	1	24	42
Total	18	0	1	19	0	67	0	67	0	0	0	0	0	79	11	90	176
Grand Total	29	0	3	32	0	199	0	199	0	0	0	0	0	152	24	176	407
Apprch %	90.6	0	9.4		0	100	0		0	0	0		0	86.4	13.6		
Total %	7.1	0	0.7	7.9	0	48.9	0	48.9	0	0	0	0	0	37.3	5.9	43.2	

	ARELIOUS WALKER DR Southbound				INNES AV Westbound				0 Northbound				INNES AV Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:00																	
16:00	1	0	1	2	0	30	0	30	0	0	0	0	0	18	2	20	52
16:15	2	0	1	3	0	33	0	33	0	0	0	0	0	12	5	17	53
16:30	5	0	0	5	0	30	0	30	0	0	0	0	0	25	2	27	62
16:45	3	0	0	3	0	39	0	39	0	0	0	0	0	18	4	22	64
Total Volume	11	0	2	13	0	132	0	132	0	0	0	0	0	73	13	86	231
% App. Total	84.6	0	15.4		0	100	0		0	0	0		0	84.9	15.1		
PHF	.550	.000	.500	.650	.000	.846	.000	.846	.000	.000	.000	.000	.000	.730	.650	.796	.902



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Site Code : 14

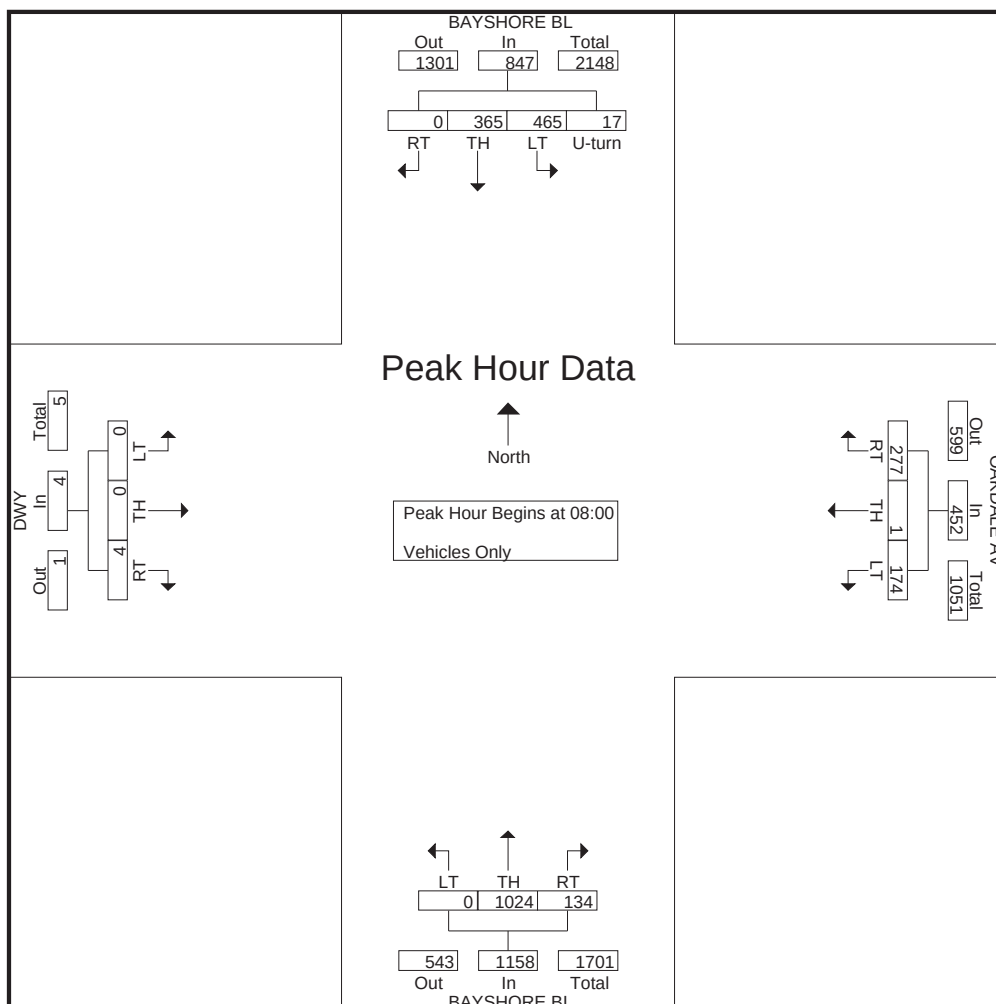
Start Date : 5/13/2015

Page No : 1

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	BAYSHORE BL Southbound					OAKDALE AV Westbound				BAYSHORE BL Northbound				DWY Eastbound				
Start Time	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
07:00	0	62	70	1	133	49	0	33	82	19	144	0	163	0	0	0	0	378
07:15	0	63	82	6	151	61	0	44	105	31	222	0	253	0	0	0	0	509
07:30	0	92	74	6	172	82	1	43	126	21	254	0	275	1	0	0	1	574
07:45	0	107	100	3	210	60	0	39	99	21	234	0	255	0	0	0	0	564
Total	0	324	326	16	666	252	1	159	412	92	854	0	946	1	0	0	1	2025
08:00	0	92	132	4	228	76	0	51	127	29	253	0	282	0	0	0	0	637
08:15	0	92	120	5	217	73	1	39	113	28	280	0	308	2	0	0	2	640
08:30	0	88	90	6	184	79	0	43	122	39	253	0	292	0	0	0	0	598
08:45	0	93	123	2	218	49	0	41	90	38	238	0	276	2	0	0	2	586
Total	0	365	465	17	847	277	1	174	452	134	1024	0	1158	4	0	0	4	2461
Grand Total	0	689	791	33	1513	529	2	333	864	226	1878	0	2104	5	0	0	5	4486
Apprch %	0	45.5	52.3	2.2		61.2	0.2	38.5		10.7	89.3	0		100	0	0		
Total %	0	15.4	17.6	0.7	33.7	11.8	0	7.4	19.3	5	41.9	0	46.9	0.1	0	0	0.1	

	BAYSHORE BL Southbound					OAKDALE AV Westbound				BAYSHORE BL Northbound				DWY Eastbound				
Start Time	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																		
Peak Hour for Entire Intersection Begins at 08:00																		
08:00	0	92	132	4	228	76	0	51	127	29	253	0	282	0	0	0	0	637
08:15	0	92	120	5	217	73	1	39	113	28	280	0	308	2	0	0	2	640
08:30	0	88	90	6	184	79	0	43	122	39	253	0	292	0	0	0	0	598
08:45	0	93	123	2	218	49	0	41	90	38	238	0	276	2	0	0	2	586
Total Volume	0	365	465	17	847	277	1	174	452	134	1024	0	1158	4	0	0	4	2461
% App. Total	0	43.1	54.9	2		61.3	0.2	38.5		11.6	88.4	0		100	0	0		
PHF	.000	.981	.881	.708	.929	.877	.250	.853	.890	.859	.914	.000	.940	.500	.000	.000	.500	.961



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File Name : bayshore-oakdale-p

Site Code : 14

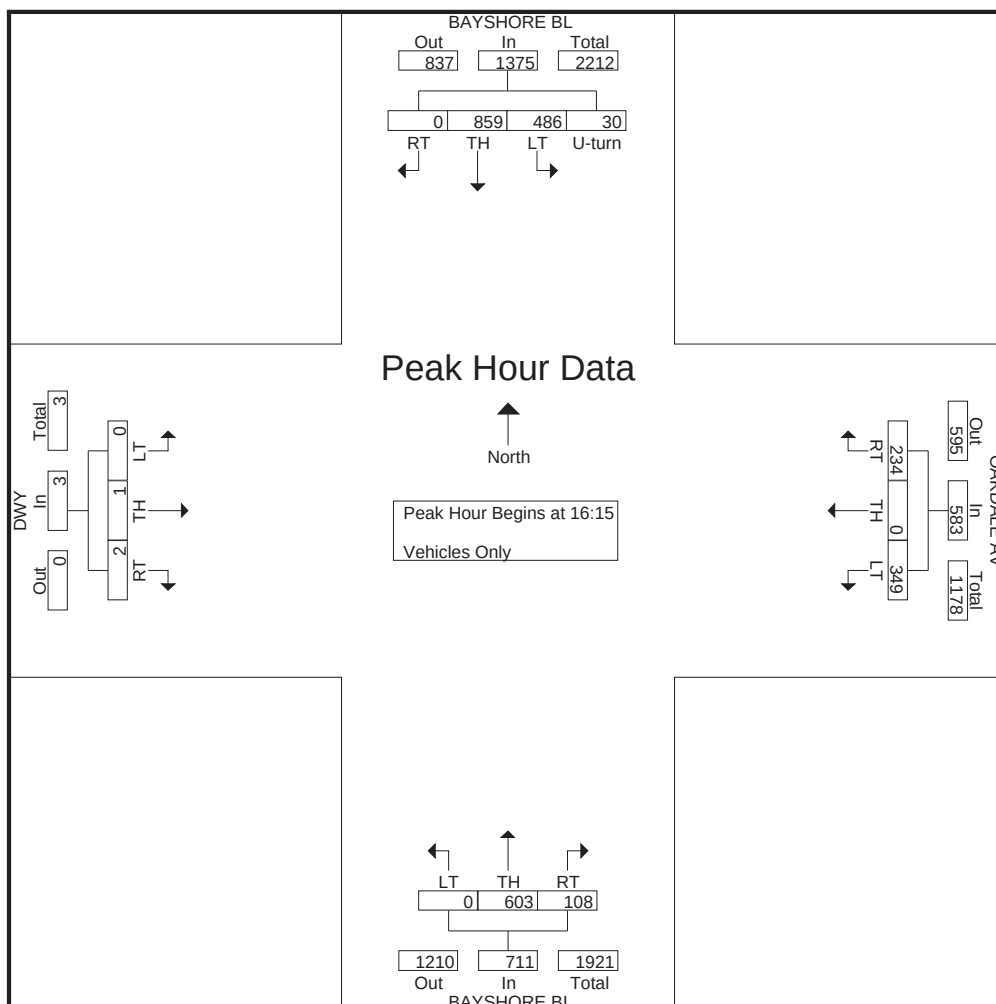
Start Date : 5/13/2015

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	BAYSHORE BL Southbound					OAKDALE AV Westbound				BAYSHORE BL Northbound				DWY Eastbound				
Start Time	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	0	117	106	6	229	40	0	70	110	22	158	0	180	0	0	0	0	519
16:15	0	203	110	9	322	66	0	81	147	27	149	0	176	0	1	0	1	646
16:30	0	216	134	4	354	54	0	82	136	31	174	0	205	0	0	0	0	695
16:45	0	237	151	7	395	53	0	77	130	24	136	0	160	0	0	0	0	685
Total	0	773	501	26	1300	213	0	310	523	104	617	0	721	0	1	0	1	2545
17:00	0	203	91	10	304	61	0	109	170	26	144	0	170	2	0	0	2	646
17:15	0	178	95	6	279	56	0	81	137	20	188	0	208	0	0	0	0	624
17:30	1	188	99	7	295	56	0	74	130	25	148	0	173	0	0	0	0	598
17:45	0	212	88	9	309	43	1	78	122	24	154	0	178	0	0	0	0	609
Total	1	781	373	32	1187	216	1	342	559	95	634	0	729	2	0	0	2	2477
Grand Total	1	1554	874	58	2487	429	1	652	1082	199	1251	0	1450	2	1	0	3	5022
Apprch %	0	62.5	35.1	2.3		39.6	0.1	60.3		13.7	86.3	0		66.7	33.3	0		
Total %	0	30.9	17.4	1.2	49.5	8.5	0	13	21.5	4	24.9	0	28.9	0	0	0	0.1	

	BAYSHORE BL Southbound					OAKDALE AV Westbound				BAYSHORE BL Northbound				DWY Eastbound				
Start Time	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																		
Peak Hour for Entire Intersection Begins at 16:15																		
16:15	0	203	110	9	322	66	0	81	147	27	149	0	176	0	1	0	1	646
16:30	0	216	134	4	354	54	0	82	136	31	174	0	205	0	0	0	0	695
16:45	0	237	151	7	395	53	0	77	130	24	136	0	160	0	0	0	0	685
17:00	0	203	91	10	304	61	0	109	170	26	144	0	170	2	0	0	2	646
Total Volume	0	859	486	30	1375	234	0	349	583	108	603	0	711	2	1	0	3	2672
% App. Total	0	62.5	35.3	2.2		40.1	0	59.9		15.2	84.8	0		66.7	33.3	0		
PHF	.000	.906	.805	.750	.870	.886	.000	.800	.857	.871	.866	.000	.867	.250	.250	.000	.375	.961



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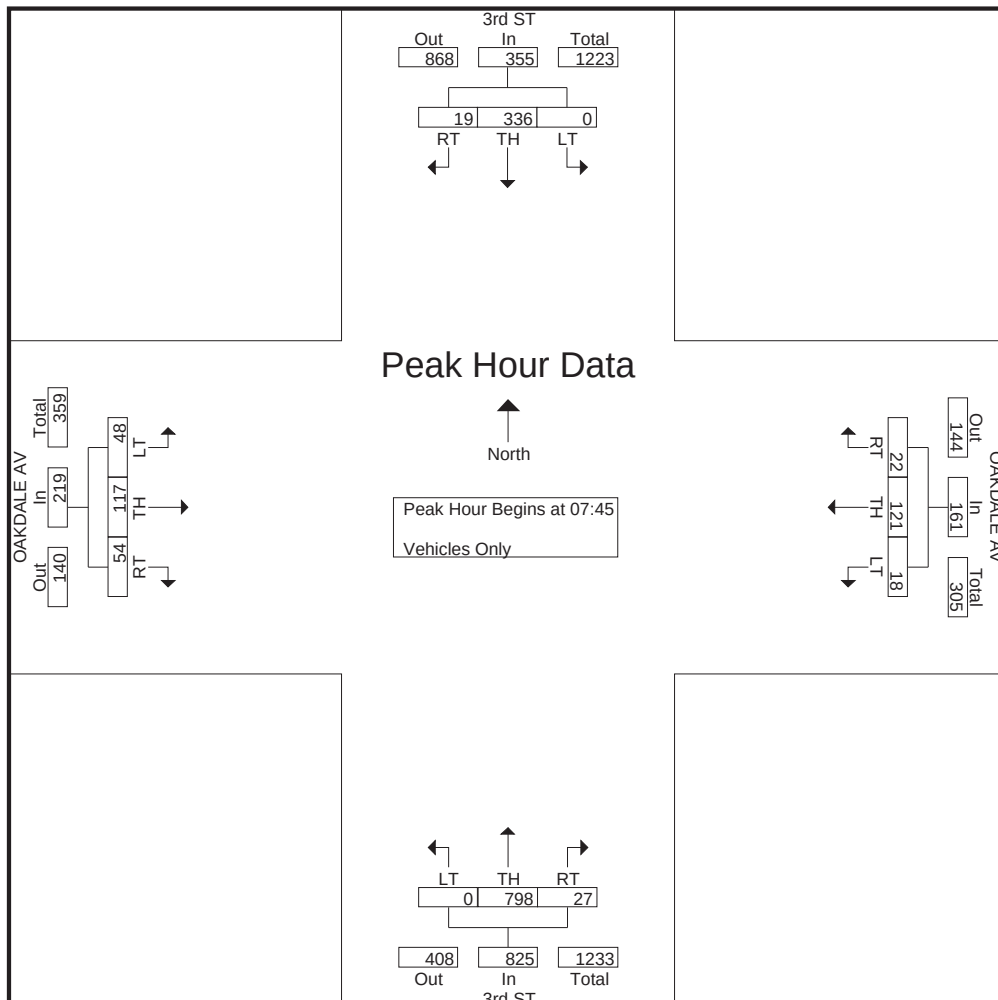
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File Name : 3-oakdale-a
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Page No : 1

Groups Printed- Vehicles Only

	3rd ST Southbound				OAKDALE AV Westbound				3rd ST Northbound				OAKDALE AV Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
07:00	3	54	0	57	3	24	6	33	4	120	0	124	7	23	5	35	249
07:15	9	78	0	87	1	29	6	36	4	165	0	169	11	16	4	31	323
07:30	5	91	0	96	2	41	6	49	2	166	0	168	12	22	8	42	355
07:45	3	96	0	99	2	30	7	39	5	218	0	223	11	26	11	48	409
Total	20	319	0	339	8	124	25	157	15	669	0	684	41	87	28	156	1336
08:00	7	80	0	87	6	25	4	35	6	185	0	191	12	41	11	64	377
08:15	5	75	0	80	8	35	4	47	6	201	0	207	15	26	11	52	386
08:30	4	85	0	89	6	31	3	40	10	194	0	204	16	24	15	55	388
08:45	8	96	0	104	12	31	7	50	5	181	0	186	14	36	8	58	398
Total	24	336	0	360	32	122	18	172	27	761	0	788	57	127	45	229	1549
Grand Total	44	655	0	699	40	246	43	329	42	1430	0	1472	98	214	73	385	2885
Apprch %	6.3	93.7	0		12.2	74.8	13.1		2.9	97.1	0		25.5	55.6	19		
Total %	1.5	22.7	0	24.2	1.4	8.5	1.5	11.4	1.5	49.6	0	51	3.4	7.4	2.5	13.3	

	3rd ST Southbound				OAKDALE AV Westbound				3rd ST Northbound				OAKDALE AV Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45																	
07:45	3	96	0	99	2	30	7	39	5	218	0	223	11	26	11	48	409
08:00	7	80	0	87	6	25	4	35	6	185	0	191	12	41	11	64	377
08:15	5	75	0	80	8	35	4	47	6	201	0	207	15	26	11	52	386
08:30	4	85	0	89	6	31	3	40	10	194	0	204	16	24	15	55	388
Total Volume	19	336	0	355	22	121	18	161	27	798	0	825	54	117	48	219	1560
% App. Total	5.4	94.6	0		13.7	75.2	11.2		3.3	96.7	0		24.7	53.4	21.9		
PHF	.679	.875	.000	.896	.688	.864	.643	.856	.675	.915	.000	.925	.844	.713	.800	.855	.954



MARKS TRAFFIC DATA

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CITY OF SAN FRANCISCO

File Name : 3-oakdale-p
Site Code : 15
Start Date : 5/13/2015
Page No : 1

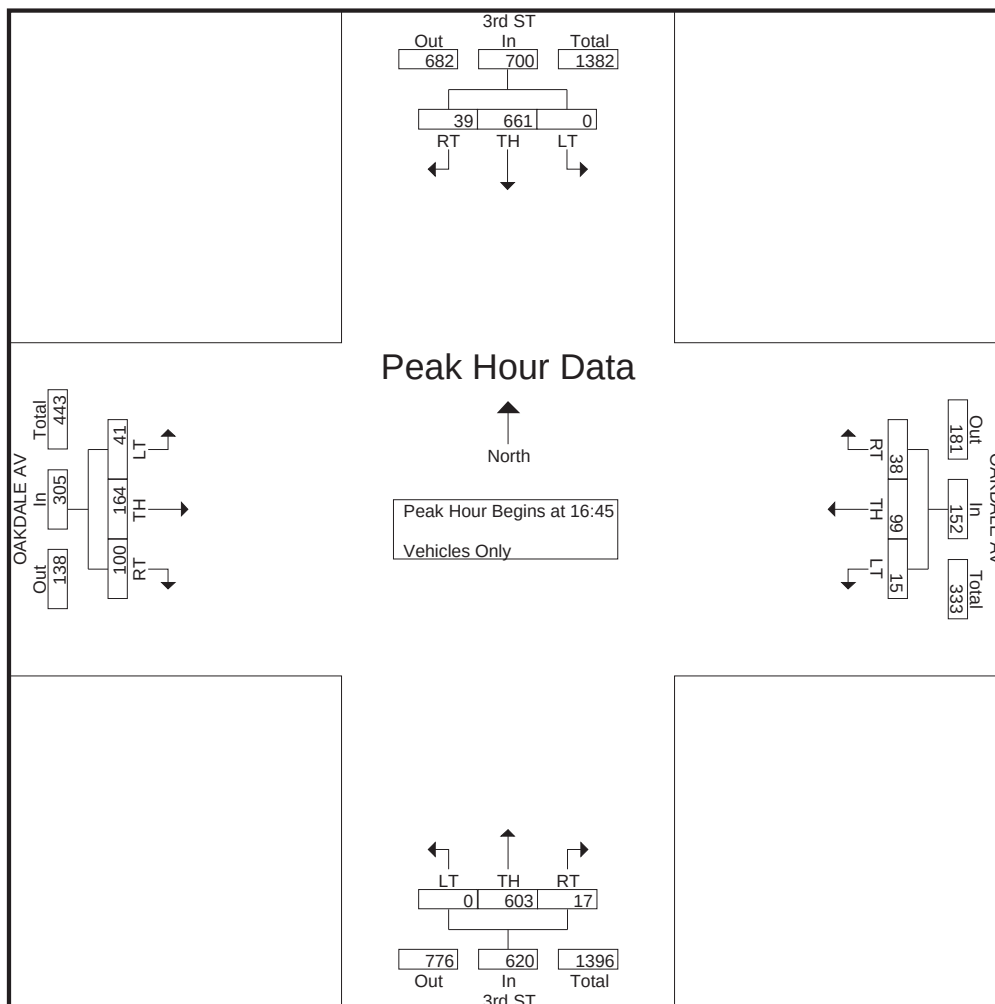
Groups Printed- Vehicles Only

	3rd ST Southbound				OAKDALE AV Westbound				3rd ST Northbound				OAKDALE AV Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	7	116	0	123	13	14	9	36	10	166	0	176	18	28	14	60	395
16:15	12	131	0	143	8	20	4	32	3	137	1	141	15	38	8	61	377
16:30	10	166	0	176	7	24	5	36	5	153	0	158	17	33	7	57	427
16:45	5	131	0	136	8	21	2	31	5	147	0	152	34	35	10	79	398
Total	34	544	0	578	36	79	20	135	23	603	1	627	84	134	39	257	1597
17:00	6	195	0	201	9	25	3	37	5	152	0	157	27	38	13	78	473
17:15	14	188	0	202	13	28	4	45	2	146	0	148	18	50	12	80	475
17:30	14	147	0	161	8	25	6	39	5	158	0	163	21	41	6	68	431
17:45	4	138	0	142	8	18	3	29	8	145	0	153	17	42	15	74	398
Total	38	668	0	706	38	96	16	150	20	601	0	621	83	171	46	300	1777
Grand Total	72	1212	0	1284	74	175	36	285	43	1204	1	1248	167	305	85	557	3374
Apprch %	5.6	94.4	0		26	61.4	12.6		3.4	96.5	0.1		30	54.8	15.3		
Total %	2.1	35.9	0	38.1	2.2	5.2	1.1	8.4	1.3	35.7	0	37	4.9	9	2.5	16.5	

	3rd ST Southbound				OAKDALE AV Westbound				3rd ST Northbound				OAKDALE AV Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:45	5	131	0	136	8	21	2	31	5	147	0	152	34	35	10	79	398
17:00	6	195	0	201	9	25	3	37	5	152	0	157	27	38	13	78	473
17:15	14	188	0	202	13	28	4	45	2	146	0	148	18	50	12	80	475
17:30	14	147	0	161	8	25	6	39	5	158	0	163	21	41	6	68	431
Total Volume	39	661	0	700	38	99	15	152	17	603	0	620	100	164	41	305	1777
% App. Total	5.6	94.4	0		25	65.1	9.9		2.7	97.3	0		32.8	53.8	13.4		
PHF	.696	.847	.000	.866	.731	.884	.625	.844	.850	.954	.000	.951	.735	.820	.788	.953	.935

Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 16:45



MARKS TRAFFIC DATA

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CITY OF SAN FRANCISCO

File Name : ingalls-palou-a
Site Code : 16
Start Date : 5/13/2015
Page No : 1

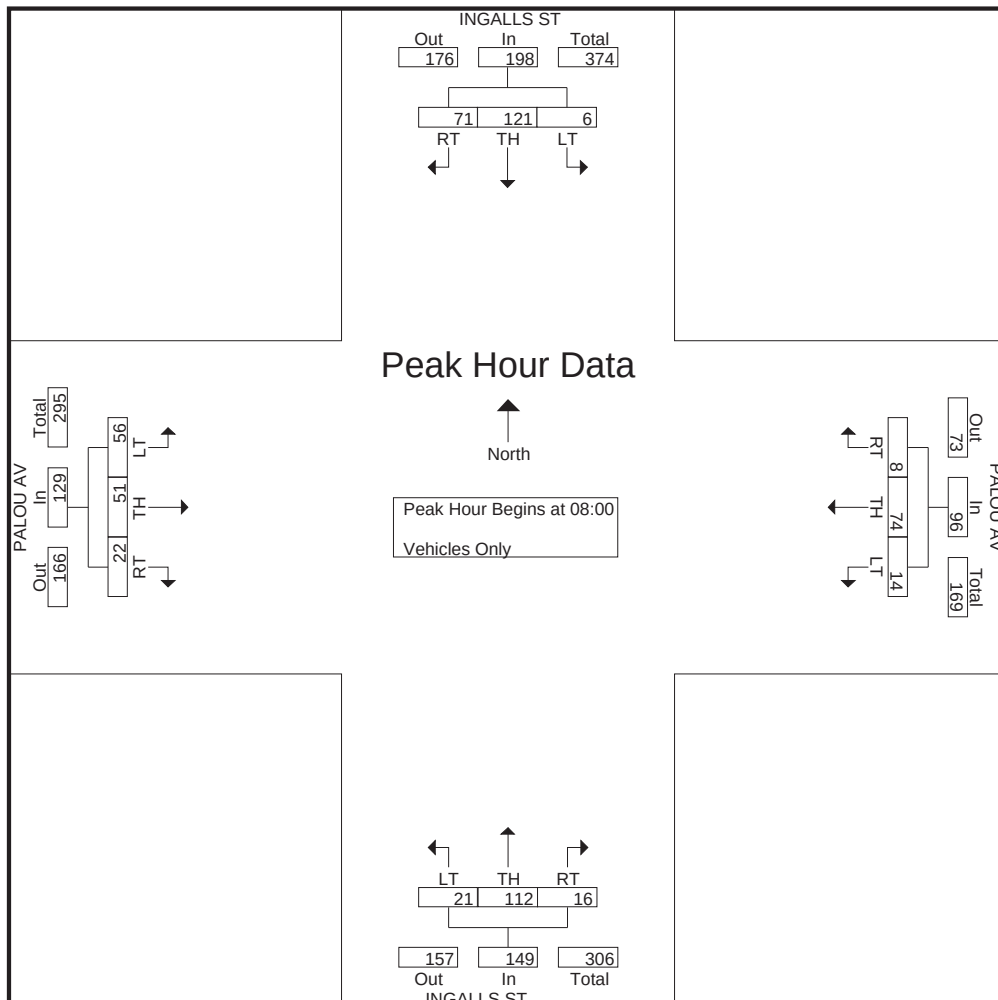
Groups Printed- Vehicles Only

	INGALLS ST Southbound				PALOU AV Westbound				INGALLS ST Northbound				PALOU AV Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
07:00	12	19	3	34	2	13	0	15	0	19	2	21	4	18	9	31	101
07:15	18	19	4	41	3	13	2	18	0	23	9	32	4	7	11	22	113
07:30	23	37	3	63	1	15	1	17	1	13	4	18	1	15	5	21	119
07:45	18	33	2	53	2	17	3	22	0	27	4	31	6	14	17	37	143
Total	71	108	12	191	8	58	6	72	1	82	19	102	15	54	42	111	476
08:00	21	37	3	61	3	23	0	26	3	28	2	33	8	17	16	41	161
08:15	18	32	1	51	1	19	6	26	4	25	7	36	1	13	13	27	140
08:30	21	22	1	44	1	13	3	17	4	28	7	39	6	5	16	27	127
08:45	11	30	1	42	3	19	5	27	5	31	5	41	7	16	11	34	144
Total	71	121	6	198	8	74	14	96	16	112	21	149	22	51	56	129	572
Grand Total	142	229	18	389	16	132	20	168	17	194	40	251	37	105	98	240	1048
Apprch %	36.5	58.9	4.6		9.5	78.6	11.9		6.8	77.3	15.9		15.4	43.8	40.8		
Total %	13.5	21.9	1.7	37.1	1.5	12.6	1.9	16	1.6	18.5	3.8	24	3.5	10	9.4	22.9	

	INGALLS ST Southbound				PALOU AV Westbound				INGALLS ST Northbound				PALOU AV Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
08:00	21	37	3	61	3	23	0	26	3	28	2	33	8	17	16	41	161
08:15	18	32	1	51	1	19	6	26	4	25	7	36	1	13	13	27	140
08:30	21	22	1	44	1	13	3	17	4	28	7	39	6	5	16	27	127
08:45	11	30	1	42	3	19	5	27	5	31	5	41	7	16	11	34	144
Total Volume	71	121	6	198	8	74	14	96	16	112	21	149	22	51	56	129	572
% App. Total	35.9	61.1	3		8.3	77.1	14.6		10.7	75.2	14.1		17.1	39.5	43.4		
PHF	.845	.818	.500	.811	.667	.804	.583	.889	.800	.903	.750	.909	.688	.750	.875	.787	.888

Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 08:00



MARKS TRAFFIC DATA

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CITY OF SAN FRANCISCO

File Name : ingalls-palou-p
Site Code : 16
Start Date : 5/13/2015
Page No : 1

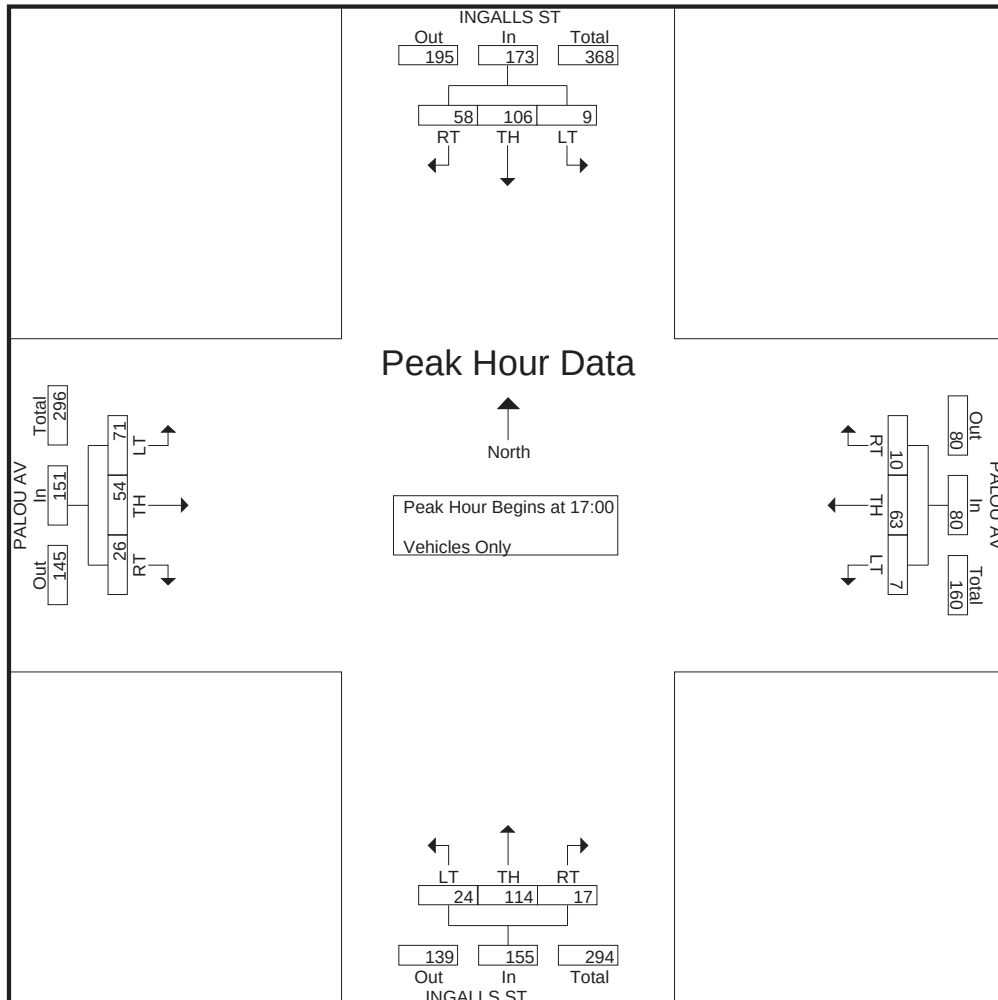
Groups Printed- Vehicles Only

	INGALLS ST Southbound				PALOU AV Westbound				INGALLS ST Northbound				PALOU AV Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	17	30	4	51	3	18	2	23	1	31	3	35	4	16	15	35	144
16:15	13	32	2	47	4	17	0	21	2	30	6	38	7	11	11	29	135
16:30	13	33	2	48	5	25	3	33	3	26	4	33	7	17	8	32	146
16:45	17	20	6	43	0	14	3	17	2	26	3	31	7	18	8	33	124
Total	60	115	14	189	12	74	8	94	8	113	16	137	25	62	42	129	549
17:00	13	32	3	48	1	25	3	29	7	25	4	36	5	11	17	33	146
17:15	15	20	4	39	2	16	2	20	2	24	8	34	7	16	15	38	131
17:30	6	32	2	40	5	12	1	18	3	30	7	40	6	16	21	43	141
17:45	24	22	0	46	2	10	1	13	5	35	5	45	8	11	18	37	141
Total	58	106	9	173	10	63	7	80	17	114	24	155	26	54	71	151	559
Grand Total	118	221	23	362	22	137	15	174	25	227	40	292	51	116	113	280	1108
Apprch %	32.6	61	6.4		12.6	78.7	8.6		8.6	77.7	13.7		18.2	41.4	40.4		
Total %	10.6	19.9	2.1	32.7	2	12.4	1.4	15.7	2.3	20.5	3.6	26.4	4.6	10.5	10.2	25.3	

	INGALLS ST Southbound				PALOU AV Westbound				INGALLS ST Northbound				PALOU AV Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
17:00	13	32	3	48	1	25	3	29	7	25	4	36	5	11	17	33	146
17:15	15	20	4	39	2	16	2	20	2	24	8	34	7	16	15	38	131
17:30	6	32	2	40	5	12	1	18	3	30	7	40	6	16	21	43	141
17:45	24	22	0	46	2	10	1	13	5	35	5	45	8	11	18	37	141
Total Volume	58	106	9	173	10	63	7	80	17	114	24	155	26	54	71	151	559
% App. Total	33.5	61.3	5.2		12.5	78.8	8.8		11	73.5	15.5		17.2	35.8	47		
PHF	.604	.828	.563	.901	.500	.630	.583	.690	.607	.814	.750	.861	.813	.844	.845	.878	.957

Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 17:00



MARKS TRAFFIC DATA

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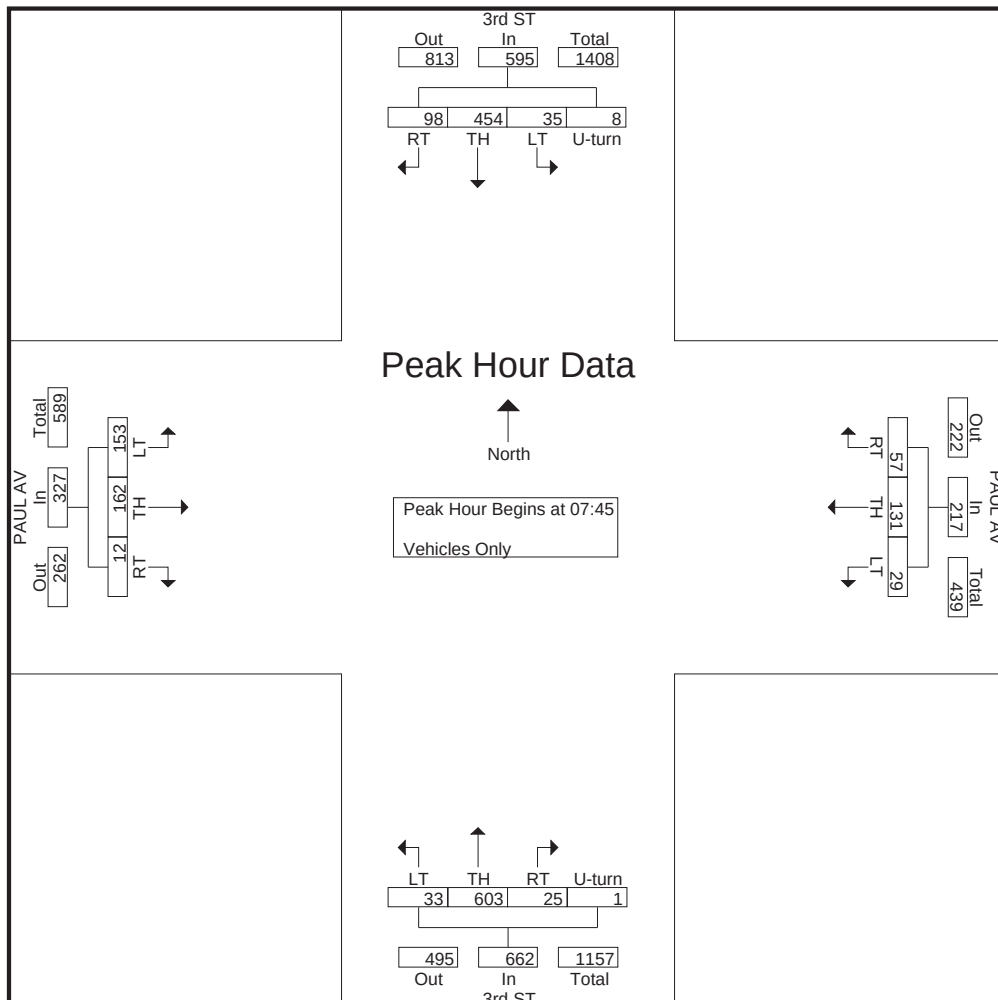
CITY OF SAN FRANCISCO

File Name : 3-paul-a
Site Code : 17
Start Date : 5/12/2015
Page No : 1

Groups Printed- Vehicles Only

	3rd ST Southbound					PAUL AV Westbound				3rd ST Northbound					PAUL AV Eastbound				
Start Time	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	Int. Total
07:00	13	112	6	0	131	8	23	5	36	10	129	6	1	146	1	22	21	44	357
07:15	18	123	2	1	144	12	30	11	53	12	117	3	1	133	6	34	26	66	396
07:30	27	138	8	1	174	15	34	15	64	5	126	9	1	141	0	31	26	57	436
07:45	31	115	6	2	154	10	27	7	44	9	151	10	0	170	4	29	49	82	450
Total	89	488	22	4	603	45	114	38	197	36	523	28	3	590	11	116	122	249	1639
08:00	21	125	10	2	158	21	32	7	60	6	130	3	0	139	3	36	37	76	433
08:15	20	116	6	1	143	13	35	7	55	4	170	9	0	183	1	59	34	94	475
08:30	26	98	13	3	140	13	37	8	58	6	152	11	1	170	4	38	33	75	443
08:45	23	109	6	3	141	8	23	7	38	9	135	12	1	157	5	33	34	72	408
Total	90	448	35	9	582	55	127	29	211	25	587	35	2	649	13	166	138	317	1759
Grand Total	179	936	57	13	1185	100	241	67	408	61	1110	63	5	1239	24	282	260	566	3398
Apprch %	15.1	79	4.8	1.1		24.5	59.1	16.4		4.9	89.6	5.1	0.4		4.2	49.8	45.9		
Total %	5.3	27.5	1.7	0.4	34.9	2.9	7.1	2	12	1.8	32.7	1.9	0.1	36.5	0.7	8.3	7.7	16.7	

	3rd ST Southbound					PAUL AV Westbound				3rd ST Northbound					PAUL AV Eastbound				
Start Time	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 07:45																			
07:45	31	115	6	2	154	10	27	7	44	9	151	10	0	170	4	29	49	82	450
08:00	21	125	10	2	158	21	32	7	60	6	130	3	0	139	3	36	37	76	433
08:15	20	116	6	1	143	13	35	7	55	4	170	9	0	183	1	59	34	94	475
08:30	26	98	13	3	140	13	37	8	58	6	152	11	1	170	4	38	33	75	443
Total Volume	98	454	35	8	595	57	131	29	217	25	603	33	1	662	12	162	153	327	1801
% App. Total	16.5	76.3	5.9	1.3		26.3	60.4	13.4		3.8	91.1	5	0.2		3.7	49.5	46.8		
PHF	.790	.908	.673	.667	.941	.679	.885	.906	.904	.694	.887	.750	.250	.904	.750	.686	.781	.870	.948



MARKS TRAFFIC DATA

mietekm@comcast.net
916.806.0250

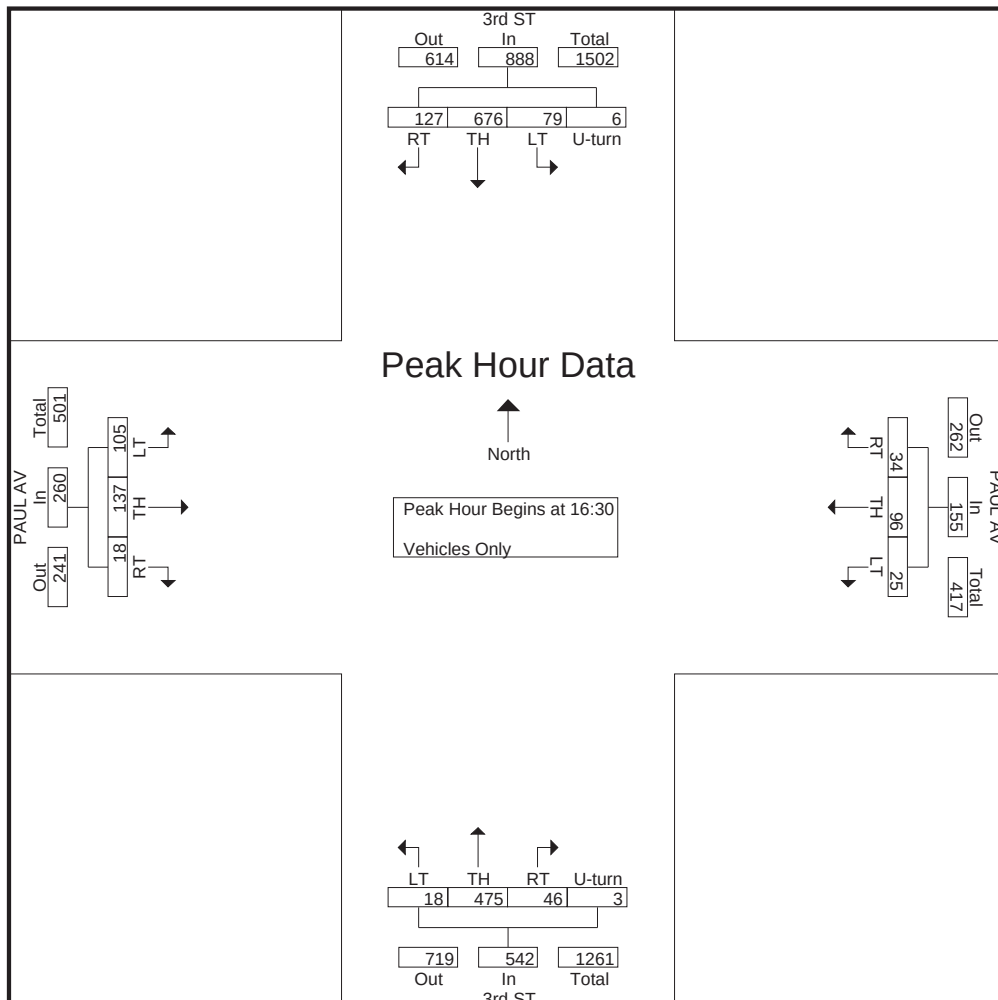
CITY OF SAN FRANCISCO

File Name : 3-paul-p
Site Code : 17
Start Date : 5/12/2015
Page No : 1

Groups Printed- Vehicles Only

	3rd ST Southbound					PAUL AV Westbound				3rd ST Northbound					PAUL AV Eastbound				
Start Time	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	21	143	13	3	180	10	11	6	27	17	138	7	0	162	2	31	26	59	428
16:15	38	114	14	3	169	8	22	13	43	15	111	8	0	134	1	33	23	57	403
16:30	32	184	23	1	240	7	28	10	45	11	125	4	2	142	6	34	19	59	486
16:45	32	145	20	2	199	10	24	6	40	9	120	2	0	131	2	36	30	68	438
Total	123	586	70	9	788	35	85	35	155	52	494	21	2	569	11	134	98	243	1755
17:00	30	179	15	1	225	8	26	5	39	12	134	6	0	152	4	34	34	72	488
17:15	33	168	21	2	224	9	18	4	31	14	96	6	1	117	6	33	22	61	433
17:30	34	143	25	2	204	8	22	11	41	11	103	3	0	117	4	33	25	62	424
17:45	17	122	19	4	162	6	19	0	25	17	102	3	0	122	5	31	24	60	369
Total	114	612	80	9	815	31	85	20	136	54	435	18	1	508	19	131	105	255	1714
Grand Total	237	1198	150	18	1603	66	170	55	291	106	929	39	3	1077	30	265	203	498	3469
Apprch %	14.8	74.7	9.4	1.1		22.7	58.4	18.9		9.8	86.3	3.6	0.3		6	53.2	40.8		
Total %	6.8	34.5	4.3	0.5	46.2	1.9	4.9	1.6	8.4	3.1	26.8	1.1	0.1	31	0.9	7.6	5.9	14.4	

	3rd ST Southbound					PAUL AV Westbound				3rd ST Northbound					PAUL AV Eastbound				
Start Time	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 16:30																			
16:30	32	184	23	1	240	7	28	10	45	11	125	4	2	142	6	34	19	59	486
16:45	32	145	20	2	199	10	24	6	40	9	120	2	0	131	2	36	30	68	438
17:00	30	179	15	1	225	8	26	5	39	12	134	6	0	152	4	34	34	72	488
17:15	33	168	21	2	224	9	18	4	31	14	96	6	1	117	6	33	22	61	433
Total Volume	127	676	79	6	888	34	96	25	155	46	475	18	3	542	18	137	105	260	1845
% App. Total	14.3	76.1	8.9	0.7		21.9	61.9	16.1		8.5	87.6	3.3	0.6		6.9	52.7	40.4		
PHF	.962	.918	.859	.750	.925	.850	.857	.625	.861	.821	.886	.750	.375	.891	.750	.951	.772	.903	.945



Hunters Point Blvd Hawes St

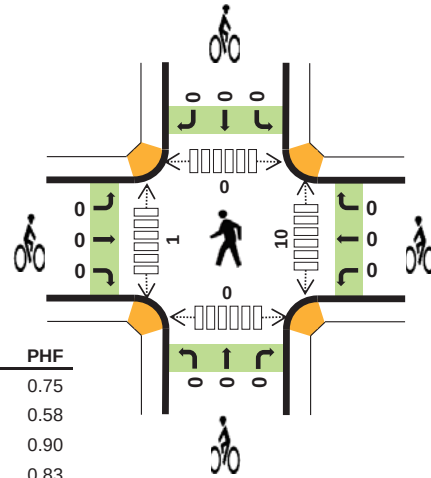
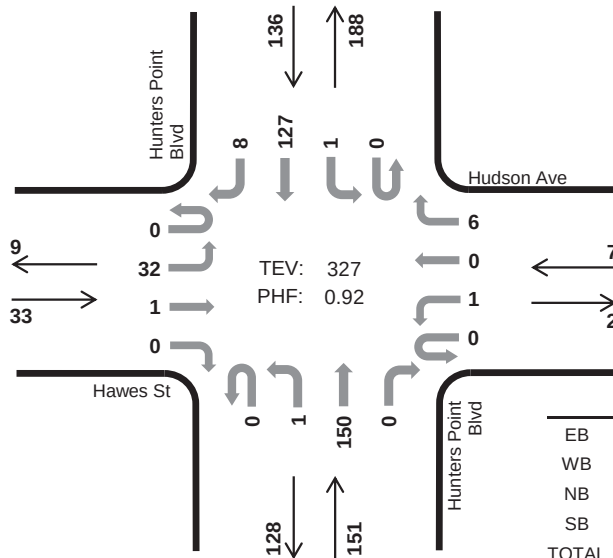


Peak Hour

Date: 08/30/2016

Count Period: 7:00 AM to 9:00 AM

Peak Hour: 7:15 AM to 8:15 AM



Two-Hour Count Summaries

Interval Start		Hawes St				Hudson Ave				Hunters Point Blvd				Hunters Point Blvd				15-min Total	Rolling One Hour
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		0	2	0	0	0	0	0	2	0	1	36	0	0	5	27	3	76	0
7:15 AM		0	7	0	0	0	0	0	3	0	1	35	0	0	0	25	2	73	0
7:30 AM		0	11	0	0	0	0	0	3	0	0	42	0	0	0	27	1	84	0
7:45 AM		0	8	0	0	0	0	0	0	0	0	32	0	0	1	40	0	81	314
8:00 AM		0	6	1	0	0	1	0	0	0	0	41	0	0	0	35	5	89	327
8:15 AM		0	9	0	0	0	0	0	0	0	0	32	0	1	0	24	1	67	321
8:30 AM		0	3	0	0	0	0	0	0	0	0	28	0	1	0	30	3	65	302
8:45 AM		0	5	0	0	0	0	0	0	0	0	40	0	0	1	24	4	74	295
Count Total		0	51	1	0	0	1	0	8	0	2	286	0	2	7	232	19	609	0
Peak Hour	All	0	32	1	0	0	1	0	6	0	1	150	0	0	1	127	8	327	0
	HV	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3	0
	HV%	-	0%	0%	-	-	0%	-	0%	-	0%	2%	-	-	0%	0%	0%	1%	0

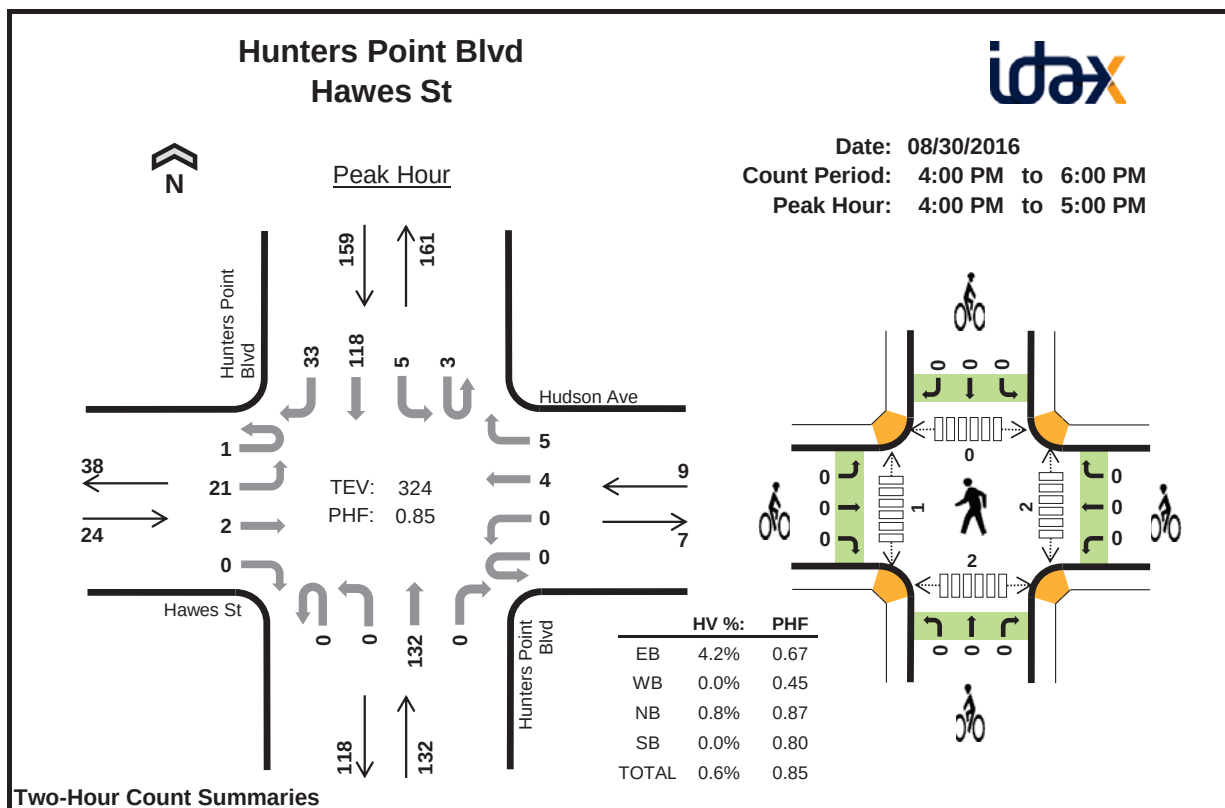
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	0	1	0	1	0	0	0	0	0	2	0	0	0	2
7:15 AM	0	0	1	0	1	0	0	0	0	0	3	0	0	0	3
7:30 AM	0	0	1	0	1	0	0	0	0	0	4	0	0	0	4
7:45 AM	0	0	0	0	0	0	0	0	0	0	2	1	0	0	3
8:00 AM	0	0	1	0	1	0	0	0	0	0	1	0	0	0	1
8:15 AM	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	5	1	6	0	0	0	0	0	12	1	0	0	13
Peak Hour	0	0	3	0	3	0	0	0	0	0	10	1	0	0	11

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Hawes St				Hudson Ave				Hunters Point Blvd				Hunters Point Blvd				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
8:00 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	3
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	3
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
8:45 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	3
Count Total	0	0	0	0	0	0	0	0	0	0	5	0	0	0	1	0	6	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3	0

Two-Hour Count Summaries - Bikes																		
Interval Start	Hawes St			Hudson Ave			Hunters Point Blvd			Hunters Point Blvd			15-min Total	Rolling One Hour				
	Eastbound			Westbound			Northbound			Southbound								
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT						
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0				

Note: U-Turn volumes for bikes are included in Left-Turn, if any.



Two-Hour Count Summaries

Interval Start		Hawes St				Hudson Ave				Hunters Point Blvd				Hunters Point Blvd				15-min Total	Rolling One Hour
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		1	5	0	0	0	0	1	0	0	0	38	0	1	2	33	14	95	0
4:15 PM		0	8	1	0	0	0	0	1	0	0	31	0	2	0	28	3	74	0
4:30 PM		0	2	1	0	0	0	1	1	0	0	34	0	0	3	27	6	75	0
4:45 PM		0	6	0	0	0	0	2	3	0	0	29	0	0	0	30	10	80	324
5:00 PM		0	6	0	0	0	0	0	5	0	2	48	0	0	1	29	4	95	324
5:15 PM		0	4	1	0	0	0	0	0	0	0	28	0	0	0	23	4	60	310
5:30 PM		0	4	0	1	0	0	0	0	0	0	25	0	0	0	43	5	78	313
5:45 PM		0	1	0	0	0	1	0	0	0	1	35	0	0	1	24	4	67	300
Count Total		1	36	3	1	0	1	4	10	0	3	268	0	3	7	237	50	624	0
Peak Hour	All	1	21	2	0	0	0	4	5	0	0	132	0	3	5	118	33	324	0
	HV	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	0
	HV%	0%	5%	0%	-	-	-	0%	0%	-	-	1%	-	0%	0%	0%	0%	1%	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

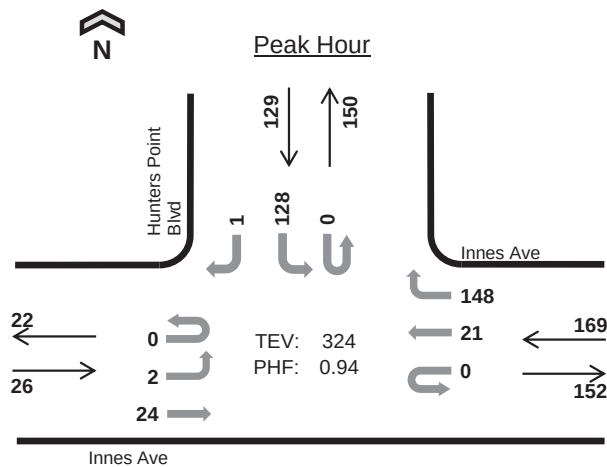
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	2	4
4:45 PM	1	0	1	0	2	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
5:15 PM	0	0	0	2	2	0	0	0	0	0	3	0	0	0	3
5:30 PM	0	0	0	1	1	0	0	0	0	0	2	0	0	0	2
5:45 PM	0	0	4	1	5	0	0	0	0	0	0	0	0	0	0
Count Total	1	0	5	4	10	0	0	0	0	0	8	1	0	2	11
Peak Hour	1	0	1	0	2	0	0	0	0	0	2	1	0	2	5

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Hawes St				Hudson Ave				Hunters Point Blvd				Hunters Point Blvd				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	2	2
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	4
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	5
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	1	0	8
Count Total	0	1	0	0	0	0	0	0	0	0	0	5	0	0	0	4	0	10
Peak Hour	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2

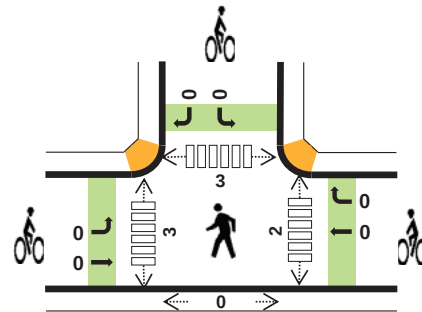
Two-Hour Count Summaries - Bikes																		
Interval Start	Hawes St			Hudson Ave			Hunters Point Blvd			Hunters Point Blvd			15-min Total	Rolling One Hour				
	Eastbound			Westbound			Northbound			Southbound								
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT						
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Hunters Point Blvd Innes Ave



Date: 08/30/2016
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:15 AM to 8:15 AM



	HV %:	PHF
EB	0.0%	0.93
WB	1.8%	0.80
NB	-	-
SB	0.0%	0.83
TOTAL	0.9%	0.94

Two-Hour Count Summaries

Interval Start		Innes Ave				Innes Ave				0				Hunters Point Blvd				15-min Total	Rolling One Hour
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		1	0	10	0	1	0	6	35	0	0	0	0	0	27	0	0	80	0
7:15 AM		0	1	6	0	0	0	3	34	0	0	0	0	0	28	0	0	72	0
7:30 AM		0	0	7	0	0	0	7	46	0	0	0	0	0	26	0	0	86	0
7:45 AM		0	0	6	0	0	0	5	33	0	0	0	0	0	39	0	0	83	321
8:00 AM		0	1	5	0	0	0	6	35	0	0	0	0	0	35	0	1	83	324
8:15 AM		1	0	5	0	0	0	1	32	0	0	0	0	0	24	0	0	63	315
8:30 AM		0	1	9	0	0	0	5	36	0	0	0	0	0	30	0	0	81	310
8:45 AM		0	1	6	0	1	0	4	31	0	0	0	0	0	24	0	0	67	294
Count Total		2	4	54	0	2	0	37	282	0	0	0	0	0	233	0	1	615	0
Peak Hour	All	0	2	24	0	0	0	21	148	0	0	0	0	0	128	0	1	324	0
	HV	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	3	0
	HV%	-	0%	0%	-	-	-	0%	2%	-	-	-	-	-	0%	-	0%	1%	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

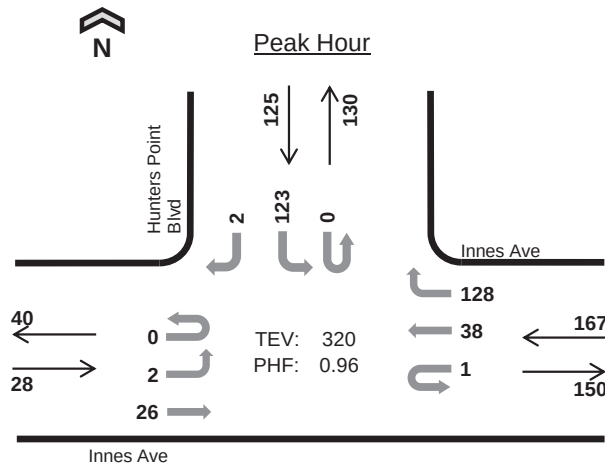
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	1	0	0	1	0	0	0	0	0	2	2	2	0	6
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2
8:00 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	1	1	0	0	0	0	0	0	1	0	0	1
8:30 AM	0	1	0	0	1	0	0	0	0	0	0	0	3	0	3
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	5	0	1	6	0	0	0	0	0	2	4	6	0	12
Peak Hr	0	3	0	0	3	0	0	0	0	0	2	3	3	0	8

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Innes Ave				Innes Ave				0				Hunters Point Blvd				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0
7:15 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0
7:30 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
8:00 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	3
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	3
8:30 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	3
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Count Total	0	0	0	0	0	0	0	5	0	0	0	0	0	1	0	0	6	0
Peak Hour	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	3	0

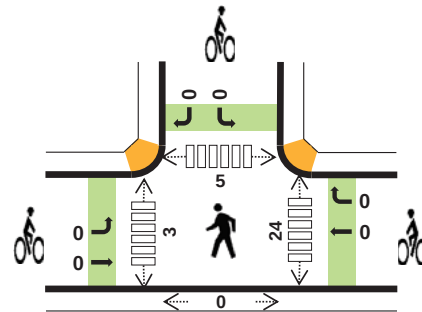
Two-Hour Count Summaries - Bikes																		
Interval Start	Innes Ave			Innes Ave			0			Hunters Point Blvd			15-min Total	Rolling One Hour				
	Eastbound			Westbound			Northbound			Southbound								
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT						
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0				

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Hunters Point Blvd Innes Ave



Date: 08/30/2016
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:45 PM to 5:45 PM



	HV %:	PHF
EB	0.0%	0.54
WB	1.2%	0.89
NB	-	-
SB	2.4%	0.73
TOTAL	1.6%	0.96

Two-Hour Count Summaries

Interval Start		Innes Ave				Innes Ave				0				Hunters Point Blvd				15-min Total	Rolling One Hour
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		0	1	6	0	0	0	8	36	0	0	0	0	0	34	0	0	85	0
4:15 PM		0	0	7	0	0	0	6	29	0	0	0	0	0	26	0	0	68	0
4:30 PM		0	0	5	0	0	0	6	32	0	0	0	0	0	28	0	0	71	0
4:45 PM		0	1	6	0	0	0	11	35	0	0	0	0	0	30	0	0	83	307
5:00 PM		0	1	3	0	0	0	7	40	0	0	0	0	0	29	0	0	80	302
5:15 PM		0	0	13	0	1	0	11	32	0	0	0	0	0	23	0	0	80	314
5:30 PM		0	0	4	0	0	0	9	21	0	0	0	0	0	41	0	2	77	320
5:45 PM		0	0	4	0	0	0	3	36	0	0	0	0	0	24	0	1	68	305
Count Total		0	3	48	0	1	0	61	261	0	0	0	0	0	235	0	3	612	0
Peak Hour	All	0	2	26	0	1	0	38	128	0	0	0	0	0	123	0	2	320	0
	HV	0	0	0	0	0	0	1	1	0	0	0	0	0	3	0	0	5	0
	HV%	-	0%	0%	-	0%	-	3%	1%	-	-	-	-	-	2%	-	0%	2%	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	3	1	0	0	4
4:15 PM	0	0	0	0	0	0	0	0	0	0	7	5	0	0	12
4:30 PM	0	0	0	0	0	0	0	0	0	0	10	3	1	0	14
4:45 PM	0	2	0	0	2	0	0	0	0	0	6	0	0	0	6
5:00 PM	0	0	0	0	0	0	0	0	0	0	10	2	4	0	16
5:15 PM	0	0	0	2	2	0	0	0	0	0	5	0	0	0	5
5:30 PM	0	0	0	1	1	0	0	0	0	0	3	1	1	0	5
5:45 PM	0	4	0	1	5	0	0	0	0	0	5	3	1	0	9
Count Total	0	6	0	4	10	0	0	0	0	0	49	15	7	0	71
Peak Hr	0	2	0	3	5	0	0	0	0	0	24	3	5	0	32

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Innes Ave				Innes Ave				0				Hunters Point Blvd				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	2	2
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	4
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	5
5:45 PM	0	0	0	0	0	0	0	4	0	0	0	0	0	1	0	0	5	8
Count Total	0	0	0	0	0	0	1	5	0	0	0	0	0	4	0	0	10	0
Peak Hour	0	0	0	0	0	0	1	1	0	0	0	0	0	3	0	0	5	0

Two-Hour Count Summaries - Bikes																		
Interval Start	Innes Ave			Innes Ave			0			Hunters Point Blvd			15-min Total	Rolling One Hour				
	Eastbound			Westbound			Northbound			Southbound								
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT						
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

MARKS TRAFFIC DATA

mietekm@comcast.net
916.806.0250

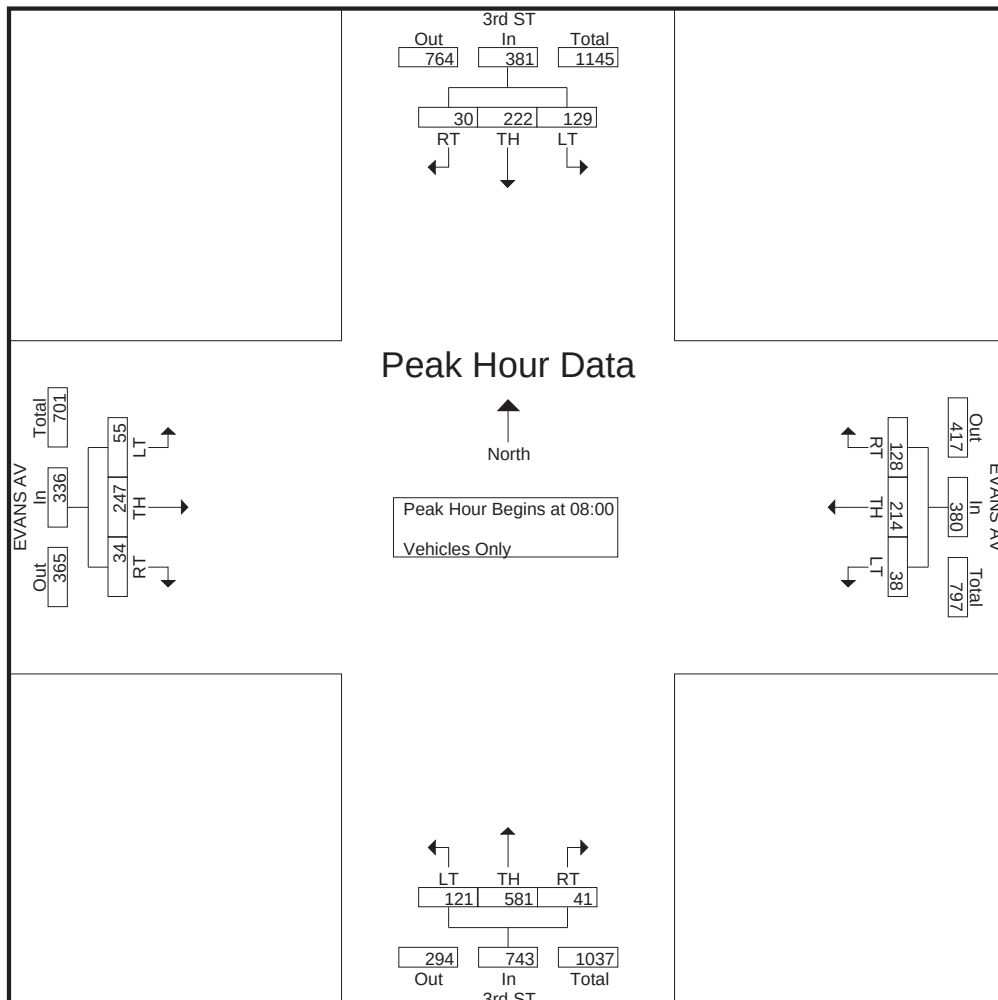
CITY OF SAN FRANCISCO

File Name : 3-evans-a
Site Code : 8
Start Date : 5/12/2015
Page No : 1

Groups Printed- Vehicles Only

	3rd ST Southbound				EVANS AV Westbound				3rd ST Northbound				EVANS AV Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
07:00	1	43	33	77	30	68	8	106	11	69	19	99	5	65	10	80	362
07:15	7	42	31	80	26	53	7	86	10	104	21	135	5	67	17	89	390
07:30	3	33	29	65	27	67	11	105	13	142	33	188	11	66	15	92	450
07:45	3	45	27	75	43	45	9	97	10	151	28	189	8	55	15	78	439
Total	14	163	120	297	126	233	35	394	44	466	101	611	29	253	57	339	1641
08:00	5	45	37	87	40	51	6	97	11	136	36	183	6	55	16	77	444
08:15	8	58	28	94	36	56	11	103	7	155	28	190	9	53	14	76	463
08:30	10	59	34	103	31	55	8	94	10	148	28	186	5	65	13	83	466
08:45	7	60	30	97	21	52	13	86	13	142	29	184	14	74	12	100	467
Total	30	222	129	381	128	214	38	380	41	581	121	743	34	247	55	336	1840
Grand Total	44	385	249	678	254	447	73	774	85	1047	222	1354	63	500	112	675	3481
Apprch %	6.5	56.8	36.7		32.8	57.8	9.4		6.3	77.3	16.4		9.3	74.1	16.6		
Total %	1.3	11.1	7.2	19.5	7.3	12.8	2.1	22.2	2.4	30.1	6.4	38.9	1.8	14.4	3.2	19.4	

	3rd ST Southbound				EVANS AV Westbound				3rd ST Northbound				EVANS AV Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00																	
08:00	5	45	37	87	40	51	6	97	11	136	36	183	6	55	16	77	444
08:15	8	58	28	94	36	56	11	103	7	155	28	190	9	53	14	76	463
08:30	10	59	34	103	31	55	8	94	10	148	28	186	5	65	13	83	466
08:45	7	60	30	97	21	52	13	86	13	142	29	184	14	74	12	100	467
Total Volume	30	222	129	381	128	214	38	380	41	581	121	743	34	247	55	336	1840
% App. Total	7.9	58.3	33.9		33.7	56.3	10		5.5	78.2	16.3		10.1	73.5	16.4		
PHF	.750	.925	.872	.925	.800	.955	.731	.922	.788	.937	.840	.978	.607	.834	.859	.840	.985



MARKS TRAFFIC DATA

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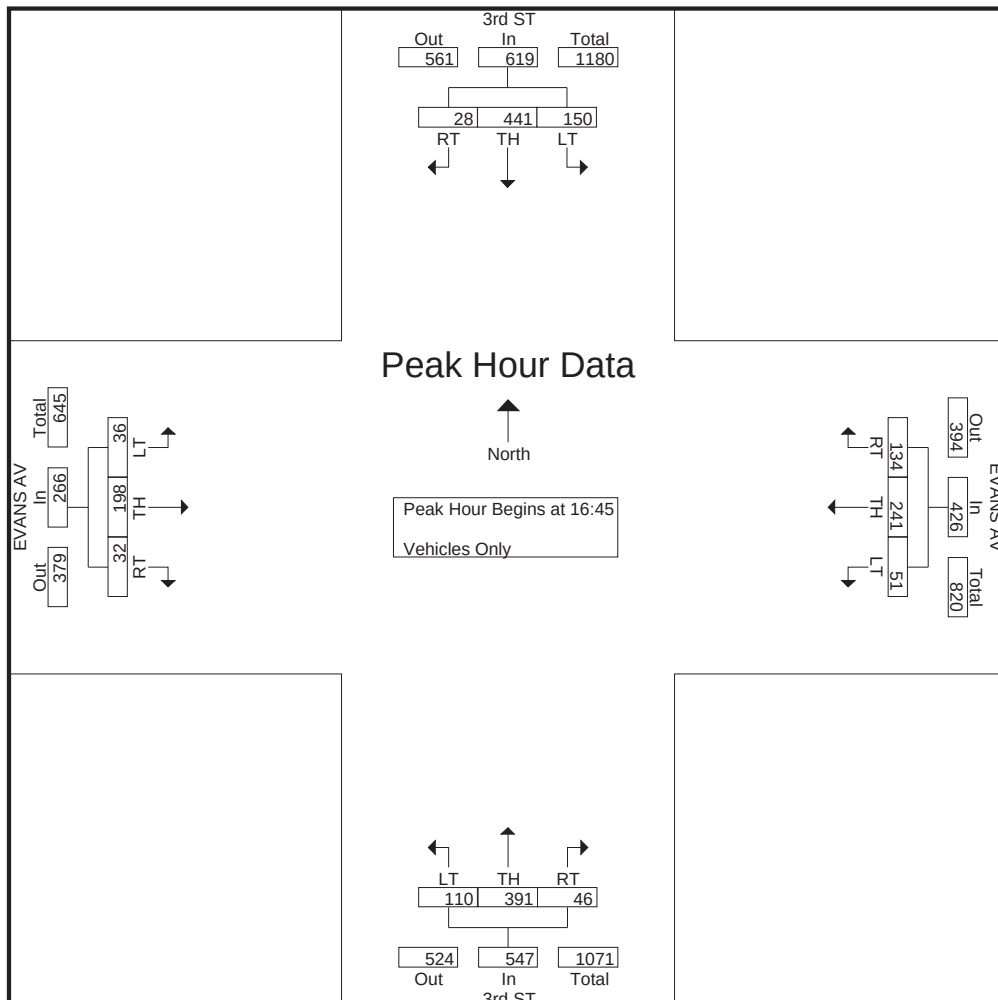
CITY OF SAN FRANCISCO

File Name : 3-evans-p
Site Code : 8
Start Date : 5/12/2015
Page No : 1

Groups Printed- Vehicles Only

	3rd ST Southbound				EVANS AV Westbound				3rd ST Northbound				EVANS AV Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	3	83	44	130	34	63	16	113	8	126	32	166	9	51	16	76	485
16:15	1	75	36	112	37	50	9	96	5	114	33	152	9	42	12	63	423
16:30	4	93	39	136	37	62	18	117	4	101	26	131	7	41	9	57	441
16:45	4	100	38	142	33	60	9	102	11	98	29	138	10	49	8	67	449
Total	12	351	157	520	141	235	52	428	28	439	120	587	35	183	45	263	1798
17:00	7	88	32	127	33	65	14	112	11	95	28	134	8	48	10	66	439
17:15	11	125	43	179	32	68	14	114	10	108	29	147	8	53	12	73	513
17:30	6	128	37	171	36	48	14	98	14	90	24	128	6	48	6	60	457
17:45	5	97	43	145	40	43	13	96	9	74	23	106	8	56	6	70	417
Total	29	438	155	622	141	224	55	420	44	367	104	515	30	205	34	269	1826
Grand Total	41	789	312	1142	282	459	107	848	72	806	224	1102	65	388	79	532	3624
Apprch %	3.6	69.1	27.3		33.3	54.1	12.6		6.5	73.1	20.3		12.2	72.9	14.8		
Total %	1.1	21.8	8.6	31.5	7.8	12.7	3	23.4	2	22.2	6.2	30.4	1.8	10.7	2.2	14.7	

	3rd ST Southbound				EVANS AV Westbound				3rd ST Northbound				EVANS AV Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:45																	
16:45	4	100	38	142	33	60	9	102	11	98	29	138	10	49	8	67	449
17:00	7	88	32	127	33	65	14	112	11	95	28	134	8	48	10	66	439
17:15	11	125	43	179	32	68	14	114	10	108	29	147	8	53	12	73	513
17:30	6	128	37	171	36	48	14	98	14	90	24	128	6	48	6	60	457
Total Volume	28	441	150	619	134	241	51	426	46	391	110	547	32	198	36	266	1858
% App. Total	4.5	71.2	24.2		31.5	56.6	12		8.4	71.5	20.1		12	74.4	13.5		
PHF	.636	.861	.872	.865	.931	.886	.911	.934	.821	.905	.948	.930	.800	.934	.750	.911	.905



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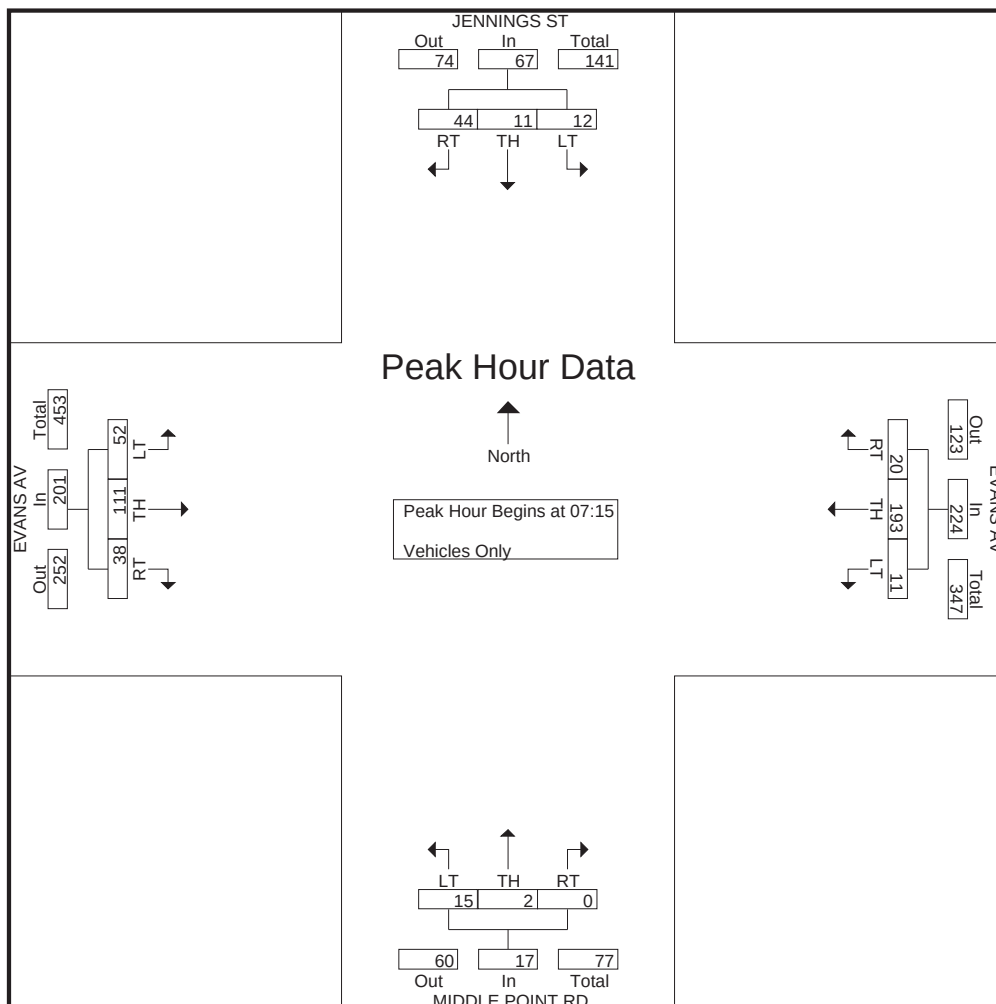
CITY OF SAN FRANCISCO

File Name : jennings-evans-a
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Groups Printed- Vehicles Only

	JENNINGS ST Southbound				EVANS AV Westbound				MIDDLE POINT RD Northbound				EVANS AV Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
07:00	5	3	5	13	6	22	1	29	0	0	1	1	8	22	9	39	82
07:15	14	5	3	22	4	48	4	56	0	1	3	4	10	39	11	60	142
07:30	7	3	2	12	4	52	1	57	0	1	3	4	7	27	15	49	122
07:45	12	2	3	17	7	51	3	61	0	0	4	4	12	21	16	49	131
Total	38	13	13	64	21	173	9	203	0	2	11	13	37	109	51	197	477
08:00	11	1	4	16	5	42	3	50	0	0	5	5	9	24	10	43	114
08:15	15	1	6	22	8	39	4	51	0	0	0	0	18	32	13	63	136
08:30	7	2	2	11	5	48	1	54	0	0	1	1	16	15	8	39	105
08:45	11	4	7	22	5	35	4	44	1	0	1	2	13	25	13	51	119
Total	44	8	19	71	23	164	12	199	1	0	7	8	56	96	44	196	474
Grand Total	82	21	32	135	44	337	21	402	1	2	18	21	93	205	95	393	951
Apprch %	60.7	15.6	23.7		10.9	83.8	5.2		4.8	9.5	85.7		23.7	52.2	24.2		
Total %	8.6	2.2	3.4	14.2	4.6	35.4	2.2	42.3	0.1	0.2	1.9	2.2	9.8	21.6	10	41.3	

	JENNINGS ST Southbound				EVANS AV Westbound				MIDDLE POINT RD Northbound				EVANS AV Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15																	
07:15	14	5	3	22	4	48	4	56	0	1	3	4	10	39	11	60	142
07:30	7	3	2	12	4	52	1	57	0	1	3	4	7	27	15	49	122
07:45	12	2	3	17	7	51	3	61	0	0	4	4	12	21	16	49	131
08:00	11	1	4	16	5	42	3	50	0	0	5	5	9	24	10	43	114
Total Volume	44	11	12	67	20	193	11	224	0	2	15	17	38	111	52	201	509
% App. Total	65.7	16.4	17.9		8.9	86.2	4.9		0	11.8	88.2		18.9	55.2	25.9		
PHF	.786	.550	.750	.761	.714	.928	.688	.918	.000	.500	.750	.850	.792	.712	.813	.838	.896



MARKS TRAFFIC DATA

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Site Code : 9
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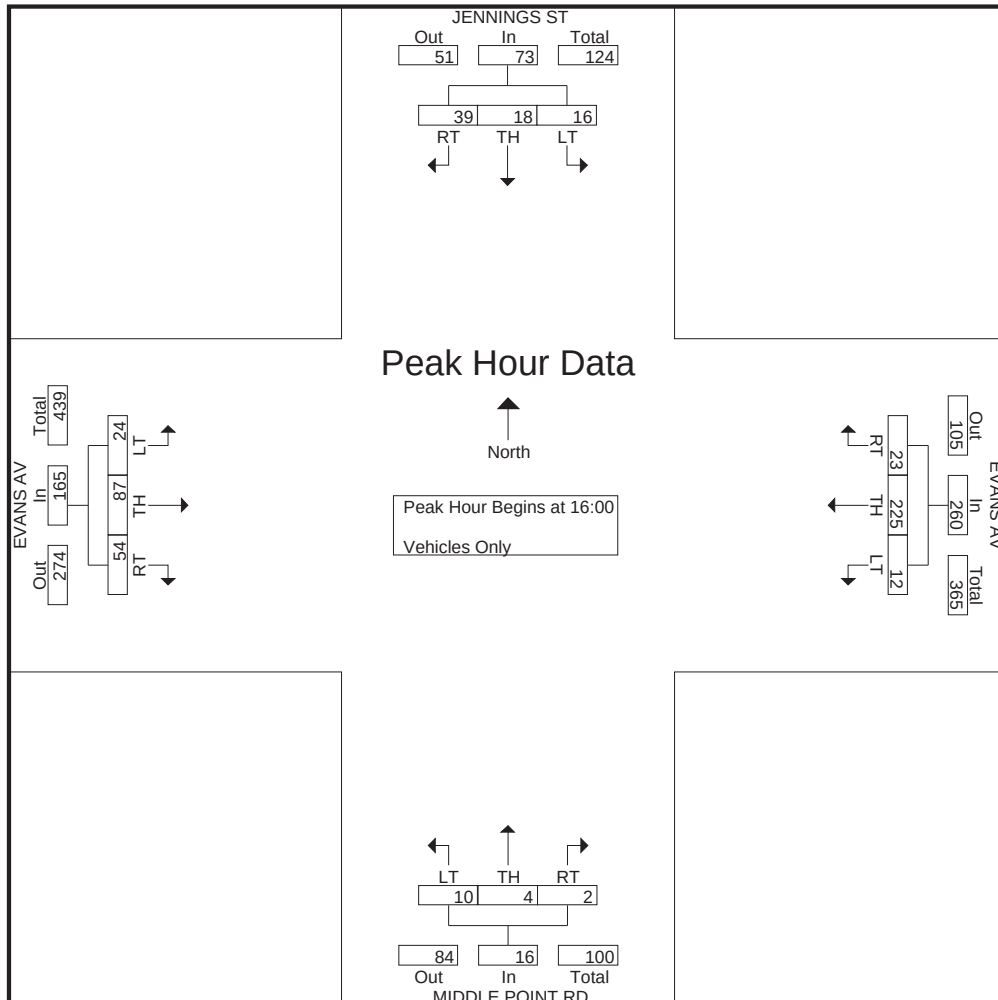
Groups Printed- Vehicles Only

	JENNINGS ST Southbound				EVANS AV Westbound				MIDDLE POINT RD Northbound				EVANS AV Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	12	7	4	23	8	53	3	64	1	0	2	3	21	20	5	46	136
16:15	9	6	4	19	5	54	4	63	0	2	4	6	13	21	10	44	132
16:30	8	2	3	13	6	53	2	61	1	1	2	4	10	23	6	39	117
16:45	10	3	5	18	4	65	3	72	0	1	2	3	10	23	3	36	129
Total	39	18	16	73	23	225	12	260	2	4	10	16	54	87	24	165	514
17:00	12	4	5	21	4	42	2	48	0	1	5	6	19	26	7	52	127
17:15	10	4	4	18	4	30	5	39	1	0	2	3	9	25	5	39	99
17:30	5	2	3	10	4	42	4	50	1	0	3	4	18	31	7	56	120
17:45	8	2	3	13	3	38	6	47	0	0	8	8	13	27	7	47	115
Total	35	12	15	62	15	152	17	184	2	1	18	21	59	109	26	194	461
Grand Total	74	30	31	135	38	377	29	444	4	5	28	37	113	196	50	359	975
Apprch %	54.8	22.2	23		8.6	84.9	6.5		10.8	13.5	75.7		31.5	54.6	13.9		
Total %	7.6	3.1	3.2	13.8	3.9	38.7	3	45.5	0.4	0.5	2.9	3.8	11.6	20.1	5.1	36.8	

	JENNINGS ST Southbound				EVANS AV Westbound				MIDDLE POINT RD Northbound				EVANS AV Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	12	7	4	23	8	53	3	64	1	0	2	3	21	20	5	46	136
16:15	9	6	4	19	5	54	4	63	0	2	4	6	13	21	10	44	132
16:30	8	2	3	13	6	53	2	61	1	1	2	4	10	23	6	39	117
16:45	10	3	5	18	4	65	3	72	0	1	2	3	10	23	3	36	129
Total Volume	39	18	16	73	23	225	12	260	2	4	10	16	54	87	24	165	514
% App. Total	53.4	24.7	21.9		8.8	86.5	4.6		12.5	25	62.5		32.7	52.7	14.5		
PHF	.813	.643	.800	.793	.719	.865	.750	.903	.500	.500	.625	.667	.643	.946	.600	.897	.945

Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 16:00



Hunters Point Blvd Hawes St

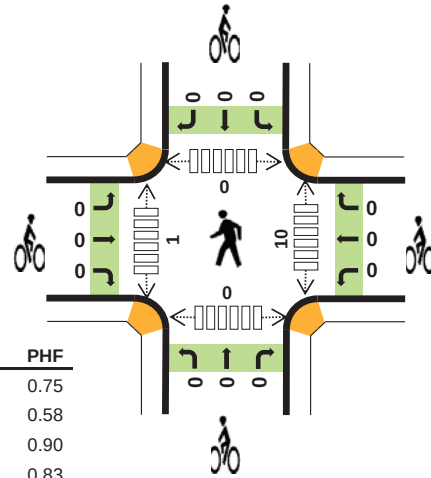
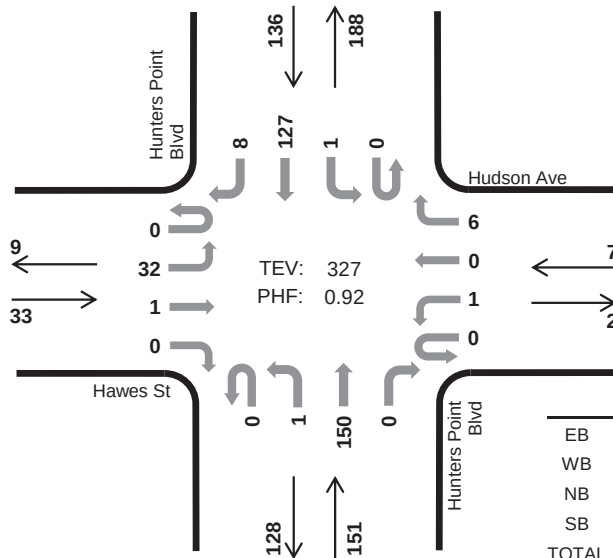


Peak Hour

Date: 08/30/2016

Count Period: 7:00 AM to 9:00 AM

Peak Hour: 7:15 AM to 8:15 AM



	HV %:	PHF
EB	0.0%	0.75
WB	0.0%	0.58
NB	2.0%	0.90
SB	0.0%	0.83
TOTAL	0.9%	0.92

Two-Hour Count Summaries

Interval Start		Hawes St				Hudson Ave				Hunters Point Blvd				Hunters Point Blvd				15-min Total	Rolling One Hour
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		0	2	0	0	0	0	0	2	0	1	36	0	0	5	27	3	76	0
7:15 AM		0	7	0	0	0	0	0	3	0	1	35	0	0	0	25	2	73	0
7:30 AM		0	11	0	0	0	0	0	3	0	0	42	0	0	0	27	1	84	0
7:45 AM		0	8	0	0	0	0	0	0	0	0	32	0	0	1	40	0	81	314
8:00 AM		0	6	1	0	0	1	0	0	0	0	41	0	0	0	35	5	89	327
8:15 AM		0	9	0	0	0	0	0	0	0	0	32	0	1	0	24	1	67	321
8:30 AM		0	3	0	0	0	0	0	0	0	0	28	0	1	0	30	3	65	302
8:45 AM		0	5	0	0	0	0	0	0	0	0	40	0	0	1	24	4	74	295
Count Total		0	51	1	0	0	1	0	8	0	2	286	0	2	7	232	19	609	0
Peak Hour	All	0	32	1	0	0	1	0	6	0	1	150	0	0	1	127	8	327	0
	HV	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3	0
	HV%	-	0%	0%	-	-	0%	-	0%	-	0%	2%	-	-	0%	0%	0%	1%	0

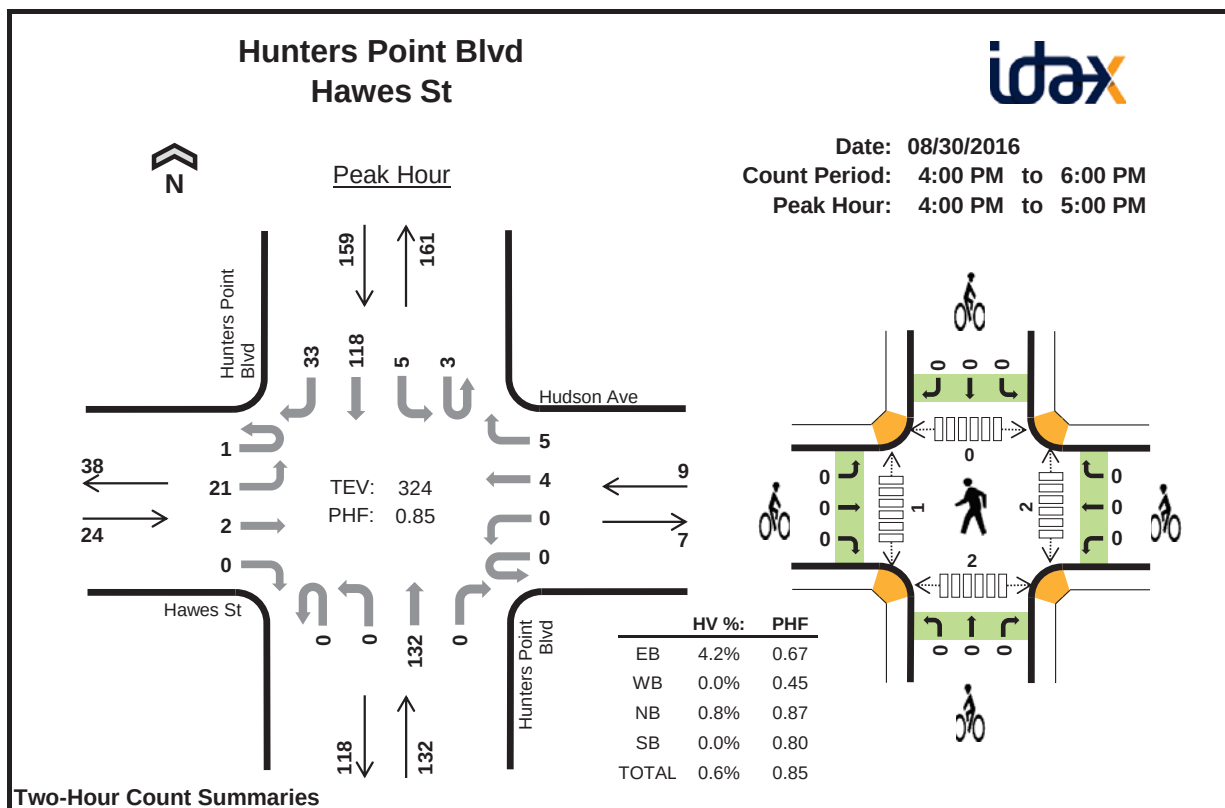
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	0	1	0	1	0	0	0	0	0	2	0	0	0	2
7:15 AM	0	0	1	0	1	0	0	0	0	0	3	0	0	0	3
7:30 AM	0	0	1	0	1	0	0	0	0	0	4	0	0	0	4
7:45 AM	0	0	0	0	0	0	0	0	0	0	2	1	0	0	3
8:00 AM	0	0	1	0	1	0	0	0	0	0	1	0	0	0	1
8:15 AM	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	5	1	6	0	0	0	0	0	12	1	0	0	13
Peak Hour	0	0	3	0	3	0	0	0	0	0	10	1	0	0	11

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Hawes St				Hudson Ave				Hunters Point Blvd				Hunters Point Blvd				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
8:00 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	3
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	3
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
8:45 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	3
Count Total	0	0	0	0	0	0	0	0	0	0	5	0	0	0	1	0	6	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3	0

Two-Hour Count Summaries - Bikes																		
Interval Start	Hawes St			Hudson Ave			Hunters Point Blvd			Hunters Point Blvd			15-min Total	Rolling One Hour				
	Eastbound			Westbound			Northbound			Southbound								
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT						
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0				

Note: U-Turn volumes for bikes are included in Left-Turn, if any.



Two-Hour Count Summaries

Interval Start		Hawes St				Hudson Ave				Hunters Point Blvd				Hunters Point Blvd				15-min Total	Rolling One Hour
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		1	5	0	0	0	0	1	0	0	0	38	0	1	2	33	14	95	0
4:15 PM		0	8	1	0	0	0	0	1	0	0	31	0	2	0	28	3	74	0
4:30 PM		0	2	1	0	0	0	1	1	0	0	34	0	0	3	27	6	75	0
4:45 PM		0	6	0	0	0	0	2	3	0	0	29	0	0	0	30	10	80	324
5:00 PM		0	6	0	0	0	0	0	5	0	2	48	0	0	1	29	4	95	324
5:15 PM		0	4	1	0	0	0	0	0	0	0	28	0	0	0	23	4	60	310
5:30 PM		0	4	0	1	0	0	0	0	0	0	25	0	0	0	43	5	78	313
5:45 PM		0	1	0	0	0	1	0	0	0	1	35	0	0	1	24	4	67	300
Count Total		1	36	3	1	0	1	4	10	0	3	268	0	3	7	237	50	624	0
Peak Hour	All	1	21	2	0	0	0	4	5	0	0	132	0	3	5	118	33	324	0
	HV	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	0
	HV%	0%	5%	0%	-	-	-	0%	0%	-	-	1%	-	0%	0%	0%	0%	1%	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

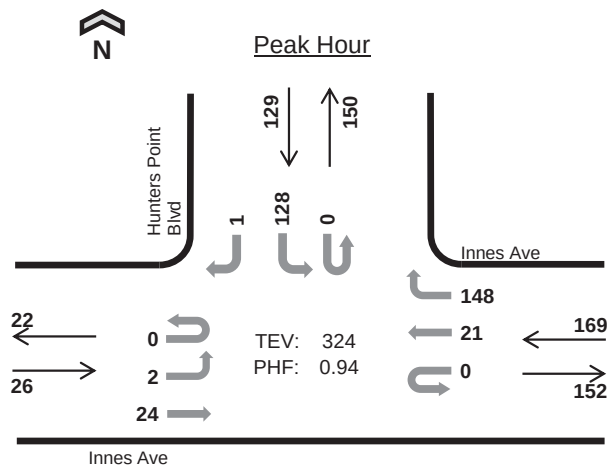
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	2	4
4:45 PM	1	0	1	0	2	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
5:15 PM	0	0	0	2	2	0	0	0	0	0	3	0	0	0	3
5:30 PM	0	0	0	1	1	0	0	0	0	0	2	0	0	0	2
5:45 PM	0	0	4	1	5	0	0	0	0	0	0	0	0	0	0
Count Total	1	0	5	4	10	0	0	0	0	0	8	1	0	2	11
Peak Hour	1	0	1	0	2	0	0	0	0	0	2	1	0	2	5

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Hawes St				Hudson Ave				Hunters Point Blvd				Hunters Point Blvd				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	4
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	5
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	1	0	8
Count Total	0	1	0	0	0	0	0	0	0	0	0	5	0	0	0	4	0	10
Peak Hour	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2

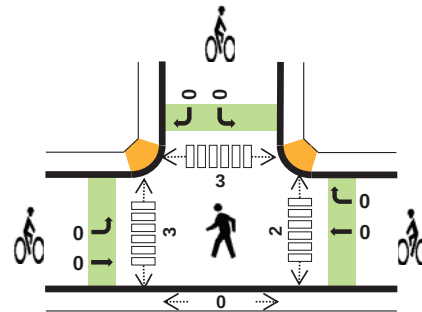
Two-Hour Count Summaries - Bikes																		
Interval Start	Hawes St			Hudson Ave			Hunters Point Blvd			Hunters Point Blvd						15-min Total	Rolling One Hour	
	Eastbound			Westbound			Northbound			Southbound								
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT			
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Hunters Point Blvd Innes Ave



Date: 08/30/2016
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:15 AM to 8:15 AM



	HV %:	PHF
EB	0.0%	0.93
WB	1.8%	0.80
NB	-	-
SB	0.0%	0.83
TOTAL	0.9%	0.94

Two-Hour Count Summaries

Interval Start		Innes Ave				Innes Ave				0				Hunters Point Blvd				15-min Total	Rolling One Hour
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		1	0	10	0	1	0	6	35	0	0	0	0	0	27	0	0	80	0
7:15 AM		0	1	6	0	0	0	3	34	0	0	0	0	0	28	0	0	72	0
7:30 AM		0	0	7	0	0	0	7	46	0	0	0	0	0	26	0	0	86	0
7:45 AM		0	0	6	0	0	0	5	33	0	0	0	0	0	39	0	0	83	321
8:00 AM		0	1	5	0	0	0	6	35	0	0	0	0	0	35	0	1	83	324
8:15 AM		1	0	5	0	0	0	1	32	0	0	0	0	0	24	0	0	63	315
8:30 AM		0	1	9	0	0	0	5	36	0	0	0	0	0	30	0	0	81	310
8:45 AM		0	1	6	0	1	0	4	31	0	0	0	0	0	24	0	0	67	294
Count Total		2	4	54	0	2	0	37	282	0	0	0	0	0	233	0	1	615	0
Peak Hour	All	0	2	24	0	0	0	21	148	0	0	0	0	0	128	0	1	324	0
	HV	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	3	0
	HV%	-	0%	0%	-	-	-	0%	2%	-	-	-	-	-	0%	-	0%	1%	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

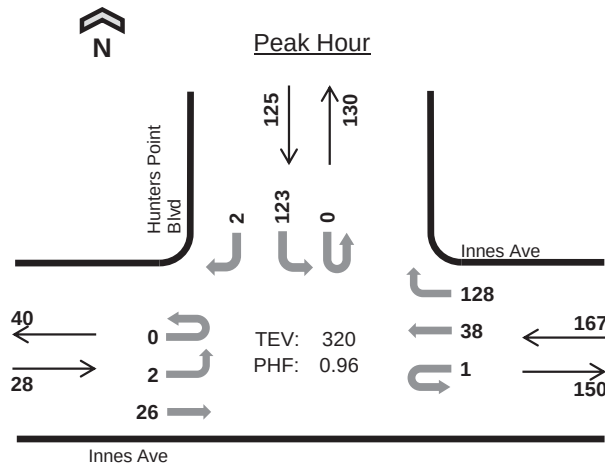
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	1	0	0	1	0	0	0	0	0	2	2	2	0	6
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2
8:00 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	1	1	0	0	0	0	0	0	1	0	0	1
8:30 AM	0	1	0	0	1	0	0	0	0	0	0	0	3	0	3
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	5	0	1	6	0	0	0	0	0	2	4	6	0	12
Peak Hr	0	3	0	0	3	0	0	0	0	0	2	3	3	0	8

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Innes Ave				Innes Ave				0				Hunters Point Blvd				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0
7:15 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0
7:30 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
8:00 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	3
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	3
8:30 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	3
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Count Total	0	0	0	0	0	0	0	5	0	0	0	0	0	1	0	0	6	0
Peak Hour	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	3	0

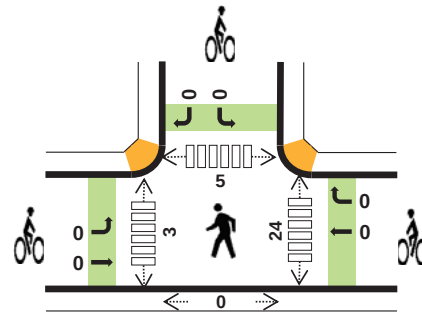
Two-Hour Count Summaries - Bikes																		
Interval Start	Innes Ave			Innes Ave			0			Hunters Point Blvd			15-min Total	Rolling One Hour				
	Eastbound			Westbound			Northbound			Southbound								
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT						
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Hunters Point Blvd Innes Ave



Date: 08/30/2016
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:45 PM to 5:45 PM



	HV %:	PHF
EB	0.0%	0.54
WB	1.2%	0.89
NB	-	-
SB	2.4%	0.73
TOTAL	1.6%	0.96

Two-Hour Count Summaries

Interval Start		Innes Ave				Innes Ave				0				Hunters Point Blvd				15-min Total	Rolling One Hour
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		0	1	6	0	0	0	8	36	0	0	0	0	0	34	0	0	85	0
4:15 PM		0	0	7	0	0	0	6	29	0	0	0	0	0	26	0	0	68	0
4:30 PM		0	0	5	0	0	0	6	32	0	0	0	0	0	28	0	0	71	0
4:45 PM		0	1	6	0	0	0	11	35	0	0	0	0	0	30	0	0	83	307
5:00 PM		0	1	3	0	0	0	7	40	0	0	0	0	0	29	0	0	80	302
5:15 PM		0	0	13	0	1	0	11	32	0	0	0	0	0	23	0	0	80	314
5:30 PM		0	0	4	0	0	0	9	21	0	0	0	0	0	41	0	2	77	320
5:45 PM		0	0	4	0	0	0	3	36	0	0	0	0	0	24	0	1	68	305
Count Total		0	3	48	0	1	0	61	261	0	0	0	0	0	235	0	3	612	0
Peak Hour	All	0	2	26	0	1	0	38	128	0	0	0	0	0	123	0	2	320	0
	HV	0	0	0	0	0	0	1	1	0	0	0	0	0	3	0	0	5	0
	HV%	-	0%	0%	-	0%	-	3%	1%	-	-	-	-	-	2%	-	0%	2%	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	3	1	0	0	4
4:15 PM	0	0	0	0	0	0	0	0	0	0	7	5	0	0	12
4:30 PM	0	0	0	0	0	0	0	0	0	0	10	3	1	0	14
4:45 PM	0	2	0	0	2	0	0	0	0	0	6	0	0	0	6
5:00 PM	0	0	0	0	0	0	0	0	0	0	10	2	4	0	16
5:15 PM	0	0	0	2	2	0	0	0	0	0	5	0	0	0	5
5:30 PM	0	0	0	1	1	0	0	0	0	0	3	1	1	0	5
5:45 PM	0	4	0	1	5	0	0	0	0	0	5	3	1	0	9
Count Total	0	6	0	4	10	0	0	0	0	0	49	15	7	0	71
Peak Hr	0	2	0	3	5	0	0	0	0	0	24	3	5	0	32

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Innes Ave				Innes Ave				0				Hunters Point Blvd				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	2	2
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	4
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	5
5:45 PM	0	0	0	0	0	0	0	4	0	0	0	0	0	1	0	0	5	8
Count Total	0	0	0	0	0	0	1	5	0	0	0	0	0	4	0	0	10	0
Peak Hour	0	0	0	0	0	0	1	1	0	0	0	0	0	3	0	0	5	0

Two-Hour Count Summaries - Bikes																		
Interval Start	Innes Ave			Innes Ave			0			Hunters Point Blvd			15-min Total	Rolling One Hour				
	Eastbound			Westbound			Northbound			Southbound								
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT						
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

MARKS TRAFFIC DATA

mietekm@comcast.net
916.806.0250

CITY OF SAN FRANCISCO

File Name : arelious walker-innes-a

Site Code : 12

Start Date : 5/13/2015

Page No : 1

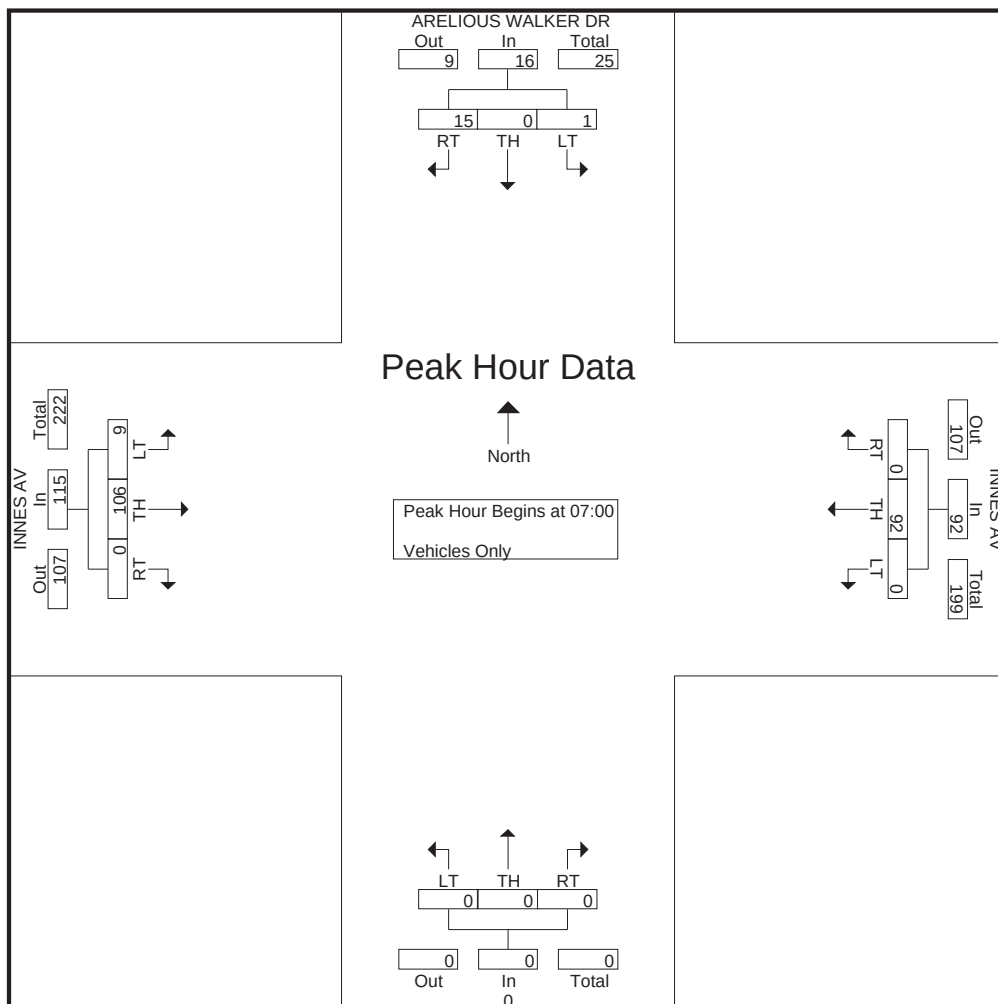
Groups Printed- Vehicles Only

	ARELIIOUS WALKER DR Southbound				INNES AV Westbound				0 Northbound				INNES AV Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
07:00	2	0	0	2	0	14	0	14	0	0	0	0	0	24	4	28	44
07:15	5	0	0	5	0	27	0	27	0	0	0	0	0	31	2	33	65
07:30	5	0	0	5	0	27	0	27	0	0	0	0	0	30	1	31	63
07:45	3	0	1	4	0	24	0	24	0	0	0	0	0	21	2	23	51
Total	15	0	1	16	0	92	0	92	0	0	0	0	0	106	9	115	223
08:00	0	0	0	0	0	11	0	11	0	0	0	0	0	10	0	10	21
08:15	4	0	0	4	0	19	0	19	0	0	0	0	0	33	3	36	59
08:30	1	0	0	1	0	22	0	22	0	0	0	0	0	15	4	19	42
08:45	4	0	2	6	0	18	0	18	0	0	0	0	0	29	3	32	56
Total	9	0	2	11	0	70	0	70	0	0	0	0	0	87	10	97	178
Grand Total	24	0	3	27	0	162	0	162	0	0	0	0	0	193	19	212	401
Apprch %	88.9	0	11.1		0	100	0		0	0	0		0	91	9		
Total %	6	0	0.7	6.7	0	40.4	0	40.4	0	0	0	0	0	48.1	4.7	52.9	

	ARELIIOUS WALKER DR Southbound				INNES AV Westbound				0 Northbound				INNES AV Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
07:00	2	0	0	2	0	14	0	14	0	0	0	0	0	24	4	28	44
07:15	5	0	0	5	0	27	0	27	0	0	0	0	0	31	2	33	65
07:30	5	0	0	5	0	27	0	27	0	0	0	0	0	30	1	31	63
07:45	3	0	1	4	0	24	0	24	0	0	0	0	0	21	2	23	51
Total Volume	15	0	1	16	0	92	0	92	0	0	0	0	0	106	9	115	223
% App. Total	93.8	0	6.2		0	100	0		0	0	0		0	92.2	7.8		
PHF	.750	.000	.250	.800	.000	.852	.000	.852	.000	.000	.000	.000	.000	.855	.563	.871	.858

Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 07:00



MARKS TRAFFIC DATA

mietekm@comcast.net
916.806.0250

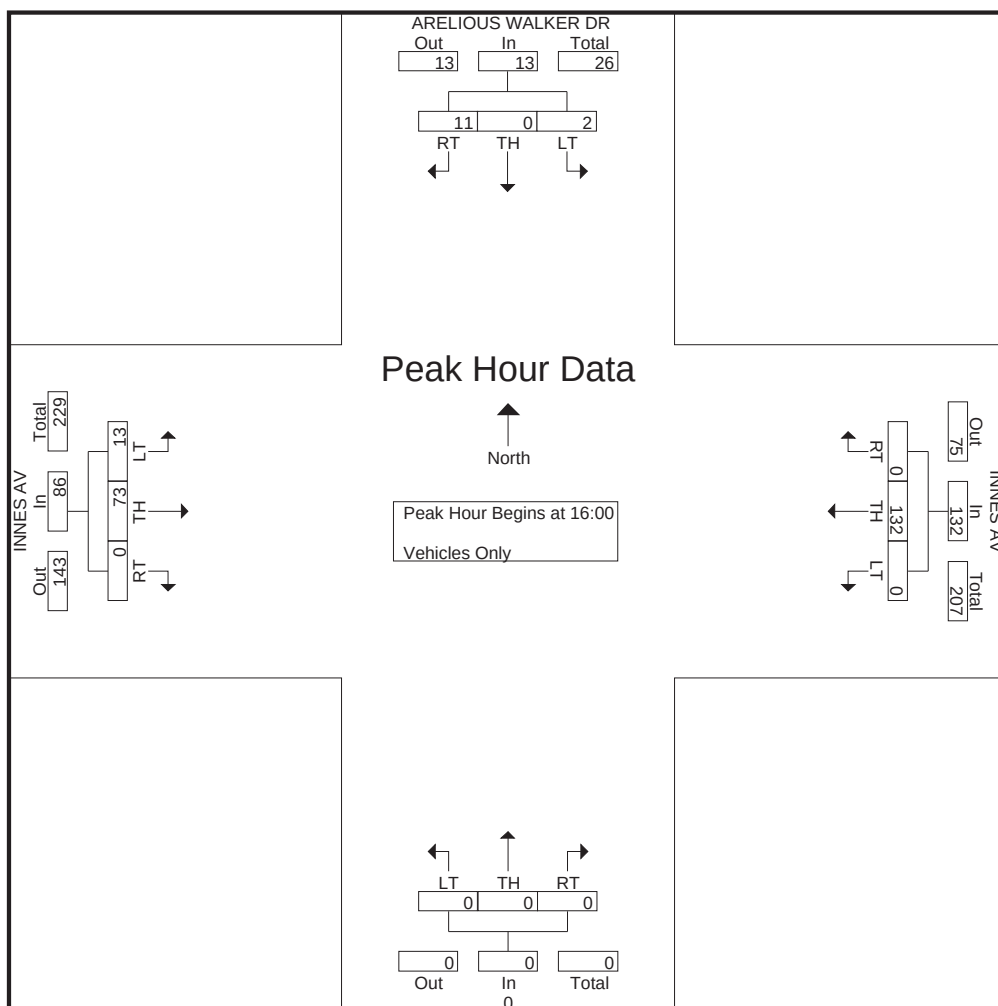
CITY OF SAN FRANCISCO

File Name : arelious walker-innes-p
Site Code : 12
Start Date : 5/13/2015
Page No : 1

Groups Printed- Vehicles Only

	ARELIIOUS WALKER DR Southbound				INNES AV Westbound				0 Northbound				INNES AV Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	1	0	1	2	0	30	0	30	0	0	0	0	0	18	2	20	52
16:15	2	0	1	3	0	33	0	33	0	0	0	0	0	12	5	17	53
16:30	5	0	0	5	0	30	0	30	0	0	0	0	0	25	2	27	62
16:45	3	0	0	3	0	39	0	39	0	0	0	0	0	18	4	22	64
Total	11	0	2	13	0	132	0	132	0	0	0	0	0	73	13	86	231
17:00	2	0	0	2	0	20	0	20	0	0	0	0	0	22	4	26	48
17:15	0	0	0	0	0	13	0	13	0	0	0	0	0	10	3	13	26
17:30	14	0	0	14	0	19	0	19	0	0	0	0	0	24	3	27	60
17:45	2	0	1	3	0	15	0	15	0	0	0	0	0	23	1	24	42
Total	18	0	1	19	0	67	0	67	0	0	0	0	0	79	11	90	176
Grand Total	29	0	3	32	0	199	0	199	0	0	0	0	0	152	24	176	407
Apprch %	90.6	0	9.4		0	100	0		0	0	0		0	86.4	13.6		
Total %	7.1	0	0.7	7.9	0	48.9	0	48.9	0	0	0	0	0	37.3	5.9	43.2	

	ARELIIOUS WALKER DR Southbound				INNES AV Westbound				0 Northbound				INNES AV Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:00																	
16:00	1	0	1	2	0	30	0	30	0	0	0	0	0	18	2	20	52
16:15	2	0	1	3	0	33	0	33	0	0	0	0	0	12	5	17	53
16:30	5	0	0	5	0	30	0	30	0	0	0	0	0	25	2	27	62
16:45	3	0	0	3	0	39	0	39	0	0	0	0	0	18	4	22	64
Total Volume	11	0	2	13	0	132	0	132	0	0	0	0	0	73	13	86	231
% App. Total	84.6	0	15.4		0	100	0		0	0	0		0	84.9	15.1		
PHF	.550	.000	.500	.650	.000	.846	.000	.846	.000	.000	.000	.000	.000	.730	.650	.796	.902



APPENDIX P: CUMULATIVE SCENARIO QUEUE LENGTHS – PLUS PROPOSED PROJECT AND PLUS PROJECT VARIANT

Cumulative Plus Project - New Griffith Street

FOR DISCUSSION PURPOSES ONLY
5/14/2016

Queue Lengths

Note: All queue lengths shown are 95th percentile (longer of AM or PM)

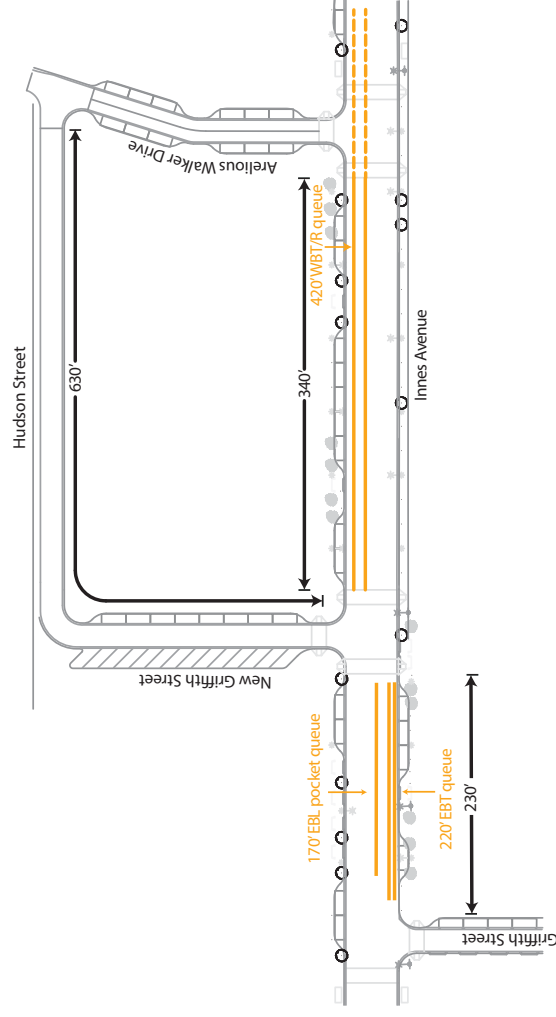


Figure 1A
Queue Lengths

Cumulative Plus Project - Arelious Walker Drive

FOR DISCUSSION PURPOSES ONLY
5/14/2016

Queue Lengths

Note: All queue lengths shown are 95th percentile (longer of AM or PM)

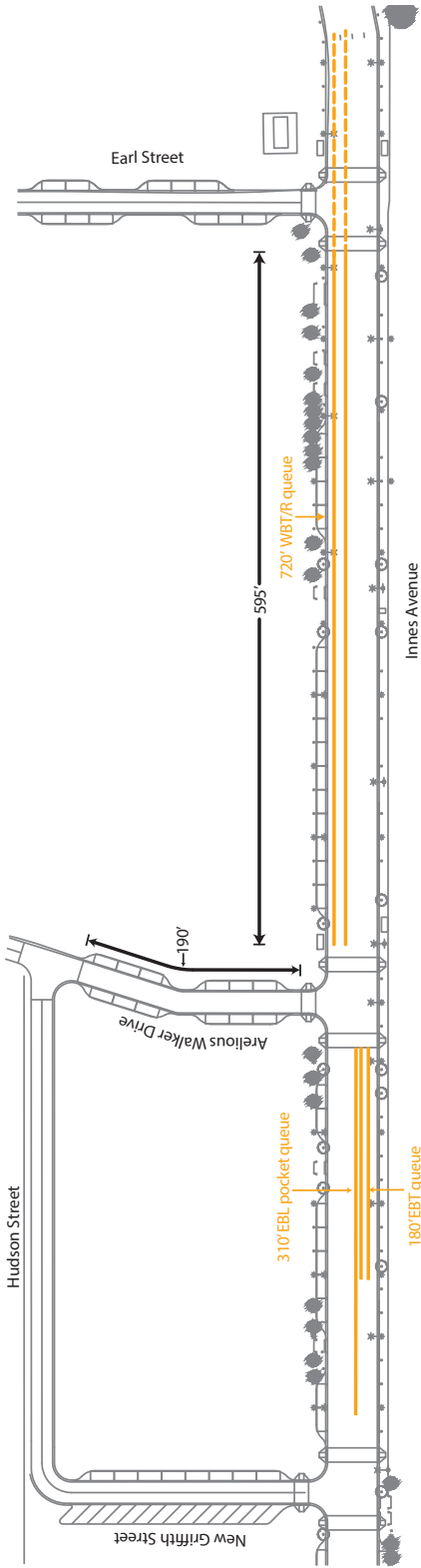


Figure 1B
Queue Lengths

Cumulative Plus Project - Earl Street

FOR DISCUSSION PURPOSES ONLY
5/14/2016

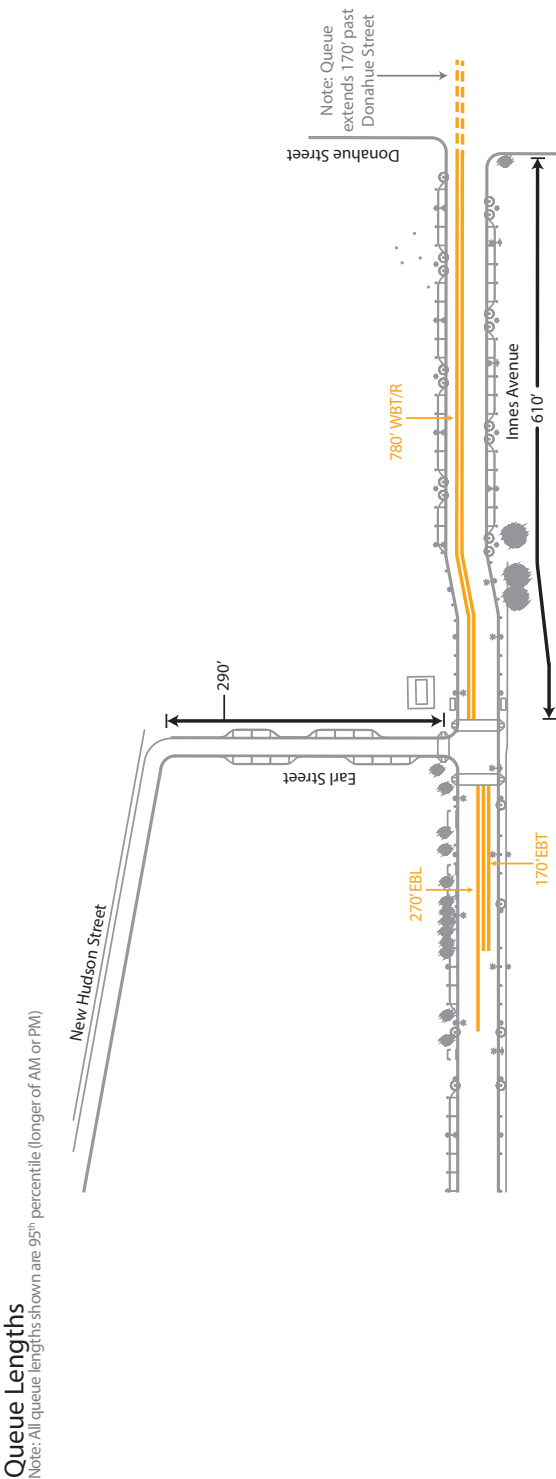
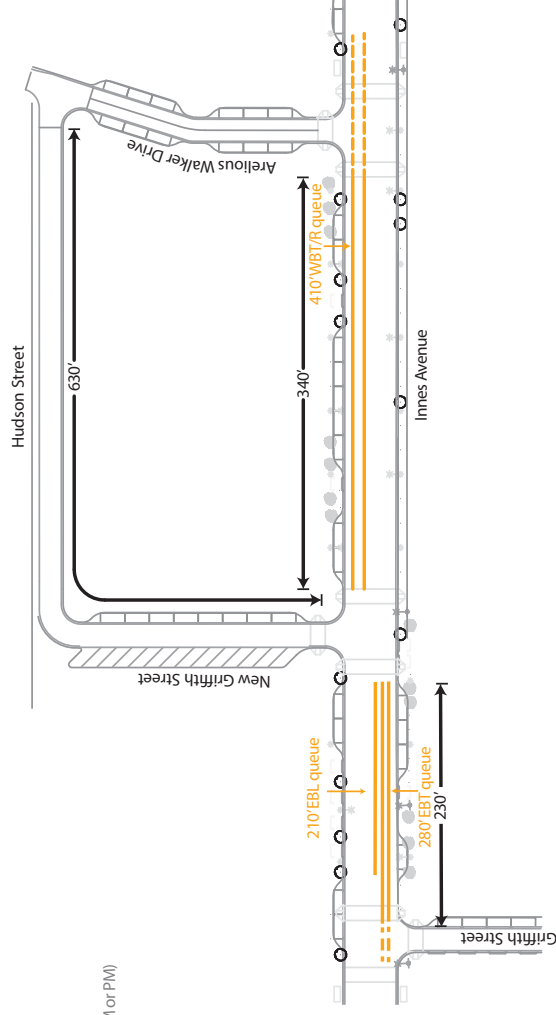


Figure 1C
Queue Lengths

Cumulative Plus Variant - New Griffith Street

FOR DISCUSSION PURPOSES ONLY
5/14/2016



Queue Lengths

Note: All queue lengths shown are 95th percentile (longer of AM or PM)



Figure 2A
Queue Lengths

Cumulative Plus Variant - Arelious Walker Drive

Queue Lengths

Note: All queue lengths shown are 95th percentile (longer of AM or PM)

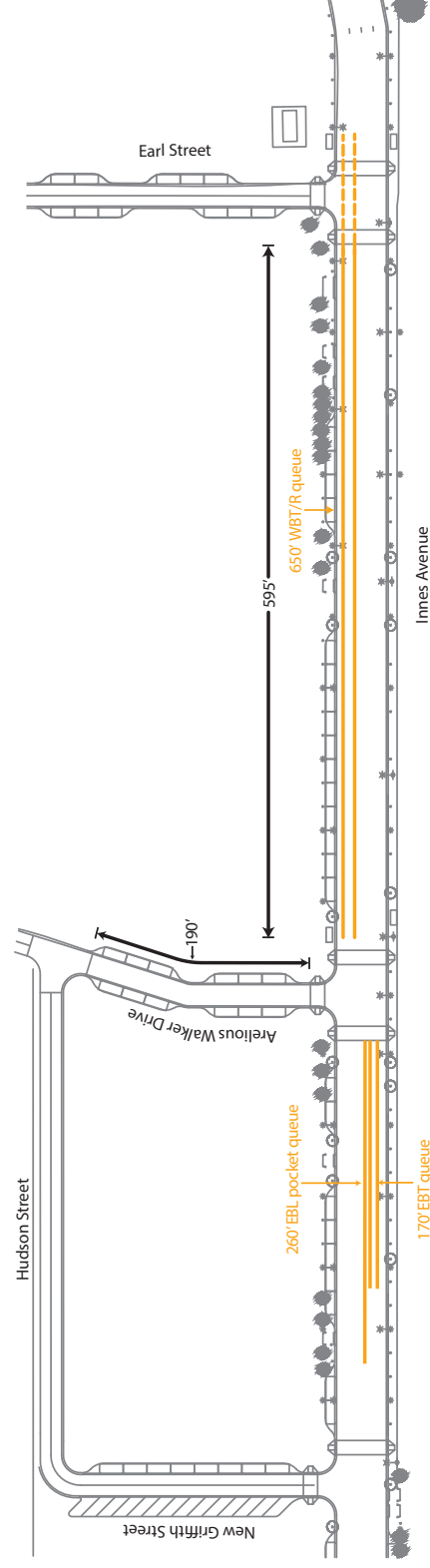


Figure 2B
Queue Lengths

Cumulative Plus Variant - Earl Street

FOR DISCUSSION PURPOSES ONLY
5/14/2016

Queue Lengths

Note: All queue lengths shown are 95th percentile (longer of AM or PM)

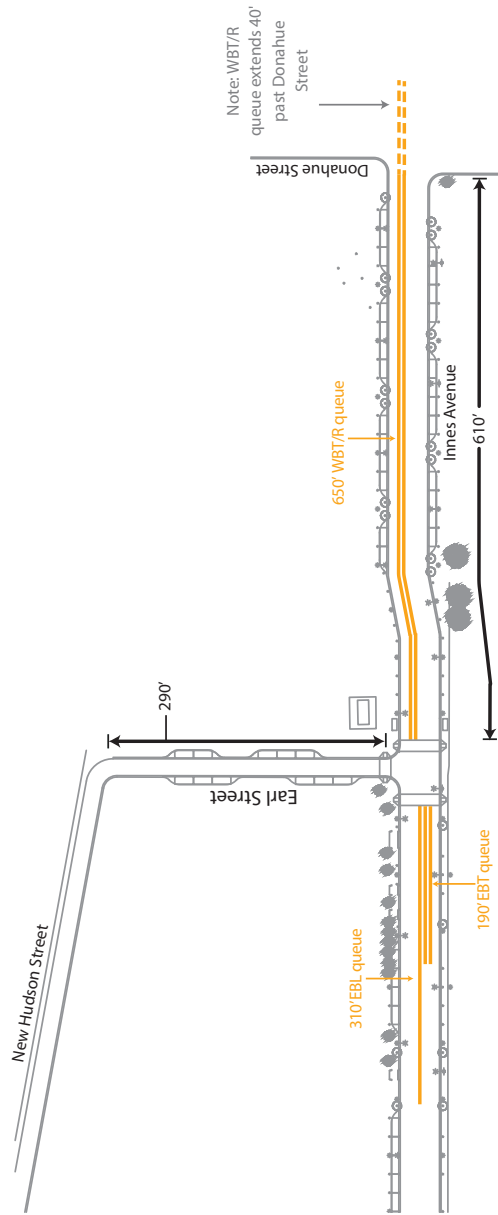


Figure 2C
Queue Lengths



MEMORANDUM

Date: July 10, 2017

To: Debra Dwyer, San Francisco Planning Department

From: Andy Kosinski, PE, and Matthew Crane

Subject: India Basin Code Compliant Alternative Analysis – Transportation and Circulation

SF15-0820

The purpose of this memorandum is to compare the transportation impacts of the Project Alternatives with those of the Proposed India Basin Project as evaluated in the India Basin Project Transportation Impact Study.¹ This memorandum examines the No Project, Reduced Development, and Code Compliant alternatives, which are described in detail in the Draft EIR for the India Basin Project (herein “Proposed Project”).

The Proposed Project, co-sponsored by Build and the San Francisco Recreation and Parks Department (together, the “Project Sponsor”), would redevelop the Sponsor’s parcels along the India Basin shoreline of the San Francisco Bay; it would develop the privately owned 16.94 acres plus 5.77 acres of developed and undeveloped public rights of way into a mixed-use development composed of 500 to 1,240 dwelling units, 275,330 to 1,000,000 square feet (sf) of commercial and retail uses, 50,000 square feet of educational space, and 24.5 acres of open space.

The No Project Alternative would result in no additional development at the site (i.e. retain existing conditions), while the Reduced Development Alternative would result in a mixed-use development composed of 620 dwelling units, 75,000 sf of commercial and retail uses, and 26,750 sf of educational space. Since the No Project and Reduced Development alternatives represent a level of development that is much less than the Proposed Project, a brief qualitative assessment of these scenarios is provided.

¹ *Transportation Impact Study for India Basin*, prepared by Fehr & Peers for the San Francisco Planning Department, July 2017. Case Study 2014.002541ENV



The Code Compliant Alternative would result in a mixed-use development composed of 1,240 dwelling units, approximately 738,000 sf of commercial and retail uses, and approximately 54,000 sf of educational space. Since the total size of the Code Compliant Alternative is similar to the Proposed Project, a more in-depth analysis of the impacts of this alternative is provided.

INTRODUCTION

Land Use Comparison

Land use summaries for the Proposed Project, Project Variant, No Project Alternative, Reduced Development Alternative, and Code Compliant Alternative are presented in **Table 1**.

TABLE 1: PROPOSED PROJECT ALTERNATIVE LAND USE SUMMARY							
Land Use	Proposed Project	Project Variant	No Project Alternative	Reduced Development Alternative	Code Compliant Alternative		
					Land Use Size	Change from Project	Change from Variant
Residential (dwelling units)	1,240	500	4	620	1,240	0	+740
Commercial/ Retail (sf)	275,330	1,000,000	18,162	75,000	738,501	+463,171	-261,499
Institutional/ Educational Space	50,000	50,000	0	26,750	53,499	+3,499	+3,499
Off-street Parking (spaces)	1,820	1,932	113	900	1,820	0	-112
Open Space (acres)	24.5	24.5	11.8	11.8	11.8	-12.7	-12.7

Source: Draft India Basin Notice of Preparation of an Environmental Impact Report and Public Scoping Meeting, April 30, 2015, modified June 2017.

Mitigation and Improvement Measure Comparison

Table summarizes the improvement measures and mitigation measures that would be applicable to the Proposed Project, Project Variant, and each Project alternative.

**TABLE 2: APPLICABILITY OF MITIGATION AND IMPROVEMENT MEASURES**

Measure	Description	Proposed Project	Project Variant	No Project Alternative	Reduced Development Alternative	Code Compliant Alternative
Mitigation Measure M-TR-1A	Implement Transit Capacity Improvements	X			X ¹	
Mitigation Measure M-TR-1B	Implement Transit Capacity Improvements		X			X
Mitigation Measure M-TR-2	School Site Loading	X	X		X	X
Cumulative Mitigation Measure C-M-TR-3	Implement Bus-Only Lanes	X	X		X ¹	X
Improvement Measure I-TR-1	Queue Abatement	X	X		X	X
Improvement Measure I-TR-2	Active Loading Management Plan	X	X		X	X
Improvement Measure I-TR-3	Construction Management	X	X		X	X
Improvement Measure I-TR-4B	Reconfigure Southbound Approach of Jennings Street/Evans Avenue		X			X
Cumulative Improvement Measure C-I-TR-5	Reconfigure Eastbound Approach of Jennings Street/Evans Avenue	X	X		X ¹	X

Notes:

1. These measures may not be required as this alternative is about half of the total size of the Proposed Project. However, the effect of this difference on the significance of impacts has not been analyzed quantitatively. Therefore, identification of these measures as being applicable is conservative.

Source: *Transportation Impact Study for India Basin*, prepared by Fehr & Peers for the San Francisco Planning Department, July 2017. Case Study 2014.002541ENV



NO PROJECT ALTERNATIVE

The No Project Alternative would involve no change to the existing transportation network and no construction of any new land uses. Therefore, the No Project Alternative would not cause any significant impacts to the transportation system as it represents a continuation of existing conditions.

REDUCED DEVELOPMENT ALTERNATIVE

The Reduced Development Alternative would have a total development size of about 45 percent of the Proposed Project (and about 50 percent of the Project Variant). Therefore, the Reduced Development Alternative would not result in any additional significant impacts that have not already been identified under the Proposed Project or Project Variant scenarios. This alternative could result in additional less-than-significant transportation impacts from those identified in the EIR, but the extent of this has not been analyzed quantitatively. It is likely that approximately 45 percent of the Proposed Project transit trip generation would still trigger a significant transit capacity impacts for the 44 O'Shaughnessy, as the Proposed Project does.

CODE COMPLIANT ALTERNATIVE

The Code Compliant Alternative would result in a larger overall development size than either the Proposed Project or Project Variant. Therefore, the remainder of this memo is focused on the impact analysis for the Code Compliant Alternative.

Analysis Methodology

The impact analysis methodology and assumptions for the Code Compliant Alternative are similar to the analysis of the Proposed Project. The Code Compliant Alternative has the same proposed transportation network as the Proposed Project and Project Variant. The Code Compliant Alternative would include 1,820 parking spaces, the same number included in the Proposed Project and 112 fewer spaces than included in the Project Variant. The alternative has a different land use program than the Proposed Project and Project Variant. Because the difference in land use results in a different trip generation, travel demand has been recalculated as part of this study.



Travel Demand

Travel demand for the Code Compliant Alternative was analyzed using similar methodologies and assumptions as was used for the Proposed Project in the TIS. The travel demand forecasting methodology is presented in more detail in a separate memorandum, titled *"Proposed Trip Generation, Distribution, and Mode Split Forecasts for the India Basin Project Transportation Study"* dated April 12, 2016, included in Appendix I of the TIS. The travel demand forecasts for the Code Compliant Alternative are provided in **Appendix A** of this memorandum. The forecasts are based on the methodology contained in the *SF Guidelines* and supplemented with information to account for the large scale and mixed-use qualities of the Proposed Project.

As shown in **Table 3**, the Code Compliant Alternative would generate significantly more weekday AM and PM peak hour person trips (26 to 30 percent) than the Proposed Project. Compared to the Project Variant, the Code Compliant Alternative is similar, but would generate one percent more person trips during the AM peak hour and two percent fewer PM peak hour person trips. Although the overall amount of development is more under the Code Compliant Alternative than the Project Variant, the mix of uses is different such that more trips remain internal to the site in the AM peak and less in the PM peak.



TABLE 3: PROJECT AND CODE COMPLIANT ALTERNATIVE EXTERNAL TRIP GENERATION

Trip Type	Proposed Project	Project Variant	Code Compliant Alternative	Change from Project	Change from Variant		
Weekday AM Peak Hour							
Total Person Trips	3,860	5,075	5,095	+1,235	+32%	+20	+1%
Auto	3,044 (79%)	4,018 (79%)	3,978 (78%)	+934	+31%	-40	-1%
Transit	237 (6%)	458 (9%)	452 (9%)	+215	+91%	-6	-1%
Walk	478 (12%)	461 (9%)	544 (11%)	+66	+13%	+83	+18%
Bike	101 (3%)	138 (3%)	121 (2%)	+20	+20%	-17	-12%
Total Vehicle Trips	1,865	2,612	2,546	+681	+37%	-66	-3%
Weekday PM Peak Hour							
Total Person Trips	4,724	6,118	6,014	+1,290	+27%	-104	-2%
Auto	3,372 (71%)	4,457 (73%)	4,425 (74%)	+1,053	+31%	-32	-1%
Transit	302 (6%)	517 (8%)	520 (9%)	+218	+72%	+3	+1%
Walk	947 (20%)	1,013 (17%)	940 (16%)	-7	-1%	-73	-7%
Bike	103 (2%)	131 (2%)	129 (2%)	+26	+25%	-2	-2%
Total Vehicle Trips	1,969	2,734	2,705	+736	+37%	-29	-1%

Source: Fehr & Peers, 2017

Impact Analysis

Vehicle Miles Traveled (VMT) Impacts

Given that the Project Site is located in a Traffic Analysis Zone (TAZ) where existing VMT is more than 15 percent below the existing regional average and that the Code Compliant Alternative (similar to the Proposed Project) would incorporate similar features to other development within the TAZ that influence the lower-than-average VMT, such as density, mix of uses, and transit accessibility, the Code Compliant Alternative's residential, office, and retail (and thus, restaurant, opens space, and school) uses would not result in substantial additional VMT and impacts would be **less-than-significant** and no mitigation is required.

Induced Travel Impact

The Code Compliant Alternative will have a similar effect on induced travel as the Proposed Project. Similar to the Proposed Project, the Code Compliant Alternative would include features that will



slightly alter the transportation network (although these are identical to those included in the Proposed Project). These features would be sidewalk widening, on-street loading zones, curb cuts, and on-street safety strategies, left-turn lanes, and intersection signalization. These features fit within the general types of projects identified that would not substantially induce automobile travel as they do not create substantial increases in roadway capacity. While a lane addition such as a turn-pocket may induce automobile travel in some situations, in this location, the left-turn pockets are minor changes to the transportation network and are being installed to provide access to the site and would not increase vehicle speeds or reduce automobile delay; therefore it is assumed that they would not induce automobile travel. Therefore, induced travel impacts would similarly be **less-than-significant** for the Code Compliant Alternative.

Traffic Impacts

Traffic Hazard Impacts

The Code Compliant Alternative would result in similar increases to traffic congestion as the Project Variant along Evans Avenue, Hunters Point Boulevard, and Innes Avenue, as it would generate a similar number of peak hour vehicle trips, though slightly fewer than the Project Variant. While the alternative would increase the total number of trips within the vicinity of the Project Site, increased trips alone do not cause traffic hazards. The inclusion of signalization at the project intersections along Innes Avenue removes conflicts that would otherwise exist between the substantial number of project vehicles and the substantial number of people driving along Innes Avenue in a way that does not cause any new traffic hazards. Therefore the impact under this alternative would be **less-than-significant**.

Intersection Improvement Measures Identified

A detailed traffic analysis was conducted for informational and site planning purposes for the Proposed Project. The traffic operations analysis identified a feasible improvement measure (Improvement Measure I-TR-4B) for the intersection of Evans Avenue and Jennings Street, which would operate at LOS F in the AM peak period under the Project Variant. Improvement Measure I-TR-4B would reconfigure the southbound approach of the intersection to include a 100-foot left turn pocket. Adding this turn pocket would require removal of approximately five parking spaces on the west side of the street. Improvement Measure I-TR-4B would also apply to the Code Compliant Alternative, since the alternative would generate a similar level of traffic to the Project Variant.



Transit Impacts

Transit Capacity Impacts

The Code Compliant Alternative would generate a similar number of transit trips compared to the Project Variant, with six fewer trips in the AM peak hour and three more trips in the PM peak hour. The additional transit trips in the PM peak hour would not be sufficient to cause an additional transit capacity impact to either the 19 Polk or 44 O'Shaughnessy bus routes. Therefore, the Code Compliant Alternative would cause similar **significant** transit capacity impacts as those identified for the Project Variant.

Mitigation Measures M-TR-1A and M-TR-1B require that the Project Sponsors either provide fair share funding to the SFMTA to implement temporary transit service improvements or, if for any reason the SFMTA determines that the provision of increased transit frequency is not feasible at the time of its implementation, implement temporary shuttle service to provide sufficient transit capacity to meet the needs of the Project. As the Code Compliant Alternative is similar in size to the Project Variant, Mitigation Measure M-TR-1B would also apply to the Code Compliant Alternative. Implementation of Mitigation Measure M-TR-1B would increase transit capacity adjacent to the Project Site and therefore the impacts to transit capacity would become **less-than-significant with mitigation**.

Transit Delay Impacts

The Code Compliant Alternative would generate a similar number of vehicle trips to the Project Variant, which would cause similar increases to traffic congestion at nearby intersections along Evans Avenue, Hunters Point Boulevard, and Innes Avenue to the west of the Project Site. The Code Compliant Alternative would also generate a similar number of transit trips such that the increase in bus dwell time would be similar to the Project Variant. Since the Code Compliant Alternative would generate slightly fewer vehicle trips during the AM and PM peak hour and only three more transit trips in the PM peak hour, the combination of congestion delay plus the boarding/alighting delay would increase similar to the Project Variant. As with the Proposed Project, this increase in vehicle trips would not lead to an increase in round-trip travel time greater than half of each bus route's peak-hour headway. Therefore, the Code Compliant Alternative would have a **less-than-significant** impact on transit delay.



Bicycle Impacts

The bicycle network and facilities for the Code Compliant Alternative would be identical to those for the Proposed Project and Project Variant. The Code Compliant Alternative generates more bicycle trips than the Proposed Project because it has more commercial and retail space than the Proposed Project. The alternative generates slightly fewer bicycle trips than the Project Variant because it has less commercial and retail space. The Code Compliant Alternative would produce 20 more bicycle trips during the AM peak hour and 26 more trips during the PM peak hour compared to the Proposed Project, as shown in **Table 3**. The Code Compliant Alternative would produce 17 fewer bicycle trips during the AM peak hour and two fewer trips during the PM peak hour compared to the Project Variant.

The alternative would not increase bicycle traffic to a level that adversely affects bicycle facilities in the area, nor would the alternative create a new hazard or substantial conflict to bicycling. The alternative would not interfere with affect bicycle accessibility to the Project Site or adjoining areas. Thus, the Code Compliant Alternative's impact to bicycle facilities and circulation would be considered ***less-than-significant*** and no mitigation is required.

Pedestrian Impacts

Similar to the Proposed Project and Project Variant, pedestrian trips generated by the Code Compliant Alternative would include walk trips to and from the local and regional transit stops, as well as some walk trips to and from nearby complementary land uses.

The Code Compliant Alternative generates more pedestrian trips than the Proposed Project during the AM peak period because it has more commercial and retail space, which encourages more internalization of trips (e.g. residents walking to nearby offices and retail shops instead of commuting/shopping off-site). Compared to the Project Variant, the Code Compliant Variant has more residential units, which yields a higher level of internalization since more residents would live close to retail and commercial uses they may utilize by walking instead of going to destinations external to the site. The Code Compliant Alternative would produce 66 more pedestrian trips during the AM peak hour, but seven fewer trips during the PM peak hour compared to the Proposed Project, as shown in **Table 3**. The Code Compliant Alternative would produce 83 more pedestrian



trips during the AM peak hour, but 73 fewer during the PM peak hour compared to the Project Variant.

As with the Proposed Project, the Code Compliant Alternative's pedestrian network would be adequate to accommodate expected pedestrian demand, would not create potentially hazardous conditions for pedestrians, nor otherwise interfere with pedestrian accessibility to the site and adjoining areas, and therefore would result in a **less-than-significant** pedestrian impact. However, since the Code Compliant alternative would have a similar site layout to the Proposed Project, with parking structures dispersed throughout the site, the effect of vehicle queuing across sidewalks would be minimized. Improvement Measure I-TR-1 requires that the Proposed Project (specifically the 700 Innes parcel) be subject to the Planning Department's vehicle queue abatement Conditions of Approval. Improvement Measure I-TR-1 would also apply to the Code Compliant Alternative to further reduce less-than-significant impacts related to potential conflicts between vehicle queues and pedestrians.

Loading Impacts

Truck Loading

The Code Compliant Alternative would have the same amount of curb space dedicated to off-street loading as the Proposed Project (20 spaces). The Code Compliant Alternative would have slightly higher peak loading demands compared to the Proposed Project (20 versus 16 spaces) and slightly lower peak loading demands compared to the Project Variant (20 versus 25 spaces),² which would be fully accommodated by the proposed loading supply and therefore result in a **less-than-significant** and no mitigation is required.

While loading supply would be sufficient to meet the anticipated loading demand, Improvement Measure I-TR-2 was identified for the Proposed Project. Improvement Measure I-TR-2 would require that the Project Sponsor develop an Active Loading Management Plan that would seek to avoid loading conflicts and incorporate actions to address potential ongoing loading issues. Improvement Measure I-TR-2 would also apply to the Code Compliant Alternative since it would have a similar number of loading spaces to the Proposed Project.

² The delivery/service vehicle trips and loading demand is determined based on rates in SF Guidelines as well as truck count data collected for the existing Whole Foods supermarket in San Francisco (as SF Guidelines do not provide loading data for supermarkets).



School Loading

Similar to the Proposed Project, the Code Compliant Alternative would include a school. Due to the comparably short periods of heavy drop-off and pick-up at the school, it will have a much higher level of passenger loading activity during its peak than any other of the proposed uses. Because of this, and because the design of the school passenger loading zone is not finalized for the Code Compliant Alternative, the school site passenger loading impacts are **significant**.

Mitigation Measure M-TR-2 requires that the school provide and enforce a pick-up/drop-off plan to ensure the safety of pedestrians (subject to review and approval by the SFMTA). Mitigation Measure M-TR-2 would also apply to the Code Compliant Alternative and therefore the impacts would be ***less-than-significant with mitigation***.

Emergency Access Impacts

Emergency access to the project site for the Code Compliant Alternative would be the same to that of the Proposed Project and Project Variant. The Project Sponsor is working with the San Francisco Fire Department to finalize the design to meet emergency access requirements for the internal roadway network. The planned internal streets as well as the shared way along Spring Lane, Fairfax Lane, and Beach Lane would be designed to provide sufficient travel width for emergency vehicles.

While final roadway designs would need to be approved by the Fire Department prior to construction, all roadways have been designed to accommodate a standard fire truck. The streetscape changes off-site would maintain a sufficient right of way for emergency vehicles and therefore would not result in a significant impact to emergency vehicle access. Thus, the Code Compliant Alternative would have a ***less-than-significant*** impact to emergency access.

Construction Impacts

The Code Compliant Alternative would have similar construction impacts as the Proposed Project and Project Variant because it would involve construction of a similar number of buildings and parking structures. The construction duration, both for the overall project and individual buildings, may be up to 10 percent longer under this alternative compared to the Proposed Project and Project Variant given the increased level of overall square footage. However, construction of the Code Compliant Alternative would not result in significant impacts on the transportation and circulation network because any effects would be of limited duration and temporary. Therefore, construction-



related work for the Code Compliant Alternative would have a ***less-than-significant*** impact on transportation and no mitigation measures would be required.

To help minimize construction-related impacts, Improvement Measure I-TR-3 recommends that the Project Sponsor for each parcel (700 Innes, 900 Innes, India Basin Shoreline Parking, and India Basin Open Space) prepare a Construction Traffic Control Plan. The plan would include a traffic control plan, measures to reduce single-occupant vehicle trips by construction workers, and regular construction updates to the surrounding residents and businesses. Improvement Measure I-TR-3 would also apply to the Code Compliant Alternative to further reduce less-than-significant impacts related to potential conflicts between construction activities and pedestrians, bicyclists, transit and vehicles, and between construction activities and nearby businesses and residents.

Parking Impacts

The midday peak parking demand would be 3,087 spaces for the Code Compliant Alternative. Parking demand outside of the midday peak period will be lower than during the midday peak, approximately 2,036 spaces. These levels are higher than the midday peak parking demand of 2,553 spaces for the Proposed Project, but lower than the 3,624 spaces for the Project Variant. The Code Compliant Alternative would provide 1,820 parking spaces, so there would be a deficit of up to 1,267 spaces during the midday peak period.

While the estimated demand would result in a parking deficit for the Code Compliant Alternative (similar to the Proposed Project and Project Variant), the alternative would implement similar TDM measures to encourage the use of transit, walking, bicycling, and other modes and discourage the use of single occupancy automobiles or automobiles in general. These measures were not specifically accounted for in the travel demand forecast process and would result in a substantial shift in mode share away from automobiles and a resulting decrease in demand for parking. As a result, the parking demand estimate is conservative as it does not reflect vehicle trip reductions resulting from Travel Demand Management (TDM). Additionally, the Project Site is well served by public transit and bicycle facilities, which would be further expanded by near-term enhancements to transit described in the Baseline scenario. These would serve to further provide alternative transportation choices to the automobile. Because of these anticipated transit enhancements, any unmet parking demand associated with the project would not be substantial. Therefore, as with the Proposed Project and Project Variant, the Code Compliant Alternative would have a ***less-than-significant*** parking impact.



Cumulative Impact Analysis

VMT Impacts

An SF-CHAMP model run for the 2040 Cumulative conditions was conducted to estimate VMT by private automobiles and taxis for different land use types for the Proposed Project and Variant. Cumulative average daily VMT per capita would be more than 15 percent below the Cumulative regional average daily VMT per capita for residential, office, and retail uses in TAZ 446 where the Proposed Project is located.

Given that the Code Compliant Alternative is similar to the Proposed Project (and Project Variant) and would incorporate similar features to other development within the TAZ that influence the lower-than-average VMT, such as density, mix of uses, and transit accessibility, the Code Compliant Alternative's residential, office, and retail (and thus, restaurant, opens space, and school) uses would not result in substantial additional VMT and impacts would be ***less-than-significant*** and no mitigation is required.

Induced Travel Impact

The Code Compliant Alternative will have a similar effect on induced travel as the Proposed Project. Similar to the Proposed Project, the Code Compliant Alternative would include features that will slightly alter the transportation network (although these are identical to those included in the Proposed Project). These features would be sidewalk widening, on-street loading zones, curb cuts, and on-street safety strategies and intersection signalization. These features fit within the general types of projects identified that would not substantially induce automobile travel as they do not create substantial increases in roadway capacity. While a lane addition such as a turn-pocket may induce automobile travel in some situations, in this location, the left-turn pockets are minor changes to the transportation network and are being installed to provide access to the site and would not increase vehicle speeds or reduce automobile delay; therefore it is assumed that they would not induce automobile travel. Therefore, cumulative impacts would similarly be ***less-than-significant*** for the Code Compliant Alternative.

Traffic Impacts

Traffic Hazard Impacts

The Code Compliant Alternative would result in similar increases to traffic congestion as the Project Variant along Evans Avenue, Hunters Point Boulevard, and Innes Avenue, as it would generate a



similar number of (though slightly fewer) peak hour vehicle trips. Cumulative vehicle, pedestrian, and bicycle volumes on Innes Avenue and other streets near the Project Site would be substantial. The Code Compliant Alternative would generate around 2,500 to 2,600 vehicle trips in the AM and PM peak hours, respectively. This substantial increase in vehicle volumes, added to already substantial Cumulative volumes, would worsen vehicular delay, but vehicular delay alone does not create traffic hazards. The inclusion of signalization at the project intersections along Innes Avenue removes conflicts that would otherwise exist between the substantial number of project vehicles and the substantial number of people driving along Innes Avenue. Therefore, no traffic hazard would be caused. Therefore, impacts on cumulative conditions would be ***less-than-significant*** under the Code Compliant Alternative.

Intersection Improvement Measures

A detailed traffic analysis was conducted for informational and site planning purposes for the Project. The cumulative traffic operations analysis found that the Proposed Project and Project Variant would contribute 50 to 58 percent of the traffic growth at the intersection of Evans Avenue and Jennings Street. The analysis identified a recommended improvement measure for the intersection of Evans Avenue and Jennings Street. Improvement Measure C-I-TR-5 would reconfigure the eastbound approach of the intersection to include a 100-foot left turn pocket, one through lane, and one shared through/right turn lane. No additional right-of-way would be required for this reconfiguration. Improvement Measure C-I-TR-5 would also apply to the Code Compliant Alternative, since the alternative would generate a similar level of traffic to the Proposed Project and Project Variant.

Transit Impacts

Transit Capacity

Under cumulative conditions, the Code Compliant Alternative would result in similar significant cumulative impacts to those identified for the Project Variant to downtown Muni screenlines that operate above the 85 percent threshold and BART screenlines that operate above the 100 percent threshold without the Code Compliant Alternative in the AM and PM peak hours. However, since the Code Compliant Alternative would generate a similar number of transit trips to the Project Variant, it would contribute a negligible amount (i.e. less than one percent) of riders to these screenlines. Therefore, while the Code Compliant Alternative would have a ***significant cumulative impact***, the contribution to this significant impact would ***not be considerable*** and therefore no



mitigation is required. For the remaining downtown and regional screenlines, the Code Compliant Alternative would have a ***less-than-significant*** cumulative impact.

Transit Delay

Under cumulative conditions, the Code Compliant Alternative would result in similar significant cumulative transit delay impacts to those identified for the Project Variant, since it generates a similar number of vehicle and transit trips. The three additional transit trips in the PM peak would not be sufficient to cause an additional transit delay impact beyond what has been identified for the Project Variant. Cumulative Mitigation Measure C-M-TR-3 would require the Project Sponsors to fund the implementation of transit only lanes (one in each direction) along the Innes Avenue corridor to improve transit operations. Cumulative Mitigation Measure C-M-TR-3 would also apply to the Code Compliant Alternative. Implementation of Cumulative Mitigation Measure C-M-TR-3 would reduce the Code Compliant Alternative's contribution to cumulative impacts to transit delay to acceptable levels. However, since the SFMTA cannot commit to implementing these improvements, the cumulative transit delay impact is considered ***significant and unavoidable with mitigation***.

Bicycle Impacts

In the cumulative scenario, there would be high-quality bicycle facilities throughout the Project area and the amount of bicyclists would increase. The addition of the Code Compliant Alternative would contribute to bicycle volumes (131 new AM peak trips and 144 new PM peak trips, most similar to the Project Variant's contribution of 138 AM and 131 PM trips), but the additional bike trips would not increase bicycle traffic to a level that adversely affects bicycle facilities in the area, nor would the alternative create a new hazard or substantial conflict to bicycling. Similar to the Proposed Project, the Code Compliant Alternative would not adversely affect bicycle accessibility to the Project Site or adjoining areas. For these reasons, the Code Compliant Alternative, in combination with past, present and reasonably foreseeable development in San Francisco, would result in ***less-than-significant*** cumulative impacts on bicyclists. Given that the IBTAP would retain or improve bicycle circulation compared to the CPHPS Streetscape Cumulative scenario, the Code Compliant Alternative, in combination with past, present and reasonably foreseeable development in San Francisco, would result in ***less-than-significant*** cumulative impacts on bicyclists for the IBTAP scenarios.

Pedestrian Impacts



The Code Compliant Alternative would generate between 541 and 923 pedestrian trips during the AM and PM peak hours, which is generally lower than the Project Variant but higher than the Proposed Project. As with the Proposed Project, the Code Compliant Alternative's pedestrian network would be adequate to accommodate expected pedestrian demand, would not create potentially hazardous conditions for pedestrians, nor otherwise interfere with pedestrian accessibility to the site and adjoining areas. Therefore, the Code Compliant Alternative, in combination with past, present and reasonably foreseeable development in San Francisco, would result in **less-than-significant** cumulative impacts on pedestrians. Given that the IBTAP would retain or improve pedestrian circulation compared to the CPHPS Streetscape Cumulative Scenario, the Code Compliant Alternative, in combination with past, present and reasonably foreseeable development in San Francisco, would result in **less-than-significant** cumulative impacts on bicyclists for the IBTAP scenarios.

Loading Impacts

Loading impacts are by their nature localized and site-specific, and they would not contribute to impacts from other development projects near the Project Site. While this is not true every time a proposed project aims to meet loading demand in the public right-of-way in a densely developed area, it applies to the Code Compliant Alternative similar to the Proposed Project and Project Variant given the site conditions and conditions across the street (steep hillside without development). As with the Project Variant, the Code Compliant Alternative is expected to provide adequate loading facilities for the anticipated demand. In addition, there are some existing businesses along Innes Avenue that will be retained. These businesses currently load off-street or in on-street parking spaces, and this arrangement would be expected to continue upon construction of the Code Compliant Alternative. Therefore, the Code Compliant Alternative, in combination with past, present and reasonably foreseeable development in San Francisco, would result in **less-than-significant** cumulative loading impacts.

Emergency Access Impacts

While there would be a general increase in vehicle traffic that is expected through the future scenario, as with the Proposed Project (and Project Variant), the Code Compliant Alternative would not create potentially hazardous conditions for emergency vehicles, or otherwise interfere with emergency vehicle accessibility to the site and adjoining areas. For these reasons, the Code Compliant Alternative, in combination with past, present and reasonably foreseeable development in San Francisco, would have **less-than-significant** cumulative emergency access impacts.



Construction Impacts

The Code Compliant Alternative's contribution to the cumulative construction impact would not be cumulatively considerable as the construction would be of temporary duration. Under Improvement Measure I-TR-3, the Project Sponsors would coordinate with various City departments such as SFMTA and DPW through the Transportation Advisory Staff Committee (TASC) to develop coordinated plans that would address construction-related vehicle routing and pedestrian movements adjacent to the construction area for the duration of construction overlap. Therefore, for the above reasons, the Code Compliant Alternative, in combination with past, present and reasonably foreseeable development in San Francisco, would result in ***less-than-significant*** cumulative construction-related transportation impacts.

Parking Impacts

The parking conditions for the Cumulative scenario are the same as the Baseline scenario, with 218 on-street spaces in the area under consideration. The India Basin Transportation Action Plan (IBTAP) Scenario would reduce parking by 127 on-street spaces in the portion of the street network under consideration, compared with Cumulative conditions. While IBTAP Subvariant B would also remove a parking lane on Jennings Street between Cargo Way and Evans Avenue resulting in the loss of approximately 45 spaces, this is outside of the parking area under consideration. Both of these IBTAP scenarios would reduce the total parking spaces to 91 in the Cumulative condition.

As with the Proposed Project, the Code Compliant Alternative represents the only substantial new development in the area and its robust set of TDM measures is anticipated to reduce parking demand associated with new project residents and employees. Because existing parking demand would not be in excess of supply, the Code Compliant Alternative would not result in a substantial parking deficit with the proposed on-street and off-street parking supply. Therefore, cumulative impacts related to parking would be ***less-than-significant*** under the Cumulative Scenario. Even with the comparatively fewer on-street parking spaces, cumulative impacts related to parking would also be ***less-than-significant*** under the IBTAP scenarios.



ATTACHMENT A: TRAVEL DEMAND SPREADSHEETS

Report Table: Project Person Trip Generation

Land Use	Size	Trip Generation Rates				Person Trips Generated		
		Daily Trip Rate	AM Peak Hour as % of Daily	PM Peak Hour as % of Daily	AM Peak Hour as % of PM	Daily	AM Peak Hour	PM Peak Hour
Code-Compliant Alternative								
Residential	198 studio units	7.5 per unit	13.3%	17.3%	77%	1,485	198	257
	236 1-bedroom units	7.5 per unit	13.3%	17.3%	77%	1,770	235	306
	805 2+ bedroom units	10 per unit	13.3%	17.3%	77%	8,050	1,072	1,393
	Subtotal					11,305	1,505	1,956
Commercial	62,800 sf Clinical Use	43.3 per ksf	15.2%	14.5%	105%	2,719	413	394
	73,900 sf Administrative	36.4 per ksf	17.0%	16.2%	105%	2,690	456	436
	498,500 sf Office	18.1 per ksf	8.9%	8.5%	105%	9,023	803	767
	Subtotal					14,432	1,672	1,597
Retail	18,500 sf Restaurant	200 per ksf	1.5%	13.5%	11%	3,700	54	500
	14,800 sf Café	200 per ksf	14.8%	13.5%	110%	2,960	439	400
	18,500 sf Supermarket	297 per ksf	2.6%	7.3%	36%	5,495	144	401
	51,500 sf General Retail	150 per ksf	2.3%	9.0%	26%	7,725	180	695
	Subtotal					19,880	817	1,996
Educational	450 students	4.2 per student	50.0%	15.7%	318%	1,890	945	297
	95 staff	2.0 per staff	25.0%	25.0%	100%	190	48	48
	Subtotal					2,080	993	345
Open Space	19.05 acres	24.3 per acre	23.3%	25.9%	90%	464	108	120
Total		--		--	--	48,161	5,095	6,014

Using CPHPS Memo to Determine Mode Split for Transit Improvements Scenario

& Applying Differences in 2015 and 2040 CHAMP Models to Arrive at Mode Split For Baseline

Mode	Central SoMa CHAMP Model Runs				MXD + Methodology		CPHPS Memo (2009)			CPHPS - Transit Improvements		Convert...	CPHPS - Existing/Baseline (post CHAMP adjustment)	CPHPS - Existing/Baseline (post CHAMP adjustment)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
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Notes:

1. See "Deriving Aggregated Work and Non-Work Mode Splits from CPHPS Memo" Appendix sheet for derivation of these aggregate figures
2. Walk mode split fixed = walk mode share for the Code-Compliant Alternative during AM and PM peak. This represents a fixed internalization rate.

Trip Generation By Mode

Retail Pass-By Rate 10%

CODE-COMPLIANT ALTERNATIVE PLUS TRANSIT IMPROVEMENTS

Land Use	Person Trip Generation				Mode Share Percentage						Person Trip Generation (by Mode)						Vehicle Trip Generation						Transit Trips											
	Net New Land Use	Work Trips	Non-Work Trips	Total	Auto (Work)	Auto (Non-Work)	Transit (Work)	Transit (Non-Work)	Bike (Work)	Bike (Non-Work)	Walk (Work)	Walk (Non-Work)	Transit	Automobile	Transit	Bike	Walk	Total	In % ²	Out % ²	In	Out	Total ³	In % ⁴	Out % ⁴	In	Out	Total						
AM PEAK HOUR																																		
Open Space	399.6 ksf	0	108	108	0%	75%	0%	8%	0%	0%	13%	0%	4%	81	9	14	5	109	56%	44%	43	34	77	50%	50%	5	5	9						
School	53.4 ksf	48	943	993	92%	84%	8%	9%	0%	0%	0%	6%	836	93	5	53	993	72%	28%	390	153	543	100%	0%	93	0	93							
Retail	103.3 ksf	31	764	795	92%	61%	24%	13%	3%	0%	12%	0%	110	24	24	98	616	68%	35%	201	108	309	68%	35%	72	38	110							
R80/Office	635.2 ksf	1388	284	1672	61%	72%	24%	13%	3%	0%	12%	0%	1000	278	45	181	1504	31%	65%	184	409	593	31%	65%	86	192	278							
Residential	1239 DU	752	752	1504	61%	50%	24%	13%	3%	0%	12%	0%	3552	860	138	544	5094	71%	29%	1480	794	2274	68%	32%	582	279	860							
Total	-	-	-	5094										3552	860	138	544	5094	65%	35%	1480	794	2274	68%	32%	582	279	860						
PM PEAK HOUR																																		
Open Space	399.6 ksf	0	120	120	0%	50%	0%	8%	0%	14%	0%	28%	60	10	17	33	120	57%	43%	33	28	68	56%	50%	5	5	10							
School	53.4 ksf	48	297	345	92%	84%	8%	9%	0%	0%	0%	6%	293	32	32	1	33	345	30%	70%	43	33	130	100%	0%	33	37							
Retail	103.3 ksf	80	1916	1997	190%	58%	23%	13%	3%	0%	16%	0%	1368	267	41	319	1995	48%	51%	354	369	723	43%	57%	115	152	267							
R80/Office	635.2 ksf	1326	271	1597	58%	69%	23%	13%	3%	2%	16%	0%	956	340	45	256	1597	10%	90%	68	615	683	10%	90%	16	324	340							
Residential	1239 DU	978	978	1956	58%	50%	23%	13%	3%	0%	16%	0%	1242	352	49	313	1956	65%	35%	475	260	735	75%	25%	264	88	352							
Total	-	-	-	6013										3919	1001	153	940	6013	41%	59%	987	1402	2389	40%	60%	400	607	1001						
Transit Pass-by Trips																																		
															65%	17%	3%	16%	100%															
															35	37	72																	

	Auto (Work)	Auto (Non-Work)	Transit (Work)	Transit (Non-Work)	Bike (Work)	Bike (Non-Work)	Walk (Work)	Walk (Non-Work)
Open Space Mode Share Adjustment	-8%	-8%	8%	8%	0%	0%	0%	0%
School Mode Share Adjustment	-8%	-8%	8%	8%	0%	0%	0%	0%

Notes:

- Mode Share Percentages are all adjusted using the same source:
 - For school and open space they are taken from CP-HPS 2009 memo, with all non-walk modes adjusted based on difference between 2015 and 2040 CHAMP model to reflect absence of transit improvements that CHPS assumed.
 - For retail, office, and residential, they are taken from CP-HPS 2009 memo and are adjusted based on difference between 2015 and 2040 CHAMP model to reflect absence of transit improvements that CHPS assumed. The walk mode split is fixed and is derived using the MXD+ methodology, which considers the size and mix of land uses at the site as well as local area factors.
- In/Out Rates are taken from two sources:
 - For Open Space and School they are taken from observation data as documented in other appendices
 - For retail, office, and residential, they are taken from SF Guidelines for PM (weighted by work/non-work percentages from CHPS memo), and from ITE Trip Generation Handbook for AM
- Vehicle Trip Generation Totals are taken from two sources:
 - For Open Space and School they are based off observation data (factoring in AVO and auto in/out percentages) as documented in other appendices
 - For retail, office, and residential, they are taken from a separate appendix spreadsheet, "Vehicle Trip Generation by Land Use Category", where SF-CHAMP trip distribution is combined with in/out splits (unique for each origin/destination) and AVOs from the SF Guidelines for each land use category.
- Transit In/Out Rates are taken from two sources:
 - For Open Space and School they are taken from observation data as documented in other appendices
 - For retail, office, and residential, they are taken from SF Guidelines for PM by work/non-work (weighted by work/non-work transit percentages from SF CHAMP), and from ITE Trip Generation Handbook for AM
- Retail Pass-By Rate
 - Taken from ITE for land use code 820 Shopping Center

Vehicle Trip Generation By Land Use Category

Proposed Project - AM Peak Hour - Residential

Total Automobile Trips	1091
Auto Work Trips (All)	504
Auto Non-Work: Retail Trips	0
Auto Non-Work: Other Trips	587

Proposed Project - PM Peak Hour - Residential

Total Automobile Trips	1330
Auto Work Trips (All)	616
Auto Non-Work: Retail Trips	0
Auto Non-Work: Other Trips	714

Max Commercial Variant - AM Peak Hour - Residential

Total Automobile Trips	1128
Auto Work Trips (All)	519
Auto Non-Work: Retail Trips	0
Auto Non-Work: Other Trips	609

Max Commercial Variant - PM Peak Hour - Residential

Total Automobile Trips	1408
Auto Work Trips (All)	655
Auto Non-Work: Retail Trips	0
Auto Non-Work: Other Trips	753

Trip Distribution (SF-CHAMP)				Auto Person Trip Distribution				Persons Per Auto (SF Guidelines)				Vehicle Trips			
Zone	Work	Non-Work		Auto Work	Auto Non-work:Retail	Auto Non-work:Other		Work Trips	Non-work:Retail	Non-work:Other		Work Trips	Non-work:Retail	Non-work:Other	
SD-1	20%	7%		100.8	0.0	41.1		1.3	1.76	2.03		78	0	20	
SD-2	11%	6%		55.4	0.0	35.2		1.26	1.52	1.97		44	0	18	
SD-3	29%	44%		146.2	0.0	258.3		1.25	2.04	2.43		117	0	106	
SD-4	4%	3%		20.2	0.0	17.6		1.48	1.78	2.51		14	0	7	
East Bay	12%	6%		60.5	0.0	35.2		1.61	1.77	2.59		38	0	14	
North Bay	2%	1%		10.1	0.0	5.9		1.44	1.44	2.11		7	0	3	
South Bay	22%	33%		110.9	0.0	193.7		1.13	1.98	2.28		38	0	85	
												395	0	253	

648 Total Vehicle Trips

Trip Distribution (SF-CHAMP)				Auto Person Trip Distribution				Persons Per Auto (SF Guidelines)				Vehicle Trips			
Zone	Work	Non-Work		Auto Work	Auto Non-work:Retail	Auto Non-work:Other		Work Trips	Non-work:Retail	Non-work:Other		Work Trips	Non-work:Retail	Non-work:Other	
SD-1	20%	7%		123.2	0.0	50.0		1.3	1.76	2.03		95	0	25	
SD-2	11%	6%		67.8	0.0	42.8		1.26	1.52	1.97		54	0	22	
SD-3	29%	44%		178.6	0.0	314.2		1.25	2.04	2.43		143	0	129	
SD-4	4%	3%		24.6	0.0	21.4		1.48	1.78	2.51		17	0	9	
East Bay	12%	6%		73.9	0.0	42.8		1.61	1.77	2.59		46	0	17	
North Bay	2%	1%		12.3	0.0	7.1		1.44	1.44	2.11		9	0	3	
South Bay	22%	33%		135.5	0.0	235.6		1.13	1.98	2.28		120	0	103	
												483	0	307	

790 Total Vehicle Trips

Trip Distribution (SF-CHAMP)				Auto Person Trip Distribution				Persons Per Auto (SF Guidelines)				Vehicle Trips			
Zone	Work	Non-Work		Auto Work	Auto Non-work:Retail	Auto Non-work:Other		Work Trips	Non-work:Retail	Non-work:Other		Work Trips	Non-work:Retail	Non-work:Other	
SD-1	20%	7%		103.8	0.0	42.6		1.3	1.76	2.03		80	0	21	
SD-2	11%	6%		57.1	0.0	36.5		1.26	1.52	1.97		45	0	19	
SD-3	29%	44%		150.5	0.0	268.0		1.25	2.04	2.43		120	0	110	
SD-4	4%	3%		20.8	0.0	18.3		1.48	1.78	2.51		14	0	7	
East Bay	12%	6%		62.3	0.0	36.5		1.61	1.77	2.59		39	0	14	
North Bay	2%	1%		10.4	0.0	6.1		1.44	1.44	2.11		7	0	3	
South Bay	22%	33%		114.2	0.0	201.0		1.13	1.98	2.28		101	0	88	
												407	0	262	

665 Total Vehicle Trips

Trip Distribution (SF-CHAMP)				Auto Person Trip Distribution				Persons Per Auto (SF Guidelines)				Vehicle Trips			
Zone	Work	Non-Work		Auto Work	Auto Non-work:Retail	Auto Non-work:Other		Work Trips	Non-work:Retail	Non-work:Other		Work Trips	Non-work:Retail	Non-work:Other	
SD-1	20%	7%		131.0	0.0	52.7		1.3	1.76	2.03		101	0	26	
SD-2	11%	6%		72.1	0.0	45.2		1.26	1.52	1.97		57	0	23	
SD-3	29%	44%		190.0	0.0	331.3		1.25	2.04	2.43		152	0	136	
SD-4	4%	3%		26.2	0.0	22.6		1.48	1.78	2.51		18	0	9	
East Bay	12%	6%		78.6	0.0	45.2		1.61	1.77	2.59		49	0	17	
North Bay	2%	1%		13.1	0.0	7.5		1.44	1.44	2.11		9	0	4	
South Bay	22%	33%		144.1	0.0	248.5		1.13	1.98	2.28		128	0	109	
												513	0	324	

837 Total Vehicle Trips

Vehicle Trip Generation By Land Use Category

Proposed Project Plus Transit - AM Peak Hour - Residential

Total Automobile Trips	970
Auto Work Trips (All)	444
Auto Non-Work Retail Trips	0
Auto Non-Work Other Trips	527

Proposed Project Plus Transit - PM Peak Hour - Residential

Total Automobile Trips	1173
Auto Work Trips (All)	538
Auto Non-Work Retail Trips	0
Auto Non-Work Other Trips	636

Max Commercial Variant Plus Transit - AM Peak Hour - Residential

Total Automobile Trips	1000
Auto Work Trips (All)	459
Auto Non-Work Retail Trips	0
Auto Non-Work Other Trips	542

Max Commercial Variant Plus Transit - PM Peak Hour - Residential

Total Automobile Trips	1242
Auto Work Trips (All)	567
Auto Non-Work Retail Trips	0
Auto Non-Work Other Trips	675

Trip Distribution (SF-CHAMP)				Auto Person Trip Distribution				Persons Per Auto (SF Guidelines)				Vehicle Trips			
Trip Distribution (SF-CHAMP)		Auto Person Trip Distribution		Auto Person Trip Distribution		Persons Per Auto (SF Guidelines)		Persons Per Auto (SF Guidelines)		Persons Per Auto (SF Guidelines)		Vehicle Trips		Vehicle Trips	
Zone	Work	Non-Work	Auto Work	Auto Non-work	Auto Non-work	Auto Work	Auto Non-work	Work Trips	Non-work: Retail	Non-work: Other	Non-work: Other	Work Trips	Non-work: Retail	Non-work: Other	Non-work: Other
SD-1	20%	7%	888	0.0	36.9	1.3	1.76	2.03	1.76	2.03	1.76	68	0	18	18
SD-2	11%	6%	488	0.0	31.6	1.26	1.52	1.97	1.52	1.97	1.52	39	0	16	16
SD-3	29%	44%	1288	0.0	231.9	1.25	2.04	2.43	2.04	2.43	2.04	103	0	95	95
SD-4	4%	3%	178	0.0	15.8	1.48	1.78	2.51	1.78	2.51	1.78	12	0	6	6
East Bay	12%	6%	53.3	0.0	31.6	1.61	1.77	2.59	1.77	2.59	1.77	33	0	12	12
North Bay	2%	1%	8.9	0.0	5.3	1.44	1.44	2.11	1.44	2.11	1.44	6	0	2	2
South Bay	22%	33%	97.7	0.0	173.9	1.13	1.98	2.28	1.98	2.28	1.98	86	0	76	76
														348	0
														575	Total Vehicle Trips

Trip Distribution (SF-CHAMP)				Auto Person Trip Distribution				Persons Per Auto (SF Guidelines)				Vehicle Trips			
Trip Distribution (SF-CHAMP)		Auto Person Trip Distribution		Auto Person Trip Distribution		Persons Per Auto (SF Guidelines)		Persons Per Auto (SF Guidelines)		Persons Per Auto (SF Guidelines)		Vehicle Trips		Vehicle Trips	
Zone	Work	Non-Work	Auto Work	Auto Non-work	Auto Non-work	Auto Work	Auto Non-work	Work Trips	Non-work: Retail	Non-work: Other	Non-work: Other	Work Trips	Non-work: Retail	Non-work: Other	Non-work: Other
SD-1	20%	7%	107.6	0.0	44.5	1.3	1.76	2.03	1.76	2.03	1.76	83	0	22	22
SD-2	11%	6%	59.2	0.0	38.2	1.26	1.52	1.97	1.52	1.97	1.52	47	0	19	19
SD-3	29%	44%	156.0	0.0	279.8	1.25	2.04	2.43	2.04	2.43	2.04	125	0	115	115
SD-4	4%	3%	21.5	0.0	19.1	1.48	1.78	2.51	1.78	2.51	1.78	15	0	8	8
East Bay	12%	6%	64.6	0.0	38.2	1.61	1.77	2.59	1.77	2.59	1.77	40	0	15	15
North Bay	2%	1%	10.8	0.0	6.4	1.44	1.44	2.11	1.44	2.11	1.44	7	0	3	3
South Bay	22%	33%	118.4	0.0	209.9	1.13	1.98	2.28	1.98	2.28	1.98	105	0	92	92
														421	0
														695	Total Vehicle Trips

Trip Distribution (SF-CHAMP)				Auto Person Trip Distribution				Persons Per Auto (SF Guidelines)				Vehicle Trips			
Trip Distribution (SF-CHAMP)		Auto Person Trip Distribution		Auto Person Trip Distribution		Persons Per Auto (SF Guidelines)		Persons Per Auto (SF Guidelines)		Persons Per Auto (SF Guidelines)		Vehicle Trips		Vehicle Trips	
Zone	Work	Non-Work	Auto Work	Auto Non-work	Auto Non-work	Auto Work	Auto Non-work	Work Trips	Non-work: Retail	Non-work: Other	Non-work: Other	Work Trips	Non-work: Retail	Non-work: Other	Non-work: Other
SD-1	20%	7%	91.8	0.0	37.9	1.3	1.76	2.03	1.76	2.03	1.76	71	0	19	19
SD-2	11%	6%	50.5	0.0	32.5	1.26	1.52	1.97	1.52	1.97	1.52	40	0	17	17
SD-3	29%	44%	133.1	0.0	238.5	1.25	2.04	2.43	2.04	2.43	2.04	106	0	98	98
SD-4	4%	3%	18.4	0.0	16.3	1.48	1.78	2.51	1.78	2.51	1.78	12	0	6	6
East Bay	12%	6%	55.1	0.0	32.5	1.61	1.77	2.59	1.77	2.59	1.77	34	0	13	13
North Bay	2%	1%	9.2	0.0	5.4	1.44	1.44	2.11	1.44	2.11	1.44	6	0	3	3
South Bay	22%	33%	101.0	0.0	178.9	1.13	1.98	2.28	1.98	2.28	1.98	89	0	78	78
														360	0
														593	Total Vehicle Trips

Trip Distribution (SF-CHAMP)				Auto Person Trip Distribution				Persons Per Auto (SF Guidelines)				Vehicle Trips			
Trip Distribution (SF-CHAMP)		Auto Person Trip Distribution		Auto Person Trip Distribution		Persons Per Auto (SF Guidelines)		Persons Per Auto (SF Guidelines)		Persons Per Auto (SF Guidelines)		Vehicle Trips		Vehicle Trips	
Zone	Work	Non-Work	Auto Work	Auto Non-work	Auto Non-work	Auto Work	Auto Non-work	Work Trips	Non-work: Retail	Non-work: Other	Non-work: Other	Work Trips	Non-work: Retail	Non-work: Other	Non-work: Other
SD-1	20%	7%	113.4	0.0	47.3	1.3	1.76	2.03	1.76	2.03	1.76	87	0	23	23
SD-2	11%	6%	62.4	0.0	40.5	1.26	1.52	1.97	1.52	1.97	1.52	50	0	21	21
SD-3	29%	44%	164.4	0.0	297.0	1.25	2.04	2.43	2.04	2.43	2.04	132	0	122	122
SD-4	4%	3%	22.7	0.0	20.3	1.48	1.78	2.51	1.78	2.51	1.78	15	0	8	8
East Bay	12%	6%	68.0	0.0	40.5	1.61	1.77	2.59	1.77	2.59	1.77	42	0	16	16
North Bay	2%	1%	11.3	0.0	6.8	1.44	1.44	2.11	1.44	2.11	1.44	8	0	3	3
South Bay	22%	33%	124.7	0.0	222.8	1.13	1.98	2.28	1.98	2.28	1.98	110	0	98	98
														444	0
														735	Total Vehicle Trips

Vehicle Trip Generation By Land Use Category

Proposed Project - AM Peak Hour - Retail

Total Automobile Trips	754
Auto Work Trips (All)	26
Auto Non-Work Retail Trips	728
Auto Non-Work Other Trips	0

Proposed Project - PM Peak Hour - Retail

Total Automobile Trips	1476
Auto Work Trips (All)	51
Auto Non-Work Retail Trips	1424
Auto Non-Work Other Trips	0

Maximum Commercial Variant - AM Peak Hour - Retail

Total Automobile Trips	657
Auto Work Trips (All)	23
Auto Non-Work Retail Trips	635
Auto Non-Work Other Trips	0

Maximum Commercial Variant - PM Peak Hour - Retail

Total Automobile Trips	1529
Auto Work Trips (All)	53
Auto Non-Work Retail Trips	1475
Auto Non-Work Other Trips	0

Trip Distribution (SF-CHAMP)										Persons Per Auto (SF Guidelines)				Vehicle Trips		
Trip Distribution		Auto Person Trip Distribution		Auto Non-work		Auto Non-work		Auto Non-work		Non-work		Non-work		Non-work		Other
Zone	Work	Non-Work	Auto Work	Auto Non-work	Auto Non-work	Auto Non-work	Auto Non-work	Auto Non-work	Auto Non-work	Work Trips	Retail	Other	Work Trips	Retail	Other	
SD-1	20%	7%	5.2	51.0	0.0	1.3	1.76	2.03	4	1.3	1.76	2.03	4	29	0	0
SD-2	11%	6%	2.9	43.7	0.0	1.26	1.52	1.97	2	1.26	1.52	1.97	2	29	0	0
SD-3	29%	44%	7.5	320.3	0.0	1.25	2.04	2.43	6	1.25	2.04	2.43	6	157	0	0
SD-4	4%	3%	1.0	21.8	0.0	1.48	1.78	2.51	1	1.48	1.78	2.51	1	12	0	0
East Bay	12%	6%	3.1	43.7	0.0	1.61	1.77	2.59	2	1.61	1.77	2.59	2	25	0	0
North Bay	2%	1%	0.5	7.3	0.0	1.44	1.44	2.11	0	1.44	1.44	2.11	0	5	0	0
South Bay	22%	33%	5.7	240.2	0.0	1.13	1.98	2.28	5	1.13	1.98	2.28	5	121	0	0
															20	378
															398 Total Vehicle Trips	

Trip Distribution (SF-CHAMP)										Persons Per Auto (SF Guidelines)				Vehicle Trips		
Trip Distribution		Auto Person Trip Distribution		Auto Non-work		Auto Non-work		Auto Non-work		Non-work		Non-work		Non-work		Other
Zone	Work	Non-Work	Auto Work	Auto Non-work	Auto Non-work	Auto Non-work	Auto Non-work	Auto Non-work	Auto Non-work	Work Trips	Retail	Other	Work Trips	Retail	Other	
SD-1	20%	7%	10.2	99.7	0.0	1.3	1.76	2.03	8	1.3	1.76	2.03	8	57	0	0
SD-2	11%	6%	5.6	85.4	0.0	1.26	1.52	1.97	4	1.26	1.52	1.97	4	56	0	0
SD-3	29%	44%	14.8	626.6	0.0	1.25	2.04	2.43	12	1.25	2.04	2.43	12	307	0	0
SD-4	4%	3%	2.0	42.7	0.0	1.48	1.78	2.51	1	1.48	1.78	2.51	1	24	0	0
East Bay	12%	6%	6.1	85.4	0.0	1.61	1.77	2.59	4	1.61	1.77	2.59	4	48	0	0
North Bay	2%	1%	1.0	14.2	0.0	1.44	1.44	2.11	1	1.44	1.44	2.11	1	10	0	0
South Bay	22%	33%	11.2	469.9	0.0	1.13	1.98	2.28	10	1.13	1.98	2.28	10	237	0	0
															40	739
															779 Total Vehicle Trips	

Trip Distribution (SF-CHAMP)										Persons Per Auto (SF Guidelines)				Vehicle Trips		
Trip Distribution		Auto Person Trip Distribution		Auto Non-work		Auto Non-work		Auto Non-work		Non-work		Non-work		Non-work		Other
Zone	Work	Non-Work	Auto Work	Auto Non-work	Auto Non-work	Auto Non-work	Auto Non-work	Auto Non-work	Auto Non-work	Work Trips	Retail	Other	Work Trips	Retail	Other	
SD-1	20%	7%	4.6	44.5	0.0	1.3	1.76	2.03	4	1.3	1.76	2.03	4	25	0	0
SD-2	11%	6%	2.5	38.1	0.0	1.26	1.52	1.97	2	1.26	1.52	1.97	2	25	0	0
SD-3	29%	44%	6.7	279.4	0.0	1.25	2.04	2.43	5	1.25	2.04	2.43	5	137	0	0
SD-4	4%	3%	0.9	19.1	0.0	1.48	1.78	2.51	1	1.48	1.78	2.51	1	11	0	0
East Bay	12%	6%	2.8	38.1	0.0	1.61	1.77	2.59	2	1.61	1.77	2.59	2	22	0	0
North Bay	2%	1%	0.5	6.4	0.0	1.44	1.44	2.11	0	1.44	1.44	2.11	0	4	0	0
South Bay	22%	33%	5.1	209.6	0.0	1.13	1.98	2.28	4	1.13	1.98	2.28	4	106	0	0
															18	330
															348 Total Vehicle Trips	

Trip Distribution (SF-CHAMP)										Persons Per Auto (SF Guidelines)				Vehicle Trips		
Trip Distribution		Auto Person Trip Distribution		Auto Non-work		Auto Non-work		Auto Non-work		Non-work		Non-work		Non-work		Other
Zone	Work	Non-Work	Auto Work	Auto Non-work	Auto Non-work	Auto Non-work	Auto Non-work	Auto Non-work	Auto Non-work	Work Trips	Retail	Other	Work Trips	Retail	Other	
SD-1	20%	7%	10.6	103.3	0.0	1.3	1.76	2.03	8	1.3	1.76	2.03	8	59	0	0
SD-2	11%	6%	5.8	88.5	0.0	1.26	1.52	1.97	5	1.26	1.52	1.97	5	58	0	0
SD-3	29%	44%	15.4	649.0	0.0	1.25	2.04	2.43	12	1.25	2.04	2.43	12	318	0	0
SD-4	4%	3%	2.1	44.3	0.0	1.48	1.78	2.51	1	1.48	1.78	2.51	1	25	0	0
East Bay	12%	6%	6.4	88.5	0.0	1.61	1.77	2.59	4	1.61	1.77	2.59	4	50	0	0
North Bay	2%	1%	1.1	14.8	0.0	1.44	1.44	2.11	1	1.44	1.44	2.11	1	10	0	0
South Bay	22%	33%	11.7	486.8	0.0	1.13	1.98	2.28	10	1.13	1.98	2.28	10	246	0	0
															42	766
															807 Total Vehicle Trips	

Vehicle Trip Generation By Land Use Category

Proposed Project Plus Transit - AM Peak Hour - Retail

Total Automobile Trips	676
Auto Work Trips (All)	23
Auto Non-Work Retail Trips	653
Auto Non-Work Other Trips	0

Proposed Project Plus Transit - PM Peak Hour - Retail

Total Automobile Trips	1313
Auto Work Trips (All)	45
Auto Non-Work Retail Trips	1268
Auto Non-Work Other Trips	0

Maximum Commercial Variant Plus Transit - AM Peak Hour - Retail

Total Automobile Trips	584
Auto Work Trips (All)	20
Auto Non-Work Retail Trips	564
Auto Non-Work Other Trips	0

Maximum Commercial Variant Plus Transit - PM Peak Hour - Retail

Total Automobile Trips	1368
Auto Work Trips (All)	46
Auto Non-Work Retail Trips	1322
Auto Non-Work Other Trips	0

Trip Distribution (SF-CHAMP)						Persons Per Auto (SF Guidelines)						Vehicle Trips		
Zone		Work	Non-Work	Auto Work	Auto Non-work/Retail	Auto Non-work/Other	Work Trips	Non-work/Retail	Non-work/Other	Work Trips	Non-work/Retail	Work Trips	Non-work/Retail	Non-work/Other
SD-1		20%	7%	4.6	45.7	0.0	1.3	1.76	2.03	4	26	0	26	0
SD-2		11%	6%	2.5	39.2	0.0	1.26	1.52	1.97	2	26	0	26	0
SD-3		29%	44%	6.7	287.3	0.0	1.25	2.04	2.43	5	141	0	141	0
SD-4		4%	3%	0.9	19.6	0.0	1.48	1.78	2.51	1	11	0	11	0
East Bay		12%	6%	2.8	39.2	0.0	1.61	1.77	2.59	2	22	0	22	0
North Bay		2%	1%	0.5	6.5	0.0	1.44	1.44	2.11	0	5	0	5	0
South Bay		22%	33%	5.1	215.5	0.0	1.13	1.98	2.28	4	109	0	109	0
													18	339
													357	Total Vehicle Trips

Trip Distribution (SF-CHAMP)						Persons Per Auto (SF Guidelines)						Vehicle Trips		
Zone		Work	Non-Work	Auto Work	Auto Non-work/Retail	Auto Non-work/Other	Work Trips	Non-work/Retail	Non-work/Other	Work Trips	Non-work/Retail	Work Trips	Non-work/Retail	Non-work/Other
SD-1		20%	7%	9.0	88.8	0.0	1.3	1.76	2.03	7	50	0	50	0
SD-2		11%	6%	5.0	76.1	0.0	1.26	1.52	1.97	4	50	0	50	0
SD-3		29%	44%	13.1	557.9	0.0	1.25	2.04	2.43	10	273	0	273	0
SD-4		4%	3%	1.8	38.0	0.0	1.48	1.78	2.51	1	21	0	21	0
East Bay		12%	6%	5.4	76.1	0.0	1.61	1.77	2.59	3	43	0	43	0
North Bay		2%	1%	0.9	12.7	0.0	1.44	1.44	2.11	1	9	0	9	0
South Bay		22%	35%	9.9	418.4	0.0	1.13	1.98	2.28	9	211	0	211	0
													35	658
													694	Total Vehicle Trips

Maximum Commercial Variant Plus Transit - AM Peak Hour - Retail

Trip Distribution (SF-CHAMP)						Persons Per Auto (SF Guidelines)						Vehicle Trips		
Zone		Work	Non-Work	Auto Work	Auto Non-work/Retail	Auto Non-work/Other	Work Trips	Non-work/Retail	Non-work/Other	Work Trips	Non-work/Retail	Work Trips	Non-work/Retail	Non-work/Other
SD-1		20%	7%	4.0	39.5	0.0	1.3	1.76	2.03	3	22	0	22	0
SD-2		11%	6%	2.2	33.8	0.0	1.26	1.52	1.97	2	22	0	22	0
SD-3		29%	44%	5.8	248.2	0.0	1.25	2.04	2.43	5	122	0	122	0
SD-4		4%	3%	0.8	16.9	0.0	1.48	1.78	2.51	1	10	0	10	0
East Bay		12%	6%	2.4	33.8	0.0	1.61	1.77	2.59	1	19	0	19	0
North Bay		2%	1%	0.4	5.6	0.0	1.44	1.44	2.11	0	4	0	4	0
South Bay		22%	33%	4.4	186.1	0.0	1.13	1.98	2.28	4	94	0	94	0
													16	293
													309	Total Vehicle Trips

Maximum Commercial Variant Plus Transit - PM Peak Hour - Retail

Trip Distribution (SF-CHAMP)						Persons Per Auto (SF Guidelines)						Vehicle Trips		
Zone		Work	Non-Work	Auto Work	Auto Non-work/Retail	Auto Non-work/Other	Work Trips	Non-work/Retail	Non-work/Other	Work Trips	Non-work/Retail	Work Trips	Non-work/Retail	Non-work/Other
SD-1		20%	7%	9.2	92.5	0.0	1.3	1.76	2.03	7	53	0	53	0
SD-2		11%	6%	5.1	79.3	0.0	1.26	1.52	1.97	4	52	0	52	0
SD-3		29%	44%	13.3	581.7	0.0	1.25	2.04	2.43	11	285	0	285	0
SD-4		4%	3%	1.8	39.7	0.0	1.48	1.78	2.51	1	22	0	22	0
East Bay		12%	6%	5.5	79.3	0.0	1.61	1.77	2.59	3	45	0	45	0
North Bay		2%	1%	0.9	13.2	0.0	1.44	1.44	2.11	1	9	0	9	0
South Bay		22%	35%	10.1	436.3	0.0	1.13	1.98	2.28	9	220	0	220	0
													36	687
													723	Total Vehicle Trips

Vehicle Trip Generation By Land Use Category

Proposed Project - AM Peak Hour - Office

Total Automobile Trips	194
Auto Work Trips (All)	157
Auto Non-Work: Retail Trips	0
Auto Non-Work: Other Trips	37

Proposed Project - PM Peak Hour - Office

Total Automobile Trips	175
Auto Work Trips (All)	141
Auto Non-Work: Retail Trips	0
Auto Non-Work: Other Trips	33

Maximum Commercial Variant - AM Peak Hour - Office/R&D

Total Automobile Trips	1188
Auto Work Trips (All)	958
Auto Non-Work: Retail Trips	0
Auto Non-Work: Other Trips	230

Maximum Commercial Variant - PM Peak Hour - Office/R&D

Total Automobile Trips	1097
Auto Work Trips (All)	888
Auto Non-Work: Retail Trips	0
Auto Non-Work: Other Trips	209

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139 Total Vehicle Trips

Trip Distribution (SF-CHAMP)			Auto Person Trip Distribution			Persons Per Auto (SF Guidelines)			Vehicle Trips		
Zone	Work	Non-Work	Auto Work	Auto Non-work/Retail	Work	Other	Non-work	Other	Work Trips	Retail	Other
SD-1	20%	7%	28.2	0.0	2.3	1.3	1.76	2.03	22	0	1
SD-2	11%	6%	15.5	0.0	2.0	1.52	1.97	1.26	12	0	1
SD-3	29%	44%	40.9	0.0	14.5	1.25	2.04	2.43	33	0	6
SD-4	3%	3%	5.6	0.0	1.0	1.48	1.78	2.51	4	0	0
East Bay	12%	6%	16.9	0.0	2.0	1.61	1.77	2.59	11	0	1
North Bay	2%	1%	2.8	0.0	0.3	1.44	1.44	2.11	2	0	0
South Bay	22%	33%	31.0	0.0	10.9	1.13	1.98	2.28	27	0	5

125 Total Vehicle Trips

Zone	Trip Distribution (SF-CHAMP)		Auto Person Trip Distribution			Persons Per Auto (SF Guidelines)			Vehicle Trips		
	Work	Non-Work	Auto Work	Auto Non-Work	Auto Retail	Work Trips	Non-work Trips	Other	Work Trips	Non-work Trips	Other
SD-1	20%	7%	191.6	0.0	16.1	1.3	1.76	2.03	147	0	8
SD-2	11%	6%	105.4	0.0	13.8	1.26	1.52	1.97	84	0	7
SD-3	29%	44%	277.8	0.0	101.2	1.25	2.04	2.43	222	0	42
SD-4	4%	3%	38.3	0.0	6.9	1.48	1.78	2.51	26	0	3
East Bay	12%	6%	1150.0	0.0	13.8	1.61	1.77	2.59	771	0	5
North Bay	2%	1%	19.2	0.0	2.3	1.44	1.44	2.11	13	0	1
South Bay	22%	33%	210.8	0.0	75.9	1.13	1.98	2.28	187	0	33

849 Total Vehicle Trips

Trip Distribution (SF-CHAMP)			Auto Person Trip Distribution			Persons Per Auto (SF Guidelines)			Vehicle Trips		
	Work	Non-Work	Auto Work	Auto Retail	Auto Non-Work	Work Trips	Work Trips	Non-Work: Other	Work Trips	Non-Work: Retail	Non-Work: Other
Zone											
SD-1	20%	7%	97.7	0.0	14.6	1.3	1.76	2.03	137	0	7
SD-2	11%	6%	97.6	0.0	15.2	1.26	1.52	1.97	78	0	6
SD-3	29%	44%	257.5	0.0	92.0	1.25	2.04	2.43	206	0	38
SD-4	4%	3%	35.5	0.0	6.3	1.48	1.78	2.51	24	0	2
East Bay	12%	6%	106.6	0.0	12.5	1.61	1.77	2.59	66	0	5
North Bay	2%	1%	17.8	0.0	2.1	1.44	1.44	2.11	12	0	1
South Bay	22%	33%	195.4	0.0	69.0	1.13	1.98	2.28	173	0	30

786 Total Vehicle Trips

Vehicle Trip Generation By Land Use Category

Proposed Project Plus Transit - AM Peak Hour - Office

Total Automobile Trips	172
Auto Work Trips (All)	138
Auto Non-Work Retail Trips	0
Auto Non-Work Other Trips	34

Trip Distribution (SF-CHAMP)				Auto Person Trip Distribution				Persons Per Auto (SF Guidelines)				Vehicle Trips			
Zone	Work	Non-Work		Auto Work	Auto Non-work	Auto Non-work	Auto Non-work	Work Trips	Non-work	Other		Work Trips	Non-work	Other	
SD-1	20%	7%		27.6	0.0	2.4	1.3	1.76	2.03			21	0	1	
SD-2	11%	6%		15.2	0.0	2.0	1.28	1.52	1.97			12	0	1	
SD-3	29%	44%		40.0	0.0	15.0	1.25	2.04	2.43			32	0	6	
SD-4	4%	3%		5.5	0.0	1.0	1.48	1.78	2.51			4	0	0	
East Bay	12%	6%		16.6	0.0	2.0	1.61	1.77	2.59			10	0	1	
North Bay	2%	1%		2.8	0.0	0.3	1.44	1.44	2.11			2	0	0	
South Bay	22%	33%		30.4	0.0	11.2	1.13	1.98	2.28			27	0	5	
												108	0	15	

123 Total Vehicle Trips

Proposed Project Plus Transit - PM Peak Hour - Office

Total Automobile Trips	153
Auto Work Trips (All)	123
Auto Non-Work Retail Trips	0
Auto Non-Work Other Trips	29

Trip Distribution (SF-CHAMP)				Auto Person Trip Distribution				Persons Per Auto (SF Guidelines)				Vehicle Trips			
Zone	Work	Non-Work		Auto Work	Auto Non-work	Auto Non-work	Auto Non-work	Work Trips	Non-work	Other		Work Trips	Non-work	Other	
SD-1	20%	7%		24.6	0.0	2.0	1.3	1.76	2.03			19	0	1	
SD-2	11%	6%		13.5	0.0	1.7	1.26	1.52	1.97			11	0	1	
SD-3	29%	44%		35.7	0.0	12.8	1.25	2.04	2.43			29	0	5	
SD-4	4%	3%		4.9	0.0	0.9	1.48	1.78	2.51			3	0	0	
East Bay	12%	6%		14.8	0.0	1.7	1.61	1.77	2.59			9	0	1	
North Bay	2%	1%		2.5	0.0	0.3	1.44	1.44	2.11			2	0	0	
South Bay	22%	33%		27.1	0.0	9.6	1.13	1.98	2.28			24	0	4	
												96	0	12	

109 Total Vehicle Trips

Maximum Commercial Variant Plus Transit - AM Peak Hour - Office/R&D

Total Automobile Trips	1051
Auto Work Trips (All)	847
Auto Non-Work Retail Trips	0
Auto Non-Work Other Trips	205

Trip Distribution (SF-CHAMP)				Auto Person Trip Distribution				Persons Per Auto (SF Guidelines)				Vehicle Trips			
Zone	Work	Non-Work		Auto Work	Auto Non-work	Auto Non-work	Auto Non-work	Work Trips	Non-work	Other		Work Trips	Non-work	Other	
SD-1	20%	7%		169.4	0.0	14.4	1.3	1.76	2.03			130	0	7	
SD-2	11%	6%		93.2	0.0	12.3	1.26	1.52	1.97			74	0	6	
SD-3	29%	44%		245.6	0.0	90.2	1.25	2.04	2.43			197	0	37	
SD-4	4%	3%		33.9	0.0	6.2	1.48	1.78	2.51			23	0	2	
East Bay	12%	6%		101.6	0.0	12.3	1.61	1.77	2.59			63	0	5	
North Bay	2%	1%		16.9	0.0	2.1	1.44	1.44	2.11			12	0	1	
South Bay	22%	33%		186.3	0.0	67.7	1.13	1.98	2.28			165	0	30	
												663	0	88	

752 Total Vehicle Trips

Maximum Commercial Variant Plus Transit - PM Peak Hour - Office/R&D

Total Automobile Trips	956
Auto Work Trips (All)	769
Auto Non-Work Retail Trips	0
Auto Non-Work Other Trips	187

Trip Distribution (SF-CHAMP)				Auto Person Trip Distribution				Persons Per Auto (SF Guidelines)				Vehicle Trips			
Zone	Work	Non-Work		Auto Work	Auto Non-work	Auto Non-work	Auto Non-work	Work Trips	Non-work	Other		Work Trips	Non-work	Other	
SD-1	20%	7%		153.8	0.0	13.1	1.3	1.76	2.03			118	0	6	
SD-2	11%	6%		84.6	0.0	11.2	1.26	1.52	1.97			67	0	6	
SD-3	29%	44%		223.0	0.0	82.3	1.25	2.04	2.43			178	0	34	
SD-4	4%	3%		30.8	0.0	5.6	1.48	1.78	2.51			21	0	2	
East Bay	12%	6%		92.3	0.0	11.2	1.61	1.77	2.59			57	0	4	
North Bay	2%	1%		15.4	0.0	1.9	1.44	1.44	2.11			11	0	1	
South Bay	22%	33%		169.2	0.0	61.7	1.13	1.98	2.28			150	0	27	
												602	0	81	

683 Total Vehicle Trips