



PITTSBURG APARTMENTS

PITTSBURG, CA
AUGUST 21, 2014





OVERALL SOUTH ELEVATION



LOVRIDGE ROAD STREETSCAPE

DESCRIPTION

These 2 and 3-story garden apartments are located around a contiguous landscaped commons which meanders across the length of a 10-acre site.

The site plan consists of 12 residential buildings, a community building, swimming pool, playgrounds, exercise and maintenance building, and gated perimeter parking with freestanding garages and carports.

There are 230 units total, 5 different residential building types, and 8 unit types ranging from 1 to 3 bedrooms each. Additionally, there are 40 private single garages available in buildings located along the north drive aisle.

PROJECT INFORMATION

Location: 1201 Stoneman Avenue, Pittsburg, CA 94565
Current Zoning: GQ-L158
Proposed Zoning: RH, Multi-Family Residential

Site Area: Approx. 10.49 Acres

Total Units: 230

Density: 21.9 DU/AC

Occupancy: R2/U

Construction Type: V-B Sprinklered

Total Area of Apartments only: 222,250 SF

Total Gross Area of Apartment Buildings: 227,537 SF

Total Gross Area of Community Buildings: 4,115 SF

Total Gross Area of Detached Garages: 11,055 SF

Total Ground Floor Area: 165,298 SF

Lot Coverage: 32.4%

Parking Required: 230 units x 2 = 460 spaces

Add for 2 & 3 bedroom units: 186 x 0.5 = 93

Total 553

See site plan for total provided

Bicycle parking required: 10% x 553 = 56

Provided: 56

Private Open Space Required: 230 units @ 60 SF ea. = 13,800 SF

Provided: 230 patios & decks with min. 6' dimension

Area deficit compensated by common open space = -1,581 SF

PROJECT TEAM

OWNER

The Pacific Companies
430 E. State Street
Eagle, ID 83616
Attn: Owen Poole
Real Estate Services, (925) 933-4928

ARCHITECT

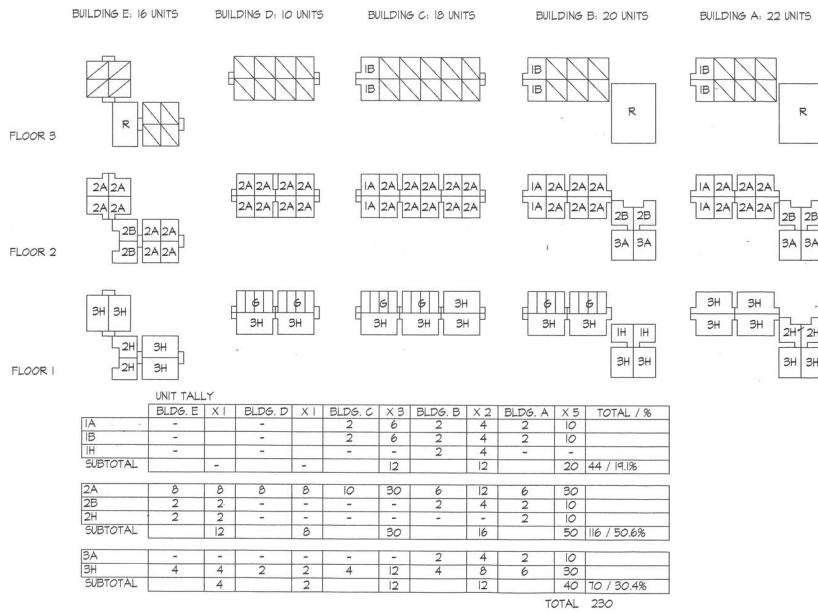
SDG ARCHITECTS, INC.
3361 Walnut Blvd. #120
Brentwood, CA 94513
Attn: Scott Prickett, (925) 634-7000

CIVIL ENGINEERING

Bellecci & Associates, Inc.
2290 Diamond Blvd. #100
Concord, CA 94520
Attn: Frank Bellecci, (925) 685-4569

LANDSCAPE ARCHITECT

HWA Landscape Architecture
2420 Sand Creek Rd. #311
Brentwood, CA 94513
Attn: Ross Wells, (925) 513-3091



BUILDING & UNIT TALLY

Planting Legend

	STREET TREE Per City of Pittsburgh requirements
	CANOPY TREES (Selection Options) Liriodendron tulipifera Platanus chinensis Tilia cordata Ulmus parvifolia
	INTERIOR TREES (Selection Options) Acer r. 'Red Sunset' Arbutus 'Marina' Prunus caroliniana Pyrus c. 'New Bradford'
	FLOWERING ACCENT TREE (Selection Options) Crataegus phaenopyrum Lagerstroemia x.f. Malus 'Robinson'
	EVERGREEN TREE (Selection Options) Pinus canariensis Sequoia s. 'Sequel'
	24" Box TULIP TREE CHINESE PISTACHE BRISBANE BOX CHINESE ELM
	24" Box RED MAPLE N.C.N. CAROLINA CHERRY LAUREL FLOWERING PEAR
	24" Box WASHINGTON HAWTHORN CRAPE MYRTLE CRABAPPLE
	24" Box CANARY ISLAND PINE REDWOOD



SHRUB AND GROUND COVER AREAS (Selection Optional)	
LARGE SHRUB (Selection Options) Cupressus s. 'Tiny Tower' Lavatera assurgentiflora Podocarpus gracillior Podocarpus macrophyllus Photinia fraseri	16-Gal DW. ITALIAN CYPRESS TREE MALLOW FERN PINE YEW PINE PHOTINIA
MEDIUM SHRUB (Selection Options) Berberis spp. Buxus spp. Carex spp. Coleonema spp. Correa spp. Dieris vegeta Lantana montevidensis Lavandula spp. Nandina spp. Phormium spp. Pittosporum spp. Raphiolepis indica Rosea Teucrium fruticans Trachelospermum jasminoides	5-Gal BARBERRY BOXWOOD SEDE BREATH OF HEAVEN AUSTRALIAN FUCHSIA FORTNIGHT LILY LANTANA LAVENDER HEAVENLY BAMBOO NEW ZEALAND FLAX PITTOSPORUM INDIA HAWTHORN ROSE BUSH GERMANDER STAR JASMINE
SUB SHRUB (Selection Options) Agapanthus spp. Hemerocallis Lavandula a. 'Munstead' Teucrium chamaedrys	1-Gal LILY OF THE NILE DAY LILY MUNSTEAD LAVENDER GERMANDER



BIOSWALE PLANTS (Selection Optional) Carex divisa Chandropetalum Ceanothus 'Anchor Bay' Iris douglasiana Juncea patens Muhlenbergia rigens Ribes viburnifolium	5-Gal & 1-Gal BERKELEY SEDGE CAPE RUSH ANCHOR BAY CEANOTHUS DOUGLAS IRIS CALIFORNIA GRAY SEDGE DEER GRASS EVERGREEN CURRENT
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SOD LAWN Dwarf Fescue Blend



Overall Site

Stoneman
Preliminary Landscape Plan

Pittsburg, California
August 2014

0 12.5 25 50 100



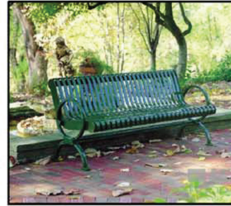
HWA
Landscape Architecture
Site Planning
768 Pittsburg Drive
Pittsburg, California 95413
Phone 925.513.3091
Fax 925.513.3099
Project # 14.000

1 of 3



Bicycle Rack

Mfg.: Dumor, Inc.
Style shown: 125
Color to be determined



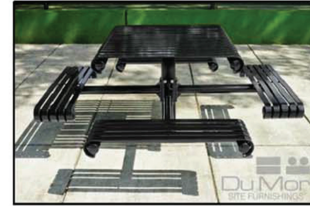
Park Bench

Mfg.: Dumor, Inc.
Style shown: 119-60
Color to be determined



Trash Receptacle

Mfg.: Dumor, Inc.
Style shown: 157
Color to be determined



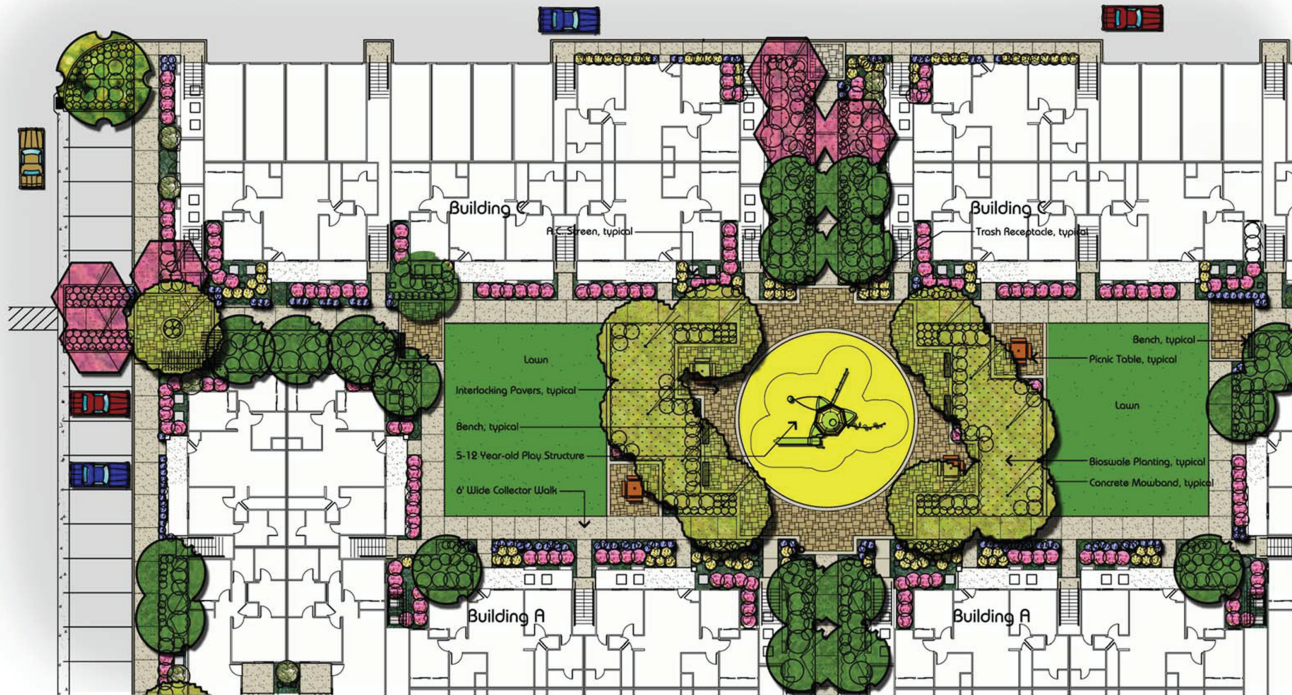
Picnic Table

Mfg.: Dumor, Inc.
Style shown: 448-33,34
Color to be determined



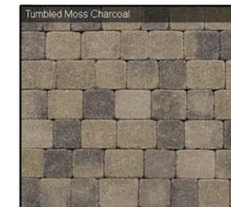
Lattice Screen for A.C. Units

Final style and material selection not determined at this time



5-12 Year-old Play Structure

Mfg.: Landscape Structures, Inc.
Custom play structure components not selected at this time.



Interlocking Pavers

Style not determined at this time



Permeable Pavers

Style not determined at this time



2-5 Year-old Play Structure

Mfg.: Landscape Structures, Inc.
Custom play structure components not selected at this time.



Tree Grate

Style not selected at this time



Example of C3 Swale

NOTE: Grassy swale is only item in this photo being referenced.



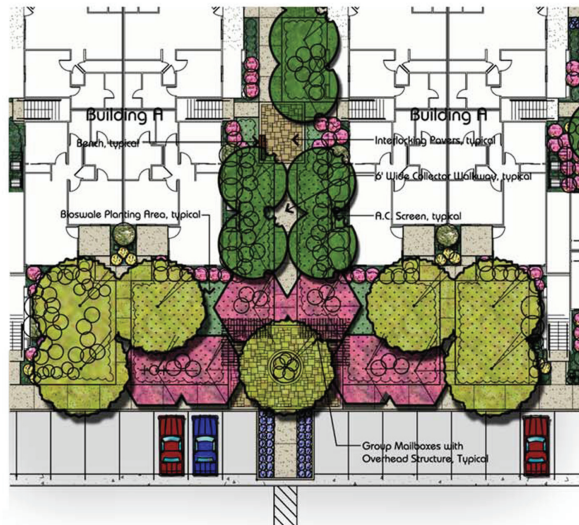
Cluster Mailbox

Regency style cluster mailbox available from Mailboxes.com

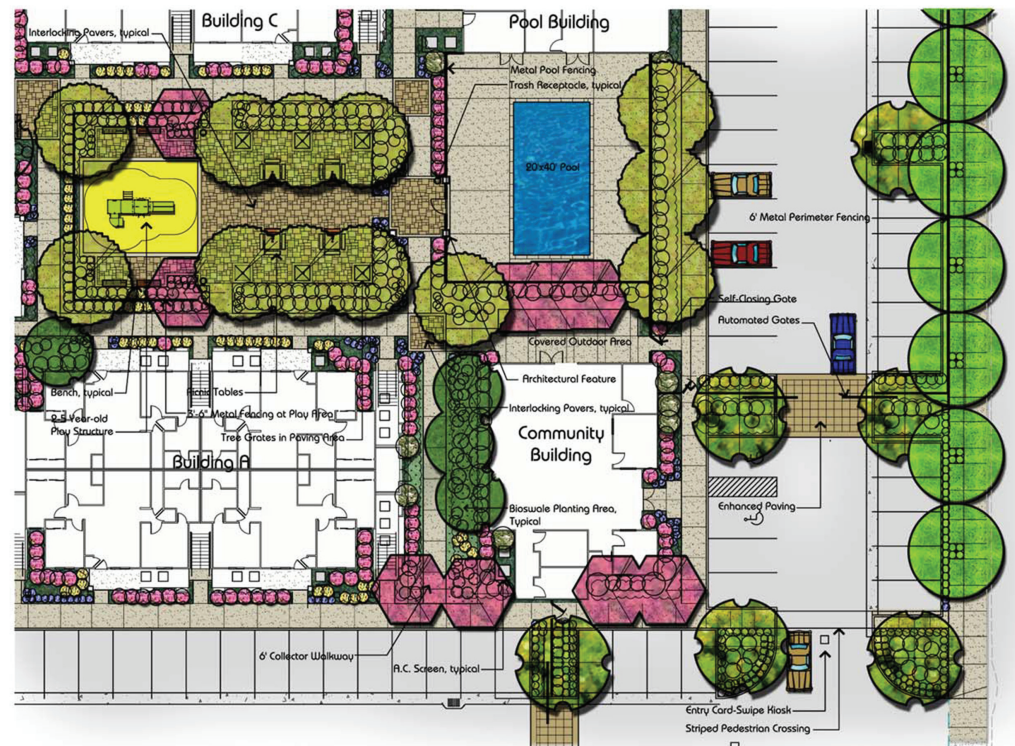


6' Metal Perimeter Fencing

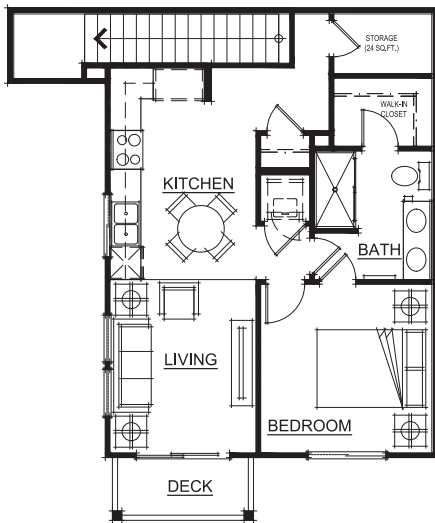
Manufacturer: Ameristar Fencing
Style not determined at this time



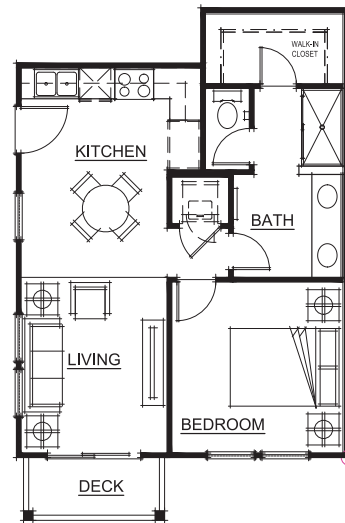
Area B Enlargement



Area C Enlargement

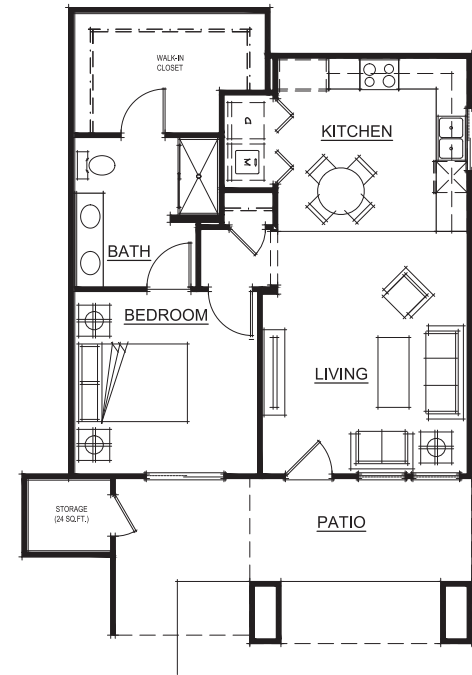


UNIT 1B (@ 3rd Floors)	
UNIT 1B AREA	651 SQ. FT.



UNIT 1A (@ 2nd Floors)	
UNIT 1A AREA	578 SQ. FT.

NOTE: SEE BUILDING PLANS FOR
UNIT 1A STORAGE ROOMS



UNIT 1H (@ 1st Floors)	
UNIT 1H AREA	779 SQ. FT.

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Pittsburg, CA
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The Pacific Companies

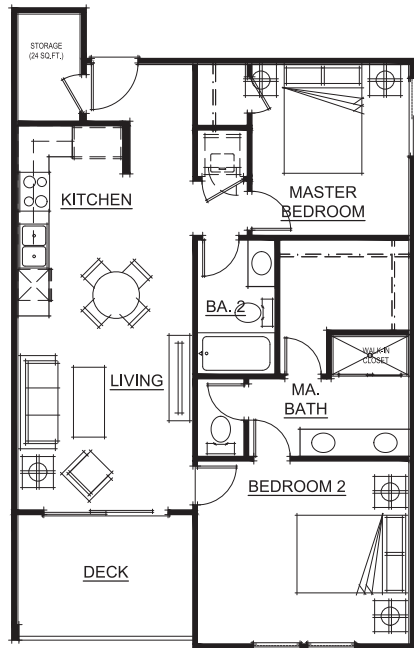
430 East State Street, Suite 100, Eagle, Idaho 83616
208.461.0033



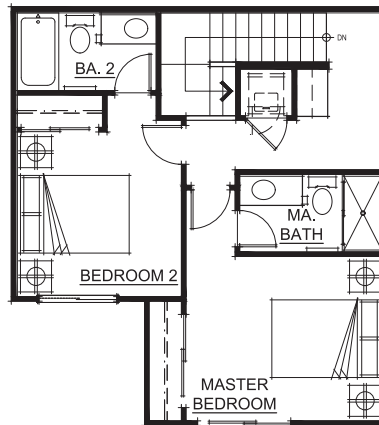
1 BEDROOM UNITS

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925.634.7000
www.straussdesign.com

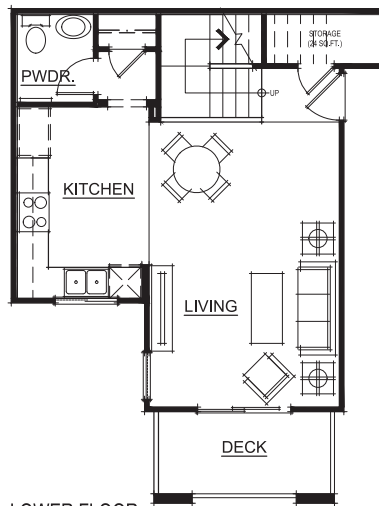




UNIT 2B (@ 2nd Floor)
UNIT 2B AREA 901 SQ. FT.

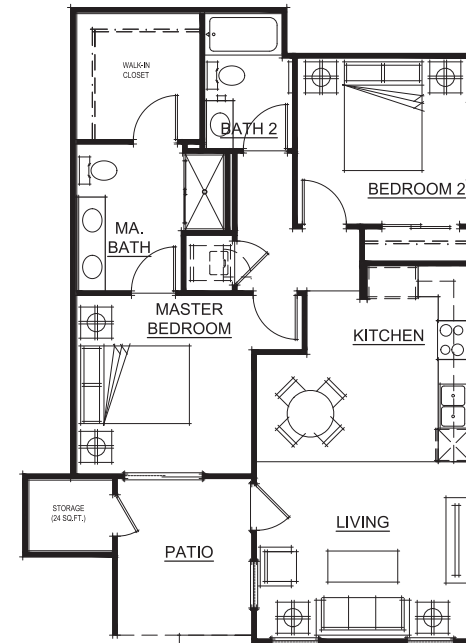


UPPER FLOOR



LOWER FLOOR

UNIT 2A (2nd/ 3rd FLOORS)	
UNIT 2A LOWER FLOOR	507 SQ. FT.
UNIT 2A UPPER FLOOR	534 SQ. FT.
UNIT 2A TOTAL LIVING	1041 SQ. FT.



UNIT 2H (@ 1ST Floor)
UNIT 2H AREA 934 SQ. FT.

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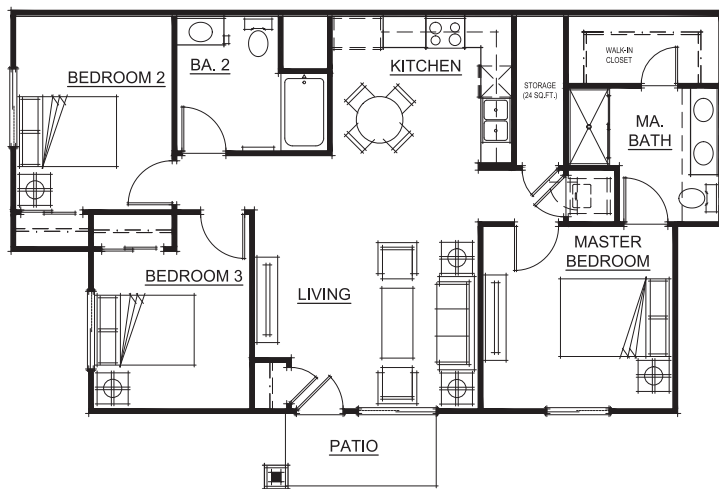
2 BEDROOM UNITS

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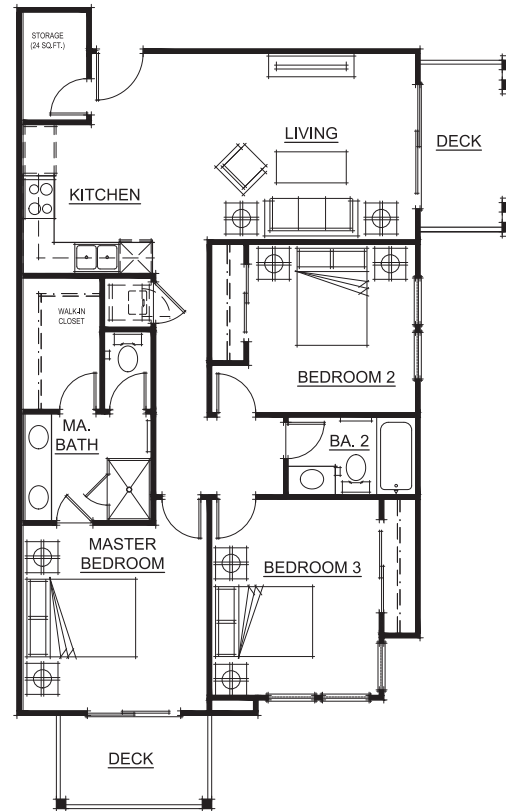
925.634.7000

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UNIT 3H (@ 1st FLOOR)	
UNIT 3H AREA	1104 SQ. FT.



UNIT 3A (2nd FLOOR)	
UNIT 3A AREA	1107 SQ. FT.

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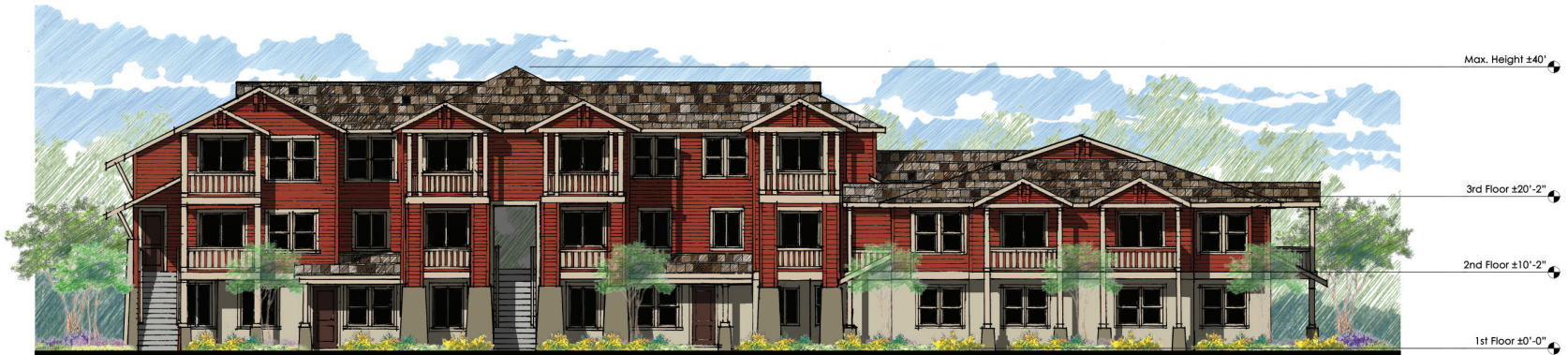
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3 BEDROOM UNITS

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FRONT ELEVATION



RIGHT ELEVATION



LEFT ELEVATION



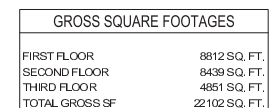
REAR ELEVATION

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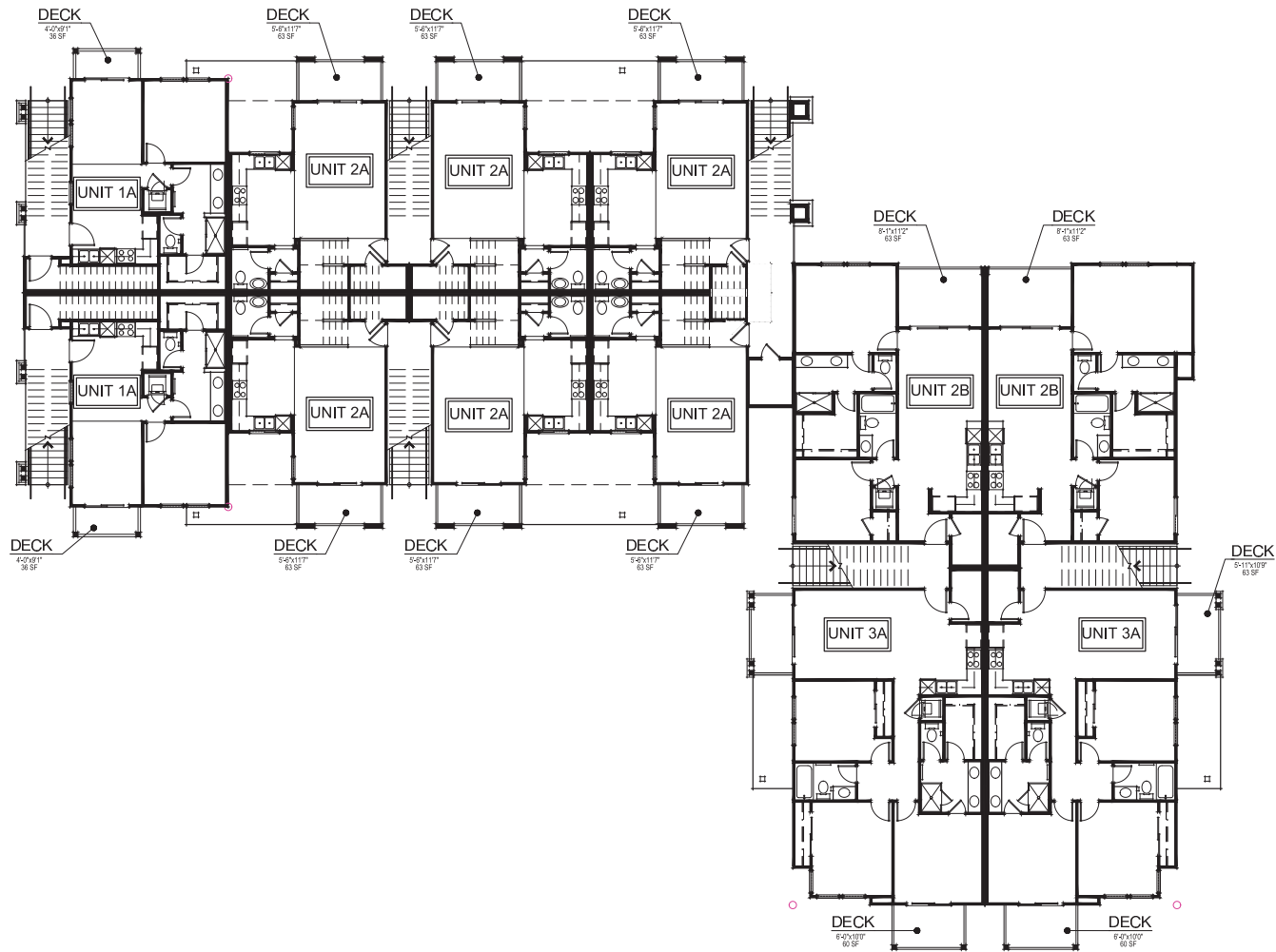
BUILDING A

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SDG
Sustainable Development Goals



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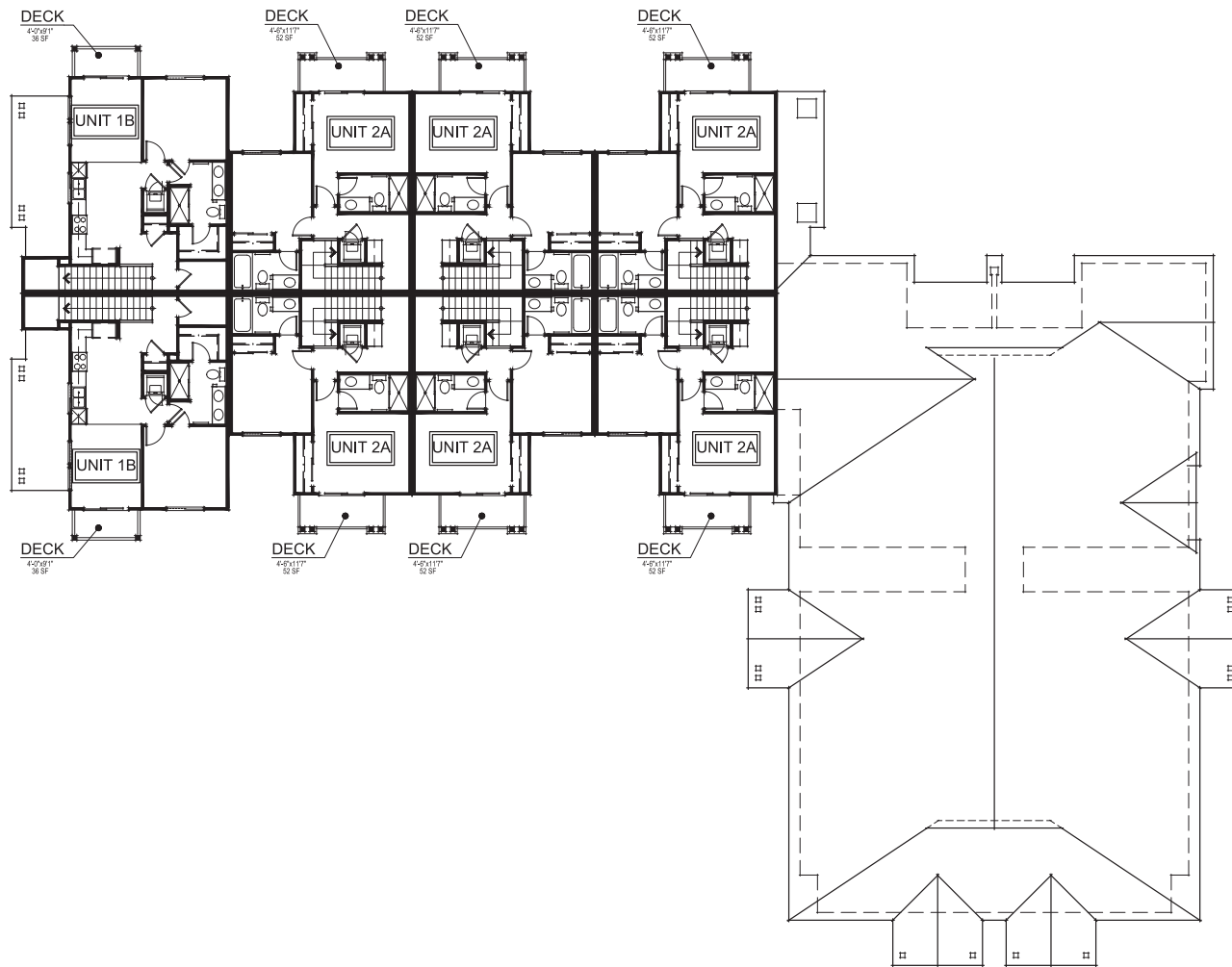
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BUILDING A SECOND FLOOR PLAN

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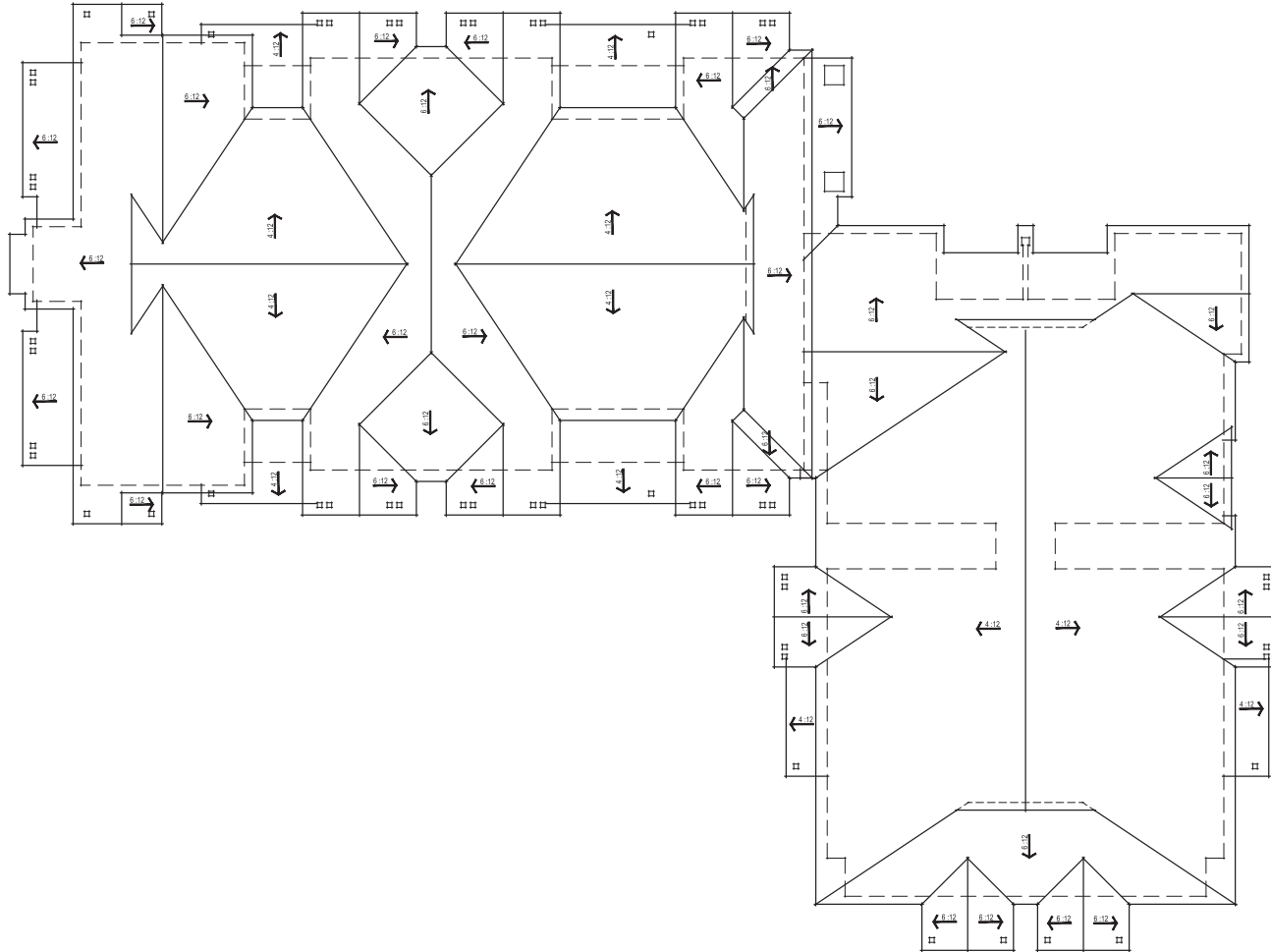
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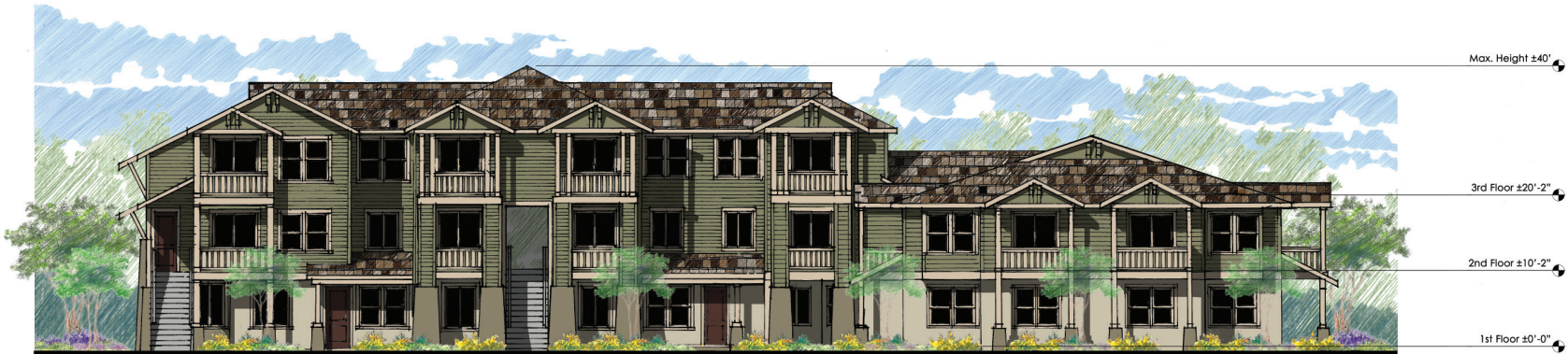
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FRONT ELEVATION



RIGHT ELEVATION



LEFT ELEVATION



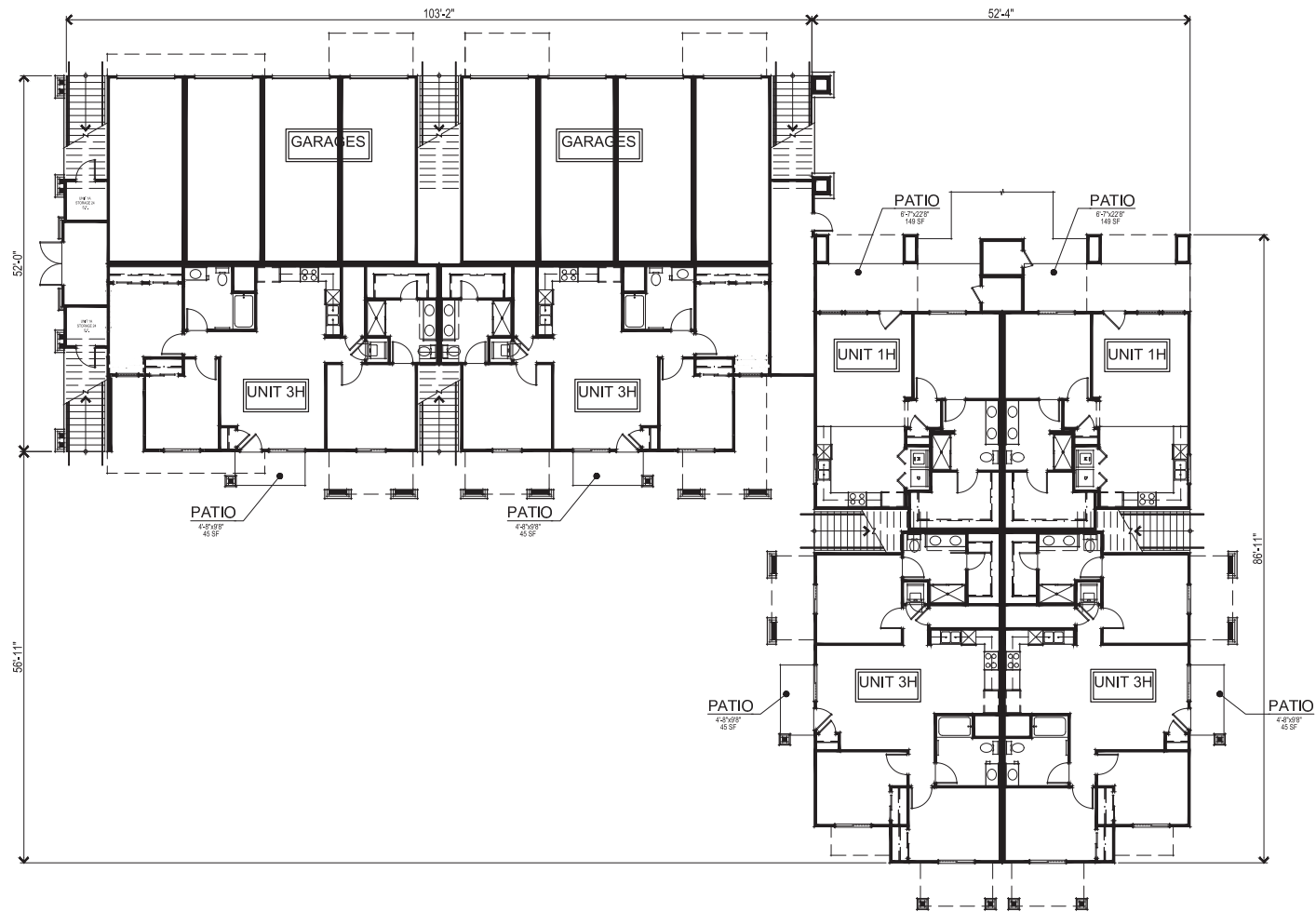
REAR ELEVATION

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BUILDING B

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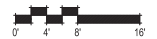


GROSS SQUARE FOOTAGES	
FIRST FLOOR	8526 SQ. FT.
SECOND FLOOR	8438 SQ. FT.
THIRD FLOOR	4851 SQ. FT.
TOTAL GROSS SF	21815 SQ. FT.

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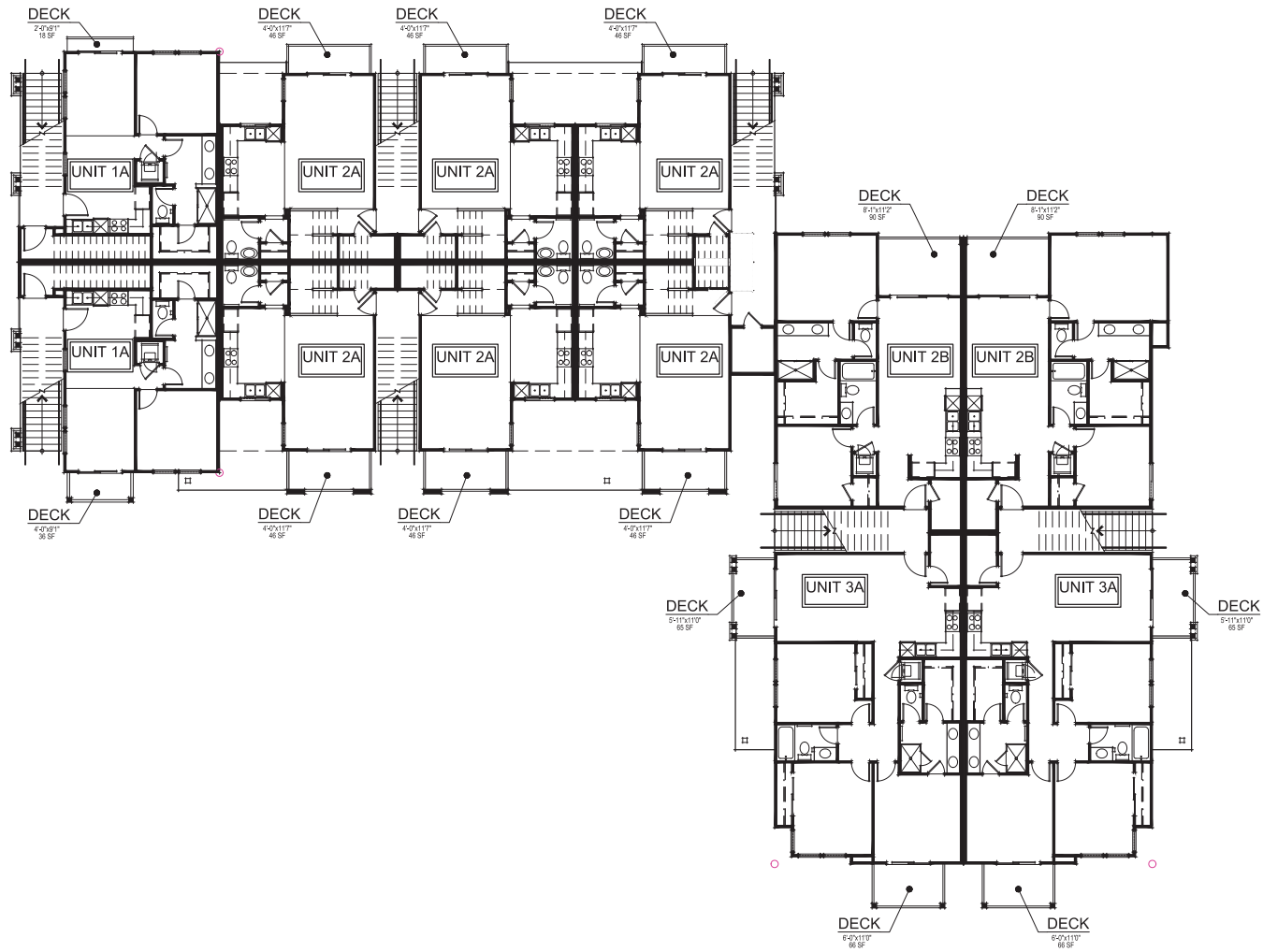
BUILDING B FIRST FLOOR PLAN

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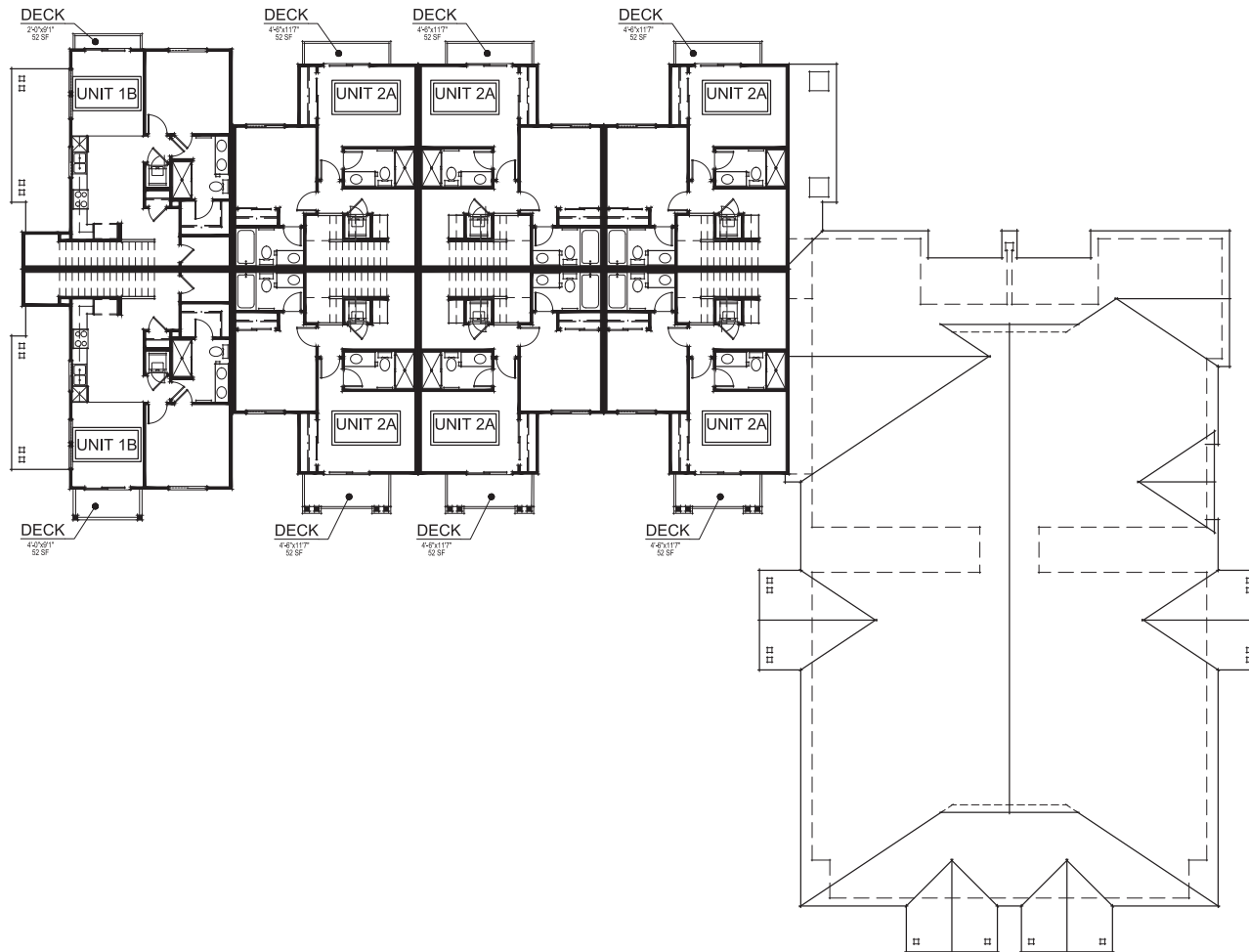
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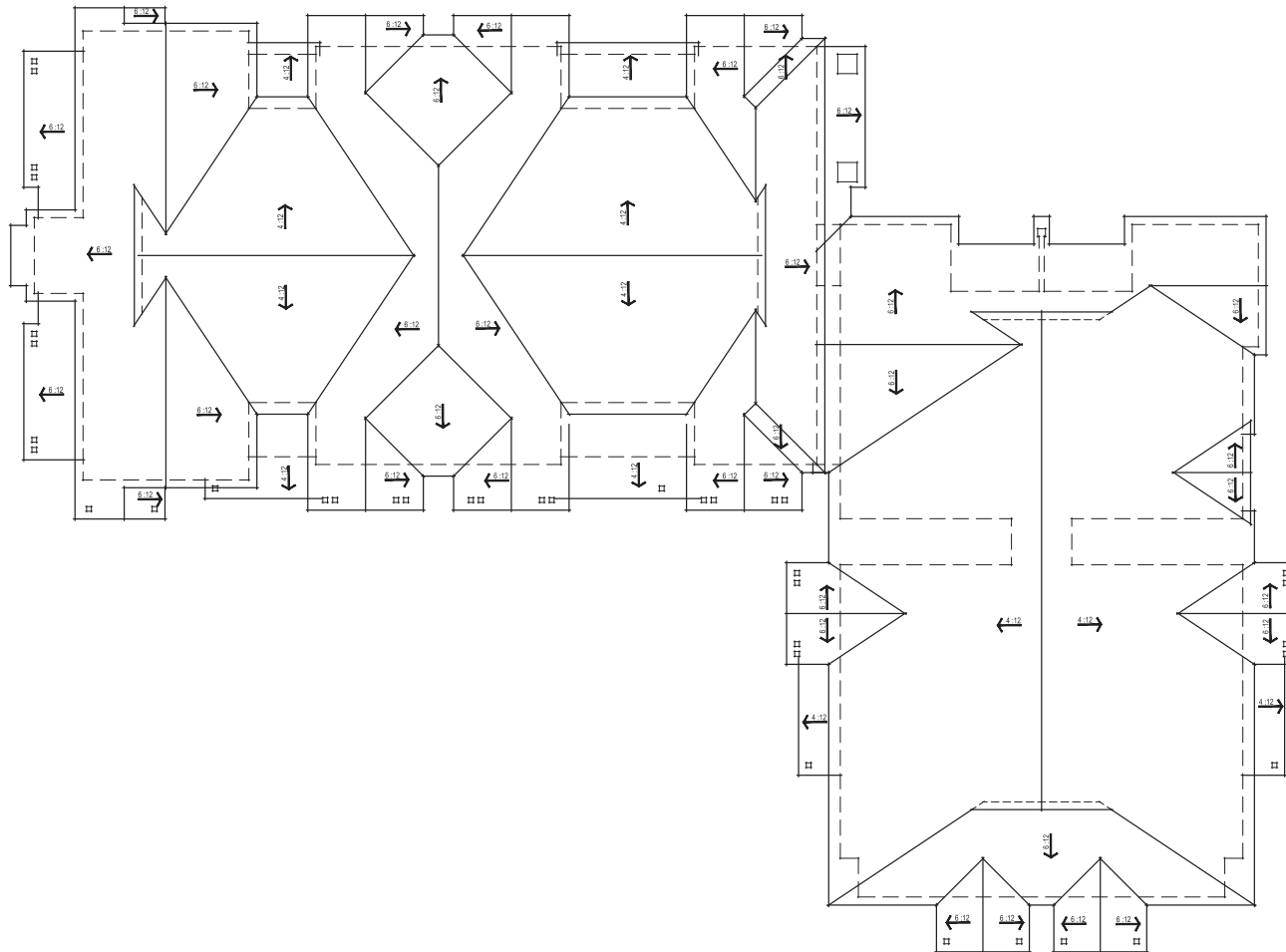
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BUILDING B THIRD FLOOR PLAN

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BUILDING B ROOF PLAN

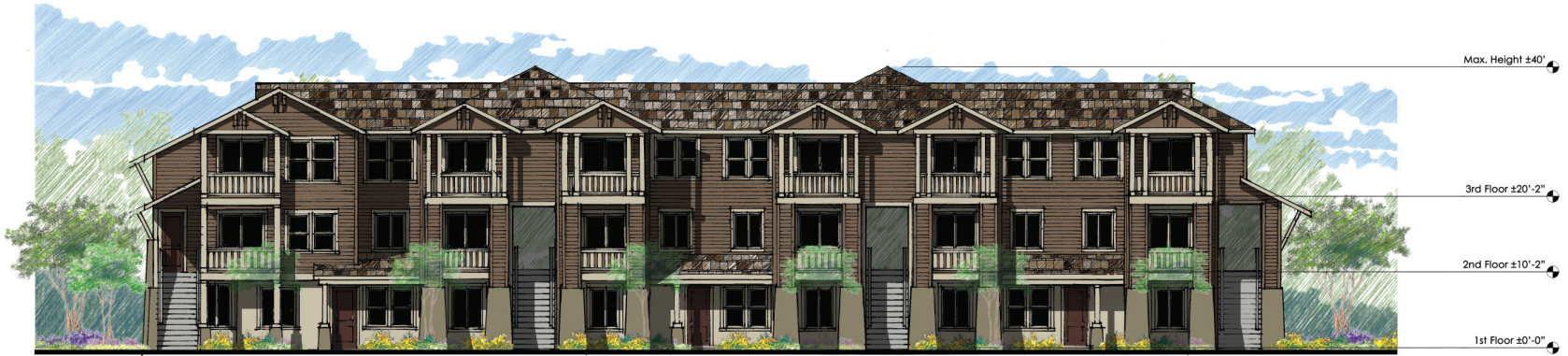
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FRONT ELEVATION



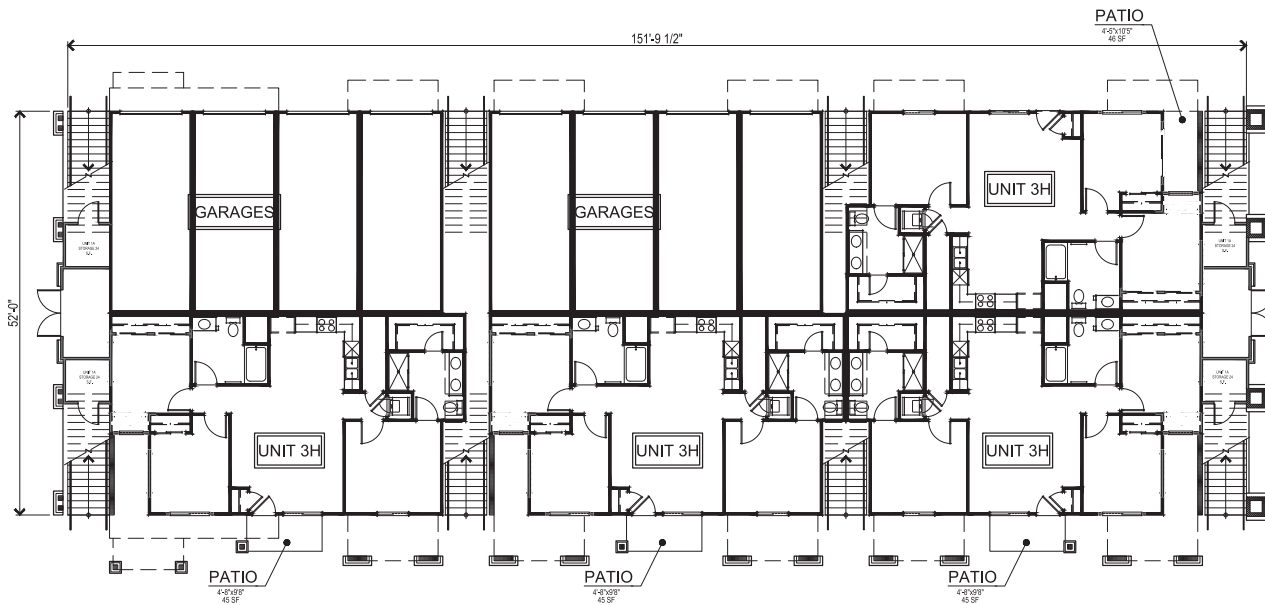
LEFT ELEVATION



RIGHT ELEVATION



REAR ELEVATION



GROSS SQUARE FOOTAGES	
FIRST FLOOR	6939 SQ. FT.
SECOND FLOOR	6423 SQ. FT.
THIRD FLOOR	7217 SQ. FT.
TOTAL GROSS SF	14196 SQ. FT.



BUILDING C FIRST FLOOR PLAN

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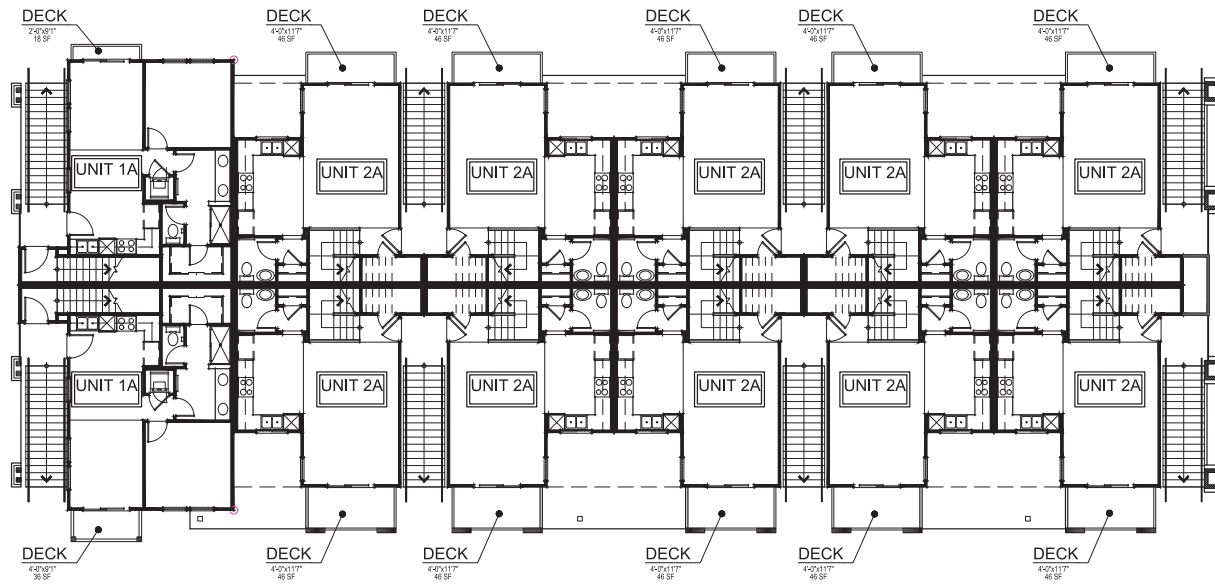
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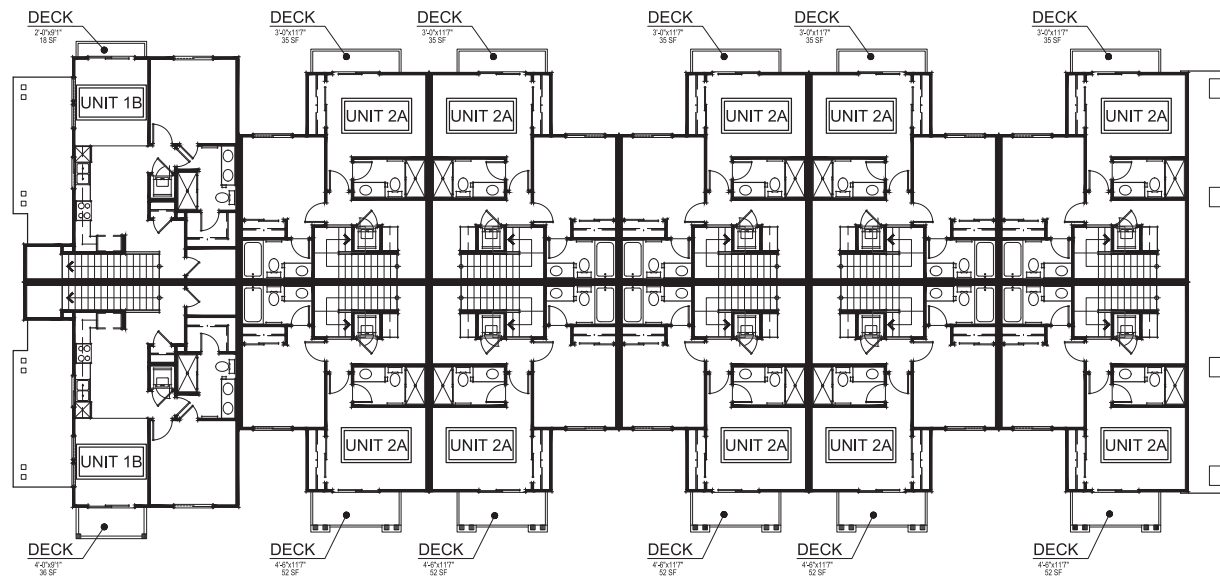
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BUILDING C SECOND FLOOR PLAN

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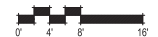




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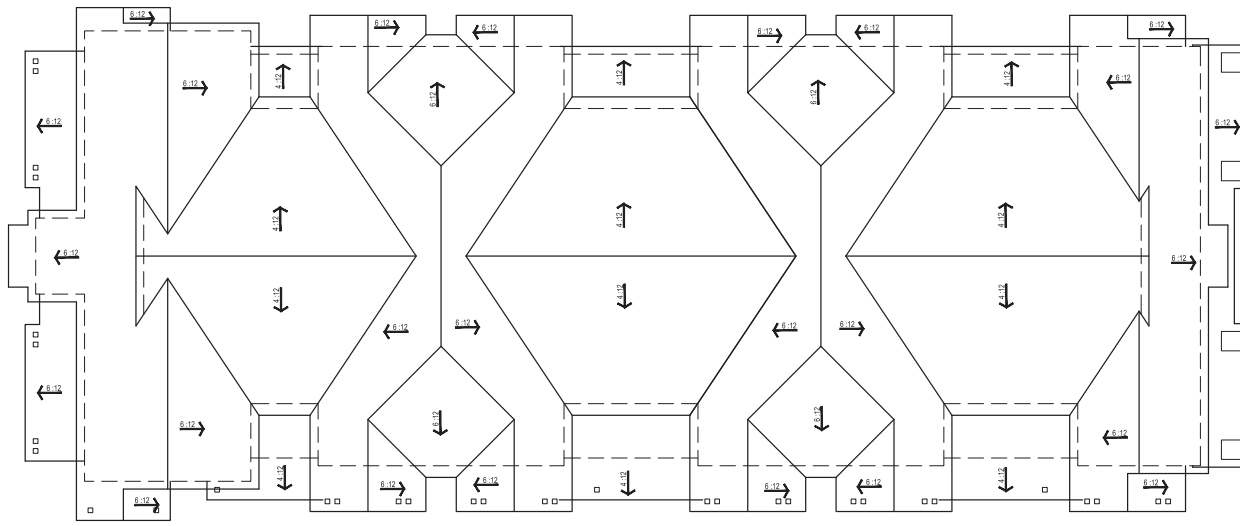
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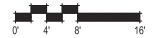




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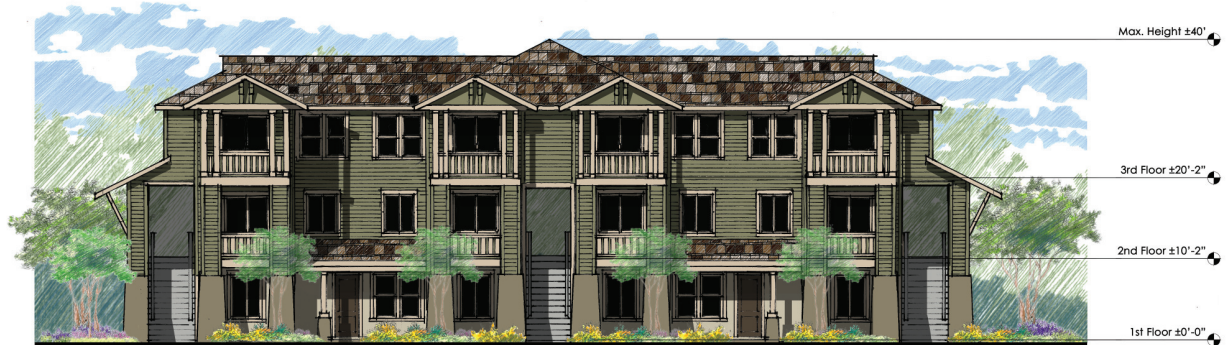
BUILDING C ROOF PLAN

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LEFT ELEVATION



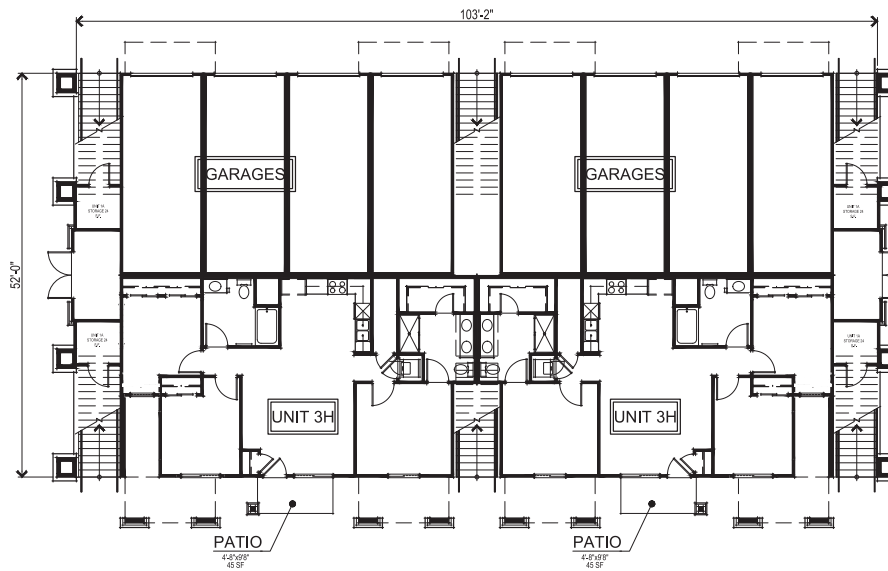
FRONT ELEVATION



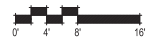
REAR ELEVATION



RIGHT ELEVATION



GROSS SQUARE FOOTAGES	
FIRST FLOOR	4729 SQ. FT.
SECOND FLOOR	4125 SQ. FT.
THIRD FLOOR	4726 SQ. FT.
TOTAL GROSS SF	13580 SQ. FT.



BUILDING D FIRST FLOOR PLAN

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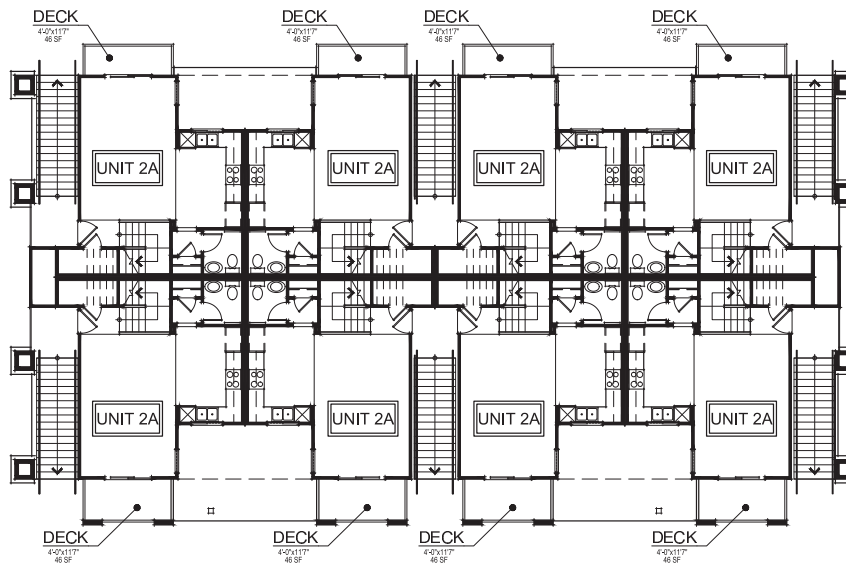
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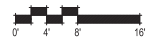




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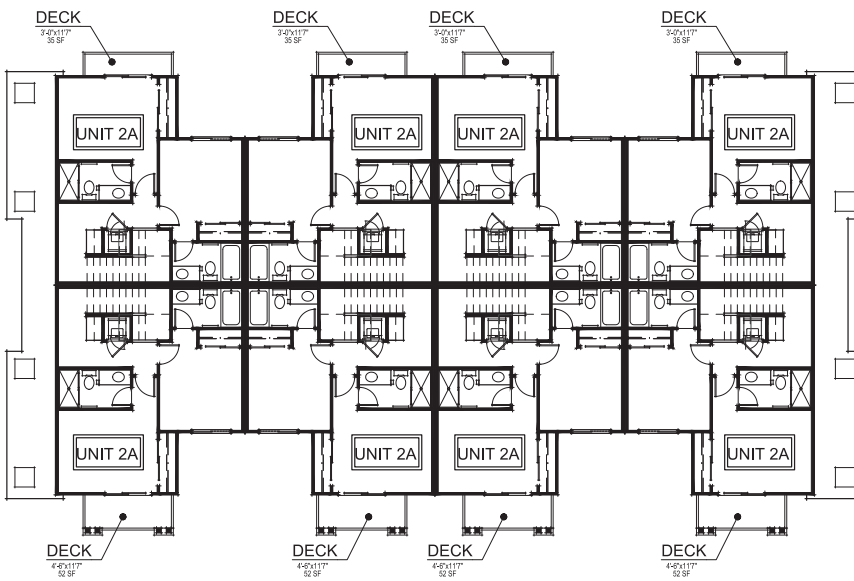
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BUILDING D SECOND FLOOR PLAN

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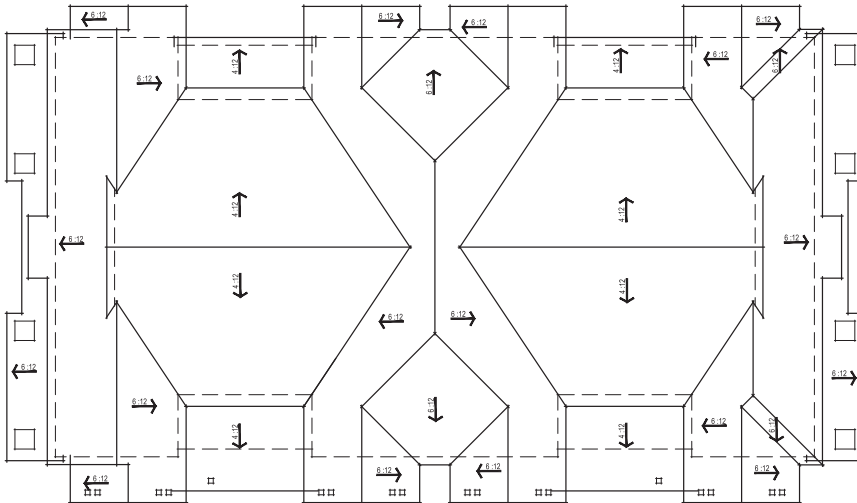
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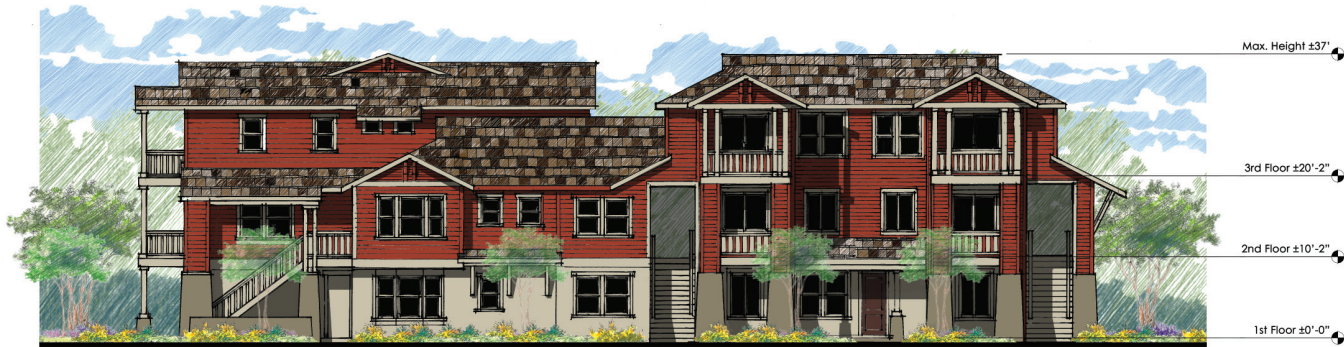
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BUILDING D ROOF PLAN

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FRONT ELEVATION



RIGHT ELEVATION



REAR ELEVATION

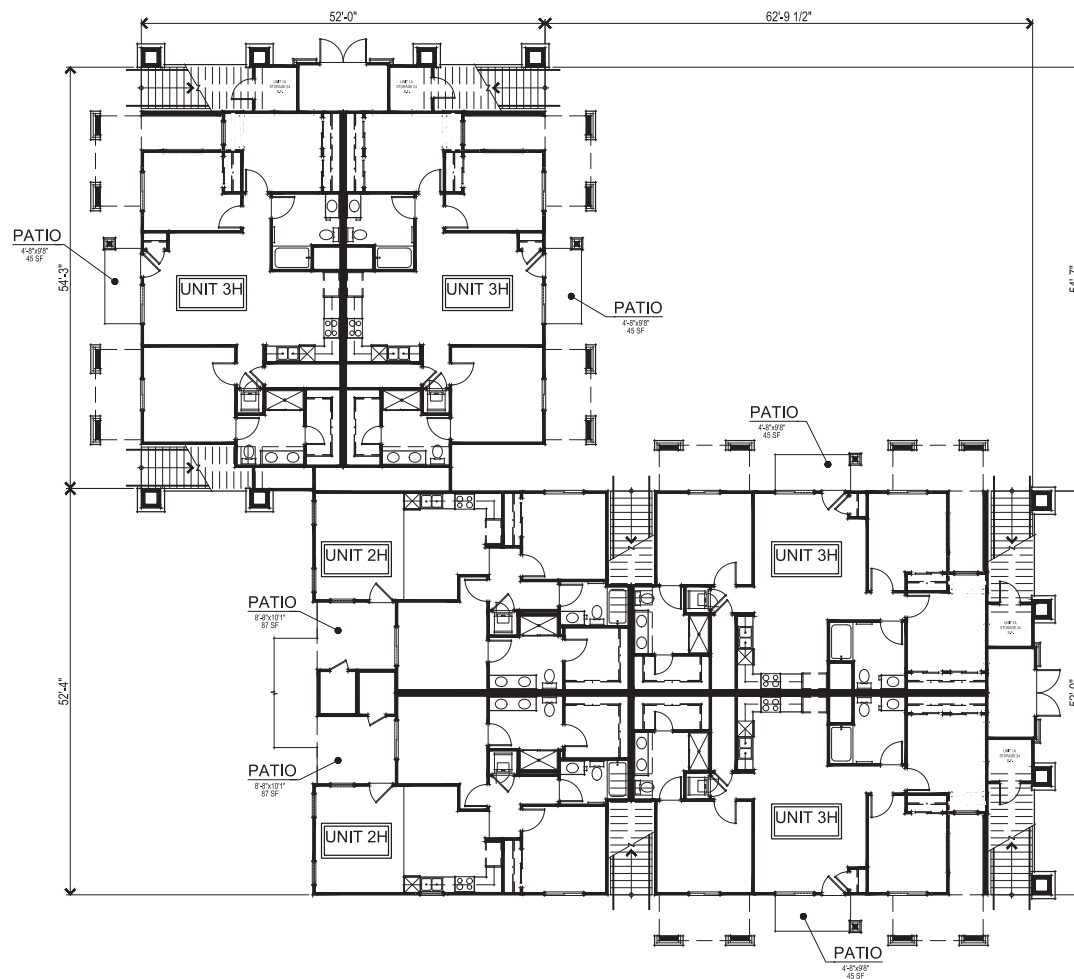
LEFT ELEVATION

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BUILDING E

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GROSS SQUARE FOOTAGES	
FIRST FLOOR	6658 SQ. FT.
SECOND FLOOR	5968 SQ. FT.
THIRD FLOOR	4723 SQ. FT.
TOTAL GROSS SF	17349 SQ. FT.

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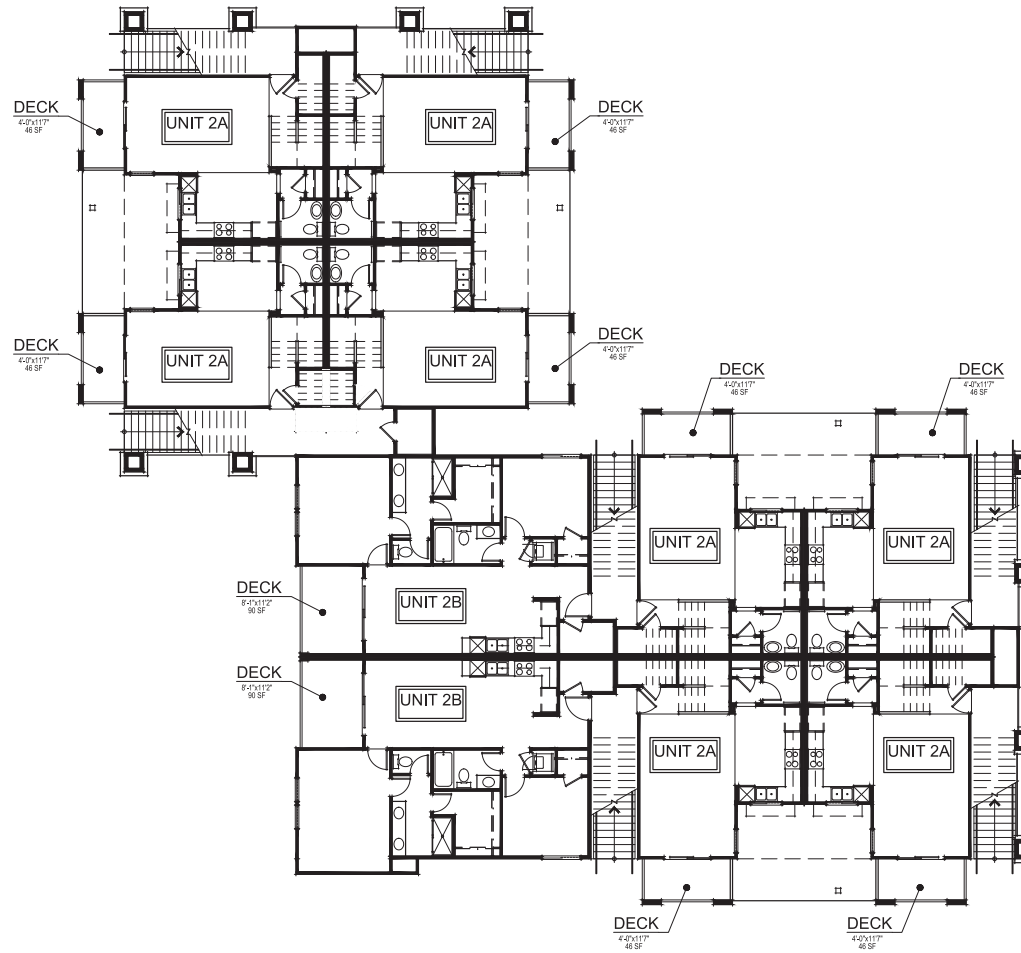
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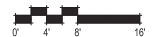




Pittsburg Apartments
Pittsburg, CA
August 21, 2014

The Pacific Companies

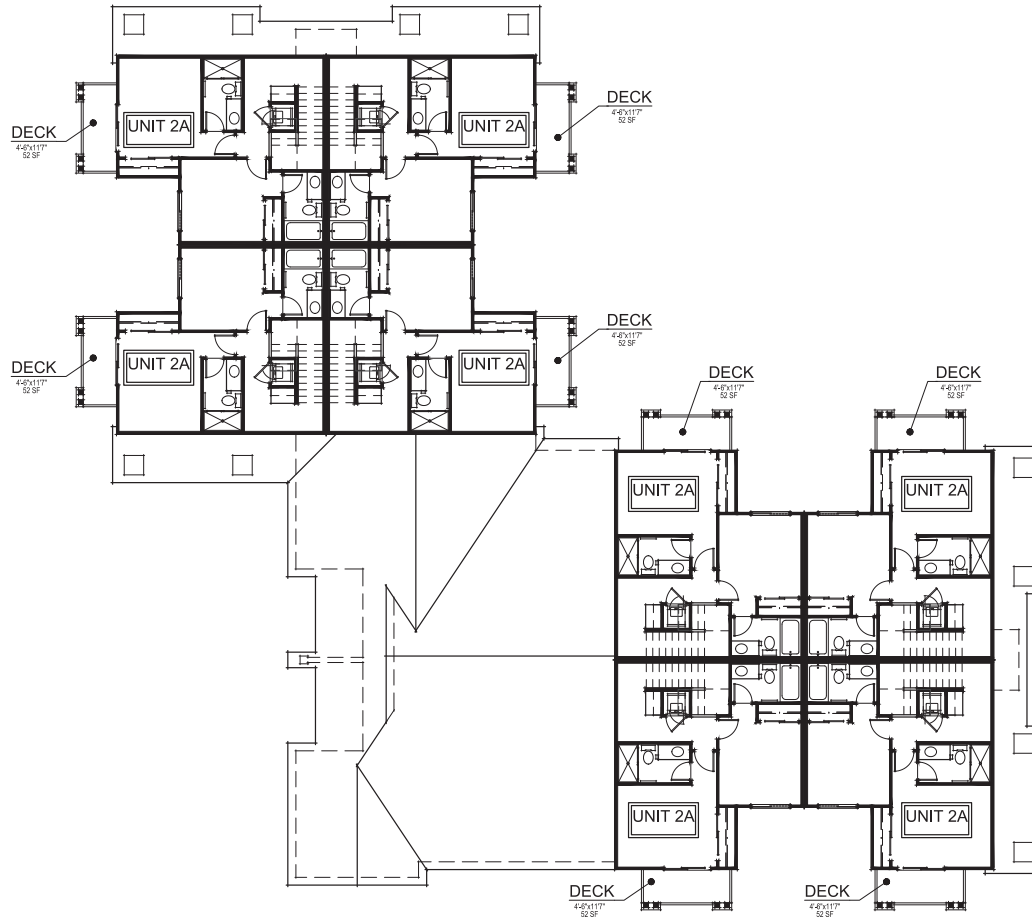
430 East State Street, Suite 100, Eagle, Idaho 83616
208.461.0033



BUILDING E SECOND FLOOR PLAN

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The Pacific Companies

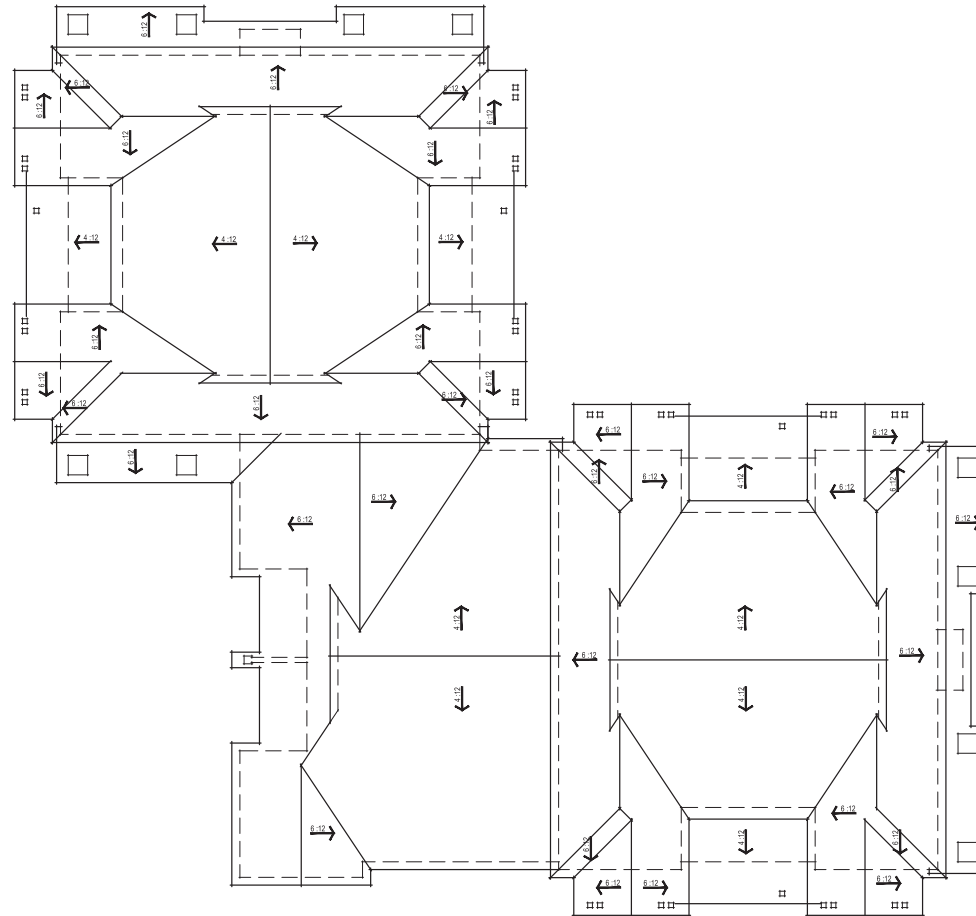
430 East State Street, Suite 100, Eagle, Idaho 83616
208.461.0033



BUILDING E THIRD FLOOR PLAN

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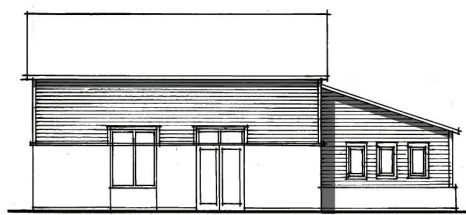
BUILDING E ROOF PLAN

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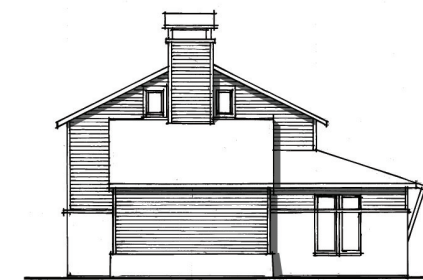




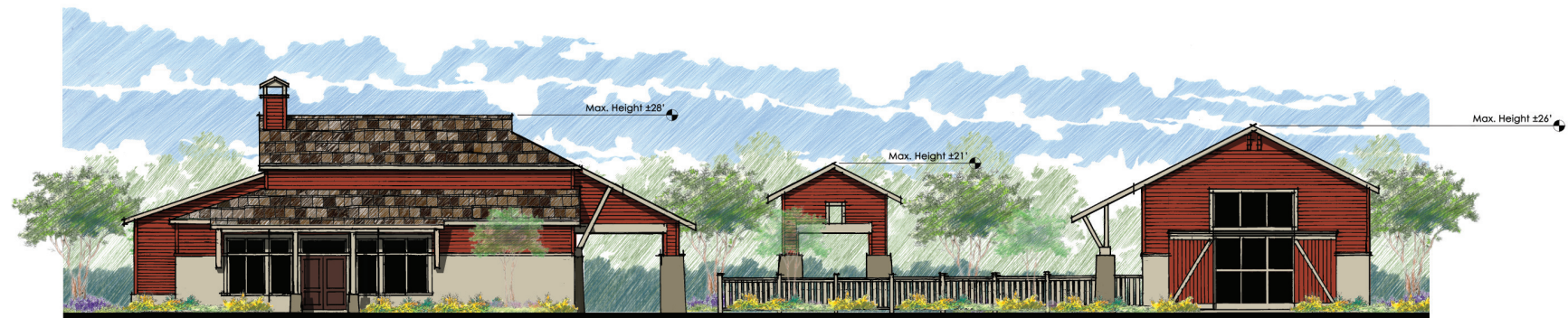
REAR ELEVATION



RIGHT ELEVATION



LEFT ELEVATION



FRONT ELEVATION: COMMUNITY BUILDING

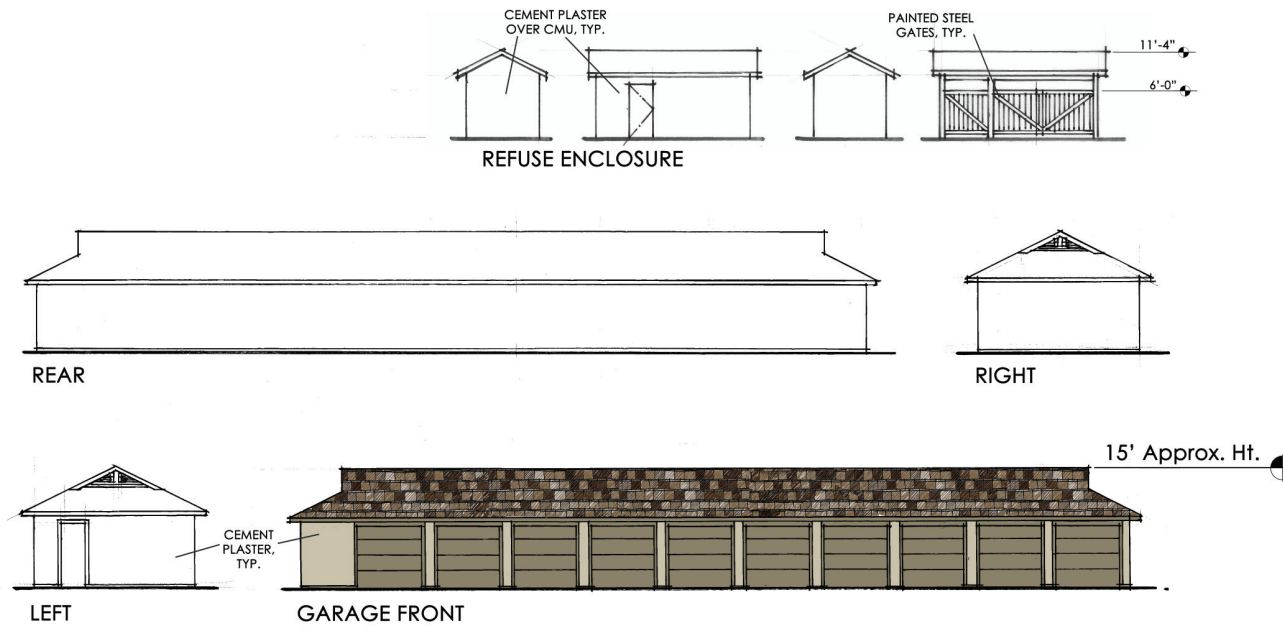
RAMADA

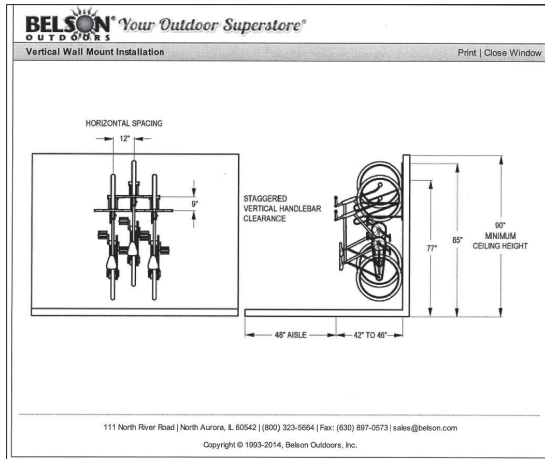
POOL BUILDING

Pittsburg Apartments
Pittsburg, CA
August 21, 2014

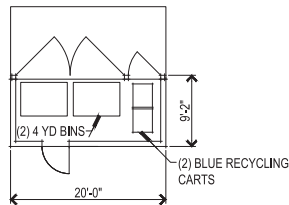
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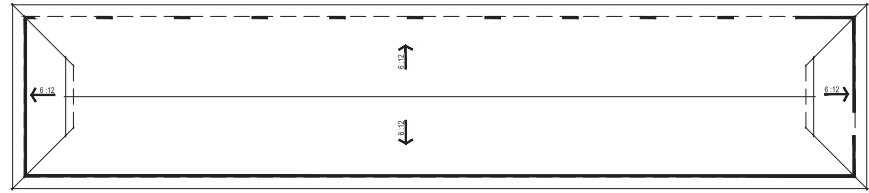




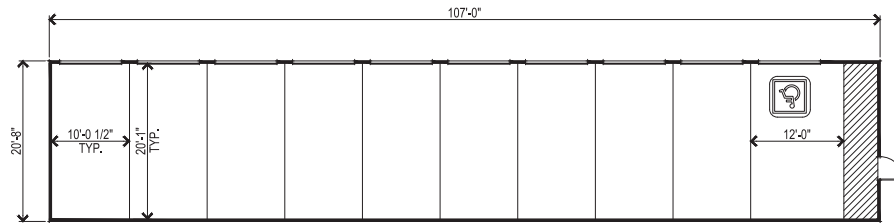
BIKE RACK



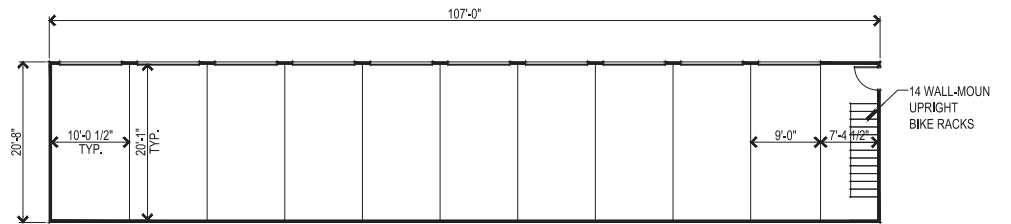
TYP. REFUSE PLAN



ROOF PLAN



GARAGE B



GARAGE A



GARAGE FLOOR AND ROOF PLANS, REFUSE PLAN

Pittsburg Apartments
Pittsburg, CA
August 21, 2014

The Pacific Companies

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208.461.0033

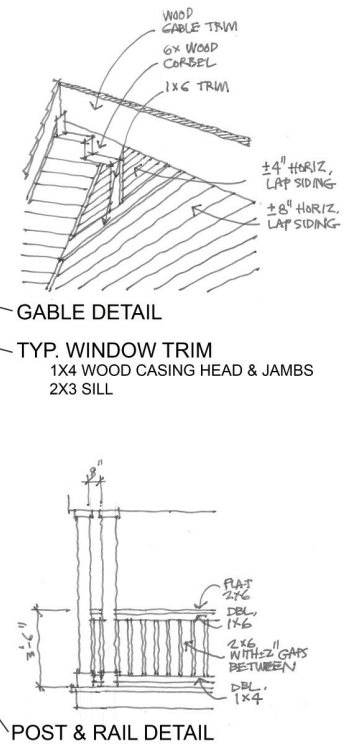
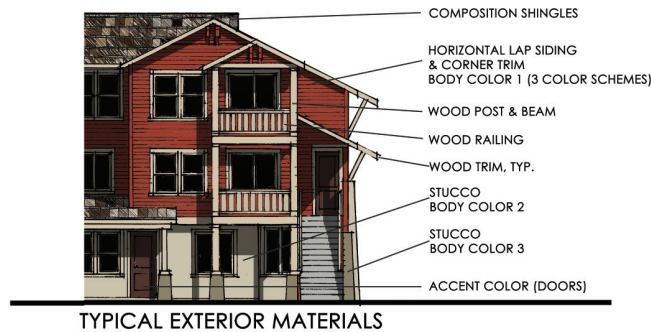
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COLOR SELECTIONS

Pittsburg Apartments
Pittsburg, CA
August 21, 2014



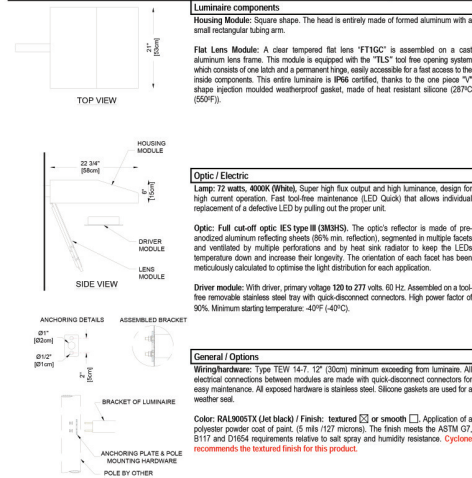
MATERIALS, DETAILS & COLOR

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DOUBLES Luminaire: SU2153-FT1GC-3M3HS-72W-4K-120@277-RAL9005TX



SPECIFICATION

Luminaire components

Housing Module: Square shape. The head is entirely made of formed aluminum with a small rectangular tubing arm.

Flat Lens Module: A clear tempered flat lens "FT1GC" is assembled on a cast aluminum lens frame. This module is equipped with the "TLS" tool free opening system which consists of one latch and a permanent hinge, easily accessible for a fast access to the inside components. This entire luminaire is IP66 certified, thanks to the one piece "Y" shape injection moulded weatherproof gasket, made of heat resistant silicone (207°C (500°F)).

Optic / Electric

Lamp: 72 watts, 4000K (White). Super high flux output and high luminance, design for high current operation. Fast tool-free maintenance (LED Quick) that allows individual replacement of a defective LED by pulling out the proper unit.

Optic: Full cut-off optic IES type III (DM3HS). The optic's reflector is made of pre-anodized aluminum reflecting sheets (98% min. reflection), segmented in multiple facets and ventilated by multiple perforations and by heat sink radiator to keep the LEDs temperature down and increase their longevity. The orientation of each facet has been meticulously calculated to optimize the light distribution for each application.

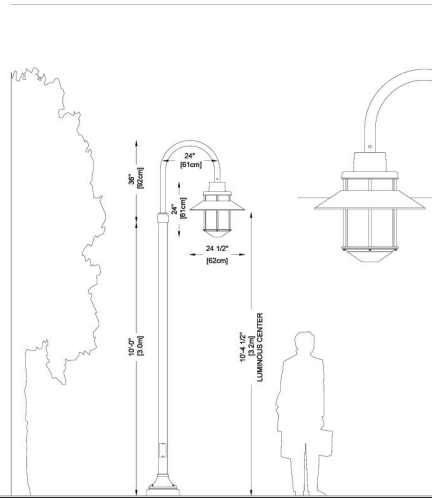
Driver module: With driver, primary voltage 120 to 277 volts, 60 Hz. Assembled on a tool-free removable stainless steel tray with quick-disconnect connectors. High power factor of 90%. Minimum starting temperature: -40°F (-40°C).

General / Options

Wiring hardware: Type TEW 14-7, 12" (30cm) minimum extending from luminaire. All electrical connections between modules are made with quick-disconnect connectors for easy maintenance. All exposed hardware is stainless steel. Silicone gaskets are used for a weather seal.

Color: RAL9005TX (Jet black) / **Finish:** textured ☒ or smooth ☐. Application of a polyester powder coat of paint (5 mils (127 microns). The finish meets the ASTM G2, G17, G117 and G1554 requirements relative to salt spray and humidity resistance. **Cyclone recommends the textured finish for this product.**

WALL MOUNT



PEDESTRIAN SCALE

NOTE: SPECIFIC FIXTURE LOCATIONS WILL BE ESTABLISHED
AT THE NEXT STAGE OF PROJECT DEVELOPMENT
BASED ON PHOTOMETRIC ANALYSIS & CODE REQUIREMENTS

MANUFACTURE REP:
GREAT BINS® LIGHTING
STEVE OR FRAN COLE
(915) 240-1568



LUMINAIRE SPECIFICATIONS:

CATALOG NO.: SU21-FT1GC-3M3HS-72W-4000K-120/277-RAL9005TX

MATERIAL: FORMED ALUMINUM

LENS MAT'L: FLAT GLASS LENS

IES CLASSIFIC: TYPE II FULL CUT-OFF - DARK SKY COMFORT

WATTAGE: 72 WATTS

LIGHT SOURCE: LED

LINE VOLTAGE: 120 to 277 Voh

DRIVER MODULE: MOUNTED ON AN ALUMINUM TRAY. ALL COMPONENTS SHALL HAVE MOLEX QUICK CONNECTORS. IP66 WEATHERPROOF LUMINAIRE

POLE: 4" SQUARE POLE ON 4"-6" CONCRETE PEDESTAL

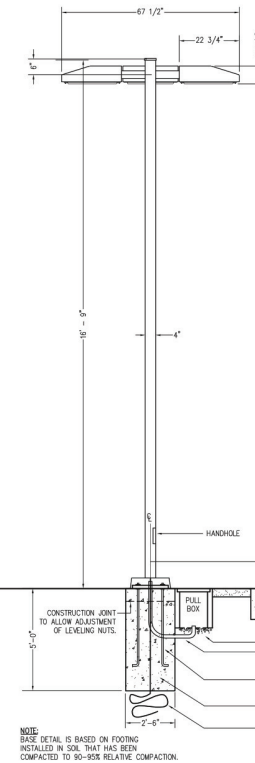
CATALOG NUMBER: SPIC401-10.8-8P

LUMINAIRE CONFIGURATION ON POLE: C2A & C3B

ALL NON ELECTRICAL HARDWARE SHALL BE STAINLESS STEEL

COLOR & FINISH: TEXTURED POWDER COAT JET BLACK

PAINT WARRANTY: 5 YEARS



PARKING LOT

Pittsburg Apartments
Pittsburg, CA
August 21, 2014

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925.634.7000
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SDG Architects, Inc.

LIGHTING

STONEMAN AIR QUALITY AND GHG EMISSIONS ASSESSMENT

Pittsburg, California

March 18, 2015

Prepared for:

Joan Lamphier

JML Planning

Joan Lamphier <egret4@gmail.com>

Prepared by:

James A. Reyff

ILLINGWORTH & RODKIN, INC.
/// Acoustics • Air Quality ///

1 Willowbrook Court, Suite 120
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(707) 794-0400

Introduction

The purpose of this report is to address air quality and greenhouse gas (GHG) emission impacts associated with the proposed Stoneman Apartment project in the City of Pittsburg, California. The Project would demolish a vacant junior high school and construct twelve apartment buildings with 230 rental units on a 9.6 acre site, located at 1201 Stoneman Avenue. The site is approximately bounded by Loveridge Road to the east, Loveridge Circle to the north, and Stoneman Avenue to the south. Air quality impacts were analyzed for temporary construction emissions and as a result of direct and indirect air pollutant and GHG emissions from users of the proposed residences. This analysis was conducted following guidance provided by the Bay Area Air Quality Management District (BAAQMD).

Setting

The project is located in the northern portion of Contra Costa County that is part of the San Francisco Bay Area Air Basin. Ambient air quality standards have been established at both the State and federal level. The Bay Area meets all ambient air quality standards with the exception of ground-level ozone, respirable particulate matter (PM₁₀) and fine particulate matter (PM_{2.5}).

High ozone levels are caused by the cumulative emissions of reactive organic gases (ROG) and nitrogen oxides (NO_x). These precursor pollutants react under certain meteorological conditions to form high ozone levels. Controlling the emissions of these precursor pollutants is the focus of the Bay Area's attempts to reduce ozone levels. The highest ozone levels in the Bay Area occur in the eastern and southern inland valleys that are downwind of air pollutant sources. High ozone levels aggravate respiratory and cardiovascular diseases, reduced lung function, and increase coughing and chest discomfort.

Particulate matter is another problematic air pollutant of the Bay Area. Particulate matter is assessed and measured in terms of respirable particulate matter or particles that have a diameter of 10 micrometers or less (PM₁₀) and fine particulate matter where particles have a diameter of 2.5 micrometers or less (PM_{2.5}). Elevated concentrations of PM₁₀ and PM_{2.5} are the result of both region-wide (or cumulative) emissions and localized emissions. High particulate matter levels aggravate respiratory and cardiovascular diseases, reduce lung function, increase mortality (e.g., lung cancer), and result in reduced lung function growth in children.

Toxic air contaminants (TAC) are a broad class of compounds known to cause morbidity or mortality (usually because they cause cancer) and include, but are not limited to, the criteria air pollutants listed above. TACs are found in ambient air, especially in urban areas, and are caused by industry, agriculture, fuel combustion, and commercial operations (e.g., dry cleaners). TACs are typically found in low concentrations, even near their source (e.g., diesel particulate matter near a freeway). Because chronic exposure can result in adverse health effects, TACs are regulated at the regional, state, and Federal level.

Diesel exhaust is the predominant TAC in urban air and is estimated to represent about three-quarters of the cancer risk from TACs (based on the Bay Area average). According to the CARB, diesel exhaust is a complex mixture of gases, vapors and fine particles. This complexity makes the evaluation of health effects of diesel exhaust a complex scientific issue. Some of the chemicals in diesel exhaust, such as benzene and formaldehyde, have been previously identified as TACs by the CARB, and are listed as carcinogens either under the state's Proposition 65 or under the Federal Hazardous Air Pollutants programs.

CARB has adopted and implemented a number of regulations for stationary and mobile sources to reduce emissions of DPM. Several of these regulatory programs affect medium and heavy duty diesel trucks that represent the bulk of DPM emissions from California highways. These regulations include the solid

waste collection vehicle (SWCV) rule, in-use public and utility fleets, and the heavy-duty diesel truck and bus regulations. In 2008, CARB approved a new regulation to reduce emissions of DPM and nitrogen oxides from existing on-road heavy-duty diesel fueled vehicles.¹ The regulation requires affected vehicles to meet specific performance requirements between 2014 and 2023, with all affected diesel vehicles required to have 2010 model-year engines or equivalent by 2023. These requirements are phased in over the compliance period and depend on the model year of the vehicle.

BAAQMD is the regional agency tasked with managing air quality in the region. At the State level, the California Air Resources Board (a part of the California Environmental Protection Agency) oversees regional air district activities and regulates air quality at the State level. BAAQMD has published CEQA Air Quality Guidelines that are used in this assessment to evaluate air quality impacts of projects.²

Significance Thresholds

In June 2010, BAAQMD adopted thresholds of significance to assist in the review of projects under CEQA. Thresholds were designed to establish the level at which BAAQMD believed air pollution emissions would cause significant environmental impacts under CEQA and were posted on BAAQMD's website and included in the Air District's updated CEQA Guidelines (updated May 2011). The significance thresholds identified by BAAQMD and used in this analysis are summarized in Table 1.

BAAQMD's adoption of significance thresholds contained in the 2011 CEQA Air Quality Guidelines was called into question by an order issued March 5, 2012, in California Building Industry Association (CBIA) v. BAAQMD (Alameda Superior Court Case No. RGI0548693). The order requires BAAQMD to set aside its approval of the thresholds until it has conducted environmental review under CEQA. The ruling made in the case concerned the environmental impacts of adopting the thresholds and how the thresholds would indirectly affect land use development patterns. In August 2013, the Appellate Court struck down the lower court's order to set aside the thresholds. However, this litigation remains pending as the California Supreme Court recently accepted a portion of CBIA's petition to review the appellate court's decision to uphold BAAQMD's adoption of the thresholds. The specific portion of the argument to be considered is in regard to whether CEQA requires consideration of the effects of the environment on a project (as contrasted to the effects of a proposed project on the environment). Therefore, the significance thresholds contained in the 2011 CEQA Air Quality Guidelines are applied to this project.

Impacts and Mitigation Measures

Impact 1: Conflict with or obstruct implementation of the applicable air quality plan? *Less than significant.*

The most recent clean air plan is the *Bay Area 2010 Clean Air Plan* that was adopted by BAAQMD in September 2010. The proposed project would not conflict with the latest Clean Air planning efforts since (1) the project would have emissions well below the BAAQMD thresholds (see Impact 2), (2) development of the project site would be considered urban "infill", (3) development would occur near employment centers, and (4) development would be near existing transit with regional connections. The project, at 230 units is too small to exceed any of the significance thresholds and, thus, not required to incorporate project-specific transportation control measures listed in the latest Clean Air Plan.

¹ Available online: <http://www.arb.ca.gov/msprog/onrdiesel/onrdiesel.htm>. Accessed: March 18, 2015.

² Bay Area Air Quality Management District, 2011. BAAQMD CEQA Air Quality Guidelines. May.

Table 1. Air Quality Significance Thresholds

Pollutant	Construction Thresholds	Operational Thresholds	
	Average Daily Emissions (lbs./day)	Average Daily Emissions (lbs./day)	Annual Average Emissions (tons/year)
Criteria Air Pollutants			
ROG	54	54	10
NO _x	54	54	10
PM ₁₀	82	82	15
PM _{2.5}	54	54	10
CO	Not Applicable	9.0 ppm (8-hour average) or 20.0 ppm (1-hour average)	
Fugitive Dust	Construction Dust Ordinance or other Best Management Practices	Not Applicable	
Health Risks and Hazards for New Sources			
Excess Cancer Risk	10 per one million		
Chronic or Acute Hazard Index	1.0		
Incremental annual average PM _{2.5}	0.3 µg/m ³		
Health Risks and Hazards for Sensitive Receptors (Cumulative from all sources within 1,000 foot zone of influence) and Cumulative Thresholds for New Sources			
Excess Cancer Risk	100 per one million		
Chronic Hazard Index	10.0		
Annual Average PM _{2.5}	0.8 µg/m ³		
Greenhouse Gas Emissions			
GHG Annual Emissions	1,100 metric tons or 4.6 metric tons per capita		
Note: ROG = reactive organic gases, NO _x = nitrogen oxides, PM ₁₀ = course particulate matter or particulates with an aerodynamic diameter of 10 micrometers (µm) or less, PM _{2.5} = fine particulate matter or particulates with an aerodynamic diameter of 2.5µm or less; and GHG = greenhouse gas.			

Impact 2: Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable Federal or State ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)? ***Less than significant with implementation of Mitigation Measure AQ-1***

The Bay Area is considered a non-attainment area for ground-level ozone and fine particulate matter (PM_{2.5}) under both the Federal Clean Air Act and the California Clean Air Act. The area is also considered non-attainment for respirable particulates or particulate matter with a diameter of less than 10 micrometers (PM₁₀) under the California Clean Air Act, but not the Federal act. The area has attained both State and Federal ambient air quality standards for carbon monoxide. As part of an effort to attain and maintain ambient air quality standards for ozone and PM₁₀, the BAAQMD has established thresholds of significance for these air pollutants and their precursors. These thresholds are for ozone precursor

pollutants (ROG and NO_x), PM₁₀ and PM_{2.5} and apply to both construction period and operational period impacts.

Due to the project size, construction exhaust and operational period emissions would be less than significant. In their 2011 update to the *CEQA Air Quality Guidelines*, BAAQMD identified the size of land use projects that could result in significant air pollutant emissions. For construction exhaust impacts, the apartment residential project screening size was identified at 240 dwelling units. For operational impacts, the project size was identified at 451 dwelling units. Since the project proposes 230 dwelling units, it is concluded that emissions would be below the BAAQMD significance thresholds for both operational emissions. Since project construction would include demolition of the existing junior high school, construction period emissions were modeled and compared against BAAQMD significance thresholds. Operational emissions were also modeled for information purposes.

CalEEMod Modeling

The CalEEMod model was also used to predict both air pollutant and GHG emissions from construction and operation of the site assuming full build-out of the project. The project land use types and size, trip generation rate and other project-specific information were input to the model. The use of this model for evaluating emissions from land use projects is recommended by the BAAQMD. Unless otherwise noted below, the CalEEMod model defaults for Contra Costa County were used. CalEEMod provides emissions for transportation, areas sources, electricity consumption, natural gas combustion, electricity usage associated with water usage and wastewater discharge, and solid waste land filling and transport. CalEEMod output worksheets are included in *Attachment 1*.

Land Use Descriptions

The proposed project land use was input into CalEEMod, which were 230 residential units entered as “Apartments Low Rise,” on a 9.6-acre site.

Construction

Construction duration and equipment usage was based on the CalEEMod model default values. CalEEMod assigns default values based on the type, size and acreage of the project. A 100,000 square-foot building size was input for demolition, based on the size of the existing junior high school and associated buildings estimated using aerial photos.

Trip Generation Rates

CalEEMod model default trip generation rates for the land use, similar to that predicted in the Traffic Impact Assessment, were used in the model.

Model Year

The model uses mobile emission factors from the California Air Resources Board’s EMFAC2011 model. This model is sensitive to the year selected, since vehicle emissions have and continue to be reduced due to fuel efficiency standards and low carbon fuels. The Year 2017 was analyzed, since it is the first full year that the project could conceivably be occupied.

Energy

Default rates for energy consumption were assumed in the model. Emission rates associated with electricity consumption were based on model the default Pacific Gas & Electric utility’s (PG&E) rate of 641.35 pounds of CO₂ per megawatt of electricity produced.

Wood Burning

As a worst-case assumption, all units were assumed to include natural gas fireplaces; however, there would be no wood burning per BAAQMD regulations.

Other Inputs

Default model assumptions for GHG emissions associated with area sources, solid waste generation and water/wastewater use were applied to the project.

Service Population

Project service population is the sum of future residents and full-time employees. The number of future residents was estimated at 741. This was based on the latest US Census data for the City of Pittsburg, CA, which shows an average of 3.22 residents per household.³ The persons per household were based on renter-occupied homes.

The CalEEMod model output is provided in *Attachment 1*.

Construction Air Pollutant Emissions

CalEEMod predicted the annual and total construction emissions in tons for each pollutant. According to the default construction schedule generated by the model, construction would begin in early 2016 and be completed in 2017, a period of approximately 15 months or 330 days. Since the significance thresholds are based on average daily emissions, the total emissions predicted by CalEEMod were divided by the number of construction days. Construction air pollutant emissions are reported in Table 2. These emissions are below the significance threshold for average daily emissions.

Table 2. Construction Period Emissions

Scenario	ROG	NOx	PM₁₀ Exhaust	PM_{2.5} Exhaust
Unmitigated Construction emissions (tons)	2.94 tons	6.66 tons	0.38 tons	0.36 tons
Average daily emissions (pounds) ¹	17.8 lbs.	40.4 lbs.	2.3 lbs.	2.2 lbs.
<i>BAAQMD Thresholds (pounds per day)</i>	54 lbs.	54 lbs.	82 lbs.	54 lbs.
<i>Exceed Threshold?</i>	No	No	No	No
Notes: ¹ Assumes 330 workdays.				

Construction Fugitive Dust

Construction activities, particularly during site preparation and grading would temporarily generate fugitive dust in the form of PM₁₀ and PM_{2.5}. Sources of fugitive dust would include disturbed soils at the construction site and trucks carrying uncovered loads of soil. Unless properly controlled, vehicles leaving the site would deposit mud on local streets, which could be an additional source of airborne dust after it dries. Fugitive dust emissions would vary from day to day, depending on the nature and magnitude of construction activity and local weather conditions. Fugitive dust emissions would also depend on soil moisture, silt content of soil, wind speed, and the amount of equipment operating. Larger dust particles would settle near the source, while fine particles would be dispersed over greater distances from the construction site. The BAAQMD CEQA Air Quality Guidelines consider these impacts to be less than significant if best management practices are employed to reduce these emissions. *Mitigation Measure 1 would implement BAAQMD-recommended best management practices.*

³ United States Census Bureau, 2014. *State & County QuickFacts: Pittsburg, California*. Available online: <http://quickfacts.census.gov/qfd/states/06/0657456.html>. Accessed: March 16, 2015.

Mitigation Measure AQ-1: Include measures to control construction emissions.

Implementation of the measures recommended by BAAQMD and listed below would reduce the air quality and fugitive dust-related impacts associated with grading and new construction to a less than significant. The contractor shall implement the following Best Management Practices that are required of all projects:

1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
4. All vehicle speeds on unpaved roads shall be limited to 15 mph.
5. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible and feasible. Building pads shall be laid as soon as possible and feasible, as well, after grading unless seeding or soil binders are used.
6. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.
7. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.
8. Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.

Operational Emissions

Table 3 reports the modeled annual and average daily operational emissions. As shown, annual and average daily emissions of ROG, NO_x, PM₁₀, or PM_{2.5} emissions associated with operation of the project would not exceed the BAAQMD significance thresholds.

Table 3. Air Pollutant Emissions from Operation of the Project

Scenario	ROG	NO_x	PM₁₀	PM_{2.5}
Annual 2017 Project Emissions	2.04 tons	2.19 tons	1.31 tons	0.39 tons
<i>Annual Emission Thresholds</i>	<i>10 tons</i>	<i>10 tons</i>	<i>15 tons</i>	<i>10 tons</i>
<i>Exceed Threshold?</i>	<i>No</i>	<i>No</i>	<i>No</i>	<i>No</i>
Daily 2017 Emissions	11.2 lbs.	12.0 lbs.	7.2 lbs.	2.1 lbs.
<i>Daily Emission Thresholds</i>	<i>54lbs.</i>	<i>54lbs.</i>	<i>82lbs.</i>	<i>54lbs.</i>
<i>Exceed Threshold?</i>	<i>No</i>	<i>No</i>	<i>No</i>	<i>No</i>

Impact 3: Violate any air quality standard or contribute substantially to an existing or projected air quality violation? *Less than significant*

As discussed under Impact 2, the project would have emissions less than the significance thresholds adopted by BAAQMD for evaluating impacts related to ozone and particulate matter. Therefore, the project would not contribute substantially to existing or projected violations of those standards. Carbon monoxide emissions from traffic generated by the project would be the pollutant of greatest concern at the local level. Congested intersections with a large volume of traffic have the greatest potential to cause high-localized concentrations of carbon monoxide. Air pollutant monitoring data indicate that carbon monoxide levels have been at healthy levels (i.e., below State and federal standards) in the Bay Area since the early 1990s. As a result, the region has been designated as attainment for the standard. There is an ambient air quality monitoring station in Concord that measures carbon monoxide concentrations. The highest measured level over any 8-hour averaging period during the last 3 years is less than 3.0 parts per million (ppm), compared to the ambient air quality standard of 9.0 ppm. The project would generate a relatively small amount of traffic (less than 200 trips during the busiest hour). Intersections affected by the project would have traffic volumes less than the BAAQMD screening criteria and, thus, would not cause a violation of an ambient air quality standard or have a considerable contribution to cumulative violations of these standards.⁴

Impact 4: Expose sensitive receptors to substantial pollutant concentrations? *Less than significant with construction period Mitigation Measures AQ-1 and AQ-2*

Sensitive receptors are locations where an identifiable subset of the general population (children, asthmatics, the elderly, and the chronically ill) that is at greater risk to the effects of air pollutants are likely to be exposed. These locations include residences, schools, playgrounds, childcare centers, retirement homes, hospitals, and medical clinics. Operation of the project is not expected to cause any localized emissions that could expose sensitive receptors to unhealthy air pollutant levels. Construction activity would generate dust and equipment exhaust on a temporary basis. There are no nearby sources of air pollutant emissions that could adversely affect new residents.

Much of the construction activities would be at least 100 feet away from sensitive receptors and temporary in nature. The use of heavy diesel equipment would occur mainly during the demolition and grading phases of the project that are anticipated to last less than 6 months. Diesel exhaust associated with construction activity is considered a TAC, since it can cause cancer and includes fine particulate matter or PM_{2.5}. If uncontrolled, construction activities have the potential to result in elevated concentrations of diesel particulate matter and fugitive dust PM_{2.5} concentrations at nearby sensitive receptors. As a result, the impact is considered potentially significant. Use of newer or retrofitted diesel equipment, alternatively-fueled equipment and limiting the hours of use would greatly reduce impacts such to ensure that significant health risks do not occur.

Mitigation Measure AQ-2: Equipment Selection to minimize emissions. Such equipment selection would include the following:

1. All diesel-powered mobile equipment larger than 50 horsepower (e.g., loaders, excavators, graders) and operating on the site for more than two days consecutively shall meet U.S. EPA

⁴ For a land-use project type, the BAAQMD CEQA Air Quality Guidelines state that a proposed project would result in a less than significant impact to localized carbon monoxide concentrations if the project would not increase traffic at affected intersections to more than 44,000 vehicles per hour.

particulate matter emissions standards for Tier 2 engines or equivalent; or alternative measures such as the use of alternative-powered equipment (e.g., LPG-powered forklifts), alternative fuels (e.g., biofuels), added exhaust devices, or a combination of measures, provided that these measures are approved by the lead agency;

2. All diesel-powered portable equipment (e.g., generators and compressors) operating on the site for more than two days consecutively shall meet U.S. EPA particulate matter emissions standards for Tier 4 engines or equivalent; or the construction contractor shall use alternative-powered equipment (e.g., LPG-powered forklifts), alternative fuels (e.g., biofuels), added exhaust devices, or a combination of measures, provided that these measures are approved by the lead agency;
3. Provide line power to the site during the building construction phases to minimize diesel-powered generator use; and
4. Minimize the number of hours that equipment will operate including the use of idling restrictions.

Implementation of *Mitigation Measure AQ-2* is considered to reduce diesel particulate matter emissions by 64 percent. Implementation of *Mitigation Measure AQ-1* would further reduce on-site diesel exhaust emissions by 5 percent.

Impact 5: Create objectionable odors affecting a substantial number of people? ***Less than significant.***

The project would generate localized emissions of diesel exhaust during construction equipment operation and truck activity. These emissions may be noticeable from time to time by adjacent receptors. However, they would be localized and are not likely to adversely affect people off site by resulting in confirmed odor complaints. There were no identified odor sources that would affect the project in terms of generating frequent odor complaints.

Impact 6: Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment? ***Less than significant***

The BAAQMD May 2011 CEQA Guidelines included GHG emissions-based significance thresholds. These thresholds include a “bright-line” emissions level of 1,100 metric tons per year for land-use type projects and 10,000 metric tons per year for stationary sources. Land use projects with emissions above the 1,100 metric ton per year threshold would then be subject to a GHG efficiency threshold of 4.6 metric tons per year per capita. Projects with emissions above the thresholds would be considered to have an impact, which, cumulatively, would be significant. The project size, 230 apartment units, exceeds the screening size listed in the 2011 BAAQMD CEQA Air Quality Guidelines as having less than significant GHG emissions. Therefore, a refined analysis that includes modeling of GHG emissions from the project was conducted.

The CalEEMod model was also used to predict GHG emissions from operation of the site assuming full build-out of the project. GHG emissions associated with construction were computed to be 763 metric tons CO₂e. Note that CO₂e is considered the emissions of all greenhouse gases expressed as equivalent carbon dioxide based on the warming potential for each gas. The warming potentials are based on the values assigned by CalEEMod. These are the emissions from on-site operation of construction equipment, and hauling truck, vendor truck, and worker trips. The BAAQMD does not have an adopted Threshold of Significance for construction-related GHG emissions, though total construction period emissions would be less than the BAAQMD operational threshold of 1,100 metric tons CO₂e per year.

The District recommends quantifying emissions and disclosing that GHG emissions would occur during construction. BAAQMD also encourages the incorporation of best management practices to reduce GHG emissions during construction where feasible and applicable. Best management practices assumed to be incorporated into construction of the proposed project include, but are not limited to: using local building materials of at least 10 percent and recycling or reusing at least 50 percent of construction waste or demolition materials.

The CalEEMod model was used to predict daily emissions associated with operation of the fully-developed site under the proposed project. In 2017, annual emissions resulting from the proposed project are predicted to be 1,929 metric tons of CO₂e. These emissions would exceed the BAAQMD threshold of 1,100 metric tons of CO₂e/yr. As discussed above, land use projects with emissions above the 1,100 metric ton per year threshold would be subject to a GHG efficiency threshold of 4.6 metric tons per year per capita to determine impact significance. Computed project per capita emissions are 2.6 metric tons of CO₂e/year/service population, which would not exceed the BAAQMD threshold of 4.6 metric tons of CO₂e/year/service population. Table 4 shows predicted project GHG emissions. GHG emissions are included in the CalEEMod output that is provided as *Attachment 1*.

Table 4. Annual Project GHG Emissions in Metric Tons

Source Category	2017 Project Emissions
Construction (2 years)	763
Operation	
Area	11
Energy Consumption	455
Mobile	1,373
Solid Waste Generation	48
Water Usage	42
Total	1,929
GHG Per Capita Emissions¹	2.6
BAAQMD Threshold	4.6 MT CO ₂ e/year/S.P.
Significant?	No

Note: ¹Based on service population of 741.

Impact 7: Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases? **No Impact.**

The project would be subject to new requirements under rule making developed at the State and local level regarding greenhouse gas emissions and be subject to local policies that may affect emissions of greenhouse gases.

Attachment 1: CalEEMod Output Worksheets

Stoneman Apartments

Contra Costa County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Apartments Low Rise	230.00	Dwelling Unit	9.60	230,000.00	658

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	58
Climate Zone	5			Operational Year	2017
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MW hr)	445	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Assume PG&E with existing certified emission rates

Land Use - Based on draft traffic study description

Construction Phase - Assumed a 90-day demolition period

Demolition - Estimating about 100,000 sf of buildings with main building about 75,000

Architectural Coating - Assume coatings meet BAAQMD regs

Construction Off-road Equipment Mitigation - Tier 2 Mobile and Tier 4 Portable equipment along with BMPs for dust control

Woodstoves - Assumed no woodstoves or wood burning and all natural gas fireplaces

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Interior	100.00	150.00
tblArchitecturalCoating	EF_Residential_Interior	100.00	150.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	10.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	20.00	90.00
tblConstructionPhase	PhaseEndDate	5/19/2016	2/11/2016
tblConstructionPhase	PhaseStartDate	5/6/2016	1/29/2016
tblFireplaces	NumberGas	126.50	159.00
tblFireplaces	NumberWood	32.20	0.00

tblLandUse	LotAcreage	14.38	9.60
tblProjectCharacteristics	CO2IntensityFactor	641.35	445
tblProjectCharacteristics	OperationalYear	2014	2017
tblWoodstoves	WoodstoveWoodMass	954.80	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	0.7221	6.1539	5.4278	7.9000e-003	0.3937	0.3535	0.7472	0.1413	0.3306	0.4719	0.0000	692.8695	692.8695	0.1318	0.0000	695.6363
2017	2.2202	0.5072	0.4694	7.9000e-004	0.0203	0.0305	0.0508	5.4200e-003	0.0285	0.0339	0.0000	67.2978	67.2978	0.0131	0.0000	67.5730
Total	2.9424	6.6611	5.8972	8.6900e-003	0.4140	0.3840	0.7980	0.1467	0.3591	0.5058	0.0000	760.1673	760.1673	0.1449	0.0000	763.2093

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	0.2625	4.0479	4.7699	7.9000e-003	0.2809	0.1159	0.3968	0.0710	0.1154	0.1864	0.0000	692.8690	692.8690	0.1318	0.0000	695.6357
2017	2.1857	0.3994	0.4881	7.9000e-004	0.0203	0.0127	0.0330	5.4200e-003	0.0127	0.0181	0.0000	67.2978	67.2978	0.0131	0.0000	67.5729
Total	2.4482	4.4473	5.2579	8.6900e-003	0.3012	0.1287	0.4298	0.0764	0.1281	0.2045	0.0000	760.1667	760.1667	0.1449	0.0000	763.2087

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	16.79	33.24	10.84	0.00	27.25	66.49	46.14	47.94	64.32	59.57	0.00	0.00	0.00	0.00	0.00	0.00

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.1147	0.0201	1.7250	9.0000e-005		9.9000e-003	9.9000e-003		9.8900e-003	9.8900e-003	0.0000	10.4336	10.4336	2.9500e-003	1.4000e-004	10.5389
Energy	0.0290	0.2481	0.1056	1.5800e-003		0.0201	0.0201		0.0201	0.0201	0.0000	452.4135	452.4135	0.0163	7.4900e-003	455.0781
Mobile	0.8999	1.9179	9.0425	0.0179	1.2607	0.0233	1.2840	0.3376	0.0215	0.3591	0.0000	1,371.9465	1,371.9465	0.0596	0.0000	1,373.1986
Waste						0.0000	0.0000		0.0000	0.0000	21.4764	0.0000	21.4764	1.2692	0.0000	48.1301
Water						0.0000	0.0000		0.0000	0.0000	4.7542	23.0414	27.7956	0.4898	0.0118	41.7520
Total	2.0436	2.1861	10.8731	0.0196	1.2607	0.0533	1.3140	0.3376	0.0514	0.3890	26.2306	1,857.8350	1,884.0656	1.8379	0.0195	1,928.6977

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.1147	0.0201	1.7250	9.0000e-005		9.9000e-003	9.9000e-003		9.8900e-003	9.8900e-003	0.0000	10.4336	10.4336	2.9500e-003	1.4000e-004	10.5389
Energy	0.0290	0.2481	0.1056	1.5800e-003		0.0201	0.0201		0.0201	0.0201	0.0000	452.4135	452.4135	0.0163	7.4900e-003	455.0781
Mobile	0.8999	1.9179	9.0425	0.0179	1.2607	0.0233	1.2840	0.3376	0.0215	0.3591	0.0000	1,371.9465	1,371.9465	0.0596	0.0000	1,373.1986

Waste						0.0000	0.0000		0.0000	0.0000	21.4764	0.0000	21.4764	1.2692	0.0000	48.1301
Water						0.0000	0.0000		0.0000	0.0000	4.7542	23.0414	27.7956	0.4897	0.0118	41.7444
Total	2.0436	2.1861	10.8731	0.0196	1.2607	0.0533	1.3140	0.3376	0.0514	0.3890	26.2306	1,857.8350	1,884.0656	1.8378	0.0195	1,928.6901

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2016	5/5/2016	5	90	
2	Site Preparation	Site Preparation	1/29/2016	2/11/2016	5	10	
3	Grading	Grading	2/12/2016	3/10/2016	5	20	
4	Building Construction	Building Construction	3/11/2016	1/26/2017	5	230	
5	Paving	Paving	1/27/2017	2/23/2017	5	20	
6	Architectural Coating	Architectural Coating	2/24/2017	3/23/2017	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 10

Acres of Paving: 0

Residential Indoor: 465,750; Residential Outdoor: 155,250; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Demolition	Excavators	3	8.00	162	0.38
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73

Grading	Excavators	1	8.00	162	0.38
Building Construction	Cranes	1	7.00	226	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Paving	Pavers	2	8.00	125	0.42
Paving	Rollers	2	8.00	80	0.38
Demolition	Rubber Tired Dozers	2	8.00	255	0.40
Grading	Rubber Tired Dozers	1	8.00	255	0.40
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading	Graders	1	8.00	174	0.41
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Paving	Paving Equipment	2	8.00	130	0.36
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	3	8.00	255	0.40
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	455.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	166.00	25.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	33.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Use Soil Stabilizer

Replace Ground Cover

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Demolition - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0492	0.0000	0.0492	7.4500e-003	0.0000	7.4500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1929	2.0545	1.5764	1.8000e-003		0.1032	0.1032		0.0961	0.0961	0.0000	166.9381	166.9381	0.0454	0.0000	167.8915
Total	0.1929	2.0545	1.5764	1.8000e-003	0.0492	0.1032	0.1524	7.4500e-003	0.0961	0.1036	0.0000	166.9381	166.9381	0.0454	0.0000	167.8915

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	5.2700e-003	0.0682	0.0568	1.7000e-004	3.8400e-003	8.8000e-004	4.7300e-003	1.0600e-003	8.1000e-004	1.8700e-003	0.0000	15.5950	15.5950	1.2000e-004	0.0000	15.5974
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5400e-003	3.7400e-003	0.0365	7.0000e-005	6.1500e-003	5.0000e-005	6.2000e-003	1.6300e-003	5.0000e-005	1.6800e-003	0.0000	5.5499	5.5499	3.1000e-004	0.0000	5.5564
Total	7.8100e-003	0.0720	0.0933	2.4000e-004	9.9900e-003	9.3000e-004	0.0109	2.6900e-003	8.6000e-004	3.5500e-003	0.0000	21.1449	21.1449	4.3000e-004	0.0000	21.1538

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0222	0.0000	0.0222	1.6800e-003	0.0000	1.6800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0501	1.2953	1.1369	1.8000e-003		0.0334	0.0334		0.0334	0.0334	0.0000	166.9379	166.9379	0.0454	0.0000	167.8913
Total	0.0501	1.2953	1.1369	1.8000e-003	0.0222	0.0334	0.0555	1.6800e-003	0.0334	0.0351	0.0000	166.9379	166.9379	0.0454	0.0000	167.8913

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	5.2700e-003	0.0682	0.0568	1.7000e-004	3.8400e-003	8.8000e-004	4.7300e-003	1.0600e-003	8.1000e-004	1.8700e-003	0.0000	15.5950	15.5950	1.2000e-004	0.0000	15.5974
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5400e-003	3.7400e-003	0.0365	7.0000e-005	6.1500e-003	5.0000e-005	6.2000e-003	1.6300e-003	5.0000e-005	1.6800e-003	0.0000	5.5499	5.5499	3.1000e-004	0.0000	5.5564
Total	7.8100e-003	0.0720	0.0933	2.4000e-004	9.9900e-003	9.3000e-004	0.0109	2.6900e-003	8.6000e-004	3.5500e-003	0.0000	21.1449	21.1449	4.3000e-004	0.0000	21.1538

3.3 Site Preparation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
--	-----	-----	----	-----	---------------	--------------	------------	----------------	---------------	-------------	----------	-----------	-----------	-----	-----	------

Category	tons/yr										MT/yr					
Fugitive Dust					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0254	0.2732	0.2055	2.0000e-004		0.0147	0.0147		0.0135	0.0135	0.0000	18.4386	18.4386	5.5600e-003	0.0000	18.5554
Total	0.0254	0.2732	0.2055	2.0000e-004	0.0903	0.0147	0.1050	0.0497	0.0135	0.0632	0.0000	18.4386	18.4386	5.5600e-003	0.0000	18.5554

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.4000e-004	5.0000e-004	4.8700e-003	1.0000e-005	8.2000e-004	1.0000e-005	8.3000e-004	2.2000e-004	1.0000e-005	2.2000e-004	0.0000	0.7400	0.7400	4.0000e-005	0.0000	0.7409
Total	3.4000e-004	5.0000e-004	4.8700e-003	1.0000e-005	8.2000e-004	1.0000e-005	8.3000e-004	2.2000e-004	1.0000e-005	2.2000e-004	0.0000	0.7400	0.7400	4.0000e-005	0.0000	0.7409

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0407	0.0000	0.0407	0.0112	0.0000	0.0112	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.1500e-003	0.1721	0.1170	2.0000e-004		4.8100e-003	4.8100e-003		4.8100e-003	4.8100e-003	0.0000	18.4385	18.4385	5.5600e-003	0.0000	18.5553

Total	6.1500e-003	0.1721	0.1170	2.0000e-004	0.0407	4.8100e-003	0.0455	0.0112	4.8100e-003	0.0160	0.0000	18.4385	18.4385	5.5600e-003	0.0000	18.5553
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Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.4000e-004	5.0000e-004	4.8700e-003	1.0000e-005	8.2000e-004	1.0000e-005	8.3000e-004	2.2000e-004	1.0000e-005	2.2000e-004	0.0000	0.7400	0.7400	4.0000e-005	0.0000	0.7409
Total	3.4000e-004	5.0000e-004	4.8700e-003	1.0000e-005	8.2000e-004	1.0000e-005	8.3000e-004	2.2000e-004	1.0000e-005	2.2000e-004	0.0000	0.7400	0.7400	4.0000e-005	0.0000	0.7409

3.4 Grading - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0655	0.0000	0.0655	0.0337	0.0000	0.0337	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0367	0.3845	0.2608	3.0000e-004		0.0220	0.0220		0.0202	0.0202	0.0000	28.0664	28.0664	8.4700e-003	0.0000	28.2442
Total	0.0367	0.3845	0.2608	3.0000e-004	0.0655	0.0220	0.0875	0.0337	0.0202	0.0539	0.0000	28.0664	28.0664	8.4700e-003	0.0000	28.2442

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.7000e-004	8.3000e-004	8.1100e-003	2.0000e-005	1.3700e-003	1.0000e-005	1.3800e-003	3.6000e-004	1.0000e-005	3.7000e-004	0.0000	1.2333	1.2333	7.0000e-005	0.0000	1.2348
Total	5.7000e-004	8.3000e-004	8.1100e-003	2.0000e-005	1.3700e-003	1.0000e-005	1.3800e-003	3.6000e-004	1.0000e-005	3.7000e-004	0.0000	1.2333	1.2333	7.0000e-005	0.0000	1.2348

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0295	0.0000	0.0295	7.5800e-003	0.0000	7.5800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0110	0.2626	0.2038	3.0000e-004		8.2300e-003	8.2300e-003		8.2300e-003	8.2300e-003	0.0000	28.0664	28.0664	8.4700e-003	0.0000	28.2441
Total	0.0110	0.2626	0.2038	3.0000e-004	0.0295	8.2300e-003	0.0377	7.5800e-003	8.2300e-003	0.0158	0.0000	28.0664	28.0664	8.4700e-003	0.0000	28.2441

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.7000e-004	8.3000e-004	8.1100e-003	2.0000e-005	1.3700e-003	1.0000e-005	1.3800e-003	3.6000e-004	1.0000e-005	3.7000e-004	0.0000	1.2333	1.2333	7.0000e-005	0.0000	1.2348
Total	5.7000e-004	8.3000e-004	8.1100e-003	2.0000e-005	1.3700e-003	1.0000e-005	1.3800e-003	3.6000e-004	1.0000e-005	3.7000e-004	0.0000	1.2333	1.2333	7.0000e-005	0.0000	1.2348

3.5 Building Construction - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.3594	3.0074	1.9525	2.8300e-003		0.2076	0.2076		0.1950	0.1950	0.0000	255.4720	255.4720	0.0634	0.0000	256.8026
Total	0.3594	3.0074	1.9525	2.8300e-003		0.2076	0.2076		0.1950	0.1950	0.0000	255.4720	255.4720	0.0634	0.0000	256.8026

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0331	0.2642	0.3796	6.3000e-004	0.0170	3.9000e-003	0.0209	4.8700e-003	3.5800e-003	8.4500e-003	0.0000	56.8431	56.8431	4.5000e-004	0.0000	56.8526
Worker	0.0660	0.0970	0.9467	1.8900e-003	0.1595	1.3000e-003	0.1608	0.0424	1.1900e-003	0.0436	0.0000	143.9932	143.9932	7.9800e-003	0.0000	144.1607
Total	0.0991	0.3611	1.3263	2.5200e-003	0.1764	5.2000e-003	0.1816	0.0473	4.7700e-003	0.0520	0.0000	200.8363	200.8363	8.4300e-003	0.0000	201.0133

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0875	1.8835	1.8795	2.8300e-003		0.0634	0.0634		0.0634	0.0634	0.0000	255.4717	255.4717	0.0634	0.0000	256.8023
Total	0.0875	1.8835	1.8795	2.8300e-003		0.0634	0.0634		0.0634	0.0634	0.0000	255.4717	255.4717	0.0634	0.0000	256.8023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0331	0.2642	0.3796	6.3000e-004	0.0170	3.9000e-003	0.0209	4.8700e-003	3.5800e-003	8.4500e-003	0.0000	56.8431	56.8431	4.5000e-004	0.0000	56.8526
Worker	0.0660	0.0970	0.9467	1.8900e-003	0.1595	1.3000e-003	0.1608	0.0424	1.1900e-003	0.0436	0.0000	143.9932	143.9932	7.9800e-003	0.0000	144.1607
Total	0.0991	0.3611	1.3263	2.5200e-003	0.1764	5.2000e-003	0.1816	0.0473	4.7700e-003	0.0520	0.0000	200.8363	200.8363	8.4300e-003	0.0000	201.0133

3.5 Building Construction - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0295	0.2509	0.1722	2.5000e-004		0.0169	0.0169		0.0159	0.0159	0.0000	22.7505	22.7505	5.6000e-003	0.0000	22.8681
Total	0.0295	0.2509	0.1722	2.5000e-004		0.0169	0.0169		0.0159	0.0159	0.0000	22.7505	22.7505	5.6000e-003	0.0000	22.8681

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.7600e-003	0.0213	0.0325	6.0000e-005	1.5300e-003	3.0000e-004	1.8300e-003	4.4000e-004	2.8000e-004	7.2000e-004	0.0000	5.0330	5.0330	4.0000e-005	0.0000	5.0339
Worker	5.2500e-003	7.8100e-003	0.0757	1.7000e-004	0.0144	1.1000e-004	0.0145	3.8200e-003	1.0000e-004	3.9200e-003	0.0000	12.4716	12.4716	6.6000e-004	0.0000	12.4853
Total	8.0100e-003	0.0291	0.1082	2.3000e-004	0.0159	4.1000e-004	0.0163	4.2600e-003	3.8000e-004	4.6400e-003	0.0000	17.5046	17.5046	7.0000e-004	0.0000	17.5192

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	7.8800e-003	0.1696	0.1693	2.5000e-004		5.7100e-003	5.7100e-003		5.7100e-003	5.7100e-003	0.0000	22.7505	22.7505	5.6000e-003	0.0000	22.8681

Total	7.8800e-003	0.1696	0.1693	2.5000e-004		5.7100e-003	5.7100e-003		5.7100e-003	5.7100e-003	0.0000	22.7505	22.7505	5.6000e-003	0.0000	22.8681
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Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.7600e-003	0.0213	0.0325	6.0000e-005	1.5300e-003	3.0000e-004	1.8300e-003	4.4000e-004	2.8000e-004	7.2000e-004	0.0000	5.0330	5.0330	4.0000e-005	0.0000	5.0339
Worker	5.2500e-003	7.8100e-003	0.0757	1.7000e-004	0.0144	1.1000e-004	0.0145	3.8200e-003	1.0000e-004	3.9200e-003	0.0000	12.4716	12.4716	6.6000e-004	0.0000	12.4853
Total	8.0100e-003	0.0291	0.1082	2.3000e-004	0.0159	4.1000e-004	0.0163	4.2600e-003	3.8000e-004	4.6400e-003	0.0000	17.5046	17.5046	7.0000e-004	0.0000	17.5192

3.6 Paving - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0191	0.2030	0.1473	2.2000e-004		0.0114	0.0114		0.0105	0.0105	0.0000	20.6934	20.6934	6.3400e-003	0.0000	20.8266
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0191	0.2030	0.1473	2.2000e-004		0.0114	0.0114		0.0105	0.0105	0.0000	20.6934	20.6934	6.3400e-003	0.0000	20.8266

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.0000e-004	7.4000e-004	7.2000e-003	2.0000e-005	1.3700e-003	1.0000e-005	1.3800e-003	3.6000e-004	1.0000e-005	3.7000e-004	0.0000	1.1863	1.1863	6.0000e-005	0.0000	1.1876
Total	5.0000e-004	7.4000e-004	7.2000e-003	2.0000e-005	1.3700e-003	1.0000e-005	1.3800e-003	3.6000e-004	1.0000e-005	3.7000e-004	0.0000	1.1863	1.1863	6.0000e-005	0.0000	1.1876

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	9.1200e-003	0.1970	0.1693	2.2000e-004		6.5400e-003	6.5400e-003		6.5400e-003	6.5400e-003	0.0000	20.6934	20.6934	6.3400e-003	0.0000	20.8265
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	9.1200e-003	0.1970	0.1693	2.2000e-004		6.5400e-003	6.5400e-003		6.5400e-003	6.5400e-003	0.0000	20.6934	20.6934	6.3400e-003	0.0000	20.8265

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.0000e-004	7.4000e-004	7.2000e-003	2.0000e-005	1.3700e-003	1.0000e-005	1.3800e-003	3.6000e-004	1.0000e-005	3.7000e-004	0.0000	1.1863	1.1863	6.0000e-005	0.0000	1.1876
Total	5.0000e-004	7.4000e-004	7.2000e-003	2.0000e-005	1.3700e-003	1.0000e-005	1.3800e-003	3.6000e-004	1.0000e-005	3.7000e-004	0.0000	1.1863	1.1863	6.0000e-005	0.0000	1.1876

3.7 Architectural Coating - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.1588					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.3200e-003	0.0219	0.0187	3.0000e-005		1.7300e-003	1.7300e-003		1.7300e-003	1.7300e-003	0.0000	2.5533	2.5533	2.7000e-004	0.0000	2.5589
Total	2.1621	0.0219	0.0187	3.0000e-005		1.7300e-003	1.7300e-003		1.7300e-003	1.7300e-003	0.0000	2.5533	2.5533	2.7000e-004	0.0000	2.5589

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1000e-003	1.6300e-003	0.0158	4.0000e-005	3.0000e-003	2.0000e-005	3.0300e-003	8.0000e-004	2.0000e-005	8.2000e-004	0.0000	2.6098	2.6098	1.4000e-004	0.0000	2.6127
Total	1.1000e-003	1.6300e-003	0.0158	4.0000e-005	3.0000e-003	2.0000e-005	3.0300e-003	8.0000e-004	2.0000e-005	8.2000e-004	0.0000	2.6098	2.6098	1.4000e-004	0.0000	2.6127

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.1588					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.0000e-004	1.2900e-003	0.0183	3.0000e-005		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	2.5533	2.5533	2.7000e-004	0.0000	2.5589
Total	2.1591	1.2900e-003	0.0183	3.0000e-005		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	2.5533	2.5533	2.7000e-004	0.0000	2.5589

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1000e-003	1.6300e-003	0.0158	4.0000e-005	3.0000e-003	2.0000e-005	3.0300e-003	8.0000e-004	2.0000e-005	8.2000e-004	0.0000	2.6098	2.6098	1.4000e-004	0.0000	2.6127
Total	1.1000e-003	1.6300e-003	0.0158	4.0000e-005	3.0000e-003	2.0000e-005	3.0300e-003	8.0000e-004	2.0000e-005	8.2000e-004	0.0000	2.6098	2.6098	1.4000e-004	0.0000	2.6127

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.8999	1.9179	9.0425	0.0179	1.2607	0.0233	1.2840	0.3376	0.0215	0.3591	0.0000	1,371.9465	1,371.9465	0.0596	0.0000	1,373.1986
Unmitigated	0.8999	1.9179	9.0425	0.0179	1.2607	0.0233	1.2840	0.3376	0.0215	0.3591	0.0000	1,371.9465	1,371.9465	0.0596	0.0000	1,373.1986

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	1,515.70	1,646.80	1396.10	3,387,265	3,387,265
Total	1,515.70	1,646.80	1,396.10	3,387,265	3,387,265

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Low Rise	12.40	4.30	5.40	26.10	29.10	44.80	86	11	3

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.527495	0.065038	0.176571	0.145330	0.036305	0.004850	0.009787	0.021393	0.001225	0.001483	0.006378	0.002095	0.002051

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	165.1047	165.1047	0.0108	2.2300e-003	166.0207
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	165.1047	165.1047	0.0108	2.2300e-003	166.0207
NaturalGas Mitigated	0.0290	0.2481	0.1056	1.5800e-003		0.0201	0.0201		0.0201	0.0201	0.0000	287.3088	287.3088	5.5100e-003	5.2700e-003	289.0574
NaturalGas Unmitigated	0.0290	0.2481	0.1056	1.5800e-003		0.0201	0.0201		0.0201	0.0201	0.0000	287.3088	287.3088	5.5100e-003	5.2700e-003	289.0574

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Low Rise	5.38396e+006	0.0290	0.2481	0.1056	1.5800e-003		0.0201	0.0201		0.0201	0.0201	0.0000	287.3088	287.3088	5.5100e-003	5.2700e-003	289.0574
Total		0.0290	0.2481	0.1056	1.5800e-003		0.0201	0.0201		0.0201	0.0201	0.0000	287.3088	287.3088	5.5100e-003	5.2700e-003	289.0574

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					

Apartments Low Rise	5.38396e+006	0.0290	0.2481	0.1056	1.5800e-003		0.0201	0.0201		0.0201	0.0201	0.0000	287.3088	287.3088	5.5100e-003	5.2700e-003	289.0574
Total		0.0290	0.2481	0.1056	1.5800e-003		0.0201	0.0201		0.0201	0.0201	0.0000	287.3088	287.3088	5.5100e-003	5.2700e-003	289.0574

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	817963	165.1047	0.0108	2.2300e-003	166.0207
Total		165.1047	0.0108	2.2300e-003	166.0207

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	817963	165.1047	0.0108	2.2300e-003	166.0207
Total		165.1047	0.0108	2.2300e-003	166.0207

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.1147	0.0201	1.7250	9.0000e-005		9.9000e-003	9.9000e-003		9.8900e-003	9.8900e-003	0.0000	10.4336	10.4336	2.9500e-003	1.4000e-004	10.5389
Unmitigated	1.1147	0.0201	1.7250	9.0000e-005		9.9000e-003	9.9000e-003		9.8900e-003	9.8900e-003	0.0000	10.4336	10.4336	2.9500e-003	1.4000e-004	10.5389

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1619					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.8983					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	7.7000e-004	0.0000	4.0000e-005	0.0000		5.3000e-004	5.3000e-004		5.3000e-004	5.3000e-004	0.0000	7.6440	7.6440	1.5000e-004	1.4000e-004	7.6905
Landscaping	0.0537	0.0201	1.7250	9.0000e-005		9.3700e-003	9.3700e-003		9.3700e-003	9.3700e-003	0.0000	2.7896	2.7896	2.8000e-003	0.0000	2.8484
Total	1.1147	0.0201	1.7250	9.0000e-005		9.9000e-003	9.9000e-003		9.9000e-003	9.9000e-003	0.0000	10.4336	10.4336	2.9500e-003	1.4000e-004	10.5389

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1619					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.8983					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	7.7000e-004	0.0000	4.0000e-005	0.0000		5.3000e-004	5.3000e-004		5.3000e-004	5.3000e-004	0.0000	7.6440	7.6440	1.5000e-004	1.4000e-004	7.6905
Landscaping	0.0537	0.0201	1.7250	9.0000e-005		9.3700e-003	9.3700e-003		9.3700e-003	9.3700e-003	0.0000	2.7896	2.7896	2.8000e-003	0.0000	2.8484
Total	1.1147	0.0201	1.7250	9.0000e-005		9.9000e-003	9.9000e-003		9.9000e-003	9.9000e-003	0.0000	10.4336	10.4336	2.9500e-003	1.4000e-004	10.5389

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	27.7956	0.4897	0.0118	41.7444
Unmitigated	27.7956	0.4898	0.0118	41.7520

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			

Apartments Low Rise	14.9854 / 9.44733	27.7956	0.4898	0.0118	41.7520
Total		27.7956	0.4898	0.0118	41.7520

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	14.9854 / 9.44733	27.7956	0.4897	0.0118	41.7444
Total		27.7956	0.4897	0.0118	41.7444

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	21.4764	1.2692	0.0000	48.1301
Unmitigated	21.4764	1.2692	0.0000	48.1301

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	105.8	21.4764	1.2692	0.0000	48.1301
Total		21.4764	1.2692	0.0000	48.1301

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	105.8	21.4764	1.2692	0.0000	48.1301
Total		21.4764	1.2692	0.0000	48.1301

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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10.0 Vegetation

**Historic Architectural Assessment Report
1201 Stoneman Avenue, Pittsburg
Contra Costa County, California**

PREPARED FOR:

JML Planning
45 Calle del Ribera
Stinson Beach, CA 94970

PREPARED BY:

WSA
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March 2015

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Introduction

WSA has been contracted by JML Planning to implement a records search and architectural assessment for an existing structure associated with the World War II-era Camp Stoneman military facility. The structure is located at 1201 Stoneman Avenue in Pittsburg, Contra Costa County, California (Figure 1 and Figure 2, all figures in Appendix A). The building was first used in the 1940s as the camp's Officer's Club (dining hall, library, bowling alley) within Camp Stoneman. The Pittsburg Unified School District acquired the property in 1962 and converted it into an office, library, and cafeteria as part of the Central Junior High School (closed since 2008). The structure meets the age criterion for assessment as a potential historic resource. In order to fulfill the requirements pertaining to cultural resources in sections 15064.5 of the California Environmental Quality Act (CEQA), WSA's qualified architectural historian conducted a study in order to make a recommendation regarding the structure's potential eligibility for listing in the California Register of Historical Resources (CRHR). In addition to the former Officer's Club, a pool/storage building associated with Camp Stoneman also remains standing on the property. While it meets the age criterion for assessment as a potential historic resource, it is not being formally evaluated as part of this scope of work. It is an expediently built utilitarian structure and WSA recommends it does not warrant individual evaluation. The project area is situated in Section 21 of Township 2 North, Range 1 East, as depicted on the Antioch North, California, 7.5' USGS topographic quadrangle (Figure 3). The parcel (APN 088-230-022) is presently occupied by the former Central Junior High School and the majority of the buildings are vacant, although a shop building is used for vocational education classes by the Pittsburg Adult School. WSA has recorded the former camp Officer's Club on appropriate Department of Parks and Recreation Primary Record (DPR 523) and associated (e.g., Building-Structure-Object) forms. These are attached in Appendix B.

Research Methods

WSA architectural historian Aimee Arrigoni, M.A., conducted a site visit to survey the property on January 28, 2015. During the visit, Ms. Arrigoni documented the building's layout and architectural features with photographs and field notes. WSA consulted with the California Historical Resources Information System, Northwest Information Center (NWIC) at Sonoma State University to conduct a records search to determine whether the structure on the project parcel is listed or previously has been recommended for listing on the CRHR. In addition, WSA consulted the Phase I Environmental Site Assessment RNC Environmental (2013) prepared for the project for further information. It contains a land use history based on a review of aerial photographs (1939, 1949, 1960, 1968, 1981, 1993) and USGS Topographic Maps (1953, 1978). The Phase I study also reviewed the Pittsburg zoning map and current property tax files to gather further land use information. No Sanborn Fire Insurance Company maps were identified that cover the subject property. The information presented in

the Phase I study was combined with George Emanuels' 1993 work, *California's Contra Costa County: An Illustrated History*, a history of Camp Stoneman available in Front and Center, the monthly electronic newsletter of the California State Military Museums (Johnson 2012), as well as information on file at WSA to understand the historic context within which the former camp Officer's Club should be evaluated.

Historic Overview

The earliest overland exploration of Contra Costa County took place during the Fages-Crespi Expedition of 1772. Traveling through what are now Milpitas, San Lorenzo, Oakland, and Berkeley, the party reached Pinole on March 28, 1772 (Cook 1957:131). From there they traveled through Rodeo and Crockett to Martinez, made a brief foray into the delta region of the Central Valley, and then made camp somewhere near Pittsburg or Antioch. On March 31, Fages and Crespi decided to return to Monterey. They traveled to modern day Walnut Creek, turned south, and then made their way to the location of Danville, where they spent the night. On April 1 they passed through today's San Ramon and Dublin to reach Pleasanton. On April 2 they arrived back in the area of Milpitas.

The Anza-Font Expedition reached the East Bay hills in March 1776 by following a route similar to that of the earlier Fages-Crespi Expedition. Regarding the Native American population, Cook wrote:

On the return journey, Crespi traversed the valley from Walnut Creek to Dublin, Pleasanton, and near Niles, and noted a scattering of rancherias at least as far as Pleasanton. ...it is clear that the heavy concentration of population was along the Bay Shore... [while] secondary centers were in the broader and lower interior valleys, west and north of Mount Diablo. [Cook 1957: 136]

In 1775, Captain Juan Manuel Ayala's expedition explored the San Francisco Bay and ventured up the Sacramento and San Joaquin rivers in search of suitable mission sites. The first mission in the region, Mission San Francisco de Asis (Mission Dolores) in San Francisco, was established in 1776. It was followed by the formation of other missions in the area, including the Mission Santa Clara de Asis in Santa Clara, and the Mission San Jose de Guadalupe in Fremont.

Mexican independence from Spain had far-reaching consequences in coastal California. Despite initially attempting to maintain the established missions, the Mexican government soon secularized the entire system. The institutions that had once served as the center of colonial power had now become parish churches, and government finances and efforts were focused elsewhere. Before long the land that was once occupied by the vast herds of mission cattle began to be divided into large ranchos. In 1839, the Mexican government granted

almost 10,000 acres, known as Rancho Los Medanos, to Jose Antone Mesa and Miguel Jose Garcia. The rancho encompassed modern-day Pittsburg and the current project area.

Deterioration of relations between the United States and Mexico resulted in the Mexican War, which ended with Mexico relinquishing California to the United States under the Treaty of Guadalupe Hidalgo of 1848. With the formation of the new State of California, and the onset of the American period, rapid changes were in store for the region. The discovery of gold in the Sierra Nevada in 1848 produced a major population increase in the northern half of California as emigrants sought gold or various jobs producing goods or services for miners. Land use changes resulted as livestock grazed some native grasses to extinction, woodlands were cut for lumber, railroad ties, and mine timbers, and agricultural development occurred on nearly all arable land. The future site of Pittsburg was soon named New York of the Pacific. The gentleman who laid out the town, J. D. Stevenson, was a native of New York, and may have named it for his hometown. The area soon became known as New York Landing, and fishing and canning operations were established there.

When coal was discovered in the nearby hills at the turn-of-the-century the name of the town was changed to Black Diamond. Finally, on February 11, 1911, five years after Columbia Geneva Steel opened, the town was renamed Pittsburg, after the famous birthplace of the steel industry in Pennsylvania.

Construction of Camp Stoneman was authorized in January, 1942. The military began negotiations to acquire the necessary property, acquiring a total of 2,841 acres from various entities. The largest tract appears to have been owned by C.A. Hooper, a developer with ranching and industrial interests, who had owned the property since the turn-of-the-century (Johnson 2012). An aerial photograph taken in 1939 confirms that the current project area was part of a large open field at the time and was being used for grazing and hay cutting prior to acquisition for construction of the camp (RNC Environmental 2013:11). The San Francisco general contractors McDonald & Kahn won the construction bid and work was completed by September of that year. According to Johnson (2012):

Construction was began [sic] on February 11, and completed on September 20. The first troops arrived at the camp on May 25, 1942. The camp was formally activated on 28 May 1942. About 700 carpenters and other workers from as far as Oklahoma responded to the task. Some boarded with local residents. Others lived in trailers and tents on the waterfront. The first commanding officer was Colonel Murray H. Ellis, a graduate of Allegheny College in Pennsylvania, and a cavalry officer. The camp was a permanent base for 125 officers and 2,000 troops. Camp Stoneman could house and mess over 2,000 troops at a time on its 2,800 acres. Stoneman also housed German and Italian prisoners of war.

For thousands of GIs who went to fight in the Pacific Theater operations during World War II and later the Korean conflict, their departure from the United States began at Camp Stoneman. Pittsburg was well suited as a point of deployment, since two rail lines and a paved highway served the area, and the San Joaquin River provided access to the San Francisco Bay (Johnson 2012). The most common way for troops to leave was to march down Harbor Street to the waterfront, where a ferry took them to Fort Mason where they boarded ships bound for the Pacific.

Facilities within Camp Stoneman included the following:

- 346 barracks
- 86 administrative and storehouses
- 8 infirmaries
- 9 post exchanges
- 14 recreation halls
- 13 mess halls
- 24-hour
- shoe repair /tailoring
- 1 post office
- 1 chapel
- 1 stockade
- fire department
- water reservoir
- bakery
- Red Cross station
- meat cutting plant
- library
- 31 miles of roads
- 2 gyms
- baseball diamond
- 8 basketball courts
- 8 boxing rings
- indoor pool and bowling alley

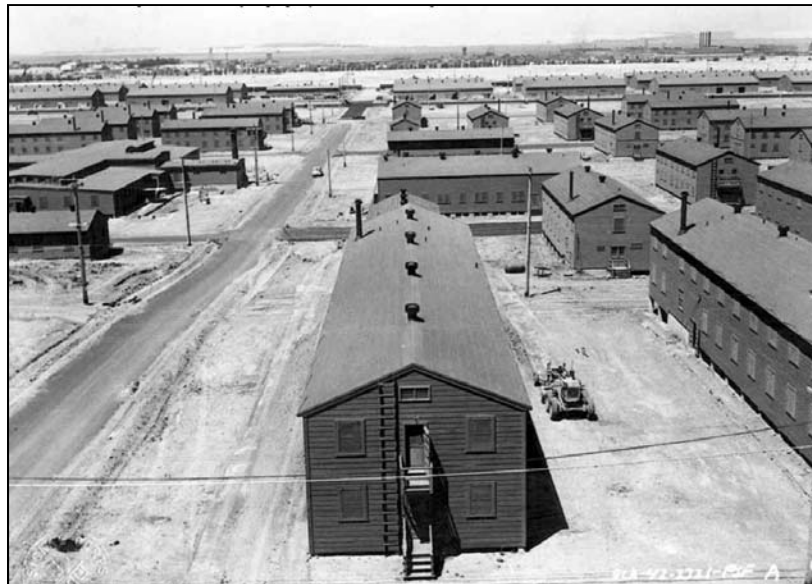


Photo 1. View of Camp Stoneman in 1942. The Officer's Club is out of the photo to the right.

In addition, Johnson (2012) reports the camp contained a telephone center with a bank of operators who could accommodate 2,000 long-distance calls a day. The camp hosted the likes of Groucho Marx, Gary Moore, and Red Skelton, who were featured in USO shows on base.

A 1949 aerial photo of the current project area shows multiple buildings on the property including the Officer's Club, a pool/storage building, and six other buildings (likely barracks) (RNC Environmental 2013:11). The pool depicted to the north of the east wing of the Officer's Club has since been filled and covered with a concrete patio. In the photo, rows of barracks stretch out in all directions surrounding the project area.

In 1954, the camp was closed despite a "Save Stoneman" campaign sponsored by local residents who feared the loss of jobs and business that the closure represented. In 1960, the GSA sold 750 buildings for removal from the camp (Johnson 2012). The more solidly constructed buildings, such as warehouses and chapels, were sold with the main garrison land, which comprised 1,000 acres. A 1960 aerial photo of the current project area confirms that the buildings standing in 1949 were still present and their configuration had not been altered (RNC Environmental 2013:11). The final Camp Stoneman parcels were not disposed of until 1962, the year the current project area was acquired by the Pittsburg Unified School District. The Central Junior High School was built on the property shortly thereafter, and incorporated the former camp Officer's Club and pool/storage building previously used by military personnel. A 1968 aerial photo of the project area confirms that most of the camp buildings had been demolished and the property had been redeveloped as a school (RNC Environmental 2013:11). The junior high was closed in 2008.

The type of residential and retail growth associated with the area today did not generally begin until after 1960. While SR4 has served the region for many years, work to widen the freeway and increase accessibility continues today. The expansion of BART to the east county region has also more fully connected the area to the communities to the west.

The land formerly within Camp Stoneman's boundaries has been extensively redeveloped since the camp's closure. It now includes residences, light industry, office buildings, Los Medanos College, a public golf course, and Stoneman Park.

Results of the Record Search

On behalf of WSA, staff at the California Historical Resources Information System, Northwest Information Center at Sonoma State University conducted a records search of the project vicinity on March 17, 2015 (File No. 14-1197). The study included a review of records on file at the California Archaeological Inventory. In addition, the Office of Historic Preservation indices for Pittsburg and the *California Inventory of Historic Resources* listings for Pittsburg were consulted. Results of the record search indicate that there are no previously recorded archaeological sites within the project area and that the structures within the project area are not listed or have not been previously recommended for listing on the California Register of Historical Resources. No previous cultural resources studies have included the project area.

Description of the Built Resource

WSA architectural historian Aimee Arrigoni, M.A., conducted a site visit to record the former Officer's Club on the property on January 28, 2015. Since its use as an officer's club (1942-1954) the building was converted into an office/library/cafeteria as part of the Central Junior High School complex and was in use in that capacity from the mid-1960s until the school was closed in 2008. Ms. Arrigoni documented the building's layout and architectural features with photographs and field notes and subsequently prepared a sketch map of the property (see DPR forms in Appendix B).

The large former Officer's Club is rear-facing, 'T' in plan, and is finished in beige-painted stucco. The east and west wings have flat roofs and the central wing (main entrance) has a low-pitched front gabled roof detail accented by vertical columns (Photo 1, all photos in Appendix C). The long axis of the building includes offices and a cafeteria, while the library is located in the 'T' extending from the rear of the building (Photo 2). Trim is painted a faded green. The large metal windows are primarily fixed panels of repeating rectangular shapes. Both the windows and a decorative molded band (stucco) at the windows serve as unifying exterior design elements (Photo 3). Several windows have been boarded over due to vandalism. What appear to be large ash trees and a series of cypress trees line the facade of the building. The main entry to the building appears to have been modified with aluminum windows and entry doors at the time it was converted for use as a school office and cafeteria (Photo 4).

Flat awnings accent entrances to the building (Photo 5). A corrugated metal awning has been attached to the east end of the east wing and covers utility equipment (Photo 6). The Phase I Environmental Site Assessment (RNC Environmental 2013) notes that an elevator was added to the building within the last ten years to address ADA compliance (Photo 7). The concrete ramp at the west end of the west wing was also likely added at the same time (refer to Photo 5).

A mural has been painted on the exterior of the west elevation of the library (Photo 8). The library entry doors were likely modified when the building was converted from military to school use (refer to Photo 8). Tall cypress trees flank a large exterior chimney (stucco) on the north elevation of the library (Photo 9). The chimney has the same banded detail visible on the windows.

A swimming pool was once located north of the east wing of the building. It is now filled and covered with a concrete patio (Photo 10). A metal and corrugated plastic awning has also been attached to the north elevation of the east wing of the building. It provided shade for students eating outside the cafeteria. A roll-up door has been installed under the awning. It replaced one large window and provides access to an interior work space (refer to Photo 10).

While the interior of the building was not examined as part of this scope of work, the Phase I report (RNC Environmental 2013) indicates that a bowling alley formerly occupied the basement of the Officer's Club. The wood flooring has been removed from the former bowling alley, although it is unknown if any associated equipment remains in place.

CRHR Criteria for Evaluation

Under CEQA, both public and private projects with financing or approval from a public agency must assess a project's effects on cultural resources (Public Resources Code Section 21082, 21083.2 and 21084 and California Code of Regulations 10564.5). Cultural resources are buildings, sites, cultural landscapes, traditional cultural properties, structures, or objects that may have historical, architectural, cultural, or scientific importance. CEQA states that if a project will have a significant impact on important cultural resources, then project alternatives and mitigation measures must be considered.

CEQA defines *historical resources* as “resources listed or eligible for listing in the California Register of Historical Resources (CRHR)” (Public Resources Code Section 5024.1). A property may be considered a historical resource if it meets one of the following criteria for listing on the CRHR:

1. It is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
2. It is associated with the lives of persons important to California's past;
3. It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
4. It has yielded or is likely to yield information important in prehistory or history [Public Resources Code Section 5024.1].

A resource included in a local register of historical resources, as defined in section 5020.1(k) of the Public Resources Code or identified as significant in an historical resource survey meeting the requirements of section 5024.1(g) of the Public Resources Code, shall be presumed to be historically or culturally significant. Public agencies must treat any such resource as significant unless the preponderance of evidence demonstrates that it is not historically or culturally significant.

The fact that a resource is not listed in, or determined to be eligible for listing in the CRHR, not included in a local register of historical resources (pursuant to section 5020.1(k) of the Public Resources Code), or identified in an historical resources survey (meeting the criteria in section 5024.1(g) of the Public Resources Code) does not preclude a lead agency from

determining that the resource may be an historical resource as defined in Public Resources Code sections 5020.1(j) or 5024.1.

Integrity

In addition to meeting one or more of the four specific criteria listed above, an archaeological site or architectural resource must possess “integrity” to qualify for listing in the CRHR. Integrity is generally evaluated with reference to seven aspects, which include location, design (i.e., site structure), materials, workmanship, setting, feeling, and association. A potentially eligible site must retain the integrity of the values that would make it significant. Typically, for architectural resources integrity is indicated by evidence of the retention of the features that maintain contextual association with historical developments or personages that render them significant (Criteria A/1, B/2, and/or C/3). Evidence of the preservation of this context is typically determined by the level of preservation of historic and architectural features that associate a property with significant events, personages, or styles.

Integrity refers both to the authenticity of a property’s historic identity, as shown by the survival of physical characteristics that existed during its historic period, and to the ability of the property to convey its significance. This is often not an all-or-nothing scenario (determinations can be subjective); however, the final judgment must be based on the relationship between a property’s features and its significance.

Evaluation of the former Officer's Club

The Officer's Club is evaluated below based on the CRHR criteria presented above.

Criterion 1. The Officer's Club was constructed in 1942 as part of Camp Stoneman, a processing center for thousands of soldiers on their way to fight both in the Pacific Theater during World War II and, later, in Korea. The building has an important association with the Camp and events that have made a significant contribution to the broad patterns of California's history and cultural heritage, particularly California's role as a distribution point for men and material during World War II and the Korean conflict. As a result, WSA recommends that the Officer's Club meets Criterion 1 of the CRHR. WSA does not recommend that the Officer's Club is eligible for listing on the CRHR, however, due to its lack of integrity (see below).

Criterion 2. The Officer's Club is not associated with the lives of individuals important to California's past. While particular officers that served at Camp Stoneman were likely well-respected soldiers, the building was used by a large and variable group of people, making it more appropriate to associate it with the Camp's broader mission, as discussed above in

Criterion 1. As a result, WSA recommends that the Officer's Club is not eligible for listing in the CRHR under Criterion 2.

Criterion 3. As originally constructed, the Officer's Club was likely a good example of expedient military construction in the 1940s. While it did have some unifying design elements, such as the banks of windows and the molded stucco band at the windows, on the whole its low, long profile, lack of ornamentation, and simple design (flat roof, flat awnings) speak primarily to the need to erect a building in time to receive troops headed for the front. The building was heavily modified in the early 1960s during its conversion from an Officer's Club to a junior high school office and cafeteria, particularly at the main entrance. It was further modified during the installation of an elevator in the 2000s. As a result, the former Officer's Club no longer embodies the distinctive characteristics of a type, period, region, or method of construction. In addition, it does not represent the work of an important creative individual or possess high artistic values. Consequently, WSA recommends that the Officer's Club is not eligible for listing in the CRHR under Criterion 3.

Criterion 4. Criterion 4 is not typically applied to built resources, and is not considered in relation to the potential eligibility of the Officer's Club.

Integrity

As discussed above, in order to be eligible for the CRHR, a resource must meet one or more of the criteria for listing and must also possess “integrity,” which includes consideration of the resource’s location, design (i.e., site structure), materials, workmanship, setting, feeling, and association.

In the case of the Officer's Club, the building has lost the ability to convey its significance because of both physical alterations to the structure as well as the loss of setting through the broader redevelopment of the surrounding area. The individual aspects of integrity are discussed briefly below. The Officer's Club retains integrity of location. It has not been moved since Camp Stoneman's closure. The Officer's Club has lost integrity of design, materials, and workmanship. While alterations over time do not necessarily affect the eligibility of a property, the facade of the Officer's Club was compromised during its conversion to use as a school, new materials (windows/doors) were introduced at the main entrance, and the newly installed elevator has disrupted the design of the west wing. Similarly, the Officer's Club has not retained integrity of setting, feeling, or association. The area surrounding the Officer's Club has been completely redeveloped since the property's use as Camp Stoneman (1942-1954). The former Officer's Club is now located within an abandoned school with residential uses to the north and west and a continuation high school to the south. As discussed above, the barracks and surrounding camp buildings were largely removed in 1960. As a result of the physical changes to the structure, as well as the

surrounding landscape, the Officer's Club no longer retains integrity of feeling or association. In other words, it has lost its ability to convey its historic qualities, or significance.

Due to the structure's lack of integrity, WSA recommends that the Officer's Club is not eligible for listing in the CRHR.

Conclusion

It is WSA's recommendation that the former Officer's Club within the 1201 Stoneman Avenue project area meets Criterion 1 for listing on the CRHR, but due to its lack of integrity (physical alterations as well as a lack of integrity as it relates to setting), WSA does not recommend that the Officer's Club be considered an historical resource for the purposes of CEQA.

References Cited

Cook, Sherburne F.

- 1957 The Aboriginal Populations of Alameda and Contra Costa Counties, California, *Anthropological Records of the University of California Anthropological Survey*, Berkeley, CA.

Johnson, Danny

- 2012 Historic California Posts, Camps, Stations and Airfields - Camp Stoneman, *Front and Center*, Issue 29, February 2012 (electronic newsletter of the California State Military Museums).

RNC Environmental

- 2013 Phase I Environmental Site Assessment Former Central Junior High School APN 088-230-022 1201 Stoneman Avenue Pittsburg, Contra Costa County, California 94565. Prepared for Pacific West Communities, Inc., Eagle, Idaho.

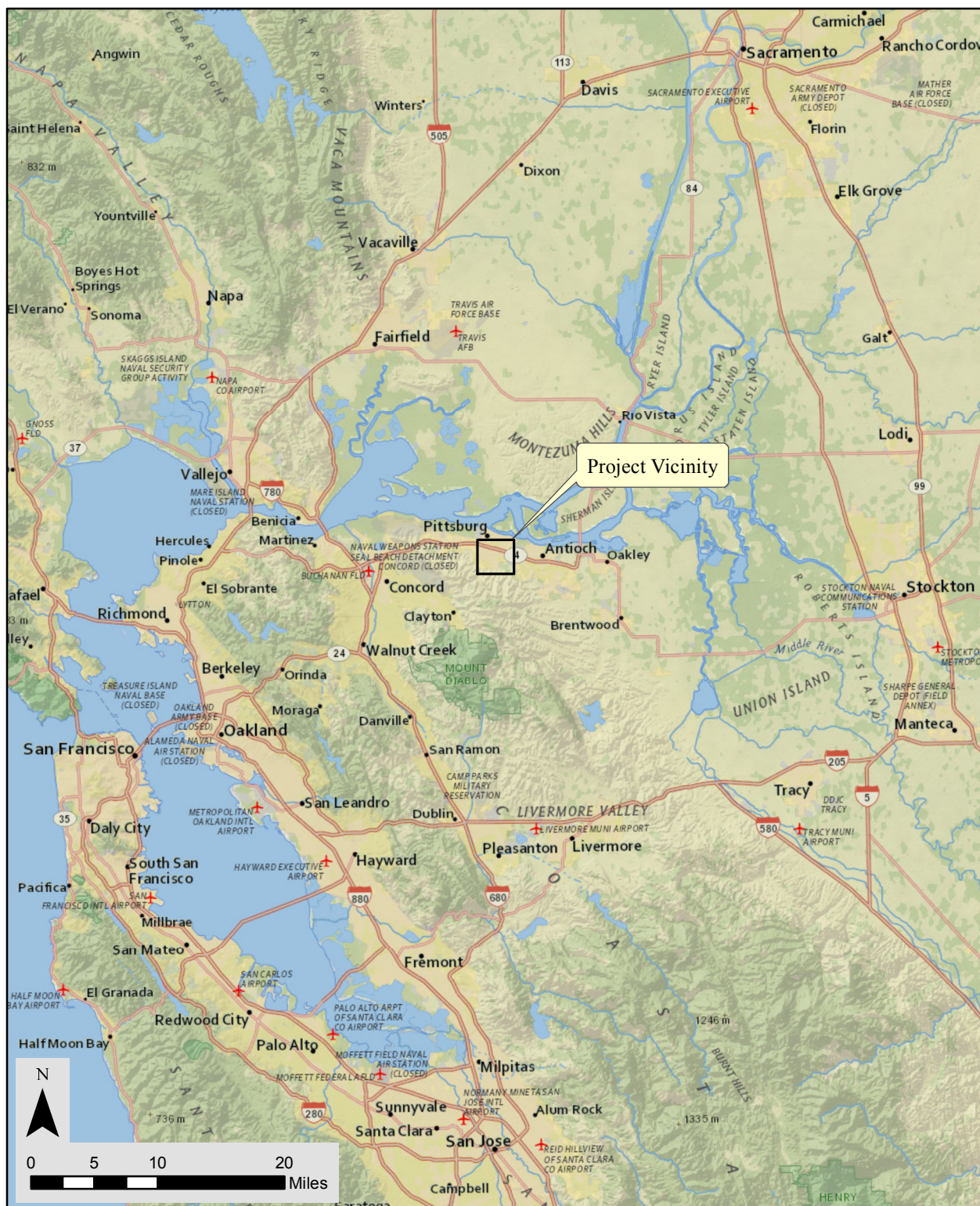
APPENDIX A

Figures

Figure 1: Project Vicinity Map

Figure 2: Project Area Map

Figure 3: Project Location on Antioch North 7.5' Topographic Map



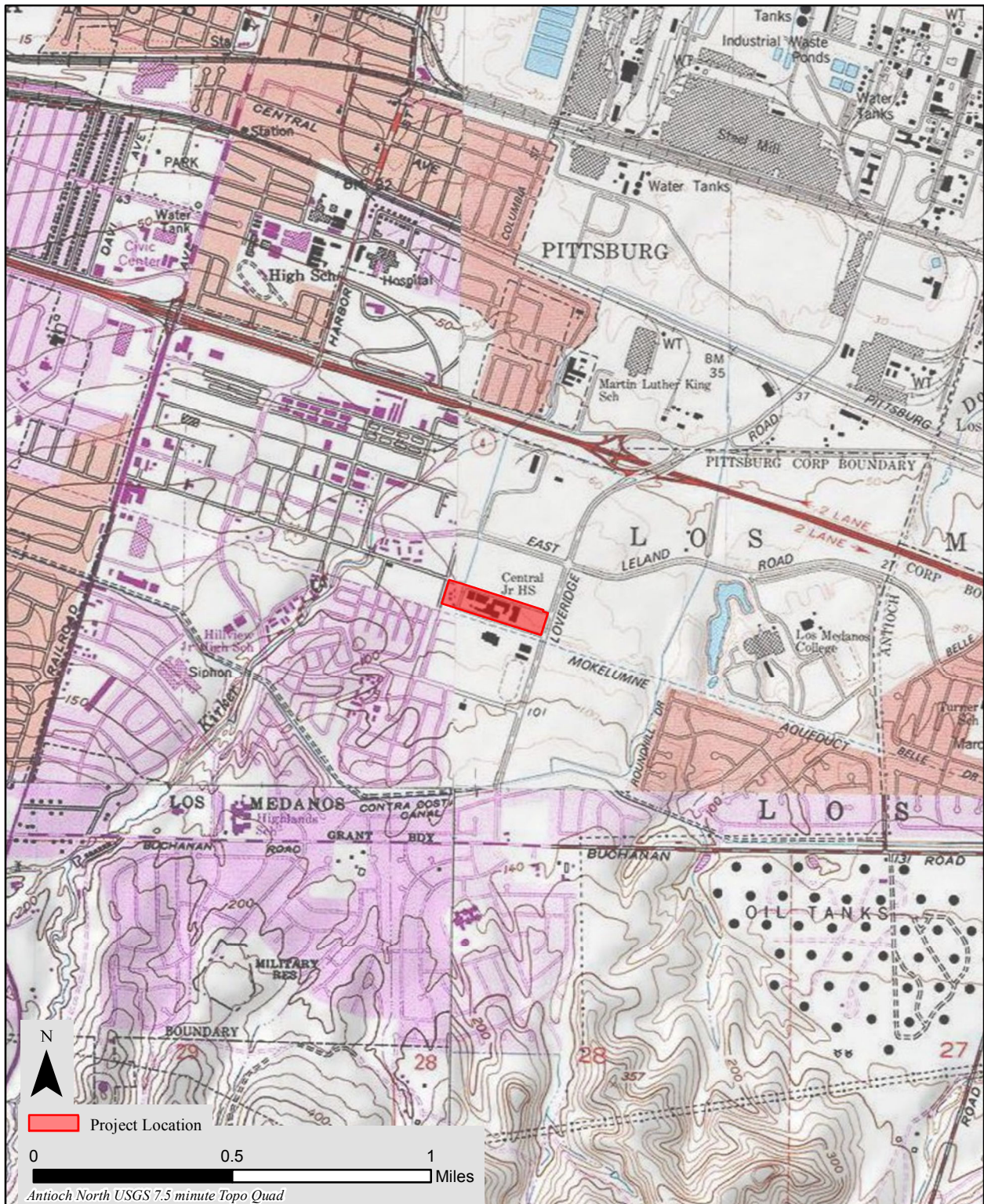
Project Vicinity Map

Figure 1
1201 Stoneman Avenue Project
JML Planning
Contra Costa County, CA



Project Area Map

Figure 2
1201 Stoneman Avenue Project
JML Planning
Contra Costa County, CA



Project Location Map

Figure 3
1201 Stoneman Avenue Project
JML Planning
Contra Costa County, CA

APPENDIX B

Department of Parks and Recreation Form 523

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code

Other Listings
Review Code

Reviewer

Date

Page 1 of 13

Resource Name or #: former Officer's Club

P1. Other Identifier: Main Office/former Central Junior High School

P2. Location: ☐ Not for Publication ☐ Unrestricted

a. County: Contra Costa

b. USGS 7.5' Quad: Antioch North

Date: 1980 T2N ; R1E ; Section 21

c. Address: 1201 Stoneman Avenue

City: Pittsburg

Zip: 94565

d. UTM: Zone:

P3a. Description: The buildings was constructed in 1942 as the Officer's Club within Camp Stoneman (see historic context on Continuation Sheets). Subsequent to its use as an officer's club (1942-1954) the building was converted into an office/library/cafeteria as part of the Central Junior High School complex and was in use in that capacity from the mid-1960s until the school was closed in 2008.

The large former Officer's Club is rear-facing, 'T' in plan, and is finished in beige-painted stucco. The east and west wings have flat roofs and the central wing (main entrance) has a low-pitched front gabled roof detail accented by vertical columns (Photo 1, all photos on attached Continuation Sheets). The long axis of the building includes offices and a cafeteria, while the library is located in the 'T' extending from the rear of the building (Photo 2). Trim is painted a faded green. The large metal windows are primarily fixed panels of repeating rectangular shapes. Both the windows and a decorative molded band (stucco) at the windows serve as unifying exterior design elements (Photo 3). Several windows have been boarded over due to vandalism. What appear to be large ash trees and a series of cypress trees line the facade of the building. The main entry to the building appears to have been modified with aluminum windows and entry doors at the time it was converted for use as a school office and cafeteria (Photo 4). See Continuation Sheets.

P3b. Resource Attributes: HP34: Military Property; HP15 Educational Building



P4. Resources Present: ☒ Building ☐ Structure ☐ Object ☐ Site ☐ District ☐ Element of District ☐ Other (Isolates, etc.)

P5b. Description of Photo:
View northwest: Facade

P6. Date Constructed/Age and Sources:
☒ Historic ☐ Prehistoric ☐ Both

P7. Owner and Address:
Pittsburg Unified School District
Pittsburg, CA 94565

P8. Recorded by:
Aimee Arrigoni, M.A.
WSA
61D Avenida de Orinda
Orinda, CA 94563

P9. Date Recorded: 01-28-2015

P10. Survey Type: Historic Structure
Recordation

P11. Report Citation: WSA, 2015, Historic Architectural Assessment Report, 1201 Stoneman Avenue, Pittsburg, Contra Costa County, California.

Attachments: ☐ None ☒ Location Map ☒ Sketch Map ☒ Continuation Sheet ☒ Building, Structure, and Object Record
☐ Archaeological Record ☐ District Record ☐ Linear Feature Record ☐ Milling Station Record ☐ Rock Art Record
☐ Artifact Record ☒ Photograph Record ☐ Other (List):

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
CONTINUATION SHEET

Primary # _____
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*Recorded by: Aimee Arrigoni, WSA, Inc. Date: 1/28/2015

*Resource Name or #: former Officer's Club

☒ Continuation ☐ Update

***P3a. Description:**

Flat awnings accent entrances to the building (Photo 5). A corrugated metal awning has been attached to the east end of the east wing and covers utility equipment (Photo 6). The Phase I Environmental Site Assessment (RNC Environmental 2013) notes that an elevator was added to the building within the last ten years to address ADA compliance (Photo 7). The concrete ramp at the west end of the west wing was also likely added at the same time (refer to Photo 5).

A mural has been painted on the exterior of the west elevation of the library (Photo 8). The library entry doors were likely modified when the building was converted from military to school use (refer to Photo 8). Tall cypress trees flank a large exterior chimney (stucco) on the north elevation of the library (Photo 9). The chimney has the same banded detail visible on the windows.

A swimming pool was once located north of the east wing of the building. It is now filled and covered with a concrete patio (Photo 10). A metal and corrugated plastic awning has also been attached to the north elevation of the east wing of the building. It provided shade for students eating outside the cafeteria. A roll-up door has been installed under the awning. It replaced one large window and provides access to an interior work space (refer to Photo 10).

While the interior of the building was not examined as part of this scope of work, the Phase I report (RNC Environmental 2013) indicates that a bowling alley formerly occupied the basement of the Officer's Club. The wood flooring has been removed from the former bowling alley, although it is unknown if any associated equipment remains in place.

HISTORIC CONTEXT

Construction of Camp Stoneman was authorized in January, 1942. The military began negotiations to acquire the necessary property, acquiring a total of 2,841 acres from various entities. The largest tract appears to have been owned by C.A. Hooper, a developer with ranching and industrial interests, who had owned the property since the turn-of-the-century (Johnson 2012). An aerial photograph taken in 1939 confirms that the current project area was part of a large open field at the time and was being used for grazing and hay cutting prior to acquisition for construction of the camp (RNC Environmental 2013:11). The San Francisco general contractors McDonald & Kahn won the construction bid and work was completed by September of that year. According to Johnson (2012):

Construction was began [sic] on February 11, and completed on September 20. The first troops arrived at the camp on May 25, 1942. The camp was formally activated on 28 May 1942. About 700 carpenters and other workers from as far as Oklahoma responded to the task. Some boarded with local residents. Others lived in trailers and tents on the waterfront. The first commanding officer was Colonel Murray H. Ellis, a graduate of Allegheny College in Pennsylvania, and a cavalry officer. The camp was a permanent base for 125 officers and 2,000 troops. Camp Stoneman could house and mess over 2,000 troops at a time on its 2,800 acres. Stoneman also housed German and Italian prisoners of war.

For thousands of GIs who went to fight in the Pacific Theater operations during World War II and later the Korean conflict, their departure from the United States began at Camp Stoneman. Pittsburg was well suited as a point of deployment, since two rail lines and a paved highway served the area, and the San Joaquin River provided access to the San Francisco Bay (Johnson 2012). The most common way for troops to leave was to march down Harbor Street to the waterfront, where a ferry took them to Fort Mason where they boarded ships bound for the Pacific.

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*Recorded by: Aimee Arrigoni, WSA, Inc. Date: 1/28/2015

*Resource Name or #: former Officer's Club

☒ Continuation ☐ Update

Facilities within Camp Stoneman included the following:

- 346 barracks
- 86 administrative and storehouses
- 8 infirmaries
- 9 post exchanges
- 14 recreation halls
- 13 mess halls
- 24-hour
- shoe repair /tailoring
- 1 post office
- 1 chapel
- 1 stockade
- fire department
- water reservoir
- bakery
- Red Cross station
- meat cutting plant
- library
- 31 miles of roads
- 2 gyms
- baseball diamond
- 8 basketball courts
- 8 boxing rings
- indoor pool and bowling alley

In addition, Johnson (2012) reports the camp contained a telephone center with a bank of operators who could accomodate 2,000 long-distance calls a day. The camp hosted the likes of Groucho Marx, Gary Moore, and Red Skelton, who were featured in USO shows on base.

A 1949 aerial photo of the current project area shows multiple buildings on the property including the Officer's Club, a pool/storage building, and six other buildings (likely barracks) (RNC Environmental 2013:11). The pool depicted to the north of the east wing of the Officer's Club has since been filled and covered with a concrete patio. In the photo, rows of barracks stretch out in all directions surrounding the project area.

In 1954, the camp was closed despite a "Save Stoneman" campaign sponsored by local residents who feared the loss of jobs and business that the closure represented. In 1960, the GSA sold 750 buildings for removal from the camp (Johnson 2012). The more solidly constructed buildings, such as warehouses and chapels, were sold with the main garrison land, which comprised 1,000 acres. A 1960 aerial photo of the current project area confirms that the buildings standing in 1949 were still present and their configuration had not been altered (RNC Environmental 2013:11). The final Camp Stoneman parcels were not disposed of until 1962, the year the current project area was acquired by the Pittsburg Unified School District. The Central Junior High School was built on the property shortly thereafter, and incorporated the former camp Officer's Club and pool/storage building previously used by military personnel. A 1968 aerial photo of the project area confirms that most of the camp buildings had been demolished and the property had been

redeveloped as a school (RNC Environmental 2013:11). The junior high was closed in 2008.

The type of residential and retail growth associated with the area today did not generally begin until after 1960. While SR4 has served the region for many years, work to widen the freeway and increase accessibility continues today. The expansion of BART to the east county region has also more fully connected the area to the communities to the west

The land formerly within Camp Stoneman's boundaries has been extensively redeveloped since the camp's closure. It now includes residences, light industry, office buildings, Los Medanos College, a public golf course, and Stoneman Park.

CRHR EVALUATION

Criterion 1. The Officer's Club was constructed in 1942 as part of Camp Stoneman, a processing center for thousands of soldiers on their way to fight both in the Pacific Theater during World War II and, later, in Korea. The building has an important association with the Camp and events that have made a significant contribution to the broad patterns of California's history and cultural heritage, particularly California's role as a distribution point for men and material during World War II and the Korean conflict. As a result, WSA recommends that the Officer's Club meets Criterion 1 of the CRHR. WSA does not recommend that the Officer's Club is eligible for listing on the CRHR, however, due to its lack of integrity (see below).

Criterion 2. The Officer's Club is not associated with the lives of individuals important to California's past. While particular officers that served at Camp Stoneman were likely well-respected soldiers, the building was used by a large and variable group of people, making it more appropriate to associate it with the Camp's broader mission, as discussed above in Criterion 1. As a result, WSA recommends that the Officer's Club is not eligible for listing in the CRHR under Criterion 2.

Criterion 3. As originally constructed, the Officer's Club was likely a good example of expedient military construction in the 1940s. While it did have some unifying design elements, such as the banks of windows and the molded stucco band at the windows, on the whole its low, long profile, lack of ornamentation, and simple design (flat roof, flat awnings) speak primarily to the need to erect a building in time to receive troops headed for the front. The building was heavily modified in the early 1960s during its conversion from an Officer's Club to a junior high school office and cafeteria, particularly at the main entrance. It was further modified during the installation of an elevator in the 2000s. As a result, the former Officer's Club no longer embodies the distinctive characteristics of a type, period, region, or method of construction. In addition, it does not represent the work of an important creative individual or possess high artistic values. Consequently, WSA recommends that the Officer's Club is not eligible for listing in the CRHR under Criterion 3.

Criterion 4. Criterion 4 is not typically applied to built resources, and is not considered in relation to the potential eligibility of the Officer's Club.

Integrity

As discussed above, in order to be eligible for the CRHR, a resource must meet one or more of the criteria for listing and must also possess "integrity," which includes consideration of the resource's location, design (i.e., site structure), materials, workmanship, setting, feeling, and association.

In the case of the Officer's Club, the building has lost the ability to convey its significance because of both physical alterations to the structure as well as the loss of setting through the broader redevelopment of the surrounding area. The individual aspects of

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
CONTINUATION SHEET

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*Recorded by: Aimee Arrigoni, WSA, Inc. Date: 1/28/2015

*Resource Name or #: former Officer's Club

☒ Continuation ☐ Update

integrity are discussed briefly below. The Officer's Club retains integrity of location. It has not been moved since Camp Stoneman's closure. The Officer's Club has lost integrity of design, materials, and workmanship. While alterations over time do not necessarily affect the eligibility of a property, the facade of the Officer's Club was compromised during its conversion to use as a school, new materials (windows/doors) were introduced at the main entrance, and the newly installed elevator has disrupted the design of the west wing. Similarly, the Officer's Club has not retained integrity of setting, feeling, or association. The area surrounding the Officer's Club has been completely redeveloped since the property's use as Camp Stoneman (1942-1954). The former Officer's Club is now located within an abandoned school with residential uses to the north and west and a continuation high school to the south. As discussed above, the barracks and surrounding camp buildings were largely removed in 1960. As a result of the physical changes to the structure, as well as the surrounding landscape, the Officer's Club no longer retains integrity of feeling or association. In other words, it has lost its ability to convey its historic qualities, or significance.

Due to the structure's lack of integrity, WSA recommends that the Officer's Club is not eligible for listing in the CRHR.

PHOTOGRAPHS



Photo 1: View northwest: Facade (south elevation) of former Officer's Club.

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Photo 2: View southeast: West end of west wing in foreground and library extending from rear of building in background.



Photo 3: View northwest: Window detail on facade (west wing).

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*Recorded by: Aimee Arrigoni, WSA, Inc. Date: 1/28/2015

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Photo 4: View northeast: Main entrance. Window and door modifications that date to the conversion from military to school use are evident.



Photo 5: View southeast: West end of west wing with recently installed ADA compliant ramp. Representative flat awning over entrance is visible.

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*Recorded by: Aimee Arrigoni, WSA, Inc. Date: 1/28/2015

*Resource Name or #: former Officer's Club

☒ Continuation ☐ Update



Photo 6: View northwest: Awning over utility equipment at east end of east wing.



Photo 7: View north: Recently installed elevator likely visible at left of photo attached to front of building.

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Primary # _____
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*Recorded by: Aimee Arrigoni, WSA, Inc. Date: 1/28/2015

*Resource Name or #: former Officer's Club

☒ Continuation ☐ Update



Photo 8: View northeast: Library entrance with mural and modified doors are evident.



Photo 9: View southwest: Rear of library. Large external chimney and cypress trees visible.

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DEPARTMENT OF PARKS AND RECREATION
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Primary # _____
HRI# _____
Trinomial: _____

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*Recorded by: Aimee Arrigoni, WSA, Inc. Date: 1/28/2015

*Resource Name or #: former Officer's Club

☒ Continuation ☐ Update



Photo 10: View southwest: Awning extending from rear of west wing (cafeteria). Recently installed roll-up door visible at left of photo. Patio covering former pool visible at right of photo.

REFERENCES CITED

Johnson, Danny

2012 Historic California Posts, Camps, Stations and Airfields - Camp Stoneman, *Front and Center*, Issue 29, February 2012 (electronic newsletter of the California State Military Museums).

RNC Environmental

2013 Phase I Environmental Site Assessment Former Central Junior High School APN 088-230-022 1201 Stoneman Avenue Pittsburg, Contra Costa County, California 94565. Prepared for Pacific West Communities, Inc., Eagle, Idaho.

BUILDING, STRUCTURE, AND OBJECT RECORD

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NRHP Status Code

Resource Name or # former Officer's Club

B1. Historic Name: Camp Stoneman Officer's Club

B2. Common Name: currently vacant school building (Central Junior High School, Pittsburg)

B3. Original Use: Military

B4. Present Use: Vacant (school building)

B5. Architectural Style: Expedient, military

B6. Construction History: Built 1942, heavily modified mid-1960s.

B7. Moved? ☒No ☐Yes ☐Unknown Date: Original Location:

B8. Related Features: None

B9a. Architect: Unknown

b. Builder: McDonald & Kahn, San Francisco

B10. Theme: Wartime deployment California

Area: California

Period of Significance: 1942-1962

Property Type: Military/School

Applicable Criteria: 1

The Officer's Club was constructed in 1942 as part of Camp Stoneman, a processing center for thousands of soldiers on their way to fight both in the Pacific Theater during World War II and, later, in Korea. The building has an important association with the Camp and events that have made a significant contribution to the broad patterns of California's history and cultural heritage, particularly California's role as a distribution point for men and material during World War II and the Korean conflict. As a result, WSA recommends that the Officer's Club meets Criterion 1 of the CRHR. WSA does not recommend that the Officer's Club is eligible for listing on the CRHR, however, due to its lack of integrity.

See Historic Context and full CRHR Evaluation presented in Continuation Sheets.

B11. Additional Resource Attributes: N/A

B12. References:

B13. Remarks: None

B14. Evaluator: Aimee Arrigoni, WSA, Inc.

Date of Evaluation: 01-28-2015

see attached Sketch Map (page 13 of 13)

(This space reserved for official comments.)

State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
LOCATION MAP

Primary # _____

HRI # _____

Trinomial: _____

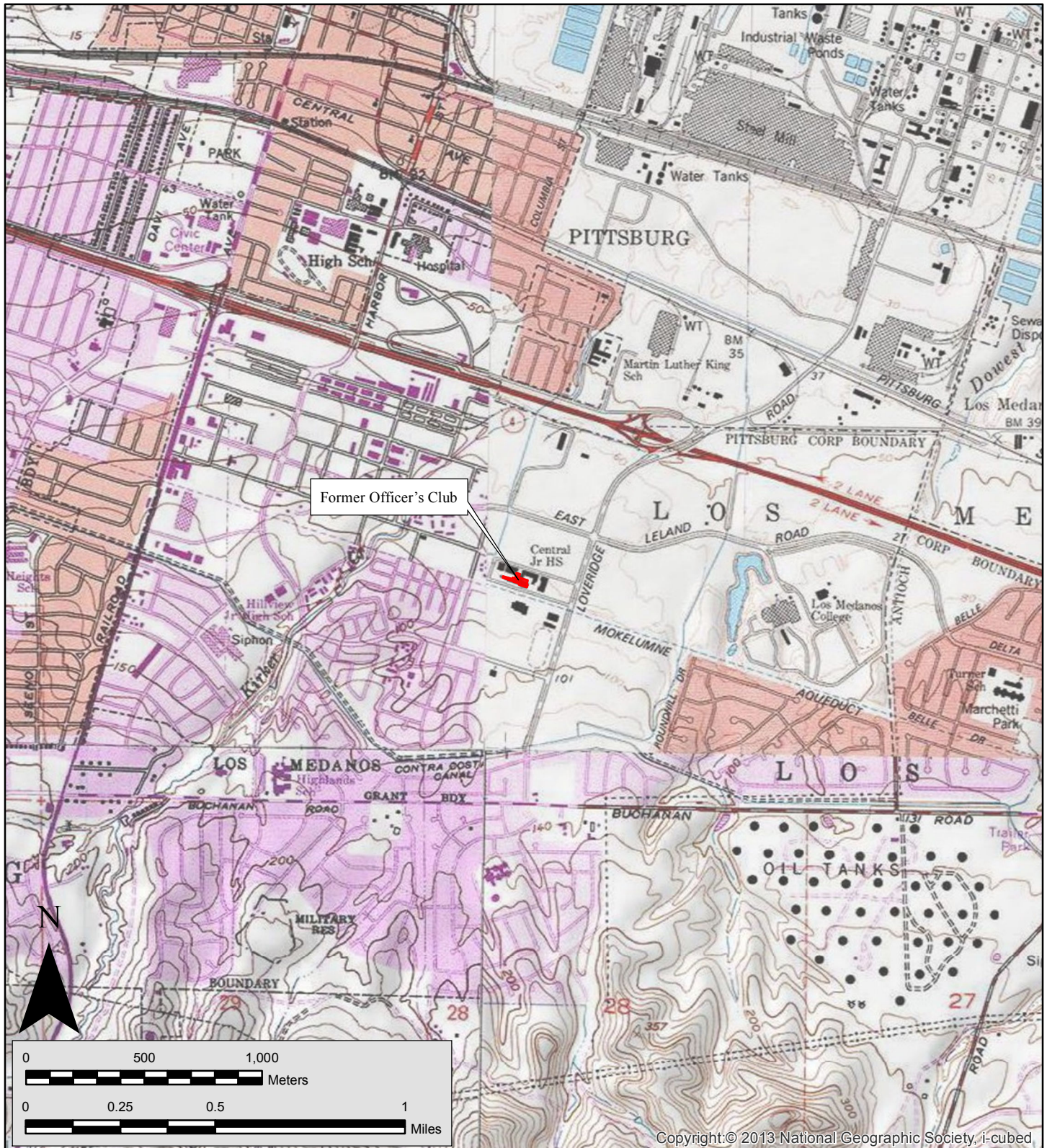
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Resource Name or # (Assigned by Recorder) Former Officer's Club

*Map Name: Antioch North

*Scale: 1:24000

*Date of MAP: 1980



DPR 523J (1/95)

*Required Information

State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
SKETCH MAP

Primary #
HRI # _____
Trinomial:

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Resource Name or # (Assigned by Recorder) **Former Officer's Club**

*Drawn by: N.Fino

*Date:03/19/2015



APPENDIX C

Photographs



Photo 1: View northwest: Facade (south elevation) of former Officer's Club.



Photo 2: View southeast: West end of west wing in foreground and library extending from rear of building in background.



Photo 3: View northwest: Window detail on facade (west wing).



Photo 4: View northeast: Main entrance. Window and door modifications that date to the conversion from military to school use are evident.



Photo 5: View southeast: West end of west wing with recently installed ADA compliant ramp. Representative flat awning over entrance is visible.



Photo 6: View northwest: Awning over utility equipment at east end of east wing.



Photo 7: View north: Recently installed elevator likely visible at left of photo attached to front of building.



Photo 8: View northeast: Library entrance with mural and modified doors are evident.



Photo 9: View southwest: Rear of library. Large external chimney and cypress trees visible.



Photo 10: View southwest: Awning extending from rear of west wing (cafeteria). Recently installed roll-up door visible at left of photo. Patio covering former pool visible at right of photo.

Stoneman Apartments

1201 Stoneman Avenue

Traffic Impact Analysis

Final Report

By



1970 Broadway, Suite 740
Oakland, CA 94612
(510) 763-2061

February 25, 2015



Document Description

Client	City of Pittsburgh
DKS Project Number	14173-000
Project Name	1201 Stoneman Apartments TIA
Related Task / WBS Number	N/A
Document Name	Traffic Impact Analysis Final Report
File Path	p:\p\14\14173-000 pittsburg 1201 stoneman tia\04 deliverables\03 final\1201 stoneman final tia.docx
Date Document Issued	February 25, 2015

Version Control

Version Number	Date	Description of Change	Author
0-1	12/10/2014	Initial Document	KBJ/JMP2
0-2	2/25/2015	Final Draft	KBJ/JMP2

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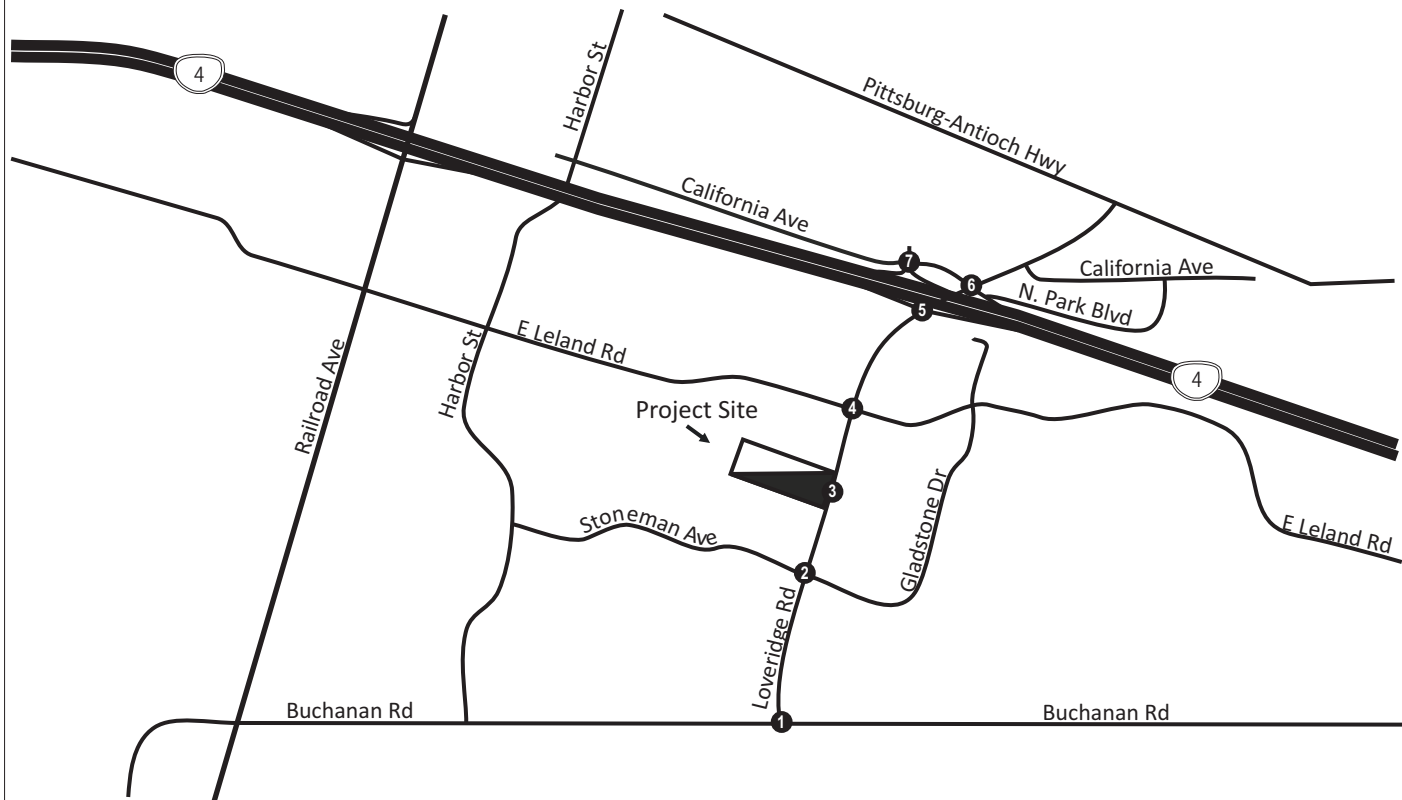
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Executive Summary

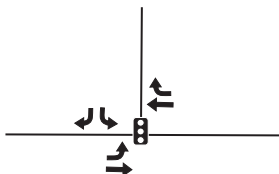
This report provides an evaluation of traffic and transportation issues related to the proposed Project. The Project consists of the demolition of a vacant junior high school and construction of twelve apartment buildings with 230 rental units on a 9.6 acre site in Pittsburg, California. The proposed Project site, located at 1201 Stoneman Avenue, is approximately bounded by Loveridge Road to the east, Loveridge Circle to the north, and EBMUD right-of-way to the south. Access to the Project site is provided by a driveway located on Loveridge Road. This driveway is served by a signalized intersection. The proposed Project would generate 1,530 daily trips, including 127 net new AM peak hour trips (37 inbound, 90 outbound) and 154 net new PM peak hour trips (94 inbound, 60 outbound). **Figure 1** illustrates the Project site location, study area, surrounding roadway network and existing intersection geometry at each study intersection. **Figure 2** shows the Project site plan.

This report provides a general description of the transportation facilities in the Project vicinity and summarizes Existing Condition, Existing Plus Project Condition, Cumulative year 2035 (no Project), and Cumulative year 2035 plus Project Conditions.

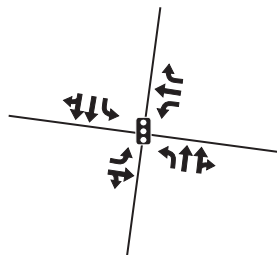
This report analyzes the traffic conditions during the weekday AM and PM peak hours for the Project land use. The impacts of the proposed Project were estimated using the current level-of-service methodologies set forth by the City of Pittsburg and the Contra Costa Transportation Authority (CCTA). The proposed Project would result in significant transportation impacts in the Cumulative Plus Project Condition for following the intersections; Loveridge Road and Buchanan Road (PM peak hour) and Loveridge Road and E. Leland Road (both AM and PM peak hour). Mitigation and improvement measures have been recommended to address the effects of the proposed Project. **Table ES 1** summarizes the Level of Service operations for all study intersections under AM and PM peak hours by HCM methodologies. **Table ES 2** summarizes the Level of Service operations for all study intersections under AM and PM peak hours by CCTALOS methodologies.



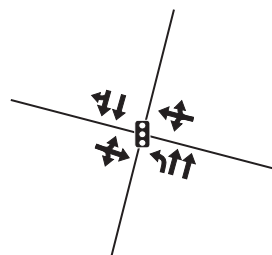
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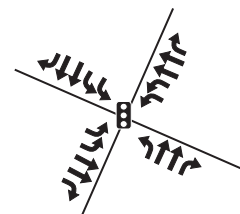
2. Lovridge Rd / Stoneman Ave



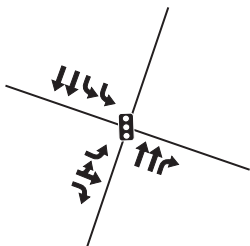
3. Lovridge Rd / Project Driveway



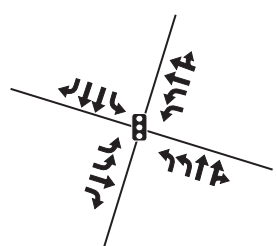
4. Lovridge Rd / E Leland Rd



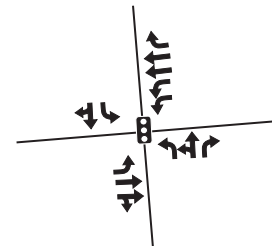
5. Lovridge Rd / SR-4 EB Ramps



6. Lovridge Rd / California Ave - N. Park Blvd



7. California Ave / SR-4 WB Ramps

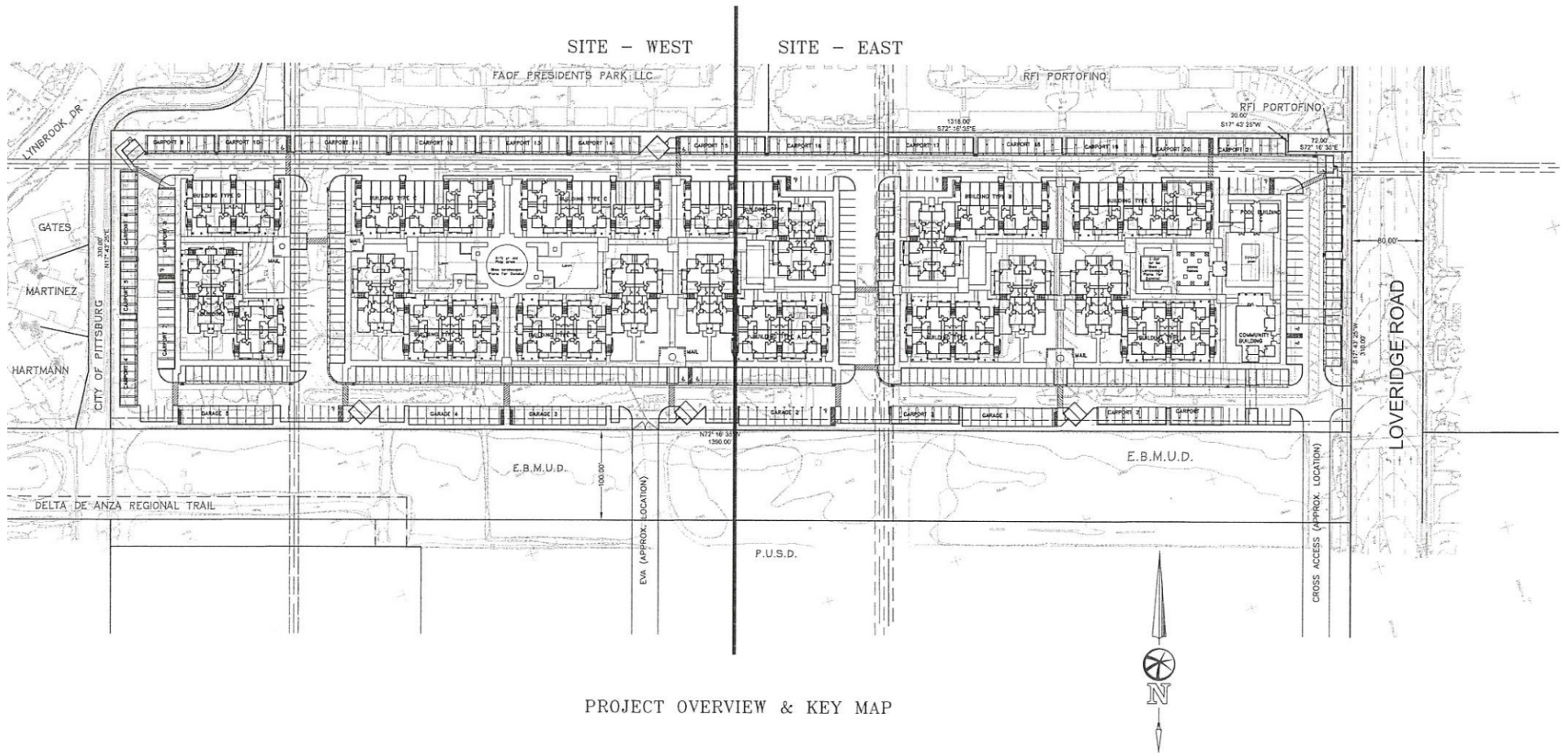


LEGEND

- Study Intersection
- Existing Lane Geometry
- Traffic Signal
- Project Site



Figure 1
Study Area, Intersection Geometry and Traffic Control



LEGEND

DKS

Figure 2

Stoneman Apartments Site Plan



Table ES 1 Study Intersection LOS Summary – HCM Methodology

Int. #	Intersection	Peak Hour	Existing		Existing Plus Project		Cumulative		Cumulative Plus Project	
			Avg Delay	LOS	Avg Delay	LOS	Avg Delay	LOS	Avg Delay	LOS
1	Loveridge Rd / Buchanan Rd ¹	AM	30.6	C	30.8	C	37.4	D	37.6	D
		PM	23.3	C	23.5	C	68.8	E	70.4	E
2	Loveridge Rd / Stoneman Ave	AM	27.8	C	27.8	C	32.5	C	32.6	C
		PM	23.7	C	23.7	C	26.3	C	26.4	C
3	Loveridge Rd / Project Driveway	AM	1.9	A	3.8	A	2.2	A	4.2	A
		PM	2.2	A	4.4	A	3.2	A	6.3	A
4	Loveridge Rd / E. Leland Rd ¹	AM	37.9	D	39.1	D	118.9	F	122.3	F
		PM	41.8	D	42.1	D	63.1	E	64.2	E
5	Loveridge Rd / SR-4 EB Ramps ²	AM	22.7	C	23.2	C	33.5	C	46.3	D
		PM	28.3	C	33.5	C	46.3	D	55.2	E
6	Loveridge Rd / California Ave – N. Park Blvd	AM	69.0	E	74.1	E	86.1	F	90.9	F
		PM	51.3	D	57.4	E	70.7	E	76.6	E
7	SR-4 WB Ramps / California Ave ²	AM	24.8	C	25.4	C	30.1	C	30.9	C
		PM	54.8	D	62.7	E	51.2	D	57.7	E

Source: DKS Associates, 2015

Notes: HCM 2010 analysis unless specified by ²

¹ Route of Regional Significance intersection

² HCM 2000 analysis due to HCM 2010 limitations

Bold = LOS E or worse.



Table ES 2 Study Intersection LOS Summary – CCTALOS Methodology

Int. #	Intersection	Peak Hour	Existing		Existing Plus Project		Cumulative		Cumulative Plus Project	
			V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS
1	Loveridge Rd / Buchanan Rd	AM	0.606	B	0.607	B	0.730	C	0.731	C
		PM	0.681	B	0.681	B	0.794	C	0.794	C
2	Loveridge Rd / Stoneman Ave	AM	0.508	A	0.510	A	0.591	A	0.592	A
		PM	0.486	A	0.488	A	0.519	A	0.521	A
3	Loveridge Rd / Project Driveway	AM	0.228	A	0.288	A	0.293	A	0.353	A
		PM	0.270	A	0.335	A	0.426	A	0.491	A
4	Loveridge Rd / E. Leland Rd	AM	0.554	A	0.575	A	0.899	D	0.919	E
		PM	0.559	A	0.588	A	0.698	B	0.727	C
5	Loveridge Rd / SR-4 EB Ramps	AM	0.499	A	0.523	A	0.753	C	0.778	C
		PM	0.646	B	0.682	B	0.717	C	0.753	C
6	Loveridge Rd / California Ave – N. Park Blvd	AM	0.467	A	0.470	A	0.568	A	0.593	A
		PM	0.553	A	0.553	A	0.724	C	0.724	C
7	SR-4 WB Ramps / California Ave	AM	0.432	A	0.434	A	0.561	A	0.549	A
		PM	0.420	A	0.430	A	0.472	A	0.482	A

Source: DKS Associates, 2015
Bold = LOS E or worse.

1. Introduction

This report provides an evaluation of traffic and transportation issues related to the proposed Project. The Project consists of the demolition of a vacant junior high school and construction of twelve apartment buildings with 230 rental units on a 9.6 acre site in Pittsburg, California. The proposed Project site, located at 1201 Stoneman Avenue, is approximately bounded by Loveridge Road to the east, Loveridge Circle to the north, and Stoneman Avenue to the south. Access to the Project site is provided by a driveway located on Loveridge Road. This driveway is served by a signalized intersection. The proposed Project would generate 1,530 daily trips, including 127 net new AM peak hour trips (37 inbound, 90 outbound) and 154 net new PM peak hour trips (94 inbound, 60 outbound). **Figure 1** illustrates the Project site location, study area, surrounding roadway network and existing intersection geometry at each study intersection. **Figure 2** shows the Project site plan.

This report provides a general description of the transportation facilities in the Project vicinity and summarizes Existing Condition, Existing Plus Project Condition, Cumulative year 2035 (no Project), and Cumulative year 2035 plus Project Conditions. Particular attention is given to impacts on vehicular facilities.

This report analyzes the traffic conditions during the weekday AM and PM peak hours for the Project land use. The impacts of the proposed Project were estimated using the current level-of-service methodologies set forth by the City of Pittsburg and CCTA.

The proposed Project would result in significant transportation impacts in the Cumulative Plus Project Condition for following the intersections; Loveridge Road and Buchanan Road (PM peak hour) and Loveridge Road and E. Leland Road (both AM and PM peak hour). Mitigation and improvement measures have been recommended to address the effects of the proposed Project.

Based on consultation with City of Pittsburg staff, the following intersections were analyzed as part of the traffic impact analysis:

1. Loveridge Road & Buchanan Road
2. Loveridge Road & Stoneman Avenue
3. Loveridge Road & E. Leland Road
4. Loveridge Road & Project Driveway
5. Loveridge Road & SR-4 EB Ramps
6. Loveridge Road & California Avenue – N. Park Blvd
7. SR-4 WB Ramps & California Avenue

The list of study intersections was based on the size of the Project and the number of trips it would potentially generate, the surrounding study area, and with consideration to those intersections that are most likely to be impacted by the proposed Project. The operation of these intersections was evaluated during the weekday AM (7:00 – 9:00 AM) and weekday PM (4:00 – 6:00 PM) peak periods for the following scenarios:

Scenario 1: Existing Condition. Existing peak-hour volumes, lane geometry, and traffic control (e.g., signal timing, signal phasing, STOP control, etc.).

Scenario 2: Existing Plus Project Condition. Existing volumes plus Project-generated traffic estimated for proposed development Project. This scenario assumes full buildout of the proposed apartment buildings.

Scenario 3: Cumulative Year 2035 Baseline (No Project) Condition. Existing peak-hour volumes plus forecasted growth derived from the Contra Costa Countywide Travel Demand Mode

Scenario 4: Cumulative Year 2035 with Project Condition. Cumulative Year 2035 Baseline Condition volumes plus Project-generated traffic estimated for proposed development Project. This scenario assumes full buildout of the proposed apartment buildings.

The following section presents an analysis of the Existing Conditions of various transportation system components. The components include roadways, intersections, transit service, bicycles, and pedestrians.

2. Existing Transportation System

This section provides an evaluation of traffic and transportation issues related to the proposed Project. A description of the existing transportation system facilities in terms of the roadway network facilities, intersections, transit service, bicycle, pedestrian and parking is provided below.

2.1 Adjacent Street System

The Pittsburg roadway network is comprised of freeways, arterials, parkways, collector streets and local streets. **Figure 1** illustrates the roadway network. Regional access to Pittsburg is provided via State Route 4.

State Route 4 (SR-4) – This eight-lane, east-west facility, which contains one HOV lane in each direction between Loveridge Road and Port Chicago Highway, serves the East Bay, connecting Interstate 580 in Pacheco and eastern Contra Costa County. It is identified as a Route of Regional Significance.

Several local-serving arterials are included in this analysis. The following are descriptions of the local serving arterials and roadways.

Buchanan Road – This is an east-west, two-lane major arterial that generally lies parallel to SR-4 in the Project study area. It provides access to other major arterials such as Railroad Avenue, Loveridge Road and Somersville Road, as well as residential, commercial, and retail areas. The posted speed limit for Buchanan Road is 35 miles per hour (MPH) in the project study area. Buchanan Road within the Project study area has Class II bike lanes. The Pittsburg General Plan identifies this road as a major arterial in the roadway system and the East County Action Plan identifies this road as a Route of Regional Significance.

Loveridge Road – This is a north-south, four-lane major arterial with Class II bike lanes that runs perpendicular to SR-4 in the Project study area. It provides access to SR-4 and, as well as residential, commercial, and retail areas. The posted speed limit for Loveridge Road is 35 MPH except near the Stoneman Elementary School where the speed limit is 25 MPH when children are present. The Pittsburg General Plan identifies this road as a major arterial in the roadway system.

Stoneman Avenue – This is an east-west, two-lane, major arterial with Class II bike lanes that generally lies parallel to SR-4 in the Project study area, which provides access to commercial, residential and industrial areas. The posted speed limit for Stoneman Road is 35 MPH (25 MPH school zone when children are present). The Pittsburg General Plan identifies this road as a collector in the roadway system.

E. Leland Road – This is an east-west, four-lane, major arterial with Class II bike lanes that generally lies parallel to SR-4 in the Project study area, which provides access to commercial, residential and industrial areas. The posted speed limit for E. Leland Road is 35 MPH east of Loveridge Road and 40 MPH west of Loveridge Road. The Pittsburg General Plan identifies this road as a major arterial in the roadway system and the East County Action Plan identifies this road as a Route of Regional Significance.

2.2 Available Transit Service

Tri Delta Transit

Tri Delta Transit provides bus transit service to the cities of Antioch, Pittsburg, Brentwood, Oakley, Bay Point, Discovery Bay and Concord. There are several bus routes running along major streets in Pittsburg that serve as connectors to the Bay Area Rapid Transit (BART) Station in the City of Pittsburg.

County Connection

The County Connection transit service, operated by the Contra Costa County Transit Authority (CCCTA), serves most Contra Costa County cities, with limited service to East County areas. County Connection operates Line 930 through Pittsburg, which originates in Walnut Creek and travels on Ygnacio Valley Road/Kirker Pass Road to Buchanan Road. Its terminus is at the Hillcrest Park & Ride Lot in Antioch.

Bay Area Rapid Transit (BART)

The BART system provides rail service between San Mateo, San Francisco, Alameda, and Contra Costa Counties, with a station in Pittsburg near the Bailey Road interchange along SR-4. The proposed Project is located approximately 4.5 miles from the Pittsburg-Bay Point BART station. The Pittsburg/Bay Point BART Station is located at the southwest quadrant of the SR-4/Bailey Road interchange. During weekdays, scheduled trains complete 75 round-trips between the Pittsburg-Bay Point BART Station and other Bay Area destinations. There is a proposed extension of BART into East Contra Costa County (eBART). The planned extension includes a new station located in the SR-4 median at or near the Railroad Avenue interchange. The proposed eBART extension will use a DMU (Diesel Multiple-Unit) type train instead of the electric trains currently used by BART.

3. Level-of-Service (LOS) Analysis Methodology

To evaluate traffic conditions as well as provide a basis for comparison of conditions before and after Project-generated traffic is added to the street system, intersection Level-of-Service (LOS) analysis was evaluated at all seven study intersections. Signal timing sheets (signal timing plans for signalized intersections) were provided by City and Caltrans staff and used in this analysis.

3.1 Level of Service (LOS) Definition

Traffic conditions for the study intersections were evaluated according to the requirements set forth by the Contra Costa County Transportation Authority (CCTA) using the 2010 Highway Capacity Manual (HCM) methodology. Additional analysis of traffic operations was conducted using Contra Costa Transportation Authority Level of Service Methodology (CCTALOS). The CCTALOS methodology uses the ratio of traffic volumes versus the theoretical intersection capacity. Based on this ratio, an LOS letter grade is assigned. This methodology is useful for planning purposes. The HCM methodology uses the average delay time a driver experiences and assigns an LOS letter grade. This methodology is more refined and is useful when evaluating the detailed operations of an intersection.

For reference purposes, LOS is a quality measure describing operating conditions within a traffic stream. It is generally described in terms such as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience. LOS at study intersections was calculated using both Synchro 8.0 and TRAFFIX 8.0 software.

The LOS evaluation indicates the degree of congestion that occurs during peak travel periods and is the principal measure of roadway and intersection performance. LOS can range from “A” representing free-flow conditions, to “F” representing extremely long delays. LOS B and C signify stable conditions with acceptable delays. LOS D is typically considered acceptable for a peak hour in urban areas. LOS E is approaching capacity and LOS F represents conditions at or above capacity.

At signalized intersections, the HCM standard determines LOS on the basis of average stopped delay for all vehicles at the intersection. Alternatively, the CCTA standard bases LOS by the volume to capacity ratio (V/C) for the entire intersection. **Table 1** defines the LOS for signalized intersections based on HCM methodology. **Table 2** defines the LOS for signalized intersections based on CCTALOS methodologies.

Table 1 Signalized Intersections— Level-of-Service Thresholds by HCM Methodology

Level of Service	Average Stopped Delay (seconds/vehicle)	Description
A	≤ 10.0	Free flow; minimal to no delay
B	$10.0 < \text{and} \leq 20.0$	Stable flow, but speeds are beginning to be restricted by traffic condition; slight delays.
C	$20.0 < \text{and} \leq 35.0$	Stable flow, but most drivers cannot select their own speeds and feel somewhat restricted; acceptable delays.
D	$35.0 < \text{and} \leq 55.0$	Approaching unstable flow, and drivers have difficulty maneuvering; tolerable delays.
E	$55.0 < \text{and} \leq 80.0$	Unstable flow with stop and go; delays
F	> 80.0	Forced flow; excessive delays

Source: Transportation Research Board, Special Report 209, Highway Capacity Manual, Chapter 16-Signalized Intersections, 2010.

Notes: Average Control Delay per Vehicle (in seconds per vehicle)

Table 2 Signalized Intersections— Level-of-Service Thresholds by CCTALOS Methodology

Level of Service	Ratios (V/C)	Description
A	≤ 0.60	Traffic is typically free flowing; very little delay
B	$0.61 < \text{and} \leq 0.70$	Only slight delays; the majority of vehicles do not stop.
C	$0.71 < \text{and} \leq 0.80$	Acceptable delays; if an intersection is signalized, a few drivers may have to wait through one cycle.
D	$0.81 < \text{and} \leq 0.90$	Delays are substantial during short periods, but excessive backups do not occur.
E	$0.91 < \text{and} \leq 1.00$	Delays can exceed one or more signal cycles.
F	> 1.00	Excessive delays; back ups from other locations restrict or prevent movement.

Source: CCTA Technical Procedures Manual

3.2 Standards of Significance

In 2014, the City of Pittsburg adopted a new standard of significance described in CCTA's Technical Procedures and in the East County Action Plan, superseding the previous standard for Routes of Regional Significance. For comparison purposes both standards will be analyzed in this study, however only the standard from the East County Action Plan will be used for determination of project impacts.

The East County Action Plan (May 2014) provides a standard of LOS D (or better) on all signalized intersections along Routes of Regional Significance except for Bailey Road where LOS E is considered

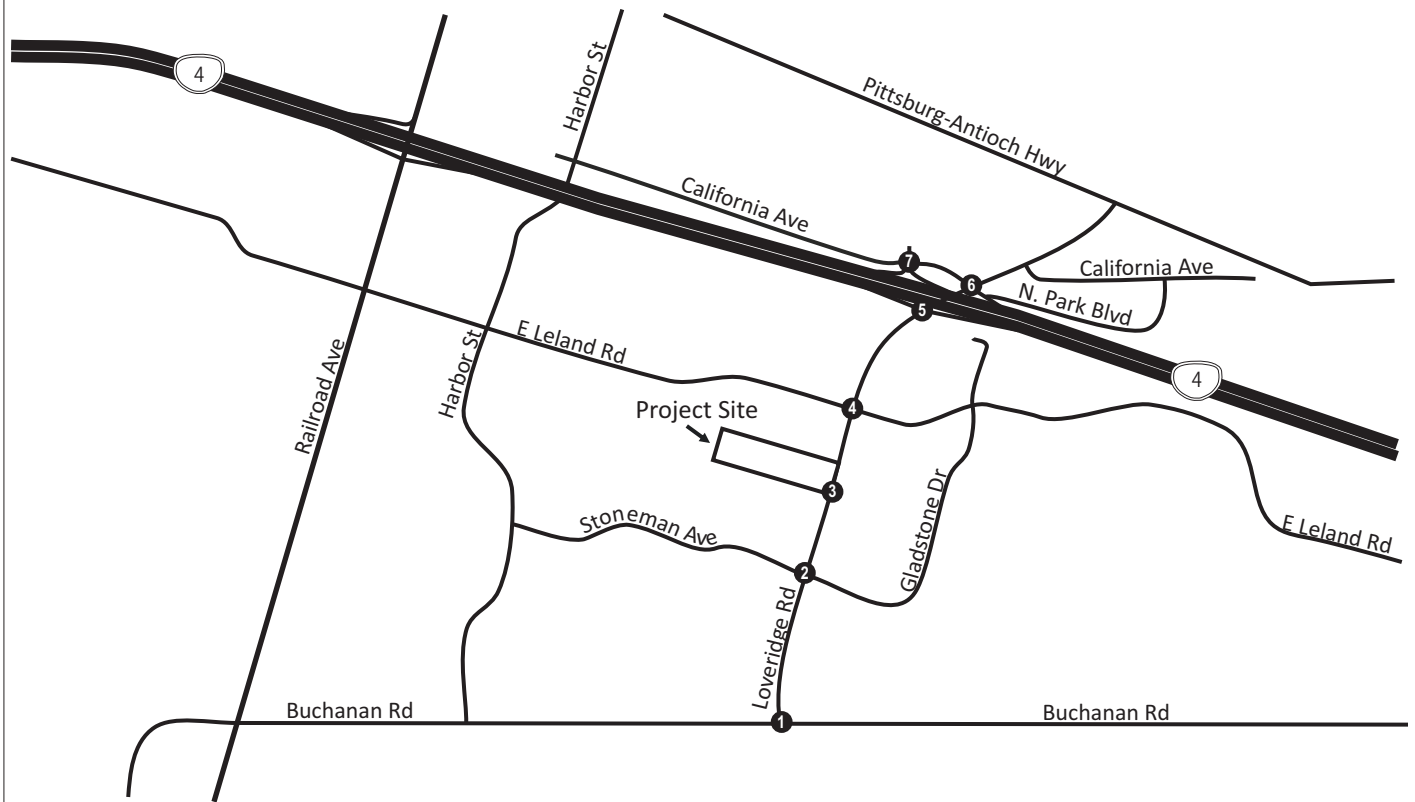
acceptable, and at Traffic Management Program (TMP) sites where other performance measures are used. This LOS is determined using the HCM 2010 methodologies. This study area includes three Routes of Regional Significance; SR-4, Buchanan Road and E. Leland Road.

The Pittsburg General Plan identifies two primary route categories: Routes of Regional Significance and Basic Routes. Routes of Regional Significance located in the study area include SR-4, E. Leland Road and Buchanan Road. All other over roads within the study area are classified as Basic Routes. As part of the City of Pittsburg's General Plan, the City of Pittsburg strives to maintain a LOS D (or better) during peak hours at all intersections along Routes of Regional Significance, with LOS E permissible at intersections along Kirker Pass Road. Also as part of the City of Pittsburg General Plan, the City of Pittsburg strives to maintain an LOS of Low D (V/C less than or equal to 0.84) at intersections along Suburban Basic Routes and an LOS of high D (V/C less than or equal to 0.89) at intersections along Urban Basic Routes. The intersections at Loveridge Rd and Buchanan Rd and Loveridge Rd and Stoneman Ave are along Suburban Basic Routes. The remaining study intersections are all along Urban Basic Routes.

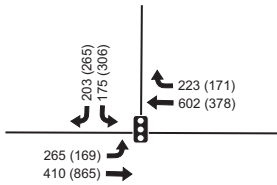
4. Existing Condition

Turning movement counts at the seven study intersections were conducted during a typical weekday AM and PM peak period in September 2014. An intersection turning movement count consisted of counting each vehicle at each study intersection location by turning movement. Due to limitations in the Synchro 8.0 software, HCM 2010 methodologies could not be used for two out of seven study intersections (Loveridge Rd and SR-4 EB Ramps, SR-4 WB Ramps and California Dr). For these two locations, the HCM 2000 methodology was used instead.

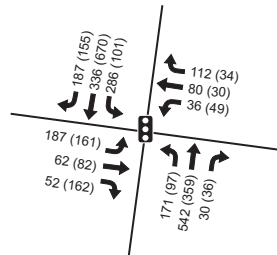
Signal timing plans were obtained from the City of Pittsburg and Caltrans. **Appendix A** includes the detailed intersection count sheets for the AM and PM peak periods. **Figure 3** illustrates the existing AM and PM peak hour traffic volumes at each study intersection. According to HCM intersection LOS standards defined in the East County Action Plan, the intersections along Routes of Regional Significance all operate at LOS D (or better) under Existing Conditions. According to CCTALOS intersection standards defined in the City of Pittsburg General Plan all intersections along either Regional Routes of Significance or Basic Routes operate at LOS D (or better) under Existing Conditions. The intersections and their corresponding existing levels of service are presented in **Table 3**. **Appendix B** includes the detailed calculation LOS analysis sheets for each intersection, including the AM and PM peak hours.



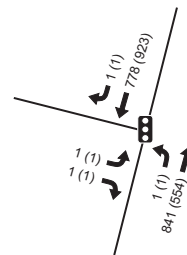
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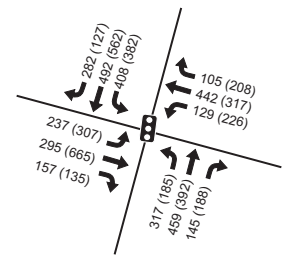
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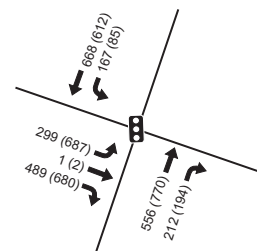
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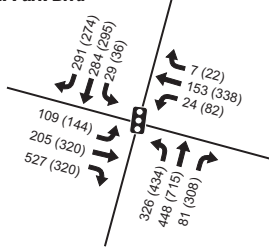
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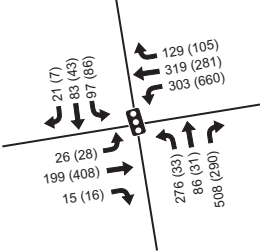
5. Loveridge Rd / SR-4 EB Ramps



6. Loveridge Rd / California Ave - N. Park Blvd



7. California Ave / SR-4 WB Ramps



LEGEND

- Study Intersection
- Existing Lane Geometry
- AM (PM) - Peak Hour Traffic Volume

- Traffic Signal
- Project Site



Figure 3

**1201 Stoneman Ave
Existing Condition Peak Hour Volumes**

Table 3 Existing Condition LOS Summary

Int. #	Intersection	Peak Hour	HCM		CCTALOS	
			Avg Delay	LOS	V/C	LOS
1	Loveridge Rd / Buchanan Rd ¹	AM	30.6	C	0.606	B
		PM	23.3	C	0.681	B
2	Loveridge Rd / Stoneman Ave	AM	27.8	C	0.508	A
		PM	23.7	C	0.486	A
3	Loveridge Rd / Project Driveway	AM	1.9	A	0.228	A
		PM	2.2	A	0.270	A
4	Loveridge Rd / E. Leland Rd ¹	AM	37.9	D	0.554	A
		PM	41.8	D	0.559	A
5	Loveridge Rd / SR-4 EB Ramps ²	AM	22.7	C	0.499	A
		PM	28.3	C	0.646	B
6	Loveridge Rd / California Ave – N. Park Blvd	AM	69.0	E	0.467	A
		PM	51.3	D	0.553	A
7	SR-4 WB Ramps / California Ave ²	AM	24.8	C	0.432	A
		PM	54.8	D	0.420	A

Source: DKS Associates, 2015

Notes: HCM 2010 analysis unless specified by ²

¹ Route of Regional Significance intersection

² HCM 2000 analysis due to HCM 2010 limitations

Bold = LOS E or worse.

5. Project Condition

This section evaluates Project-generated traffic estimated for the proposed Project. The amount of traffic associated with a Project is estimated using a three-step process: (1) trip generation, (2) trip distribution, and (3) trip assignment. Trip generation is the process of predicting the number of peak-hour trips a proposed development would contribute to the roadways, and whether these trips would be entering or exiting the site. After the number of trips is determined, the distribution process Projects the direction these trips use to approach and depart the site, from a regional perspective. Trip assignment involves determining which specific roadways a vehicle would use to travel between its origin and destination.

5.1 Planned Roadway Improvements

For the 2035 Cumulative Baseline and 2035 Cumulative Baseline with Project scenarios, this study assumed no additional new construction for any of the study intersections.

5.2 Project Trip Generation, Distribution, and Assignment

5.2.1 Trip Generation

Trip generation of the proposed Project was based on the Institute of Transportation Engineers (ITE) Trip Generation Manual, 9th Edition (2012), as summarized in **Table 4**, for the AM and PM peak hours, respectively. The proposed Project would generate 1,530 daily trips, including 127 net new AM peak hour trips (37 inbound, 90 outbound) and 154 net new PM peak hour trips (94 inbound, 60 outbound).

Table 4 Project Trip Generation

Land Use	Size	Units	Daily ADT		AM Peak Hour						PM Peak Hour					
			Trip rate	Total Trips	Trip Rate	Percentage		Trips		Total Trips	Trip Rate	Percentage		Trips		Total Trips
						In	Out	In	Out			In	Out	In	Out	
Apartment ¹	230	Dwelling Units	6.65	1530	0.55	29	71	37	90	127	0.67	61	39	94	60	154

Source: ITE Trip Generation Manual 9th Edition, Vol 3, 2012

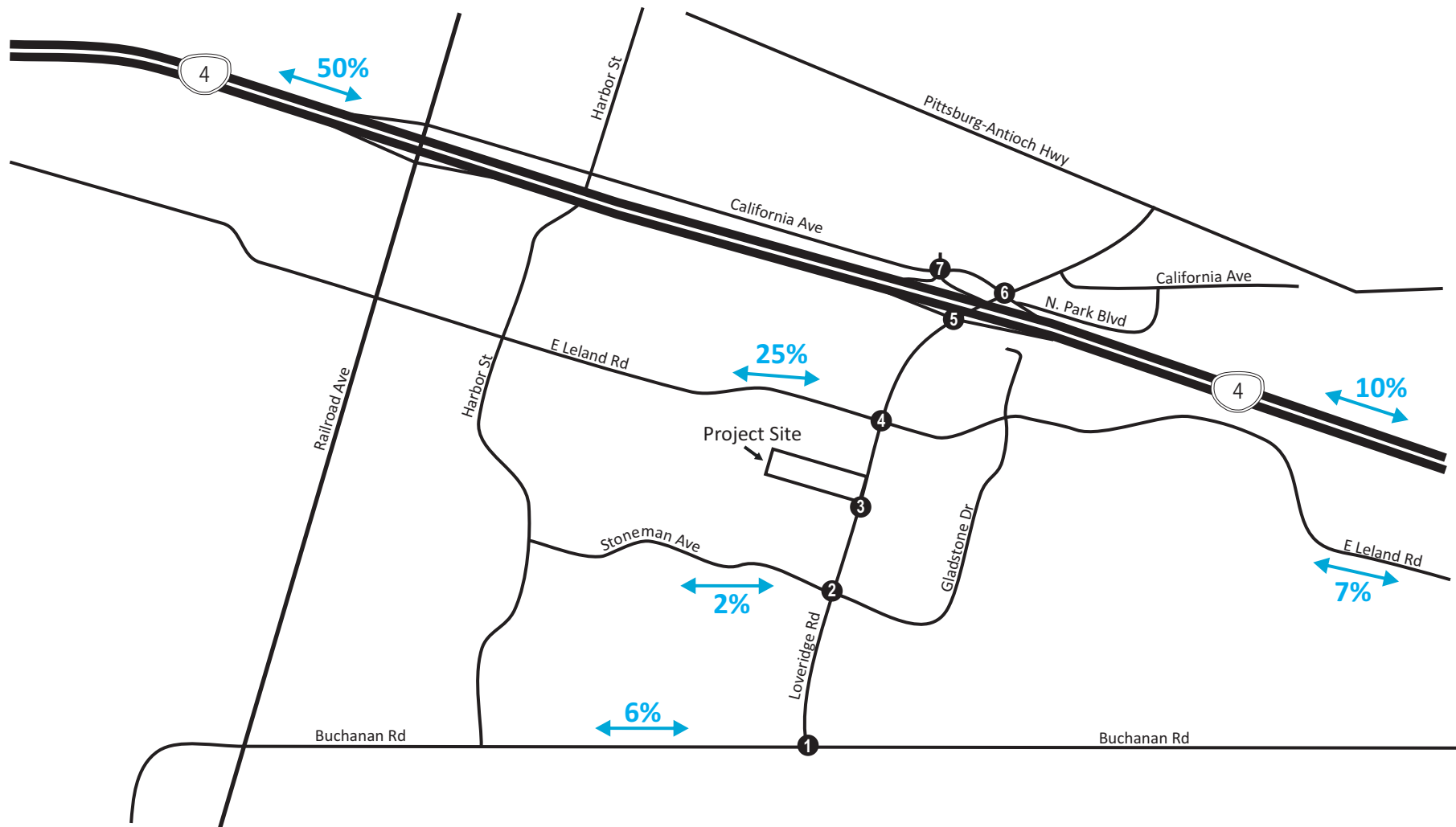
¹ITE Land Use Code No. 220; Rates based on peak hour of adjacent street.

5.2.2 Trip Distribution

The direction of approach and departure for Project trips vary depending on the type of land use. DKS reviewed traffic volumes, turning movements at the intersections, and locations of various land uses as part of this analysis. Trip distribution patterns were derived in consultation with City of Pittsburgh staff. The trip distribution patterns are illustrated in **Figure 4**.

5.2.3 Trip Assignment

Project-generated trips were assigned to the roadway network based on access points, trip distribution assumptions and likely travel patterns. The proportion of these trips that would travel through the study intersections was used for the intersection LOS analysis under the Project Condition. **Figure 5** illustrates the Peak Hour Project Trips at each study intersection for the AM and PM peak hour.



LEGEND

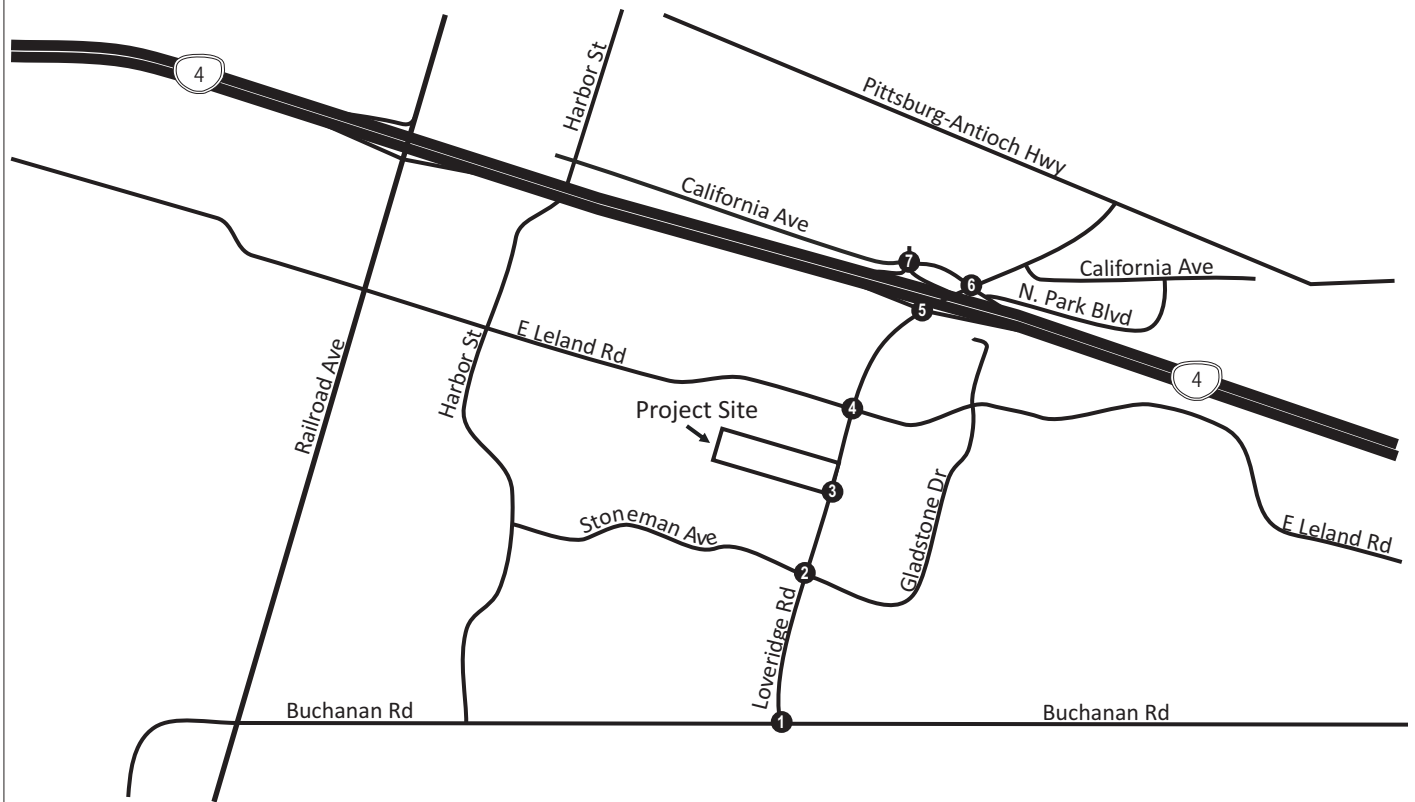
-  - Study Intersection & Number
-  - Trip Distribution
-  - Project Site



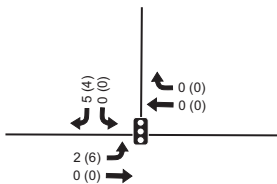
DKS

Figure 4

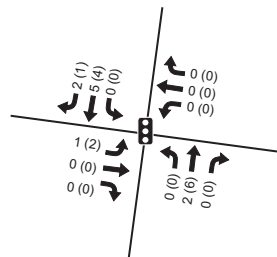
Project Trip Distribution



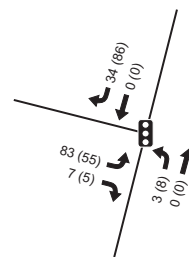
1. Loveridge Rd / Buchanan Rd



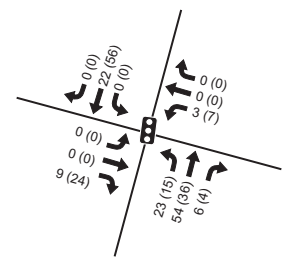
2. Loveridge Rd / Stoneman Ave



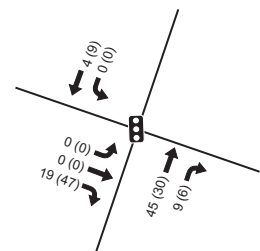
3. Loveridge Rd / Project Driveway



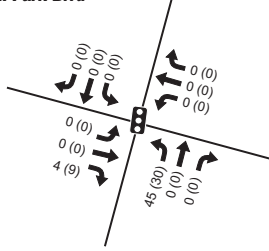
4. Loveridge Rd / E Leland Rd



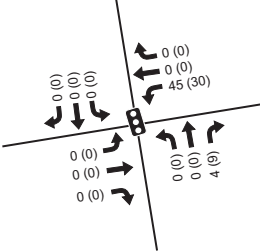
5. Loveridge Rd / SR-4 EB Ramps



6. Loveridge Rd / California Ave - N. Park Blvd



7. California Ave / SR-4 WB Ramps



LEGEND

- Study Intersection
- Existing Lane Geometry
- AM (PM) - Peak Hour Traffic Volume



- Traffic Signal
- Project Site



NO SCALE



Figure 5

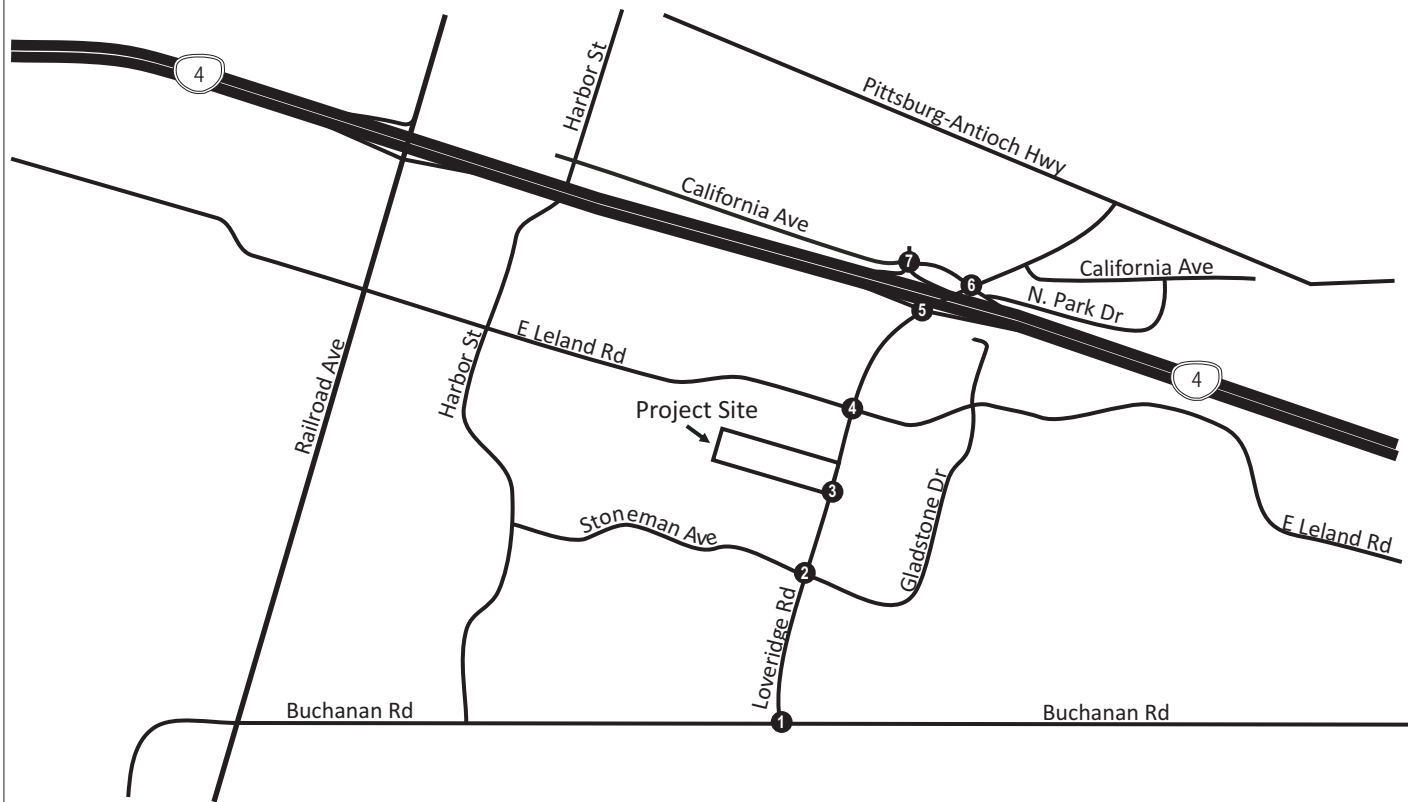
**1201 Stoneman Ave
Peak Hour Project Trips**

6. Existing Plus Project Condition

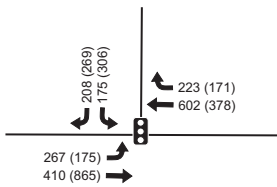
Project trips were added to existing condition volumes to obtain the Existing Plus Project Condition turn movement volumes, which are shown in **Figure 6** for the AM and PM peak hours, respectively.

6.1 Intersection Operations

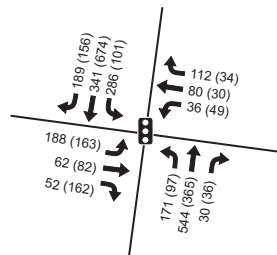
All intersections were evaluated for the Project Conditions under the City of Pittsburgh significance criteria as outlined in Section 3.2 of this report. According to HCM intersection LOS standards defined in the East County Action Plan, the intersections along Routes of Regional Significance all operate at LOS D (or better) under Existing Plus Project Conditions. According to CCTALOS intersection standards, defined in the City of Pittsburgh General Plan, all intersections along either Regional Routes of Significance or Basic Routes should operate at LOS D (or better) under Existing Plus Project Conditions. The intersections and their corresponding Existing Plus Project Condition LOS are presented in **Table 5**. Comparisons of Existing Condition and Existing Plus Project Condition in both HCM and CCTALOS methodologies are shown in **Table 6** and **Table 7**, respectively.



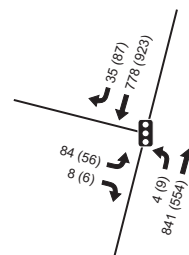
1. Lloveridge Rd / Buchanan Rd



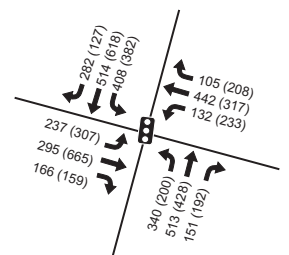
2. Lloveridge Rd / Stoneman Rd



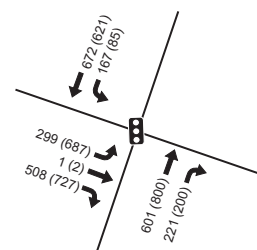
3. Lloveridge Rd / Project Driveway



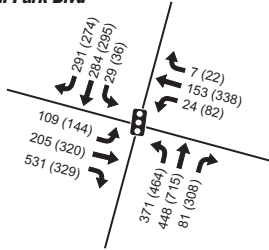
4. Lloveridge Rd / E Leland Rd



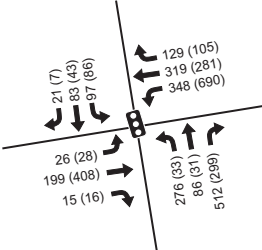
5. Lloveridge Rd / SR-4 EB Ramps



6. Lloveridge Rd / California Ave - N. Park Blvd



7. California Ave / SR-4 WB Ramps



LEGEND

- Study Intersection
- Existing Lane Geometry
- AM (PM) - Peak Hour Traffic Volume



- Traffic Signal



- Project Site



NO SCALE



Figure 6

**1201 Stoneman Ave
Existing Plus Project Peak Hour**

Table 5 Existing Plus Project LOS Summary

Int. #	Intersection	Peak Hour	HCM		CCTALOS	
			Avg Delay	LOS	V/C	LOS
1	Loveridge Rd / Buchanan Rd ¹	AM	30.8	C	0.607	B
		PM	23.5	C	0.681	B
2	Loveridge Rd / Stoneman Ave	AM	27.8	C	0.510	A
		PM	23.7	C	0.488	A
3	Loveridge Rd / Project Driveway	AM	3.8	A	0.288	A
		PM	4.4	A	0.335	A
4	Loveridge Rd / E. Leland Rd ¹	AM	39.1	D	0.575	A
		PM	42.1	D	0.588	A
5	Loveridge Rd / SR-4 EB Ramps ²	AM	23.2	C	0.523	A
		PM	33.5	C	0.682	B
6	Loveridge Rd / California Ave – N. Park Blvd	AM	74.1	E	0.470	A
		PM	57.4	E	0.553	A
7	SR-4 WB Ramps / California Ave ²	AM	25.4	C	0.434	A
		PM	62.7	E	0.430	A

Source: DKS Associates, 2015

Notes: HCM 2010 analysis unless specified by ²

¹ Route of Regional Significance intersection

² HCM 2000 analysis due to HCM 2010 limitations

Bold = LOS E or worse.

Table 6 Existing Plus Project LOS Comparison Summary – HCM Methodology

Int. #	Intersection	Peak Hour	Existing		Project		Diff. Existing vs Project
			Avg Delay	LOS	Avg Delay	LOS	Avg Delay
1	Loveridge Rd / Buchanan Rd ¹	AM	30.6	C	30.8	C	0.2
		PM	23.3	C	23.5	C	0.2
2	Loveridge Rd / Stoneman Ave	AM	27.8	C	27.8	C	0.0
		PM	23.7	C	23.7	C	0.0
3	Loveridge Rd / Project Driveway	AM	1.9	A	3.8	A	1.9
		PM	2.2	A	4.4	A	2.2
4	Loveridge Rd / E. Leland Rd ¹	AM	37.9	D	39.1	D	1.2
		PM	41.8	D	42.1	D	0.3
5	Loveridge Rd / SR-4 EB Ramps ²	AM	22.7	C	23.2	C	0.5
		PM	28.3	C	33.5	C	5.2
6	Loveridge Rd / California Ave – N. Park Blvd	AM	69.0	E	74.1	E	5.1
		PM	51.3	D	57.4	E	6.1
7	SR-4 WB Ramps / California Ave ²	PM	24.8	D	25.4	C	0.6
		AM	54.8	D	62.7	E	7.9

Source: DKS Associates, 2015

Notes: HCM 2010 analysis unless specified by ²

¹ Route of Regional Significance intersection

² HCM 2000 analysis due to HCM 2010 limitations

Bold = LOS E or worse.

Table 7 Existing Plus Project LOS Comparison Summary – CCTALOS Methodology

Int. #	Intersection	Peak Hour	Existing		Project		Diff. Existing vs Project
			V/C	LOS	V/C	LOS	V/C
1	Loveridge Rd / Buchanan Rd	AM	0.606	B	0.607	B	0.001
		PM	0.681	B	0.681	B	0.000
2	Loveridge Rd / Stoneman Ave	AM	0.508	A	0.510	A	0.002
		PM	0.486	A	0.488	A	0.002
3	Loveridge Rd / Project Driveway	AM	0.228	A	0.288	A	0.060
		PM	0.270	A	0.335	A	0.065
4	Loveridge Rd / E. Leland Rd	AM	0.554	A	0.575	A	0.021
		PM	0.559	A	0.588	A	0.029
5	Loveridge Rd / SR-4 EB Ramps	AM	0.499	A	0.523	A	0.024
		PM	0.646	B	0.682	B	0.036
6	Loveridge Rd / California Ave – N. Park Blvd	AM	0.467	A	0.470	A	0.003
		PM	0.553	A	0.553	A	0.000
7	SR-4 WB Ramps / California Ave	PM	0.432	A	0.434	A	0.002
		AM	0.420	A	0.430	A	0.010

Source: DKS Associates, 2015
Bold = LOS E or worse.

6.2 Site Access and Circulation

The proposed Project site, located at 1201 Stoneman Avenue, is approximately bounded by Loveridge Road to the east, Loveridge Circle to the north, and Stoneman Avenue to the south. Access to the Project site is provided by a driveway located on Loveridge Road. This driveway is served by a signalized intersection. The proposed driveway was evaluated for safety and spacing issues. This evaluation included considering the characteristics of the surrounding land uses, the existing roadway geometry and the available sight distance. According to Table 405.1A of the Caltrans Highway Design Manual, the required Corner Sight Distance for a 45 MPH roadway is 495 feet. An evaluation of the Project site plan, shown in **Figure 2**, shows that the Project driveway is located on roadways that are both straight and flat with satisfactory sight distance per the requirements of the Highway Design Manual. These proposed driveway locations also do not appear to be in alignment with the existing signalized intersection at Loveridge Road. The project driveway on Loveridge Road should be aligned or realigned to conform to the existing signalized intersection.

6.3 Transit Accessibility

Per the current transit operating routes in the vicinity of the Project site, three Tri Delta routes (Lines 380, 390, and 393) operate near the Project site. In general, the routes provide access between the Project area and the nearby Pittsburg BART stations.

The anticipated mode share of transit patrons from the proposed Project site is anticipated to be minimal (less than five percent). By assuming a mode share of five percent, approximately 15 or fewer peak-hour transit trips would be made in any direction. It is estimated that these additional patrons could be accommodated by the existing service, spread out over the various routes and frequency of service.

6.4 Pedestrians, Bicyclists and Non-Motorized Vehicular Travel

6.4.1 Bicycle Facilities

The 2001 East Contra Costa County Bikeway Plan indicates bicycle facilities in the vicinity of the Project. The existing system consists of three classifications of bicycle facilities:

- Class I Bikeway (bike path) – completely separated, with paved right of way (shared with pedestrians) which excludes general motor vehicle traffic.
- Class II Bikeway (bike lane) – provides a striped and stenciled lane for one-way bike travel on a street or highway.
- Class III Bikeway (bike route) – a shared use roadway with motor vehicle traffic and is only identified by signage.

In the vicinity of the Project site, a combination of Class II and Class III bicycle lanes are provided on Buchanan Road, E. Leland Road, and Loveridge Road. A Class I bicycle path (Delta De Anza Trail) is provided south of the project along the EBMUD right-of way.

6.4.2 Pedestrian Facilities

Based on a recent site visit, pedestrian facilities within the vicinity of the Project site include sidewalks, crosswalks, curb ramps and traffic signals with pedestrian crosswalks. Pedestrian traffic volume is moderate in the vicinity of the Project site. There are crosswalks and traffic signals with flashing “Walk/Don’t Walk” pedestrian signals at all study intersections. The existing pedestrian facilities along with the proposed improvements associated with the Project should accommodate anticipated pedestrian volumes generated by the Project.

7. Cumulative and Cumulative Plus Project Conditions

As part of this analysis, DKS reviewed recent forecasts from the travel forecast model for several roadway segments within the vicinity of the Project. For the purpose of this analysis, DKS obtained 2014 and 2035 growth forecasts (roadway segment link volumes). The growth forecasts were derived from the Contra Costa County Travel Demand Model. **Figure 7** illustrates AM and PM peak hour intersection turning movement volumes for the 2035 Cumulative condition without the Project. **Figure 8** illustrates AM and PM peak hour intersection turn movement volumes under the 2035 Cumulative Plus Project Condition.

7.1 Cumulative and Cumulative Plus Project Forecast Methodology

Cumulative forecasts were obtained by adding model growth between 2014 and 2035 to existing counts. In order to evaluate cumulative traffic conditions as well as to provide a basis for comparison of cumulative conditions before and after Project-generated traffic is added to the street system, the 2035 cumulative baseline growth forecasts had to be modified by applying the “Furness” method to balance the roadway network. This method is described below.

“Furness” Method

The “Furness” method involves the conversion of model link volumes to intersection turn movement volumes. DKS applied the “Furness” method to achieve balancing of link volumes within the roadway network and to generate 2035 cumulative baseline intersection turning movement volumes.

7.2 Intersection Operations—Cumulative Conditions (Without Project)

The study intersections were analyzed based on their anticipated traffic volumes by the year 2035. According to HCM intersection LOS standards defined in the East County Action Plan, the intersections along Routes of Regional Significance do not operate at LOS D (or better) under Cumulative Conditions. The following intersections operate at LOS E or F:

Int. #1 Loveridge Road and Buchanan Road (LOS E, PM peak hour)

Int. #4 Loveridge Road and E. Leland Road (LOS F, AM peak hour and LOS E, PM peak hour)

According to CCTALOS intersection standards defined in the City of Pittsburg General Plan all intersections along either Regional Routes of Significance or Basic Routes operate at LOS D (or better) under Cumulative Conditions. These intersections and their corresponding Cumulative Year 2035 Baseline Condition LOS are presented in **Table 8. Appendix B** includes the detailed calculation LOS analysis sheets for these signalized intersections, including the weekday AM and PM peak hours.

Table 8 Cumulative Condition LOS Summary

Int. #	Intersection	Peak Hour	HCM		CCTALOS	
			Avg Delay	LOS	V/C	LOS
1	Loveridge Rd / Buchanan Rd ¹	AM	37.4	D	0.730	C
		PM	68.8	E	0.794	C
2	Loveridge Rd / Stoneman Ave	AM	32.5	C	0.591	A
		PM	26.3	C	0.519	A
3	Loveridge Rd / Project Driveway	AM	2.2	A	0.293	A
		PM	3.2	A	0.426	A
4	Loveridge Rd / E. Leland Rd ¹	AM	118.9	F	0.899	D
		PM	63.1	E	0.698	B
5	Loveridge Rd / SR-4 EB Ramps ²	AM	33.5	C	0.753	C
		PM	46.3	D	0.717	C
6	Loveridge Rd / California Ave – N. Park Blvd	AM	86.1	F	0.568	A
		PM	70.7	E	0.724	C
7	SR-4 WB Ramps / California Ave ²	AM	30.1	C	0.561	A
		PM	51.2	D	0.472	A

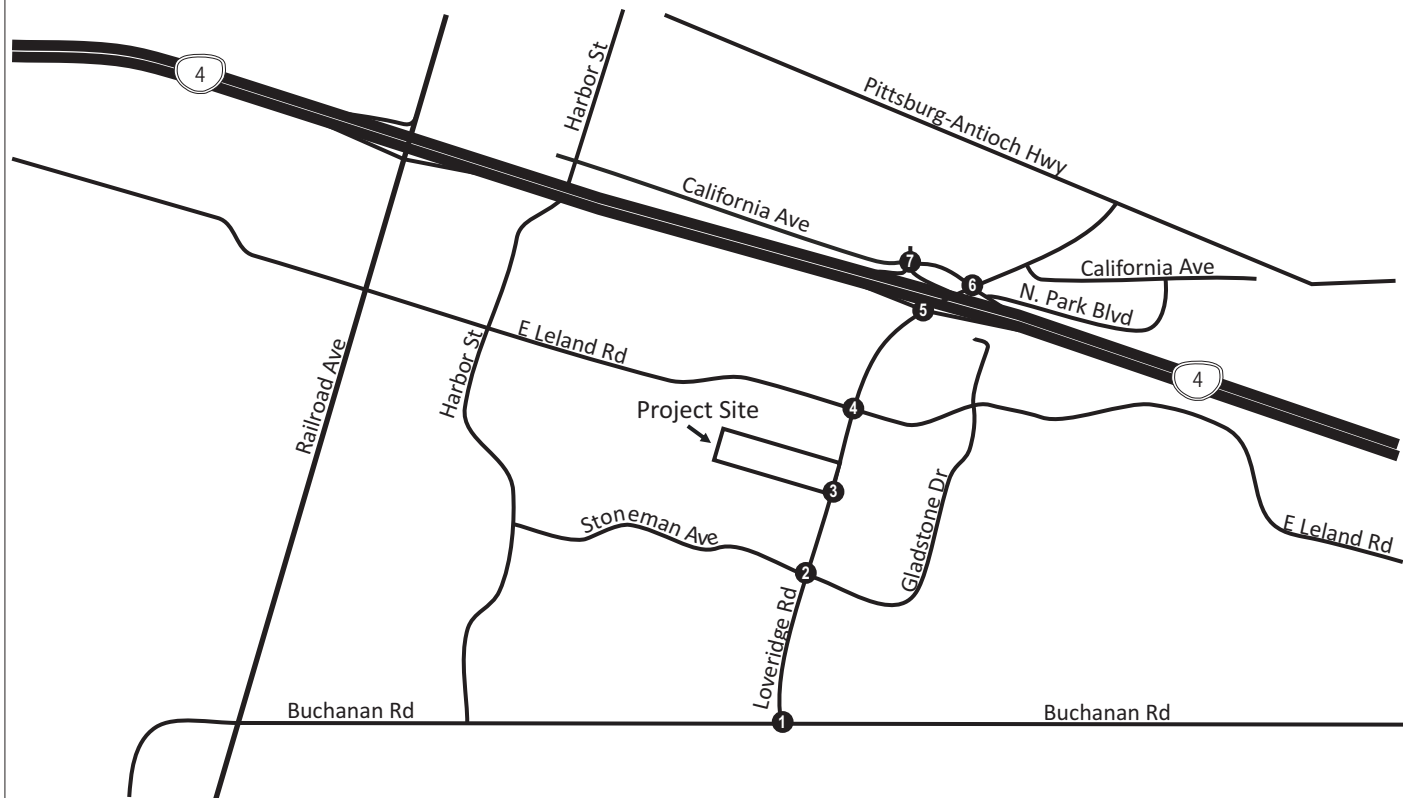
Source: DKS Associates, 2015

Notes: HCM 2010 analysis unless specified by ²

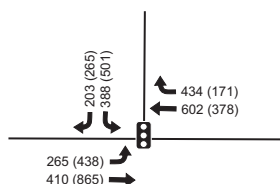
¹ Route of Regional Significance intersection

² HCM 2000 analysis due to HCM 2010 limitations

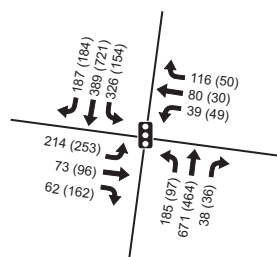
Bold = LOS E or worse.



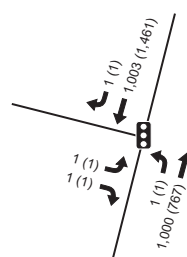
1. Loveridge Rd / Buchanan Rd



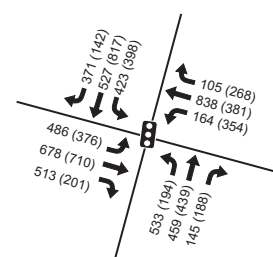
2. Loveridge Rd / Stoneman Rd



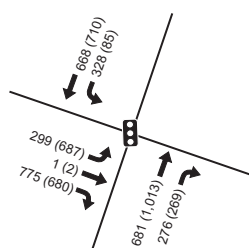
3. Loveridge Rd / Project Driveway



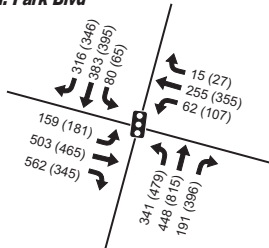
4. Loveridge Rd / E Leland Rd



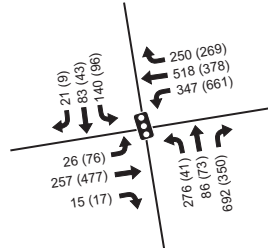
5. Loveridge Rd / SR-4 EB Ramps



6. Loveridge Rd / California Ave - N. Park Blvd



7. California Ave / SR-4 WB Ramps



LEGEND

- Study Intersection
- Existing Lane Geometry
- AM (PM) - Peak Hour Traffic Volume



- Traffic Signal
- Project Site



NO SCALE



Figure 7

1201 Stoneman Ave Cumulative Condition Peak Hour Volumes

7.3 Intersection Operations—Cumulative Plus Project Conditions

All intersections were evaluated for the Cumulative Plus Project Conditions under the City of Pittsburgh significance criteria as outlined in Section 3.2 of this report. According to HCM intersection LOS standards defined in the East County Action Plan, the intersections along Routes of Regional Significance do not operate at LOS D (or better) under Cumulative Conditions. The following intersections operate at LOS E or F:

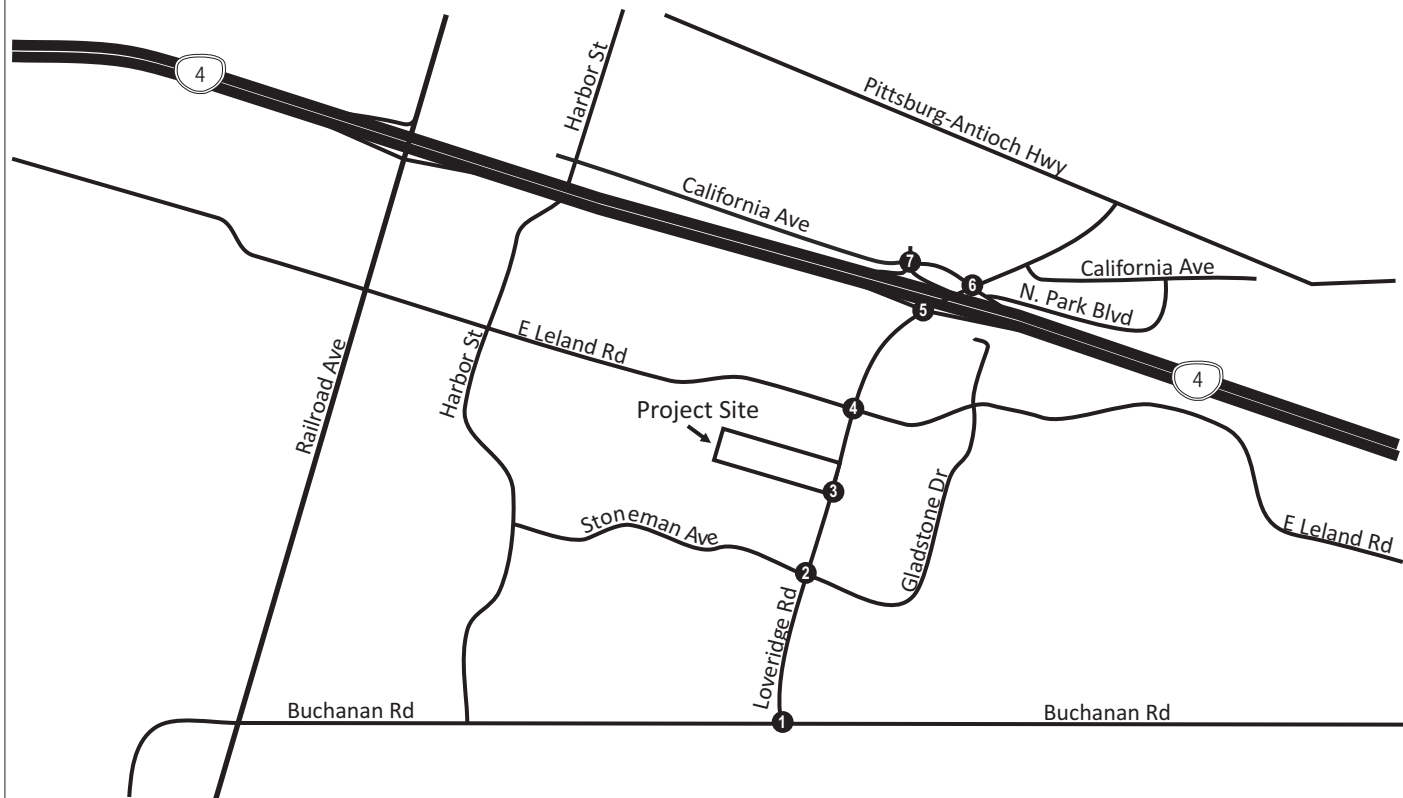
Int. #1 Loveridge Road and Buchanan Road (LOS E, PM peak hour)

Int. #4 Loveridge Road and E. Leland Road (LOS F, AM peak hour and LOS E, PM peak hour)

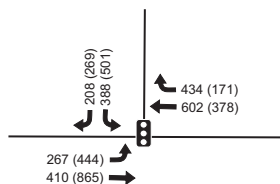
According to CCTALOS intersection standards defined in the City of Pittsburgh General Plan all intersections along either Regional Routes of Significance or Basic Routes operate at LOS D (or better) under Cumulative Conditions with one exception:

Int. #4 Loveridge Road and E. Leland Road (LOS F, AM peak hour)

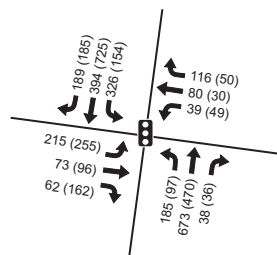
The intersections and their corresponding Cumulative Plus Project Condition levels of service are presented in **Table 9**. Comparisons of Existing Condition and Existing Plus Project Conditions in both HCM and CCTALOS methodologies are shown in **Table 10** and **Table 11**, respectively. **Appendix B** includes the detailed calculation LOS analysis sheets for all intersections, including the weekday AM and PM peak hours.



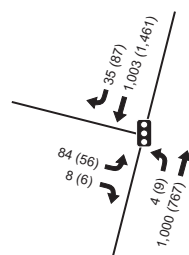
1. Loveridge Rd / Buchanan Rd



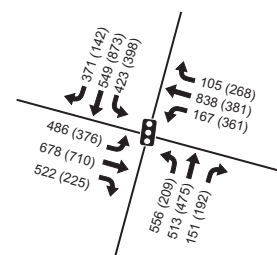
2. Loveridge Rd / Stoneman Ave



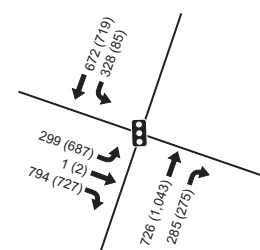
3. Loveridge Rd / Project Driveway



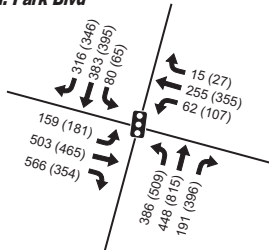
4. Loveridge Rd / E Leland Rd



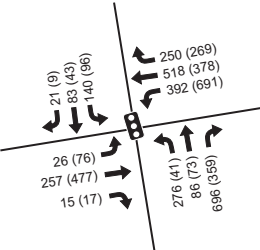
5. Loveridge Rd / SR-4 EB Ramps



6. Loveridge Rd / California Ave - N. Park Blvd



7. California Ave / SR-4 WB Ramps



LEGEND

- Study Intersection
- Existing Lane Geometry
- AM (PM) - Peak Hour Traffic Volume



- Traffic Signal
- Project Site



NO SCALE



1201 Stoneman Ave Cumulative Plus Project Condition Peak Hour Volumes

Table 9 Cumulative Plus Project LOS Summary

Int. #	Intersection	Peak Hour	HCM		CCTALOS	
			Avg Delay	LOS	V/C	LOS
1	Loveridge Rd / Buchanan Rd ¹	AM	37.6	D	0.731	C
		PM	70.4	E	0.794	C
2	Loveridge Rd / Stoneman Ave	AM	32.6	C	0.592	A
		PM	26.4	C	0.521	A
3	Loveridge Rd / Project Driveway	AM	4.2	A	0.353	A
		PM	6.3	A	0.491	A
4	Loveridge Rd /E. Leland Rd ¹	AM	122.3	F	0.919	E
		PM	64.2	E	0.727	C
5	Loveridge Rd / SR-4 EB Ramps ²	AM	46.3	D	0.778	C
		PM	55.2	E	0.753	C
6	Loveridge Rd / California Ave – N. Park Blvd	AM	90.9	F	0.593	A
		PM	76.6	E	0.724	C
7	SR-4 WB Ramps / California Ave ²	AM	51.2	D	0.549	A
		PM	57.7	E	0.482	A

Source: DKS Associates, 2015

Notes: HCM 2010 analysis unless specified by ²

¹ Route of Regional Significance intersection

² HCM 2000 analysis due to HCM 2010 limitations

Bold = LOS E or worse.

Table 10 Cumulative Plus Project LOS Comparison Summary – HCM Methodology

Int. #	Intersection	Peak Hour	Cumulative		Project		Diff. Cumulative vs Project
			Avg Delay	LOS	Avg Delay	LOS	Avg Delay
1	Loveridge Rd / Buchanan Rd ¹	AM	37.4	D	37.6	D	0.2
		PM	68.8	E	70.4	E	1.6
2	Loveridge Rd / Stoneman Ave	AM	32.5	C	32.6	C	0.1
		PM	26.3	C	26.4	C	0.1
3	Loveridge Rd / Project Driveway	AM	2.2	A	4.2	A	2.0
		PM	3.2	A	6.3	A	3.1
4	Loveridge Rd / E. Leland Rd ¹	AM	118.9	F	122.3	F	3.4
		PM	63.1	E	64.2	E	1.1
5	Loveridge Rd / SR-4 EB Ramps ²	AM	33.5	C	46.3	D	12.8
		PM	46.3	D	55.2	E	8.9
6	Loveridge Rd / California Ave – N. Park Blvd	AM	86.1	F	90.9	F	4.8
		PM	70.7	E	76.6	E	5.9
7	SR-4 WB Ramps / California Ave ²	AM	30.1	C	30.9	C	0.8
		PM	51.2	D	57.7	E	6.5

Source: DKS Associates, 2015

Notes: HCM 2010 analysis unless specified by ²

¹ Route of Regional Significance intersection

² HCM 2000 analysis due to HCM 2010 limitations

Bold = LOS E or worse.

Table 11 Cumulative Plus Project LOS Comparison Summary – CCTALOS Methodology

Int. #	Intersection	Peak Hour	Cumulative		Project		Diff. Cumulative vs Project
			V/C	LOS	V/C	LOS	V/C
1	Loveridge Rd / Buchanan Rd	AM	0.730	C	0.731	C	0.001
		PM	0.794	C	0.794	C	0.000
2	Loveridge Rd / Stoneman Ave	AM	0.591	A	0.592	A	0.001
		PM	0.519	A	0.521	A	0.002
3	Loveridge Rd / Project Driveway	AM	0.293	A	0.353	A	0.060
		PM	0.426	A	0.491	A	0.065
4	Loveridge Rd / E. Leland Rd	AM	0.899	D	0.919	E	0.020
		PM	0.698	B	0.727	C	0.029
5	Loveridge Rd / SR-4 EB Ramps	AM	0.753	C	0.778	C	0.025
		PM	0.717	C	0.753	C	0.036
6	Loveridge Rd / California Ave – N. Park Blvd	AM	0.568	A	0.593	A	0.025
		PM	0.724	C	0.724	C	0.000
7	SR-4 WB Ramps / California Ave	AM	0.561	A	0.549	A	-0.012
		PM	0.472	A	0.482	A	0.010

Source: DKS Associates, 2015
Bold = LOS E or worse.

7.4 Mitigation and Improvement Recommendations

This section summarizes the traffic impacts identified in the previous sections and presents recommended mitigation and improvement measures, if any. The before and after mitigation LOS analysis results are included in **Appendix C**.

7.4.1. Project Impacts

AM Peak Hour

Intersection #4 Loveridge Road and E. Leland Road (AM Peak Hour, Cumulative Plus Project Condition)

This intersection operates at an LOS below the standards identified in the East County Action Plan under the Cumulative Condition. Since this intersection was already operating below the standard, the addition of any Project-related traffic would be considered a significant project impact. To mitigate this impact, the intersection signal operation would need to be adjusted to include:

- An adjustment in traffic signal cycle and green time allocation (splits).

With this mitigation in place, the intersection under HCM method would remain to LOS F with an average delay of 107.4 seconds during the AM peak hour. This would result in an improved average delay of 14.9 seconds when compared with the Cumulative Condition. With this proposed mitigation, this impact would be less than significant.

PM Peak Hour

Intersection #1 Loveridge Road and Buchanan Road (PM Peak Hour, Cumulative Plus Project Condition)

This intersection operates at an LOS below the standards identified in the East County Action Plan under the Cumulative Condition. Since this intersection was already operating below the standard, the addition of any Project-related traffic would be considered a significant project impact. To mitigate this impact, the intersection signal operation would need to be adjusted to include:

- An adjustment in green time allocation (splits) amongst the eastbound-westbound approaches and southbound approach.

With this mitigation in place, the intersection would improve to LOS D with an average delay of 52.5 seconds during the PM peak hour. This would result in an improved average delay of 17.9 seconds when compared with the Cumulative Condition. With this proposed mitigation, this impact would be less than significant.

Intersection #4 Loveridge Road and E. Leland Road (PM Peak Hour, Cumulative Plus Project Condition)

This intersection operates at an LOS below the standards identified in the East County Action Plan under the Cumulative Condition. Since this intersection was already operating below the standard, the addition of any Project-related traffic would be considered a significant project impact. To mitigate this impact, the intersection signal operation would need to be adjusted to include:

-
- An adjustment in green time allocation (splits) amongst the eastbound-westbound approaches and northbound-southbound approaches.

With this mitigation in place, the intersection would improve to LOS D with an average delay of 51.0 seconds during the PM peak hour. This would result in an improved average delay of 13.2 seconds when compared with the Cumulative Condition. With this proposed mitigation, this impact would be less than significant.

8. Conclusions

This report provides an evaluation of traffic and transportation issues related to the proposed Project. The Project consists of demolition of a vacant junior high school and construction of twelve apartment buildings with 230 rental units on a 9.6 acre site in the City of Pittsburg, California. The proposed Project would generate 1,530 daily trips, including 127 net new AM peak hour trips (37 inbound, 90 outbound) and 154 net new PM peak hour trips (94 inbound, 60 outbound).

The proposed Project would result in significant transportation impacts in the Cumulative Plus Project Condition for following the intersections; Loveridge Road and Buchanan Road (PM peak hour) and Loveridge Road and E. Leland Road (both AM and PM peak hour). Mitigation and improvement measures have been recommended to address the effects of the proposed Project.

Appendix A

INTERSECTION TURNING MOVEMENT COUNTS

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File Name : #6 CALIFORNIA&SR4WB RAMPSPM

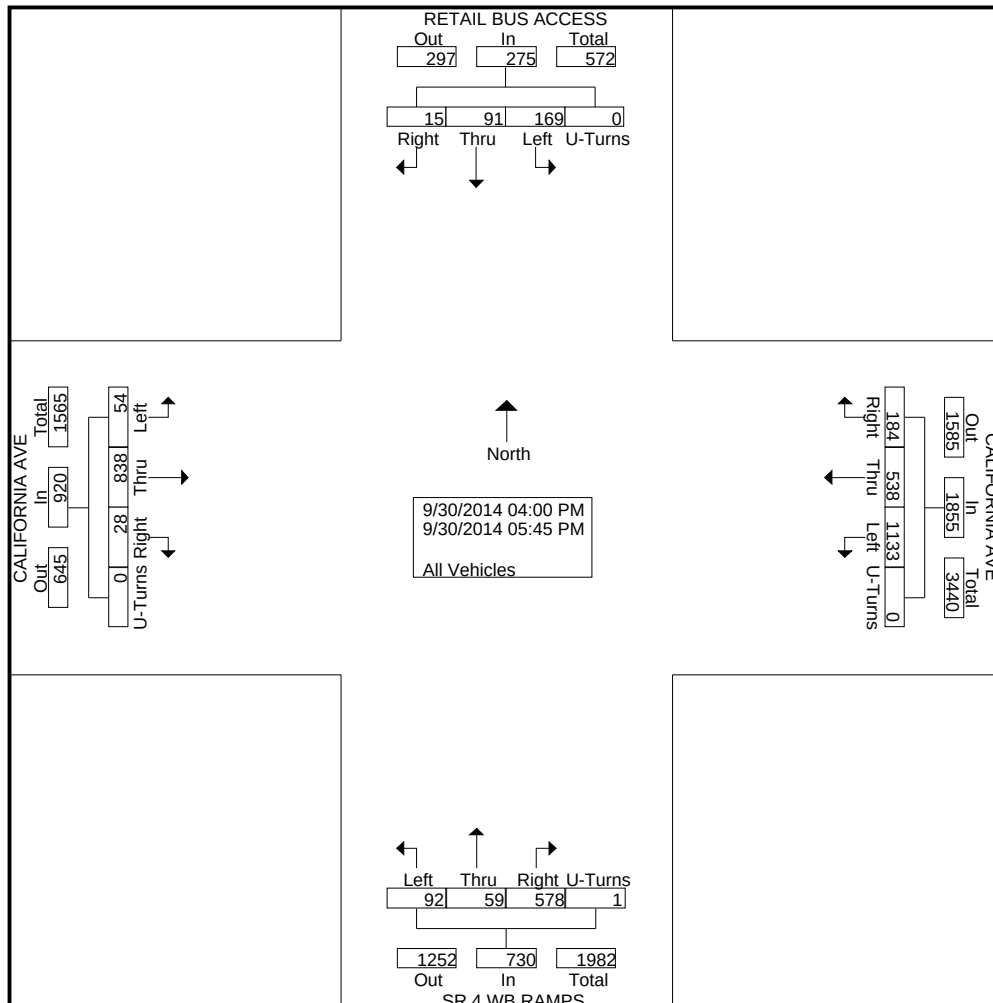
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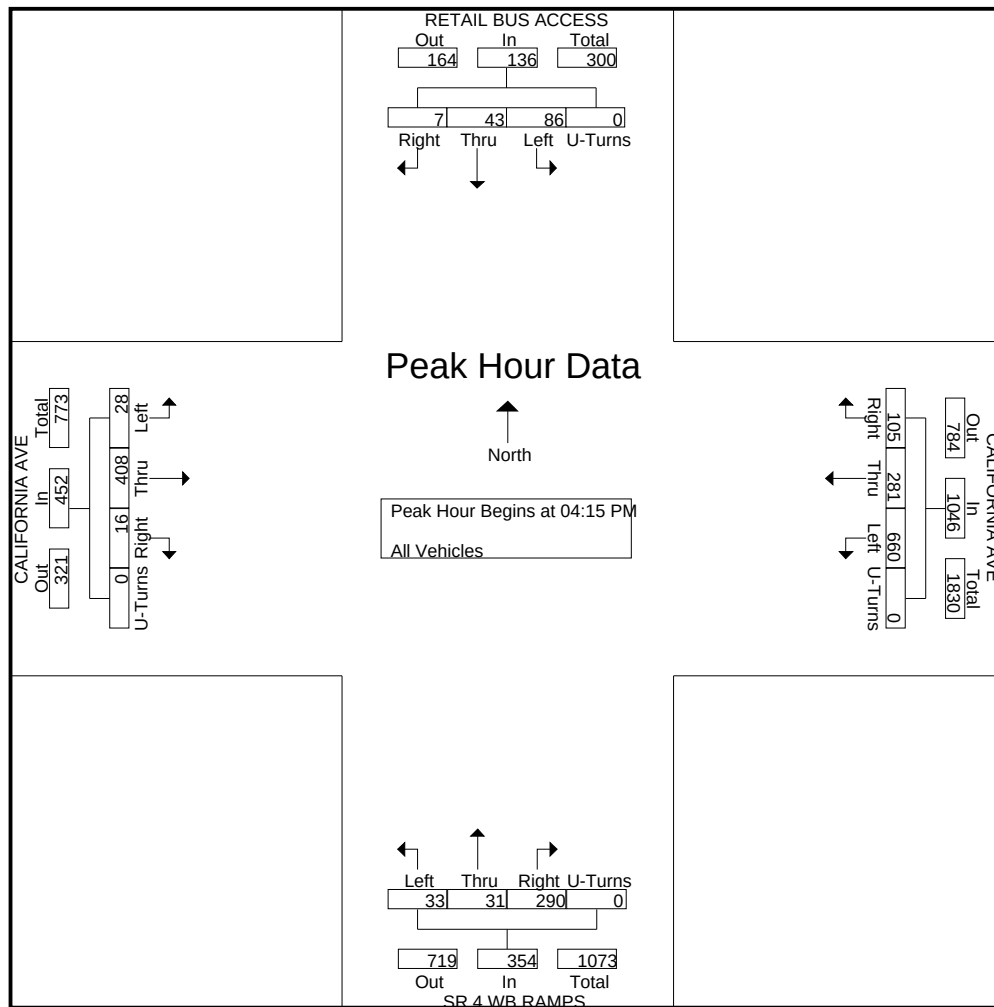
Groups Printed- All Vehicles

Start Time	RETAIL BUS ACCESS Southbound				CALIFORNIA AVE Westbound				SR 4 WB RAMPS Northbound				CALIFORNIA AVE Eastbound				Int. Total
	Right	Thru	Left	U-Turns	Right	Thru	Left	U-Turns	Right	Thru	Left	U-Turns	Right	Thru	Left	U-Turns	
04:00 PM	3	15	30	0	21	57	102	0	73	11	18	0	3	88	8	0	429
04:15 PM	0	11	24	0	25	59	177	0	80	6	7	0	3	95	6	0	493
04:30 PM	5	10	25	0	31	67	135	0	74	7	12	0	5	99	5	0	475
04:45 PM	0	11	23	0	28	74	166	0	77	8	7	0	5	115	7	0	521
Total	8	47	102	0	105	257	580	0	304	32	44	0	16	397	26	0	1918
05:00 PM	2	11	14	0	21	81	182	0	59	10	7	0	3	99	10	0	499
05:15 PM	3	17	18	0	20	65	132	0	77	6	15	0	4	107	4	0	468
05:30 PM	1	9	13	0	23	67	117	0	72	6	12	1	2	122	9	0	454
05:45 PM	1	7	22	0	15	68	122	0	66	5	14	0	3	113	5	0	441
Total	7	44	67	0	79	281	553	0	274	27	48	1	12	441	28	0	1862
Grand Total	15	91	169	0	184	538	1133	0	578	59	92	1	28	838	54	0	3780
Apprch %	5.5	33.1	61.5	0	9.9	29	61.1	0	79.2	8.1	12.6	0.1	3	91.1	5.9	0	
Total %	0.4	2.4	4.5	0	4.9	14.2	30	0	15.3	1.6	2.4	0	0.7	22.2	1.4	0	



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	RETAIL BUS ACCESS Southbound					CALIFORNIA AVE Westbound					SR 4 WB RAMPS Northbound					CALIFORNIA AVE Eastbound					
Start Time	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	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 04:15 PM																					
04:15 PM	0	11	24	0	35	25	59	177	0	261	80	6	7	0	93	3	95	6	0	104	493
04:30 PM	5	10	25	0	40	31	67	135	0	233	74	7	12	0	93	5	99	5	0	109	475
04:45 PM	0	11	23	0	34	28	74	166	0	268	77	8	7	0	92	5	115	7	0	127	521
05:00 PM	2	11	14	0	27	21	81	182	0	284	59	10	7	0	76	3	99	10	0	112	499
Total Volume	7	43	86	0	136	105	281	660	0	1046	290	31	33	0	354	16	408	28	0	452	1988
% App. Total	5.1	31.6	63.2	0		10	26.9	63.1	0		81.9	8.8	9.3	0		3.5	90.3	6.2	0		
PHF	.350	.977	.860	.000	.850	.847	.867	.907	.000	.921	.906	.775	.688	.000	.952	.800	.887	.700	.000	.890	.954



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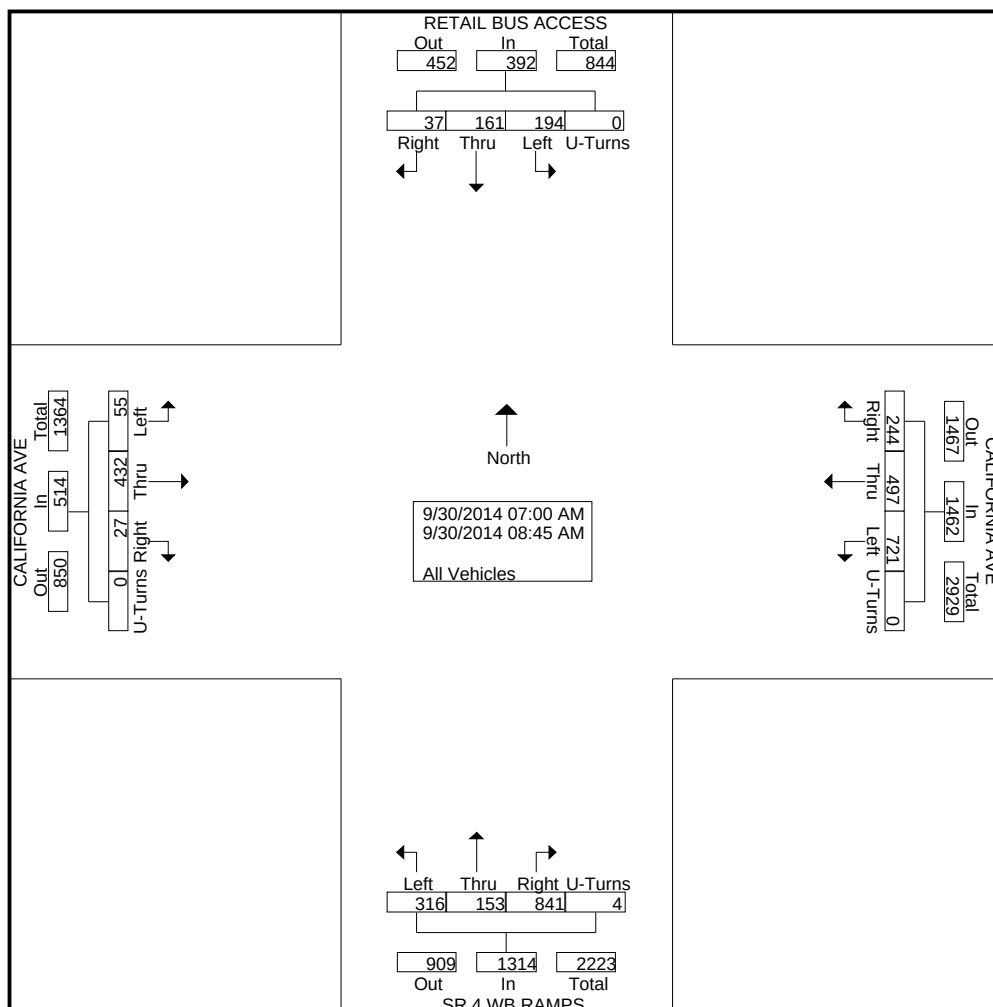
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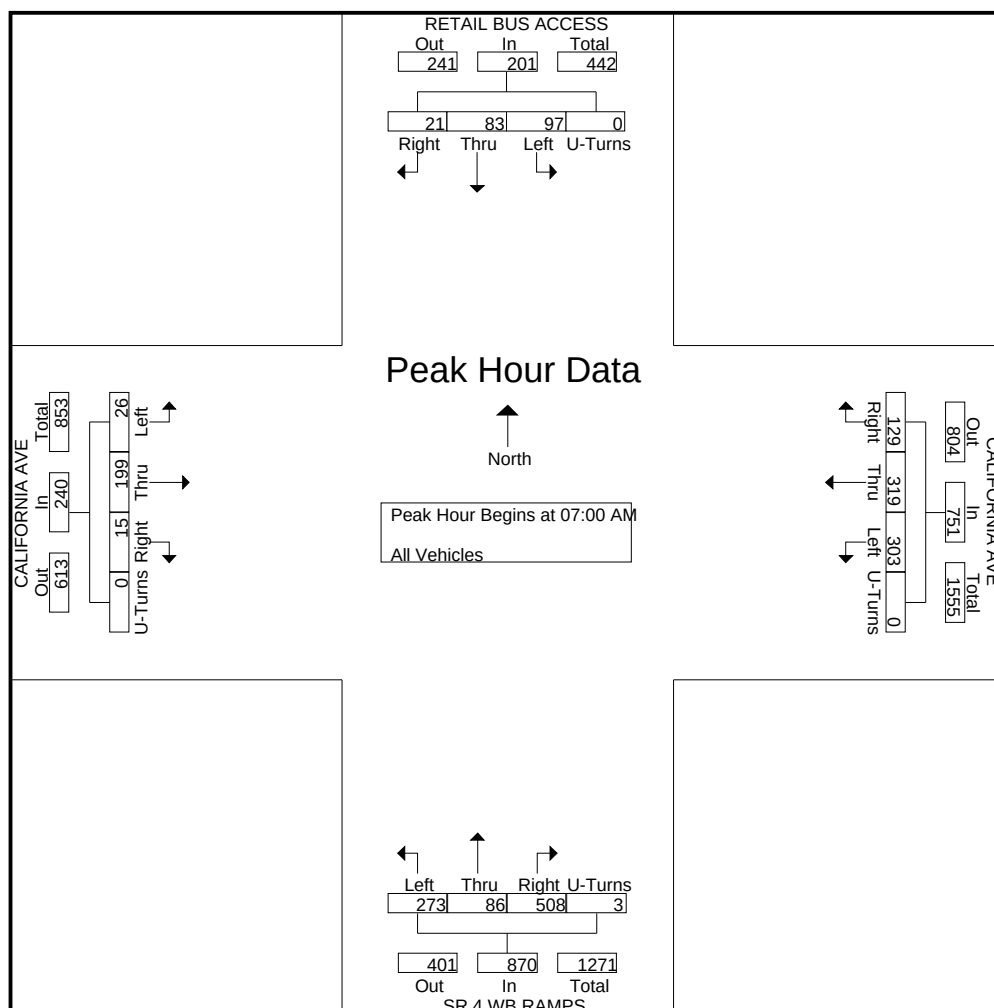
Groups Printed- All Vehicles

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Start Time	Right	Thru	Left	U-Turns	Right	Thru	Left	U-Turns	Right	Thru	Left	U-Turns	Right	Thru	Left	U-Turns	Int. Total
07:00 AM	4	21	13	0	25	75	84	0	145	16	90	3	2	21	5	0	504
07:15 AM	2	24	17	0	31	72	80	0	144	28	80	0	3	34	6	0	521
07:30 AM	8	21	33	0	38	80	60	0	97	23	52	0	3	58	4	0	477
07:45 AM	7	17	34	0	35	92	79	0	122	19	51	0	7	86	11	0	560
Total	21	83	97	0	129	319	303	0	508	86	273	3	15	199	26	0	2062
08:00 AM	6	23	36	0	36	73	94	0	84	16	17	0	7	96	9	0	497
08:15 AM	3	22	20	0	28	52	101	0	73	18	9	0	4	57	3	0	390
08:30 AM	4	19	24	0	25	20	110	0	76	14	11	0	1	38	12	0	354
08:45 AM	3	14	17	0	26	33	113	0	100	19	6	1	0	42	5	0	379
Total	16	78	97	0	115	178	418	0	333	67	43	1	12	233	29	0	1620
Grand Total	37	161	194	0	244	497	721	0	841	153	316	4	27	432	55	0	3682
Apprch %	9.4	41.1	49.5	0	16.7	34	49.3	0	64	11.6	24	0.3	5.3	84	10.7	0	
Total %	1	4.4	5.3	0	6.6	13.5	19.6	0	22.8	4.2	8.6	0.1	0.7	11.7	1.5	0	



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	RETAIL BUS ACCESS Southbound					CALIFORNIA AVE Westbound					SR 4 WB RAMPS Northbound					CALIFORNIA AVE Eastbound					
Start Time	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	4	21	13	0	38	25	75	84	0	184	145	16	90	3	254	2	21	5	0	28	504
07:15 AM	2	24	17	0	43	31	72	80	0	183	144	28	80	0	252	3	34	6	0	43	521
07:30 AM	8	21	33	0	62	38	80	60	0	178	97	23	52	0	172	3	58	4	0	65	477
07:45 AM	7	17	34	0	58	35	92	79	0	206	122	19	51	0	192	7	86	11	0	104	560
Total Volume	21	83	97	0	201	129	319	303	0	751	508	86	273	3	870	15	199	26	0	240	2062
% App. Total	10.4	41.3	48.3	0		17.2	42.5	40.3	0		58.4	9.9	31.4	0.3		6.2	82.9	10.8	0		
PHF	.656	.865	.713	.000	.810	.849	.867	.902	.000	.911	.876	.768	.758	.250	.856	.536	.578	.591	.000	.577	.921



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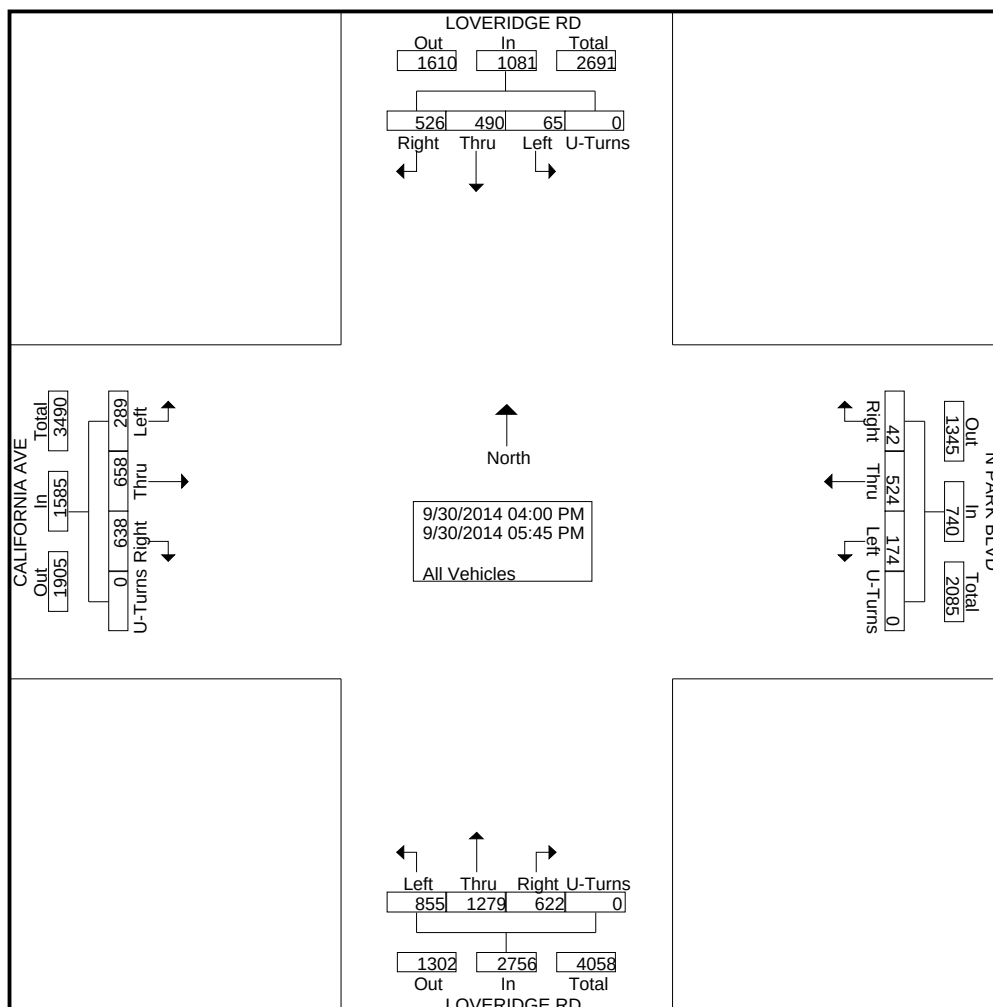
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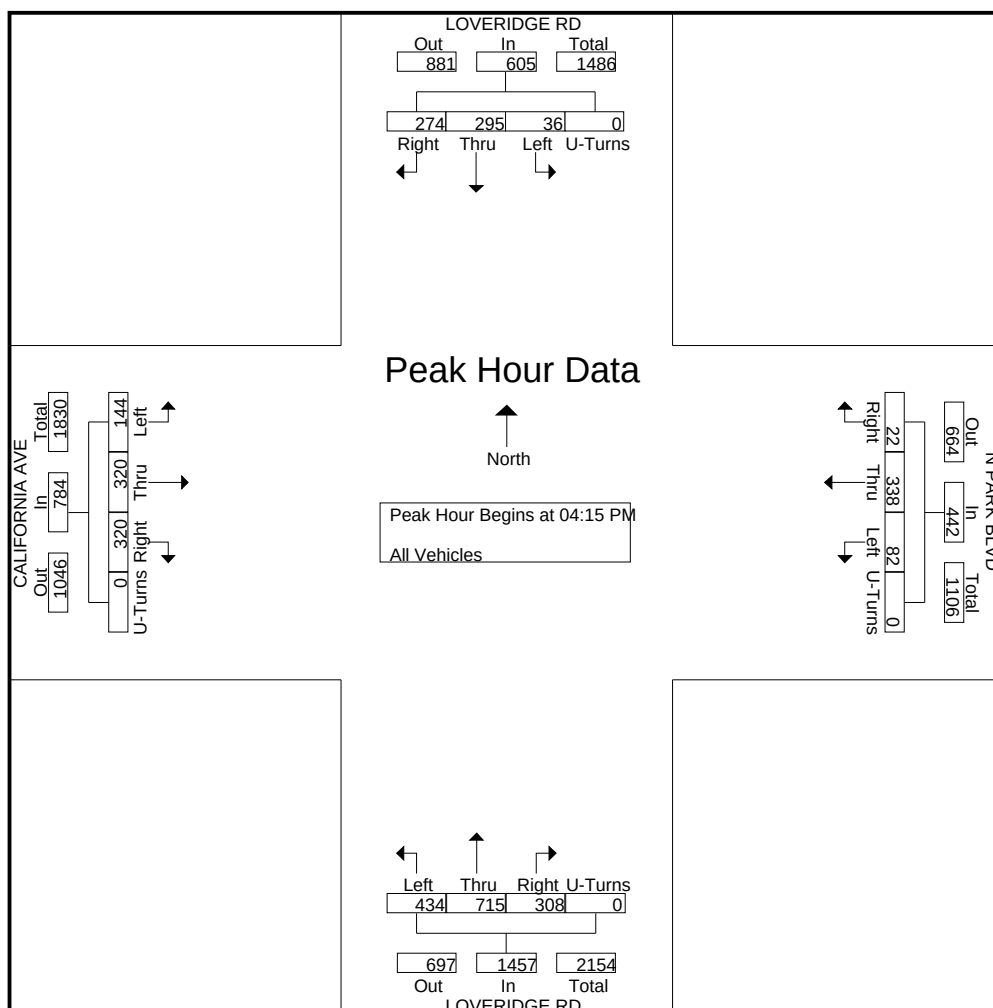
Groups Printed- All Vehicles

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04:00 PM	65	68	12	0	5	46	19	0	79	152	119	0	81	77	33	0	756
04:15 PM	76	36	10	0	7	61	29	0	65	125	124	0	96	71	32	0	732
04:30 PM	67	82	3	0	5	62	22	0	72	189	104	0	82	83	33	0	804
04:45 PM	66	105	11	0	6	101	18	0	85	186	101	0	79	93	43	0	894
Total	274	291	36	0	23	270	88	0	301	652	448	0	338	324	141	0	3186
05:00 PM	65	72	12	0	4	114	13	0	86	215	105	0	63	73	36	0	858
05:15 PM	79	45	10	0	1	45	25	0	71	115	93	0	86	82	34	0	686
05:30 PM	48	52	2	0	12	39	23	0	88	141	120	0	74	100	33	0	732
05:45 PM	60	30	5	0	2	56	25	0	76	156	89	0	77	79	45	0	700
Total	252	199	29	0	19	254	86	0	321	627	407	0	300	334	148	0	2976
Grand Total	526	490	65	0	42	524	174	0	622	1279	855	0	638	658	289	0	6162
Apprch %	48.7	45.3	6	0	5.7	70.8	23.5	0	22.6	46.4	31	0	40.3	41.5	18.2	0	
Total %	8.5	8	1.1	0	0.7	8.5	2.8	0	10.1	20.8	13.9	0	10.4	10.7	4.7	0	



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	LOVERIDGE RD Southbound					N PARK BLVD Westbound					LOVERIDGE RD Northbound					CALIFORNIA AVE Eastbound					
Start Time	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	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 04:15 PM																					
04:15 PM	76	36	10	0	122	7	61	29	0	97	65	125	124	0	314	96	71	32	0	199	732
04:30 PM	67	82	3	0	152	5	62	22	0	89	72	189	104	0	365	82	83	33	0	198	804
04:45 PM	66	105	11	0	182	6	101	18	0	125	85	186	101	0	372	79	93	43	0	215	894
05:00 PM	65	72	12	0	149	4	114	13	0	131	86	215	105	0	406	63	73	36	0	172	858
Total Volume	274	295	36	0	605	22	338	82	0	442	308	715	434	0	1457	320	320	144	0	784	3288
% App. Total	45.3	48.8	6	0		5	76.5	18.6	0		21.1	49.1	29.8	0		40.8	40.8	18.4	0		
PHF	.901	.702	.750	.000	.831	.786	.741	.707	.000	.844	.895	.831	.875	.000	.897	.833	.860	.837	.000	.912	.919



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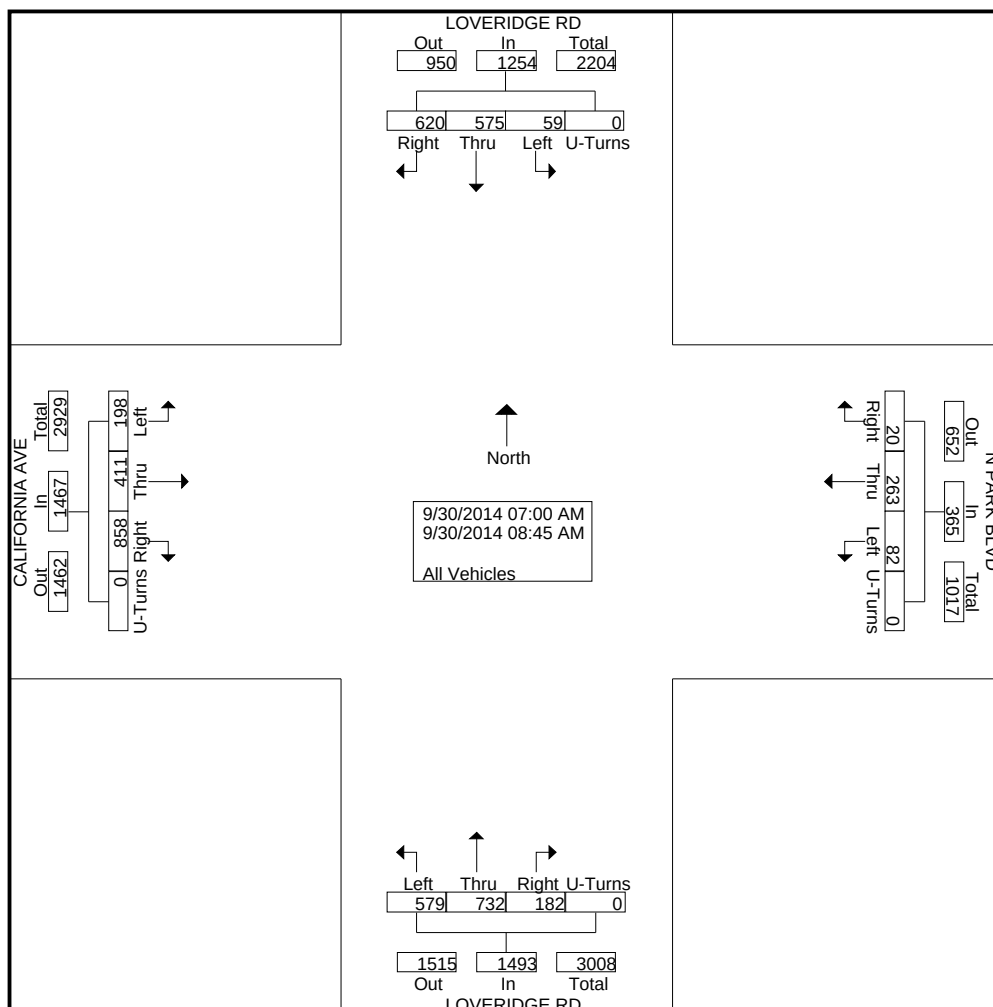
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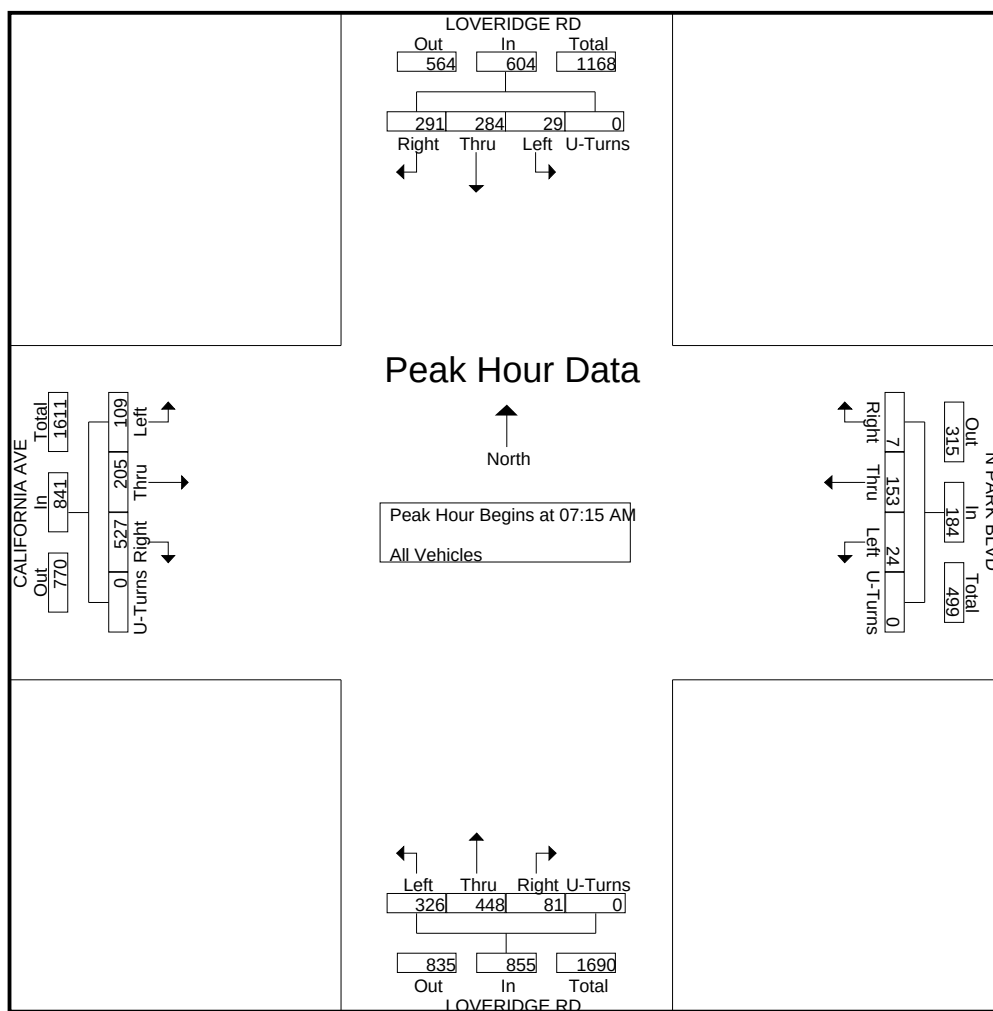
Groups Printed- All Vehicles

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Start Time	Right	Thru	Left	U-Turns	Right	Thru	Left	U-Turns	Right	Thru	Left	U-Turns	Right	Thru	Left	U-Turns	Int. Total
07:00 AM	87	120	7	0	2	24	4	0	12	72	73	0	53	108	18	0	580
07:15 AM	72	99	6	0	1	45	4	0	8	108	66	0	95	75	25	0	604
07:30 AM	65	48	8	0	2	22	4	0	17	115	91	0	136	25	27	0	560
07:45 AM	57	43	5	0	2	56	4	0	26	118	93	0	179	32	31	0	646
Total	281	310	26	0	7	147	16	0	63	413	323	0	463	240	101	0	2390
08:00 AM	97	94	10	0	2	30	12	0	30	107	76	0	117	73	26	0	674
08:15 AM	85	61	11	0	1	37	18	0	33	81	59	0	97	21	32	0	536
08:30 AM	90	36	4	0	3	13	14	0	29	80	52	0	92	27	19	0	459
08:45 AM	67	74	8	0	7	36	22	0	27	51	69	0	89	50	20	0	520
Total	339	265	33	0	13	116	66	0	119	319	256	0	395	171	97	0	2189
Grand Total	620	575	59	0	20	263	82	0	182	732	579	0	858	411	198	0	4579
Apprch %	49.4	45.9	4.7	0	5.5	72.1	22.5	0	12.2	49	38.8	0	58.5	28	13.5	0	
Total %	13.5	12.6	1.3	0	0.4	5.7	1.8	0	4	16	12.6	0	18.7	9	4.3	0	



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	LOVERIDGE RD Southbound					N PARK BLVD Westbound					LOVERIDGE RD Northbound					CALIFORNIA AVE Eastbound					
Start Time	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	72	99	6	0	177	1	45	4	0	50	8	108	66	0	182	95	75	25	0	195	604
07:30 AM	65	48	8	0	121	2	22	4	0	28	17	115	91	0	223	136	25	27	0	188	560
07:45 AM	57	43	5	0	105	2	56	4	0	62	26	118	93	0	237	179	32	31	0	242	646
08:00 AM	97	94	10	0	201	2	30	12	0	44	30	107	76	0	213	117	73	26	0	216	674
Total Volume	291	284	29	0	604	7	153	24	0	184	81	448	326	0	855	527	205	109	0	841	2484
% App. Total	48.2	47	4.8	0		3.8	83.2	13	0		9.5	52.4	38.1	0		62.7	24.4	13	0		
PHF	.750	.717	.725	.000	.751	.875	.683	.500	.000	.742	.675	.949	.876	.000	.902	.736	.683	.879	.000	.869	.921



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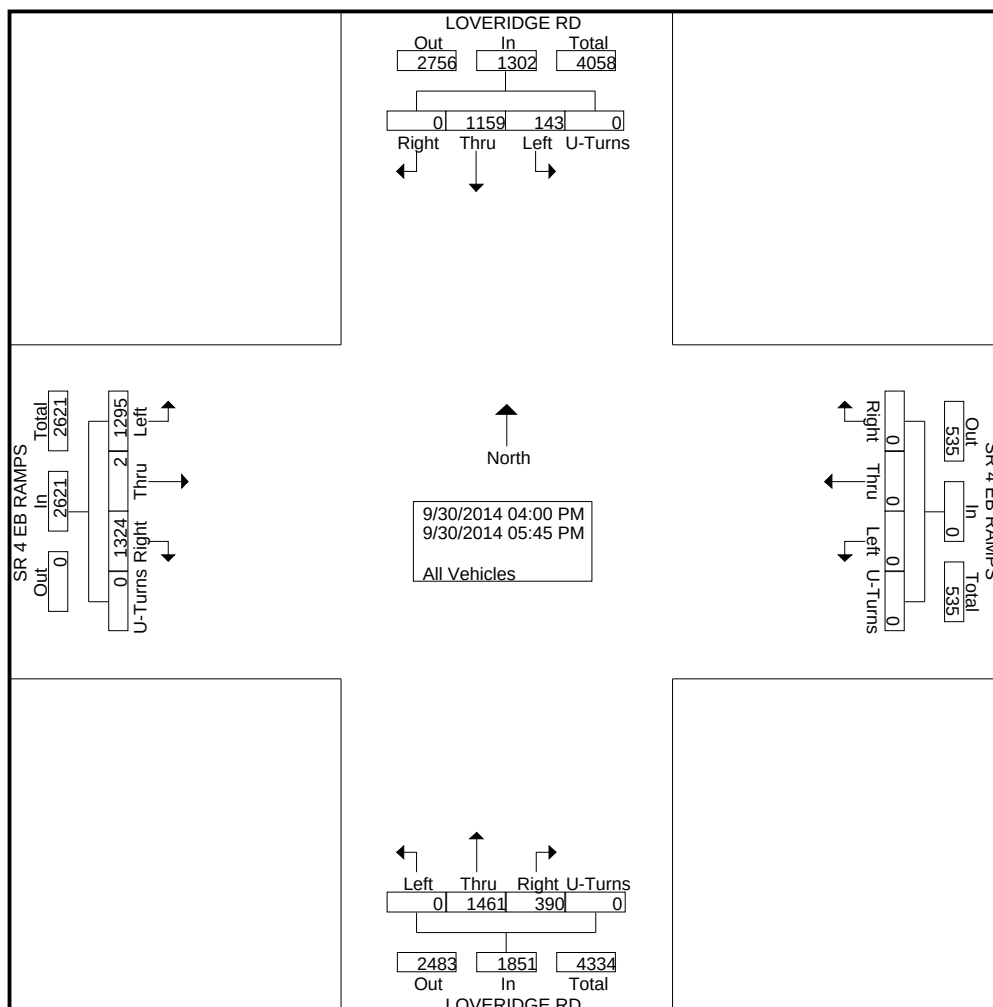
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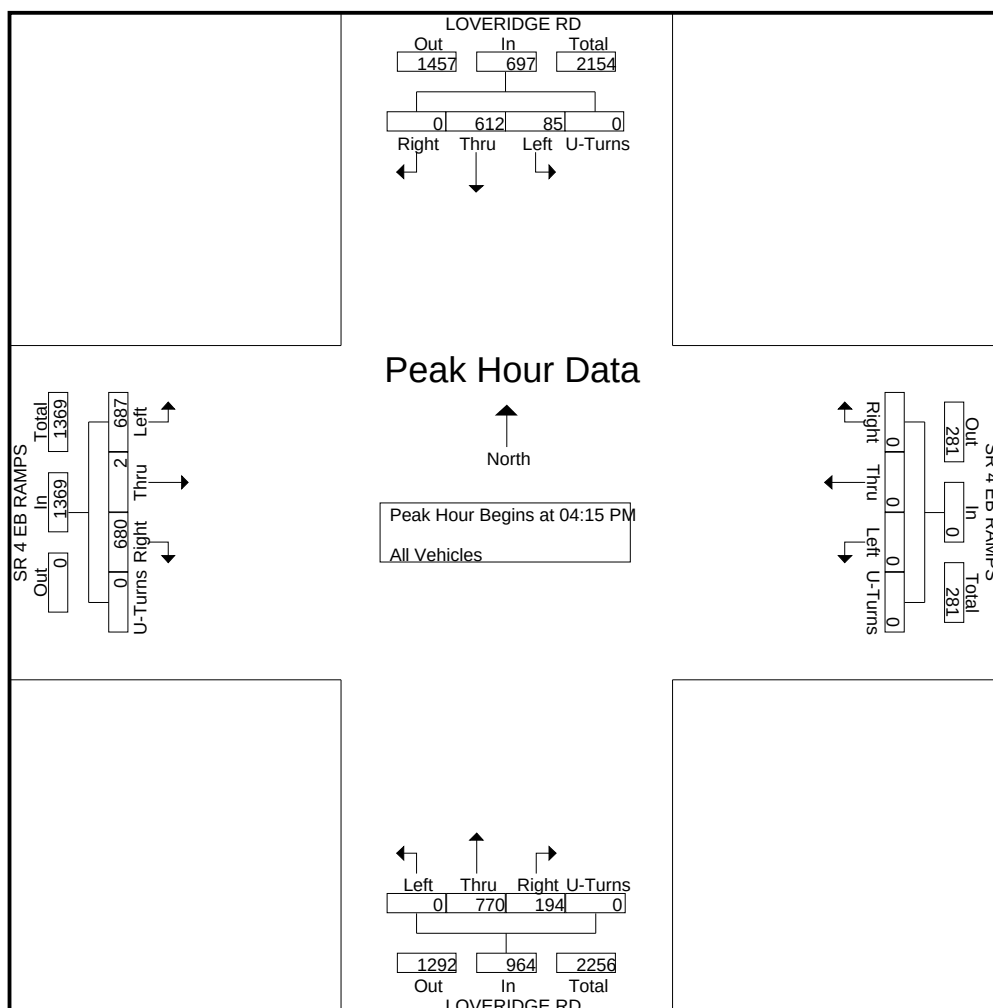
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Start Time	Right	Thru	Left	U-Turns	Right	Thru	Left	U-Turns	Right	Thru	Left	U-Turns	Right	Thru	Left	U-Turns	Int. Total
04:00 PM	0	146	22	0	0	0	0	0	57	197	0	0	133	0	153	0	708
04:15 PM	0	135	26	0	0	0	0	0	47	152	0	0	172	1	162	0	695
04:30 PM	0	165	21	0	0	0	0	0	43	199	0	0	182	0	166	0	776
04:45 PM	0	186	16	0	0	0	0	0	45	193	0	0	173	0	179	0	792
Total	0	632	85	0	0	0	0	0	192	741	0	0	660	1	660	0	2971
05:00 PM	0	126	22	0	0	0	0	0	59	226	0	0	153	1	180	0	767
05:15 PM	0	143	13	0	0	0	0	0	45	169	0	0	150	0	110	0	630
05:30 PM	0	139	10	0	0	0	0	0	58	170	0	0	174	0	179	0	730
05:45 PM	0	119	13	0	0	0	0	0	36	155	0	0	187	0	166	0	676
Total	0	527	58	0	0	0	0	0	198	720	0	0	664	1	635	0	2803
Grand Total	0	1159	143	0	0	0	0	0	390	1461	0	0	1324	2	1295	0	5774
Apprch %	0	89	11	0	0	0	0	0	21.1	78.9	0	0	50.5	0.1	49.4	0	
Total %	0	20.1	2.5	0	0	0	0	0	6.8	25.3	0	0	22.9	0	22.4	0	



File Name : #4 LOVERIDGE&SR4EBRAMPSPM
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	LOVERIDGE RD Southbound					SR 4 EB RAMPS Westbound					LOVERIDGE RD Northbound					SR 4 EB RAMPS Eastbound					
Start Time	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	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 04:15 PM																					
04:15 PM	0	135	26	0	161	0	0	0	0	0	47	152	0	0	199	172	1	162	0	335	695
04:30 PM	0	165	21	0	186	0	0	0	0	0	43	199	0	0	242	182	0	166	0	348	776
04:45 PM	0	186	16	0	202	0	0	0	0	0	45	193	0	0	238	173	0	179	0	352	792
05:00 PM	0	126	22	0	148	0	0	0	0	0	59	226	0	0	285	153	1	180	0	334	767
Total Volume	0	612	85	0	697	0	0	0	0	0	194	770	0	0	964	680	2	687	0	1369	3030
% App. Total	0	87.8	12.2	0		0	0	0	0		20.1	79.9	0	0		49.7	0.1	50.2	0		
PHF	.000	.823	.817	.000	.863	.000	.000	.000	.000	.000	.822	.852	.000	.000	.846	.934	.500	.954	.000	.972	.956



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File Name : #4 LOVERIDGE&SR4EBRAMPSAM

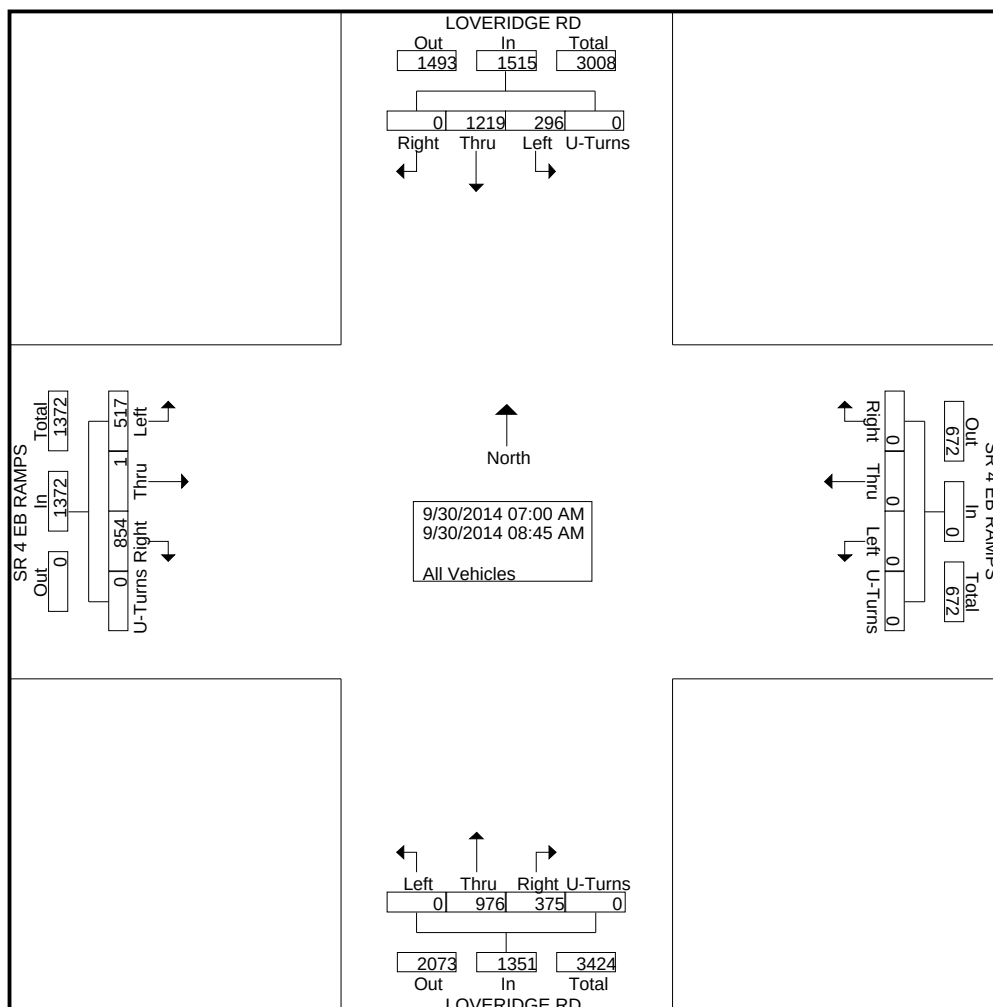
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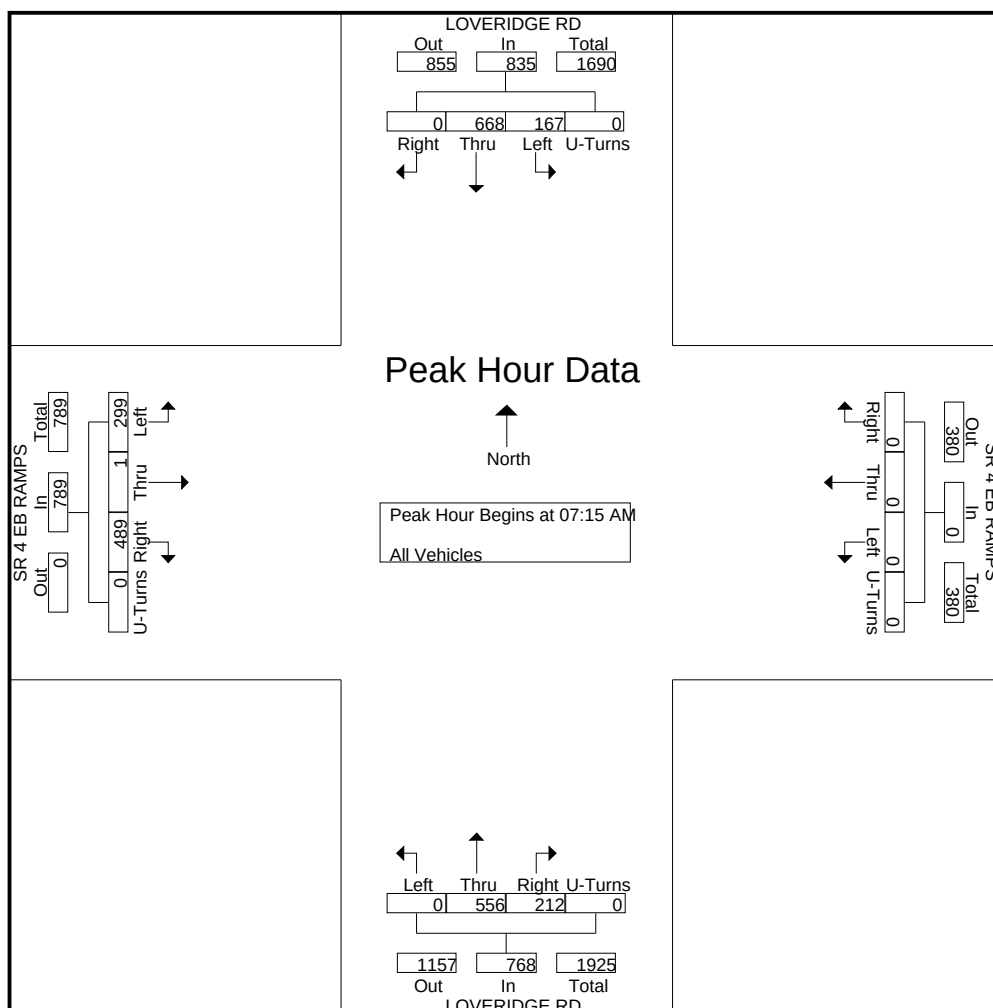
Groups Printed- All Vehicles

	LOVERIDGE RD Southbound				SR 4 EB RAMPS Westbound				LOVERIDGE RD Northbound				SR 4 EB RAMPS Eastbound				
Start Time	Right	Thru	Left	U-Turns	Right	Thru	Left	U-Turns	Right	Thru	Left	U-Turns	Right	Thru	Left	U-Turns	Int. Total
07:00 AM	0	149	28	0	0	0	0	0	36	99	0	0	72	0	58	0	442
07:15 AM	0	174	24	0	0	0	0	0	47	114	0	0	92	1	68	0	520
07:30 AM	0	147	41	0	0	0	0	0	51	155	0	0	118	0	68	0	580
07:45 AM	0	185	41	0	0	0	0	0	69	144	0	0	159	0	93	0	691
Total	0	655	134	0	0	0	0	0	203	512	0	0	441	1	287	0	2233
08:00 AM	0	162	61	0	0	0	0	0	45	143	0	0	120	0	70	0	601
08:15 AM	0	141	35	0	0	0	0	0	37	114	0	0	108	0	59	0	494
08:30 AM	0	111	31	0	0	0	0	0	46	107	0	0	91	0	54	0	440
08:45 AM	0	150	35	0	0	0	0	0	44	100	0	0	94	0	47	0	470
Total	0	564	162	0	0	0	0	0	172	464	0	0	413	0	230	0	2005
Grand Total	0	1219	296	0	0	0	0	0	375	976	0	0	854	1	517	0	4238
Apprch %	0	80.5	19.5	0	0	0	0	0	27.8	72.2	0	0	62.2	0.1	37.7	0	
Total %	0	28.8	7	0	0	0	0	0	8.8	23	0	0	20.2	0	12.2	0	



File Name : #4 LOVERIDGE&SR4EBRAMPSAM
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	LOVERIDGE RD Southbound					SR 4 EB RAMPS Westbound					LOVERIDGE RD Northbound					SR 4 EB RAMPS Eastbound					
Start Time	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	0	174	24	0	198	0	0	0	0	0	47	114	0	0	161	92	1	68	0	161	520
07:30 AM	0	147	41	0	188	0	0	0	0	0	51	155	0	0	206	118	0	68	0	186	580
07:45 AM	0	185	41	0	226	0	0	0	0	0	69	144	0	0	213	159	0	93	0	252	691
08:00 AM	0	162	61	0	223	0	0	0	0	0	45	143	0	0	188	120	0	70	0	190	601
Total Volume	0	668	167	0	835	0	0	0	0	0	212	556	0	0	768	489	1	299	0	789	2392
% App. Total	0	80	20	0		0	0	0	0		27.6	72.4	0	0		62	0.1	37.9	0		
PHF	.000	.903	.684	.000	.924	.000	.000	.000	.000	.000	.768	.897	.000	.000	.901	.769	.250	.804	.000	.783	.865

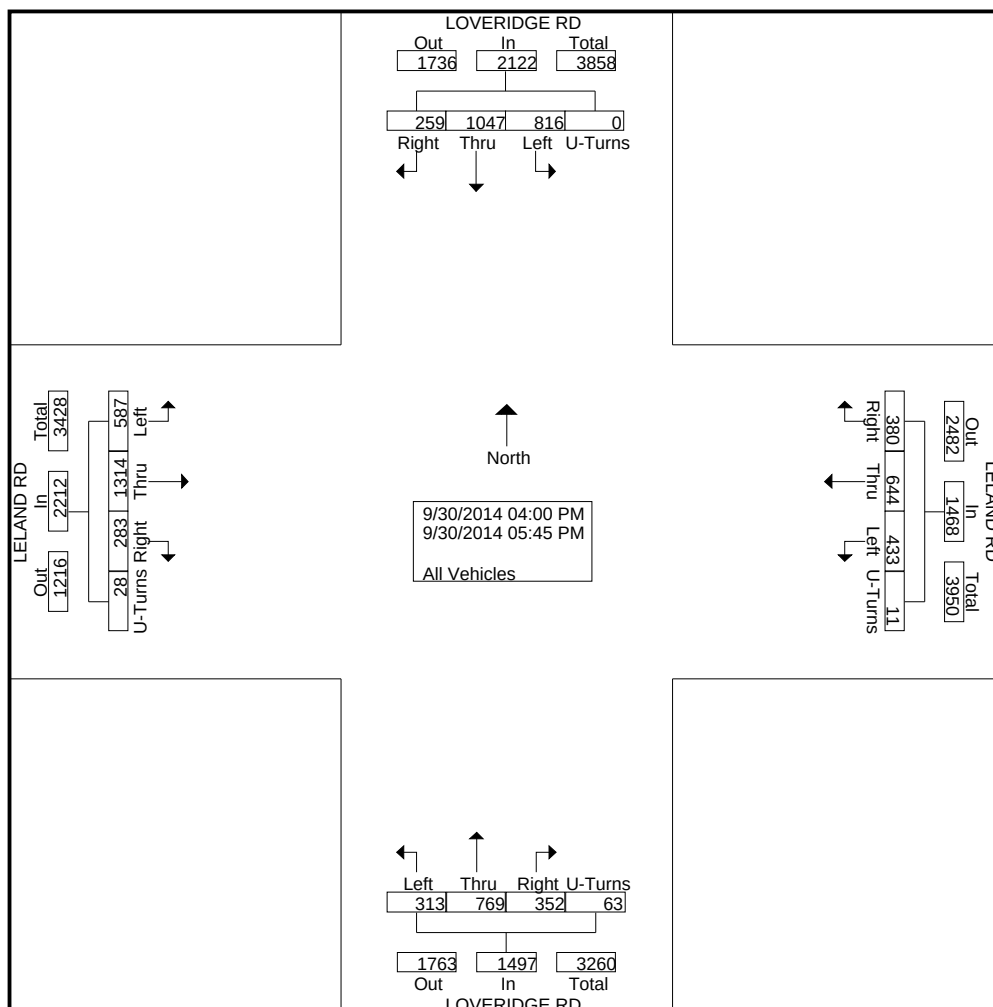


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File Name : #3 LOVERIDGE&LELANDPM
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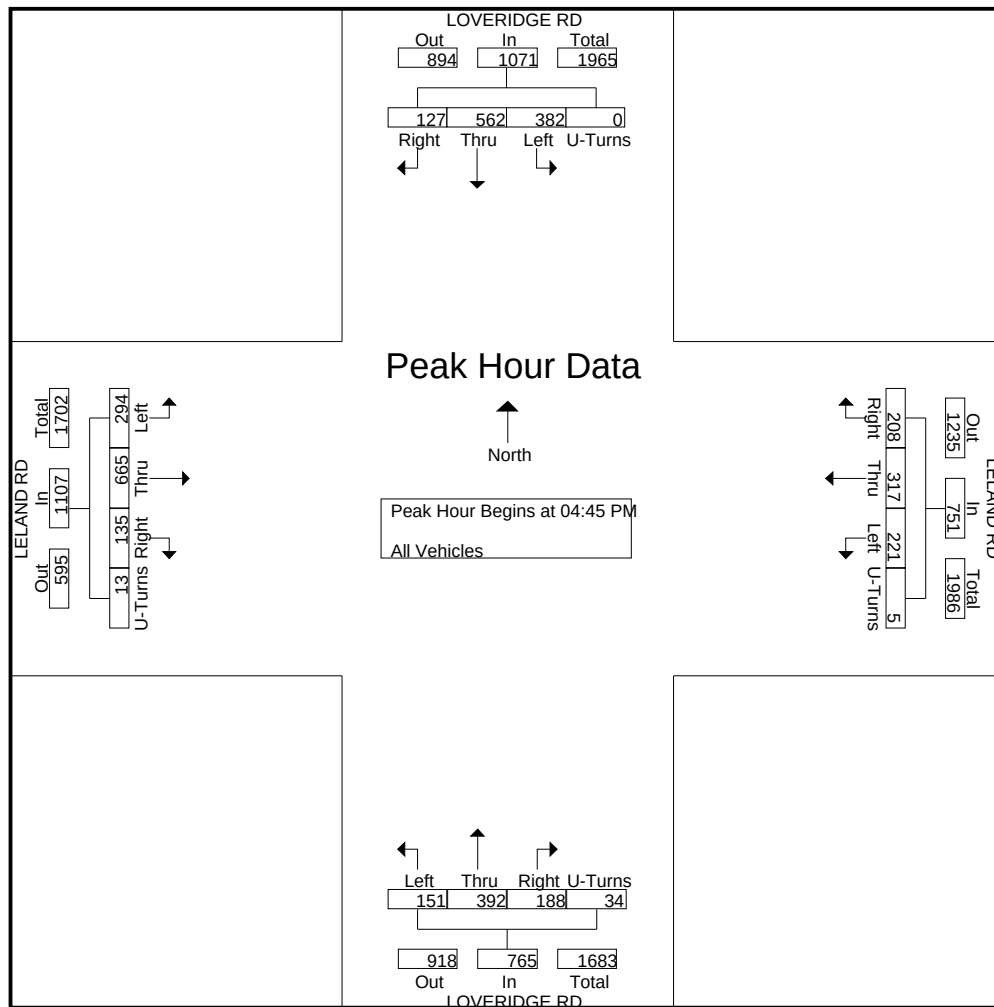
Groups Printed- All Vehicles

	LOVERIDGE RD Southbound				LELAND RD Westbound				LOVERIDGE RD Northbound				LELAND RD Eastbound				
Start Time	Right	Thru	Left	U-Turns	Right	Thru	Left	U-Turns	Right	Thru	Left	U-Turns	Right	Thru	Left	U-Turns	Int. Total
04:00 PM	48	120	97	0	53	73	56	0	38	95	45	7	37	161	77	2	909
04:15 PM	33	125	94	0	34	105	45	2	35	100	35	4	42	153	72	6	885
04:30 PM	26	130	123	0	47	78	53	2	47	105	32	7	31	154	82	2	919
04:45 PM	43	162	92	0	45	72	56	1	51	101	28	8	27	161	77	3	927
Total	150	537	406	0	179	328	210	5	171	401	140	26	137	629	308	13	3640
05:00 PM	33	114	94	0	65	81	61	2	48	112	47	7	34	163	75	4	940
05:15 PM	17	137	82	0	44	85	52	0	51	92	35	11	37	151	69	5	868
05:30 PM	34	149	114	0	54	79	52	2	38	87	41	8	37	190	73	1	959
05:45 PM	25	110	120	0	38	71	58	2	44	77	50	11	38	181	62	5	892
Total	109	510	410	0	201	316	223	6	181	368	173	37	146	685	279	15	3659
Grand Total	259	1047	816	0	380	644	433	11	352	769	313	63	283	1314	587	28	7299
Apprch %	12.2	49.3	38.5	0	25.9	43.9	29.5	0.7	23.5	51.4	20.9	4.2	12.8	59.4	26.5	1.3	
Total %	3.5	14.3	11.2	0	5.2	8.8	5.9	0.2	4.8	10.5	4.3	0.9	3.9	18	8	0.4	



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	LOVERIDGE RD Southbound					LELAND RD Westbound					LOVERIDGE RD Northbound					LELAND RD Eastbound					
Start Time	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	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 04:45 PM																					
04:45 PM	43	162	92	0	297	45	72	56	1	174	51	101	28	8	188	27	161	77	3	268	927
05:00 PM	33	114	94	0	241	65	81	61	2	209	48	112	47	7	214	34	163	75	4	276	940
05:15 PM	17	137	82	0	236	44	85	52	0	181	51	92	35	11	189	37	151	69	5	262	868
05:30 PM	34	149	114	0	297	54	79	52	2	187	38	87	41	8	174	37	190	73	1	301	959
Total Volume	127	562	382	0	1071	208	317	221	5	751	188	392	151	34	765	135	665	294	13	1107	3694
% App. Total	11.9	52.5	35.7	0		27.7	42.2	29.4	0.7		24.6	51.2	19.7	4.4		12.2	60.1	26.6	1.2		
PHF	.738	.867	.838	.000	.902	.800	.932	.906	.625	.898	.922	.875	.803	.773	.894	.912	.875	.955	.650	.919	.963

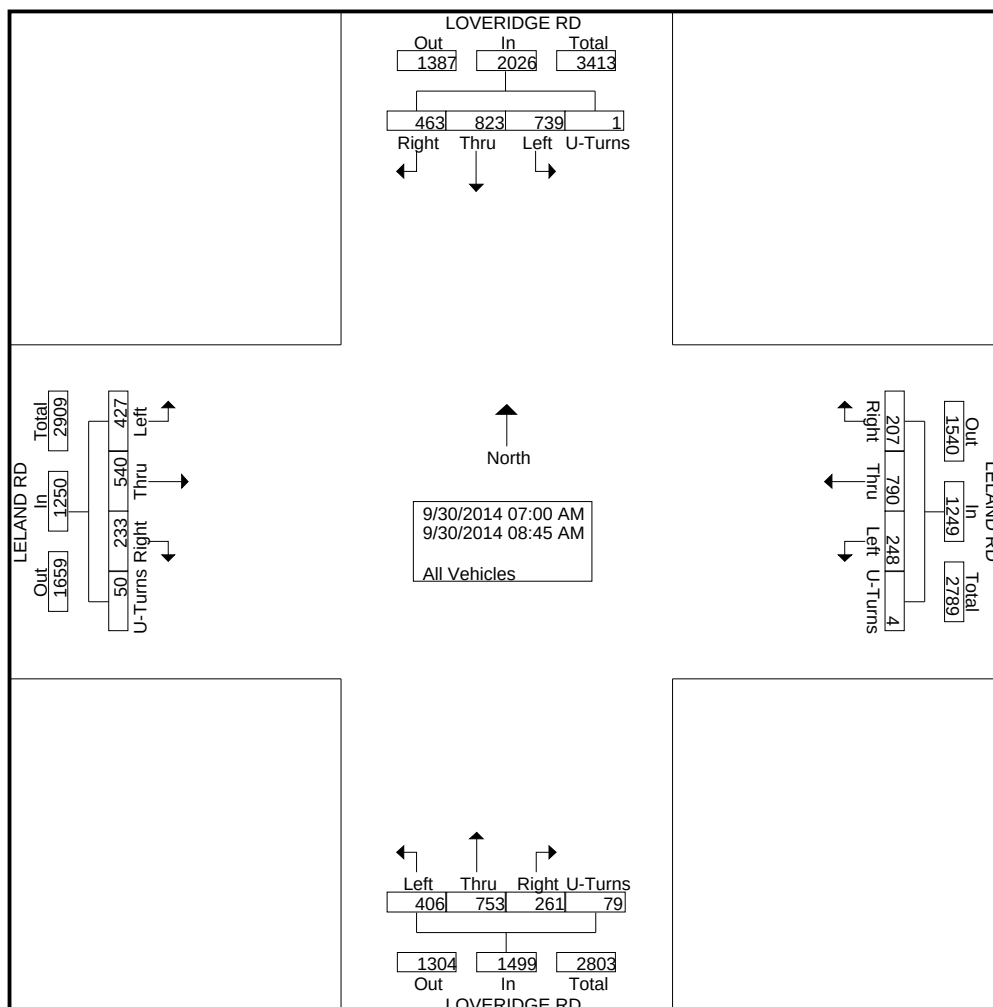


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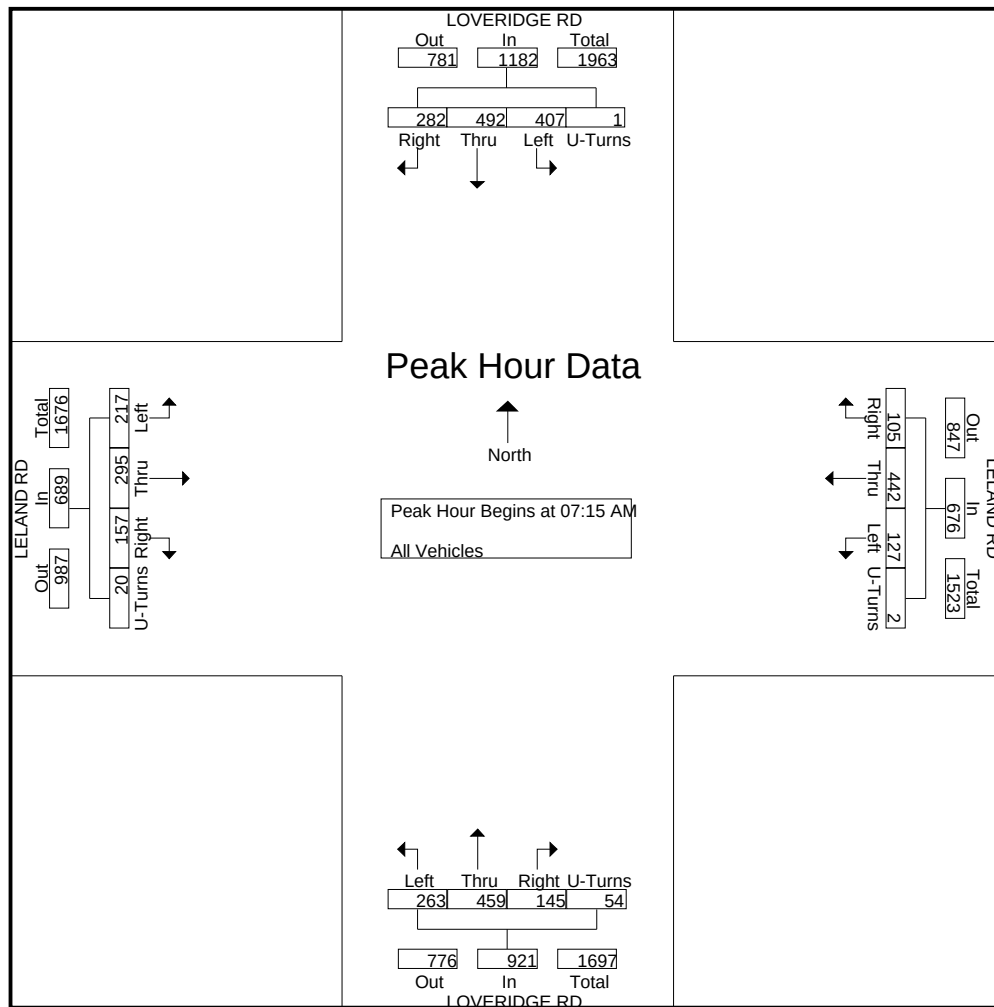
Groups Printed- All Vehicles

	LOVERIDGE RD Southbound				LELAND RD Westbound				LOVERIDGE RD Northbound				LELAND RD Eastbound				
Start Time	Right	Thru	Left	U-Turns	Right	Thru	Left	U-Turns	Right	Thru	Left	U-Turns	Right	Thru	Left	U-Turns	Int. Total
07:00 AM	92	85	30	0	34	157	35	0	15	60	36	4	14	28	55	11	656
07:15 AM	101	101	56	0	27	136	27	0	16	75	60	10	32	36	57	7	741
07:30 AM	51	105	113	1	29	107	40	1	42	125	70	3	43	41	43	5	819
07:45 AM	79	152	131	0	34	106	36	1	51	143	64	17	49	125	68	4	1060
Total	323	443	330	1	124	506	138	2	124	403	230	34	138	230	223	27	3276
08:00 AM	51	134	107	0	15	93	24	0	36	116	69	24	33	93	49	4	848
08:15 AM	37	101	103	0	23	69	30	1	32	86	39	4	31	69	53	5	683
08:30 AM	19	73	79	0	21	58	33	1	34	80	27	8	19	85	60	7	604
08:45 AM	33	72	120	0	24	64	23	0	35	68	41	9	12	63	42	7	613
Total	140	380	409	0	83	284	110	2	137	350	176	45	95	310	204	23	2748
Grand Total	463	823	739	1	207	790	248	4	261	753	406	79	233	540	427	50	6024
Apprch %	22.9	40.6	36.5	0	16.6	63.3	19.9	0.3	17.4	50.2	27.1	5.3	18.6	43.2	34.2	4	
Total %	7.7	13.7	12.3	0	3.4	13.1	4.1	0.1	4.3	12.5	6.7	1.3	3.9	9	7.1	0.8	



File Name : #3 LOVERIDGE&LELANDAM
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	LOVERIDGE RD Southbound					LELAND RD Westbound					LOVERIDGE RD Northbound					LELAND RD Eastbound					
Start Time	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	101	101	56	0	258	27	136	27	0	190	16	75	60	10	161	32	36	57	7	132	741
07:30 AM	51	105	113	1	270	29	107	40	1	177	42	125	70	3	240	43	41	43	5	132	819
07:45 AM	79	152	131	0	362	34	106	36	1	177	51	143	64	17	275	49	125	68	4	246	1060
08:00 AM	51	134	107	0	292	15	93	24	0	132	36	116	69	24	245	33	93	49	4	179	848
Total Volume	282	492	407	1	1182	105	442	127	2	676	145	459	263	54	921	157	295	217	20	689	3468
% App. Total	23.9	41.6	34.4	0.1		15.5	65.4	18.8	0.3		15.7	49.8	28.6	5.9		22.8	42.8	31.5	2.9		
PHF	.698	.809	.777	.250	.816	.772	.813	.794	.500	.889	.711	.802	.939	.563	.837	.801	.590	.798	.714	.700	.818



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File Name : #2 LOVERIDGE&STONEMANPM

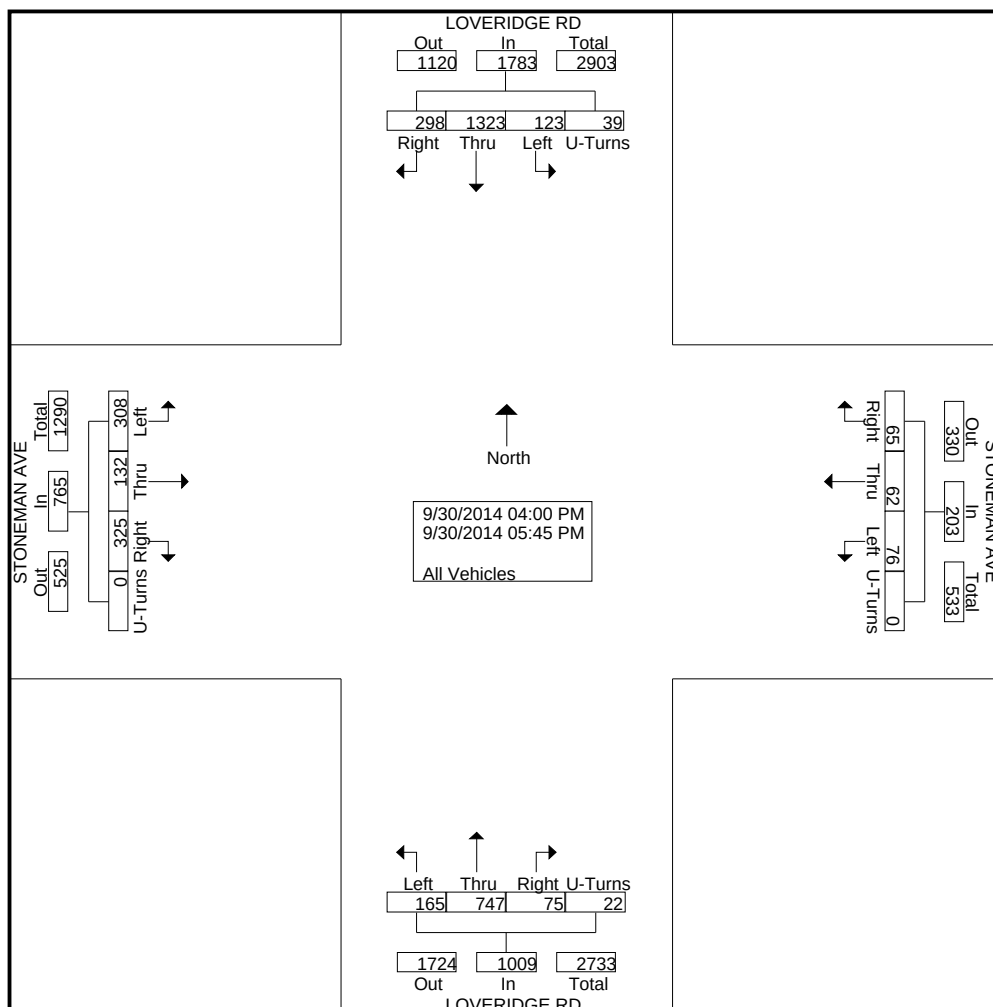
Site Code : 00000000

Start Date : 9/30/2014

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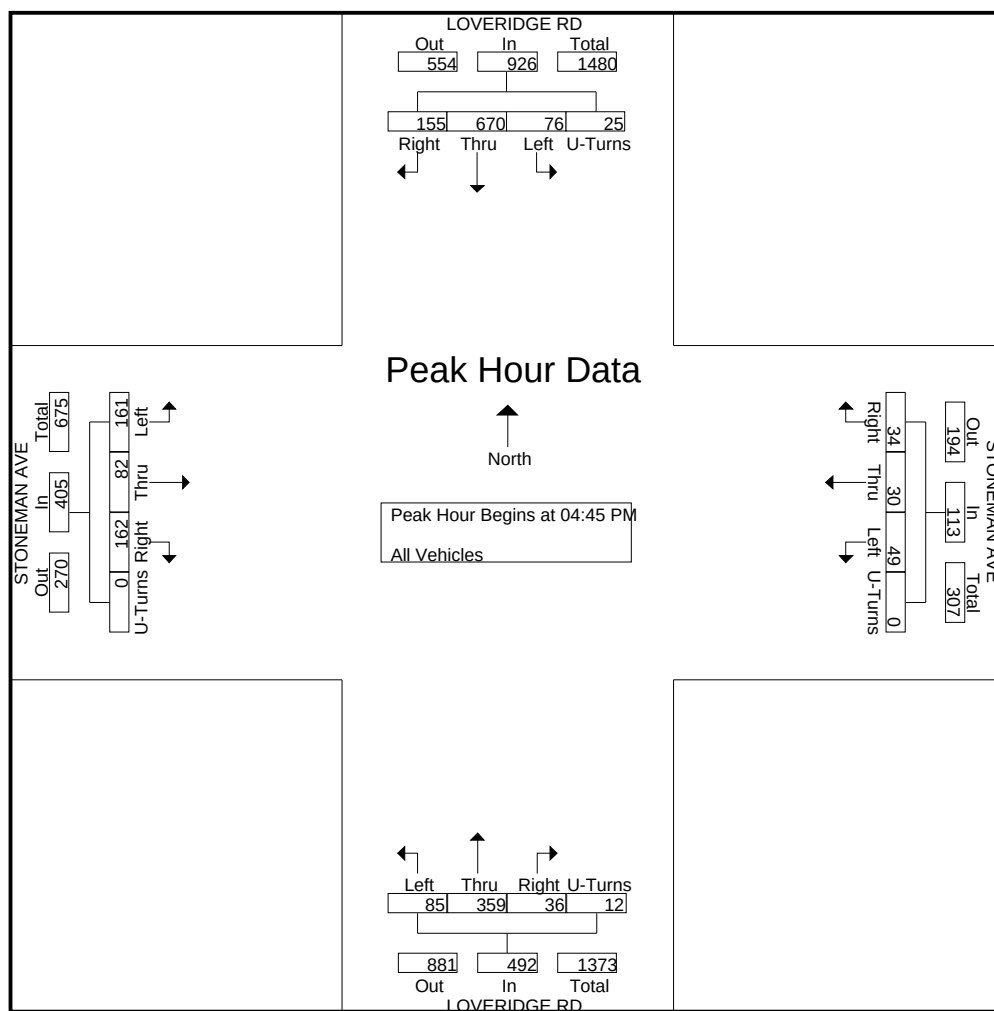
Groups Printed- All Vehicles

	LOVERIDGE RD Southbound				STONEMAN AVE Westbound				LOVERIDGE RD Northbound				STONEMAN AVE Eastbound				
Start Time	Right	Thru	Left	U-Turns	Right	Thru	Left	U-Turns	Right	Thru	Left	U-Turns	Right	Thru	Left	U-Turns	Int. Total
04:00 PM	34	144	9	1	6	8	8	0	18	88	22	2	31	12	36	0	419
04:15 PM	23	190	8	4	11	10	10	0	8	93	18	2	56	12	30	0	475
04:30 PM	34	174	19	3	7	10	3	0	7	111	21	1	38	14	44	0	486
04:45 PM	42	167	18	4	5	8	14	0	9	88	18	1	33	21	35	0	463
Total	133	675	54	12	29	36	35	0	42	380	79	6	158	59	145	0	1843
05:00 PM	37	173	15	5	10	10	14	0	11	109	20	6	49	23	28	0	510
05:15 PM	45	153	23	7	9	5	9	0	11	83	24	2	36	13	48	0	468
05:30 PM	31	177	20	9	10	7	12	0	5	79	23	3	44	25	50	0	495
05:45 PM	52	145	11	6	7	4	6	0	6	96	19	5	38	12	37	0	444
Total	165	648	69	27	36	26	41	0	33	367	86	16	167	73	163	0	1917
Grand Total	298	1323	123	39	65	62	76	0	75	747	165	22	325	132	308	0	3760
Apprch %	16.7	74.2	6.9	2.2	32	30.5	37.4	0	7.4	74	16.4	2.2	42.5	17.3	40.3	0	
Total %	7.9	35.2	3.3	1	1.7	1.6	2	0	2	19.9	4.4	0.6	8.6	3.5	8.2	0	



File Name : #2 LOVERIDGE&STONEMANPM
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	LOVERIDGE RD Southbound					STONEMAN AVE Westbound					LOVERIDGE RD Northbound					STONEMAN AVE Eastbound					
Start Time	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	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 04:45 PM																					
04:45 PM	42	167	18	4	231	5	8	14	0	27	9	88	18	1	116	33	21	35	0	89	463
05:00 PM	37	173	15	5	230	10	10	14	0	34	11	109	20	6	146	49	23	28	0	100	510
05:15 PM	45	153	23	7	228	9	5	9	0	23	11	83	24	2	120	36	13	48	0	97	468
05:30 PM	31	177	20	9	237	10	7	12	0	29	5	79	23	3	110	44	25	50	0	119	495
Total Volume	155	670	76	25	926	34	30	49	0	113	36	359	85	12	492	162	82	161	0	405	1936
% App. Total	16.7	72.4	8.2	2.7		30.1	26.5	43.4	0		7.3	73	17.3	2.4		40	20.2	39.8	0		
PHF	.861	.946	.826	.694	.977	.850	.750	.875	.000	.831	.818	.823	.885	.500	.842	.827	.820	.805	.000	.851	.949



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File Name : #2 LOVERIDGE&STONEMANAM

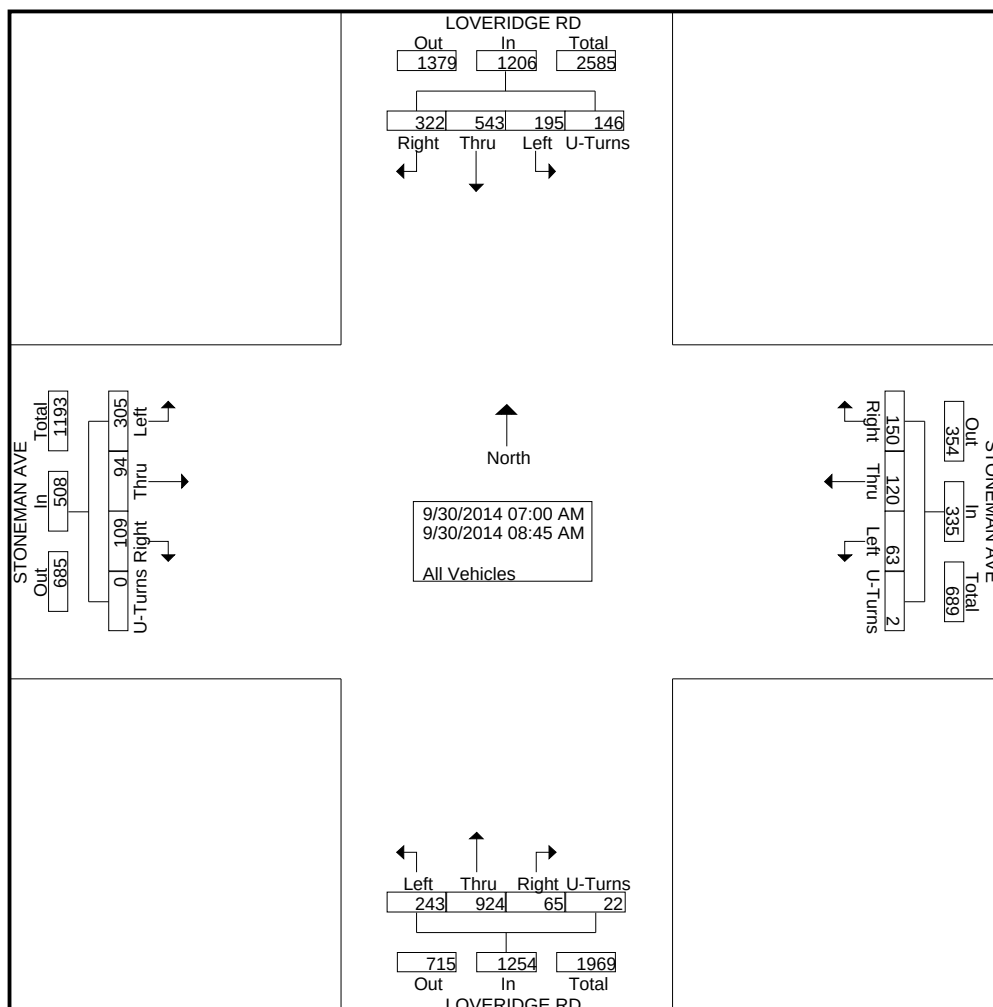
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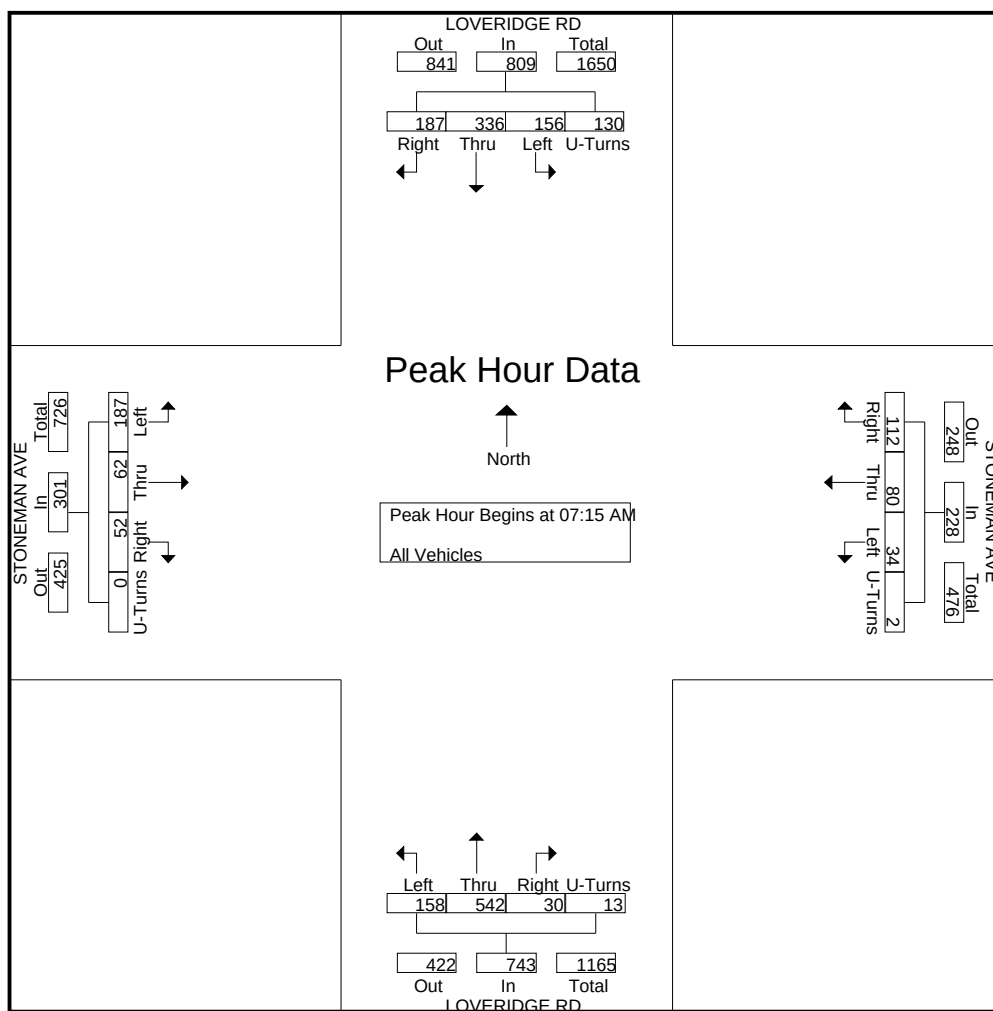
Groups Printed- All Vehicles

	LOVERIDGE RD Southbound				STONEMAN AVE Westbound				LOVERIDGE RD Northbound				STONEMAN AVE Eastbound				
Start Time	Right	Thru	Left	U-Turns	Right	Thru	Left	U-Turns	Right	Thru	Left	U-Turns	Right	Thru	Left	U-Turns	Int. Total
07:00 AM	37	57	11	6	8	16	4	0	3	85	21	2	2	2	21	0	275
07:15 AM	30	68	25	24	8	24	10	1	3	103	35	3	11	10	34	0	389
07:30 AM	50	92	54	47	40	18	5	1	11	169	41	5	11	12	47	0	603
07:45 AM	52	91	57	51	52	20	10	0	9	172	44	3	14	26	66	0	667
Total	169	308	147	128	108	78	29	2	26	529	141	13	38	50	168	0	1934
08:00 AM	55	85	20	8	12	18	9	0	7	98	38	2	16	14	40	0	422
08:15 AM	47	53	16	4	8	7	8	0	7	104	23	3	25	17	34	0	356
08:30 AM	28	53	3	1	10	8	9	0	14	100	22	0	14	7	39	0	308
08:45 AM	23	44	9	5	12	9	8	0	11	93	19	4	16	6	24	0	283
Total	153	235	48	18	42	42	34	0	39	395	102	9	71	44	137	0	1369
Grand Total	322	543	195	146	150	120	63	2	65	924	243	22	109	94	305	0	3303
Apprch %	26.7	45	16.2	12.1	44.8	35.8	18.8	0.6	5.2	73.7	19.4	1.8	21.5	18.5	60	0	
Total %	9.7	16.4	5.9	4.4	4.5	3.6	1.9	0.1	2	28	7.4	0.7	3.3	2.8	9.2	0	



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	LOVERIDGE RD Southbound					STONEMAN AVE Westbound					LOVERIDGE RD Northbound					STONEMAN AVE Eastbound					
Start Time	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	30	68	25	24	147	8	24	10	1	43	3	103	35	3	144	11	10	34	0	55	389
07:30 AM	50	92	54	47	243	40	18	5	1	64	11	169	41	5	226	11	12	47	0	70	603
07:45 AM	52	91	57	51	251	52	20	10	0	82	9	172	44	3	228	14	26	66	0	106	667
08:00 AM	55	85	20	8	168	12	18	9	0	39	7	98	38	2	145	16	14	40	0	70	422
Total Volume	187	336	156	130	809	112	80	34	2	228	30	542	158	13	743	52	62	187	0	301	2081
% App. Total	23.1	41.5	19.3	16.1		49.1	35.1	14.9	0.9		4	72.9	21.3	1.7		17.3	20.6	62.1	0		
PHF	.850	.913	.684	.637	.806	.538	.833	.850	.500	.695	.682	.788	.898	.650	.815	.813	.596	.708	.000	.710	.780



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File Name : #1 LOVERIDGE&BUCHANANPM

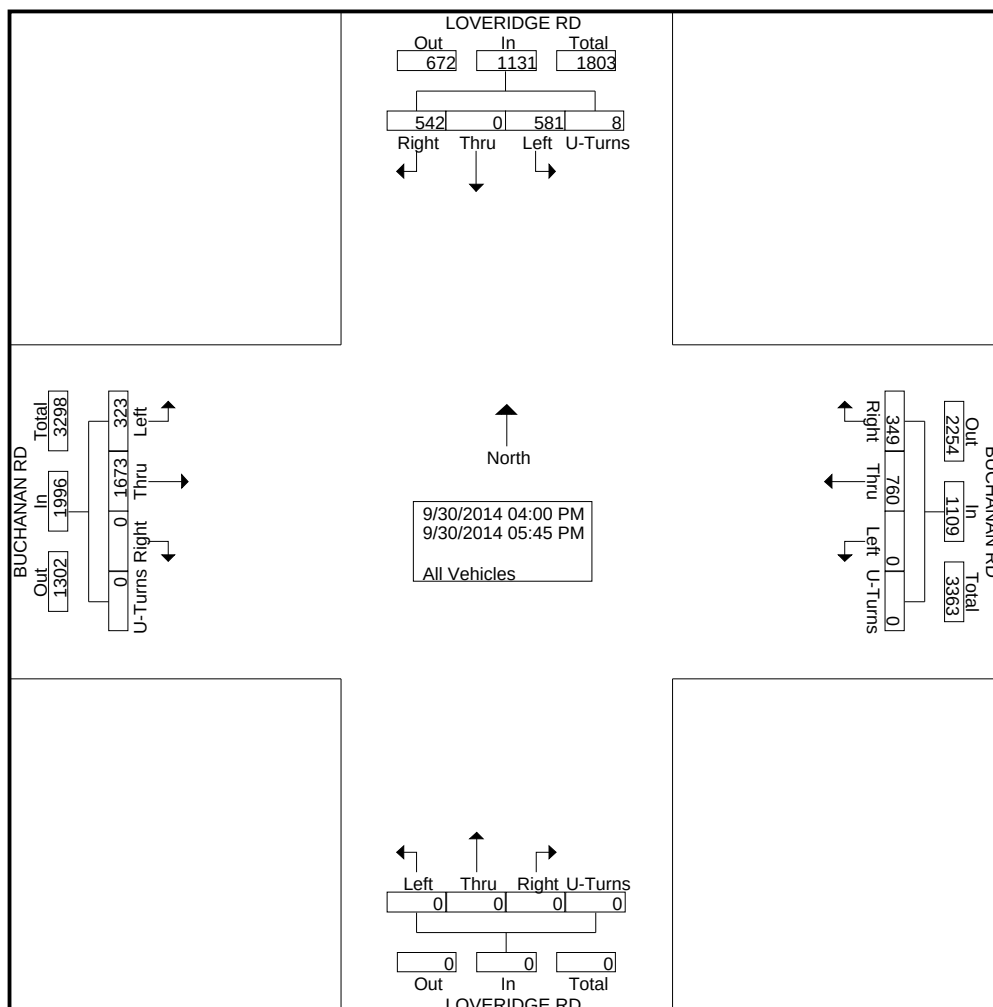
Site Code : 00000000

Start Date : 9/30/2014

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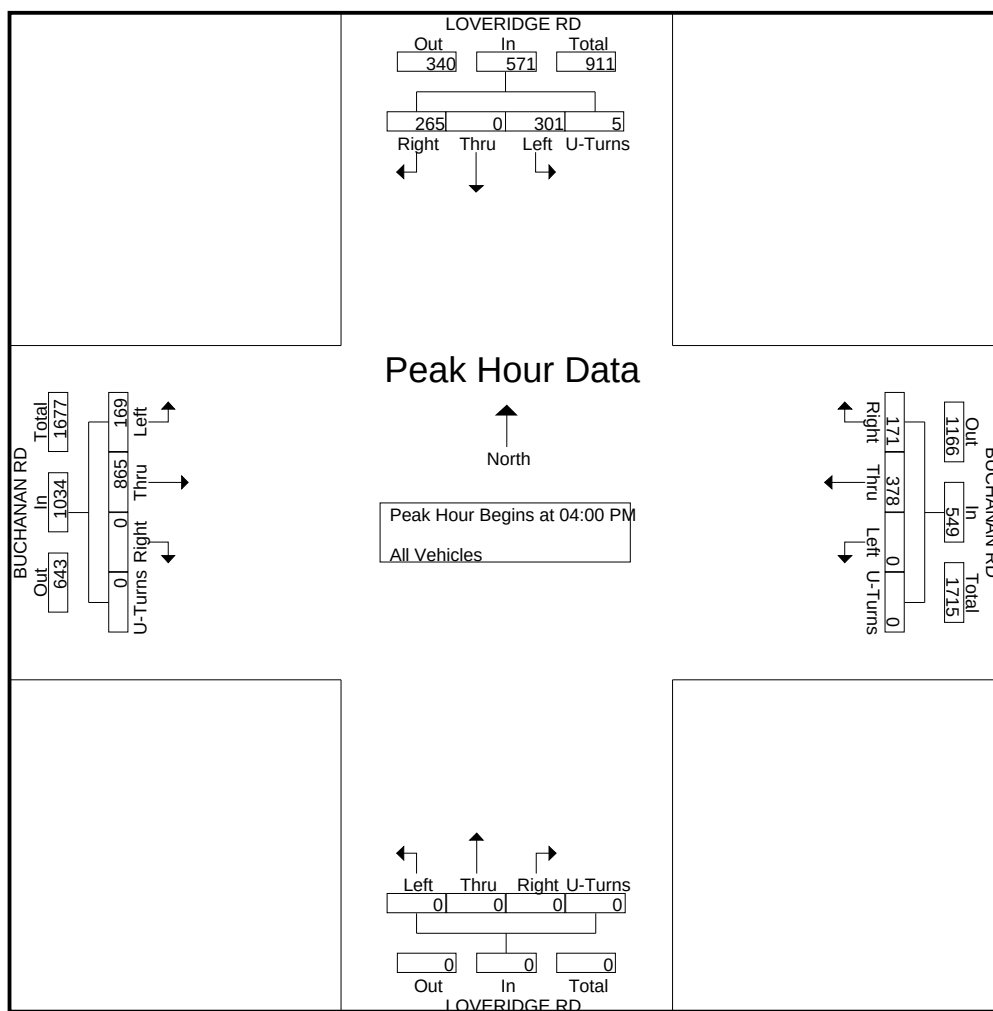
Groups Printed- All Vehicles

	LOVERIDGE RD Southbound				BUCHANAN RD Westbound				LOVERIDGE RD Northbound				BUCHANAN RD Eastbound				
Start Time	Right	Thru	Left	U-Turns	Right	Thru	Left	U-Turns	Right	Thru	Left	U-Turns	Right	Thru	Left	U-Turns	Int. Total
04:00 PM	51	0	74	1	51	98	0	0	0	0	0	0	0	226	33	0	534
04:15 PM	61	0	74	2	42	96	0	0	0	0	0	0	0	211	43	0	529
04:30 PM	80	0	85	1	50	71	0	0	0	0	0	0	0	211	45	0	543
04:45 PM	73	0	68	1	28	113	0	0	0	0	0	0	0	217	48	0	548
Total	265	0	301	5	171	378	0	0	0	0	0	0	0	865	169	0	2154
05:00 PM	73	0	76	2	48	86	0	0	0	0	0	0	0	183	34	0	502
05:15 PM	70	0	59	1	43	96	0	0	0	0	0	0	0	213	35	0	517
05:30 PM	79	0	68	0	45	107	0	0	0	0	0	0	0	221	37	0	557
05:45 PM	55	0	77	0	42	93	0	0	0	0	0	0	0	191	48	0	506
Total	277	0	280	3	178	382	0	0	0	0	0	0	0	808	154	0	2082
Grand Total	542	0	581	8	349	760	0	0	0	0	0	0	0	1673	323	0	4236
Apprch %	47.9	0	51.4	0.7	31.5	68.5	0	0	0	0	0	0	0	83.8	16.2	0	
Total %	12.8	0	13.7	0.2	8.2	17.9	0	0	0	0	0	0	0	39.5	7.6	0	



File Name : #1 LOVERIDGE&BUCHANANPM
 Site Code : 00000000
 Start Date : 9/30/2014
 Page No : 2

	LOVERIDGE RD Southbound					BUCHANAN RD Westbound					LOVERIDGE RD Northbound					BUCHANAN RD Eastbound					
Start Time	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	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 04:00 PM																					
04:00 PM	51	0	74	1	126	51	98	0	0	149	0	0	0	0	0	0	226	33	0	259	534
04:15 PM	61	0	74	2	137	42	96	0	0	138	0	0	0	0	0	0	211	43	0	254	529
04:30 PM	80	0	85	1	166	50	71	0	0	121	0	0	0	0	0	0	211	45	0	256	543
04:45 PM	73	0	68	1	142	28	113	0	0	141	0	0	0	0	0	0	217	48	0	265	548
Total Volume	265	0	301	5	571	171	378	0	0	549	0	0	0	0	0	0	865	169	0	1034	2154
% App. Total	46.4	0	52.7	0.9		31.1	68.9	0	0		0	0	0	0		0	83.7	16.3	0		
PHF	.828	.000	.885	.625	.860	.838	.836	.000	.000	.921	.000	.000	.000	.000	.000	.000	.957	.880	.000	.975	.983



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File Name : #1 LOVERIDGE&BUCHANANAM

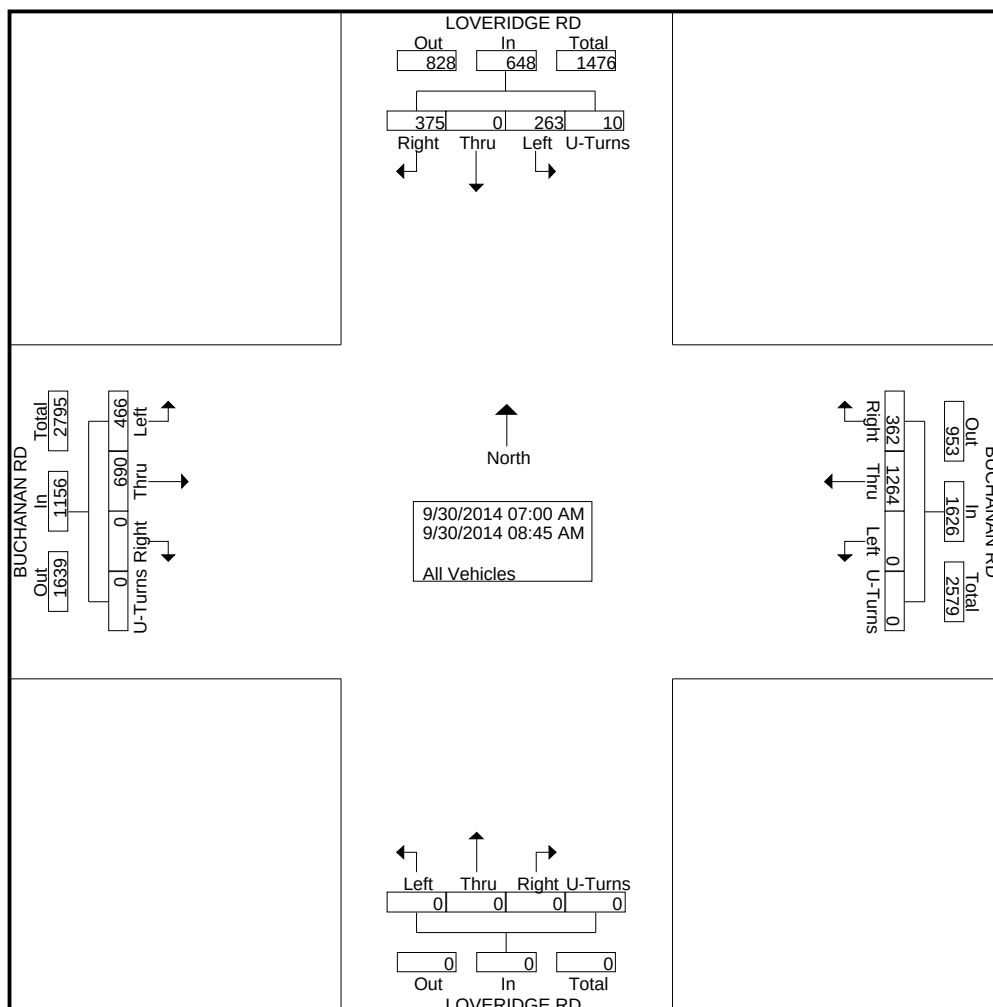
Site Code : 00000000

Start Date : 9/30/2014

Page No : 1

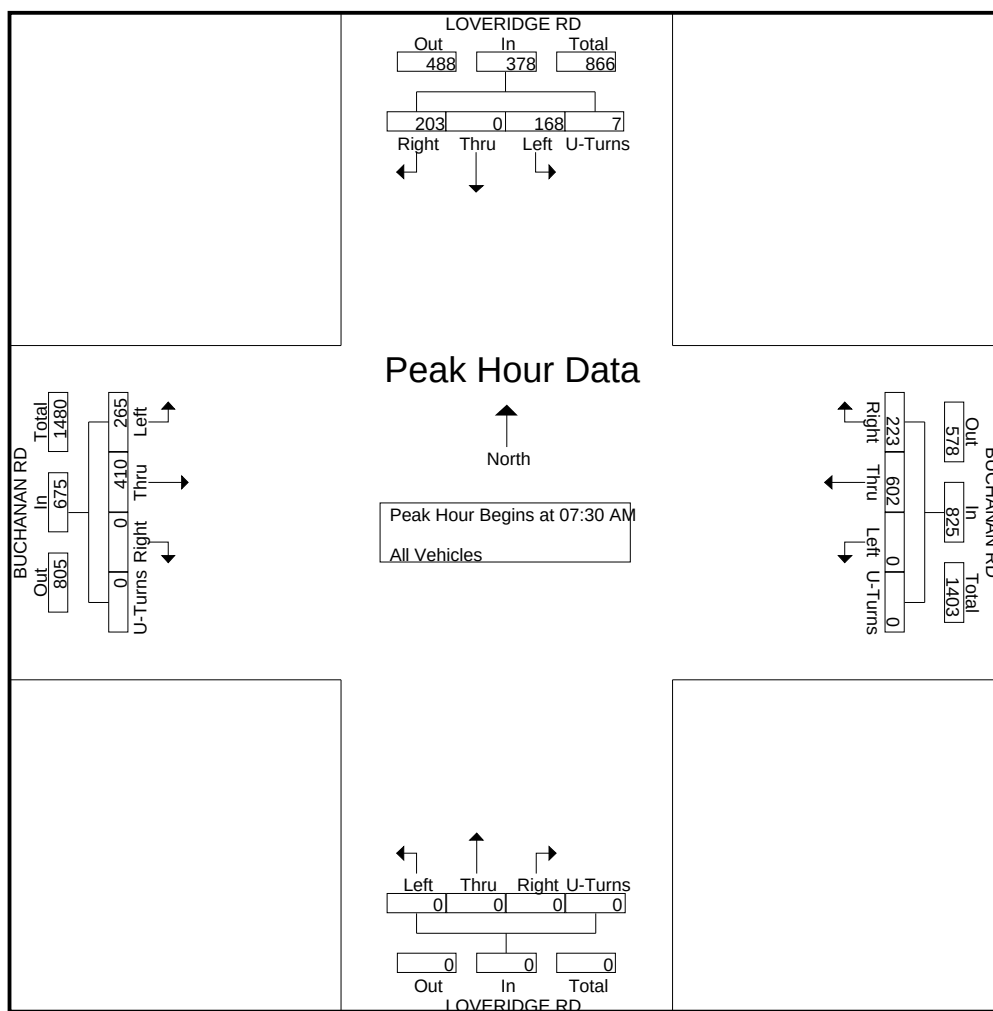
Groups Printed- All Vehicles

	LOVERIDGE RD Southbound				BUCHANAN RD Westbound				LOVERIDGE RD Northbound				BUCHANAN RD Eastbound				
Start Time	Right	Thru	Left	U-Turns	Right	Thru	Left	U-Turns	Right	Thru	Left	U-Turns	Right	Thru	Left	U-Turns	Int. Total
07:00 AM	53	0	17	2	9	194	0	0	0	0	0	0	0	47	49	0	371
07:15 AM	49	0	18	1	28	185	0	0	0	0	0	0	0	72	57	0	410
07:30 AM	61	0	28	2	47	164	0	0	0	0	0	0	0	91	77	0	470
07:45 AM	59	0	44	5	64	129	0	0	0	0	0	0	0	115	84	0	500
Total	222	0	107	10	148	672	0	0	0	0	0	0	0	325	267	0	1751
08:00 AM	46	0	49	0	60	150	0	0	0	0	0	0	0	91	47	0	443
08:15 AM	37	0	47	0	52	159	0	0	0	0	0	0	0	113	57	0	465
08:30 AM	35	0	25	0	53	158	0	0	0	0	0	0	0	84	56	0	411
08:45 AM	35	0	35	0	49	125	0	0	0	0	0	0	0	77	39	0	360
Total	153	0	156	0	214	592	0	0	0	0	0	0	0	365	199	0	1679
Grand Total	375	0	263	10	362	1264	0	0	0	0	0	0	0	690	466	0	3430
Apprch %	57.9	0	40.6	1.5	22.3	77.7	0	0	0	0	0	0	0	59.7	40.3	0	
Total %	10.9	0	7.7	0.3	10.6	36.9	0	0	0	0	0	0	0	20.1	13.6	0	



File Name : #1 LOVERIDGE&BUCHANANAM
 Site Code : 00000000
 Start Date : 9/30/2014
 Page No : 2

	LOVERIDGE RD Southbound					BUCHANAN RD Westbound					LOVERIDGE RD Northbound					BUCHANAN RD Eastbound					
Start Time	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	61	0	28	2	91	47	164	0	0	211	0	0	0	0	0	0	91	77	0	168	470
07:45 AM	59	0	44	5	108	64	129	0	0	193	0	0	0	0	0	0	115	84	0	199	500
08:00 AM	46	0	49	0	95	60	150	0	0	210	0	0	0	0	0	0	91	47	0	138	443
08:15 AM	37	0	47	0	84	52	159	0	0	211	0	0	0	0	0	0	113	57	0	170	465
Total Volume	203	0	168	7	378	223	602	0	0	825	0	0	0	0	0	0	410	265	0	675	1878
% App. Total	53.7	0	44.4	1.9		27	73	0	0		0	0	0	0		0	60.7	39.3	0		
PHF	.832	.000	.857	.350	.875	.871	.918	.000	.000	.977	.000	.000	.000	.000	.000	.000	.891	.789	.000	.848	.939



Appendix B

INTERSECTION LEVEL OF SERVICE ANALYSIS

Existing Condition

A.M. Peak

HCM METHODOLOGY

HCM 2010 Signalized Intersection Summary

1: Buchanan Rd & Loveridge Rd

12/3/2014

								
Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations								
Volume (veh/h)	265	410	602	223	175	203		
Number	7	4	8	18	1	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	288	446	654	242	190	221		
Adj No. of Lanes	1	1	1	1	1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	323	1177	730	621	439	392		
Arrive On Green	0.18	0.63	0.39	0.39	0.25	0.25		
Sat Flow, veh/h	1774	1863	1863	1583	1774	1583		
Grp Volume(v), veh/h	288	446	654	242	190	221		
Grp Sat Flow(s),veh/h/ln	1774	1863	1863	1583	1774	1583		
Q Serve(g_s), s	13.8	10.1	28.6	9.5	7.8	10.6		
Cycle Q Clear(g_c), s	13.8	10.1	28.6	9.5	7.8	10.6		
Prop In Lane	1.00			1.00	1.00	1.00		
Lane Grp Cap(c), veh/h	323	1177	730	621	439	392		
V/C Ratio(X)	0.89	0.38	0.90	0.39	0.43	0.56		
Avail Cap(c_a), veh/h	347	1243	772	656	439	392		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	34.7	7.7	24.8	19.0	27.6	28.6		
Incr Delay (d2), s/veh	22.0	0.2	12.7	0.4	3.1	5.8		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	8.7	5.1	17.1	4.2	4.2	9.9		
LnGrp Delay(d),s/veh	56.7	7.9	37.4	19.4	30.7	34.4		
LnGrp LOS	E	A	D	B	C	C		
Approach Vol, veh/h		734	896		411			
Approach Delay, s/veh		27.1	32.5		32.7			
Approach LOS		C	C		C			
Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				59.9		27.0	20.8	39.1
Change Period (Y+Rc), s				5.0		5.5	5.0	5.0
Max Green Setting (Gmax), s				58.0		21.5	17.0	36.0
Max Q Clear Time (g_c+I1), s				12.1		12.6	15.8	30.6
Green Ext Time (p_c), s				11.0		0.6	0.1	3.5
Intersection Summary								
HCM 2010 Ctrl Delay			30.6					
HCM 2010 LOS			C					

HCM 2010 Signalized Intersection Summary

2: Loveridge Rd & Stoneman Ave

12/3/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	187	62	52	36	80	112	171	542	30	286	336	187
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	203	67	57	39	87	122	186	589	33	311	365	203
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	242	189	161	90	218	185	225	1192	67	352	931	510
Arrive On Green	0.14	0.20	0.20	0.05	0.12	0.12	0.13	0.35	0.35	0.20	0.42	0.42
Sat Flow, veh/h	1774	931	792	1774	1863	1583	1774	3408	191	1774	2210	1209
Grp Volume(v), veh/h	203	0	124	39	87	122	186	305	317	311	291	277
Grp Sat Flow(s),veh/h/ln	1774	0	1723	1774	1863	1583	1774	1770	1829	1774	1770	1649
Q Serve(g_s), s	9.0	0.0	5.0	1.7	3.5	5.9	8.3	10.9	11.0	13.7	9.2	9.4
Cycle Q Clear(g_c), s	9.0	0.0	5.0	1.7	3.5	5.9	8.3	10.9	11.0	13.7	9.2	9.4
Prop In Lane	1.00		0.46	1.00		1.00	1.00		0.10	1.00		0.73
Lane Grp Cap(c), veh/h	242	0	350	90	218	185	225	619	640	352	746	695
V/C Ratio(X)	0.84	0.00	0.35	0.43	0.40	0.66	0.83	0.49	0.49	0.88	0.39	0.40
Avail Cap(c_a), veh/h	418	0	812	154	600	510	440	619	640	594	746	695
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.0	0.0	27.6	37.2	33.0	34.1	34.4	20.6	20.6	31.4	16.2	16.2
Incr Delay (d2), s/veh	2.9	0.0	0.6	1.2	1.2	4.0	3.0	2.8	2.7	4.4	1.5	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.6	0.0	2.4	0.9	1.9	2.8	4.2	5.8	6.0	7.2	4.8	4.6
LnGrp Delay(d),s/veh	36.9	0.0	28.2	38.4	34.2	38.1	37.3	23.4	23.3	35.8	17.7	17.9
LnGrp LOS	D		C	D	C	D	D	C	C	D	B	B
Approach Vol, veh/h		327			248			808			879	
Approach Delay, s/veh		33.6			36.8			26.6			24.2	
Approach LOS		C			D			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	20.0	32.2	8.1	20.4	14.2	38.0	15.0	13.4				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	27.0	27.0	7.0	38.0	20.0	34.0	19.0	26.0				
Max Q Clear Time (g_c+l1), s	15.7	13.0	3.7	7.0	10.3	11.4	11.0	7.9				
Green Ext Time (p_c), s	0.3	3.8	0.0	1.7	0.1	4.4	0.1	1.5				
Intersection Summary												
HCM 2010 Ctrl Delay			27.8									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary

3: Loveridge Rd & Driveway

12/3/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	0	1	0	0	0	1	841	0	0	778	1
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1863	1863	0	0	1863	1900
Adj Flow Rate, veh/h	1	0	1	0	0	0	1	914	0	0	846	1
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	0	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	0	0	2	2
Cap, veh/h	0	0	6	0	7	0	3	3062	0	0	2893	3
Arrive On Green	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.87	0.00	0.00	0.80	0.80
Sat Flow, veh/h	0	0	1583	0	1863	0	1774	3632	0	0	3720	4
Grp Volume(v), veh/h	0	0	1	0	0	0	1	914	0	0	413	434
Grp Sat Flow(s),veh/h/ln	0	0	1583	0	1863	0	1774	1770	0	0	1770	1862
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.6	0.0	0.0	4.7	4.7
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.6	0.0	0.0	4.7	4.7
Prop In Lane	0.00		1.00	0.00		0.00	1.00		0.00	0.00		0.00
Lane Grp Cap(c), veh/h	0	0	6	0	7	0	3	3062	0	0	1412	1485
V/C Ratio(X)	0.00	0.00	0.17	0.00	0.00	0.00	0.29	0.30	0.00	0.00	0.29	0.29
Avail Cap(c_a), veh/h	0	0	809	0	659	0	209	3062	0	0	1412	1485
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	37.9	0.0	0.0	0.0	38.0	0.9	0.0	0.0	2.0	2.0
Incr Delay (d2), s/veh	0.0	0.0	12.4	0.0	0.0	0.0	41.7	0.2	0.0	0.0	0.5	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.8	0.0	0.0	2.4	2.5
LnGrp Delay(d),s/veh	0.0	0.0	50.3	0.0	0.0	0.0	79.8	1.2	0.0	0.0	2.6	2.5
LnGrp LOS			D				E	A			A	A
Approach Vol, veh/h		1			0			915			847	
Approach Delay, s/veh		50.3			0.0			1.3			2.5	
Approach LOS		D						A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s		71.0		5.3	5.1	65.9	0.0	5.3				
Change Period (Y+Rc), s		5.0		5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s		66.0		39.0	9.0	52.0	7.0	27.0				
Max Q Clear Time (g_c+I1), s		5.6		2.0	2.0	6.7	0.0	0.0				
Green Ext Time (p_c), s		19.9		0.0	0.0	18.3	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			1.9									
HCM 2010 LOS			A									

HCM 2010 Signalized Intersection Summary

4: Loveridge Rd & Leland Rd

12/3/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	237	295	157	129	442	105	317	459	145	408	492	282
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	258	321	171	140	480	114	345	499	158	443	535	307
Adj No. of Lanes	2	2	1	2	2	1	1	2	1	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	327	751	336	237	659	295	382	1282	573	535	1069	478
Arrive On Green	0.09	0.21	0.21	0.07	0.19	0.19	0.22	0.36	0.36	0.16	0.30	0.30
Sat Flow, veh/h	3442	3539	1583	3442	3539	1583	1774	3539	1583	3442	3539	1583
Grp Volume(v), veh/h	258	321	171	140	480	114	345	499	158	443	535	307
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1770	1583	1774	1770	1583	1721	1770	1583
Q Serve(g_s), s	7.3	7.8	9.5	3.9	12.7	6.3	18.8	10.4	7.0	12.4	12.3	16.7
Cycle Q Clear(g_c), s	7.3	7.8	9.5	3.9	12.7	6.3	18.8	10.4	7.0	12.4	12.3	16.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	327	751	336	237	659	295	382	1282	573	535	1069	478
V/C Ratio(X)	0.79	0.43	0.51	0.59	0.73	0.39	0.90	0.39	0.28	0.83	0.50	0.64
Avail Cap(c_a), veh/h	381	1033	462	312	962	430	482	1282	573	762	1069	478
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.0	33.9	34.6	44.9	38.1	35.4	38.0	23.5	22.4	40.7	28.5	30.0
Incr Delay (d2), s/veh	9.3	0.2	0.6	2.3	0.8	0.4	17.3	0.9	1.2	5.2	1.7	6.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	3.9	4.2	1.9	6.3	2.8	11.0	5.2	3.2	6.3	6.3	8.1
LnGrp Delay(d),s/veh	53.3	34.1	35.2	47.2	38.9	35.9	55.3	24.4	23.6	45.9	30.2	36.5
LnGrp LOS	D	C	D	D	D	D	E	C	C	D	C	D
Approach Vol, veh/h		750			734			1002			1285	
Approach Delay, s/veh		40.9			40.0			34.9			37.1	
Approach LOS		D			D			C			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	20.4	41.0	11.9	26.1	26.4	35.0	14.4	23.5				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	22.0	35.0	9.0	29.0	27.0	30.0	11.0	27.0				
Max Q Clear Time (g_c+I1), s	14.4	12.4	5.9	11.5	20.8	18.7	9.3	14.7				
Green Ext Time (p_c), s	1.0	6.7	0.1	4.4	0.6	5.0	0.2	3.8				
Intersection Summary												
HCM 2010 Ctrl Delay			37.9									
HCM 2010 LOS			D									

HCM Signalized Intersection Capacity Analysis

5: Loveridge Rd & SR4 EB Off Ramp/SR4 EB On Ramp

12/4/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	299	1	489	0	0	0	0	556	212	167	668	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	5.0					4.5	4.5	4.5	4.5	
Lane Util. Factor	0.95	0.95	1.00					0.95	1.00	0.97	0.95	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1681	1686	1583					3539	1583	3433	3539	
Flt Permitted	0.95	0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1681	1686	1583					3539	1583	3433	3539	
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)	325	1	532	0	0	0	0	604	230	182	726	0
RTOR Reduction (vph)	0	0	78	0	0	0	0	0	159	0	0	0
Lane Group Flow (vph)	162	164	454	0	0	0	0	604	71	182	726	0
Turn Type	Prot	NA	Perm					NA	Perm	Prot	NA	
Protected Phases	7	4						2		1	6	
Permitted Phases			4						2			
Actuated Green, G (s)	40.0	40.0	39.0					27.9	27.9	9.1	41.5	
Effective Green, g (s)	40.0	40.0	39.0					27.9	27.9	9.1	41.5	
Actuated g/C Ratio	0.44	0.44	0.43					0.31	0.31	0.10	0.46	
Clearance Time (s)	4.0	5.0	5.0					4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	747	749	685					1097	490	347	1631	
v/s Ratio Prot	0.10	0.10						c0.17		0.05	c0.21	
v/s Ratio Perm			c0.29						0.05			
v/c Ratio	0.22	0.22	0.66					0.55	0.15	0.52	0.45	
Uniform Delay, d1	15.4	15.4	20.3					25.8	22.4	38.4	16.4	
Progression Factor	1.00	1.00	1.00					1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	0.1	2.4					2.0	0.6	1.4	0.9	
Delay (s)	15.5	15.5	22.7					27.8	23.1	39.8	17.3	
Level of Service	B	B	C					C	C	D	B	
Approach Delay (s)		20.0			0.0			26.5			21.8	
Approach LOS		B			A			C			C	
Intersection Summary												
HCM 2000 Control Delay			22.7		HCM 2000 Level of Service				C			
HCM 2000 Volume to Capacity ratio			0.61									
Actuated Cycle Length (s)			90.0		Sum of lost time (s)				14.0			
Intersection Capacity Utilization			56.7%		ICU Level of Service				B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 2010 Signalized Intersection Summary

6: Loveridge Rd & California Ave/Park Blvd

12/3/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	109	205	527	24	153	7	326	448	81	29	284	291
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	118	223	573	26	166	8	354	487	88	32	309	316
Adj No. of Lanes	2	1	1	2	2	0	2	2	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	210	516	439	119	862	41	400	1383	249	70	1360	609
Arrive On Green	0.06	0.28	0.28	0.03	0.25	0.25	0.12	0.46	0.46	0.04	0.38	0.38
Sat Flow, veh/h	3442	1863	1583	3442	3438	165	3442	2998	539	1774	3539	1583
Grp Volume(v), veh/h	118	223	573	26	85	89	354	286	289	32	309	316
Grp Sat Flow(s),veh/h/ln	1721	1863	1583	1721	1770	1834	1721	1770	1768	1774	1770	1583
Q Serve(g_s), s	3.7	11.0	31.0	0.8	4.2	4.3	11.3	11.6	11.8	2.0	6.6	17.2
Cycle Q Clear(g_c), s	3.7	11.0	31.0	0.8	4.2	4.3	11.3	11.6	11.8	2.0	6.6	17.2
Prop In Lane	1.00		1.00	1.00		0.09	1.00		0.30	1.00		1.00
Lane Grp Cap(c), veh/h	210	516	439	119	444	460	400	816	815	70	1360	609
V/C Ratio(X)	0.56	0.43	1.31	0.22	0.19	0.19	0.89	0.35	0.35	0.46	0.23	0.52
Avail Cap(c_a), veh/h	215	516	439	215	490	508	400	816	815	111	1360	609
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.1	33.2	40.4	52.5	33.0	33.0	48.7	19.4	19.4	52.6	23.2	26.5
Incr Delay (d2), s/veh	1.8	0.2	153.5	0.3	0.1	0.1	19.8	1.2	1.2	1.7	0.4	3.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	5.7	32.2	0.4	2.1	2.2	6.5	5.9	6.0	1.0	3.3	8.0
LnGrp Delay(d),s/veh	52.9	33.4	193.9	52.9	33.1	33.1	68.5	20.6	20.6	54.3	23.6	29.6
LnGrp LOS	D	C	F	D	C	C	E	C	C	D	C	C
Approach Vol, veh/h	914				200			929			657	
Approach Delay, s/veh	136.5				35.6			38.8			28.0	
Approach LOS	F				D			D			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.4	57.6	8.9	36.0	18.0	49.0	11.8	33.1				
Change Period (Y+Rc), s	5.0	6.0	5.0	5.0	5.0	6.0	5.0	5.0				
Max Green Setting (Gmax), s	7.0	49.0	7.0	31.0	13.0	43.0	7.0	31.0				
Max Q Clear Time (g_c+l1), s	4.0	13.8	2.8	33.0	13.3	19.2	5.7	6.3				
Green Ext Time (p_c), s	0.0	3.9	0.0	0.0	0.0	3.7	0.0	2.1				
Intersection Summary												
HCM 2010 Ctrl Delay	69.0											
HCM 2010 LOS	E											

HCM Signalized Intersection Capacity Analysis

7: SR4 WB Ramps/Loveridge Center Driveway & California Ave

12/4/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	26	199	15	303	319	129	276	86	508	97	83	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5		3.5	4.5	4.5	3.5	3.5	3.5	3.5	3.5	
Lane Util. Factor	1.00	0.95		0.97	0.95	1.00	0.95	0.95	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	0.97	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3503		3433	3539	1583	1681	1724	1583	1770	1806	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	0.82	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3503		3433	3539	1583	1681	1459	1583	1770	1806	
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)	28	216	16	329	347	140	300	93	552	105	90	23
RTOR Reduction (vph)	0	7	0	0	0	99	0	0	350	0	8	0
Lane Group Flow (vph)	28	225	0	329	347	41	195	198	202	105	105	0
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			
Actuated Green, G (s)	2.9	14.2		12.2	23.0	23.0	13.7	40.7	28.8	8.4	23.5	
Effective Green, g (s)	2.9	14.2		12.2	23.0	23.0	13.7	40.7	28.8	8.4	23.5	
Actuated g/C Ratio	0.04	0.18		0.16	0.29	0.29	0.17	0.52	0.37	0.11	0.30	
Clearance Time (s)	4.0	4.5		3.5	4.5	4.5	3.5	3.5	3.5	3.5	3.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	65	632		532	1035	463	292	801	580	189	539	
v/s Ratio Prot	0.02	0.06		c0.10	c0.10		c0.12	0.04		0.06	0.06	
v/s Ratio Perm						0.03		0.08	c0.13			
v/c Ratio	0.43	0.36		0.62	0.34	0.09	0.67	0.25	0.35	0.56	0.19	
Uniform Delay, d1	37.0	28.2		31.0	21.8	20.2	30.3	10.5	18.1	33.3	20.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	4.5	0.3		2.1	0.2	0.1	5.7	0.2	1.7	3.5	0.8	
Delay (s)	41.6	28.5		33.2	22.0	20.3	36.0	10.6	19.7	36.8	21.3	
Level of Service	D	C		C	C	C	D	B	B	D	C	
Approach Delay (s)		29.9			26.2			21.2			28.8	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			24.8				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.50									
Actuated Cycle Length (s)			78.6				Sum of lost time (s)			15.5		
Intersection Capacity Utilization			55.8%				ICU Level of Service			B		
Analysis Period (min)			15									
c Critical Lane Group												

P.M. PEAK

HCM METHODOLOGY

HCM 2010 Signalized Intersection Summary

1: Buchanan Rd & Loveridge Rd

12/4/2014

								
Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations								
Volume (veh/h)	169	865	378	171	306	265		
Number	7	4	8	18	1	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	184	940	411	186	333	288		
Adj No. of Lanes	1	1	1	1	1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	224	1104	750	638	485	433		
Arrive On Green	0.13	0.59	0.40	0.40	0.27	0.27		
Sat Flow, veh/h	1774	1863	1863	1583	1774	1583		
Grp Volume(v), veh/h	184	940	411	186	333	288		
Grp Sat Flow(s),veh/h/ln	1774	1863	1863	1583	1774	1583		
Q Serve(g_s), s	7.9	32.6	13.3	6.2	13.2	12.7		
Cycle Q Clear(g_c), s	7.9	32.6	13.3	6.2	13.2	12.7		
Prop In Lane	1.00			1.00	1.00	1.00		
Lane Grp Cap(c), veh/h	224	1104	750	638	485	433		
V/C Ratio(X)	0.82	0.85	0.55	0.29	0.69	0.66		
Avail Cap(c_a), veh/h	384	1375	853	725	485	433		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	33.5	13.2	18.0	15.9	25.5	25.3		
Incr Delay (d2), s/veh	4.1	4.4	0.6	0.3	7.7	7.8		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	4.1	17.8	7.0	2.8	7.5	11.7		
LnGrp Delay(d),s/veh	37.5	17.6	18.6	16.1	33.2	33.2		
LnGrp LOS	D	B	B	B	C	C		
Approach Vol, veh/h		1124	597		621			
Approach Delay, s/veh		20.8	17.8		33.2			
Approach LOS		C	B		C			
Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				51.6		27.0	14.9	36.6
Change Period (Y+Rc), s				5.0		5.5	5.0	5.0
Max Green Setting (Gmax), s				58.0		21.5	17.0	36.0
Max Q Clear Time (g_c+l1), s				34.6		15.2	9.9	15.3
Green Ext Time (p_c), s				12.0		0.8	0.2	11.2
Intersection Summary								
HCM 2010 Ctrl Delay			23.3					
HCM 2010 LOS			C					

HCM 2010 Signalized Intersection Summary

2: Loveridge Rd & Stoneman Ave

12/4/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	161	82	162	49	30	34	97	359	36	101	670	155
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	175	89	176	53	33	37	105	390	39	110	728	168
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	215	114	225	110	268	228	145	1442	143	147	1270	293
Arrive On Green	0.12	0.20	0.20	0.06	0.14	0.14	0.08	0.44	0.44	0.08	0.44	0.44
Sat Flow, veh/h	1774	560	1107	1774	1863	1583	1774	3252	323	1774	2857	659
Grp Volume(v), veh/h	175	0	265	53	33	37	105	211	218	110	451	445
Grp Sat Flow(s),veh/h/ln	1774	0	1667	1774	1863	1583	1774	1770	1806	1774	1770	1746
Q Serve(g_s), s	7.4	0.0	11.5	2.2	1.2	1.6	4.4	5.8	5.8	4.6	14.5	14.5
Cycle Q Clear(g_c), s	7.4	0.0	11.5	2.2	1.2	1.6	4.4	5.8	5.8	4.6	14.5	14.5
Prop In Lane	1.00		0.66	1.00		1.00	1.00		0.18	1.00		0.38
Lane Grp Cap(c), veh/h	215	0	338	110	268	228	145	785	801	147	786	776
V/C Ratio(X)	0.82	0.00	0.78	0.48	0.12	0.16	0.72	0.27	0.27	0.75	0.57	0.57
Avail Cap(c_a), veh/h	441	0	828	162	633	538	464	785	801	626	786	776
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.8	0.0	28.9	34.7	28.5	28.7	34.3	13.5	13.5	34.3	15.8	15.8
Incr Delay (d2), s/veh	2.9	0.0	4.0	1.2	0.2	0.3	2.6	0.8	0.8	2.9	3.0	3.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	0.0	5.7	1.1	0.6	0.7	2.3	3.0	3.1	2.4	7.7	7.6
LnGrp Delay(d),s/veh	35.7	0.0	32.9	35.9	28.7	29.0	36.9	14.3	14.3	37.2	18.9	18.9
LnGrp LOS	D		C	D	C	C	D	B	B	D	B	B
Approach Vol, veh/h		440			123			534			1006	
Approach Delay, s/veh		34.0			31.9			18.7			20.9	
Approach LOS		C			C			B			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.3	37.9	8.7	19.5	10.2	38.0	13.3	15.0				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	27.0	27.0	7.0	38.0	20.0	34.0	19.0	26.0				
Max Q Clear Time (g_c+l1), s	6.6	7.8	4.2	13.5	6.4	16.5	9.4	3.6				
Green Ext Time (p_c), s	0.1	4.9	0.0	2.0	0.1	4.7	0.1	2.0				
Intersection Summary												
HCM 2010 Ctrl Delay			23.7									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary

3: Loveridge Rd & Driveway

12/4/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	0	1	0	0	0	1	554	0	0	923	1
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1863	1863	0	0	1863	1900
Adj Flow Rate, veh/h	1	0	1	0	0	0	1	602	0	0	1003	1
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	0	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	0	0	2	2
Cap, veh/h	0	0	6	0	7	0	3	3062	0	0	2894	3
Arrive On Green	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.87	0.00	0.00	0.80	0.80
Sat Flow, veh/h	0	0	1583	0	1863	0	1774	3632	0	0	3721	4
Grp Volume(v), veh/h	0	0	1	0	0	0	1	602	0	0	489	515
Grp Sat Flow(s),veh/h/ln	0	0	1583	0	1863	0	1774	1770	0	0	1770	1862
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1	0.0	0.0	5.9	5.9
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1	0.0	0.0	5.9	5.9
Prop In Lane	0.00		1.00	0.00		0.00	1.00		0.00	0.00		0.00
Lane Grp Cap(c), veh/h	0	0	6	0	7	0	3	3062	0	0	1412	1485
V/C Ratio(X)	0.00	0.00	0.17	0.00	0.00	0.00	0.29	0.20	0.00	0.00	0.35	0.35
Avail Cap(c_a), veh/h	0	0	809	0	659	0	209	3062	0	0	1412	1485
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	37.9	0.0	0.0	0.0	38.0	0.8	0.0	0.0	2.2	2.2
Incr Delay (d2), s/veh	0.0	0.0	12.4	0.0	0.0	0.0	41.7	0.1	0.0	0.0	0.7	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.1	0.0	0.0	3.1	3.3
LnGrp Delay(d),s/veh	0.0	0.0	50.3	0.0	0.0	0.0	79.8	1.0	0.0	0.0	2.8	2.8
LnGrp LOS			D				E	A			A	A
Approach Vol, veh/h		1			0			603			1004	
Approach Delay, s/veh		50.3			0.0			1.1			2.8	
Approach LOS		D						A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s		71.0		5.3	5.1	65.9	0.0	5.3				
Change Period (Y+Rc), s		5.0		5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s		66.0		39.0	9.0	52.0	7.0	27.0				
Max Q Clear Time (g_c+I1), s		4.1		2.0	2.0	7.9	0.0	0.0				
Green Ext Time (p_c), s		16.9		0.0	0.0	15.6	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			2.2									
HCM 2010 LOS			A									

HCM 2010 Signalized Intersection Summary

4: Loveridge Rd & Leland Rd

12/4/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	307	665	135	226	317	208	185	392	188	382	562	127
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	334	723	147	246	345	226	201	426	204	415	611	138
Adj No. of Lanes	2	2	1	2	2	1	1	2	1	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	360	870	389	295	803	359	237	1178	527	500	1220	546
Arrive On Green	0.10	0.25	0.25	0.09	0.23	0.23	0.13	0.33	0.33	0.15	0.34	0.34
Sat Flow, veh/h	3442	3539	1583	3442	3539	1583	1774	3539	1583	3442	3539	1583
Grp Volume(v), veh/h	334	723	147	246	345	226	201	426	204	415	611	138
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1770	1583	1774	1770	1583	1721	1770	1583
Q Serve(g_s), s	10.1	20.4	8.1	7.4	8.8	13.5	11.6	9.6	10.4	12.3	14.4	6.6
Cycle Q Clear(g_c), s	10.1	20.4	8.1	7.4	8.8	13.5	11.6	9.6	10.4	12.3	14.4	6.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	360	870	389	295	803	359	237	1178	527	500	1220	546
V/C Ratio(X)	0.93	0.83	0.38	0.83	0.43	0.63	0.85	0.36	0.39	0.83	0.50	0.25
Avail Cap(c_a), veh/h	360	976	437	295	909	407	456	1178	527	720	1220	546
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.7	37.6	32.9	47.3	34.8	36.6	44.5	26.6	26.9	43.7	27.3	24.7
Incr Delay (d2), s/veh	29.7	5.1	0.3	18.4	0.2	1.8	8.2	0.9	2.1	5.5	1.5	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.3	10.6	3.6	4.3	4.3	6.1	6.2	4.8	4.9	6.3	7.3	3.0
LnGrp Delay(d),s/veh	76.4	42.7	33.3	65.7	35.0	38.5	52.7	27.5	29.0	49.2	28.8	25.8
LnGrp LOS	E	D	C	E	D	D	D	C	C	D	C	C
Approach Vol, veh/h	1204				817			831			1164	
Approach Delay, s/veh	50.9				45.2			33.9			35.7	
Approach LOS	D				D			C			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	20.3	40.0	14.0	30.9	19.0	41.2	16.0	28.9				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	22.0	35.0	9.0	29.0	27.0	30.0	11.0	27.0				
Max Q Clear Time (g_c+I1), s	14.3	12.4	9.4	22.4	13.6	16.4	12.1	15.5				
Green Ext Time (p_c), s	1.0	6.4	0.0	3.5	0.4	5.2	0.0	5.0				
Intersection Summary												
HCM 2010 Ctrl Delay	41.8											
HCM 2010 LOS	D											

HCM Signalized Intersection Capacity Analysis

5: Loveridge Rd & SR4 EB Off Ramp/SR4 EB On Ramp

12/4/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	687	2	680	0	0	0	0	770	194	85	612	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	5.0					4.5	4.5	4.5	4.5	
Lane Util. Factor	0.95	0.95	1.00					0.95	1.00	0.97	0.95	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1681	1686	1583					3539	1583	3433	3539	
Flt Permitted	0.95	0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1681	1686	1583					3539	1583	3433	3539	
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)	747	2	739	0	0	0	0	837	211	92	665	0
RTOR Reduction (vph)	0	0	94	0	0	0	0	0	111	0	0	0
Lane Group Flow (vph)	373	376	645	0	0	0	0	837	100	92	665	0
Turn Type	Prot	NA	Perm					NA	Perm	Prot	NA	
Protected Phases	7	4						2		1	6	
Permitted Phases			4						2			
Actuated Green, G (s)	40.0	40.0	39.0					31.3	31.3	6.6	42.4	
Effective Green, g (s)	40.0	40.0	39.0					31.3	31.3	6.6	42.4	
Actuated g/C Ratio	0.44	0.44	0.43					0.34	0.34	0.07	0.47	
Clearance Time (s)	4.0	5.0	5.0					4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	739	741	679					1218	545	249	1650	
v/s Ratio Prot	0.22	0.22						c0.24		0.03	c0.19	
v/s Ratio Perm			c0.41						0.06			
v/c Ratio	0.50	0.51	0.95					0.69	0.18	0.37	0.40	
Uniform Delay, d1	18.3	18.3	25.0					25.6	20.9	40.2	15.9	
Progression Factor	1.00	1.00	1.00					1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.5	0.5	23.0					3.2	0.7	0.9	0.7	
Delay (s)	18.9	18.9	48.0					28.8	21.6	41.1	16.7	
Level of Service	B	B	D					C	C	D	B	
Approach Delay (s)		33.4			0.0			27.3			19.6	
Approach LOS		C			A			C			B	
Intersection Summary												
HCM 2000 Control Delay			28.3									HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio			0.81									
Actuated Cycle Length (s)			90.9									Sum of lost time (s) 14.0
Intersection Capacity Utilization			66.9%									ICU Level of Service C
Analysis Period (min)			15									
c Critical Lane Group												

HCM 2010 Signalized Intersection Summary

6: Loveridge Rd & California Ave/Park Blvd

12/4/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	144	320	320	82	338	22	434	715	308	36	295	274
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	157	348	348	89	367	24	472	777	335	39	321	298
Adj No. of Lanes	2	1	1	2	2	0	2	2	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	216	458	390	203	818	53	404	1112	479	78	1373	614
Arrive On Green	0.06	0.25	0.25	0.06	0.24	0.24	0.12	0.46	0.46	0.04	0.39	0.39
Sat Flow, veh/h	3442	1863	1583	3442	3374	220	3442	2411	1038	1774	3539	1583
Grp Volume(v), veh/h	157	348	348	89	192	199	472	570	542	39	321	298
Grp Sat Flow(s),veh/h/ln	1721	1863	1583	1721	1770	1824	1721	1770	1680	1774	1770	1583
Q Serve(g_s), s	5.0	19.2	23.5	2.8	10.2	10.3	13.0	28.4	28.5	2.4	6.8	15.7
Cycle Q Clear(g_c), s	5.0	19.2	23.5	2.8	10.2	10.3	13.0	28.4	28.5	2.4	6.8	15.7
Prop In Lane	1.00		1.00	1.00		0.12	1.00		0.62	1.00		1.00
Lane Grp Cap(c), veh/h	216	458	390	203	429	442	404	816	775	78	1373	614
V/C Ratio(X)	0.73	0.76	0.89	0.44	0.45	0.45	1.17	0.70	0.70	0.50	0.23	0.49
Avail Cap(c_a), veh/h	217	521	443	217	495	510	404	816	775	112	1373	614
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.0	38.7	40.4	50.4	35.7	35.7	48.9	23.7	23.8	51.8	22.8	25.6
Incr Delay (d2), s/veh	10.1	4.6	17.2	0.5	0.3	0.3	99.6	4.9	5.2	1.8	0.4	2.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	10.4	12.2	1.3	5.0	5.2	11.7	14.9	14.2	1.2	3.4	7.3
LnGrp Delay(d),s/veh	61.1	43.3	57.6	50.9	35.9	36.0	148.5	28.7	29.0	53.6	23.2	28.3
LnGrp LOS	E	D	E	D	D	D	F	C	C	D	C	C
Approach Vol, veh/h	853				480			1584			658	
Approach Delay, s/veh	52.4				38.7			64.5			27.3	
Approach LOS	D				D			E			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.9	57.1	11.5	32.3	18.0	49.0	11.9	31.9				
Change Period (Y+Rc), s	5.0	6.0	5.0	5.0	5.0	6.0	5.0	5.0				
Max Green Setting (Gmax), s	7.0	49.0	7.0	31.0	13.0	43.0	7.0	31.0				
Max Q Clear Time (g_c+l1), s	4.4	30.5	4.8	25.5	15.0	17.7	7.0	12.3				
Green Ext Time (p_c), s	0.0	6.3	0.0	1.7	0.0	6.8	0.0	2.9				
Intersection Summary												
HCM 2010 Ctrl Delay	51.3											
HCM 2010 LOS	D											

HCM Signalized Intersection Capacity Analysis

7: SR4 WB Ramps/Loveridge Center Driveway & California Ave

12/4/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	28	408	16	660	281	105	33	31	290	86	43	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5		3.5	4.5	4.5	3.5	3.5	3.5	3.5	3.5	
Lane Util. Factor	1.00	0.95		0.97	0.95	1.00	0.95	0.95	1.00	1.00	1.00	
Flt Protected	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	0.99	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3520		3433	3539	1583	1681	1760	1583	1770	1822	
Satd. Flow (perm)	1770	3520		3433	3539	1583	1681	1753	1583	1770	1822	
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)	30	443	17	717	305	114	36	34	315	93	47	8
RTOR Reduction (vph)	0	3	0	0	0	73	0	0	217	0	5	0
Lane Group Flow (vph)	30	457	0	717	305	41	32	38	98	93	50	0
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			
Actuated Green, G (s)	3.0	18.0		14.8	29.3	29.3	3.1	28.4	25.3	7.9	30.1	
Effective Green, g (s)	3.0	18.0		14.8	29.3	29.3	3.1	28.4	25.3	7.9	30.1	
Actuated g/C Ratio	0.04	0.22		0.18	0.36	0.36	0.04	0.35	0.31	0.10	0.37	
Clearance Time (s)	4.0	4.5		3.5	4.5	4.5	3.5	3.5	3.5	3.5	3.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	65	782		627	1280	572	64	614	494	172	677	
v/s Ratio Prot	0.02	c0.13		c0.21	0.09		0.02	0.00		c0.05	0.03	
v/s Ratio Perm						0.03		0.02	c0.06			
v/c Ratio	0.46	0.58		1.14	0.24	0.07	0.50	0.06	0.20	0.54	0.07	
Uniform Delay, d1	38.2	28.2		33.1	18.1	16.9	38.2	17.5	20.4	34.8	16.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	5.1	1.1		82.5	0.1	0.1	6.0	0.0	0.9	3.4	0.2	
Delay (s)	43.3	29.3		115.6	18.2	17.0	44.2	17.5	21.3	38.3	16.7	
Level of Service	D	C		F	B	B	D	B	C	D	B	
Approach Delay (s)		30.1			79.5			22.9			30.2	
Approach LOS		C			E			C			C	
Intersection Summary												
HCM 2000 Control Delay			54.8			HCM 2000 Level of Service			D			
HCM 2000 Volume to Capacity ratio			0.56									
Actuated Cycle Length (s)			81.0			Sum of lost time (s)			15.5			
Intersection Capacity Utilization			52.5%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

Project Condition

A.M. Peak

HCM METHODOLOGY

HCM 2010 Signalized Intersection Summary

1: Buchanan Rd & Loveridge Rd

12/4/2014

								
Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations								
Volume (veh/h)	267	410	602	223	175	208		
Number	7	4	8	18	1	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	290	446	654	242	190	226		
Adj No. of Lanes	1	1	1	1	1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	325	1178	730	620	438	391		
Arrive On Green	0.18	0.63	0.39	0.39	0.25	0.25		
Sat Flow, veh/h	1774	1863	1863	1583	1774	1583		
Grp Volume(v), veh/h	290	446	654	242	190	226		
Grp Sat Flow(s),veh/h/ln	1774	1863	1863	1583	1774	1583		
Q Serve(g_s), s	13.9	10.1	28.6	9.6	7.9	10.9		
Cycle Q Clear(g_c), s	13.9	10.1	28.6	9.6	7.9	10.9		
Prop In Lane	1.00			1.00	1.00	1.00		
Lane Grp Cap(c), veh/h	325	1178	730	620	438	391		
V/C Ratio(X)	0.89	0.38	0.90	0.39	0.43	0.58		
Avail Cap(c_a), veh/h	346	1241	770	655	438	391		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	34.7	7.7	24.8	19.0	27.6	28.8		
Incr Delay (d2), s/veh	22.3	0.2	12.8	0.4	3.1	6.1		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	8.8	5.1	17.3	4.2	4.2	0.7		
LnGrp Delay(d),s/veh	57.0	7.9	37.6	19.4	30.7	34.9		
LnGrp LOS	E	A	D	B	C	C		
Approach Vol, veh/h		736	896		416			
Approach Delay, s/veh		27.3	32.7		33.0			
Approach LOS		C	C		C			
Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				60.0		27.0	21.0	39.1
Change Period (Y+Rc), s				5.0		5.5	5.0	5.0
Max Green Setting (Gmax), s				58.0		21.5	17.0	36.0
Max Q Clear Time (g_c+l1), s				12.1		12.9	15.9	30.6
Green Ext Time (p_c), s				11.0		0.6	0.1	3.4
Intersection Summary								
HCM 2010 Ctrl Delay			30.8					
HCM 2010 LOS			C					

HCM 2010 Signalized Intersection Summary

2: Loveridge Rd & Stoneman Ave

12/4/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	188	62	52	36	80	112	171	544	30	286	341	189
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	204	67	57	39	87	122	186	591	33	311	371	205
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	243	189	161	90	218	185	225	1191	66	352	933	507
Arrive On Green	0.14	0.20	0.20	0.05	0.12	0.12	0.13	0.35	0.35	0.20	0.42	0.42
Sat Flow, veh/h	1774	931	792	1774	1863	1583	1774	3409	190	1774	2215	1205
Grp Volume(v), veh/h	204	0	124	39	87	122	186	306	318	311	295	281
Grp Sat Flow(s),veh/h/ln	1774	0	1723	1774	1863	1583	1774	1770	1829	1774	1770	1650
Q Serve(g_s), s	9.1	0.0	5.0	1.7	3.5	6.0	8.3	11.0	11.0	13.8	9.4	9.6
Cycle Q Clear(g_c), s	9.1	0.0	5.0	1.7	3.5	6.0	8.3	11.0	11.0	13.8	9.4	9.6
Prop In Lane	1.00		0.46	1.00		1.00	1.00		0.10	1.00		0.73
Lane Grp Cap(c), veh/h	243	0	350	90	218	185	225	618	639	352	745	695
V/C Ratio(X)	0.84	0.00	0.35	0.43	0.40	0.66	0.83	0.50	0.50	0.88	0.40	0.40
Avail Cap(c_a), veh/h	417	0	811	154	600	510	439	618	639	593	745	695
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.0	0.0	27.6	37.2	33.0	34.1	34.4	20.7	20.7	31.4	16.2	16.3
Incr Delay (d2), s/veh	3.0	0.0	0.6	1.2	1.2	4.0	3.0	2.8	2.7	4.4	1.6	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.6	0.0	2.4	0.9	1.9	2.8	4.2	5.8	6.0	7.2	4.8	4.7
LnGrp Delay(d),s/veh	36.9	0.0	28.2	38.4	34.2	38.1	37.3	23.5	23.4	35.9	17.8	18.0
LnGrp LOS	D		C	D	C	D	D	C	C	D	B	B
Approach Vol, veh/h		328			248			810			887	
Approach Delay, s/veh		33.6			36.8			26.6			24.2	
Approach LOS		C			D			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	20.0	32.2	8.1	20.4	14.2	38.0	15.1	13.4				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	27.0	27.0	7.0	38.0	20.0	34.0	19.0	26.0				
Max Q Clear Time (g_c+l1), s	15.8	13.0	3.7	7.0	10.3	11.6	11.1	8.0				
Green Ext Time (p_c), s	0.3	3.9	0.0	1.7	0.1	4.4	0.1	1.5				
Intersection Summary												
HCM 2010 Ctrl Delay			27.8									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary

3: Loveridge Rd & Driveway

12/4/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	84	0	8	0	0	0	4	841	0	0	778	35
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1863	1863	0	0	1863	1900
Adj Flow Rate, veh/h	91	0	9	0	0	0	4	914	0	0	846	38
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	0	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	0	0	2	2
Cap, veh/h	0	0	121	0	142	0	13	2839	0	0	2532	114
Arrive On Green	0.00	0.00	0.08	0.00	0.00	0.00	0.01	0.80	0.00	0.00	0.73	0.73
Sat Flow, veh/h	0	0	1583	0	1863	0	1774	3632	0	0	3543	155
Grp Volume(v), veh/h	0	0	9	0	0	0	4	914	0	0	434	450
Grp Sat Flow(s),veh/h/ln	0	0	1583	0	1863	0	1774	1770	0	0	1770	1835
Q Serve(g_s), s	0.0	0.0	0.4	0.0	0.0	0.0	0.2	5.7	0.0	0.0	7.1	7.1
Cycle Q Clear(g_c), s	0.0	0.0	0.4	0.0	0.0	0.0	0.2	5.7	0.0	0.0	7.1	7.1
Prop In Lane	0.00		1.00	0.00		0.00	1.00		0.00	0.00		0.08
Lane Grp Cap(c), veh/h	0	0	121	0	142	0	13	2839	0	0	1299	1347
V/C Ratio(X)	0.00	0.00	0.07	0.00	0.00	0.00	0.30	0.32	0.00	0.00	0.33	0.33
Avail Cap(c_a), veh/h	0	0	750	0	611	0	194	2839	0	0	1299	1347
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	35.3	0.0	0.0	0.0	40.6	2.2	0.0	0.0	3.9	3.9
Incr Delay (d2), s/veh	0.0	0.0	0.3	0.0	0.0	0.0	12.4	0.3	0.0	0.0	0.7	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.2	0.0	0.0	0.0	0.1	2.8	0.0	0.0	3.6	3.8
LnGrp Delay(d),s/veh	0.0	0.0	35.6	0.0	0.0	0.0	53.0	2.5	0.0	0.0	4.6	4.5
LnGrp LOS			D				D	A			A	A
Approach Vol, veh/h		9			0			918			884	
Approach Delay, s/veh		35.6			0.0			2.7			4.5	
Approach LOS		D						A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s		71.0		11.3	5.6	65.4	0.0	11.3				
Change Period (Y+Rc), s		5.0		5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s		66.0		39.0	9.0	52.0	7.0	27.0				
Max Q Clear Time (g_c+I1), s		7.7		2.4	2.2	9.1	0.0	0.0				
Green Ext Time (p_c), s		20.5		0.0	0.0	18.5	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			3.8									
HCM 2010 LOS			A									

HCM 2010 Signalized Intersection Summary

4: Loveridge Rd & Leland Rd

12/4/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	237	295	166	132	442	105	340	513	151	408	514	282
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	258	321	180	143	480	114	370	558	164	443	559	307
Adj No. of Lanes	2	2	1	2	2	1	1	2	1	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	325	749	335	233	655	293	405	1306	584	532	1046	468
Arrive On Green	0.09	0.21	0.21	0.07	0.18	0.18	0.23	0.37	0.37	0.15	0.30	0.30
Sat Flow, veh/h	3442	3539	1583	3442	3539	1583	1774	3539	1583	3442	3539	1583
Grp Volume(v), veh/h	258	321	180	143	480	114	370	558	164	443	559	307
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1770	1583	1774	1770	1583	1721	1770	1583
Q Serve(g_s), s	7.4	8.0	10.3	4.1	13.0	6.4	20.6	12.0	7.4	12.7	13.4	17.2
Cycle Q Clear(g_c), s	7.4	8.0	10.3	4.1	13.0	6.4	20.6	12.0	7.4	12.7	13.4	17.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	325	749	335	233	655	293	405	1306	584	532	1046	468
V/C Ratio(X)	0.79	0.43	0.54	0.61	0.73	0.39	0.91	0.43	0.28	0.83	0.53	0.66
Avail Cap(c_a), veh/h	373	1011	452	305	941	421	472	1306	584	746	1046	468
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.0	34.7	35.6	46.0	39.0	36.3	38.2	24.0	22.5	41.6	29.9	31.2
Incr Delay (d2), s/veh	10.0	0.2	0.7	2.6	1.0	0.5	20.5	1.0	1.2	5.7	2.0	7.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	3.9	4.6	2.0	6.4	2.8	12.4	6.0	3.4	6.5	6.8	8.4
LnGrp Delay(d),s/veh	54.9	34.9	36.3	48.6	40.0	36.8	58.7	25.0	23.7	47.3	31.9	38.3
LnGrp LOS	D	C	D	D	D	D	E	C	C	D	C	D
Approach Vol, veh/h		759			737			1092			1309	
Approach Delay, s/veh		42.1			41.2			36.2			38.6	
Approach LOS		D			D			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	20.7	42.5	11.9	26.5	28.2	35.0	14.6	23.8				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	22.0	35.0	9.0	29.0	27.0	30.0	11.0	27.0				
Max Q Clear Time (g_c+l1), s	14.7	14.0	6.1	12.3	22.6	19.2	9.4	15.0				
Green Ext Time (p_c), s	1.0	7.1	0.1	4.3	0.5	5.2	0.1	3.8				
Intersection Summary												
HCM 2010 Ctrl Delay			39.1									
HCM 2010 LOS			D									

HCM Signalized Intersection Capacity Analysis

5: Loveridge Rd & SR4 EB Off Ramp/SR4 EB On Ramp

12/4/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	299	1	508	0	0	0	0	601	221	167	672	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	5.0					4.5	4.5	4.5	4.5	
Lane Util. Factor	0.95	0.95	1.00					0.95	1.00	0.97	0.95	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1681	1686	1583					3539	1583	3433	3539	
Flt Permitted	0.95	0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1681	1686	1583					3539	1583	3433	3539	
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)	325	1	552	0	0	0	0	653	240	182	730	0
RTOR Reduction (vph)	0	0	77	0	0	0	0	0	166	0	0	0
Lane Group Flow (vph)	162	164	476	0	0	0	0	653	74	182	730	0
Turn Type	Prot	NA	Perm					NA	Perm	Prot	NA	
Protected Phases	7	4						2		1	6	
Permitted Phases			4						2			
Actuated Green, G (s)	40.0	40.0	39.0					27.9	27.9	9.1	41.5	
Effective Green, g (s)	40.0	40.0	39.0					27.9	27.9	9.1	41.5	
Actuated g/C Ratio	0.44	0.44	0.43					0.31	0.31	0.10	0.46	
Clearance Time (s)	4.0	5.0	5.0					4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	747	749	685					1097	490	347	1631	
v/s Ratio Prot	0.10	0.10						c0.18		0.05	c0.21	
v/s Ratio Perm			c0.30						0.05			
v/c Ratio	0.22	0.22	0.69					0.60	0.15	0.52	0.45	
Uniform Delay, d1	15.4	15.4	20.7					26.3	22.5	38.4	16.5	
Progression Factor	1.00	1.00	1.00					1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	0.1	3.1					2.4	0.7	1.4	0.9	
Delay (s)	15.5	15.5	23.7					28.7	23.1	39.8	17.4	
Level of Service	B	B	C					C	C	D	B	
Approach Delay (s)		20.7			0.0			27.2			21.8	
Approach LOS		C			A			C			C	
Intersection Summary												
HCM 2000 Control Delay			23.2		HCM 2000 Level of Service				C			
HCM 2000 Volume to Capacity ratio			0.64									
Actuated Cycle Length (s)			90.0		Sum of lost time (s)				14.0			
Intersection Capacity Utilization			57.9%		ICU Level of Service				B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 2010 Signalized Intersection Summary

6: Loveridge Rd & California Ave/Park Blvd

12/4/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	109	205	531	24	153	7	371	448	81	29	284	291
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	118	223	577	26	166	8	403	487	88	32	309	316
Adj No. of Lanes	2	1	1	2	2	0	2	2	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	210	516	439	119	862	41	400	1383	249	70	1360	609
Arrive On Green	0.06	0.28	0.28	0.03	0.25	0.25	0.12	0.46	0.46	0.04	0.38	0.38
Sat Flow, veh/h	3442	1863	1583	3442	3438	165	3442	2998	539	1774	3539	1583
Grp Volume(v), veh/h	118	223	577	26	85	89	403	286	289	32	309	316
Grp Sat Flow(s),veh/h/ln	1721	1863	1583	1721	1770	1834	1721	1770	1768	1774	1770	1583
Q Serve(g_s), s	3.7	11.0	31.0	0.8	4.2	4.3	13.0	11.6	11.8	2.0	6.6	17.2
Cycle Q Clear(g_c), s	3.7	11.0	31.0	0.8	4.2	4.3	13.0	11.6	11.8	2.0	6.6	17.2
Prop In Lane	1.00		1.00	1.00		0.09	1.00		0.30	1.00		1.00
Lane Grp Cap(c), veh/h	210	516	439	119	444	460	400	816	815	70	1360	609
V/C Ratio(X)	0.56	0.43	1.32	0.22	0.19	0.19	1.01	0.35	0.35	0.46	0.23	0.52
Avail Cap(c_a), veh/h	215	516	439	215	490	508	400	816	815	111	1360	609
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.1	33.2	40.4	52.5	33.0	33.0	49.4	19.4	19.4	52.6	23.2	26.5
Incr Delay (d2), s/veh	1.8	0.2	157.3	0.3	0.1	0.1	47.0	1.2	1.2	1.7	0.4	3.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	5.7	32.7	0.4	2.1	2.2	8.7	5.9	6.0	1.0	3.3	8.0
LnGrp Delay(d),s/veh	52.9	33.4	197.7	52.9	33.1	33.1	96.4	20.6	20.6	54.3	23.6	29.6
LnGrp LOS	D	C	F	D	C	C	F	C	C	D	C	C
Approach Vol, veh/h		918			200			978			657	
Approach Delay, s/veh		139.2			35.6			51.8			28.0	
Approach LOS		F			D			D			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.4	57.6	8.9	36.0	18.0	49.0	11.8	33.1				
Change Period (Y+Rc), s	5.0	6.0	5.0	5.0	5.0	6.0	5.0	5.0				
Max Green Setting (Gmax), s	7.0	49.0	7.0	31.0	13.0	43.0	7.0	31.0				
Max Q Clear Time (g_c+l1), s	4.0	13.8	2.8	33.0	15.0	19.2	5.7	6.3				
Green Ext Time (p_c), s	0.0	3.9	0.0	0.0	0.0	3.7	0.0	2.1				
Intersection Summary												
HCM 2010 Ctrl Delay			74.1									
HCM 2010 LOS			E									

HCM Signalized Intersection Capacity Analysis

7: SR4 WB Ramps/Loveridge Center Driveway & California Ave

12/4/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	26	199	15	348	319	129	276	86	512	97	83	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5		3.5	4.5	4.5	3.5	3.5	3.5	3.5	3.5	
Lane Util. Factor	1.00	0.95		0.97	0.95	1.00	0.95	0.95	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	0.97	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3503		3433	3539	1583	1681	1724	1583	1770	1806	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	0.82	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3503		3433	3539	1583	1681	1458	1583	1770	1806	
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)	28	216	16	378	347	140	300	93	557	105	90	23
RTOR Reduction (vph)	0	7	0	0	0	98	0	0	355	0	8	0
Lane Group Flow (vph)	28	225	0	378	347	42	195	198	202	105	105	0
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			
Actuated Green, G (s)	2.9	14.1		13.0	23.7	23.7	13.7	40.7	28.8	8.4	23.5	
Effective Green, g (s)	2.9	14.1		13.0	23.7	23.7	13.7	40.7	28.8	8.4	23.5	
Actuated g/C Ratio	0.04	0.18		0.16	0.30	0.30	0.17	0.51	0.36	0.11	0.30	
Clearance Time (s)	4.0	4.5		3.5	4.5	4.5	3.5	3.5	3.5	3.5	3.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	64	622		562	1057	473	290	794	574	187	535	
v/s Ratio Prot	0.02	0.06		c0.11	c0.10		c0.12	0.04		0.06	0.06	
v/s Ratio Perm						0.03		0.08	c0.13			
v/c Ratio	0.44	0.36		0.67	0.33	0.09	0.67	0.25	0.35	0.56	0.20	
Uniform Delay, d1	37.4	28.6		31.2	21.6	20.0	30.7	10.8	18.4	33.7	20.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	4.7	0.4		3.2	0.2	0.1	6.0	0.2	1.7	3.8	0.8	
Delay (s)	42.1	29.0		34.3	21.8	20.1	36.7	10.9	20.1	37.5	21.7	
Level of Service	D	C		C	C	C	D	B	C	D	C	
Approach Delay (s)		30.4			27.0			21.6			29.3	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			25.4				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.51									
Actuated Cycle Length (s)			79.3				Sum of lost time (s)		15.5			
Intersection Capacity Utilization			56.1%				ICU Level of Service		B			
Analysis Period (min)			15									
c Critical Lane Group												

P.M. PEAK

HCM METHODOLOGY

HCM 2010 Signalized Intersection Summary

1: Buchanan Rd & Loveridge Rd

12/4/2014

								
Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations								
Volume (veh/h)	175	865	378	171	306	269		
Number	7	4	8	18	1	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	190	940	411	186	333	292		
Adj No. of Lanes	1	1	1	1	1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	230	1104	744	632	485	433		
Arrive On Green	0.13	0.59	0.40	0.40	0.27	0.27		
Sat Flow, veh/h	1774	1863	1863	1583	1774	1583		
Grp Volume(v), veh/h	190	940	411	186	333	292		
Grp Sat Flow(s),veh/h/ln	1774	1863	1863	1583	1774	1583		
Q Serve(g_s), s	8.2	32.6	13.4	6.3	13.2	12.9		
Cycle Q Clear(g_c), s	8.2	32.6	13.4	6.3	13.2	12.9		
Prop In Lane	1.00			1.00	1.00	1.00		
Lane Grp Cap(c), veh/h	230	1104	744	632	485	433		
V/C Ratio(X)	0.82	0.85	0.55	0.29	0.69	0.67		
Avail Cap(c_a), veh/h	384	1375	853	725	485	433		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	33.3	13.2	18.2	16.1	25.5	25.4		
Incr Delay (d2), s/veh	4.1	4.4	0.6	0.3	7.7	8.1		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	4.3	17.8	7.0	2.8	7.5	11.9		
LnGrp Delay(d),s/veh	37.4	17.6	18.8	16.3	33.2	33.6		
LnGrp LOS	D	B	B	B	C	C		
Approach Vol, veh/h		1130	597		625			
Approach Delay, s/veh		20.9	18.1		33.4			
Approach LOS		C	B		C			
Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				51.6		27.0	15.2	36.4
Change Period (Y+Rc), s				5.0		5.5	5.0	5.0
Max Green Setting (Gmax), s				58.0		21.5	17.0	36.0
Max Q Clear Time (g_c+l1), s				34.6		15.2	10.2	15.4
Green Ext Time (p_c), s				12.0		0.8	0.2	11.1
Intersection Summary								
HCM 2010 Ctrl Delay			23.5					
HCM 2010 LOS			C					

HCM 2010 Signalized Intersection Summary

2: Loveridge Rd & Stoneman Ave

12/4/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	163	82	162	49	30	34	97	365	36	101	674	156
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	177	89	176	53	33	37	105	397	39	110	733	170
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	217	114	225	110	266	226	145	1445	141	147	1268	294
Arrive On Green	0.12	0.20	0.20	0.06	0.14	0.14	0.08	0.44	0.44	0.08	0.44	0.44
Sat Flow, veh/h	1774	560	1107	1774	1863	1583	1774	3258	318	1774	2854	662
Grp Volume(v), veh/h	177	0	265	53	33	37	105	215	221	110	454	449
Grp Sat Flow(s),veh/h/ln	1774	0	1667	1774	1863	1583	1774	1770	1807	1774	1770	1746
Q Serve(g_s), s	7.4	0.0	11.5	2.2	1.2	1.6	4.4	5.9	5.9	4.6	14.7	14.7
Cycle Q Clear(g_c), s	7.4	0.0	11.5	2.2	1.2	1.6	4.4	5.9	5.9	4.6	14.7	14.7
Prop In Lane	1.00		0.66	1.00		1.00	1.00		0.18	1.00		0.38
Lane Grp Cap(c), veh/h	217	0	338	110	266	226	145	785	801	147	786	776
V/C Ratio(X)	0.82	0.00	0.78	0.48	0.12	0.16	0.72	0.27	0.28	0.75	0.58	0.58
Avail Cap(c_a), veh/h	441	0	828	162	633	538	464	785	801	626	786	776
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.7	0.0	28.9	34.7	28.6	28.8	34.3	13.5	13.5	34.3	15.9	15.9
Incr Delay (d2), s/veh	2.9	0.0	4.0	1.2	0.2	0.3	2.6	0.9	0.9	2.9	3.1	3.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	0.0	5.7	1.1	0.6	0.7	2.3	3.1	3.1	2.4	7.7	7.7
LnGrp Delay(d),s/veh	35.6	0.0	32.9	35.9	28.8	29.1	36.9	14.3	14.4	37.2	19.0	19.0
LnGrp LOS	D		C	D	C	C	D	B	B	D	B	B
Approach Vol, veh/h		442			123			541			1013	
Approach Delay, s/veh		34.0			32.0			18.7			21.0	
Approach LOS		C			C			B			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.3	37.9	8.7	19.5	10.2	38.0	13.3	14.9				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	27.0	27.0	7.0	38.0	20.0	34.0	19.0	26.0				
Max Q Clear Time (g_c+l1), s	6.6	7.9	4.2	13.5	6.4	16.7	9.4	3.6				
Green Ext Time (p_c), s	0.1	4.9	0.0	2.0	0.1	4.8	0.1	2.0				
Intersection Summary												
HCM 2010 Ctrl Delay			23.7									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary

3: Loveridge Rd & Driveway

12/4/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	56	0	6	0	0	0	9	554	0	0	923	87
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1863	1863	0	0	1863	1900
Adj Flow Rate, veh/h	61	0	7	0	0	0	10	602	0	0	1003	95
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	0	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	0	0	2	2
Cap, veh/h	0	0	107	0	126	0	31	2866	0	0	2389	226
Arrive On Green	0.00	0.00	0.07	0.00	0.00	0.00	0.02	0.81	0.00	0.00	0.73	0.73
Sat Flow, veh/h	0	0	1583	0	1863	0	1774	3632	0	0	3361	309
Grp Volume(v), veh/h	0	0	7	0	0	0	10	602	0	0	543	555
Grp Sat Flow(s),veh/h/ln	0	0	1583	0	1863	0	1774	1770	0	0	1770	1808
Q Serve(g_s), s	0.0	0.0	0.3	0.0	0.0	0.0	0.5	3.2	0.0	0.0	9.7	9.7
Cycle Q Clear(g_c), s	0.0	0.0	0.3	0.0	0.0	0.0	0.5	3.2	0.0	0.0	9.7	9.7
Prop In Lane	0.00		1.00	0.00		0.00	1.00		0.00	0.00		0.17
Lane Grp Cap(c), veh/h	0	0	107	0	126	0	31	2866	0	0	1294	1322
V/C Ratio(X)	0.00	0.00	0.07	0.00	0.00	0.00	0.32	0.21	0.00	0.00	0.42	0.42
Avail Cap(c_a), veh/h	0	0	758	0	617	0	196	2866	0	0	1294	1322
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	35.6	0.0	0.0	0.0	39.6	1.8	0.0	0.0	4.3	4.3
Incr Delay (d2), s/veh	0.0	0.0	0.3	0.0	0.0	0.0	5.9	0.2	0.0	0.0	1.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.2	0.0	0.0	0.0	0.3	1.6	0.0	0.0	5.0	5.1
LnGrp Delay(d),s/veh	0.0	0.0	35.8	0.0	0.0	0.0	45.5	1.9	0.0	0.0	5.3	5.2
LnGrp LOS			D				D	A			A	A
Approach Vol, veh/h		7			0			612			1098	
Approach Delay, s/veh		35.8			0.0			2.7			5.2	
Approach LOS		D						A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s		71.0		10.5	6.4	64.6	0.0	10.5				
Change Period (Y+Rc), s		5.0		5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s		66.0		39.0	9.0	52.0	7.0	27.0				
Max Q Clear Time (g_c+l1), s		5.2		2.3	2.5	11.7	0.0	0.0				
Green Ext Time (p_c), s		18.9		0.0	0.0	16.7	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			4.4									
HCM 2010 LOS			A									

HCM 2010 Signalized Intersection Summary

4: Loveridge Rd & Leland Rd

12/4/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	307	665	159	233	317	208	200	428	192	382	618	127
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	334	723	173	253	345	226	217	465	209	415	672	138
Adj No. of Lanes	2	2	1	2	2	1	1	2	1	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	360	871	390	295	804	360	253	1178	527	500	1187	531
Arrive On Green	0.10	0.25	0.25	0.09	0.23	0.23	0.14	0.33	0.33	0.15	0.34	0.34
Sat Flow, veh/h	3442	3539	1583	3442	3539	1583	1774	3539	1583	3442	3539	1583
Grp Volume(v), veh/h	334	723	173	253	345	226	217	465	209	415	672	138
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1770	1583	1774	1770	1583	1721	1770	1583
Q Serve(g_s), s	10.1	20.4	9.7	7.6	8.8	13.5	12.6	10.6	10.7	12.3	16.4	6.7
Cycle Q Clear(g_c), s	10.1	20.4	9.7	7.6	8.8	13.5	12.6	10.6	10.7	12.3	16.4	6.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	360	871	390	295	804	360	253	1178	527	500	1187	531
V/C Ratio(X)	0.93	0.83	0.44	0.86	0.43	0.63	0.86	0.39	0.40	0.83	0.57	0.26
Avail Cap(c_a), veh/h	360	976	437	295	909	406	455	1178	527	720	1187	531
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.7	37.6	33.5	47.5	34.8	36.6	44.0	27.0	27.0	43.7	28.7	25.5
Incr Delay (d2), s/veh	29.8	5.1	0.4	21.6	0.2	1.8	8.2	1.0	2.2	5.5	2.0	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.3	10.6	4.3	4.5	4.3	6.1	6.7	5.3	5.0	6.3	8.3	3.1
LnGrp Delay(d),s/veh	76.5	42.7	34.0	69.1	35.0	38.4	52.2	27.9	29.2	49.2	30.6	26.6
LnGrp LOS	E	D	C	E	C	D	D	C	C	D	C	C
Approach Vol, veh/h	1230				824				891			
Approach Delay, s/veh	50.6				46.4				34.1			
Approach LOS	D				D				C			
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	20.3	40.0	14.0	30.9	20.0	40.3	16.0	28.9				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	22.0	35.0	9.0	29.0	27.0	30.0	11.0	27.0				
Max Q Clear Time (g_c+l1), s	14.3	12.7	9.6	22.4	14.6	18.4	12.1	15.5				
Green Ext Time (p_c), s	1.0	7.0	0.0	3.5	0.5	5.2	0.0	5.0				
Intersection Summary												
HCM 2010 Ctrl Delay	42.1											
HCM 2010 LOS	D											

HCM Signalized Intersection Capacity Analysis

5: Loveridge Rd & SR4 EB Off Ramp/SR4 EB On Ramp

12/4/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	687	2	727	0	0	0	0	800	200	85	621	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	5.0					4.5	4.5	4.5	4.5	
Lane Util. Factor	0.95	0.95	1.00					0.95	1.00	0.97	0.95	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1681	1686	1583					3539	1583	3433	3539	
Flt Permitted	0.95	0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1681	1686	1583					3539	1583	3433	3539	
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)	747	2	790	0	0	0	0	870	217	92	675	0
RTOR Reduction (vph)	0	0	91	0	0	0	0	0	111	0	0	0
Lane Group Flow (vph)	373	376	699	0	0	0	0	870	106	92	675	0
Turn Type	Prot	NA	Perm					NA	Perm	Prot	NA	
Protected Phases	7	4						2		1	6	
Permitted Phases			4						2			
Actuated Green, G (s)	40.0	40.0	39.0					31.3	31.3	6.6	42.4	
Effective Green, g (s)	40.0	40.0	39.0					31.3	31.3	6.6	42.4	
Actuated g/C Ratio	0.44	0.44	0.43					0.34	0.34	0.07	0.47	
Clearance Time (s)	4.0	5.0	5.0					4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	739	741	679					1218	545	249	1650	
v/s Ratio Prot	0.22	0.22						c0.25		0.03	c0.19	
v/s Ratio Perm			c0.44						0.07			
v/c Ratio	0.50	0.51	1.03					0.71	0.19	0.37	0.41	
Uniform Delay, d1	18.3	18.3	26.0					25.9	20.9	40.2	16.0	
Progression Factor	1.00	1.00	1.00					1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.5	0.5	42.4					3.6	0.8	0.9	0.8	
Delay (s)	18.9	18.9	68.3					29.5	21.7	41.1	16.7	
Level of Service	B	B	E					C	C	D	B	
Approach Delay (s)		44.3			0.0			28.0			19.7	
Approach LOS		D			A			C			B	
Intersection Summary												
HCM 2000 Control Delay			33.5		HCM 2000 Level of Service				C			
HCM 2000 Volume to Capacity ratio			0.86									
Actuated Cycle Length (s)			90.9		Sum of lost time (s)				14.0			
Intersection Capacity Utilization			70.1%		ICU Level of Service				C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 2010 Signalized Intersection Summary

6: Loveridge Rd & California Ave/Park Blvd

12/4/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	144	320	329	82	338	22	464	715	308	36	295	274
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	157	348	358	89	367	24	504	777	335	39	321	298
Adj No. of Lanes	2	1	1	2	2	0	2	2	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	214	467	397	202	834	54	401	1105	476	78	1365	610
Arrive On Green	0.06	0.25	0.25	0.06	0.25	0.25	0.12	0.46	0.46	0.04	0.39	0.39
Sat Flow, veh/h	3442	1863	1583	3442	3374	220	3442	2411	1038	1774	3539	1583
Grp Volume(v), veh/h	157	348	358	89	192	199	504	570	542	39	321	298
Grp Sat Flow(s),veh/h/ln	1721	1863	1583	1721	1770	1824	1721	1770	1680	1774	1770	1583
Q Serve(g_s), s	5.0	19.2	24.4	2.8	10.2	10.3	13.0	28.7	28.8	2.4	6.8	15.9
Cycle Q Clear(g_c), s	5.0	19.2	24.4	2.8	10.2	10.3	13.0	28.7	28.8	2.4	6.8	15.9
Prop In Lane	1.00		1.00	1.00		0.12	1.00		0.62	1.00		1.00
Lane Grp Cap(c), veh/h	214	467	397	202	438	451	401	811	769	78	1365	610
V/C Ratio(X)	0.73	0.75	0.90	0.44	0.44	0.44	1.26	0.70	0.70	0.50	0.24	0.49
Avail Cap(c_a), veh/h	216	518	440	216	492	507	401	811	769	111	1365	610
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.4	38.5	40.4	50.7	35.4	35.5	49.3	24.2	24.2	52.1	23.2	25.9
Incr Delay (d2), s/veh	10.5	4.3	19.1	0.6	0.3	0.3	134.2	5.1	5.4	1.8	0.4	2.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	10.4	12.8	1.3	5.0	5.2	13.6	15.1	14.4	1.2	3.4	7.4
LnGrp Delay(d),s/veh	61.9	42.8	59.5	51.3	35.7	35.7	183.5	29.2	29.5	53.9	23.6	28.7
LnGrp LOS	E	D	E	D	D	D	F	C	C	D	C	C
Approach Vol, veh/h		863			480			1616			658	
Approach Delay, s/veh		53.2			38.6			77.4			27.7	
Approach LOS		D			D			E			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.9	57.1	11.6	33.0	18.0	49.0	11.9	32.6				
Change Period (Y+Rc), s	5.0	6.0	5.0	5.0	5.0	6.0	5.0	5.0				
Max Green Setting (Gmax), s	7.0	49.0	7.0	31.0	13.0	43.0	7.0	31.0				
Max Q Clear Time (g_c+I1), s	4.4	30.8	4.8	26.4	15.0	17.9	7.0	12.3				
Green Ext Time (p_c), s	0.0	6.2	0.0	1.6	0.0	6.8	0.0	2.9				
Intersection Summary												
HCM 2010 Ctrl Delay			57.4									
HCM 2010 LOS			E									

HCM Signalized Intersection Capacity Analysis

7: SR4 WB Ramps/Loveridge Center Driveway & California Ave

12/4/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	28	408	16	690	281	105	33	31	299	86	43	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5		3.5	4.5	4.5	3.5	3.5	3.5	3.5	3.5	
Lane Util. Factor	1.00	0.95		0.97	0.95	1.00	0.95	0.95	1.00	1.00	1.00	
Flt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	0.99	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3520		3433	3539	1583	1681	1760	1583	1770	1822	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	0.99	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3520		3433	3539	1583	1681	1753	1583	1770	1822	
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)	30	443	17	750	305	114	36	34	325	93	47	8
RTOR Reduction (vph)	0	3	0	0	0	73	0	0	223	0	5	0
Lane Group Flow (vph)	30	457	0	750	305	41	32	38	102	93	50	0
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			
Actuated Green, G (s)	3.0	18.0		14.8	29.3	29.3	3.1	28.4	25.3	7.9	30.1	
Effective Green, g (s)	3.0	18.0		14.8	29.3	29.3	3.1	28.4	25.3	7.9	30.1	
Actuated g/C Ratio	0.04	0.22		0.18	0.36	0.36	0.04	0.35	0.31	0.10	0.37	
Clearance Time (s)	4.0	4.5		3.5	4.5	4.5	3.5	3.5	3.5	3.5	3.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	65	782		627	1280	572	64	614	494	172	677	
v/s Ratio Prot	0.02	c0.13		c0.22	0.09		0.02	0.00		c0.05	0.03	
v/s Ratio Perm						0.03		0.02	c0.06			
v/c Ratio	0.46	0.58		1.20	0.24	0.07	0.50	0.06	0.21	0.54	0.07	
Uniform Delay, d1	38.2	28.2		33.1	18.1	16.9	38.2	17.5	20.5	34.8	16.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	5.1	1.1		103.2	0.1	0.1	6.0	0.0	0.9	3.4	0.2	
Delay (s)	43.3	29.3		136.3	18.2	17.0	44.2	17.5	21.4	38.3	16.7	
Level of Service	D	C		F	B	B	D	B	C	D	B	
Approach Delay (s)		30.1			93.9			22.9			30.2	
Approach LOS		C			F			C			C	
Intersection Summary												
HCM 2000 Control Delay			62.7				HCM 2000 Level of Service		E			
HCM 2000 Volume to Capacity ratio			0.57									
Actuated Cycle Length (s)			81.0				Sum of lost time (s)		15.5			
Intersection Capacity Utilization			53.3%				ICU Level of Service		A			
Analysis Period (min)			15									
c Critical Lane Group												

Cumulative Baseline Condition

A.M. Peak

HCM METHODOLOGY

HCM 2010 Signalized Intersection Summary

1: Buchanan Rd & Loveridge Rd

12/4/2014

								
Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations								
Volume (veh/h)	265	410	602	434	388	203		
Number	7	4	8	18	1	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	288	446	654	472	422	221		
Adj No. of Lanes	1	1	1	1	1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	323	1180	734	624	437	390		
Arrive On Green	0.18	0.63	0.39	0.39	0.25	0.25		
Sat Flow, veh/h	1774	1863	1863	1583	1774	1583		
Grp Volume(v), veh/h	288	446	654	472	422	221		
Grp Sat Flow(s),veh/h/ln	1774	1863	1863	1583	1774	1583		
Q Serve(g_s), s	13.8	10.1	28.6	22.5	20.5	10.7		
Cycle Q Clear(g_c), s	13.8	10.1	28.6	22.5	20.5	10.7		
Prop In Lane	1.00			1.00	1.00	1.00		
Lane Grp Cap(c), veh/h	323	1180	734	624	437	390		
V/C Ratio(X)	0.89	0.38	0.89	0.76	0.97	0.57		
Avail Cap(c_a), veh/h	346	1238	768	653	437	390		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	34.8	7.7	24.7	22.8	32.5	28.8		
Incr Delay (d2), s/veh	22.2	0.2	12.3	4.9	35.2	5.9		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	8.8	5.1	17.0	10.5	14.4	10.0		
LnGrp Delay(d),s/veh	57.0	7.9	37.0	27.7	67.8	34.7		
LnGrp LOS	E	A	D	C	E	C		
Approach Vol, veh/h		734	1126		643			
Approach Delay, s/veh		27.2	33.1		56.4			
Approach LOS		C	C		E			
Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				60.3		27.0	20.9	39.4
Change Period (Y+Rc), s				5.0		5.5	5.0	5.0
Max Green Setting (Gmax), s				58.0		21.5	17.0	36.0
Max Q Clear Time (g_c+l1), s				12.1		22.5	15.8	30.6
Green Ext Time (p_c), s				12.9		0.0	0.1	3.8
Intersection Summary								
HCM 2010 Ctrl Delay			37.4					
HCM 2010 LOS			D					

HCM 2010 Signalized Intersection Summary

2: Loveridge Rd & Stoneman Ave

12/4/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	214	73	62	39	80	116	185	671	38	326	389	187
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	233	79	67	42	87	126	201	729	41	354	423	203
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	271	205	174	92	221	188	239	1085	61	392	944	448
Arrive On Green	0.15	0.22	0.22	0.05	0.12	0.12	0.13	0.32	0.32	0.22	0.41	0.41
Sat Flow, veh/h	1774	932	791	1774	1863	1583	1774	3407	192	1774	2330	1107
Grp Volume(v), veh/h	233	0	146	42	87	126	201	378	392	354	320	306
Grp Sat Flow(s),veh/h/ln	1774	0	1723	1774	1863	1583	1774	1770	1829	1774	1770	1667
Q Serve(g_s), s	10.9	0.0	6.1	1.9	3.7	6.5	9.4	15.7	15.7	16.5	11.1	11.3
Cycle Q Clear(g_c), s	10.9	0.0	6.1	1.9	3.7	6.5	9.4	15.7	15.7	16.5	11.1	11.3
Prop In Lane	1.00		0.46	1.00		1.00	1.00		0.10	1.00		0.66
Lane Grp Cap(c), veh/h	271	0	379	92	221	188	239	564	583	392	717	675
V/C Ratio(X)	0.86	0.00	0.39	0.46	0.39	0.67	0.84	0.67	0.67	0.90	0.45	0.45
Avail Cap(c_a), veh/h	398	0	772	146	571	486	419	564	583	565	717	675
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.0	0.0	28.2	39.0	34.5	35.8	35.8	25.0	25.0	32.1	18.3	18.4
Incr Delay (d2), s/veh	8.6	0.0	0.6	1.3	1.1	4.1	3.1	6.3	6.1	10.6	2.0	2.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.0	0.0	3.0	1.0	2.0	3.0	4.8	8.7	8.9	9.2	5.8	5.6
LnGrp Delay(d),s/veh	43.6	0.0	28.8	40.3	35.7	39.8	38.9	31.3	31.1	42.8	20.3	20.6
LnGrp LOS	D		C	D	D	D	D	C	C	D	C	C
Approach Vol, veh/h		379			255			971			980	
Approach Delay, s/veh		37.9			38.5			32.8			28.5	
Approach LOS		D			D			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	22.8	31.0	8.4	22.6	15.4	38.3	16.9	14.1				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	27.0	27.0	7.0	38.0	20.0	34.0	19.0	26.0				
Max Q Clear Time (g_c+l1), s	18.5	17.7	3.9	8.1	11.4	13.3	12.9	8.5				
Green Ext Time (p_c), s	0.3	3.7	0.0	1.8	0.1	5.2	0.1	1.6				
Intersection Summary												
HCM 2010 Ctrl Delay			32.5									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary

3: Loveridge Rd & Driveway

12/4/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	0	1	0	0	0	1	1000	0	0	1003	1
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1863	1863	0	0	1863	1900
Adj Flow Rate, veh/h	1	0	1	0	0	0	1	1087	0	0	1090	1
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	0	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	0	0	2	2
Cap, veh/h	0	0	6	0	7	0	3	3062	0	0	2894	3
Arrive On Green	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.87	0.00	0.00	0.80	0.80
Sat Flow, veh/h	0	0	1583	0	1863	0	1774	3632	0	0	3722	3
Grp Volume(v), veh/h	0	0	1	0	0	0	1	1087	0	0	532	559
Grp Sat Flow(s),veh/h/ln	0	0	1583	0	1863	0	1774	1770	0	0	1770	1862
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.6	0.0	0.0	6.6	6.6
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.6	0.0	0.0	6.6	6.6
Prop In Lane	0.00		1.00	0.00		0.00	1.00		0.00	0.00		0.00
Lane Grp Cap(c), veh/h	0	0	6	0	7	0	3	3062	0	0	1412	1485
V/C Ratio(X)	0.00	0.00	0.17	0.00	0.00	0.00	0.29	0.36	0.00	0.00	0.38	0.38
Avail Cap(c_a), veh/h	0	0	809	0	659	0	209	3062	0	0	1412	1485
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	37.9	0.0	0.0	0.0	38.0	1.0	0.0	0.0	2.2	2.2
Incr Delay (d2), s/veh	0.0	0.0	12.4	0.0	0.0	0.0	41.7	0.3	0.0	0.0	0.8	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.1	2.3	0.0	0.0	3.4	3.6
LnGrp Delay(d),s/veh	0.0	0.0	50.3	0.0	0.0	0.0	79.8	1.3	0.0	0.0	3.0	3.0
LnGrp LOS			D				E	A			A	A
Approach Vol, veh/h		1			0			1088			1091	
Approach Delay, s/veh		50.3			0.0			1.4			3.0	
Approach LOS		D						A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s		71.0		5.3	5.1	65.9	0.0	5.3				
Change Period (Y+Rc), s		5.0		5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s		66.0		39.0	9.0	52.0	7.0	27.0				
Max Q Clear Time (g_c+I1), s		6.6		2.0	2.0	8.6	0.0	0.0				
Green Ext Time (p_c), s		28.8		0.0	0.0	24.7	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			2.2									
HCM 2010 LOS			A									

HCM 2010 Signalized Intersection Summary

4: Loveridge Rd & Leland Rd

12/4/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 		 	 			 		 	 	
Volume (veh/h)	486	678	513	164	838	105	533	459	145	423	527	371
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	528	737	558	178	911	114	579	499	158	460	573	403
Adj No. of Lanes	2	2	1	2	2	1	1	2	1	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	329	927	415	236	831	372	417	1206	540	533	923	413
Arrive On Green	0.10	0.26	0.26	0.07	0.23	0.23	0.23	0.34	0.34	0.15	0.26	0.26
Sat Flow, veh/h	3442	3539	1583	3442	3539	1583	1774	3539	1583	3442	3539	1583
Grp Volume(v), veh/h	528	737	558	178	911	114	579	499	158	460	573	403
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1770	1583	1774	1770	1583	1721	1770	1583
Q Serve(g_s), s	11.0	22.3	30.1	5.8	27.0	6.8	27.0	12.4	8.4	15.0	16.4	29.0
Cycle Q Clear(g_c), s	11.0	22.3	30.1	5.8	27.0	6.8	27.0	12.4	8.4	15.0	16.4	29.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	329	927	415	236	831	372	417	1206	540	533	923	413
V/C Ratio(X)	1.60	0.80	1.35	0.75	1.10	0.31	1.39	0.41	0.29	0.86	0.62	0.98
Avail Cap(c_a), veh/h	329	927	415	269	831	372	417	1206	540	658	923	413
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.0	39.6	42.4	52.6	44.0	36.3	44.0	29.1	27.8	47.4	37.5	42.1
Incr Delay (d2), s/veh	285.6	4.6	170.9	10.1	60.9	0.2	189.8	1.0	1.4	9.7	3.1	38.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	18.3	11.4	32.8	3.1	20.2	3.0	35.1	6.3	3.9	7.9	8.4	17.1
LnGrp Delay(d),s/veh	337.6	44.1	213.3	62.7	104.9	36.5	233.8	30.1	29.1	57.1	40.6	80.8
LnGrp LOS	F	D	F	E	F	D	F	C	C	E	D	F
Approach Vol, veh/h	1823				1203			1236			1436	
Approach Delay, s/veh	180.9				92.2			125.4			57.2	
Approach LOS	F				F			F			E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	22.8	44.2	12.9	35.1	32.0	35.0	16.0	32.0				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	22.0	35.0	9.0	29.0	27.0	30.0	11.0	27.0				
Max Q Clear Time (g_c+I1), s	17.0	14.4	7.8	32.1	29.0	31.0	13.0	29.0				
Green Ext Time (p_c), s	0.8	7.0	0.1	0.0	0.0	0.0	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay	118.9											
HCM 2010 LOS	F											

HCM Signalized Intersection Capacity Analysis

5: Loveridge Rd & SR4 EB Off Ramp/SR4 EB On Ramp

12/4/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	687	2	727	0	0	0	0	800	200	85	621	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	5.0					4.5	4.5	4.5	4.5	
Lane Util. Factor	0.95	0.95	1.00					0.95	1.00	0.97	0.95	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1681	1686	1583					3539	1583	3433	3539	
Flt Permitted	0.95	0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1681	1686	1583					3539	1583	3433	3539	
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)	747	2	790	0	0	0	0	870	217	92	675	0
RTOR Reduction (vph)	0	0	91	0	0	0	0	0	111	0	0	0
Lane Group Flow (vph)	373	376	699	0	0	0	0	870	106	92	675	0
Turn Type	Prot	NA	Perm					NA	Perm	Prot	NA	
Protected Phases	7	4						2		1	6	
Permitted Phases			4						2			
Actuated Green, G (s)	40.0	40.0	39.0					31.3	31.3	6.6	42.4	
Effective Green, g (s)	40.0	40.0	39.0					31.3	31.3	6.6	42.4	
Actuated g/C Ratio	0.44	0.44	0.43					0.34	0.34	0.07	0.47	
Clearance Time (s)	4.0	5.0	5.0					4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	739	741	679					1218	545	249	1650	
v/s Ratio Prot	0.22	0.22						c0.25		0.03	c0.19	
v/s Ratio Perm			c0.44						0.07			
v/c Ratio	0.50	0.51	1.03					0.71	0.19	0.37	0.41	
Uniform Delay, d1	18.3	18.3	26.0					25.9	20.9	40.2	16.0	
Progression Factor	1.00	1.00	1.00					1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.5	0.5	42.4					3.6	0.8	0.9	0.8	
Delay (s)	18.9	18.9	68.3					29.5	21.7	41.1	16.7	
Level of Service	B	B	E					C	C	D	B	
Approach Delay (s)		44.3			0.0			28.0			19.7	
Approach LOS		D			A			C			B	
Intersection Summary												
HCM 2000 Control Delay			33.5		HCM 2000 Level of Service					C		
HCM 2000 Volume to Capacity ratio			0.86									
Actuated Cycle Length (s)			90.9		Sum of lost time (s)					14.0		
Intersection Capacity Utilization			70.1%		ICU Level of Service					C		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 2010 Signalized Intersection Summary

6: Loveridge Rd & California Ave/Park Blvd

12/4/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	159	503	562	62	255	15	341	448	191	80	383	316
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	173	547	611	67	277	16	371	487	208	87	416	343
Adj No. of Lanes	2	1	1	2	2	0	2	2	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	211	506	430	186	899	52	392	1040	441	109	1333	596
Arrive On Green	0.06	0.27	0.27	0.05	0.26	0.26	0.11	0.43	0.43	0.06	0.38	0.38
Sat Flow, veh/h	3442	1863	1583	3442	3402	196	3442	2422	1029	1774	3539	1583
Grp Volume(v), veh/h	173	547	611	67	143	150	371	355	340	87	416	343
Grp Sat Flow(s),veh/h/ln	1721	1863	1583	1721	1770	1828	1721	1770	1681	1774	1770	1583
Q Serve(g_s), s	5.7	31.0	31.0	2.1	7.4	7.5	12.2	16.4	16.5	5.5	9.5	19.7
Cycle Q Clear(g_c), s	5.7	31.0	31.0	2.1	7.4	7.5	12.2	16.4	16.5	5.5	9.5	19.7
Prop In Lane	1.00		1.00	1.00		0.11	1.00		0.61	1.00		1.00
Lane Grp Cap(c), veh/h	211	506	430	186	468	483	392	760	722	109	1333	596
V/C Ratio(X)	0.82	1.08	1.42	0.36	0.31	0.31	0.95	0.47	0.47	0.80	0.31	0.58
Avail Cap(c_a), veh/h	211	506	430	211	481	496	392	760	722	109	1333	596
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.0	41.6	41.6	52.1	33.6	33.7	50.2	23.3	23.3	52.9	25.1	28.3
Incr Delay (d2), s/veh	20.7	63.8	202.7	0.4	0.1	0.1	31.7	2.1	2.2	31.1	0.6	4.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	24.8	37.7	1.0	3.6	3.8	7.5	8.4	8.1	3.6	4.7	9.3
LnGrp Delay(d),s/veh	73.6	105.4	244.3	52.5	33.8	33.8	81.9	25.3	25.5	83.9	25.7	32.3
LnGrp LOS	E	F	F	D	C	C	F	C	C	F	C	C
Approach Vol, veh/h	1331				360			1066			846	
Approach Delay, s/veh	165.0				37.3			45.1			34.4	
Approach LOS	F				D			D			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.0	55.0	11.2	36.0	18.0	49.0	12.0	35.2				
Change Period (Y+Rc), s	5.0	6.0	5.0	5.0	5.0	6.0	5.0	5.0				
Max Green Setting (Gmax), s	7.0	49.0	7.0	31.0	13.0	43.0	7.0	31.0				
Max Q Clear Time (g_c+l1), s	7.5	18.5	4.1	33.0	14.2	21.7	7.7	9.5				
Green Ext Time (p_c), s	0.0	5.1	0.0	0.0	0.0	4.9	0.0	4.0				
Intersection Summary												
HCM 2010 Ctrl Delay	86.1											
HCM 2010 LOS	F											

HCM Signalized Intersection Capacity Analysis

7: SR4 WB Ramps/Loveridge Center Driveway & California Ave

12/4/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	28	408	16	690	281	105	33	31	299	86	43	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5		3.5	4.5	4.5	3.5	3.5	3.5	3.5	3.5	
Lane Util. Factor	1.00	0.95		0.97	0.95	1.00	0.95	0.95	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	0.99	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3520		3433	3539	1583	1681	1760	1583	1770	1822	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	0.99	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3520		3433	3539	1583	1681	1753	1583	1770	1822	
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)	30	443	17	750	305	114	36	34	325	93	47	8
RTOR Reduction (vph)	0	3	0	0	0	73	0	0	223	0	5	0
Lane Group Flow (vph)	30	457	0	750	305	41	32	38	102	93	50	0
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			
Actuated Green, G (s)	3.0	18.0		14.8	29.3	29.3	3.1	28.4	25.3	7.9	30.1	
Effective Green, g (s)	3.0	18.0		14.8	29.3	29.3	3.1	28.4	25.3	7.9	30.1	
Actuated g/C Ratio	0.04	0.22		0.18	0.36	0.36	0.04	0.35	0.31	0.10	0.37	
Clearance Time (s)	4.0	4.5		3.5	4.5	4.5	3.5	3.5	3.5	3.5	3.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	65	782		627	1280	572	64	614	494	172	677	
v/s Ratio Prot	0.02	c0.13		c0.22	0.09		0.02	0.00		c0.05	0.03	
v/s Ratio Perm						0.03		0.02	c0.06			
v/c Ratio	0.46	0.58		1.20	0.24	0.07	0.50	0.06	0.21	0.54	0.07	
Uniform Delay, d1	38.2	28.2		33.1	18.1	16.9	38.2	17.5	20.5	34.8	16.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	5.1	1.1		103.2	0.1	0.1	6.0	0.0	0.9	3.4	0.2	
Delay (s)	43.3	29.3		136.3	18.2	17.0	44.2	17.5	21.4	38.3	16.7	
Level of Service	D	C		F	B	B	D	B	C	D	B	
Approach Delay (s)		30.1			93.9			22.9			30.2	
Approach LOS		C			F			C			C	
Intersection Summary												
HCM 2000 Control Delay			62.7				HCM 2000 Level of Service		E			
HCM 2000 Volume to Capacity ratio			0.57									
Actuated Cycle Length (s)			81.0				Sum of lost time (s)		15.5			
Intersection Capacity Utilization			53.3%				ICU Level of Service		A			
Analysis Period (min)			15									
c Critical Lane Group												

P.M. PEAK

HCM METHODOLOGY

HCM 2010 Signalized Intersection Summary

1: Buchanan Rd & Loveridge Rd

12/4/2014

								
Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations								
Volume (veh/h)	438	865	378	171	501	265		
Number	7	4	8	18	1	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	476	940	411	186	545	288		
Adj No. of Lanes	1	1	1	1	1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	369	1134	633	538	466	416		
Arrive On Green	0.21	0.61	0.34	0.34	0.26	0.26		
Sat Flow, veh/h	1774	1863	1863	1583	1774	1583		
Grp Volume(v), veh/h	476	940	411	186	545	288		
Grp Sat Flow(s),veh/h/ln	1774	1863	1863	1583	1774	1583		
Q Serve(g_s), s	17.0	32.6	15.3	7.2	21.5	13.4		
Cycle Q Clear(g_c), s	17.0	32.6	15.3	7.2	21.5	13.4		
Prop In Lane	1.00			1.00	1.00	1.00		
Lane Grp Cap(c), veh/h	369	1134	633	538	466	416		
V/C Ratio(X)	1.29	0.83	0.65	0.35	1.17	0.69		
Avail Cap(c_a), veh/h	369	1321	820	697	466	416		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	32.4	12.6	22.9	20.2	30.1	27.2		
Incr Delay (d2), s/veh	149.9	4.0	1.1	0.4	96.9	9.1		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	23.5	17.7	8.1	3.2	22.9	12.4		
LnGrp Delay(d),s/veh	182.3	16.6	24.0	20.6	127.0	36.3		
LnGrp LOS	F	B	C	C	F	D		
Approach Vol, veh/h		1416	597		833			
Approach Delay, s/veh		72.3	22.9		95.7			
Approach LOS		E	C		F			
Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				54.8		27.0	22.0	32.8
Change Period (Y+Rc), s				5.0		5.5	5.0	5.0
Max Green Setting (Gmax), s				58.0		21.5	17.0	36.0
Max Q Clear Time (g_c+l1), s				34.6		23.5	19.0	17.3
Green Ext Time (p_c), s				12.0		0.0	0.0	10.5
Intersection Summary								
HCM 2010 Ctrl Delay			68.8					
HCM 2010 LOS			E					

HCM 2010 Signalized Intersection Summary

2: Loveridge Rd & Stoneman Ave

12/4/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	253	96	162	49	30	50	97	464	36	154	721	184
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	275	104	176	53	33	54	105	504	39	167	784	200
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	316	132	223	109	177	150	144	1345	104	206	1227	313
Arrive On Green	0.18	0.21	0.21	0.06	0.09	0.09	0.08	0.40	0.40	0.12	0.44	0.44
Sat Flow, veh/h	1774	623	1054	1774	1863	1583	1774	3330	257	1774	2794	713
Grp Volume(v), veh/h	275	0	280	53	33	54	105	267	276	167	497	487
Grp Sat Flow(s),veh/h/ln	1774	0	1677	1774	1863	1583	1774	1770	1817	1774	1770	1737
Q Serve(g_s), s	11.7	0.0	12.2	2.2	1.3	2.5	4.5	8.2	8.3	7.1	16.9	16.9
Cycle Q Clear(g_c), s	11.7	0.0	12.2	2.2	1.3	2.5	4.5	8.2	8.3	7.1	16.9	16.9
Prop In Lane	1.00		0.63	1.00		1.00	1.00		0.14	1.00		0.41
Lane Grp Cap(c), veh/h	316	0	355	109	177	150	144	715	734	206	777	763
V/C Ratio(X)	0.87	0.00	0.79	0.49	0.19	0.36	0.73	0.37	0.38	0.81	0.64	0.64
Avail Cap(c_a), veh/h	435	0	823	160	626	532	458	715	734	619	777	763
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.9	0.0	28.9	35.1	32.3	32.8	34.8	16.2	16.2	33.4	16.9	16.9
Incr Delay (d2), s/veh	10.4	0.0	3.9	1.2	0.5	1.4	2.7	1.5	1.5	2.9	4.0	4.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.6	0.0	6.1	1.1	0.7	1.1	2.3	4.3	4.4	3.6	9.1	9.0
LnGrp Delay(d),s/veh	41.3	0.0	32.8	36.4	32.8	34.3	37.4	17.7	17.7	36.2	20.9	21.0
LnGrp LOS	D		C	D	C	C	D	B	B	D	C	C
Approach Vol, veh/h		555			140			648			1151	
Approach Delay, s/veh		37.0			34.7			20.9			23.2	
Approach LOS		D			C			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.0	35.3	8.8	20.4	10.3	38.0	17.8	11.4				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	27.0	27.0	7.0	38.0	20.0	34.0	19.0	26.0				
Max Q Clear Time (g_c+l1), s	9.1	10.3	4.2	14.2	6.5	18.9	13.7	4.5				
Green Ext Time (p_c), s	0.2	5.5	0.0	2.2	0.1	5.3	0.2	2.1				
Intersection Summary												
HCM 2010 Ctrl Delay			26.3									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary

3: Loveridge Rd & Driveway

12/4/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	0	1	0	0	0	1	767	0	0	1461	1
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1863	1863	0	0	1863	1900
Adj Flow Rate, veh/h	1	0	1	0	0	0	1	834	0	0	1588	1
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	0	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	0	0	2	2
Cap, veh/h	0	0	6	0	7	0	3	3062	0	0	2895	2
Arrive On Green	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.87	0.00	0.00	0.80	0.80
Sat Flow, veh/h	0	0	1583	0	1863	0	1774	3632	0	0	3723	2
Grp Volume(v), veh/h	0	0	1	0	0	0	1	834	0	0	774	815
Grp Sat Flow(s),veh/h/ln	0	0	1583	0	1863	0	1774	1770	0	0	1770	1862
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.2	0.0	0.0	12.0	12.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.2	0.0	0.0	12.0	12.0
Prop In Lane	0.00		1.00	0.00		0.00	1.00		0.00	0.00		0.00
Lane Grp Cap(c), veh/h	0	0	6	0	7	0	3	3062	0	0	1412	1485
V/C Ratio(X)	0.00	0.00	0.17	0.00	0.00	0.00	0.29	0.27	0.00	0.00	0.55	0.55
Avail Cap(c_a), veh/h	0	0	809	0	659	0	209	3062	0	0	1412	1485
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	37.9	0.0	0.0	0.0	38.0	0.9	0.0	0.0	2.8	2.8
Incr Delay (d2), s/veh	0.0	0.0	12.4	0.0	0.0	0.0	41.7	0.2	0.0	0.0	1.5	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.6	0.0	0.0	6.2	6.5
LnGrp Delay(d),s/veh	0.0	0.0	50.3	0.0	0.0	0.0	79.8	1.1	0.0	0.0	4.3	4.2
LnGrp LOS			D				E	A			A	A
Approach Vol, veh/h		1			0			835			1589	
Approach Delay, s/veh		50.3			0.0			1.2			4.3	
Approach LOS		D						A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s		71.0		5.3	5.1	65.9	0.0	5.3				
Change Period (Y+Rc), s		5.0		5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s		66.0		39.0	9.0	52.0	7.0	27.0				
Max Q Clear Time (g_c+l1), s		5.2		2.0	2.0	14.0	0.0	0.0				
Green Ext Time (p_c), s		35.8		0.0	0.0	26.6	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			3.2									
HCM 2010 LOS			A									

HCM 2010 Signalized Intersection Summary

4: Loveridge Rd & Leland Rd

12/4/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 		 	 			 		 	 	
Volume (veh/h)	376	710	201	354	381	268	194	439	188	398	817	142
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	409	772	218	385	414	291	211	477	204	433	888	154
Adj No. of Lanes	2	2	1	2	2	1	1	2	1	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	352	900	403	288	834	373	246	1153	516	515	1192	533
Arrive On Green	0.10	0.25	0.25	0.08	0.24	0.24	0.14	0.33	0.33	0.15	0.34	0.34
Sat Flow, veh/h	3442	3539	1583	3442	3539	1583	1774	3539	1583	3442	3539	1583
Grp Volume(v), veh/h	409	772	218	385	414	291	211	477	204	433	888	154
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1770	1583	1774	1770	1583	1721	1770	1583
Q Serve(g_s), s	11.0	22.3	12.8	9.0	10.9	18.5	12.5	11.3	10.7	13.1	23.9	7.7
Cycle Q Clear(g_c), s	11.0	22.3	12.8	9.0	10.9	18.5	12.5	11.3	10.7	13.1	23.9	7.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	352	900	403	288	834	373	246	1153	516	515	1192	533
V/C Ratio(X)	1.16	0.86	0.54	1.33	0.50	0.78	0.86	0.41	0.40	0.84	0.75	0.29
Avail Cap(c_a), veh/h	352	956	428	288	890	398	446	1153	516	705	1192	533
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.2	38.2	34.6	49.2	35.5	38.4	45.2	28.2	28.0	44.4	31.5	26.2
Incr Delay (d2), s/veh	99.1	7.1	0.7	172.5	0.2	8.3	8.3	1.1	2.3	6.6	4.3	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.0	11.8	5.7	11.2	5.3	8.9	6.7	5.7	5.0	6.7	12.3	3.5
LnGrp Delay(d),s/veh	147.3	45.3	35.3	221.7	35.8	46.7	53.5	29.3	30.3	51.0	35.8	27.5
LnGrp LOS	F	D	D	F	D	D	D	C	C	D	D	C
Approach Vol, veh/h	1399				1090			892			1475	
Approach Delay, s/veh	73.6				104.3			35.3			39.4	
Approach LOS	E				F			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	21.1	40.0	14.0	32.3	19.9	41.2	16.0	30.3				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	22.0	35.0	9.0	29.0	27.0	30.0	11.0	27.0				
Max Q Clear Time (g_c+I1), s	15.1	13.3	11.0	24.3	14.5	25.9	13.0	20.5				
Green Ext Time (p_c), s	0.9	8.6	0.0	3.0	0.5	2.8	0.0	3.9				
Intersection Summary												
HCM 2010 Ctrl Delay	63.1											
HCM 2010 LOS	E											

HCM Signalized Intersection Capacity Analysis

5: Loveridge Rd & SR4 EB Off Ramp/SR4 EB On Ramp

12/4/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	687	2	740	0	0	0	0	1028	275	260	612	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	5.0					4.5	4.5	4.5	4.5	
Lane Util. Factor	0.95	0.95	1.00					0.95	1.00	0.97	0.95	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1681	1686	1583					3539	1583	3433	3539	
Flt Permitted	0.95	0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1681	1686	1583					3539	1583	3433	3539	
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)	747	2	804	0	0	0	0	1117	299	283	665	0
RTOR Reduction (vph)	0	0	93	0	0	0	0	0	126	0	0	0
Lane Group Flow (vph)	373	376	711	0	0	0	0	1117	173	283	665	0
Turn Type	Prot	NA	Perm					NA	Perm	Prot	NA	
Protected Phases	7	4						2		1	6	
Permitted Phases			4						2			
Actuated Green, G (s)	40.0	40.0	39.0					27.3	27.3	9.7	41.5	
Effective Green, g (s)	40.0	40.0	39.0					27.3	27.3	9.7	41.5	
Actuated g/C Ratio	0.44	0.44	0.43					0.30	0.30	0.11	0.46	
Clearance Time (s)	4.0	5.0	5.0					4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	747	749	685					1073	480	370	1631	
v/s Ratio Prot	0.22	0.22						c0.32		c0.08	0.19	
v/s Ratio Perm			c0.45						0.11			
v/c Ratio	0.50	0.50	1.04					1.04	0.36	0.76	0.41	
Uniform Delay, d1	17.9	17.9	25.5					31.4	24.5	39.0	16.1	
Progression Factor	1.00	1.00	1.00					1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.5	0.5	44.6					38.7	2.1	9.1	0.8	
Delay (s)	18.4	18.4	70.1					70.1	26.6	48.1	16.9	
Level of Service	B	B	E					E	C	D	B	
Approach Delay (s)		45.2			0.0			60.9			26.2	
Approach LOS		D			A			E			C	
Intersection Summary												
HCM 2000 Control Delay			46.3		HCM 2000 Level of Service					D		
HCM 2000 Volume to Capacity ratio			1.00									
Actuated Cycle Length (s)			90.0		Sum of lost time (s)					14.0		
Intersection Capacity Utilization			70.7%		ICU Level of Service					C		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 2010 Signalized Intersection Summary

6: Loveridge Rd & California Ave/Park Blvd

12/4/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	181	465	345	107	355	27	479	815	396	65	395	346
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	197	505	375	116	386	29	521	886	430	71	429	376
Adj No. of Lanes	2	1	1	2	2	0	2	2	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	210	503	427	205	896	67	390	1005	483	97	1325	593
Arrive On Green	0.06	0.27	0.27	0.06	0.27	0.27	0.11	0.43	0.43	0.05	0.37	0.37
Sat Flow, veh/h	3442	1863	1583	3442	3338	250	3442	2321	1115	1774	3539	1583
Grp Volume(v), veh/h	197	505	375	116	204	211	521	674	642	71	429	376
Grp Sat Flow(s),veh/h/ln	1721	1863	1583	1721	1770	1819	1721	1770	1666	1774	1770	1583
Q Serve(g_s), s	6.5	31.0	26.0	3.8	10.9	11.0	13.0	40.0	40.9	4.5	9.9	22.4
Cycle Q Clear(g_c), s	6.5	31.0	26.0	3.8	10.9	11.0	13.0	40.0	40.9	4.5	9.9	22.4
Prop In Lane	1.00		1.00	1.00		0.14	1.00		0.67	1.00		1.00
Lane Grp Cap(c), veh/h	210	503	427	205	475	488	390	766	721	97	1325	593
V/C Ratio(X)	0.94	1.00	0.88	0.57	0.43	0.43	1.34	0.88	0.89	0.73	0.32	0.63
Avail Cap(c_a), veh/h	210	503	427	210	478	491	390	766	721	108	1325	593
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.7	41.9	40.1	52.6	34.7	34.8	50.9	29.8	30.0	53.5	25.6	29.5
Incr Delay (d2), s/veh	44.6	41.2	17.7	2.0	0.2	0.2	168.2	13.6	15.5	16.5	0.6	5.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.4	21.5	13.4	1.8	5.4	5.5	15.2	22.4	21.8	2.7	4.9	10.6
LnGrp Delay(d),s/veh	98.3	83.1	57.8	54.6	35.0	35.0	219.1	43.4	45.5	69.9	26.2	34.6
LnGrp LOS	F	F	E	D	C	C	F	D	D	E	C	C
Approach Vol, veh/h	1077				531			1837			876	
Approach Delay, s/veh	77.1				39.3			94.0			33.3	
Approach LOS	E				D			F			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.3	55.7	11.8	36.0	18.0	49.0	12.0	35.8				
Change Period (Y+Rc), s	5.0	6.0	5.0	5.0	5.0	6.0	5.0	5.0				
Max Green Setting (Gmax), s	7.0	49.0	7.0	31.0	13.0	43.0	7.0	31.0				
Max Q Clear Time (g_c+l1), s	6.5	42.9	5.8	33.0	15.0	24.4	8.5	13.0				
Green Ext Time (p_c), s	0.0	4.0	0.0	0.0	0.0	8.2	0.0	3.7				
Intersection Summary												
HCM 2010 Ctrl Delay	70.7											
HCM 2010 LOS	E											

HCM Signalized Intersection Capacity Analysis

7: SR4 WB Ramps/Loveridge Center Driveway & California Ave

12/4/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	76	477	17	660	380	269	41	73	350	96	43	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5		3.5	4.5	4.5	3.5	3.5	3.5	3.5	3.5	
Lane Util. Factor	1.00	0.95		0.97	0.95	1.00	0.95	0.95	1.00	1.00	1.00	
Flt Protected	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3521		3433	3539	1583	1681	1764	1583	1770	1822	
Satd. Flow (perm)	1770	3521		3433	3539	1583	1681	1761	1583	1770	1822	
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)	83	518	18	717	413	292	45	79	380	104	47	8
RTOR Reduction (vph)	0	2	0	0	0	201	0	0	265	0	5	0
Lane Group Flow (vph)	83	534	0	717	413	91	40	84	115	104	50	0
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			
Actuated Green, G (s)	7.7	18.9		14.8	25.5	25.5	4.8	29.5	24.7	8.5	28.4	
Effective Green, g (s)	7.7	18.9		14.8	25.5	25.5	4.8	29.5	24.7	8.5	28.4	
Actuated g/C Ratio	0.09	0.23		0.18	0.31	0.31	0.06	0.36	0.30	0.10	0.35	
Clearance Time (s)	4.0	4.5		3.5	4.5	4.5	3.5	3.5	3.5	3.5	3.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	166	812		620	1101	492	98	634	477	183	631	
v/s Ratio Prot	0.05	c0.15		c0.21	0.12		0.02	0.01		c0.06	0.03	
v/s Ratio Perm						0.06		0.04	c0.07			
v/c Ratio	0.50	0.66		1.16	0.38	0.18	0.41	0.13	0.24	0.57	0.08	
Uniform Delay, d1	35.3	28.6		33.6	22.0	20.6	37.2	17.6	21.5	35.0	18.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.4	1.9		87.6	0.2	0.2	2.8	0.1	1.2	4.0	0.2	
Delay (s)	37.6	30.5		121.2	22.2	20.8	39.9	17.7	22.7	39.0	18.2	
Level of Service	D	C		F	C	C	D	B	C	D	B	
Approach Delay (s)		31.5			71.8			23.3			31.8	
Approach LOS		C			E			C			C	
Intersection Summary												
HCM 2000 Control Delay			51.2			HCM 2000 Level of Service			D			
HCM 2000 Volume to Capacity ratio			0.61									
Actuated Cycle Length (s)			81.9			Sum of lost time (s)			15.5			
Intersection Capacity Utilization			55.0%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

Cumulative Baseline with Project Condition

A.M. Peak

HCM METHODOLOGY

HCM 2010 Signalized Intersection Summary

1: Buchanan Rd & Loveridge Rd

12/4/2014

								
Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations								
Volume (veh/h)	265	410	602	434	388	203		
Number	7	4	8	18	1	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	288	446	654	472	422	221		
Adj No. of Lanes	1	1	1	1	1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	323	1180	734	624	437	390		
Arrive On Green	0.18	0.63	0.39	0.39	0.25	0.25		
Sat Flow, veh/h	1774	1863	1863	1583	1774	1583		
Grp Volume(v), veh/h	288	446	654	472	422	221		
Grp Sat Flow(s),veh/h/ln	1774	1863	1863	1583	1774	1583		
Q Serve(g_s), s	13.8	10.1	28.6	22.5	20.5	10.7		
Cycle Q Clear(g_c), s	13.8	10.1	28.6	22.5	20.5	10.7		
Prop In Lane	1.00			1.00	1.00	1.00		
Lane Grp Cap(c), veh/h	323	1180	734	624	437	390		
V/C Ratio(X)	0.89	0.38	0.89	0.76	0.97	0.57		
Avail Cap(c_a), veh/h	346	1238	768	653	437	390		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	34.8	7.7	24.7	22.8	32.5	28.8		
Incr Delay (d2), s/veh	22.2	0.2	12.3	4.9	35.2	5.9		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	8.8	5.1	17.0	10.5	14.4	10.0		
LnGrp Delay(d),s/veh	57.0	7.9	37.0	27.7	67.8	34.7		
LnGrp LOS	E	A	D	C	E	C		
Approach Vol, veh/h		734	1126		643			
Approach Delay, s/veh		27.2	33.1		56.4			
Approach LOS		C	C		E			
Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				60.3		27.0	20.9	39.4
Change Period (Y+Rc), s				5.0		5.5	5.0	5.0
Max Green Setting (Gmax), s				58.0		21.5	17.0	36.0
Max Q Clear Time (g_c+l1), s				12.1		22.5	15.8	30.6
Green Ext Time (p_c), s				12.9		0.0	0.1	3.8
Intersection Summary								
HCM 2010 Ctrl Delay			37.4					
HCM 2010 LOS			D					

HCM 2010 Signalized Intersection Summary

2: Loveridge Rd & Stoneman Ave

12/4/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	214	73	62	39	80	116	185	671	38	326	389	187
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	233	79	67	42	87	126	201	729	41	354	423	203
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	271	205	174	92	221	188	239	1085	61	392	944	448
Arrive On Green	0.15	0.22	0.22	0.05	0.12	0.12	0.13	0.32	0.32	0.22	0.41	0.41
Sat Flow, veh/h	1774	932	791	1774	1863	1583	1774	3407	192	1774	2330	1107
Grp Volume(v), veh/h	233	0	146	42	87	126	201	378	392	354	320	306
Grp Sat Flow(s),veh/h/ln	1774	0	1723	1774	1863	1583	1774	1770	1829	1774	1770	1667
Q Serve(g_s), s	10.9	0.0	6.1	1.9	3.7	6.5	9.4	15.7	15.7	16.5	11.1	11.3
Cycle Q Clear(g_c), s	10.9	0.0	6.1	1.9	3.7	6.5	9.4	15.7	15.7	16.5	11.1	11.3
Prop In Lane	1.00		0.46	1.00		1.00	1.00		0.10	1.00		0.66
Lane Grp Cap(c), veh/h	271	0	379	92	221	188	239	564	583	392	717	675
V/C Ratio(X)	0.86	0.00	0.39	0.46	0.39	0.67	0.84	0.67	0.67	0.90	0.45	0.45
Avail Cap(c_a), veh/h	398	0	772	146	571	486	419	564	583	565	717	675
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.0	0.0	28.2	39.0	34.5	35.8	35.8	25.0	25.0	32.1	18.3	18.4
Incr Delay (d2), s/veh	8.6	0.0	0.6	1.3	1.1	4.1	3.1	6.3	6.1	10.6	2.0	2.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.0	0.0	3.0	1.0	2.0	3.0	4.8	8.7	8.9	9.2	5.8	5.6
LnGrp Delay(d),s/veh	43.6	0.0	28.8	40.3	35.7	39.8	38.9	31.3	31.1	42.8	20.3	20.6
LnGrp LOS	D		C	D	D	D	D	C	C	D	C	C
Approach Vol, veh/h		379			255			971			980	
Approach Delay, s/veh		37.9			38.5			32.8			28.5	
Approach LOS		D			D			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	22.8	31.0	8.4	22.6	15.4	38.3	16.9	14.1				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	27.0	27.0	7.0	38.0	20.0	34.0	19.0	26.0				
Max Q Clear Time (g_c+l1), s	18.5	17.7	3.9	8.1	11.4	13.3	12.9	8.5				
Green Ext Time (p_c), s	0.3	3.7	0.0	1.8	0.1	5.2	0.1	1.6				
Intersection Summary												
HCM 2010 Ctrl Delay			32.5									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary

3: Loveridge Rd & Driveway

12/4/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	0	1	0	0	0	1	1000	0	0	1003	1
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1863	1863	0	0	1863	1900
Adj Flow Rate, veh/h	1	0	1	0	0	0	1	1087	0	0	1090	1
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	0	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	0	0	2	2
Cap, veh/h	0	0	6	0	7	0	3	3062	0	0	2894	3
Arrive On Green	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.87	0.00	0.00	0.80	0.80
Sat Flow, veh/h	0	0	1583	0	1863	0	1774	3632	0	0	3722	3
Grp Volume(v), veh/h	0	0	1	0	0	0	1	1087	0	0	532	559
Grp Sat Flow(s),veh/h/ln	0	0	1583	0	1863	0	1774	1770	0	0	1770	1862
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.6	0.0	0.0	6.6	6.6
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.6	0.0	0.0	6.6	6.6
Prop In Lane	0.00		1.00	0.00		0.00	1.00		0.00	0.00		0.00
Lane Grp Cap(c), veh/h	0	0	6	0	7	0	3	3062	0	0	1412	1485
V/C Ratio(X)	0.00	0.00	0.17	0.00	0.00	0.00	0.29	0.36	0.00	0.00	0.38	0.38
Avail Cap(c_a), veh/h	0	0	809	0	659	0	209	3062	0	0	1412	1485
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	37.9	0.0	0.0	0.0	38.0	1.0	0.0	0.0	2.2	2.2
Incr Delay (d2), s/veh	0.0	0.0	12.4	0.0	0.0	0.0	41.7	0.3	0.0	0.0	0.8	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.1	2.3	0.0	0.0	3.4	3.6
LnGrp Delay(d),s/veh	0.0	0.0	50.3	0.0	0.0	0.0	79.8	1.3	0.0	0.0	3.0	3.0
LnGrp LOS			D				E	A			A	A
Approach Vol, veh/h		1			0			1088			1091	
Approach Delay, s/veh		50.3			0.0			1.4			3.0	
Approach LOS		D						A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s		71.0		5.3	5.1	65.9	0.0	5.3				
Change Period (Y+Rc), s		5.0		5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s		66.0		39.0	9.0	52.0	7.0	27.0				
Max Q Clear Time (g_c+I1), s		6.6		2.0	2.0	8.6	0.0	0.0				
Green Ext Time (p_c), s		28.8		0.0	0.0	24.7	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			2.2									
HCM 2010 LOS			A									

HCM 2010 Signalized Intersection Summary

4: Loveridge Rd & Leland Rd

12/4/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	486	678	513	164	838	105	533	459	145	423	527	371
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	528	737	558	178	911	114	579	499	158	460	573	403
Adj No. of Lanes	2	2	1	2	2	1	1	2	1	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	329	927	415	236	831	372	417	1206	540	533	923	413
Arrive On Green	0.10	0.26	0.26	0.07	0.23	0.23	0.23	0.34	0.34	0.15	0.26	0.26
Sat Flow, veh/h	3442	3539	1583	3442	3539	1583	1774	3539	1583	3442	3539	1583
Grp Volume(v), veh/h	528	737	558	178	911	114	579	499	158	460	573	403
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1770	1583	1774	1770	1583	1721	1770	1583
Q Serve(g_s), s	11.0	22.3	30.1	5.8	27.0	6.8	27.0	12.4	8.4	15.0	16.4	29.0
Cycle Q Clear(g_c), s	11.0	22.3	30.1	5.8	27.0	6.8	27.0	12.4	8.4	15.0	16.4	29.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	329	927	415	236	831	372	417	1206	540	533	923	413
V/C Ratio(X)	1.60	0.80	1.35	0.75	1.10	0.31	1.39	0.41	0.29	0.86	0.62	0.98
Avail Cap(c_a), veh/h	329	927	415	269	831	372	417	1206	540	658	923	413
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.0	39.6	42.4	52.6	44.0	36.3	44.0	29.1	27.8	47.4	37.5	42.1
Incr Delay (d2), s/veh	285.6	4.6	170.9	10.1	60.9	0.2	189.8	1.0	1.4	9.7	3.1	38.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	18.3	11.4	32.8	3.1	20.2	3.0	35.1	6.3	3.9	7.9	8.4	17.1
LnGrp Delay(d),s/veh	337.6	44.1	213.3	62.7	104.9	36.5	233.8	30.1	29.1	57.1	40.6	80.8
LnGrp LOS	F	D	F	E	F	D	F	C	C	E	D	F
Approach Vol, veh/h	1823				1203				1236			
Approach Delay, s/veh	180.9				92.2				125.4			
Approach LOS	F				F				F			
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	22.8	44.2	12.9	35.1	32.0	35.0	16.0	32.0				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	22.0	35.0	9.0	29.0	27.0	30.0	11.0	27.0				
Max Q Clear Time (g_c+l1), s	17.0	14.4	7.8	32.1	29.0	31.0	13.0	29.0				
Green Ext Time (p_c), s	0.8	7.0	0.1	0.0	0.0	0.0	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay	118.9											
HCM 2010 LOS	F											

HCM Signalized Intersection Capacity Analysis

5: Loveridge Rd & SR4 EB Off Ramp/SR4 EB On Ramp

12/9/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	687	2	727	0	0	0	0	800	200	85	621	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	5.0					4.5	4.5	4.5	4.5	
Lane Util. Factor	0.95	0.95	1.00					0.95	1.00	0.97	0.95	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1681	1686	1583					3539	1583	3433	3539	
Flt Permitted	0.95	0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1681	1686	1583					3539	1583	3433	3539	
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)	747	2	790	0	0	0	0	870	217	92	675	0
RTOR Reduction (vph)	0	0	91	0	0	0	0	0	111	0	0	0
Lane Group Flow (vph)	373	376	699	0	0	0	0	870	106	92	675	0
Turn Type	Prot	NA	Perm					NA	Perm	Prot	NA	
Protected Phases	7	4						2		1	6	
Permitted Phases			4						2			
Actuated Green, G (s)	40.0	40.0	39.0					31.3	31.3	6.6	42.4	
Effective Green, g (s)	40.0	40.0	39.0					31.3	31.3	6.6	42.4	
Actuated g/C Ratio	0.44	0.44	0.43					0.34	0.34	0.07	0.47	
Clearance Time (s)	4.0	5.0	5.0					4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	739	741	679					1218	545	249	1650	
v/s Ratio Prot	0.22	0.22						c0.25		0.03	c0.19	
v/s Ratio Perm			c0.44						0.07			
v/c Ratio	0.50	0.51	1.03					0.71	0.19	0.37	0.41	
Uniform Delay, d1	18.3	18.3	26.0					25.9	20.9	40.2	16.0	
Progression Factor	1.00	1.00	1.00					1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.5	0.5	42.4					3.6	0.8	0.9	0.8	
Delay (s)	18.9	18.9	68.3					29.5	21.7	41.1	16.7	
Level of Service	B	B	E					C	C	D	B	
Approach Delay (s)		44.3			0.0			28.0			19.7	
Approach LOS		D			A			C			B	
Intersection Summary												
HCM 2000 Control Delay			33.5		HCM 2000 Level of Service				C			
HCM 2000 Volume to Capacity ratio			0.86									
Actuated Cycle Length (s)			90.9		Sum of lost time (s)				14.0			
Intersection Capacity Utilization			70.1%		ICU Level of Service				C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 2010 Signalized Intersection Summary

6: Loveridge Rd & California Ave/Park Blvd

12/4/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	159	503	562	62	255	15	341	448	191	80	383	316
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	173	547	611	67	277	16	371	487	208	87	416	343
Adj No. of Lanes	2	1	1	2	2	0	2	2	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	211	506	430	186	899	52	392	1040	441	109	1333	596
Arrive On Green	0.06	0.27	0.27	0.05	0.26	0.26	0.11	0.43	0.43	0.06	0.38	0.38
Sat Flow, veh/h	3442	1863	1583	3442	3402	196	3442	2422	1029	1774	3539	1583
Grp Volume(v), veh/h	173	547	611	67	143	150	371	355	340	87	416	343
Grp Sat Flow(s),veh/h/ln	1721	1863	1583	1721	1770	1828	1721	1770	1681	1774	1770	1583
Q Serve(g_s), s	5.7	31.0	31.0	2.1	7.4	7.5	12.2	16.4	16.5	5.5	9.5	19.7
Cycle Q Clear(g_c), s	5.7	31.0	31.0	2.1	7.4	7.5	12.2	16.4	16.5	5.5	9.5	19.7
Prop In Lane	1.00		1.00	1.00		0.11	1.00		0.61	1.00		1.00
Lane Grp Cap(c), veh/h	211	506	430	186	468	483	392	760	722	109	1333	596
V/C Ratio(X)	0.82	1.08	1.42	0.36	0.31	0.31	0.95	0.47	0.47	0.80	0.31	0.58
Avail Cap(c_a), veh/h	211	506	430	211	481	496	392	760	722	109	1333	596
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.0	41.6	41.6	52.1	33.6	33.7	50.2	23.3	23.3	52.9	25.1	28.3
Incr Delay (d2), s/veh	20.7	63.8	202.7	0.4	0.1	0.1	31.7	2.1	2.2	31.1	0.6	4.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	24.8	37.7	1.0	3.6	3.8	7.5	8.4	8.1	3.6	4.7	9.3
LnGrp Delay(d),s/veh	73.6	105.4	244.3	52.5	33.8	33.8	81.9	25.3	25.5	83.9	25.7	32.3
LnGrp LOS	E	F	F	D	C	C	F	C	C	F	C	C
Approach Vol, veh/h	1331				360			1066			846	
Approach Delay, s/veh	165.0				37.3			45.1			34.4	
Approach LOS	F				D			D			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.0	55.0	11.2	36.0	18.0	49.0	12.0	35.2				
Change Period (Y+Rc), s	5.0	6.0	5.0	5.0	5.0	6.0	5.0	5.0				
Max Green Setting (Gmax), s	7.0	49.0	7.0	31.0	13.0	43.0	7.0	31.0				
Max Q Clear Time (g_c+I1), s	7.5	18.5	4.1	33.0	14.2	21.7	7.7	9.5				
Green Ext Time (p_c), s	0.0	5.1	0.0	0.0	0.0	4.9	0.0	4.0				
Intersection Summary												
HCM 2010 Ctrl Delay	86.1											
HCM 2010 LOS	F											

HCM Signalized Intersection Capacity Analysis

7: SR4 WB Ramps/Loveridge Center Driveway & California Ave

12/9/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	26	257	15	347	518	250	276	86	692	140	83	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5		3.5	4.5	4.5	3.5	3.5	3.5	3.5	3.5	
Lane Util. Factor	1.00	0.95		0.97	0.95	1.00	0.95	0.95	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	0.97	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3510		3433	3539	1583	1681	1724	1583	1770	1806	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	0.82	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3510		3433	3539	1583	1681	1456	1583	1770	1806	
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)	28	279	16	377	563	272	300	93	752	152	90	23
RTOR Reduction (vph)	0	5	0	0	0	185	0	0	365	0	9	0
Lane Group Flow (vph)	28	290	0	377	563	87	195	198	387	152	104	0
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			
Actuated Green, G (s)	2.9	16.3		13.0	25.9	25.9	14.0	38.7	24.7	12.1	22.8	
Effective Green, g (s)	2.9	16.3		13.0	25.9	25.9	14.0	38.7	24.7	12.1	22.8	
Actuated g/C Ratio	0.04	0.20		0.16	0.32	0.32	0.17	0.48	0.30	0.15	0.28	
Clearance Time (s)	4.0	4.5		3.5	4.5	4.5	3.5	3.5	3.5	3.5	3.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	63	705		550	1130	505	290	741	482	264	507	
v/s Ratio Prot	0.02	0.08		c0.11	c0.16		c0.12	c0.05		0.09	0.06	
v/s Ratio Perm						0.05		0.08	c0.24			
v/c Ratio	0.44	0.41		0.69	0.50	0.17	0.67	0.27	0.80	0.58	0.21	
Uniform Delay, d1	38.3	28.2		32.1	22.3	19.9	31.4	12.7	26.0	32.1	22.2	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	4.9	0.4		3.5	0.3	0.2	6.0	0.2	13.2	3.0	0.9	
Delay (s)	43.2	28.6		35.7	22.7	20.0	37.4	12.9	39.2	35.1	23.2	
Level of Service	D	C		D	C	C	D	B	D	D	C	
Approach Delay (s)		29.9			26.1			34.3			30.0	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			30.1			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.72									
Actuated Cycle Length (s)			81.1			Sum of lost time (s)			15.5			
Intersection Capacity Utilization			69.4%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

P.M. PEAK

HCM METHODOLOGY

HCM 2010 Signalized Intersection Summary

1: Buchanan Rd & Loveridge Rd

12/9/2014

								
Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations								
Volume (veh/h)	444	865	378	171	501	269		
Number	7	4	8	18	1	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	483	940	411	186	545	292		
Adj No. of Lanes	1	1	1	1	1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	369	1134	633	538	466	416		
Arrive On Green	0.21	0.61	0.34	0.34	0.26	0.26		
Sat Flow, veh/h	1774	1863	1863	1583	1774	1583		
Grp Volume(v), veh/h	483	940	411	186	545	292		
Grp Sat Flow(s),veh/h/ln	1774	1863	1863	1583	1774	1583		
Q Serve(g_s), s	17.0	32.6	15.3	7.2	21.5	13.6		
Cycle Q Clear(g_c), s	17.0	32.6	15.3	7.2	21.5	13.6		
Prop In Lane	1.00			1.00	1.00	1.00		
Lane Grp Cap(c), veh/h	369	1134	633	538	466	416		
V/C Ratio(X)	1.31	0.83	0.65	0.35	1.17	0.70		
Avail Cap(c_a), veh/h	369	1321	820	697	466	416		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	32.4	12.6	22.9	20.2	30.1	27.2		
Incr Delay (d2), s/veh	157.7	4.0	1.1	0.4	96.9	9.5		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	24.3	17.7	8.1	3.2	22.9	12.6		
LnGrp Delay(d),s/veh	190.1	16.6	24.0	20.6	127.0	36.7		
LnGrp LOS	F	B	C	C	F	D		
Approach Vol, veh/h		1423	597		837			
Approach Delay, s/veh		75.5	22.9		95.5			
Approach LOS		E	C		F			
Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				54.8		27.0	22.0	32.8
Change Period (Y+Rc), s				5.0		5.5	5.0	5.0
Max Green Setting (Gmax), s				58.0		21.5	17.0	36.0
Max Q Clear Time (g_c+l1), s				34.6		23.5	19.0	17.3
Green Ext Time (p_c), s				12.0		0.0	0.0	10.5
Intersection Summary								
HCM 2010 Ctrl Delay			70.4					
HCM 2010 LOS			E					

HCM 2010 Signalized Intersection Summary

2: Loveridge Rd & Stoneman Ave

12/9/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	255	96	162	49	30	50	97	470	36	154	725	185
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	277	104	176	53	33	54	105	511	39	167	788	201
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	318	132	223	109	175	149	144	1346	102	206	1227	313
Arrive On Green	0.18	0.21	0.21	0.06	0.09	0.09	0.08	0.40	0.40	0.12	0.44	0.44
Sat Flow, veh/h	1774	623	1054	1774	1863	1583	1774	3334	254	1774	2794	713
Grp Volume(v), veh/h	277	0	280	53	33	54	105	271	279	167	499	490
Grp Sat Flow(s),veh/h/ln	1774	0	1677	1774	1863	1583	1774	1770	1818	1774	1770	1737
Q Serve(g_s), s	11.8	0.0	12.2	2.2	1.3	2.5	4.5	8.3	8.4	7.1	17.1	17.1
Cycle Q Clear(g_c), s	11.8	0.0	12.2	2.2	1.3	2.5	4.5	8.3	8.4	7.1	17.1	17.1
Prop In Lane	1.00		0.63	1.00		1.00	1.00		0.14	1.00		0.41
Lane Grp Cap(c), veh/h	318	0	355	109	175	149	144	715	734	206	777	763
V/C Ratio(X)	0.87	0.00	0.79	0.49	0.19	0.36	0.73	0.38	0.38	0.81	0.64	0.64
Avail Cap(c_a), veh/h	435	0	823	160	626	532	458	715	734	619	777	763
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.9	0.0	28.9	35.1	32.4	32.9	34.8	16.2	16.3	33.4	17.0	17.0
Incr Delay (d2), s/veh	10.7	0.0	3.9	1.2	0.5	1.5	2.7	1.5	1.5	2.9	4.1	4.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.7	0.0	6.1	1.1	0.7	1.1	2.3	4.4	4.5	3.6	9.2	9.0
LnGrp Delay(d),s/veh	41.5	0.0	32.8	36.4	32.9	34.4	37.4	17.8	17.8	36.2	21.0	21.1
LnGrp LOS	D		C	D	C	C	D	B	B	D	C	C
Approach Vol, veh/h		557			140			655			1156	
Approach Delay, s/veh		37.2			34.8			20.9			23.2	
Approach LOS		D			C			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.0	35.3	8.8	20.4	10.3	38.0	17.9	11.3				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	27.0	27.0	7.0	38.0	20.0	34.0	19.0	26.0				
Max Q Clear Time (g_c+l1), s	9.1	10.4	4.2	14.2	6.5	19.1	13.8	4.5				
Green Ext Time (p_c), s	0.2	5.6	0.0	2.2	0.1	5.3	0.2	2.1				
Intersection Summary												
HCM 2010 Ctrl Delay			26.4									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary

3: Loveridge Rd & Driveway

12/9/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	56	0	6	0	0	0	9	767	0	0	1461	87
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1863	1863	0	0	1863	1900
Adj Flow Rate, veh/h	61	0	7	0	0	0	10	834	0	0	1588	95
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	0	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	0	0	2	2
Cap, veh/h	0	0	107	0	126	0	31	2866	0	0	2482	148
Arrive On Green	0.00	0.00	0.07	0.00	0.00	0.00	0.02	0.81	0.00	0.00	0.73	0.73
Sat Flow, veh/h	0	0	1583	0	1863	0	1774	3632	0	0	3488	202
Grp Volume(v), veh/h	0	0	7	0	0	0	10	834	0	0	824	859
Grp Sat Flow(s),veh/h/ln	0	0	1583	0	1863	0	1774	1770	0	0	1770	1827
Q Serve(g_s), s	0.0	0.0	0.3	0.0	0.0	0.0	0.5	4.8	0.0	0.0	19.1	19.5
Cycle Q Clear(g_c), s	0.0	0.0	0.3	0.0	0.0	0.0	0.5	4.8	0.0	0.0	19.1	19.5
Prop In Lane	0.00		1.00	0.00		0.00	1.00		0.00	0.00		0.11
Lane Grp Cap(c), veh/h	0	0	107	0	126	0	31	2866	0	0	1294	1336
V/C Ratio(X)	0.00	0.00	0.07	0.00	0.00	0.00	0.32	0.29	0.00	0.00	0.64	0.64
Avail Cap(c_a), veh/h	0	0	758	0	617	0	196	2866	0	0	1294	1336
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	35.6	0.0	0.0	0.0	39.6	1.9	0.0	0.0	5.5	5.6
Incr Delay (d2), s/veh	0.0	0.0	0.3	0.0	0.0	0.0	5.9	0.3	0.0	0.0	2.4	2.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.2	0.0	0.0	0.0	0.3	2.3	0.0	0.0	10.0	10.4
LnGrp Delay(d),s/veh	0.0	0.0	35.8	0.0	0.0	0.0	45.5	2.2	0.0	0.0	7.9	8.0
LnGrp LOS			D				D	A			A	A
Approach Vol, veh/h		7			0			844			1683	
Approach Delay, s/veh		35.8			0.0			2.7			7.9	
Approach LOS		D						A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s		71.0		10.5	6.4	64.6	0.0	10.5				
Change Period (Y+Rc), s		5.0		5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s		66.0		39.0	9.0	52.0	7.0	27.0				
Max Q Clear Time (g_c+l1), s		6.8		2.3	2.5	21.5	0.0	0.0				
Green Ext Time (p_c), s		37.9		0.0	0.0	23.7	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			6.3									
HCM 2010 LOS			A									

HCM 2010 Signalized Intersection Summary

4: Loveridge Rd & Leland Rd

12/9/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 		 	 			 		 	 	
Volume (veh/h)	376	710	225	361	381	268	209	475	192	398	873	142
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	409	772	245	392	414	291	227	516	209	433	949	154
Adj No. of Lanes	2	2	1	2	2	1	1	2	1	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	352	901	403	288	835	374	263	1153	516	515	1159	519
Arrive On Green	0.10	0.25	0.25	0.08	0.24	0.24	0.15	0.33	0.33	0.15	0.33	0.33
Sat Flow, veh/h	3442	3539	1583	3442	3539	1583	1774	3539	1583	3442	3539	1583
Grp Volume(v), veh/h	409	772	245	392	414	291	227	516	209	433	949	154
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1770	1583	1774	1770	1583	1721	1770	1583
Q Serve(g_s), s	11.0	22.3	14.7	9.0	10.9	18.5	13.4	12.4	11.0	13.1	26.5	7.8
Cycle Q Clear(g_c), s	11.0	22.3	14.7	9.0	10.9	18.5	13.4	12.4	11.0	13.1	26.5	7.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	352	901	403	288	835	374	263	1153	516	515	1159	519
V/C Ratio(X)	1.16	0.86	0.61	1.36	0.50	0.78	0.86	0.45	0.41	0.84	0.82	0.30
Avail Cap(c_a), veh/h	352	955	427	288	890	398	446	1153	516	705	1159	519
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.2	38.2	35.3	49.2	35.5	38.4	44.7	28.6	28.1	44.4	33.2	26.9
Incr Delay (d2), s/veh	99.2	7.1	1.7	182.7	0.2	8.2	8.8	1.3	2.4	6.6	6.5	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.0	11.8	6.6	11.6	5.3	8.9	7.2	6.2	5.1	6.7	14.0	3.6
LnGrp Delay(d),s/veh	147.4	45.3	37.0	231.9	35.8	46.7	53.5	29.8	30.5	51.1	39.7	28.4
LnGrp LOS	F	D	D	F	D	D	D	C	C	D	D	C
Approach Vol, veh/h	1426				1097				952		1536	
Approach Delay, s/veh	73.2				108.7				35.6		41.8	
Approach LOS	E				F				D		D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	21.1	40.0	14.0	32.3	20.9	40.2	16.0	30.3				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	22.0	35.0	9.0	29.0	27.0	30.0	11.0	27.0				
Max Q Clear Time (g_c+I1), s	15.1	14.4	11.0	24.3	15.4	28.5	13.0	20.5				
Green Ext Time (p_c), s	0.9	9.1	0.0	3.0	0.5	1.2	0.0	3.9				
Intersection Summary												
HCM 2010 Ctrl Delay	64.2											
HCM 2010 LOS	E											

HCM Signalized Intersection Capacity Analysis

5: Loveridge Rd & SR4 EB Off Ramp/SR4 EB On Ramp

12/9/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	687	2	787	0	0	0	0	1058	281	260	621	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	5.0					4.5	4.5	4.5	4.5	
Lane Util. Factor	0.95	0.95	1.00					0.95	1.00	0.97	0.95	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1681	1686	1583					3539	1583	3433	3539	
Flt Permitted	0.95	0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1681	1686	1583					3539	1583	3433	3539	
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)	747	2	855	0	0	0	0	1150	305	283	675	0
RTOR Reduction (vph)	0	0	90	0	0	0	0	0	125	0	0	0
Lane Group Flow (vph)	373	376	765	0	0	0	0	1150	180	283	675	0
Turn Type	Prot	NA	Perm					NA	Perm	Prot	NA	
Protected Phases	7	4						2		1	6	
Permitted Phases			4						2			
Actuated Green, G (s)	40.0	40.0	39.0					27.3	27.3	9.7	41.5	
Effective Green, g (s)	40.0	40.0	39.0					27.3	27.3	9.7	41.5	
Actuated g/C Ratio	0.44	0.44	0.43					0.30	0.30	0.11	0.46	
Clearance Time (s)	4.0	5.0	5.0					4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	747	749	685					1073	480	370	1631	
v/s Ratio Prot	0.22	0.22						c0.32		c0.08	0.19	
v/s Ratio Perm			c0.48						0.11			
v/c Ratio	0.50	0.50	1.12					1.07	0.38	0.76	0.41	
Uniform Delay, d1	17.9	17.9	25.5					31.4	24.6	39.0	16.2	
Progression Factor	1.00	1.00	1.00					1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.5	0.5	71.1					48.9	2.2	9.1	0.8	
Delay (s)	18.4	18.4	96.6					80.2	26.9	48.1	16.9	
Level of Service	B	B	F					F	C	D	B	
Approach Delay (s)		60.1			0.0			69.0			26.1	
Approach LOS		E			A			E			C	
Intersection Summary												
HCM 2000 Control Delay			55.2		HCM 2000 Level of Service				E			
HCM 2000 Volume to Capacity ratio			1.05									
Actuated Cycle Length (s)			90.0		Sum of lost time (s)				14.0			
Intersection Capacity Utilization			73.8%		ICU Level of Service				D			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 2010 Signalized Intersection Summary

6: Loveridge Rd & California Ave/Park Blvd

12/9/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	181	465	354	107	355	27	509	815	396	65	395	346
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	197	505	385	116	386	29	553	886	430	71	429	376
Adj No. of Lanes	2	1	1	2	2	0	2	2	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	210	503	427	205	896	67	390	1005	483	97	1325	593
Arrive On Green	0.06	0.27	0.27	0.06	0.27	0.27	0.11	0.43	0.43	0.05	0.37	0.37
Sat Flow, veh/h	3442	1863	1583	3442	3338	250	3442	2321	1115	1774	3539	1583
Grp Volume(v), veh/h	197	505	385	116	204	211	553	674	642	71	429	376
Grp Sat Flow(s),veh/h/ln	1721	1863	1583	1721	1770	1819	1721	1770	1666	1774	1770	1583
Q Serve(g_s), s	6.5	31.0	26.9	3.8	10.9	11.0	13.0	40.0	40.9	4.5	9.9	22.4
Cycle Q Clear(g_c), s	6.5	31.0	26.9	3.8	10.9	11.0	13.0	40.0	40.9	4.5	9.9	22.4
Prop In Lane	1.00		1.00	1.00		0.14	1.00		0.67	1.00		1.00
Lane Grp Cap(c), veh/h	210	503	427	205	475	488	390	766	721	97	1325	593
V/C Ratio(X)	0.94	1.00	0.90	0.57	0.43	0.43	1.42	0.88	0.89	0.73	0.32	0.63
Avail Cap(c_a), veh/h	210	503	427	210	478	491	390	766	721	108	1325	593
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.7	41.9	40.4	52.6	34.7	34.8	50.9	29.8	30.0	53.5	25.6	29.5
Incr Delay (d2), s/veh	44.6	41.2	21.2	2.0	0.2	0.2	203.2	13.6	15.5	16.5	0.6	5.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.4	21.5	14.3	1.8	5.4	5.5	17.1	22.4	21.8	2.7	4.9	10.6
LnGrp Delay(d),s/veh	98.3	83.1	61.6	54.6	35.0	35.0	254.1	43.4	45.5	69.9	26.2	34.6
LnGrp LOS	F	F	E	D	C	C	F	D	D	E	C	C
Approach Vol, veh/h	1087				531			1869			876	
Approach Delay, s/veh	78.2				39.3			106.5			33.3	
Approach LOS	E				D			F			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.3	55.7	11.8	36.0	18.0	49.0	12.0	35.8				
Change Period (Y+Rc), s	5.0	6.0	5.0	5.0	5.0	6.0	5.0	5.0				
Max Green Setting (Gmax), s	7.0	49.0	7.0	31.0	13.0	43.0	7.0	31.0				
Max Q Clear Time (g_c+l1), s	6.5	42.9	5.8	33.0	15.0	24.4	8.5	13.0				
Green Ext Time (p_c), s	0.0	4.0	0.0	0.0	0.0	8.2	0.0	3.7				
Intersection Summary												
HCM 2010 Ctrl Delay	76.6											
HCM 2010 LOS	E											

HCM Signalized Intersection Capacity Analysis

7: SR4 WB Ramps/Loveridge Center Driveway & California Ave

12/9/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	76	477	17	690	380	269	41	73	359	96	43	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5		3.5	4.5	4.5	3.5	3.5	3.5	3.5	3.5	
Lane Util. Factor	1.00	0.95		0.97	0.95	1.00	0.95	0.95	1.00	1.00	1.00	
Flt Protected	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3521		3433	3539	1583	1681	1764	1583	1770	1822	
Satd. Flow (perm)	1770	3521		3433	3539	1583	1681	1761	1583	1770	1822	
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)	83	518	18	750	413	292	45	79	390	104	47	8
RTOR Reduction (vph)	0	2	0	0	0	201	0	0	272	0	5	0
Lane Group Flow (vph)	83	534	0	750	413	91	40	84	118	104	50	0
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			
Actuated Green, G (s)	7.7	18.9		14.8	25.5	25.5	4.8	29.5	24.7	8.5	28.4	
Effective Green, g (s)	7.7	18.9		14.8	25.5	25.5	4.8	29.5	24.7	8.5	28.4	
Actuated g/C Ratio	0.09	0.23		0.18	0.31	0.31	0.06	0.36	0.30	0.10	0.35	
Clearance Time (s)	4.0	4.5		3.5	4.5	4.5	3.5	3.5	3.5	3.5	3.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	166	812		620	1101	492	98	634	477	183	631	
v/s Ratio Prot	0.05	c0.15		c0.22	0.12		0.02	0.01		c0.06	0.03	
v/s Ratio Perm						0.06		0.04	c0.07			
v/c Ratio	0.50	0.66		1.21	0.38	0.18	0.41	0.13	0.25	0.57	0.08	
Uniform Delay, d1	35.3	28.6		33.6	22.0	20.6	37.2	17.6	21.6	35.0	18.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.4	1.9		108.9	0.2	0.2	2.8	0.1	1.2	4.0	0.2	
Delay (s)	37.6	30.5		142.4	22.2	20.8	39.9	17.7	22.8	39.0	18.2	
Level of Service	D	C		F	C	C	D	B	C	D	B	
Approach Delay (s)		31.5			83.9			23.3			31.8	
Approach LOS		C			F			C			C	
Intersection Summary												
HCM 2000 Control Delay			57.7				HCM 2000 Level of Service			E		
HCM 2000 Volume to Capacity ratio			0.62									
Actuated Cycle Length (s)			81.9				Sum of lost time (s)			15.5		
Intersection Capacity Utilization			55.8%				ICU Level of Service			B		
Analysis Period (min)			15									
c Critical Lane Group												

Existing Condition

A.M. Peak

CCTALOS METHODOLOGY

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

Intersection #1 Loveridge Rd / Buchanan Rd

Cycle (sec): 90 Critical Vol./Cap.(X): 0.606
Loss Time (sec): 15 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 68 Level Of Service: B

Street Name:	Loveridge Rd						Buchanan Rd					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	8	0	8	8	8	0	0	8	8
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0	0	1	0	0	1	0	1	0	0	1

Volume Module:	Loveridge Rd			Buchanan Rd			Buchanan Rd			Buchanan Rd		
Base Vol:	0	0	0	175	0	203	265	410	0	0	602	223
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	175	0	203	265	410	0	0	602	223
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	175	0	203	265	410	0	0	602	223
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	175	0	203	265	410	0	0	602	223
RTOR Reduct:	0	0	0	0	0	203	0	0	0	0	0	175
RTOR Vol:	0	0	0	175	0	0	265	410	0	0	602	48
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	175	0	0	265	410	0	0	602	48

Saturation Flow Module:	Loveridge Rd			Buchanan Rd			Buchanan Rd			Buchanan Rd		
Sat/Lane:	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Final Sat.:	0	0	0	1720	0	1720	1720	1720	0	0	1720	1720

Capacity Analysis Module:	Loveridge Rd			Buchanan Rd			Buchanan Rd			Buchanan Rd		
Vol/Sat:	0.00	0.00	0.00	0.10	0.00	0.00	0.15	0.24	0.00	0.00	0.35	0.03
Crit Volume:	0			175			265			602		
Crit Moves:	****			****			****			****		

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

Intersection #2 Loveridge Rd / Stoneman Ave

Cycle (sec): 115 Critical Vol./Cap.(X): 0.508
Loss Time (sec): 15 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 55 Level Of Service: A

Street Name:	Loveridge Rd						Stoneman Ave					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	7	7	7	7	7	7	7	7	7	7	7	7
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	1	1	0	1	1	0	1	1	0	1

Volume Module:	Loveridge Rd NB			Loveridge Rd SB			Stoneman Ave EB			Stoneman Ave WB		
Base Vol:	171	542	30	286	336	187	187	62	52	36	80	112
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	171	542	30	286	336	187	187	62	52	36	80	112
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	171	542	30	286	336	187	187	62	52	36	80	112
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	171	542	30	286	336	187	187	62	52	36	80	112
RTOR Reduct:	0	0	0	0	0	0	0	0	0	0	0	112
RTOR Vol:	171	542	30	286	336	187	187	62	52	36	80	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	171	542	30	286	336	187	187	62	52	36	80	0

Saturation Flow Module:	Loveridge Rd NB			Loveridge Rd SB			Stoneman Ave EB			Stoneman Ave WB		
Sat/Lane:	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	1.90	0.10	1.00	1.28	0.72	1.00	0.54	0.46	1.00	1.00	1.00
Final Sat.:	1650	3127	173	1650	2120	1180	1650	897	753	1650	1650	1650

Capacity Analysis Module:	Loveridge Rd NB			Loveridge Rd SB			Stoneman Ave EB			Stoneman Ave WB		
Vol/Sat:	0.10	0.17	0.17	0.17	0.16	0.16	0.11	0.07	0.07	0.02	0.05	0.00
Crit Volume:	286			286			187			80		
Crit Moves:	****			****			****			****		

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

Intersection #3 Loveridge Rd / Project Driveway

Cycle (sec): 115 Critical Vol./Cap.(X): 0.228
Loss Time (sec): 12 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 33 Level Of Service: A

Loveridge Rd						Project Driveway						
North Bound			South Bound			East Bound			West Bound			
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	7	7	0	0	7	7	7	7	7	7	7	7
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	2	0	0	0	0	1	1	0	0	0

Volume Module:

Base Vol:	1	841	0	0	778	1	1	0	1	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	1	841	0	0	778	1	1	0	1	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	1	841	0	0	778	1	1	0	1	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	1	841	0	0	778	1	1	0	1	0	0	0
RTOR Reduct:	0	0	0	0	0	0	0	0	0	0	0	0
RTOR Vol:	1	841	0	0	778	1	1	0	1	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	1	841	0	0	778	1	1	0	1	0	0	0

Saturation Flow Module:

Sat/Lane:	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	2.00	0.00	0.00	1.99	0.01	0.50	0.00	0.50	0.00	1.00	0.00
Final Sat.:	1720	3440	0	0	3436	4	860	0	860	0	1720	0

Capacity Analysis Module:

Vol/Sat:	0.00	0.24	0.00	0.00	0.23	0.23	0.00	0.00	0.00	0.00	0.00	0.00
Crit Volume:	1				390		1				0	
Crit Moves:	****				****		****					

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

Intersection #4 Loveridge Rd / Leland Rd

Cycle (sec): 115 Critical Vol./Cap.(X): 0.554
Loss Time (sec): 15 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 61 Level Of Service: A

Street Name:	Loveridge Rd						Leland Rd											
Approach:	North Bound			South Bound			East Bound			West Bound								
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R			
Control:	Protected						Protected						Protected					
Rights:	Include						Include						Include					
Min. Green:	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7			
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0			
Lanes:	1	0	2	0	12	2	0	2	0	1	2	0	2	0	1			

Volume Module:	Loveridge Rd NB			Loveridge Rd SB			Leland Rd EB			Leland Rd WB		
Base Vol:	317	459	145	408	492	282	237	295	157	129	442	105
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	317	459	145	408	492	282	237	295	157	129	442	105
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	317	459	145	408	492	282	237	295	157	129	442	105
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	317	459	145	408	492	282	237	295	157	129	442	105
RTOR Reduct:	0	0	71	0	0	130	0	0	157	0	0	105
RTOR Vol:	317	459	74	408	492	152	237	295	0	129	442	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	317	459	74	408	492	152	237	295	0	129	442	0

Saturation Flow Module:	Loveridge Rd NB			Loveridge Rd SB			Leland Rd EB			Leland Rd WB		
Sat/Lane:	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650
Adjustment:	1.00	1.00	0.87	0.91	1.00	1.00	0.91	1.00	1.00	0.91	1.00	1.00
Lanes:	1.00	2.00	12.00	2.00	2.00	1.00	2.00	2.00	1.00	2.00	2.00	1.00
Final Sat.:	1650	3300	17226	3000	3300	1650	3000	3300	1650	3000	3300	1650

Capacity Analysis Module:	Loveridge Rd NB			Loveridge Rd SB			Leland Rd EB			Leland Rd WB		
Vol/Sat:	0.19	0.14	0.00	0.14	0.15	0.09	0.08	0.09	0.00	0.04	0.13	0.00
Crit Volume:	317			246			119			221		
Crit Moves:	****			****			****			****		

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

Intersection #5 Loveridge Rd / SR4 EB Ramps

Cycle (sec): 90 Critical Vol./Cap.(X): 0.499
Loss Time (sec): 15 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 54 Level Of Service: A

Street Name:	Loveridge Rd						SR4 EB Ramps					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0	2	0	1		2	0	2	0	0	
	1						1	1	0	1	0	

Volume Module:	Loveridge Rd NB			Loveridge Rd SB			SR4 EB Ramps East			SR4 EB Ramps West		
Base Vol:	0	556	212	167	668	0	299	1	489	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	556	212	167	668	0	299	1	489	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	556	212	167	668	0	299	1	489	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	556	212	167	668	0	299	1	489	0	0	0
RTOR Reduct:	0	0	0	0	0	0	0	0	0	0	0	0
RTOR Vol:	0	556	212	167	668	0	299	1	489	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	556	212	167	668	0	299	1	489	0	0	0

Saturation Flow Module:	Loveridge Rd NB			Loveridge Rd SB			SR4 EB Ramps East			SR4 EB Ramps West		
Sat/Lane:	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720
Adjustment:	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	2.00	1.00	2.00	2.00	0.00	1.99	0.01	1.00	0.00	0.00	0.00
Final Sat.:	0	3440	1720	3127	3440	0	3117	11	1720	0	0	0

Capacity Analysis Module:	Loveridge Rd NB			Loveridge Rd SB			SR4 EB Ramps East			SR4 EB Ramps West		
Vol/Sat:	0.00	0.16	0.12	0.05	0.19	0.00	0.10	0.09	0.28	0.00	0.00	0.00
Crit Volume:		278		84					489	0		
Crit Moves:		****		****					****			

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

Intersection #6 Loveridge Rd / California Ave-Park Blvd

Cycle (sec): 115 Critical Vol./Cap.(X): 0.467
Loss Time (sec): 15 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 51 Level Of Service: A

Street Name:	Loveridge Rd						California Ave-Park Blvd					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	7	7	7	7	7	7	7	7	7	7	7	7
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2	0	1	1	0	2	2	0	1	2	0	1

Volume Module:	Loveridge Rd NB			Loveridge Rd SB			California Ave-Park Blvd EB			California Ave-Park Blvd WB		
Base Vol:	326	448	81	29	284	291	109	205	527	24	153	7
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	326	448	81	29	284	291	109	205	527	24	153	7
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	326	448	81	29	284	291	109	205	527	24	153	7
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	326	448	81	29	284	291	109	205	527	24	153	7
RTOR Reduct:	0	0	0	0	0	60	0	0	179	0	0	0
RTOR Vol:	326	448	81	29	284	231	109	205	348	24	153	7
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	326	448	81	29	284	231	109	205	348	24	153	7

Saturation Flow Module:	Loveridge Rd NB			Loveridge Rd SB			California Ave-Park Blvd EB			California Ave-Park Blvd WB		
Sat/Lane:	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650
Adjustment:	0.91	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00	1.00
Lanes:	2.00	1.69	0.31	1.00	2.00	1.00	2.00	1.00	1.00	2.00	1.91	0.09
Final Sat.:	3000	2795	505	1650	3300	1650	3000	1650	1650	3000	3156	144

Capacity Analysis Module:	Loveridge Rd NB			Loveridge Rd SB			California Ave-Park Blvd EB			California Ave-Park Blvd WB		
Vol/Sat:	0.11	0.16	0.16	0.02	0.09	0.14	0.04	0.12	0.21	0.01	0.05	0.05
Crit Volume:	163					231			348	12		
Crit Moves:	****					****			****	****		

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

Intersection #7 SR4 WB Ramps / California Ave

Cycle (sec): 100 Critical Vol./Cap.(X): 0.432
Loss Time (sec): 10 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 38 Level Of Service: A

Street Name:	SR4 WB Ramps						California Ave					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	4	4	4	4	4	4	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	1	0	0	1	1	0	1	1	0	2	0

Volume Module:	SR4 WB Ramps			SR4 WB Ramps			California Ave			California Ave		
Base Vol:	276	86	508	97	83	21	26	199	15	303	319	129
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	276	86	508	97	83	21	26	199	15	303	319	129
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	276	86	508	97	83	21	26	199	15	303	319	129
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	276	86	508	97	83	21	26	199	15	303	319	129
RTOR Reduct:	0	0	167	0	0	0	0	0	0	0	0	97
RTOR Vol:	276	86	341	97	83	21	26	199	15	303	319	32
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	276	86	341	97	83	21	26	199	15	303	319	32

Saturation Flow Module:	SR4 WB Ramps			SR4 WB Ramps			California Ave			California Ave		
Sat/Lane:	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650
Adjustment:	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00
Lanes:	1.52	0.48	1.00	1.00	0.80	0.20	1.00	1.86	0.14	2.00	2.00	1.00
Final Sat.:	2287	784	1650	1650	1317	333	1650	3069	231	3000	3300	1650

Capacity Analysis Module:	SR4 WB Ramps			SR4 WB Ramps			California Ave			California Ave		
Vol/Sat:	0.12	0.11	0.21	0.06	0.06	0.06	0.02	0.06	0.06	0.10	0.10	0.02
Crit Volume:	341			97			107			152		
Crit Moves:	****			****			****			****		

P.M. PEAK

CCTALOS METHODOLOGY

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

Intersection #1 Loveridge Rd / Buchanan Rd

Cycle (sec): 90 Critical Vol./Cap.(X): 0.681
Loss Time (sec): 15 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 85 Level Of Service: B

Street Name:	Loveridge Rd						Buchanan Rd					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	8	0	8	8	8	0	0	8	8
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0	0	1	0	0	1	0	1	0	0	1

Volume Module:	Loveridge Rd			Loveridge Rd			Buchanan Rd			Buchanan Rd		
Base Vol:	0	0	0	306	0	265	169	865	0	0	378	171
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	306	0	265	169	865	0	0	378	171
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	306	0	265	169	865	0	0	378	171
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	306	0	265	169	865	0	0	378	171
RTOR Reduct:	0	0	0	0	0	169	0	0	0	0	0	171
RTOR Vol:	0	0	0	306	0	96	169	865	0	0	378	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	306	0	96	169	865	0	0	378	0

Saturation Flow Module:	Loveridge Rd			Loveridge Rd			Buchanan Rd			Buchanan Rd		
Sat/Lane:	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Final Sat.:	0	0	0	1720	0	1720	1720	1720	0	0	1720	1720

Capacity Analysis Module:	Loveridge Rd			Loveridge Rd			Buchanan Rd			Buchanan Rd		
Vol/Sat:	0.00	0.00	0.00	0.18	0.00	0.06	0.10	0.50	0.00	0.00	0.22	0.00
Crit Volume:	0			306			865			0		
Crit Moves:	****			****			****			****		

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

Intersection #2 Loveridge Rd / Stoneman Ave

Cycle (sec): 115 Critical Vol./Cap.(X): 0.486
Loss Time (sec): 15 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 53 Level Of Service: A

Street Name:	Loveridge Rd						Stoneman Ave					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	7	7	7	7	7	7	7	7	7	7	7	7
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	1	1	0	1	1	0	1	0	1	0

Volume Module:	Loveridge Rd NB			Loveridge Rd SB			Stoneman Ave EB			Stoneman Ave WB		
Base Vol:	97	359	36	101	670	155	161	82	162	49	30	34
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	97	359	36	101	670	155	161	82	162	49	30	34
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	97	359	36	101	670	155	161	82	162	49	30	34
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	97	359	36	101	670	155	161	82	162	49	30	34
RTOR Reduct:	0	0	0	0	0	0	0	0	0	0	0	34
RTOR Vol:	97	359	36	101	670	155	161	82	162	49	30	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	97	359	36	101	670	155	161	82	162	49	30	0

Saturation Flow Module:	Loveridge Rd NB			Loveridge Rd SB			Stoneman Ave EB			Stoneman Ave WB		
Sat/Lane:	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	1.82	0.18	1.00	1.62	0.38	1.00	0.34	0.66	1.00	1.00	1.00
Final Sat.:	1650	2999	301	1650	2680	620	1650	555	1095	1650	1650	1650

Capacity Analysis Module:	Loveridge Rd NB			Loveridge Rd SB			Stoneman Ave EB			Stoneman Ave WB		
Vol/Sat:	0.06	0.12	0.12	0.06	0.25	0.25	0.10	0.15	0.15	0.03	0.02	0.00
Crit Volume:	97			413			244			49		
Crit Moves:	****			****			****			****		

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

Intersection #3 Loveridge Rd / Project Driveway

Cycle (sec): 115 Critical Vol./Cap.(X): 0.270
Loss Time (sec): 12 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 33 Level Of Service: A

Street Name:	Loveridge Rd						Project Driveway					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	7	7	0	0	7	7	7	7	7	7	7	7
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	2	0	0	1	0	0	1	0	0	1

Volume Module:	Loveridge Rd			Project Driveway		
Base Vol:	1	554	0	0	923	1
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	1	554	0	0	923	1
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	1	554	0	0	923	1
Reduct Vol:	0	0	0	0	0	0
Reduced Vol:	1	554	0	0	923	1
RTOR Reduct:	0	0	0	0	0	0
RTOR Vol:	1	554	0	0	923	1
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	1	554	0	0	923	1

Saturation Flow Module:	Loveridge Rd			Project Driveway		
Sat/Lane:	1720	1720	1720	1720	1720	1720
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	2.00	0.00	0.00	1.99	0.01
Final Sat.:	1720	3440	0	0	3436	4

Capacity Analysis Module:	Loveridge Rd			Project Driveway		
Vol/Sat:	0.00	0.16	0.00	0.00	0.27	0.27
Crit Volume:	1			462	1	
Crit Moves:	****			****	****	

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

Intersection #4 Loveridge Rd / Leland Rd

Cycle (sec): 115 Critical Vol./Cap.(X): 0.559
Loss Time (sec): 15 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 61 Level Of Service: A

Street Name:	Loveridge Rd						Leland Rd									
Approach:	North Bound			South Bound			East Bound			West Bound						
Movement:	L	T	R	L	T	R	L	T	R	L	T	R				
Control:	Protected			Protected			Protected			Protected						
Rights:	Include			Include			Include			Include						
Min. Green:	7	7	7	7	7	7	7	7	7	7	7	7				
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Lanes:	1	0	2	0	12		2	0	2	0	1	2	0	2	0	1

Volume Module:	Loveridge Rd			Loveridge Rd			Leland Rd			Leland Rd		
Base Vol:	185	392	188	382	562	127	307	665	135	226	317	208
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	185	392	188	382	562	127	307	665	135	226	317	208
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	185	392	188	382	562	127	307	665	135	226	317	208
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	185	392	188	382	562	127	307	665	135	226	317	208
RTOR Reduct:	0	0	124	0	0	127	0	0	135	0	0	208
RTOR Vol:	185	392	64	382	562	0	307	665	0	226	317	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	185	392	64	382	562	0	307	665	0	226	317	0

Saturation Flow Module:	Loveridge Rd			Loveridge Rd			Leland Rd			Leland Rd		
Sat/Lane:	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650
Adjustment:	1.00	1.00	0.87	0.91	1.00	1.00	0.91	1.00	1.00	0.91	1.00	1.00
Lanes:	1.00	2.00	12.00	2.00	2.00	1.00	2.00	2.00	1.00	2.00	2.00	1.00
Final Sat.:	1650	3300	17226	3000	3300	1650	3000	3300	1650	3000	3300	1650

Capacity Analysis Module:	Loveridge Rd			Loveridge Rd			Leland Rd			Leland Rd		
Vol/Sat:	0.11	0.12	0.00	0.13	0.17	0.00	0.10	0.20	0.00	0.08	0.10	0.00
Crit Volume:	185			281			333			113		
Crit Moves:	****			****			****			****		

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

Intersection #5 Loveridge Rd / SR4 EB Ramps

Cycle (sec): 90 Critical Vol./Cap.(X): 0.646
Loss Time (sec): 15 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 76 Level Of Service: B

Street Name:	Loveridge Rd						SR4 EB Ramps					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0	2	0	1		2	0	2	0	0	
	1						1	1	0	1	0	

Volume Module:	Loveridge Rd NB			Loveridge Rd SB			SR4 EB Ramps East			SR4 EB Ramps West		
Base Vol:	0	770	194	85	612	0	687	2	680	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	770	194	85	612	0	687	2	680	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	770	194	85	612	0	687	2	680	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	770	194	85	612	0	687	2	680	0	0	0
RTOR Reduct:	0	0	0	0	0	0	0	0	0	0	0	0
RTOR Vol:	0	770	194	85	612	0	687	2	680	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	770	194	85	612	0	687	2	680	0	0	0

Saturation Flow Module:	Loveridge Rd NB			Loveridge Rd SB			SR4 EB Ramps East			SR4 EB Ramps West		
Sat/Lane:	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720
Adjustment:	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	2.00	1.00	2.00	2.00	0.00	1.99	0.01	1.00	0.00	0.00	0.00
Final Sat.:	0	3440	1720	3127	3440	0	3118	10	1720	0	0	0

Capacity Analysis Module:	Loveridge Rd NB			Loveridge Rd SB			SR4 EB Ramps East			SR4 EB Ramps West		
Vol/Sat:	0.00	0.22	0.11	0.03	0.18	0.00	0.22	0.20	0.40	0.00	0.00	0.00
Crit Volume:	385			43			680			0		
Crit Moves:	****			****			****					

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

Intersection #6 Loveridge Rd / California Ave-Park Blvd

Cycle (sec): 115 Critical Vol./Cap.(X): 0.553
Loss Time (sec): 15 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 60 Level Of Service: A

Street Name:	Loveridge Rd						California Ave-Park Blvd					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	7	7	7	7	7	7	7	7	7	7	7	7
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2	0	1	1	0	2	2	0	1	2	0	1

Volume Module:	Loveridge Rd NB			Loveridge Rd SB			California Ave-Park Blvd EB			California Ave-Park Blvd WB		
Base Vol:	434	715	308	36	295	274	144	320	320	82	338	22
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	434	715	308	36	295	274	144	320	320	82	338	22
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	434	715	308	36	295	274	144	320	320	82	338	22
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	434	715	308	36	295	274	144	320	320	82	338	22
RTOR Reduct:	0	0	0	0	0	79	0	0	239	0	0	0
RTOR Vol:	434	715	308	36	295	195	144	320	81	82	338	22
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	434	715	308	36	295	195	144	320	81	82	338	22

Saturation Flow Module:	Loveridge Rd NB			Loveridge Rd SB			California Ave-Park Blvd EB			California Ave-Park Blvd WB		
Sat/Lane:	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650
Adjustment:	0.91	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00	1.00
Lanes:	2.00	1.40	0.60	1.00	2.00	1.00	2.00	1.00	1.00	2.00	1.88	0.12
Final Sat.:	3000	2306	994	1650	3300	1650	3000	1650	1650	3000	3098	202

Capacity Analysis Module:	Loveridge Rd NB			Loveridge Rd SB			California Ave-Park Blvd EB			California Ave-Park Blvd WB		
Vol/Sat:	0.14	0.31	0.31	0.02	0.09	0.12	0.05	0.19	0.05	0.03	0.11	0.11
Crit Volume:	512			36			320			41		
Crit Moves:	****			****			****			****		

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

Intersection #7 SR4 WB Ramps / California Ave

Cycle (sec): 100 Critical Vol./Cap.(X): 0.420
Loss Time (sec): 10 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 38 Level Of Service: A

Street Name:	SR4 WB Ramps						California Ave					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	4	4	4	4	4	4	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	1	0	0	1	1	0	1	1	0	2	0

Volume Module:	SR4 WB Ramps			SR4 WB Ramps			California Ave			California Ave		
Base Vol:	33	31	290	86	43	7	28	408	16	660	281	105
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	33	31	290	86	43	7	28	408	16	660	281	105
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	33	31	290	86	43	7	28	408	16	660	281	105
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	33	31	290	86	43	7	28	408	16	660	281	105
RTOR Reduct:	0	0	290	0	0	0	0	0	0	0	0	86
RTOR Vol:	33	31	0	86	43	7	28	408	16	660	281	19
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	33	31	0	86	43	7	28	408	16	660	281	19

Saturation Flow Module:	SR4 WB Ramps			SR4 WB Ramps			California Ave			California Ave		
Sat/Lane:	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650
Adjustment:	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00
Lanes:	1.03	0.97	1.00	1.00	0.86	0.14	1.00	1.92	0.08	2.00	2.00	1.00
Final Sat.:	1547	1598	1650	1650	1419	231	1650	3175	125	3000	3300	1650

Capacity Analysis Module:	SR4 WB Ramps			SR4 WB Ramps			California Ave			California Ave		
Vol/Sat:	0.02	0.02	0.00	0.05	0.03	0.03	0.02	0.13	0.13	0.22	0.09	0.01
Crit Volume:	32			86			212			330		
Crit Moves:	****			****			****			****		

Project Condition

A.M. Peak

CCTALOS METHODOLOGY

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

Intersection #1 Loveridge Rd / Buchanan Rd

Cycle (sec): 90 Critical Vol./Cap.(X): 0.607
Loss Time (sec): 15 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 69 Level Of Service: B

Street Name:	Loveridge Rd						Buchanan Rd					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	8	0	8	8	8	0	0	8	8
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0	0	1	0	0	1	0	1	0	0	1

Volume Module:	Loveridge Rd			Loveridge Rd			Buchanan Rd			Buchanan Rd		
Base Vol:	0	0	0	175	0	208	267	410	0	0	602	223
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	175	0	208	267	410	0	0	602	223
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	175	0	208	267	410	0	0	602	223
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	175	0	208	267	410	0	0	602	223
RTOR Reduct:	0	0	0	0	0	208	0	0	0	0	0	175
RTOR Vol:	0	0	0	175	0	0	267	410	0	0	602	48
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	175	0	0	267	410	0	0	602	48

Saturation Flow Module:	Loveridge Rd			Loveridge Rd			Buchanan Rd			Buchanan Rd		
Sat/Lane:	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Final Sat.:	0	0	0	1720	0	1720	1720	1720	0	0	1720	1720

Capacity Analysis Module:	Loveridge Rd			Loveridge Rd			Buchanan Rd			Buchanan Rd		
Vol/Sat:	0.00	0.00	0.00	0.10	0.00	0.00	0.16	0.24	0.00	0.00	0.35	0.03
Crit Volume:	0			175			267			602		
Crit Moves:				****			****			****		

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

Intersection #2 Loveridge Rd / Stoneman Ave

Cycle (sec): 115 Critical Vol./Cap.(X): 0.510
Loss Time (sec): 15 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 55 Level Of Service: A

Loveridge Rd						Stoneman Ave						
North Bound			South Bound			East Bound			West Bound			
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	7	7	7	7	7	7	7	7	7	7	7	7
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	1	1	0	1	1	0	1	0	1	0

Volume Module:												
Base Vol:	171	544	30	286	341	189	188	62	52	36	80	112
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	171	544	30	286	341	189	188	62	52	36	80	112
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	171	544	30	286	341	189	188	62	52	36	80	112
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	171	544	30	286	341	189	188	62	52	36	80	112
RTOR Reduct:	0	0	0	0	0	0	0	0	0	0	0	112
RTOR Vol:	171	544	30	286	341	189	188	62	52	36	80	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	171	544	30	286	341	189	188	62	52	36	80	0

Saturation Flow Module:												
Sat/Lane:	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	1.90	0.10	1.00	1.29	0.71	1.00	0.54	0.46	1.00	1.00	1.00
Final Sat.:	1650	3128	172	1650	2123	1177	1650	897	753	1650	1650	1650

Capacity Analysis Module:												
Vol/Sat:	0.10	0.17	0.17	0.17	0.16	0.16	0.11	0.07	0.07	0.02	0.05	0.00
Crit Volume:	287			286			188			80		
Crit Moves:	****			****			****			****		

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

Intersection #3 Loveridge Rd / Project Driveway

Cycle (sec): 115 Critical Vol./Cap.(X): 0.288
Loss Time (sec): 12 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 33 Level Of Service: A

Street Name:	Loveridge Rd						Project Driveway					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	7	7	0	0	7	7	7	7	7	7	7	7
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	2	0	0	0	0	0	1	0	0	0

Volume Module:	Loveridge Rd			Project Driveway		
Base Vol:	4	841	0	0	778	35
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	4	841	0	0	778	35
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	4	841	0	0	778	35
Reduct Vol:	0	0	0	0	0	0
Reduced Vol:	4	841	0	0	778	35
RTOR Reduct:	0	0	0	0	0	0
RTOR Vol:	4	841	0	0	778	35
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	4	841	0	0	778	35

Saturation Flow Module:	Loveridge Rd			Project Driveway		
Sat/Lane:	1720	1720	1720	1720	1720	1720
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	2.00	0.00	0.00	1.91	0.09
Final Sat.:	1720	3440	0	0	3292	148

Capacity Analysis Module:	Loveridge Rd			Project Driveway		
Vol/Sat:	0.00	0.24	0.00	0.00	0.24	0.24
Crit Volume:	4			407	84	
Crit Moves:	****			****	****	

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

Intersection #4 Loveridge Rd / Leland Rd

Cycle (sec): 115 Critical Vol./Cap.(X): 0.575
Loss Time (sec): 15 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 63 Level Of Service: A

Street Name:	Loveridge Rd						Leland Rd									
Approach:	North Bound			South Bound			East Bound			West Bound						
Movement:	L	T	R	L	T	R	L	T	R	L	T	R				
Control:	Protected			Protected			Protected			Protected						
Rights:	Include			Include			Include			Include						
Min. Green:	7	7	7	7	7	7	7	7	7	7	7	7				
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Lanes:	1	0	2	0	12		2	0	2	0	1	2	0	2	0	1

Volume Module:	Loveridge Rd			Loveridge Rd			Leland Rd			Leland Rd		
Base Vol:	340	513	151	408	514	282	237	295	166	132	442	105
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	340	513	151	408	514	282	237	295	166	132	442	105
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	340	513	151	408	514	282	237	295	166	132	442	105
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	340	513	151	408	514	282	237	295	166	132	442	105
RTOR Reduct:	0	0	73	0	0	130	0	0	166	0	0	105
RTOR Vol:	340	513	78	408	514	152	237	295	0	132	442	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	340	513	78	408	514	152	237	295	0	132	442	0

Saturation Flow Module:	Loveridge Rd			Loveridge Rd			Leland Rd			Leland Rd		
Sat/Lane:	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650
Adjustment:	1.00	1.00	0.87	0.91	1.00	1.00	0.91	1.00	1.00	0.91	1.00	1.00
Lanes:	1.00	2.00	12.00	2.00	2.00	1.00	2.00	2.00	1.00	2.00	2.00	1.00
Final Sat.:	1650	3300	17226	3000	3300	1650	3000	3300	1650	3000	3300	1650

Capacity Analysis Module:	Loveridge Rd			Loveridge Rd			Leland Rd			Leland Rd		
Vol/Sat:	0.21	0.16	0.00	0.14	0.16	0.09	0.08	0.09	0.00	0.04	0.13	0.00
Crit Volume:	340			257			119			221		
Crit Moves:	****			****			****			****		

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

Intersection #5 Loveridge Rd / SR4 EB Ramps

Cycle (sec): 90 Critical Vol./Cap.(X): 0.523
Loss Time (sec): 15 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 57 Level Of Service: A

Street Name:	Loveridge Rd						SR4 EB Ramps					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0	2	0	1		2	0	2	0	0	
	1						1	1	0	1	0	

Volume Module:	North Bound			South Bound			East Bound			West Bound		
Base Vol:	0	601	221	167	672	0	299	1	508	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	601	221	167	672	0	299	1	508	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	601	221	167	672	0	299	1	508	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	601	221	167	672	0	299	1	508	0	0	0
RTOR Reduct:	0	0	0	0	0	0	0	0	0	0	0	0
RTOR Vol:	0	601	221	167	672	0	299	1	508	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	601	221	167	672	0	299	1	508	0	0	0

Saturation Flow Module:	North Bound			South Bound			East Bound			West Bound		
Sat/Lane:	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720
Adjustment:	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	2.00	1.00	2.00	2.00	0.00	1.99	0.01	1.00	0.00	0.00	0.00
Final Sat.:	0	3440	1720	3127	3440	0	3117	11	1720	0	0	0

Capacity Analysis Module:	North Bound			South Bound			East Bound			West Bound		
Vol/Sat:	0.00	0.17	0.13	0.05	0.20	0.00	0.10	0.09	0.30	0.00	0.00	0.00
Crit Volume:	301			84			508			0		
Crit Moves:	****			****			****					

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

Intersection #6 Loveridge Rd / California Ave-Park Blvd

Cycle (sec): 115 Critical Vol./Cap.(X): 0.470
Loss Time (sec): 15 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 51 Level Of Service: A

Street Name:	Loveridge Rd						California Ave-Park Blvd								
Approach:	North Bound			South Bound			East Bound			West Bound					
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected			Protected			Protected			Protected					
Rights:	Include			Include			Include			Include					
Min. Green:	7	7	7	7	7	7	7	7	7	7	7	7			
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0			
Lanes:	2	0	1	1	0	1	0	2	0	1	2	0	1	1	0

Volume Module:	Loveridge Rd NB			Loveridge Rd SB			California Ave-Park Blvd EB			California Ave-Park Blvd WB		
Base Vol:	371	448	81	29	284	291	109	205	531	24	153	7
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	371	448	81	29	284	291	109	205	531	24	153	7
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	371	448	81	29	284	291	109	205	531	24	153	7
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	371	448	81	29	284	291	109	205	531	24	153	7
RTOR Reduct:	0	0	0	0	0	60	0	0	204	0	0	0
RTOR Vol:	371	448	81	29	284	231	109	205	327	24	153	7
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	371	448	81	29	284	231	109	205	327	24	153	7

Saturation Flow Module:	Loveridge Rd NB			Loveridge Rd SB			California Ave-Park Blvd EB			California Ave-Park Blvd WB		
Sat/Lane:	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650
Adjustment:	0.91	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00	1.00
Lanes:	2.00	1.69	0.31	1.00	2.00	1.00	2.00	1.00	1.00	2.00	1.91	0.09
Final Sat.:	3000	2795	505	1650	3300	1650	3000	1650	1650	3000	3156	144

Capacity Analysis Module:	Loveridge Rd NB			Loveridge Rd SB			California Ave-Park Blvd EB			California Ave-Park Blvd WB		
Vol/Sat:	0.12	0.16	0.16	0.02	0.09	0.14	0.04	0.12	0.20	0.01	0.05	0.05
Crit Volume:	186					231			327	12		
Crit Moves:	****					****			****	****		

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

Intersection #7 SR4 WB Ramps / California Ave

Cycle (sec): 100 Critical Vol./Cap.(X): 0.434
Loss Time (sec): 10 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 38 Level Of Service: A

Street Name:	SR4 WB Ramps						California Ave					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	4	4	4	4	4	4	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	1	0	0	1	1	0	1	1	0	2	0

Volume Module:	SR4 WB Ramps			SR4 WB Ramps			California Ave			California Ave		
Base Vol:	276	86	512	97	83	21	26	199	15	348	319	129
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	276	86	512	97	83	21	26	199	15	348	319	129
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	276	86	512	97	83	21	26	199	15	348	319	129
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	276	86	512	97	83	21	26	199	15	348	319	129
RTOR Reduct:	0	0	191	0	0	0	0	0	0	0	0	97
RTOR Vol:	276	86	321	97	83	21	26	199	15	348	319	32
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	276	86	321	97	83	21	26	199	15	348	319	32

Saturation Flow Module:	SR4 WB Ramps			SR4 WB Ramps			California Ave			California Ave		
Sat/Lane:	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650
Adjustment:	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00
Lanes:	1.52	0.48	1.00	1.00	0.80	0.20	1.00	1.86	0.14	2.00	2.00	1.00
Final Sat.:	2287	784	1650	1650	1317	333	1650	3069	231	3000	3300	1650

Capacity Analysis Module:	SR4 WB Ramps			SR4 WB Ramps			California Ave			California Ave		
Vol/Sat:	0.12	0.11	0.19	0.06	0.06	0.06	0.02	0.06	0.06	0.12	0.10	0.02
Crit Volume:	321			97			107			174		
Crit Moves:	****			****			****			****		

P.M. PEAK

CCTALOS METHODOLOGY

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

Intersection #1 Loveridge Rd / Buchanan Rd

Cycle (sec): 90 Critical Vol./Cap.(X): 0.681
Loss Time (sec): 15 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 85 Level Of Service: B

Street Name:	Loveridge Rd						Buchanan Rd					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	8	0	8	8	8	0	0	8	8
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0	0	1	0	0	1	0	1	0	0	1

Volume Module:	Loveridge Rd			Loveridge Rd			Buchanan Rd			Buchanan Rd		
Base Vol:	0	0	0	306	0	269	175	865	0	0	378	171
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	306	0	269	175	865	0	0	378	171
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	306	0	269	175	865	0	0	378	171
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	306	0	269	175	865	0	0	378	171
RTOR Reduct:	0	0	0	0	0	175	0	0	0	0	0	171
RTOR Vol:	0	0	0	306	0	94	175	865	0	0	378	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	306	0	94	175	865	0	0	378	0

Saturation Flow Module:	Loveridge Rd			Loveridge Rd			Buchanan Rd			Buchanan Rd		
Sat/Lane:	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Final Sat.:	0	0	0	1720	0	1720	1720	1720	0	0	1720	1720

Capacity Analysis Module:	Loveridge Rd			Loveridge Rd			Buchanan Rd			Buchanan Rd		
Vol/Sat:	0.00	0.00	0.00	0.18	0.00	0.05	0.10	0.50	0.00	0.00	0.22	0.00
Crit Volume:	0			306			865			0		
Crit Moves:	****			****			****			****		

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

Intersection #2 Loveridge Rd / Stoneman Ave

Cycle (sec): 115 Critical Vol./Cap.(X): 0.488
Loss Time (sec): 15 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 53 Level Of Service: A

Loveridge Rd						Stoneman Ave						
North Bound			South Bound			East Bound			West Bound			
Approach:												
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	7	7	7	7	7	7	7	7	7	7	7	7
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	1	1	0	1	0	1	0	1	0	1

Volume Module:												
Base Vol:	97	365	36	101	674	156	163	82	162	49	30	34
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	97	365	36	101	674	156	163	82	162	49	30	34
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	97	365	36	101	674	156	163	82	162	49	30	34
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	97	365	36	101	674	156	163	82	162	49	30	34
RTOR Reduct:	0	0	0	0	0	0	0	0	0	0	0	34
RTOR Vol:	97	365	36	101	674	156	163	82	162	49	30	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	97	365	36	101	674	156	163	82	162	49	30	0

Saturation Flow Module:												
Sat/Lane:	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	1.82	0.18	1.00	1.62	0.38	1.00	0.34	0.66	1.00	1.00	1.00
Final Sat.:	1650	3004	296	1650	2680	620	1650	555	1095	1650	1650	1650

Capacity Analysis Module:												
Vol/Sat:	0.06	0.12	0.12	0.06	0.25	0.25	0.10	0.15	0.15	0.03	0.02	0.00
Crit Volume:	97					415			244	49		
Crit Moves:	****					****			****	****		

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

Intersection #3 Loveridge Rd / Project Driveway

Cycle (sec): 115 Critical Vol./Cap.(X): 0.335
Loss Time (sec): 12 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 34 Level Of Service: A

Street Name:	Loveridge Rd						Project Driveway					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	7	7	0	0	7	7	7	7	7	7	7	7
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	2	0	0	1	0	0	1	0	0	1

Volume Module:	Loveridge Rd			Project Driveway		
Base Vol:	9	554	0	0	923	87
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	9	554	0	0	923	87
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	9	554	0	0	923	87
Reduct Vol:	0	0	0	0	0	0
Reduced Vol:	9	554	0	0	923	87
RTOR Reduct:	0	0	0	0	0	0
RTOR Vol:	9	554	0	0	923	87
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	9	554	0	0	923	87

Saturation Flow Module:	Loveridge Rd			Project Driveway		
Sat/Lane:	1720	1720	1720	1720	1720	1720
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	2.00	0.00	0.00	1.83	0.17
Final Sat.:	1720	3440	0	0	3144	296

Capacity Analysis Module:	Loveridge Rd			Project Driveway		
Vol/Sat:	0.01	0.16	0.00	0.00	0.29	0.29
Crit Volume:	9			505		62
Crit Moves:	****			****		****

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

Intersection #4 Loveridge Rd / Leland Rd

Cycle (sec): 115 Critical Vol./Cap.(X): 0.588
Loss Time (sec): 15 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 65 Level Of Service: A

Street Name:	Loveridge Rd						Leland Rd									
Approach:	North Bound			South Bound			East Bound			West Bound						
Movement:	L	T	R	L	T	R	L	T	R	L	T	R				
Control:	Protected			Protected			Protected			Protected						
Rights:	Include			Include			Include			Include						
Min. Green:	7	7	7	7	7	7	7	7	7	7	7	7				
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Lanes:	1	0	2	0	12		2	0	2	0	1	2	0	2	0	1

Volume Module:	Loveridge Rd			Loveridge Rd			Leland Rd			Leland Rd		
Base Vol:	200	428	192	382	618	127	307	665	159	233	317	208
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	200	428	192	382	618	127	307	665	159	233	317	208
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	200	428	192	382	618	127	307	665	159	233	317	208
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	200	428	192	382	618	127	307	665	159	233	317	208
RTOR Reduct:	0	0	128	0	0	127	0	0	159	0	0	208
RTOR Vol:	200	428	64	382	618	0	307	665	0	233	317	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	200	428	64	382	618	0	307	665	0	233	317	0

Saturation Flow Module:	Loveridge Rd			Loveridge Rd			Leland Rd			Leland Rd		
Sat/Lane:	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650
Adjustment:	1.00	1.00	0.87	0.91	1.00	1.00	0.91	1.00	1.00	0.91	1.00	1.00
Lanes:	1.00	2.00	12.00	2.00	2.00	1.00	2.00	2.00	1.00	2.00	2.00	1.00
Final Sat.:	1650	3300	17226	3000	3300	1650	3000	3300	1650	3000	3300	1650

Capacity Analysis Module:	Loveridge Rd			Loveridge Rd			Leland Rd			Leland Rd		
Vol/Sat:	0.12	0.13	0.00	0.13	0.19	0.00	0.10	0.20	0.00	0.08	0.10	0.00
Crit Volume:	200			309			333			117		
Crit Moves:	****			****			****			****		

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

Intersection #5 Loveridge Rd / SR4 EB Ramps

Cycle (sec): 90 Critical Vol./Cap.(X): 0.682
Loss Time (sec): 15 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 85 Level Of Service: B

Street Name:	Loveridge Rd						SR4 EB Ramps					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0	2	0	1		2	0	2	0	0	
	1						1	1	0	1	0	

Volume Module:	Loveridge Rd NB			Loveridge Rd SB			SR4 EB Ramps East			SR4 EB Ramps West		
Base Vol:	0	800	200	85	621	0	687	2	727	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	800	200	85	621	0	687	2	727	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	800	200	85	621	0	687	2	727	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	800	200	85	621	0	687	2	727	0	0	0
RTOR Reduct:	0	0	0	0	0	0	0	0	0	0	0	0
RTOR Vol:	0	800	200	85	621	0	687	2	727	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	800	200	85	621	0	687	2	727	0	0	0

Saturation Flow Module:	Loveridge Rd NB			Loveridge Rd SB			SR4 EB Ramps East			SR4 EB Ramps West		
Sat/Lane:	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720
Adjustment:	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	2.00	1.00	2.00	2.00	0.00	1.99	0.01	1.00	0.00	0.00	0.00
Final Sat.:	0	3440	1720	3127	3440	0	3118	10	1720	0	0	0

Capacity Analysis Module:	Loveridge Rd NB			Loveridge Rd SB			SR4 EB Ramps East			SR4 EB Ramps West		
Vol/Sat:	0.00	0.23	0.12	0.03	0.18	0.00	0.22	0.20	0.42	0.00	0.00	0.00
Crit Volume:	400			43			727			0		
Crit Moves:	****			****			****			****		

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

Intersection #6 Loveridge Rd / California Ave-Park Blvd

Cycle (sec): 115 Critical Vol./Cap.(X): 0.553
Loss Time (sec): 15 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 60 Level Of Service: A

Street Name:	Loveridge Rd						California Ave-Park Blvd								
Approach:	North Bound			South Bound			East Bound			West Bound					
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected			Protected			Protected			Protected					
Rights:	Include			Include			Include			Include					
Min. Green:	7	7	7	7	7	7	7	7	7	7	7	7			
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0			
Lanes:	2	0	1	1	0	1	0	2	0	1	2	0	1	1	0

Volume Module:	Loveridge Rd NB			Loveridge Rd SB			California Ave-Park Blvd EB			California Ave-Park Blvd WB		
Base Vol:	464	715	308	36	295	274	144	320	329	82	338	22
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	464	715	308	36	295	274	144	320	329	82	338	22
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	464	715	308	36	295	274	144	320	329	82	338	22
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	464	715	308	36	295	274	144	320	329	82	338	22
RTOR Reduct:	0	0	0	0	0	79	0	0	255	0	0	0
RTOR Vol:	464	715	308	36	295	195	144	320	74	82	338	22
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	464	715	308	36	295	195	144	320	74	82	338	22

Saturation Flow Module:	Loveridge Rd NB			Loveridge Rd SB			California Ave-Park Blvd EB			California Ave-Park Blvd WB		
Sat/Lane:	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650
Adjustment:	0.91	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00	1.00
Lanes:	2.00	1.40	0.60	1.00	2.00	1.00	2.00	1.00	1.00	2.00	1.88	0.12
Final Sat.:	3000	2306	994	1650	3300	1650	3000	1650	1650	3000	3098	202

Capacity Analysis Module:	Loveridge Rd NB			Loveridge Rd SB			California Ave-Park Blvd EB			California Ave-Park Blvd WB		
Vol/Sat:	0.15	0.31	0.31	0.02	0.09	0.12	0.05	0.19	0.04	0.03	0.11	0.11
Crit Volume:	512			36			320			41		
Crit Moves:	****			****			****			****		

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

Intersection #7 SR4 WB Ramps / California Ave

Cycle (sec): 100 Critical Vol./Cap.(X): 0.430
Loss Time (sec): 10 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 38 Level Of Service: A

Street Name:	SR4 WB Ramps						California Ave								
Approach:	North Bound			South Bound			East Bound			West Bound					
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected			Protected			Protected			Protected					
Rights:	Include			Include			Include			Include					
Min. Green:	4	4	4	4	4	4	10	10	10	10	10	10			
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0			
Lanes:	1	1	0	0	1	1	0	0	1	0	1	0	1	1	0

Volume Module:	SR4 WB Ramps			California Ave								
Base Vol:	33	31	299	86	43	7	28	408	16	690	281	105
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	33	31	299	86	43	7	28	408	16	690	281	105
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	33	31	299	86	43	7	28	408	16	690	281	105
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	33	31	299	86	43	7	28	408	16	690	281	105
RTOR Reduct:	0	0	299	0	0	0	0	0	0	0	0	86
RTOR Vol:	33	31	0	86	43	7	28	408	16	690	281	19
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	33	31	0	86	43	7	28	408	16	690	281	19

Saturation Flow Module:	SR4 WB Ramps			California Ave								
Sat/Lane:	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650
Adjustment:	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00
Lanes:	1.03	0.97	1.00	1.00	0.86	0.14	1.00	1.92	0.08	2.00	2.00	1.00
Final Sat.:	1547	1598	1650	1650	1419	231	1650	3175	125	3000	3300	1650

Capacity Analysis Module:	SR4 WB Ramps			California Ave								
Vol/Sat:	0.02	0.02	0.00	0.05	0.03	0.03	0.02	0.13	0.13	0.23	0.09	0.01
Crit Volume:	32			86			212			345		
Crit Moves:	****			****			****			****		

Cumulative Baseline Condition

A.M. Peak

CCTALOS METHODOLOGY

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

Intersection #1 Loveridge Rd / Buchanan Rd

Cycle (sec): 90 Critical Vol./Cap.(X): 0.730
Loss Time (sec): 15 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 100 Level Of Service: C

Street Name:	Loveridge Rd						Buchanan Rd					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	8	0	8	8	8	0	0	8	8
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0	0	0	1	0	0	0	1	1	0	1

Volume Module:	Loveridge Rd			Loveridge Rd			Buchanan Rd			Buchanan Rd		
Base Vol:	0	0	0	388	0	203	265	410	0	0	602	434
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	388	0	203	265	410	0	0	602	434
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	388	0	203	265	410	0	0	602	434
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	388	0	203	265	410	0	0	602	434
RTOR Reduct:	0	0	0	0	0	203	0	0	0	0	0	388
RTOR Vol:	0	0	0	388	0	0	265	410	0	0	602	46
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	388	0	0	265	410	0	0	602	46

Saturation Flow Module:	Loveridge Rd			Loveridge Rd			Buchanan Rd			Buchanan Rd		
Sat/Lane:	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Final Sat.:	0	0	0	1720	0	1720	1720	1720	0	0	1720	1720

Capacity Analysis Module:	Loveridge Rd			Loveridge Rd			Buchanan Rd			Buchanan Rd		
Vol/Sat:	0.00	0.00	0.00	0.23	0.00	0.00	0.15	0.24	0.00	0.00	0.35	0.03
Crit Volume:	0			388			265			602		
Crit Moves:	****			****			****			****		

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

Intersection #2 Loveridge Rd / Stoneman Ave

Cycle (sec): 115 Critical Vol./Cap.(X): 0.591
Loss Time (sec): 15 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 66 Level Of Service: A

Street Name:	Loveridge Rd						Stoneman Ave								
Approach:	North Bound			South Bound			East Bound			West Bound					
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected			Protected			Protected			Protected					
Rights:	Include			Include			Include			Include					
Min. Green:	7	7	7	7	7	7	7	7	7	7	7	7			
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0			
Lanes:	1	0	1	1	0	1	0	1	1	0	1	0	0	1	0

Volume Module:	Loveridge Rd NB			Loveridge Rd SB			Stoneman Ave EB			Stoneman Ave WB		
Base Vol:	185	671	38	326	389	187	214	73	62	39	80	116
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	185	671	38	326	389	187	214	73	62	39	80	116
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	185	671	38	326	389	187	214	73	62	39	80	116
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	185	671	38	326	389	187	214	73	62	39	80	116
RTOR Reduct:	0	0	0	0	0	0	0	0	0	0	0	116
RTOR Vol:	185	671	38	326	389	187	214	73	62	39	80	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	185	671	38	326	389	187	214	73	62	39	80	0

Saturation Flow Module:	Loveridge Rd NB			Loveridge Rd SB			Stoneman Ave EB			Stoneman Ave WB		
Sat/Lane:	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	1.89	0.11	1.00	1.35	0.65	1.00	0.54	0.46	1.00	1.00	1.00
Final Sat.:	1650	3123	177	1650	2229	1071	1650	892	758	1650	1650	1650

Capacity Analysis Module:	Loveridge Rd NB			Loveridge Rd SB			Stoneman Ave EB			Stoneman Ave WB		
Vol/Sat:	0.11	0.21	0.21	0.20	0.17	0.17	0.13	0.08	0.08	0.02	0.05	0.00
Crit Volume:	355			326			214			80		
Crit Moves:	****			****			****			****		

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

Intersection #3 Loveridge Rd / Project Driveway

Cycle (sec): 115 Critical Vol./Cap.(X): 0.293
Loss Time (sec): 12 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 33 Level Of Service: A

Street Name:	Loveridge Rd						Project Driveway								
Approach:	North Bound			South Bound			East Bound			West Bound					
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected			Protected			Permitted			Permitted					
Rights:	Include			Include			Include			Include					
Min. Green:	7	7	0	0	7	7	7	7	7	7	7	7			
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0			
Lanes:	1	0	2	0	0	0	0	1	1	0	0	0	1	0	0

Volume Module:

Base Vol:	1	1000	0	0	1003	1	1	0	1	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	1	1000	0	0	1003	1	1	0	1	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	1	1000	0	0	1003	1	1	0	1	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	1	1000	0	0	1003	1	1	0	1	0	0	0
RTOR Reduct:	0	0	0	0	0	0	0	0	0	0	0	0
RTOR Vol:	1	1000	0	0	1003	1	1	0	1	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	1	1000	0	0	1003	1	1	0	1	0	0	0

Saturation Flow Module:

Sat/Lane:	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	2.00	0.00	0.00	1.99	0.01	0.50	0.00	0.50	0.00	1.00	0.00
Final Sat.:	1720	3440	0	0	3437	3	860	0	860	0	1720	0

Capacity Analysis Module:

Vol/Sat:	0.00	0.29	0.00	0.00	0.29	0.29	0.00	0.00	0.00	0.00	0.00	0.00
Crit Volume:	1				502	1				0		
Crit Moves:	****				****	****						

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

Intersection #4 Loveridge Rd / Leland Rd

Cycle (sec): 115 Critical Vol./Cap.(X): 0.899
Loss Time (sec): 15 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 180 Level Of Service: D

Street Name:	Loveridge Rd						Leland Rd								
Approach:	North Bound			South Bound			East Bound			West Bound					
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected			Protected			Protected			Protected					
Rights:	Include			Include			Include			Include					
Min. Green:	7	7	7	7	7	7	7	7	7	7	7	7			
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0			
Lanes:	1	0	2	0	1	2	0	2	0	1	2	0	2	0	1

Volume Module:	Loveridge Rd			Loveridge Rd			Leland Rd			Leland Rd		
Base Vol:	533	459	145	423	527	371	486	678	513	164	838	105
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	533	459	145	423	527	371	486	678	513	164	838	105
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	533	459	145	423	527	371	486	678	513	164	838	105
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	533	459	145	423	527	371	486	678	513	164	838	105
RTOR Reduct:	0	0	90	0	0	267	0	0	513	0	0	105
RTOR Vol:	533	459	55	423	527	104	486	678	0	164	838	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	533	459	55	423	527	104	486	678	0	164	838	0

Saturation Flow Module:	Loveridge Rd			Loveridge Rd			Leland Rd			Leland Rd		
Sat/Lane:	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650
Adjustment:	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.91	1.00	1.00
Lanes:	1.00	2.00	1.00	2.00	2.00	1.00	2.00	2.00	1.00	2.00	2.00	1.00
Final Sat.:	1650	3300	1650	3000	3300	1650	3000	3300	1650	3000	3300	1650

Capacity Analysis Module:	Loveridge Rd			Loveridge Rd			Leland Rd			Leland Rd		
Vol/Sat:	0.32	0.14	0.03	0.14	0.16	0.06	0.16	0.21	0.00	0.05	0.25	0.00
Crit Volume:	533			263			243			419		
Crit Moves:	****			****			****			****		

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

Intersection #5 Loveridge Rd / SR4 EB Ramps

Cycle (sec): 90 Critical Vol./Cap.(X): 0.753
Loss Time (sec): 15 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 110 Level Of Service: C

Street Name:	Loveridge Rd						SR4 EB Ramps					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0	2	0	1		2	0	2	0	0	
	1						1	1	0	1	0	

Volume Module:	Loveridge Rd NB			Loveridge Rd SB			SR4 EB Ramps East			SR4 EB Ramps West		
Base Vol:	0	681	276	328	668	0	299	1	775	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	681	276	328	668	0	299	1	775	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	681	276	328	668	0	299	1	775	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	681	276	328	668	0	299	1	775	0	0	0
RTOR Reduct:	0	0	0	0	0	0	0	0	0	0	0	0
RTOR Vol:	0	681	276	328	668	0	299	1	775	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	681	276	328	668	0	299	1	775	0	0	0

Saturation Flow Module:	Loveridge Rd NB			Loveridge Rd SB			SR4 EB Ramps East			SR4 EB Ramps West		
Sat/Lane:	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720
Adjustment:	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	2.00	1.00	2.00	2.00	0.00	1.99	0.01	1.00	0.00	0.00	0.00
Final Sat.:	0	3440	1720	3127	3440	0	3117	11	1720	0	0	0

Capacity Analysis Module:	Loveridge Rd NB			Loveridge Rd SB			SR4 EB Ramps East			SR4 EB Ramps West		
Vol/Sat:	0.00	0.20	0.16	0.10	0.19	0.00	0.10	0.09	0.45	0.00	0.00	0.00
Crit Volume:		341		164					775	0		
Crit Moves:		****		****					****			

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

Intersection #6 Loveridge Rd / California Ave-Park Blvd

Cycle (sec): 115 Critical Vol./Cap.(X): 0.568
Loss Time (sec): 15 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 62 Level Of Service: A

Street Name:	Loveridge Rd						California Ave-Park Blvd								
Approach:	North Bound			South Bound			East Bound			West Bound					
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected			Protected			Protected			Protected					
Rights:	Include			Include			Include			Include					
Min. Green:	7	7	7	7	7	7	7	7	7	7	7	7			
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0			
Lanes:	2	0	1	1	0	1	0	2	0	1	2	0	1	1	0

Volume Module:	Loveridge Rd NB			Loveridge Rd SB			California Ave-Park Blvd EB			California Ave-Park Blvd WB		
Base Vol:	341	448	191	80	383	316	159	503	562	62	255	15
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	341	448	191	80	383	316	159	503	562	62	255	15
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	341	448	191	80	383	316	159	503	562	62	255	15
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	341	448	191	80	383	316	159	503	562	62	255	15
RTOR Reduct:	0	0	0	0	0	87	0	0	188	0	0	0
RTOR Vol:	341	448	191	80	383	229	159	503	374	62	255	15
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	341	448	191	80	383	229	159	503	374	62	255	15

Saturation Flow Module:	Loveridge Rd NB			Loveridge Rd SB			California Ave-Park Blvd EB			California Ave-Park Blvd WB		
Sat/Lane:	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650
Adjustment:	0.91	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00	1.00
Lanes:	2.00	1.40	0.60	1.00	2.00	1.00	2.00	1.00	1.00	2.00	1.89	0.11
Final Sat.:	3000	2314	986	1650	3300	1650	3000	1650	1650	3000	3117	183

Capacity Analysis Module:	Loveridge Rd NB			Loveridge Rd SB			California Ave-Park Blvd EB			California Ave-Park Blvd WB		
Vol/Sat:	0.11	0.19	0.19	0.05	0.12	0.14	0.05	0.30	0.23	0.02	0.08	0.08
Crit Volume:	319			80			503			31		
Crit Moves:	****			****			****			****		

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

Intersection #7 SR4 WB Ramps / California Ave

Cycle (sec): 100 Critical Vol./Cap.(X): 0.561
Loss Time (sec): 10 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 46 Level Of Service: A

Street Name:	SR4 WB Ramps						California Ave					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	4	4	4	4	4	4	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	1	0	0	1	1	0	1	1	0	2	0

Volume Module:	SR4 WB Ramps			California Ave								
Base Vol:	276	86	692	140	83	21	26	257	15	347	518	250
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	276	86	692	140	83	21	26	257	15	347	518	250
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	276	86	692	140	83	21	26	257	15	347	518	250
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	276	86	692	140	83	21	26	257	15	347	518	250
RTOR Reduct:	0	0	191	0	0	0	0	0	0	0	0	140
RTOR Vol:	276	86	501	140	83	21	26	257	15	347	518	110
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	276	86	501	140	83	21	26	257	15	347	518	110

Saturation Flow Module:	SR4 WB Ramps			California Ave								
Sat/Lane:	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650
Adjustment:	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00
Lanes:	1.52	0.48	1.00	1.00	0.80	0.20	1.00	1.89	0.11	2.00	2.00	1.00
Final Sat.:	2287	784	1650	1650	1317	333	1650	3118	182	3000	3300	1650

Capacity Analysis Module:	SR4 WB Ramps			California Ave								
Vol/Sat:	0.12	0.11	0.30	0.08	0.06	0.06	0.02	0.08	0.08	0.12	0.16	0.07
Crit Volume:	501			140			26			259		
Crit Moves:	****			****			****			****		

P.M. PEAK

CCTALOS METHODOLOGY

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

Intersection #1 Loveridge Rd / Buchanan Rd

Cycle (sec): 90 Critical Vol./Cap.(X): 0.794
Loss Time (sec): 15 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 131 Level Of Service: C

Street Name:	Loveridge Rd						Buchanan Rd					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	8	0	8	8	8	0	0	8	8
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0	0	1	0	0	1	0	1	0	0	1

Volume Module:	Loveridge Rd			Buchanan Rd			Buchanan Rd			Buchanan Rd		
Base Vol:	0	0	0	501	0	265	438	865	0	0	378	171
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	501	0	265	438	865	0	0	378	171
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	501	0	265	438	865	0	0	378	171
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	501	0	265	438	865	0	0	378	171
RTOR Reduct:	0	0	0	0	0	265	0	0	0	0	0	171
RTOR Vol:	0	0	0	501	0	0	438	865	0	0	378	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	501	0	0	438	865	0	0	378	0

Saturation Flow Module:	Loveridge Rd			Buchanan Rd			Buchanan Rd			Buchanan Rd		
Sat/Lane:	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Final Sat.:	0	0	0	1720	0	1720	1720	1720	0	0	1720	1720

Capacity Analysis Module:	Loveridge Rd			Buchanan Rd			Buchanan Rd			Buchanan Rd		
Vol/Sat:	0.00	0.00	0.00	0.29	0.00	0.00	0.25	0.50	0.00	0.00	0.22	0.00
Crit Volume:	0			501			865			0		
Crit Moves:	****			****			****			****		

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

Intersection #2 Loveridge Rd / Stoneman Ave

Cycle (sec): 115 Critical Vol./Cap.(X): 0.519
Loss Time (sec): 15 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 56 Level Of Service: A

Street Name:	Loveridge Rd						Stoneman Ave					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	7	7	7	7	7	7	7	7	7	7	7	7
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	1	1	0	1	1	0	1	0	1	0

Volume Module:	Loveridge Rd			Loveridge Rd			Stoneman Ave			Stoneman Ave		
Base Vol:	97	464	36	154	721	184	253	96	162	49	30	50
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	97	464	36	154	721	184	253	96	162	49	30	50
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	97	464	36	154	721	184	253	96	162	49	30	50
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	97	464	36	154	721	184	253	96	162	49	30	50
RTOR Reduct:	0	0	0	0	0	0	0	0	0	0	0	50
RTOR Vol:	97	464	36	154	721	184	253	96	162	49	30	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	97	464	36	154	721	184	253	96	162	49	30	0

Saturation Flow Module:	Loveridge Rd			Loveridge Rd			Stoneman Ave			Stoneman Ave		
Sat/Lane:	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	1.86	0.14	1.00	1.59	0.41	1.00	0.37	0.63	1.00	1.00	1.00
Final Sat.:	1650	3062	238	1650	2629	671	1650	614	1036	1650	1650	1650

Capacity Analysis Module:	Loveridge Rd			Loveridge Rd			Stoneman Ave			Stoneman Ave		
Vol/Sat:	0.06	0.15	0.15	0.09	0.27	0.27	0.15	0.16	0.16	0.03	0.02	0.00
Crit Volume:	97			453			258			49		
Crit Moves:	****			****			****			****		

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

Intersection #3 Loveridge Rd / Project Driveway

Cycle (sec): 115 Critical Vol./Cap.(X): 0.426
Loss Time (sec): 12 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 40 Level Of Service: A

Street Name:	Loveridge Rd						Project Driveway								
Approach:	North Bound			South Bound			East Bound			West Bound					
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected			Protected			Permitted			Permitted					
Rights:	Include			Include			Include			Include					
Min. Green:	7	7	0	0	7	7	7	7	7	7	7	7			
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0			
Lanes:	1	0	2	0	0	0	0	1	1	0	0	0	1	0	0

Volume Module:	Loveridge Rd			Project Driveway		
Base Vol:	1	767	0	0	1461	1
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	1	767	0	0	1461	1
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	1	767	0	0	1461	1
Reduct Vol:	0	0	0	0	0	0
Reduced Vol:	1	767	0	0	1461	1
RTOR Reduct:	0	0	0	0	0	0
RTOR Vol:	1	767	0	0	1461	1
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	1	767	0	0	1461	1

Saturation Flow Module:	Loveridge Rd			Project Driveway		
Sat/Lane:	1720	1720	1720	1720	1720	1720
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	2.00	0.00	0.00	1.99	0.01
Final Sat.:	1720	3440	0	0	3438	2

Capacity Analysis Module:	Loveridge Rd			Project Driveway		
Vol/Sat:	0.00	0.22	0.00	0.00	0.42	0.43
Crit Volume:	1			731	1	
Crit Moves:	****			****	****	

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

Intersection #4 Loveridge Rd / Leland Rd

Cycle (sec): 115 Critical Vol./Cap.(X): 0.698
Loss Time (sec): 15 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 89 Level Of Service: B

Street Name:	Loveridge Rd						Leland Rd								
Approach:	North Bound			South Bound			East Bound			West Bound					
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected			Protected			Protected			Protected					
Rights:	Include			Include			Include			Include					
Min. Green:	7	7	7	7	7	7	7	7	7	7	7	7			
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0			
Lanes:	1	0	2	0	1	2	0	2	0	1	2	0	2	0	1

Volume Module:	Loveridge Rd			Loveridge Rd			Leland Rd			Leland Rd		
Base Vol:	194	439	188	398	817	142	376	710	201	354	381	268
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	194	439	188	398	817	142	376	710	201	354	381	268
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	194	439	188	398	817	142	376	710	201	354	381	268
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	194	439	188	398	817	142	376	710	201	354	381	268
RTOR Reduct:	0	0	188	0	0	142	0	0	194	0	0	219
RTOR Vol:	194	439	0	398	817	0	376	710	7	354	381	49
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	194	439	0	398	817	0	376	710	7	354	381	49

Saturation Flow Module:	Loveridge Rd			Loveridge Rd			Leland Rd			Leland Rd		
Sat/Lane:	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650
Adjustment:	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.91	1.00	1.00
Lanes:	1.00	2.00	1.00	2.00	2.00	1.00	2.00	2.00	1.00	2.00	2.00	1.00
Final Sat.:	1650	3300	1650	3000	3300	1650	3000	3300	1650	3000	3300	1650

Capacity Analysis Module:	Loveridge Rd			Loveridge Rd			Leland Rd			Leland Rd		
Vol/Sat:	0.12	0.13	0.00	0.13	0.25	0.00	0.13	0.22	0.00	0.12	0.12	0.03
Crit Volume:	194			409			355			177		
Crit Moves:	****			****			****			****		

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

Intersection #5 Loveridge Rd / SR4 EB Ramps

Cycle (sec): 90 Critical Vol./Cap.(X): 0.717
Loss Time (sec): 15 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 95 Level Of Service: C

Street Name:	Loveridge Rd						SR4 EB Ramps					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0	2	0	1	2	0	1	1	0	1	0

Volume Module:	Loveridge Rd NB			Loveridge Rd SB			SR4 EB Ramps East			SR4 EB Ramps West		
Base Vol:	0	1013	269	85	710	103	687	2	680	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	1013	269	85	710	103	687	2	680	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	1013	269	85	710	103	687	2	680	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	1013	269	85	710	103	687	2	680	0	0	0
RTOR Reduct:	0	0	0	0	0	0	0	0	0	0	0	0
RTOR Vol:	0	1013	269	85	710	103	687	2	680	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	1013	269	85	710	103	687	2	680	0	0	0

Saturation Flow Module:	Loveridge Rd NB			Loveridge Rd SB			SR4 EB Ramps East			SR4 EB Ramps West		
Sat/Lane:	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720
Adjustment:	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	2.00	1.00	2.00	1.75	0.25	1.99	0.01	1.00	0.00	0.00	0.00
Final Sat.:	0	3440	1720	3127	3004	436	3118	10	1720	0	0	0

Capacity Analysis Module:	Loveridge Rd NB			Loveridge Rd SB			SR4 EB Ramps East			SR4 EB Ramps West		
Vol/Sat:	0.00	0.29	0.16	0.03	0.24	0.24	0.22	0.20	0.40	0.00	0.00	0.00
Crit Volume:	507			43			680			0		
Crit Moves:	****			****			****			****		

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

Intersection #6 Loveridge Rd / California Ave-Park Blvd

Cycle (sec): 115 Critical Vol./Cap.(X): 0.724
Loss Time (sec): 15 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 98 Level Of Service: C

Street Name:	Loveridge Rd						California Ave-Park Blvd								
Approach:	North Bound			South Bound			East Bound			West Bound					
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected			Protected			Protected			Protected					
Rights:	Include			Include			Include			Include					
Min. Green:	7	7	7	7	7	7	7	7	7	7	7	7			
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0			
Lanes:	2	0	1	1	0	1	0	2	0	1	2	0	1	1	0

Volume Module:	Loveridge Rd NB			Loveridge Rd SB			California Ave-Park Blvd EB			California Ave-Park Blvd WB		
Base Vol:	479	815	396	65	395	346	181	465	345	107	355	27
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	479	815	396	65	395	346	181	465	345	107	355	27
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	479	815	396	65	395	346	181	465	345	107	355	27
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	479	815	396	65	395	346	181	465	345	107	355	27
RTOR Reduct:	0	0	0	0	0	100	0	0	263	0	0	0
RTOR Vol:	479	815	396	65	395	246	181	465	82	107	355	27
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	479	815	396	65	395	246	181	465	82	107	355	27

Saturation Flow Module:	Loveridge Rd NB			Loveridge Rd SB			California Ave-Park Blvd EB			California Ave-Park Blvd WB		
Sat/Lane:	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650
Adjustment:	0.91	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00	1.00
Lanes:	2.00	1.35	0.65	1.00	2.00	1.00	2.00	1.00	1.00	2.00	1.86	0.14
Final Sat.:	3000	2221	1079	1650	3300	1650	3000	1650	1650	3000	3067	233

Capacity Analysis Module:	Loveridge Rd NB			Loveridge Rd SB			California Ave-Park Blvd EB			California Ave-Park Blvd WB		
Vol/Sat:	0.16	0.37	0.37	0.04	0.12	0.15	0.06	0.28	0.05	0.04	0.12	0.12
Crit Volume:	606			65			465			54		
Crit Moves:	****			****			****			****		

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

Intersection #7 SR4 WB Ramps / California Ave

Cycle (sec): 100 Critical Vol./Cap.(X): 0.472
Loss Time (sec): 10 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 38 Level Of Service: A

Street Name:	SR4 WB Ramps						California Ave					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	4	4	4	4	4	4	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	1	0	0	1	1	0	1	1	0	2	0

Volume Module:	SR4 WB Ramps			SR4 WB Ramps			California Ave			California Ave		
Base Vol:	41	73	350	96	43	9	76	477	17	661	378	269
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	41	73	350	96	43	9	76	477	17	661	378	269
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	41	73	350	96	43	9	76	477	17	661	378	269
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	41	73	350	96	43	9	76	477	17	661	378	269
RTOR Reduct:	0	0	350	0	0	0	0	0	0	0	0	96
RTOR Vol:	41	73	0	96	43	9	76	477	17	661	378	173
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	41	73	0	96	43	9	76	477	17	661	378	173

Saturation Flow Module:	SR4 WB Ramps			SR4 WB Ramps			California Ave			California Ave		
Sat/Lane:	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650
Adjustment:	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00
Lanes:	1.00	1.00	1.00	1.00	0.83	0.17	1.00	1.93	0.07	2.00	2.00	1.00
Final Sat.:	1500	1650	1650	1650	1364	286	1650	3186	114	3000	3300	1650

Capacity Analysis Module:	SR4 WB Ramps			SR4 WB Ramps			California Ave			California Ave		
Vol/Sat:	0.03	0.04	0.00	0.06	0.03	0.03	0.05	0.15	0.15	0.22	0.11	0.10
Crit Volume:	73			96			247			331		
Crit Moves:	****			****			****			****		

Cumulative Baseline with Project Condition

A.M. Peak

CCTALOS METHODOLOGY

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

Intersection #1 Loveridge Rd / Buchanan Rd

Cycle (sec): 90 Critical Vol./Cap.(X): 0.731
Loss Time (sec): 15 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 100 Level Of Service: C

Street Name:	Loveridge Rd						Buchanan Rd											
Approach:	North Bound			South Bound			East Bound			West Bound								
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R			
Control:	Protected						Protected						Protected					
Rights:	Include						Include						Include					
Min. Green:	0	0	0	0	0	8	0	8	8	8	0	0	8	8	0			
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0			
Lanes:	0	0	0	0	0	1	0	0	0	1	1	0	1	0	0			

Volume Module:	Loveridge Rd NB			Loveridge Rd SB			Buchanan Rd EB			Buchanan Rd WB		
Base Vol:	0	0	0	388	0	208	267	410	0	0	602	434
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	388	0	208	267	410	0	0	602	434
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	388	0	208	267	410	0	0	602	434
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	388	0	208	267	410	0	0	602	434
RTOR Reduct:	0	0	0	0	0	208	0	0	0	0	0	388
RTOR Vol:	0	0	0	388	0	0	267	410	0	0	602	46
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	0	0	388	0	0	267	410	0	0	602	46

Saturation Flow Module:	Loveridge Rd NB			Loveridge Rd SB			Buchanan Rd EB			Buchanan Rd WB		
Sat/Lane:	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Final Sat.:	0	0	0	1720	0	1720	1720	1720	0	0	1720	1720

Capacity Analysis Module:	Loveridge Rd NB			Loveridge Rd SB			Buchanan Rd EB			Buchanan Rd WB		
Vol/Sat:	0.00	0.00	0.00	0.23	0.00	0.00	0.16	0.24	0.00	0.00	0.35	0.03
Crit Volume:	0			388			267			602		
Crit Moves:	****			****			****			****		

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

Intersection #2 Loveridge Rd / Stoneman Ave

Cycle (sec): 115 Critical Vol./Cap.(X): 0.592
Loss Time (sec): 15 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 66 Level Of Service: A

Loveridge Rd						Stoneman Ave						
North Bound			South Bound			East Bound			West Bound			
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	7	7	7	7	7	7	7	7	7	7	7	7
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	1	1	0	1	1	0	1	0	1	0

Volume Module:												
Base Vol:	185	673	38	326	394	189	215	73	62	39	80	116
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	185	673	38	326	394	189	215	73	62	39	80	116
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	185	673	38	326	394	189	215	73	62	39	80	116
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	185	673	38	326	394	189	215	73	62	39	80	116
RTOR Reduct:	0	0	0	0	0	0	0	0	0	0	0	116
RTOR Vol:	185	673	38	326	394	189	215	73	62	39	80	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	185	673	38	326	394	189	215	73	62	39	80	0

Saturation Flow Module:												
Sat/Lane:	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	1.89	0.11	1.00	1.35	0.65	1.00	0.54	0.46	1.00	1.00	1.00
Final Sat.:	1650	3124	176	1650	2230	1070	1650	892	758	1650	1650	1650

Capacity Analysis Module:												
Vol/Sat:	0.11	0.22	0.22	0.20	0.18	0.18	0.13	0.08	0.08	0.02	0.05	0.00
Crit Volume:	356			326			215			80		
Crit Moves:	****			****			****			****		

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

Intersection #3 Loveridge Rd / Project Driveway

Cycle (sec): 115 Critical Vol./Cap.(X): 0.353
Loss Time (sec): 12 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 35 Level Of Service: A

Loveridge Rd						Project Driveway						
North Bound			South Bound			East Bound			West Bound			
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	7	7	0	0	7	7	7	7	7	7	7	7
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	2	0	0	0	0	1	1	0	0	0

Volume Module:												
Base Vol:	4	1000	0	0	1003	35	84	0	8	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	4	1000	0	0	1003	35	84	0	8	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	4	1000	0	0	1003	35	84	0	8	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	4	1000	0	0	1003	35	84	0	8	0	0	0
RTOR Reduct:	0	0	0	0	0	0	0	0	0	0	0	0
RTOR Vol:	4	1000	0	0	1003	35	84	0	8	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	4	1000	0	0	1003	35	84	0	8	0	0	0

Saturation Flow Module:												
Sat/Lane:	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	2.00	0.00	0.00	1.93	0.07	0.91	0.00	0.09	0.00	1.00	0.00
Final Sat.:	1720	3440	0	0	3324	116	1570	0	150	0	1720	0

Capacity Analysis Module:												
Vol/Sat:	0.00	0.29	0.00	0.00	0.30	0.30	0.05	0.00	0.05	0.00	0.00	0.00
Crit Volume:	4					519	84				0	
Crit Moves:	****					****	****					

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

Intersection #4 Loveridge Rd / Leland Rd

Cycle (sec): 115 Critical Vol./Cap.(X): 0.919
Loss Time (sec): 15 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 180 Level Of Service: E

Street Name:	Loveridge Rd						Leland Rd								
Approach:	North Bound			South Bound			East Bound			West Bound					
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected			Protected			Protected			Protected					
Rights:	Include			Include			Include			Include					
Min. Green:	7	7	7	7	7	7	7	7	7	7	7	7			
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0			
Lanes:	1	0	2	0	1	2	0	2	0	1	2	0	2	0	1

Volume Module:	Loveridge Rd NB			Loveridge Rd SB			Leland Rd EB			Leland Rd WB		
Base Vol:	556	513	151	423	549	371	486	678	522	167	838	105
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	556	513	151	423	549	371	486	678	522	167	838	105
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	556	513	151	423	549	371	486	678	522	167	838	105
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	556	513	151	423	549	371	486	678	522	167	838	105
RTOR Reduct:	0	0	92	0	0	267	0	0	522	0	0	105
RTOR Vol:	556	513	59	423	549	104	486	678	0	167	838	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	556	513	59	423	549	104	486	678	0	167	838	0

Saturation Flow Module:	Loveridge Rd NB			Loveridge Rd SB			Leland Rd EB			Leland Rd WB		
Sat/Lane:	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650
Adjustment:	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.91	1.00	1.00
Lanes:	1.00	2.00	1.00	2.00	2.00	1.00	2.00	2.00	1.00	2.00	2.00	1.00
Final Sat.:	1650	3300	1650	3000	3300	1650	3000	3300	1650	3000	3300	1650

Capacity Analysis Module:	Loveridge Rd NB			Loveridge Rd SB			Leland Rd EB			Leland Rd WB		
Vol/Sat:	0.34	0.16	0.04	0.14	0.17	0.06	0.16	0.21	0.00	0.06	0.25	0.00
Crit Volume:	556			275			243			419		
Crit Moves:	****			****			****			****		

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

Intersection #5 Loveridge Rd / SR4 EB Ramps

Cycle (sec): 90 Critical Vol./Cap.(X): 0.778
Loss Time (sec): 15 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 121 Level Of Service: C

Street Name:	Loveridge Rd						SR4 EB Ramps					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0	2	0	1		2	0	2	0	0	
	1						1	1	0	1	0	

Volume Module:	Loveridge Rd NB			Loveridge Rd SB			SR4 EB Ramps East			SR4 EB Ramps West		
Base Vol:	0	726	285	328	672	0	299	1	794	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	726	285	328	672	0	299	1	794	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	726	285	328	672	0	299	1	794	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	726	285	328	672	0	299	1	794	0	0	0
RTOR Reduct:	0	0	0	0	0	0	0	0	0	0	0	0
RTOR Vol:	0	726	285	328	672	0	299	1	794	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	726	285	328	672	0	299	1	794	0	0	0

Saturation Flow Module:	Loveridge Rd NB			Loveridge Rd SB			SR4 EB Ramps East			SR4 EB Ramps West		
Sat/Lane:	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720
Adjustment:	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	2.00	1.00	2.00	2.00	0.00	1.99	0.01	1.00	0.00	0.00	0.00
Final Sat.:	0	3440	1720	3127	3440	0	3117	11	1720	0	0	0

Capacity Analysis Module:	Loveridge Rd NB			Loveridge Rd SB			SR4 EB Ramps East			SR4 EB Ramps West		
Vol/Sat:	0.00	0.21	0.17	0.10	0.20	0.00	0.10	0.09	0.46	0.00	0.00	0.00
Crit Volume:	363			164			794			0		
Crit Moves:	****			****			****					

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

Intersection #6 Loveridge Rd / California Ave-Park Blvd

Cycle (sec): 115 Critical Vol./Cap.(X): 0.593
Loss Time (sec): 15 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 66 Level Of Service: A

Street Name:	Loveridge Rd						California Ave-Park Blvd								
Approach:	North Bound			South Bound			East Bound			West Bound					
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected			Protected			Protected			Protected					
Rights:	Include			Include			Include			Include					
Min. Green:	7	7	7	7	7	7	7	7	7	7	7	7			
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0			
Lanes:	2	0	1	1	0	1	0	2	0	1	2	0	1	1	0

Volume Module:	Loveridge Rd NB			Loveridge Rd SB			California Ave-Park Blvd EB			California Ave-Park Blvd WB		
Base Vol:	386	448	191	80	383	316	159	503	566	62	255	15
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	386	448	191	80	383	316	159	503	566	62	255	15
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	386	448	191	80	383	316	159	503	566	62	255	15
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	386	448	191	80	383	316	159	503	566	62	255	15
RTOR Reduct:	0	0	0	0	0	87	0	0	212	0	0	0
RTOR Vol:	386	448	191	80	383	229	159	503	354	62	255	15
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	386	448	191	80	383	229	159	503	354	62	255	15

Saturation Flow Module:	Loveridge Rd NB			Loveridge Rd SB			California Ave-Park Blvd EB			California Ave-Park Blvd WB		
Sat/Lane:	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650
Adjustment:	0.91	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00	1.00
Lanes:	2.00	1.40	0.60	1.00	2.00	1.00	2.00	1.00	1.00	2.00	1.89	0.11
Final Sat.:	3000	2314	986	1650	3300	1650	3000	1650	1650	3000	3117	183

Capacity Analysis Module:	Loveridge Rd NB			Loveridge Rd SB			California Ave-Park Blvd EB			California Ave-Park Blvd WB		
Vol/Sat:	0.13	0.19	0.19	0.05	0.12	0.14	0.05	0.30	0.21	0.02	0.08	0.08
Crit Volume:	193					229		503		31		
Crit Moves:	****					****		****		****		

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

Intersection #7 SR4 WB Ramps / California Ave

Cycle (sec): 100 Critical Vol./Cap.(X): 0.549
Loss Time (sec): 10 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 44 Level Of Service: A

Street Name:	SR4 WB Ramps						California Ave					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	4	4	4	4	4	4	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	1	0	0	1	1	0	1	1	0	2	0

Volume Module:	SR4 WB Ramps			California Ave								
Base Vol:	276	86	696	140	83	21	26	257	15	392	518	250
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	276	86	696	140	83	21	26	257	15	392	518	250
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	276	86	696	140	83	21	26	257	15	392	518	250
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	276	86	696	140	83	21	26	257	15	392	518	250
RTOR Reduct:	0	0	216	0	0	0	0	0	0	0	0	140
RTOR Vol:	276	86	480	140	83	21	26	257	15	392	518	110
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	276	86	480	140	83	21	26	257	15	392	518	110

Saturation Flow Module:	SR4 WB Ramps			California Ave								
Sat/Lane:	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650
Adjustment:	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00
Lanes:	1.52	0.48	1.00	1.00	0.80	0.20	1.00	1.89	0.11	2.00	2.00	1.00
Final Sat.:	2287	784	1650	1650	1317	333	1650	3118	182	3000	3300	1650

Capacity Analysis Module:	SR4 WB Ramps			California Ave								
Vol/Sat:	0.12	0.11	0.29	0.08	0.06	0.06	0.02	0.08	0.08	0.13	0.16	0.07
Crit Volume:	480			140			26			259		
Crit Moves:	****			****			****			****		

P.M. PEAK

CCTALOS METHODOLOGY

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

Intersection #1 Loveridge Rd / Buchanan Rd

Cycle (sec): 90 Critical Vol./Cap.(X): 0.794
Loss Time (sec): 15 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 131 Level Of Service: C

Street Name:	Loveridge Rd						Buchanan Rd											
Approach:	North Bound			South Bound			East Bound			West Bound								
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R			
Control:	Protected						Protected						Protected					
Rights:	Include						Include						Include					
Min. Green:	0	0	0	0	0	8	0	8	8	8	0	0	8	8	0			
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0			
Lanes:	0	0	0	0	0	1	0	0	0	1	1	0	1	0	0			

Volume Module:	Loveridge Rd NB			Loveridge Rd SB			Buchanan Rd EB			Buchanan Rd WB		
Base Vol:	0	0	0	501	0	269	444	865	0	0	378	171
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	501	0	269	444	865	0	0	378	171
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	501	0	269	444	865	0	0	378	171
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	501	0	269	444	865	0	0	378	171
RTOR Reduct:	0	0	0	0	0	269	0	0	0	0	0	171
RTOR Vol:	0	0	0	501	0	0	444	865	0	0	378	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	501	0	0	444	865	0	0	378	0

Saturation Flow Module:	Loveridge Rd NB			Loveridge Rd SB			Buchanan Rd EB			Buchanan Rd WB		
Sat/Lane:	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Final Sat.:	0	0	0	1720	0	1720	1720	1720	0	0	1720	1720

Capacity Analysis Module:	Loveridge Rd NB			Loveridge Rd SB			Buchanan Rd EB			Buchanan Rd WB		
Vol/Sat:	0.00	0.00	0.00	0.29	0.00	0.00	0.26	0.50	0.00	0.00	0.22	0.00
Crit Volume:	0			501			865			0		
Crit Moves:	*****			*****			*****			*****		

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

Intersection #2 Loveridge Rd / Stoneman Ave

Cycle (sec): 115 Critical Vol./Cap.(X): 0.521
Loss Time (sec): 15 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 56 Level Of Service: A

Street Name:	Loveridge Rd						Stoneman Ave					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	7	7	7	7	7	7	7	7	7	7	7	7
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	1	1	0	1	1	0	1	0	1	0

Volume Module:	Loveridge Rd NB			Loveridge Rd SB			Stoneman Ave EB			Stoneman Ave WB		
Base Vol:	97	470	36	154	725	185	255	96	162	49	30	50
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	97	470	36	154	725	185	255	96	162	49	30	50
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	97	470	36	154	725	185	255	96	162	49	30	50
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	97	470	36	154	725	185	255	96	162	49	30	50
RTOR Reduct:	0	0	0	0	0	0	0	0	0	0	0	50
RTOR Vol:	97	470	36	154	725	185	255	96	162	49	30	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	97	470	36	154	725	185	255	96	162	49	30	0

Saturation Flow Module:	Loveridge Rd NB			Loveridge Rd SB			Stoneman Ave EB			Stoneman Ave WB		
Sat/Lane:	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	1.86	0.14	1.00	1.59	0.41	1.00	0.37	0.63	1.00	1.00	1.00
Final Sat.:	1650	3065	235	1650	2629	671	1650	614	1036	1650	1650	1650

Capacity Analysis Module:	Loveridge Rd NB			Loveridge Rd SB			Stoneman Ave EB			Stoneman Ave WB		
Vol/Sat:	0.06	0.15	0.15	0.09	0.28	0.28	0.15	0.16	0.16	0.03	0.02	0.00
Crit Volume:	97					455			258	49		
Crit Moves:	****					****			****	****		

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

Intersection #3 Loveridge Rd / Project Driveway

Cycle (sec): 115 Critical Vol./Cap.(X): 0.491
Loss Time (sec): 12 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 45 Level Of Service: A

Street Name:		Loveridge Rd						Project Driveway								
Approach:		North Bound			South Bound			East Bound			West Bound					
Movement:		L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:		Protected			Protected			Permitted			Permitted					
Rights:		Include			Include			Include			Include					
Min. Green:		7	7	0	0	7	7	7	7	7	7	7	7			
Y+R:		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0			
Lanes:		1	0	2	0	0	0	0	1	1	0	0	0	1	0	0

Volume Module:												
Base Vol:	9	767	0	0	1461	87	56	0	6	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	9	767	0	0	1461	87	56	0	6	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	9	767	0	0	1461	87	56	0	6	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	9	767	0	0	1461	87	56	0	6	0	0	0
RTOR Reduct:	0	0	0	0	0	0	0	0	0	0	0	0
RTOR Vol:	9	767	0	0	1461	87	56	0	6	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	9	767	0	0	1461	87	56	0	6	0	0	0

Saturation Flow Module:												
Sat/Lane:	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	2.00	0.00	0.00	1.89	0.11	0.90	0.00	0.10	0.00	1.00	0.00
Final Sat.:	1720	3440	0	0	3247	193	1554	0	166	0	1720	0

Capacity Analysis Module:												
Vol/Sat:	0.01	0.22	0.00	0.00	0.45	0.45	0.04	0.00	0.04	0.00	0.00	0.00
Crit Volume:	9					774			62	0		
Crit Moves:	****					****			****			

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

Intersection #4 Loveridge Rd / Leland Rd

Cycle (sec): 115 Critical Vol./Cap.(X): 0.727
Loss Time (sec): 15 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 99 Level Of Service: C

Street Name:	Loveridge Rd						Leland Rd								
Approach:	North Bound			South Bound			East Bound			West Bound					
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected			Protected			Protected			Protected					
Rights:	Include			Include			Include			Include					
Min. Green:	7	7	7	7	7	7	7	7	7	7	7	7			
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0			
Lanes:	1	0	2	0	1	2	0	2	0	1	2	0	2	0	1

Volume Module:	Loveridge Rd NB			Loveridge Rd SB			Leland Rd EB			Leland Rd WB		
Base Vol:	209	475	192	398	873	142	376	710	225	361	381	268
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	209	475	192	398	873	142	376	710	225	361	381	268
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	209	475	192	398	873	142	376	710	225	361	381	268
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	209	475	192	398	873	142	376	710	225	361	381	268
RTOR Reduct:	0	0	192	0	0	142	0	0	209	0	0	219
RTOR Vol:	209	475	0	398	873	0	376	710	16	361	381	49
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	209	475	0	398	873	0	376	710	16	361	381	49

Saturation Flow Module:	Loveridge Rd NB			Loveridge Rd SB			Leland Rd EB			Leland Rd WB		
Sat/Lane:	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650
Adjustment:	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.91	1.00	1.00
Lanes:	1.00	2.00	1.00	2.00	2.00	1.00	2.00	2.00	1.00	2.00	2.00	1.00
Final Sat.:	1650	3300	1650	3000	3300	1650	3000	3300	1650	3000	3300	1650

Capacity Analysis Module:	Loveridge Rd NB			Loveridge Rd SB			Leland Rd EB			Leland Rd WB		
Vol/Sat:	0.13	0.14	0.00	0.13	0.26	0.00	0.13	0.22	0.01	0.12	0.12	0.03
Crit Volume:	209			436			355			181		
Crit Moves:	****			****			****			****		

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

Intersection #5 Loveridge Rd / SR4 EB Ramps

Cycle (sec): 90 Critical Vol./Cap.(X): 0.753
Loss Time (sec): 15 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 109 Level Of Service: C

Street Name:	Loveridge Rd						SR4 EB Ramps					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0	2	0	1	1	0	1	1	0	0	0

Volume Module:	Loveridge Rd NB			Loveridge Rd SB			SR4 EB Ramps East			SR4 EB Ramps West		
Base Vol:	0	1043	275	85	719	103	687	2	727	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	1043	275	85	719	103	687	2	727	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	1043	275	85	719	103	687	2	727	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	1043	275	85	719	103	687	2	727	0	0	0
RTOR Reduct:	0	0	0	0	0	0	0	0	0	0	0	0
RTOR Vol:	0	1043	275	85	719	103	687	2	727	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	1043	275	85	719	103	687	2	727	0	0	0

Saturation Flow Module:	Loveridge Rd NB			Loveridge Rd SB			SR4 EB Ramps East			SR4 EB Ramps West		
Sat/Lane:	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720
Adjustment:	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	2.00	1.00	2.00	1.75	0.25	1.99	0.01	1.00	0.00	0.00	0.00
Final Sat.:	0	3440	1720	3127	3009	431	3118	10	1720	0	0	0

Capacity Analysis Module:	Loveridge Rd NB			Loveridge Rd SB			SR4 EB Ramps East			SR4 EB Ramps West		
Vol/Sat:	0.00	0.30	0.16	0.03	0.24	0.24	0.22	0.20	0.42	0.00	0.00	0.00
Crit Volume:	522			43			727			0		
Crit Moves:	****			****			****					

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

Intersection #6 Loveridge Rd / California Ave-Park Blvd

Cycle (sec): 115 Critical Vol./Cap.(X): 0.724
Loss Time (sec): 15 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 98 Level Of Service: C

Street Name:	Loveridge Rd						California Ave-Park Blvd								
Approach:	North Bound			South Bound			East Bound			West Bound					
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected			Protected			Protected			Protected					
Rights:	Include			Include			Include			Include					
Min. Green:	7	7	7	7	7	7	7	7	7	7	7	7			
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0			
Lanes:	2	0	1	1	0	1	0	2	0	1	2	0	1	1	0

Volume Module:	Loveridge Rd NB			Loveridge Rd SB			California Ave-Park Blvd EB			California Ave-Park Blvd WB		
Base Vol:	509	815	396	65	395	346	181	465	354	107	355	27
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	509	815	396	65	395	346	181	465	354	107	355	27
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	509	815	396	65	395	346	181	465	354	107	355	27
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	509	815	396	65	395	346	181	465	354	107	355	27
RTOR Reduct:	0	0	0	0	0	100	0	0	280	0	0	0
RTOR Vol:	509	815	396	65	395	246	181	465	74	107	355	27
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	509	815	396	65	395	246	181	465	74	107	355	27

Saturation Flow Module:	Loveridge Rd NB			Loveridge Rd SB			California Ave-Park Blvd EB			California Ave-Park Blvd WB		
Sat/Lane:	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650
Adjustment:	0.91	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00	1.00
Lanes:	2.00	1.35	0.65	1.00	2.00	1.00	2.00	1.00	1.00	2.00	1.86	0.14
Final Sat.:	3000	2221	1079	1650	3300	1650	3000	1650	1650	3000	3067	233

Capacity Analysis Module:	Loveridge Rd NB			Loveridge Rd SB			California Ave-Park Blvd EB			California Ave-Park Blvd WB		
Vol/Sat:	0.17	0.37	0.37	0.04	0.12	0.15	0.06	0.28	0.04	0.04	0.12	0.12
Crit Volume:	606			65			465			54		
Crit Moves:	****			****			****			****		

Level Of Service Computation Report
CCTALOS Method (Base Volume Alternative)

Intersection #7 SR4 WB Ramps / California Ave

Cycle (sec): 100 Critical Vol./Cap.(X): 0.482
Loss Time (sec): 10 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 39 Level Of Service: A

Street Name:	SR4 WB Ramps						California Ave					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	4	4	4	4	4	4	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	1	0	0	1	1	0	1	1	0	2	0

Volume Module:	SR4 WB Ramps			SR4 WB Ramps			California Ave			California Ave		
Base Vol:	41	73	359	96	43	9	76	477	17	691	378	269
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	41	73	359	96	43	9	76	477	17	691	378	269
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	41	73	359	96	43	9	76	477	17	691	378	269
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	41	73	359	96	43	9	76	477	17	691	378	269
RTOR Reduct:	0	0	359	0	0	0	0	0	0	0	0	96
RTOR Vol:	41	73	0	96	43	9	76	477	17	691	378	173
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	41	73	0	96	43	9	76	477	17	691	378	173

Saturation Flow Module:	SR4 WB Ramps			SR4 WB Ramps			California Ave			California Ave		
Sat/Lane:	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650
Adjustment:	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00
Lanes:	1.00	1.00	1.00	1.00	0.83	0.17	1.00	1.93	0.07	2.00	2.00	1.00
Final Sat.:	1500	1650	1650	1650	1364	286	1650	3186	114	3000	3300	1650

Capacity Analysis Module:	SR4 WB Ramps			SR4 WB Ramps			California Ave			California Ave		
Vol/Sat:	0.03	0.04	0.00	0.06	0.03	0.03	0.05	0.15	0.15	0.23	0.11	0.10
Crit Volume:	73			96			247			346		
Crit Moves:	****			****			****			****		

Appendix C

MITIGATION MEASURES

CCTALOS METHODOLOGY

HCM 2010 Signalized Intersection Summary

4: Loveridge Rd & Leland Rd

12/10/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	486	678	522	167	838	105	556	513	151	423	549	371
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	528	737	567	182	911	114	604	558	164	460	597	403
Adj No. of Lanes	2	2	1	2	2	1	1	2	1	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	329	923	785	240	831	372	417	1206	540	533	923	413
Arrive On Green	0.10	0.26	0.26	0.07	0.23	0.23	0.23	0.34	0.34	0.15	0.26	0.26
Sat Flow, veh/h	3442	3539	1583	3442	3539	1583	1774	3539	1583	3442	3539	1583
Grp Volume(v), veh/h	528	737	567	182	911	114	604	558	164	460	597	403
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1770	1583	1774	1770	1583	1721	1770	1583
Q Serve(g_s), s	11.0	22.4	30.0	6.0	27.0	6.8	27.0	14.2	8.8	15.0	17.2	29.0
Cycle Q Clear(g_c), s	11.0	22.4	30.0	6.0	27.0	6.8	27.0	14.2	8.8	15.0	17.2	29.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	329	923	785	240	831	372	417	1206	540	533	923	413
V/C Ratio(X)	1.60	0.80	0.72	0.76	1.10	0.31	1.45	0.46	0.30	0.86	0.65	0.98
Avail Cap(c_a), veh/h	329	923	785	269	831	372	417	1206	540	658	923	413
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.0	39.7	22.8	52.5	44.0	36.3	44.0	29.7	27.9	47.4	37.8	42.1
Incr Delay (d2), s/veh	285.6	4.7	3.0	10.6	60.9	0.2	215.6	1.3	1.5	9.7	3.5	38.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	18.3	11.6	14.7	3.2	20.2	3.0	38.1	7.1	4.0	7.9	8.9	17.1
LnGrp Delay(d),s/veh	337.6	44.4	25.8	63.2	104.9	36.5	259.6	30.9	29.3	57.1	41.3	80.8
LnGrp LOS	F	D	C	E	F	D	F	C	C	E	D	F
Approach Vol, veh/h	1832			1207			1326			1460		
Approach Delay, s/veh	123.1			92.1			134.9			57.2		
Approach LOS	F			F			F			E		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	22.8	44.2	13.0	35.0	32.0	35.0	16.0	32.0				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	22.0	35.0	9.0	29.0	27.0	30.0	11.0	27.0				
Max Q Clear Time (g_c+I1), s	17.0	16.2	8.0	32.0	29.0	31.0	13.0	29.0				
Green Ext Time (p_c), s	0.8	7.3	0.1	0.0	0.0	0.0	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay	102.9											
HCM 2010 LOS	F											
Notes												

HCM 2010 Signalized Intersection Summary

4: Loveridge Rd & Leland Rd

12/10/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	376	710	225	361	381	268	209	475	192	398	873	142
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	409	772	245	392	414	291	227	516	209	433	949	154
Adj No. of Lanes	2	2	1	2	2	1	1	2	1	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	454	854	382	423	823	368	255	1118	500	495	1120	501
Arrive On Green	0.13	0.24	0.24	0.12	0.23	0.23	0.14	0.32	0.32	0.14	0.32	0.32
Sat Flow, veh/h	3442	3539	1583	3442	3539	1583	1774	3539	1583	3442	3539	1583
Grp Volume(v), veh/h	409	772	245	392	414	291	227	516	209	433	949	154
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1770	1583	1774	1770	1583	1721	1770	1583
Q Serve(g_s), s	13.3	24.1	15.8	12.8	11.6	19.7	14.3	13.3	11.8	14.0	28.5	8.4
Cycle Q Clear(g_c), s	13.3	24.1	15.8	12.8	11.6	19.7	14.3	13.3	11.8	14.0	28.5	8.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	454	854	382	423	823	368	255	1118	500	495	1120	501
V/C Ratio(X)	0.90	0.90	0.64	0.93	0.50	0.79	0.89	0.46	0.42	0.87	0.85	0.31
Avail Cap(c_a), veh/h	454	871	390	423	840	376	265	1118	500	544	1120	501
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.7	41.9	38.7	49.4	38.0	41.1	47.9	31.2	30.7	47.7	36.3	29.5
Incr Delay (d2), s/veh	20.9	12.3	2.8	26.2	0.3	10.0	28.4	1.4	2.6	13.8	8.0	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.6	13.3	7.2	7.6	5.7	9.6	9.0	6.7	5.5	7.6	15.1	3.9
LnGrp Delay(d),s/veh	69.6	54.2	41.6	75.6	38.2	51.1	76.3	32.5	33.2	61.5	44.3	31.0
LnGrp LOS	E	D	D	E	D	D	E	C	C	E	D	C
Approach Vol, veh/h	1426		1097				952		1536			
Approach Delay, s/veh	56.5		55.0				43.1		47.8			
Approach LOS	E		D				D		D			
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	21.4	41.0	19.0	32.5	21.3	41.0	20.0	31.5				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	18.0	35.0	14.0	28.0	17.0	36.0	15.0	27.0				
Max Q Clear Time (g_c+I1), s	16.0	15.3	14.8	26.1	16.3	30.5	15.3	21.7				
Green Ext Time (p_c), s	0.4	8.9	0.0	1.4	0.0	3.8	0.0	3.3				
Intersection Summary												
HCM 2010 Ctrl Delay	51.0											
HCM 2010 LOS	D											

HCM 2010 Signalized Intersection Summary

1: Buchanan Rd & Loveridge Rd

12/10/2014

								
Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations								
Volume (veh/h)	444	865	378	171	501	269		
Number	7	4	8	18	1	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	483	940	411	186	545	292		
Adj No. of Lanes	1	1	1	1	1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	423	1079	529	450	534	477		
Arrive On Green	0.24	0.58	0.28	0.28	0.30	0.30		
Sat Flow, veh/h	1774	1863	1863	1583	1774	1583		
Grp Volume(v), veh/h	483	940	411	186	545	292		
Grp Sat Flow(s),veh/h/ln	1774	1863	1863	1583	1774	1583		
Q Serve(g_s), s	21.0	37.7	17.8	8.4	26.5	13.9		
Cycle Q Clear(g_c), s	21.0	37.7	17.8	8.4	26.5	13.9		
Prop In Lane	1.00			1.00	1.00	1.00		
Lane Grp Cap(c), veh/h	423	1079	529	450	534	477		
V/C Ratio(X)	1.14	0.87	0.78	0.41	1.02	0.61		
Avail Cap(c_a), veh/h	423	1122	572	486	534	477		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	33.5	15.7	28.9	25.6	30.7	26.3		
Incr Delay (d2), s/veh	88.1	7.4	6.2	0.6	44.1	5.8		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	20.6	21.3	10.1	3.7	19.5	12.8		
LnGrp Delay(d),s/veh	121.5	23.1	35.2	26.2	74.8	32.1		
LnGrp LOS	F	C	D	C	F	C		
Approach Vol, veh/h		1423	597		837			
Approach Delay, s/veh		56.5	32.4		59.9			
Approach LOS		E	C		E			
Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				56.0		32.0	26.0	30.0
Change Period (Y+Rc), s				5.0		5.5	5.0	5.0
Max Green Setting (Gmax), s				53.0		26.5	21.0	27.0
Max Q Clear Time (g_c+l1), s				39.7		28.5	23.0	19.8
Green Ext Time (p_c), s				8.4		0.0	0.0	5.1
Intersection Summary								
HCM 2010 Ctrl Delay			52.5					
HCM 2010 LOS			D					