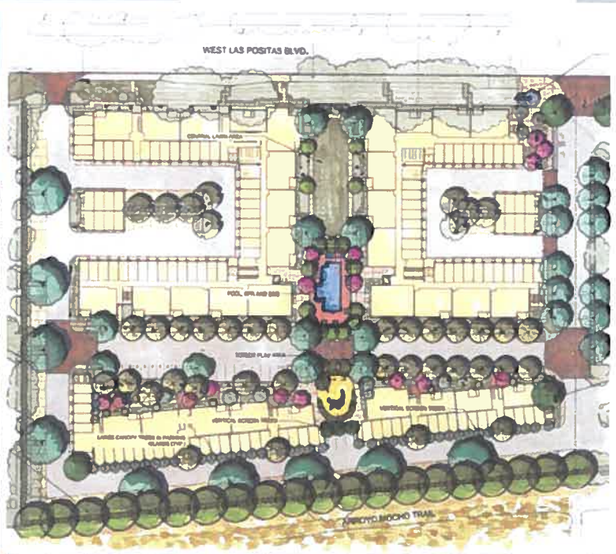
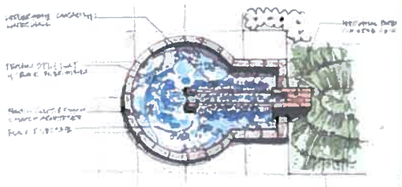
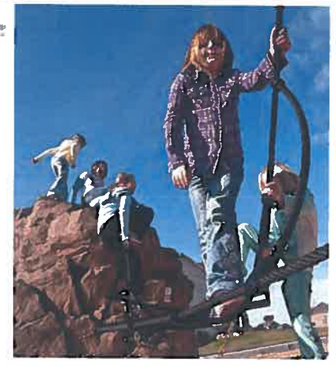
PUD-103 & P14-0086
PUD & Development Agreement
"RECEIVED JAN 24 2014"
EXHIBIT B

5850 WEST LAS POSITAS BLVD PLEASANTON, CA

PUD SUBMITTAL JANUARY 24, 2014







SHEET INDEX

A1.1	EXISTING SITE PHOTOS
A1.2	LAND USE CONTEXT
A1.3	CIRCULATION CONTEXT
A1.4	CONCEPTUAL SITE PLAN
A1.5	OPEN SPACE DIAGRAM
A2.1-A2.6	FLOOR PLANS
A3.1-A3.2	ROOF PLANS
A4.1-A4.6	UNIT PLANS
A5.1	TYPICAL BUILDING SECTIONS
A6.1-A6.9	CONCEPTUAL ELEVATIONS
A7.1-A7.4	CONCEPTUAL PERSPECTIVES
A8.1	COLORS & MATERIALS
L1.0	CONCEPTUAL LANDSCAPE PLAN
L1.1-L1.2	CONCEPTUAL LANDSCAPE ENLARGEMENTS
L2.0-L2.2	CONCEPTUAL LANDSCAPE DETAILS
L3.0	CONCEPTUAL PLANT LIST & DESIGN INTENT
L3.1	CONCEPTUAL PLANT IMAGERY
C1.0	EXISTING CONDITIONS PLAN
C2.0	PRELIMINARY SITE PLAN
C3.0	PRELIMINARY FIRE HYDRANT LOCATION AND FIRE TURNING PATH PLAN
C4.0	PRELIMINARY GRADING AND DRAINAGE PLAN
C5.0	PRELIMINARY UTILITY PLAN
C6.0	PRELIMINARY STORMWATER MANAGEMENT PLAN
JT1	JOINT TRENCH COMPOSITE TITLE SHEET
JT2-JT4	JOINT TRENCH GENERAL NOTES AND DETAILS
JT5-JT8	JOINT TRENCH COMPOSITE PLANS
SL1-SL2	STREET LIGHTING GENERAL NOTES AND DETAILS
SL3-SL6	STREET LIGHTING SITE PLAN
PE	PHOTOMETRIC EXHIBIT

AN APARTMENT COMMUNITY BY:

OWNER/DEVELOPER:

SUMMERHILL COMMUNITIES OF DISTINCTION

SHAC LAS POSITAS APARTMENTS LLC
3000 EXECUTIVE PARKWAY, SUITE 450
SAN RAMON, CA 94583
CONTACT: KEVIN EBRAHIMI
T: 650.842.2268
KEBRAHIMI@SHHOMES.COM

DESIGN TEAM:

ARCHITECT:

ktgy

KTGY GROUP INC.
1733 OCEAN AVE, SUITE 250
SANTA MONICA, CA 90401
CONTACT: MANNY GONZALEZ
T:310.394.2623
MGONZALEZ@KTGY.COM

LANDSCAPE ARCHITECT:

VAN DORN ABED
81 14TH STREET
SAN FRANCISCO, CA 94103
CONTACT: ZEKI ABED
T:415.864.1921 X 104
ZEKI@VALAINC.COM
WWW.VALAINC.COM

CIVIL ENGINEER:

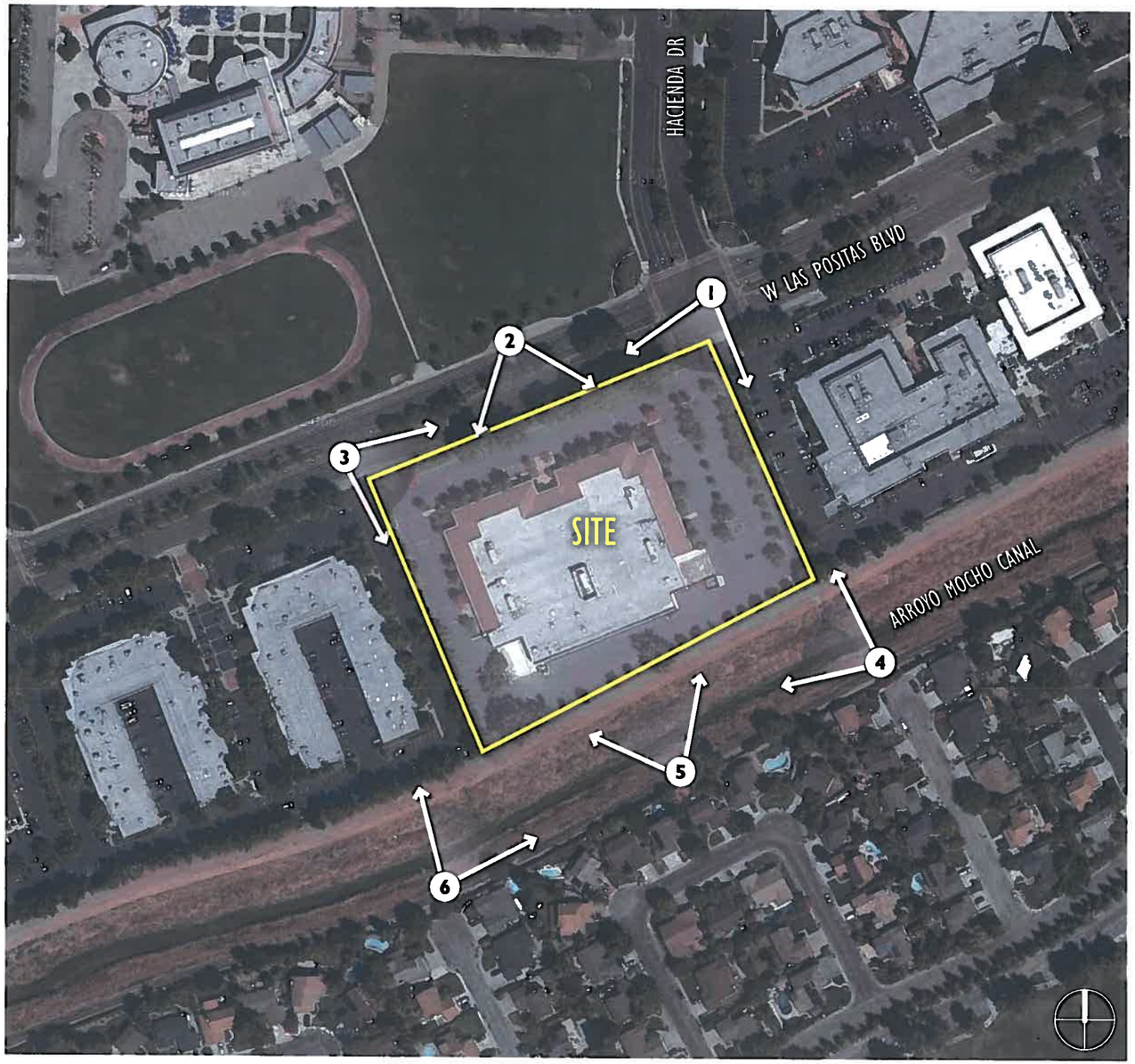
RJA

RUGGERI - JENSEN - AZAR
4690 CHABOT DRIVE
SUITE 200
PLEASANTON, CA 94588
CONTACT: EDDIE SIUE, P.E.
T:925.227-9100
ESIEU@RJA-GPS.COM
WWW.RJA-GPS.COM

UTILITY CONSULTANT:

TARRAR UTILITY CONSULTANTS

TARRAR
3361 WALNUT BLVD
SUITE 100
BRENTWOOD, CA 94513
CONTACT: KHALID TARRAR
T:925.240-2595
KHALID@TARRAR.COM
WWW.TARRAR.COM



5850 WEST LAS POSITAS BLVD

SUMMERHILL APARTMENT COMMUNITIES
COMMUNITIES OF DISTINCTION

SummerHill Apartment Communities
3000 Executive Parkway, Suite 450
San Ramon, CA 94583
650.842.2268
www.shapartments.com

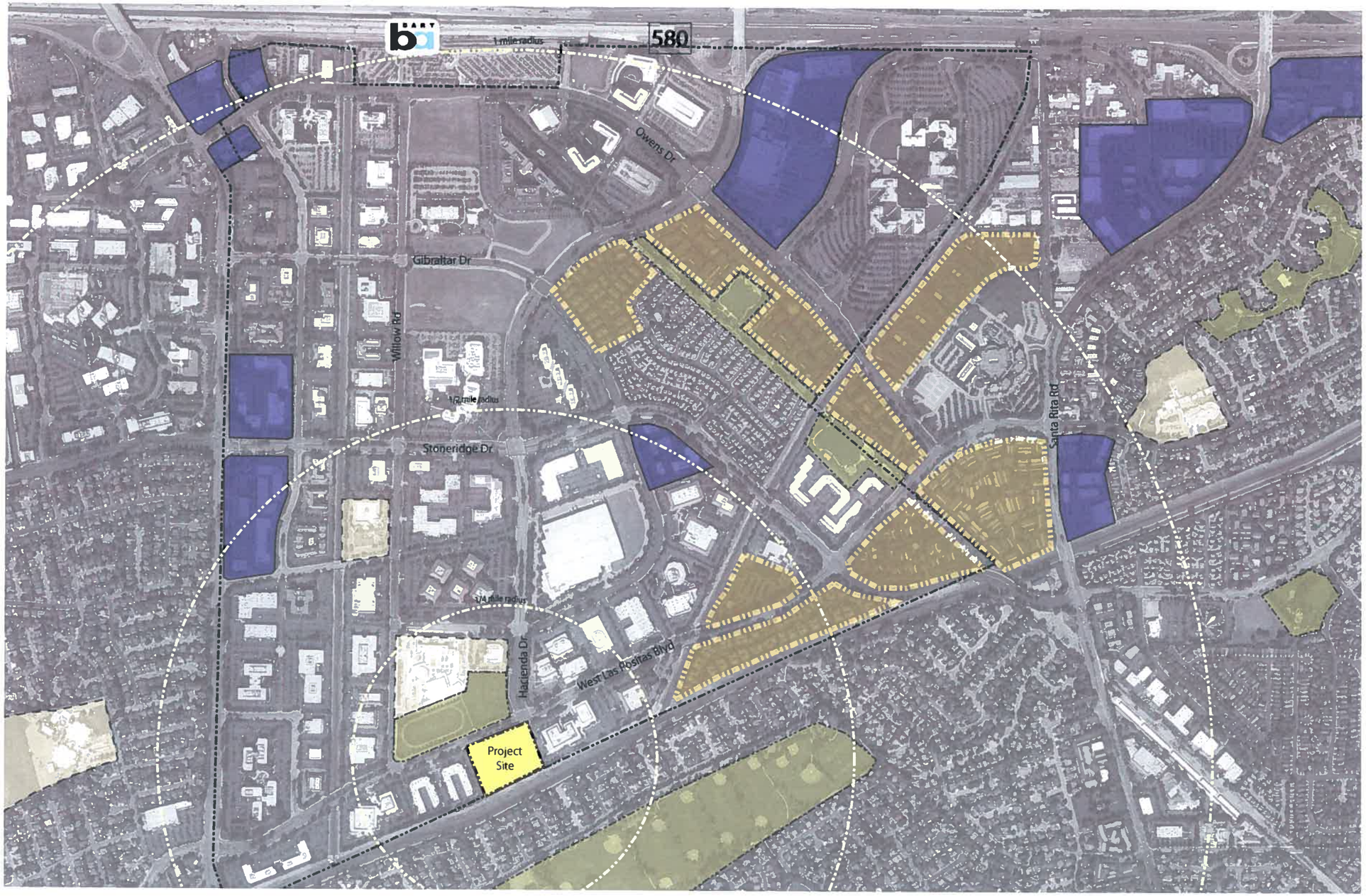
SITE PHOTOS

PLEASANTON, CALIFORNIA
KTGY # 2013-0313 01/24/2014

A1.1

KTGY Group, Inc.
Architecture+Planning
1733 Ocean Ave., Suite 250
Santa Monica, CA 90401
310.394.2623
ktgy.com

ktgy



LEGEND:

- Bart Station
- Project Site
- Major Shopping Areas
- Schools
- Multifamily Housing
- Parks & Open Spaces
- Hacienda Business Park
- Walking Distances from the Site (1/4,1/2,1 mile)

5850 WEST LAS POSITAS BLVD

LAND USE CONTEXT

A1.2

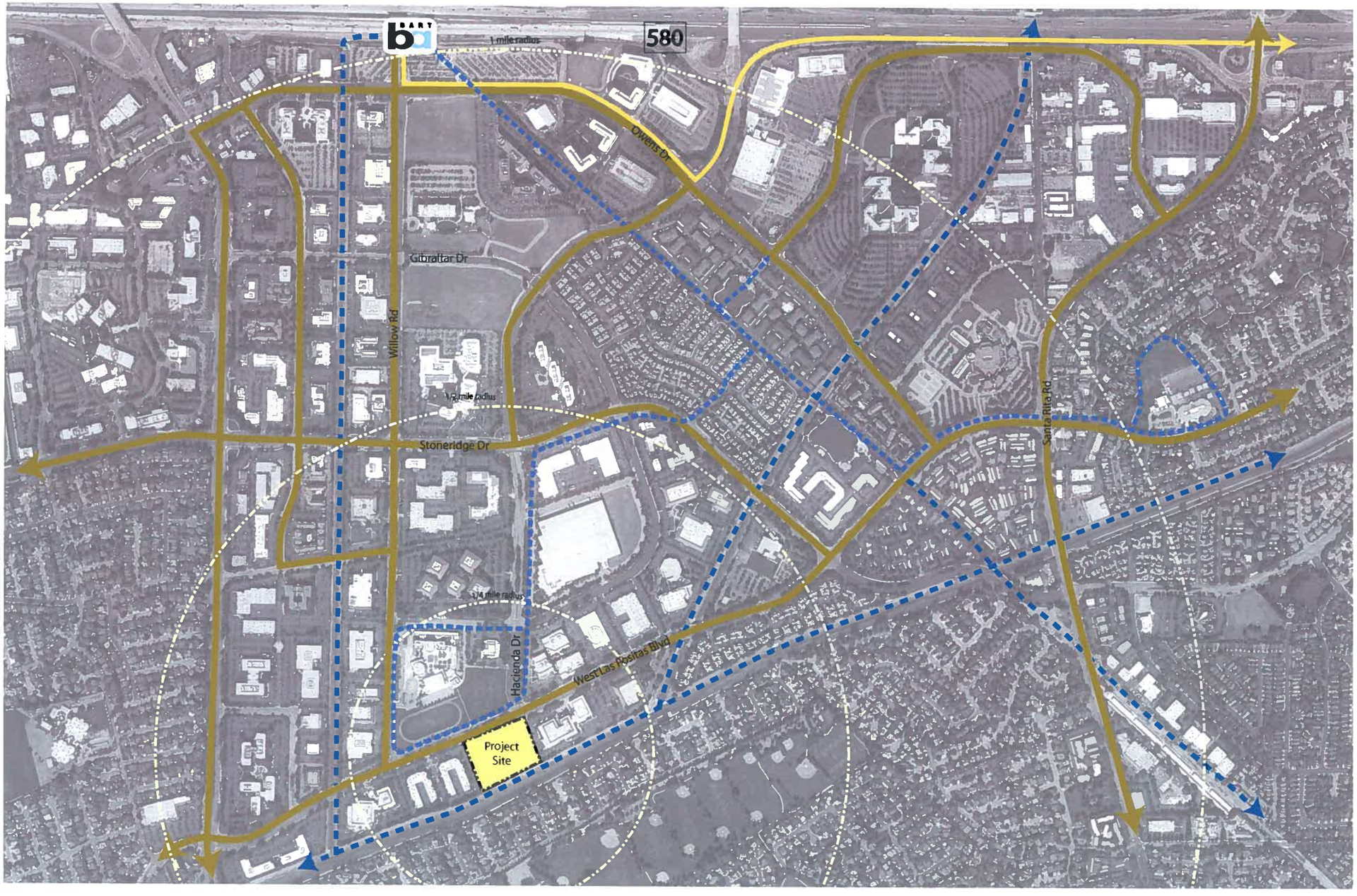
PLEASANTON, CALIFORNIA

KTGY # 2013-0313 01/24/2014

SUMMERHILL APARTMENT COMMUNITIES
COMMUNITIES OF DISTINCTION

SummerHill Apartment Communities
3000 Executive Parkway, Suite 450
San Ramon, CA 94583
650.842.2268
www.shapartments.com

KTGY Group, Inc.
Architecture+Planning
1733 Ocean Ave., Suite 250
Santa Monica, CA 90401
310.394.2623
ktgy.com



LEGEND:

- Bart Station
- Project Site
- Wheels outes
- Wheels onnection to Ace rain
- Walk ays/Bike ays to Schools
- lass 1 Bike ay/ Multi use rail
- Walking Distances from the Site (1/4.1/2.1 mile)

5850 WEST LAS POSITAS BLVD

CIRCULATION CONTEXT

PLEASANTON, CALIFORNIA

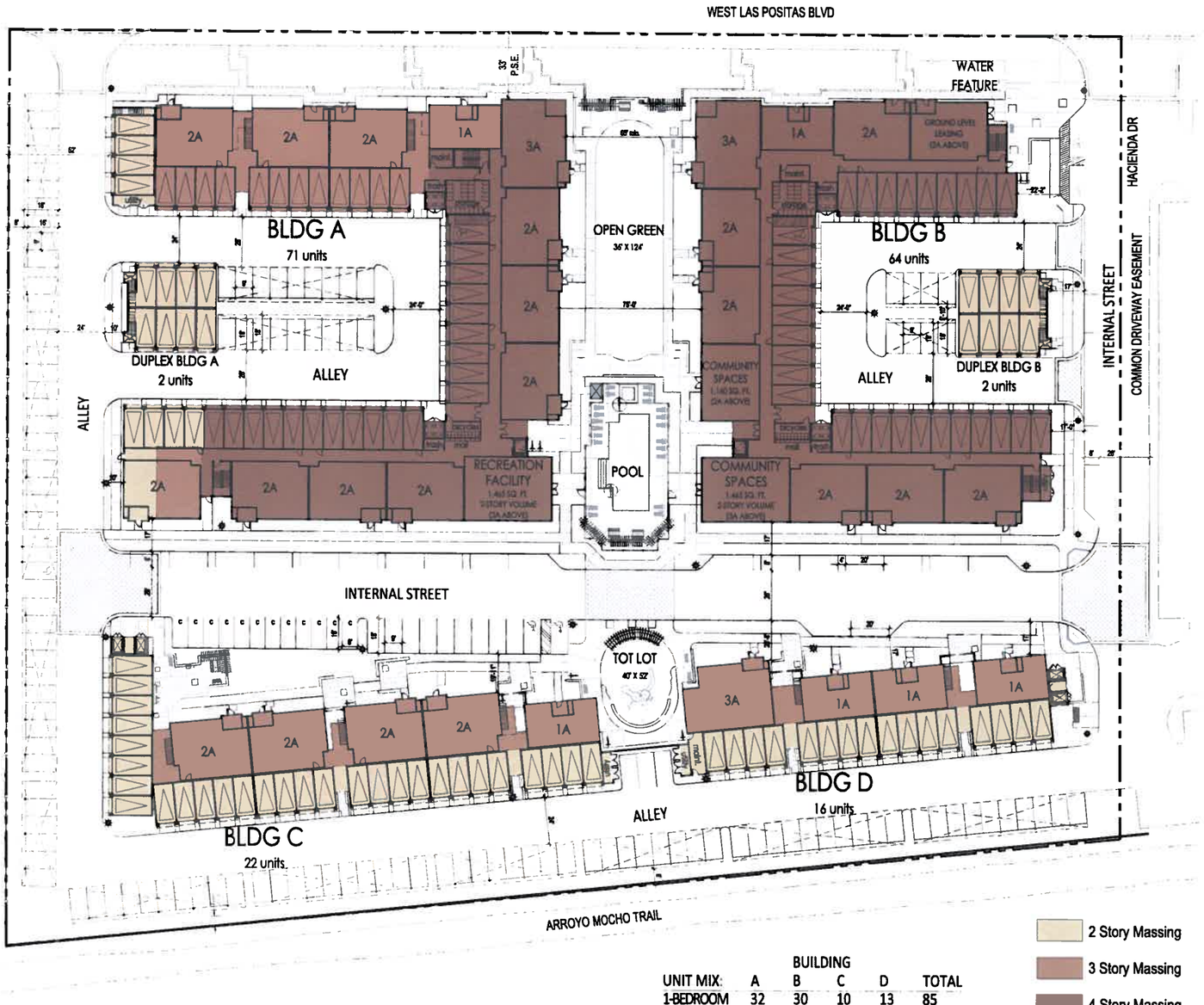
KTGY # 2013-0313 01/24/2014

A1.3

SUMMERHILL APARTMENT COMMUNITIES
COMMUNITIES OF DISTINCTION

SummerHill Apartment Communities
3000 Executive Parkway, Suite 450
San Ramon, CA 94583
650.842.2268
www.shapartments.com

KTGY Group, Inc.
Architecture+Planning
1733 Ocean Ave., Suite 250
Santa Monica, CA 90401
310.394.2623
ktgy.com



UNIT MIX:	BUILDING A	B	C	D	TOTAL
1-BEDROOM	32	30	10	13	85
2-BEDROOM	35	30	12		77
3-BEDROOM	6	6		3	15
	73	66	22	16	177 units

2 Story Massing
3 Story Massing
4 Story Massing
Carport

PROJECT SUMMARY

Site Area:	5.9 acres or 257,283 sq. ft.	Gross Floor Area:	227,060 sq. ft.
Total Units:	177 DU	Building Footprint:	85,000 sq. ft.
Density:	30.0 DU/AC	Building Coverage:	33%
Building Heights:	2 to 4 Stories	Landscaped Area:	44,530 sq. ft.

DEVELOPMENT STANDARDS:
(Per Housing Site Design Guidelines)

Front Setbacks:	33' min. from public streets 17' min. from internal streets
Side Setbacks:	8' min. to carports 50' min. from west property line to bldg.
Rear Setback:	8' min. to carports
Alley Setbacks:*	5' min. to garage door 3' min. to upper stories
Drive aisle widths:	26' min. internal streets 24' min. alleys

PARKING REQUIRED:

1.5 spaces per 1-bedrm unit x 85 + 2 =	130 spaces
1.5 spaces per 2-bedrm unit x 77 =	116 spaces
2 spaces per 3-bedrm unit x 15 =	30 spaces
1 visitor space per 7 units x 177 =	25 spaces
	301 spaces required

PARKING PROVIDED:

Garage spaces - 10' x 20' min.	130 spaces (2 accessible)
Carport spaces - 9' x 18' min.**	124 spaces (2 accessible)
Uncovered spaces - 9' x 18' min.	38 spaces (4 accessible)
Compact spaces - 8' x 16' min.	12 spaces
	304 (8 accessible) spaces provided

SECURE BICYCLE PARKING REQUIRED:

0.8 per unit x 177 =	**142 spaces required**

SECURE BICYCLE PARKING PROVIDED:

Inside Private Garages:	130 spaces
Inside Bicycle Storage Rooms:	20 spaces
	150 spaces provided

RESIDENTIAL STORAGE REQUIRED:

40 cu. ft. per unit x 177 =	**7,080 cu. ft. storage required**

RESIDENTIAL STORAGE PROVIDED:

40 cu. ft. patio storage x 153 =	6,120 cu. ft. provided on patios
2'w x 3'd x 6'-8"h typ. locker x 152 =	6,080 cu. ft. provided in storage rooms
	12,200 cu. ft. storage provided

NOTES:
* Zero setbacks to face of carriage buildings, with 2' garage door recess
** Carport depth includes 2' vehicle overhang above landscaping

Scale 0 15 30 60

5850 WEST LAS POSITAS BLVD

CONCEPTUAL SITE PLAN

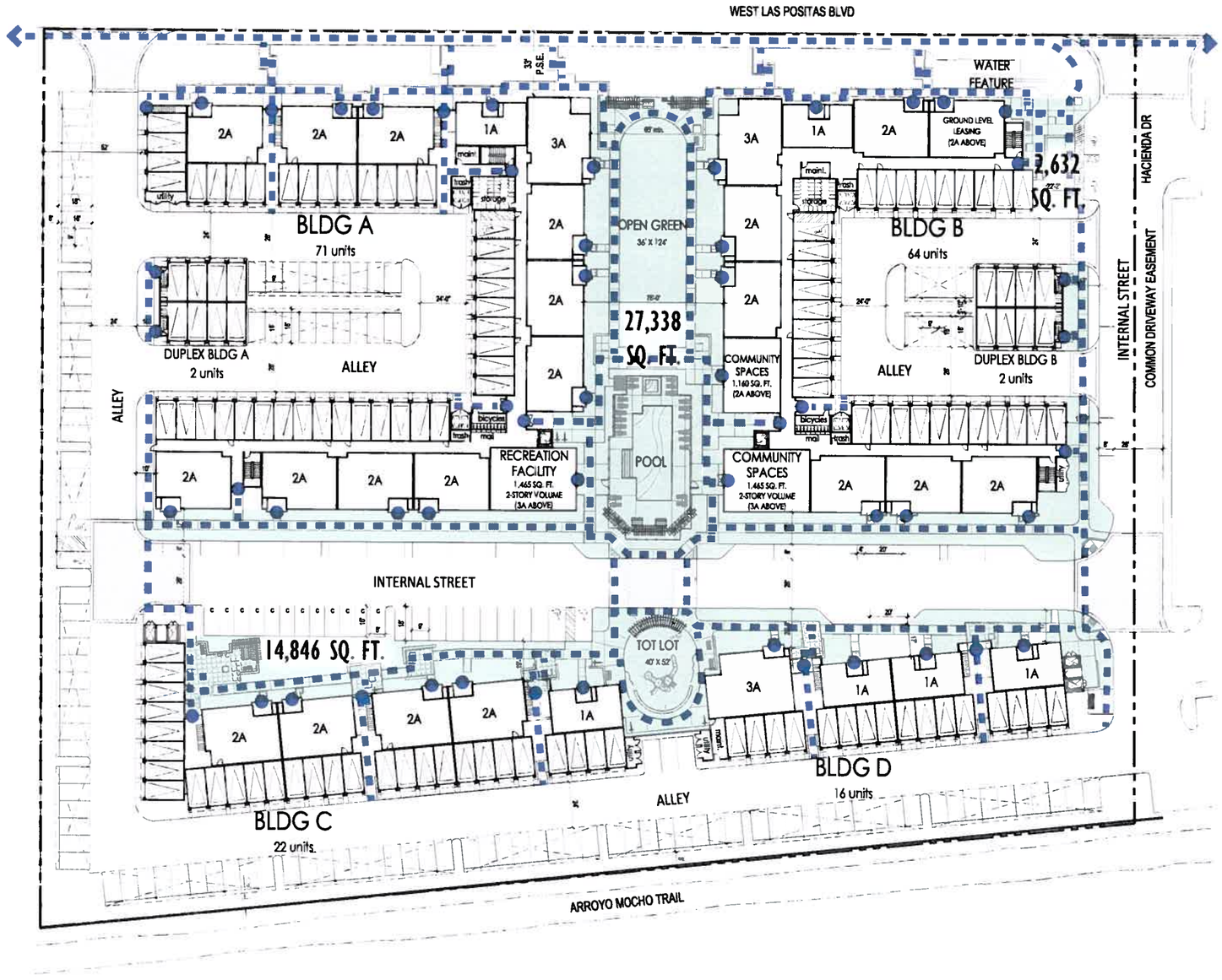
A1.4

PLEASANTON, CALIFORNIA
KTGY # 2013-0313 01/24/2014

SUMMERHILL APARTMENT COMMUNITIES
COMMUNITIES OF DISTINCTION

SummerHill Apartment Communities
3000 Executive Parkway, Suite 450
San Ramon, CA 94583
650.842.2268
www.shapartments.com

KTGY Group, Inc.
Architecture+Planning
1733 Ocean Ave., Suite 250
Santa Monica, CA 90401
310.394.2623
ktgy.com



OPEN SPACE SUMMARY

USABLE OPEN SPACE REQUIRED:

300 sq. ft. per unit x 177 =	**53,100 sq. ft. required**

USABLE OPEN SPACE PROVIDED:

Group Usable Open Space (min. dimension 15')		45,209 sq. ft.
Private Open Space (upper balconies, min. dimension 5')		
Plan 1A:	56 sq. ft. x 52 units =	2,912 sq. ft.
	71 sq. ft. x 4 units =	284 sq. ft.
Plan 1B:	64 sq. ft. x 12 units =	768 sq. ft.
	82 sq. ft. x 1 unit =	82 sq. ft.
	114 sq. ft. x 1 unit =	114 sq. ft.
Plan 2A:	68 sq. ft. x 56 units =	3,808 sq. ft.
Plan 3A:	63 sq. ft. x 2 units =	126 sq. ft.
	143 sq. ft. x 10 units =	1,430 sq. ft.
	Total Private Open Space	9,524 sq. ft.
	Credit Towards Group OS	19,048 sq. ft. (at 2:1 credit)
Total Usable Open Space Provided		**64,257 sq. ft. provided**

Pedestrian Circulation

Building Entries

Scale 0 15 30 60

5850 WEST LAS POSITAS BLVD

OPEN SPACE PLAN

PLEASANTON, CALIFORNIA

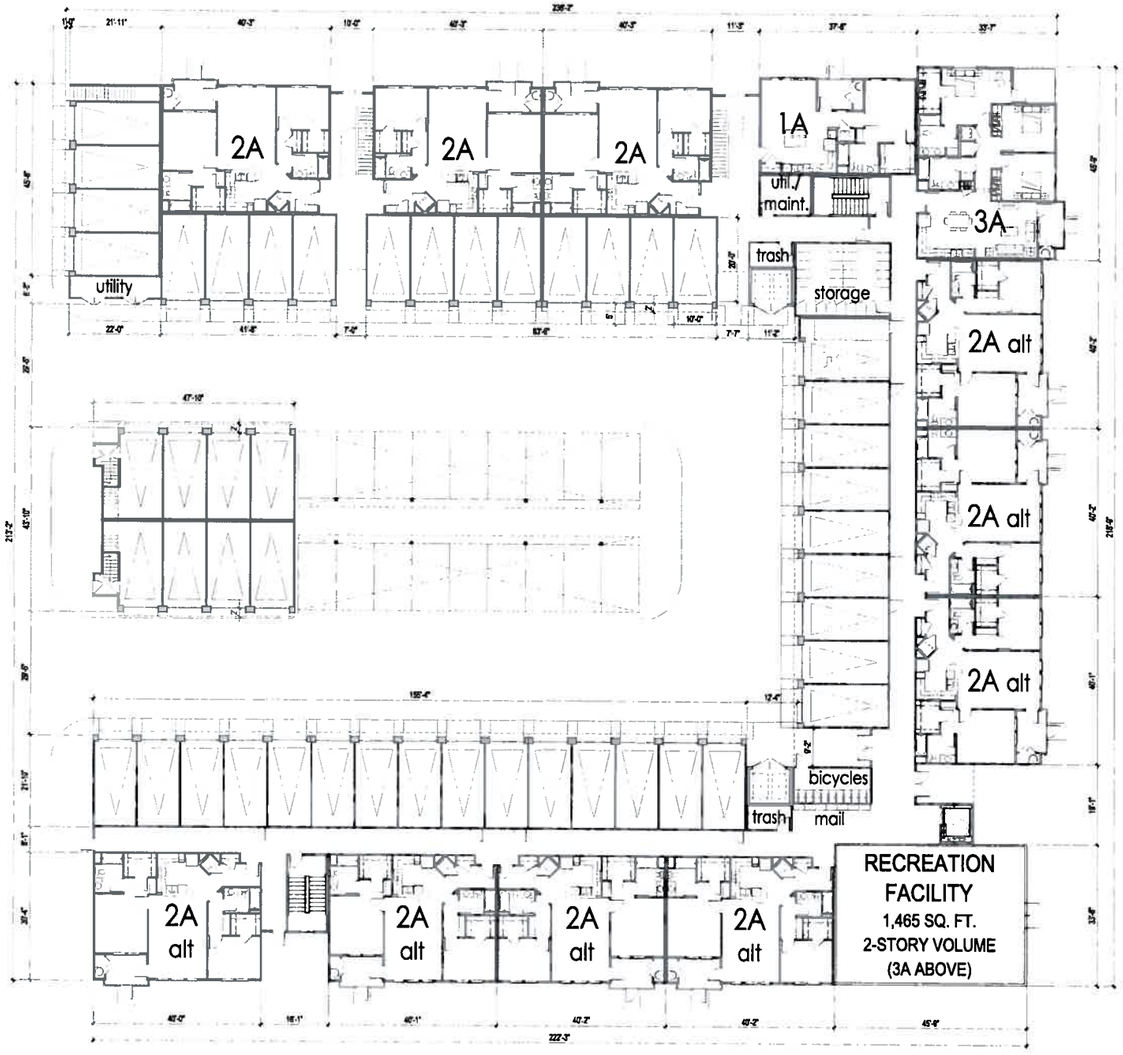
KTGY # 2013-0313 01/24/2014

A1.5

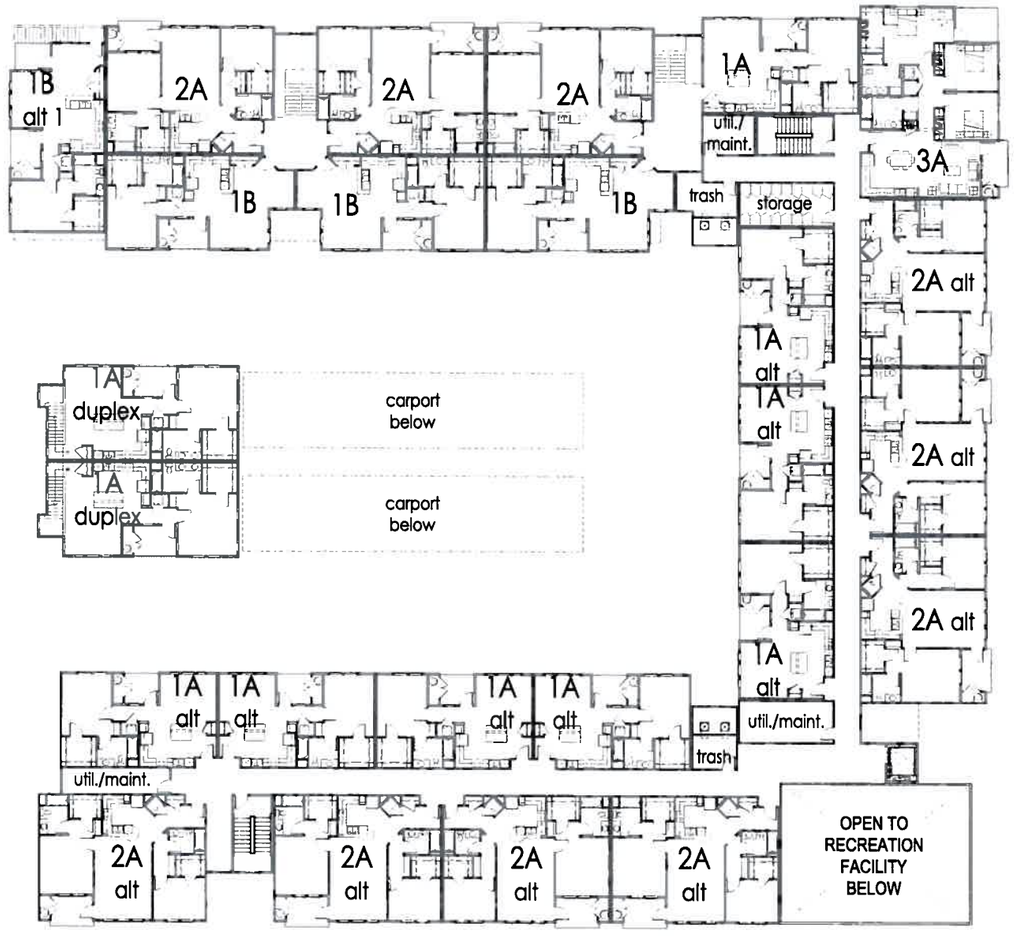
SUMMERHILL APARTMENT COMMUNITIES
COMMUNITIES OF DISTINCTION

SummerHill Apartment Communities
3000 Executive Parkway, Suite 450
San Ramon, CA 94583
650.842.2268
www.shapartments.com

KTGY Group, Inc.
Architecture+Planning
1733 Ocean Ave., Suite 250
Santa Monica, CA 90401
310.394.2623
ktgy.com



GROUND LEVEL



SECOND LEVEL

0 8 16 32

5850 WEST LAS POSITAS BLVD

BUILDING A FLOOR PLANS

PLEASANTON, CALIFORNIA

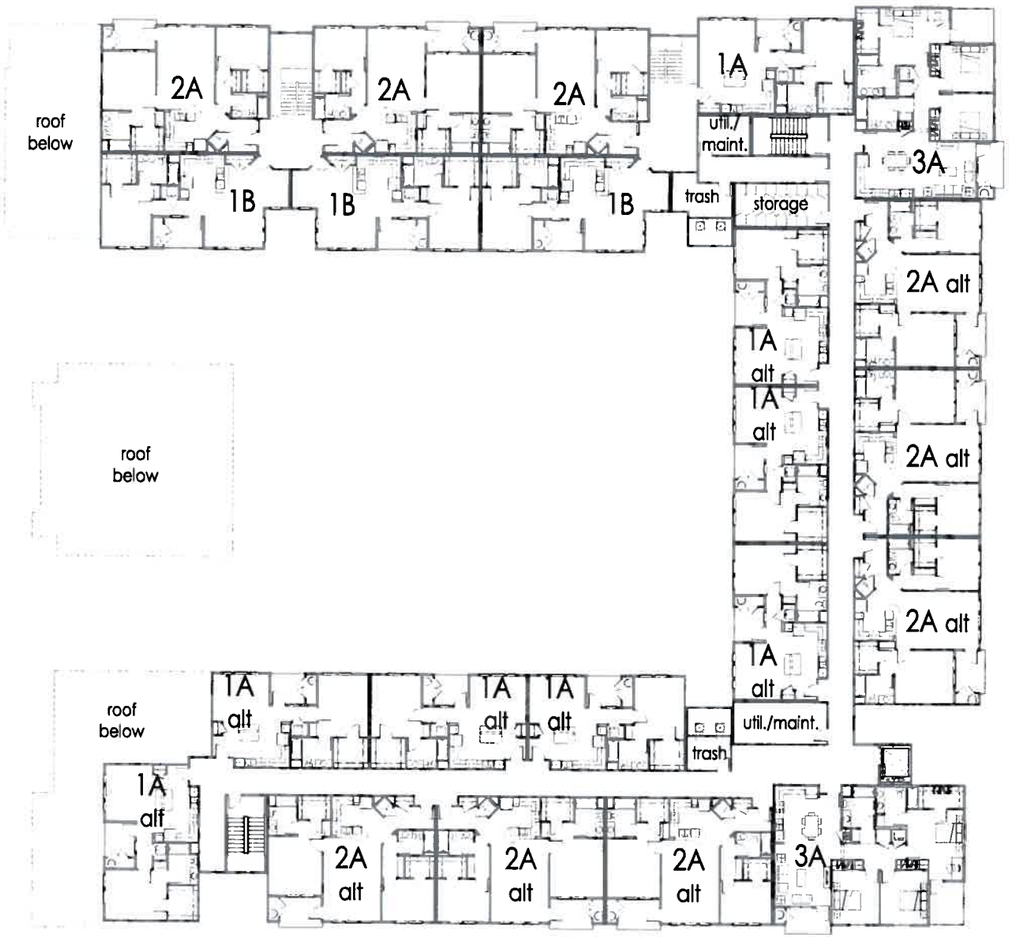
KTGY # 2013-0313 01/24/2014

A2.1

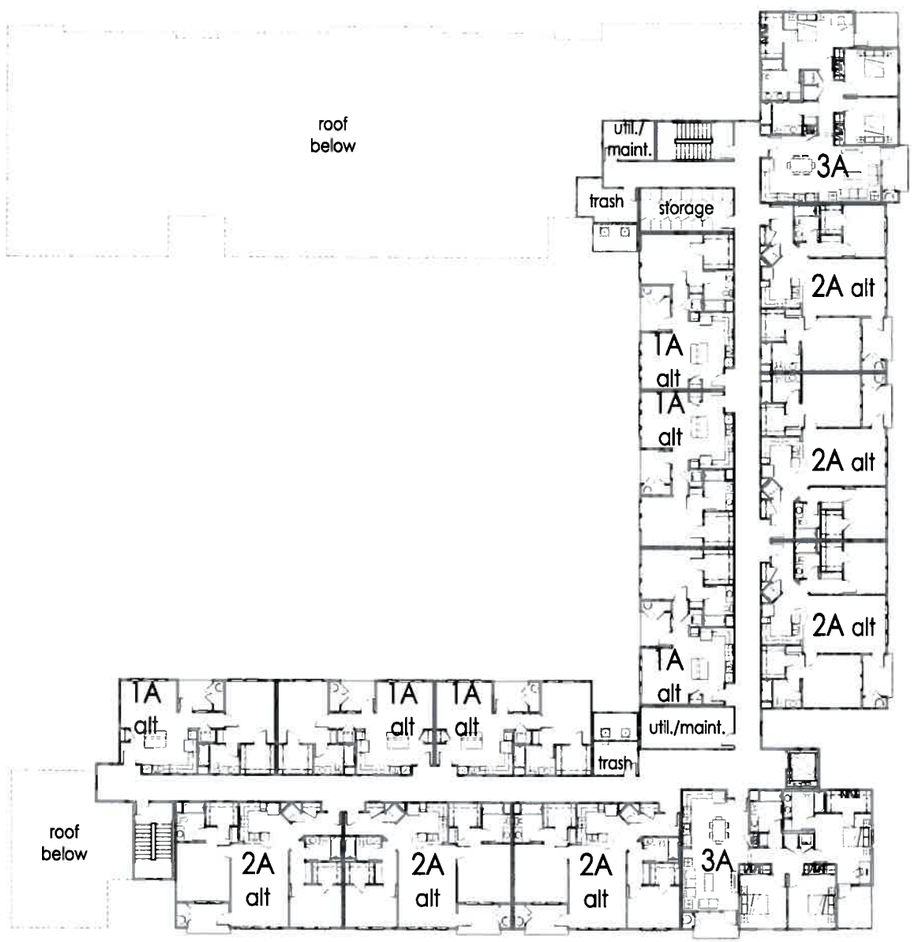
SUMMERHILL APARTMENT COMMUNITIES
COMMUNITIES OF DISTINCTION

SummerHill Apartment Communities
3000 Executive Parkway, Suite 450
San Ramon, CA 94583
650.842.2268
www.shapartments.com

KTGY Group, Inc.
Architecture+Planning
1733 Ocean Ave., Suite 250
Santa Monica, CA 90401
310.394.2623
ktgy.com



THIRD LEVEL



FOURTH LEVEL

0 8 16 32

5850 WEST LAS POSITAS BLVD

BUILDING A FLOOR PLANS

A2.2

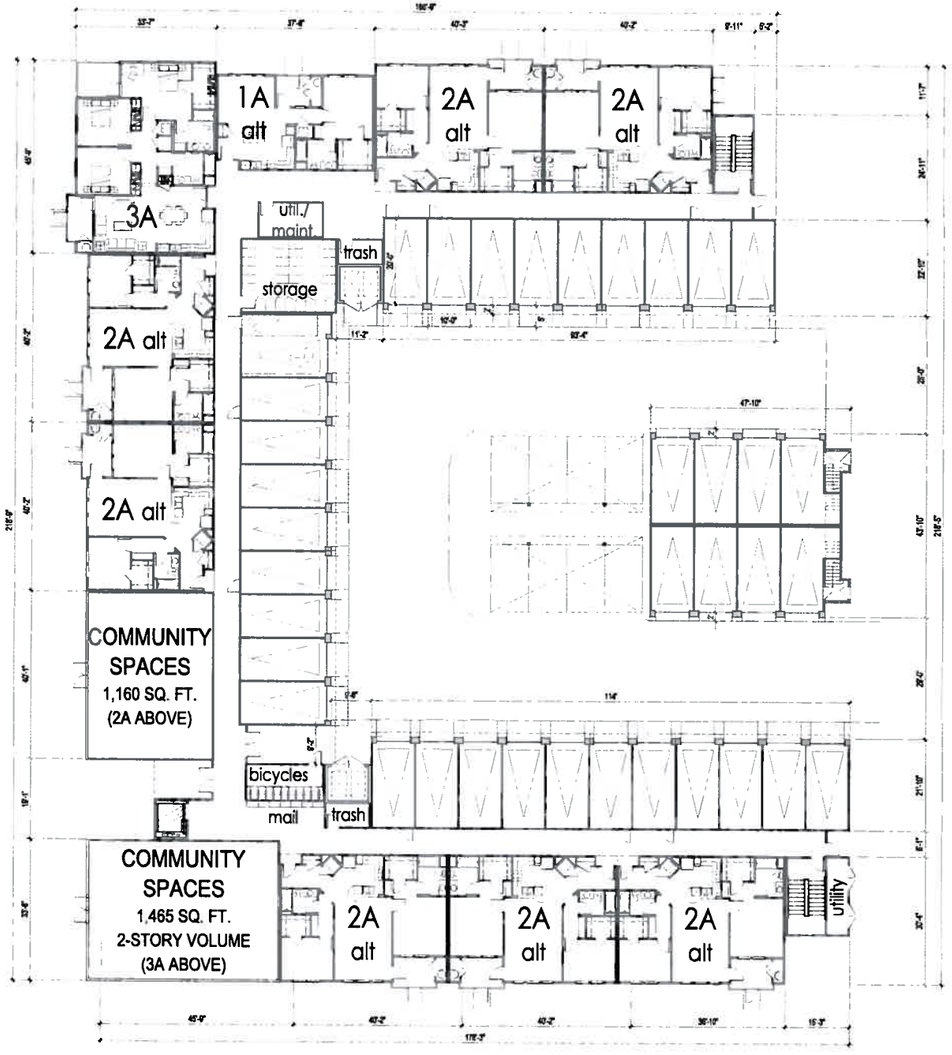
PLEASANTON, CALIFORNIA

KTGY # 2013-033 01/24/2014

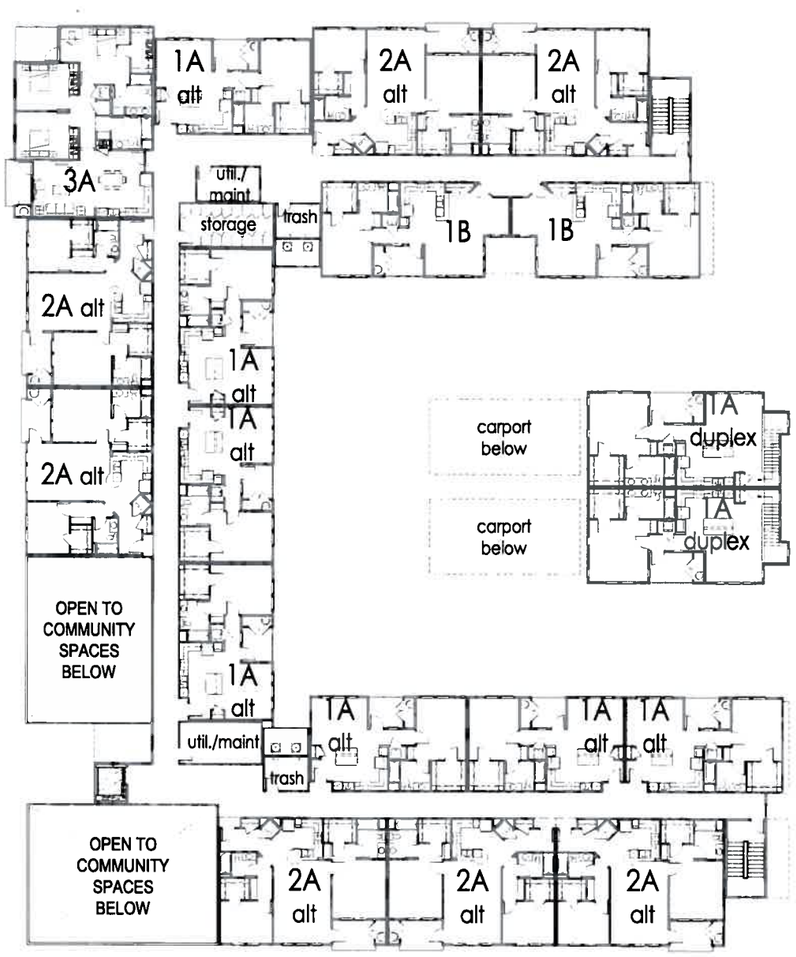
SUMMERHILL APARTMENT COMMUNITIES
COMMUNITIES OF DISTINCTION

SummerHill Apartment Communities
3000 Executive Parkway, Suite 450
San Ramon, CA 94583
650.842.2268
www.shapartments.com

KTGY Group, Inc.
Architecture+Planning
1733 Ocean Ave., Suite 250
Santa Monica, CA 90401
310.394.2623
ktgy.com



GROUND LEVEL



SECOND LEVEL

0 8 16 32

5850 WEST LAS POSITAS BLVD

BUILDING B FLOOR PLANS

A2.3

PLEASANTON, CALIFORNIA

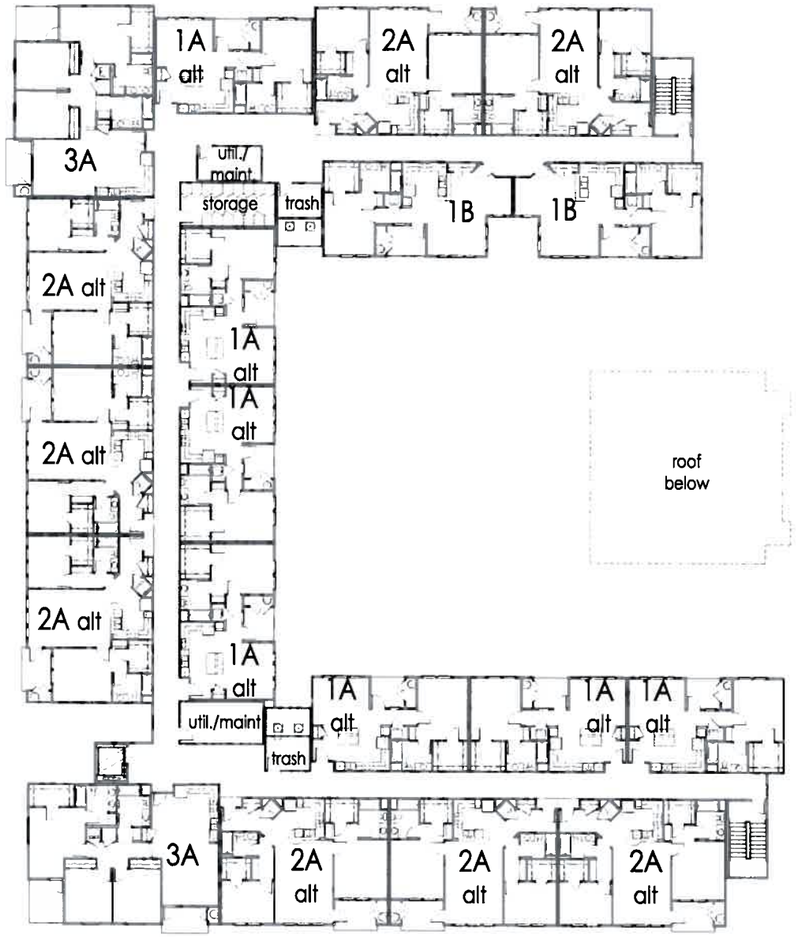
KTGY # 2013-0313 01/24/2014

SUMMERHILL APARTMENT COMMUNITIES
COMMUNITIES OF DISTINCTION

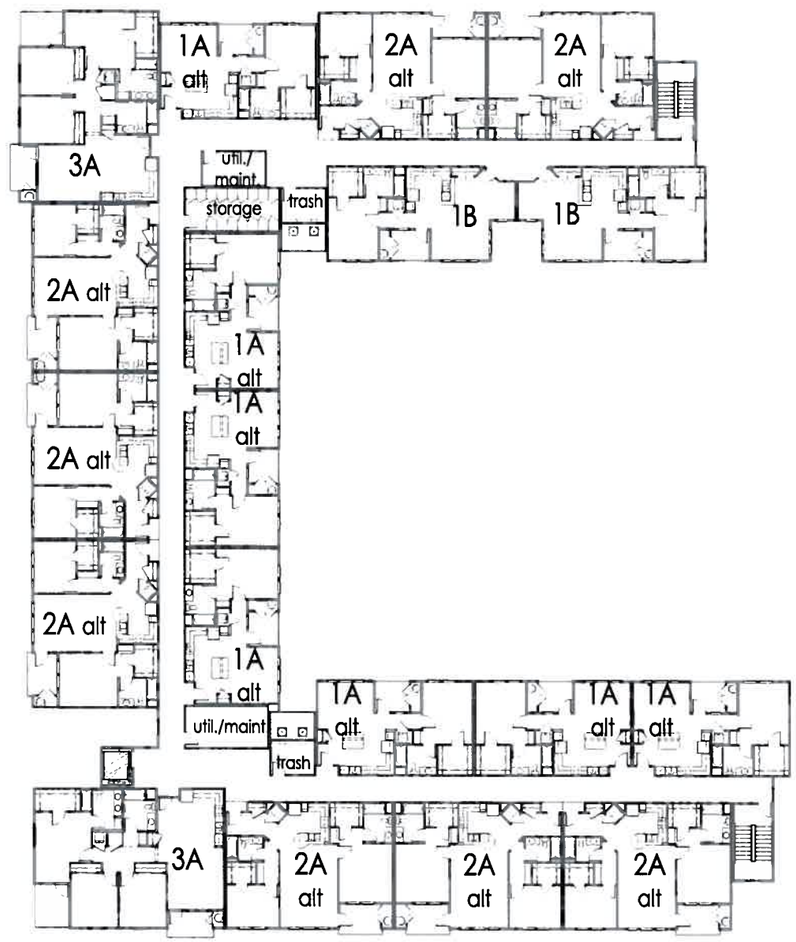
SummerHill Apartment Communities
3000 Executive Parkway, Suite 450
San Ramon, CA 94583
650.842.2268
www.shapartments.com

KTGY Group, Inc.
Architecture+Planning
1733 Ocean Ave., Suite 250
Santa Monica, CA 90401
310.394.2623
ktgy.com

ktgy



THIRD LEVEL



FOURTH LEVEL

0 8 16 32

5850 WEST LAS POSITAS BLVD

BUILDING B FLOOR PLANS

A2.4

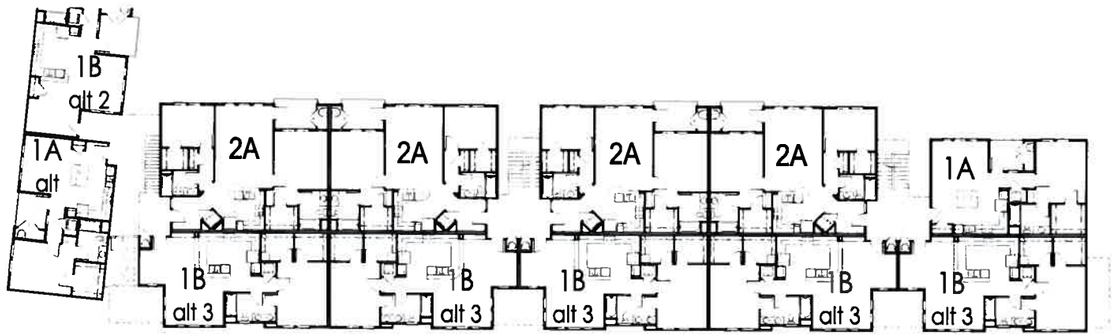
PLEASANTON, CALIFORNIA

KTGY # 2013-0313 01/24/2014

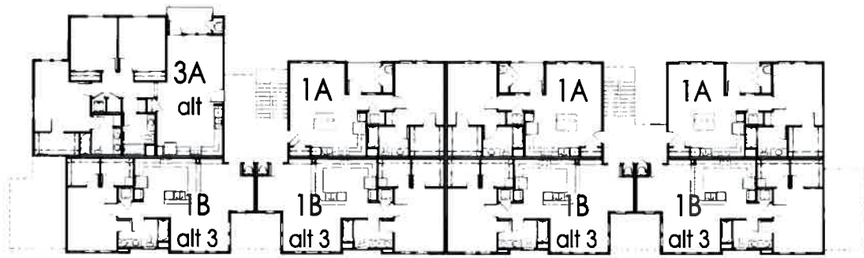
SUMMERHILL APARTMENT COMMUNITIES
COMMUNITIES OF DISTINCTION

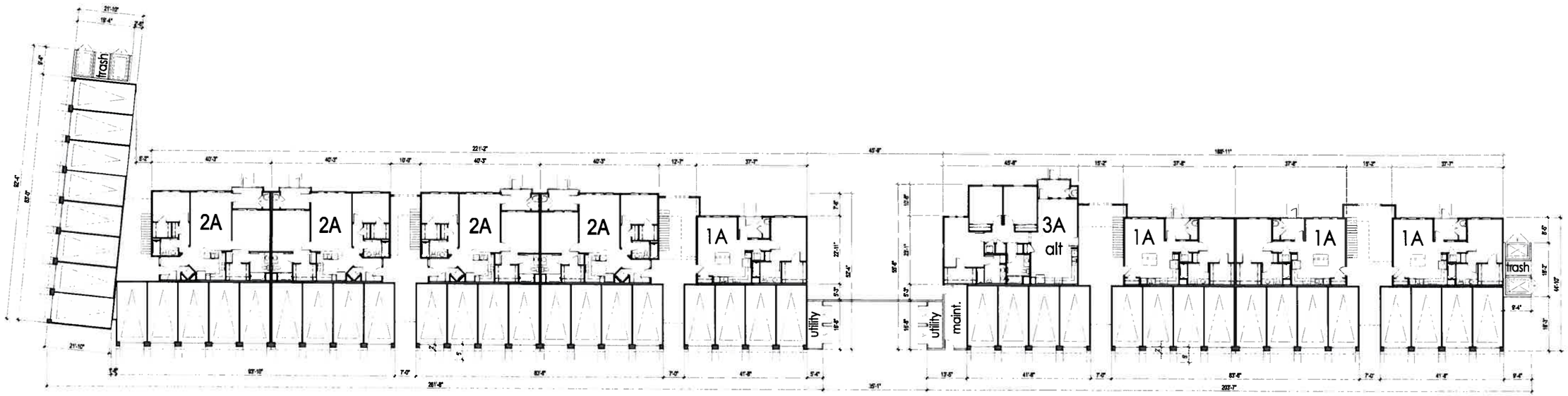
SummerHill Apartment Communities
3000 Executive Parkway, Suite 450
San Ramon, CA 94583
650.842.2268
www.shapartments.com

KTGY Group, Inc.
Architecture+Planning
1733 Ocean Ave., Suite 250
Santa Monica, CA 90401
310.394.2623
ktgy.com



SECOND LEVEL





GROUND LEVEL

0 8 16 32

5850 WEST LAS POSITAS BLVD

BUILDINGS C & D FLOOR PLANS

A2.5

PLEASANTON, CALIFORNIA

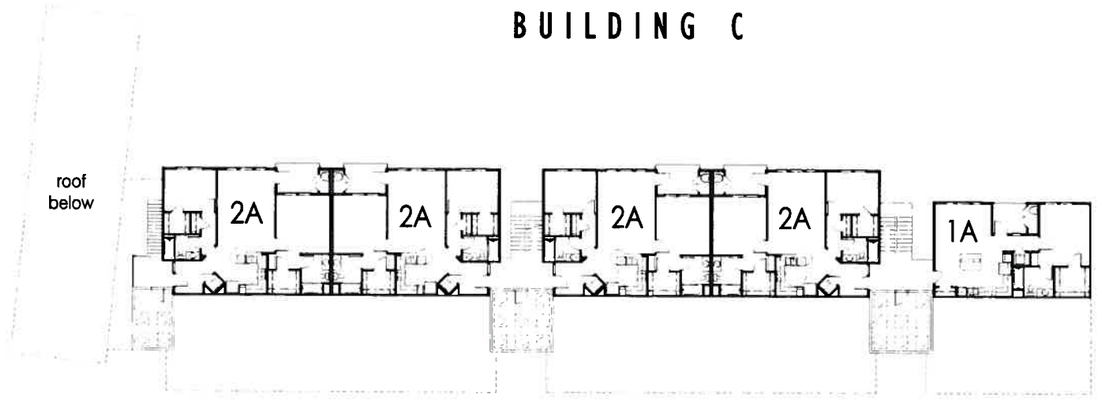
KTGY # 2013-0313 01/24/2014

SUMMERHILL APARTMENT COMMUNITIES
COMMUNITIES OF DISTINCTION

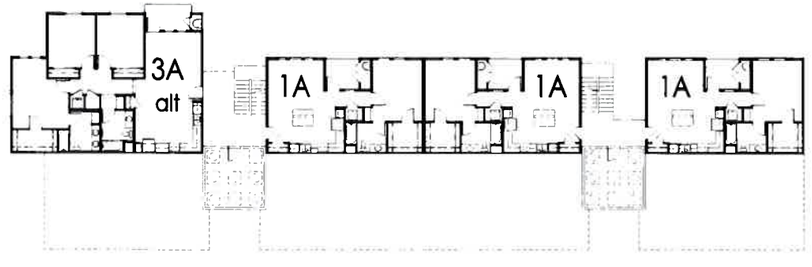
SummerHill Apartment Communities
3000 Executive Parkway, Suite 450
San Ramon, CA 94583
650.842.2268
www.shapartments.com

KTGY Group, Inc.
Architecture+Planning
1733 Ocean Ave., Suite 250
Santa Monica, CA 90401
310.394.2623
ktgy.com

BUILDING C



BUILDING D



THIRD LEVEL

0 8 16 32

5850 WEST LAS POSITAS BLVD

BUILDINGS C & D FLOOR PLANS

A2.6

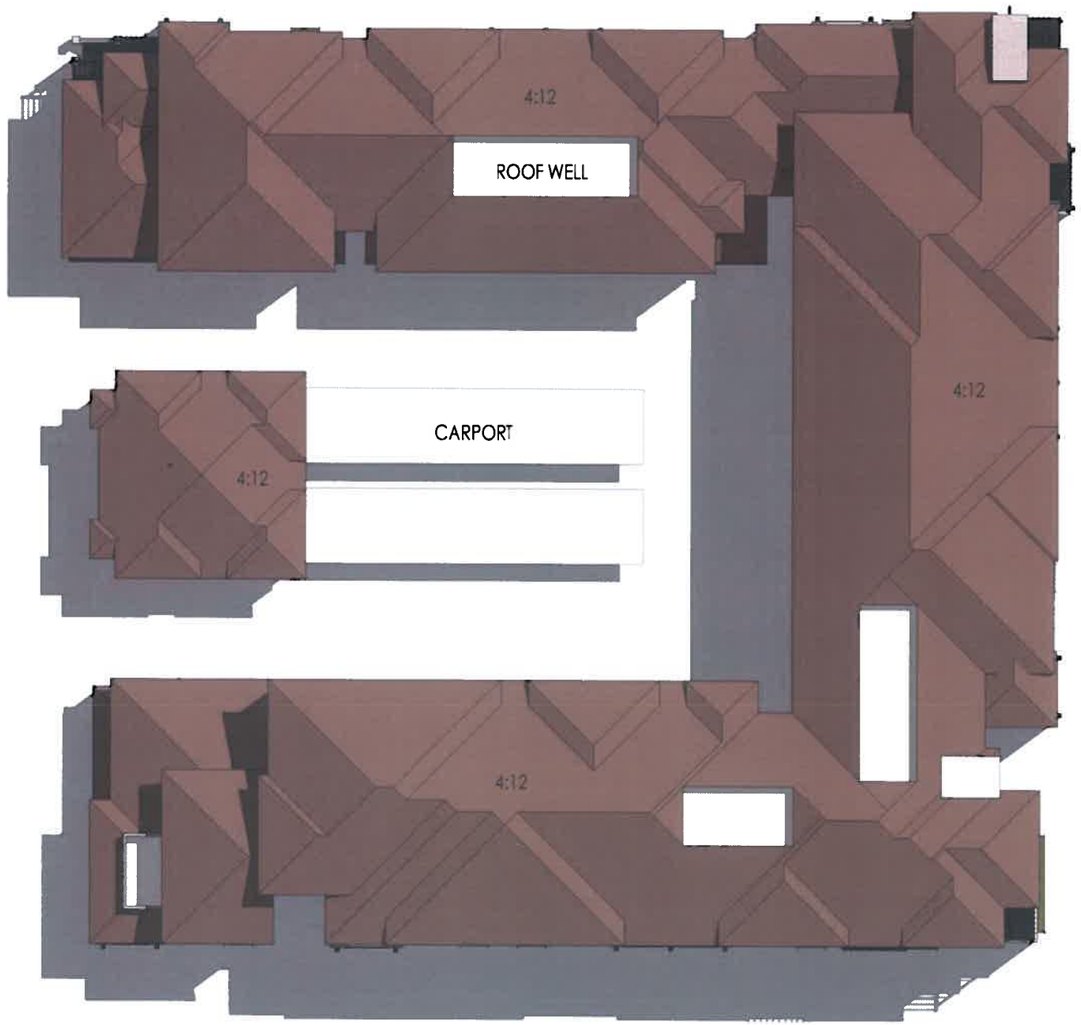
PLEASANTON, CALIFORNIA

KTGY # 2013-03|3 01/24/2014

SUMMERHILL APARTMENT COMMUNITIES
COMMUNITIES OF DISTINCTION

SummerHill Apartment Communities
3000 Executive Parkway, Suite 450
San Ramon, CA 94583
650.842.2268
www.shapartments.com

KTGY Group, Inc.
Architecture+Planning
1733 Ocean Ave., Suite 250
Santa Monica, CA 90401
310.394.2623
ktgy.com



0 8 16 32

5850 WEST LAS POSITAS BLVD

BUILDINGS A & B ROOF PLANS

A3.1

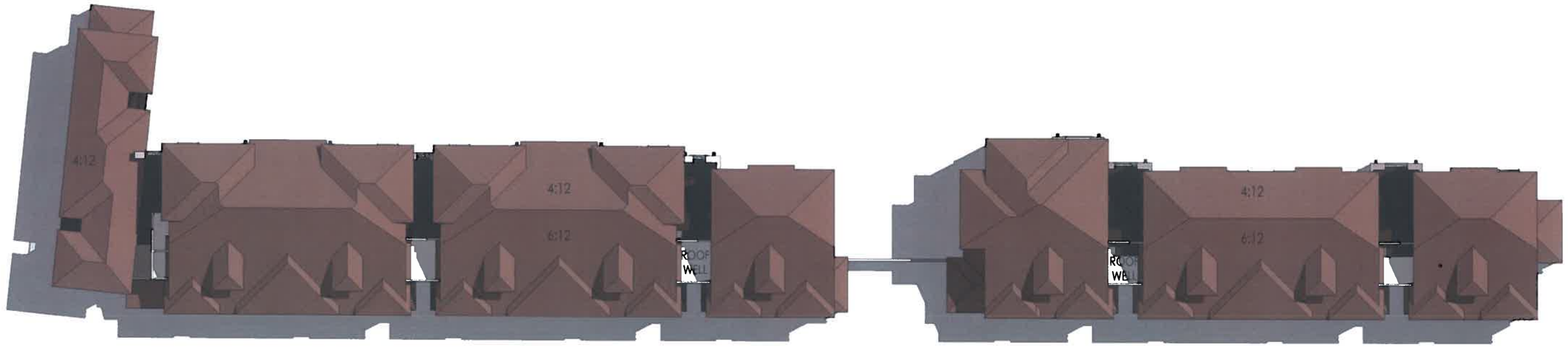
PLEASANTON, CALIFORNIA

KTGY # 2013-033 01/24/2014

SUMMERHILL APARTMENT COMMUNITIES
COMMUNITIES OF DISTINCTION

SummerHill Apartment Communities
3000 Executive Parkway, Suite 450
San Ramon, CA 94583
650.842.2268
www.shapartments.com

KTGY Group, Inc.
Architecture+Planning
1733 Ocean Ave., Suite 250
Santa Monica, CA 90401
310.394.2623
ktgy.com



0 8 16 32

5850 WEST LAS POSITAS BLVD

BUILDINGS C & D ROOF PLANS

A3.2

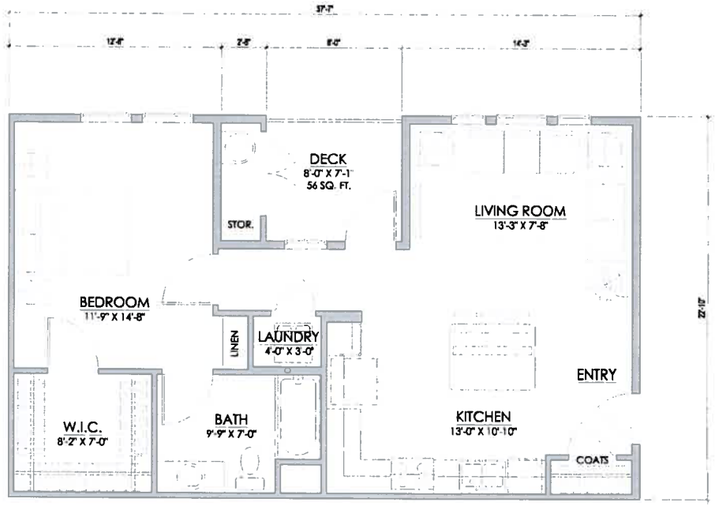
PLEASANTON, CALIFORNIA

KTGY # 2013-0313 01/24/2014

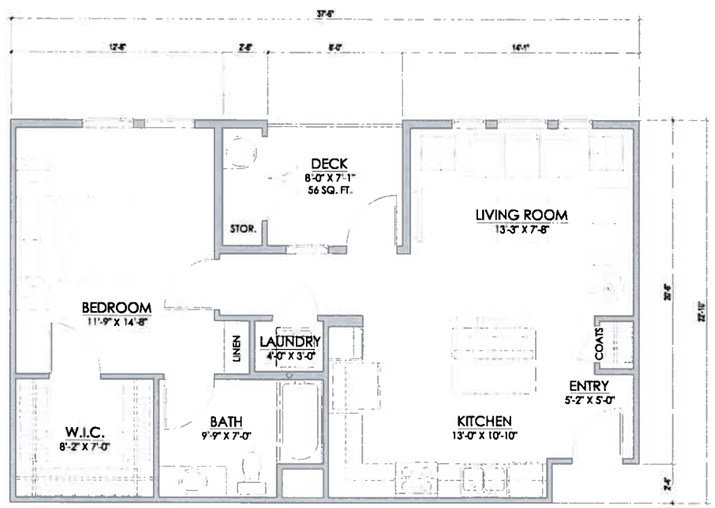
SUMMERHILL APARTMENT COMMUNITIES
COMMUNITIES OF DISTINCTION

SummerHill Apartment Communities
3000 Executive Parkway, Suite 450
San Ramon, CA 94583
650.842.2268
www.shapartments.com

KTGY Group, Inc.
Architecture+Planning
1733 Ocean Ave., Suite 250
Santa Monica, CA 90401
310.394.2623
ktgy.com



1A - 1BDR/1BATH
UNIT AREA: 715 SQ. FT.
PRIVATE OPEN SPACE: 56 SQ. FT.
PRIVATE STORAGE: 40 CU. FT. MIN.



1A alt - 1BDR/1BATH
UNIT AREA: 702 SQ. FT.
PRIVATE OPEN SPACE: 56 SQ. FT.
PRIVATE STORAGE: 40 CU. FT. MIN.

5850 WEST LAS POSITAS BLVD

SUMMERHILL APARTMENT COMMUNITIES
COMMUNITIES OF DISTINCTION

SummerHill Apartment Communities
3000 Executive Parkway, Suite 450
San Ramon, CA 94583
650.842.2268
www.shapartments.com

ONE-BEDROOM UNIT PLANS

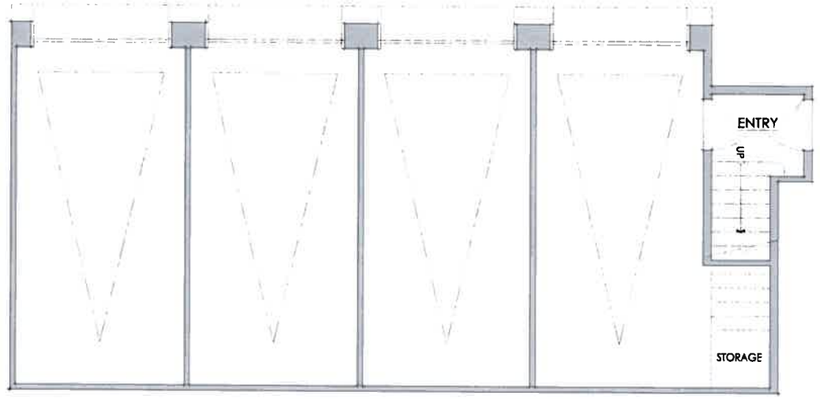
PLEASANTON, CALIFORNIA
KTGY # 2013-0313 01/24/2014

0 2 4 8

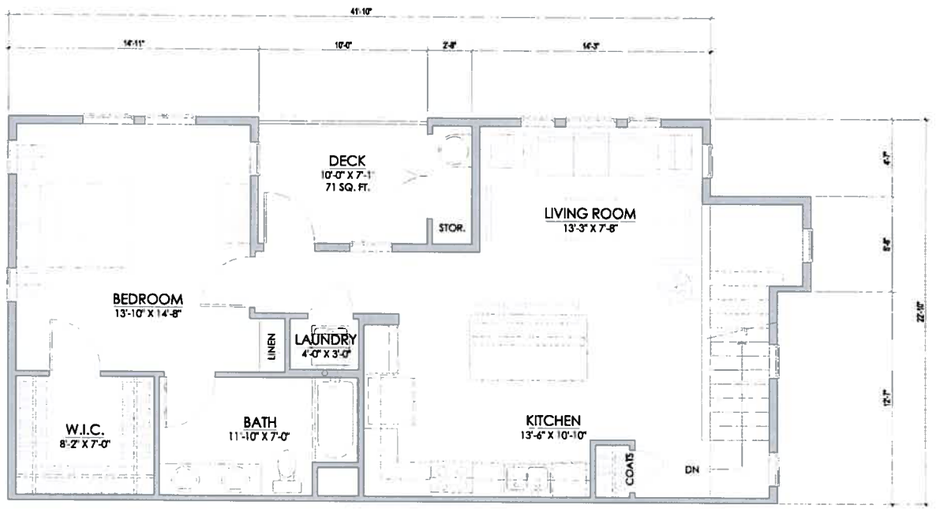
A4.1

KTGY Group, Inc.
Architecture+Planning
1733 Ocean Ave., Suite 250
Santa Monica, CA 90401
310.394.2623
ktgy.com

ktgy



1A duplex unit -
GROUND LEVEL ENTRY



1A duplex unit -
LEVEL 2
1BDR/1BATH
UNIT AREA: 860 SQ. FT.
PRIVATE OPEN SPACE: 71 SQ. FT.
PRIVATE STORAGE: 40 CU. FT. MIN.

5850 WEST LAS POSITAS BLVD

SUMMERHILL APARTMENT COMMUNITIES
COMMUNITIES OF DISTINCTION

SummerHill Apartment Communities
3000 Executive Parkway, Suite 450
San Ramon, CA 94583
650.842.2268
www.shapartments.com

ONE-BEDROOM UNIT PLANS

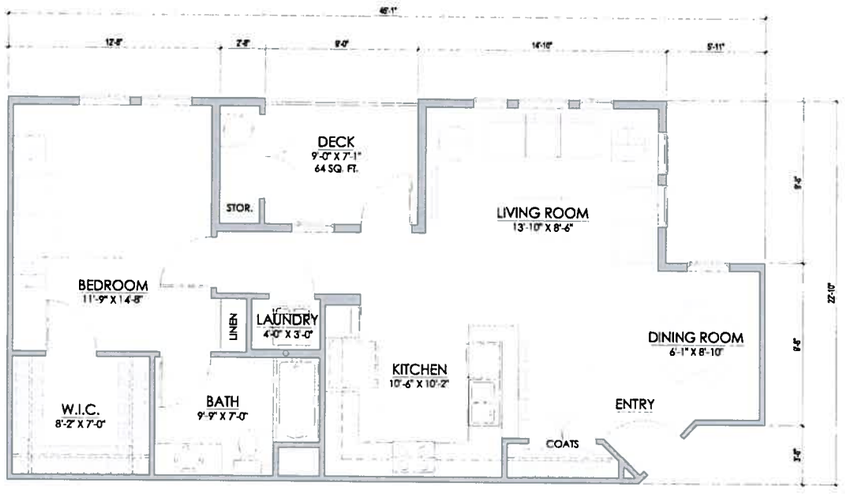
PLEASANTON, CALIFORNIA
KTGY # 2013-0313 01/24/2014

0 2 4 8

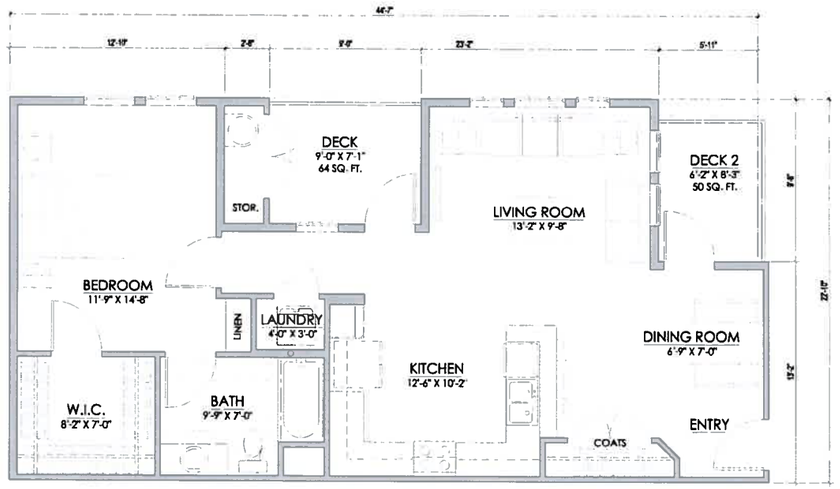
A4.2

KTGY Group, Inc.
Architecture+Planning
1733 Ocean Ave., Suite 250
Santa Monica, CA 90401
310.394.2623
ktgy.com

ktgy



1B - 1BDR/1BATH
UNIT AREA: 796 SQ. FT.
PRIVATE OPEN SPACE: 64 SQ. FT.
PRIVATE STORAGE: 40 CU. FT. MIN.



1B alt 1 - 1BDR/1BATH
UNIT AREA: 810 SQ. FT.
PRIVATE OPEN SPACE: 114 SQ. FT.
PRIVATE STORAGE: 40 CU. FT. MIN.

5850 WEST LAS POSITAS BLVD

ONE-BEDROOM UNIT PLANS

PLEASANTON, CALIFORNIA

KTGY # 2013-0313 01/24/2014

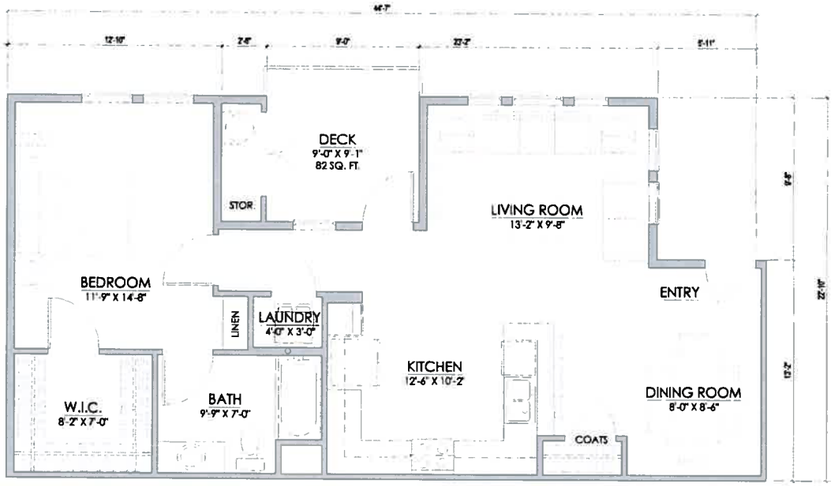
0 2 4 8

A4.3

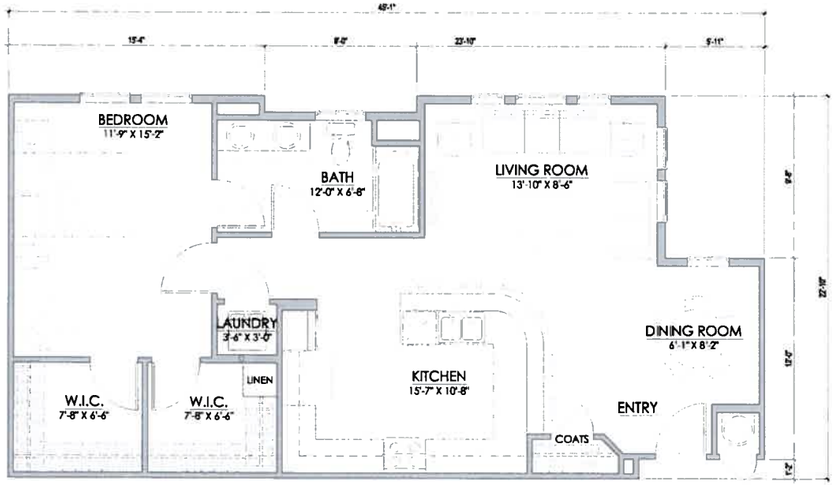
SUMMERHILL APARTMENT COMMUNITIES
COMMUNITIES OF DISTINCTION

SummerHill Apartment Communities
3000 Executive Parkway, Suite 450
San Ramon, CA 94583
650.842.2268
www.shapartments.com

KTGY Group, Inc.
Architecture+Planning
1733 Ocean Ave., Suite 250
Santa Monica, CA 90401
310.394.2623
ktgy.com



1B alt 2 - 1BDR/1BATH
UNIT AREA: 810 SQ. FT.
PRIVATE OPEN SPACE: 82 SQ. FT.
PRIVATE STORAGE: 40 CU. FT. MIN.



1B alt 3 - 1BDR/1BATH
UNIT AREA: 889 SQ. FT.

5850 WEST LAS POSITAS BLVD

ONE-BEDROOM UNIT PLANS

PLEASANTON, CALIFORNIA

KTGY # 2013-0313 01/24/2014

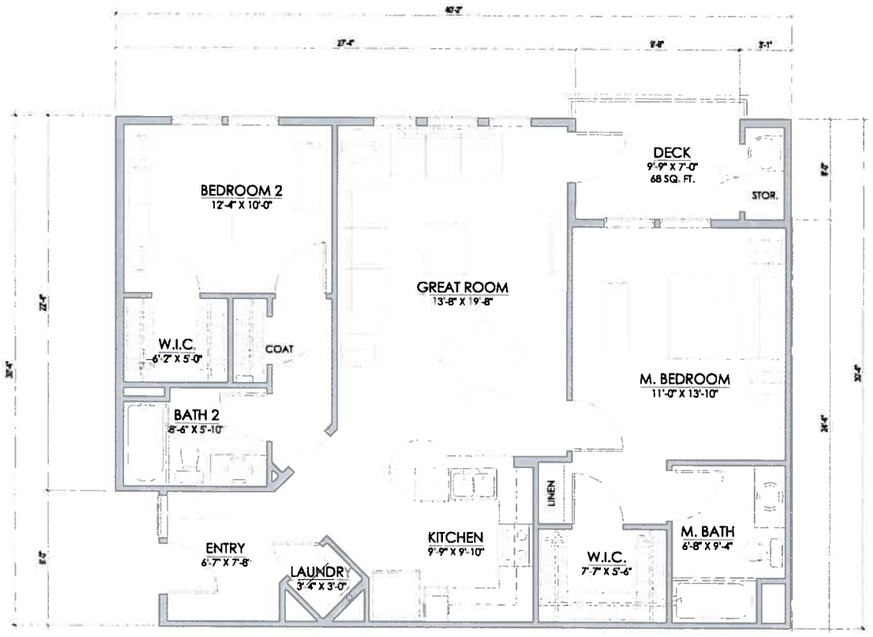
0 2 4 8

A4.4

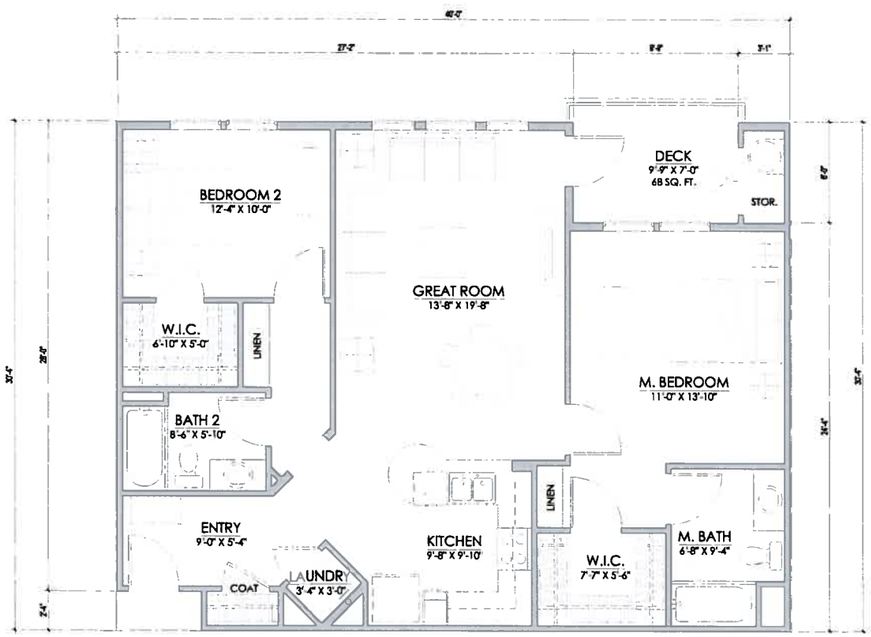
SUMMERHILL APARTMENT COMMUNITIES
COMMUNITIES OF DISTINCTION

SummerHill Apartment Communities
3000 Executive Parkway, Suite 450
San Ramon, CA 94583
650.842.2268
www.shapartments.com

KTGY Group, Inc.
Architecture+Planning
1733 Ocean Ave., Suite 250
Santa Monica, CA 90401
310.394.2623
ktgy.com



2A - 2BDR/2BATH
UNIT AREA: 1054 SQ. FT.
PRIVATE OPEN SPACE: 68 SQ. FT.
PRIVATE STORAGE: 40 CU. FT. MIN.



2A alt - 2BDR/2BATH
UNIT AREA: 1063 SQ. FT.
PRIVATE OPEN SPACE: 68 SQ. FT.
PRIVATE STORAGE: 40 CU. FT. MIN.

5850 WEST LAS POSITAS BLVD

TWO-BEDROOM UNIT PLANS

PLEASANTON, CALIFORNIA

KTGY # 2013.03|3 01/24/2014

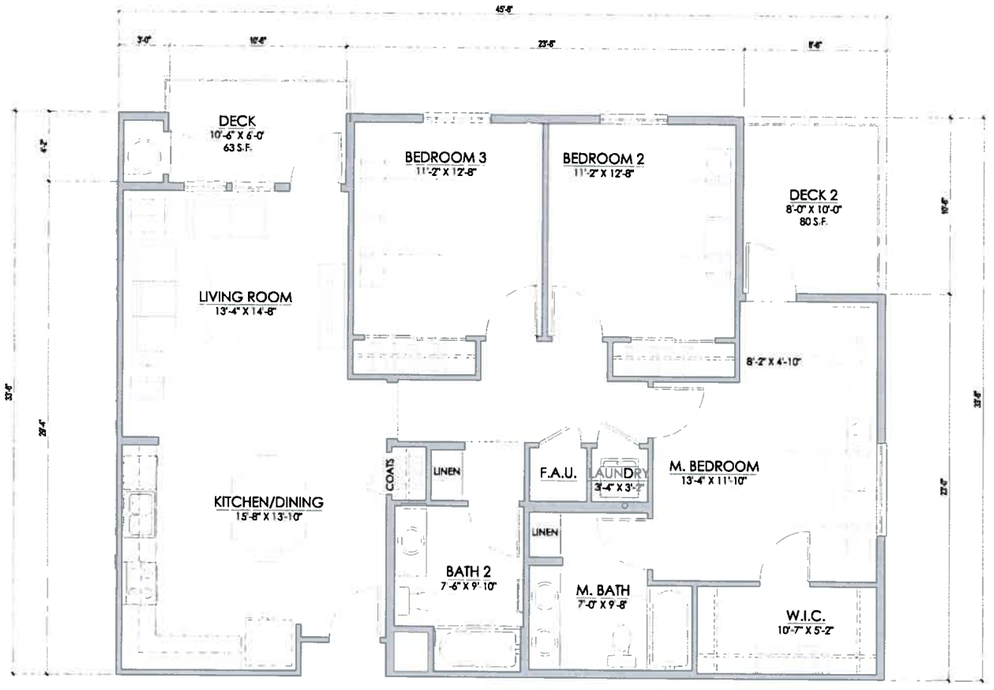
0 2 4 8

A4.5

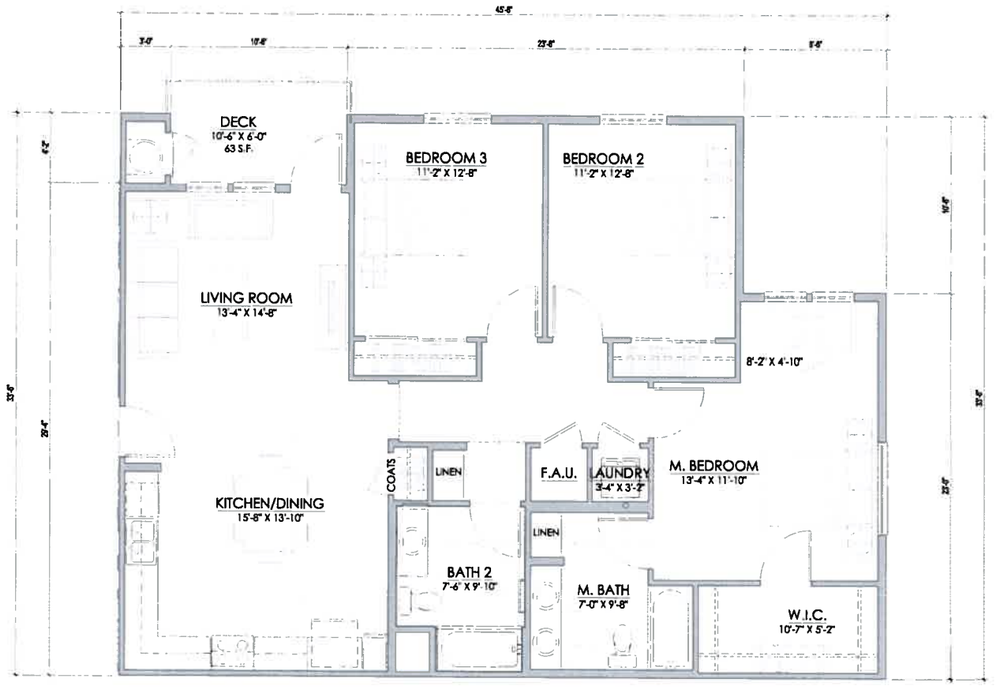
SUMMERHILL APARTMENT COMMUNITIES
COMMUNITIES OF DISTINCTION

SummerHill Apartment Communities
3000 Executive Parkway, Suite 450
San Ramon, CA 94583
650.842.2268
www.shapartments.com

KTGY Group, Inc.
Architecture+Planning
1733 Ocean Ave., Suite 250
Santa Monica, CA 90401
310.394.2623
ktgy.com



3A - 3BDR/2BATH
UNIT AREA: 1298 SQ. FT.
PRIVATE OPEN SPACE: 143 SQ. FT.



3A alt - 3BDR/2BATH
UNIT AREA: 1309 SQ. FT.
PRIVATE OPEN SPACE: 63 SQ. FT.

5850 WEST LAS POSITAS BLVD

SUMMERHILL APARTMENT COMMUNITIES
COMMUNITIES OF DISTINCTION

SummerHill Apartment Communities
3000 Executive Parkway, Suite 450
San Ramon, CA 94583
650.842.2268
www.shapartments.com

THREE-BEDROOM UNIT PLANS

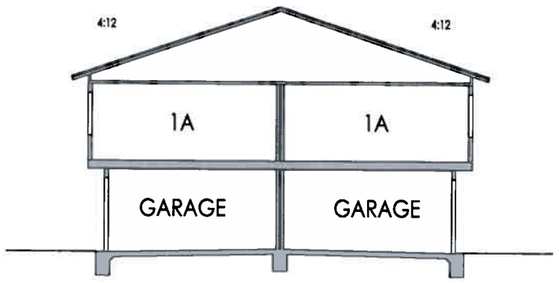
PLEASANTON, CALIFORNIA
KTGY # 2013-0313 01/24/2014

0 2 4 8

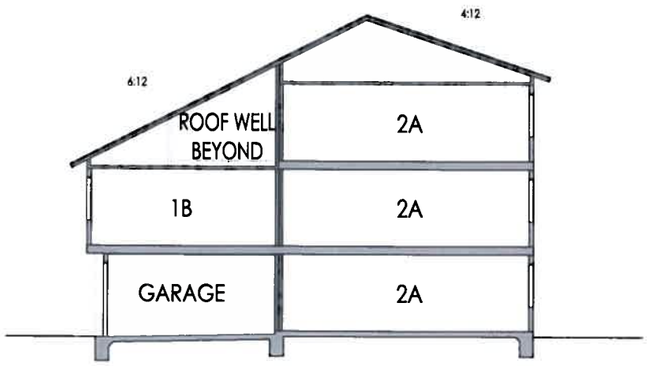
A4.6

KTGY Group, Inc.
Architecture+Planning
1733 Ocean Ave., Suite 250
Santa Monica, CA 90401
310.394.2623
ktgy.com

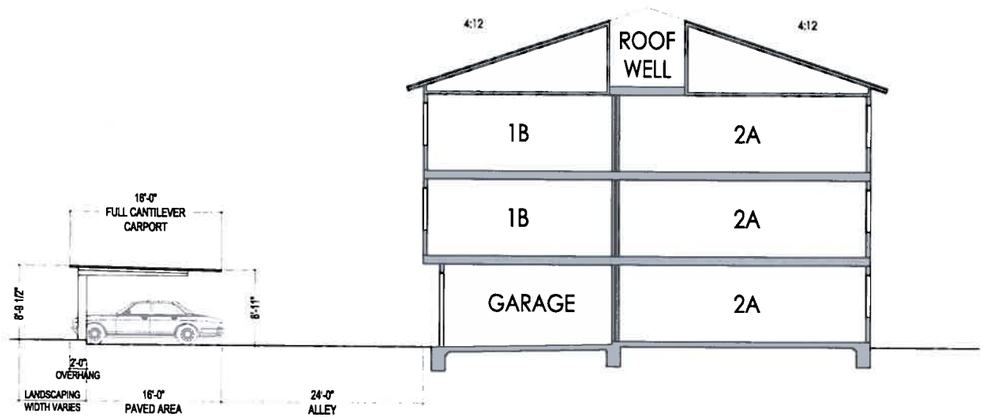
ktgy



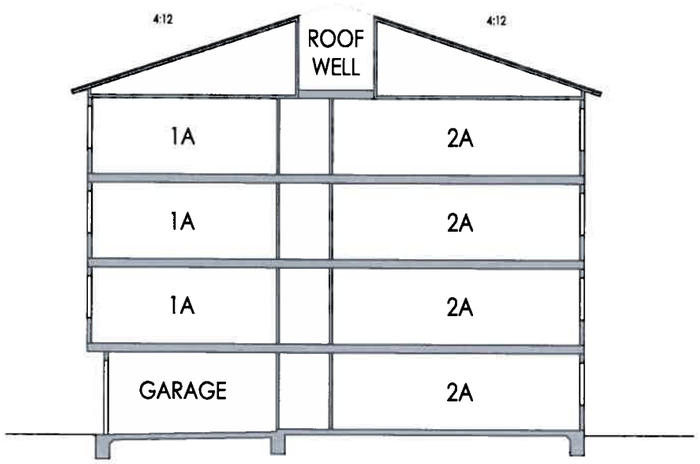
DUPLEX BUILDINGS A & B



BUILDINGS C & D



BUILDING A



BUILDINGS A & B

5850 WEST LAS POSITAS BLVD

SUMMERHILL APARTMENT COMMUNITIES
COMMUNITIES OF DISTINCTION

SummerHill Apartment Communities
3000 Executive Parkway, Suite 450
San Ramon, CA 94583
650.842.2268
www.shapartments.com

TYPICAL BUILDING SECTIONS

PLEASANTON, CALIFORNIA

KTGY # 2013-031 3 01/24/2014

0 4 8 16

A5.1

KTGY Group, Inc.
Architecture+Planning
1733 Ocean Ave., Suite 250
Santa Monica, CA 90401
310.394.2623
ktgy.com

NORTH ELEVATION - BUILDING A

EAST ELEVATION - BUILDING A

Building height dimensions are measured from finished floor to top of roof and do not include slab height to finished grade, which is a minimum of 8" and will vary depending on site grading.
Colors depicted are representations and may not be accurate due to printing variations.
Refer to Material Board for actual samples.

0 4 8 16

5850 WEST LAS POSITAS BLVD

BUILDING A ELEVATIONS

A6.1

PLEASANTON, CALIFORNIA

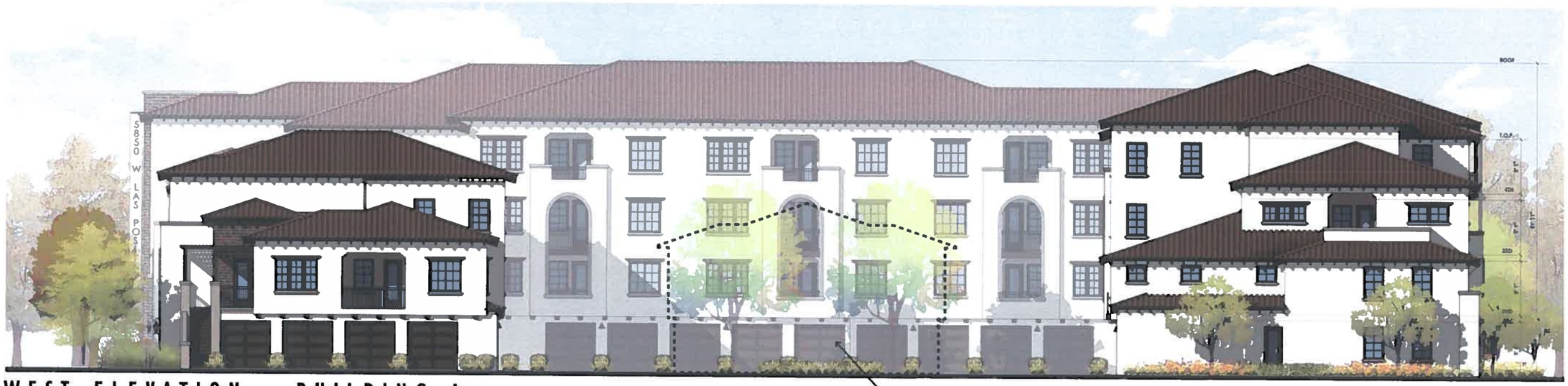
KTGY # 2013-0313 01/24/2014

SUMMERHILL APARTMENT COMMUNITIES
COMMUNITIES OF DISTINCTION

SummerHill Apartment Communities
3000 Executive Parkway, Suite 450
San Ramon, CA 94583
650.842.2268
www.shapartments.com

KTGY Group, Inc.
Architecture+Planning
1733 Ocean Ave., Suite 250
Santa Monica, CA 90401
310.394.2623
ktgy.com

SOUTH ELEVATION - BUILDING A



WEST ELEVATION - BUILDING A

SEE SHEET A6.5 FOR
DUPLEX BUILDING ELEVATIONS

Building height dimensions are measured from finished floor to top of roof and do not include slab height to finished grade, which is a minimum of 8" and will vary depending on site grading. Colors depicted are representations and may not be accurate due to printing variations. Refer to Material Board for actual samples.

0 4 8 16

5850 WEST LAS POSITAS BLVD

BUILDING A ELEVATIONS

PLEASANTON, CALIFORNIA

KTGY # 2013-0313 01/24/2014

A6.2

SUMMERHILL APARTMENT COMMUNITIES
COMMUNITIES OF DISTINCTION

SummerHill Apartment Communities
3000 Executive Parkway, Suite 450
San Ramon, CA 94583
650.842.2268
www.shapartments.com

KTGY Group, Inc.
Architecture+Planning
1733 Ocean Ave., Suite 250
Santa Monica, CA 90401
310.394.2623
ktgy.com

NORTH ELEVATION - BUILDING B

EAST ELEVATION - BUILDING B

SEE SHEET A6.5 FOR
DUPLEX BUILDING ELEVATIONS

Building height dimensions are measured from finished floor to rop of roof and do not include slab height to finished grade, which is a minimum of 8" and will vary depending on site grading. Colors depicted are representations and may not be accurate due to printing variations. Refer to Material Board for actual samples.

0 4 8 16

5850 WEST LAS POSITAS BLVD

BUILDING B ELEVATIONS

PLEASANTON, CALIFORNIA

KTGY # 2013-0313 01/24/2014

A6.3

SUMMERHILL APARTMENT COMMUNITIES
COMMUNITIES OF DISTINCTION

SummerHill Apartment Communities
3000 Executive Parkway, Suite 450
San Ramon, CA 94583
650.842.2268
www.shapartments.com

KTGY Group, Inc.
Architecture+Planning
1733 Ocean Ave., Suite 250
Santa Monica, CA 90401
310.394.2623
ktgy.com

SOUTH ELEVATION - BUILDING B

WEST ELEVATION - BUILDING B

Building height dimensions are measured from finished floor to top of roof and do not include slab height to finished grade, which is a minimum of 8" and will vary depending on site grading. Colors depicted are representations and may not be accurate due to printing variations. Refer to Material Board for actual samples.

0 4 8 16

5850 WEST LAS POSITAS BLVD

BUILDING B ELEVATIONS

A6.4

PLEASANTON, CALIFORNIA

KTGY # 2013-0313 01/24/2014

SUMMERHILL APARTMENT COMMUNITIES
COMMUNITIES OF DISTINCTION

SummerHill Apartment Communities
3000 Executive Parkway, Suite 450
San Ramon, CA 94583
650.842.2268
www.shapartments.com

KTGY Group, Inc.
Architecture+Planning
1733 Ocean Ave., Suite 250
Santa Monica, CA 90401
310.394.2623
ktgy.com

FRONT ELEVATION

LEFT ELEVATION

REAR ELEVATION

RIGHT ELEVATION

Building height dimensions are measured from finished floor to top of roof and do not include slab height to finished grade, which is a minimum of 8" and will vary depending on site grading. Colors depicted are representations and may not be accurate due to printing variations. Refer to Material Board for actual samples.

0 4 8 16

5850 WEST LAS POSITAS BLVD

DUPLEX BUILDING ELEVATIONS

A6.5

PLEASANTON, CALIFORNIA

KTGY # 2013-0313 01/24/2014

SUMMERHILL APARTMENT COMMUNITIES
COMMUNITIES OF DISTINCTION

SummerHill Apartment Communities
3000 Executive Parkway, Suite 450
San Ramon, CA 94583
650.842.2268
www.shapartments.com

KTGY Group, Inc.
Architecture+Planning
1733 Ocean Ave., Suite 250
Santa Monica, CA 90401
310.394.2623
ktgy.com

NORTH ELEVATION - BUILDING C

EAST ELEVATION - BUILDING C

Building height dimensions are measured from finished floor to top of roof and do not include slab height to finished grade, which is a minimum of 8" and will vary depending on site grading. Colors depicted are representations and may not be accurate due to printing variations. Refer to Material Board for actual samples.

0 4 8 16

5850 WEST LAS POSITAS BLVD

BUILDING C ELEVATIONS

A6.6

PLEASANTON, CALIFORNIA

KTGY # 2013-0313 01/24/2014

SUMMERHILL APARTMENT COMMUNITIES
COMMUNITIES OF DISTINCTION

SummerHill Apartment Communities
3000 Executive Parkway, Suite 450
San Ramon, CA 94583
650.842.2268
www.shapartments.com

KTGY Group, Inc.
Architecture+Planning
1733 Ocean Ave., Suite 250
Santa Monica, CA 90401
310.394.2623
ktgy.com

SOUTH ELEVATION - BUILDING C

WEST ELEVATION - BUILDING C

Building height dimensions are measured from finished floor to top of roof and do not include slab height to finished grade, which is a minimum of 8" and will vary depending on site grading.
Colors depicted are representations and may not be accurate due to printing variations.
Refer to Material Board for actual samples.

0 4 8 16

5850 WEST LAS POSITAS BLVD

BUILDING C ELEVATIONS

PLEASANTON, CALIFORNIA

KTGY # 2013-0313 01/24/2014

A6.7

SUMMERHILL APARTMENT COMMUNITIES
COMMUNITIES OF DISTINCTION

SummerHill Apartment Communities
3000 Executive Parkway, Suite 450
San Ramon, CA 94583
650.842.2268
www.shapartments.com

KTGY Group, Inc.
Architecture+Planning
1733 Ocean Ave., Suite 250
Santa Monica, CA 90401
310.394.2623
ktgy.com

NORTH ELEVATION - BUILDING D

EAST ELEVATION - BUILDING D

Building height dimensions are measured from finished floor to top of roof and do not include slab height to finished grade, which is a minimum of 8" and will vary depending on site grading.
Colors depicted are representations and may not be accurate due to printing variations.
Refer to Material Board for actual samples.

0 4 8 16

5850 WEST LAS POSITAS BLVD

BUILDING D ELEVATIONS

PLEASANTON, CALIFORNIA

KTGY # 2013-0313 01/24/2014

A6.8

SUMMERHILL APARTMENT COMMUNITIES
COMMUNITIES OF DISTINCTION

SummerHill Apartment Communities
3000 Executive Parkway, Suite 450
San Ramon, CA 94583
650.842.2268
www.shapartments.com

KTGY Group, Inc.
Architecture+Planning
1733 Ocean Ave., Suite 250
Santa Monica, CA 90401
310.394.2623
ktgy.com

SOUTH ELEVATION - BUILDING D

WEST ELEVATION - BUILDING D

Building height dimensions are measured from finished floor to top of roof and do not include slab height to finished grade, which is a minimum of 8" and will vary depending on site grading.
Colors depicted are representations and may not be accurate due to printing variations.
Refer to Material Board for actual samples.

0 4 8 16

5850 WEST LAS POSITAS BLVD

BUILDING D ELEVATIONS

PLEASANTON, CALIFORNIA

KTGY # 2013-0313 01/24/2014

A6.9

SUMMERHILL APARTMENT COMMUNITIES
COMMUNITIES OF DISTINCTION

SummerHill Apartment Communities
3000 Executive Parkway, Suite 450
San Ramon, CA 94583
650.842.2268
www.shapartments.com

KTGY Group, Inc.
Architecture+Planning
1733 Ocean Ave., Suite 250
Santa Monica, CA 90401
310.394.2623
ktgy.com

Colors depicted are representations and may not be accurate due to printing variations.
Refer to Material Board for actual samples.

5850 WEST LAS POSITAS BLVD

PERSPECTIVE VIEW - BUILDING B FROM NORTHEAST

A7.1

PLEASANTON, CALIFORNIA

KTGY # 2013-0313 01/24/2014

SUMMERHILL APARTMENT COMMUNITIES
COMMUNITIES OF DISTINCTION

SummerHill Apartment Communities
3000 Executive Parkway, Suite 450
San Ramon, CA 94583
650.842.2268
www.shapartments.com

KTGY Group, Inc.
Architecture+Planning
1733 Ocean Ave., Suite 250
Santa Monica, CA 90401
310.394.2623
ktgy.com

Colors depicted are representations and may not be accurate due to printing variations.
Refer to Material Board for actual samples.

5850 WEST LAS POSITAS BLVD

PERSPECTIVE VIEW - BUILDING A FROM NORTHWEST

A7.2

PLEASANTON, CALIFORNIA

KTGY # 2013-031 3 01/24/2014

SUMMERHILL APARTMENT COMMUNITIES
COMMUNITIES OF DISTINCTION

SummerHill Apartment Communities
3000 Executive Parkway, Suite 450
San Ramon, CA 94583
650.842.2268
www.shapartments.com

KTGY Group, Inc.
Architecture+Planning
1733 Ocean Ave., Suite 250
Santa Monica, CA 90401
310.394.2623
ktgy.com

Colors depicted are representations and may not be accurate due to printing variations.
Refer to Material Board for actual samples.

5850 WEST LAS POSITAS BLVD

PERSPECTIVE VIEW - CENTRAL PASEO FROM NORTH

A7.3

PLEASANTON, CALIFORNIA

KTGY # 2013-0313 01/24/2014

SUMMERHILL APARTMENT COMMUNITIES
COMMUNITIES OF DISTINCTION

SummerHill Apartment Communities
3000 Executive Parkway, Suite 450
San Ramon, CA 94583
650.842.2268
www.shapartments.com

KTGY Group, Inc.
Architecture+Planning
1733 Ocean Ave., Suite 250
Santa Monica, CA 90401
310.394.2623
ktgy.com

Colors depicted are representations and may not be accurate due to printing variations.
Refer to Material Board for actual samples.

5850 WEST LAS POSITAS BLVD

PERSPECTIVE VIEW - INTERNAL STREET FROM EAST

A7.4

PLEASANTON, CALIFORNIA

KTGY # 2013-0313 01/24/2014

SUMMERHILL APARTMENT COMMUNITIES
COMMUNITIES OF DISTINCTION

SummerHill Apartment Communities
3000 Executive Parkway, Suite 450
San Ramon, CA 94583
650.842.2268
www.shapartments.com

KTGY Group, Inc.
Architecture+Planning
1733 Ocean Ave., Suite 250
Santa Monica, CA 90401
310.394.2623
ktgy.com

LIGHTING FIXTURES
EVERGREEN MADRID SERIES

LANTERN STYLE ON PRIMARY FACADES

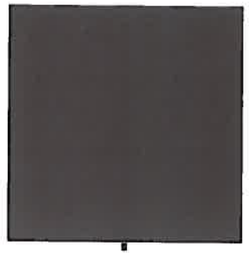
DARK SKY FIXTURES ON ALLEY FACADES

VINYL WINDOWS
MILGARD CHOCOLATE

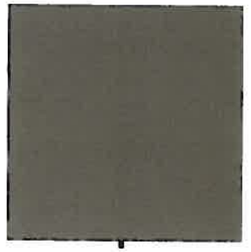
30/30 SAND FINISH PLASTER (BLDGS C & D)
SW 7038 TONY TAUPE
SW 6154 NACRE

SMOOTH COAT PLASTER (BLDGS A & B)
OMEGA 404 BARN SWALLOW
OMEGA 12 CHENILLE

PAINTED FOAM TRIM, FACIA, AND SMOOTH STUCCO ACCENTS
SW 7041 VAN DYKE BROWN



CANVAS AWNING
SUNBRELLA 46" PALM



THIN BRICK VENEER
EL DORADO TUNDRA
HARTFORD

WROUGHT IRON RAILINGS
SW 7675 SEAL SKIN

RAFTER TAILS
FACTORY FINISH OR PAINTED TO MATCH TRIM

WOOD PATIO GATES

CONCRETE S-TILE
EAGLE ROOFING
CAPISTRANO - 3723 ADOBE BLEND

SIMULATED STONE TRIM

5850 WEST LAS POSITAS BLVD

Materials may be substituted for equivalents during final design.
Refer to Material Board for actual samples.

COLORS & MATERIALS

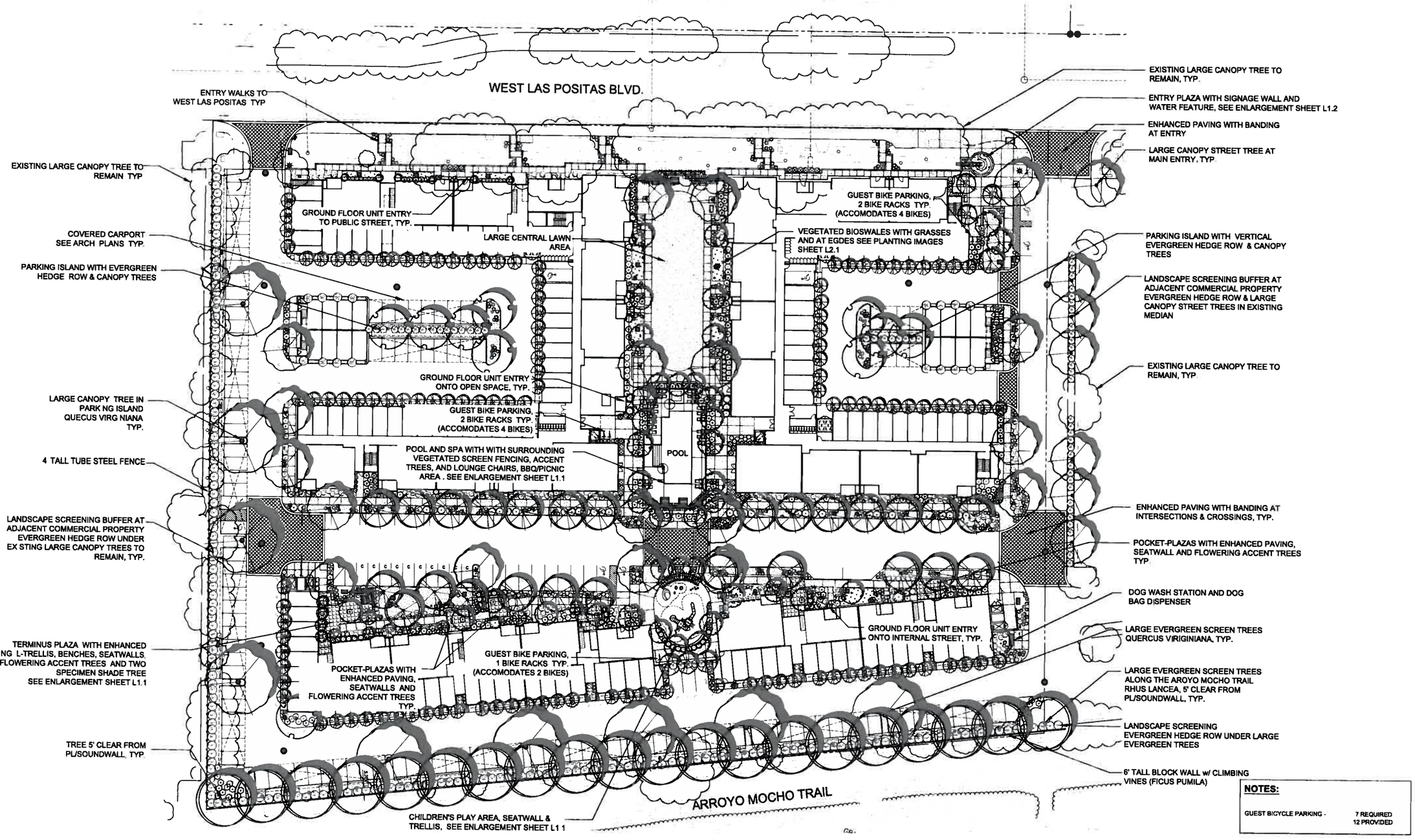
PLEASANTON, CALIFORNIA
KTGY # 2013-0313 01/24/2014

A8.1

SUMMERHILL APARTMENT COMMUNITIES
COMMUNITIES OF DISTINCTION

SummerHill Apartment Communities
3000 Executive Parkway, Suite 450
San Ramon, CA 94583
650.842.2268
www.shapartments.com

KTGY Group, Inc.
Architecture+Planning
1733 Ocean Ave., Suite 250
Santa Monica, CA 90401
310.394.2623
ktgy.com



VAN DORN ABED
LANDSCAPE ARCHITECTS, INC.
81 14TH ST., SAN FRANCISCO, CA
ZIP 94103 PH (415) 864-1921 FAX(415) 864-4796

Summerhill Apartment Communities
5850 West Las Positas Blvd.
PLEASANTON, CALIFORNIA

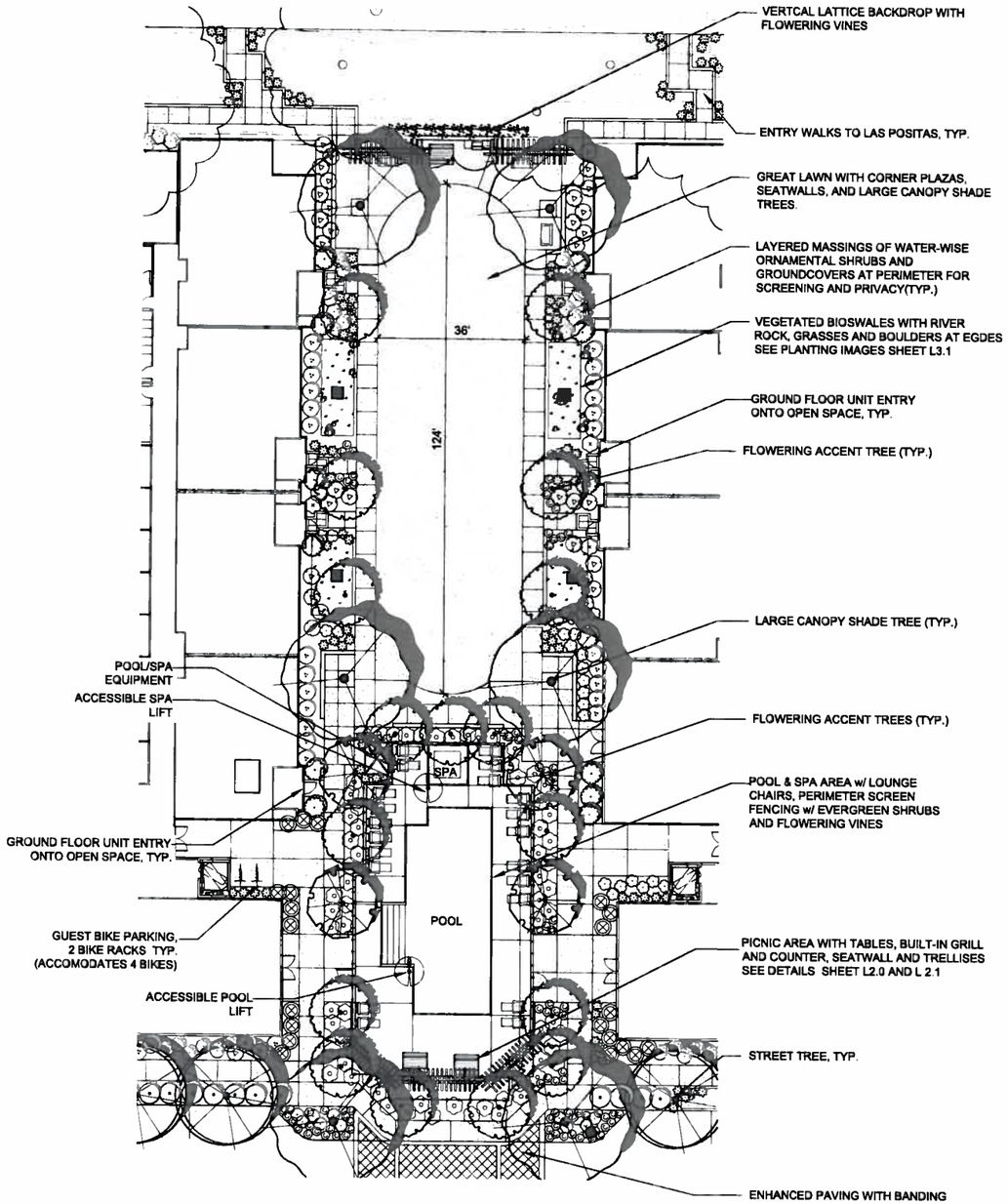
CONCEPTUAL LANDSCAPE PLAN

SCALE: 1" = 30'-0"

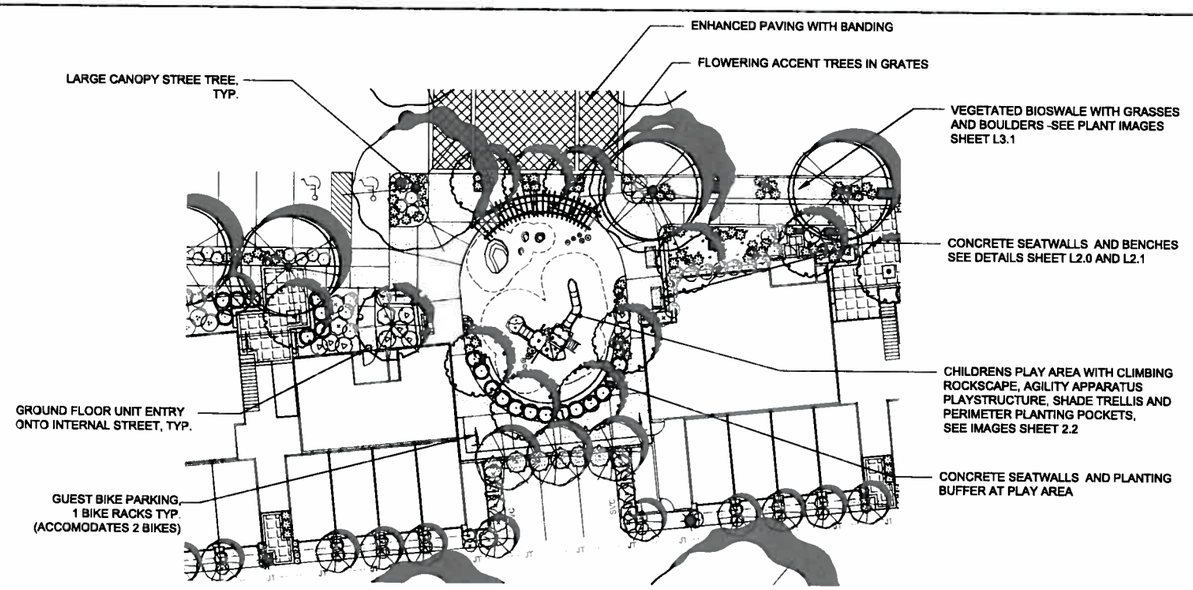
DATE: 1/24/14

0 15 30 60 90

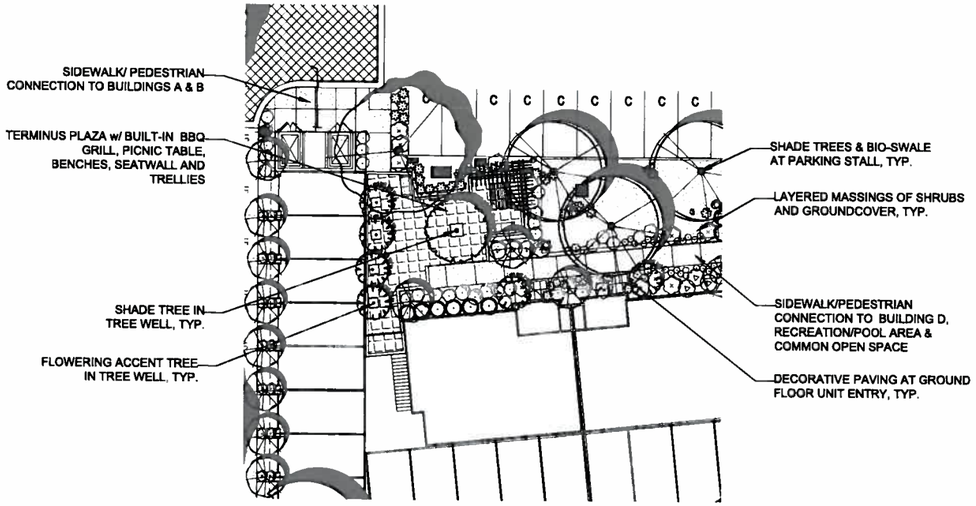
L1.0



A COMMON OPEN SPACE LANDSCAPE ENLARGEMENT
1/16" = 1'-0"



B POOL AREA LANDSCAPE ENLARGEMENT
1/16" = 1'-0"



C TERMINUS PLAZA AT BLDG. C
1/16" = 1'-0"

VAN DORN ABED
LANDSCAPE ARCHITECTS, INC.
81 14TH ST., SAN FRANCISCO, CA
ZIP 94103 PH (415) 864-1921 FAX(415) 864-4796

Summerhill Apartment Communities
5850 West Las Positas Blvd.
PLEASANTON, CALIFORNIA

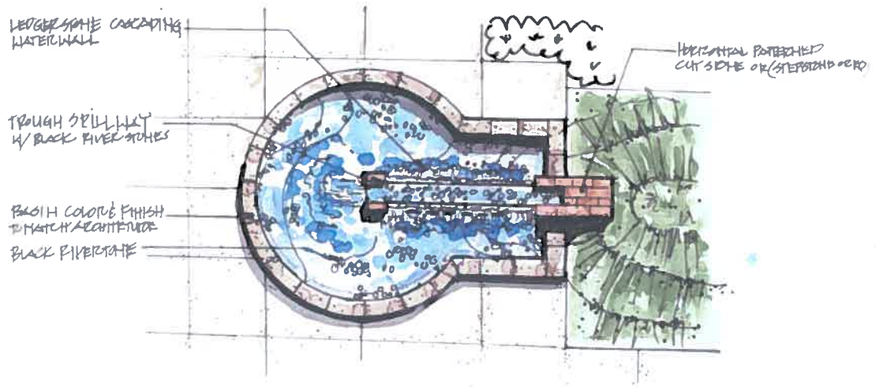
CONCEPTUAL LANDSCAPE ENLARGEMENTS

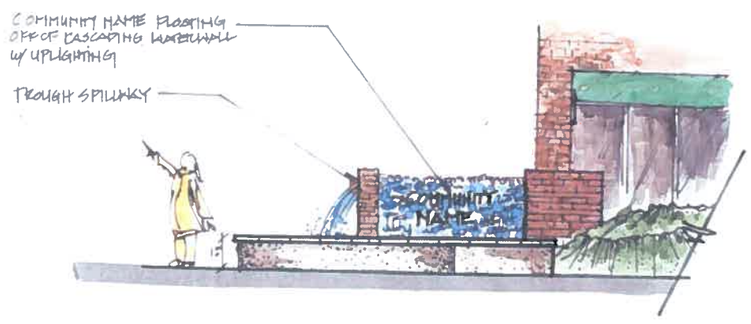
SCALE: 1/16" = 1'-0"

DATE: 1/24/14

0 8 16 32 64

L1.1





A ENTRY PLAZA WITH WATER FEATURE & SIGNAGE WALL
NTS

VAN DORN ABED
LANDSCAPE ARCHITECTS, INC.
81 14TH ST., SAN FRANCISCO, CA
ZIP 94103 PH (415) 864-1921 FAX(415) 864-4796

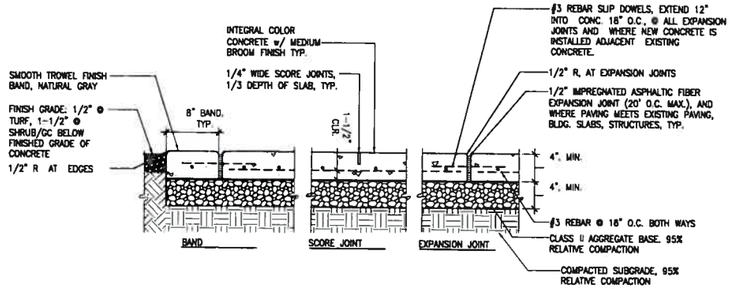
Summerhill Apartment Communities
5850 West Las Positas Blvd.
PLEASANTON, CALIFORNIA

CONCEPTUAL LANDSCAPE ENLARGEMENTS

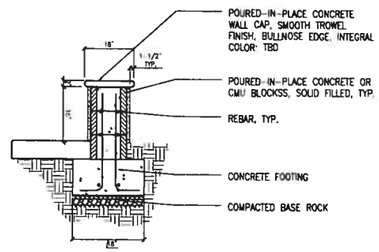
SCALE: NTS

DATE: 1/24/14

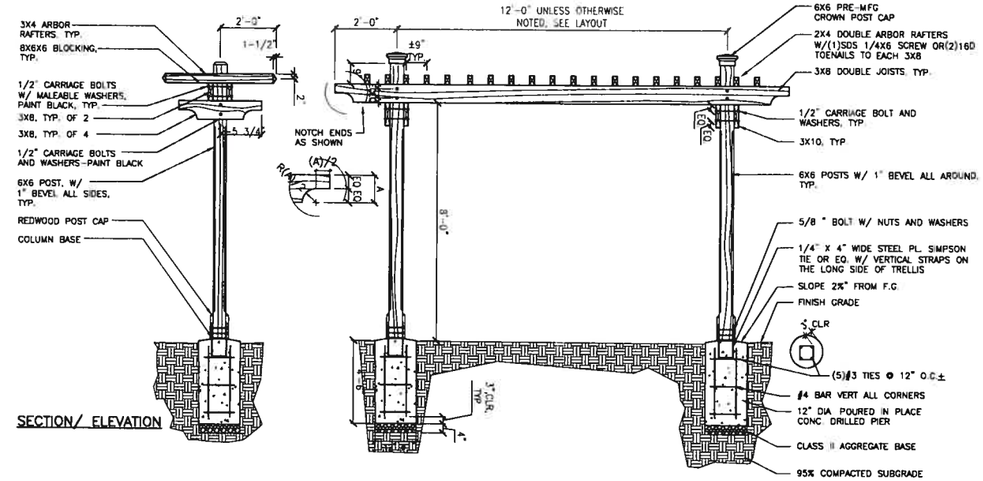
L1.2



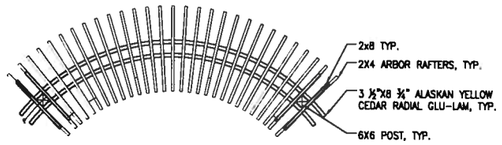
A DECORATIVE SCORED CONCRETE PAVING w/ BANDING
SCALE: NTS



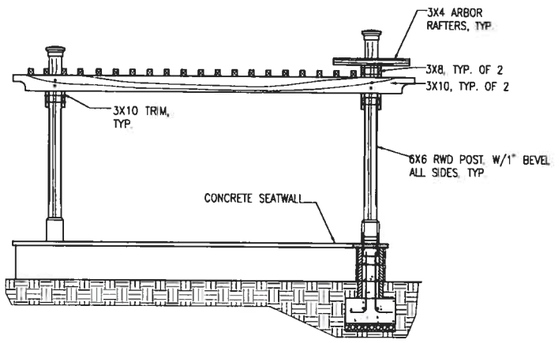
B CONCRETE SEATWALL
SCALE: NTS



C 2-POST TRELLIS
SCALE: NTS

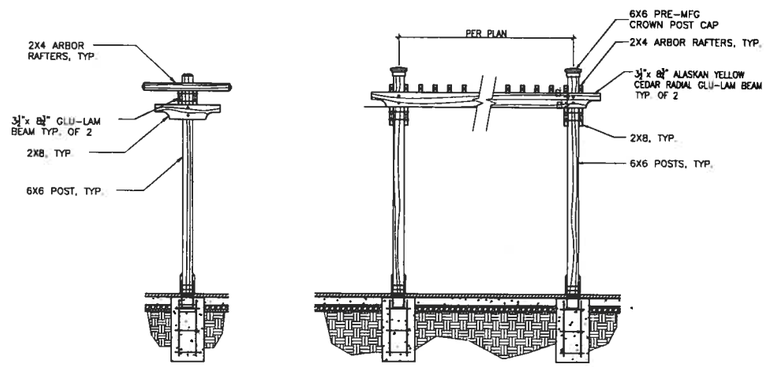


PLAN VIEW



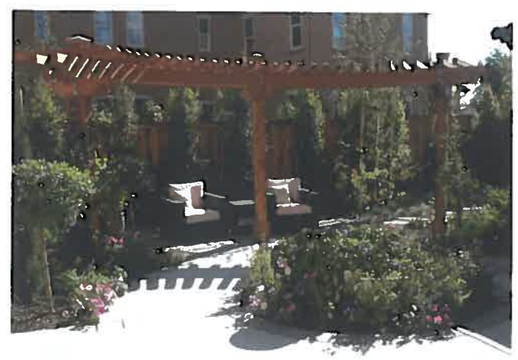
ELEVATION

D L-SHAPED TRELLIS ON SEATWALL
SCALE: NTS



ELEVATION

E RADIAL TRELLIS AT PLAY AREA
SCALE: NTS



VAN DORN ABED
LANDSCAPE ARCHITECTS, INC.
81 14TH ST., SAN FRANCISCO, CA
ZIP 94103 PH (415) 864-1921 FAX(415) 864-4796

Summerhill Apartment Communities
5850 West Las Positas Blvd.
PLEASANTON, CALIFORNIA

CONCEPTUAL LANDSCAPE DETAILS

SCALE: AS NOTED

DATE: 1/24/14

L2.0

6' BENCH - WOOD w/ POWDERCOAT FRAME
"TRIO" BY FORMS & SURFACES
OR EQUIVALENT

A BENCH
SCALE: NTS

6' TABLE & BENCHES - WOOD w/ POWDERCOAT FRAME
"TRIO EMSEMBLE" BY FORMS & SURFACES
OR EQUIVALENT

B TABLE & BENCH ASSEMBLY
SCALE: NTS

36" TALL LED PATH LIGHT - POWDERCOAT ALUMINUM
"HAWTHORNE" BY LANDSCAPE FORMS
OR EQUIVALENT

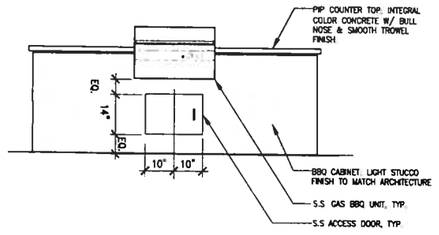
C BOLLARD LIGHT
SCALE: NTS

12' TALL LED POLE LIGHT - POWDERCOAT ALUMINUM
"ALCOTT" BY LANDSCAPE FORMS
OR EQUIVALENT

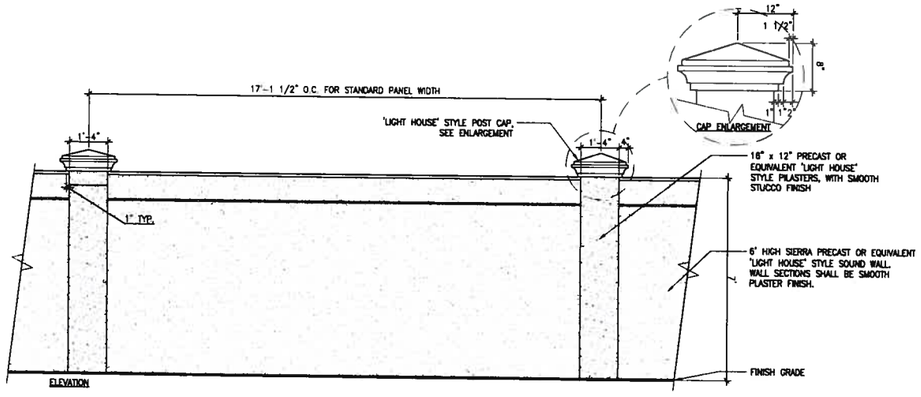
D POLE LIGHT
SCALE: NTS

MODERN U-SHAPE BIKE RACK
"TRIO" BY FORMS & SURFACES
OR EQUIVALENT

E BIKE RACK
SCALE: NTS



F BUILT-IN GRILL w/ CONCRETE COUNTER
SCALE: NTS



G 6' TALL BLOCK WALL
SCALE: NTS

VAN DORN ABED
LANDSCAPE ARCHITECTS, INC.
81 14TH ST., SAN FRANCISCO, CA
ZIP 94103 PH (415) 864-1921 FAX(415) 864-4796

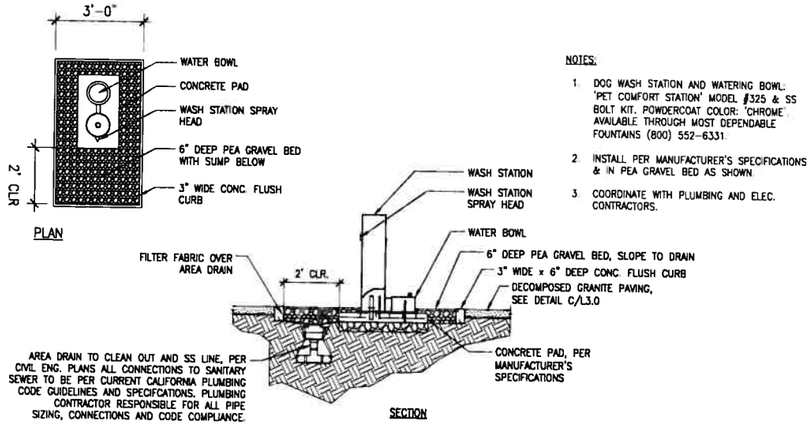
Summerhill Apartment Communities
5850 West Las Positas Blvd.
PLEASANTON, CALIFORNIA

CONCEPTUAL LANDSCAPE DETAILS

SCALE: AS NOTED

DATE: 1/24/14

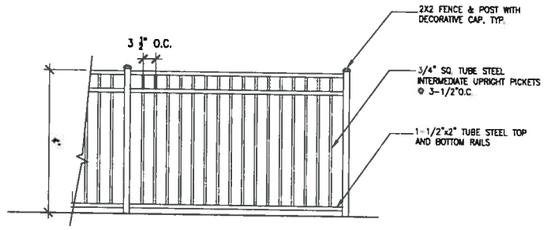
L2.1



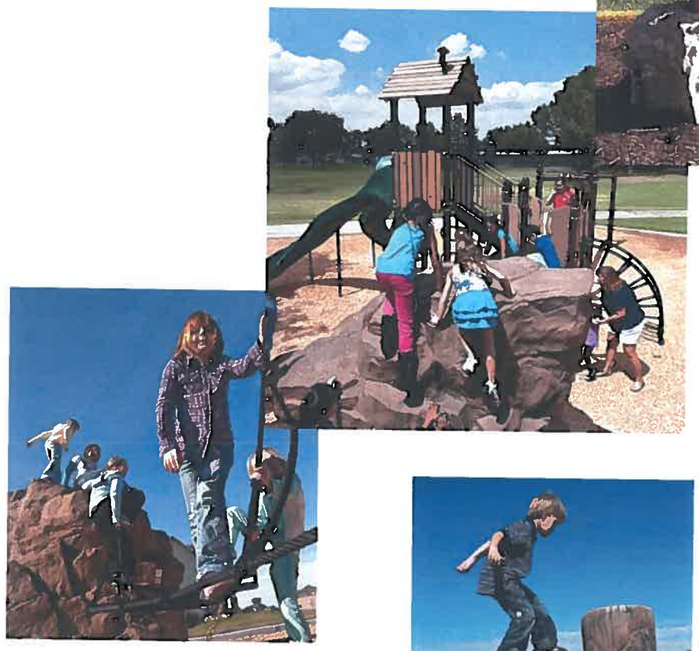
NOTES:

1. DOG WASH STATION AND WATERING BOWL: 'PET COMFORT STATION' MODEL #325 & SS BOLT KIT. POWDERCOAT COLOR: 'CHROME' AVAILABLE THROUGH MOST DEPENDABLE FOUNTAINS (800) 552-6331.
2. INSTALL PER MANUFACTURER'S SPECIFICATIONS & IN PEA GRAVEL BED AS SHOWN.
3. COORDINATE WITH PLUMBING AND ELEC. CONTRACTORS.

A DOG WASHING STATION
SCALE: NTS



B 4' TALL TUBE STEEL FENCE
SCALE: NTS



"TREE HOUSE & CLIMBING ROCK" PLAY STRUCTURE
BY LANDSCAPE FORMS
OR EQUIVALENT

"TREE STUMPS" BY LANDSCAPE FORMS
OR EQUIVALENT

C PLAY AREA
SCALE: NTS

BOULDERS IN LANDSCAPE AROUND PERIMETER AND IN PLAY AREA FOR CLIMBING

VAN DORN ABED
LANDSCAPE ARCHITECTS, INC.
81 14TH ST., SAN FRANCISCO, CA
ZIP 94103 PH (415) 864-1921 FAX(415) 864-4796

Summerhill Apartment Communities
5850 West Las Positas Blvd.
PLEASANTON, CALIFORNIA

CONCEPTUAL LANDSCAPE DETAILS

SCALE: AS NOTED

DATE: 1/24/14

L2.2

CONCEPTUAL TREE & SHRUBS PALETTE

CODE	BOTANICAL NAME	COMMON NAME	CONT	WUCOLS WATER USE
ACE RUB	ACER RUBRUM	RED MAPLE	24"BOX	M
ARB UNE	ARBUTUS UNEDO	STRAWBERRY TREE	15 GAL	L
ARB HYB	ARBUTUS X 'MARINA'	ARBUTUS STANDARD	15 GAL	L
CEL SIN	CELTIS SINENSIS	CHINESE HACKBERRY	24"BOX	L
CER OCC	CERCIS OCCIDENTALIS	WESTERN REDBUD	5 GAL	L
FRA OXY	FRAXINUS OXYCARPA 'RAYWOOD' TM	RAYWOOD ASH	24"BOX	M
GIN BIL	GINKGO BILOBA - PRINCETON SENTRY	GINKGO	24"BOX	M
JAC MIM	JACARANDA MIMOSIFOLIA	JACARANDA	24" BOX	M
LAG HOP	LAGERSTROEMIA FAURIEI 'HOPI'	CREPE MYRTLE	15 GAL	L
LAG TRI	LAGERSTROEMIA HYBRIDS 'COMMANCE'	INDIAN TRIBE CRAPE MYRTLE	15 GAL	L
LAG MUS	LAGERSTROEMIA INDICA 'MUSKOGEE'	CREPE MYRTLE	15 GAL	L
LAG ZUN	LAGERSTROEMIA X 'ZUNI'	JAPANESE CRAPE MYRTLE MULTI-TRUNK	15 GAL	L
LAU SAR	LAURUS NOBILIS 'SARATOGA'	SWEET BAY	15 GAL	L
TRI CON	LOPHOSTEMON CONFERTUS	BRISBANE BOX	15 GAL	L
MAG LIT	MAGNOLIA GRANDIFLORA 'LITTLE GEM'	DWARF MAGNOLIA	15 GAL	M
MAG SOU	MAGNOLIA SOULANGIANA 'LILLIPUTIAN'	MUTLI-TRUNK LILLIPUTIAN MAGNOLIA	24"BOX	M
MAG STE	MAGNOLIA STELLATA	STAR MAGNOLIA MULTI-TRUNK	15 GAL	M
PIS CHI	PISTACIA CHINENSIS	CHINESE PISTACHE	24"BOX	L
PRU CHA	PYRUS CALLERYANA 'CHANTICLEER'	CHANTICLEER PEAR	15 GAL	M
PYR PEA	PYRUS CALLERYANA 'REDSPIRE'	REDSPIRE CALLERY PEAR	24"BOX	M
RHU LAN	RHUS LANCEA	AFRICAN SUMAC	24"BOX	L
QUE VIR	QUERCUS VIRGINIANA	SOUTHERN LIVE OAK	24" BOX	L
ROB IDA	ROBINIA X AMBIGUA 'IDAHOENSIS'	IDAHO LOCUST	24"BOX	M
CHI TAS	X CHITALPA TASHKENTENSIS 'PINK DAWN'	PINK DAWN CHITALPA	15 GAL	L

CODE	BOTANICAL NAME	COMMON NAME	CONT	WUCOLS WATER USE
ABE EDW	ABELIA X GRANDIFLORA 'EDWARD GOUCHER'	GLOSSY ABELIA	5 GAL	M
ABU PIN	ABUTILON HYBRIDUM 'PINK'	FLOWERING MAPLE	5 GAL	M
BER CRI	BERBERIS THUNBERGII 'CRIMSON PYGMY'	CRIMSON PYGMY BARBERRY	5 GAL	L
BER COR	BERGENIA CORDIFOLIA	HEARTLEAF BERGENIA	1 GAL	M
CAL LIT	CALLISTEMON CITRINUS 'LITTLE JOHN'	DWARF BOTTLE BRUSH	1 GAL	L
COL PUL	COLEONEMA PULCHRUM	PINK BREATH OF HEAVEN	5 GAL	M
DIE BIC	DIETES BICOLOR	FORTNIGHT LILY	1 GAL	L
DOD PUR	DODONAEA VISCOSA 'PURPUREA'	PURPLE LEAFED HOPSEED BUSH	5 GAL	L
ERI WAY	ERIGERON GLAUCUS 'WAYNE RODERICK'	SEASIDE DAISY	1 GAL	L
ERI KAR	ERIGERON KARVINSKIANUS	FLEABANE	1 GAL	L

CONCEPTUAL SHRUBS PALETTE (cont.)

ERY BOW	ERYSIMUM 'BOWLES MAUVE'	WALLFLOWER	5 GAL	L
ERY APR	ERYSIMUM X 'APRICOT TWIST'	APRICOT TWIST WALLFLOWER	5 GAL	L
EUP RED	EUPHORBIA X MARTINII 'RED MARTIN'	EUPHORBIA	5 GAL	L
FUC GAR	FUCHSIA HYBRIDA 'GARTENMEISTER BONSTEDT'	FUCHSIA	5 GAL	M
GRE NOE	GREVILLEA HYBRID 'NOELLII'	GREVILLEA	5 GAL	L
HEB SPE	HEBE SPECIOSA	SHOWY HEBE	5 GAL	M
HEB AUT	HEBE X 'AUTUMN GLORY'	AUTUMN GLORY HEBE	5 GAL	M
HEB COE	HEBE 'COED'	HEBE	5 GAL	M
HEM HYB	HEMEROCALLIS HYBRID	FLOWERING DAYLILY	1 GAL	L
HEU SAC	HEUCHERA X 'SANTA ANA CARDINAL'	CORAL BELLS	1 GAL	M
JUN RO2	JUNIPERUS C. SPARTAN	NCN	15 GAL	L
JUN SK2	JUNIPERUS S. SKYROCKET	NCN	15 GAL	L
LAV ASS	LAVATERA ASSURGENTIFLORA	MALLOW	5 GAL	L
LIR GIG	LIRIOPE GIGANTEA	GIANT LIRIOPE	5 GAL	M
LOR CHI	LOROPETALUM CHINENSE	GREEN FINGE FLOWER	5 GAL	L
OLE LIT	OLEA EUROPAEA 'LITTLE OLLIE' STANDARD	LITTLE OLLIE OLIVE - STANDARD	15 GAL	VL
PEN WH2	PENNISETUM SETACEUM 'WHITE'	WHITE FOUTAIN GRASS	5 GAL	L
PHO TT	PHORMIUM TENAX 'TOM THUMB'	DWARF GREEN FLAX	1 GAL	L
PHO WAV	PHORMIUM TENAX 'YELLOW WAVE'	NEW ZEALAND FLAX	5 GAL	L
PHO MQ	PHORMIUM 'MAORI QUEEN'	NEW ZEALAND FLAX	5 GAL	L
PIT CM	PITTOSPORUM TOBIRA 'CREAM DE MINT' TM	CREAM DE MINT DWARF MOCK ORANGE	5 GAL	L
PIT WHE	PITTOSPORUM TOBIRA 'WHEELERS DWARF'	WHEELER'S DWARF MOCK ORANGE	5 GAL	M
PRU CAR	PRUNUS CAROLINIANA 'BRIGHT-N-TIGHT'	CAROLINA LAUREL CHERRY	15 GAL	L
ROS CAL	ROSA CALIFORNICA	CALIFORNIA WILD ROSE	5 GAL	L
ROS IC2	ROSA FLORIBUNDA 'ICEBERG'	ROSE	5 GAL	M
ROS RED	ROSA FLOWER CARPET RED	GROUNDCOVER ROSE	2 GAL	M
ROS IC3	ROSA ICEBERG (STANDARD)	ROSE	15 GAL STD	M
ROS FLC	ROSA X 'FLOWER CARPET APPLEBLOSSOM' TM	GROUNDCOVER ROSE	2 GAL	M
ROS FL6	ROSA X 'FLOWER CARPET WHITE'	GROUNDCOVER ROSE	2 GAL	M
SOL RAN	SOLANUM RANTONNETII (STANDARD)	PARAGUAY NIGHTSHADE	15 GAL STD	L
TAG LEM	TAGETES LEMMONII	COPPER CANYON DAISY	1 GAL	L
TIB UR2	TIBOUCHINA URVILLEANA	PRINCESS FLOWER	5 GAL	M
WES FRU	WESTRINGIA FRUTICOSA	COAST ROSEMARY	5 GAL	L
WES MOR	WESTRINGIA FRUTICOSA 'MORNING LIGHT'	MORNING LIGHT COAST ROSEMARY	5 GAL	L

CONCEPTUAL GRASSES & GROUNDCOVER

CODE	BOTANICAL NAME	COMMON NAME	CONT	WUCOLS WATER USE
CAR PAN	CAREX PANSA	SANDDUNE SEDGE	FLAT	L
FES IDA	FESTUCA IDAHOENSIS	IDAHO FESCUE	1 GAL	L
FES OVI	FESTUCA OVINA GLAUCA 'ELIJAH BLUE'	BLUE FESCUE	1 GAL	L
NAS TEN	NASSELLA TENUISSIMA	MEXICAN FEATHERGRASS	5 GAL	L

CODE	BOTANICAL NAME	COMMON NAME	CONT	WUCOLS WATER USE
SOD	FESTUCA ELATOR 'MEDALLION'	FESTUCA MEDALLION SOD	SOD	H
FES MOW	FESTUCA X 'NO MOW'	FESTUCA X 'NO MOW'	SOD	M
FRA CHI	FRAGARIA CHILOENSIS	BEACH STRAWBERRY	FLAT	L

PLANTING & WATER EFFICIENCY DESIGN INTENT STATEMENT

THE PLANTING DESIGN INCORPORATES PRINCIPLES INCLUDED IN THE "BAY FRIENDLY LANDSCAPE GUIDELINES".

THE PLANTING DESIGN MINIMIZES TURF/LAWN AREAS AND UTILIZES PRIMARILY LOW WATER USE & NATIVE PLANT SPECIES AND ORNAMENTAL PLANTS ADAPTED TO LOCAL CLIMATIC CONDITIONS. PLANTS ARE GROUPED BY HYDROZONE, & EXPOSURE. THE PLANTING DESIGN ALLOWS FOR THE PLANTS TO REACH THEIR NATURAL, FULL-GROWN SIZE AND ELIMINATES THE NEED FOR EXCESSIVE PRUNING OR HEDGING.

SELECTED TREES HAVE BEEN CHOSEN TO PROVIDE A VARIATION OF HEIGHTS, WIDTHS, COLORS, TEXTURES, AND CHARACTER. TREE LOCATION AND ORIENTATION HAVE BEEN DESIGNED FOR MAXIMUM AESTHETIC EFFECT AND PASSIVE SOLAR BENEFITS.

VEGETATED SWALES AND BIORETENTION TREATMENT AREAS WILL BE PLANTED WITH APPROVED WATER CONSERVING CAREX PANSA OR ALTERNATIVE GRASS SPECIES, AND PERIMETER SHRUBS THAT ARE ADAPTED TO BIO-SWALE CONDITIONS.

THE TREES, SHRUBS AND TURF PLANTING AREAS WILL BE DESIGNED IN CONJUNCTION WITH THE IRRIGATION SYSTEM FOR MAXIMUM WATER CONSERVATION. THE LANDSCAPES ESTIMATED TOTAL WATER USE WILL NOT EXCEED THE PROJECTS MAXIMUM WATER ALLOWANCE AS SPECIFIED IN THE THE STATE OF CALIFORNIA'S 2010 MODEL WATER EFFICIENT LANDSCAPE ORDINANCE.

THE PLANTING & IRRIGATION DESIGN WILL COMPLY WITH THE STATE OF CALIFORNIA'S 2010 MODEL WATER EFFICIENT LANDSCAPE ORDINANCE.

THE PLANTS HAVE BEEN SELECTED UTILIZING THE STATE OF CALIFORNIA'S 2010 MODEL WATER EFFICIENT LANDSCAPE ORDINANCE PLANT LIST, WUCOLS III. NO PLANTS ARE USED THAT ARE CONSIDERED INVASIVE IN THE THE REGION AS LISTED BY THE CAL-IPC.

IRRIGATION DESIGN INTENT STATEMENT

THE IRRIGATION SYSTEMS WILL UTILIZE A COMBINATION OF PRESSURE COMPENSATING LOW VOLUME DRIP EMITTERS, PRESSURE COMPENSATING LOW FLOW BUBBLERS & SPRAY HEADS. THE LOW, MEDIUM AND HIGH WATER USE PLANTS WILL BE ON SEPARATE VALVE CIRCUITS. PLANT SPECIES WILL BE GROUPED BY HYDROZONE AS STATED ABOVE.

ALL NEW TREES WILL BE IRRIGATED WITH DEEP WATERING BUBBLERS. THE GREAT LAWN WILL BE IRRIGATED WITH LOW GALLON USE SPRAY HEADS WITH MATCHED PRECIPITATION RATE HEADS. ADJACENT PAVING WILL BE DESIGNED TO DRAIN ENTIRELY TO THE LANDSCAPE AREAS SHOULD ANY OVER-SPRAY OCCUR.

SMART E.T. BASED IRRIGATION CONTROLLERS SHALL BE UTILIZED TO OPTIMIZE EFFICIENT WATER APPLICATION. SMART CONTROLLERS AUTOMATICALLY ADJUST THEIR DAILY WATER SCHEDULE PROGRAMMING BASED UPON THE LOCAL CLIMATE AT THE PROJECT SITE. SMART CONTROLLERS RECEIVE WIRELESS DATA DAILY FROM THE IRRIGATION MANUFACTURERS WEATHER DATA SERVICE. A RAIN SWITCH WILL BE INSTALLED TO PREVENT IRRIGATION DURING RAINY PERIODS.

A FLOW SENSOR AND MASTER VALVE WILL BE CONNECTED TO THE SMART CONTROLLER TO ALLOW AUTOMATIC SHUT OFF OF ANY VALVE CIRCUIT OR MAIN LINE IN THE EVENT OF A PIPE BRAKE TO PREVENT WATER WASTE.

THE IRRIGATION SYSTEM DESIGN WILL COMPLY WITH THE 2010 CALIFORNIA WATER EFFICIENT LANDSCAPE ORDINANCE.

VAN DORN ABED
LANDSCAPE ARCHITECTS, INC.
81 14TH ST., SAN FRANCISCO, CA
ZIP 94103 PH (415) 864-1921 FAX(415) 864-4796

Summerhill Apartment Communities
5850 West Las Positas Blvd.
PLEASANTON, CALIFORNIA

CONCEPTUAL PLANT LIST & DESIGN INTENT STATEMENTS

SCALE: NTS

DATE: 1/24/14

L3.0

CONCEPTUAL TREE PALETTE

ACER RUBRUM
RHUS LANCEA
QUERCUS VIRGINIANA
PYRUS CALLERYANA
PISTACIA CHINENSIS
ARBUTUS
GINGO BILOBA
CHITALPA
LAGERSTROEMIA
MAGNOLIA x SOULANGIANA 'LILLIPUTIAN'
CELTIS SINENSIS
JACARANDA
MAGNOLIA GRANDIFLORA 'LITTLE GEM'
MAGNOLIA STELLATA
LAURUS NOBILIS
FRAXINUS OXYCARPA
CERCIS OCCIDENTALIS
JUNIPERUS C. SPARTAN

CONCEPTUAL SHRUBS & GROUNDCOVER PALETTE

PRUNUS CAROLINIANA
GREVILLEA FLOWER
PHORMIUM
COLEONEMA PULCHRUM
DIETES
ANIGOZANTHOS FLAVIDUS
PHORMIUM
NEBE
ERYSIMUM 'APRICOT'
ERYSIMUM 'DOWLES MAUVE'
WESTRINGIA MORNING LIGHT
LAVATERA ASSURGENTIFLORA
CALLISTEMON VIMINALIS 'LITTLE JOHN'
PITTOSPORUM TOBIRA 'WHEELERS DWARF'
HEUCHERA
ICEBURG ROSE
ERIGERON KARVINSKIANUS
FAGARIA
ERIGERON GLAUCUS
ROSA FLORA CARPET 'APPLE BLOSSOM'
HEMEROCALLIS
ROSA FLORA CARPET 'PINK'
BIO-RETENTION SHRUBS & GRASSES
BIO-RETENTION SHRUBS & GRASSES

VAN DORN ABED
LANDSCAPE ARCHITECTS, INC.
81 14TH ST., SAN FRANCISCO, CA
ZIP 94103 PH (415) 864-1921 FAX(415) 864-4796

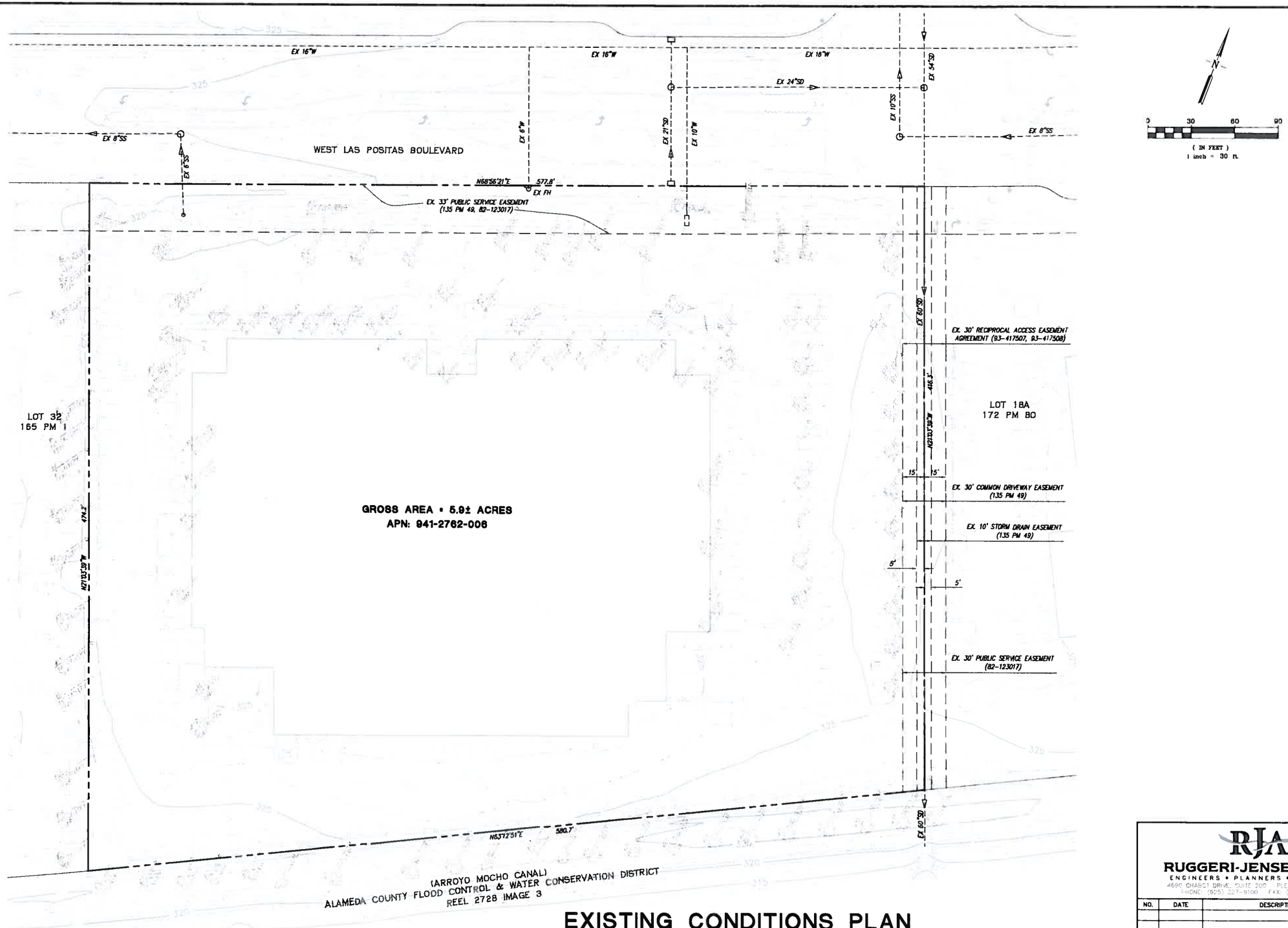
Summerhill Apartment Communities
5850 West Las Positas Blvd.
PLEASANTON, CALIFORNIA

CONCEPTUAL PLANT IMAGERY

SCALE: NTS

DATE: 1/24/14

L3.1



EXISTING CONDITIONS PLAN

5850 WEST LAS POSITAS BOULEVARD

CITY OF PLEASANTON, ALAMEDA COUNTY, CALIFORNIA
FOR: SHAC LAS POSITAS APARTMENTS LLC.

RJA
RUGGERI-JENSEN-AZAR
ENGINEERS • PLANNERS • SURVEYORS
4690 CHABOT DRIVE, SUITE 200 PLEASANTON, CA 94588
PHONE: (925) 227-9100 FAX: (925) 227-9300

NO.	DATE	DESCRIPTION	BY

DATE: JANUARY 24, 2014

JOB NO.: 131045

SHEET NO.

C-1.0

WEST LAS POSITAS BOULEVARD

SEE HACIENDA DRIVE DETAIL ON THIS SHEET

N68°56'21"E 577.8'

EX. 33' PUBLIC SERVICE EASEMENT

BLDG A

BLDG B

BLDG A

BLDG B

BLDG C

BLDG D

LOT 32
165 PM 1

LOT 18A
172 PM 80

STREET "C"

STREET "A"

STREET "D"

STREET "B"

N21°03'39"W 474.2'

N21°03'39"W

EX. 30' RECIPROCAL ACCESS EASEMENT AGREEMENT (93-417507, 93-417508)

EX. 30' COMMON DRIVEWAY EASEMENT

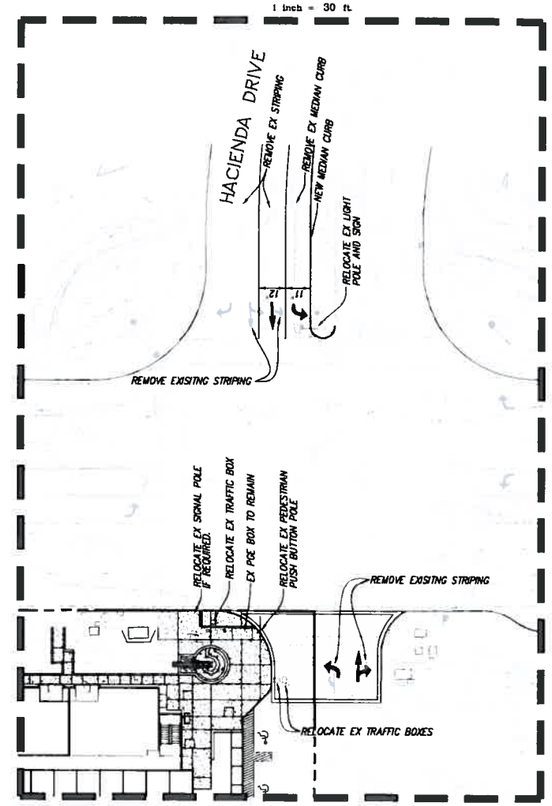
EX. 10' STORM DRAIN EASEMENT

EX. 30' PUBLIC SERVICE EASEMENT

N63°12'51"E 580.7'

(ARROYO MOCHO CANAL)
ALAMEDA COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
REEL 2728 IMAGE 3

0 30 60 90
(IN FEET)
1 inch = 30 ft



HACIENDA DRIVE DETAIL

LEGEND

EXISTING STRIPING

PROPOSED STRIPING

PRELIMINARY SITE PLAN

5850 WEST LAS POSITAS BLVD.

CITY OF PLEASANTON, ALAMEDA COUNTY, CALIFORNIA
FOR: SHAC LAS POSITAS APARTMENTS LLC.

SUMMARY PARKING COUNT

GARAGE	130
CARPORT	124
ON-STREET	38
ON-STREET(COMPACT)	12
TOTAL	304

RJA
RUGGERI-JENSEN-AZAR
ENGINEERS • PLANNERS • SURVEYORS
4690 CHABOT DRIVE, SUITE 200 PLEASANTON, CA 94588
PHONE (925) 227-9100 FAX (925) 227-9300

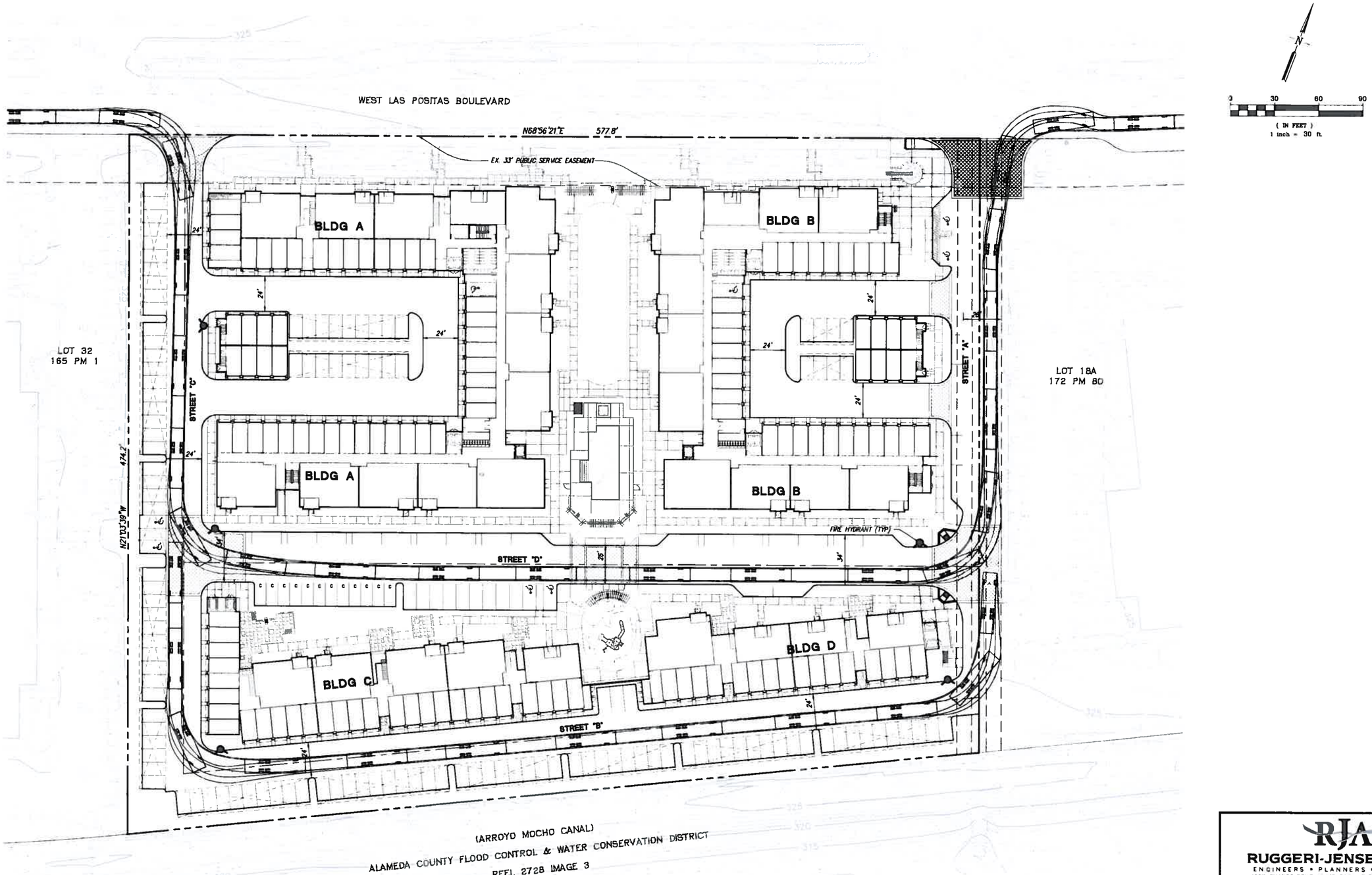
NO.	DATE	DESCRIPTION	BY

DATE: JANUARY 24, 2014

JOB NO.: 131045

SHEET NO.
C-2.0

© \\RJA2013\13045\PLANNING\131045-C2.0-SITE PLAN.DWG 1/24/2014 11:28:53 AM DOMINIC CARUSO



PRELIMINARY FIRE HYDRANT LOCATION AND FIRE TURNING PATH PLAN

5850 WEST LAS POSITAS BLVD.

CITY OF PLEASANTON, ALAMEDA COUNTY, CALIFORNIA
FOR: SHAC LAS POSITAS POSITAS APARTMENTS LLC

RJA
RUGGERI-JENSEN-AZAR
ENGINEERS • PLANNERS • SURVEYORS
4690 CHABOT DRIVE, SUITE 200 PLEASANTON, CA 94588
PHONE (925) 227-9100 FAX (925) 227-9300

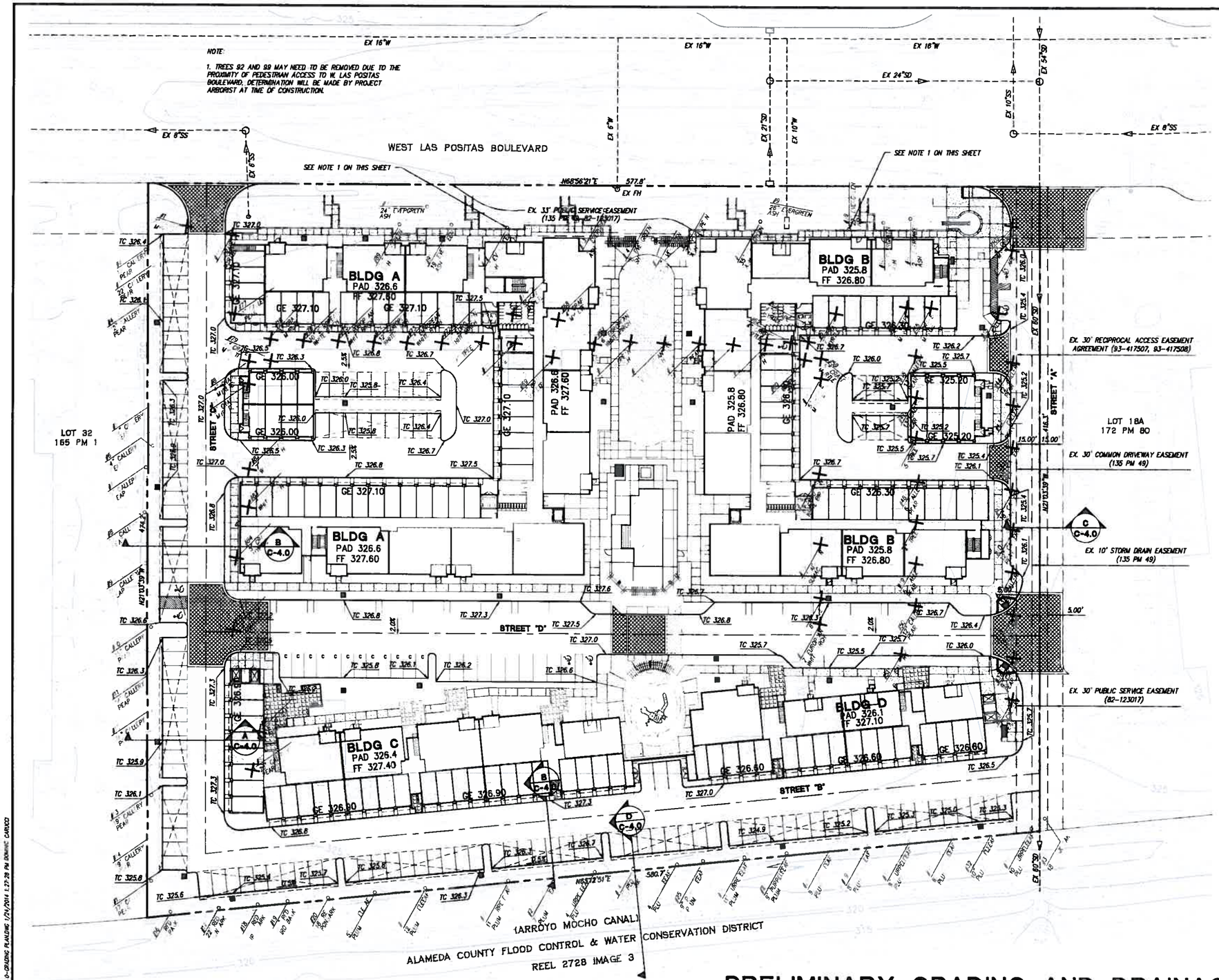
NO.	DATE	DESCRIPTION	BY

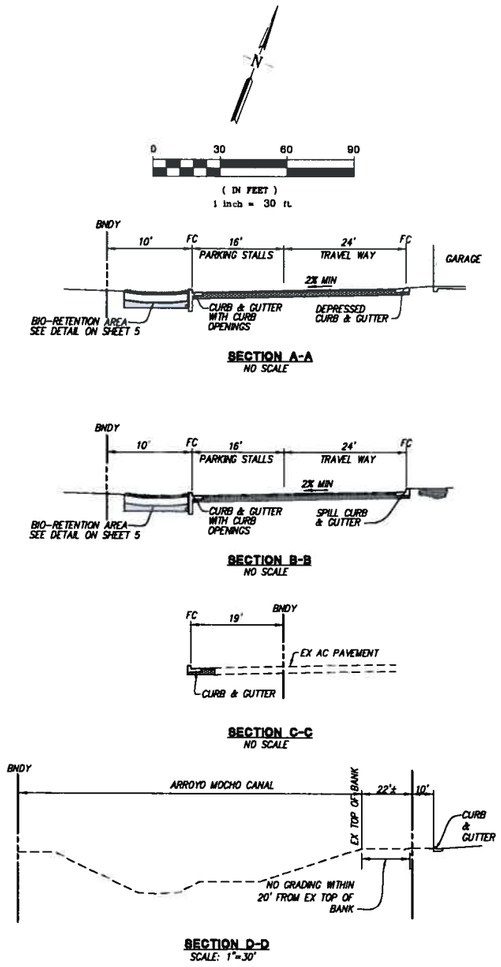
DATE: JANUARY 24, 2014

JOB NO.: 131045

SHEET NO.
C-3.0

G:\JOB2013\131045\PD\131045-C3.0-FIRE HYDRANT_TURNING.DWG 1/24/2014 11:25:53 AM DOMINIC CARUCCI





ESTIMATED EARTHWORK QUANTITIES

ITEMS	CUT (C.Y.)	FILL (C.Y.)
BUILDING & LANDSCAPE AREA	1,200	2,200
STREET AREA	3,000	–
BIO-RETENTION AREA	800	–
TRENCH SPOIL	3,000	–
SHRINKAGE (ASSUME 15%)	–	300
TOTAL	8,000	2,500

1. ALL QUANTITIES SHOWN ON THIS PLAN ARE APPROXIMATE, CALCULATED CUT AND FILL ARE TO "ROUGH GRADE" AND EXISTING GROUND. THE ACTUAL AMOUNT OF EARTH MOVED IS VARIABLE DEPENDENT ON COMPACTION, CONSOLIDATION, STRIPPING REQUIREMENTS, AND THE CONTRACTOR'S METHOD OF OPERATION.
2. IT IS ASSUMED DEMO OF EXISTING BUILDING FOUNDATION (ESTIMATED 1,700 CY) AND REMOVAL OF EXISTING AC PAVEMENT (ESTIMATED 1,100 CY) QUANTITIES WILL BE OFF-HAULED SEPARATELY OR USED AS A SUBBASE AND ARE NOT INCLUDED IN THE ESTIMATED EARTHWORK QUANTITIES.
3. THIS ESTIMATE QUANTITY DOES NOT INCLUDE FOUNDATION & PLUMBING SPOILS.

RJA
RUGGERI-JENSEN-AZAR
ENGINEERS • PLANNERS • SURVEYORS
4690 CHABOT DRIVE, SUITE 200 PLEASANTON, CA 94588
PHONE: (925) 227-9100 FAX: (925) 227-9300

NO.	DATE	DESCRIPTION	BY

PRELIMINARY GRADING AND DRAINAGE PLAN

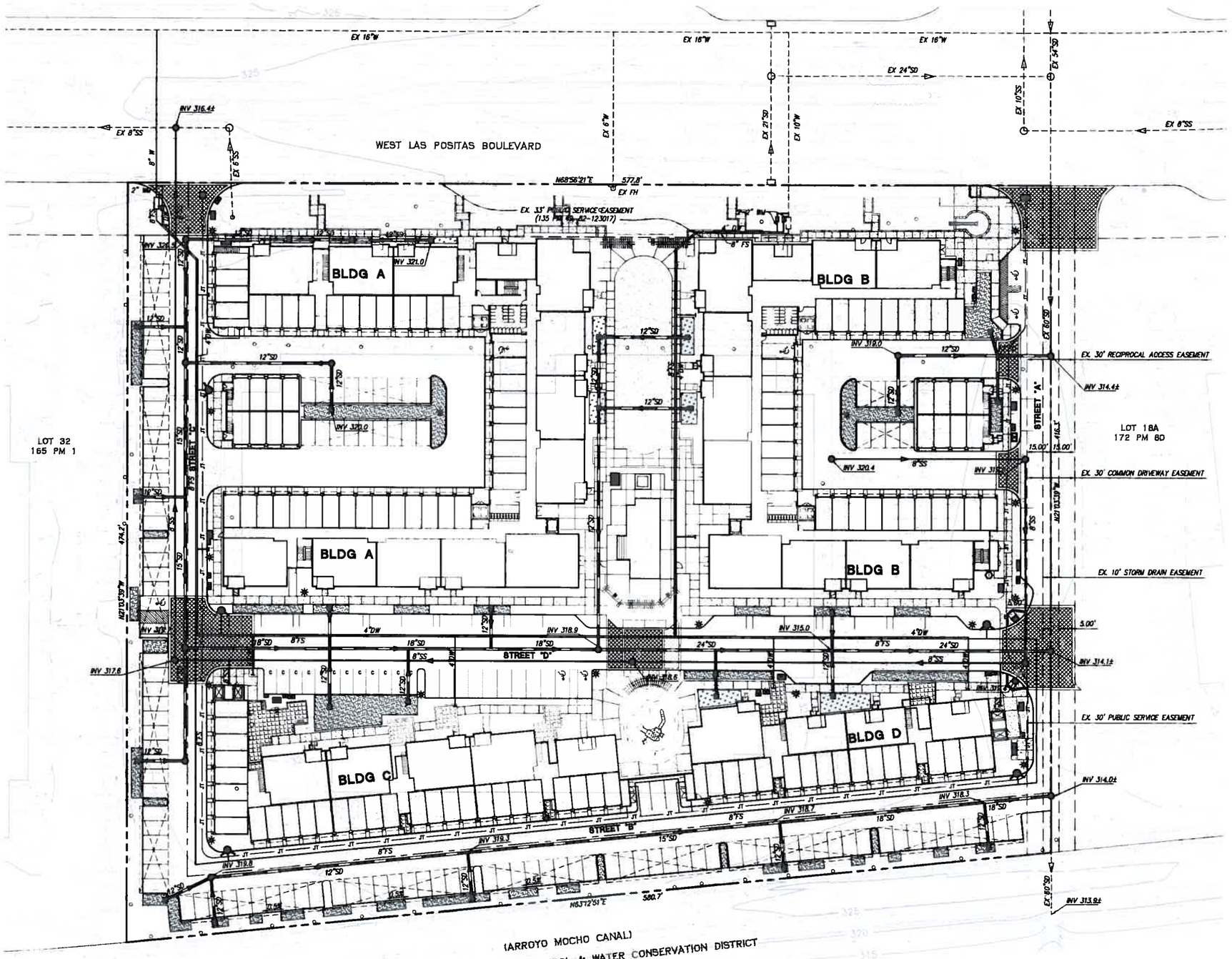
5850 WEST LAS POSITAS BLVD.

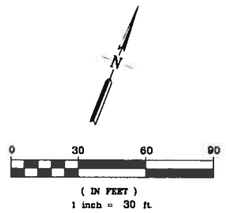
CITY OF PLEASANTON, ALAMEDA COUNTY, CALIFORNIA
FOR: SHAC LAS POSITAS APARTMENTS LLC.

DATE: JANUARY 24, 2014

JOB NO.: 131045

SHEET NO. C-4.0





LEGEND

DW	DOMESTIC WATER
FS	FIRE SERVICE
SD	STORM DRAIN
SS	SANITARY SEWER
JT	JOINT TRENCH

NOTE:

1. TRASH CAPTURE DEVICES SHALL BE INSTALLED AT DOWNSTREAM ENDS OF NEW STORM DRAINS PRIOR TO DISCHARGING INTO THE EXISTING 60" CITY STORM DRAIN PER THE CITY REQUIREMENTS.
2. GREASE INTERCEPTORS SHALL BE INSTALLED FOR ALL TRASH ENCLOSURES.

PRELIMINARY UTILITY PLAN
5850 WEST LAS POSITAS BLVD.

CITY OF PLEASANTON, ALAMEDA COUNTY, CALIFORNIA
FOR: SHAC LAS POSITAS APARTMENTS LLC.

RJA
RUGGERI-JENSEN-AZAR
ENGINEERS ▪ PLANNERS ▪ SURVEYORS
4690 CHABOT DRIVE, SUITE 200 PLEASANTON, CA 94588
PHONE (925) 227-9100 FAX (925) 227-9300

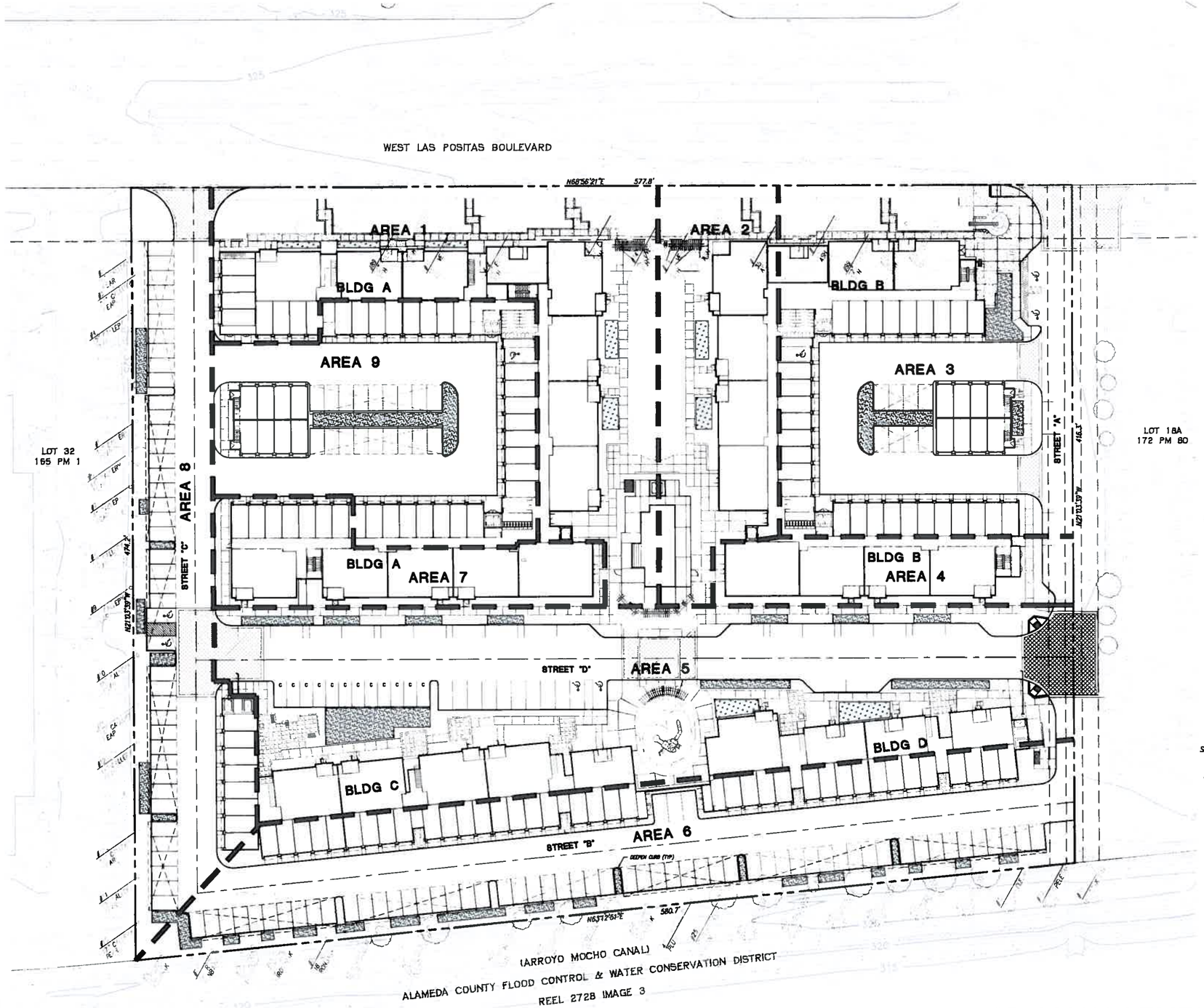
NO.	DATE	DESCRIPTION	BY

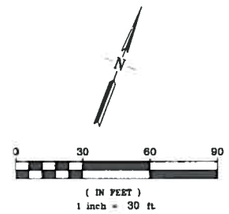
DATE: JANUARY 24, 2014

JOB NO.: 131045

SHEET NO.
C-5.0

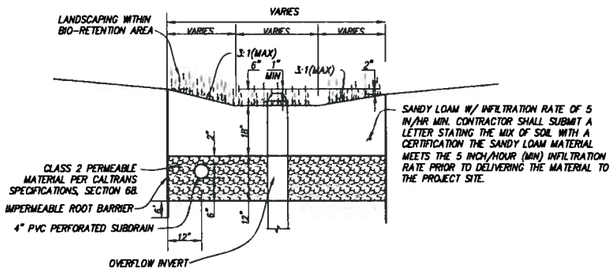
G:\2013\131045\PLS\131045-C5.0-UTILITY PLAN.DWG 1/24/2014 1:26:59 PM DOMINIC CARUCCI





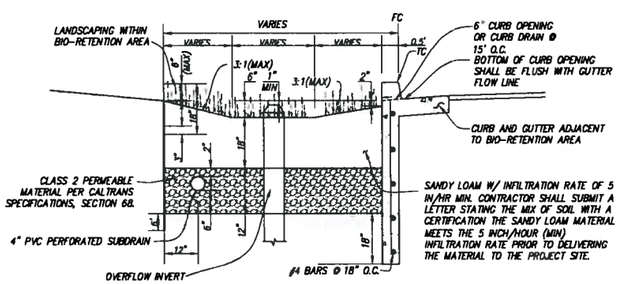
STORMWATER TREATMENT CALCULATION

AREA ID	SURFACE	IMPERVIOUS AREA (SF)	BMP USED	SIZING FACTOR	REQUIRED SURFACE AREA (SF)	SURFACE AREA AS PROVIDED (SF)
AREA 1	ROOF/PAV	15,584	BIO RETENTION	0.04	623	694
AREA 2	ROOF/PAV	6,720	BIO RETENTION	0.04	269	380
AREA 3	ROOF/PAV	35,151	BIO RETENTION	0.04	1,406	1,406
AREA 4	ROOF	7,980	BIO RETENTION	0.04	319	333
AREA 5	ROOF/PAV	57,200	BIO RETENTION	0.04	2,288	3,000
AREA 6	ROOF/PAV	34,505	BIO RETENTION	0.04	1,380	1,424
AREA 7	ROOF	11,950	BIO RETENTION	0.04	478	555
AREA 8	ROOF/PAV	19,663	BIO RETENTION	0.04	787	931
AREA 9	ROOF/PAV	26,500	BIO RETENTION	0.04	1,060	1,060



BIO-RETENTION AREA AT LANDSCAPE

NOT TO SCALE



BIO-RETENTION AREA NEXT TO STREET

NOT TO SCALE

NOTE:
TOP OF GRATE OF OVERFLOW INVERT SHALL BE 1" BELOW GUTTER FLOW LINE

LEGEND

- DRAINAGE MANAGEMENT AREA BOUNDARY
- BIO-RETENTION AREA NEXT TO STREET
- BIO-RETENTION AREA AT LANDSCAPE

PRELIMINARY STORMWATER MANAGEMENT PLAN

5850 WEST LAS POSITAS BLVD.

CITY OF PLEASANTON, ALAMEDA COUNTY, CALIFORNIA
FOR: SHAC LAS POSITAS APARTMENTS LLC.

RJA
RUGGERI-JENSEN-AZAR
ENGINEERS • PLANNERS • SURVEYORS
4690 CHABOT DRIVE, SUITE 200 PLEASANTON, CA 94588
PHONE (925) 227-9100 FAX (925) 227-9300

NO.	DATE	DESCRIPTION	BY

DATE: JANUARY 24, 2014

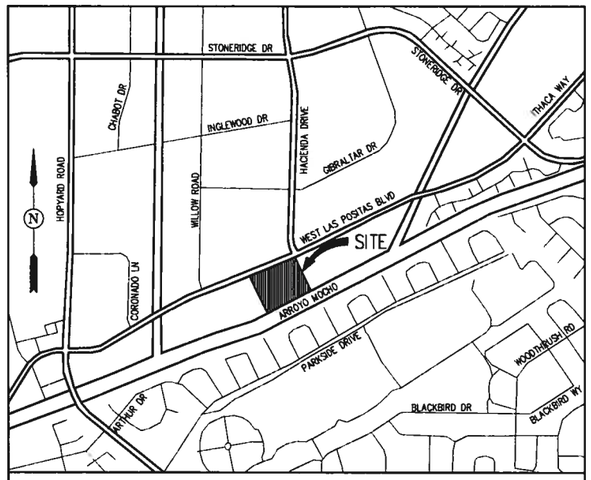
JOB NO.: 131045

SHEET NO.

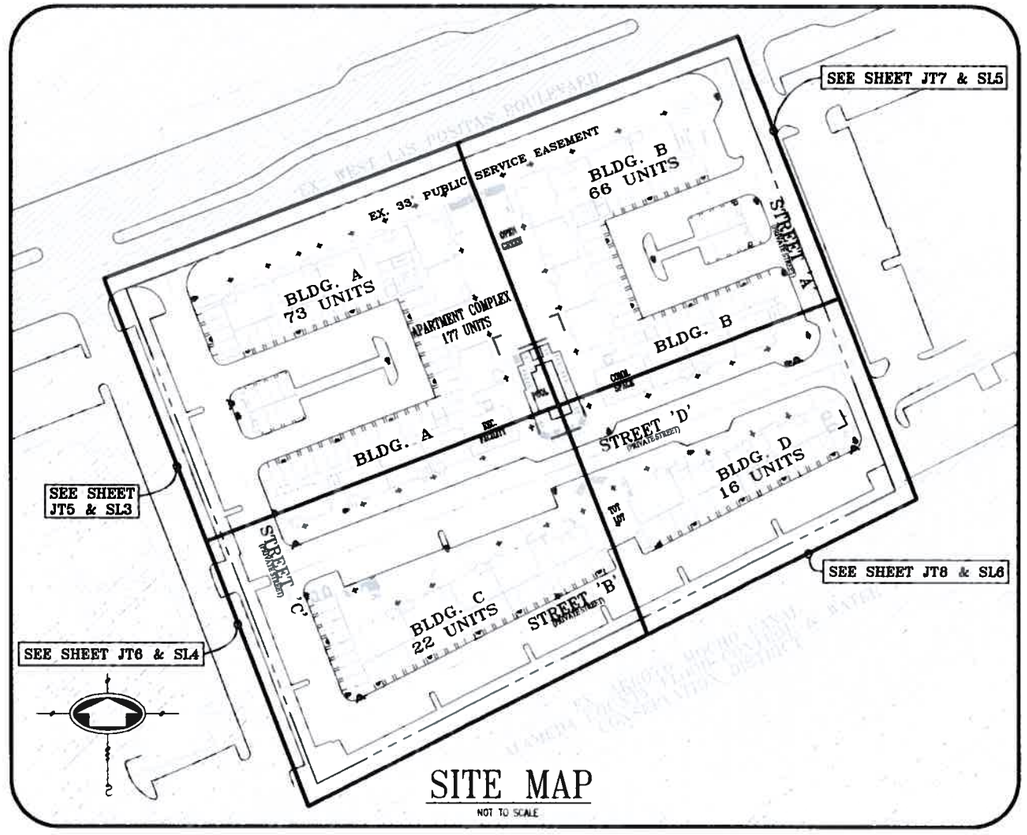
C-6.0

G:\JOBS\131\131045\PD\131045-CLB-STORMWATER MANAGEMENT PLAN.DWG 1/24/2014 1:27:40 PM DOMINIC CARUCCI

SUMMERHILL HOMES
CANNAE
PLEASANTON ALAMEDA COUNTY CALIFORNIA



VICINITY MAP
NOT TO SCALE



SITE MAP
NOT TO SCALE

SHEET INDEX

SHEET NO.	DESCRIPTION
JT1	JOINT TRENCH COMPOSITE TITLE SHEET
JT2	JOINT TRENCH GENERAL NOTES AND DETAILS
JT3	JOINT TRENCH DETAILS
JT4	JOINT TRENCH SECTIONS AND DETAILS
JT5 - JT8	JOINT TRENCH COMPOSITE PLAN
SL1-SL2	STREET LIGHTING GENERAL NOTES AND DETAILS
SL3 - SL6	STREET LIGHTING SITE PLAN
PE	PHOTOMETRIC EXHIBIT

4 NEW FULL SERVICE COMPLETIONS (MULTI FAMILY DWELLINGS 177 UNITS)

1 NEW FULL SERVICE COMPLETION (REC. CENTER)

1,415 L.F. OF JOINT TRENCH, XXXX L.F. OF STREET LIGHT TRENCH, 16 POST TOP STREET LIGHTS AND 36 BOLLARD LIGHTS SHALL BE INSTALLED WITH THIS JOINT TRENCH PLAN SET

TARRAR UTILITY REP.:	KHALID TARRAR	JOB NO.	21325	PHONE NO.	(925) 240-2595
DEVELOPER:	SUMMERHILL HOMES (KEVIN EBRAHIMI)	JOB NO.	21325	PHONE NO.	(650) 842-2268
PG&E ELECTRIC COORDINATOR:	RENEE ROMO	JOB NO.	R-PGEJOBNO	PHONE NO.	(408) 525-2077
PG&E GAS COORDINATOR:	RENEE ROMO	JOB NO.	R-PGEJOBNO	PHONE NO.	(408) 525-2077
TELEPHONE REP.:	JAMES WILBERT MILLAN	JOB NO.	R-TELEJOBNO	PHONE NO.	(925) 823-1587
CABLE T.V. REP.:	ROBERT OBIACORO	JOB NO.	R-CATVJOBNO	PHONE NO.	(925) 208-5121

FILES STATUS

DESCRIPTION:	BY:	DATE:	STATUS:
CIVIL PLANS (ELECTRONIC FILE)	RUGGERI - JENSEN - AZAR	11-07-2013	R
ARCHITECTURAL PLANS (ELECTRONIC FILE)	KTGY GROUP, INC.	09-10-2013	R
LANDSCAPE PLANS (ELECTRONIC FILE)	VAN DORN ABED LANDSCAPE ARCHITECTS, INC.	11-07-2013	R
GAS DESIGN	TARRAR UTILITY CONSULTANTS	XX-XX-XXXX	XXXX
ELECTRIC DESIGN	LOPES UTILITY DESIGN SERVICES	XX-XX-XXXX	XXXX
TELEPHONE INTENT REPLY	JAMES WILBERT MILLAN (AT&T)	XX-XX-XXXX	XXXX
CATV INTENT REPLY	ROBERT OBIACORO (SEFNCO)	XX-XX-XXXX	XXXX
STREET LIGHT PLANS - PUBLIC	TARRAR UTILITY CONSULTANTS	XX-XX-XXXX	XXXX
STREET LIGHT PLANS - PRIVATE	TARRAR UTILITY CONSULTANTS	XX-XX-XXXX	XXXX
SOILS REPORT	TBD	XX-XX-XXXX	XXXX

A = APPROVED • ANS = APPROVED NOT SIGNED • NA = NOT APPROVED • F = FIRST SUBMITTAL • SS = SECOND SUBMITTAL • R = RECEIVED

COMPOSITE DRAWING BY DEVELOPER

Estimate # _____

Approved _____ _____
Gas ADE Date

Approved _____ _____
Electric ADE Date

PG & E is not responsible for the accuracy of the specifications shown on this drawing.

COMPOSITE DRAWING BY DEVELOPER

Approved _____ _____
Telephone representative Date

Approved _____ _____
CATV representative Date

LEGEND

JT	PROPOSED JOINT TRENCH
JTX	PROPOSED JOINT TRENCH CROSSING
SVC	PROPOSED JOINT TRENCH SERVICE
EX JT	EXISTING JOINT TRENCH
GAS	PROPOSED GAS
EX GAS	EXISTING GAS
	EXISTING STORM DRAIN
	EXISTING SEWER
	EXISTING WATER
ECUG	EXISTING UNDERGROUND CATV LINES
EEUG	EXISTING UNDERGROUND ELECTRIC LINES
EUUG	EXISTING UNDERGROUND UTILITY LINES
ETUG	EXISTING UNDERGROUND TELEPHONE LINES
EUOH	EXISTING OVERHEAD UTILITY LINES
ECOH	EXISTING OVERHEAD CATV LINES
ETOH	EXISTING OVERHEAD TELEPHONE LINES
EEOH	EXISTING OVERHEAD ELECTRIC LINES
HIGH VOLTAGE	EXISTING OVERHEAD HIGH VOLTAGE ELECTRIC LINES
	PROPOSED STORM DRAIN
	PROPOSED SEWER
	PROPOSED WATER
UOH	PROPOSED OVERHEAD UTILITY LINES
	DESIGNATES UTILITY LINES TO BE REMOVED
	EXISTING PRIMARY SPLICE BOX
	EXISTING SECONDARY SPLICE BOX
4	PG&E SERVICE BOX, 17" x 30" x 18"/17" x 30" x 26"
5	PG&E SPLICE BOX, 3' x 5' x 3'6"
7	PG&E SPLICE BOX, 4'6" x 8'6" x 6'
	PG&E SUBSURFACE TRANSFORMER, 3' x 5' x 4'6"
T	TELEPHONE SERVICE BOX, 14" x 20" x 15" 10" x 15" x 12"/11" x 17" x 12"/11" x 17" x 18"
T4	TELEPHONE SERVICE BOX, 30" x 48" x 32"
T7	TELEPHONE SERVICE BOX, 24" x 36" x 42"
C	CATV SPLICE BOX, 17" x 30" x 12"
C	CATV SPLICE BOX PEDESTAL, 24" x 36" x 18"/12" x 30" x 14"
	ELECTROLIER, POST TOP (XW)
	LIGHTING BOLLARD
	LIGHTING, WALL MOUNTED (BY OTHERS)
	STREET LIGHT PULL BOX STATE TYPE #3 1/2, 15" x 20" x 12"
	STREET LIGHT GROUND BOX STATE TYPE #5, 18" x 27.5" x 12"
	EXISTING TRAFFIC SIGNAL
	EXISTING ELECTROLIER, SINGLE ARM
I	IRRIGATION CONTROLLER (BY OTHERS)
G	GAS ETS BOX, 17" x 30" x 18"
	BELLHOLE, 4' x 4'
XX-X'	JOINT TRENCH LABEL, XX INDICATES SECTION NUMBER- X' INDICATES TRENCH SECTION LENGTH
X	PG&E SKETCH LOCATION NUMBER
X	PHOTO NUMBER REFERENCE, SEE PHOTO EXHIBIT SHEET(S)

DEVELOPER PLEASE NOTE AND SIGN

ALL PG&E ENCLOSURES AND BOXES HAVE BEEN SET TO GRADE ACCORDING TO GRADE STAKES PROVIDED BY DEVELOPERS ENGINEER. ALL COSTS TO RELOCATE OR READJUST BOXES AT A LATER DATE WILL BE BILLED TO THE DEVELOPER. PLEASE HAVE YOUR JOB SUPT. VERIFY THE CORRECT GRADE OF ALL ENCLOSURES AND BOXES, AND SIGN AND DATE DRAWING. THANK YOU

SIGNED _____ DATE _____

3361 Walnut Blvd
Suite 100
Brentwood, CA 94513
(925) 240-2595
(925) 240-7013 fax
www.tarrar.com

TARRAR UTILITY CONSULTANTS

- Planning
- Design
- Estimating
- Joint Trench
- Street Lighting
- Fiber Optic
- T-24
- PG&E Gas Design
- PG&E Elec Design
- M.E.P. Design
- Cost Analysis
- Due Diligence

JOINT TRENCH COMPOSITE TITLE SHEET

SUMMERHILL HOMES
CANNAE
PLEASANTON CALIFORNIA

NO.	REVISIONS	BY	DATE

DATE: DECEMBER 2013 | DATE LAST WORKED ON: 12/20/2013
SCALE: NOT TO SCALE | DRAWN: AR | CHECKED: KT
JOB NO: 21325
PRELIMINARY NOT FOR CONSTRUCTION
INTENT TO CONSTRUCT

800-227-2600 — CALL BEFORE YOU DIG — USA — UNDERGROUND SERVICE ALERT

REGISTERED PROFESSIONAL ENGINEER — KHALID M. TARRAR — C 59346 — Exp. 06/30/15 — CIVIL — STATE OF CALIFORNIA

SHEET JT1 OF JT8 SHEETS

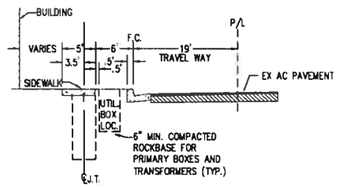
PROJECT NOTES:

1. FIELD ADJUST SERVICES TO MINIMIZE INTERFERENCE WITH EXISTING FACILITIES (TYPICAL).
2. CONTRACTOR SHALL PERFORM ALL TRENCHING, EXCAVATING, BACKFILLING AND OTHER WORK AS SHOWN OR NOTED ON PLANS, AND AS SPECIFIED ON UTILITY BID DOCUMENTS.
3. FIELD ADJUST SPLICE BOXES TO KEEP CLEAR OF SIDEWALK, DRIVEWAYS AND EXISTING FACILITIES (TYPICAL).
4. A 3 FOOT LEVEL WORKING AREA MUST BE MAINTAINED AROUND ALL ELECTRIC ENCLOSURES. PRIOR TO ENERGIZING THE SYSTEM, THE ELECTRIC UTILITY COMPANY INSPECTOR WILL DETERMINE IF RETAINING WALLS ARE REQUIRED TO MEET MINIMUM CLEARANCE BETWEEN ENCLOSURES AND THE TOPS OR TOES OF SLOPES. IF RETAINING WALLS ARE REQUIRED, THE DEVELOPER AND/OR CONTRACTOR SHALL OBTAIN THE NECESSARY PERMITS FROM THE CITY/COUNTY BUILDING DEPARTMENT PRIOR TO WALL CONSTRUCTION.
5. TRANSITION TO VAULTS FROM TRENCH NOT SHOWN, SEE TRANSITION DETAIL SHEET JT3 (TYPICAL).
6. CONTRACTOR SHALL PLACE ALL UTILITY SPLICE BOXES, ENCLOSURES & CONDUIT IN PROPER RELATIONSHIP TO FINAL GRADE (SHOWN SCHEMATICALLY).
7. ALL PG&E, TELEPHONE, CABLE T.V. AND FIBER OPTIC BOXES AND JOINT TRENCH FACILITIES ARE TO MAINTAIN A MINIMUM OF 3' SEPARATION FROM SEWER, WATER LATERALS AND DRIVEWAYS.
8. CONTRACTOR SHALL COORDINATE ALL CONNECTIONS BETWEEN PROPOSED AND EXISTING FACILITIES AS DIRECTED BY THE RESPECTIVE UTILITY COMPANY INSPECTOR. UTILITY COMPANY PERSONNEL SHALL MAKE ALL "HOT TIE-INS"; THE CONTRACTOR IS PROHIBITED FROM WORKING IN ANY ENERGIZED FACILITIES.
9. THE CONTRACTOR SHALL OBTAIN THE APPROPRIATE STREET EXCAVATION AND ENCROACHMENT PERMIT(S) FROM THE CITY/COUNTY PRIOR TO STARTING WORK IN THE PUBLIC STREET AREA.
10. FIELD LOCATE JOINT TRENCH FACILITIES TO KEEP CLEAR OF SERVICE LATERALS. SERVICE LATERALS TO BE ROUTED TO AVOID SPLICE BOX (ADDITIONAL P.U.E MAY BE REQUIRED).
11. RESPECTIVE UTILITY COMPANY TO OBTAIN CITY APPROVAL OF ALL ABOVE GROUND EQUIPMENT.
12. UNLESS OTHERWISE SHOWN ON THE PLANS, NATURAL BENDS SHALL BE USED FOR ALL CONDUIT EXCEPT STREET LIGHT CONDUIT.
13. INCIDENTAL TRENCHING TO SPLICE BOXES NOT SHOWN (TYPICAL). CONTRACTOR TO PROVIDE ADDITIONAL TRENCHING AS REQUIRED FOR CONDUIT ROUTING TO SPLICE BOXES AND CABINETS (TYPICAL).
14. ALL CONDUITS SHALL ENTER OR EXIT PERPENDICULAR TO BOX WALLS.
15. ALL CONDUITS MUST BE MANDREL TESTED AND APPROVED.
16. OFFSET SPLICE BOXES TO ROUTE TELEPHONE/FIBER OPTIC CONDUIT AS NEEDED (TYPICAL).
17. PULL ROPES SHALL BE PLACED IN ALL EMPTY CONDUITS AS REQUIRED BY EACH UTILITY COMPANY.
18. ALL PG&E SPLICE BOXES ADJACENT TO TRANSFORMER SHALL BE 26" IN DEPTH (TYPICAL).
19. ALL CONDUITS NOT ENTERING SPLICE BOXES OR ENCLOSURES SHALL BE CAPPED.
20. COORDINATE TIE-IN WITH UTILITY COMPANY AS REQUIRED.
21. THE STREET LIGHT SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE "MATERIAL AND LABOR RECAP" AND LIGHT SCHEDULE AS SHOWN ON THESE PLANS.
22. ALL EXISTING DUCTS TO BE USED IN THESE PLANS SHALL BE "VERIFIED" BY PULLING A MANDREL THROUGH THE ENTIRE EXISTING LENGTH PRIOR TO CONNECTION.
23. EDGE OF SPLICE BOXES & PEDESTALS SHALL BE 5' FROM EDGE OF FIRE HYDRANT AND 3' FROM STREET LIGHT (TYPICAL). CONTRACTOR TO AVOID DISTURBING FIRE HYDRANT THRUST BLOCK.
24. ALL UTILITY SUBSTRUCTURES SHALL BE INSTALLED IN ACCORDANCE WITH THE "MATERIAL AND LABOR RECAP" SHOWN ON THESE PLANS
25. MAINTAIN 3' CLEARANCE AND LEVEL AREA AROUND PRIMARY SPLICE BOXES & XFMRS.
26. DUE TO UNCERTAINTIES OF THE EXACT LOCATION OF EXISTING FACILITIES, FIELD LOCATION OF PROPOSED FACILITIES MAY BE REQUIRED. CONFIRM WITH VARIOUS UTILITIES FOR EXACT PLACEMENT.
27. FOR CLARITY – BOXES/PEDESTALS ARE SHOWN AT LARGER SIZE THAN ACTUAL. FIELD ADJUST TO KEEP CLEAR OF DRIVEWAYS (TYPICAL).
28. ALL SERVICE FACILITIES SHALL BE EXTENDED TO EITHER THE PROPERTY LINE OR TO POSITION SHOWN ON THE PLANS, AND THEN CAPPED, BURIED AND LOCATION STAKED.
29. THESE PLANS WERE PREPARED UTILIZING PLANS RECEIVED FROM RUGGERI-JENSEN-AZAR (925) 227-9100.

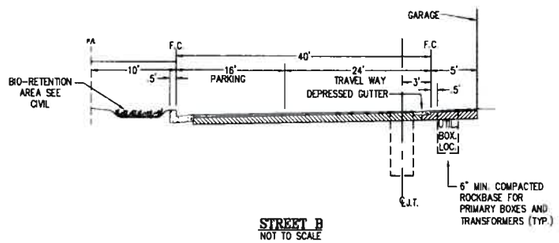
ABBREVIATION LIST

B/C	BACK OF CURB	H.P.S.	HIGH PRESSURE SODIUM	RT	RETAINING WALL
B/W	BACK OF WALK	IRR.	IRRIGATION CONTROLLER	R/W	RIGHT OF WAY
BTU	BRITISH TERM UNITS	J.T.	JOINT TRENCH	SCH.	SCHEDULE
CB	CATCH BASIN	KV	KILO-VOLTS	SD	STORM DRAIN
℄	CENTERLINE	LE	LANDSCAPE EASEMENT	SHT.	SHEET
CAT.	CATALOG	LF	LINEAR FOOT/FEET	S/W	SIDE WALK
C OR CATV	CABLE TELEVISION	MH	MANHOLE	SS	SANITARY SEWER
CFH	CUBIC FEET PER HOUR	MIN.	MINIMUM	SSE	SANITARY SEWER EASEMENT
C.I.P.	CAPITOL IMPROVEMENT PROJECT	MPOE	MINIMUM POINT OF ENTRY	ST. LT.-S/L	STREET LIGHT
CL	CENTER LINE	N.T.S.	NOT TO SCALE	SUBDV	SUBDIVISION
CU	COPPER	O.D.	OUTER DIAMETER	Sq/ft.	SQUARE FOOTAGE
E	ELECTRIC	O.H.	OVER HEAD	T	TELEPHONE
EP	EDGE OF PAVEMENT	PIEVE	PRIVATE INGRESS, EGRESS, AND UTILITY EASEMENT	TUC	TARRAR UTILITY CONSULTANTS
EVAE	EMERGENCY VEHICLE ACCESS EASEMENT			TYP.	TYPICAL
EX.	EXISTING	ℙ	PROPERTY LINE	T/S	TRAFFIC SIGNAL
F/C	FACE OF CURB	P.S.	POWER SUPPLY	U.G.	UNDERGROUND
FH	FIRE HYDRANT	PROJ.	PROJECT	U.O.N.	UNLESS OTHERWISE NOTED
FUT.	FUTURE	PSDE	PRIVATE STORM DRAIN EASEMENT	V	VOLT
F.O.	FIBER OPTIC	PSE	PUBLIC SERVICE EASEMENT	W	WATT
G	GAS	PVAW	PRIVATE VEHICLE ACCESS WAY	WT	WATER
GALV.	GALVANIZE	P.V.C.	POLY VINYL CHLORIDE	W/	WITH
G.E.	GENERAL ELECTRIC	PWE	PUBLIC WATER LINE EASEMENT	W/O	WITHOUT
GRD.	GROUND	PWR	POWER	WLE	WATER LINE EASEMENT
H.O.A.	HOME OWNERS ASSOCIATION	PUE	PUBLIC UTILITY EASEMENT	XFMR	TRANSFORMER

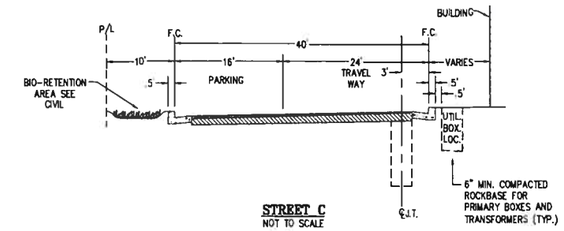
JOINT TRENCH AND UTILITY BOX LOCATION



STREET A
NOT TO SCALE



STREET B
NOT TO SCALE



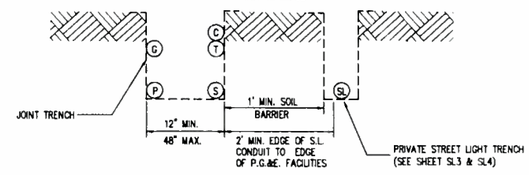
STREET C
NOT TO SCALE

JOINT TRENCH STREET SECTIONS
NOT TO SCALE
NOTE: SEE PLANS FOR CONFIGURATIONS AND ARRANGEMENTS.
* UNLESS OTHERWISE SHOWN

WITHIN ROADWAY SECTION
(95% RELATIVE COMPACTION FOR THE TOP 6" BELOW ROAD SUBGRADE AND 90% BELOW THAT)

PRIVATE STREET LIGHT TRENCH LOCATION ADJACENT TO JOINT TRENCH

NOT TO SCALE



GENERAL NOTES:

1. ALL JOINT TRENCH CONSTRUCTION WORK SHALL BE IN ACCORDANCE WITH PG&E UTILITY OPERATIONS UO STANDARD S5453.
2. ALL WORK SHALL BE SUBJECT TO THE INSPECTION AND SATISFACTION OF ALL PARTICIPATING UTILITIES AND CITY INSPECTORS.
3. BACKFILL SELECTION SHALL BE SUBJECT TO THE APPROVAL OF THE RESPECTIVE UTILITY COMPANIES, THE SOILS ENGINEER AND THE CITY AND/OR COUNTY WHERE THE PROJECT IS LOCATED. CONSULT PARTICIPATING UTILITIES, SOILS ENGINEER, AND THE CITY FOR APPROVED BACKFILL MATERIAL. COMPACTION TO MEET LOCAL AGENCIES REQUIREMENTS.
4. THE BOTTOM OF THE TRENCH SHALL BE CLEARED OF ROCKS AND OTHER HARD SURFACES AND A SAND CUSHION MINIMUM OF 4" MAY BE REQUIRED AS A PAD ON WHICH UTILITY FACILITIES CAN REST.
5. THE CONTRACTOR SHALL BE RESPONSIBLE TO REPLACE PAVEMENT AND/OR SIDEWALK WHERE REMOVED OR DAMAGED AS A RESULT OF ITS OPERATION (UNLESS OTHERWISE NOTED). REPLACEMENT OF PAVEMENT AND/OR SIDEWALK TO BE PER CITY SPECIFICATIONS.
6. THE CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE AND NOTIFY ALL PARTICIPATING UTILITY INSTALLATIONS.
7. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR ANY FIELD CHANGES MADE WITHOUT FIRST NOTIFYING TARRAR UTILITY CONSULTANTS.
8. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE EXISTENCE AND/OR PRECISE LOCATION OF ALL UNDERGROUND FACILITIES PRIOR TO THE START OF CONSTRUCTION. TARRAR UTILITY CONSULTANTS MAKES NO WARRANTY WHATSOEVER THAT THE EXISTING UNDERGROUND UTILITIES AND/OR STRUCTURES DEPICTED ON THE PLANS HAVE BEEN ACCURATELY LOCATED OR THAT THERE ARE NO OTHER UNDERGROUND UTILITIES AND STRUCTURES IN ADDITION TO WHAT HAS BEEN SHOWN. CALL U.S.A. A MINIMUM OF 48 HOURS PRIOR TO STARTING CONSTRUCTION. FOR CALIFORNIA NORTH, (KERN COUNTY AND NORTHERLY, AND NEVADA) CALL (800)227-2600. FOR CALIFORNIA SOUTH, (SAN BERNARDINO COUNTY AND SOUTHERLY) CALL (800)422-4133.
9. CONTRACTOR SHALL COMPLY WITH ALL STATE, COUNTY AND CITY LAWS AND ORDINANCES AND WITH THE REGULATIONS OF THE DEPARTMENT OF INDUSTRIAL RELATIONS, O.S.H.A. AND ANY OTHER GOVERNMENTAL AGENCY RELATING TO THE SAFETY AND CHARACTER OF WORK, EQUIPMENT AND LABOR PERSONNEL.
10. THE DRAWINGS AND SPECIFICATIONS SHALL BE CONSIDERED TO BE COMPLEMENTARY TO EACH OTHER. ANYTHING SHOWN ON THE DRAWINGS AND NOT MENTIONED IN THE SPECIFICATIONS, OR MENTIONED IN THE SPECIFICATIONS AND NOT SHOWN ON THE DRAWINGS, SHALL BE OF LIKE EFFECT AS IF SHOWN ON OR MENTIONED IN BOTH. IF DISCREPANCY IS FOUND, NOTIFY TARRAR UTILITY CONSULTANTS PRIOR TO STARTING WORK.
11. TRENCH AND CONDUIT LAYOUTS ARE SHOWN SCHEMATICALLY.
12. TRENCHING OR SUBSTRUCTURE EXCAVATION MAY NECESSITATE OPERATION OVER, UNDER, OR ADJACENT TO OTHER UNDERGROUND UTILITIES (STORM, SEWER, WATER, ETC.). THE CONTRACTOR IS RESPONSIBLE TO LOCATE, PROSPECT, EXPOSE AND PROTECT ALL ADJACENT OR CROSSING UNDERGROUND UTILITIES. THIS WORK TO PROTECT THOSE UTILITIES IS NOT CONSIDERED AS EXTRA WORK. IT IS THE CONTRACTOR'S RESPONSIBILITY TO REVIEW IMPROVEMENT PLANS, IN CONJUNCTION WITH THIS PLAN, AND BID THE WORK ACCORDINGLY.
13. THE QUANTITIES SHOWN ON THESE PLANS ARE ONLY ESTIMATES OF WHAT WILL ACTUALLY BE REQUIRED FOR THE CONSTRUCTION OF THE OVERALL PROJECT. FINAL QUANTITIES MAY VARY ACCORDING TO CHANGES, ADDITIONS, DELETIONS OR OMISSIONS ON THE ORIGINAL PLAN.
14. VERIFY ALL SUBSTRUCTURE EXCAVATION DIMENSIONS WITH SUPPLIER(S) BEFORE BIDDING.
15. TARRAR UTILITY CONSULTANTS ASSUMES NO RESPONSIBILITY FOR ANY VARIANCE BETWEEN THESE PLANS AND THE ACTUAL FIELD CONDITIONS. THE CONTRACTOR SHOULD REVIEW THE PROJECT SITE PRIOR TO SUBMITTING ITS BID.
16. THE CONTRACTOR IS REQUIRED TO EXCAVATE BELL HOLE(S) AT TIE-IN LOCATIONS AS DIRECTED BY PARTICIPATING UTILITY.
17. CONTRACTOR WILL COMPLY WITH ALL LAWS, ORDINANCES AND REGULATIONS. CONTRACTOR SHALL BE FAMILIAR WITH O.S.H.A. INDUSTRIAL ORDERS AND SHALL CONDUCT HIS WORK ACCORDINGLY. WHEN WORKING ENERGIZED EQUIPMENT, THE UTILITY OWNER SHALL BE NOTIFIED TO SUPPLY THE APPROPRIATE MAN POWER AND SAFETY PRECAUTIONS AS NEEDED. THE CONTRACTOR IS RESPONSIBLE FOR PUBLIC SAFETY AND TRAFFIC CONTROL MEASURES.
18. THE CONTRACTOR IS RESPONSIBLE TO PROVIDE AS-BUILT DRAWINGS AFTER INSTALLATION OF PG&E'S GAS AND ELECTRIC SYSTEMS (PRIOR TO "HOT TIE-INS").
19. THE CITY INSPECTOR SHALL BE NOTIFIED TWO WORKING DAYS PRIOR TO COMMENCEMENT OF WORK. COORDINATE WITH THE INSPECTOR ANY SERVICES TO BE ABANDONED.
20. THE CONTRACTOR IS TO VERIFY THE RIGHT OF WAY, PUBLIC UTILITY EASEMENT AND/OR PUBLIC SERVICE EASEMENT ACQUISITION WITH THE APPLICANT PRIOR TO CONSTRUCTION WITHIN AREAS OF QUESTION.
21. PG&E'S GENERAL TERM AND CONDITIONS FOR GAS AND ELECTRIC EXTENSION AND SERVICE CONSTRUCTION BY "APPLICANT" (EFFECTIVE 07/1/95) TO BE UTILIZED FOR ALL TRENCHING, BACKFILLING, AND INSTALLATION WORK.
22. IN THE EVENT OF DISPUTES OR DISAGREEMENT OVER ANY INSTALLATIONS, DESIGNS, PLANS OR DRAWINGS, THE SPECIFICATIONS AND REQUIREMENTS OF THE INDIVIDUAL UTILITY COMPANIES AND THEIR INSPECTORS SHALL TAKE PRECEDENCE. IN CASE OF DISCREPANCIES WITHIN THE DRAWINGS AND SPECIFICATIONS HEREIN, THE CONTRACTOR SHALL CONSULT TARRAR UTILITY CONSULTANTS FOR INTERPRETATION BEFORE WORK IS STARTED.
23. TARRAR UTILITY CONSULTANTS HEREIN, ASSUMES NO RESPONSIBILITY WHATSOEVER FOR THE QUALITY, QUANTITY OR TIMING OF WORK TO BE PERFORMED BY THE CONTRACTOR, UTILITY COMPANY CONSTRUCTION CREWS, OR OTHER SUB-CONTRACTOR OF DEVELOPER.
24. ALL TRENCHING, BACKFILLING AND INSTALLATION WORK IS TO BE IN ACCORDANCE WITH THE STANDARD PRACTICES AND SPECIFICATIONS OF EACH UTILITY COMPANY PARTICIPATING IN THE UTILITY TRENCHES WITHIN THE PROJECT.
25. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING POINTS OF ACCESS THAT ARE AGREEABLE TO ADJACENT LAND USES AND TENANTS AT ALL TIMES.
26. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ASCERTAINING WHAT INSPECTIONS WILL BE REQUIRED FOR APPROVAL OF THE WORK AND FOR COORDINATING ALL SUCH INSPECTIONS. THE CONTRACTOR SHALL GIVE AT LEAST 48 HOURS PRIOR NOTICE TO THE CITY, SOILS ENGINEER, UTILITY COMPANIES OR ANY OTHER INDIVIDUALS OR PUBLIC AGENCIES, THAT THE WORK IS READY FOR INSPECTION.
27. THE CONTRACTOR SHALL NOTIFY DEVELOPER 48 HOURS PRIOR TO THE NEED FOR SURVEY STAKING. THE CONTRACTOR IS RESPONSIBLE FOR THE PRESERVATION OF ALL CONSTRUCTION STAKING SET BY THE DEVELOPER'S SURVEYORS AND WILL BE BACK CHARGED FOR ANY RE-STAKING THAT IS REQUIRED. ANY EXTRA CONSTRUCTION STAKING NECESSITATED SOLELY BY THE CONTRACTOR'S NEGLIGENCE WILL BE CHARGED TO AND PAID FOR BY THE CONTRACTOR.
28. ALL TRANSFORMERS AND TRANSFORMER PADS ARE TO BE INSTALLED PER PG&E SPECIFICATIONS. PROTECTIVE BOLLARDS ARE TO BE PLACED WHERE NEEDED.
29. THE CONTRACTOR SHALL MAKE HIMSELF FAMILIAR WITH THE PROJECT IMPROVEMENT PLANS AND CONDUCT HIS WORK ACCORDINGLY.
30. KEEP ALL BOXES AND PEDESTALS WITHIN PUBLIC UTILITY EASEMENTS OR RIGHT OF WAY, AS SHOWN.
31. ALL SAND BACKFILL MUST HAVE TESTING OF PH LEVEL AS WELL AS SAND EQUIVALENT. SEE CITY PLEASANTON REQUIREMENTS.
32. THE PROPOSED CONSTRUCTION OPERATION MAY TAKE PLACE AT OR NEAR FENCE LINES, PROPERTY LINES AND PROPERTY IMPROVEMENTS PRIOR TO CONSTRUCTION, CONTRACTOR SHALL BE RESPONSIBLE FOR IDENTIFYING THESE AREAS AND FOR MAINTAINING THESE AREAS AND FACILITIES AT ALL TIMES DURING THE CONSTRUCTION OPERATION.
33. THE CONTRACTOR ASSUMES SOLE AND COMPLETE RESPONSIBILITY FOR THE SITE CONDITION AND SHALL DEFEND AND HOLD THE DEVELOPER AND TARRAR UTILITY CONSULTANTS HARMLESS FROM ANY ALLEGED CLAIMS OR LIABILITIES, EXCEPT THOSE ARISING FROM SOLE NEGLIGENCE OF THE DEVELOPER OR TARRAR UTILITY CONSULTANTS.
34. THE APPROXIMATE LOCATIONS OF ALL EXISTING UTILITY COMPANY UNDERGROUND LINES, POLES BOXES, ETC., WERE OBTAINED FROM A REVIEW OF AVAILABLE UTILITY COMPANY RECORDS. REPRESENTATIONS OF UTILITY COMPANY PERSONAL, OR FIELD OBSERVATIONS. NEITHER THE DEVELOPER NOR TARRAR UTILITY CONSULTANTS ASSUME ANY RESPONSIBILITY FOR VARIANCES BETWEEN THESE PLANS AND THE ACTUAL FIELD CONDITIONS. NO EXTRA PAYMENT WILL BE MADE TO THE CONTRACTOR FOR ANY ADDITIONAL TRENCHING, BOX EXCAVATIONS, MATERIALS, ETC., THAT MAY BE REQUIRED TO COMPLETE THIS PROJECT IN THE EVENT AN EXISTING TIE-IN POINT SUBSTRUCTURE IS EITHER NON-EXISTING OR IS NOT SHOWN ON THE PLANS IN ITS ACTUAL FIELD POSITION. IT IS THE CONTRACTOR'S OBLIGATION AND RESPONSIBILITY TO SAFELY LOCATE ALL EXISTING UNDERGROUND FACILITIES BY SURFACE MARKING AND/OR HAND EXCAVATION PRIOR TO STARTING CONSTRUCTION.
35. "DEVELOPER AND/OR CONTRACTOR IS RESPONSIBLE TO OBTAIN A CITY OF PLEASANTON ENCROACHMENT PERMIT FOR ALL WORK DONE IN THE PUBLIC RIGHT OF WAY. DEVELOPER AND/OR CONTRACTOR IS ALSO RESPONSIBLE TO PROVIDE JOINT TRENCH PLANS TO THE CITY OF PLEASANTON AT THE TIME OF APPLICATION FOR THE ENCROACHMENT PERMIT."

3361 Walnut Blvd.
Suite 100
Brentwood, CA 94513
(925) 240-2595
(925) 240-7013 fax
www.tarrar.com

TARRAR UTILITY CONSULTANTS

- Planning
- Design
- Estimating
- Joint Trench
- Street Lighting
- Fiber Optic
- T-24
- PG&E Gas Design
- PG&E Elec Design
- M.E.P. Design
- Cost Analysis
- Due Diligence

JOINT TRENCH GENERAL NOTES AND DETAILS

SUMMERHILL HOMES
CANNAE
PLEASANTON CALIFORNIA

NO.	REVISIONS	BY	DATE

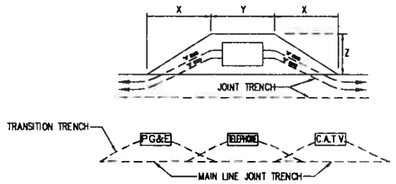
DATE: DECEMBER 2013 | DATE LAST WORKED ON: 12/20/2013
SCALE: NOT TO SCALE | DRAWN: AR | CHECKED: KT
JOB NO.: 21325 | PRELIMINARY NOT FOR CONSTRUCTION
INTENT TO CONSTRUCT

800-227-2600 (CALL BEFORE YOU DIG – UNDERGROUND SERVICE ALERT)

REGISTERED PROFESSIONAL ENGINEER ZAHTHUL LAH ZALA
C 59346
Exp. 06/30/15
CIVIL
STATE OF CALIFORNIA

SHEET JT2 OF JT8 SHEETS

JOINT TRENCH TRANSITION

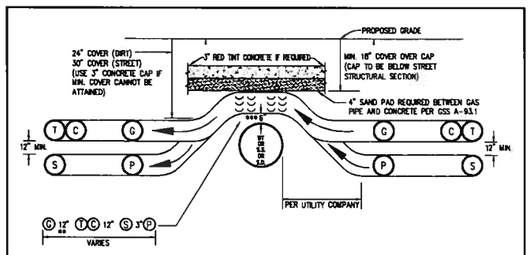


BEND	PRIMARY BOX SIZE	DISTANCE (when conduit enters box) "X"	"Y"	"Z"	NOTES
"A"	3' x 5'	24'	7'	5'	BEND IS 60° RADIUS WITH AN ANGLE OF 10 DEG. USE 2-5 COUPLINGS WITH 1-5 CONDUIT SECTION FOR EACH BEND SHOWN
	4'-6" x 8'-6"	24'	11'	7'	
"B"	3' x 5'	32'	7'	5'	BEND IS 30° RADIUS WITH AN ANGLE OF 15 DEG. USE 3-5 COUPLINGS WITH 2-2 1/2' CONDUIT SECTION FOR EACH BEND SHOWN.
	4'-6" x 8'-6"	32'	11'	7'	

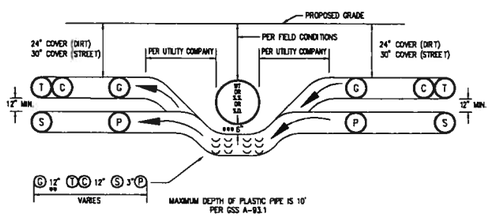
NOTE:

1. CONTRACTOR TO EXCAVATE TRANSITIONS FROM MAIN-LINE TRENCH TO VAULTS AS REQUIRED BY EACH UTILITY
2. TRANSITIONS NOT SHOWN ON COMPOSITE DRAWING FOR CLARITY
3. CONTRACTOR TO INCLUDE COST OF TRANSITIONS IN VAULT EXCAVATION COST.

1 / JT3 — **TYPICAL PRIMARY BOX EXCAVATION USING CONDUIT**
NOT TO SCALE



JOINT TRENCH OVER WATER, SANITARY SEWER OR STORM DRAIN
CHOICE 1 (PREFERRED METHOD)



JOINT TRENCH UNDER WATER, SANITARY SEWER OR STORM DRAIN
CHOICE 2 (OPTIONAL METHOD)

- SEE MINIMUM COVER & CLEARANCE CHART
- ** WITH MUTUAL AGREEMENT, WHEN 4" O.D. OR SMALLER GAS PIPE IS INSTALLED SEPARATION MAY BE REDUCED TO NOT LESS THAN 6" BETWEEN GAS AND COMMUNICATION DUCTS (TELEPHONE & CATV).
- *** 6" MINIMUM REQUIRED BY PG&E--ADDITIONAL CLEARANCE MAYBE REQUIRED BY CITY OR COUNTY

DETAIL 2 / N.T.S. JT3 — **OVER UNDER DETAILS**

CONSTRUCTION LABOR AND MATERIAL RESPONSIBILITY

PUBLIC UTILITY SYSTEM (JOINT TRENCH)

	P.G.&E. ELECTRIC	P.G.&E. GAS	TELEPHONE	C.A.T.V.	CONTRACTOR
TRENCHING: EXCAVATE, BACKFILL AND COMPACT.	○	○	○	○	●
GAS MATERIAL: FURNISH.		○			
INSTALL.		○			●
ELECTRIC CABLE: FURNISH.	○				
INSTALL.	○				●
ELECTRIC CONDUIT: FURNISH.	○				
INSTALL.	○				●
ELECTRIC SPLICE BOXES: EXCAVATE.	○				●
FURNISH.	○				
INSTALL.	○				●
ELECTRIC TRANS. ENCLS.: EXCAVATE	○				●
FURNISH.	○				
INSTALL.	○				●
ELECTRIC EQUIP. ENCLS.: EXCAVATE.	○				●
FURNISH.	○				
INSTALL.	○				●
ELECTRIC TRANS. PADS: GRADE.	○				●
FURNISH.	○				
INSTALL.	○				●
ELECTRIC SWITCH PADS: GRADE.	○				●
FURNISH.	○				
INSTALL.	○				●
TELEPHONE CONDUIT: FURNISH.			○		
INSTALL.			○		●
TELEPHONE CABLE: FURNISH.			○		
INSTALL.			○		●
TELEPHONE SPLICE BOX: EXCAVATE.			○		●
FURNISH.			○		
INSTALL.			○		●
TELEPHONE INTER. PADS: GRADE.			○		●
FURNISH.			○		
INSTALL.			○		●
C.A.T.V. CONDUITS: FURNISH.				○	
INSTALL.				○	●
C.A.T.V. SPLICE BOXES: EXCAVATE.				○	●
FURNISH.				○	
INSTALL.				○	●

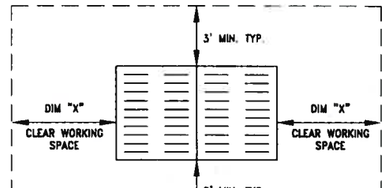
STREET LIGHTING SYSTEM

	P.G.&E.	CONTRACTOR
WIRE: FURNISH.	○	
INSTALL.		●
CONDUIT: FURNISH.	○	
INSTALL.		●
BASES: FURNISH.	○	
INSTALL.		●
LUMINAIRES: FURNISH.	○	
INSTALL.		●
SPLICE BOXES: FURNISH.	○	
INSTALL.		●
EXCAVATE.		●
POLES & ARMS: FURNISH.	○	
INSTALL.		●

SCHEDULE: LSSC
INSTALL IN JOINT TRENCH: NO
INSTALL IN SEPARATE TRENCH: YES
CONDUIT SIZE: VARIES
CONDUIT TYPE: SCH. 40
WIRE SIZE: VARIES TYPE CU

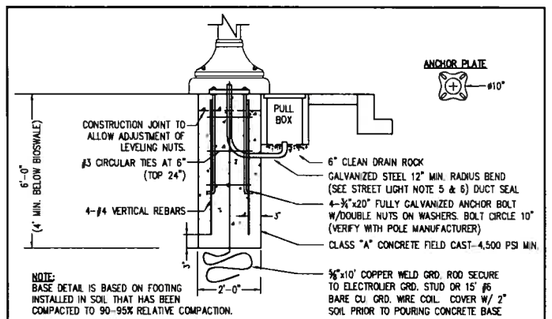
ADDITIONAL NOTES:
DEVELOPER TO SUPPLY AND INSTALL GAS & ELECTRIC FACILITIES UNDER THE COMPETITIVE BIDDING PROVISIONS OF PG&E GREEN BOOK RULES 15, 16 AND 20.

● DESIGNATES THE WORK TO BE PERFORMED BY THE CONTRACTOR AND EACH UTILITY COMPANY.



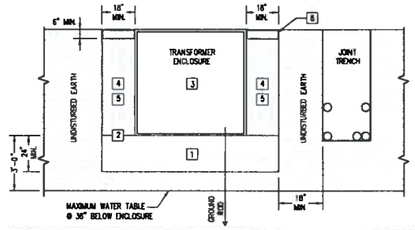
DIM "X"
3' MIN. 3'0" x 5'0" ENCLOSURES
5' MIN. 4'6" x 8'6" x 6'0" ENCLOSURES
(OR EASEMENT REQUIRED)

DETAIL 3 / N.T.S. JT3 — **PG&E ENCLOSURE CLEARANCES**



NOTE:
BASE DETAIL IS BASED ON FOOTING INSTALLED IN SOIL THAT HAS BEEN COMPACTED TO 90-95% RELATIVE COMPACTION.

5 / JT3 — **PRIVATE POST TOP ELECTROLIER FOOTING DETAIL @ BIOSWALE**
NOT TO SCALE



LEGEND

1. ¾" – 1½" DRAIN ROCK BASE, 24" MINIMUM DEPTH BELOW THE ENCLOSURE.
2. US FABRICS TYPE US180NW GEOTEXTILE FABRIC (OR SIMILAR) COVERING THE DRAIN ROCK BASE.
3. TRANSFORMER ENCLOSURE WITH 4 EVENLY SPACED 2" DRAIN HOLES CORE BORED THROUGH BOTTOM OF ENCLOSURE, WITH HOLES THROUGH THE GEOTEXTILE FABRIC INTO THE ROCK BASE.
4. WATERPROOF EXTERIOR SIDE WALLS OF ENCLOSURE USING TREMPROOF 250 GC FLUID APPLIED ELASTOMERIC WATERPROOFING MEMBRANE
5. 2 SACK CONCRETE SLURRY FILL ON ALL SIDES OF ENCLOSURE ABOVE DRAIN ROCK, MINIMUM 18" WIDTH, TO WITHIN ½" OF ENCLOSURE TOP
6. 6" CONCRETE CAP AROUND THE TOP EDGE OF THE ENCLOSURE, MINIMUM 18" WIDTH, MATCHING GRADE OF THE ENCLOSURE LID AND WITH A MINIMUM 2% MAXIMUM 10% SLOPE AWAY FROM THE ENCLOSURE LID. USE 10% SLOPE IF ENCLOSURE IS NOT IN A MONOLITHIC SIDEWALK AREA.

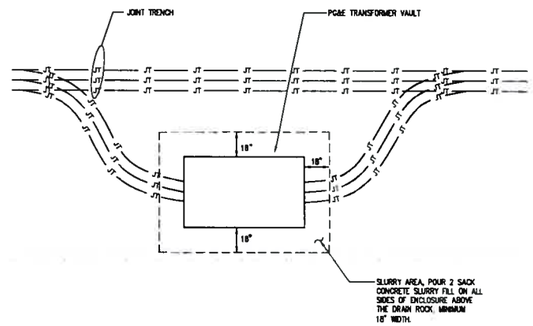
INSTALLATION:

1. EXCAVATE FOR 18" SKIRT OF SLURRY AND 24" OF DRAIN ROCK BASE. INSTALL 1/2"-3/4" DRAIN ROCK A MINIMUM OF 24" DEEP COMPACTED ACROSS THE BOTTOM OF THE EXCAVATION TO ALLOW FOR WATER DRAINAGE FROM THE ENCLOSURE.
2. INSTALL US FABRICS TYPE US180NW GEOTEXTILE FABRIC, LAYFIELD NONWOVEN GEOTEXTILE, TYPE LP10, OR PROPEX SYNTHETICS NONWOVEN, TYPE GEOTEX 160T ACROSS THE TOP OF THE DRAIN ROCK BASE TO KEEP THE DRAIN ROCK FROM FILLING WITH SOIL.
3. SET THE TRANSFORMER ENCLOSURE AND DRILL 4 EVENLY SPACED 2" DRAIN HOLES THROUGH THE BOTTOM OF THE ENCLOSURE, AND THROUGH THE GEOTEXTILE FABRIC INTO THE ROCK BASE. (NOTE: IF LEAD TIME PERMITS, THE ENCLOSURE SUPPLIER MAY BE ABLE TO PROVIDE THE ENCLOSURE WITH THE 2" DRAIN HOLES INCLUDED).
4. WATERPROOF EXTERIOR SIDE WALLS OF ENCLOSURE USING TREMPROOF 250 GC FLUID APPLIED ELASTOMERIC WATERPROOFING MEMBRANE TO KEEP WATER FROM MIGRATING THROUGH THE WALLS INTO THE ENCLOSURE. (NOTE: IF LEAD TIME PERMITS, THE ENCLOSURESUPPLIER MAY BE ABLE TO PROVIDE A WATERPROOFED ENCLOSURE.)
5. INSTALL ANY CONDUITS REQUIRED OUT BEYOND THE SLURRY AREA. POUR 2 SACK CONCRETE SLURRY FILL ON ALL SIDES OF ENCLOSURE ABOVE DRAIN ROCK, MINIMUM 18" WIDTH, TO WITHIN 6" OF ENCLOSURE TOP. THE SLURRY IS TO FURTHER IMPEDE THE MIGRATION OF WATER INTO THE ENCLOSURE WHILE STILL ALLOWING FOR FUTURE ACCESS TO THE CONDUITS.
6. POUR A 6" CONCRETE CAP AROUND THE TOP EDGE OF THE ENCLOSURE, MINIMUM 18" WIDTH, MATCHING THE GRADE OF THE ENCLOSURE LID AND WITH A MINIMUM 2% MAXIMUM 10% SLOPE AWAY FROM THE ENCLOSURE LID. USE 10% SLOPE IF ENCLOSURE IS NOT IN A MONOLITHIC SIDEWALK AREA. THE CONCRETE CAP IS TO PROTECT THE SLURRY MIX FROM DAMAGE AND TO IMPEDE THE FLOW OF SURFACE WATER INTO THE ENCLOSURE. (NOTE: THE STANDARD CURB AND GUTTER MAY SUBSTITUTE FOR PART OF THE CONCRETE CAP AND SLURRY).

TRANSFORMER ENCLOSURE LOCATION REQUIREMENTS:

MAY NOT BE IN:
- DRAINAGE AREA
- SWALE
- PERCOLATION AREA

MUST BE:
- IN LOCATION WHERE SURROUNDING AREA WATER DRAINS AWAY FROM ENCLOSURE
- HIGHER THAN SIDEWALK



DETAIL 4 / N.T.S. JT3 — **PG&E REMEDIATION OPTION SUBSURFACE TRANSFORMER INSTALLATION IN CORROSIVE SOILS AREA**

REQUIREMENTS FOR ALLOWING INSTALLATION OF SUBSURFACE TRANSFORMER

A. SOIL CORROSIVITY TESTS SHALL BE CONDUCTED ON SOIL SAMPLES COLLECTED AT EITHER 4.5-FEET DEPTH FOR TYPE-1 OR 7.5-FEET DEPTH FOR TYPE-2 ,PCATOPWS (SEE Table. Transformer Type). THE REFERENCED NATIONAL STANDARDS (e.g. ASTM G57, CTM 127, ETC.) CONTAIN GUIDANCE ON COLLECTING SOIL SAMPLES.

Table: Transformer Type

Type-1	Single-Phase Transformer
Type-2	Three-Phase Transformer

B. A SOIL CORROSIVITY TEST SAMPLE IS CONSIDERED VALID FOR A 10-FOOT RADIUS FROM THE SAMPLE CORE. EACH PROPOSED SUBSURFACE ENCLOSURE LOCATION MUST BE ENCOMPASSED WITHIN AN AREA COVERED BY A SOILS TEST

C. IF THE SOIL SAMPLE IS NOT NATIVE SOIL, THEN AN ADDITIONAL TEST OF THE NEAREST NATIVE SOIL WITHIN 20 FEET OF THE ORIGINAL TEST LOCATION IS REQUIRED. IF THERE IS NO NATIVE WITHIN 20 FEET, THEN NO ADDITIONAL TEST IS REQUIRED.

D. THE TESTED SOIL CHARACTERISTICS ARE: ELECTRICAL RESISTIVITY; pH; CHLORIDE; REDOX (ORP) POTENTIAL; SULFATE, SULFIDE CONTENT; AND GROUND WATER TABLE (SEE Table: Corrosivity Points)

Table: Corrosivity Points

Soil Characteristic	Range	Possible Points
Resistivity (ohm-cm) per ASTMG-57; CTM 643; AASHTO T-288	< 500	10
	500 - 1,000	8
	1,001 - 2,000	6
	2,001 - 5,000	4
	5,001 - 10,000	2
	> 10,000	0
Soil pH per ASTM G-51; ASTM D-4972; CTM 643; or AASHTO T-289	> 8.5	3
	8.5 - 5.1	0
	5.0 - 2.0	4
	< 2.0	5
Chloride (ppm) or (mg/kg) per ASTM D-4327; ASTM-512; CTM 422, OR AASHTO T-291	< 100	0
	> 100	3
Redox Potential (mV) (VERSUS CSE) per ASTM G-200	< 100	5
	100 - 199	4
	200 - 400	3.5
	> 400	0
SULFATE (ppm) or (mg/kg) per ASTM D-516; CTM 417 or AASHTO T-290	< 200	0
	200 - 500	1
	501 - 1,000	2
	> 1,000	3
Sulfide per ASTM D-4658	Negative	0
	Trace	2
	Positive	3.5
Water table	- Higher than 7.5 ft. for Type 1 or 10.5 ft. for Type 2	8
	- Lower than 7.5 ft. for Type 1 or 10.5 ft. for Type 2	0
Total Points		⩾ 8 FAIL
		⩽ 6.5 PASS

Notes:
ASTM - American Society for Testing and Materials
CTM - California Test Method
AASHTO - American Association of State Highway Transportation Officials

E. THE SOIL CHARACTERISTICS SHALL BE TESTED BY ONE OF THE APPLICABLE STANDARDS AS INDICATED IN TABLE: CORROSIVITY POINTS. THE FOLLOWING QUANTITIVE CRITERIA ARE GRADING RESULTS THAT SHALL BE USED FOR DETERMINING SOIL CORROSIVITY

F. INTERPRETATION OF SOIL CORROSIVITY (SEE TABLE: Corrosivity Score)

Table: Corrosivity Score

> 12	Extremely Corrosive
8 - 11.5	Corrosive
3 - 5.5	Mildly Corrosive
< 3	Very Mildly Corrosive

G. SUBSURFACE TRANSFORMERS MAY ONLY BE INSTALLED IN MILDLY OR VERY MILDLY CORROSIVE SOILS; i.e., 5.5 POINTS OR LESS.

3361 Walnut Blvd
Suite 108
Brentwood, CA 94513
(925) 240-2595
(925) 240-7013 fax
www.tarrar.com

TARRAR UTILITY CONSULTANTS

- Planning
- Design
- Estimating
- Joint Trench
- Street Lighting
- Fiber Optic
- 1-24
- PG&E Gas Design
- PG&E Elec Design
- M E P Design
- Cost Analysis
- Due Diligence

JOINT TRENCH DETAILS
SUMMERHILL HOMES
CANNAE
PLEASANTON CALIFORNIA

NO.	REVISIONS	BY	DATE

DATE: DECEMBER 2013 | DATE LAST WORKED ON: 12/20/2013
SCALE: NOT TO SCALE | DRAWN: AR | CHECKED: KT
JOB NO.: 21325
PRELIMINARY NOT FOR CONSTRUCTION
INTENT TO CONSTRUCT

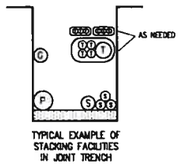
800-227-2600 — CALL BEFORE YOU DIG — UNDERGROUND SERVICE ALERT

REGISTERED PROFESSIONAL ENGINEER — ASHIULLAH ZAKA — C 59346 Exp 06/30/15 — CIVIL — STATE OF CALIFORNIA

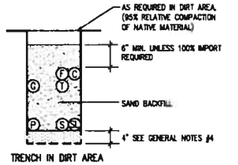
SHEET JT3 OF JT8 SHEETS

JOINT TRENCH MINIMUM COVER AND CLEARANCES
MINIMUM SEPARATION FROM

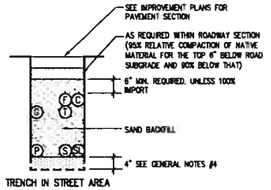
UTILITY	G	T	C	S	P	SL	SL	F	MINIMUM COVER
G (GAS)*		12"	12"	8"	12"	12"	6"	12"	24"; 30" IN STREET
T (TELEPHONE)	12"		1"	12"	12"	12"	12"	1"	24"; 30" IN STREET
C (CABLE T.V.)	12"	1"		12"	12"	12"	12"	1"	24"; 30" IN STREET
S (ELECT. SECONDARY)	6"	12"	12"		3"	1"	1"	12"	24"; 30" IN STREET
P (ELECT PRIMARY)	12"	12"	12"	3"		3"	3"	12"	30"; 36" IN STREET
SL (PUBLIC AND PRIVATE-STREET LIGHT)**	12"	12"	12"	12"	12"			12"	24"; 30" IN STREET
SL (P.G.E.- STREET LIGHT)	12"	12"	12"	1"	3"			12"	24"; 30" IN STREET
F (FIBER OPTIC)	12"	1"	1"	12"	12"	12"	12"	1"	24"; 30" IN STREET



TYPICAL EXAMPLE OF STACKING FACILITIES IN JOINT TRENCH



TRENCH IN DIRT AREA



TRENCH IN STREET AREA

LEGEND

- MEETS UTILITY TRENCH ALLOTMENT
- EXCEEDS UTILITY TRENCH ALLOTMENT
- (G) GAS
- (P) ELECTRIC PRIMARY
- (S) ELECTRIC SECONDARY
- (T) TELEPHONE
- (C) CATV
- (SL) STREET LIGHT (PUBLIC OR PG&E)
- (F) FIBER OPTIC

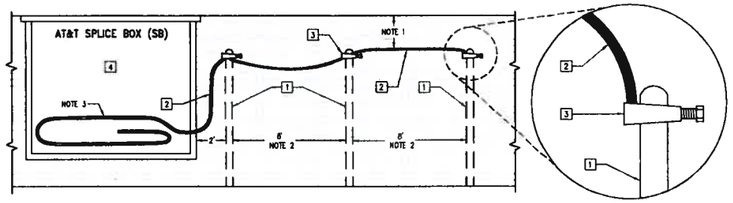
JOINT TRENCH NOTES:

1. TRENCH COVER & CLEARANCES SHOWN ARE MINIMUMS ONLY AND MAY REQUIRE ALTERATIONS TO SUIT FIELD CONDITIONS.
2. IT IS RECOMMENDED THAT ALL FACILITIES ARE TO BE A MINIMUM OF 12" BELOW SUB-BASE DISTURBANCE.
3. * WITH MUTUAL AGREEMENT FROM PARTICIPATING UTILITIES, WHEN 4" O.D. OR SMALLER GAS PIPE IS INSTALLED, SEPARATION MAY BE REDUCED TO NOT LESS THAN 6" BETWEEN GAS AND COMMUNICATION DUCTS (TELEPHONE, C.A.T.V. & FIBER OPTIC).
4. * WHERE 6" GAS MAIN IS LOCATED IN THE JOINT TRENCH A 12" MINIMUM SEPARATION FROM GAS MAIN TO ALL UTILITIES WILL BE REQUIRED.
5. ** WITH MUTUAL AGREEMENT FROM PARTICIPATING UTILITIES, STREET LIGHT SEPARATION MAY BE REDUCED TO 0" BETWEEN STREET LIGHT AND COMMUNICATION DUCTS (TELEPHONE, C.A.T.V. & FIBER OPTIC).
6. TRENCH CONFIGURATIONS SHOWN ARE FOR INSTALLATION WHERE EACH OCCUPANT IS UTILIZING HIS ENTIRE SPACE ALLOCATION. OTHER CONFIGURATIONS OR REDUCED DIMENSIONS MAY BE USED, PROVIDED THAT MINIMUM COVER AND CLEARANCES ARE MAINTAINED.
7. THE CONTRACTOR IS TO ADJUST TRENCH DEPTHS AT ALL JOINT TRENCH LATERAL CROSSINGS TO MAINTAIN REQUIRED CLEARANCES BETWEEN ALL PARTICIPATING UTILITIES.
8. TRENCH SECTIONS ARE SHOWN SCHEMATICALLY AND INDICATE AREAS OF OCCUPANCY ONLY; THEY DO NOT REFLECT SIZE OR QUANTITY OF FACILITIES TO BE INSTALLED.
9. TRENCH FOOTAGES PER SECTION ARE APPROXIMATE. SECTIONS ARE DESIGNED TO ACCOMMODATE ALL REQUIRED FACILITIES AS INDICATED ON EACH TRENCH PARTICIPANT'S CONSTRUCTION DRAWINGS.
10. THE CONTRACTOR SHALL VERIFY TRENCH FOOTAGES FOR ACCURACY PRIOR TO EXCAVATION AND TAKE NECESSARY PRECAUTION CROSSING WATER AND SEWER FACILITIES.
11. THE CONTRACTOR SHALL REFER TO THE COMPOSITE, CONDUIT, AND/OR EACH RESPECTIVE UTILITY INSTALLATION PLAN FOR THE NECESSARY CONDUIT CABLE AND/OR PIPE TO BE INSTALLED IN THIS PROJECT.
12. TYPE "M2" TRENCH SHALL BE INSTALLED AFTER CURB AND GUTTER INSTALLATION. CONTRACTOR SHALL COORDINATE ADDITIONAL MOVE-INS NECESSARY TO COMPLETE THE SERVICES TO THE DWELLING UNITS WITH THE DEVELOPER, ALL AGENCIES AND THE UTILITY COMPANIES. THE COST OF THESE MOVE-INS SHALL BE INCLUDED IN THE CONTRACTOR'S UNIT PRICE FOR TRENCHING.
13. THE AVERAGE TRENCH DEPTHS SHOWN ARE BASED ON THE MINIMUM UTILITY COMPANY REQUIREMENTS FOR DEPTH AND SEPARATION. CONTRACTOR SHALL ADJUST TRENCH WIDTH & DEPTH AS REQUIRED TO ADEQUATELY CLEAR EXISTING UNDERGROUND FACILITIES AND MAINTAIN MINIMUM UTILITY CLEARANCES. ALL TRENCHES OVER 60" DEEP MUST COMPLY WITH OSHA REQUIREMENTS. (SEE THE JOINT TRENCH MINIMUM COVER AND CLEARANCE TABLE)
14. CONTRACTOR SHALL USE SAND BEDDING AND SHADING AS REQUIRED BY THE UTILITY COMPANIES. ALL TRENCH SECTIONS SHOWN HEREON INCLUDE A 4" THICK BEDDING LAYER (UON).
15. ALL TRENCHING AND BACKFILLING TO BE DONE IN ACCORDANCE WITH THE CITY OF PLEASANTON ENGINEERING STANDARDS AND SPECIFICATIONS.
16. ALL PG&E, TELEPHONE, CABLE, AND FIBER OPTIC BOXES AND JOINT TRENCH FACILITIES ARE TO MAINTAIN A MINIMUM OF 3' SEPARATION FROM SEWER AND WATER LATERALS AND DRIVEWAYS. ALL UTILITY VAULTS, BOXES, PEDESTALS, ETC. MUST MAINTAIN A 5' MINIMUM CLEARANCE FROM FIRE HYDRANTS, AND 3' MINIMUM FROM STREETLIGHTS.

JOINT TRENCH OCCUPANCY GUIDE

TRENCH SECTION	A*	B*	C*	D*	E*	F*	G*	H*	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W
GAS	X	X	X		X				X	X	X		X	X	X		X			X			
TELEPHONE	X	X		X		X			X	X		X	X	X		X		X			X		
CABLE T.V.	X		X	X			X		X		X	X	X		X	X			X			X	
ELECTRIC SEC.	X	X	X	X	X	X	X	X					X	X	X	X	X	X					X
ELECTRIC PRI.	X	X	X	X	X	X	X	X															
FIBER OPTICS	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

*THESE SECTIONS MAY OR MAY NOT CONTAIN SECONDARY



LEGEND

1. 8' LENGTH x 5/8" DIAMETER GROUND ROD POLES
2. BARE CONTINUOUS SOLID NUMBER 6 AWG. WIRE
3. GROUND CLAMP
4. TELEPHONE SPLICE BOX

NOTES

1. MINIMUM DEPTH = 12 INCHES
2. GROUND RODS MAY BE PLACED IN ANY CONFIGURATION AS LONG AS THE 8 FOOT SEPARATION BETWEEN GROUND RODS IS MAINTAINED AND THE 2 FOOT SEPARATION FROM THE SB WALL IS NOT ENCROACHED UPON.
3. BARE #6 GROUND WIRE TO ENTER THROUGH SIDEWALL OR BOTTOM OF SB AND WRAP SB ONCE.

DETAIL 1 — AT&T AERIAL AND BURIED GROUND BED DESIGN
N.T.S. JT4

THIS AREA RESERVED FOR JOINT TRENCH SECTIONS TO BE PLACED AT A LATER TIME

3361 Walnut Blvd.
Suite 100
Brentwood, CA 94513
(925) 240-2595
(925) 240-7013 fax
www.tarrar.com

TARRAR UTILITY CONSULTANTS

- Planning
- Design
- Estimating
- Joint Trench
- Street Lighting
- Fiber Optic
- T-24
- PG&E Gas Design
- PG&E Elec Design
- M.E.P. Design
- Cost Analysis
- Due Diligence

JOINT TRENCH SECTIONS AND DETAILS
SUMMERHILL HOMES
CANNAE
PLEASANTON CALIFORNIA

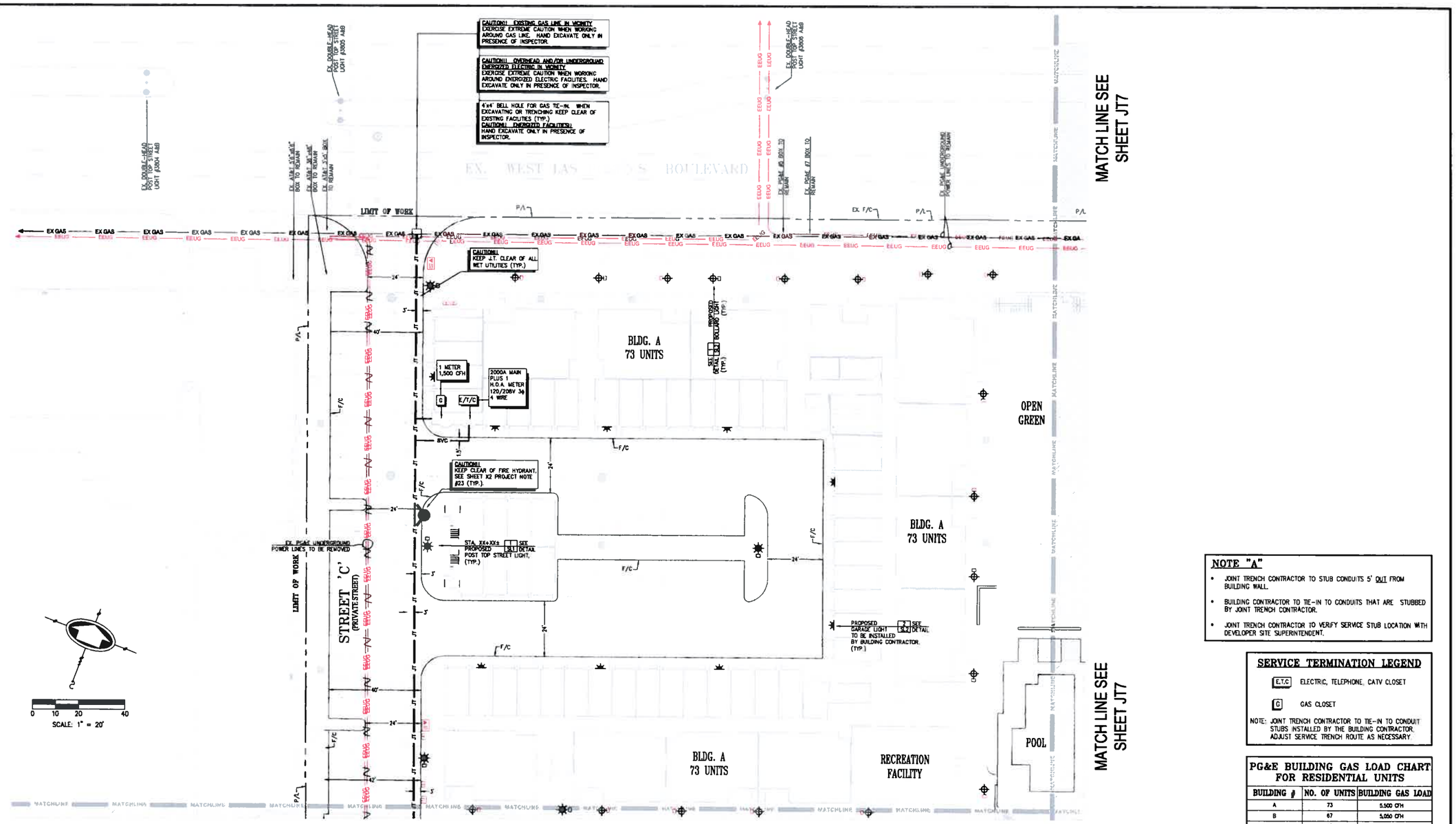
NO.	REVISIONS	BY	DATE

DATE: DECEMBER 2013 — DATE LAST WORKED ON: 12/20/2013
SCALE: NOT TO SCALE — DRAWN: AR — CHECKED: KT
JOB NO.: 21325 — PRELIMINARY NOT FOR CONSTRUCTION
INTENT TO CONSTRUCT

800-227-2600 — USA — BEFORE YOU DIG — UNDERGROUND SERVICE ALERT

REGISTERED PROFESSIONAL ENGINEER — ZAHRULLAH ZAKA — C 59345 Exp 06/30/15 — CIVIL — STATE OF CALIFORNIA

SHEET JT4 OF JT8 SHEETS



NOTE "A"

- JOINT TRENCH CONTRACTOR TO STUB CONDUITS 5' OUT FROM BUILDING WALL.
- BUILDING CONTRACTOR TO TIE-IN TO CONDUITS THAT ARE STUBBED BY JOINT TRENCH CONTRACTOR.
- JOINT TRENCH CONTRACTOR TO VERIFY SERVICE STUB LOCATION WITH DEVELOPER SITE SUPERINTENDENT.

SERVICE TERMINATION LEGEND

E.T.C ELECTRIC, TELEPHONE, CATV CLOSET

G GAS CLOSET

NOTE: JOINT TRENCH CONTRACTOR TO TIE-IN TO CONDUIT STUBS INSTALLED BY THE BUILDING CONTRACTOR. ADJUST SERVICE TRENCH ROUTE AS NECESSARY.

PG&E BUILDING GAS LOAD CHART FOR RESIDENTIAL UNITS

BUILDING #	NO. OF UNITS	BUILDING GAS LOAD
A	73	5,500 CFH
B	67	5,050 CFH
C	17	1,275 CFH
D	20	1,500 CFH
REC. FACILITY	1	600 CFH
TOTAL	178	13,925 CFH

JOINT TRENCH OCCUPANCY GUIDE

TRENCH SECTION	A*	B*	C*	D*	E*	F*	G*	H*	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W
GAS	X	X	X		X				X	X	X		X	X	X		X			X			
TELEPHONE	X	X		X		X			X	X		X	X	X		X					X		
CABLE T.V.	X		X	X			X		X		X	X			X	X			X			X	
ELECTRIC SEC.	X	X	X	X	X	X	X	X					X	X	X	X	X	X	X				X
ELECTRIC PRI.	X	X	X	X	X	X	X	X															

*THESE SECTIONS MAY OR MAY NOT CONTAIN SECONDARY

CAUTION !! CAUTION !! CAUTION !!
EX. JOINT TRENCH AND EX. GAS AND ALL OTHER UTILITY LOCATIONS ARE SHOWN BASED UPON INFORMATION PROVIDED BY OTHERS AND FIELD OBSERVATION. JOINT TRENCH CONTRACTOR TO VERIFY EXACT LOCATION OF ALL EXISTING FACILITIES PRIOR OF ANY JOINT TRENCH CONSTRUCTION. POTHOLE IF NECESSARY. CONTACT U.S.A. DIG ALERT 24 HOURS IN ADVANCE

CONTRACTOR WILL COMPLY WITH ALL LAWS, ORDINANCES AND REGULATIONS. CONTRACTOR SHALL BE FAMILIAR WITH O.S.H.A. INDUSTRIAL ORDERS AND SHALL CONDUCT HIS WORK ACCORDINGLY. WHEN WORKING AROUND ENERGIZED EQUIPMENT, THE UTILITY OWNER SHALL BE NOTIFIED TO SUPPLY THE APPROPRIATE MAN POWER AND SAFETY PRECAUTIONS AS NEEDED. THE CONTRACTOR IS RESPONSIBLE FOR PUBLIC SAFETY AND TRAFFIC CONTROL MEASURES.

3361 Walnut Blvd.
Suite 100
Brentwood, CA 94513
(925) 240-2595
(925) 240-7813 fax
www.tarrar.com

TARRAR UTILITY :: CONSULTANTS

- Planning
- Design
- Estimating
- Joint Trench
- Street Lighting
- Fiber Optic
- T-24
- PG&E Gas Design
- PG&E Elec Design
- M.E.P. Design
- Cost Analysis
- Due Diligence

JOINT TRENCH COMPOSITE PLAN

SUMMERHILL HOMES
CANNAE
PLEASANTON CALIFORNIA

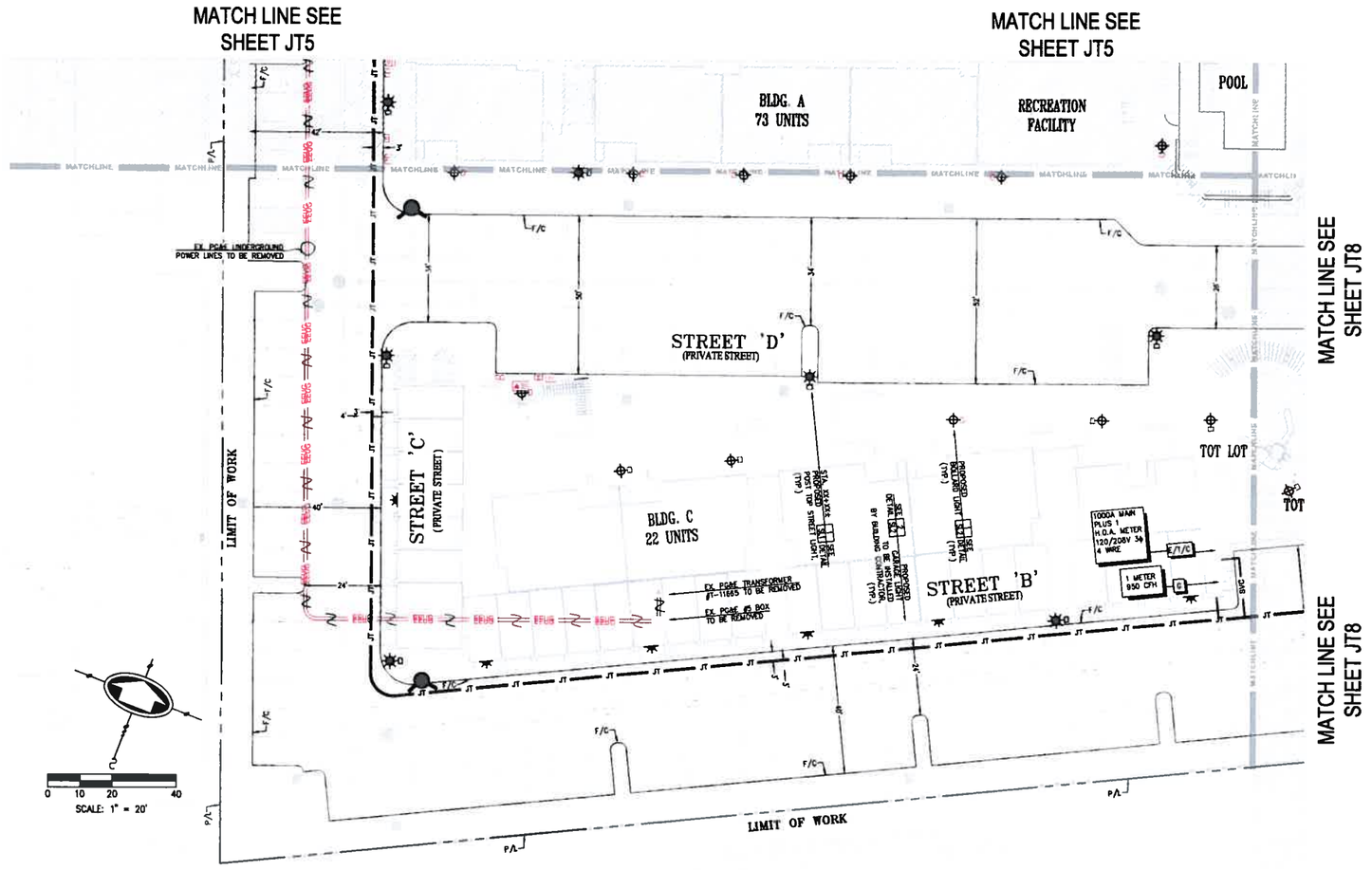
NO.	REVISIONS	BY	DATE

DATE: DECEMBER 2013 | DATE LAST WORKED ON: 1/24/2014
SCALE: 1" = 20' | DRAWN: AR | CHECKED: KT
JOB NO.: 21325
PRELIMINARY NOT FOR CONSTRUCTION
INTENT TO CONSTRUCT

800-227-2600 CALL BEFORE YOU DIG UNDERGROUND SERVICE ALERT

REGISTERED PROFESSIONAL ENGINEER ZABIHULLAH ZAKA C 19146 Exp 06/30/15 CIVIL STATE OF CALIFORNIA

SHEET JT5 OF JT8 SHEETS



NOTE "A"

- JOINT TRENCH CONTRACTOR TO STUB CONDUITS 5' OUT FROM BUILDING WALL.
- BUILDING CONTRACTOR TO TIE-IN TO CONDUITS THAT ARE STUBBED BY JOINT TRENCH CONTRACTOR.
- JOINT TRENCH CONTRACTOR TO VERIFY SERVICE STUB LOCATION WITH DEVELOPER SITE SUPERINTENDENT.

SERVICE TERMINATION LEGEND

E.T.C ELECTRIC, TELEPHONE, CATV CLOSET

G GAS CLOSET

NOTE: JOINT TRENCH CONTRACTOR TO TIE-IN TO CONDUIT STUBS INSTALLED BY THE BUILDING CONTRACTOR. ADJUST SERVICE TRENCH ROUTE AS NECESSARY.

PG&E BUILDING GAS LOAD CHART FOR RESIDENTIAL UNITS

BUILDING #	NO. OF UNITS	BUILDING GAS LOAD
A	73	5,500 CFH
B	67	5,050 CFH
C	17	1,275 CFH
D	20	1,500 CFH
REC. FACILITY	1	600 CFH
TOTAL	178	13,925 CFH

JOINT TRENCH OCCUPANCY GUIDE

TRENCH SECTION	A*	B*	C*	D*	E*	F*	G*	H*	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W
GAS		X	X	X		X				X	X	X		X	X	X		X			X		
TELEPHONE		X	X		X		X			X	X		X	X	X		X		X			X	
CABLE T.V.		X		X	X			X		X		X	X	X		X	X			X			X	
ELECTRIC SEC.		X	X	X	X	X	X	X	X					X	X	X	X	X	X					X
ELECTRIC PRI.		X	X	X	X	X	X	X	X															

*THESE SECTIONS MAY OR MAY NOT CONTAIN SECONDARY

CAUTION !! CAUTION !! CAUTION !!
EX. JOINT TRENCH AND EX. GAS AND ALL OTHER UTILITY LOCATIONS ARE SHOWN BASED UPON INFORMATION PROVIDED BY OTHERS AND FIELD OBSERVATION. JOINT TRENCH CONTRACTOR TO VERIFY EXACT LOCATION OF ALL EXISTING FACILITIES PRIOR OF ANY JOINT TRENCH CONSTRUCTION. POTHOLE IF NECESSARY. CONTACT U.S.A. DIG ALERT 24 HOURS IN ADVANCE

CONTRACTOR WILL COMPLY WITH ALL LAWS, ORDINANCES AND REGULATIONS. CONTRACTOR SHALL BE FAMILIAR WITH O.S.H.A. INDUSTRIAL ORDERS AND SHALL CONDUCT HIS WORK ACCORDINGLY. WHEN WORKING AROUND ENERGIZED EQUIPMENT, THE UTILITY OWNER SHALL BE NOTIFIED TO SUPPLY THE APPROPRIATE MAN POWER AND SAFETY PRECAUTIONS AS NEEDED. THE CONTRACTOR IS RESPONSIBLE FOR PUBLIC SAFETY AND TRAFFIC CONTROL MEASURES.

3361 Walnut Blvd
Suite 100
Brentwood, CA 94513
(925) 240-2595
(925) 240-7013 fax
www.tarrar.com

TARRAR UTILITY CONSULTANTS

- Planning
- Design
- Estimating
- Joint Trench
- Street Lighting
- Fiber Optic
- T-24
- PG&E Gas Design
- PG&E Elec Design
- M E P Design
- Cost Analysis
- Due Diligence

JOINT TRENCH COMPOSITE PLAN

SUMMERHILL HOMES
CANNAE
PLEASANTON CALIFORNIA

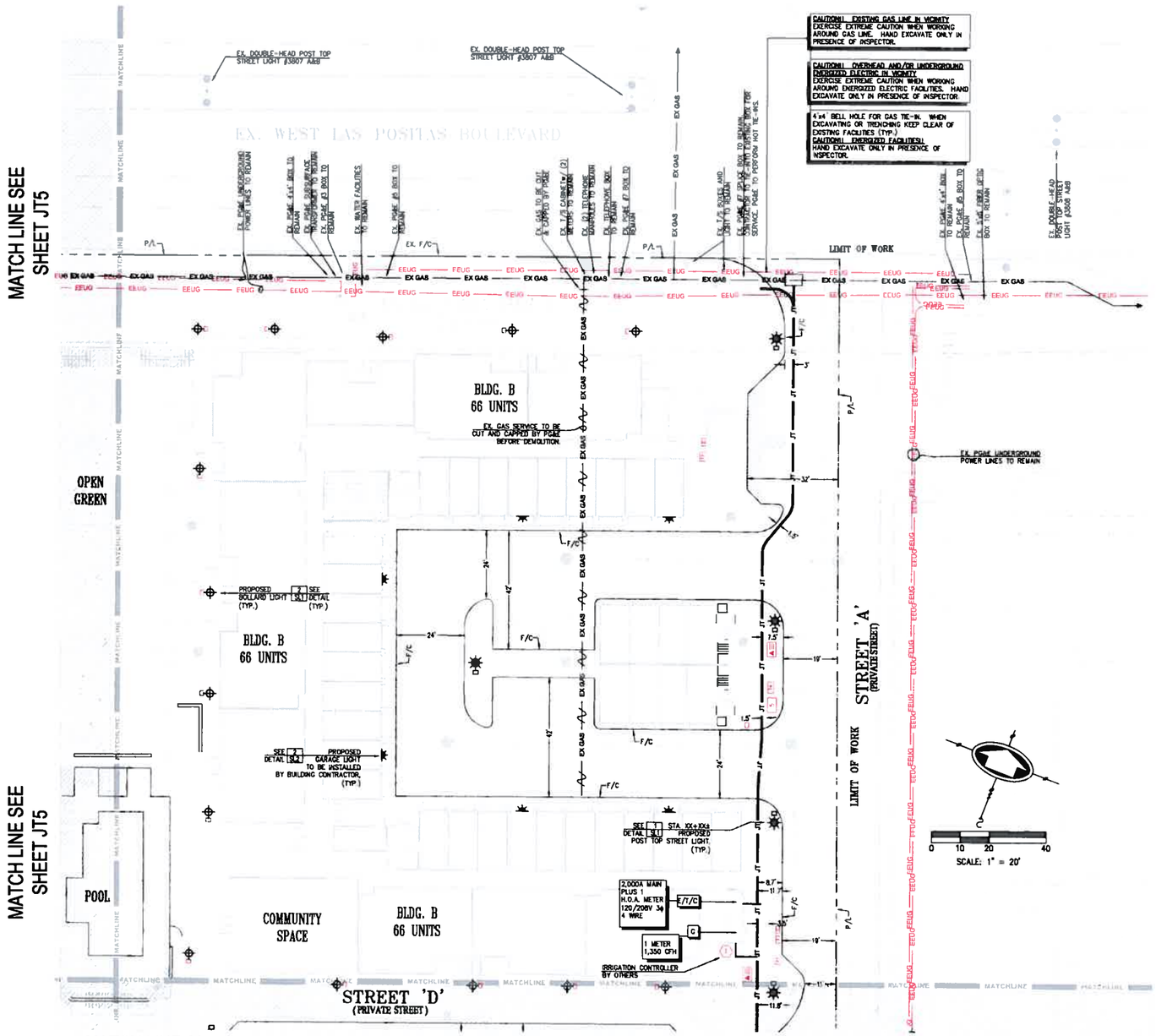
NO.	REVISIONS	BY	DATE

DATE: DECEMBER 2013 | DATE LAST WORKED ON: 1/24/2014
SCALE: 1" = 20' | DRAWN: AR | CHECKED: KT
JOB NO.: 21325
PRELIMINARY NOT FOR CONSTRUCTION
INTENT TO CONSTRUCT

800-227-2600
CALL BEFORE YOU DIG UNDERGROUND SERVICE ALERT

REGISTERED PROFESSIONAL ENGINEER ZABIHULLAH ZADA C 59346 Exp 06/30/15 CIVIL STATE OF CALIFORNIA

SHEET JT6 OF JT8 SHEETS



NOTE "A"

- JOINT TRENCH CONTRACTOR TO STUB CONDUITS 5' OUT FROM BUILDING WALL.
- BUILDING CONTRACTOR TO TIE-IN TO CONDUITS THAT ARE STUBBED BY JOINT TRENCH CONTRACTOR.
- JOINT TRENCH CONTRACTOR TO VERIFY SERVICE STUB LOCATION WITH DEVELOPER SITE SUPERINTENDENT.

SERVICE TERMINATION LEGEND

E.T.C ELECTRIC, TELEPHONE, CATV CLOSET

G GAS CLOSET

NOTE: JOINT TRENCH CONTRACTOR TO TIE-IN TO CONDUIT STUBS INSTALLED BY THE BUILDING CONTRACTOR. ADJUST SERVICE TRENCH ROUTE AS NECESSARY.

PG&E BUILDING GAS LOAD CHART FOR RESIDENTIAL UNITS

BUILDING #	NO. OF UNITS	BUILDING GAS LOAD
A	73	5,500 CFH
B	67	5,050 CFH
C	17	1,275 CFH
D	20	1,500 CFH
REC. FACILITY	1	600 CFH
TOTAL	178	13,925 CFH

JOINT TRENCH OCCUPANCY GUIDE

TRENCH SECTION	A*	B*	C*	D*	E*	F*	G*	H*	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W
GAS	X	X	X		X				X	X	X		X	X	X		X			X			
TELEPHONE	X	X		X		X			X	X		X	X	X		X		X			X		
CABLE T.V.	X		X	X			X		X		X	X	X		X				X			X	
ELECTRIC SEC.	X	X	X	X	X	X	X	X					X	X	X	X	X	X	X				X
ELECTRIC PRI.	X	X	X	X	X	X	X	X															

*THESE SECTIONS MAY OR MAY NOT CONTAIN SECONDARY

CAUTION !! CAUTION !! CAUTION !!
EX. JOINT TRENCH AND EX. GAS AND ALL OTHER UTILITY LOCATIONS ARE SHOWN BASED UPON INFORMATION PROVIDED BY OTHERS AND FIELD OBSERVATION. JOINT TRENCH CONTRACTOR TO VERIFY EXACT LOCATION OF ALL EXISTING FACILITIES PRIOR OF ANY JOINT TRENCH CONSTRUCTION. POTHOLE IF NECESSARY. CONTACT U.S.A. DIG ALERT 24 HOURS IN ADVANCE

CONTRACTOR WILL COMPLY WITH ALL LAWS, ORDINANCES AND REGULATIONS. CONTRACTOR SHALL BE FAMILIAR WITH O.S.H.A. INDUSTRIAL ORDERS AND SHALL CONDUCT HIS WORK ACCORDINGLY. WHEN WORKING AROUND ENERGIZED EQUIPMENT, THE UTILITY OWNER SHALL BE NOTIFIED TO SUPPLY THE APPROPRIATE MAN POWER AND SAFETY PRECAUTIONS AS NEEDED. THE CONTRACTOR IS RESPONSIBLE FOR PUBLIC SAFETY AND TRAFFIC CONTROL MEASURES.

3361 Walnut Blvd
Suite 108
Brentwood, CA 94513
(925) 240-2595
(925) 240-7013 fax
www.tarrar.com

TARRAR UTILITY CONSULTANTS

- Planning
- Design
- Estimating
- Joint Trench
- Street Lighting
- Fiber Optic
- T-24
- PG&E Gas Design
- PG&E Elec Design
- M.E.P Design
- Cost Analysis
- Due Diligence

JOINT TRENCH COMPOSITE PLAN

SUMMERHILL HOMES
CANNAE
PLEASANTON CALIFORNIA

NO.	REVISIONS	BY	DATE

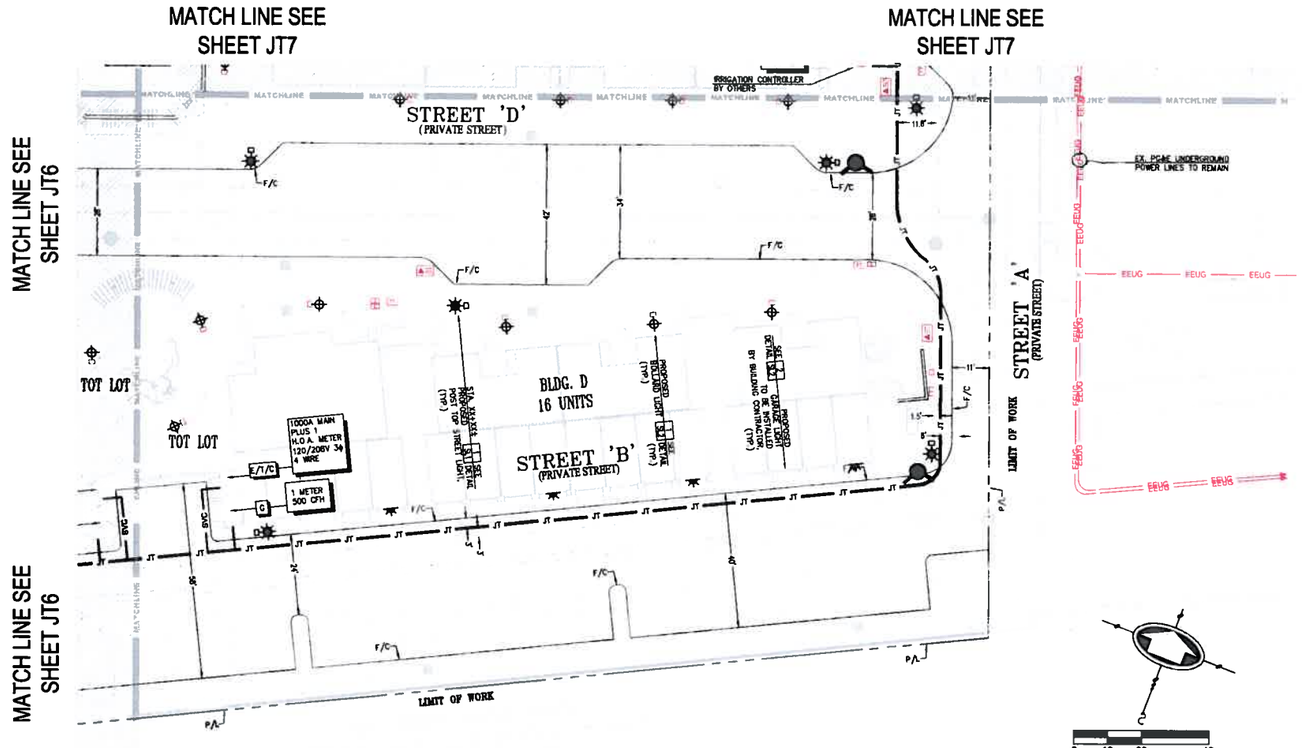
DATE: DECEMBER 2013 | DATE LAST WORKED ON: 1/24/2014
SCALE: 1"=20' | DRAWN: AR | CHECKED: KT
JOB NO. 21325 | PRELIMINARY NOT FOR CONSTRUCTION

INTENT TO CONSTRUCT

800-227-2600 CALL BEFORE YOU DIG UNDERGROUND SERVICE ALERT

REGISTERED PROFESSIONAL ENGINEER JABHUKLAH TARRAR C 59346 Exp. 06/30/15 CIVIL STATE OF CALIFORNIA

SHEET JT7 OF JT8 SHEETS



NOTE "A"

- JOINT TRENCH CONTRACTOR TO STUB CONDUITS 5' OUT FROM BUILDING WALL.
- BUILDING CONTRACTOR TO TIE-IN TO CONDUITS THAT ARE STUBBED BY JOINT TRENCH CONTRACTOR.
- JOINT TRENCH CONTRACTOR TO VERIFY SERVICE STUB LOCATION WITH DEVELOPER SITE SUPERINTENDENT.

SERVICE TERMINATION LEGEND

E.T.C. ELECTRIC, TELEPHONE, CATV CLOSET

G GAS CLOSET

NOTE: JOINT TRENCH CONTRACTOR TO TIE-IN TO CONDUIT STUBS INSTALLED BY THE BUILDING CONTRACTOR. ADJUST SERVICE TRENCH ROUTE AS NECESSARY.

PG&E BUILDING GAS LOAD CHART FOR RESIDENTIAL UNITS

BUILDING #	NO. OF UNITS	BUILDING GAS LOAD
A	73	3,500 CFH
B	67	3,050 CFH
C	17	1,275 CFH
D	20	1,500 CFH
REC. FACILITY	1	800 CFH
TOTAL	178	13,925 CFH

JOINT TRENCH OCCUPANCY GUIDE

TRENCH SECTION	A*	B**	C*	D**	E*	F**	G*	H**	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W
GAS	X	X	X		X				X	X	X		X	X	X		X			X			
TELEPHONE	X	X		X		X			X	X			X	X		X		X			X		
CABLE T.V.	X		X	X			X		X			X	X	X		X	X			X			X
ELECTRIC SEC.	X	X	X	X	X	X	X	X					X	X	X	X	X	X					X
ELECTRIC PRI.	X	X	X	X	X	X	X	X															

*THESE SECTIONS MAY OR MAY NOT CONTAIN SECONDARY

CAUTION !! CAUTION !! CAUTION !!
EX. JOINT TRENCH AND EX. GAS AND ALL OTHER UTILITY LOCATIONS ARE SHOWN BASED UPON INFORMATION PROVIDED BY OTHERS AND FIELD OBSERVATION. JOINT TRENCH CONTRACTOR TO VERIFY EXACT LOCATION OF ALL EXISTING FACILITIES PRIOR OF ANY JOINT TRENCH CONSTRUCTION. POTHOLE IF NECESSARY. CONTACT U.S.A. DIG ALERT 24 HOURS IN ADVANCE

CONTRACTOR WILL COMPLY WITH ALL LAWS, ORDINANCES AND REGULATIONS. CONTRACTOR SHALL BE FAMILIAR WITH O.S.H.A. INDUSTRIAL ORDERS AND SHALL CONDUCT HIS WORK ACCORDINGLY. WHEN WORKING AROUND ENERGIZED EQUIPMENT, THE UTILITY OWNER SHALL BE NOTIFIED TO SUPPLY THE APPROPRIATE MAN POWER AND SAFETY PRECAUTIONS AS NEEDED. THE CONTRACTOR IS RESPONSIBLE FOR PUBLIC SAFETY AND TRAFFIC CONTROL MEASURES.

3361 Walnut Blvd
Suite 108
Brentwood, CA 94513
(925) 240-2595
(925) 240-7013 fax
www.tarrar.com

TARRAR UTILITY CONSULTANTS

- Planning
- Design
- Estimating
- Joint Trench
- Street Lighting
- Fiber Optic
- T-24
- PG&E Gas Design
- PG&E Elec Design
- H.F.P. Design
- Cost Analysis
- Due Diligence

JOINT TRENCH COMPOSITE PLAN

SUMMERHILL HOMES
CANNAE
PLEASANTON CALIFORNIA

NO.	REVISIONS	BY	DATE

DATE: DECEMBER 2013 | DATE LAST WORKED ON: 1/24/2014
SCALE: 1" = 20' | DRAWN: AR | CHECKED: KT
JOB NO.: 21325
PRELIMINARY NOT FOR CONSTRUCTION
INTENT TO CONSTRUCT

800-227-2600 CALL BEFORE YOU DIG UNDERGROUND SERVICE ALERT

REGISTERED PROFESSIONAL ENGINEER ZABIHULLAH ZADA C 59346 Exp. 06/30/15 CIVIL STATE OF CALIFORNIA

SHEET JT8 OF JT8 SHEETS

SUMMERHILL HOMES
CANNAE
PLEASANTON ALAMEDA COUNTY CALIFORNIA

LUMINAIRE SPECIFICATIONS:
CATALOG NO.:
TYPE III: CE21T4-FTIGC-3W3HS-72W-4K
-120-F2AP-DJP-SQ-HSS-RAL9006TX
TYPE V: CE21T4-FTIGC-55L4-BOW-4K
-120-F2AP-DJP-SQ-RAL9005TX

LENS MATL: CLEAR TEMPERED GLASS
IES CLASSIFIC: TYPE III WITH HOUSE SIDE SHIELD & TYPE V
WATTAGE: TYPE III-72W & TYPE V-80W
LIGHT SOURCE: LED - 4000K (WHITE)
LINE VOLTAGE: 120 VOLT
DRIVER: MOUNTED ON A QUICK RELEASE TRAY.
ALL COMPONENTS SHALL HAVE QUICK CONNECTORS.
POLE ADAPTOR: FITTER WITH SQUARE HEAD BOLTS
IP66 WEATHERPROOF LUMINAIRE WITH "V" GROOVE SILICONE GASKET

POLE SPECIFICATIONS:
CATALOG NO.: PA40-13'-6"-SA-RAL9005TX
MATERIAL: 4" ROUND, ALUMINUM TUBING
POLE HEIGHT: 13'-6"
ANCHOR BOLTS: (4) 3/4" x 20" FULLY GALVANIZED
BOLT CIRCLE: 10"

BASE COVER SPECIFICATIONS:
CATALOG NO.: BD11-RAL9005TX
MATERIAL: TWO-PIECE COVER MADE OF CAST ALUMINUM

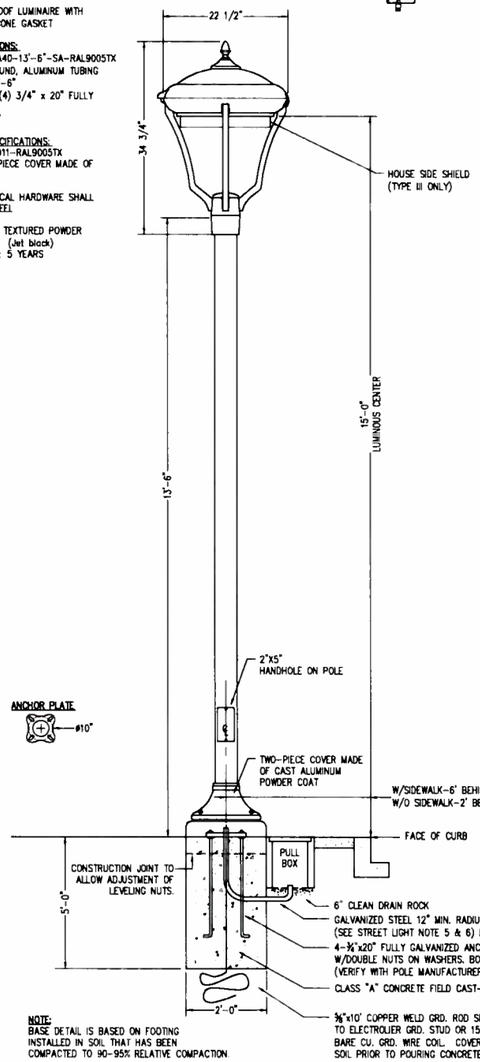
ALL NON ELECTRICAL HARDWARE SHALL BE STAINLESS STEEL

COLOR & FINISH: TEXTURED POWDER COAT RAL9005TX (Jet black)
PAINT WARRANTY: 5 YEARS

TOP VIEW
FRONT VIEW
HOUSE SIDE SHIELD
HOUSE SIDE SHIELD

MANUFACTURER REP.:
GREAT BASIN LIGHTING
STEVE OR FRAN COLE
(925) 240-1566

HOUSE SIDE SHIELD

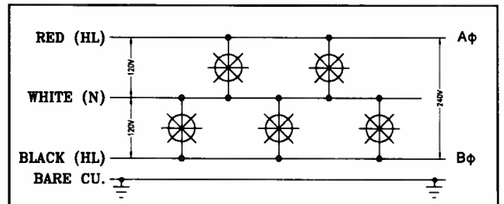


NOTE:
BASE DETAIL IS BASED ON FOOTING INSTALLED IN SOIL THAT HAS BEEN COMPACTED TO 90-95% RELATIVE COMPACTION.

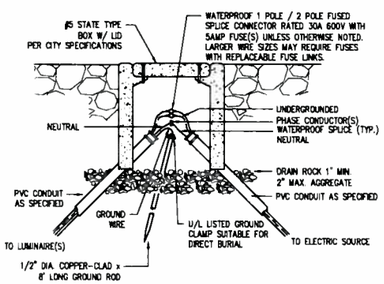
1 / SL1 **PRIVATE POST TOP ELECTROLIER DETAIL**
NOT TO SCALE

LEGEND

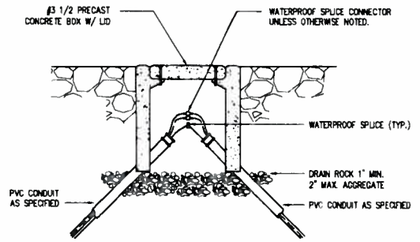
- EXISTING TRAFFIC SIGNAL
- STREET LIGHT PULL BOX STATE TYPE ø3 1/2, 15" x 20" x 12"
- STREET LIGHT GROUND BOX STATE TYPE ø5, 18" x 27.5" x 12"
- ELECTROLIER, POST TOP
- LIGHTING BOLLARD
- LIGHTING, WALL MOUNTED (BY OTHERS)
- EXISTING ELECTROLIER, SINGLE ARM
- EXISTING ELECTROLIER, POST TOP
- EXISTING LIGHTING BOLLARD
- EXISTING LIGHTING, WALL MOUNTED (BY OTHERS)
- METER SERVICE PEDESTAL
- IRRIGATION CONTROLLER (BY OTHERS)
- CIRCUIT NUMBER
- (XXXX) POLE NUMBER



120/240 VOLT WIRING DIAGRAM
SEE GENERAL NOTE #4
NOT TO SCALE



2 / SL1 **STREET LIGHT GROUND BOX DETAIL**
NOT TO SCALE



3 / SL1 **STREET LIGHT PULL BOX DETAIL**
NOT TO SCALE

CONSTRUCTION LABOR AND MATERIAL RESPONSIBILITY

STREET LIGHTING SYSTEM

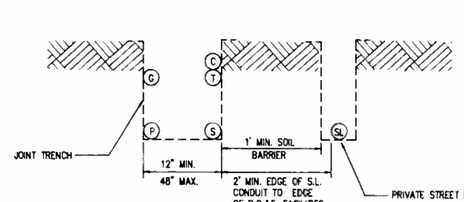
	P.G.&E.	CONTRACTOR
WIRE: FURNISH		●
WIRE: INSTALL		●
CONDUIT: FURNISH		●
CONDUIT: INSTALL		●
BASES: FURNISH		●
BASES: INSTALL		●
LUMINAIRES: FURNISH		●
LUMINAIRES: INSTALL		●
SPLICE BOXES: FURNISH		●
SPLICE BOXES: INSTALL		●
EXCAVATE		●
POLES & ARMS: FURNISH		●
POLES & ARMS: INSTALL		●

SCHEDULE:	LSDC
INSTALL IN JOINT TRENCH:	NO
INSTALL IN SEPARATE TRENCH:	YES
CONDUIT SIZE:	VARIES
CONDUIT TYPE:	SCH. 40
WIRE SIZE: VARIES	TYPE: CU

ADDITIONAL NOTES:
-STREET LIGHTS TO BE MAINTAINED BY H.O.A., UPON TRACT ACCEPTANCE
-SEE JOINT TRENCH COMPOSITE FOR TRENCH LOCATION
-TYPE V DISTRIBUTION AT ALL CUL-DE-SAC BULBS

STREET LIGHTING NOTES:

1. ALL MATERIAL AND WORKMANSHIP SHALL FULLY CONFORM WITH THE NATIONAL ELECTRIC CODE AND STANDARD SPECIFICATIONS AND DETAILS OF THE CITY OF PLEASANTON.
2. THE ELECTRICAL CONTRACTOR SHALL INSTALL THE UNDERGROUND SERVICE FROM THE LUMINAIRE TO PG&E SERVICE POINT AND TERMINATE CONDUIT AND WIRES AT BOX AS DIRECTED BY PG&E
3. KEEP STREET LIGHTS A MINIMUM OF 3 FEET AWAY FROM THE EDGE OF DRIVEWAYS, SEWER AND WATER LATERALS, AND 5 FEET AWAY FROM FIRE HYDRANTS & CATCH BASINS.
4. TWO OR MORE STREET LIGHTS ON THE SAME CIRCUIT SHALL BE WIRED TO BALANCE THE LOAD. (SEE WIRING DIAGRAM)
5. CONDUIT AND FITTINGS: ALL CONDUIT AND FITTINGS SHALL BE U.L. APPROVED SCHEDULE 40 P.V.C. UNLESS OTHERWISE NOTED OR REQUIRED, USE MINIMUM 1 1/2" SCH. 40 P.V.C. CONDUIT AND FITTINGS BELOW GRADE. MINIMUM RADIUS BENDS SHALL BE 18". FOR ABOVE GROUND INSTALLATION USE METALLIC RIGID STEEL CONDUIT. PROVIDE PULL WIRE IN EMPTY CONDUITS. ALL CROSSINGS TO BE PERPENDICULAR TO STREET.
6. CONDUIT DEPTH: 24" UNDER SIDEWALK; 24" UNDER PLANTER STRIP; 30" UNDER PAVEMENT.
7. CABLE: CABLE SHALL BE U.L. A.W.G. NO. 8,7-STRAND SOFT COPPER, TYPE THW OR THWN WITH MINIMUM OF 3/64" (40 MIL) POLYVINILCHLORIDE INSULATION, UNLESS OTHERWISE NOTED. U.L. LISTED 600 VOLT, NO. 10 IN POLE MAY BE USED (40 MIL INSULATION).
8. SPLICE BOXES: SPLICE BOXES SHALL BE NO. 3-1/ 2 STATE TYPE WITH LID AND BRASS HOLD DOWN BOLTS, UNLESS OTHERWISE NOTED. LIDS TO BE INSCRIBED 'STREET LIGHTING'. SPLICE BOXES SHALL NOT BE MORE THAN 200 FEET APART ON LONG RUNS. SPLICE BOXES TO BE SET ON A CONCRETE FOOTING WHEN SUBJECT TO TRAFFIC LOAD.
9. FUSES: EACH POLE SHALL BE FUSED WITH WATERPROOF IN-LINE FUSE HOLDERS AT EACH ADJACENT BOX WITH 5 AMP FUSE. FOR DUPLEX LIGHTS, EACH LUMINAIRE SHALL BE FUSED SEPARATELY.
10. SPLICING: ALL SPLICES SHALL BE MADE IN HAND HOLES OR SPLICE BOXES ONLY. SPLICES SHALL BE MADE WITH "STACK -ON" CRIMP JOINTS, "SCOTCH LOCK" FASTENERS, OR APPROVED EQUAL. ON SPLICES MADE BELOW GRADE, WRAP WITH MOISTURE PROOF INSULATION THICKNESS.
11. POLE NUMBERS: OBTAIN AND PLACE POLE NUMBERS ON ALL STREET LIGHT STANDARDS AS REQUIRED. COORDINATE WITH PG&E AND/OR CITY FOR THEIR REQUIREMENTS.
12. TRENCH: CONDUIT CAN BE PLACED IN JOINT TRENCH. THE CONDUIT LAYOUT IS SHOWN SCHEMATICALLY. SEE COMPOSITE DRAWING FOR TRENCH AND BOX LOCATIONS. ANY INCIDENTAL TRENCHING NOT PROVIDED BY TRENCHING AGENT IS CONTRACTOR'S RESPONSIBILITY.
13. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR ANY FIELD CHANGES MADE WITHOUT FIRST NOTIFYING TARRAR UTILITY CONSULTANTS.
14. TARRAR UTILITY CONSULTANTS ASSUMES NO RESPONSIBILITY FOR ANY VARIANCE BETWEEN THESE PLANS AND THE ACTUAL FIELD CONDITIONS. CONTRACTOR SHOULD REVIEW PROJECT SITE PRIOR TO SUBMITTING ITS BID.
15. CONTRACTOR TO CONSULT WITH LOCAL AGENCIES FOR THEIR CIRCUIT GROUNDING REQUIREMENTS. IF GROUND WIRE IS REQUIRED IN CONDUIT, INSTALL ACCORDINGLY.
16. LEGEND SYMBOLS ARE SHOWN IN STREET AREA FOR CLARITY. INSTALL BEHIND CURB AND/OR SIDEWALK PER CITY SPECIFICATIONS KEEP CLEAR OF DRIVEWAYS AND PATHWAYS (TYPICAL).
17. CENTERLINE OF STREET LIGHTS SHALL BE LOCATED ON THE LOT LINE UNLESS OTHERWISE NOTED ON THESE PLANS.
18. ANY CHANGES OR MODIFICATIONS TO PROPOSED STREET LIGHT LOCATIONS SHALL BE APPROVED, IN WRITING, BY THE CITY PRIOR TO INSTALLATION.
19. SET ALL STREET LIGHTS TO ULTIMATE FINISHED GRADE. CONSULT WITH CITY FOR PROPER PHYSICAL PROTECTION AND/OR SIGNING AND STRIPING ADJACENT TO ANY STREET LIGHTS INSTALLED IN THEIR ULTIMATE LOCATIONS THAT ARE NOT PROTECTED BY A VERTICAL CURB. BERM AND COMPACT EARTH TO FINISHED GRADE A MINIMUM OF 5' AROUND STREET LIGHT BASES AT THESE LOCATIONS.
20. CONTACT U.S.A. (2) FULL WORKING DAYS PRIOR TO STARTING WORK IF EXISTING UTILITIES CONFLICT WITH POLE LOCATION, FIELD ADJUST TO CLEAR EXISTING UTILITIES A MINIMUM OF 3'-0".
21. STREET LIGHT CONDUIT BENDS SHALL HAVE A MINIMUM 2 FOOT RADIUS. UNLESS OTHERWISE SHOWN ON THE PLANS, NO BEND SHALL BE INSTALLED IN THE STREET LIGHT SYSTEM WITHOUT PRIOR APPROVAL OF THE UTILITY COMPANY INSPECTOR.
22. ALL BOXES ARE TO BE INSTALLED WITHIN THE R/W AND/OR P.U.E. AREA.



PRIVATE STREET LIGHT TRENCH LOCATION ADJACENT TO JOINT TRENCH
NOT TO SCALE

3361 Walnut Blvd
Suite 108
Brentwood, CA 94513
(925) 240-2595
(925) 240-7813 fax
www.tarrar.com

TARRAR UTILITY CONSULTANTS

- Planning
- Design
- Estimating
- Joint Trench
- Street Lighting
- Fiber Optic
- T-24
- PG&E Gas Design
- PG&E Elec Design
- M.E.P. Design
- Cost Analysis
- Due Diligence

STREET LIGHTING GENERAL NOTES AND DETAILS
SUMMERHILL HOMES
CANNAE
PLEASANTON CALIFORNIA

NO.	REVISIONS	BY	DATE

DATE: DECEMBER 2013 | DATE LAST WORKED ON: 1/16/2014
SCALE: NOT TO SCALE | DRAWN: AR | CHECKED: KT
JOB NO.: 21325
PRELIMINARY NOT FOR CONSTRUCTION
FOR REVIEW ONLY

800-227-2600 CALL BEFORE YOU DIG UNDERGROUND SERVICE ALERT

REGISTERED PROFESSIONAL ENGINEER ANTONIO OCAMPO CABRERA E 012569 Exp. 6-30-15 ELECTRICAL STATE OF CALIFORNIA

SHEET SL1 OF SL6 SHEETS

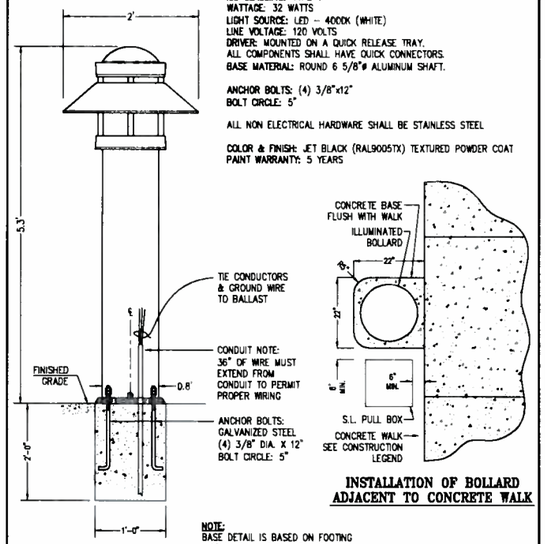
MANUFACTURER REP.:
GREAT BASIN LIGHTING
STEVE OR FRAN COLE
(925) 240-1566

LUMINAIRE SPECIFICATIONS:
CATALOGUE NO.: CBM1103H-LAP-5SL4-32W-4K-120-BBI-RAL9005TX
LENS MAT'L: POND ACRYLIC
IES CLASSIFIC: TYPE V
WATTAGE: 32 WATTS
LIGHT SOURCE: LED - 4000K (WHITE)
LINE VOLTAGE: 120 VOLTS
DRIVER: MOUNTED ON A QUICK RELEASE TRAY.
ALL COMPONENTS SHALL HAVE QUICK CONNECTORS.
BASE MATERIAL: ROUND 6 5/8"ø ALUMINUM SHAFT.

ANCHOR BOLTS: (4) 3/8"x12"
BOLT CIRCLE: 5"

ALL NON ELECTRICAL HARDWARE SHALL BE STAINLESS STEEL

COLOR & FINISH: JET BLACK (RAL9005TX) TEXTURED POWDER COAT
PAINT WARRANTY: 5 YEARS



INSTALLATION OF BOLLARD ADJACENT TO CONCRETE WALK

NOTE:
BASE DETAIL IS BASED ON FOOTING INSTALLED IN SOIL THAT HAS BEEN COMPACTED TO 90-95% RELATIVE COMPACTION.

1 / SL2 **PRIVATE LIGHTING BOLLARD DETAIL**
NOT TO SCALE

EVERGREEN LIGHTING

Catalog# :
Project :
Prepared By :
Comments :

Type :
Date :

Exterior - Dark Sky

Madrid Cutoff
2600 SERIES
Description :
HID Series. Made in U.S.A.

Product Features :

Size
20"W x 12"H x 11 1/4"D

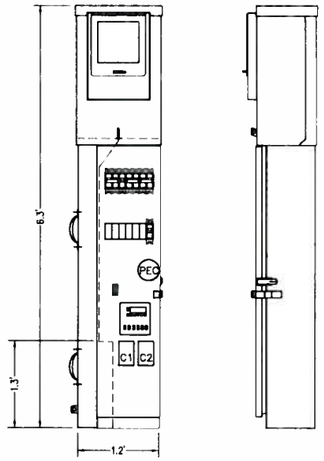
Features
- Housing - Corrosion Resistant Metal
- Diffuser - Tempered Glass
- Finish - Powdercoat Bronze
- Reflector - Specular Aluminum
- UL Listed - Wet Locations

Options
- Custom Sizes Available
- Compact Fluorescent
- Custom Finish
- Fusing
- Photo Cell
- Voltage

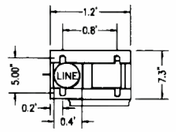
Product Details :

MODEL#	LAMP	NUMBER
2600-35FL	1455PL-I	35UL
2600-120FL	1-120UPL-I	60UL
2600-70H	70-HPS	84W
2600-100H	100HPS	96W
2600-150H	150HPS	150W
2600-70M	70MH	94UL
2600-100V	100VH	100W
2600-150V	150VH	126W
2600-175V	175VH	130W

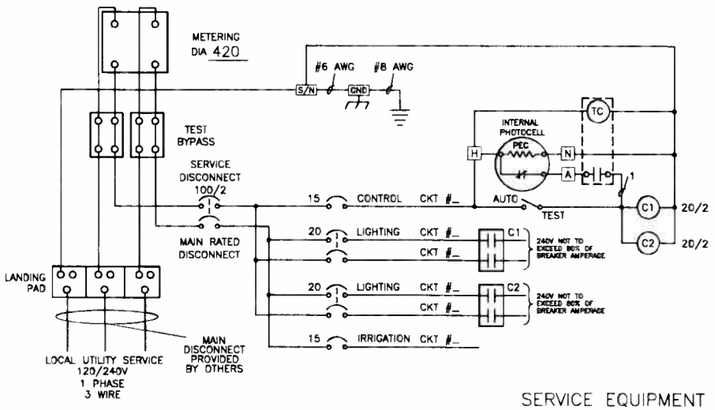
2 / SL2 **WALL SCONCE LIGHT**
NOT TO SCALE



FRONT VIEW RIGHT SIDE



BASE PLAN



SERVICE EQUIPMENT WIRING DIAGRAM

NOTE: LOAD CURRENT FOR ALL BREAKERS NOT TO EXCEED 80% OF BREAKER AMPERAGE

ENCLOSURE CONSTRUCTION NOTES
1. EXTERIOR 12 GA. H.D. GALV. STEEL AND INTERIOR 14 GA. COLD ROLLED STEEL ELECTRICALLY WELDED AND REINFORCED WHERE REQUIRED.
2. CONSTRUCTION WILL BE NEMA 3R, RAINTIGHT.
3. ALL NUTS, BOLTS AND SCREWS WILL BE STAINLESS STEEL.
4. NUTS, BOLTS & SCREWS WILL NOT BE VISIBLE FROM OUTSIDE OF ENCLOSURE.
5. NAMEPLATES WILL BE PROVIDED AS REQUIRED.
6. CONTROL WIRING WILL BE MARKED AT BOTH ENDS BY PERMANENT WIRE MARKERS.
7. A PLASTIC COVERED WIRING DIAGRAM WILL BE ATTACHED TO THE INSIDE OF THE FRONT DOOR.
8. ENCLOSURE WILL BE FACTORY WIRED AND CONFORM TO REQUIRED NEMA AND UL 508A STANDARDS.
9. COLOR TO BE: RANCH GREEN

TESCO
INDUSTRIAL CONTROL PANEL

VOLTAGE	PHASE	WIRES	BRANCH AMPERES	HZ
120/240	1	3	100	60

SUITABLE FOR USE ON A CIRCUIT CAPABLE OF DELIVERING NOT MORE THAN

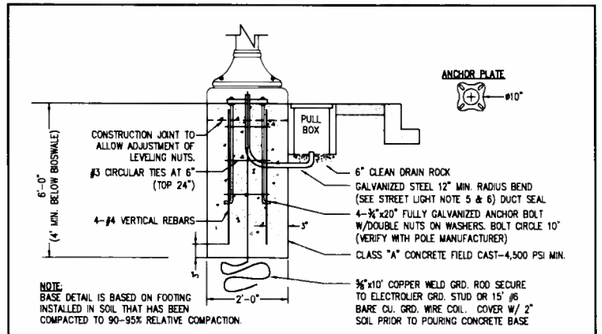
AMPERES	VOLTAGE
10,000 RMS SYM.	240 V

METER SOCKET RATING 100 A. CONT.
ENCLOSURE TYPE 3R

SUITABLE ONLY FOR USE AS SERVICE EQUIPMENT

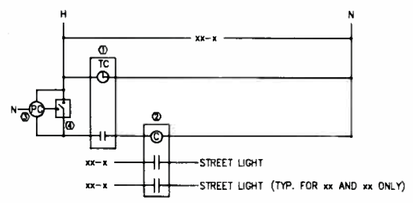
CONTACT TESCO
916-395-8800
FOR ORDERING DETAIL

3 / SL2 **METERED SERVICE PEDESTAL**
100A 120/240V 1Ø 3W MAIN BRKR. TYPE B WITH TIME CLOCK AND P.E.C. OR APPROVED EQUAL.



NOTE:
BASE DETAIL IS BASED ON FOOTING INSTALLED IN SOIL THAT HAS BEEN COMPACTED TO 90-95% RELATIVE COMPACTION.

4 / SL2 **PRIVATE POST TOP ELECTROLIER FOOTING DETAIL @ BIOSWALE**
NOT TO SCALE



① 365 DAYS PROGRAMMABLE TIME CLOCK WITH PROGRAM BACKUP CAPABILITIES FOR AT LEAST 10 HRS.
② LIGHTING CONTACTOR 20A MULTIPOLE 120V COIL.
③ ADJUSTABLE PHOTO CELL ON ROOF (AIM NORTH)
④ BY-PASS TEST SWITCH

LIGHTING CONTROL DIAGRAM
SCHEMATIC

3361 Walnut Blvd.
Suite 108
Brentwood, CA 94513
(925) 240-2595
(925) 240-7813 fax
tarrar.com

TARRAR UTILITY CONSULTANTS

- Planning
- Design
- Estimating
- Joint Trench
- Street Lighting
- Fiber Optic

STREET LIGHTING GENERAL NOTES AND DETAILS
SUMMERHILL HOMES
CANNAE
PLEASANTON CALIFORNIA

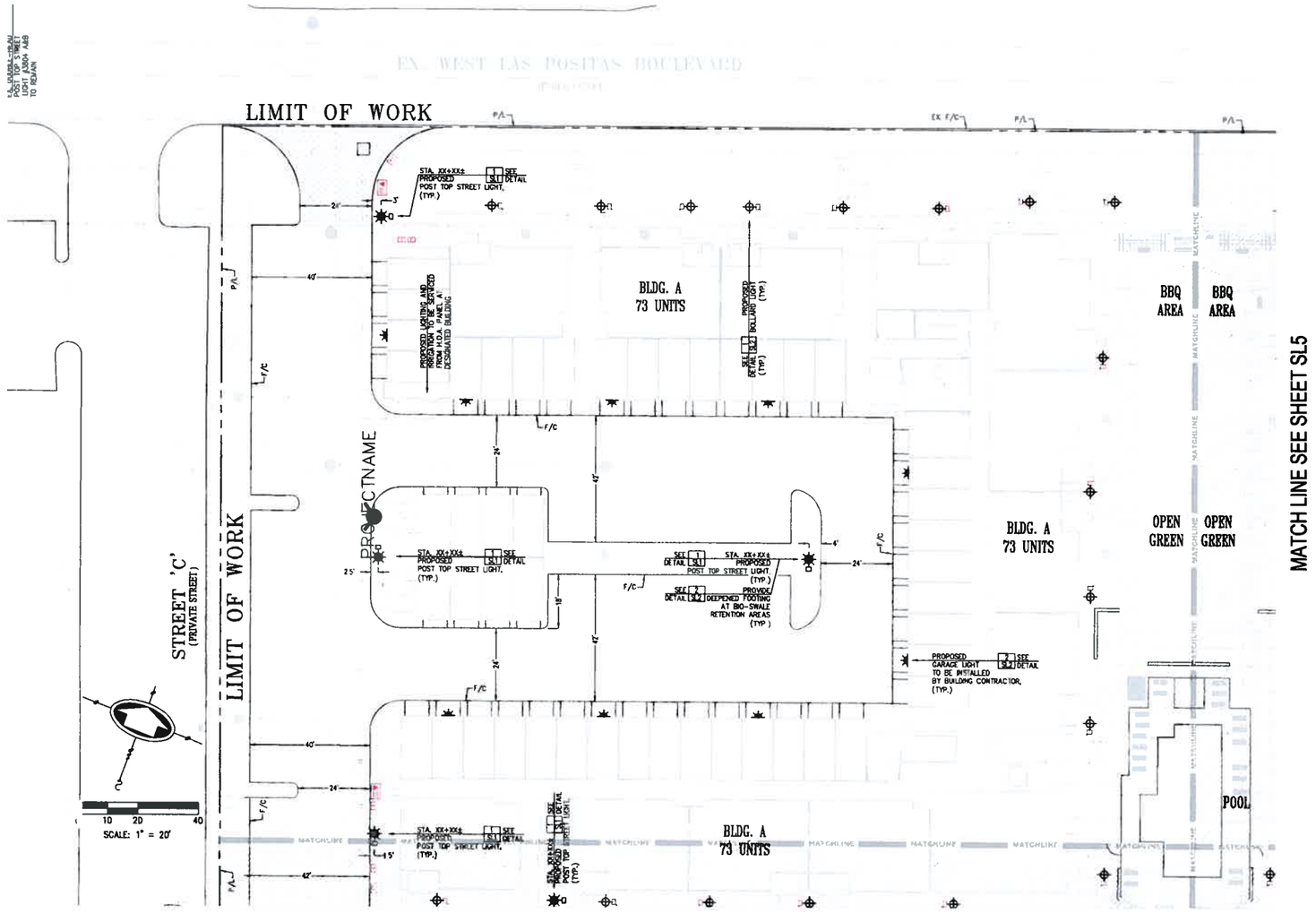
NO.	REVISIONS	BY	DATE

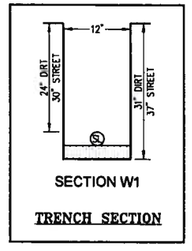
DATE: DECEMBER 2013 | DATE LAST WORKED ON: 1/16/2014
SCALE: NOT TO SCALE | DRAWN: AR | CHECKED: KT
JOB NO.: 21325 | PRELIMINARY NOT FOR CONSTRUCTION
FOR REVIEW ONLY

800-227-2600 CALL BEFORE YOU DIG UNDERGROUND SERVICE ALERT

REGISTERED PROFESSIONAL ENGINEER ARTURO OCAMPO CISNEROS E 010569 Exp 6-30-15 ELECTRICAL STATE OF CALIFORNIA

SHEET SL2 OF SL6 SHEETS





SECTION W1

TRENCH SECTION

3361 Walnut Blvd
Suite 108
Brentwood, CA 94513
(925) 240-2595
(925) 240-7813 fax
www.tarrar.com

TARRAR UTILITY CONSULTANTS

- Planning
- Design
- Estimating
- Joint Trench
- Street Lighting
- Fiber Optic
- T-24
- PG&E Gas Design
- PG&E Elec Design
- M.E.P. Design
- Cost Analysis
- Due Diligence

STREET LIGHTING SITE PLAN

SUMMERHILL HOMES
CANNAE
PLEASANTON CALIFORNIA

NO.	REVISIONS	BY	DATE

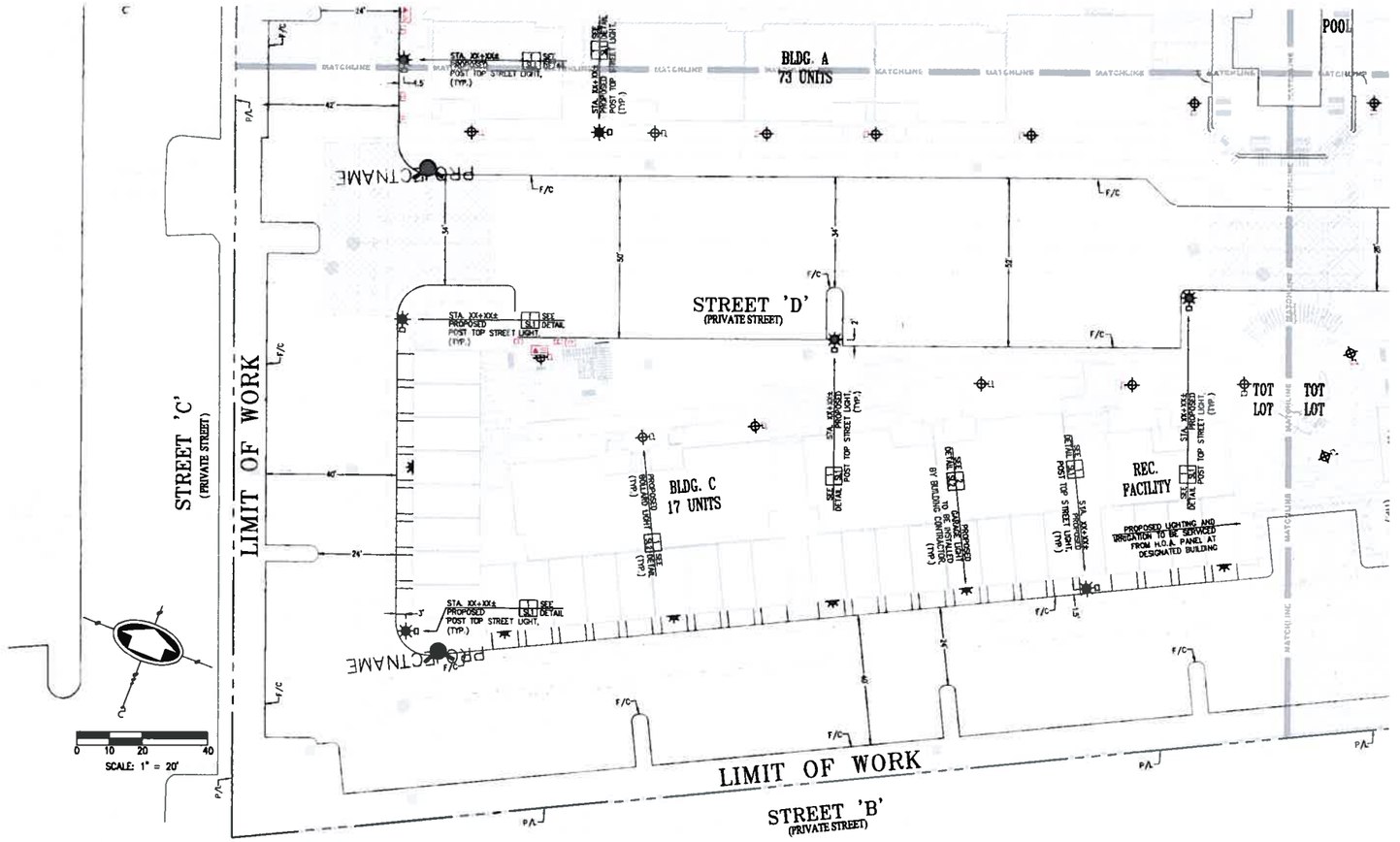
DATE: DECEMBER 2013 | DATE LAST WORKED ON: 1/24/2014
SCALE 1" = 20' | DRAWN: AR | CHECKED KT
JOB NO.: 21325
PRELIMINARY NOT FOR CONSTRUCTION
FOR REVIEW ONLY

800-227-2600

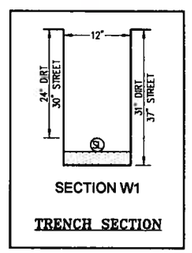
REGISTERED PROFESSIONAL ENGINEER ARTURO OCAMPO CABRERA E 010569 Exp. 6-30-15 ELECTRICAL STATE OF CALIFORNIA

SHEET SL3 OF SL6 SHEETS

MATCH LINE SEE SHEET SL3



MATCH LINE SEE SHEET SL6



SECTION W1

TRENCH SECTION

3361 Walnut Blvd
Suite 108
Brentwood, CA 94513
(925) 240 2595
(925) 240 7013 fax
www.tarrar.com

TARRAR UTILITY CONSULTANTS

- Planning
- Design
- Estimating
- Joint Trench
- Street Lighting
- Fiber Optic
- T-24
- PG&E Gas Design
- PG&E Elec Design
- M E P Design
- Cost Analysis
- Due Diligence

STREET LIGHTING SITE PLAN

SUMMERHILL HOMES
CANNAE
PLEASANTON CALIFORNIA

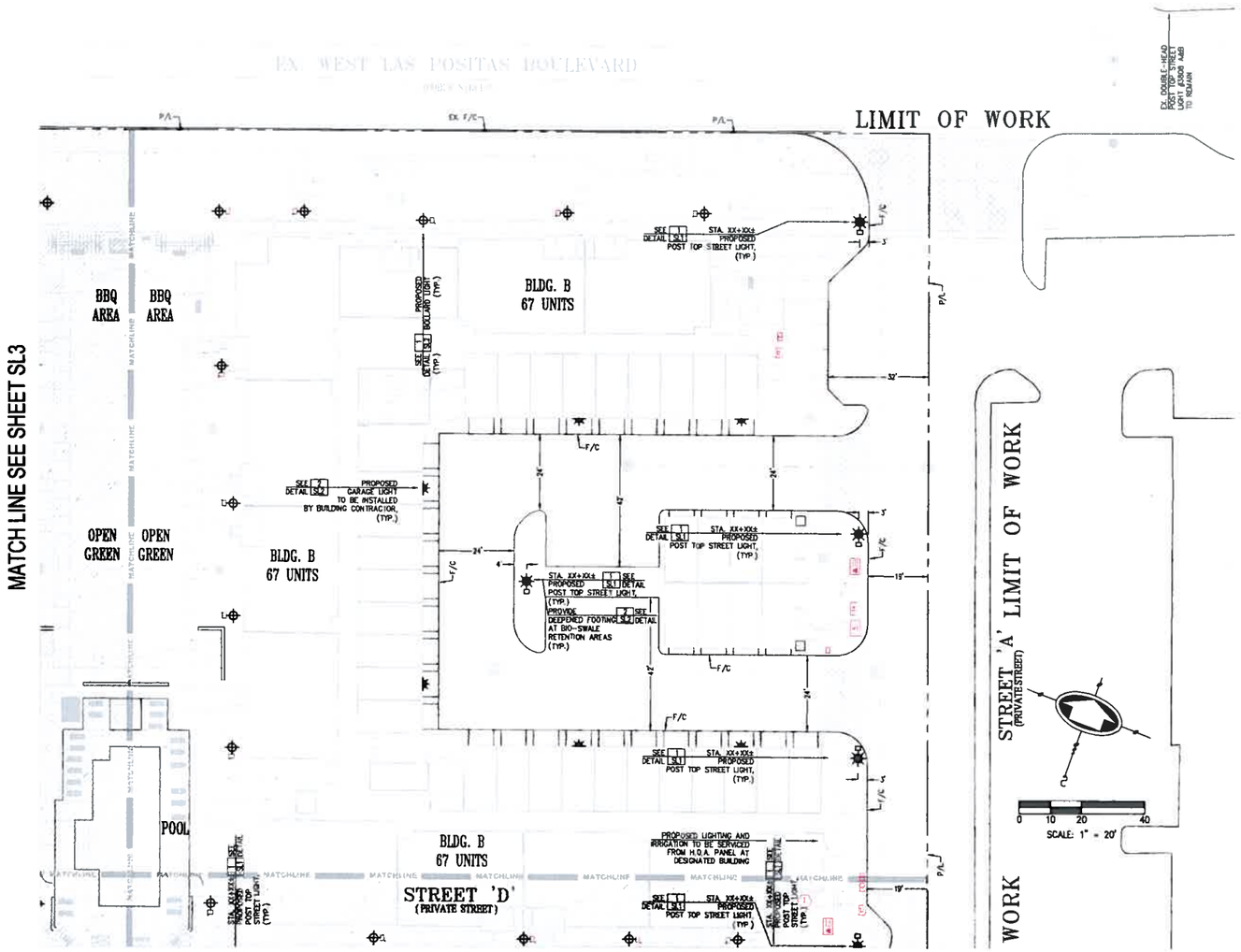
NO	REVISIONS	BY	DATE

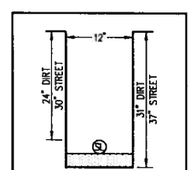
DATE: DECEMBER 2013 | DATE LAST WORKED ON: 1/24/2014
SCALE: 1" = 20' | DRAWN: AR | CHECKED: KT
JOB NO.: 21325 | PRELIMINARY NOT FOR CONSTRUCTION
FOR REVIEW ONLY

800-227-2600

REGISTERED PROFESSIONAL ENGINEER ARTURO OCAMPO CABRERA ELECTRICAL STATE OF CALIFORNIA E 010569 Exp 6-30-15

SHEET SL4 OF SL6 SHEETS





3361 Walnut Blvd
Suite 180
Brentwood, CA 94513
(925) 240-2595
(925) 240-7813 fax
www.tarrar.com

TARRAR UTILITY CONSULTANTS

- Planning
- Design
- Estimating
- Joint Trench
- Street Lighting
- Fiber Optic
- 1-24
- PG&E Gas Design
- PG&E Elec Design
- M.E.P. Design
- Cost Analysis
- Due Diligence

STREET LIGHTING SITE PLAN

SUMMERHILL HOMES
CANNAE
PLEASANTON CALIFORNIA

NO.	REVISIONS	BY	DATE

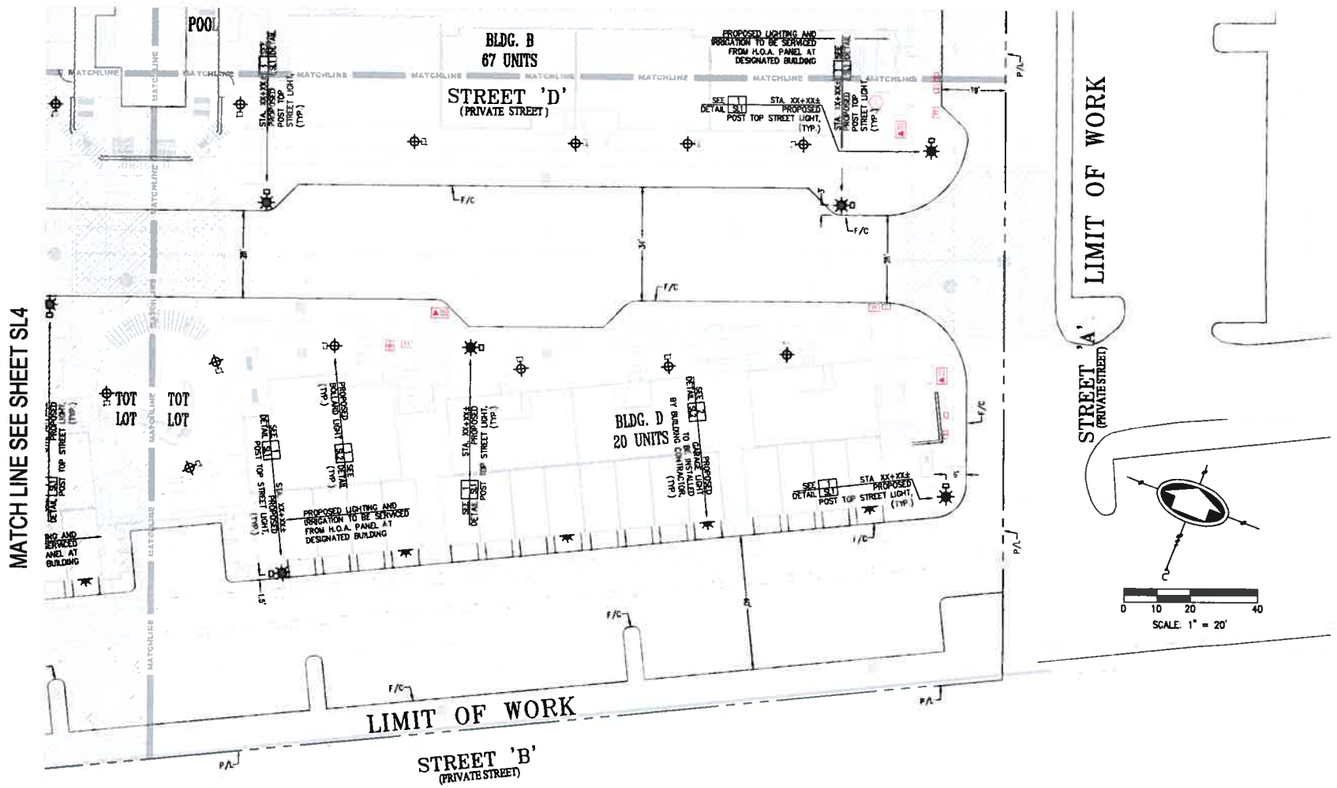
DATE: DECEMBER 2013 | DATE LAST WORKED ON: 1/24/2014
SCALE: 1" = 20' | DRAWN: AR | CHECKED: KT
JOB NO. 21325
PRELIMINARY NOT FOR CONSTRUCTION
FOR REVIEW ONLY

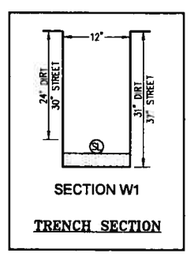
800-227-2600 USA BEFORE YOU DIG

REGISTERED PROFESSIONAL ENGINEER ARTURO OCAMPO CARRERA No. E 010569 ELECTRICAL STATE OF CALIFORNIA

SHEET SL5 OF SL6 SHEETS

MATCH LINE SEE SHEET SL5





SECTION W1

TRENCH SECTION

3361 Walnut Blvd
Suite 100
Brentwood, CA 94513
(925) 240-2595
(925) 240-7013 fax
www.tarrar.com

TARRAR UTILITY CONSULTANTS

- Planning
- Design
- Estimating
- Joint Trench
- Street Lighting
- Fiber Optic
- T-24
- PG&E Gas Design
- PG&E Elec Design
- M E P Design
- Cost Analysis
- Due Diligence

STREET LIGHTING SITE PLAN

SUMMERHILL HOMES
CANNAE
PLEASANTON CALIFORNIA

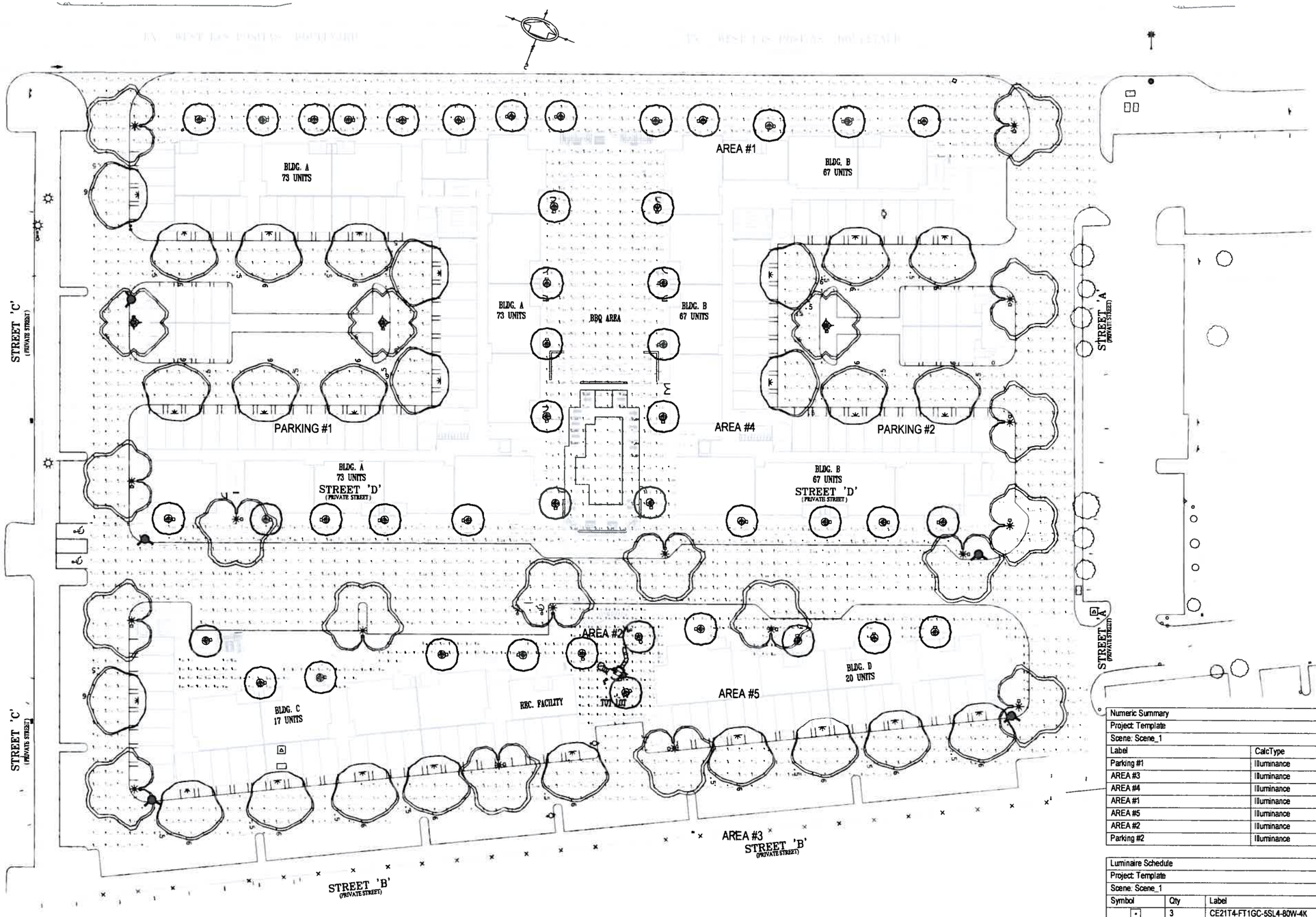
NO	REVISIONS	BY	DATE

DATE: DECEMBER 2013 | DATE LAST WORKED ON: 1/24/2014
SCALE: 1" = 20' | DRAWN: AR | CHECKED: KT
JOB NO: 21325
PRELIMINARY NOT FOR CONSTRUCTION
FOR REVIEW ONLY

800-227-2600
CALL BEFORE YOU DIG
UNDERGROUND SERVICE ALERT

REGISTERED PROFESSIONAL ENGINEER
ARTURO OCAMPO CAMBERA
No. E 010569
Exp. 6-30-15
ELECTRICAL
STATE OF CALIFORNIA

SHEET SL6 OF SL6 SHEETS



Numeric Summary						
Project: Template						
Scene: Scene_1						
Label	CalcType	Units	Avg	Max	Min	Avg/Min
Parking #1	Illuminance	Fc	1.70	15.05	0.12	14.17
AREA #3	Illuminance	Fc	1.86	21.94	0.09	20.67
AREA #4	Illuminance	Fc	0.47	5.99	0.01	47.00
AREA #1	Illuminance	Fc	0.53	5.86	0.01	53.00
AREA #5	Illuminance	Fc	0.79	5.77	0.03	26.33
AREA #2	Illuminance	Fc	0.52	3.05	0.07	7.43
Parking #2	Illuminance	Fc	1.33	16.13	0.07	19.00

Luminaire Schedule					
Project: Template					
Scene: Scene_1					
Symbol	Qty	Label	Arrangement	Lumens	LLF
	3	CE21T4-FT1GC-5SL4-80W-4K	SINGLE	125	0.850
	44	CBM1210-LAP-5SL4-32W-4K	SINGLE	N.A.	0.850
	17	CE21T4-FT1GC-3M3HS-72W-4K-HSS	SINGLE	N.A.	0.850
	25	Wallpack 30W LED	SINGLE	3300	0.850

3361 Walnut Blvd
Suite 100
Brentwood, CA 94513
(925) 240-2595
(925) 240-7013 fax
www.tarrar.com

TARRAR UTILITY CONSULTANTS

- Planning
- Design
- Estimating
- Joint Trench
- Street Lighting
- Fiber Optic
- T-24
- PG&E Gas Design
- PG&E Elec Design
- M E P Design
- Cost Analysis
- Due Diligence

PHOTOMETRIC EXHIBIT
SUMMERHILL HOMES
CANNAE
PLEASANTON CALIFORNIA

NO	REVISIONS	BY	DATE

DATE: DECEMBER 2013 | DATE LAST WORKED ON: 1/9/2014
SCALE: NOT TO SCALE | DRAWN: KS | CHECKED: KT
JOB NO.: 21325
PRELIMINARY NOT FOR CONSTRUCTION
FOR REVIEW ONLY

800-227-2600
CALL BEFORE YOU DIG

SHEET PE OF PE SHEETS

PUD-103 & P14-0086
PUD & Development Agreement
"RECEIVED JAN 24 2014"
EXHIBIT B

CLIMATE ACTION PLAN CHECKLIST

Project Name: SummerHill Apartment Communities **Project Address:** 5850 West Las Positas Blvd
Case No.: P13-2078 **Residential Units:** 177 Units **Sqft. of Com./Office/Mixed-Use Area:** N/A

	Project Aspects that reduce Greenhouse Gas (GHG) Emissions	Yes	No	N/A	Comments
LU1: Support Infill and High Density Development					
LU1-2	Project is infill development within the existing urban fabric that helps complete, reinforce, and repair the surrounding area.	X			
LU1-3	Project is mixed-use development which incorporates higher density and affordable residential units consistent and with the Downtown Specific Plan with easy access to activity areas. (Applies to projects in the downtown area only).			X	*Not applicable; project site is not in downtown area.*
LU1-4	Project is transit-oriented development near BART station, along transportation corridors, in business parks, and/or in the downtown area.	X			*Project is located less than 1/4-mile from bus stops for Wheels routes 9, 54 and 70 (which serve the Pleasanton/Dublin BART station) and Wheels routes 603, 607, 609 and 610.* *Site is in HBP (a business park). "Transit-oriented development" is defined in CAP as "Development structured around mixed-use transportation hubs meant to maximize access to public transport and thereby increase efficiencies and reduce community-wide greenhouse gas emissions."* *CAP also states: "The City has already targeted the Hacienda Business Park as a mixed-use, transit-oriented development." (p41)*
LU1-5	Project is high density development near and/or around transportation hubs and employment centers.	X			*30 DU/ac. See note, LU1-4.*
LU1-6	Project is TOD (transit oriented development): located within 1/4 mile of commuter rail, BART, and other transportation hubs.		X		*Project site is not located within Hacienda Business Park and close to several bus stops, but is not within 1/4 mile of a "transit hub."*
LU1-7	Project incorporates affordable housing on a vacant infill site.			X	*Project incorporates affordable housing units and project density (30 DU/ac) meets State affordability standard. Office building on project site is vacant.*
LU2: Support Mixed-use Infill and New Development near Local-serving					
LU2-1	Project is located within convenient walking distance to work, residences, and services.	X			*Project is located within 1/2 mile of retail, services, offices, school (Hopyard at W Las Positas).*
LU2-2	Project provides new housing and/or new employment located within ½-mile walking/biking proximity of complementary land uses, including retail, employment, institutional, or recreational.	X			*See note, LU2-1.*
LU2-4	Project reconnects streets and adds streets; minimizes parking to below code requirements; and includes attractive and functional urban plazas. (Applies to development near Pleasanton BART station in Hacienda and development near West Pleasanton BART)			X	*Not applicable; project site is not near Pleasanton BART station in Hacienda or West Pleasanton BART.*
LU2-9	Project includes live-work units.		X		
LU2-10	Project incorporates elements of LEED for Neighborhood Development (LEED ND)	X			*See attached list.*

	Project Aspects that reduce Greenhouse Gas (GHG) Emissions	Yes	No	N/A	Comments
LU3: Improve Transportation Efficiency through Design Improvements					
LU3-1	Project provides key services within a ½-mile walking distance of residential clusters or areas. (Applies to non-residential projects)			X	*Not applicable; project is residential.*
LU3-2	Project provides building, landscape, and streetscape development design features that encourage transit, bicycle, and pedestrian access.	X			
LU3-3	Project encourages transit use and provides pedestrian and bicycle facilities.	X			
LU3-4	Project provides infrastructure to facilitate 'NextBus' technologies for tracking buses and predicting arrival times. (Applies to projects that include two or more bus shelters.)			X	*Not applicable; project does not include bus shelters.*
LU3-5	Project provides street improvements that meet the municipal street standards and AB 1358 Complete Streets and increase the safety, convenience, and efficiency of pedestrians, bicyclists, motorists, and transit riders.			X	*Not applicable; the project does not include any significant off-site street improvements. On-site private streets will be designed with enhanced paving, curb pop-outs at intersections, and other features to enhance pedestrian safety and walkability.*
LU3-6	Project includes pedestrian and bicycle access through cul-de-sacs in new projects, except where prohibited by topography.			X	*Not applicable; project does not include cul-de-sacs; all interior streets have circuit connection.*
LU3-7	Project includes neighborhood traffic calming to slow traffic speeds, reduce cut-through traffic and traffic-related noise, improve the aesthetics of the street, and increase safety for pedestrians, bicyclists, and vehicles.	X			*Cross-walks, enhanced paving, curb pop-outs at intersections near parallel parking*
TR1: Improve and Increase Transit Ridership with Incentives,					
TR1-6	The project offers discounted transit passes as part of HOA amenities, payable through the HOA dues. (Applies to residential development within 1/2 mile of transit.)	X			*Residents will qualify for Wheels ECO Pass which provides free travel on local Wheels buses. Project is located less than 1/4-mile from bus stops for Wheels routes 9, 54 and 70 (which serve the Pleasanton/Dublin BART station) and Wheels routes 603, 607, 609 and 610.*
TR1-9	The project includes a condition of approval to limit diesel vehicle idling. (Applies to projects with associated bus or truck traffic.)	X			*Construction vehicles will be subject to BAAQMD standards that limit diesel vehicle idling.*
NM1: Enhance and Maintain a Safe, Convenient, and Effective System					
NM1-1	Project provides a community trail, bike lane, staging area or other facility consistent with the Community Trails Master Plan or the Pedestrian and Bicycle Master Plan.		X		*Project site is not designated for any trails, bike lanes, etc.*
NM1-4	Project provides bicycle-related improvements (i.e., work-place provision for showers, bicycle storage, bicycle lanes, etc.).	X			*Project provides bicycle storage.*
NM1-5	Project provides bike parking. (Applies to non-residential and multi-family projects.)	X			*Project provides bicycle storage.*
NM1-7	Project provides bicycle detection at signalized intersections.			X	*Not applicable; project will not include any new signalized intersections.*
NM1-8	Project provides safe and convenient bike racks. (Applies to private schools, business and office projects.)			X	*Not applicable; project is not a private school, business or office project.*

	Project Aspects that reduce Greenhouse Gas (GHG) Emissions	Yes	No	N/A	Comments
NM1-9	Project completes a section of the Iron Horse Trail. (Applies to developments adjacent to the trail location.)			X	*Not applicable; project is not adjacent to the Iron Horse Trail.*
NM1-10	Project contributes to the bicycle/pedestrian underpass at 580/680 interchange (Johnson Drive canal) for connection to Dublin. (Applies to new projects in the immediate vicinity.)			X	*Not applicable; project is not in the immediate vicinity of the 580/680 interchange.*
TDM1: Use Parking Policy/Pricing to Discourage Single Occupancy					
TDM1-1	Project shares parking with adjacent use to reduce paved areas that contribute to urban heat islands and reduce stormwater infiltration.			X	
TDM1-2	Project separates fee-based parking from home rents/purchase prices or office leases. (Applies to projects within 1/2 mile of BART stations to increase housing and office affordability for those without a car or cars.)			X	*Not applicable; project site not within 1/2 mile of BART station.*
TDM1-3	Project tenants will participate in the City's TSM program to reduce auto trips. (Applies to non-residential projects.)			X	*Not applicable; project is residential.*
TDM1-5	Project will participate in a parking demand management program.		X		*Project is residential.*
TDM1-6	Project provides one or more electric charging stations for plug-in vehicles.	X			*Project will provide one or more electric charging stations.*
TDM1-7	Project provides motorcycle or scooter parking. (Applies to projects located in Downtown.)			X	*Not applicable; project is not located in downtown area.*
TDM2: Promote Alternatives to Work and School Commutes					
TDM2-4	Project provides a neighborhood telecommuting center.	X			*Proposed programming includes a business center*
TDM2-7	Project provides transit passes or other transit use incentives for an interim period to establish transit use patterns for employees. (Applies to new non-residential projects of more than 20,000 s.f. within 1/4 mile of transit)			X	*Not applicable; project is residential.*
TDM2-10	Project provides dedicated parking spaces for carpool, vanpool, alternative-fuel, and car-share vehicles.			X	*Not applicable; project is residential.*
TDM2-11	Project incorporates a car-sharing service.			X	
EC1: Use City Codes, Ordinances and Permitting to Enhance Green					
EC1-1	Project meets LEED Certified rating level and achieves 25% above T-24, and incorporates new requirements for shade trees, cool roofs and landscape lighting. (Applies to civic projects and commercial projects over 20,000 s.f.			X	*Not applicable; project is not a civic or commercial project.*
EC1-2	Project meets the City's residential green rating standard, including 25% above T-24, and incorporates new requirements for shade trees, cool roofs and landscape lighting. (Applies to residential projects.)	X			*Project will achieve a GreenPoint rating of at least 100 on the Multifamily New Home 2.2 / 2008 Title 24 checklist (130 points expected). Project will exceed 2008 Title 24 standards by 25%.*
EC1-3	Project provides light-colored paving material for roads and parking areas, as well as parking lot shade trees.	X			*Parking lot shade trees and earthtone sandstone pavers or sand/light sandstone a/c paving*
EC4: Develop Programs to Increase Energy Efficiency and Conservation					
EC4-4	Project incorporates solar tubes, skylights, and other daylighting systems within the design .	X			*High ceilings and south facing glazing with transom windows for daylighting of the community spaces*

	Project Aspects that reduce Greenhouse Gas (GHG) Emissions	Yes	No	N/A	Comments
ER1: Implement Local Ordinances and Permitting Processes to Support					
ER1-1	Project provides residential renewable energy installations (e.g., wind turbines). (Applies to residential projects.)		x		*The estimated cost to install distributed wind turbines on the project would be at least about $994,000 (and potentially much higher, given the need for increased structural reinforcement to support the turbines). The estimated savings (energy costs) would be about $42,600 per year. In addition, the turbines would be visible above the roof.*
ER2: Develop Programs to Promote On-Site Renewable Energy in the					
ER2-3	Project incorporates distributed generation, especially PV, solar thermal, solar hot water, and solar cooling, and/or providing bloom box or other fuel cell technologies.	x			*Thermal solar heating for pool and spa. Note, the projected cost for solar domestic hot water would be approximately $310,000 (not including any incentives or tax credits). According to the estimate Brian McKim received, incentives and tax credits could be approximately $170,000-$220,000, which would reduce the effective cost of a domestic hot water system to about $90,000-$140,000.*
ER2-5	Project includes a solar grid to power one or more EV charging stations.		x		*Microgrid Solar (MO): "The typical cost or EV charging equipment and installation is between $8,000 – $18,000. A 30% Federal Tax Credit for charging infrastructure reduces the overall installed cost of charging stations by 30%, up to $30,000 per location." SolarCity (CA): "Homeowners and businesses can install electric vehicle charging for as little as $1,500 with solar"*
SW2: Increase Recycling, Organics Diversion, and Waste Reduction					
SW2-12	Project provides adequate space and logistics for handling of recyclable and compostable materials. (Applies to commercial and multifamily residential projects.)	x			
WA1: Conserve Community Water through Building and Landscape					
WA 1-7	Project incorporates a water-saving landscape plan that includes xeriscaping and drought-resistant planting in lieu of lawns.	x			*Project will meet 2010 Statewide Water Efficient planting guidelines which require the use of at least 70% native or naturalized low water use plant material and a maximum of 25% turf areas.*
WA 1-8	Project limits lawn areas to designated play areas.	x			*Lawn areas limited to central play space and existing berm.*
WA3: Increase or Establish use of Reclaimed/Grey Water Systems					
WA3-2	Project utilizes reclaimed wastewater.	x			*Project will connect to City recycled water infrastructure when available (expected 2015).*
WA3-4	Project incorporates rain harvesting.		x		*Estimated cost is $333,659, or approximately $1,885 per unit. Based on the site size and expected rainfall, we calculate that a 12,000 CY storage tank would be required.*

Attachment to
CLIMATE ACTION PLAN CHECKLIST

Project Name: SummerHill Apartment Communities
Project Address: 5850 West Las Positas Blvd
Case No.: P13-2078
Residential Units: 177 Units

LU2-10: Project incorporates elements of LEED for Neighborhood Development

SLL Credit 1: Preferred Locations
OPTION 1. An infill site that is also a previously developed site. (5 points)

SLL Credit 4: Bicycle Network and Storage
BICYCLE NETWORK within ¼ mile AND BICYCLE STORAGE for 30% of units. (1 point)

SLL Credit 5: Housing and Jobs Proximity
Project is residential and located with 1/2 mile walk of 177+ jobs FTE. (2 points)

SLL Credit 6: Steep Slope Protection
Site has no slopes greater than 15%. (1 point)

NPD Credit 1: Walkable Streets
(2 points)
g. If a façade extends along a sidewalk, no more than 40% of its length or 50 feet, whichever is less, is blank (without doors or windows).
i. On-street parking is provided on a minimum of 70% of both sides of all new and *existing* streets, including the project side of bordering streets.
j. Continuous sidewalks or equivalent provisions for walking are available along both sides of all streets within the project
m. At least 40% of all street frontage within the project has a minimum building-height-to-street-width ratio of 1:3 (i.e., a minimum of 1 foot of building height for every 3 feet of street width).
n. 75% of residential-only streets within the project are designed for a target speed of no more than 20 mph (existing streets may be exempted from calculations).
p. At-grade crossings with driveways account for no more than 10% of the length of sidewalks within the project.

NPD Credit 2: Compact Development
> 25 and ≤ 38 DU/ac (4 points)

NPD Credit 3: Mixed-Use neighborhood Centers
4–6 diverse uses within ¼ mile walk distance: church, school, office, retail, park. (1 point)

NPD Credit 5: Reduced Parking Footprint
Locate all new off-street surface parking lots at the side or rear of buildings, Use no more than 20% of the total *development footprint* area for all new off-street surface

parking facilities, and Provide at least one secure, enclosed bicycle storage space per occupant for 30% of the *planned occupancy* but no fewer than one per unit. (1 point)

NPD Credit 9: Access to Civic and Public Space
Project is located within 1/4 mile of Hart Middle School athletic fields. (1 point)

NPD Credit 10: Access to Recreation Facilities
Project is located within 1/4 mile of Hart Middle School athletic fields. (1 point)

NPD Credit 11: Visitability and Universal Design
Design a minimum of 20% of the dwelling units (and not less than one) to incorporate the universal design requirements (1 point)

NPD Credit 12: Community outreach and involvement
OPTION 1. Community outreach (1 point)

NPD Credit 14: Tree-Lined and Shaded Streets
Trees on both sides of proposed streets. (1 point)

NPD Credit 15: Neighborhood Schools
Project is located within 1/2 mile of Hart Middle School. (1 point)

GIB Credit 4: Water-Efficient landscaping
Reduce water consumption for outdoor landscape irrigation by 50% from a calculated midsummer baseline case. (1 point)

GIB Credit 7: Minimized Site Disturbance in Design and Construction
100% of project site is previously developed. (1 point)

GIB Credit 8: Stormwater Management
Implement a comprehensive stormwater management plan for the *project* that retains on-site, through infiltration, the 85th percentile rainfall volume (2 points + 1 point for *previously developed site)*

GIB Credit 11: On-Site Renewable Energy Sources
5% of annual electrical and thermal energy cost. (1 point)

GIB Credit 17: Light Pollution Reduction
To minimize light trespass from *project* sites, reduce sky-glow to increase night sky access, improve nighttime visibility through glare reduction, and reduce adverse effects on wildlife environments. (1 point)

ILLINGWORTH & RODKIN, INC.
Acoustics • Air Quality
1 Willowbrook Court, Suite 120
Petaluma, California 94954

Tel: 707-794-0400 *Fax: 707-794-0405*
www.illingworthrodkin.com *illro@illingworthrodkin.com*

September 9, 2013
Revised October 30, 2013

PUD-103 & P14-0024
PUD & Growth Management Plan
"RECEIVED JAN 24 2014"
EXHIBIT B

Kevin Ebrahimi
Summerhill Homes
777 S. California Avenue
Palo Alto, CA 94304

Via email: KEbrahimi@shhomes.com

Subject: 5850 West Las Positas Residential Development

Dear Kevin:

We understand that the 5850 West Las Positas project, which would develop residences in Pleasanton, underwent environmental review as part of the city's recent Housing Element Update. Mitigation 4.B-4 requires that a qualified air quality consultant prepare a Health Risk Assessment (HRA) in accordance with BAAQMD requirements to address Toxic Air Contaminates (TACs) related to traffic on West Las Positas Blvd. The report will need to address both indoor air quality and outdoor air quality.

Traffic on high volume roadways are a source of TAC emissions that may adversely affect sensitive receptors that reside in close proximity. For roadways, the Bay Area Air Quality Management District (BAAQMD) has published screening tables and data to determine if roadways with traffic volumes of over 10,000 vehicles per day may have a significant effect on a proposed project. These screening tables provide estimates of excess lifetime cancer risk, annual $PM_{2.5}$ concentration and Hazard Index based on the county, roadway orientation, traffic volume, and distance from the roadway[1]. The latest City average daily traffic (ADT) traffic counts indicate this portion of Las Positas Boulevard has18,500 vehicles[2]. Project plans indicate that the closest residences for the 5850 West Las Positas Boulevard project would be 30 feet or further from the edge of the roadway (see Attachment 1). BAAQMD screening tables, shown in Attachment 2, indicate that the TAC impacts shown in Table 1 for an east-west roadway with ADT of 20,000 and setback distance of 10 feet. Impacts at project residences that would be further away than 10 feet would be less.

As indicated above, traffic on West Las Positas Boulevard would result in TAC impacts that are below the community risk thresholds that are recommended by BAAQMD. These thresholds address outdoor air quality. Concentrations of TACs from Las Positas Boulevard indoors would be less.

---

[1] BAAQMD CEQA Tools - http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Tools-and-Methodology.aspx (September 9, 2013)
[2] City traffic counts accessed from http://www.cityofpleasantonca.gov/services/traffic/traffic-counts-map.html (September 9, 2013)

Table 1. TAC Roadway Impacts at 10 feet from Las Positas Boulevard

TAC Effect	Project Level from BAAQMD Screening Table at 10 feet from Road	BAAQMD Recommended Threshold[3]
Excess Lifetime Cancer Risk	5.47 per million	10.0 per million
Annual $PM_{2.5}$ Concentration	0.223 $\mu g/m^3$	0.3 $\mu g/m^3$
Hazard Index	<0.03 Concentration/REL	1.0 Concentration/REL

Note: East-west roadway in Alameda County with ADT of 20,000 vehicles and setback of 10 feet.

* * *

This concludes our review of the changes in grading plans for the 5850 West Las Positas Boulevard Residential project in Pleasanton. If you have any questions or need additional information, please feel free to call us.

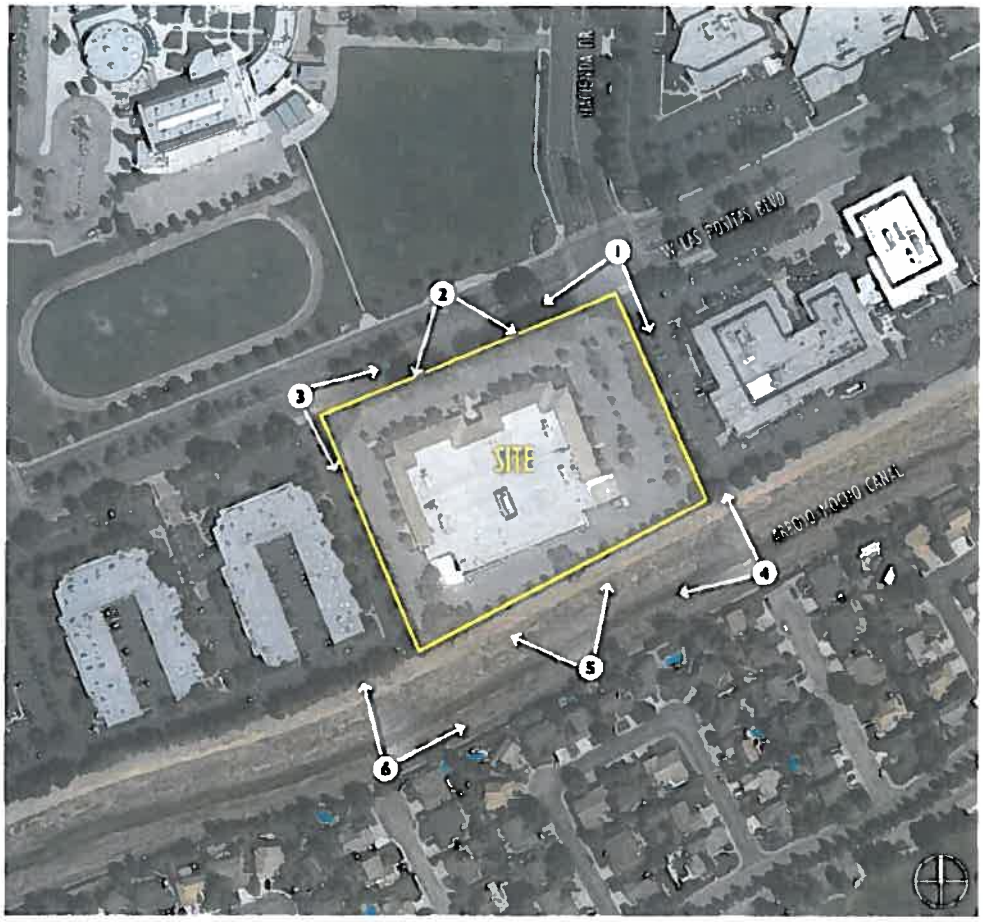
Sincerely,

James A. Reyff
Illingworth & Rodkin, Inc.
(13-170)

Attachment 1: Project Location
Attachment 2: BAAQMD Roadway Screening Analysis Tables

[3] BAAQMD. 2011. CEQA Air Quality Guidelines. May.

Attachment 1: Project Location



5850 WEST LAS POSITAS BLVD

Attachment 2: BAAQMD Roadway Screening Analysis Tables – Alameda County

Alameda County
PM2.5 Concentrations and Cancer Risks Generated from Surface Streets

How to use the screening tables:

- Distance is from the edge of the nearest travel lane of a street to the facility or development
- When two or more streets are within the influence area, sum the contribution from each street

$PM_{2.5}$ CONCENTRATIONS (UG/M^3)

NORTH-SOUTH DIRECTIONAL ROADWAY							
Annual Average Daily Traffic	Distance East or West of Surface Street - PM2.5 Concentration (ug/m^3)						
	10 feet	50 feet	100 feet	200 feet	500 feet	700 feet	1,000 feet
1,000	No analysis required						
5,000							
10,000	0.159	0.135	0.095	0.045	0.015	0.014	0.014
20,000	0.199	0.191	0.175	0.111	0.043	0.029	0.016
30,000	0.278	0.270	0.238	0.167	0.062	0.045	0.027
40,000	0.342	0.334	0.302	0.215	0.087	0.058	0.041
50,000	0.485	0.477	0.421	0.278	0.103	0.072	0.049
60,000	0.640	0.624	0.529	0.346	0.123	0.087	0.060
70,000	0.795	0.771	0.638	0.413	0.143	0.103	0.070
80,000	0.908	0.881	0.727	0.472	0.164	0.118	0.080
90,000	1.022	0.991	0.818	0.531	0.184	0.133	0.090
100,000	1.136	1.101	0.908	0.590	0.204	0.148	0.100

EAST-WEST DIRECTIONAL ROADWAY							
Annual Average Daily Traffic	Distance North or South of Surface Street - PM2.5 Concentration (ug/m^3)						
	10 feet	50 feet	100 feet	200 feet	500 feet	700 feet	1,000 feet
1,000	No analysis required						
5,000							
10,000	0.431	0.095	0.072	0.050	0.024	0.020	0.014
20,000	0.223	0.191	0.143	0.095	0.039	0.030	0.025
30,000	0.264	0.246	0.223	0.135	0.053	0.035	0.027
40,000	0.334	0.318	0.254	0.191	0.070	0.053	0.033
50,000	0.638	0.572	0.461	0.223	0.095	0.066	0.048
60,000	0.680	0.604	0.469	0.262	0.115	0.081	0.056
70,000	0.723	0.638	0.477	0.302	0.135	0.095	0.065
80,000	0.827	0.727	0.545	0.345	0.154	0.109	0.074
90,000	0.930	0.818	0.613	0.388	0.174	0.123	0.084
100,000	1.033	0.908	0.681	0.431	0.193	0.138	0.093

LIFETIME CANCER RISK

NORTH-SOUTH DIRECTIONAL ROADWAY							
Annual Average Daily Traffic	Distance East or West of Surface Street - Cancer Risk (per million)						
	10 feet	50 feet	100 feet	200 feet	500 feet	700 feet	1,000 feet
1,000	No analysis required						
5,000							
10,000	4.60	3.83	2.87	1.26	0.61	0.49	0.38
20,000	5.01	4.63	4.06	2.77	1.15	0.88	0.61
30,000	6.56	6.33	5.79	3.86	1.50	1.12	0.77
40,000	8.11	8.06	7.33	5.39	2.08	1.54	1.08
50,000	11.58	11.42	8.93	6.93	2.62	1.92	1.38
60,000	15.25	14.97	11.99	8.30	3.14	2.29	1.63
70,000	18.91	18.52	15.06	9.66	3.66	2.65	1.88
80,000	21.62	21.17	17.21	11.04	4.18	3.03	2.15
90,000	24.32	23.81	19.36	12.42	4.70	3.41	2.42
100,000	27.02	26.46	21.51	13.80	5.22	3.79	2.69

EAST-WEST DIRECTIONAL ROADWAY							
Annual Average Daily Traffic	Distance North or South of Surface Street - Cancer Risk (per million)						
	10 feet	50 feet	100 feet	200 feet	500 feet	700 feet	1,000 feet
1,000	No analysis required						
5,000							
10,000	2.59	2.39	1.92	1.46	0.84	0.65	0.53
20,000	5.47	4.63	3.47	2.65	1.33	1.07	0.80
30,000	6.17	5.79	5.40	3.46	1.53	1.11	0.89
40,000	8.10	8.01	6.17	4.63	2.03	1.53	1.11
50,000	15.06	12.78	10.45	5.40	2.68	2.03	1.42
60,000	15.75	13.92	11.38	6.55	3.20	2.39	1.69
70,000	16.44	15.06	12.31	7.70	3.72	2.76	1.95
80,000	18.79	17.21	14.07	8.80	4.25	3.15	2.23
90,000	21.14	19.36	15.83	9.90	4.79	3.55	2.51
100,000	23.49	21.51	17.59	11.00	5.32	3.94	2.79

- Screening tables based on meteorological data collected from Pleasanton in 2005
- The maximum acute and chronic hazard index for the distances and AADT shown in the table will be less than 0.03.
- Cancer risk were estimated based on exposure from 2014 through 2084. PM2.5 concentrations were based on emissions in 2014.

SummerHill Homes

Tree Report
5850 W. Las Positas Blvd.

Prepared for:
SummerHill Homes
777 S. California Avenue
Palo Alto CA 94304

Prepared by:
HortScience, Inc.
325 Ray Street
Pleasanton, CA 94566

December 12, 2013

HORT SCIENCE

Tree Report

5850 W. Las Positas Blvd.
Pleasanton CA

Table of Contents

	Page
Introduction and Overview	1
Survey Methods	1
Description of Trees	1
Suitability for Preservation	4
Appraisal of Value	5
Evaluation of Impacts & Recommendations for Action	6
Tree Preservation Guidelines	13

List of Tables

Table 1. Tree condition & frequency of occurrence.	2
Table 2. Suitability for preservation.	4
Table 3. Proposed action.	7

Attachments

Tree Assessment Form

Tree Location Map

Pruning Guidelines

Introduction and Overview

SummerHill Homes is planning to re-develop the property located at 5850 W. Las Positas Blvd. in Pleasanton CA. Current site use consists of office building with associated parking and landscape. SummerHill Homes requested that HortScience, Inc. prepare a **Tree Report** for the site. This report provides the following information:

1. A survey of trees currently growing on the site.
2. Appraisal of tree value.
3. Assessment of impacts from the proposed projects including recommendations for preservation and removal.
4. Guidelines for tree preservation during the design, construction and maintenance phases of development.

Survey Methods

Trees were surveyed in May 2013. The survey encompassed all trees over 6" in diameter located within the property and trees located on adjacent properties whose canopies extended into the proposed project area. The survey procedure consisted of the following steps:

1. Identify the tree as to species.
2. Attach a numerically coded metal tag to the trunk of each tree.
3. Record the tree's location on a map.
4. Measure the trunk diameter at a point 54" above grade.
5. Identify any trees that meet the City of Pleasanton's criteria for Heritage status: 1) a trunk diameter of 18" or greater or 2) tree height of 35' or greater.
6. Evaluate the health and structural condition using a scale of 0 – 5 where 0 = dead, 1 = poor and 5 = excellent condition.
7. Comment on presence of defects in structure, insects or diseases and other aspects of development.
8. Assess the tree's suitability for preservation.

Results for individual trees are located in the ***Tree Assessment Form*** (see **Attachments**). Tree locations are noted by tree tag number in the ***Tree Assessment Map***.

Description of Trees

One hundred three (103) trees were evaluated, representing 8 species (Table 1, following page). All trees appeared to have been planted as part of the site's landscape development. No species were native to the Pleasanton area. No trees appeared to be indigenous to the site.

Callery pear (33 trees) was the most frequently encountered species (Photo 1). Trees were semi-mature and mature in development with trunk diameters ranging from 6" to 22" (tree #3). Seven trees met the City's criteria for Heritage status. Condition of pears was generally fair (24 trees) with 9 trees in good condition. Key elements to tree condition were the presence of codominant or multiple stems that arose at one point and thin crowns.

Table 1. Tree condition & frequency of occurrence. 5850 W. Las Positas Blvd. Pleasanton CA.

Common name	Scientific name	Condition				No. of Trees	
		Poor	Fair	Good	Excell.	Heritage	Total
European white birch	*Betula pendula*	--	--	11	3	--	14
Red ironbark	*Eucalyptus sideroxylon*	1	5	--	--	6	6
Evergreen ash	*Fraxinus uhdei*	--	2	10	1	13	13
Crape myrtle	*Lagerstroemia indica*	--	--	13	8	--	21
Purpleleaf plum	*Prunus cerasifera* 'Atropurpurea'	1	6	4	1	--	12
Callery pear	*Pyrus calleryana*	--	24	9	--	7	33
Cork oak	*Quercus suber*	--	--	--	1	1	1
African sumac	*Rhus lanceolata*	1	2	--	--	--	3
Total, all trees assessed		**3**	**39**	**47**	**14**	**27**	**103**

Photo 1 (top). Callery pears #46 & 47 were 13" in diameter and in fair condition.

Photo 2 (right). Crape myrtle #68 was growing in an above-ground planter with multiple stems.

Twenty-one (21) crape myrtles were present (Photo 2). Trees were semi-mature and mature in development with trunk diameters that ranged from 4" to 9" (for single-stem trees). Five trees had multiple stems that arose near ground level. Condition of crape myrtles was either good (13 trees) or excellent (8).

Fourteen (14) European white birches were scattered across the site. Trees were semi-mature and mature in development. Trunk diameters were between 6" and 12". Tree condition was generally good (11 trees). Three birches were in excellent condition.

Thirteen (13) evergreen ashes were present along the West Las Positas Blvd. frontage (Photo 3). Trees were generally mature in development with trunk diameters between 18" and 35". All 13 trees were Heritage in size. With a diameter of 35" ash #97 was the largest tree on the site. Ten ashes were in good condition while trees #91 and 99 were fair. Ash #96 was in excellent condition.

Photo 3. Row of ashes along West Las Positas.

Twelve (12) purpleleaf plums were present. Trees were mature in development with trunk diameters between 7" and 12". Tree condition was variable. Plums #27 was in poor condition. Six plums were fair. Trees #30 – 33 were in good condition while #23 was excellent. Variation in tree condition was associated with extensive sunburn on the trunk and poor form and structure.

None of the remaining species were represented by more than 6 trees:

- 6 red ironbarks were located adjacent to the property line on the south. Trees ranged in size from 18" to 30" in diameter and were mature in development. Tree condition was either fair (5 trees) or poor (#17). As has occurred in other areas of the Business Park, adjacent pavement was extensively disrupted and damaged by growth of tree roots. All 6 trees met the criteria for Heritage status.
- 3 African sumac were present. Tree #53 and 85 were fair; #84 was poor.
- Cork oak #34 was located in the southeast corner of the property (Photo 4). It was 19" in diameter, Heritage in size, and in excellent condition.

Photo 4. Cork oak #34.

Suitability for Preservation

Trees that are preserved on development sites must be carefully selected to make sure that they may survive development impacts, adapt to a new environment and perform well in the landscape. Our goal is to identify trees that have the potential for long-term health, structural stability and longevity. Evaluation of suitability for preservation considers several factors:

- **Tree health**
  Healthy, vigorous trees are better able to tolerate impacts such as root injury, demolition of existing structures, changes in soil grade and moisture, and soil compaction than are non-vigorous trees.

- **Structural integrity**
  Trees with significant amounts of wood decay and other structural defects that cannot be corrected are likely to fail. Such trees should not be preserved in areas where damage to people or property is likely.

- **Species response**
  There is a wide variation in the response of individual species to construction impacts and changes in the environment. In our experience, for example, Red ironbark is sensitive to construction impacts; while evergreen ash is more tolerant of site disturbance.

- **Tree age and longevity**
  Old trees, while having significant emotional and aesthetic appeal, have limited physiological capacity to adjust to an altered environment. Young trees are better able to generate new tissue and respond to change.

- **Species invasiveness**
  Species which spread across a site and displace desired vegetation are not always appropriate for retention. This is particularly true when indigenous species are displaced. The California Invasive Plant Inventory Database (http://www.cal-ipc.org/ip/inventory/weedlist.php?#key) lists species identified as having being invasive. Pleasanton is part of the Central West Floristic Province. Purpleleaf plum has been identified as "moderately" invasive.

Each tree was rated for suitability for preservation based upon its age, health, structural condition and ability to safely coexist within a development environment (Table 2).

Table 2. Tree suitability for preservation. 5850 W. Las Positas Blvd. Pleasanton CA.

High	Trees with good health and structural stability that have the potential for longevity at the site. Forty (40) trees were rated as having good suitability for preservation: 21 crape myrtle. 9 evergreen ash, 5 Callery pear, 3 European white birch, cork oak #34 and purpleleaf plum #23.

Table 2, continued. Tree suitability for preservation. 5850 W. Las Positas Blvd. Pleasanton CA.

Moderate	Trees in fair health and/or possessing structural defects that may be abated with treatment. Trees in this category require more intense management and monitoring, and may have shorter life-spans than those in the "high" category. Forty-two (42) trees were rated as having moderate suitability for preservation: 24 Callery pear, 11 European white birch, 5 purpleleaf plum and 2 evergreen ash.
Low	Trees in poor health or possessing significant defects in structure that cannot be abated with treatment. These trees can be expected to decline regardless of management. The species or individual tree may possess either characteristics that are undesirable in landscape settings or be unsuited for use areas. Twenty-one (21) trees were rated as having poor suitability for preservation: 6 purpleleaf plum, 6 red ironbark, 4 Callery pear, 3 African sumac and 2 evergreen ash.

We consider trees with high suitability for preservation to be the best candidates for preservation. We do not recommend retention of trees with low suitability for preservation in areas where people or property will be present. Retention of trees with moderate suitability for preservation depends upon the intensity of proposed site changes.

Evaluation of Impacts and Recommendations for Action

Appropriate tree retention develops a practical match between the location and intensity of construction activities and the quality and health of trees. The results of the individual tree assessment were the reference points for tree condition and quality. Impacts from the proposed project were assessed using the preliminary plans prepared by Ruggeri Jensen Azar, project engineers (dated August 13, 2013). Plans included existing conditions, preliminary site plan, grading and drainage plan and utility plan.

Tree trunks were located on all plans, referenced by tree tag number. Canopy outlines also provided.

The proposed project would require demolition of the existing structures, driveways, and landscape features. Impacts to trees could occur in a variety of ways. Demolition may directly damage tree roots and crowns. Grading and other construction activities may also damage trees, through both direct mechanical injury and indirectly by altering drainage.

Based on my assessment of the conceptual plan, I recommend removal 57 trees (2 Heritage, Callery pears #41, 87) and preservation of 46 (Table 3, following pages). All trees recommended for removal are within the proposed project area. This part of the site will undergo dramatic change at the existing structures are demolished, the site re-graded and the new residential units constructed. There is no opportunity for preservation with this group of trees.

Trees recommended for preservation are concentrated around the periphery of the property in three general areas:

- Callery pears #2 – 15 are located in narrow planters on the west side of the project site. Trees are in good and fair condition. As designed, the new curb should be at least 3' from the existing curb. Final grade for the driveway will the same as present. Both the increased distance from the new curb and relatively shallow excavation should limit impacts from construction.

- Trees #16 – 34 are located on the south side of the property. Included in this group are several red ironbarks, purpleleaf plums and cork oak #34. The new curb will be approximately 5' from existing, and should result in limited impacts from excavation.

- Trees #89 – 94, 96 – 101 located within the public service easement along West Las Positas Blvd. Included in this group are 12 evergreen ashes. Although recommended for preservation, trees #92 and 99 may need to be removed due to their proximity of pedestrian access to W. Las Positas Blvd. This will need to be confirmed at construction stage when site improvements are staked in the field.

Appraisal of Value

The City of Pleasanton requires that the value of trees "included in the Preliminary Tree Report affected by the development which are required to remain" (section17.16.050 #6) be established. To establish the value of the surveyed trees, I employed the standard methods found in ***Guide for Plant Appraisal***, 9th edition (published in 2000 by the International Society of Arboriculture, Savoy IL). In addition, I referred to ***Species Classification and Group Assignment*** (2004), a publication of the Western Chapter of the International Society of Arboriculture. These two documents outline the methods employed in tree appraisal.

The value of landscape trees is based upon four factors: size, species, condition and location. Size is measured as trunk diameter, normally 54" above grade. The species factor considers the adaptability and appropriateness of the plant in the East Bay area. The ***Species Classification and Group Assignment*** lists recommended species ratings and evaluations. Condition reflects the health and structural integrity of the individual. The location factor considers the site, placement and contribution of the tree in its surrounding landscape.

The appraised value of the 103 trees is $212,750. For the 46 recommended for preservation, the appraised value is $132,900; for the 57 recommended for removal, $79,850. Results for individual trees are found in the ***Tree Assessment Form***. Numerous trees will be added to the new landscape to replace those being removed.

Table 3. Proposed action. 5850 W. Las Positas Blvd. Pleasanton CA.

Tree No.	Species	Trunk Diameter (in.)	Heritage Tree?	Condition 1=poor 5=excel-lent	Proposed Action	Notes
1	Crape myrtle	7	No	5	Remove	Project entry
2	Callery pear	15	No	3	Preserve	W. edge
3	Callery pear	22	Yes	3	Preserve	W. edge
4	Callery pear	12	No	3	Preserve	W. edge
5	Callery pear	15	No	3	Preserve	W. edge
6	Callery pear	14	No	3	Preserve	W. edge
7	Callery pear	9	No	3	Preserve	W. edge
8	Callery pear	13	No	4	Preserve	W. edge
9	Callery pear	10	No	4	Preserve	W. edge
10	Callery pear	18	Yes	3	Preserve	W. edge
11	Callery pear	14	No	3	Preserve	W. edge
12	Callery pear	18	Yes	4	Preserve	W. edge
13	Callery pear	19	Yes	3	Preserve	W. edge
14	Callery pear	19	Yes	3	Preserve	W. edge
15	Callery pear	17	No	3	Preserve	W. edge
16	Red ironbark	25	Yes	3	Preserve	SW. corner
17	Red ironbark	22	Yes	2	Preserve	S. edge
18	Red ironbark	30	Yes	3	Preserve	S. edge
19	Red ironbark	20	Yes	3	Preserve	S. edge
20	Red ironbark	18	Yes	3	Preserve	S. edge
21	Purpleleaf plum	12	No	3	Preserve	S. edge
22	Purpleleaf plum	11	No	3	Preserve	S. edge
23	Purpleleaf plum	7	No	5	Preserve	S. edge
24	Red ironbark	26	Yes	3	Preserve	S. edge
25	Purpleleaf plum	9	No	3	Preserve	S. edge
26	Purpleleaf plum	11	No	3	Preserve	S. edge
27	Purpleleaf plum	9	No	2	Preserve	S. edge
28	Purpleleaf plum	9	No	3	Preserve	S. edge
29	Purpleleaf plum	8	No	3	Preserve	S. edge
30	Purpleleaf plum	9	No	4	Preserve	S. edge
31	Purpleleaf plum	8	No	4	Preserve	S. edge
32	Purpleleaf plum	10	No	4	Preserve	S. edge
33	Purpleleaf plum	10	No	4	Preserve	S. edge
34	Cork oak	19	Yes	5	Preserve	SE. corner, off-site?
35	Callery pear	15	No	3	Remove	Within graded area

Table 3, continued. Proposed action. 5850 W. Las Positas Blvd. Pleasanton CA.

Tree No.	Species	Trunk Diameter (in.)	Heritage Tree?	Condition 1=poor 5=excel-lent	Proposed Action	Notes
36	Callery pear	11	No	3	Remove	Within graded area
37	Callery pear	9	No	3	Remove	Within graded area
38	Callery pear	10	No	3	Remove	Within graded area
39	Callery pear	10	No	3	Remove	Within graded area
40	Callery pear	12	No	3	Remove	Within graded area
41	Callery pear	18	Yes	4	Remove	Within graded area
42	Callery pear	15	No	3	Remove	Within graded area
43	Callery pear	14	No	3	Remove	Within graded area
44	Callery pear	12	No	3	Remove	Within graded area
45	Callery pear	13	No	3	Remove	Within graded area
46	Callery pear	13	No	3	Remove	Within graded area
47	Callery pear	13	No	3	Remove	Within graded area
48	Callery pear	6	No	4	Remove	Within graded area
49	Callery pear	6	No	4	Remove	Within graded area

Table 3, continued. Proposed action. 5850 W. Las Positas Blvd. Pleasanton CA.

Tree No.	Species	Trunk Diameter (in.)	Heritage Tree?	Condition 1=poor 5=excel-lent	Proposed Action	Notes
50	Callery pear	12	No	4	Remove	Within graded area
51	Callery pear	14	No	4	Remove	Within graded area
52	European white birch	7	No	4	Remove	Within graded area
53	African sumac	11	No	3	Remove	Within graded area
54	European white birch	6	No	4	Remove	Within graded area
55	Crape myrtle	5	No	5	Remove	Within graded area
56	Crape myrtle	5	No	5	Remove	Within graded area
57	Crape myrtle	7	No	5	Remove	Within graded area
58	Crape myrtle	5	No	4	Remove	Within graded area
59	Crape myrtle	5	No	4	Remove	Within graded area
60	Crape myrtle	5	No	4	Remove	Within graded area
61	Crape myrtle	4	No	4	Remove	Within graded area
62	Crape myrtle	4	No	4	Remove	Within graded area
63	European white birch	9	No	4	Remove	Within graded area

Table 3, continued. Proposed action. 5850 W. Las Positas Blvd. Pleasanton CA.

Tree No.	Species	Trunk Diameter (in.)	Heritage Tree?	Condition 1=poor 5=excel-lent	Proposed Action	Notes
64	European white birch	12	No	4	Remove	Within graded area
65	European white birch	9	No	4	Remove	Within graded area
66	European white birch	10	No	4	Remove	Within graded area
67	European white birch	6	No	5	Remove	Within graded area
68	Crape myrtle	4,4,3,3,3,2,2	No	4	Remove	Within graded area
69	Crape myrtle	3,3,2,2,2,2,2,2,2,2	No	4	Remove	Within graded area
70	Crape myrtle	4,4,4,3	No	4	Remove	Within graded area
71	Crape myrtle	5,4,4,4,4,2	No	5	Remove	Within graded area
72	European white birch	12	No	4	Remove	Within graded area
73	European white birch	6	No	5	Remove	Within graded area
74	European white birch	12	No	4	Remove	Within graded area
75	European white birch	12	No	4	Remove	Within graded area
76	European white birch	10	No	4	Remove	Within graded area
77	Callery pear	7	No	4	Remove	Within graded area

Table 3, continued. Proposed action. 5850 W. Las Positas Blvd. Pleasanton CA.

Tree No.	Species	Trunk Diameter (in.)	Heritage Tree?	Condition 1=poor 5=excel-lent	Proposed Action	Notes
78	Crape myrtle	4	No	4	Remove	Within graded area
79	Crape myrtle	4	No	4	Remove	Within graded area
80	Crape myrtle	4	No	4	Remove	Within graded area
81	Crape myrtle	5	No	4	Remove	Within graded area
82	European white birch	7	No	5	Remove	Within graded area
83	European white birch	7	No	4	Remove	Within graded area
84	Crape myrtle	5,5,4,4,4	No	4	Remove	Within graded area
85	African sumac	12	No	2	Remove	Within graded area
86	African sumac	15	No	3	Remove	Within graded area
87	Callery pear	20	Yes	3	Remove	Within graded area
88	Crape myrtle	9	No	5	Remove	Within graded area
89	Evergreen ash	26	Yes	4	Preserve	N. edge; storm drain approx. 6' to S.
90	Evergreen ash	24	Yes	4	Preserve	N. edge
91	Evergreen ash	19	Yes	3	Preserve	N. edge; storm drain approx. 8' to SW.
92	Evergreen ash	24	Yes	4	Preserve	N. edge

Table 3, continued. Proposed action. 5850 W. Las Positas Blvd. Pleasanton CA.

Tree No.	Species	Trunk Diameter (in.)	Heritage Tree?	Condition 1=poor 5=excel-lent	Proposed Action	Notes
93	Evergreen ash	27	Yes	4	Preserve	N. edge
94	Evergreen ash	18	Yes	4	Preserve	N. edge
95	Evergreen ash	20	Yes	4	Preserve	N. edge
96	Evergreen ash	27	Yes	5	Preserve	N. edge
97	Evergreen ash	35	Yes	4	Preserve	N. edge; water line approx. 7' from trunk
98	Evergreen ash	26	Yes	4	Preserve	N. edge
99	Evergreen ash	22	Yes	3	Preserve	N. edge
100	Evergreen ash	26	Yes	4	Preserve	N. edge
101	Evergreen ash	27	Yes	4	Preserve	N. edge
102	Crape myrtle	4	No	5	Remove	Within graded area
103	Crape myrtle	8	No	5	Remove	Within graded area

Tree Preservation Guidelines

The following are recommendations for design and construction phases that will assist in successful tree preservation.

Design recommendations

1. Allow the Consulting Arborist to review all future project submittals including final/revised grading, utility, drainage, irrigation, and landscape plans.

2. Prepare a site work plan which identifies access and haul routes, construction trailer and storage areas, etc.

3. Establish a **TREE PROTECTION ZONE** around each tree to be preserved. For design purposes, the **TREE PROTECTION ZONE** shall be the limits of the public service easement on the north and 1' behind the edge of construction elsewhere. No grading, excavation, construction or storage of materials shall occur within that zone.

4. Install protection around all trees to be preserved. Install 6' chain-link fence around the public service easement. Secure hay bales 6' high around the trunks of any other tree to be preserved. No entry is permitted into a tree protection zone without permission of the project superintendent.

5. Route underground services including utilities, sub-drains, water or sewer around the **TREE PROTECTION ZONE**. Where encroachment cannot be avoided, special construction techniques such as hand digging or tunneling under roots shall be employed where necessary to minimize root injury.

6. Use only herbicides safe for use around trees and labeled for that use, even below pavement.

7. Design irrigation systems so that no trenching will occur within the **TREE PROTECTION ZONE**.

Pre-construction and demolition treatments and recommendations

1. The demolition contractor shall meet with the Consulting Arborist before beginning work to discuss work procedures and tree protection.

2. Trees to be preserved may require pruning to provide adequate clearance from construction activities. All pruning shall be performed by a licensed State of California contractor possessing the C61 classification license and the D49 specification. All pruning shall adhere to the latest editions of the American National Standards Institute Z133 and A300 standards. Pruning guidelines are found in the **Attachments**.

Tree protection during construction

1. Prior to beginning work, the contractors working in the vicinity of trees to be preserved are required to meet with the Consulting Arborist at the site to review all work procedures, access routes, storage areas and tree protection measures.

2. Any grading, construction, demolition or other work that is expected to encounter tree roots should be monitored by the Consulting Arborist.

3. If injury should occur to any tree during construction, it should be evaluated as soon as possible by the Consulting Arborist so that appropriate treatments can be applied.

4. Fences have been erected to protect trees to be preserved. Fences are to remain until all site work has been completed. Fences may not be relocated or removed without permission of the project superintendent.

5. Construction trailers, traffic and storage areas must remain outside fenced areas at all times.

6. No materials, equipment, spoil, waste or wash-out water may be deposited, stored, or parked within the **TREE PROTECTION ZONE** (fenced area).

7. Any additional tree pruning needed for clearance during construction must be performed by a qualified arborist and not by construction personnel.

8. Any roots damaged during grading or construction shall be exposed to sound tissue and cut cleanly with a saw.

HortScience, Inc.

James R. Clark, Ph.D.
Certified Arborist WE-0846
Registered Consulting Arborist #357

ATTACHMENTS

Tree Assessment Form

Tree Location Map

Pruning Guidelines

Pruning Guidelines
5850 W. Las Positas Blvd.
Pleasanton CA

Qualifications
An I.S.A. (International Society of Arboriculture) Certified Arborist or Tree Worker is to be present at all times during pruning. Arborist must have a State of Calif. Contractor's License for Tree Service (C61-D49) and provide proof of workman's compensation and general liability insurance.

Objectives
The following is the primary objective:

1. Provide clearance for construction activities along the property line.

Specifications
1. All pruning shall be in accordance with the most recent editions of the *Best Management Practices for Pruning* (International Society of Arboriculture) and the American National Standard for Tree Care Operations (Z133.1) and Pruning (A300).

2. No pruning cut should extend beyond the property line.

3. To the extent possible, pruning shall consist of branch removal and reduction cuts.

4. Tree shall not be climbed with spurs.

5. Pruning operations shall be conducted in a manner that does not damage surrounding understory plants and structures.

Jim Clark
Certified Arborist WE-0846
Registered Consulting Arborist #357
jim@hortscience.com

Tree Assessment

5850 West Las Positas
Pleasanton California
May 2013

HORT SCIENCE

TREE No.	SPECIES	TRUNK DIAMETER (in.)	HERITAGE TREE?	CONDITION 1=poor 5=excel-lent	SUITABILITY for PRESERVATION	APPRAISED VALUE	COMMENTS
1	Crape myrtle	7	No	5	High	$1,800	Multiple attachments @ 3'; excellent form & structure.
2	Callery pear	15	No	3	Moderate	$2,300	Codominant trunks @ 8'; one-sided to W.
3	Callery pear	22	Yes	3	Moderate	$4,950	Multiple attachments @ 6'; trunk leans S.
4	Callery pear	12	No	3	Moderate	$1,500	Multiple attachments @ 7'; pruned on N. for light standard clearance.
5	Callery pear	15	No	3	Moderate	$2,300	Multiple attachments @ 5'; thin canopy.
6	Callery pear	14	No	3	Moderate	$2,000	Multiple attachments @ 6' with very narrow attachments; surface roots.
7	Callery pear	9	No	3	Low	$850	Multiple attachments @ 6'; crowded by tree #6.
8	Callery pear	13	No	4	High	$2,450	Multiple attachments @ 6'; good form; full crown.
9	Callery pear	10	No	4	High	$1,450	Excellent form & structure; minor dieback.
10	Callery pear	18	Yes	3	Moderate	$3,300	Multiple attachments @ 6' with wide attachment.
11	Callery pear	14	No	3	Moderate	$2,000	Multiple attachments @ 7' with narrow attachment.
12	Callery pear	18	Yes	4	Moderate	$4,650	Multiple attachments @ 7'; full crown.
13	Callery pear	19	Yes	3	Moderate	$3,700	Multiple attachments @ 7'.
14	Callery pear	19	Yes	3	Moderate	$3,700	Multiple attachments @ 6'; thin canopy.
15	Callery pear	17	No	3	Moderate	$2,950	Multiple attachments @ 6'; thin canopy.
16	Red ironbark	25	Yes	3	Low	$800	Codominant trunks @ 12 & 15'; 15' attachment looks to be cracked apart; thin canopy.
17	Red ironbark	22	Yes	2	Low	$450	Codominant trunks @ 5' with narrow upright form.
18	Red ironbark	30	Yes	3	Low	$1,150	Codominant trunks @ 8 & 12"; history of branch failure; lifting asphalt.
19	Red ironbark	20	Yes	3	Low	$800	Codominant trunks @ 5'; nice canopy.
20	Red ironbark	18	Yes	3	Low	$500	Thin crown.

Tree Assessment

5850 West Las Positas
Pleasanton California
May 2013

HORT SCIENCE

TREE No.	SPECIES	TRUNK DIAMETER (in.)	HERITAGE TREE?	CONDITION 1=poor 5=excel-lent	SUITABILITY for PRESERVATION	APPRAISED VALUE	COMMENTS
21	Purpleleaf plum	12	No	3	Low	$1,200	Multiple attachments @ 4'; trunk leans E. against fence; deformed base.
22	Purpleleaf plum	11	No	3	Low	$1,000	Multiple attachments @ 5'; decayed sun-burned stems on W.
23	Purpleleaf plum	7	No	5	High	$1,050	Good young tree; full crown.
24	Red ironbark	26	Yes	3	Low	$850	Multiple attachments @ 12'; okay form; thin canopy.
25	Purpleleaf plum	9	No	3	Low	$850	Trunk leans N; multiple attachments @ 5'.
26	Purpleleaf plum	11	No	3	Low	$1,250	Multiple attachments @ 5'; minor dieback in upper crown.
27	Purpleleaf plum	9	No	2	Low	$500	Excessive sun-burn on W. stems & trunk.
28	Purpleleaf plum	9	No	3	Moderate	$850	Multiple attachments @ 2'; nice form.
29	Purpleleaf plum	8	No	3	Low	$650	Multiple attachments @ 3'; trunk leans E.
30	Purpleleaf plum	9	No	4	Moderate	$1,200	Multiple attachments @ 3'; full crown.
31	Purpleleaf plum	8	No	4	Moderate	$950	Multiple attachments @ 3'; full crown.
32	Purpleleaf plum	10	No	4	Moderate	$1,250	Multiple attachments @ 3'; full crown; trunk leans
33	Purpleleaf plum	10	No	4	Moderate	$1,450	Multiple attachments @ 2'; full crown.
34	Cork oak	19	Yes	5	High	$13,250	Excellent form & structure.
35	Callery pear	15	No	3	Moderate	$2,300	Multiple attachments @ 7' with narrow attachments.
36	Callery pear	11	No	3	Moderate	$1,100	Multiple attachments @ 6'; in 4' planter.
37	Callery pear	9	No	3	Moderate	$750	Multiple attachments @ 6'; in 4' planter; thin canopy.
38	Callery pear	10	No	3	Moderate	$950	Multiple attachments @ 6'; in 4' planter; trunk leans E.

Tree Assessment

5850 West Las Positas
Pleasanton California
May 2013

HORT SCIENCE

TREE No.	SPECIES	TRUNK DIAMETER (in.)	HERITAGE TREE?	CONDITION 1=poor 5=excel-lent	SUITABILITY for PRESERVATION	APPRAISED VALUE	COMMENTS
39	Callery pear	10	No	3	Moderate	$950	Multiple attachments @ 6'; in 4' planter; thin canopy.
40	Callery pear	12	No	3	Low	$1,350	Multiple attachments @ 6' with narrow attachments; in 4' planter; thin canopy.
41	Callery pear	18	Yes	4	Moderate	$4,150	Multiple attachments @ 6'; in 4' planter; full crown.
42	Callery pear	15	No	3	Moderate	$2,050	Multiple attachments @ 6'; in 4' planter.
43	Callery pear	14	No	3	Moderate	$1,800	Multiple attachments @ 6'; in 4' planter.
44	Callery pear	12	No	3	Moderate	$1,350	Multiple attachments @ 6'; in 4' planter.
45	Callery pear	13	No	3	Low	$1,550	Multiple attachments @ 6'; in 4' planter; thin canopy.
46	Callery pear	13	No	3	Low	$1,550	Multiple attachments @ 6'; in 4' island; very thin canopy.
47	Callery pear	13	No	3	Moderate	$1,250	Multiple attachments @ 6'; in 4' island.
48	Callery pear	6	No	4	High	$500	Good young tree; in 4' island.
49	Callery pear	6	No	4	High	$500	Good young tree; in 4' island.
50	Callery pear	12	No	4	Moderate	$1,850	Multiple attachments @ 6'; in 4' island; full crown.
51	Callery pear	14	No	4	Moderate	$2,550	Multiple attachments @ 7' with narrow attachment; in 4' planter;
52	European white birch	7	No	4	Moderate	$450	Good young tree.
53	African sumac	11	No	3	Low	$2,100	Okay form; needs good pruning.
54	European white birch	6	No	4	Moderate	$350	Good young tree.
55	Crape myrtle	5	No	5	High	$1,000	Multiple attachments @ 5'; excellent form & structure.
56	Crape myrtle	5	No	5	High	$1,000	Multiple attachments @ 5'; excellent form & structure.
57	Crape myrtle	7	No	5	High	$2,000	Excellent form & structure.

Tree Assessment

5850 West Las Positas
Pleasanton California
May 2013

HORT SCIENCE

TREE No.	SPECIES	TRUNK DIAMETER (in.)	HERITAGE TREE?	CONDITION 1=poor 5=excel-lent	SUITABILITY for PRESERVATION	APPRAISED VALUE	COMMENTS
58	Crape myrtle	5	No	4	High	$750	Multiple attachments @ 4'; minor basal damage.
59	Crape myrtle	5	No	4	High	$750	Multiple attachments @ 4'; minor basal damage.
60	Crape myrtle	5	No	4	High	$750	Multiple attachments @ 4'; minor basal damage.
61	Crape myrtle	4	No	4	High	$550	Multiple attachments @ 4'; minor basal damage.
62	Crape myrtle	4	No	4	High	$550	Multiple attachments @ 4'; minor basal damage.
63	European white birch	9	No	4	Moderate	$700	Good young tree; canopy slightly thin.
64	European white birch	12	No	4	Moderate	$1,250	Multiple attachments @ 5'; good upright form.
65	European white birch	9	No	4	Moderate	$700	Good young tree; canopy slightly thin.
66	European white birch	10	No	4	Moderate	$900	Good form; low limb to N. has included bark.
67	European white birch	6	No	5	High	$500	Good young tree.
68	Crape myrtle	4,4,3,3,3,2,2	No	4	High	$1,950	In raised planter; multiple attachments @ base; nice specimen.
69	Crape myrtle	3,3,2,2,2,2,2,2,2,2	No	4	High	$1,400	In raised planter; multiple attachments @ base; nice specimen.
70	Crape myrtle	4,4,4,3	No	4	High	$1,700	In raised planter; multiple attachments @ base; nice specimen.
71	Crape myrtle	5,4,4,4,4,2	No	5	High	$3,450	Good young tree; multiple attachments @ base; two branches grow together on N.
72	European white birch	12	No	4	Moderate	$1,250	Multiple attachments @ 10'; canopy slightly thin.
73	European white birch	6	No	5	High	$500	Excellent form & structure; good young tree.
74	European white birch	12	No	4	Moderate	$1,250	Multiple attachments @ 6'; otherwise good
75	European white birch	12	No	4	Moderate	$1,250	Codominant trunks @ 12'; otherwise good.
76	European white birch	10	No	4	Moderate	$900	Excellent form & structure; canopy slightly thin.
77	Callery pear	7	No	4	High	$700	Good young tree.
78	Crape myrtle	4	No	4	High	$550	Multiple attachments @ 4'; basal damage.
79	Crape myrtle	4	No	4	High	$550	Multiple attachments @ 4'; basal damage.

Tree Assessment

5850 West Las Positas
Pleasanton California
May 2013

HORT SCIENCE

TREE No.	SPECIES	TRUNK DIAMETER (in.)	HERITAGE TREE?	CONDITION 1=poor 5=excel-lent	SUITABILITY for PRESERVATION	APPRAISED VALUE	COMMENTS
80	Crape myrtle	4	No	4	High	$550	Multiple attachments @ 4'; basal damage.
81	Crape myrtle	5	No	4	High	$750	Multiple attachments @ 4'; basal damage.
82	European white birch	7	No	5	High	$650	Excellent form & structure.
83	European white birch	7	No	4	Moderate	$450	Good form; canopy slightly thin.
84	Crape myrtle	5,5,4,4,4	No	4	High	$2,850	Multiple attachments @ base; nice specimen.
85	African sumac	12	No	2	Low	$1,250	Multiple attachments @ 5' with very wide attachment; poor form; thin canopy.
86	African sumac	15	No	3	Low	$3,250	Multiple attachments @ 5' with wide attachment; poor form; full crown.
87	Callery pear	20	Yes	3	Moderate	$4,100	Multiple attachments @ 6'; trunk leans E.
88	Crape myrtle	9	No	5	High	$3,950	Multiple attachments @ 6'; excellent form & structure.
89	Evergreen ash	26	Yes	4	High	$5,450	Codominant trunks @ 7'; nice full crown; surface roots.
90	Evergreen ash	24	Yes	4	High	$4,650	Multiple attachments @ 7'; upright form.
91	Evergreen ash	19	Yes	3	Low	$1,650	Multiple attachments @ 8'; decay in area of old branch failure.
92	Evergreen ash	24	Yes	4	High	$4,650	Multiple attachments @ 8'; full crown.
93	Evergreen ash	27	Yes	4	Moderate	$5,850	Multiple attachments @ 8'; wound on N. from branch failure; corrected form.
94	Evergreen ash	18	Yes	4	High	$2,650	Multiple attachments @ 12'; one-sided to W.
95	Evergreen ash	20	Yes	4	High	$3,250	Codominant trunks @ 7'; crowded by #96.
96	Evergreen ash	27	Yes	5	High	$8,400	Excellent form & structure; beautiful tree.
97	Evergreen ash	35	Yes	4	High	$9,500	Multiple attachments @ 12'; full crown.
98	Evergreen ash	26	Yes	4	High	$5,450	Multiple attachments @ 8'; full crown.

Tree Assessment

5850 West Las Positas
Pleasanton California
May 2013

HORT SCIENCE

TREE No.	SPECIES	TRUNK DIAMETER (in.)	HERITAGE TREE?	CONDITION 1=poor 5=excel-lent	SUITABILITY for PRESERVATION	APPRAISED VALUE	COMMENTS
99	Evergreen ash	22	Yes	3	Low	$2,800	Multiple attachments @ 12'; crowded & one-sided to W.
100	Evergreen ash	26	Yes	4	High	$5,450	Multiple attachments @ 12'; narrow crown.
101	Evergreen ash	27	Yes	4	Moderate	$5,050	Multiple attachments @ 12'; crown one-sided to E.
102	Crape myrtle	4	No	5	High	$900	Good young tree.
103	Crape myrtle	8	No	5	High	$3,100	Good young tree.

Tree Assessment Map

5850 West Las Positas
Pleasanton, CA

Prepared for:
SummerHill Homes
Palo Alto, CA

May 2013

No Scale

Notes

- Base map provided by: Esri Maps
- Numbered tree locations are approximate.

HORT SCIENCE

325 Ray Street
Pleasanton, California 94566
Phone 925.484.0211
Fax 925.484.0596

ENGEO
Expect Excellence

GEOTECHNICAL
ENVIRONMENTAL
WATER RESOURCES
CONSTRUCTION SERVICES

Project No.
10269.000.000

June 11, 2013

Mr. Kevin Ebrahimi
SummerHill Homes
777 S. California Avenue
Palo Alto, CA 94304

Subject: Cannae Property – 5.9 Acres
5850 West Las Positas Boulevard
Pleasanton, California

GEOTECHNICAL FEASIBILITY EVALUATION

Dear Mr. Ebrahimi:

As authorized by you, this letter contains the results of our geotechnical feasibility evaluation at the Cannae Property located at 5850 West Las Positas Boulevard in Pleasanton, California. The purpose of our evaluation was to review site documents, available geologic maps, perform a site reconnaissance, and conduct limited subsurface exploration to render our opinion from a preliminary standpoint of the main geotechnical considerations with regards to redevelopment of the property as a planned apartment residential development.

We understand that the contemplated redevelopment at this site will include a 177-unit apartment residential community with associated streets, underground utilities, and landscaping. The existing site development will be demolished and removed. The site grading is anticipated to include maximum cuts and fills less than 2 to 3 feet. The apartment buildings are anticipated to have floor levels near existing site grades.

SITE DESCRIPTION

The property, located at 5850 W. Las Positas Boulevard, is currently occupied by an 83,500± ft^2 single-story office building and appurtenant parking areas. The site is generally a flat business park and is located across the street from Hart Middle School. The lot is bounded by Las Positas Boulevard to the north, office buildings on adjacent lots to the east and west, and the Arroyo Mocho Canal on the south boundary of the site.

The existing building at the site was constructed circa 1980's. Based on review of historic aerial photographs it is apparent that before development of the area, land use was agricultural. A canal formerly crossed the northwest corner of the project site. This canal is referred to as the Hewlett Canal on historic topographic maps. Historic aerial photographs indicate that this canal was filled sometime in the 1970's before the existing commercial development of the site.

GEOLOGY

The property is not located within a State of California Earthquake Fault Zone (1982) for known active faults. No faults are shown crossing the site on available published geologic maps. The nearest known active fault is the Calaveras, located approximately 2 miles southwest of the project site.

The State of California Seismic Hazard Zone Map indicates that the Arroyo Mocho Canal, directly adjacent to the property, is an area with potentially liquefiable soils. Other published liquefaction hazard maps show the potential for liquefaction at the site as moderate to high (Witter & Wentworth 2006, Knudsen & Wentworth 2000).

Soils at the site are mapped as Holocene alluvial terrace and basin deposits comprised of very fine silty clay (Graymer 1997). The creek and watershed map for the Dublin and Pleasanton area shows the project site within the 1874 boundary of a lagoon known as Tulare Lake that once occupied the central portion of the Amador Valley (Sowers 2003). Based on our experience in the region, sediments deposited in this lagoon are typically found to be moderately compressible, normally consolidated clays.

CITY OF PLEASANTON DOCUMENT REVIEW

The City of Pleasanton was contacted in an effort to obtain previous geotechnical reports in the vicinity of the site. No geotechnical reports for the 5850 West Las Positas Boulevard property were available from the City. Soils reports for lots on the north side of Las Positas Boulevard were available for review, however; boring exploration at these sites was apparently limited to depths of about 15 to 20 feet.

LIMITED FIELD EXPLORATION

ENGEO explored the project site on May 14, 2013, by advancing three CPT probes at the approximate locations shown on a figure in Appendix A. The CPT probes were advanced to depths of approximately 40 to 50 feet below existing grades (bgs). CPT-1 was terminated at 50 feet bgs, and CPT-2 and CPT-3 were extended to depths of 48 and 38½ feet, where these encountered refusal. The CPT locations were established by visual sighting from existing features and should be considered accurately located only to the degree implied by the method used. A report summarizing the CPT data was provided by California Push Technologies Incorporated and is attached in Appendix A. Classification of the soil is based on correlations to CPT results, as no soil samples were collected during exploration.

SUBSURFACE CONDITIONS

The site has been previously graded and developed with the existing single-story office building and appurtenant parking and landscape areas. It is underlain by existing man-made fills

associated with the previous grading and existing development. Below the near surface fills, natural deposits consist of stiff to hard, moderately to low compressibility clays and silty clays. The near surface clay deposits are considered moderate to highly expansive when subject to changes in moisture content. These deposits were encountered to approximate depths of 40 feet below existing grade in our three CPT holes. Below approximately 40 feet, the CPTs encountered sandy silts and silty sands; within this layer there are local, relatively thin interspersed lenses of sands between considered marginally susceptible to liquefaction.

GEOTECHNICAL CONSIDERATIONS

From a geologic and geotechnical standpoint, the study area appears to be suitable for the proposed development contingent on proper engineering design and construction measures to mitigate geotechnical hazards. A design-level geotechnical analysis should be performed as part of the design process. The main geotechnical concerns for the proposed site development include: (1) expansive soils, (2) seismic hazards, and (3) proper grading and foundation design. These items are discussed below and should be considered in the initial planning for the project site.

Expansive Soils -- A significant geotechnical concern is the expansive nature of the native soils in the proposed development area. Based geotechnical information in the area the clayey soils on the site may have high plasticity with Plasticity Indices (P.I.) above 30. Expansive soils shrink and swell as a result of seasonal fluctuation in moisture content. This can cause heaving and cracking of slabs-on-grade, pavements and structures founded on shallow foundations. Building damage due to volume changes associated with expansive soils can be reduced by underlaying structures with imported low expansive material or treating the existing material with lime.

The planned development should include considerations for moisture conditioning and compaction within selected range for the expansive soils. Additionally, to reduce adverse effects from expansive soils building floor slabs and exterior concrete flatwork should consider underlayment with adequate thickness of select "low to non" expansive import fill, or alternatively the use of lime treatment to reduce adverse effects of highly expansive soils. Appropriate foundation and site subdrainage and surface drainage should be considered in design.

Seismic Hazards -- No known active faults cross the subject property and the site is not located within the Alquist-Priolo Earthquake Fault Zone. In our opinion, the potential for ground rupture is low. The nearest active fault is the Calaveras fault, which is located 2 miles southwest of the project site. Other active faults in the San Francisco Bay Area capable of producing significant ground shaking at the site include the Hayward Fault, mapped approximately 9 miles west of the site, the Greenville Fault, mapped approximately 10 miles east of the site and the San Andreas Fault mapped approximately 27 miles west of the site. To mitigate the ground shaking effects, all structures should be designed using sound engineering judgment and the latest California Building Code (CBC) requirements as a minimum.

Although the site is mapped within an area that has moderate to high liquefaction potential, brief analyses of CPT results show no liquefaction hazard within the first 40ft of soil on the site. Some thin lenses between 40 and 50 show marginal liquefaction hazard, but we see these as a minor risk. In the event that these deep lenses liquefy, resulting settlements are expected to be less than 1 inch. Resulting differential settlements are within tolerable ranges and can be addressed with shallow foundations. Foundations should be designed to tolerate minor potential seismic settlement.

Existing "Man-Made" Fill - Fill placed prior to the development of the area may be encountered throughout the site. Potential fills may be up to 3 feet thick and could require overexcavation and recompaction, depending on whether these were placed as engineered fills or if these are undocumented. As identified in historic aerial photographs, a canal previously crossed the northwest corner of the site. As of the date this report was prepared, we have not been able to obtain documentation for placement of the fill in the canal. Additional geotechnical exploration should be performed in order to confirm existence of the fill within the project area, identify the extent of the fill, and evaluate the composition and properties of the material for geotechnical engineering recommendations.

Preliminary Foundation Considerations

Preliminary settlement analyses show that the 3 to 4 level, wood-framed buildings may be supported on conventional shallow foundation systems provided that overall foundation loads are determined to be light to moderate. Although not anticipated for the planned residential development, if heavy foundation loads are determined, these must be evaluated as part of the design level geotechnical study of settlement potential to determine foundation design criteria, and/or whether alternate foundation support such as deep foundations are necessary to reduce settlements.

It is our preliminary evaluation that suitable shallow foundations may include continuous and spread footings combined with a slab on grade, or alternatively post tensioned structural mats. Settlement analyses for nearby properties have resulted in maximum allowable bearing pressures around 3,000 psf for shallow footings at the Hacienda Business Park. Based on the presence of expansive soils foundation embedment may be on the order of 24 inches or greater.

Based on CPT results, there is a 20-foot-thick layer of compressible clay across the site starting around 18 feet below the ground surface. Consideration for using deep foundations such as drilled piers may be necessary due the compressible clay layer that could result in several inches of settlement under heavier loads. Structural details for the building and further geotechnical explorations are needed before specific geotechnical recommendations regarding foundation design can be made.

LIMITATIONS

This letter is issued with the understanding that it is the responsibility of the owner to transmit the information and recommendations of this letter to developers, owners, buyers, architects, engineers, and designers for the project so that the necessary steps can be taken by the contractors and subcontractors to carry out such recommendations in the field. The conclusions and recommendations contained in this letter are solely professional opinions.

The professional staff of ENGEO strives to perform services in a proper and professional manner with reasonable care and competence, but is not infallible. There are risks of earth movement and property damages inherent in land development. We are unable to eliminate all risks or provide insurance; therefore, we are unable to guarantee or warrant the results of our service.

This letter is based upon field and other conditions discovered at the time of preparation of ENGEO's work. This document must not be subject to unauthorized reuse, that is, reuse without written authorization of ENGEO. Such authorization is essential because it requires ENGEO to evaluate the document's applicability given new circumstances, not the least of which is passage of time. Actual field or other conditions will necessitate clarifications, adjustments, modifications or other changes to ENGEO's work. Therefore, ENGEO must be engaged to prepare the necessary clarifications, adjustments, modifications or other changes before construction activities commence or further activity proceeds. If ENGEO's scope of services does not include onsite construction observation, or if other persons or entities are retained to provide such services, ENGEO cannot be held responsible for any or all claims arising from or resulting from the performance of such services by other persons or entities, and from any or all claims arising from or resulting from clarifications, adjustments, modifications, discrepancies or other changes necessary to reflect changed field or other conditions.

We look forward to working with you on this project. If you have any questions regarding the geotechnical aspects of the project, please call and we will be glad to discuss them with you.

Sincerely,

ENGEO Incorporated

Cierra Atkinson, EIT

Raymond P. Skinner, CEG

PROFESSIONAL GEOLOGIST
RAYMOND SKINNER
No. 1239
Exp. 2/28/2015
CERTIFIED ENGINEERING GEOLOGIST
STATE OF CALIFORNIA

Theodore P. Bayham, GE

Attachments: List of Selected References
Appendix A – Limited Field Exploration

SELECTED REFERENCES

State of California Earthquake Fault Zone. 1982. Dublin Quadrangle, California.

Helley and Graymer, 1997, Quaternary Geology of Alameda County and Surrounding Areas. Geologic Map of the Dublin Quadrangle, Solano County, California.

California Geological Survey. 2008. Seismic Hazard Zones Dublin Quadrangle.

Sowers, Janet. 2003. Creek and Watershed of the Dublin and Pleasanton Area.

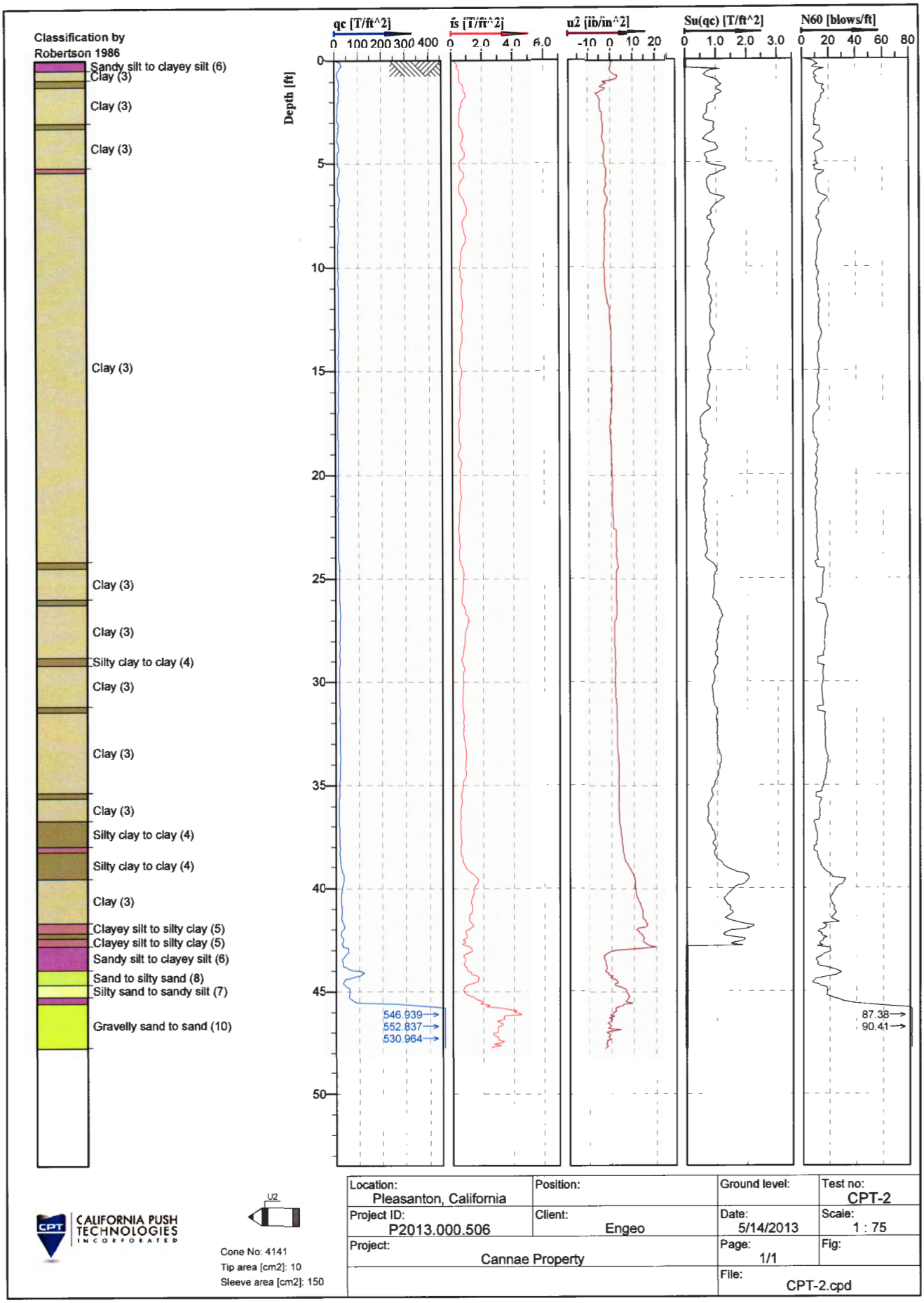
Witter and Wenterworth. 2006 Liquefaction Susceptibility in the Central San Francisco Bay Region, California. USGS.

Knudsen and Wentworth, 2000. Preliminary Maps of Quaternary Deposits and Liquefaction Susceptibility, Nine-County San Francisco Bay Region, California. USGS.

APPENDIX A

Limited Field Exploration

CPT-1
5850 W Las Positas Blvd, Pleasanton, CA 94588, USA
CPT-3
CPT-2
Google earth

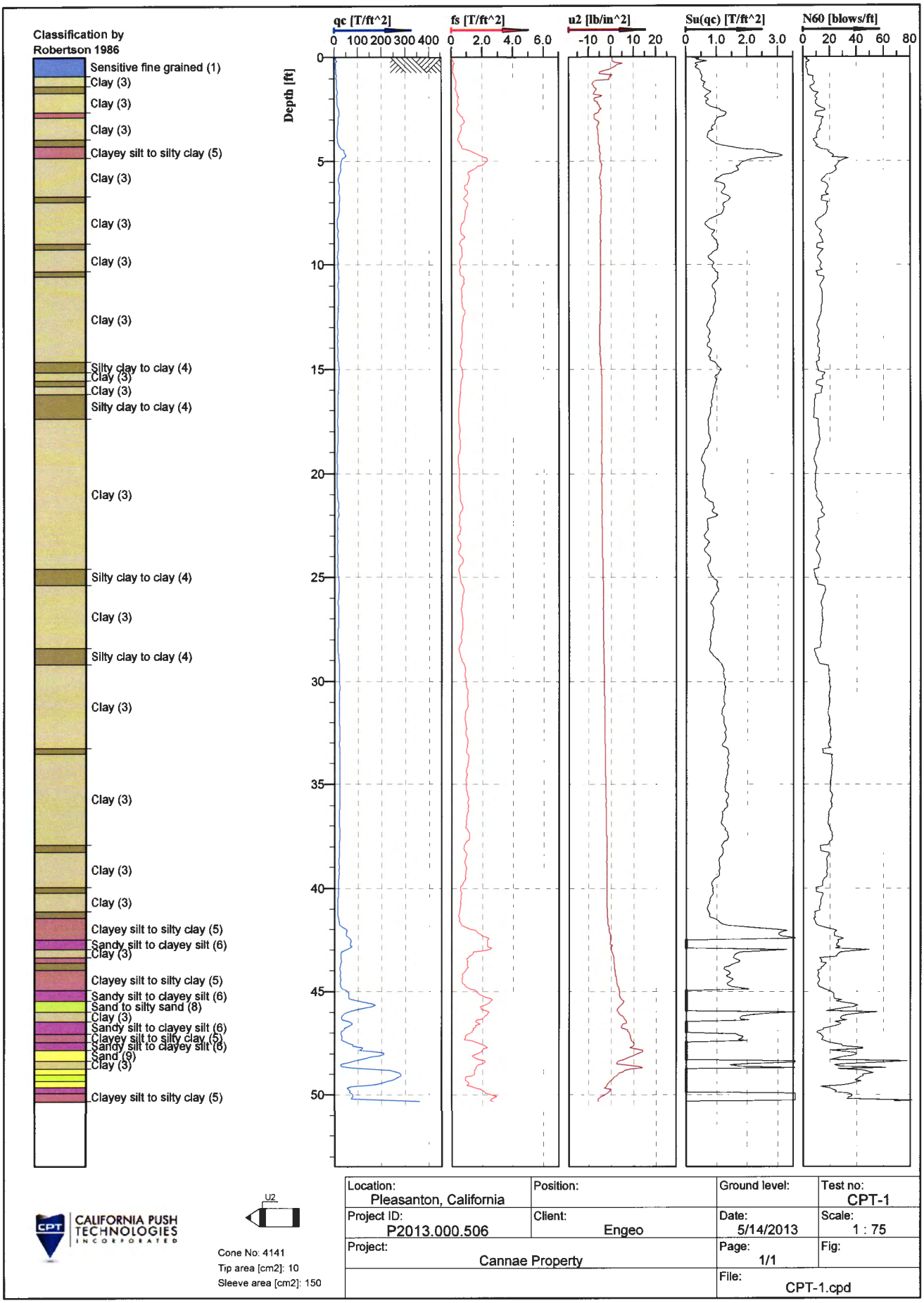


CALIFORNIA PUSH TECHNOLOGIES INCORPORATED

U2

Cone No: 4141
Tip area [cm2]: 10
Sleeve area [cm2]: 150

Location: Pleasanton, California	Position:	Ground level:	Test no: CPT-2
Project ID: P2013.000.506	Client: Engeo	Date: 5/14/2013	Scale: 1 : 75
Project: Cannae Property		Page: 1/1	Fig:
		File: CPT-2.cpd	

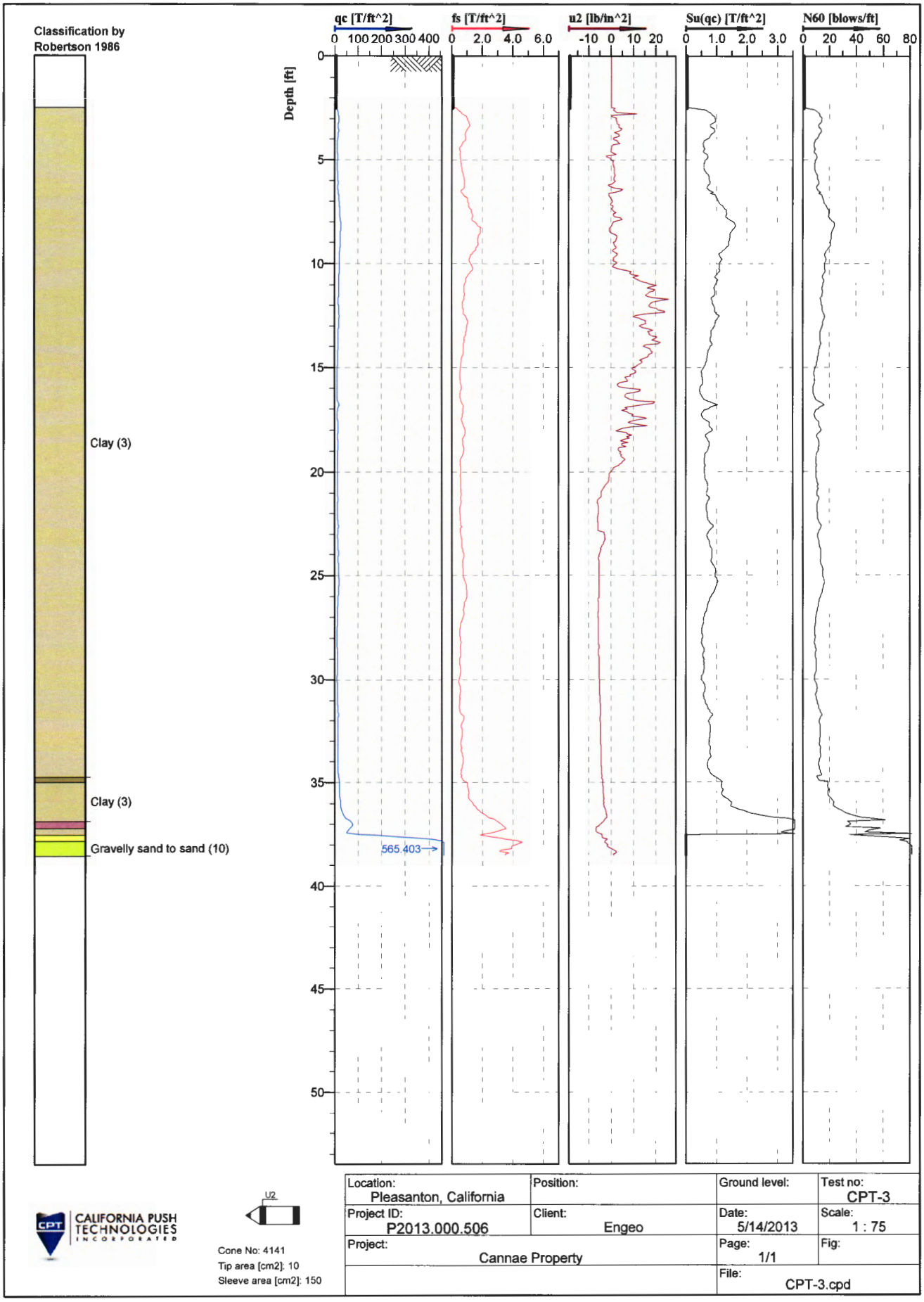


CALIFORNIA PUSH TECHNOLOGIES INCORPORATED

U2

Cone No: 4141
Tip area [cm2]: 10
Sleeve area [cm2]: 150

Location: Pleasanton, California	Position:	Ground level:	Test no: CPT-1
Project ID: P2013.000.506	Client: Engeo	Date: 5/14/2013	Scale: 1 : 75
Project: Cannae Property		Page: 1/1	Fig:
		File: CPT-1.cpd	



CALIFORNIA PUSH TECHNOLOGIES INCORPORATED

U2

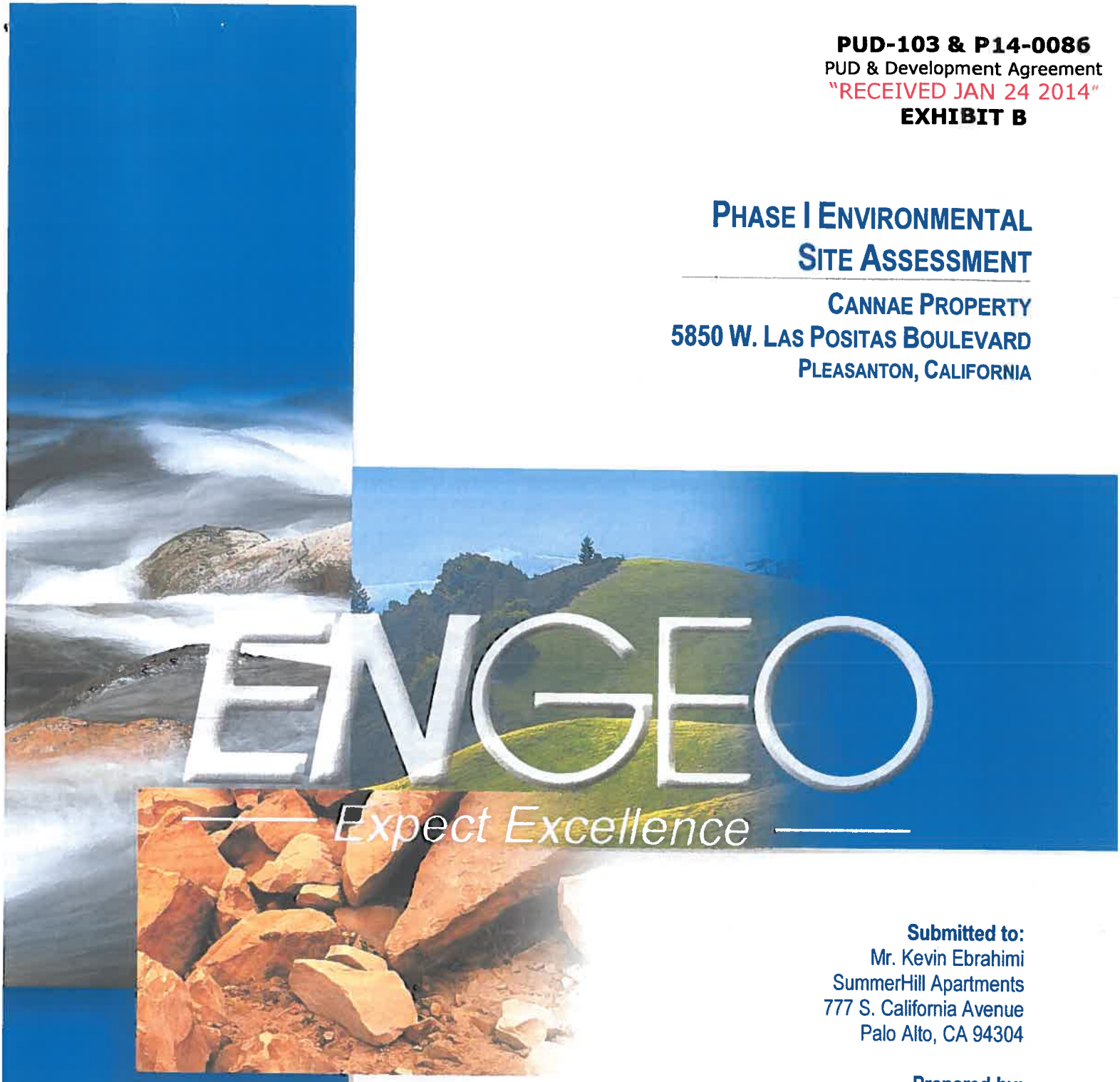
Cone No: 4141
Tip area [cm2]: 10
Sleeve area [cm2]: 150

Location: Pleasanton, California	Position:	Ground level:	Test no: CPT-3
Project ID: P2013.000.506	Client: Engeo	Date: 5/14/2013	Scale: 1 : 75
Project: Cannae Property		Page: 1/1	Fig:
		File: CPT-3.cpd	

PUD-103 & P14-0086
PUD & Development Agreement
"RECEIVED JAN 24 2014"
EXHIBIT B

PHASE I ENVIRONMENTAL SITE ASSESSMENT

CANNAE PROPERTY
5850 W. LAS POSITAS BOULEVARD
PLEASANTON, CALIFORNIA



Submitted to:
Mr. Kevin Ebrahimi
SummerHill Apartments
777 S. California Avenue
Palo Alto, CA 94304

Prepared by:
ENGEO Incorporated

May 17, 2013

Project No:
10269.000.000

Copyright © 2013 by ENGEO Incorporated. This document may not be reproduced in whole or in part by any means whatsoever, nor may it be quoted or excerpted without the express written consent of ENGEO Incorporated.

ENGEO
Expect Excellence

GEOTECHNICAL
ENVIRONMENTAL
WATER RESOURCES
CONSTRUCTION SERVICES

Project No.
10269.000.000

May 17, 2013

Mr. Kevin Ebrahimi
SummerHill Apartments
777 S. California Avenue
Palo Alto, CA 94304

Subject: Cannae Property
5850 W. Las Positas Boulevard
Pleasanton, California

PHASE I ENVIRONMENTAL SITE ASSESSMENT

Dear Mr. Ebrahimi:

ENGEO is pleased to present our phase I environmental site assessment of the subject property (Property) located in Pleasanton, California. The attached report includes a description of the site assessment activities, along with ENGEO's findings, opinions, and conclusions regarding the Property.

ENGEO has the specific qualifications based on education, training, and experience to assess the nature, history, and setting of the Property, and has developed and performed all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312. We declare that, to the best of our professional knowledge and belief, the responsible charge for this study meets the definition of Environmental Professional as defined in Section 312.10 of 40 CFR 312 and ASTM 1527-05.

We are pleased to be of service to you on this project. If you have any questions concerning the contents of our report, please contact us.

Sincerely,

ENGEO Incorporated

REGISTERED PROFESSIONAL ENGINEER
JEFFREY A. ADAMS
No. 69633
Exp. 6/30/2014
CIVIL
STATE OF CALIFORNIA

Jeffrey A. Adams, PhD, PE
Associate

Shawn Munger, CHG
Principal

TABLE OF CONTENTS

Letter of Transmittal

Page

EXECUTIVE SUMMARY 1

1.0 INTRODUCTION 2

1.1 PURPOSE OF PHASE I ENVIRONMENTAL SITE ASSESSMENT 2
1.2 DETAILED SCOPE OF SERVICES 2
1.3 LIMITATIONS AND EXCEPTIONS OF ASSESSMENT 2
1.4 SPECIAL TERMS AND CONDITIONS 3

2.0 PROPERTY INFORMATION 4

2.1 SITE LOCATION 4
2.2 SITE AND VICINITY CHARACTERISTICS 4
2.3 CURRENT USE OF PROPERTY/DESCRIPTION OF SITE IMPROVEMENTS 4
2.4 CURRENT USE OF ADJOINING PROPERTIES 4

3.0 RECORDS REVIEW 5

3.1 PREVIOUS ENVIRONMENTAL REPORTS 5
3.2 PROPERTY RECORDS 5
3.2.1 Title Report/Ownership 5
3.3 HISTORICAL RECORD SOURCES 5
3.3.1 Historical Topographic Maps 5
3.3.2 Aerial Photographs 6
3.3.3 Fire Insurance Maps 7
3.3.4 City Directory 8
3.3.5 Government Agencies 8
3.4 ENVIRONMENTAL RECORD SOURCES 9
3.4.1 Federal ASTM Standard/Supplemental Sources 9
3.4.1.1 Subject Property 9
3.4.1.2 Other Properties 9
3.4.2 State ASTM Standard/Supplemental Sources 9
3.4.2.1 Subject Property 9
3.4.2.2 Other Properties 10
3.4.3 Local and/or Other ASTM Supplemental Sources 10
3.4.3.1 Subject Property 10
3.4.3.2 Other Properties 11

4.0 SITE RECONNAISSANCE 11

4.1 METHODOLOGY 11
4.2 GENERAL SITE SETTING 11

TABLE OF CONTENTS (Continued)

4.3 INTERIOR OBSERVATIONS 12
4.4 EXTERIOR OBSERVATIONS 12
4.5 ASBESTOS-CONTAINING MATERIALS AND LEAD-BASED PAINT 13
4.6 INDOOR AIR QUALITY 13
5.0 INTERVIEWS 14
6.0 FINDINGS 14
7.0 OPINIONS AND DATA GAPS 14
8.0 CONCLUSIONS 14
REFERENCES
FIGURES
APPENDIX A – Environmental Data Resources, Inc., Radius Map Report
APPENDIX B – Environmental Data Resources, Inc., Sanborn Map Report
APPENDIX C – Environmental Data Resources, Inc., Historical Topographic Map Report
APPENDIX D – First American Title Insurance Company, Preliminary Title Report
APPENDIX E – Environmental Data Resources, Inc., Aerial Photo Decade Package
APPENDIX F – Environmental Data Resources, Inc., City Directory
APPENDIX G – Qualification of Environmental Professional

EXECUTIVE SUMMARY

ENGEO conducted a phase I environmental site assessment for the property (Property) located at 5850 West Las Positas Boulevard in Pleasanton, California (Figures 1 and 2). The approximately 5.91-acre Property is identified by APN 941-2762-6 (Figure 3). The Property is currently occupied by an approximately 88,500-square-foot single-story commercial office building and associated exterior improvements.

The study included a review of local, state and federal environmental record sources, standard historical sources, aerial photographs, fire insurance maps and physical setting sources, and a reconnaissance of the Property to review site use and current conditions to check for the storage, use, production or disposal of hazardous or potentially hazardous materials.

The site reconnaissance and records review did not find documentation or physical evidence of significant soil and/or groundwater impairments associated with the use of the Property. A review of regulatory databases maintained by county, state, and federal agencies found no documentation of hazardous materials violations or discharge on the Property. A review of regulatory agency records and available databases did not identify contaminated facilities within the appropriate ASTM search distances that could impact the Property. Based on the findings of this assessment, no Recognized Environmental Conditions (RECs) or historical RECs were identified for the Property.

ENGEO has performed a phase I environmental site assessment of the Property in general conformance with the scope and limitations of ASTM E 1527-05 "Standard Practice for Environmental Site Assessments" and USEPA "Standards and Practices for All Appropriate Inquires", 40 CFR Part 312. Based on the findings of this assessment, ENGEO recommends no further environmental studies at this time.

1.0 INTRODUCTION

ENGEO conducted a phase I environmental site assessment for the Property located at 5850 West Las Positas Boulevard in Pleasanton, California (Figures 1 and 2). The approximately 5.91-acre Property is identified by APN 941-2762-6 (Figure 3). The Property is currently occupied by an approximately 88,500-square-foot single-story commercial office building and associated exterior improvements.

1.1 PURPOSE OF PHASE I ENVIRONMENTAL SITE ASSESSMENT

This assessment was performed at the request of SummerHill Homes for the purpose of environmental due diligence during Property acquisition. The objective of this phase I environmental site assessment is to identify recognized environmental conditions associated with the Property. As defined in the ASTM Standard Practice E 1527-05, a REC is "the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property".

1.2 DETAILED SCOPE OF SERVICES

The scope of services performed included the following:

- A review of a previous environmental report prepared for the Property.
- A review of publicly available and practically reviewable standard local, state, tribal, and federal environmental record sources.
- A review of publicly available and practically reviewable standard historical sources, aerial photographs, fire insurance maps and physical setting sources.
- A reconnaissance of the Property to review site use and current conditions. The reconnaissance was conducted to check for the storage, use, production or disposal of hazardous or potentially hazardous materials.
- Interviews with owners/occupants and/or public sector officials.
- Preparation of this report with our findings, opinions, and conclusions.

1.3 LIMITATIONS AND EXCEPTIONS OF ASSESSMENT

The professional staff at ENGEO strives to perform its services in a proper and professional manner with reasonable care and competence but is not infallible. The recommendations and conclusions presented in this report were based on the findings of our study, which were developed solely from the contracted services. The findings of the report are based in part on

contracted database research, out-of-house reports and personal communications. The opinions formed by ENGEO are based on the assumed accuracy of the relied upon data in conjunction with our relevant professional experience related to such data interpretation. ENGEO assumes no liability for the validity of the materials relied upon in the preparation of this report.

This document must not be subject to unauthorized reuse; that is, reuse without written authorization of ENGEO. Such authorization is essential because it requires ENGEO to evaluate the document's applicability given new circumstances, not the least of which is passage of time. The findings from a phase I environmental site assessment are valid for one year after completion of the report. Updates of portions of the assessment may be necessary after a period of 180 days after completion.

This phase I environmental site assessment is not intended to represent a complete soil or groundwater characterization, nor define the depth or extent of soil or groundwater contamination. It is intended to provide an evaluation of potential environmental concerns associated with the use of the Property. A more extensive assessment that would include a subsurface exploration with laboratory testing of soil and groundwater samples could provide more definitive information concerning site-specific conditions. If additional assessment activities are considered for the Property and if other entities are retained to provide such services, ENGEO cannot be held responsible for any and all claims arising from or resulting from the performance of such services by other persons or entities. ENGEO can also not be held responsible from any and all claims arising or resulting from clarifications, adjustments, modifications, discrepancies or other changes necessary to reflect changed field or other conditions.

1.4 SPECIAL TERMS AND CONDITIONS

ENGEO has prepared this report for the exclusive use of our client, SummerHill Apartments. It is recognized and agreed that ENGEO has assumed responsibility only for undertaking the study for the client. The responsibility for disclosures or reports to a third party and for remedial or mitigative action shall be solely that of the Client.

Laboratory testing of soil or groundwater samples was not within the scope of the contracted services. The assessment did not include an asbestos survey, an evaluation of lead-based paint, an inspection of light ballasts for polychlorinated biphenyls (PCBs), a radon evaluation, or a mold survey.

This report is based upon field and other conditions discovered at the time of preparation of ENGEO's assessment. Visual observations referenced in this report are intended only to represent conditions at the time of the reconnaissance. ENGEO would not be aware of site contamination, such as dumping and/or accidental spillage that occurred subsequent to the reconnaissance conducted by ENGEO personnel.

2.0 PROPERTY INFORMATION

2.1 SITE LOCATION

The Property is located at 5850 West Las Positas Boulevard in Pleasanton, California (Figures 1 and 2). The approximately 5.91-acre Property is identified by APN 941-2762-6 (Figure 3).

2.2 SITE AND VICINITY CHARACTERISTICS

Review of published topographic maps found that the Property is relatively level at an approximate elevation of 325 feet above mean sea level (msl). Review of a United States Geological Survey preliminary geologic map (Dibblee Jr., 1980) found that the Property is underlain by Quaternary-age alluvium, which typically consists of undifferentiated deposits of gravel, sand, silt, and clay.

Geocheck – the Physical Setting Source Summary of the Environmental Resources Data report (Appendix A) includes 15 Federal United States Geological Survey (USGS) wells located within one mile of the Property. Groundwater depths measured in these have varied, although the shallowest measurements seem to indicate that groundwater is at least 30 feet below the ground surface near the Property.

The site-specific depth to groundwater and direction of groundwater flow was not determined as part of this assessment. Fluctuations in groundwater levels may occur seasonally and over a period of years due to variations in precipitation, temperature, irrigation and other factors.

We reviewed the Department of Conservation, Division of Oil, Gas, and Geothermal Resources (DOGGR) web site and map database to determine if any historic oil and/or gas wells were located within the Property. No wells were mapped within 1 mile of the Property.

2.3 CURRENT USE OF PROPERTY/DESCRIPTION OF SITE IMPROVEMENTS

The Property is currently occupied by an approximately 88,500-square-foot, single-story commercial office building and associated exterior improvements. The structure consists primarily of masonry and window exterior finishes. Exterior areas are primarily devoted to parking areas, landscaped areas, and driveways. Two loading dock areas are present; one is located at the southwest portion of the structure, and one is located at the southwest portion of the structure.

2.4 CURRENT USE OF ADJOINING PROPERTIES

Properties to the east and west are devoted to commercial office uses. A school campus is located to the north of the Property. Arroyo Mocho is located to the south of the Property, and a residential neighborhood is located further to the south.

3.0 RECORDS REVIEW

3.1 PREVIOUS ENVIRONMENTAL REPORTS

Bureau Veritas, Phase I Environmental Site Assessment Report, 5758, 5794, and 5850 West Las Positas Boulevard, Pleasanton, Alameda County, California; February 22, 2012.

Bureau Veritas performed a phase I ESA, which included the Property among other properties in 2012. The report included a reconnaissance, interviews, records review, and evaluation. At the time of their report, the Property included a vacant, 88,512-square-foot, one-story office building. Previous use interior areas reportedly consisted of various raised floor office space, restrooms, and kitchenettes. Bureau Veritas indicated that the building was vacated in 2007 and had been previously occupied by AT&T, SBC Long Distance, and Pacific Bell for office use only. It was also reported that the above-ground diesel storage tank and associated emergency generator were removed in 2007. The ESA did not identify evidence of recognized environmental conditions (RECs) in connection with the Property.

3.2 PROPERTY RECORDS

3.2.1 Title Report/Ownership

The Title Report lists recorded land title detail, ownership fees, leases, land contracts, easements, liens, deficiencies, and other encumbrances attached to or recorded against a subject property. Laws and regulations pertaining to land trusts vary from state to state and the detail of information presented in a Title Report can vary greatly by jurisdiction. As a result, ENGEO utilizes a Title Report, when provided to us, as a supplement to other historical record sources.

A Preliminary Title Report for the Property, prepared by First American Title Insurance Company and dated March 22, 2013, was provided for our review. The Property title is vested in Las Positas Property, LLC, A Delaware Limited Liability Company. No references to environmental liens, deed restrictions or other potential environmental issues were noted. This report is included in Appendix D.

3.3 HISTORICAL RECORD SOURCES

The purpose of the historical record review is to develop a history of the previous uses or occupancies of the Property and surrounding area in order to identify those uses or occupancies that are likely to have led to recognized environmental conditions on the Property.

3.3.1 Historical Topographic Maps

Historical USGS topographic maps were reviewed to determine if discernible changes in topography or improvements pertaining to the Property had been recorded. The following maps were provided to us through an EDR Historical Topographic Map Report, presented in Appendix C.

TABLE 3.3.1-1
Historical Topographic Maps

Quad	Year	Series	Scale
Pleasanton	1906	15	1:62,500
Pleasanton	1947	15	1:50,000
Dublin	1953	7.5	1:24,000
Livermore	1953	15	1:62,500
Dublin	1961	7.5	1:24,000
Livermore	1961	15	1:62,500
Dublin	1968	7.5	1:24,000
Dublin	1973	7.5	1:24,000
Dublin	1980	7.5	1:24,000

1906 Map – There are no structures depicted within the Property boundaries. Water courses are depicted to the north and the south of the Property. The surrounding area is mapped predominantly as open space.

1947 and 1953 Maps – The Property conditions appear similar to the 1906 Map, although the water course to the north of the Property is no longer depicted. The Arroyo Mocho canal is in place to the south of the Property. Hewlett Canal and a channelized Tassajara Creek are depicted to the west and the east of the Property, respectively.

1961 Maps – Property conditions appear similar to the 1953 Maps. A Military Reservation is depicted to the south of Arroyo Mocho.

1968 - 1980 Maps – Property conditions are similar to those depicted on the 1961 maps. Residential developments are depicted in the vicinity of the Property to the west and the south.

3.3.2 Aerial Photographs

The following aerial photographs, provided by EDR, were reviewed for information regarding past conditions and land use at the Property and in the immediate vicinity. These photographs are presented in Appendix E.

TABLE 3.3.2-1
Aerial Photographs

Flyer	Year	Scale
Fairchild	1939	1"=500'
Jack Ammann	1946	1"=500'

Flyer	Year	Scale
Cartwright	1958	1"=500'
Cartwright	1966	1"=500'
WAC	1979	1"=500'
WAC	1984	1"=500'
EDR	1993	1"=500'
WAC	1999	1"=500'
EDR	2005	1"=500'
EDR	2006	1"=500'
EDR	2009	1"=500'
EDR	2010	1"=500'
EDR	2012	1"=500'

1939, 1946, 1958, and 1966 Photographs – The Property appears to be undeveloped, vacant open space; dry farming activities (likely the cultivation of hay) are visible. Arroyo Mocho is visible to the south, and Hewlett Canal and a channelized Tassajara Creek are visible to the west and the east of the Property, respectively. Nearby properties are visible as undeveloped open space and are primarily devoted to agricultural activities.

1979 Photograph – Property conditions are similar to those depicted on earlier photographs. Recreational and residential land uses are visible near the Property to the south and the west.

1984 Photograph – The commercial office building and related site improvements are visible at the Property. Las Positas Boulevard, Hacienda Drive, and other nearby streets are visible. Commercial development is visible to the north, east, and west, and residential construction is visible to the south of the Property across Arroyo Mocho.

1993 and 1999 Photographs – Property conditions appear similar to the 1984 Photograph. Additional commercial, institutional, and residential development has occurred on adjacent properties and/or in the vicinity of the Property.

2005 through 2012 Photographs – Property conditions are similar to those depicted on the 1999 photograph, although the Building appears vacant in 2009, 2010, and 2012, due to an empty parking lot. The existing school campus to the north of the Property is visible in its current configuration.

3.3.3 Fire Insurance Maps

EDR prepared a Sanborn Fire insurance map search for the Property and surrounding properties. EDR reported that no maps were available for the Property and surrounding properties. A summary of the search report is presented in Appendix B.

3.3.4 City Directory

City Directories, published since the 18th century for major towns and cities, lists the name of the resident or business associated with each address. No listings dating to 1989 were identified for 5850 West Las Positas Boulevard. Listings in the vicinity of the Property are associated with commercial businesses. The results of the city directory search conducted by EDR are presented in Appendix F.

3.3.5 Government Agencies

The following agencies were contacted pertaining to possible past development and/or activity at the Property.

- City of Pleasanton Building and Safety Services Department
- Livermore-Pleasanton Fire Department
- Alameda Department of Environmental Health
- Alameda County Assessor's Office
- California Regional Water Quality Control Board
- Department of Toxic Substances Control
- California Environmental Protection Agency

City of Pleasanton Building and Safety Services Department – The City of Pleasanton Building and Safety Services Department was contacted regarding files for the Property. A file review was conducted on May 14, 2013. Several documents pertaining to building permits, calculations, and plans were reviewed. Most of the documents pertained to construction of the building in 1982. Numerous permits were reviewed regarding tenant improvements in 1996 and 1997, including those associated with the generator and above-ground storage tank enclosure. Additional permits were dated 2001 for lunchroom-related tenant improvements. Additionally, zoning information dating to 1993 was reviewed regarding the proposed occupancy of the Property by Smith Kline Beecham (SKB). The documentation discussed potential conflicts of zoning ordinances with respect to SKB's use and storage of iodine 125 (a reported approximate half-life of 60 days) and cobalt 57 (a reported approximate half-life of 272 days), two radioactive materials commonly used for medical purposes. No additional documentation pertaining to these materials or SKB was available.

Livermore-Pleasanton Fire Department – The Dublin Livermore Fire Department was contacted regarding files for the Property. A file review was conducted on May 10, 2013. Several files pertaining to the Property were reviewed. Several files pertained to minor fire inspection violations. Waste streams identified at the Property included used oil and filters, used lead-acid batteries, and used fluorescent bulbs. Documents were reviewed pertaining to a former diesel-powered emergency generator and 2,500-gallon above-ground diesel storage tank. This equipment was installed near the southwest loading dock in approximately 1997. No violations were noted.

Alameda County Department of Environmental Health – The Alameda County Department of Environmental Health website was reviewed for files pertaining to the Property. The Department did not have files associated with the Property.

Alameda County Assessor's Office – The Contra Costa County Assessor's Office website was viewed for information regarding the Property. Information on the website confirmed that the Property is an approximately 5.91-acre parcel identified by Assessor's Parcel Number (APN) 941-2762-6.

California Regional Water Quality Control Board – We reviewed the GeoTracker Database maintained by the State Water Resource Control Board to identify ongoing environmental site assessment and remedial activities within the immediate vicinity of the Property. The GeoTracker database did not identify any sites within the immediate vicinity of the Property that would be considered an environmental concern.

Department of Toxic Substances Control – We reviewed the EnviroStor Database maintained by the Department of Toxic Substances Control (DTSC) to identify ongoing environmental site assessment and remedial activities within the immediate vicinity of the Property. The EnviroStor database did not identify any sites within the immediate vicinity of the Property that would be considered an environmental concern.

3.4 ENVIRONMENTAL RECORD SOURCES

EDR performed a search of federal, tribal, state, and local databases regarding the Property and nearby properties. Details regarding the databases searched by EDR are provided in Appendix A. A list of the facilities documented by EDR within the approximate minimum search distance of the Property is provided below:

3.4.1 Federal ASTM Standard/Supplemental Sources

3.4.1.1 Subject Property

The Property is not listed on the Federal ASTM Standard sources.

3.4.1.2 Other Properties

No facilities were identified within the appropriate ASTM search distances of the Property on Federal ASTM Standard or supplemental sources.

3.4.2 State ASTM Standard/Supplemental Sources

3.4.2.1 Subject Property

The Property is listed on the following State ASTM Standard sources:

- AST – Aboveground Petroleum Storage Tank Facilities – Registered aboveground storage tanks. The listing is for the former 2,500-gallon aboveground tank associated with a former emergency generator.

3.4.2.2 Other Properties

The following database(s) include(s) facilities listed within the appropriate ASTM search distances of the Property on State ASTM Standard or supplemental sources. The number of cases is listed in parentheses.

- LUST – The Leaking Underground Storage Tank Incident Reports contain an inventory of reported leaking underground storage tank incidents. The data comes from the State Water Resource Control Board Leaking Underground Storage Tank Information System.

Pacific Bell	*4568 Willow Road*
GTE Mobilnet	*4440 Willow Road*

- SLIC – The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Britannia Business Center II	*4280 Hacienda Drive*

3.4.3 Local and/or Other ASTM Supplemental Sources

3.4.3.1 Subject Property

The Property is listed on the following Local and/or Other ASTM supplemental databases:

- FINDS – Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

- HAZNET - Facility and Manifest Data – Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method. This listing is a result of various off-haul manifests for unspecified oil-containing waste, waste oil, and mixed oil.

- EMI – Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies. The first listing is recorded in 2003 with the last in 2006. This listing appears to be associated with emissions related to the use of an on-site emergency generator.

3.4.3.2 Other Properties

The following database(s) include(s) facilities listed within the appropriate ASTM search distances of the Property on Local and/or Other ASTM Standard or supplemental sources. The number of cases is listed in parentheses.

- HIST CORTESE – The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substance Control (CALSITES). This listing is no longer updated by the state agency.

Pacific Bell	*4568 Willow Road*
GTE Mobilnet	*4440 Willow Road*

- Alameda County CS – A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Britannia Business Center II	*4280 Hacienda Drive*

Based on the distances to the identified database sites, regional topographic gradient, and the EDR findings, it is unlikely that the above-stated database sites pose an environmental risk to the Property. Properties that are on the "Orphan Summary" list appear to be located beyond the ASTM recommended radius search criteria.

4.0 SITE RECONNAISSANCE

4.1 METHODOLOGY

ENGEO conducted a reconnaissance of the Property on May 14, 2013. The Property was viewed for hazardous materials storage, superficial staining or discoloration, debris, stressed vegetation, or other conditions that may be indicative of potential sources of soil or groundwater contamination. The site was also checked for evidence of fill/ventilation pipes, ground subsidence, or other evidence of existing or preexisting underground storage tanks. Photographs taken during the site reconnaissance are presented in Figure 4.

4.2 GENERAL SITE SETTING

The Property consists primarily of a one-story commercial office building. The structure, consisting primarily of masonry and window exterior finishes, occupies a reported floor plate of approximately 88,500 square feet. Exterior areas are primarily devoted to parking areas,

landscaped areas, and driveways. Two loading dock areas are present; one is located at the southwest portion of the structure, and one is located at the southwest portion of the structure. Properties to the east and west are devoted to commercial office uses. A school campus is located to the north of the Property. Arroyo Mocho is located to the south of the Property, and a residential neighborhood is located further to the south.

4.3 INTERIOR OBSERVATIONS

Structure. The structure consists of commercial office building. At the time of our reconnaissance, all floor coverings and baseboard materials had been removed, including mastic materials. With the exception of regular slender interior columns and core functional areas (electrical facilities, restrooms), the interior consists of a large open space with very few partitioned areas. A fiberglass-panel drop ceiling remains intact in several areas, although many panels have been removed. Additionally, the HVAC system appears to be in the process of being removed and/or salvaged. Virtually all office fixtures have been removed. The building's water and electrical service were operational at the time of the reconnaissance.

4.4 EXTERIOR OBSERVATIONS

Hazardous Substances and Petroleum Products in Connection with Identified Uses. No hazardous substances or petroleum products were observed within the Property during the reconnaissance, although two five-gallon buckets of paint were observed within the southwest portion of the interior of the structure.

Storage Tanks. No above-ground storage tanks or evidence of existing underground storage tanks was observed during the reconnaissance. As discussed in previous sections, a 2,500-gallon aboveground diesel tank was previously located within an enclosure to the immediate southwest of the structure, next to a loading dock. The tank was used in conjunction with an emergency generator previously located in the same enclosure area. A competent concrete slab remains within the enclosure area. No staining or other evidence of spillage from the tank or generator was observed.

Odors. No odors indicative of hazardous materials or petroleum material impacts were noted at the time of the reconnaissance.

Pools of Potentially Hazardous Liquid. No pools of potentially hazardous liquid were observed within the Property at the time of our reconnaissance.

Drums. No drums were observed on the Property at the time of the reconnaissance.

Hazardous Substance and Petroleum Product Containers. With the exception of the aforementioned paint buckets, no hazardous substance or petroleum product containers were observed on the Property at the time of our reconnaissance.

Polychlorinated Biphenyls (PCBs). Two pad-mounted transformers were observed at the Property; one near the southwest loading dock, and one adjacent to a public sidewalk on the north border of the Property. No staining was observed in either location. Given the age of the structure and the inferred age of the transformers, it is unlikely that PCB-containing materials are present within the transformers.

Pits, Ponds and Lagoons. No pits or lagoons were observed within the Property at the time of our reconnaissance.

Stained Soil/Pavement. No significant stained soil or pavement was observed within the Property at the time of our reconnaissance.

Stressed Vegetation. No signs of stressed vegetation were observed on the Property at the time of our reconnaissance.

Solid Waste/Debris. No solid waste or debris was observed within the Property at the time of our reconnaissance.

Wastewater. Aside from on-site municipal sewer and stormwater service facilities, no wastewater conveyance systems were observed at the Property during the reconnaissance.

Wells. No evidence of on-site wells was observed at the time of our reconnaissance.

Septic Systems. No evidence of on-site septic systems was observed at the time of our reconnaissance.

4.5 ASBESTOS-CONTAINING MATERIALS AND LEAD-BASED PAINT

The structure at the Property was reportedly constructed in 1982. It is unlikely that lead-based paint materials are present. However, it is possible that asbestos-containing materials are present. If one has not already been completed, a lead-based paint and asbestos survey should be performed for the structure prior to significant renovation or demolition.

4.6 INDOOR AIR QUALITY

An evaluation of indoor air quality, mold, or radon was not included as part of the contracted scope of services. The California Department of Health Services has conducted studies of radon risks throughout the state, sorted by zip code. Results of the studies indicate that 25 tests were conducted within the Property zip code, with none of the tests exceeding the current EPA action level of 4 picocuries per liter [pCi/L][1]).

[1] California Department of Health Services – Division of Drinking Water and Environmental Management – Radon (http://www.cdph.ca.gov/HealthInfo/environhealth/Documents/Radon/CaliforniaRadonDatabase.pdf).

In accordance with ASTM E2600-10 (Tier 1) (*Standard Guide for Vapor Encroachment Screening on Property Involved in Real Estate Transactions*); there are no likely potential petroleum hydrocarbon sources for vapor intrusion within 1/10 mile of the Property or volatile organic compound (VOCs) sources within 1/3 mile of the Property.

5.0 INTERVIEWS

Neither a client nor a Key Site Manager environmental questionnaire had been completed by the time of preparation of this report.

6.0 FINDINGS

The reconnaissance and records research did not find documentation or physical evidence of soil or groundwater impairments associated with the current or past use of the Property. A review of regulatory databases maintained by county, state and federal agencies found no documentation of hazardous materials violations or discharge on the Property.

Based on the findings of this assessment, no Recognized Environmental Conditions (RECs) and no historical RECs were identified for the Property.

7.0 OPINIONS AND DATA GAPS

It is our opinion that the findings of this study are based on a sufficient level of information obtained during our contracted scope of services to render a conclusion as to whether additional appropriate investigation is required to identify the presence or likely presence of a REC. The following data gap was identified:

- We were not provided with completed interview questionnaires from the client or a Key Site manager at the time of report publication.

The data gaps identified during this process do not affect the conclusions as to the presence or lack of presence of RECs at the Property.

8.0 CONCLUSIONS

The study included a review of local, state and federal environmental record sources, standard historical sources, aerial photographs, fire insurance maps and physical setting sources, and a reconnaissance of the Property to review site use and current conditions to check for the storage, use, production or disposal of hazardous or potentially hazardous materials.

The site reconnaissance and records review did not find documentation or physical evidence of significant soil and/or groundwater impairments associated with the use of the Property. A review of regulatory databases maintained by county, state, and federal agencies found no documentation of hazardous materials violations or discharge on the Property. A review of regulatory agency records and available databases did not identify contaminated facilities within

the appropriate ASTM search distances that could impact the Property. Based on the findings of this assessment, no Recognized Environmental Conditions (RECs) or historical RECs were identified for the Property.

ENGEO has performed a phase I environmental site assessment of the Property in general conformance with the scope and limitations of ASTM E 1527-05 "Standard Practice for Environmental Site Assessments" and USEPA "Standards and Practices for All Appropriate Inquires", 40 CFR Part 312. Based on the findings of this assessment, ENGEO recommends no further environmental studies at this time.

SELECTED REFERENCES

Bureau Veritas, Phase I Environmental Site Assessment Report, 5758, 5794, and 5850 West Las Positas Boulevard, Pleasanton, Alameda County, California; February 22, 2012; Project No. 33112-012009.00.

California Department of Water Resources (http://wdl.water.ca.gov)

California Department of Conservation, Division of Oil, Gas and Geothermal, DOMS 2.0 Mapping System (http://maps.conservation.ca.gov/doms/index.html).

California Department of Health Services – Division of Drinking Water and Environmental Management- Radon
(http://ww2.cdph.ca.gov/HealthInfo/environhealth/Documents/Radon/CaliforniaRadonDatabase.pdf)

Dibblee Jr., T. W., Preliminary Geologic Map of the Dublin Quadrangle, Alameda and Contra Costa Counties, California, United States Geologic Survey, 1980.

Google Maps (http://maps.google.com)

USGS 7.5' Dublin Quadrangle-Alameda County Maps dated 1953, 1961, 1968, 1973, and 1980.

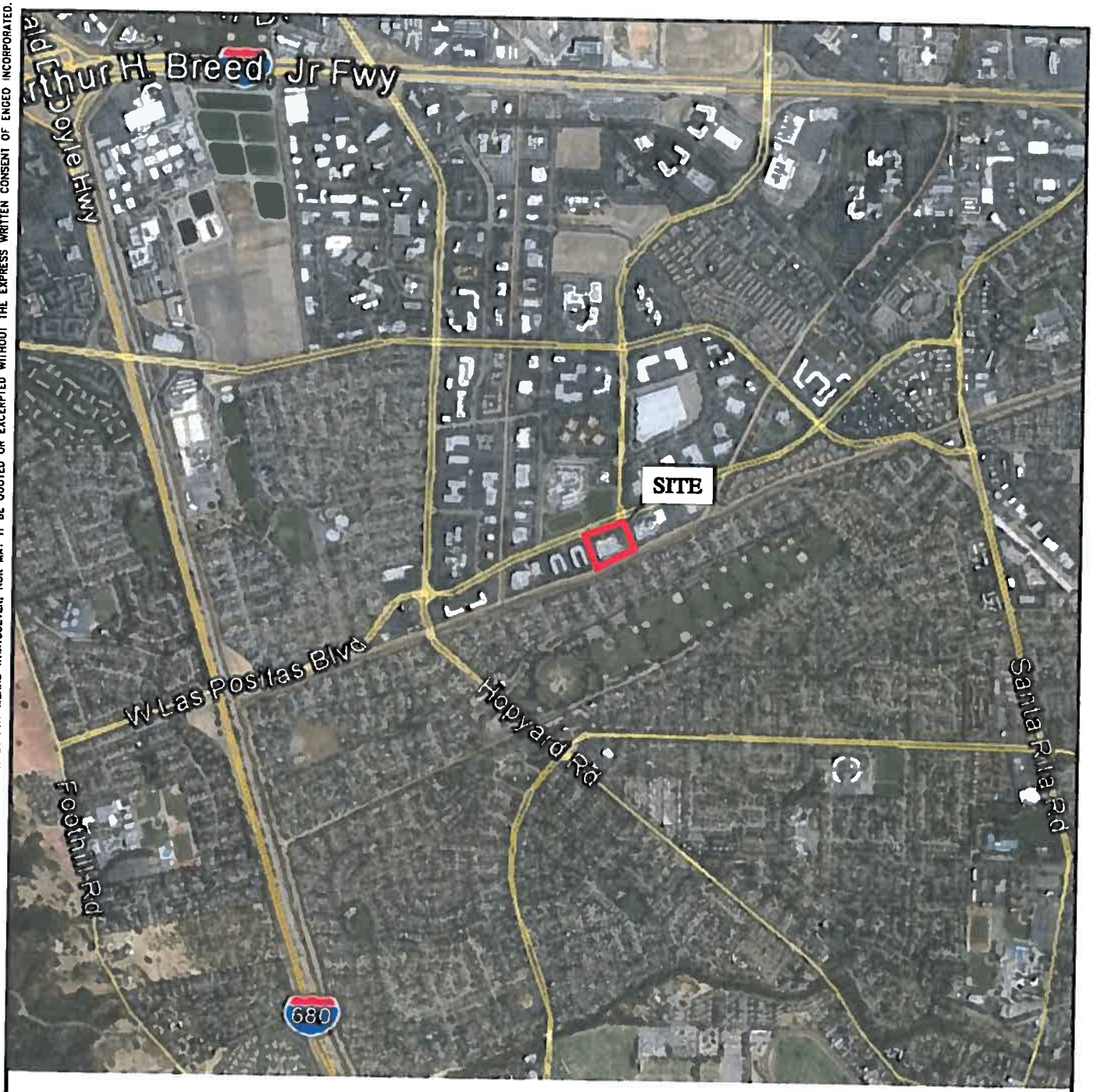
USGS 15' Pleasanton Quadrangle-Alameda County Maps dated 1906 and 1947.

USGS 15' Livermore Quadrangle-Alameda County Maps dated 1953 and 1961.

FIGURES

LIST OF FIGURES

Figure 1 – Vicinity Map
Figure 2 – Aerial Photograph
Figure 3 – Assessor's Parcel Map
Figure 4 – Site Photographs



BASE MAP SOURCE: GOOGLE EARTH PRO

ENGEO Expect Excellence

VICINITY MAP

5850 WEST LAS POSITAS BOULEVARD

PLEASANTON, CALIFORNIA

PROJECT NO.: 10269.000.000		FIGURE NO. 1
SCALE: AS SHOWN		
DRAWN BY: LL	CHECKED BY: JA	

G:\Drafting\DRAFTING2_Dwg_10000 to 12999\10269\000\ESA\10269000000-ESA-1-VicMap-0513.dwg Plot Date: 5-17-13 lee

ORIGINAL FIGURE PRINTED IN COLOR

COPYRIGHT © 2013 BY ENGEO INCORPORATED. THIS DOCUMENT MAY NOT BE REPRODUCED IN WHOLE OR IN PART BY ANY MEANS WHATSOEVER, NOR MAY IT BE QUOTED OR EXCERPTED WITHOUT THE EXPRESS WRITTEN CONSENT OF ENGEO INCORPORATED.

COPYRIGHT © 2013 BY ENGEO INCORPORATED. THIS DOCUMENT MAY NOT BE REPRODUCED IN WHOLE OR IN PART BY ANY MEANS WHATSOEVER, NOR MAY IT BE QUOTED OR EXCERPTED WITHOUT THE EXPRESS WRITTEN CONSENT OF ENGEO INCORPORATED.

N

0 FEET 300
0 METERS 150

BASE MAP SOURCE: GOOGLE EARTH PRO

ENGEO Expect Excellence

AERIAL PHOTOGRAPH

5850 WEST LAS POSITAS BOULEVARD

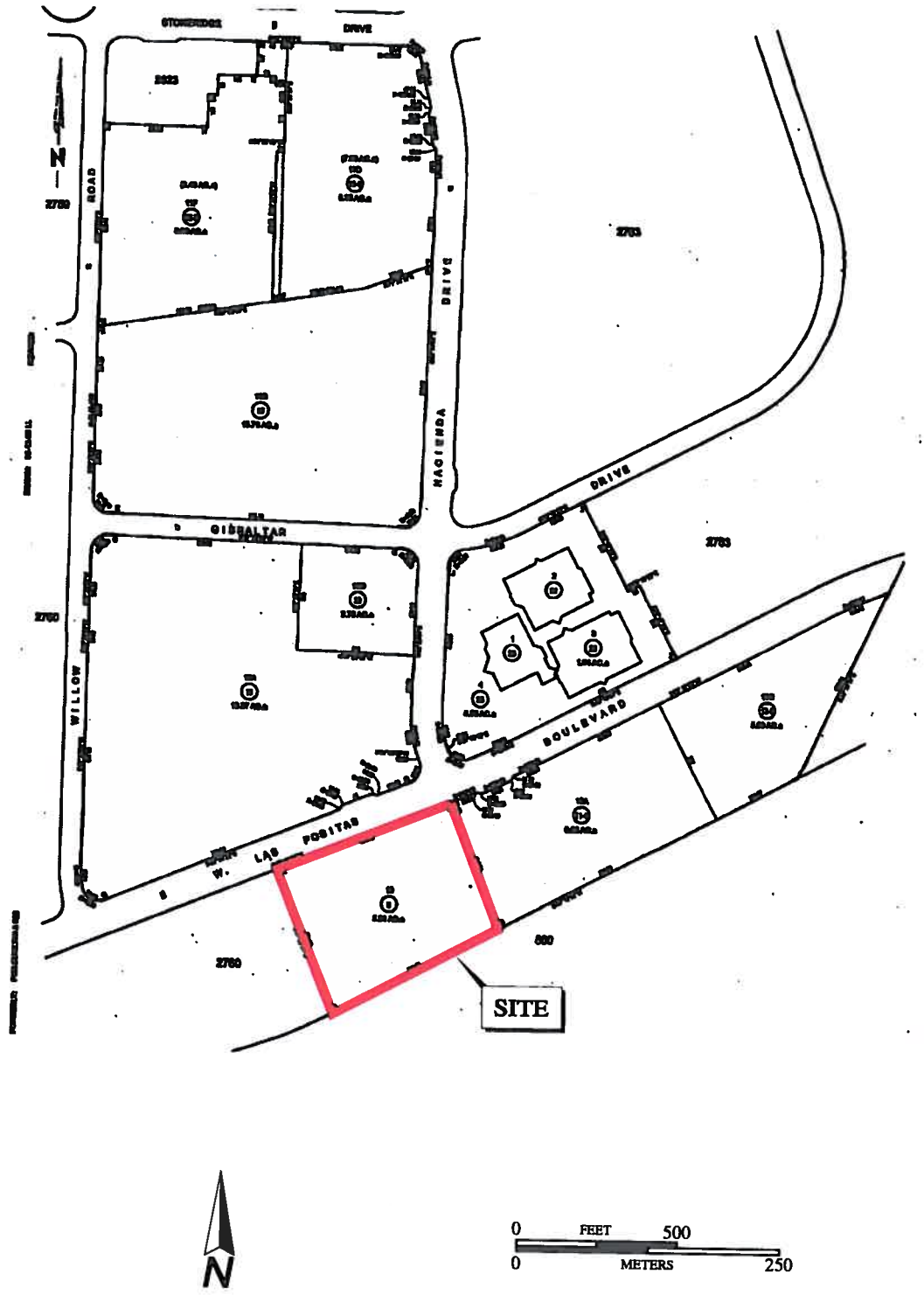
PLEASANTON, CALIFORNIA

PROJECT NO.: 10269.000.000		FIGURE NO. 2
SCALE: AS SHOWN		
DRAWN BY: LL	CHECKED BY: JA	

G:\Drafting\DRAFTING2_Dwg_10000 to 12999\10269\000\ESA\10269000000-ESA-2-AerMap-0513.dwg Plot Date: 5-17-13 lee

ORIGINAL FIGURE PRINTED IN COLOR

COPYRIGHT © 2013 BY ENGEO INCORPORATED. THIS DOCUMENT MAY NOT BE REPRODUCED IN WHOLE OR IN PART BY ANY MEANS WHATSOEVER, NOR MAY IT BE QUOTED OR EXCERPTED WITHOUT THE EXPRESS WRITTEN CONSENT OF ENGEO INCORPORATED



BASE MAP SOURCE: COUNTY ASSESSOR'S OFFICE

ENGEO Expect Excellence

ASSESSOR'S PARCEL MAP

5850 WEST LAS POSITAS BOULEVARD

PLEASANTON, CALIFORNIA

PROJECT NO.: 10269.000.000		FIGURE NO. 3
SCALE: AS SHOWN		
DRAWN BY: LL	CHECKED BY: JA	

G:\Drafting\DRAFTING2_Dwg_10000 to 12999\10269\000\ESA\10269000000-ESA-3-APNMap-0513.dwg Plot Date: 5-17-13 llee

ORIGINAL FIGURE PRINTED IN COLOR

COPYRIGHT © 2013 BY ENGEO INCORPORATED. THIS DOCUMENT MAY NOT BE REPRODUCED IN WHOLE OR IN PART BY ANY MEANS WHATSOEVER, NOR MAY IT BE QUOTED OR EXCERPTED WITHOUT THE EXPRESS WRITTEN CONSENT OF ENGEO INCORPORATED.

CONCRETE FLOORING FOLLOWING TILE REMOVAL

ELECTRICAL EQUIPMENT ROOM

FORMER AGT ENCLOSURE

JANITORIAL CLOSET

LOADING DOCK AREA

ENGEO
Expect Excellence

SITE PHOTOGRAPHS

5850 WEST LAS POSITAS BOULEVARD

PLEASANTON, CALIFORNIA

PROJECT NO.: 10269.000.000		FIGURE NO. 4A
SCALE: NO SCALE		
DRAWN BY: LL	CHECKED BY: JA	

G:\Drafting\DRAFTING2_Dwg_10000 to 12999\10269\000\ESA\10269000000-ESA-4-SitePhotos-0513.dwg Plot Date: 5-17-13 lee

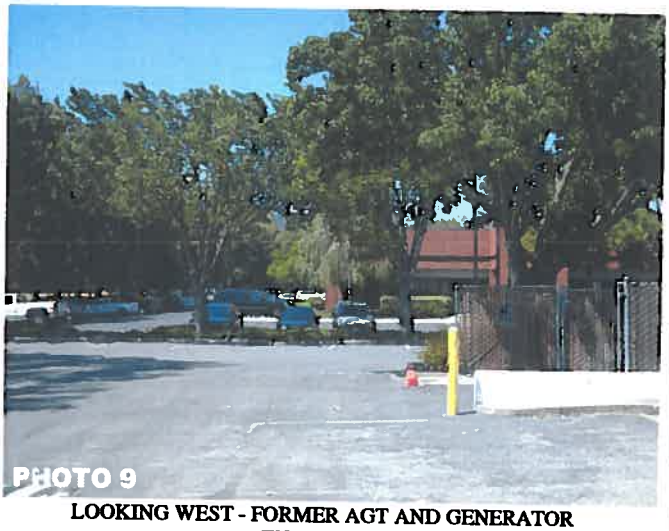
ORIGINAL FIGURE PRINTED IN COLOR

COPYRIGHT © 2013 BY ENGEO INCORPORATED. THIS DOCUMENT MAY NOT BE REPRODUCED IN WHOLE OR IN PART BY ANY MEANS WHATSOEVER, NOR MAY IT BE QUOTED OR EXCERPTED WITHOUT THE EXPRESS WRITTEN CONSENT OF ENGEO INCORPORATED.

LOOKING EAST FROM PROPERTY

LOOKING NORTH FROM PROPERTY.JPG

LOOKING SOUTH FROM PROPERTY



LOOKING WEST - FORMER AGT AND GENERATOR ENCLOSURE

PAD MOUNTED TRANSFORMER

ENGEO Expect Excellence

SITE PHOTOGRAPHS

5850 WEST LAS POSITAS BOULEVARD

PLEASANTON, CALIFORNIA

PROJECT NO.: 10269.000.000	FIGURE NO. 4B
SCALE: NO SCALE	
DRAWN BY: LL	CHECKED BY: JA

G:\Drafting\DRAFTING2_Dwg_10000 to 12999\10269\000\ESA\10269000000-ESA-4-SitePhotos-0513.dwg Plot Date: 5-17-13 lee

ORIGINAL FIGURE PRINTED IN COLOR

COPYRIGHT © 2013 BY ENGEO INCORPORATED. THIS DOCUMENT MAY NOT BE REPRODUCED IN WHOLE OR IN PART BY ANY MEANS WHATSOEVER, NOR MAY IT BE QUOTED OR EXCERPTED WITHOUT THE EXPRESS WRITTEN CONSENT OF ENGEO INCORPORATED.

PAINT AND MATERIAL STORAGE

SINK WASH AREA

VIEW OF INTERIOR OFFICE SPACE

VIEW THROUGH WINDOW AT LOADING DOCK AREA

ENGEO Expect Excellence

SITE PHOTOGRAPHS

5850 WEST LAS POSITAS BOULEVARD

PLEASANTON, CALIFORNIA

PROJECT NO.: 10269.000.000		FIGURE NO. 4C
SCALE: NO SCALE		
DRAWN BY: LL	CHECKED BY: JA	

G:\Drafting\DRAFTING2_Dwg_10000 to 12999\10269\000\ESA\10269000000-ESA-4-SitePhotos-0513.dwg Plot Date: 5-17-13 lee

ORIGINAL FIGURE PRINTED IN COLOR

PUD-103 & P14-0086
PUD & Development Agreement
"RECEIVED JAN 24 2014"
EXHIBIT B

5850 West Las Positas Boulevard

Pleasanton, California

Environmental Noise Assessment

12 December 2013

Prepared for:

SummerHill Homes
Kevin Ebrahimi
777 S. California Avenue
Palo Alto, CA 94304
Phone: 650.842.2268
Email: kebrahimi@shhomes.com

Prepared by:

Charles M. Salter Associates, Inc.
Joshua M. Roper, PE, LEED AP
100 W. San Fernando, Suite 430
San Jose, CA 95113
Phone: 408.295.4944
Email: josh.roper@cmsalter.com

CSA Project Number: 13-0602

Charles M. Salter
ASSOCIATES INC.

INTRODUCTION

This letter summarizes our environmental noise assessment for the West Las Positas Boulevard residential project in Pleasanton, California. The project consists of 177 residential units in four 2- to 4-story buildings with amenity spaces including recreation and community rooms. Outdoor use space will be provided in the open space between the buildings as shown in Figure 1, attached. The site, located at 5850 West Las Positas Boulevard, is included in the City of Pleasanton Housing Element Supplemental Environmental Impact Report study area. The site is bordered by Las Positas Boulevard and Hart Middle School to the north, commercial office buildings to the east and west, and single-family homes across the Arroyo Mocho Canal to the south. Following is a summary of our findings:

1. Incorporating sound-rated windows and doors with STC ratings up to approximately 30 in residences along West Las Positas Boulevard will reduce estimated traffic noise to DNL[1] 45 dB[2] or lower indoors.
2. Where windows must be closed to meet the interior noise criterion, residences must include ventilation or air conditioning systems to provide a habitable interior environment (with windows closed).
3. Estimated environmental noise is DNL 65 dB and below in planned common open spaces, which is consistent with the City's goal.
4. Estimated noise from vehicles associated with the project will not increase DNL at off-site receivers along West Las Positas Boulevard.
5. Outdoor condensing units and other mechanical equipment must incorporate mitigation measures to reduce noise to the City's Municipal Code limits at the adjacent property lines.
6. Guidelines are provided to reduce the impact of construction noise.

ACOUSTICAL CRITERIA

The Pleasanton General Plan

The Noise Element of the Pleasanton General Plan 2005-2025, adopted 21 July 2009, contains land use compatibility guidelines for environmental noise in the community. Table 1, below, summarizes these guidelines for residential land uses.

Table 1: Summary of Table 11-5: Noise and Land Use Compatibility Guidelines

DNL Value in Decibels Multi-Family Residential	Compatibility Level
65 dB or less	*Normally Acceptable:* Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special insulation requirements.
65 to 75 dB	*Conditionally Acceptable:* Specified land use may be permitted only after detailed analysis of the noise reduction requirements and needed noise insulation features included in the design.
Greater than 75 dB	*Unacceptable:* New construction or development should generally not be undertaken because mitigation is usually not feasible to comply with noise element policies.

[1] Day/Night Average Sound Level (DNL) — A descriptor established by the U.S. Environmental Protection Agency to describe the average day-night level with a penalty applied to noise occurring during the nighttime hours (10 pm - 7 am) to account for the increased sensitivity of people during sleeping hours.

[2] A-Weighted Sound Level (dB) — A term for the A-Weighted sound pressure level. The sound level is obtained by use of a standard sound level meter and is expressed in decibels.

In addition to the land use compatibility guidelines, the Noise Element outlines the following noise level goals:

- Interior noise goal of DNL 45 dB or lower for all residences
- Maximum instantaneous noise level goals indoors, when the noise source is rail activity or aircraft. The project site is located outside the DNL 60 dB railroad noise contour, and the CNEL 60 dB airport noise contour for Livermore Municipal Airport. Therefore, this analysis assumes these instantaneous noise level goals do not apply.

The Final Supplemental EIR for General Plan Amendment and Rezoning, dated December 2011, identifies DNL 65 dB as the outdoor noise goal for residential outdoor use spaces.

Pleasanton Municipal Code

Section 9.04.030 of the Pleasanton Municipal Code limits noise levels from mechanical equipment such as air-conditioners to 60 dB at residential property lines. Section 9.04.100 limits construction noise to the levels indicated in the Construction Noise section below.

California Building Code (CBC)

The California Building Code limits indoor noise from outdoor sources to DNL 45 dB in habitable rooms of attached housing.[3] Projects exposed to an outdoor DNL greater than 60 dB require an acoustical analysis during the design phase showing that the proposed design will limit outdoor noise to the prescribed allowable interior level. Additionally, if windows must be closed to meet the interior standard, "the design for the structure must also specify a ventilation or air-conditioning system to provide a habitable interior environment."

EXISTING NOISE ENVIRONMENT

To quantify the existing noise environment, two long-term monitors continuously measured noise levels at the site between 6 and 8 November 2013. In addition, short-term "spot" measurements were conducted and compared with corresponding time periods of the long-term monitors to determine how noise levels vary at different locations and elevations. Table 2 summarizes existing noise levels at the site. Figure 1, attached, shows the approximate measurement locations.

Table 2: Existing Noise Environment

Site	Location	Date / Time	DNL
LT-1	West Las Positas Boulevard Monitor Approximately 85 feet southeast of roadway centerline	6 – 8 November 2013	65 dB
LT-2	Arroyo Mocho Canal Monitor Along southern property line of site		55 dB
ST-1	West Las Positas Boulevard Spot Approximately 95 feet southeast of roadway centerline	3:40 – 3:55 PM 8 November 2013	63 dB
ST-2	West Side Spot Approximately 340 feet southeast of roadway centerline	2:50 – 3:05 PM 11 October 2013	54 dB

Appendix D for the City's Housing Element Supplemental EIR includes existing and "far term" forecast traffic volumes for West Las Positas Boulevard in the project vicinity. In summary, forecast peak-hour traffic volumes are expected to increase by approximately 50 percent. This corresponds with approximately a 2-decibel increase in environmental noise. Estimated future noise levels are summarized in Figure 1, attached.

[3] 2010 California Building Code, California Code of Regulations, Title 24, Part 2, Chapter 12, Section 1207: Sound Transmission.

ANALYSIS AND MITIGATIONS

Land Use Compatibility

As shown in Figure 1, attached, estimated future noise at the setback of planned residences ranges from DNL 56 dB in the shielded portions of the site to DNL 67 dB along Las Positas Boulevard. This falls into the City's *normally* and *conditionally acceptable* categories for residential projects.

Interior Noise

The project must incorporate sound rated windows and doors to reduce vehicle traffic noise to DNL 45 dB or less indoors. Preliminary estimates suggest that incorporating windows and doors with sound insulation ratings of STC 30 in rooms along Las Positas Boulevard will reduce traffic noise to this goal. This is based on architectural floor plans and elevations dated 5 December 2013, and assumes that exterior walls will be equivalent to stucco over wood sheeting, wood studs with batt insulation in stud cavities, and one layer of gypsum board on the interior side (approximately STC[4] 45). In other locations, STC 28 windows and doors are assumed.[5] The final design and sound insulation ratings must be reviewed by an acoustical consultant prior to construction.

Where windows need to be closed to meet the interior noise goal, the CBC requires "... a ventilation or air-conditioning system to provide a habitable interior environment." This applies to Building A and B, and should be discussed with the project mechanical engineer during the design phases of the project.

Exterior Noise

Outdoor use space will be provided in the area between Buildings A and B. Estimated future environmental noise in this areas will vary, depending on distance and shielding from vehicles on West Las Positas Boulevard. They are estimated to be DNL 65 dB and below, which is consistent with the City's goal for this type of space.

Mechanical Equipment Noise (Associated with the Project)

Outdoor mechanical equipment must meet the Municipal Code noise limits summarized above. It is assumed that the buildings will include rooftop air-condensing units. An acoustical consultant should review manufacturer's noise level data for the proposed units during the design phase to determine if noise reduction measures are needed. If needed, noise reduction may include a combination of selecting quiet units, maintaining minimum distances to property lines, physical barriers and/or enclosures.

Traffic Noise (Associated with the Project)

The Transportation Analysis, prepared by Fehr & Peers transportation consultants in July 2011, for the Pleasanton Housing Element Supplemental EIR includes peak-hour traffic volumes for the intersection of West Las Positas Boulevard and Hacienda Drive. In summary, the "project", which includes both this and the other projects included in the overall study, will increase peak-hour traffic volumes along West Las

---

[4] Sound Transmission Class (STC) – A single-number rating derived from the sound insulation properties of a partition. Numerically, STC represents the number of decibels of speech sound reduction from one side of the partition to the other

[5] It is important to note that STC ratings are for full window assemblies (glass and frame) rather than just the glass itself. Laboratory-tested sound-rated assemblies from an NVLAP accredited lab should be used. For reference, standard dual-pane construction grade windows and sliding glass doors have sound insulation ratings in the range of STC 26 to 28.

Positas Boulevard by approximately 3 percent. This corresponds with an increase in environmental noise of less than 1 decibel, which is considered less than significant.

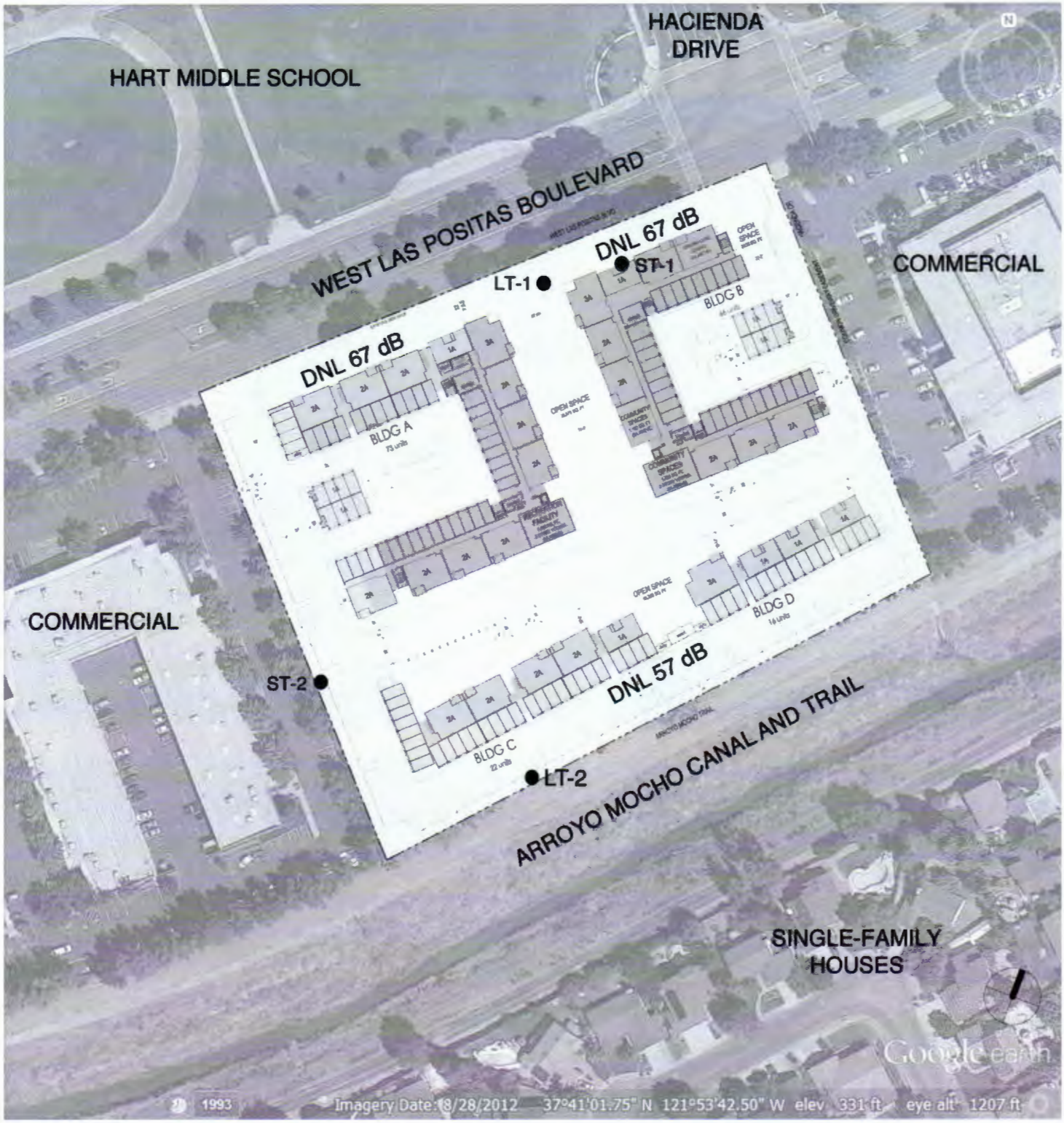
Construction Noise

The project shall incorporate the following guidelines to reduce the potential impact of construction noise. These guidelines are taken from Noise Mitigation Measure 4.J-1 from the Final Supplemental EIR, General Plan Amendment and Rezonings report dated December 2011.

- Comply with the applicable construction noise exposure criteria established in the Pleasanton Municipal Code, Section 9.04.100.
    - Notwithstanding any other provision of this chapter, between the hours of 8:00 a.m. and 8:00 p.m. daily, except Sunday and holidays, when the exemption shall apply between 10:00 a.m. and 6:00 p.m., construction, alteration or repair activities which are authorized by valid city permit shall be allowed if they meet at least one of the following noise limitations.
        - No individual piece of equipment shall produce a noise level exceeding 83 dB at a distance of 25 feet. If the devise is housed within a structure on the property, the measurement shall be made outside the structure at a distance as close to 25 feet from the equipment as possible; or
        - The noise level at any point outside of the property plane of the project shall not exceed 86 dB.
- Locate stationary construction equipment as far from adjacent occupied building as possible.
- Select routes for movement of construction-related vehicles and equipment so that noise-sensitive areas, including residences, and outdoor recreation areas, are avoided as much as possible. Include these routes in materials submitted to the City of Pleasanton for approval prior to the issuance of building permits.
- All site improvements and construction activities shall be limited to the hours of 8:00 a.m. to 5:00 p.m., Monday through Saturday. In addition, no construction shall be allowed on State and federal holidays. If complaints are received regarding the Saturday construction hours, the Community Development Director may modify or revoke the Saturday construction hours. The Community Development Director may allow earlier "start-times" for specific construction activities (e.g., concrete-foundation/floor pouring). If it can be demonstrated to the satisfaction of the Community Development Director that the construction and construction traffic noise will not affect nearby residents.
- All construction equipment must meet DMV noise standards and shall be equipped with muffling devices.

Designate a noise disturbance coordinator who will be responsible for responding to complaints about noise during construction. The telephone number of the noise disturbance coordinator shall be conspicuously posted at the construction site and shall be provided to the City of Pleasanton. Copies of the construction schedule shall also be posted at nearby noise-sensitive areas.

* * *



● INDICATES APPROXIMATE NOISE MEASUREMENT LOCATION

NOTE: DRAWING PROVIDED BY OTHERS; NO SCALE

COPYRIGHT 2013
CHARLES M. SALTER ASSOCIATES, INC
FOR ACOUSTICAL DESIGN INFORMATION ONLY

5850 WEST LAS POSITAS BOULEVARD SITE PLAN INDICATING ESTIMATED FUTURE NOISE ENVIRONMENT

FIGURE 1

CSA PROJECT NO. 13-0602
12 DECEMBER 2013
JMR

Charles M Salter Associates Inc 100 West San Fernando Suite 430 San Jose California 95113 Tel: 408 295 4944 Fax: 408 295 4949

SummerHill Apartment Project
Traffic Impact Analysis

Prepared for

THE CITY OF PLEASANTON

Submitted by

Whitlock & Weinberger Transportation, Inc.

490 Mendocino Avenue
Suite 201
Santa Rosa, CA 95401
voice 707.542.9500

475 14th Street
Suite 290
Oakland, CA 94612
voice 510.444.2600

web www.w-trans.com

February 10, 2014

Balancing Functionality and Livability
Traffic Engineering • Transportation Planning

Table of Contents

Page

Executive Summary 1

Introduction 2

Transportation Setting 3

Capacity Analysis 8

Site Access and Parking 25

Alternative Modes 27

Safety Analysis 28

School Related Traffic Analysis 29

Conclusions and Recommendations 35

Study Participants and References 37

Figures

1 Study Area and Lane Configurations 5
2 Existing Traffic Volumes 11
3 Site Plan 13
4 Trip Distribution (Non-School) 15
5 Project Traffic Volumes 16
6 Existing plus Approved Projects Traffic Volumes 18
7 Buildout Traffic Volumes 21
8 Existing Traffic Volumes (School Traffic Analysis) 30
9 Project Added Traffic Volumes (School Traffic Analysis) 32

Tables

1 Intersection Level of Service Criteria 8
2 Existing Peak Hour Intersection Levels of Service 10
3 Trip Generation Summary 12
4 School and Non-School Trips Summary Assignment 14
5 Existing and Existing plus Project Peak Hour Intersection Levels of Service 17
6 Existing plus Approved Projects Peak Hour Intersection Levels of Service 19
7 Existing plus Approved Projects plus Project Peak Hour Intersection Levels of Service 20
8 Cumulative Peak Hour Intersection Levels of Service 22
9 Cumulative and Cumulative plus Project Peak Hour Intersection Levels of Service 23
10 95th Percentile Left-Turn Queues 24
11 Parking Requirements Analysis 26
12 Collision Rates at the Study Intersections 28

13 Existing Peak Hour Intersection Levels of Service 29
14 School and Non-School Trip Assignment 31
15 Existing and Existing plus Project Peak Hour Intersection Levels of Service 33
16 95th Percentile Queues 34

Appendices

A Intersection Level of Service Calculations
B Queuing Calculations
C West Las Positas Boulevard/Hacienda Drive Intersection Exhibit
D Collision Rate Calculations
E Intersection Level of Service Calculations (School Analysis)
F Queuing Calculations (School Analysis)

Executive Summary

The proposed project would demolish the existing vacant office building located at the southwest corner of the West Las Positas Boulevard/Hacienda Drive intersection in the City of Pleasanton and construct 177 residential apartment units. This project was included in the recently approved *Pleasanton Housing Element EIR.*

The project is anticipated to generate an average of 1,177 new trips on a daily basis, including 90 trips (65 school related and 25 non-school related) during the morning peak hour and 110 trips (all non-school related) during the evening peak hour.

The proposed project would include improvements at the intersection of West Las Positas Boulevard/Hacienda Drive. These improvements were included in all the plus project conditions traffic analysis.

Currently, all of the study intersections operate at an acceptable LOS C or better during the a.m. and p.m. peak hours and would continue to do so with the addition of project-generated trips. Under Existing plus Approved Projects Conditions, all the study intersections are expected to operate acceptably without and with the addition of project generated traffic. Under Cumulative Conditions and considering the planned TIF improvements, all the study intersections would operate acceptably without and with the addition of project-generated traffic.

The 95th percentile queues in the left-turn pockets at the West Las Positas Boulevard/ Hacienda Drive intersection would fit within the available storage length during the a.m. and p.m. peak hours under Existing plus Approved Projects Conditions, and also Cumulative Conditions without and with the project.

Access to the project site would be maintained via an existing right-turn in/right-turn out driveway off of West Las Positas Boulevard and the south leg of the signalized intersection of West Las Positas Boulevard/Hacienda Drive.

The proposed project would provide 304 parking spaces, including 254 covered spaces, and would satisfy the City of Pleasanton parking requirements.

Pedestrian access to the site is expected to be adequate. Existing and proposed bicycle facilities, including secured on-site bicycle parking and proposed trail facilities, would adequately serve the project site. Existing transit routes and bus stops adjacent to the project site on West Las Positas Boulevard would adequately serve the project-generated transit trips. The City of Pleasanton Climate Action Plan requires new residential developments within one-half mile of transit to offer discounted transit passes as part of the Home Owners Association (HOA) amenities, payable through the HOA dues. It is therefore recommended that the project developer shall work with the Hacienda Business Park Association to provide ECO passes to the residents for free use of the LAVTA transit system.

The proposed project would have a less-than-significant impact at the study intersections along the routes to Donlon Elementary School and Hart Middle school during the a.m. and school p.m. peak hours.

Introduction

This report presents an analysis of the potential traffic impacts that would be associated with the development of 177 residential apartment units to be located at 5850 West Las Positas Boulevard in the City of Pleasanton. The traffic study was completed in accordance with the criteria established by the City of Pleasanton, and is consistent with standard traffic engineering techniques.

Prelude

The purpose of a traffic impact study is to provide City staff and policy makers with data that they can use to make an informed decision regarding the potential traffic impacts of a proposed project, and any associated improvements that would be required in order to mitigate these impacts to a level of insignificance as defined by the City's General Plan or other policies. Vehicular traffic impacts are typically evaluated by determining the number of new trips that the proposed use would be expected to generate, distributing these trips to the surrounding street system based on existing travel patterns or anticipated travel patterns specific to the proposed project, then analyzing the impact the new traffic would be expected to have on critical intersections. Impacts relative to safety, including for pedestrians and bicyclists, and to transit are also addressed.

Project Profile

The project site is located in the southwest quadrant of the West Las Positas Boulevard/Hacienda Drive intersection and currently has a vacant one-story office building. The project as proposed would demolish the existing vacant building and construct 177 residential apartment units. Vehicular access to the project site is currently provided via a right-turn in/right-turn out only driveway on West Las Positas Boulevard and the signalized intersection of West Las Positas Boulevard at Hacienda Drive, and these access points would remain with the proposed project.

Operational Analysis

Study Area and Periods

The study area includes the immediate site vicinity and local roadways, as well as the following seven intersections; the numbering for the intersections as contained in the City's Synchro model and used for the analysis output is indicated in parentheses:

1. Stoneridge Drive/Hacienda Drive (#57)
2. Willow Road/Gibraltar Drive (south) (#946)
3. Hacienda Drive at Gibraltar Drive (south) (#58)
4. West Las Positas Boulevard at Hopyard Road (#35)
5. West Las Positas Boulevard at Willow Road (#52)
6. West Las Positas Boulevard at Hacienda Drive (#59)
7. West Las Positas Boulevard at Stoneridge Drive (#64)

Typical operating conditions during the weekday a.m. and p.m. peak periods were evaluated to capture the highest potential impacts for the proposed project as well as the highest volumes on the local transportation network. The morning peak hour occurs between 7:00 and 9:00 a.m. and reflects conditions during the home to work or school commute, while the p.m. peak hour occurs between 4:00 and 6:00 p.m. and typically reflects the highest level of congestion during the homeward bound commute.

At the direction of City staff, traffic volume data presented in the recently approved *Pleasanton Housing Element Transportation Analysis* (Fehr & Peers, 2011), were incorporated into this analysis. Existing traffic volume data was not available for the study intersection of Willow Road/Gibraltar Drive South; therefore, new a.m. (7:00-9:00) and p.m. (4:00-6:00) peak hour turning movement counts were conducted on a typical weekday in November 2013 while local schools were in session.

Study Intersections

Stoneridge Drive/Hacienda Drive is a four-way, signalized intersection with protected left-turn phasing on all four approaches. Marked crosswalks with pedestrian signals heads and push buttons are provided on all legs of the intersection.

Willow Road/Gibraltar Drive (south) is an unsignalized, four-legged intersection. The Willow Road northbound and southbound approaches are uncontrolled and the eastbound and westbound Gibraltar Drive (south) approaches are stop-controlled. Marked crosswalks are provided on all legs of the intersection except the western leg.

Hacienda Drive/Gibraltar Drive (south) is a four-legged, signalized intersection. The northbound and southbound Hacienda Drive approaches have protected left-turn phasing and the Gibraltar Drive (south) eastbound and westbound approaches have permissive left-turn phasing. Marked crosswalks and pedestrian crossing signal equipment are provided on all legs of the intersection.

West Las Positas Boulevard/Hopyard Road is a signalized, four-way intersection with protected left-turn phasing on all four approaches. Right-turning movements are uncontrolled on all legs of the intersection except the northern leg. Marked crosswalks are provided across all legs of the intersection along with pedestrian crossing signal equipment.

West Las Positas Boulevard/Willow Road is a signalized, four-legged intersection; the southern leg is a driveway. The eastbound and westbound West Las Positas Boulevard approaches have protected left-turn phasing and the northbound driveway approach and southbound Willow Road approach each have permissive left-turn phasing. Marked crosswalks with pedestrian signal heads and push buttons are provided on all legs of the intersection.

West Las Positas Boulevard/Hacienda Drive is a four-way, signalized intersection; the southern leg is a driveway serving an office building located at the southeast corner of this intersection. The eastbound and westbound Las Positas Boulevard approaches have protected left-turn phasing. The northbound driveway approach and the southbound Hacienda Drive approach has exclusive (split) phasing. Marked crosswalks are provided on all legs of the intersection, along with pedestrian crossing signal equipment.

West Las Positas Boulevard/Stoneridge Drive is a signalized, four-way intersection with protected left-turn phasing on all four approaches. Marked crosswalks and pedestrian signal heads and push buttons are provided on all legs of the intersection.

The locations of the study intersections as well as the existing lane configurations and traffic controls are shown in Figure 1.

Alternative Modes

Pedestrian Facilities

Pedestrian facilities include sidewalks, crosswalks, pedestrian signal phases, curb ramps, curb extensions, and various streetscape amenities such as lighting, benches, etc. In general, a network of sidewalks, crosswalks, pedestrian signals, and curb ramps provide access for pedestrians in the vicinity of the proposed project site. Marked crosswalks and pedestrian signal phasing are provided at all signalized intersections.

Bicycle Facilities

The *Highway Design Manual*, California Department of Transportation (Caltrans), 2012, classifies bikeways into three categories:

- *Class I Multi-Use Path*: a completely separated right-of-way for the exclusive use of bicycles and pedestrians with cross flows of motorized traffic minimized.
- *Class II Bike Lane*: a striped and signed lane for one-way bike travel on a street or highway.
- *Class III Bike Route*: signing only for shared use with motor vehicles within the same travel lane on a street or highway.

Class I multi-use paths including Iron Horse Trail, and Alamo Canal Trail exist near the study area. Within the project vicinity, Class II bike lanes exist on West Las Positas Boulevard west of Haciendas Drive, Willow Road and Stoneridge Drive. Currently, bike lanes do not exist on West Las Positas Boulevard between Stoneridge Drive and Hacienda Drive.

According to the *Pleasanton Pedestrian and Bicycle Master Plan*, Fehr & Peers, January 2010, a Class I multi-use path is proposed on the south side of the Arroyo Mocho Creek. Class II bike lanes are proposed on West Las Positas Boulevard east of Hacienda Drive, Hopyard Road and Stoneridge Drive. Additionally, a new trail access point, east of the project site on West Las Positas Boulevard at Tassajara Creek, is also proposed.

LEGEND
● Study Intersection

002-9ple.ai 12/13

SummerHill Apartment Project Traffic Impact Analysis

Figure 1 – Study Area and Lane Configurations

w-trans

Transit Facilities

Transit service in Pleasanton is provided by three agencies: The Livermore Amador Valley Transit Authority (LAVTA) provides fixed route bus service, and the Bay Area Rapid Transit District (BART) and the Altamont Commuter Express (ACE) both operate commuter rail service. Following is a summary of the transit lines that currently serve the project site.

Wheels Bus

The LAVTA provides fixed route bus service under the name "Wheels" in the City of Pleasanton, as well as the neighboring cities of Dublin, Livermore, and unincorporated portions of Alameda County.

Wheels Bus Route 9 provides weekday morning and evening service from/to East Dublin/Pleasanton BART Station to West Las Positas Boulevard, Stoneridge Drive and Willow Road. Morning service is provided between 6:45 a.m. and 9:30 a.m. with 15-minute headways and evening service is provided between 3:30 p.m. and 6:30 p.m. with approximately 10-20 minute headways.

Wheel Bus Route 54 provides weekday morning and evening service between the Pleasanton Altamont Commuter Express (ACE) Station and East Dublin/Pleasanton BART Station connecting Hopyard Road, West Las Positas Boulevard and Stoneridge Drive. Morning service is provided between 5:30 a.m. and 9:00 a.m. with 15-60 minute headways. Evening service is provided between 3:30 p.m. and 6:30 p.m. with 60-minute headways.

Wheel Bus Route 70X provides weekday morning and evening service between Pleasant Hill BART Station and East Dublin/Pleasanton via Walnut Creek BART Station. During the morning hours, service is provided from the Pleasant Hill BART Station to the East Dublin/Pleasanton BART Station with approximately 15-30 minute headways. At the East Dublin/Pleasanton BART Station, route 70X becomes Route 9. Similarly, during the evening hours, Route 9 becomes Route 70X at the East Dublin/ Pleasanton BART Station and provides service to the Pleasant Hill BART Station with 30-minute headways.

Additionally, school focused bus routes 603, 607, 609 and 610 provide service between the various residential neighborhoods in Pleasanton and Hart Middle School from West Las Positas Boulevard, Gibraltar Drive and Hacienda Drive.

Within the project vicinity, bus stops are provided in both the eastbound and westbound directions along West Las Positas Boulevard. The eastbound direction bus stop is located on the south side of West Las Positas Boulevard just east of Hacienda Drive. The westbound direction bus stop is located on the north side of West Las Positas Boulevard just west of Hacienda Drive. These bus stops are currently being served by Wheel Bus Routes 9, 54 and 70X.

Two bicycles can be carried on most Wheels buses. Bike rack space is on a first come, first served basis. Additional bicycles are allowed on Wheels buses at the discretion of the driver.

Dial-a-ride, also known as paratransit, or door-to-door service, is available for those who are unable to independently use the transit system due to a physical or mental disability. The City of Pleasanton Dial-a-ride is designed to serve the needs of individuals with disabilities within Pleasanton which is supplemented by LAVTA in the greater Livermore-Amador Valley region.

BART

The Bay Area Rapid Transit District (BART) provides heavy-rail rapid transit service within Alameda, Contra Costa, San Francisco and San Mateo Counties. The East Dublin/Pleasanton station, located along

I-580 between Hopyard Road-Dougherty Road and Hacienda Drive, is the easternmost station along that segment of the BART system and is approximately two miles northwest of the proposed project site. Additionally the West Dublin/Pleasanton station, located near the Stoneridge Mall, also serves the City. One BART line provides service to the two Dublin/Pleasanton stations, with the line terminating in Daly City. Passengers can transfer to other BART lines that terminate at Richmond, Pittsburg/Bay Point, Fremont, Millbrae and the San Francisco International Airport. Wheels Bus Route 9 provides service between the project site and the East Dublin/Pleasanton BART Station.

ACE

The Altamont Commuter Express (ACE) is an intra-city rail transit service that provides commuter service between Stockton and San Jose with ten stations. Four westbound trains are provided in the morning and four eastbound trains are provided in the evening. The ACE station in Pleasanton is located on Pleasanton Avenue north of Bernal Avenue. Wheels Bus Route 54 provides weekday morning and evening service between the existing transit stops adjacent to the project site and the Pleasanton ACE station.

Intersection Level of Service Methodologies

Level of Service (LOS) is used to rank traffic operation on various types of facilities based on traffic volumes and roadway capacity using a series of letter designations ranging from A to F. Generally, Level of Service A represents free flow conditions and Level of Service F represents forced flow or breakdown conditions. A unit of measure that indicates a level of delay generally accompanies the LOS designation.

The study intersections were analyzed using methodologies published in the *Highway Capacity Manual* (HCM), Transportation Research Board, 2000. This source contains methodologies for various types of intersection control, all of which are related to a measurement of delay in average number of seconds per vehicle. The use of these methodologies is consistent with the recently completed City of Pleasanton Housing Element traffic analysis.

The Levels of Service for the study intersection of Willow Road/Gibraltar Drive South, which has side-street stop controls, were analyzed using the "Two-Way Stop-Controlled" intersection capacity method from the HCM. This methodology determines a level of service for each minor turning movement by estimating the level of average delay in seconds per vehicle. Results are presented for individual movements together with the weighted overall average delay for the intersection.

All of the remaining study intersections are controlled by traffic signals and were evaluated using the signalized methodology from the HCM. This methodology is based on factors including traffic volumes, green time for each movement, phasing, whether or not the signals are coordinated, truck traffic, and pedestrian activity. Average stopped delay per vehicle (in seconds) is used as the basis for evaluation in this LOS methodology.

The ranges of delay associated with the various levels of service are indicated in Table 1.

Table 1
Intersection Level of Service Criteria

LOS	Two-Way Stop-Controlled	Signalized
A	Delay of 0 to 10 seconds. Gaps in traffic are readily available for drivers exiting the minor street.	Delay of 0 to 10 seconds. Most vehicles arrive during the green phase, so do not stop at all.
B	Delay of 10 to 15 seconds. Gaps in traffic are somewhat less readily available than with LOS A, but no queuing occurs on the minor street.	Delay of 10 to 20 seconds. More vehicles stop than with LOS A, but many drivers still do not have to stop.
C	Delay of 15 to 25 seconds. Acceptable gaps in traffic are less frequent, and drivers may approach while another vehicle is already waiting to exit the side street.	Delay of 20 to 35 seconds. The number of vehicles stopping is significant, although many still pass through without stopping.
D	Delay of 25 to 35 seconds. There are fewer acceptable gaps in traffic, and drivers may enter a queue of one or two vehicles on the side street.	Delay of 35 to 55 seconds. The influence of congestion is noticeable, and most vehicles have to stop.
E	Delay of 35 to 50 seconds. Few acceptable gaps in traffic are available, and longer queues may form on the side street.	Delay of 55 to 80 seconds. Most, if not all, vehicles must stop and drivers consider the delay excessive.
F	Delay of more than 50 seconds. Drivers may wait for long periods before there is an acceptable gap in traffic for exiting the side streets, creating long queues.	Delay of more than 80 seconds. Vehicles may wait through more than one cycle to clear the intersection.

Reference: *Highway Capacity Manual,* Transportation Research Board, 2000

Traffic Operation Standards

Levels of Service

The City of Pleasanton has adopted an operational standard of LOS D or better for intersection operations per the General Plan (adopted July 2009). However, there are a few exceptions to the LOS D standard in the Downtown area and at the City of Pleasanton gateway intersections. These intersections may have a level of service below the LOS D standard if no reasonable mitigation exists or if the necessary mitigation is contrary to other goals and policies of the City. Traffic impacts at the study intersections would be considered significant if the Project would result in any of the following:

Impact Significance Criteria

Signalized Intersections

- Deterioration of a signalized intersection from LOS D (or better) to LOS E or LOS F
- The project adds ten or more trips to a signalized intersection projected to operate at LOS E prior to the addition of project traffic

Unsignalized Intersections

- Deterioration of a controlled movement at an unsignalized intersection from LOS E or better to LOS F, or at intersections where a controlled movement already operates at LOS F, one of the following:
  - Project traffic results in satisfaction of the peak hour volume traffic signal warrant;
  - Project traffic increases minor movement delay by more than 30 seconds; or
  - Where the peak hour volume signal warrant is met without Project traffic and delay cannot be measured, Project increases traffic by 10 or more vehicles per lane on the controlled approach.

Traffic Model

The City of Pleasanton's traffic model is maintained by City Staff and uses Synchro analysis software. The model was provided by City staff to use for this analysis. This citywide model was last updated for the City's Housing Element update and is consistent with the buildout of the City's General Plan. The proposed project (and not the existing office use) was included in the environmental analysis for the City's Housing Element update, and was therefore included in this traffic model for all study scenarios except the existing conditions scenarios.

Traffic volume data were obtained directly from this model, with adjustments made as noted below:

- *Existing conditions* – traffic volume data were obtained directly from the model for the existing conditions (without project) scenario.
- *Existing plus Project conditions* – project traffic volumes were added to the existing conditions traffic volumes to represent existing plus project conditions.
- *Existing plus Approved Projects conditions* – short-term future traffic volume data provided in the traffic model includes traffic that would be generated by the proposed project. Therefore the project's traffic volumes were subtracted out from the traffic model volumes.
- *Existing plus Approved Projects plus Project conditions* – short-term future traffic volume data provided in the traffic model already includes traffic that would be generated by the proposed project, so no adjustments were made to the data provided.
- *Cumulative conditions* – to develop the Cumulative without project scenario, the project's traffic volumes were subtracted out from those presented in the traffic model.

- *Cumulative plus Project conditions* – the future traffic volume data already includes the project generated traffic; therefore, no adjustments were made.

Recent traffic volume data for the intersection of Willow Road/Gibraltar Drive South was not available. Therefore, traffic volume at this intersection under short-term and cumulative scenarios was developed based on balancing traffic volumes with adjacent intersections.

Existing Conditions

The Existing Conditions scenario provides an evaluation of current operation based on existing traffic volumes during the a.m. and p.m. peak periods. This condition does not include project-generated traffic volumes. The existing traffic volumes are shown in Figure 2.

Under existing conditions, all study intersections operate acceptably at LOS C or better during both peak hours. A summary of the intersection Level of Service calculations is contained in Table 2, and copies of the calculations are provided in Appendix A.

Table 2
Existing Peak Hour Intersection Levels of Service

Study Intersection *Approach*	Existing Conditions			
	AM Peak		PM Peak	
	Delay	LOS	Delay	LOS
1. Stoneridge Dr/ Hacienda Dr	21.4	C	25.7	C
2. Willow Rd/Gibraltar Dr (south)	1.2	A	3.5	A
Eastbound (Gibraltar Dr) approach	*17.3*	*C*	*16.1*	*C*
Westbound (Gibraltar Dr) approach	*14.2*	*B*	*11.1*	*B*
3. Hacienda Dr/Gibraltar Dr (south)	6.8	A	6.1	A
4. West Las Positas Blvd/Hopyard Rd	29.0	C	23.5	C
5. West Las Positas Blvd/Willow Rd	16.0	B	10.7	B
6. West Las Positas Blvd/Hacienda Dr	14.8	B	15.6	B
7. West Las Positas Blvd/Stoneridge Dr	19.0	B	24.0	C

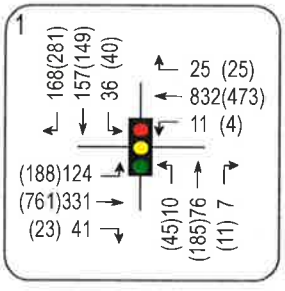
Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics*

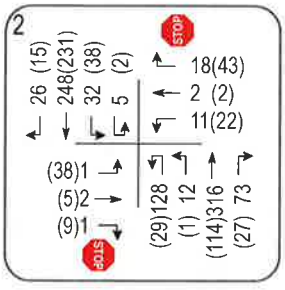
Traffic Impact Fee Program

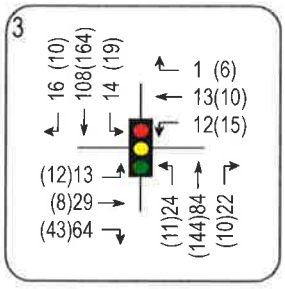
The City of Pleasanton has established a Traffic Impact Fee (TIF) program to fund future enhancements to the transportation network based on anticipated needs. As part of the City's program, there are plans to modify the following three intersections:

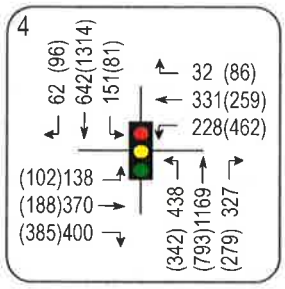
West Las Positas Boulevard/Hopyard Road

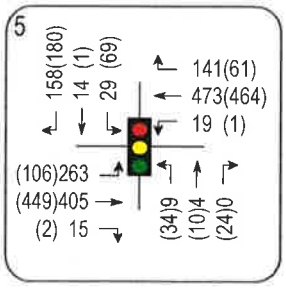
The West Las Positas westbound approach will be modified to provide three left-turn lanes, two through lanes and one right-turn lane. This improvement was included in the Cumulative Conditions scenario analysis.

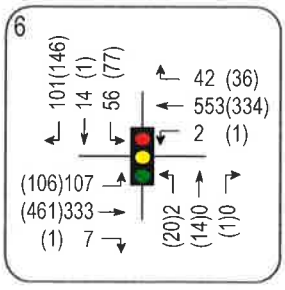


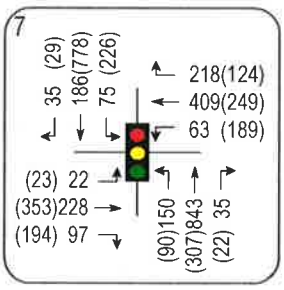












LEGEND
- Study Intersection
- xx A.M. Peak Hour Volume
- (xx) P.M. Peak Hour Volume

002-9ple.ai 12/13

SummerHill Apartment Project Traffic Impact Analysis

Figure 2 – Existing Traffic Volumes

w-trans

West Las Positas Boulevard/Hacienda Drive

Existing split phasing for the northbound and southbound Hacienda Drive approaches at West Las Positas Boulevard will be replaced with protected left-turn phasing. As part of this improvement, the northbound Hacienda Drive approach will be modified to provide one left-turn lane and one shared through/right-turn lane. The southbound Hacienda Drive approach would be modified to include one left-turn lane, one through lane and one right-turn lane. It was noted that the above intersection improvements are being proposed by the project. Therefore, these improvements were included in all the plus project scenarios.

West Las Positas Boulevard/Stoneridge Drive

The eastbound and westbound West Las Positas Boulevard approaches would be converted to two left-turn lanes, two through lanes and one right-turn lane. These improvements were included in the Cumulative Conditions traffic analysis.

Project Description

The proposed project would demolish the existing vacant office building and construct 177 residential apartment units at the southwest corner of the West Las Positas/Hacienda Drive intersection. The project site is currently accessed via a right-turn in/right-turn out driveway off of West Las Positas Boulevard and the south leg of the West Las Positas Boulevard/Hacienda Drive intersection. These access points would remain with the proposed project. The most recent site plan dated January 2014 is shown in Figure 3.

Trip Generation

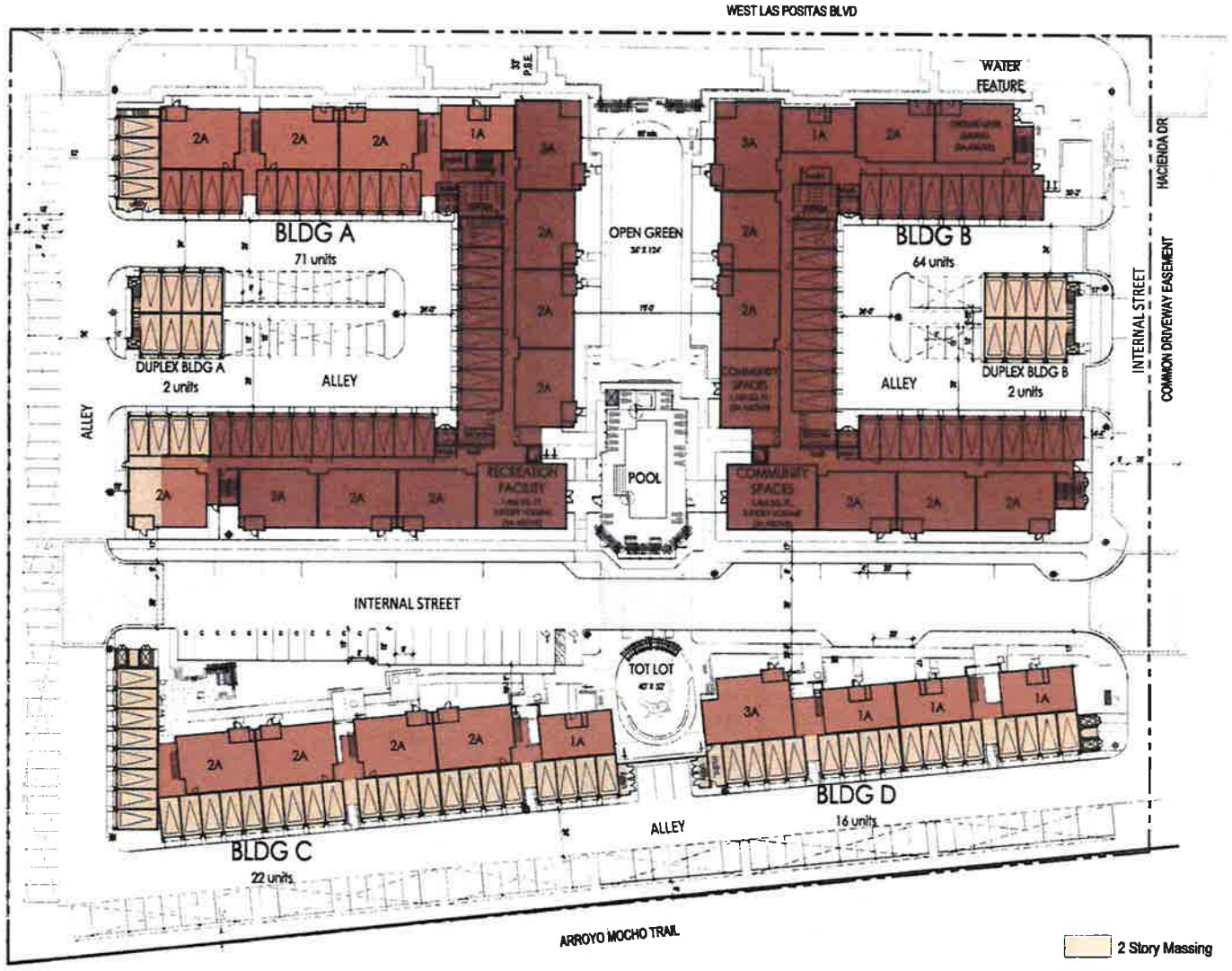
The anticipated trip generation for the proposed project was estimated using the average rates published by the Institute of Transportation Engineers (ITE) in *Trip Generation Manual*, 9th Edition, 2012 for an "Apartment" (LU# 220). As indicated in Table 3, the proposed project is expected to generate an average of 1,177 daily trips, including 90 trips during the a.m. peak hour and 110 trips during the p.m. peak hour.

Table 3
Trip Generation Summary

Land Use	Units	Daily		AM Peak Hour				PM Peak Hour			
		Rate	Trips	Rate	Trips	In	Out	Rate	Trips	In	Out
Proposed											
Apartment	177 du	6.65	1,177	0.51	90	18	72	0.62	110	71	39
Project Trips			**1,177**		**90**	**18**	**72**		**110**	**71**	**39**

Note: du = dwelling unit

Donlon Elementary School (4150 Dorman Road) and Hart Middle School (4433 Willow Road) are located within the study area. Due to the proximity of these schools to the project site, it was anticipated that some of the trips generated by the project would be to and from these schools. Based on the bell schedule (school start and end time) posted on each school's website, it was determined that the a.m. peak hour for the school and the project would coincide; however, the school p.m. peak hour (2:00-4:00 p.m.) would be outside the project p.m. peak hour (4:00-6:00 p.m.). Therefore, school-related traffic generated from the proposed project was included only in distribution for the a.m. peak hour traffic analysis.



UNIT MIX:	BUILDING A	B	C	D	TOTAL
1-BEDROOM	32	30	10	13	85
2-BEDROOM	35	30	12		77
3-BEDROOM	6	6		3	15
	73	66	22	16	177 units

Source: KTGY Group, Inc.

002-9ple.ai 1/14

SummerHill Apartment Project Traffic Impact Analysis

Figure 3 – Site Plan

w-trans

Per the information provided by the City staff, it was estimated that the proposed 177 apartment units would include a total of 47 students (31 elementary school and 16 middle school students). To provide a conservative analysis, it was assumed that all of the 47 students would be driven to school, resulting in 47 a.m. peak hour outbound trips from the site. It was also assumed that some of the project patrons would return back to the project site after dropping their children off to school (i.e., parents returning home after dropping their child off at school). Therefore, all of the 18 inbound project trips were assumed to be school-related. A summary of both school and non-school related trips is provided in Table 4.

Table 4
School and Non-School Trips Summary Assignment

Description	AM Peak Hour			PM Peak Hour		
	Trips	In	Out	Trips	In	Out
School	65	18	47	-	-	-
Non-School	25	0	25	110	71	39
Total Project Trips	**90**	**18**	**72**	**110**	**71**	**39**

Trip Distribution/Assignment

The trip distribution patterns used to allocate new project trips to the street network were determined by reviewing the existing and existing plus project volumes at the study intersections given in the *Pleasanton Housing Element Transportation Analysis*, Fehr & Peers, 2011, as well as the assignment assumptions indicated above. The applied distribution (non-school related) is shown in Figure 4.

Non-school related project trips were distributed to the roadway network based on the access scheme and trip distribution pattern shown in Figure 4. School related project trips were distributed based on the access scheme, elementary and middle school locations and the assumption that some of the project patrons after dropping their children off to school would return, while others would continue on to work or other destinations following the trip distribution pattern given in Figure 4. Further, it was assumed that project patrons exiting the site from the right-turn in/right-turn out driveway off of West Las Positas Boulevard and heading west (either to the schools or other destinations) would make a U-turn from eastbound West Las Positas Boulevard to westbound West Las Positas Boulevard at Hacienda Drive. The resulting project added traffic volumes during the a.m. and p.m. peak hour are shown in Figure 5.

Existing plus Project Conditions

Upon the addition of project-related traffic to the existing volumes and considering the roadway and traffic signal improvements at the West Las Positas Boulevard/Hacienda Drive intersection, all of the study intersections would continue to operate at an acceptable LOS C or better during both the a.m. and p.m. peak hours. A summary of the intersection Level of Service analysis is provided in Table 5 with Existing Conditions values shown for comparison purposes. Copies of the Level of Service calculations are provided in Appendix A.

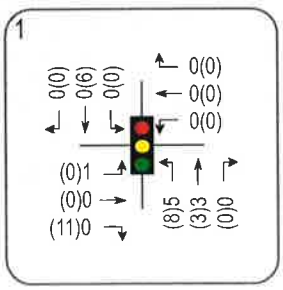
LEGEND
● Study Intersection

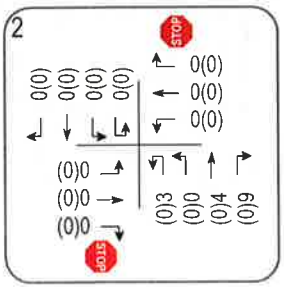
002-9ple.ai 1/14

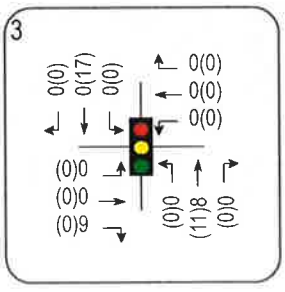
SummerHill Apartment Project Traffic Impact Analysis

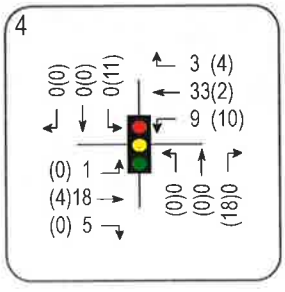
Figure 4 – Trip Distribution (Non-School)

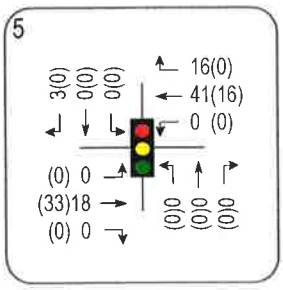
w-trans

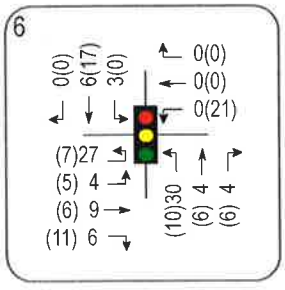


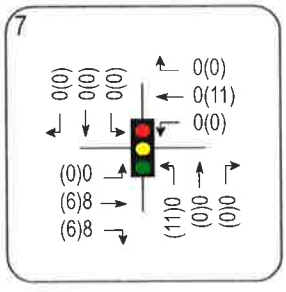












LEGEND
- Study Intersection
- xx A.M. Peak Hour Volume
- (xx) P.M. Peak Hour Volume

002-9ple.ai 1/14

SummerHill Apartment Project Traffic Impact Analysis

Figure 5 – Project Traffic Volumes

w-trans

Table 5
Existing and Existing plus Project Peak Hour Intersection Levels of Service

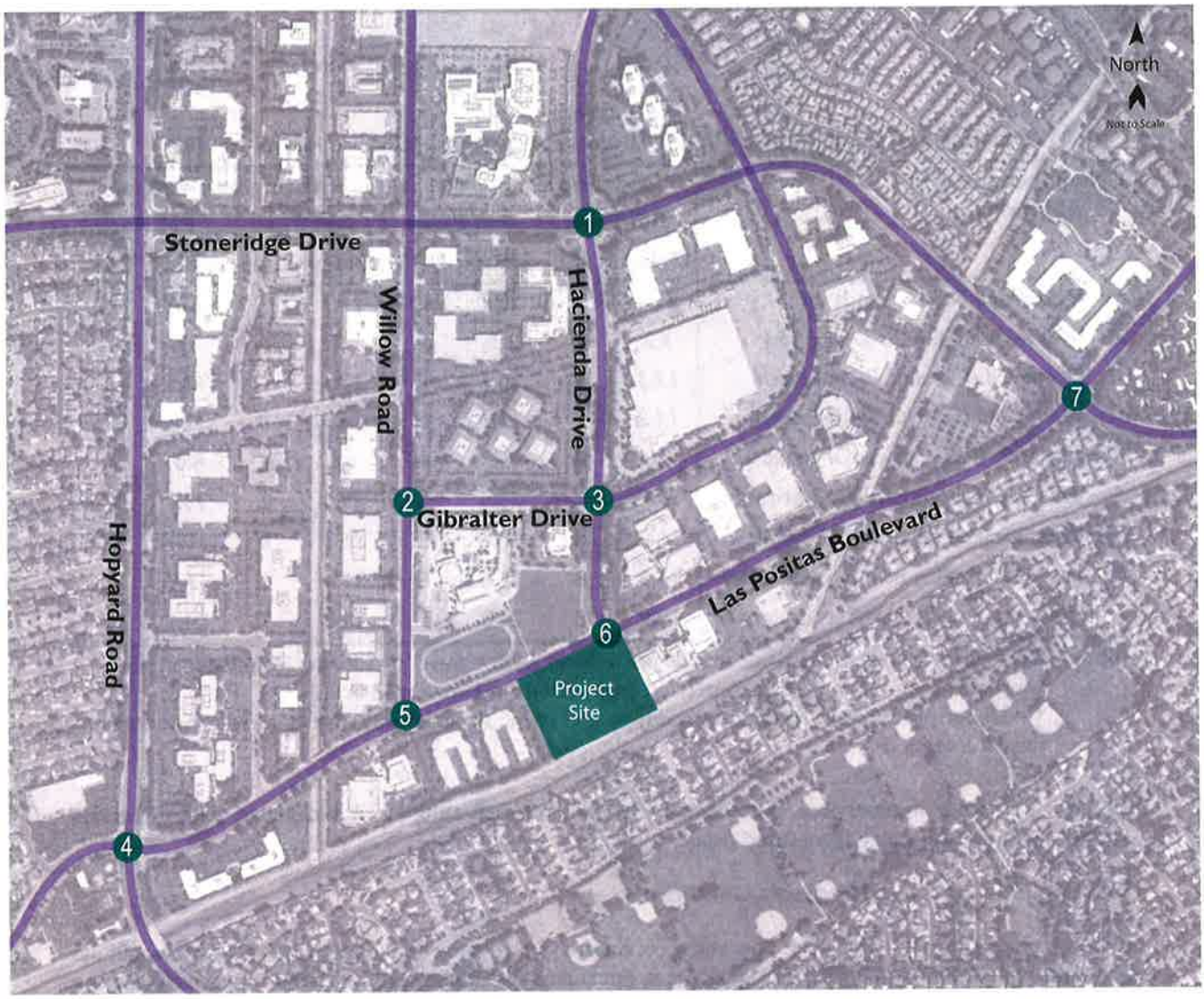
Study Intersection *Approach*	Existing Conditions				Existing plus Project			
	AM Peak		PM Peak		AM Peak		PM Peak	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1. Stoneridge Dr/ Hacienda Dr	21.4	C	25.7	C	21.7	C	25.9	C
2. Willow Rd/Gibraltar Dr (south)	1.2	A	3.5	A	1.2	A	3.5	A
Eastbound (Gibraltar Dr) approach	*17.3*	*C*	*16.1*	*C*	*17.5*	*C*	*16.1*	*C*
Westbound (Gibraltar Dr) approach	*14.2*	*B*	*11.1*	*B*	*14.4*	*B*	*11.1*	*B*
3. Hacienda Dr/Gibraltar Dr (south)	6.8	A	6.1	A	6.8	A	6.0	A
4. West Las Positas Blvd/Hopyard Rd	29.0	C	23.5	C	29.3	C	23.7	C
5. West Las Positas Blvd/Willow Rd	16.0	B	10.7	B	16.3	B	10.7	B
6. West Las Positas Blvd/Hacienda Dr*	14.8	B	15.6	B	21.1	C	16.9	B
7. West Las Positas Blvd/Stoneridge Dr	19.0	B	24.0	C	19.0	B	24.1	C

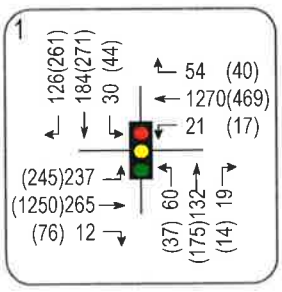
Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; Results for minor approaches to two-way stop-controlled intersections are indicated in italics;
* = Under plus project conditions, roadway and traffic signal improvements were considered at this intersection

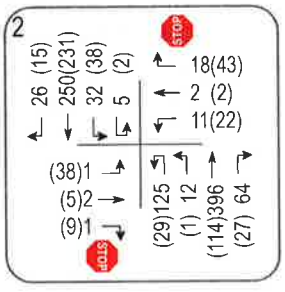
Finding: The study intersections are expected to continue operating at an acceptable level of service with the addition of project-generated traffic.

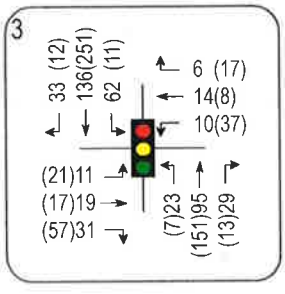
Existing plus Approved Projects Conditions

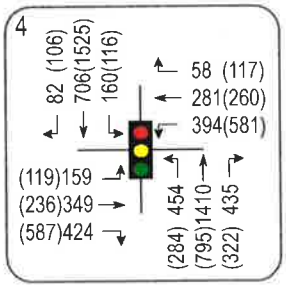
Existing plus Approved Projects operating conditions were determined with traffic that would be generated by all approved and pending projects, (including the City's Housing Element but excluding the SummerHill Apartments project) as contained in the City's Synchro traffic model. The Existing plus Approved Projects volumes are shown in Figure 6. Under these conditions, all of the study intersections are expected to operate at an acceptable LOS D or better during both peak hours. A summary of the analysis is provided in Table 6, and copies of Level of Service calculations are provided in Appendix A.

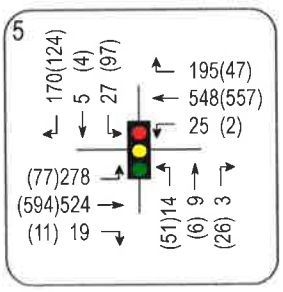


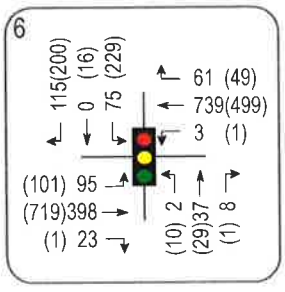


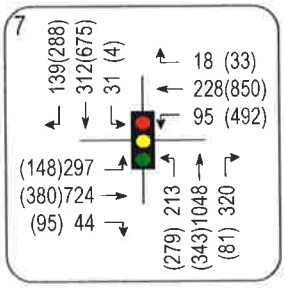


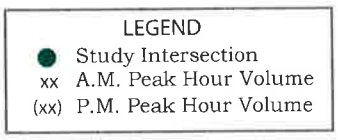












002-9ple.ai 1/14

SummerHill Apartment Project Traffic Impact Analysis

Figure 6 – Existing plus Approved Projects Traffic Volumes

w-trans

Table 6
Existing plus Approved Projects Peak Hour Intersection Levels of Service

Study Intersection *Approach*	Existing Plus Approved Projects Conditions			
	AM Peak		PM Peak	
	Delay	LOS	Delay	LOS
1. Stoneridge Dr/ Hacienda Dr	27.0	C	23.5	C
2. Willow Rd/Gibraltar Dr (south)	1.2	A	3.5	A
Eastbound (Gibraltar Dr) approach	*18.7*	*C*	*16.1*	*C*
Westbound (Gibraltar Dr) approach	*15.6*	*C*	*11.1*	*B*
3. Hacienda Dr/Gibraltar Dr (south)	7.4	A	6.4	A
4. West Las Positas Blvd/Hopyard Rd	24.7	C	32.9	C
5. West Las Positas Blvd/Willow Rd	15.0	B	8.5	A
6. West Las Positas Blvd/Hacienda Dr	17.4	B	17.5	B
7. West Las Positas Blvd/Stoneridge Dr	29.4	C	36.6	D

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics.*

Existing plus Approved Projects plus Project Conditions

Upon the addition of project-related traffic to the Existing plus Approved Projects volumes and considering the roadway and traffic signal improvements at the West Las Positas Boulevard/Hacienda Drive intersection, all of the study intersections are anticipated to operate at an acceptable LOS D or better during both peak hours. A summary of the intersection Level of Service analysis is provided in Table 7 and copies of the calculations are provided in Appendix A.

Table 7
Existing plus Approved Projects plus Project Peak Hour Intersection Levels of Service

Study Intersection *Approach*	Existing plus Approved Projects Conditions							
	Without Project				With Project			
	AM Peak		PM Peak		AM Peak		PM Peak	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1. Stoneridge Dr/ Hacienda Dr	27.0	C	23.5	C	27.1	C	23.9	C
2. Willow Rd/Gibraltar Dr (south)	1.2	A	3.5	A	1.1	A	3.5	A
Eastbound (Gibraltar Dr) approach	*18.7*	*C*	*16.1*	*C*	*18.9*	*C*	*16.1*	*C*
Westbound (Gibraltar Dr) approach	*15.6*	*C*	*11.1*	*B*	*15.8*	*C*	*11.1*	*B*
3. Hacienda Dr/Gibraltar Dr (south)	7.4	A	6.4	A	7.4	A	6.4	A
4. West Las Positas Blvd/Hopyard Rd	24.7	C	32.9	C	25.1	C	33.3	C
5. West Las Positas Blvd/Willow Rd	15.0	B	8.5	A	15.2	B	8.4	A
6. West Las Positas Blvd/Hacienda Dr*	17.4	B	17.5	B	17.0	B	21.4	C
7. West Las Positas Blvd/Stoneridge Dr	29.4	C	36.6	D	29.4	C	37.2	D

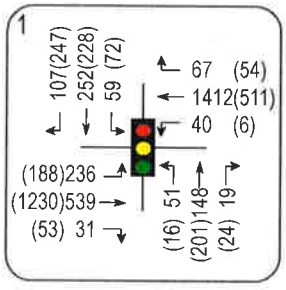
Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics;*
* =Under plus project conditions, roadway and traffic signal improvements were considered at this intersection

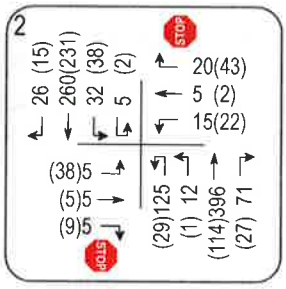
Finding: With the addition of project-generated traffic to Existing plus Approved Projects volumes, the study intersections are expected to continue operating at acceptable levels of service.

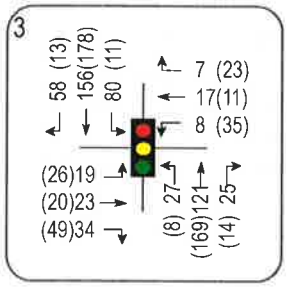
Cumulative Conditions

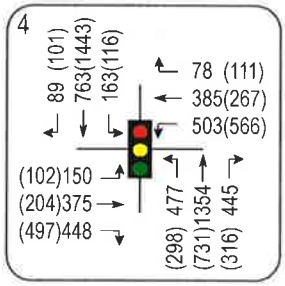
Cumulative peak hour volume projections were taken from the build-out analysis contained in the *Pleasanton Housing Element Transportation Analysis*. This scenario represents cumulative traffic conditions that would be expected upon build out of the land uses identified in the *General Plan,* including the updated Housing Element. Since the proposed project conforms to the proposed land use for the site in the Housing Element, the cumulative traffic volumes include those that would be generated by the proposed project. Therefore, to analyze Cumulative without Project conditions, traffic generated by the proposed project was subtracted from the Cumulative conditions in the City's traffic model. The Cumulative Conditions traffic volumes are shown in Figure 7. It should be noted that the planned TIF improvements at the intersections of West Las Positas Boulevard/Hopyard Road and West Las Positas Boulevard/Stoneridge Drive were included in this analysis.

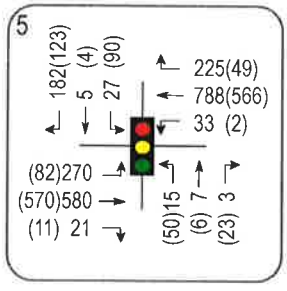
Under the anticipated future volumes and considering the planned TIF improvements, all of the study intersections are expected to operate at an acceptable LOS C or better during both peak hours. A summary of the intersection Level of Service analysis is provided in Table 8 and copies of the calculations are provided in Appendix A.

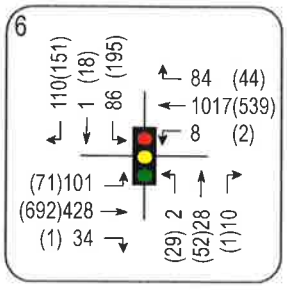


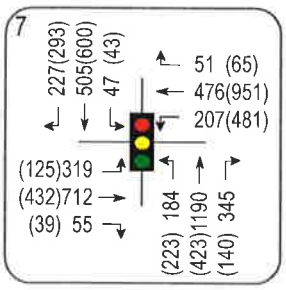












LEGEND
- Study Intersection
- xx A.M. Peak Hour Volume
- (xx) P.M. Peak Hour Volume

002-9ple.ai 1/14

SummerHill Apartment Project Traffic Impact Analysis

Figure 7 – Buildout Traffic Volumes

w-trans

Table 8
Cumulative Peak Hour Intersection Levels of Service

Study Intersection *Approach*	Cumulative Conditions			
	AM Peak		PM Peak	
	Delay	LOS	Delay	LOS
1. Stoneridge Dr/ Hacienda Dr	27.7	C	21.5	C
2. Willow Rd/Gibraltar Dr (south)	1.6	A	3.5	A
Eastbound (Gibraltar Dr) approach	*18.4*	*C*	*16.1*	*C*
Westbound (Gibraltar Dr) approach	*17.4*	*C*	*11.1*	*B*
3. Hacienda Dr/Gibraltar Dr (south)	7.9	A	6.5	A
4. West Las Positas Blvd/Hopyard Rd (with planned TIF improvements)	25.7	C	28.4	C
5. West Las Positas Blvd/Willow Rd	16.3	B	8.5	A
6. West Las Positas Blvd/Hacienda Dr	19.3	B	18.7	B
7. West Las Positas Blvd/Stoneridge Dr (with planned TIF improvements)	33.2	C	30.4	C

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics*

It was noted that some intersections are expected to operate better during the p.m. peak hour under Cumulative conditions than they would under the Existing plus Approved Projects Conditions. This is attributed to the TIF planned improvements that were assumed to be implemented for the Cumulative Conditions traffic analysis, and the fact that the City is anticipating regional improvements that would increase capacity elsewhere, resulting in a shift in traffic patterns.

Cumulative plus Project Conditions

Upon the addition of project-generated traffic to the anticipated Cumulative volumes and considering the roadway and traffic signal improvements at the West Las Positas Boulevard/Hacienda Drive intersection, all of the study intersections are expected to continue operating at an acceptable LOS C or better during both peak hours. The intersection Level of Service analysis is summarized in Table 9 and copies of the calculations are provided in Appendix A.

Table 9
Cumulative and Cumulative plus Project Peak Hour Intersection Levels of Service

Study Intersection *Approach*	Cumulative				Cumulative plus Project			
	AM Peak		PM Peak		AM Peak		PM Peak	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1. Stoneridge Dr/ Hacienda Dr	27.7	C	21.5	C	27.9	C	21.8	C
2. Willow Rd/Gibraltar Dr (south)	1.6	A	3.5	A	1.6	A	3.5	A
Eastbound (Gibraltar Dr) approach	*18.4*	*C*	*16.1*	*C*	*18.5*	*C*	*16.1*	*C*
Westbound (Gibraltar Dr) approach	*17.4*	*C*	*11.1*	*B*	*17.7*	*C*	*11.1*	*B*
3. Hacienda Dr/Gibraltar Dr (south)	7.9	A	6.5	A	7.9	A	6.5	A
4. West Las Positas Blvd/Hopyard Rd (with planned TIF improvements)	25.7	C	28.4	C	26.0	C	28.6	C
5. West Las Positas Blvd/Willow Rd	16.3	B	8.5	A	16.4	B	8.4	A
6. West Las Positas Blvd/Hacienda Dr*	19.3	B	18.7	B	25.5	C	21.8	C
7. West Las Positas Blvd/Stoneridge Dr (with planned TIF improvements)	33.2	C	30.4	C	33.3	C	30.7	C

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics;*
* = Under plus project conditions, roadway and traffic signal improvements were considered at this intersection

Finding: Upon the addition of project-generated traffic to Cumulative volumes, the study intersections are expected to operate at acceptable levels of service during both peak hours.

Queuing

Queuing analysis was performed for the study intersection of West Las Positas Boulevard/Hacienda Drive to determine if there would be adequate left-turn lane storage at this location with the addition of project-generated traffic. The proposed roadway and traffic signal improvements at this intersection were also included in the analysis. Under the Existing plus Approved Projects Conditions and Cumulative Conditions, the queue lengths for left-turn pockets that would potentially receive project-generated traffic were determined using the SIMTRAFFIC application of Synchro, and averaging the 95th percentile queues for each of five runs.

The 95th percentile queue length for all the left-turn movements at the study intersection would fit within the available storage length during both peak hours without and with the addition of project-generated traffic. The queue lengths are summarized in Table 10 and copies of the SIMTRAFFIC projections are provided in Appendix B.

Table 10
95th Percentile Left-Turn Queues

Intersection *movement*	Available Storage	95th percentile Queues AM Peak Hour				95th percentile Queues PM Peak Hour			
		E+A	E+A+P	C	C+P	E+A	E+A+P	C	C+P
West Las Positas Blvd/Hacienda Dr									
Eastbound left-turn	290	94	124	104	149	102	127	118	94
Westbound left-turn	150	*	*	*	*	**	34	8	28
Southbound left-turn	285	36	74	46	68	67	181	81	136

Notes: All distances are measured in feet; E+A = existing plus approved projects conditions, E+A+P = existing plus approved projects plus project conditions, C = cumulative conditions, C+P = cumulative plus project conditions;
* = the project would not add traffic to this movement; therefore the queue length has not been reported;
** = under existing plus approved projects conditions, there would be no traffic volume for this movement

Findings: At the intersection of West Las Positas Boulevard/Hacienda Drive, the queue length for all the left-turn movements would fit within the available storage length during both peak hours under Existing plus Approved Projects Conditions, and Cumulative Conditions without and with the project.

Site Access and Parking

Site Access

Access to the project site would be maintained through an existing right-turn in/right-turn out only driveway off of West Las Positas Boulevard and the south leg of the signalized intersection of West Las Positas Boulevard at Hacienda Drive. Internally, pathways would connect the building units to the parking areas and streets.

Based on information provided by the project team, the West Las Positas Boulevard/Hacienda Drive intersection would be modified to align the Hacienda Drive southbound through lane with the project driveway. The northbound Hacienda Drive (project driveway) approach would be modified to provide one left-turn lane and one shared through/right-turn lane. The southbound Hacienda Drive approach would be modified to include one left-turn lane, one through lane and one right-turn lane. The intersection exhibit showing the above improvements is provided in Appendix C.

Sight Distance

At unsignalized intersections a substantially clear line of sight should be maintained between the driver of a vehicle waiting on the driveway and the driver of an approaching vehicle. Adequate time must be provided for the waiting vehicle to either cross, turn left, or turn right, without requiring the through traffic to radically alter their speed.

Sight distance at the existing driveway on West Las Positas Boulevard was evaluated based on sight distance criteria contained in the *Highway Design Manual* published by Caltrans. The recommended sight distance for minor-street approaches that are either a private road or a driveway are based on stopping sight distance with the approach travel speeds as the basis for determining the recommended sight distance.

Sight distance at the proposed project driveway was field measured. Within the project vicinity, West Las Positas Boulevard is within the school zone with a posted speed limit of 25 miles per hour (mph) when children are present. The posted speed limit on West Las Positas Boulevard outside the school zone is 45 mph which was considered for sight distance evaluation. The minimum stopping sight distance needed for a design speed of 45 mph is 360 feet. West Las Positas Boulevard is relatively flat and straight on either side of the project site; therefore, sight distance from the project driveway to both the east and west is adequate.

Finding: Sight distance at the existing project driveway on Las Positas Boulevard is adequate in either direction.

Parking

The City of Pleasanton parking requirements were reviewed to ensure that the project would provide adequate on-site parking. For an apartment land use, the City of Pleasanton Municipal Code (§ 18.88.030) has the following parking requirement:

- Apartments with two bedrooms or less: Two (2) spaces for each of the first four units and one and one-half (1.5) spaces for each additional unit.
- Apartments with three or more bedrooms: Two (2) spaces per unit.
- Visitor parking: one (1) space per seven (7) units.
- One (1) space per dwelling unit of the off-street parking required above shall be located in a garage or carport.

Based on the above parking code requirements, 300 parking spaces, including 177 covered spaces, are required at the project site. As proposed, 304 parking spaces (including 254 covered spaces) would be provided on-site which would satisfy the City parking requirements. The parking analysis summary is presented in Table 11.

Table 11
Parking Requirements Analysis

Description	Required Spaces	Provided Spaces
Two bedrooms or less (162 units)	245	
Three or more bedrooms (15 units)	30	
Visitor	25	
Total	**300**	**304**
Covered	177	254

Finding: The proposed 304 parking spaces, including 254 covered spaces on the project site would satisfy the City's requirements.

Pedestrian Facilities

Sidewalks currently exist on the project frontage along West Las Positas Boulevard connecting the project site to the surrounding areas. The existing pedestrian facilities are expected to adequately serve the project site.

Finding: Existing pedestrian facilities would adequately serve the project site.

Bicycle Facilities

Bike Lanes exist on West Las Positas Boulevard west of Hacienda Drive and on Willow Road adjacent to the Hart Middle School. According to the *Pleasanton Pedestrian and Bicycle Master Plan*, bike lanes are proposed on West Las Positas Boulevard east of Hacienda Drive and along Stoneridge Drive. Also proposed is a trail access point, east of the project site on West Las Positas Boulevard at Tassajara Creek that would connect to the proposed Class I multi-use path on the south side of the Arroyo Mocho Creek and other existing trails in the study area. It is anticipated that the existing and proposed bicycle and trail facilities would provide adequate access for bicyclists.

Bicycle Storage

The proposed project would provide secured bicycle parking inside private garages (130 spaces) and bicycle storage rooms (20 spaces).

Finding: Existing and proposed bicycle facilities are expected to adequately serve the project site.

Transit

The existing transit bus stops located on the project frontage at West Las Positas Boulevard are less than a quarter-mile from the site, which is considered an acceptable walking distance to a transit stop. Pedestrian facilities that connect the project site to the bus stops are adequate. The existing transit and pedestrian facilities are anticipated to adequately accommodate the project-generated transit trips. According to the *City of Pleasanton Climate Action Plan, July 2011, ESA*, new residential developments within one-half mile of transit are required to offer discounted transit passes as part of the Home Owners Association (HOA) amenities, payable through the HOA dues. It is therefore recommended that the project developer shall work with the Hacienda Business Park Association to provide ECO passes to the residents for free use of the LAVTA transit system.

Finding: Existing transit route and bus stops adjacent to the project site are expected to be adequate.

Recommendation: The project developer shall work with the Hacienda Business Park Association to provide ECO passes to the residents for free use of the LAVTA transit system.

Collision History

The collision histories for the study intersections were reviewed to determine any trends or patterns that may indicate a safety issue. Collision rates were calculated based on collision data available from the California Highway Patrol as published in their *Statewide Integrated Traffic Records System* (SWITRS) reports between January 1, 2007, and December 31, 2011, and data provided by the City. The calculated collision rates for the study intersections were compared to average collision rates for similar facilities statewide, as indicated in *2010 Collision Data on California State Highways*, Caltrans.

All of the study intersections experienced collision rates lower than the statewide averages for similar facilities. No fatalities were reported during the five-year period studied, although the injury rate for all the signalized intersections was higher than the statewide average for similar facilities. The calculated collision rates are presented in Table 12 and details are provided in Appendix D.

Table 12
Collision Rates at the Study Intersections

Study Intersection	Number of Collisions	Calculated Collision Rate (c/mve)	Statewide Average Collision Rate (c/mve)
1. Stoneridge Dr/ Hacienda Dr	12	0.30	0.36
2. Willow Rd/Gibraltar Dr (south)	0	0.00	0.15
3. Hacienda Dr/Gibraltar Dr (south)	2	0.24	0.36
4. West Las Positas Blvd/Hopyard Rd	10	0.12	0.36
5. West Las Positas Blvd/Willow Rd	4	0.16	0.36
6. West Las Positas Blvd/Hacienda Dr	3	0.14	0.36
7. West Las Positas Blvd/Stoneridge Dr	12	0.25	0.36

Note: c/mve = collisions per million vehicles entering the intersection

School Related Traffic Analysis

Additional analysis was conducted to evaluate the potential impact of site-generated traffic traveling to and from the Donlon Elementary and Hart Middle Schools.

Operating conditions during typical weekday a.m. (7:00-9:00) and school pick-up p.m. peak periods (2:00-4:00) were evaluated at the following three intersections:

4. West Las Positas Boulevard at Hopyard Road
5. West Las Positas Boulevard at Willow Road
6. West Las Positas Boulevard at Hacienda Drive

Existing Conditions

New traffic counts during the school p.m. peak hour (2:00-4:00) were collected at the intersections of West Las Positas Boulevard/Hopyard Road and West Las Positas Boulevard/Willow Road on a typical weekday in November 2013. At the intersection of West Las Positas Boulevard/Hacienda Drive, school p.m. peak hour traffic counts provided by the City were used for analysis. During the a.m. peak hour, traffic counts provided in the City's Synchro model were used in the analysis. The existing traffic volumes are shown in Figure 8.

Under Existing Conditions, all of the study intersections are operating at an acceptable LOS C or better during the a.m. and school p.m. peak hour. The intersection Level of Service calculations are summarized in Table 13, and copies of the calculations are provided in Appendix E.

Table 13
Existing Peak Hour Intersection Levels of Service

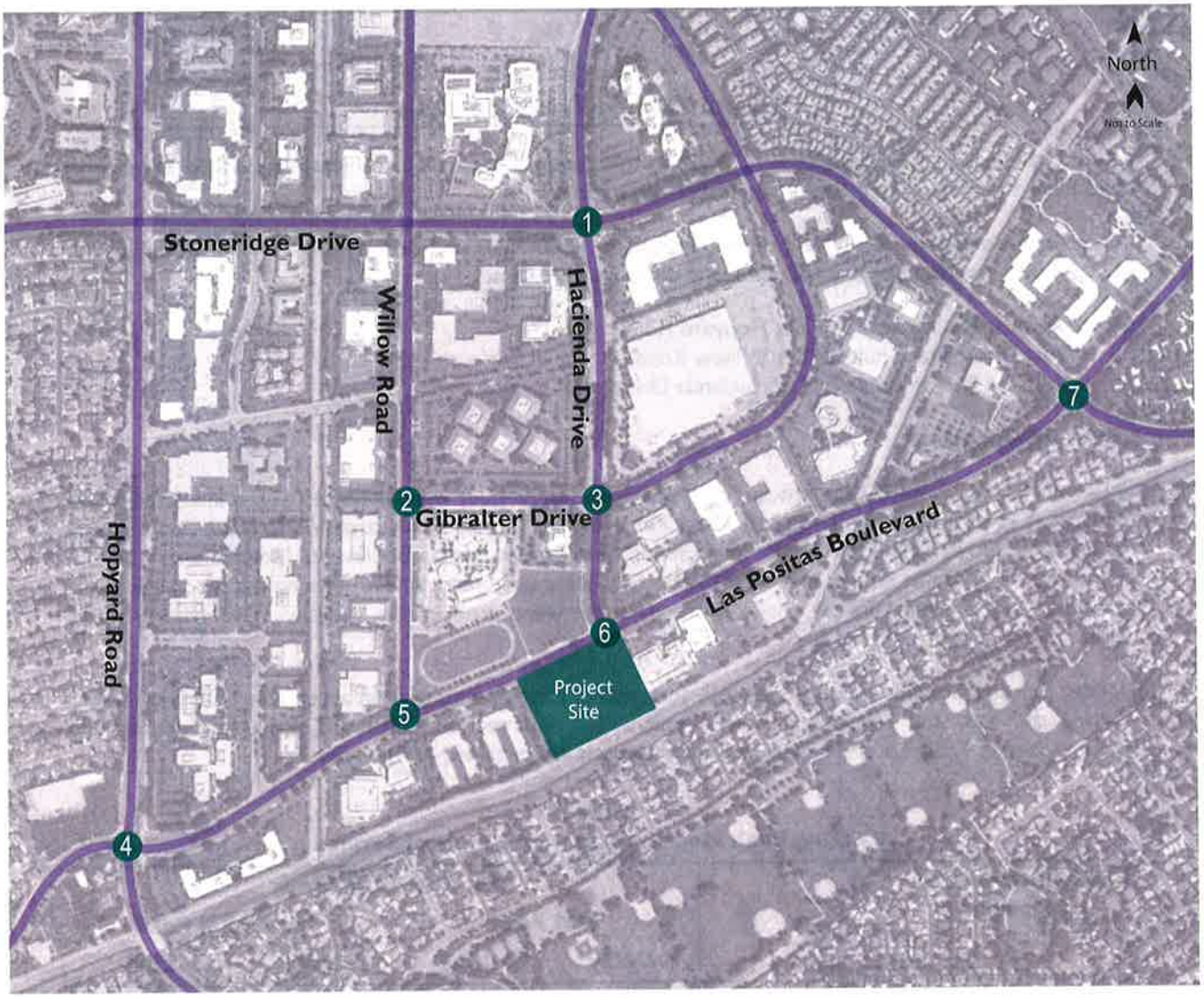
Study Intersection *Approach*	Existing Conditions			
	AM Peak		School PM Peak	
	Delay	LOS	Delay	LOS
4. West Las Positas Blvd/Hopyard Rd	29.0	C	23.9	C
5. West Las Positas Blvd/Willow Rd	16.0	B	11.3	B
6. West Las Positas Blvd/Hacienda Dr	14.8	B	14.8	B

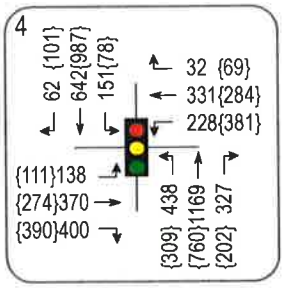
Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service

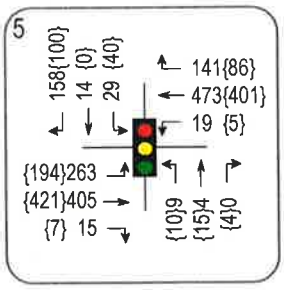
Trip Generation

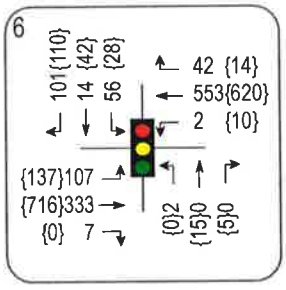
Trip generation for the proposed project during the a.m. peak hour was estimated using the average rates published by the Institute of Transportation Engineers (ITE) in *Trip Generation Manual*, 9th Edition, 2012 for an "Apartment" (LU# 220). The proposed project is expected to generate 90 trips during the a.m. peak hour, including 18 inbound and 72 outbound trips. Due to the proximity of Donlon Elementary School (4150 Dorman Road) and Hart Middle School (4433 Willow Road) to the project site, it was anticipated that some of the trips generated by the project would be to and from these schools during the a.m. and school p.m. peak hours. Per the information provided by City staff, it was estimated that the proposed 177 apartment units would include a total of 47 students (31 elementary school and 16 middle school students).

To provide a conservative analysis, it was assumed that during the a.m. peak hour, every student would be driven to school, resulting in 47 school related outbound trips. Therefore, out of 72 outbound









LEGEND

- Study Intersection
- xx A.M. Peak Hour Volume
- {xx} Midday P.M. Peak Hour Volume

002-9ple.ai 1/14

SummerHill Apartment Project Traffic Impact Analysis

Figure 8 – Existing Traffic Volumes (School Traffic Analysis)

w-trans

project trips, 47 trips would be school related and the remaining 25 trips would be non-school related. It was also assumed that all of the 18 inbound project trips would be school related.

The trip generation and assignment for the a.m. peak hour were previously discussed. During the school p.m. peak hour (school pick-up time period), it was conservatively assumed that each of the 47 students assumed to be living at the project site would be picked up and driven home. This would result in 94 trips including 47 inbound and 47 outbound trips. Since the school p.m. peak hour (2:00-4:00) is outside the project's p.m. peak hour (4:00-6:00), trips generated during the midday p.m. peak hour would be all school related. Since this trip estimate exceeds what is projected for the a.m. peak hour, it would be expected to capture all trips to and from the site and not just those that are school-related. School and non-school related trips provided in Table 14.

Table 14
School and Non-School Trip Assignment

Description	AM Peak Hour			School PM Peak Hour		
	Trips	In	Out	Trips	In	Out
School	65	18	47	94	47	47
Non-School	25	0	25	-	-	-
Total Project Trips	**90**	**18**	**72**	**94**	**47**	**47**

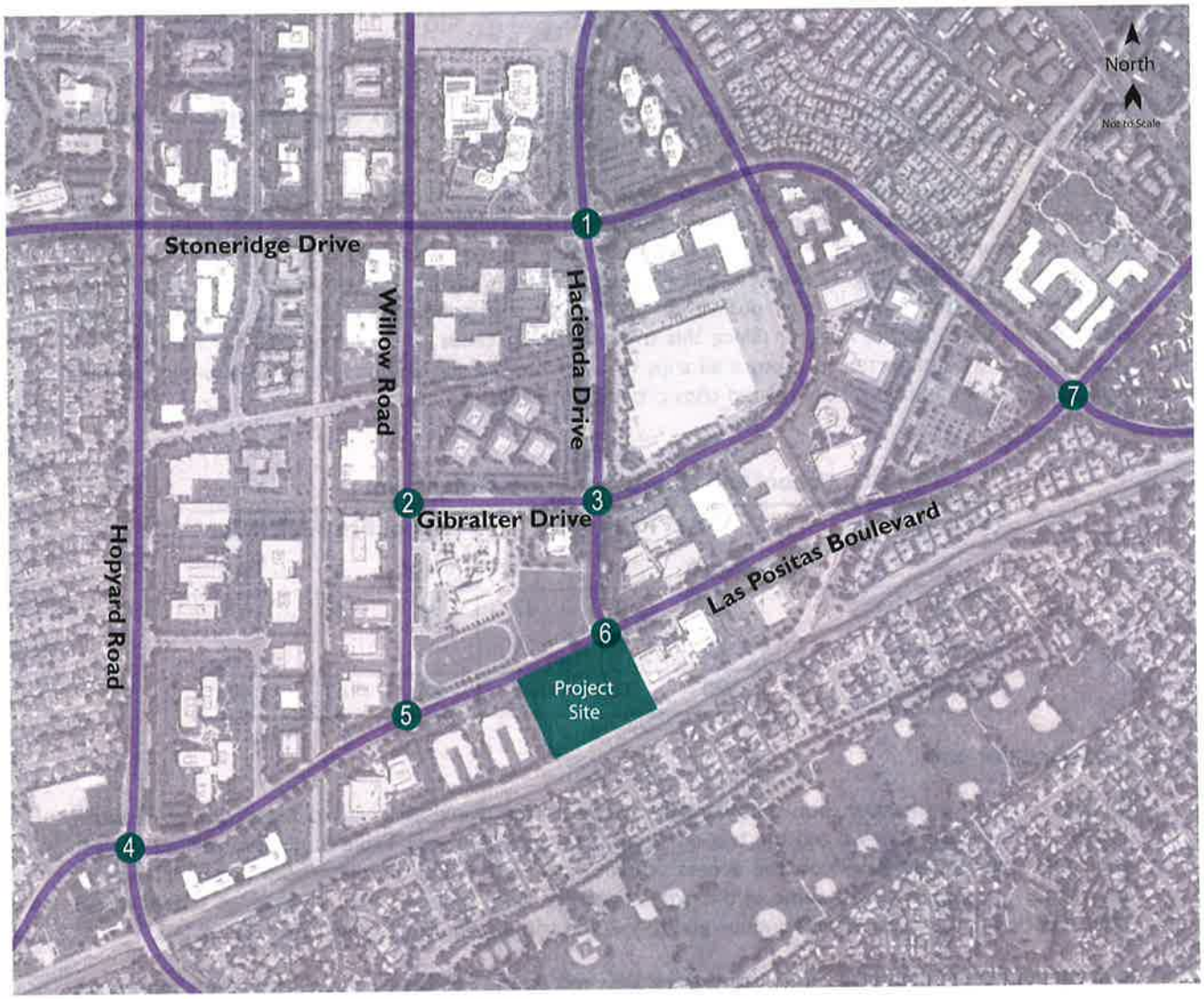
Trip Assignment

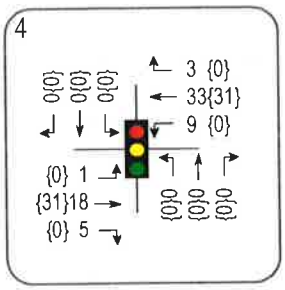
During the a.m. peak hour, non-school related project trips were assigned to the roadway network based on the access scheme and the trip distribution pattern shown in Table 5. School related project trips were distributed based on the access scheme, elementary and middle school locations and the conservative assumption that some of the project patrons after dropping their children to school would return back while others would continue and follow the trip distribution pattern given in Table 5.

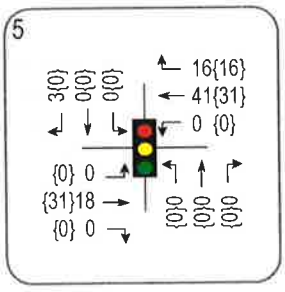
During the school p.m. peak hour, trips were assigned to the roadway network based on the access scheme and the assumption that all of the project patrons would leave the site to pick up their children and then return back to the project site. The resulting project added traffic volumes during the a.m. and school p.m. peak hour are shown in Figure 9.

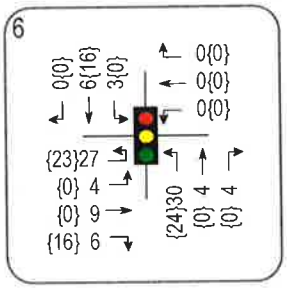
Existing plus Project Conditions

Upon the addition of project-related traffic to the existing volumes, and considering the roadway and traffic signal improvements at the West Las Positas Boulevard/Hacienda Drive intersection, all of the study intersections would continue to operate at an acceptable LOS C or better during both the a.m. and school p.m. peak hours. A summary of the intersection Level of Service analysis is provided in Table 15 with Existing Conditions values shown for comparison purposes. Copies of the calculations are provided in Appendix E.









LEGEND

- Study Intersection
- xx A.M. Peak Hour Volume
- {xx} Midday P.M. Peak Hour Volume

002-9ple.ai 1/14

SummerHill Apartment Project Traffic Impact Analysis

Figure 9 – Project Added Traffic Volumes (School Traffic Analysis)

w-trans

Table 15
Existing and Existing plus Project Peak Hour Intersection Levels of Service

Study Intersection *Approach*	Existing Conditions				Existing plus Project			
	AM Peak		School PM Peak		AM Peak		School PM Peak	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
4. West Las Positas Blvd/Hopyard Rd	29.0	C	23.9	C	29.3	C	24.3	C
5. West Las Positas Blvd/Willow Rd	16.0	B	11.3	B	16.3	B	11.3	B
6. West Las Positas Blvd/Hacienda Dr*	14.8	B	14.8	B	21.1	C	15.9	B

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service;
* = Roadway and traffic signal improvements were considered at this intersection under Existing plus Project conditions

Finding: The study intersections are expected to continue operating at acceptable Levels of Service with the addition of school-related project-generated traffic.

Queuing

A queuing analysis was performed for the three study intersections to determine if there would be adequate storage in the left-turn lanes at these locations with the addition of project-generated traffic. Under Existing Conditions, the queue lengths for through or turn pockets along West Las Positas Boulevard that would potentially receive project-generated traffic were determined using the SIMTRAFFIC application of Synchro, and averaging the 95th percentile queues for each of five runs.

As shown in Table 16, the 95th percentile queue length for all the movements at the study intersections fit within the available storage length during the a.m. and school p.m. peak hours under Existing Conditions. With the addition of project-generated traffic, the queue lengths would generally increase slightly but would not exceed the available storage. Copies of the SIMTRAFFIC projections are provided in Appendix F.

The City of Pleasanton has plans at Hart Middle School to provide a secondary drop-off/pick zone on the east side of Willow Road adjacent to the school frontage between the school entry and exit points. This would result in narrowing of the northbound Willow Road segment between the school access points from two lanes to one lane. The provision of a second drop-off/pick-up zone would allow the parents to either drop-off/pick-up their children to/from the primary school zone located inside the school or along Willow Road. It is anticipated that the proposed second drop-off/pick-up zone would ease the school related a.m. and p.m. peak hour northbound through queuing on Willow Road south of the school entry point.

Table 16
95th Percentile Queues

Intersection *movement*	Available Storage	AM Peak Hour		School PM Peak Hour	
		E	E+P	E	E+P
4. West Las Positas Blvd/Hopyard Rd					
Eastbound through	315	189	248	165	178
Westbound through	695	165	165	135	148
Westbound left-turn	230	134	149	221*	207*
5. West Las Positas Blvd/Willow Rd					
Eastbound through	825	63	71	46	48
Westbound through	835	144	126	102	100
Westbound right-turn	240	74	49	49	41
6. West Las Positas Blvd/Hacienda Dr					
Eastbound left-turn	290	86	106	96	130
Westbound left-turn	150	14*	9*	23	30

Notes: All distances are measured in feet; E = existing conditions, E+P = existing plus project conditions;
* = the project would not add traffic to these movements.

Finding: The queue lengths at the study intersections would fit within the available storage length without and with the addition of project-generated traffic. The slight increase in queue lengths due to the addition of project-generated traffic would be less-than-significant.

Summary

Under Existing Conditions, all of the study intersections operate at an acceptable LOS C or better during the a.m. and school p.m. peak hours and would continue to do so with the addition of project-generated traffic. Similarly, the queue lengths at the study intersections would fit within the available storage length without and with the addition of project-generated traffic. The proposed project would have a less-than-significant impact at the study intersections along the routes to Donlon Elementary School and Hart Middle School.

Conclusions

Existing Conditions

- Currently, all the study intersections operate at an acceptable LOS C or better during the a.m. and p.m. hours.

- The City's Traffic Impact Fee (TIF) program includes planned improvements to West Las Positas Boulevard/Hopyard Road, West Las Positas Boulevard/Hacienda Drive, and West Las Positas Boulevard/Stoneridge Drive intersections.

Project Conditions

- The proposed project is anticipated to generate an average of 1,177 new vehicle trips on a daily basis, including 90 additional trips during the a.m. peak hour and 110 additional trips during the p.m. peak hour. Out of the 90 a.m. peak hour trips, 65 trips were assumed to be school-related; while the remaining 25 trips would be non-school related. During the p.m. peak hour, none of the 110 new trips would be school-related.

- The proposed project would modify the West Las Positas Boulevard/Hacienda Drive intersection to align the Hacienda Drive southbound through lane with the project driveway. The northbound Hacienda Drive (project driveway) approach would be modified to provide one left-turn lane and one shared through/right-turn lane. The southbound Hacienda Drive approach would be modified to include one left-turn lane, one through lane and one right-turn lane. Additionally, the northbound and southbound Hacienda Drive approaches would have protected left-turn phasing.

Existing plus Project Conditions

- The study intersections are expected to continue operating at an acceptable LOS C or better with the addition of project-generated traffic to existing volumes during both peak hours.

Existing plus Approved Projects Condition

- Under Existing plus Approved Projects Conditions, all of the study intersections are expected to continue operating at acceptable levels of service without and with the addition of project-generated traffic.

- During both peak hours, the left-turn queues at the West Las Positas Boulevard/Hacienda Drive intersection are expected to be accommodated within the available storage length without and with the project.

Cumulative Scenario

- Under Cumulative without Project Conditions and considering the planned improvements at the intersections of West Las Positas Boulevard/Hopyard Road, and West Las Positas Boulevard/ Stoneridge Drive, all of the study intersections are expected to operate at an acceptable LOS C or better.

- With the addition of project-generated traffic, all study intersections are expected to operate acceptably.

- During both the peak hours, the left-turn queues at the West Las Positas Boulevard/Hacienda Drive intersection are expected to be accommodated within the available storage length without and with the project.

Project Access/Parking

- The project site would continue to be accessed via an existing right-turn in/right-turn out driveway on West Las Positas Boulevard and the signalized intersection of West Las Positas Boulevard/ Hacienda Drive.
- Sight distance in either direction from the existing project driveway on Las Positas Boulevard is adequate.
- The proposed parking supply for the project site would meet the City's requirement.

Alternative Modes of Transportation

- Existing pedestrian facilities as well as existing and proposed bicycle and trail facilities would adequately serve the project site.
- Existing transit routes and bus stops adjacent to the project site on West Las Positas Boulevard would adequately serve the project-generated transit trips.

Collision History

- The calculated collision rates for all study intersections were determined to be lower than the statewide average rates for similar facilities and do not indicate any safety concern.

School Related Traffic Analysis

- The proposed project was assumed to generate an average of 90 new trips (65 school and 25 non-school) during the a.m. peak hour and 94 new trips (all school related) during the school p.m. peak hour.
- Under Existing Conditions, the three study intersections operate at an acceptable LOS C or better during the a.m. and school p.m. peak hours. With the addition of project-generated traffic, the study intersections would continue to operate acceptably.
- The 95th percentile queue lengths for the study intersections fit within the available storage length and would continue to do so with the addition of project-generated traffic. The City of Pleasanton has plans at Hart Middle School to provide a secondary drop-off/pick zone on the east side of Willow Road adjacent to the school frontage between the school entry and exit points. This would result in narrowing of the northbound Willow Road segment between the school access points from two lanes to one lane. The proposed project would have a less-than-significant impact at the study intersections along the routes to Donlon Elementary School and Hart Middle School.

Recommendations

- The project developer shall work with the Hacienda Business Park Association to provide ECO passes to the residents for free use of the LAVTA transit system.

Study Participants and References

Study Participants

Principal in Charge:	Mark E. Spencer, PE
Engineer:	Jaspreet Anand, PE
Technician/Graphics:	Deborah J. Mizell
Editing/Formatting:	Angela McCoy
Quality Control Review:	Dalene J. Whitlock, PE, PTOE

References

2010 Collision Data on California State Highways, California Department of Transportation, 2009
Altamont Commuter Express, http://www.acerail.com
BART, http://www.bart.gov/stations/schedules/
Downtown Specific Plan, City of Pleasanton, 2002
Highway Capacity Manual, Transportation Research Board, 2000
Highway Design Manual, 6th Edition, California Department of Transportation, 2012
Livermore Amador Valley Transit Authority, http://www.lavta.org/
Pleasanton General Plan 2005-2025, City of Pleasanton, 2009
Pleasanton Housing Element Transportation Analysis, Fehr & Peers, 2011
Pleasanton Municipal Code, Quality Code Publishing, 2013
Pleasanton Pedestrian and Bicycle Master Plan, Fehr & Peers, 2010
Statewide Integrated Traffic Records System (SWITRS), California Highway Patrol, 2006-2011
Trip Generation Manual, 9th Edition, Institute of Transportation Engineers, 2012

PLE004

Appendix A

Intersection Level of Service Calculations

HCM Signalized Intersection Capacity Analysis
35: W Las Positas & Hopyard

11/27/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	138	370	400	228	331	32	438	1169	327	151	642	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
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)	150	402	435	248	360	35	476	1271	355	164	698	67
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	36
Lane Group Flow (vph)	150	402	435	248	360	35	476	1271	355	164	698	31
Confl. Peds. (#/hr)			27			7			3			10
Turn Type	Prot		Free	Prot		Free	Prot		Free	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			Free			6
Actuated Green, G (s)	9.0	20.2	120.0	12.8	24.0	120.0	14.0	58.6	120.0	8.4	53.0	53.0
Effective Green, g (s)	10.0	23.2	120.0	13.8	27.0	120.0	15.0	61.6	120.0	9.4	56.0	56.0
Actuated g/C Ratio	0.08	0.19	1.00	0.12	0.22	1.00	0.12	0.51	1.00	0.08	0.47	0.47
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	5.0		1.8	5.0		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	296	707	1603	408	823	1613	443	2698	1615	278	2452	742
v/s Ratio Prot	0.04	c0.11		c0.07	0.10		c0.13	c0.24		c0.05	0.13	
v/s Ratio Perm			0.27			0.02			0.22			0.02
v/c Ratio	0.51	0.57	0.27	0.61	0.44	0.02	1.07	0.47	0.22	0.59	0.28	0.04
Uniform Delay, d1	52.6	43.9	0.0	50.5	40.0	0.0	52.5	18.7	0.0	53.4	19.7	17.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.76	0.47	1.00	1.25	0.65	0.84
Incremental Delay, d2	0.5	1.7	0.4	1.8	0.8	0.0	60.8	0.5	0.3	2.1	0.3	0.1
Delay (s)	53.1	45.6	0.4	52.3	40.8	0.0	100.7	9.3	0.3	69.0	13.0	14.7
Level of Service	D	D	A	D	D	A	F	A	A	E	B	B
Approach Delay (s)		26.8			43.0			28.4			23.0	
Approach LOS		C			D			C			C	

Intersection Summary				
HCM Average Control Delay	29.0	HCM Level of Service		C
HCM Volume to Capacity ratio	0.61			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)		15.0
Intersection Capacity Utilization	65.9%	ICU Level of Service		C
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
52: W Las Positas & Willow

11/27/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	263	405	15	19	473	141	9	4	0	29	14	158
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Util. Factor	1.00	0.91		1.00	0.95	1.00	1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00			1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.99	1.00			1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00			0.97	1.00
Satd. Flow (prot)	1829	5223		1829	3657	1636	1817	1925			1859	1605
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.72	1.00			0.83	1.00
Satd. Flow (perm)	1829	5223		1829	3657	1636	1379	1925			1601	1605
Peak-hour factor, PHF	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Adj. Flow (vph)	333	513	19	24	599	178	11	5	0	37	18	200
RTOR Reduction (vph)	0	2	0	0	0	122	0	0	0	0	0	162
Lane Group Flow (vph)	333	530	0	24	599	56	11	5	0	0	55	38
Confl. Peds. (#/hr)			1	1			6		2	2		6
Turn Type	Prot			Prot		Perm	Perm			Perm		Perm
Protected Phases	5	2		1	6			4			4	
Permitted Phases						6	4			4		4
Actuated Green, G (s)	20.8	34.8		2.4	16.4	16.4	9.9	9.9			9.9	9.9
Effective Green, g (s)	21.8	37.8		3.4	19.4	19.4	11.9	11.9			11.9	11.9
Actuated g/C Ratio	0.35	0.61		0.05	0.31	0.31	0.19	0.19			0.19	0.19
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0	5.0	5.0			5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	642	3179		100	1142	511	264	369			307	308
v/s Ratio Prot	c0.18	0.10		0.01	c0.16			0.00				
v/s Ratio Perm						0.03	0.01				c0.03	0.02
v/c Ratio	0.52	0.17		0.24	0.52	0.11	0.04	0.01			0.18	0.12
Uniform Delay, d1	16.0	5.3		28.1	17.6	15.2	20.5	20.3			21.0	20.8
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00			1.12	1.61
Incremental Delay, d2	0.7	0.0		1.2	0.4	0.1	0.1	0.0			0.3	0.2
Delay (s)	16.7	5.3		29.4	18.0	15.3	20.5	20.4			23.8	33.7
Level of Service	B	A		C	B	B	C	C			C	C
Approach Delay (s)		9.7			17.7			20.5			31.6	
Approach LOS		A			B			C			C	

Intersection Summary				
HCM Average Control Delay	16.0	HCM Level of Service		B
HCM Volume to Capacity ratio	0.44			
Actuated Cycle Length (s)	62.1	Sum of lost time (s)		9.0
Intersection Capacity Utilization	47.4%	ICU Level of Service		A
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
57: Stoneridge & Hacienda

11/27/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	124	331	41	11	832	25	10	76	7	36	157	168
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.95		1.00	0.91		0.97	0.95		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.91	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	1.00		1.00	0.99		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3547	3584		1829	5224		3547	3601		1829	4423	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3547	3584		1829	5224		3547	3601		1829	4423	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	131	348	43	12	876	26	11	80	7	38	165	177
RTOR Reduction (vph)	0	4	0	0	1	0	0	6	0	0	148	0
Lane Group Flow (vph)	131	387	0	12	901	0	11	81	0	38	194	0
Confl. Peds. (#/hr)			12			24			24			120
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	9.8	76.7		5.2	72.1		1.3	12.6		5.5	16.8	
Effective Green, g (s)	10.8	79.7		6.2	75.1		2.3	15.6		6.5	19.8	
Actuated g/C Ratio	0.09	0.66		0.05	0.63		0.02	0.13		0.05	0.17	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	319	2380		94	3269		68	468		99	730	
v/s Ratio Prot	c0.04	0.11		0.01	c0.17		0.00	0.02		c0.02	c0.04	
v/s Ratio Perm												
v/c Ratio	0.41	0.16		0.13	0.28		0.16	0.17		0.38	0.27	
Uniform Delay, d1	51.6	7.6		54.3	10.1		57.9	46.5		54.8	43.8	
Progression Factor	0.89	0.98		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.8	0.1		0.6	0.2		1.1	0.2		2.5	0.2	
Delay (s)	46.5	7.5		54.9	10.4		59.0	46.6		57.3	44.0	
Level of Service	D	A		D	B		E	D		E	D	
Approach Delay (s)		17.3			10.9			48.0			45.3	
Approach LOS		B			B			D			D	

Intersection Summary				
HCM Average Control Delay	21.4	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.29			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0	
Intersection Capacity Utilization	53.1%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
58: Gibraltar Dr (S) & Hacienda

11/27/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	13	29	64	12	13	1	24	84	22	14	108	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor		0.95			0.95		1.00	0.91		1.00	0.91	
Frpb, ped/bikes		0.99			1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.91			0.99		1.00	0.97		1.00	0.98	
Flt Protected		0.99			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3261			3541		1829	5063		1829	5138	
Flt Permitted		0.92			0.81		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		3014			2942		1829	5063		1829	5138	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.88	0.85	0.85	0.85	0.85
Adj. Flow (vph)	15	34	75	14	15	1	28	95	26	16	127	19
RTOR Reduction (vph)	0	55	0	0	1	0	0	19	0	0	14	0
Lane Group Flow (vph)	0	69	0	0	29	0	28	102	0	16	132	0
Confl. Peds. (#/hr)	20		20	20		20			20			20
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4			4								
Actuated Green, G (s)		4.3			4.3		0.8	3.5		0.7	3.4	
Effective Green, g (s)		6.3			6.3		1.8	6.5		1.7	6.4	
Actuated g/C Ratio		0.27			0.27		0.08	0.28		0.07	0.27	
Clearance Time (s)		5.0			5.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		808			789		140	1400		132	1399	
v/s Ratio Prot							c0.02	0.02		0.01	c0.03	
v/s Ratio Perm		c0.02			0.01							
v/c Ratio		0.09			0.04		0.20	0.07		0.12	0.09	
Uniform Delay, d1		6.4			6.4		10.2	6.3		10.2	6.4	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.0			0.0		0.7	0.0		0.4	0.0	
Delay (s)		6.5			6.4		10.9	6.3		10.6	6.4	
Level of Service		A			A		B	A		B	A	
Approach Delay (s)		6.5			6.4			7.2			6.8	
Approach LOS		A			A			A			A	

Intersection Summary				
HCM Average Control Delay	6.8	HCM Level of Service	A	
HCM Volume to Capacity ratio	0.10			
Actuated Cycle Length (s)	23.5	Sum of lost time (s)	9.0	
Intersection Capacity Utilization	33.3%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
59: W Las Positas & Hacienda

11/27/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	107	333	7	2	553	42	2	0	0	56	14	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	0.91		1.00	0.95	1.00		1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.95		0.95	0.97	1.00
Satd. Flow (prot)	1829	5238		1829	3657	1636		1829		1737	1775	1615
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.95		0.95	0.97	1.00
Satd. Flow (perm)	1829	5238		1829	3657	1636		1829		1737	1775	1615
Peak-hour factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	134	416	9	2	691	52	2	0	0	70	18	126
RTOR Reduction (vph)	0	1	0	0	0	29	0	0	0	0	0	106
Lane Group Flow (vph)	134	424	0	2	691	23	0	2	0	43	45	20
Confl. Peds. (#/hr)									3			1
Turn Type	Prot			Prot		Perm	Split		Perm	Split		Perm
Protected Phases	5	2		1	6		4	4		3	3	
Permitted Phases						6			4			3
Actuated Green, G (s)	8.9	35.5		0.7	27.3	27.3		2.9		8.0	8.0	8.0
Effective Green, g (s)	9.9	38.5		1.7	30.3	30.3		5.9		11.0	11.0	11.0
Actuated g/C Ratio	0.14	0.56		0.02	0.44	0.44		0.09		0.16	0.16	0.16
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	262	2918		45	1604	717		156		277	283	257
v/s Ratio Prot	c0.07	0.08		0.00	c0.19			c0.00		0.02	c0.03	
v/s Ratio Perm						0.01						0.01
v/c Ratio	0.51	0.15		0.04	0.43	0.03		0.01		0.16	0.16	0.08
Uniform Delay, d1	27.4	7.4		32.9	13.4	11.0		28.9		25.0	25.1	24.7
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2	1.7	0.1		0.4	0.2	0.0		0.0		0.3	0.3	0.1
Delay (s)	29.0	7.5		33.3	13.6	11.1		29.0		25.3	25.3	24.9
Level of Service	C	A		C	B	B		C		C	C	C
Approach Delay (s)		12.6			13.5			29.0			25.0	
Approach LOS		B			B			C			C	

Intersection Summary				
HCM Average Control Delay	14.8	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.35			
Actuated Cycle Length (s)	69.1	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	40.2%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
64: Stoneridge & W Las Positas

11/27/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	75	186	35	150	843	35	22	228	97	63	409	218
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	5.0	3.0	3.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	1.00	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	3657	1603	3547	3657	1588	1829	5255	1636	1829	5255	1618
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	3657	1603	3547	3657	1588	1829	5255	1636	1829	5255	1618
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	84	209	39	169	947	39	25	256	109	71	460	245
RTOR Reduction (vph)	0	0	27	0	0	24	0	0	84	0	0	88
Lane Group Flow (vph)	84	209	12	169	947	15	25	256	25	71	460	157
Confl. Peds. (#/hr)			12			24			36			12
Turn Type	Prot		Perm	Prot		Perm	Prot		custom	Prot		custom
Protected Phases	7	4		3	8		5	2	2	1	6	6
Permitted Phases			4			8			2			4
Actuated Green, G (s)	5.5	21.7	21.7	9.4	25.6	25.6	2.2	14.5	14.5	6.6	17.9	39.6
Effective Green, g (s)	6.5	24.7	22.7	10.4	28.6	26.6	3.2	16.5	16.5	7.6	20.9	45.6
Actuated g/C Ratio	0.09	0.35	0.32	0.15	0.40	0.37	0.04	0.23	0.23	0.11	0.29	0.64
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	5.0	5.0	4.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	324	1269	511	518	1469	593	82	1218	379	195	1543	1036
v/s Ratio Prot	0.02	0.06		c0.05	c0.26		0.01	0.05	0.02	c0.04	c0.09	0.04
v/s Ratio Perm			0.01			0.01						0.05
v/c Ratio	0.26	0.16	0.02	0.33	0.64	0.02	0.30	0.21	0.07	0.36	0.30	0.15
Uniform Delay, d1	30.1	16.1	16.6	27.3	17.2	14.1	32.9	22.1	21.3	29.6	19.5	5.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	0.1	0.0	0.4	1.0	0.0	2.1	0.1	0.1	1.2	0.1	0.1
Delay (s)	30.5	16.2	16.7	27.6	18.2	14.1	35.0	22.2	21.4	30.7	19.6	5.2
Level of Service	C	B	B	C	B	B	D	C	C	C	B	A
Approach Delay (s)		19.9			19.4			22.8			16.0	
Approach LOS		B			B			C			B	

Intersection Summary				
HCM Average Control Delay	19.0	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.45			
Actuated Cycle Length (s)	71.2	Sum of lost time (s)	6.0	
Intersection Capacity Utilization	63.1%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (veh/h)	1	2	1	11	2	18	128	12	316	73	5	32
Sign Control		Stop			Stop				Free			
Grade		0%			0%				0%			
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	1	2	1	14	2	22	0	15	395	91	0	40
Pedestrians		20			20				20			
Lane Width (ft)		13.0			13.0				13.0			
Walking Speed (ft/s)		4.0			4.0				4.0			
Percent Blockage		2			2				2			
Right turn flare (veh)												
Median type									None			
Median storage veh)												
Upstream signal (ft)									1264			
pX, platoon unblocked							0.00				0.00	
vC, conflicting volume	698	962	211	748	933	283	0	362			0	506
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	698	962	211	748	933	283	0	362			0	506
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	0.0	4.1			0.0	4.1
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	0.0	2.2			0.0	2.2
p0 queue free %	100	99	100	95	99	97	0	99			0	96
cM capacity (veh/h)	283	233	766	269	242	688	0	1171			0	1036

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	5	16	22	15	263	223	40	207	136
Volume Left	1	14	0	15	0	0	40	0	0
Volume Right	1	0	22	0	0	91	0	0	32
cSH	298	264	688	1171	1700	1700	1036	1700	1700
Volume to Capacity	0.02	0.06	0.03	0.01	0.15	0.13	0.04	0.12	0.08
Queue Length 95th (ft)	1	5	3	1	0	0	3	0	0
Control Delay (s)	17.3	19.5	10.4	8.1	0.0	0.0	8.6	0.0	0.0
Lane LOS	C	C	B	A			A		
Approach Delay (s)	17.3	14.2		0.2			0.9		
Approach LOS	C	B							

Intersection Summary				
Average Delay	1.2			
Intersection Capacity Utilization	45.4%	ICU Level of Service		A
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
946: Gibraltar Dr (S) & Willow
11/27/2013

Movement	SBT	SBR
Lane Configurations		
Volume (veh/h)	248	26
Sign Control	Free	
Grade	0%	
Peak Hour Factor	0.80	0.80
Hourly flow rate (vph)	310	32
Pedestrians	20	
Lane Width (ft)	13.0	
Walking Speed (ft/s)	4.0	
Percent Blockage	2	
Right turn flare (veh)		
Median type	None	
Median storage veh)		
Upstream signal (ft)		
pX, platoon unblocked		
vC, conflicting volume		
vC1, stage 1 conf vol		
vC2, stage 2 conf vol		
vCu, unblocked vol		
tC, single (s)		
tC, 2 stage (s)		
tF (s)		
p0 queue free %		
cM capacity (veh/h)		

Direction, Lane #

HCM Signalized Intersection Capacity Analysis
35: W Las Positas & Hopyard

12/2/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	102	188	385	462	259	86	342	793	279	81	1314	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	110	202	414	497	278	92	368	853	300	87	1413	103
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	58
Lane Group Flow (vph)	110	202	414	497	278	92	368	853	300	87	1413	45
Confl. Peds. (#/hr)			27			7			3			10
Turn Type	Prot		Free	Prot		Free	Prot		Free	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			Free			6
Actuated Green, G (s)	7.9	15.3	120.0	20.8	28.2	120.0	14.0	56.8	120.0	7.1	49.9	49.9
Effective Green, g (s)	8.9	18.3	120.0	21.8	31.2	120.0	15.0	59.8	120.0	8.1	52.9	52.9
Actuated g/C Ratio	0.07	0.15	1.00	0.18	0.26	1.00	0.12	0.50	1.00	0.07	0.44	0.44
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	5.0		1.8	5.0		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	263	558	1603	644	951	1613	443	2619	1615	239	2317	700
v/s Ratio Prot	c0.03	c0.06		c0.14	0.08		c0.10	0.16		0.02	c0.27	
v/s Ratio Perm			0.26			0.06			0.19			0.03
v/c Ratio	0.42	0.36	0.26	0.77	0.29	0.06	0.83	0.33	0.19	0.36	0.61	0.06
Uniform Delay, d1	53.1	45.6	0.0	46.7	35.6	0.0	51.3	18.0	0.0	53.5	25.7	19.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.72	0.46	1.00	1.18	0.69	1.03
Incremental Delay, d2	0.4	0.8	0.4	5.2	0.4	0.1	11.4	0.3	0.2	0.3	1.2	0.2
Delay (s)	53.5	46.5	0.4	51.9	35.9	0.1	48.3	8.6	0.2	63.3	18.9	20.1
Level of Service	D	D	A	D	D	A	D	A	A	E	B	C
Approach Delay (s)		21.2			41.3			16.6			21.4	
Approach LOS		C			D			B			C	

Intersection Summary				
HCM Average Control Delay	23.5	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.63			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	75.6%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
52: W Las Positas & Willow

12/2/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	106	449	2	1	464	61	34	10	24	69	1	180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Util. Factor	1.00	0.91		1.00	0.95	1.00	1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	0.99			1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.89			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00			0.95	1.00
Satd. Flow (prot)	1829	5251		1829	3657	1636	1820	1703			1831	1608
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.71	1.00			0.73	1.00
Satd. Flow (perm)	1829	5251		1829	3657	1636	1353	1703			1396	1608
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	118	499	2	1	516	68	38	11	27	77	1	200
RTOR Reduction (vph)	0	0	0	0	0	45	0	20	0	0	0	151
Lane Group Flow (vph)	118	501	0	1	516	23	38	18	0	0	78	49
Confl. Peds. (#/hr)			1	1			6		2	2		6
Turn Type	Prot			Prot		Perm	Perm			Perm		Perm
Protected Phases	5	2		1	6			4			4	
Permitted Phases						6	4			4		4
Actuated Green, G (s)	9.4	21.1		0.8	12.5	12.5	9.3	9.3			9.3	9.3
Effective Green, g (s)	10.4	24.1		1.8	15.5	15.5	11.3	11.3			11.3	11.3
Actuated g/C Ratio	0.23	0.52		0.04	0.34	0.34	0.24	0.24			0.24	0.24
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0	5.0	5.0			5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	412	2739		71	1227	549	331	417			341	393
v/s Ratio Prot	c0.06	0.10		0.00	c0.14			0.01				
v/s Ratio Perm						0.01	0.03				c0.06	0.03
v/c Ratio	0.29	0.18		0.01	0.42	0.04	0.11	0.04			0.23	0.12
Uniform Delay, d1	14.8	5.8		21.3	11.9	10.3	13.6	13.3			14.0	13.6
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00			1.00	1.05
Incremental Delay, d2	0.4	0.0		0.1	0.2	0.0	0.2	0.0			0.3	0.1
Delay (s)	15.2	5.9		21.4	12.1	10.4	13.7	13.4			14.3	14.4
Level of Service	B	A		C	B	B	B	B			B	B
Approach Delay (s)		7.7			11.9			13.5			14.4	
Approach LOS		A			B			B			B	

Intersection Summary				
HCM Average Control Delay	10.7	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.32			
Actuated Cycle Length (s)	46.2	Sum of lost time (s)	9.0	
Intersection Capacity Utilization	39.7%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
57: Stoneridge & Hacienda

12/2/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	188	761	23	4	473	25	45	185	11	40	149	281
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.95		1.00	0.91		0.97	0.95		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.89	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.99		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3547	3637		1829	5201		3547	3619		1829	4216	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3547	3637		1829	5201		3547	3619		1829	4216	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	211	855	26	4	531	28	51	208	12	45	167	316
RTOR Reduction (vph)	0	1	0	0	3	0	0	4	0	0	265	0
Lane Group Flow (vph)	211	880	0	4	556	0	51	216	0	45	218	0
Confl. Peds. (#/hr)			12			24			24			120
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	12.4	75.2		2.6	65.4		6.0	14.9		7.3	16.2	
Effective Green, g (s)	13.4	78.2		3.6	68.4		7.0	17.9		8.3	19.2	
Actuated g/C Ratio	0.11	0.65		0.03	0.57		0.06	0.15		0.07	0.16	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	396	2370		55	2965		207	540		127	675	
v/s Ratio Prot	c0.06	c0.24		0.00	c0.11		0.01	c0.06		c0.02	0.05	
v/s Ratio Perm												
v/c Ratio	0.53	0.37		0.07	0.19		0.25	0.40		0.35	0.32	
Uniform Delay, d1	50.3	9.6		56.6	12.4		54.0	46.2		53.3	44.6	
Progression Factor	0.79	1.14		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.3	0.4		0.6	0.1		0.6	0.5		1.7	0.3	
Delay (s)	40.9	11.4		57.1	12.6		54.6	46.7		55.0	44.9	
Level of Service	D	B		E	B		D	D		D	D	
Approach Delay (s)		17.1			12.9			48.2			45.8	
Approach LOS		B			B			D			D	

Intersection Summary				
HCM Average Control Delay	25.7	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.38			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0	
Intersection Capacity Utilization	65.8%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
58: Gibraltar Dr (S) & Hacienda

12/2/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	8	43	15	10	6	11	144	10	19	164	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor		0.95			0.95		1.00	0.91		1.00	0.91	
Frpb, ped/bikes		0.99			1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.90			0.97		1.00	0.99		1.00	0.99	
Flt Protected		0.99			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3196			3436		1829	5196		1829	5202	
Flt Permitted		0.90			0.84		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		2891			2957		1829	5196		1829	5202	
Peak-hour factor, PHF	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Adj. Flow (vph)	15	10	55	19	13	8	14	185	13	24	210	13
RTOR Reduction (vph)	0	45	0	0	7	0	0	8	0	0	8	0
Lane Group Flow (vph)	0	35	0	0	33	0	14	190	0	24	215	0
Confl. Peds. (#/hr)	20		20	20		20			20			20
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4			4								
Actuated Green, G (s)		2.6			2.6		0.6	7.5		0.7	7.6	
Effective Green, g (s)		4.6			4.6		1.6	10.5		1.7	10.6	
Actuated g/C Ratio		0.18			0.18		0.06	0.41		0.07	0.41	
Clearance Time (s)		5.0			5.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		515			527		113	2115		121	2137	
v/s Ratio Prot							0.01	0.04		c0.01	c0.04	
v/s Ratio Perm		c0.01			0.01							
v/c Ratio		0.07			0.06		0.12	0.09		0.20	0.10	
Uniform Delay, d1		8.8			8.8		11.4	4.7		11.4	4.7	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1			0.1		0.5	0.0		0.8	0.0	
Delay (s)		8.9			8.9		11.9	4.7		12.2	4.7	
Level of Service		A			A		B	A		B	A	
Approach Delay (s)		8.9			8.9			5.2			5.4	
Approach LOS		A			A			A			A	

Intersection Summary				
HCM Average Control Delay	6.1	HCM Level of Service	A	
HCM Volume to Capacity ratio	0.09			
Actuated Cycle Length (s)	25.8	Sum of lost time (s)	6.0	
Intersection Capacity Utilization	32.8%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
59: W Las Positas & Hacienda

12/2/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	106	461	1	1	334	36	20	14	1	77	1	146
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	0.91		1.00	0.95	1.00		1.00	1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00	0.99	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97	1.00	0.95	0.95	1.00
Satd. Flow (prot)	1829	5253		1829	3657	1636		1870	1613	1737	1744	1615
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.97	1.00	0.95	0.95	1.00
Satd. Flow (perm)	1829	5253		1829	3657	1636		1870	1613	1737	1744	1615
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	113	490	1	1	355	38	21	15	1	82	1	155
RTOR Reduction (vph)	0	0	0	0	0	23	0	0	1	0	0	127
Lane Group Flow (vph)	113	491	0	1	355	15	0	36	0	42	41	28
Confl. Peds. (#/hr)									3			1
Turn Type	Prot			Prot		Perm	Split		Perm	Split		Perm
Protected Phases	5	2		1	6		4	4		3	3	
Permitted Phases						6			4			3
Actuated Green, G (s)	8.6	32.7		0.7	24.8	24.8		4.5	4.5	9.4	9.4	9.4
Effective Green, g (s)	9.6	35.7		1.7	27.8	27.8		7.5	7.5	12.4	12.4	12.4
Actuated g/C Ratio	0.14	0.52		0.02	0.40	0.40		0.11	0.11	0.18	0.18	0.18
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		6.0	6.0	6.0	6.0	6.0
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)	253	2706		45	1467	656		202	175	311	312	289
v/s Ratio Prot	c0.06	0.09		0.00	c0.10			c0.02		c0.02	0.02	
v/s Ratio Perm						0.01			0.00			0.02
v/c Ratio	0.45	0.18		0.02	0.24	0.02		0.18	0.00	0.14	0.13	0.10
Uniform Delay, d1	27.4	9.0		33.0	13.8	12.5		28.1	27.6	23.9	23.9	23.8
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	1.3	0.1		0.2	0.1	0.0		0.4	0.0	0.2	0.2	0.1
Delay (s)	28.7	9.1		33.2	13.8	12.6		28.5	27.6	24.1	24.1	23.9
Level of Service	C	A		C	B	B		C	C	C	C	C
Approach Delay (s)		12.8			13.8			28.5			24.0	
Approach LOS		B			B			C			C	

Intersection Summary				
HCM Average Control Delay	15.6	HCM Level of Service		B
HCM Volume to Capacity ratio	0.24			
Actuated Cycle Length (s)	69.3	Sum of lost time (s)		12.0
Intersection Capacity Utilization	34.9%	ICU Level of Service		A
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
64: Stoneridge & W Las Positas

12/2/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	226	778	29	90	307	22	23	353	194	189	249	124
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	5.0	3.0	3.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	1.00	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	3657	1601	3547	3657	1584	1829	5255	1636	1829	5255	1620
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	3657	1601	3547	3657	1584	1829	5255	1636	1829	5255	1620
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	240	828	31	96	327	23	24	376	206	201	265	132
RTOR Reduction (vph)	0	0	20	0	0	17	0	0	159	0	0	36
Lane Group Flow (vph)	240	828	11	96	327	6	24	376	47	201	265	96
Confl. Peds. (#/hr)			12			24			36			12
Turn Type	Prot		Perm	Prot		Perm	Prot		custom	Prot		custom
Protected Phases	7	4		3	8		5	2	2	1	6	6
Permitted Phases			4			8			2			4
Actuated Green, G (s)	10.8	25.0	25.0	5.4	19.6	19.6	2.3	16.4	16.4	14.8	27.9	52.9
Effective Green, g (s)	11.8	28.0	26.0	6.4	22.6	20.6	3.3	18.4	18.4	15.8	30.9	58.9
Actuated g/C Ratio	0.15	0.35	0.32	0.08	0.28	0.26	0.04	0.23	0.23	0.20	0.38	0.73
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	5.0	5.0	4.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	519	1270	516	282	1025	405	75	1200	373	359	2015	1184
v/s Ratio Prot	c0.07	c0.23		0.03	0.09		0.01	c0.07	0.03	c0.11	0.05	0.03
v/s Ratio Perm			0.01			0.00						0.03
v/c Ratio	0.46	0.65	0.02	0.34	0.32	0.01	0.32	0.31	0.13	0.56	0.13	0.08
Uniform Delay, d1	31.5	22.2	18.6	35.1	22.9	22.4	37.6	25.8	24.7	29.3	16.1	3.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7	1.2	0.0	0.7	0.2	0.0	2.5	0.2	0.2	1.9	0.0	0.0
Delay (s)	32.2	23.4	18.6	35.8	23.1	22.4	40.0	26.0	24.9	31.2	16.2	3.1
Level of Service	C	C	B	D	C	C	D	C	C	C	B	A
Approach Delay (s)		25.2			25.8			26.2			18.3	
Approach LOS		C			C			C			B	

Intersection Summary				
HCM Average Control Delay	24.0	HCM Level of Service		C
HCM Volume to Capacity ratio	0.51			
Actuated Cycle Length (s)	80.6	Sum of lost time (s)		9.0
Intersection Capacity Utilization	69.0%	ICU Level of Service		C
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (veh/h)	38	5	9	22	2	43	29	1	114	27	2	38
Sign Control		Stop			Stop				Free			
Grade		0%			0%				0%			
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.90	0.80	0.80	0.80	0.90	0.80
Hourly flow rate (vph)	48	6	11	28	2	54	0	1	142	34	0	48
Pedestrians		20			20				20			
Lane Width (ft)		13.0			13.0				13.0			
Walking Speed (ft/s)		4.0			4.0				4.0			
Percent Blockage		2			2				2			
Right turn flare (veh)												
Median type									None			
Median storage veh)												
Upstream signal (ft)									1264			
pX, platoon unblocked							0.00				0.00	
vC, conflicting volume	562	612	194	456	604	128	0	328			0	196
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	562	612	194	456	604	128	0	328			0	196
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	0.0	4.1			0.0	4.1
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	0.0	2.2			0.0	2.2
p0 queue free %	86	98	99	94	99	94	0	100			0	96
cM capacity (veh/h)	349	378	786	433	382	866	0	1207			0	1349

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	65	30	54	1	95	81	48	192	115
Volume Left	48	28	0	1	0	0	48	0	0
Volume Right	11	0	54	0	0	34	0	0	19
cSH	389	428	866	1207	1700	1700	1349	1700	1700
Volume to Capacity	0.17	0.07	0.06	0.00	0.06	0.05	0.04	0.11	0.07
Queue Length 95th (ft)	15	6	5	0	0	0	3	0	0
Control Delay (s)	16.1	14.0	9.4	8.0	0.0	0.0	7.8	0.0	0.0
Lane LOS	C	B	A	A			A		
Approach Delay (s)	16.1	11.1		0.1			1.0		
Approach LOS	C	B							

Intersection Summary				
Average Delay	3.5			
Intersection Capacity Utilization	42.4%	ICU Level of Service		A
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
946: Gibraltar Dr (S) & Willow 12/2/2013

Movement	SBT	SBR
Lane Configurations		
Volume (veh/h)	231	15
Sign Control	Free	
Grade	0%	
Peak Hour Factor	0.80	0.80
Hourly flow rate (vph)	289	19
Pedestrians	20	
Lane Width (ft)	13.0	
Walking Speed (ft/s)	4.0	
Percent Blockage	2	
Right turn flare (veh)		
Median type	None	
Median storage veh)		
Upstream signal (ft)		
pX, platoon unblocked		
vC, conflicting volume		
vC1, stage 1 conf vol		
vC2, stage 2 conf vol		
vCu, unblocked vol		
tC, single (s)		
tC, 2 stage (s)		
tF (s)		
p0 queue free %		
cM capacity (veh/h)		

Direction, Lane #

SummerHill Apartments Traffic Impact Study
PM Peak Hour Existing Conditions
Synchro 7 - Report
W-Trans

HCM Signalized Intersection Capacity Analysis
35: W Las Positas & Hopyard

1/24/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	139	388	405	237	364	35	438	1169	327	151	642	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
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)	151	422	440	258	396	38	476	1271	355	164	698	67
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	36
Lane Group Flow (vph)	151	422	440	258	396	38	476	1271	355	164	698	31
Confl. Peds. (#/hr)			27			7			3			10
Turn Type	Prot		Free	Prot		Free	Prot		Free	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			Free			6
Actuated Green, G (s)	9.1	20.8	120.0	13.0	24.7	120.0	14.0	57.8	120.0	8.4	52.2	52.2
Effective Green, g (s)	10.1	23.8	120.0	14.0	27.7	120.0	15.0	60.8	120.0	9.4	55.2	55.2
Actuated g/C Ratio	0.08	0.20	1.00	0.12	0.23	1.00	0.12	0.51	1.00	0.08	0.46	0.46
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	5.0		1.8	5.0		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	299	725	1603	414	844	1613	443	2663	1615	278	2417	731
v/s Ratio Prot	0.04	c0.12		c0.07	0.11		c0.13	c0.24		c0.05	0.13	
v/s Ratio Perm			0.27			0.02			0.22			0.02
v/c Ratio	0.51	0.58	0.27	0.62	0.47	0.02	1.07	0.48	0.22	0.59	0.29	0.04
Uniform Delay, d1	52.6	43.6	0.0	50.5	39.8	0.0	52.5	19.3	0.0	53.4	20.2	17.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.76	0.48	1.00	1.25	0.65	0.83
Incremental Delay, d2	0.5	1.8	0.4	2.1	0.9	0.0	60.8	0.5	0.3	2.1	0.3	0.1
Delay (s)	53.0	45.4	0.4	52.6	40.7	0.0	100.7	9.7	0.3	68.6	13.4	15.0
Level of Service	D	D	A	D	D	A	F	A	A	E	B	B
Approach Delay (s)		27.0			42.9			28.7			23.2	
Approach LOS		C			D			C			C	

Intersection Summary				
HCM Average Control Delay	29.3	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.62			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.0	
Intersection Capacity Utilization	66.3%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
52: W Las Positas & Willow

1/24/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	263	423	15	19	514	157	9	4	0	29	14	161
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Util. Factor	1.00	0.91		1.00	0.95	1.00	1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00			1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.99	1.00			1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00			0.97	1.00
Satd. Flow (prot)	1829	5224		1829	3657	1636	1816	1925			1859	1605
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.72	1.00			0.83	1.00
Satd. Flow (perm)	1829	5224		1829	3657	1636	1379	1925			1599	1605
Peak-hour factor, PHF	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Adj. Flow (vph)	333	535	19	24	651	199	11	5	0	37	18	204
RTOR Reduction (vph)	0	2	0	0	0	135	0	0	0	0	0	166
Lane Group Flow (vph)	333	552	0	24	651	64	11	5	0	0	55	38
Confl. Peds. (#/hr)			1	1			6		2	2		6
Turn Type	Prot			Prot		Perm	Perm			Perm		Perm
Protected Phases	5	2		1	6			4			4	
Permitted Phases						6	4			4		4
Actuated Green, G (s)	21.1	36.2		2.4	17.5	17.5	9.9	9.9			9.9	9.9
Effective Green, g (s)	22.1	39.2		3.4	20.5	20.5	11.9	11.9			11.9	11.9
Actuated g/C Ratio	0.35	0.62		0.05	0.32	0.32	0.19	0.19			0.19	0.19
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0	5.0	5.0			5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	637	3225		98	1181	528	258	361			300	301
v/s Ratio Prot	c0.18	0.11		0.01	c0.18			0.00				
v/s Ratio Perm						0.04	0.01				c0.03	0.02
v/c Ratio	0.52	0.17		0.24	0.55	0.12	0.04	0.01			0.18	0.13
Uniform Delay, d1	16.5	5.2		28.8	17.7	15.2	21.1	21.0			21.7	21.5
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00			1.12	1.62
Incremental Delay, d2	0.8	0.0		1.3	0.6	0.1	0.1	0.0			0.3	0.2
Delay (s)	17.3	5.2		30.1	18.3	15.3	21.2	21.0			24.6	35.0
Level of Service	B	A		C	B	B	C	C			C	C
Approach Delay (s)		9.7			17.9			21.1			32.8	
Approach LOS		A			B			C			C	

Intersection Summary				
HCM Average Control Delay	16.3	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.46			
Actuated Cycle Length (s)	63.5	Sum of lost time (s)	9.0	
Intersection Capacity Utilization	48.6%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
57: Stoneridge & Hacienda

1/24/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	125	331	41	11	832	25	15	79	7	36	157	168
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.95		1.00	0.91		0.97	0.95		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.91	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	1.00		1.00	0.99		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3547	3584		1829	5224		3547	3603		1829	4423	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3547	3584		1829	5224		3547	3603		1829	4423	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	132	348	43	12	876	26	16	83	7	38	165	177
RTOR Reduction (vph)	0	4	0	0	1	0	0	6	0	0	151	0
Lane Group Flow (vph)	132	387	0	12	901	0	16	84	0	38	191	0
Confl. Peds. (#/hr)			12			24			24			120
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	9.8	77.3		5.2	72.7		2.7	12.0		5.5	14.8	
Effective Green, g (s)	10.8	80.3		6.2	75.7		3.7	15.0		6.5	17.8	
Actuated g/C Ratio	0.09	0.67		0.05	0.63		0.03	0.12		0.05	0.15	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	319	2398		94	3295		109	450		99	656	
v/s Ratio Prot	c0.04	0.11		0.01	c0.17		0.00	0.02		c0.02	c0.04	
v/s Ratio Perm												
v/c Ratio	0.41	0.16		0.13	0.27		0.15	0.19		0.38	0.29	
Uniform Delay, d1	51.6	7.4		54.3	9.9		56.6	47.0		54.8	45.5	
Progression Factor	0.88	0.98		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.8	0.1		0.6	0.2		0.6	0.2		2.5	0.2	
Delay (s)	46.5	7.3		54.9	10.1		57.2	47.2		57.3	45.7	
Level of Service	D	A		D	B		E	D		E	D	
Approach Delay (s)		17.2			10.7			48.7			46.9	
Approach LOS		B			B			D			D	

Intersection Summary				
HCM Average Control Delay	21.7	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.30			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	53.1%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
58: Gibraltar Dr (S) & Hacienda

1/24/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	13	29	73	12	13	1	24	92	22	14	108	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor		0.95			0.95		1.00	0.91		1.00	0.91	
Frpb, ped/bikes		0.99			1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.90			0.99		1.00	0.97		1.00	0.98	
Flt Protected		0.99			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3243			3541		1829	5078		1829	5138	
Flt Permitted		0.92			0.81		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		3004			2923		1829	5078		1829	5138	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.88	0.85	0.85	0.85	0.85
Adj. Flow (vph)	15	34	86	14	15	1	28	105	26	16	127	19
RTOR Reduction (vph)	0	63	0	0	1	0	0	19	0	0	14	0
Lane Group Flow (vph)	0	72	0	0	29	0	28	112	0	16	132	0
Confl. Peds. (#/hr)	20		20	20		20			20			20
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4			4								
Actuated Green, G (s)		4.2			4.2		0.8	3.5		0.7	3.4	
Effective Green, g (s)		6.2			6.2		1.8	6.5		1.7	6.4	
Actuated g/C Ratio		0.26			0.26		0.08	0.28		0.07	0.27	
Clearance Time (s)		5.0			5.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		796			774		141	1411		133	1405	
v/s Ratio Prot							c0.02	0.02		0.01	c0.03	
v/s Ratio Perm		c0.02			0.01							
v/c Ratio		0.09			0.04		0.20	0.08		0.12	0.09	
Uniform Delay, d1		6.5			6.4		10.1	6.2		10.2	6.3	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.0			0.0		0.7	0.0		0.4	0.0	
Delay (s)		6.5			6.4		10.8	6.3		10.6	6.4	
Level of Service		A			A		B	A		B	A	
Approach Delay (s)		6.5			6.4			7.1			6.8	
Approach LOS		A			A			A			A	

Intersection Summary				
HCM Average Control Delay	6.8	HCM Level of Service	A	
HCM Volume to Capacity ratio	0.11			
Actuated Cycle Length (s)	23.4	Sum of lost time (s)	9.0	
Intersection Capacity Utilization	33.4%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	27	111	342	13	2	553	42	32	4	4	59	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0
Lane Util. Factor		1.00	0.91		1.00	0.95	1.00	1.00	1.00		1.00	1.00
Frpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	0.99		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Frt		1.00	0.99		1.00	1.00	0.85	1.00	0.93		1.00	1.00
Flt Protected		0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00
Satd. Flow (prot)		1829	5226		1829	3657	1636	1829	1767		1829	1925
Flt Permitted		0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00
Satd. Flow (perm)		1829	5226		1829	3657	1636	1829	1767		1829	1925
Peak-hour factor, PHF	0.90	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	30	139	428	16	2	691	52	40	5	5	74	25
RTOR Reduction (vph)	0	0	3	0	0	0	31	0	4	0	0	0
Lane Group Flow (vph)	0	169	441	0	2	691	21	40	6	0	74	25
Confl. Peds. (#/hr)										3		
Turn Type	Prot	Prot			Prot		Perm	Prot			Prot	
Protected Phases	5	5	2		1	6		3	8		7	4
Permitted Phases							6					
Actuated Green, G (s)		8.4	36.2		0.8	28.6	28.6	8.6	11.1		9.3	11.8
Effective Green, g (s)		9.4	39.2		1.8	31.6	31.6	11.6	14.1		12.3	14.8
Actuated g/C Ratio		0.12	0.49		0.02	0.40	0.40	0.15	0.18		0.15	0.19
Clearance Time (s)		4.0	6.0		4.0	6.0	6.0	6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		217	2580		41	1455	651	267	314		283	359
v/s Ratio Prot		c0.09	0.08		0.00	c0.19		0.02	0.00		c0.04	0.01
v/s Ratio Perm							0.01					
v/c Ratio		0.78	0.17		0.05	0.47	0.03	0.15	0.02		0.26	0.07
Uniform Delay, d1		34.0	11.1		38.0	17.7	14.6	29.6	26.9		29.5	26.6
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2		16.0	0.1		0.5	0.2	0.0	0.3	0.0		0.5	0.1
Delay (s)		50.0	11.3		38.5	18.0	14.6	29.9	27.0		30.0	26.7
Level of Service		D	B		D	B	B	C	C		C	C
Approach Delay (s)			22.0			17.8			29.3			27.8
Approach LOS			C			B			C			C

Intersection Summary			
HCM Average Control Delay	21.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	79.4	Sum of lost time (s)	9.0
Intersection Capacity Utilization	47.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
59: W Las Positas & Hacienda 1/24/2014

Movement	SBR
Lane Configurations	
Volume (vph)	101
Ideal Flow (vphpl)	1900
Total Lost time (s)	3.0
Lane Util. Factor	1.00
Frpb, ped/bikes	0.99
Flpb, ped/bikes	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1615
Flt Permitted	1.00
Satd. Flow (perm)	1615
Peak-hour factor, PHF	0.80
Adj. Flow (vph)	126
RTOR Reduction (vph)	103
Lane Group Flow (vph)	23
Confl. Peds. (#/hr)	1
Turn Type	Perm
Protected Phases	
Permitted Phases	4
Actuated Green, G (s)	11.8
Effective Green, g (s)	14.8
Actuated g/C Ratio	0.19
Clearance Time (s)	6.0
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	301
v/s Ratio Prot	
v/s Ratio Perm	c0.01
v/c Ratio	0.08
Uniform Delay, d1	26.7
Progression Factor	1.00
Incremental Delay, d2	0.1
Delay (s)	26.8
Level of Service	C
Approach Delay (s)	
Approach LOS	

Intersection Summary

SummerHill Apartments Traffic Impact Study
AM Peak Hour Existing Conditions plus Project
Synchro 7 - Report
W-Trans

HCM Signalized Intersection Capacity Analysis
64: Stoneridge & W Las Positas

1/24/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	75	186	35	150	843	35	22	236	105	63	409	218
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	5.0	3.0	3.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	1.00	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	3657	1603	3547	3657	1588	1829	5255	1636	1829	5255	1618
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	3657	1603	3547	3657	1588	1829	5255	1636	1829	5255	1618
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	84	209	39	169	947	39	25	265	118	71	460	245
RTOR Reduction (vph)	0	0	27	0	0	24	0	0	91	0	0	88
Lane Group Flow (vph)	84	209	12	169	947	15	25	265	27	71	460	157
Confl. Peds. (#/hr)			12			24			36			12
Turn Type	Prot		Perm	Prot		Perm	Prot		custom	Prot		custom
Protected Phases	7	4		3	8		5	2	2	1	6	6
Permitted Phases			4			8			2			4
Actuated Green, G (s)	5.5	21.7	21.7	9.4	25.6	25.6	2.2	14.6	14.6	6.6	18.0	39.7
Effective Green, g (s)	6.5	24.7	22.7	10.4	28.6	26.6	3.2	16.6	16.6	7.6	21.0	45.7
Actuated g/C Ratio	0.09	0.35	0.32	0.15	0.40	0.37	0.04	0.23	0.23	0.11	0.29	0.64
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	5.0	5.0	4.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	323	1267	510	517	1467	592	82	1223	381	195	1548	1037
v/s Ratio Prot	0.02	0.06		c0.05	c0.26		0.01	0.05	0.02	c0.04	c0.09	0.04
v/s Ratio Perm			0.01			0.01						0.05
v/c Ratio	0.26	0.16	0.02	0.33	0.65	0.02	0.30	0.22	0.07	0.36	0.30	0.15
Uniform Delay, d1	30.2	16.2	16.7	27.3	17.3	14.1	33.0	22.1	21.3	29.6	19.4	5.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	0.1	0.0	0.4	1.0	0.0	2.1	0.1	0.1	1.2	0.1	0.1
Delay (s)	30.6	16.2	16.7	27.7	18.2	14.2	35.1	22.2	21.4	30.8	19.6	5.2
Level of Service	C	B	B	C	B	B	D	C	C	C	B	A
Approach Delay (s)		19.9			19.5			22.8			16.0	
Approach LOS		B			B			C			B	

Intersection Summary				
HCM Average Control Delay	19.0	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.45			
Actuated Cycle Length (s)	71.3	Sum of lost time (s)	6.0	
Intersection Capacity Utilization	63.1%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
946: Gibraltar Dr (S) & Willow

1/24/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (veh/h)	1	2	1	11	2	18	131	12	320	82	5	32
Sign Control		Stop			Stop				Free			
Grade		0%			0%				0%			
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	1	2	1	14	2	22	0	15	400	102	0	40
Pedestrians		20			20				20			
Lane Width (ft)		13.0			13.0				13.0			
Walking Speed (ft/s)		4.0			4.0				4.0			
Percent Blockage		2			2				2			
Right turn flare (veh)												
Median type									None			
Median storage veh)												
Upstream signal (ft)									1264			
pX, platoon unblocked							0.00				0.00	
vC, conflicting volume	700	979	211	759	944	291	0	362			0	522
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	700	979	211	759	944	291	0	362			0	522
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	0.0	4.1			0.0	4.1
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	0.0	2.2			0.0	2.2
p0 queue free %	100	99	100	95	99	97	0	99			0	96
cM capacity (veh/h)	282	228	766	264	239	680	0	1171			0	1021

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	5	16	22	15	267	236	40	207	136
Volume Left	1	14	0	15	0	0	40	0	0
Volume Right	1	0	22	0	0	102	0	0	32
cSH	293	260	680	1171	1700	1700	1021	1700	1700
Volume to Capacity	0.02	0.06	0.03	0.01	0.16	0.14	0.04	0.12	0.08
Queue Length 95th (ft)	1	5	3	1	0	0	3	0	0
Control Delay (s)	17.5	19.8	10.5	8.1	0.0	0.0	8.7	0.0	0.0
Lane LOS	C	C	B	A			A		
Approach Delay (s)	17.5	14.4		0.2			0.9		
Approach LOS	C	B							

Intersection Summary				
Average Delay	1.2			
Intersection Capacity Utilization	45.6%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
946: Gibraltar Dr (S) & Willow

1/24/2014

Movement	SBT	SBR
Lane Configurations		
Volume (veh/h)	248	26
Sign Control	Free	
Grade	0%	
Peak Hour Factor	0.80	0.80
Hourly flow rate (vph)	310	32
Pedestrians	20	
Lane Width (ft)	13.0	
Walking Speed (ft/s)	4.0	
Percent Blockage	2	
Right turn flare (veh)		
Median type	None	
Median storage veh)		
Upstream signal (ft)		
pX, platoon unblocked		
vC, conflicting volume		
vC1, stage 1 conf vol		
vC2, stage 2 conf vol		
vCu, unblocked vol		
tC, single (s)		
tC, 2 stage (s)		
tF (s)		
p0 queue free %		
cM capacity (veh/h)		
Direction, Lane #		

HCM Signalized Intersection Capacity Analysis
35: W Las Positas & Hopyard

1/24/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	102	192	385	472	261	90	342	793	297	92	1314	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	110	206	414	508	281	97	368	853	319	99	1413	103
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	58
Lane Group Flow (vph)	110	206	414	508	281	97	368	853	319	99	1413	45
Confl. Peds. (#/hr)			27			7			3			10
Turn Type	Prot		Free	Prot		Free	Prot		Free	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			Free			6
Actuated Green, G (s)	7.9	15.4	120.0	21.4	28.9	120.0	14.0	55.8	120.0	7.4	49.2	49.2
Effective Green, g (s)	8.9	18.4	120.0	22.4	31.9	120.0	15.0	58.8	120.0	8.4	52.2	52.2
Actuated g/C Ratio	0.07	0.15	1.00	0.19	0.27	1.00	0.12	0.49	1.00	0.07	0.44	0.44
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	5.0		1.8	5.0		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	263	561	1603	662	972	1613	443	2575	1615	248	2286	691
v/s Ratio Prot	c0.03	c0.06		c0.14	0.08		c0.10	0.16		0.03	c0.27	
v/s Ratio Perm			0.26			0.06			0.20			0.03
v/c Ratio	0.42	0.37	0.26	0.77	0.29	0.06	0.83	0.33	0.20	0.40	0.62	0.06
Uniform Delay, d1	53.1	45.6	0.0	46.3	35.0	0.0	51.3	18.6	0.0	53.4	26.2	19.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.72	0.47	1.00	1.17	0.69	1.02
Incremental Delay, d2	0.4	0.9	0.4	4.8	0.3	0.1	11.4	0.3	0.3	0.4	1.2	0.2
Delay (s)	53.5	46.4	0.4	51.1	35.4	0.1	48.3	9.0	0.3	63.0	19.4	20.4
Level of Service	D	D	A	D	D	A	D	A	A	E	B	C
Approach Delay (s)		21.4			40.5			16.6			22.2	
Approach LOS		C			D			B			C	

Intersection Summary				
HCM Average Control Delay	23.7	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.64			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	76.0%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
52: W Las Positas & Willow

1/24/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	106	482	2	1	480	61	34	10	24	69	1	180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Util. Factor	1.00	0.91		1.00	0.95	1.00	1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	0.99			1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.89			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00			0.95	1.00
Satd. Flow (prot)	1829	5251		1829	3657	1636	1820	1703			1831	1608
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.71	1.00			0.73	1.00
Satd. Flow (perm)	1829	5251		1829	3657	1636	1353	1703			1395	1608
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	118	536	2	1	533	68	38	11	27	77	1	200
RTOR Reduction (vph)	0	0	0	0	0	45	0	20	0	0	0	151
Lane Group Flow (vph)	118	538	0	1	533	23	38	18	0	0	78	49
Confl. Peds. (#/hr)			1	1			6		2	2		6
Turn Type	Prot			Prot		Perm	Perm			Perm		Perm
Protected Phases	5	2		1	6			4			4	
Permitted Phases						6	4			4		4
Actuated Green, G (s)	9.5	21.4		0.8	12.7	12.7	9.3	9.3			9.3	9.3
Effective Green, g (s)	10.5	24.4		1.8	15.7	15.7	11.3	11.3			11.3	11.3
Actuated g/C Ratio	0.23	0.52		0.04	0.34	0.34	0.24	0.24			0.24	0.24
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0	5.0	5.0			5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	413	2755		71	1235	552	329	414			339	391
v/s Ratio Prot	c0.06	0.10		0.00	c0.15			0.01				
v/s Ratio Perm						0.01	0.03				c0.06	0.03
v/c Ratio	0.29	0.20		0.01	0.43	0.04	0.12	0.04			0.23	0.12
Uniform Delay, d1	14.9	5.9		21.5	11.9	10.3	13.7	13.5			14.1	13.7
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00			1.00	1.05
Incremental Delay, d2	0.4	0.0		0.1	0.2	0.0	0.2	0.0			0.3	0.1
Delay (s)	15.3	5.9		21.6	12.2	10.4	13.9	13.5			14.5	14.6
Level of Service	B	A		C	B	B	B	B			B	B
Approach Delay (s)		7.6			12.0			13.7			14.6	
Approach LOS		A			B			B			B	

Intersection Summary				
HCM Average Control Delay	10.7	HCM Level of Service		B
HCM Volume to Capacity ratio	0.33			
Actuated Cycle Length (s)	46.5	Sum of lost time (s)		9.0
Intersection Capacity Utilization	40.2%	ICU Level of Service		A
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
57: Stoneridge & Hacienda

1/24/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	188	761	34	4	473	25	53	188	11	40	155	281
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.95		1.00	0.91		0.97	0.95		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.89	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.99		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3547	3629		1829	5201		3547	3619		1829	4230	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3547	3629		1829	5201		3547	3619		1829	4230	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	211	855	38	4	531	28	60	211	12	45	174	316
RTOR Reduction (vph)	0	1	0	0	3	0	0	4	0	0	266	0
Lane Group Flow (vph)	211	892	0	4	556	0	60	219	0	45	224	0
Confl. Peds. (#/hr)			12			24			24			120
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	12.4	75.1		2.6	65.3		6.3	15.0		7.3	16.0	
Effective Green, g (s)	13.4	78.1		3.6	68.3		7.3	18.0		8.3	19.0	
Actuated g/C Ratio	0.11	0.65		0.03	0.57		0.06	0.15		0.07	0.16	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	396	2362		55	2960		216	543		127	670	
v/s Ratio Prot	c0.06	c0.25		0.00	c0.11		0.02	c0.06		c0.02	0.05	
v/s Ratio Perm												
v/c Ratio	0.53	0.38		0.07	0.19		0.28	0.40		0.35	0.33	
Uniform Delay, d1	50.3	9.7		56.6	12.5		53.8	46.1		53.3	44.9	
Progression Factor	0.78	1.14		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.3	0.4		0.6	0.1		0.7	0.5		1.7	0.3	
Delay (s)	40.8	11.5		57.1	12.6		54.5	46.6		55.0	45.2	
Level of Service	D	B		E	B		D	D		D	D	
Approach Delay (s)		17.1			12.9			48.3			46.0	
Approach LOS		B			B			D			D	

Intersection Summary				
HCM Average Control Delay	25.9	HCM Level of Service		C
HCM Volume to Capacity ratio	0.38			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)		9.0
Intersection Capacity Utilization	66.2%	ICU Level of Service		C
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
58: Gibraltar Dr (S) & Hacienda

1/24/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	8	43	15	10	6	11	155	10	19	181	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor		0.95			0.95		1.00	0.91		1.00	0.91	
Frpb, ped/bikes		0.99			1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.90			0.97		1.00	0.99		1.00	0.99	
Flt Protected		0.99			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3196			3436		1829	5200		1829	5207	
Flt Permitted		0.90			0.84		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		2891			2957		1829	5200		1829	5207	
Peak-hour factor, PHF	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Adj. Flow (vph)	15	10	55	19	13	8	14	199	13	24	232	13
RTOR Reduction (vph)	0	45	0	0	7	0	0	8	0	0	8	0
Lane Group Flow (vph)	0	35	0	0	33	0	14	204	0	24	237	0
Confl. Peds. (#/hr)	20		20	20		20			20			20
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4			4								
Actuated Green, G (s)		2.6			2.6		0.6	7.7		0.7	7.8	
Effective Green, g (s)		4.6			4.6		1.6	10.7		1.7	10.8	
Actuated g/C Ratio		0.18			0.18		0.06	0.41		0.07	0.42	
Clearance Time (s)		5.0			5.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		511			523		113	2140		120	2163	
v/s Ratio Prot							0.01	0.04		c0.01	c0.05	
v/s Ratio Perm		c0.01			0.01							
v/c Ratio		0.07			0.06		0.12	0.10		0.20	0.11	
Uniform Delay, d1		8.9			8.9		11.5	4.7		11.5	4.7	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1			0.1		0.5	0.0		0.8	0.0	
Delay (s)		9.0			9.0		12.0	4.7		12.3	4.7	
Level of Service		A			A		B	A		B	A	
Approach Delay (s)		9.0			9.0			5.2			5.4	
Approach LOS		A			A			A			A	

Intersection Summary				
HCM Average Control Delay	6.0	HCM Level of Service		A
HCM Volume to Capacity ratio	0.09			
Actuated Cycle Length (s)	26.0	Sum of lost time (s)		6.0
Intersection Capacity Utilization	32.8%	ICU Level of Service		A
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
59: W Las Positas & Hacienda

1/24/2014

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	7	111	467	12	23	334	36	30	20	7	77	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0
Lane Util. Factor		1.00	0.91		1.00	0.95	1.00	1.00	1.00		1.00	1.00
Frpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	1.00	0.85	1.00	0.96		1.00	1.00
Flt Protected		0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00
Satd. Flow (prot)		1829	5235		1829	3657	1636	1829	1846		1829	1925
Flt Permitted		0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00
Satd. Flow (perm)		1829	5235		1829	3657	1636	1829	1846		1829	1925
Peak-hour factor, PHF	0.90	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	8	118	497	13	24	355	38	32	21	7	82	19
RTOR Reduction (vph)	0	0	2	0	0	0	23	0	6	0	0	0
Lane Group Flow (vph)	0	126	508	0	24	355	15	32	22	0	82	19
Confl. Peds. (#/hr)										3		
Turn Type	Prot	Prot			Prot		Perm	Prot			Prot	
Protected Phases	5	5	2		1	6		3	8		7	4
Permitted Phases							6					
Actuated Green, G (s)		7.9	30.7		2.1	24.9	24.9	4.3	7.4		7.0	10.1
Effective Green, g (s)		8.9	33.7		3.1	27.9	27.9	7.3	10.4		10.0	13.1
Actuated g/C Ratio		0.13	0.49		0.04	0.40	0.40	0.11	0.15		0.14	0.19
Clearance Time (s)		4.0	6.0		4.0	6.0	6.0	6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		235	2549		82	1474	660	193	277		264	364
v/s Ratio Prot		c0.07	0.10		0.01	c0.10		0.02	0.01		c0.04	0.01
v/s Ratio Perm							0.01					
v/c Ratio		0.54	0.20		0.29	0.24	0.02	0.17	0.08		0.31	0.05
Uniform Delay, d1		28.2	10.1		32.0	13.6	12.4	28.2	25.3		26.5	23.0
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2		2.3	0.2		2.0	0.1	0.0	0.4	0.1		0.7	0.1
Delay (s)		30.6	10.3		34.0	13.7	12.5	28.6	25.4		27.2	23.0
Level of Service		C	B		C	B	B	C	C		C	C
Approach Delay (s)			14.3			14.8			27.1			24.5
Approach LOS			B			B			C			C

Intersection Summary				
HCM Average Control Delay	16.9	HCM Level of Service		B
HCM Volume to Capacity ratio	0.27			
Actuated Cycle Length (s)	69.2	Sum of lost time (s)		12.0
Intersection Capacity Utilization	42.8%	ICU Level of Service		A
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
59: W Las Positas & Hacienda

1/24/2014

Movement	SBR
Lane Configurations	
Volume (vph)	146
Ideal Flow (vphpl)	1900
Total Lost time (s)	3.0
Lane Util. Factor	1.00
Frpb, ped/bikes	0.99
Flpb, ped/bikes	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1615
Flt Permitted	1.00
Satd. Flow (perm)	1615
Peak-hour factor, PHF	0.94
Adj. Flow (vph)	155
RTOR Reduction (vph)	126
Lane Group Flow (vph)	29
Confl. Peds. (#/hr)	1
Turn Type	Perm
Protected Phases	
Permitted Phases	4
Actuated Green, G (s)	10.1
Effective Green, g (s)	13.1
Actuated g/C Ratio	0.19
Clearance Time (s)	6.0
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	306
v/s Ratio Prot	
v/s Ratio Perm	c0.02
v/c Ratio	0.10
Uniform Delay, d1	23.2
Progression Factor	1.00
Incremental Delay, d2	0.1
Delay (s)	23.3
Level of Service	C
Approach Delay (s)	
Approach LOS	
Intersection Summary	

HCM Signalized Intersection Capacity Analysis
64: Stoneridge & W Las Positas

1/24/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	226	778	29	101	307	22	23	359	200	189	260	124
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	5.0	3.0	3.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	1.00	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	3657	1601	3547	3657	1584	1829	5255	1636	1829	5255	1620
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	3657	1601	3547	3657	1584	1829	5255	1636	1829	5255	1620
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	240	828	31	107	327	23	24	382	213	201	277	132
RTOR Reduction (vph)	0	0	20	0	0	17	0	0	164	0	0	35
Lane Group Flow (vph)	240	828	11	107	327	6	24	382	49	201	277	97
Confl. Peds. (#/hr)			12			24			36			12
Turn Type	Prot		Perm	Prot		Perm	Prot		custom	Prot		custom
Protected Phases	7	4		3	8		5	2	2	1	6	6
Permitted Phases			4			8			2			4
Actuated Green, G (s)	10.8	25.0	25.0	5.4	19.6	19.6	2.3	16.5	16.5	14.8	28.0	53.0
Effective Green, g (s)	11.8	28.0	26.0	6.4	22.6	20.6	3.3	18.5	18.5	15.8	31.0	59.0
Actuated g/C Ratio	0.15	0.35	0.32	0.08	0.28	0.26	0.04	0.23	0.23	0.20	0.38	0.73
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	5.0	5.0	4.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	519	1269	516	281	1024	404	75	1205	375	358	2019	1184
v/s Ratio Prot	c0.07	c0.23		0.03	0.09		0.01	c0.07	0.03	c0.11	0.05	0.03
v/s Ratio Perm			0.01			0.00						0.03
v/c Ratio	0.46	0.65	0.02	0.38	0.32	0.01	0.32	0.32	0.13	0.56	0.14	0.08
Uniform Delay, d1	31.5	22.2	18.7	35.3	23.0	22.5	37.6	25.8	24.7	29.3	16.2	3.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7	1.2	0.0	0.9	0.2	0.0	2.5	0.2	0.2	2.0	0.0	0.0
Delay (s)	32.2	23.5	18.7	36.1	23.1	22.5	40.1	26.0	24.9	31.3	16.2	3.1
Level of Service	C	C	B	D	C	C	D	C	C	C	B	A
Approach Delay (s)		25.2			26.2			26.2			18.4	
Approach LOS		C			C			C			B	

Intersection Summary				
HCM Average Control Delay	24.1	HCM Level of Service		C
HCM Volume to Capacity ratio	0.51			
Actuated Cycle Length (s)	80.7	Sum of lost time (s)		9.0
Intersection Capacity Utilization	69.0%	ICU Level of Service		C
Analysis Period (min)	15			

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
946: Gibraltar Dr (S) & Willow

1/24/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (veh/h)	38	5	9	22	2	43	29	1	114	27	2	38
Sign Control		Stop			Stop				Free			
Grade		0%			0%				0%			
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.90	0.80	0.80	0.80	0.90	0.80
Hourly flow rate (vph)	48	6	11	28	2	54	0	1	142	34	0	48
Pedestrians		20			20				20			
Lane Width (ft)		13.0			13.0				13.0			
Walking Speed (ft/s)		4.0			4.0				4.0			
Percent Blockage		2			2				2			
Right turn flare (veh)												
Median type									None			
Median storage veh)												
Upstream signal (ft)									1264			
pX, platoon unblocked							0.00				0.00	
vC, conflicting volume	562	612	194	456	604	128	0	328			0	196
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	562	612	194	456	604	128	0	328			0	196
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	0.0	4.1			0.0	4.1
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	0.0	2.2			0.0	2.2
p0 queue free %	86	98	99	94	99	94	0	100			0	96
cM capacity (veh/h)	349	378	786	433	382	866	0	1207			0	1349

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	65	30	54	1	95	81	48	192	115
Volume Left	48	28	0	1	0	0	48	0	0
Volume Right	11	0	54	0	0	34	0	0	19
cSH	389	428	866	1207	1700	1700	1349	1700	1700
Volume to Capacity	0.17	0.07	0.06	0.00	0.06	0.05	0.04	0.11	0.07
Queue Length 95th (ft)	15	6	5	0	0	0	3	0	0
Control Delay (s)	16.1	14.0	9.4	8.0	0.0	0.0	7.8	0.0	0.0
Lane LOS	C	B	A	A			A		
Approach Delay (s)	16.1	11.1		0.1			1.0		
Approach LOS	C	B							

Intersection Summary				
Average Delay	3.5			
Intersection Capacity Utilization	42.4%	ICU Level of Service		A
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
946: Gibraltar Dr (S) & Willow
1/24/2014

Movement	SBT	SBR
Lane Configurations		
Volume (veh/h)	231	15
Sign Control	Free	
Grade	0%	
Peak Hour Factor	0.80	0.80
Hourly flow rate (vph)	289	19
Pedestrians	20	
Lane Width (ft)	13.0	
Walking Speed (ft/s)	4.0	
Percent Blockage	2	
Right turn flare (veh)		
Median type	None	
Median storage veh)		
Upstream signal (ft)		
pX, platoon unblocked		
vC, conflicting volume		
vC1, stage 1 conf vol		
vC2, stage 2 conf vol		
vCu, unblocked vol		
tC, single (s)		
tC, 2 stage (s)		
tF (s)		
p0 queue free %		
cM capacity (veh/h)		

Direction, Lane #

SummerHill Apartments Traffic Impact Study
PM Peak Hour Existing Conditions plus Project
Synchro 7 - Report
W-Trans

HCM Signalized Intersection Capacity Analysis
12: Stoneridge & Hacienda

12/2/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	237	265	12	21	1270	54	60	132	19	30	184	126
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.95		1.00	0.91		0.97	0.95		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.93	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.98		1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3547	3628		1829	5211		3547	3570		1829	4596	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3547	3628		1829	5211		3547	3570		1829	4596	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	252	282	13	22	1351	57	64	140	20	32	196	134
RTOR Reduction (vph)	0	2	0	0	2	0	0	11	0	0	107	0
Lane Group Flow (vph)	252	293	0	22	1406	0	64	149	0	32	223	0
Confl. Peds. (#/hr)			12			24			24			120
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	13.8	67.8		4.7	58.7		6.4	22.3		5.2	21.1	
Effective Green, g (s)	14.8	70.8		5.7	61.7		7.4	25.3		6.2	24.1	
Actuated g/C Ratio	0.12	0.59		0.05	0.51		0.06	0.21		0.05	0.20	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	437	2141		87	2679		219	753		94	923	
v/s Ratio Prot	c0.07	0.08		0.01	c0.27		0.02	0.04		c0.02	c0.05	
v/s Ratio Perm												
v/c Ratio	0.58	0.14		0.25	0.52		0.29	0.20		0.34	0.24	
Uniform Delay, d1	49.6	11.0		55.1	19.4		53.8	39.0		54.9	40.3	
Progression Factor	0.79	1.37		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.7	0.1		1.5	0.7		0.7	0.1		2.2	0.1	
Delay (s)	40.8	15.1		56.6	20.1		54.5	39.1		57.1	40.4	
Level of Service	D	B		E	C		D	D		E	D	
Approach Delay (s)		27.0			20.7			43.5			41.9	
Approach LOS		C			C			D			D	

Intersection Summary				
HCM Average Control Delay	27.0	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.45			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	68.3%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
16: W Las Positas & Hopyard

12/2/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	159	349	424	394	281	58	454	1410	435	160	706	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	185	406	493	458	327	67	528	1640	506	186	821	95
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	68
Lane Group Flow (vph)	185	406	493	458	327	67	528	1640	506	186	821	27
Confl. Peds. (#/hr)			27			7			3			10
Turn Type	Prot		Free	Prot		Free	Prot		Free	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			Free			6
Actuated Green, G (s)	9.7	20.7	120.0	18.6	29.6	120.0	30.1	52.0	120.0	8.7	30.6	30.6
Effective Green, g (s)	10.7	23.7	120.0	19.6	32.6	120.0	31.1	55.0	120.0	9.7	33.6	33.6
Actuated g/C Ratio	0.09	0.20	1.00	0.16	0.27	1.00	0.26	0.46	1.00	0.08	0.28	0.28
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	5.0		1.8	5.0		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	316	722	1603	579	993	1613	919	2409	1615	287	1471	445
v/s Ratio Prot	0.05	c0.11		c0.13	0.09		0.15	c0.31		c0.05	0.16	
v/s Ratio Perm			0.31			0.04			0.31			0.02
v/c Ratio	0.59	0.56	0.31	0.79	0.33	0.04	0.57	0.68	0.31	0.65	0.56	0.06
Uniform Delay, d1	52.5	43.5	0.0	48.2	35.0	0.0	38.7	25.6	0.0	53.5	36.9	31.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.72	0.62	1.00	0.77	0.68	0.72
Incremental Delay, d2	1.8	1.7	0.5	6.8	0.4	0.0	0.5	1.4	0.4	3.7	1.5	0.3
Delay (s)	54.3	45.1	0.5	55.0	35.4	0.0	28.2	17.3	0.4	45.0	26.7	23.0
Level of Service	D	D	A	E	D	A	C	B	A	D	C	C
Approach Delay (s)		26.4			43.2			16.2			29.5	
Approach LOS		C			D			B			C	

Intersection Summary				
HCM Average Control Delay	24.7	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.67			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	72.2%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
17: W Las Positas & Hacienda

12/2/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	95	398	23	3	739	61	2	37	8	75	0	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	0.91		1.00	0.95	1.00		1.00	1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00	0.98	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00	1.00	0.95	0.95	1.00
Satd. Flow (prot)	1829	5212		1829	3657	1636		1921	1601	1737	1737	1615
Flt Permitted	0.95	1.00		0.95	1.00	1.00		1.00	1.00	0.95	0.95	1.00
Satd. Flow (perm)	1829	5212		1829	3657	1636		1921	1601	1737	1737	1615
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	112	468	27	4	869	72	2	44	9	88	0	135
RTOR Reduction (vph)	0	4	0	0	0	40	0	0	8	0	0	108
Lane Group Flow (vph)	112	491	0	4	869	32	0	46	1	44	44	27
Confl. Peds. (#/hr)									3			1
Turn Type	Prot			Prot		Perm	Split		Perm	Split		Perm
Protected Phases	5	2		1	6		4	4		3	3	
Permitted Phases						6			4			3
Actuated Green, G (s)	7.2	37.5		1.0	31.3	31.3		4.4	4.4	12.8	12.8	12.8
Effective Green, g (s)	8.2	40.5		2.0	34.3	34.3		7.4	7.4	15.8	15.8	15.8
Actuated g/C Ratio	0.11	0.52		0.03	0.44	0.44		0.10	0.10	0.20	0.20	0.20
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		6.0	6.0	6.0	6.0	6.0
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)	193	2717		47	1614	722		183	152	353	353	328
v/s Ratio Prot	c0.06	0.09		0.00	c0.24			c0.02		c0.03	0.03	
v/s Ratio Perm						0.02			0.00			0.02
v/c Ratio	0.58	0.18		0.09	0.54	0.04		0.25	0.01	0.12	0.12	0.08
Uniform Delay, d1	33.1	9.8		37.0	15.9	12.4		32.6	31.8	25.3	25.3	25.1
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	4.4	0.1		0.8	0.3	0.0		0.7	0.0	0.2	0.2	0.1
Delay (s)	37.5	10.0		37.7	16.2	12.4		33.3	31.8	25.5	25.5	25.2
Level of Service	D	A		D	B	B		C	C	C	C	C
Approach Delay (s)		15.1			16.0			33.1			25.3	
Approach LOS		B			B			C			C	

Intersection Summary				
HCM Average Control Delay	17.4	HCM Level of Service		B
HCM Volume to Capacity ratio	0.41			
Actuated Cycle Length (s)	77.7	Sum of lost time (s)		12.0
Intersection Capacity Utilization	44.9%	ICU Level of Service		A
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
18: Stoneridge & W Las Positas

12/2/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	31	312	139	123	1048	320	297	724	44	95	228	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	5.0	3.0	3.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.96	1.00	1.00	1.00	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	3657	1598	3547	3657	1578	1829	5255	1636	1829	5255	1613
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	3657	1598	3547	3657	1578	1829	5255	1636	1829	5255	1613
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	34	347	154	137	1164	356	330	804	49	106	253	20
RTOR Reduction (vph)	0	0	105	0	0	185	0	0	33	0	0	9
Lane Group Flow (vph)	34	347	49	137	1164	171	330	804	16	106	253	11
Confl. Peds. (#/hr)			12			24			36			12
Turn Type	Prot		Perm	Prot		Perm	Prot		custom	Prot		custom
Protected Phases	7	4		3	8		5	2	2	1	6	6
Permitted Phases			4			8			2			4
Actuated Green, G (s)	3.5	29.8	29.8	8.1	34.4	34.4	21.6	28.4	28.4	10.6	16.4	46.2
Effective Green, g (s)	4.5	32.8	30.8	9.1	37.4	35.4	22.6	30.4	30.4	11.6	19.4	52.2
Actuated g/C Ratio	0.05	0.34	0.32	0.09	0.39	0.37	0.24	0.32	0.32	0.12	0.20	0.54
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	5.0	5.0	4.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	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	1251	513	337	1426	582	431	1666	519	221	1063	878
v/s Ratio Prot	0.01	0.09		c0.04	c0.32		c0.18	c0.15	0.01	0.06	0.05	0.00
v/s Ratio Perm			0.03			0.11						0.00
v/c Ratio	0.20	0.28	0.10	0.41	0.82	0.29	0.77	0.48	0.03	0.48	0.24	0.01
Uniform Delay, d1	44.0	22.9	22.8	40.9	26.2	21.4	34.2	26.4	22.6	39.3	32.1	10.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.6	0.1	0.1	0.8	3.7	0.3	7.9	0.2	0.0	1.6	0.1	0.0
Delay (s)	44.6	23.1	22.9	41.7	29.9	21.7	42.1	26.6	22.6	41.0	32.2	10.0
Level of Service	D	C	C	D	C	C	D	C	C	D	C	B
Approach Delay (s)		24.4			29.1			30.8			33.5	
Approach LOS		C			C			C			C	

Intersection Summary				
HCM Average Control Delay	29.4	HCM Level of Service		C
HCM Volume to Capacity ratio	0.70			
Actuated Cycle Length (s)	95.9	Sum of lost time (s)		9.0
Intersection Capacity Utilization	74.4%	ICU Level of Service		D
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
52: W Las Positas & Willow

12/2/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	278	524	19	25	548	195	14	9	3	27	5	170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Util. Factor	1.00	0.91		1.00	0.95	1.00	1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00			1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.99	1.00			1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.96			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00			0.96	1.00
Satd. Flow (prot)	1829	5224		1829	3657	1636	1817	1841			1844	1606
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.73	1.00			0.80	1.00
Satd. Flow (perm)	1829	5224		1829	3657	1636	1400	1841			1537	1606
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.91	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	327	616	22	29	602	229	16	11	4	32	6	200
RTOR Reduction (vph)	0	2	0	0	0	157	0	3	0	0	0	162
Lane Group Flow (vph)	327	636	0	29	602	72	16	12	0	0	38	38
Confl. Peds. (#/hr)			1	1			6		2	2		6
Turn Type	Prot			Prot		Perm	Perm			Perm		Perm
Protected Phases	5	2		1	6			4			4	
Permitted Phases						6	4			4		4
Actuated Green, G (s)	20.2	33.7		2.5	16.0	16.0	9.6	9.6			9.6	9.6
Effective Green, g (s)	21.2	36.7		3.5	19.0	19.0	11.6	11.6			11.6	11.6
Actuated g/C Ratio	0.35	0.60		0.06	0.31	0.31	0.19	0.19			0.19	0.19
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0	5.0	5.0			5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	638	3153		105	1143	511	267	351			293	306
v/s Ratio Prot	c0.18	0.12		0.02	c0.16			0.01				
v/s Ratio Perm						0.04	0.01				c0.02	0.02
v/c Ratio	0.51	0.20		0.28	0.53	0.14	0.06	0.03			0.13	0.12
Uniform Delay, d1	15.7	5.4		27.4	17.2	15.0	20.1	20.0			20.4	20.4
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00			1.10	1.48
Incremental Delay, d2	0.7	0.0		1.4	0.4	0.1	0.1	0.0			0.2	0.2
Delay (s)	16.4	5.5		28.9	17.6	15.2	20.2	20.1			22.7	30.4
Level of Service	B	A		C	B	B	C	C			C	C
Approach Delay (s)		9.2			17.4			20.2			29.2	
Approach LOS		A			B			C			C	

Intersection Summary				
HCM Average Control Delay	15.0	HCM Level of Service		B
HCM Volume to Capacity ratio	0.43			
Actuated Cycle Length (s)	60.8	Sum of lost time (s)		9.0
Intersection Capacity Utilization	49.9%	ICU Level of Service		A
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
58: Gibraltar Dr (S) & Hacienda

12/2/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	19	31	10	14	6	23	95	29	62	136	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor		0.95			0.95		1.00	0.91		1.00	0.91	
Frpb, ped/bikes		0.99			1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.92			0.97		1.00	0.96		1.00	0.97	
Flt Protected		0.99			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3306			3462		1829	5040		1829	5079	
Flt Permitted		0.90			0.85		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		3002			2998		1829	5040		1829	5079	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.88	0.85	0.85	0.85	0.85
Adj. Flow (vph)	13	22	36	12	16	7	27	108	34	73	160	39
RTOR Reduction (vph)	0	28	0	0	5	0	0	24	0	0	25	0
Lane Group Flow (vph)	0	43	0	0	30	0	27	118	0	73	174	0
Confl. Peds. (#/hr)	20		20	20		20			20			20
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4			4								
Actuated Green, G (s)		4.0			4.0		0.8	4.9		2.1	6.2	
Effective Green, g (s)		6.0			6.0		1.8	7.9		3.1	9.2	
Actuated g/C Ratio		0.23			0.23		0.07	0.30		0.12	0.35	
Clearance Time (s)		5.0			5.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		693			692		127	1531		218	1797	
v/s Ratio Prot							0.01	0.02		c0.04	c0.03	
v/s Ratio Perm		c0.01			0.01							
v/c Ratio		0.06			0.04		0.21	0.08		0.33	0.10	
Uniform Delay, d1		7.8			7.8		11.4	6.5		10.5	5.6	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.0			0.0		0.8	0.0		0.9	0.0	
Delay (s)		7.8			7.8		12.3	6.5		11.4	5.6	
Level of Service		A			A		B	A		B	A	
Approach Delay (s)		7.8			7.8			7.4			7.2	
Approach LOS		A			A			A			A	

Intersection Summary				
HCM Average Control Delay	7.4	HCM Level of Service		A
HCM Volume to Capacity ratio	0.10			
Actuated Cycle Length (s)	26.0	Sum of lost time (s)		6.0
Intersection Capacity Utilization	33.0%	ICU Level of Service		A
Analysis Period (min)	15			

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
946: Gibraltar Dr (S) & Willow

12/2/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (veh/h)	1	2	1	11	2	18	125	12	396	64	5	32
Sign Control		Stop			Stop				Free			
Grade		0%			0%				0%			
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	1	2	1	14	2	22	0	15	495	80	0	40
Pedestrians		20			20				20			
Lane Width (ft)		13.0			13.0				13.0			
Walking Speed (ft/s)		4.0			4.0				4.0			
Percent Blockage		2			2				2			
Right turn flare (veh)												
Median type									None			
Median storage veh)												
Upstream signal (ft)									1264			
pX, platoon unblocked							0.00				0.00	
vC, conflicting volume	750	1054	212	844	1030	328	0	365			0	595
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	750	1054	212	844	1030	328	0	365			0	595
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	0.0	4.1			0.0	4.1
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	0.0	2.2			0.0	2.2
p0 queue free %	100	99	100	94	99	97	0	99			0	96
cM capacity (veh/h)	258	205	764	228	212	644	0	1169			0	960

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	5	16	22	15	330	245	40	208	137
Volume Left	1	14	0	15	0	0	40	0	0
Volume Right	1	0	22	0	0	80	0	0	32
cSH	268	226	644	1169	1700	1700	960	1700	1700
Volume to Capacity	0.02	0.07	0.03	0.01	0.19	0.14	0.04	0.12	0.08
Queue Length 95th (ft)	1	6	3	1	0	0	3	0	0
Control Delay (s)	18.7	22.2	10.8	8.1	0.0	0.0	8.9	0.0	0.0
Lane LOS	C	C	B	A			A		
Approach Delay (s)	18.7	15.6		0.2			0.9		
Approach LOS	C	C							

Intersection Summary				
Average Delay	1.2			
Intersection Capacity Utilization	46.4%	ICU Level of Service		A
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
946: Gibraltar Dr (S) & Willow

12/2/2013

Movement	SBT	SBR
Lane Configurations		
Volume (veh/h)	250	26
Sign Control	Free	
Grade	0%	
Peak Hour Factor	0.80	0.80
Hourly flow rate (vph)	312	32
Pedestrians	20	
Lane Width (ft)	13.0	
Walking Speed (ft/s)	4.0	
Percent Blockage	2	
Right turn flare (veh)		
Median type	None	
Median storage veh)		
Upstream signal (ft)		
pX, platoon unblocked		
vC, conflicting volume		
vC1, stage 1 conf vol		
vC2, stage 2 conf vol		
vCu, unblocked vol		
tC, single (s)		
tC, 2 stage (s)		
tF (s)		
p0 queue free %		
cM capacity (veh/h)		

Direction, Lane #

SummerHill Apartments Traffic Impact Study
AM Peak Hour Existing plus Approved Project Conditions-No Project
Synchro 7 - Report
W-Trans

HCM Signalized Intersection Capacity Analysis
12: Stoneridge & Hacienda

12/2/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	245	1250	76	17	469	40	37	175	14	44	271	261
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.95		1.00	0.91		0.97	0.95		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.92	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.99		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3547	3619		1829	5170		3547	3604		1829	4464	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3547	3619		1829	5170		3547	3604		1829	4464	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	258	1316	80	18	494	42	39	184	15	46	285	275
RTOR Reduction (vph)	0	3	0	0	6	0	0	6	0	0	156	0
Lane Group Flow (vph)	258	1393	0	18	530	0	39	193	0	46	404	0
Confl. Peds. (#/hr)			12			24			24			120
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	14.0	67.8		3.2	57.0		4.4	21.8		7.2	24.6	
Effective Green, g (s)	15.0	70.8		4.2	60.0		5.4	24.8		8.2	27.6	
Actuated g/C Ratio	0.12	0.59		0.04	0.50		0.05	0.21		0.07	0.23	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	443	2135		64	2585		160	745		125	1027	
v/s Ratio Prot	c0.07	c0.38		0.01	0.10		0.01	0.05		c0.03	c0.09	
v/s Ratio Perm												
v/c Ratio	0.58	0.65		0.28	0.21		0.24	0.26		0.37	0.39	
Uniform Delay, d1	49.5	16.4		56.4	16.7		55.3	39.9		53.4	39.1	
Progression Factor	1.24	0.39		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.6	1.3		2.4	0.2		0.8	0.2		1.8	0.3	
Delay (s)	63.0	7.7		58.8	16.9		56.1	40.1		55.3	39.4	
Level of Service	E	A		E	B		E	D		E	D	
Approach Delay (s)		16.3			18.3			42.7			40.6	
Approach LOS		B			B			D			D	

Intersection Summary				
HCM Average Control Delay	23.5	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.56			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0	
Intersection Capacity Utilization	81.1%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
16: W Las Positas & Hopyard

12/2/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	119	236	587	581	260	117	284	795	322	116	1525	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	124	246	611	605	271	122	296	828	335	121	1589	110
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	67
Lane Group Flow (vph)	124	246	611	605	271	122	296	828	335	121	1589	44
Confl. Peds. (#/hr)			27			7			3			10
Turn Type	Prot		Free	Prot		Free	Prot		Free	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			Free			6
Actuated Green, G (s)	8.4	17.8	120.0	26.0	35.4	120.0	19.0	47.9	120.0	8.3	37.2	37.2
Effective Green, g (s)	9.4	20.8	120.0	27.0	38.4	120.0	20.0	50.9	120.0	9.3	40.2	40.2
Actuated g/C Ratio	0.08	0.17	1.00	0.22	0.32	1.00	0.17	0.42	1.00	0.08	0.34	0.34
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	5.0		1.8	5.0		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	278	634	1603	798	1170	1613	591	2229	1615	275	1760	532
v/s Ratio Prot	0.03	0.07		c0.17	0.07		c0.08	0.16		0.03	c0.30	
v/s Ratio Perm			c0.38			0.08			0.21			0.03
v/c Ratio	0.45	0.39	0.38	0.76	0.23	0.08	0.50	0.37	0.21	0.44	0.90	0.08
Uniform Delay, d1	52.8	44.0	0.0	43.4	30.0	0.0	45.5	23.6	0.0	52.9	38.0	27.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.40	1.66	1.00	0.89	0.78	0.22
Incremental Delay, d2	0.4	0.8	0.7	3.7	0.2	0.1	0.2	0.5	0.3	0.4	7.8	0.3
Delay (s)	53.2	44.8	0.7	47.1	30.2	0.1	63.9	39.6	0.3	47.3	37.6	6.4
Level of Service	D	D	A	D	C	A	E	D	A	D	D	A
Approach Delay (s)		18.4			36.8			35.5			36.4	
Approach LOS		B			D			D			D	

Intersection Summary				
HCM Average Control Delay	32.9	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.68			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0	
Intersection Capacity Utilization	82.0%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
17: W Las Positas & Hacienda

12/2/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	101	719	1	1	499	49	10	29	1	229	16	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	0.91		1.00	0.95	1.00		1.00	1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00	0.98	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99	1.00	0.95	0.96	1.00
Satd. Flow (prot)	1829	5254		1829	3657	1636		1901	1602	1737	1752	1615
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.99	1.00	0.95	0.96	1.00
Satd. Flow (perm)	1829	5254		1829	3657	1636		1901	1602	1737	1752	1615
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)	110	782	1	1	542	53	11	32	1	249	17	217
RTOR Reduction (vph)	0	0	0	0	0	35	0	0	1	0	0	161
Lane Group Flow (vph)	110	783	0	1	542	18	0	43	0	132	134	56
Confl. Peds. (#/hr)									3			1
Turn Type	Prot			Prot		Perm	Split		Perm	Split		Perm
Protected Phases	5	2		1	6		4	4		3	3	
Permitted Phases						6			4			3
Actuated Green, G (s)	8.1	28.4		0.8	21.1	21.1		4.0	4.0	15.1	15.1	15.1
Effective Green, g (s)	9.1	31.4		1.8	24.1	24.1		7.0	7.0	18.1	18.1	18.1
Actuated g/C Ratio	0.13	0.45		0.03	0.34	0.34		0.10	0.10	0.26	0.26	0.26
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		6.0	6.0	6.0	6.0	6.0
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)	237	2347		47	1254	561		189	160	447	451	416
v/s Ratio Prot	c0.06	0.15		0.00	c0.15			c0.02		0.08	c0.08	
v/s Ratio Perm						0.01			0.00			0.03
v/c Ratio	0.46	0.33		0.02	0.43	0.03		0.23	0.00	0.30	0.30	0.13
Uniform Delay, d1	28.3	12.6		33.4	17.8	15.4		29.2	28.5	21.0	21.0	20.1
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	1.4	0.1		0.2	0.2	0.0		0.6	0.0	0.4	0.4	0.1
Delay (s)	29.8	12.7		33.6	18.1	15.4		29.8	28.5	21.3	21.4	20.2
Level of Service	C	B		C	B	B		C	C	C	C	C
Approach Delay (s)		14.8			17.8			29.7			20.8	
Approach LOS		B			B			C			C	

Intersection Summary				
HCM Average Control Delay	17.5	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.37			
Actuated Cycle Length (s)	70.3	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	43.1%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
18: Stoneridge & W Las Positas

12/2/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	4	675	288	279	343	81	148	380	95	492	850	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	5.0	3.0	3.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.96	1.00	1.00	1.00	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	3657	1596	3547	3657	1575	1829	5255	1636	1829	5255	1619
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	3657	1596	3547	3657	1575	1829	5255	1636	1829	5255	1619
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	4	718	306	297	365	86	157	404	101	523	904	35
RTOR Reduction (vph)	0	0	222	0	0	56	0	0	82	0	0	12
Lane Group Flow (vph)	4	718	84	297	365	30	157	404	19	523	904	23
Confl. Peds. (#/hr)			12			24			36			12
Turn Type	Prot		Perm	Prot		Perm	Prot		custom	Prot		custom
Protected Phases	7	4		3	8		5	2	2	1	6	6
Permitted Phases			4			8			2			4
Actuated Green, G (s)	1.0	27.6	27.6	9.1	35.7	35.7	13.4	17.3	17.3	31.5	34.4	62.0
Effective Green, g (s)	2.0	30.6	28.6	10.1	38.7	36.7	14.4	19.3	19.3	32.5	37.4	68.0
Actuated g/C Ratio	0.02	0.29	0.27	0.10	0.37	0.35	0.14	0.18	0.18	0.31	0.36	0.65
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	5.0	5.0	4.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	68	1071	437	343	1354	553	252	971	302	569	1881	1054
v/s Ratio Prot	0.00	c0.20		c0.08	0.10		0.09	0.08	0.01	c0.29	c0.17	0.01
v/s Ratio Perm			0.05			0.02						0.01
v/c Ratio	0.06	0.67	0.19	0.87	0.27	0.05	0.62	0.42	0.06	0.92	0.48	0.02
Uniform Delay, d1	50.3	32.5	29.1	46.5	23.0	22.4	42.5	37.6	35.1	34.7	26.0	6.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	1.7	0.2	19.8	0.1	0.0	4.7	0.3	0.1	19.9	0.2	0.0
Delay (s)	50.7	34.2	29.3	66.3	23.1	22.5	47.2	37.9	35.2	54.6	26.2	6.5
Level of Service	D	C	C	E	C	C	D	D	D	D	C	A
Approach Delay (s)		32.8			40.2			39.7			35.9	
Approach LOS		C			D			D			D	

Intersection Summary				
HCM Average Control Delay	36.6	HCM Level of Service	D	
HCM Volume to Capacity ratio	0.73			
Actuated Cycle Length (s)	104.5	Sum of lost time (s)	9.0	
Intersection Capacity Utilization	87.8%	ICU Level of Service	E	
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
52: W Las Positas & Willow

12/2/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	77	594	11	2	557	47	51	6	26	97	4	124
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Util. Factor	1.00	0.91		1.00	0.95	1.00	1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	0.99			1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.88			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00			0.95	1.00
Satd. Flow (prot)	1829	5238		1829	3657	1636	1822	1668			1834	1609
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.69	1.00			0.71	1.00
Satd. Flow (perm)	1829	5238		1829	3657	1636	1318	1668			1363	1609
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	83	639	12	2	599	51	55	6	28	104	4	133
RTOR Reduction (vph)	0	3	0	0	0	29	0	22	0	0	0	102
Lane Group Flow (vph)	83	648	0	2	599	22	55	12	0	0	108	31
Confl. Peds. (#/hr)			1	1			6		2	2		6
Turn Type	Prot			Prot		Perm	Perm			Perm		Perm
Protected Phases	5	2		1	6			4			4	
Permitted Phases						6	4			4		4
Actuated Green, G (s)	3.2	16.4		0.8	14.0	14.0	7.0	7.0			7.0	7.0
Effective Green, g (s)	4.2	19.4		1.8	17.0	17.0	9.0	9.0			9.0	9.0
Actuated g/C Ratio	0.11	0.49		0.05	0.43	0.43	0.23	0.23			0.23	0.23
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0	5.0	5.0			5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	196	2592		84	1586	709	303	383			313	369
v/s Ratio Prot	c0.05	0.12		0.00	c0.16			0.01				
v/s Ratio Perm						0.01	0.04				c0.08	0.02
v/c Ratio	0.42	0.25		0.02	0.38	0.03	0.18	0.03			0.35	0.08
Uniform Delay, d1	16.4	5.7		17.9	7.5	6.4	12.1	11.7			12.6	11.9
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00			1.03	1.11
Incremental Delay, d2	1.5	0.1		0.1	0.2	0.0	0.3	0.0			0.7	0.1
Delay (s)	17.8	5.8		18.0	7.7	6.4	12.4	11.8			13.6	13.2
Level of Service	B	A		B	A	A	B	B			B	B
Approach Delay (s)		7.1			7.6			12.2			13.4	
Approach LOS		A			A			B			B	

Intersection Summary				
HCM Average Control Delay	8.5	HCM Level of Service	A	
HCM Volume to Capacity ratio	0.35			
Actuated Cycle Length (s)	39.2	Sum of lost time (s)	9.0	
Intersection Capacity Utilization	42.1%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
58: Gibraltar Dr (S) & Hacienda

12/2/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	21	17	57	37	8	17	7	151	13	11	251	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0			3.0		3.0	3.0			3.0	3.0
Lane Util. Factor		0.95			0.95		1.00	0.91			1.00	0.91
Frpb, ped/bikes		0.99			0.99		1.00	1.00			1.00	1.00
Flpb, ped/bikes		1.00			0.99		1.00	1.00			1.00	1.00
Frt		0.91			0.96		1.00	0.99			1.00	0.99
Flt Protected		0.99			0.97		0.95	1.00			0.95	1.00
Satd. Flow (prot)		3244			3365		1829	5181			1829	5215
Flt Permitted		0.88			0.79		0.95	1.00			0.95	1.00
Satd. Flow (perm)		2890			2722		1829	5181			1829	5215
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	22	18	59	39	8	18	7	157	14	11	261	12
RTOR Reduction (vph)	0	45	0	0	14	0	0	9	0	0	7	0
Lane Group Flow (vph)	0	54	0	0	51	0	7	162	0	11	266	0
Confl. Peds. (#/hr)	20		20	20		20			20			20
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4			4								
Actuated Green, G (s)		4.2			4.2		0.6	7.1		0.7	7.2	
Effective Green, g (s)		6.2			6.2		1.6	10.1		1.7	10.2	
Actuated g/C Ratio		0.23			0.23		0.06	0.37		0.06	0.38	
Clearance Time (s)		5.0			5.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		664			625		108	1938		115	1970	
v/s Ratio Prot							0.00	0.03		c0.01	c0.05	
v/s Ratio Perm		0.02			c0.02							
v/c Ratio		0.08			0.08		0.06	0.08		0.10	0.13	
Uniform Delay, d1		8.2			8.2		12.0	5.5		11.9	5.5	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1			0.1		0.3	0.0		0.4	0.0	
Delay (s)		8.2			8.2		12.2	5.5		12.3	5.5	
Level of Service		A			A		B	A		B	A	
Approach Delay (s)		8.2			8.2			5.7			5.8	
Approach LOS		A			A			A			A	

Intersection Summary				
HCM Average Control Delay	6.4	HCM Level of Service	A	
HCM Volume to Capacity ratio	0.10			
Actuated Cycle Length (s)	27.0	Sum of lost time (s)	6.0	
Intersection Capacity Utilization	28.8%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
946: Gibraltar Dr (S) & Willow

12/2/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (veh/h)	38	5	9	22	2	43	29	1	114	27	2	38
Sign Control		Stop			Stop				Free			
Grade		0%			0%				0%			
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	48	6	11	28	2	54	0	1	142	34	0	48
Pedestrians		20			20				20			
Lane Width (ft)		13.0			13.0				13.0			
Walking Speed (ft/s)		4.0			4.0				4.0			
Percent Blockage		2			2				2			
Right turn flare (veh)												
Median type									None			
Median storage veh)												
Upstream signal (ft)									1264			
pX, platoon unblocked							0.00				0.00	
vC, conflicting volume	562	612	194	456	604	128	0	328			0	196
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	562	612	194	456	604	128	0	328			0	196
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	0.0	4.1			0.0	4.1
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	0.0	2.2			0.0	2.2
p0 queue free %	86	98	99	94	99	94	0	100			0	96
cM capacity (veh/h)	349	378	786	433	382	866	0	1207			0	1349

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	65	30	54	1	95	81	48	192	115
Volume Left	48	28	0	1	0	0	48	0	0
Volume Right	11	0	54	0	0	34	0	0	19
cSH	389	428	866	1207	1700	1700	1349	1700	1700
Volume to Capacity	0.17	0.07	0.06	0.00	0.06	0.05	0.04	0.11	0.07
Queue Length 95th (ft)	15	6	5	0	0	0	3	0	0
Control Delay (s)	16.1	14.0	9.4	8.0	0.0	0.0	7.8	0.0	0.0
Lane LOS	C	B	A	A			A		
Approach Delay (s)	16.1	11.1		0.1			1.0		
Approach LOS	C	B							

Intersection Summary				
Average Delay	3.5			
Intersection Capacity Utilization	42.4%	ICU Level of Service		A
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
946: Gibraltar Dr (S) & Willow
12/2/2013

Movement	SBT	SBR
Lane Configurations		
Volume (veh/h)	231	15
Sign Control	Free	
Grade	0%	
Peak Hour Factor	0.80	0.80
Hourly flow rate (vph)	289	19
Pedestrians	20	
Lane Width (ft)	13.0	
Walking Speed (ft/s)	4.0	
Percent Blockage	2	
Right turn flare (veh)		
Median type	None	
Median storage veh)		
Upstream signal (ft)		
pX, platoon unblocked		
vC, conflicting volume		
vC1, stage 1 conf vol		
vC2, stage 2 conf vol		
vCu, unblocked vol		
tC, single (s)		
tC, 2 stage (s)		
tF (s)		
p0 queue free %		
cM capacity (veh/h)		

Direction, Lane #

SummerHill Apartments Traffic Impact Study
PM Peak Hour Existing plus Approved Projects Conditions-No Project
Synchro 7 - Report
W-Trans

HCM Signalized Intersection Capacity Analysis
12: Stoneridge & Hacienda

1/24/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	238	265	12	21	1270	54	65	135	19	30	184	126
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.95		1.00	0.91		0.97	0.95		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.93	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.98		1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3547	3628		1829	5211		3547	3572		1829	4596	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3547	3628		1829	5211		3547	3572		1829	4596	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	253	282	13	22	1351	57	69	144	20	32	196	134
RTOR Reduction (vph)	0	2	0	0	2	0	0	10	0	0	107	0
Lane Group Flow (vph)	253	293	0	22	1406	0	69	154	0	32	223	0
Confl. Peds. (#/hr)			12			24			24			120
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	13.8	67.8		4.7	58.7		6.5	22.3		5.2	21.0	
Effective Green, g (s)	14.8	70.8		5.7	61.7		7.5	25.3		6.2	24.0	
Actuated g/C Ratio	0.12	0.59		0.05	0.51		0.06	0.21		0.05	0.20	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	437	2141		87	2679		222	753		94	919	
v/s Ratio Prot	c0.07	0.08		0.01	c0.27		0.02	0.04		c0.02	c0.05	
v/s Ratio Perm												
v/c Ratio	0.58	0.14		0.25	0.52		0.31	0.20		0.34	0.24	
Uniform Delay, d1	49.7	11.0		55.1	19.4		53.8	39.0		54.9	40.4	
Progression Factor	0.79	1.37		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.8	0.1		1.5	0.7		0.8	0.1		2.2	0.1	
Delay (s)	40.9	15.1		56.6	20.1		54.6	39.2		57.1	40.5	
Level of Service	D	B		E	C		D	D		E	D	
Approach Delay (s)		27.0			20.7			43.7			42.0	
Approach LOS		C			C			D			D	

Intersection Summary				
HCM Average Control Delay	27.1	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.45			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	70.4%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
16: W Las Positas & Hopyard

1/24/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	160	367	429	403	314	61	454	1410	435	160	706	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	186	427	499	469	365	71	528	1640	506	186	821	95
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	69
Lane Group Flow (vph)	186	427	499	469	365	71	528	1640	506	186	821	26
Confl. Peds. (#/hr)			27			7			3			10
Turn Type	Prot		Free	Prot		Free	Prot		Free	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			Free			6
Actuated Green, G (s)	9.8	21.2	120.0	18.8	30.2	120.0	30.1	51.3	120.0	8.7	29.9	29.9
Effective Green, g (s)	10.8	24.2	120.0	19.8	33.2	120.0	31.1	54.3	120.0	9.7	32.9	32.9
Actuated g/C Ratio	0.09	0.20	1.00	0.17	0.28	1.00	0.26	0.45	1.00	0.08	0.27	0.27
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	5.0		1.8	5.0		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	319	737	1603	585	1012	1613	919	2378	1615	287	1441	436
v/s Ratio Prot	0.05	c0.12		c0.13	0.10		0.15	c0.31		c0.05	0.16	
v/s Ratio Perm			0.31			0.04			0.31			0.02
v/c Ratio	0.58	0.58	0.31	0.80	0.36	0.04	0.57	0.69	0.31	0.65	0.57	0.06
Uniform Delay, d1	52.4	43.3	0.0	48.2	34.9	0.0	38.7	26.1	0.0	53.5	37.5	32.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.72	0.62	1.00	0.74	0.69	0.73
Incremental Delay, d2	1.8	1.8	0.5	7.4	0.5	0.1	0.5	1.5	0.4	3.7	1.6	0.3
Delay (s)	54.2	45.1	0.5	55.6	35.3	0.1	28.2	17.8	0.4	43.4	27.4	23.6
Level of Service	D	D	A	E	D	A	C	B	A	D	C	C
Approach Delay (s)		26.6			43.1			16.5			29.8	
Approach LOS		C			D			B			C	

Intersection Summary				
HCM Average Control Delay	25.1	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.68			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	72.6%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
17: W Las Positas & Hacienda

1/24/2014

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	27	99	407	29	3	739	61	32	41	12	78	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0	3.0	1.1	3.0		1.1	3.0
Lane Util. Factor		1.00	0.91		1.00	0.95	1.00	1.00	1.00		1.00	1.00
Frpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Frt		1.00	0.99		1.00	1.00	0.85	1.00	0.97		1.00	1.00
Flt Protected		0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00
Satd. Flow (prot)		1829	5203		1829	3657	1636	1829	1852		1829	1925
Flt Permitted		0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00
Satd. Flow (perm)		1829	5203		1829	3657	1636	1829	1852		1829	1925
Peak-hour factor, PHF	0.90	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	30	116	479	34	4	869	72	38	48	14	92	7
RTOR Reduction (vph)	0	0	6	0	0	0	41	0	12	0	0	0
Lane Group Flow (vph)	0	146	507	0	4	869	31	38	50	0	92	7
Confl. Peds. (#/hr)										3		
Turn Type	Prot	Prot			Prot		Perm	Prot			Prot	
Protected Phases	5	5	2		1	6		3	8		7	4
Permitted Phases							6					
Actuated Green, G (s)		9.3	37.2		1.0	28.9	28.9	2.1	9.7		5.6	13.2
Effective Green, g (s)		10.3	40.2		2.0	31.9	31.9	5.1	12.7		8.6	16.2
Actuated g/C Ratio		0.14	0.55		0.03	0.43	0.43	0.07	0.17		0.12	0.22
Clearance Time (s)		4.0	6.0		4.0	6.0	6.0	4.1	6.0		4.1	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		256	2842		50	1585	709	127	320		214	424
v/s Ratio Prot		c0.08	0.10		0.00	c0.24		0.02	c0.03		c0.05	0.00
v/s Ratio Perm							0.02					
v/c Ratio		0.57	0.18		0.08	0.55	0.04	0.30	0.16		0.43	0.02
Uniform Delay, d1		29.6	8.4		34.9	15.5	12.0	32.6	25.9		30.2	22.5
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2		3.1	0.1		0.7	0.4	0.0	1.3	0.2		1.4	0.0
Delay (s)		32.6	8.5		35.6	15.9	12.1	33.9	26.1		31.6	22.5
Level of Service		C	A		D	B	B	C	C		C	C
Approach Delay (s)			13.9			15.7			29.1			26.3
Approach LOS			B			B			C			C

Intersection Summary				
HCM Average Control Delay	17.0	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.45			
Actuated Cycle Length (s)	73.6	Sum of lost time (s)	10.1	
Intersection Capacity Utilization	52.6%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
17: W Las Positas & Hacienda
1/24/2014

Movement	SBR
Lane Configurations	
Volume (vph)	115
Ideal Flow (vphpl)	1900
Total Lost time (s)	3.0
Lane Util. Factor	1.00
Frpb, ped/bikes	0.99
Flpb, ped/bikes	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1615
Flt Permitted	1.00
Satd. Flow (perm)	1615
Peak-hour factor, PHF	0.85
Adj. Flow (vph)	135
RTOR Reduction (vph)	105
Lane Group Flow (vph)	30
Confl. Peds. (#/hr)	1
Turn Type	Perm
Protected Phases	
Permitted Phases	4
Actuated Green, G (s)	13.2
Effective Green, g (s)	16.2
Actuated g/C Ratio	0.22
Clearance Time (s)	6.0
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	355
v/s Ratio Prot	
v/s Ratio Perm	0.02
v/c Ratio	0.08
Uniform Delay, d1	22.8
Progression Factor	1.00
Incremental Delay, d2	0.1
Delay (s)	22.9
Level of Service	C
Approach Delay (s)	
Approach LOS	

Intersection Summary

SummerHill Apartments Traffic Impact Study
AM Peak Hour Existing plus Approved Project Conditions plus Project
Synchro 7 - Report
W-Trans

HCM Signalized Intersection Capacity Analysis
18: Stoneridge & W Las Positas

1/24/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	31	312	139	123	1048	320	297	732	52	95	228	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	5.0	3.0	3.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.96	1.00	1.00	1.00	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	3657	1598	3547	3657	1578	1829	5255	1636	1829	5255	1613
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	3657	1598	3547	3657	1578	1829	5255	1636	1829	5255	1613
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	34	347	154	137	1164	356	330	813	58	106	253	20
RTOR Reduction (vph)	0	0	105	0	0	185	0	0	40	0	0	9
Lane Group Flow (vph)	34	347	49	137	1164	171	330	813	18	106	253	11
Confl. Peds. (#/hr)			12			24			36			12
Turn Type	Prot		Perm	Prot		Perm	Prot		custom	Prot		custom
Protected Phases	7	4		3	8		5	2	2	1	6	6
Permitted Phases			4			8			2			4
Actuated Green, G (s)	3.5	29.8	29.8	8.1	34.4	34.4	21.6	28.4	28.4	10.6	16.4	46.2
Effective Green, g (s)	4.5	32.8	30.8	9.1	37.4	35.4	22.6	30.4	30.4	11.6	19.4	52.2
Actuated g/C Ratio	0.05	0.34	0.32	0.09	0.39	0.37	0.24	0.32	0.32	0.12	0.20	0.54
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	5.0	5.0	4.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	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	1251	513	337	1426	582	431	1666	519	221	1063	878
v/s Ratio Prot	0.01	0.09		c0.04	c0.32		c0.18	c0.15	0.01	0.06	0.05	0.00
v/s Ratio Perm			0.03			0.11						0.00
v/c Ratio	0.20	0.28	0.10	0.41	0.82	0.29	0.77	0.49	0.04	0.48	0.24	0.01
Uniform Delay, d1	44.0	22.9	22.8	40.9	26.2	21.4	34.2	26.5	22.6	39.3	32.1	10.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.6	0.1	0.1	0.8	3.7	0.3	7.9	0.2	0.0	1.6	0.1	0.0
Delay (s)	44.6	23.1	22.9	41.7	29.9	21.7	42.1	26.7	22.7	41.0	32.2	10.0
Level of Service	D	C	C	D	C	C	D	C	C	D	C	B
Approach Delay (s)		24.4			29.1			30.7			33.5	
Approach LOS		C			C			C			C	

Intersection Summary				
HCM Average Control Delay	29.4	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.70			
Actuated Cycle Length (s)	95.9	Sum of lost time (s)	9.0	
Intersection Capacity Utilization	74.4%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
52: W Las Positas & Willow

1/24/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	278	542	19	25	589	211	14	9	3	27	5	173
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Util. Factor	1.00	0.91		1.00	0.95	1.00	1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00			1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.99	1.00			1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.96			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00			0.96	1.00
Satd. Flow (prot)	1829	5225		1829	3657	1636	1816	1841			1844	1605
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.73	1.00			0.80	1.00
Satd. Flow (perm)	1829	5225		1829	3657	1636	1400	1841			1535	1605
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.91	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	327	638	22	29	647	248	16	11	4	32	6	204
RTOR Reduction (vph)	0	2	0	0	0	169	0	3	0	0	0	166
Lane Group Flow (vph)	327	658	0	29	647	79	16	12	0	0	38	38
Confl. Peds. (#/hr)			1	1			6		2	2		6
Turn Type	Prot			Prot		Perm	Perm			Perm		Perm
Protected Phases	5	2		1	6			4			4	
Permitted Phases						6	4			4		4
Actuated Green, G (s)	20.6	35.0		2.5	16.9	16.9	9.6	9.6			9.6	9.6
Effective Green, g (s)	21.6	38.0		3.5	19.9	19.9	11.6	11.6			11.6	11.6
Actuated g/C Ratio	0.35	0.61		0.06	0.32	0.32	0.19	0.19			0.19	0.19
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0	5.0	5.0			5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	636	3197		103	1172	524	262	344			287	300
v/s Ratio Prot	c0.18	0.13		0.02	c0.18			0.01				
v/s Ratio Perm						0.05	0.01				c0.02	0.02
v/c Ratio	0.51	0.21		0.28	0.55	0.15	0.06	0.03			0.13	0.13
Uniform Delay, d1	16.1	5.3		28.1	17.4	15.1	20.8	20.7			21.1	21.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00			1.10	1.49
Incremental Delay, d2	0.7	0.0		1.5	0.6	0.1	0.1	0.0			0.2	0.2
Delay (s)	16.8	5.4		29.6	18.0	15.2	20.9	20.7			23.4	31.6
Level of Service	B	A		C	B	B	C	C			C	C
Approach Delay (s)		9.2			17.6			20.8			30.3	
Approach LOS		A			B			C			C	

Intersection Summary				
HCM Average Control Delay	15.2	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.44			
Actuated Cycle Length (s)	62.1	Sum of lost time (s)	9.0	
Intersection Capacity Utilization	51.0%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
58: Gibraltar Dr (S) & Hacienda

1/24/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	19	40	10	14	6	23	103	29	62	136	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor		0.95			0.95		1.00	0.91		1.00	0.91	
Frpb, ped/bikes		0.99			1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.91			0.97		1.00	0.97		1.00	0.97	
Flt Protected		0.99			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3271			3462		1829	5053		1829	5079	
Flt Permitted		0.91			0.85		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		2990			2992		1829	5053		1829	5079	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.88	0.85	0.85	0.85	0.85
Adj. Flow (vph)	13	22	47	12	16	7	27	117	34	73	160	39
RTOR Reduction (vph)	0	36	0	0	5	0	0	24	0	0	25	0
Lane Group Flow (vph)	0	46	0	0	30	0	27	127	0	73	174	0
Confl. Peds. (#/hr)	20		20	20		20			20			20
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4			4								
Actuated Green, G (s)		4.1			4.1		0.8	4.9		2.1	6.2	
Effective Green, g (s)		6.1			6.1		1.8	7.9		3.1	9.2	
Actuated g/C Ratio		0.23			0.23		0.07	0.30		0.12	0.35	
Clearance Time (s)		5.0			5.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		699			699		126	1529		217	1790	
v/s Ratio Prot							0.01	0.03		c0.04	c0.03	
v/s Ratio Perm		c0.02			0.01							
v/c Ratio		0.07			0.04		0.21	0.08		0.34	0.10	
Uniform Delay, d1		7.8			7.7		11.5	6.5		10.6	5.7	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.0			0.0		0.9	0.0		0.9	0.0	
Delay (s)		7.8			7.8		12.3	6.5		11.5	5.7	
Level of Service		A			A		B	A		B	A	
Approach Delay (s)		7.8			7.8			7.4			7.2	
Approach LOS		A			A			A			A	

Intersection Summary				
HCM Average Control Delay	7.4	HCM Level of Service		A
HCM Volume to Capacity ratio	0.10			
Actuated Cycle Length (s)	26.1	Sum of lost time (s)		6.0
Intersection Capacity Utilization	33.0%	ICU Level of Service		A
Analysis Period (min)	15			

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
946: Gibraltar Dr (S) & Willow

1/24/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (veh/h)	1	2	1	11	2	18	128	12	400	73	5	32
Sign Control		Stop			Stop				Free			
Grade		0%			0%				0%			
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	1	2	1	14	2	22	0	15	500	91	0	40
Pedestrians		20			20				20			
Lane Width (ft)		13.0			13.0				13.0			
Walking Speed (ft/s)		4.0			4.0				4.0			
Percent Blockage		2			2				2			
Right turn flare (veh)												
Median type									None			
Median storage veh)												
Upstream signal (ft)									1264			
pX, platoon unblocked							0.00				0.00	
vC, conflicting volume	752	1070	212	854	1041	336	0	365			0	611
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	752	1070	212	854	1041	336	0	365			0	611
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	0.0	4.1			0.0	4.1
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	0.0	2.2			0.0	2.2
p0 queue free %	100	99	100	94	99	96	0	99			0	96
cM capacity (veh/h)	257	200	764	224	208	637	0	1169			0	946

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	5	16	22	15	333	258	40	208	137
Volume Left	1	14	0	15	0	0	40	0	0
Volume Right	1	0	22	0	0	91	0	0	32
cSH	263	222	637	1169	1700	1700	946	1700	1700
Volume to Capacity	0.02	0.07	0.04	0.01	0.20	0.15	0.04	0.12	0.08
Queue Length 95th (ft)	1	6	3	1	0	0	3	0	0
Control Delay (s)	18.9	22.5	10.9	8.1	0.0	0.0	9.0	0.0	0.0
Lane LOS	C	C	B	A			A		
Approach Delay (s)	18.9	15.8		0.2			0.9		
Approach LOS	C	C							

Intersection Summary				
Average Delay	1.1			
Intersection Capacity Utilization	46.7%	ICU Level of Service		A
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
946: Gibraltar Dr (S) & Willow

1/24/2014

Movement	SBT	SBR
Lane Configurations		
Volume (veh/h)	250	26
Sign Control	Free	
Grade	0%	
Peak Hour Factor	0.80	0.80
Hourly flow rate (vph)	312	32
Pedestrians	20	
Lane Width (ft)	13.0	
Walking Speed (ft/s)	4.0	
Percent Blockage	2	
Right turn flare (veh)		
Median type	None	
Median storage veh)		
Upstream signal (ft)		
pX, platoon unblocked		
vC, conflicting volume		
vC1, stage 1 conf vol		
vC2, stage 2 conf vol		
vCu, unblocked vol		
tC, single (s)		
tC, 2 stage (s)		
tF (s)		
p0 queue free %		
cM capacity (veh/h)		
Direction, Lane #		

HCM Signalized Intersection Capacity Analysis
12: Stoneridge & Hacienda

1/24/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	245	1250	87	17	469	40	45	178	14	44	277	261
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.95		1.00	0.91		0.97	0.95		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.92	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.99		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3547	3613		1829	5170		3547	3605		1829	4474	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3547	3613		1829	5170		3547	3605		1829	4474	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	258	1316	92	18	494	42	47	187	15	46	292	275
RTOR Reduction (vph)	0	3	0	0	6	0	0	6	0	0	155	0
Lane Group Flow (vph)	258	1405	0	18	530	0	47	196	0	46	412	0
Confl. Peds. (#/hr)			12			24			24			120
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	14.0	68.0		3.2	57.2		5.9	21.6		7.2	22.9	
Effective Green, g (s)	15.0	71.0		4.2	60.2		6.9	24.6		8.2	25.9	
Actuated g/C Ratio	0.12	0.59		0.04	0.50		0.06	0.21		0.07	0.22	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	443	2138		64	2594		204	739		125	966	
v/s Ratio Prot	c0.07	c0.39		0.01	0.10		0.01	0.05		c0.03	c0.09	
v/s Ratio Perm												
v/c Ratio	0.58	0.66		0.28	0.20		0.23	0.27		0.37	0.43	
Uniform Delay, d1	49.5	16.4		56.4	16.6		54.0	40.1		53.4	40.6	
Progression Factor	1.24	0.39		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.6	1.3		2.4	0.2		0.6	0.2		1.8	0.3	
Delay (s)	63.2	7.7		58.8	16.8		54.6	40.3		55.3	40.9	
Level of Service	E	A		E	B		D	D		E	D	
Approach Delay (s)		16.3			18.1			43.0			42.0	
Approach LOS		B			B			D			D	

Intersection Summary				
HCM Average Control Delay	23.9	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.56			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0	
Intersection Capacity Utilization	81.4%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
16: W Las Positas & Hopyard

1/24/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	119	240	587	591	262	121	284	795	340	127	1525	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	124	250	611	616	273	126	296	828	354	132	1589	110
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	67
Lane Group Flow (vph)	124	250	611	616	273	126	296	828	354	132	1589	43
Confl. Peds. (#/hr)			27			7			3			10
Turn Type	Prot		Free	Prot		Free	Prot		Free	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			Free			6
Actuated Green, G (s)	8.4	17.8	120.0	26.6	36.0	120.0	19.0	47.0	120.0	8.6	36.6	36.6
Effective Green, g (s)	9.4	20.8	120.0	27.6	39.0	120.0	20.0	50.0	120.0	9.6	39.6	39.6
Actuated g/C Ratio	0.08	0.17	1.00	0.23	0.32	1.00	0.17	0.42	1.00	0.08	0.33	0.33
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	5.0		1.8	5.0		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	278	634	1603	816	1189	1613	591	2190	1615	284	1734	524
v/s Ratio Prot	0.03	0.07		c0.17	0.07		c0.08	0.16		0.04	c0.30	
v/s Ratio Perm			c0.38			0.08			0.22			0.03
v/c Ratio	0.45	0.39	0.38	0.75	0.23	0.08	0.50	0.38	0.22	0.46	0.92	0.08
Uniform Delay, d1	52.8	44.0	0.0	43.0	29.5	0.0	45.5	24.2	0.0	52.7	38.6	27.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.40	1.64	1.00	0.87	0.79	0.23
Incremental Delay, d2	0.4	0.8	0.7	3.6	0.2	0.1	0.2	0.5	0.3	0.4	8.9	0.3
Delay (s)	53.2	44.9	0.7	46.6	29.7	0.1	63.9	40.3	0.3	46.4	39.4	6.6
Level of Service	D	D	A	D	C	A	E	D	A	D	D	A
Approach Delay (s)		18.5			36.3			35.4			37.9	
Approach LOS		B			D			D			D	

Intersection Summary				
HCM Average Control Delay	33.3	HCM Level of Service		C
HCM Volume to Capacity ratio	0.69			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)		9.0
Intersection Capacity Utilization	82.3%	ICU Level of Service		E
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
17: W Las Positas & Hacienda

1/24/2014

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	7	106	725	12	22	499	49	20	35	7	229	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0
Lane Util. Factor		1.00	0.91		1.00	0.95	1.00	1.00	1.00		1.00	1.00
Frpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	1.00	0.85	1.00	0.97		1.00	1.00
Flt Protected		0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00
Satd. Flow (prot)		1829	5242		1829	3657	1636	1829	1869		1829	1925
Flt Permitted		0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00
Satd. Flow (perm)		1829	5242		1829	3657	1636	1829	1869		1829	1925
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)	8	115	788	13	24	542	53	22	38	8	249	36
RTOR Reduction (vph)	0	0	1	0	0	0	36	0	7	0	0	0
Lane Group Flow (vph)	0	123	800	0	24	542	17	22	39	0	249	36
Confl. Peds. (#/hr)										3		
Turn Type	Prot	Prot			Prot		Perm	Prot			Prot	
Protected Phases	5	5	2		1	6		3	8		7	4
Permitted Phases							6					
Actuated Green, G (s)		8.2	28.0		1.9	21.7	21.7	8.5	8.6		17.1	17.2
Effective Green, g (s)		9.2	31.0		2.9	24.7	24.7	11.5	11.6		20.1	20.2
Actuated g/C Ratio		0.12	0.40		0.04	0.32	0.32	0.15	0.15		0.26	0.26
Clearance Time (s)		4.0	6.0		4.0	6.0	6.0	6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		217	2094		68	1164	521	271	279		474	501
v/s Ratio Prot		c0.07	0.15		0.01	c0.15		0.01	0.02		c0.14	0.02
v/s Ratio Perm							0.01					
v/c Ratio		0.57	0.38		0.35	0.47	0.03	0.08	0.14		0.53	0.07
Uniform Delay, d1		32.3	16.5		36.4	21.2	18.2	28.5	28.7		24.7	21.6
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2		3.4	0.1		3.1	0.3	0.0	0.1	0.2		1.1	0.1
Delay (s)		35.7	16.6		39.6	21.5	18.2	28.6	28.9		25.7	21.7
Level of Service		D	B		D	C	B	C	C		C	C
Approach Delay (s)			19.2			21.9			28.8			23.9
Approach LOS			B			C			C			C

Intersection Summary				
HCM Average Control Delay	21.4	HCM Level of Service		C
HCM Volume to Capacity ratio	0.43			
Actuated Cycle Length (s)	77.6	Sum of lost time (s)		9.0
Intersection Capacity Utilization	50.3%	ICU Level of Service		A
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
17: W Las Positas & Hacienda

1/24/2014

Movement	SBR
Lane Configurations	
Volume (vph)	200
Ideal Flow (vphpl)	1900
Total Lost time (s)	3.0
Lane Util. Factor	1.00
Frpb, ped/bikes	0.99
Flpb, ped/bikes	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1615
Flt Permitted	1.00
Satd. Flow (perm)	1615
Peak-hour factor, PHF	0.92
Adj. Flow (vph)	217
RTOR Reduction (vph)	161
Lane Group Flow (vph)	56
Confl. Peds. (#/hr)	1
Turn Type	Perm
Protected Phases	
Permitted Phases	4
Actuated Green, G (s)	17.2
Effective Green, g (s)	20.2
Actuated g/C Ratio	0.26
Clearance Time (s)	6.0
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	420
v/s Ratio Prot	
v/s Ratio Perm	c0.03
v/c Ratio	0.13
Uniform Delay, d1	22.0
Progression Factor	1.00
Incremental Delay, d2	0.1
Delay (s)	22.1
Level of Service	C
Approach Delay (s)	
Approach LOS	
Intersection Summary	

HCM Signalized Intersection Capacity Analysis
18: Stoneridge & W Las Positas

1/24/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	4	675	288	290	343	81	148	386	101	492	861	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	5.0	3.0	3.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.96	1.00	1.00	1.00	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	3657	1596	3547	3657	1575	1829	5255	1636	1829	5255	1619
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	3657	1596	3547	3657	1575	1829	5255	1636	1829	5255	1619
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	4	718	306	309	365	86	157	411	107	523	916	35
RTOR Reduction (vph)	0	0	222	0	0	56	0	0	87	0	0	12
Lane Group Flow (vph)	4	718	84	309	365	30	157	411	20	523	916	23
Confl. Peds. (#/hr)			12			24			36			12
Turn Type	Prot		Perm	Prot		Perm	Prot		custom	Prot		custom
Protected Phases	7	4		3	8		5	2	2	1	6	6
Permitted Phases			4			8			2			4
Actuated Green, G (s)	1.0	27.6	27.6	9.1	35.7	35.7	13.4	17.4	17.4	31.5	34.5	62.1
Effective Green, g (s)	2.0	30.6	28.6	10.1	38.7	36.7	14.4	19.4	19.4	32.5	37.5	68.1
Actuated g/C Ratio	0.02	0.29	0.27	0.10	0.37	0.35	0.14	0.19	0.19	0.31	0.36	0.65
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	5.0	5.0	4.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	68	1070	436	342	1353	553	252	975	303	568	1884	1054
v/s Ratio Prot	0.00	c0.20		c0.09	0.10		0.09	0.08	0.01	c0.29	c0.17	0.01
v/s Ratio Perm			0.05			0.02						0.01
v/c Ratio	0.06	0.67	0.19	0.90	0.27	0.05	0.62	0.42	0.07	0.92	0.49	0.02
Uniform Delay, d1	50.4	32.6	29.1	46.8	23.1	22.5	42.5	37.6	35.1	34.8	26.1	6.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	1.7	0.2	25.9	0.1	0.0	4.7	0.3	0.1	20.4	0.2	0.0
Delay (s)	50.7	34.2	29.4	72.7	23.2	22.5	47.3	37.9	35.2	55.2	26.3	6.5
Level of Service	D	C	C	E	C	C	D	D	D	E	C	A
Approach Delay (s)		32.8			43.2			39.7			36.1	
Approach LOS		C			D			D			D	

Intersection Summary			
HCM Average Control Delay	37.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	104.6	Sum of lost time (s)	9.0
Intersection Capacity Utilization	88.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
52: W Las Positas & Willow

1/24/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	77	627	11	2	573	47	51	6	26	97	4	124
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Util. Factor	1.00	0.91		1.00	0.95	1.00	1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	0.99			1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.88			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00			0.95	1.00
Satd. Flow (prot)	1829	5239		1829	3657	1636	1822	1668			1834	1609
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.69	1.00			0.71	1.00
Satd. Flow (perm)	1829	5239		1829	3657	1636	1318	1668			1363	1609
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	83	674	12	2	616	51	55	6	28	104	4	133
RTOR Reduction (vph)	0	3	0	0	0	29	0	22	0	0	0	103
Lane Group Flow (vph)	83	683	0	2	616	22	55	12	0	0	108	30
Confl. Peds. (#/hr)			1	1			6		2	2		6
Turn Type	Prot			Prot		Perm	Perm			Perm		Perm
Protected Phases	5	2		1	6			4			4	
Permitted Phases						6	4			4		4
Actuated Green, G (s)	3.2	16.6		0.8	14.2	14.2	7.0	7.0			7.0	7.0
Effective Green, g (s)	4.2	19.6		1.8	17.2	17.2	9.0	9.0			9.0	9.0
Actuated g/C Ratio	0.11	0.50		0.05	0.44	0.44	0.23	0.23			0.23	0.23
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0	5.0	5.0			5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	195	2606		84	1596	714	301	381			311	368
v/s Ratio Prot	c0.05	0.13		0.00	c0.17			0.01				
v/s Ratio Perm						0.01	0.04				c0.08	0.02
v/c Ratio	0.43	0.26		0.02	0.39	0.03	0.18	0.03			0.35	0.08
Uniform Delay, d1	16.5	5.7		18.0	7.5	6.3	12.2	11.8			12.7	12.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00			1.03	1.11
Incremental Delay, d2	1.5	0.1		0.1	0.2	0.0	0.3	0.0			0.7	0.1
Delay (s)	18.0	5.8		18.1	7.7	6.4	12.5	11.9			13.8	13.4
Level of Service	B	A		B	A	A	B	B			B	B
Approach Delay (s)		7.1			7.6			12.3			13.5	
Approach LOS		A			A			B			B	

Intersection Summary				
HCM Average Control Delay	8.4	HCM Level of Service		A
HCM Volume to Capacity ratio	0.35			
Actuated Cycle Length (s)	39.4	Sum of lost time (s)		9.0
Intersection Capacity Utilization	42.6%	ICU Level of Service		A
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
58: Gibraltar Dr (S) & Hacienda

1/24/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	21	17	57	37	8	17	7	162	13	11	268	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0			3.0		3.0	3.0			3.0	3.0
Lane Util. Factor		0.95			0.95		1.00	0.91			1.00	0.91
Frpb, ped/bikes		0.99			0.99		1.00	1.00			1.00	1.00
Flpb, ped/bikes		1.00			0.99		1.00	1.00			1.00	1.00
Frt		0.91			0.96		1.00	0.99			1.00	0.99
Flt Protected		0.99			0.97		0.95	1.00			0.95	1.00
Satd. Flow (prot)		3244			3365		1829	5186			1829	5218
Flt Permitted		0.88			0.79		0.95	1.00			0.95	1.00
Satd. Flow (perm)		2890			2722		1829	5186			1829	5218
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	22	18	59	39	8	18	7	169	14	11	279	12
RTOR Reduction (vph)	0	45	0	0	14	0	0	9	0	0	7	0
Lane Group Flow (vph)	0	54	0	0	51	0	7	174	0	11	284	0
Confl. Peds. (#/hr)	20		20	20		20			20			20
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4			4								
Actuated Green, G (s)		4.2			4.2		0.6	7.2		0.6	7.2	
Effective Green, g (s)		6.2			6.2		1.6	10.2		1.6	10.2	
Actuated g/C Ratio		0.23			0.23		0.06	0.38		0.06	0.38	
Clearance Time (s)		5.0			5.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		664			625		108	1959		108	1971	
v/s Ratio Prot							0.00	0.03		c0.01	c0.05	
v/s Ratio Perm		0.02			c0.02							
v/c Ratio		0.08			0.08		0.06	0.09		0.10	0.14	
Uniform Delay, d1		8.2			8.2		12.0	5.4		12.0	5.5	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1			0.1		0.3	0.0		0.4	0.0	
Delay (s)		8.2			8.2		12.2	5.4		12.4	5.6	
Level of Service		A			A		B	A		B	A	
Approach Delay (s)		8.2			8.2			5.7			5.8	
Approach LOS		A			A			A			A	

Intersection Summary				
HCM Average Control Delay	6.4	HCM Level of Service		A
HCM Volume to Capacity ratio	0.12			
Actuated Cycle Length (s)	27.0	Sum of lost time (s)		9.0
Intersection Capacity Utilization	28.8%	ICU Level of Service		A
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (veh/h)	38	5	9	22	2	43	29	1	114	27	2	38
Sign Control		Stop			Stop				Free			
Grade		0%			0%				0%			
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	48	6	11	28	2	54	0	1	142	34	0	48
Pedestrians		20			20				20			
Lane Width (ft)		13.0			13.0				13.0			
Walking Speed (ft/s)		4.0			4.0				4.0			
Percent Blockage		2			2				2			
Right turn flare (veh)												
Median type									None			
Median storage veh)												
Upstream signal (ft)									1264			
pX, platoon unblocked							0.00				0.00	
vC, conflicting volume	562	612	194	456	604	128	0	328			0	196
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	562	612	194	456	604	128	0	328			0	196
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	0.0	4.1			0.0	4.1
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	0.0	2.2			0.0	2.2
p0 queue free %	86	98	99	94	99	94	0	100			0	96
cM capacity (veh/h)	349	378	786	433	382	866	0	1207			0	1349

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	65	30	54	1	95	81	48	192	115
Volume Left	48	28	0	1	0	0	48	0	0
Volume Right	11	0	54	0	0	34	0	0	19
cSH	389	428	866	1207	1700	1700	1349	1700	1700
Volume to Capacity	0.17	0.07	0.06	0.00	0.06	0.05	0.04	0.11	0.07
Queue Length 95th (ft)	15	6	5	0	0	0	3	0	0
Control Delay (s)	16.1	14.0	9.4	8.0	0.0	0.0	7.8	0.0	0.0
Lane LOS	C	B	A	A			A		
Approach Delay (s)	16.1	11.1		0.1			1.0		
Approach LOS	C	B							

Intersection Summary				
Average Delay	3.5			
Intersection Capacity Utilization	42.4%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	SBT	SBR
Lane Configurations		
Volume (veh/h)	231	15
Sign Control	Free	
Grade	0%	
Peak Hour Factor	0.80	0.80
Hourly flow rate (vph)	289	19
Pedestrians	20	
Lane Width (ft)	13.0	
Walking Speed (ft/s)	4.0	
Percent Blockage	2	
Right turn flare (veh)		
Median type	None	
Median storage veh)		
Upstream signal (ft)		
pX, platoon unblocked		
vC, conflicting volume		
vC1, stage 1 conf vol		
vC2, stage 2 conf vol		
vCu, unblocked vol		
tC, single (s)		
tC, 2 stage (s)		
tF (s)		
p0 queue free %		
cM capacity (veh/h)		

Direction, Lane #

HCM Signalized Intersection Capacity Analysis
12: Stoneridge & Hacienda

12/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	236	539	31	40	1412	67	51	148	19	59	252	107
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.95		1.00	0.91		0.97	0.95		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.95	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.98		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3547	3621		1829	5206		3547	3578		1829	4767	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3547	3621		1829	5206		3547	3578		1829	4767	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	251	573	33	43	1502	71	54	157	20	63	268	114
RTOR Reduction (vph)	0	2	0	0	3	0	0	10	0	0	73	0
Lane Group Flow (vph)	251	604	0	43	1570	0	54	167	0	63	309	0
Confl. Peds. (#/hr)			12			24			24			120
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	13.8	64.0		7.1	57.3		6.1	20.6		8.3	22.8	
Effective Green, g (s)	14.8	67.0		8.1	60.3		7.1	23.6		9.3	25.8	
Actuated g/C Ratio	0.12	0.56		0.07	0.50		0.06	0.20		0.08	0.22	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	437	2022		123	2616		210	704		142	1025	
v/s Ratio Prot	c0.07	0.17		0.02	c0.30		0.02	0.05		c0.03	c0.06	
v/s Ratio Perm												
v/c Ratio	0.57	0.30		0.35	0.60		0.26	0.24		0.44	0.30	
Uniform Delay, d1	49.6	14.0		53.4	21.3		53.9	40.6		52.9	39.5	
Progression Factor	0.79	1.25		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.6	0.3		1.7	1.0		0.7	0.2		2.2	0.2	
Delay (s)	40.9	17.9		55.2	22.3		54.6	40.8		55.1	39.7	
Level of Service	D	B		E	C		D	D		E	D	
Approach Delay (s)		24.6			23.2			44.0			41.9	
Approach LOS		C			C			D			D	

Intersection Summary				
HCM Average Control Delay	27.7	HCM Level of Service		C
HCM Volume to Capacity ratio	0.50			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)		9.0
Intersection Capacity Utilization	75.4%	ICU Level of Service		D
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
16: W Las Positas & Hopyard

12/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	150	375	448	503	385	78	477	1354	445	163	763	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.94	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	3657	1603	5157	3657	1613	3547	5255	1615	3547	5255	1589
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	3657	1603	5157	3657	1613	3547	5255	1615	3547	5255	1589
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	174	436	521	585	448	91	555	1574	517	190	887	103
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	73
Lane Group Flow (vph)	174	436	521	585	448	91	555	1574	517	190	887	30
Confl. Peds. (#/hr)			27			7			3			10
Turn Type	Prot		Free	Prot		Free	Prot		Free	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			Free			6
Actuated Green, G (s)	9.6	21.4	120.0	17.0	28.8	120.0	30.0	52.9	120.0	8.7	31.6	31.6
Effective Green, g (s)	10.6	24.4	120.0	18.0	31.8	120.0	31.0	55.9	120.0	9.7	34.6	34.6
Actuated g/C Ratio	0.09	0.20	1.00	0.15	0.27	1.00	0.26	0.47	1.00	0.08	0.29	0.29
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	5.0		1.8	5.0		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	313	744	1603	774	969	1613	916	2448	1615	287	1515	458
v/s Ratio Prot	0.05	c0.12		c0.11	0.12		0.16	c0.30		c0.05	0.17	
v/s Ratio Perm			0.32			0.06			0.32			0.02
v/c Ratio	0.56	0.59	0.33	0.76	0.46	0.06	0.61	0.64	0.32	0.66	0.59	0.06
Uniform Delay, d1	52.4	43.2	0.0	48.9	36.9	0.0	39.1	24.4	0.0	53.6	36.6	31.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.76	0.68	1.00	0.89	0.62	0.68
Incremental Delay, d2	1.2	1.8	0.5	3.8	0.7	0.1	0.7	1.2	0.5	4.3	1.6	0.3
Delay (s)	53.7	45.1	0.5	52.7	37.7	0.1	30.6	17.9	0.5	51.9	24.5	21.4
Level of Service	D	D	A	D	D	A	C	B	A	D	C	C
Approach Delay (s)		25.9			42.4			17.2			28.6	
Approach LOS		C			D			B			C	

Intersection Summary				
HCM Average Control Delay	25.7	HCM Level of Service		C
HCM Volume to Capacity ratio	0.65			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)		12.0
Intersection Capacity Utilization	70.1%	ICU Level of Service		C
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
17: W Las Positas & Hacienda

12/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	101	428	34	8	1017	84	2	28	10	86	1	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	0.91		1.00	0.95	1.00		1.00	1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00	0.98	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00	1.00	0.95	0.95	1.00
Satd. Flow (prot)	1829	5197		1829	3657	1636		1919	1600	1737	1743	1615
Flt Permitted	0.95	1.00		0.95	1.00	1.00		1.00	1.00	0.95	0.95	1.00
Satd. Flow (perm)	1829	5197		1829	3657	1636		1919	1600	1737	1743	1615
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	119	504	40	9	1196	99	2	33	12	101	1	129
RTOR Reduction (vph)	0	5	0	0	0	45	0	0	11	0	0	104
Lane Group Flow (vph)	119	539	0	9	1196	54	0	35	1	50	52	25
Confl. Peds. (#/hr)									3			1
Turn Type	Prot			Prot		Perm	Split		Perm	Split		Perm
Protected Phases	5	2		1	6		4	4		3	3	
Permitted Phases						6			4			3
Actuated Green, G (s)	8.7	42.0		1.2	34.5	34.5		4.3	4.3	13.2	13.2	13.2
Effective Green, g (s)	9.7	45.0		2.2	37.5	37.5		7.3	7.3	16.2	16.2	16.2
Actuated g/C Ratio	0.12	0.54		0.03	0.45	0.45		0.09	0.09	0.20	0.20	0.20
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		6.0	6.0	6.0	6.0	6.0
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)	215	2828		49	1658	742		169	141	340	341	316
v/s Ratio Prot	c0.07	0.10		0.00	c0.33			c0.02		0.03	c0.03	
v/s Ratio Perm						0.03			0.00			0.02
v/c Ratio	0.55	0.19		0.18	0.72	0.07		0.21	0.01	0.15	0.15	0.08
Uniform Delay, d1	34.5	9.6		39.4	18.4	12.8		35.0	34.4	27.5	27.6	27.2
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	3.1	0.1		1.8	1.6	0.0		0.6	0.0	0.2	0.2	0.1
Delay (s)	37.5	9.7		41.2	19.9	12.8		35.6	34.4	27.7	27.8	27.3
Level of Service	D	A		D	B	B		D	C	C	C	C
Approach Delay (s)		14.7			19.5			35.3			27.5	
Approach LOS		B			B			D			C	

Intersection Summary				
HCM Average Control Delay	19.3	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.51			
Actuated Cycle Length (s)	82.7	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	53.2%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
18: Stoneridge & W Las Positas

12/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	47	505	227	184	1190	345	319	712	55	207	476	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	5.0	3.0	3.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.96	1.00	1.00	1.00	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	3657	1596	3547	3657	1574	3547	3657	1636	3547	3657	1613
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	3657	1596	3547	3657	1574	3547	3657	1636	3547	3657	1613
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	52	561	252	204	1322	383	354	791	61	230	529	57
RTOR Reduction (vph)	0	0	162	0	0	189	0	0	43	0	0	21
Lane Group Flow (vph)	52	561	90	204	1322	194	354	791	18	230	529	36
Confl. Peds. (#/hr)			12			24			36			12
Turn Type	Prot		Perm	Prot		Perm	Prot		custom	Prot		custom
Protected Phases	7	4		3	8		5	2	2	1	6	6
Permitted Phases			4			8			2			4
Actuated Green, G (s)	5.1	36.6	36.6	10.4	41.9	41.9	13.6	28.4	28.4	11.2	25.0	61.6
Effective Green, g (s)	6.1	39.6	37.6	11.4	44.9	42.9	14.6	30.4	30.4	12.2	28.0	67.6
Actuated g/C Ratio	0.06	0.38	0.36	0.11	0.43	0.41	0.14	0.29	0.29	0.12	0.27	0.64
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	5.0	5.0	4.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	205	1371	568	383	1555	639	490	1053	471	410	970	1033
v/s Ratio Prot	0.01	0.15		c0.06	c0.36		c0.10	c0.22	0.01	0.06	0.14	0.01
v/s Ratio Perm			0.06			0.12						0.01
v/c Ratio	0.25	0.41	0.16	0.53	0.85	0.30	0.72	0.75	0.04	0.56	0.55	0.04
Uniform Delay, d1	47.6	24.4	23.2	44.6	27.3	21.2	43.6	34.2	27.1	44.2	33.3	7.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7	0.2	0.1	1.4	4.7	0.3	5.2	3.1	0.0	1.8	0.6	0.0
Delay (s)	48.2	24.6	23.3	46.0	32.0	21.5	48.8	37.2	27.1	45.9	34.0	7.0
Level of Service	D	C	C	D	C	C	D	D	C	D	C	A
Approach Delay (s)		25.6			31.4			40.1			35.5	
Approach LOS		C			C			D			D	

Intersection Summary				
HCM Average Control Delay	33.2	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.74			
Actuated Cycle Length (s)	105.6	Sum of lost time (s)	6.0	
Intersection Capacity Utilization	78.5%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
52: W Las Positas & Willow

12/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	270	580	21	33	788	225	15	7	3	27	5	182
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Util. Factor	1.00	0.91		1.00	0.95	1.00	1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00			1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.99	1.00			1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.95			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00			0.96	1.00
Satd. Flow (prot)	1829	5223		1829	3657	1636	1816	1820			1843	1604
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.73	1.00			0.80	1.00
Satd. Flow (perm)	1829	5223		1829	3657	1636	1400	1820			1534	1604
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.91	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	318	682	25	39	866	265	18	8	4	32	6	214
RTOR Reduction (vph)	0	2	0	0	0	166	0	3	0	0	0	177
Lane Group Flow (vph)	318	705	0	39	866	99	18	9	0	0	38	37
Confl. Peds. (#/hr)			1	1			6		2	2		6
Turn Type	Prot			Prot		Perm	Perm			Perm		Perm
Protected Phases	5	2		1	6			4			4	
Permitted Phases						6	4			4		4
Actuated Green, G (s)	20.1	38.0		4.2	22.1	22.1	9.7	9.7			9.7	9.7
Effective Green, g (s)	21.1	41.0		5.2	25.1	25.1	11.7	11.7			11.7	11.7
Actuated g/C Ratio	0.32	0.61		0.08	0.38	0.38	0.17	0.17			0.17	0.17
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0	5.0	5.0			5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	577	3201		142	1372	614	245	318			268	281
v/s Ratio Prot	c0.17	0.13		0.02	c0.24			0.00				
v/s Ratio Perm						0.06	0.01				c0.02	0.02
v/c Ratio	0.55	0.22		0.27	0.63	0.16	0.07	0.03			0.14	0.13
Uniform Delay, d1	19.0	5.8		29.1	17.1	13.9	23.1	22.9			23.4	23.3
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00			1.10	1.50
Incremental Delay, d2	1.1	0.0		1.1	1.0	0.1	0.1	0.0			0.2	0.2
Delay (s)	20.1	5.8		30.1	18.1	14.0	23.2	22.9			25.9	35.2
Level of Service	C	A		C	B	B	C	C			C	D
Approach Delay (s)		10.3			17.6			23.1			33.8	
Approach LOS		B			B			C			C	

Intersection Summary				
HCM Average Control Delay	16.3	HCM Level of Service		B
HCM Volume to Capacity ratio	0.50			
Actuated Cycle Length (s)	66.9	Sum of lost time (s)		9.0
Intersection Capacity Utilization	56.1%	ICU Level of Service		B
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
58: Gibraltar Dr (S) & Hacienda

12/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	19	23	34	8	17	7	27	121	25	80	156	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0			3.0		3.0	3.0			3.0	3.0
Lane Util. Factor		0.95			0.95		1.00	0.91			1.00	0.91
Frpb, ped/bikes		0.99			0.99		1.00	1.00			1.00	0.99
Flpb, ped/bikes		1.00			1.00		1.00	1.00			1.00	1.00
Frt		0.93			0.97		1.00	0.97			1.00	0.96
Flt Protected		0.99			0.99		0.95	1.00			0.95	1.00
Satd. Flow (prot)		3324			3470		1829	5097			1829	5010
Flt Permitted		0.88			0.87		0.95	1.00			0.95	1.00
Satd. Flow (perm)		2956			3065		1829	5097			1829	5010
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.88	0.85	0.85	0.85	0.85
Adj. Flow (vph)	22	27	40	9	20	8	32	138	29	94	184	68
RTOR Reduction (vph)	0	32	0	0	6	0	0	18	0	0	37	0
Lane Group Flow (vph)	0	57	0	0	31	0	32	149	0	94	215	0
Confl. Peds. (#/hr)	20		20	20		20			20			20
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4			4								
Actuated Green, G (s)		4.0			4.0		0.9	8.5		3.7	11.3	
Effective Green, g (s)		6.0			6.0		1.9	11.5		4.7	14.3	
Actuated g/C Ratio		0.19			0.19		0.06	0.37		0.15	0.46	
Clearance Time (s)		5.0			5.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		568			589		111	1879		276	2296	
v/s Ratio Prot							0.02	0.03		c0.05	c0.04	
v/s Ratio Perm		c0.02			0.01							
v/c Ratio		0.10			0.05		0.29	0.08		0.34	0.09	
Uniform Delay, d1		10.4			10.3		14.0	6.4		11.9	4.8	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1			0.0		1.4	0.0		0.7	0.0	
Delay (s)		10.5			10.3		15.4	6.4		12.6	4.8	
Level of Service		B			B		B	A		B	A	
Approach Delay (s)		10.5			10.3			7.9			6.9	
Approach LOS		B			B			A			A	

Intersection Summary				
HCM Average Control Delay	7.9	HCM Level of Service		A
HCM Volume to Capacity ratio	0.12			
Actuated Cycle Length (s)	31.2	Sum of lost time (s)		9.0
Intersection Capacity Utilization	33.6%	ICU Level of Service		A
Analysis Period (min)	15			

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
946: Gibraltar Dr (S) & Willow

12/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (veh/h)	5	5	5	15	5	20	125	12	396	71	5	32
Sign Control		Stop			Stop				Free			
Grade		0%			0%				0%			
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	6	6	6	19	6	25	0	15	495	89	0	40
Pedestrians		20			20				20			
Lane Width (ft)		13.0			13.0				13.0			
Walking Speed (ft/s)		4.0			4.0				4.0			
Percent Blockage		2			2				2			
Right turn flare (veh)												
Median type									None			
Median storage veh)												
Upstream signal (ft)									1264			
pX, platoon unblocked							0.00				0.00	
vC, conflicting volume	767	1075	219	861	1047	332	0	378			0	604
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	767	1075	219	861	1047	332	0	378			0	604
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	0.0	4.1			0.0	4.1
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	0.0	2.2			0.0	2.2
p0 queue free %	97	97	99	91	97	96	0	99			0	96
cM capacity (veh/h)	246	199	757	217	207	640	0	1156			0	952

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	19	25	25	15	330	254	40	217	141
Volume Left	6	19	0	15	0	0	40	0	0
Volume Right	6	0	25	0	0	89	0	0	32
cSH	288	214	640	1156	1700	1700	952	1700	1700
Volume to Capacity	0.07	0.12	0.04	0.01	0.19	0.15	0.04	0.13	0.08
Queue Length 95th (ft)	5	10	3	1	0	0	3	0	0
Control Delay (s)	18.4	24.0	10.9	8.2	0.0	0.0	8.9	0.0	0.0
Lane LOS	C	C	B	A			A		
Approach Delay (s)	18.4	17.4		0.2			0.9		
Approach LOS	C	C							

Intersection Summary				
Average Delay	1.6			
Intersection Capacity Utilization	46.6%	ICU Level of Service		A
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
946: Gibraltar Dr (S) & Willow

12/5/2013

Movement	SBT	SBR
Lane Configurations		
Volume (veh/h)	260	26
Sign Control	Free	
Grade	0%	
Peak Hour Factor	0.80	0.80
Hourly flow rate (vph)	325	32
Pedestrians	20	
Lane Width (ft)	13.0	
Walking Speed (ft/s)	4.0	
Percent Blockage	2	
Right turn flare (veh)		
Median type	None	
Median storage veh)		
Upstream signal (ft)		
pX, platoon unblocked		
vC, conflicting volume		
vC1, stage 1 conf vol		
vC2, stage 2 conf vol		
vCu, unblocked vol		
tC, single (s)		
tC, 2 stage (s)		
tF (s)		
p0 queue free %		
cM capacity (veh/h)		

Direction, Lane #

SummerHill Apartments Project Traffic Impact Study
AM Peak Hour Buildout Conditions-No Project

Synchro 7 - Report
W-Trans

HCM Signalized Intersection Capacity Analysis
12: Stoneridge & Hacienda

12/2/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	188	1230	53	6	511	54	16	201	24	72	228	247
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.95		1.00	0.91		0.97	0.95		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00		1.00	0.91	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.98		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3547	3629		1829	5151		3547	3583		1829	4420	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3547	3629		1829	5151		3547	3583		1829	4420	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	198	1295	56	6	538	57	17	212	25	76	240	260
RTOR Reduction (vph)	0	2	0	0	8	0	0	8	0	0	168	0
Lane Group Flow (vph)	198	1349	0	6	587	0	17	229	0	76	332	0
Confl. Peds. (#/hr)			12			24			24			120
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	12.0	67.8		1.4	57.2		2.7	22.6		8.2	28.1	
Effective Green, g (s)	13.0	70.8		2.4	60.2		3.7	25.6		9.2	31.1	
Actuated g/C Ratio	0.11	0.59		0.02	0.50		0.03	0.21		0.08	0.26	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	384	2141		37	2584		109	764		140	1146	
v/s Ratio Prot	c0.06	c0.37		0.00	0.11		0.00	0.06		c0.04	c0.08	
v/s Ratio Perm												
v/c Ratio	0.52	0.63		0.16	0.23		0.16	0.30		0.54	0.29	
Uniform Delay, d1	50.5	16.1		57.8	16.8		56.6	39.7		53.4	35.6	
Progression Factor	1.24	0.30		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.9	1.1		2.1	0.2		0.7	0.2		4.2	0.1	
Delay (s)	63.8	6.0		59.9	17.0		57.3	39.9		57.6	35.7	
Level of Service	E	A		E	B		E	D		E	D	
Approach Delay (s)		13.4			17.4			41.1			38.6	
Approach LOS		B			B			D			D	

Intersection Summary				
HCM Average Control Delay	21.5	HCM Level of Service		C
HCM Volume to Capacity ratio	0.52			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)		6.0
Intersection Capacity Utilization	79.7%	ICU Level of Service		D
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
16: W Las Positas & Hopyard

12/2/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	102	204	497	566	267	111	298	731	316	116	1443	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.94	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	3657	1603	5157	3657	1613	3547	5255	1615	3547	5255	1589
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	3657	1603	5157	3657	1613	3547	5255	1615	3547	5255	1589
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	106	212	518	590	278	116	310	761	329	121	1503	105
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	59
Lane Group Flow (vph)	106	212	518	590	278	116	310	761	329	121	1503	46
Confl. Peds. (#/hr)			27			7			3			10
Turn Type	Prot		Free	Prot		Free	Prot		Free	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			Free			6
Actuated Green, G (s)	7.8	17.2	120.0	17.8	27.2	120.0	19.0	56.7	120.0	8.3	46.0	46.0
Effective Green, g (s)	8.8	20.2	120.0	18.8	30.2	120.0	20.0	59.7	120.0	9.3	49.0	49.0
Actuated g/C Ratio	0.07	0.17	1.00	0.16	0.25	1.00	0.17	0.50	1.00	0.08	0.41	0.41
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	5.0		1.8	5.0		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	260	616	1603	808	920	1613	591	2614	1615	275	2146	649
v/s Ratio Prot	0.03	c0.06		c0.11	0.08		c0.09	0.14		0.03	c0.29	
v/s Ratio Perm			c0.32			0.07			0.20			0.03
v/c Ratio	0.41	0.34	0.32	0.73	0.30	0.07	0.52	0.29	0.20	0.44	0.70	0.07
Uniform Delay, d1	53.1	44.1	0.0	48.2	36.4	0.0	45.7	17.7	0.0	52.9	29.4	21.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.40	1.86	1.00	1.03	0.67	0.17
Incremental Delay, d2	0.4	0.7	0.5	2.9	0.4	0.1	0.4	0.3	0.3	0.4	1.9	0.2
Delay (s)	53.5	44.8	0.5	51.1	36.8	0.1	64.1	33.2	0.3	55.0	21.7	3.8
Level of Service	D	D	A	D	D	A	E	C	A	D	C	A
Approach Delay (s)		18.5			41.1			32.3			22.9	
Approach LOS		B			D			C			C	

Intersection Summary				
HCM Average Control Delay	28.4	HCM Level of Service		C
HCM Volume to Capacity ratio	0.60			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)		9.0
Intersection Capacity Utilization	74.6%	ICU Level of Service		D
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
17: W Las Positas & Hacienda

12/2/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	71	692	1	2	539	44	29	52	1	195	18	151
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	0.91		1.00	0.95	1.00		1.00	1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00	0.98	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98	1.00	0.95	0.96	1.00
Satd. Flow (prot)	1829	5254		1829	3657	1636		1891	1606	1737	1756	1615
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.98	1.00	0.95	0.96	1.00
Satd. Flow (perm)	1829	5254		1829	3657	1636		1891	1606	1737	1756	1615
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)	77	752	1	2	586	48	32	57	1	212	20	164
RTOR Reduction (vph)	0	0	0	0	0	32	0	0	1	0	0	123
Lane Group Flow (vph)	77	753	0	2	586	16	0	89	0	114	118	41
Confl. Peds. (#/hr)									3			1
Turn Type	Prot			Prot		Perm	Split		Perm	Split		Perm
Protected Phases	5	2		1	6		4	4		3	3	
Permitted Phases						6			4			3
Actuated Green, G (s)	6.9	27.2		0.8	21.1	21.1		7.2	7.2	14.9	14.9	14.9
Effective Green, g (s)	7.9	30.2		1.8	24.1	24.1		10.2	10.2	17.9	17.9	17.9
Actuated g/C Ratio	0.11	0.42		0.02	0.33	0.33		0.14	0.14	0.25	0.25	0.25
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		6.0	6.0	6.0	6.0	6.0
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)	200	2201		46	1222	547		268	227	431	436	401
v/s Ratio Prot	c0.04	0.14		0.00	c0.16			c0.05		0.07	c0.07	
v/s Ratio Perm						0.01			0.00			0.03
v/c Ratio	0.39	0.34		0.04	0.48	0.03		0.33	0.00	0.26	0.27	0.10
Uniform Delay, d1	29.8	14.2		34.3	19.0	16.1		27.9	26.6	21.8	21.8	20.9
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.2	0.1		0.4	0.3	0.0		0.7	0.0	0.3	0.3	0.1
Delay (s)	31.1	14.3		34.7	19.3	16.2		28.6	26.6	22.1	22.2	21.0
Level of Service	C	B		C	B	B		C	C	C	C	C
Approach Delay (s)		15.9			19.1			28.6			21.7	
Approach LOS		B			B			C			C	

Intersection Summary				
HCM Average Control Delay	18.7	HCM Level of Service		B
HCM Volume to Capacity ratio	0.38			
Actuated Cycle Length (s)	72.1	Sum of lost time (s)		12.0
Intersection Capacity Utilization	41.9%	ICU Level of Service		A
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
18: Stoneridge & W Las Positas

12/2/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	43	600	293	223	423	140	125	432	39	481	951	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	5.0	3.0	3.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.96	1.00	1.00	1.00	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	3657	1598	3547	3657	1578	3547	3657	1636	3547	3657	1620
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	3657	1598	3547	3657	1578	3547	3657	1636	3547	3657	1620
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	46	638	312	237	450	149	133	460	41	512	1012	69
RTOR Reduction (vph)	0	0	123	0	0	97	0	0	31	0	0	23
Lane Group Flow (vph)	46	638	189	237	450	52	133	460	10	512	1012	46
Confl. Peds. (#/hr)			12			24			36			12
Turn Type	Prot		Perm	Prot		Perm	Prot		custom	Prot		custom
Protected Phases	7	4		3	8		5	2	2	1	6	6
Permitted Phases			4			8			2			4
Actuated Green, G (s)	3.7	25.0	25.0	11.3	32.6	32.6	7.1	22.2	22.2	19.0	33.1	58.1
Effective Green, g (s)	4.7	28.0	26.0	12.3	35.6	33.6	8.1	24.2	24.2	20.0	36.1	64.1
Actuated g/C Ratio	0.05	0.29	0.27	0.13	0.37	0.35	0.08	0.25	0.25	0.21	0.37	0.66
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	5.0	5.0	4.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	173	1061	431	452	1349	549	298	917	410	735	1368	1076
v/s Ratio Prot	0.01	c0.17		c0.07	0.12		0.04	0.13	0.01	c0.14	c0.28	0.02
v/s Ratio Perm			0.12			0.03						0.01
v/c Ratio	0.27	0.60	0.44	0.52	0.33	0.09	0.45	0.50	0.03	0.70	0.74	0.04
Uniform Delay, d1	44.2	29.5	29.2	39.4	21.9	21.2	42.1	31.0	27.3	35.4	26.1	5.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.8	1.0	0.7	1.1	0.1	0.1	1.1	0.4	0.0	2.9	2.1	0.0
Delay (s)	45.1	30.4	29.9	40.5	22.1	21.3	43.1	31.4	27.3	38.3	28.3	5.6
Level of Service	D	C	C	D	C	C	D	C	C	D	C	A
Approach Delay (s)		30.9			27.1			33.6			30.5	
Approach LOS		C			C			C			C	

Intersection Summary				
HCM Average Control Delay	30.4	HCM Level of Service		C
HCM Volume to Capacity ratio	0.65			
Actuated Cycle Length (s)	96.5	Sum of lost time (s)		9.0
Intersection Capacity Utilization	72.7%	ICU Level of Service		C
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
52: W Las Positas & Willow

12/2/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	82	570	11	2	566	49	50	6	23	90	4	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Util. Factor	1.00	0.91		1.00	0.95	1.00	1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	0.99			1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.88			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00			0.95	1.00
Satd. Flow (prot)	1829	5238		1829	3657	1636	1822	1674			1834	1609
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.69	1.00			0.71	1.00
Satd. Flow (perm)	1829	5238		1829	3657	1636	1326	1674			1368	1609
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	88	613	12	2	609	53	54	6	25	97	4	132
RTOR Reduction (vph)	0	3	0	0	0	30	0	19	0	0	0	102
Lane Group Flow (vph)	88	622	0	2	609	23	54	12	0	0	101	30
Confl. Peds. (#/hr)			1	1			6		2	2		6
Turn Type	Prot			Prot		Perm	Perm			Perm		Perm
Protected Phases	5	2		1	6			4			4	
Permitted Phases						6	4			4		4
Actuated Green, G (s)	3.2	16.5		0.8	14.1	14.1	6.9	6.9			6.9	6.9
Effective Green, g (s)	4.2	19.5		1.8	17.1	17.1	8.9	8.9			8.9	8.9
Actuated g/C Ratio	0.11	0.50		0.05	0.44	0.44	0.23	0.23			0.23	0.23
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0	5.0	5.0			5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	196	2606		84	1595	714	301	380			311	365
v/s Ratio Prot	c0.05	0.12		0.00	c0.17			0.01				
v/s Ratio Perm						0.01	0.04				c0.07	0.02
v/c Ratio	0.45	0.24		0.02	0.38	0.03	0.18	0.03			0.32	0.08
Uniform Delay, d1	16.4	5.6		17.9	7.5	6.3	12.2	11.8			12.6	11.9
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00			1.03	1.12
Incremental Delay, d2	1.6	0.0		0.1	0.2	0.0	0.3	0.0			0.6	0.1
Delay (s)	18.1	5.7		18.0	7.6	6.3	12.5	11.8			13.6	13.5
Level of Service	B	A		B	A	A	B	B			B	B
Approach Delay (s)		7.2			7.6			12.3			13.5	
Approach LOS		A			A			B			B	

Intersection Summary				
HCM Average Control Delay	8.5	HCM Level of Service		A
HCM Volume to Capacity ratio	0.35			
Actuated Cycle Length (s)	39.2	Sum of lost time (s)		9.0
Intersection Capacity Utilization	42.3%	ICU Level of Service		A
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
58: Gibraltar Dr (S) & Hacienda

12/2/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	26	20	49	35	11	23	8	169	14	11	178	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0			3.0		3.0	3.0			3.0	3.0
Lane Util. Factor		0.95			0.95		1.00	0.91			1.00	0.91
Frpb, ped/bikes		0.99			0.99		1.00	1.00			1.00	1.00
Flpb, ped/bikes		1.00			1.00		1.00	1.00			1.00	1.00
Frt		0.92			0.95		1.00	0.99			1.00	0.99
Flt Protected		0.99			0.98		0.95	1.00			0.95	1.00
Satd. Flow (prot)		3284			3346		1829	5184			1829	5191
Flt Permitted		0.86			0.79		0.95	1.00			0.95	1.00
Satd. Flow (perm)		2878			2727		1829	5184			1829	5191
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	27	21	51	36	11	24	8	176	15	11	185	14
RTOR Reduction (vph)	0	39	0	0	18	0	0	10	0	0	9	0
Lane Group Flow (vph)	0	60	0	0	53	0	8	181	0	11	190	0
Confl. Peds. (#/hr)	20		20	20		20			20			20
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4			4								
Actuated Green, G (s)		4.3			4.3		0.6	6.8		0.7	6.9	
Effective Green, g (s)		6.3			6.3		1.6	9.8		1.7	9.9	
Actuated g/C Ratio		0.24			0.24		0.06	0.37		0.06	0.37	
Clearance Time (s)		5.0			5.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		677			641		109	1896		116	1918	
v/s Ratio Prot							0.00	0.04		c0.01	c0.04	
v/s Ratio Perm		c0.02			0.02							
v/c Ratio		0.09			0.08		0.07	0.10		0.09	0.10	
Uniform Delay, d1		8.0			8.0		11.9	5.6		11.8	5.5	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1			0.1		0.3	0.0		0.4	0.0	
Delay (s)		8.1			8.1		12.2	5.6		12.2	5.6	
Level of Service		A			A		B	A		B	A	
Approach Delay (s)		8.1			8.1			5.9			5.9	
Approach LOS		A			A			A			A	

Intersection Summary				
HCM Average Control Delay	6.5	HCM Level of Service		A
HCM Volume to Capacity ratio	0.08			
Actuated Cycle Length (s)	26.8	Sum of lost time (s)		6.0
Intersection Capacity Utilization	28.8%	ICU Level of Service		A
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (veh/h)	38	5	9	22	2	43	29	1	114	27	2	38
Sign Control		Stop			Stop				Free			
Grade		0%			0%				0%			
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	48	6	11	28	2	54	0	1	142	34	0	48
Pedestrians		20			20				20			
Lane Width (ft)		13.0			13.0				13.0			
Walking Speed (ft/s)		4.0			4.0				4.0			
Percent Blockage		2			2				2			
Right turn flare (veh)												
Median type									None			
Median storage veh)												
Upstream signal (ft)									1264			
pX, platoon unblocked							0.00				0.00	
vC, conflicting volume	562	612	194	456	604	128	0	328			0	196
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	562	612	194	456	604	128	0	328			0	196
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	0.0	4.1			0.0	4.1
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	0.0	2.2			0.0	2.2
p0 queue free %	86	98	99	94	99	94	0	100			0	96
cM capacity (veh/h)	349	378	786	433	382	866	0	1207			0	1349

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	65	30	54	1	95	81	48	192	115
Volume Left	48	28	0	1	0	0	48	0	0
Volume Right	11	0	54	0	0	34	0	0	19
cSH	389	428	866	1207	1700	1700	1349	1700	1700
Volume to Capacity	0.17	0.07	0.06	0.00	0.06	0.05	0.04	0.11	0.07
Queue Length 95th (ft)	15	6	5	0	0	0	3	0	0
Control Delay (s)	16.1	14.0	9.4	8.0	0.0	0.0	7.8	0.0	0.0
Lane LOS	C	B	A	A			A		
Approach Delay (s)	16.1	11.1		0.1			1.0		
Approach LOS	C	B							

Intersection Summary				
Average Delay	3.5			
Intersection Capacity Utilization	42.4%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	SBT	SBR
Lane Configurations		
Volume (veh/h)	231	15
Sign Control	Free	
Grade	0%	
Peak Hour Factor	0.80	0.80
Hourly flow rate (vph)	289	19
Pedestrians	20	
Lane Width (ft)	13.0	
Walking Speed (ft/s)	4.0	
Percent Blockage	2	
Right turn flare (veh)		
Median type	None	
Median storage veh)		
Upstream signal (ft)		
pX, platoon unblocked		
vC, conflicting volume		
vC1, stage 1 conf vol		
vC2, stage 2 conf vol		
vCu, unblocked vol		
tC, single (s)		
tC, 2 stage (s)		
tF (s)		
p0 queue free %		
cM capacity (veh/h)		

Direction, Lane #

HCM Signalized Intersection Capacity Analysis
12: Stoneridge & Hacienda

1/24/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	237	539	31	40	1412	67	56	151	19	59	252	107
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.95		1.00	0.91		0.97	0.95		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.95	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.98		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3547	3621		1829	5206		3547	3580		1829	4767	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3547	3621		1829	5206		3547	3580		1829	4767	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	252	573	33	43	1502	71	60	161	20	63	268	114
RTOR Reduction (vph)	0	2	0	0	3	0	0	10	0	0	73	0
Lane Group Flow (vph)	252	604	0	43	1570	0	60	171	0	63	309	0
Confl. Peds. (#/hr)			12			24			24			120
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	13.8	63.9		7.1	57.2		6.3	20.7		8.3	22.7	
Effective Green, g (s)	14.8	66.9		8.1	60.2		7.3	23.7		9.3	25.7	
Actuated g/C Ratio	0.12	0.56		0.07	0.50		0.06	0.20		0.08	0.21	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	437	2019		123	2612		216	707		142	1021	
v/s Ratio Prot	c0.07	0.17		0.02	c0.30		0.02	0.05		c0.03	c0.06	
v/s Ratio Perm												
v/c Ratio	0.58	0.30		0.35	0.60		0.28	0.24		0.44	0.30	
Uniform Delay, d1	49.6	14.1		53.4	21.3		53.8	40.6		52.9	39.6	
Progression Factor	0.79	1.25		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.6	0.3		1.7	1.0		0.7	0.2		2.2	0.2	
Delay (s)	41.0	18.0		55.2	22.4		54.5	40.8		55.1	39.8	
Level of Service	D	B		E	C		D	D		E	D	
Approach Delay (s)		24.7			23.2			44.2			42.0	
Approach LOS		C			C			D			D	

Intersection Summary				
HCM Average Control Delay	27.9	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.50			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0	
Intersection Capacity Utilization	75.4%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
16: W Las Positas & Hopyard

1/24/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	151	393	453	512	418	81	477	1354	445	163	763	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.94	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	3657	1603	5157	3657	1613	3547	5255	1615	3547	5255	1589
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	3657	1603	5157	3657	1613	3547	5255	1615	3547	5255	1589
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	176	457	527	595	486	94	555	1574	517	190	887	103
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	74
Lane Group Flow (vph)	176	457	527	595	486	94	555	1574	517	190	887	29
Confl. Peds. (#/hr)			27			7			3			10
Turn Type	Prot		Free	Prot		Free	Prot		Free	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			Free			6
Actuated Green, G (s)	9.6	21.9	120.0	17.0	29.3	120.0	30.0	52.4	120.0	8.7	31.1	31.1
Effective Green, g (s)	10.6	24.9	120.0	18.0	32.3	120.0	31.0	55.4	120.0	9.7	34.1	34.1
Actuated g/C Ratio	0.09	0.21	1.00	0.15	0.27	1.00	0.26	0.46	1.00	0.08	0.28	0.28
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	5.0		1.8	5.0		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	313	759	1603	774	984	1613	916	2426	1615	287	1493	452
v/s Ratio Prot	0.05	c0.12		c0.12	0.13		0.16	c0.30		c0.05	0.17	
v/s Ratio Perm			0.33			0.06			0.32			0.02
v/c Ratio	0.56	0.60	0.33	0.77	0.49	0.06	0.61	0.65	0.32	0.66	0.59	0.06
Uniform Delay, d1	52.5	43.1	0.0	49.0	37.0	0.0	39.1	24.8	0.0	53.6	37.0	31.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.76	0.69	1.00	0.87	0.63	0.69
Incremental Delay, d2	1.4	2.0	0.5	4.2	0.8	0.1	0.7	1.2	0.5	4.3	1.7	0.3
Delay (s)	53.9	45.1	0.5	53.2	37.8	0.1	30.6	18.2	0.5	50.9	24.9	21.8
Level of Service	D	D	A	D	D	A	C	B	A	D	C	C
Approach Delay (s)		26.2			42.6			17.4			28.8	
Approach LOS		C			D			B			C	

Intersection Summary				
HCM Average Control Delay	26.0	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.66			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	70.5%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	27	105	437	40	8	1017	84	32	32	14	89	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0
Lane Util. Factor		1.00	0.91		1.00	0.95	1.00	1.00	1.00		1.00	1.00
Frpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	0.99		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Frt		1.00	0.99		1.00	1.00	0.85	1.00	0.96		1.00	1.00
Flt Protected		0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00
Satd. Flow (prot)		1829	5189		1829	3657	1636	1829	1830		1829	1925
Flt Permitted		0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00
Satd. Flow (perm)		1829	5189		1829	3657	1636	1829	1830		1829	1925
Peak-hour factor, PHF	0.90	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	30	124	514	47	9	1196	99	38	38	16	105	8
RTOR Reduction (vph)	0	0	6	0	0	0	43	0	13	0	0	0
Lane Group Flow (vph)	0	154	555	0	9	1196	56	38	41	0	105	8
Confl. Peds. (#/hr)										3		
Turn Type	Prot	Prot			Prot		Perm	Prot			Prot	
Protected Phases	5	5	2		1	6		3	8		7	4
Permitted Phases							6					
Actuated Green, G (s)		9.5	48.9		1.1	40.5	40.5	9.8	14.2		12.5	16.9
Effective Green, g (s)		10.5	51.9		2.1	43.5	43.5	12.8	17.2		15.5	19.9
Actuated g/C Ratio		0.11	0.53		0.02	0.44	0.44	0.13	0.17		0.16	0.20
Clearance Time (s)		4.0	6.0		4.0	6.0	6.0	6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		195	2729		39	1612	721	237	319		287	388
v/s Ratio Prot		c0.08	0.11		0.00	c0.33		0.02	c0.02		c0.06	0.00
v/s Ratio Perm							0.03					
v/c Ratio		0.79	0.20		0.23	0.74	0.08	0.16	0.13		0.37	0.02
Uniform Delay, d1		43.0	12.4		47.5	22.9	16.0	38.2	34.4		37.2	31.6
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2		18.9	0.2		3.0	1.9	0.0	0.3	0.2		0.8	0.0
Delay (s)		61.9	12.6		50.5	24.8	16.0	38.5	34.6		38.0	31.6
Level of Service		E	B		D	C	B	D	C		D	C
Approach Delay (s)			23.2			24.3			36.2			34.6
Approach LOS			C			C			D			C

Intersection Summary			
HCM Average Control Delay	25.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	98.7	Sum of lost time (s)	15.0
Intersection Capacity Utilization	60.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBR
Lane Configurations	
Volume (vph)	110
Ideal Flow (vphpl)	1900
Total Lost time (s)	3.0
Lane Util. Factor	1.00
Frpb, ped/bikes	0.99
Flpb, ped/bikes	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1615
Flt Permitted	1.00
Satd. Flow (perm)	1615
Peak-hour factor, PHF	0.85
Adj. Flow (vph)	129
RTOR Reduction (vph)	103
Lane Group Flow (vph)	26
Confl. Peds. (#/hr)	1
Turn Type	Perm
Protected Phases	
Permitted Phases	4
Actuated Green, G (s)	16.9
Effective Green, g (s)	19.9
Actuated g/C Ratio	0.20
Clearance Time (s)	6.0
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	326
v/s Ratio Prot	
v/s Ratio Perm	c0.02
v/c Ratio	0.08
Uniform Delay, d1	32.0
Progression Factor	1.00
Incremental Delay, d2	0.1
Delay (s)	32.1
Level of Service	C
Approach Delay (s)	
Approach LOS	

Intersection Summary

HCM Signalized Intersection Capacity Analysis
18: Stoneridge & W Las Positas

1/24/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	47	505	227	184	1190	345	319	720	63	207	476	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	5.0	3.0	3.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.96	1.00	1.00	1.00	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	3657	1596	3547	3657	1574	3547	3657	1636	3547	3657	1613
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	3657	1596	3547	3657	1574	3547	3657	1636	3547	3657	1613
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	52	561	252	204	1322	383	354	800	70	230	529	57
RTOR Reduction (vph)	0	0	162	0	0	189	0	0	50	0	0	20
Lane Group Flow (vph)	52	561	90	204	1322	194	354	800	20	230	529	37
Confl. Peds. (#/hr)			12			24			36			12
Turn Type	Prot		Perm	Prot		Perm	Prot		custom	Prot		custom
Protected Phases	7	4		3	8		5	2	2	1	6	6
Permitted Phases			4			8			2			4
Actuated Green, G (s)	5.1	36.7	36.7	10.4	42.0	42.0	13.6	28.6	28.6	11.2	25.2	61.9
Effective Green, g (s)	6.1	39.7	37.7	11.4	45.0	43.0	14.6	30.6	30.6	12.2	28.2	67.9
Actuated g/C Ratio	0.06	0.37	0.36	0.11	0.42	0.41	0.14	0.29	0.29	0.12	0.27	0.64
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	5.0	5.0	4.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	204	1371	568	382	1554	639	489	1057	473	409	974	1034
v/s Ratio Prot	0.01	0.15		c0.06	c0.36		c0.10	c0.22	0.01	0.06	0.14	0.01
v/s Ratio Perm			0.06			0.12						0.01
v/c Ratio	0.25	0.41	0.16	0.53	0.85	0.30	0.72	0.76	0.04	0.56	0.54	0.04
Uniform Delay, d1	47.7	24.4	23.3	44.7	27.4	21.3	43.7	34.3	27.1	44.3	33.3	7.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7	0.2	0.1	1.4	4.7	0.3	5.3	3.1	0.0	1.8	0.6	0.0
Delay (s)	48.4	24.6	23.4	46.2	32.1	21.6	49.0	37.4	27.1	46.1	33.9	7.0
Level of Service	D	C	C	D	C	C	D	D	C	D	C	A
Approach Delay (s)		25.7			31.5			40.2			35.5	
Approach LOS		C			C			D			D	

Intersection Summary				
HCM Average Control Delay	33.3	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.74			
Actuated Cycle Length (s)	105.9	Sum of lost time (s)	6.0	
Intersection Capacity Utilization	78.6%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
52: W Las Positas & Willow

1/24/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	270	598	21	33	829	241	15	7	3	27	5	185
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Util. Factor	1.00	0.91		1.00	0.95	1.00	1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00			1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.99	1.00			1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.95			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00			0.96	1.00
Satd. Flow (prot)	1829	5224		1829	3657	1636	1815	1820			1843	1604
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.73	1.00			0.80	1.00
Satd. Flow (perm)	1829	5224		1829	3657	1636	1399	1820			1532	1604
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.91	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	318	704	25	39	911	284	18	8	4	32	6	218
RTOR Reduction (vph)	0	2	0	0	0	167	0	3	0	0	0	181
Lane Group Flow (vph)	318	727	0	39	911	117	18	9	0	0	38	37
Confl. Peds. (#/hr)			1	1			6		2	2		6
Turn Type	Prot			Prot		Perm	Perm			Perm		Perm
Protected Phases	5	2		1	6			4			4	
Permitted Phases						6	4			4		4
Actuated Green, G (s)	20.2	39.5		4.3	23.6	23.6	9.7	9.7			9.7	9.7
Effective Green, g (s)	21.2	42.5		5.3	26.6	26.6	11.7	11.7			11.7	11.7
Actuated g/C Ratio	0.31	0.62		0.08	0.39	0.39	0.17	0.17			0.17	0.17
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0	5.0	5.0			5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	566	3241		142	1420	635	239	311			262	274
v/s Ratio Prot	c0.17	0.14		0.02	c0.25			0.00				
v/s Ratio Perm						0.07	0.01				c0.02	0.02
v/c Ratio	0.56	0.22		0.27	0.64	0.18	0.08	0.03			0.15	0.14
Uniform Delay, d1	19.8	5.7		29.8	17.1	13.8	23.9	23.7			24.1	24.1
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00			1.09	1.49
Incremental Delay, d2	1.3	0.0		1.1	1.0	0.1	0.1	0.0			0.3	0.2
Delay (s)	21.0	5.8		30.8	18.1	13.9	24.0	23.7			26.6	36.1
Level of Service	C	A		C	B	B	C	C			C	D
Approach Delay (s)		10.4			17.5			23.9			34.7	
Approach LOS		B			B			C			C	

Intersection Summary				
HCM Average Control Delay	16.4	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.52			
Actuated Cycle Length (s)	68.5	Sum of lost time (s)	9.0	
Intersection Capacity Utilization	57.2%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
58: Gibraltar Dr (S) & Hacienda

1/24/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	19	23	43	8	17	7	27	129	25	80	156	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor		0.95			0.95		1.00	0.91		1.00	0.91	
Frpb, ped/bikes		0.99			0.99		1.00	1.00		1.00	0.99	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.92			0.97		1.00	0.98		1.00	0.96	
Flt Protected		0.99			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3293			3470		1829	5105		1829	5010	
Flt Permitted		0.89			0.87		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		2948			3056		1829	5105		1829	5010	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.88	0.85	0.85	0.85	0.85
Adj. Flow (vph)	22	27	51	9	20	8	32	147	29	94	184	68
RTOR Reduction (vph)	0	41	0	0	6	0	0	18	0	0	37	0
Lane Group Flow (vph)	0	59	0	0	31	0	32	158	0	94	215	0
Confl. Peds. (#/hr)	20		20	20		20			20			20
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4			4								
Actuated Green, G (s)		4.0			4.0		0.9	8.6		3.7	11.4	
Effective Green, g (s)		6.0			6.0		1.9	11.6		4.7	14.4	
Actuated g/C Ratio		0.19			0.19		0.06	0.37		0.15	0.46	
Clearance Time (s)		5.0			5.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		565			586		111	1892		275	2305	
v/s Ratio Prot							0.02	0.03		c0.05	c0.04	
v/s Ratio Perm		c0.02			0.01							
v/c Ratio		0.10			0.05		0.29	0.08		0.34	0.09	
Uniform Delay, d1		10.4			10.3		14.1	6.4		11.9	4.8	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1			0.0		1.4	0.0		0.7	0.0	
Delay (s)		10.5			10.4		15.5	6.4		12.7	4.8	
Level of Service		B			B		B	A		B	A	
Approach Delay (s)		10.5			10.4			7.8			6.9	
Approach LOS		B			B			A			A	

Intersection Summary				
HCM Average Control Delay	7.9	HCM Level of Service		A
HCM Volume to Capacity ratio	0.13			
Actuated Cycle Length (s)	31.3	Sum of lost time (s)		9.0
Intersection Capacity Utilization	33.6%	ICU Level of Service		A
Analysis Period (min)	15			

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
946: Gibraltar Dr (S) & Willow

1/24/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (veh/h)	5	5	5	15	5	20	128	12	400	80	5	32
Sign Control		Stop			Stop				Free			
Grade		0%			0%				0%			
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	6	6	6	19	6	25	0	15	500	100	0	40
Pedestrians		20			20				20			
Lane Width (ft)		13.0			13.0				13.0			
Walking Speed (ft/s)		4.0			4.0				4.0			
Percent Blockage		2			2				2			
Right turn flare (veh)												
Median type									None			
Median storage veh)												
Upstream signal (ft)									1264			
pX, platoon unblocked							0.00				0.00	
vC, conflicting volume	769	1091	219	872	1058	340	0	378			0	620
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	769	1091	219	872	1058	340	0	378			0	620
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	0.0	4.1			0.0	4.1
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	0.0	2.2			0.0	2.2
p0 queue free %	97	97	99	91	97	96	0	99			0	96
cM capacity (veh/h)	245	194	757	213	204	632	0	1156			0	939

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	19	25	25	15	333	267	40	217	141
Volume Left	6	19	0	15	0	0	40	0	0
Volume Right	6	0	25	0	0	100	0	0	32
cSH	284	210	632	1156	1700	1700	939	1700	1700
Volume to Capacity	0.07	0.12	0.04	0.01	0.20	0.16	0.04	0.13	0.08
Queue Length 95th (ft)	5	10	3	1	0	0	3	0	0
Control Delay (s)	18.5	24.4	10.9	8.2	0.0	0.0	9.0	0.0	0.0
Lane LOS	C	C	B	A			A		
Approach Delay (s)	18.5	17.7		0.2			0.9		
Approach LOS	C	C							

Intersection Summary				
Average Delay	1.6			
Intersection Capacity Utilization	47.0%	ICU Level of Service		A
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
946: Gibraltar Dr (S) & Willow

1/24/2014

Movement	SBT	SBR
Lane Configurations		
Volume (veh/h)	260	26
Sign Control	Free	
Grade	0%	
Peak Hour Factor	0.80	0.80
Hourly flow rate (vph)	325	32
Pedestrians	20	
Lane Width (ft)	13.0	
Walking Speed (ft/s)	4.0	
Percent Blockage	2	
Right turn flare (veh)		
Median type	None	
Median storage veh)		
Upstream signal (ft)		
pX, platoon unblocked		
vC, conflicting volume		
vC1, stage 1 conf vol		
vC2, stage 2 conf vol		
vCu, unblocked vol		
tC, single (s)		
tC, 2 stage (s)		
tF (s)		
p0 queue free %		
cM capacity (veh/h)		
Direction, Lane #		

HCM Signalized Intersection Capacity Analysis
12: Stoneridge & Hacienda

1/24/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	188	1230	64	6	511	54	24	204	24	72	234	247
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	0.97	0.95		1.00	0.91		0.97	0.95		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00		1.00	0.91	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.98		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3547	3624		1829	5151		3547	3584		1829	4429	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3547	3624		1829	5151		3547	3584		1829	4429	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	198	1295	67	6	538	57	25	215	25	76	246	260
RTOR Reduction (vph)	0	2	0	0	8	0	0	8	0	0	169	0
Lane Group Flow (vph)	198	1360	0	6	587	0	25	232	0	76	337	0
Confl. Peds. (#/hr)			12			24			24			120
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	12.0	68.6		1.4	58.0		4.1	21.8		8.2	25.9	
Effective Green, g (s)	13.0	71.6		2.4	61.0		5.1	24.8		9.2	28.9	
Actuated g/C Ratio	0.11	0.60		0.02	0.51		0.04	0.21		0.08	0.24	
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	384	2162		37	2618		151	741		140	1067	
v/s Ratio Prot	c0.06	c0.38		0.00	0.11		0.01	0.06		c0.04	c0.08	
v/s Ratio Perm												
v/c Ratio	0.52	0.63		0.16	0.22		0.17	0.31		0.54	0.32	
Uniform Delay, d1	50.5	15.6		57.8	16.4		55.4	40.4		53.4	37.4	
Progression Factor	1.24	0.31		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.9	1.1		2.1	0.2		0.5	0.2		4.2	0.2	
Delay (s)	63.8	5.9		59.9	16.6		55.9	40.6		57.6	37.6	
Level of Service	E	A		E	B		E	D		E	D	
Approach Delay (s)		13.3			17.0			42.1			40.2	
Approach LOS		B			B			D			D	

Intersection Summary				
HCM Average Control Delay	21.8	HCM Level of Service		C
HCM Volume to Capacity ratio	0.53			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)		6.0
Intersection Capacity Utilization	80.1%	ICU Level of Service		D
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
16: W Las Positas & Hopyard

1/24/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	102	208	497	576	269	115	298	731	334	127	1443	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.94	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	3657	1603	5157	3657	1613	3547	5255	1615	3547	5255	1589
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	3657	1603	5157	3657	1613	3547	5255	1615	3547	5255	1589
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	106	217	518	600	280	120	310	761	348	132	1503	105
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	59
Lane Group Flow (vph)	106	217	518	600	280	120	310	761	348	132	1503	46
Confl. Peds. (#/hr)			27			7			3			10
Turn Type	Prot		Free	Prot		Free	Prot		Free	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			Free			6
Actuated Green, G (s)	7.8	17.3	120.0	18.0	27.5	120.0	19.0	56.1	120.0	8.6	45.7	45.7
Effective Green, g (s)	8.8	20.3	120.0	19.0	30.5	120.0	20.0	59.1	120.0	9.6	48.7	48.7
Actuated g/C Ratio	0.07	0.17	1.00	0.16	0.25	1.00	0.17	0.49	1.00	0.08	0.41	0.41
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	5.0		1.8	5.0		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	260	619	1603	817	929	1613	591	2588	1615	284	2133	645
v/s Ratio Prot	0.03	c0.06		c0.12	0.08		c0.09	0.14		0.04	c0.29	
v/s Ratio Perm			c0.32			0.07			0.22			0.03
v/c Ratio	0.41	0.35	0.32	0.73	0.30	0.07	0.52	0.29	0.22	0.46	0.70	0.07
Uniform Delay, d1	53.1	44.0	0.0	48.1	36.1	0.0	45.7	18.1	0.0	52.7	29.7	21.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.40	1.85	1.00	1.03	0.68	0.17
Incremental Delay, d2	0.4	0.7	0.5	3.0	0.4	0.1	0.4	0.3	0.3	0.4	1.9	0.2
Delay (s)	53.5	44.7	0.5	51.1	36.5	0.1	64.1	33.6	0.3	54.9	22.0	3.9
Level of Service	D	D	A	D	D	A	E	C	A	D	C	A
Approach Delay (s)		18.6			40.9			32.1			23.4	
Approach LOS		B			D			C			C	

Intersection Summary				
HCM Average Control Delay	28.6	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.60			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0	
Intersection Capacity Utilization	74.9%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
17: W Las Positas & Hacienda

1/24/2014

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	7	76	698	12	23	539	44	39	58	7	195	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0
Lane Util. Factor		1.00	0.91		1.00	0.95	1.00	1.00	1.00		1.00	1.00
Frpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	1.00	0.85	1.00	0.98		1.00	1.00
Flt Protected		0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00
Satd. Flow (prot)		1829	5242		1829	3657	1636	1829	1889		1829	1925
Flt Permitted		0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00
Satd. Flow (perm)		1829	5242		1829	3657	1636	1829	1889		1829	1925
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)	8	83	759	13	25	586	48	42	63	8	212	38
RTOR Reduction (vph)	0	0	1	0	0	0	33	0	5	0	0	0
Lane Group Flow (vph)	0	91	771	0	25	586	15	42	66	0	212	38
Confl. Peds. (#/hr)										3		
Turn Type	Prot	Prot			Prot		Perm	Prot			Prot	
Protected Phases	5	5	2		1	6		3	8		7	4
Permitted Phases							6					
Actuated Green, G (s)		5.2	24.7		1.9	21.4	21.4	8.8	10.7		17.0	18.9
Effective Green, g (s)		6.2	27.7		2.9	24.4	24.4	11.8	13.7		20.0	21.9
Actuated g/C Ratio		0.08	0.36		0.04	0.32	0.32	0.15	0.18		0.26	0.29
Clearance Time (s)		4.0	6.0		4.0	6.0	6.0	6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		149	1903		70	1169	523	283	339		479	553
v/s Ratio Prot		c0.05	0.15		0.01	c0.16		0.02	c0.03		c0.12	0.02
v/s Ratio Perm							0.01					
v/c Ratio		0.61	0.41		0.36	0.50	0.03	0.15	0.19		0.44	0.07
Uniform Delay, d1		33.9	18.1		35.8	21.0	17.8	27.9	26.6		23.5	19.8
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2		7.2	0.1		3.1	0.3	0.0	0.2	0.3		0.7	0.1
Delay (s)		41.1	18.3		38.9	21.4	17.8	28.1	26.9		24.2	19.8
Level of Service		D	B		D	C	B	C	C		C	B
Approach Delay (s)			20.7			21.8			27.4			22.7
Approach LOS			C			C			C			C

Intersection Summary				
HCM Average Control Delay	21.8	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.43			
Actuated Cycle Length (s)	76.3	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	47.1%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
17: W Las Positas & Hacienda

1/24/2014

Movement	SBR
Lane Configurations	
Volume (vph)	151
Ideal Flow (vphpl)	1900
Total Lost time (s)	3.0
Lane Util. Factor	1.00
Frpb, ped/bikes	0.99
Flpb, ped/bikes	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1615
Flt Permitted	1.00
Satd. Flow (perm)	1615
Peak-hour factor, PHF	0.92
Adj. Flow (vph)	164
RTOR Reduction (vph)	121
Lane Group Flow (vph)	43
Confl. Peds. (#/hr)	1
Turn Type	custom
Protected Phases	
Permitted Phases	7
Actuated Green, G (s)	17.0
Effective Green, g (s)	20.0
Actuated g/C Ratio	0.26
Clearance Time (s)	6.0
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	423
v/s Ratio Prot	
v/s Ratio Perm	0.03
v/c Ratio	0.10
Uniform Delay, d1	21.3
Progression Factor	1.00
Incremental Delay, d2	0.1
Delay (s)	21.4
Level of Service	C
Approach Delay (s)	
Approach LOS	

Intersection Summary			
HCM Average Control Delay	30.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	97.1	Sum of lost time (s)	9.0
Intersection Capacity Utilization	73.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
18: Stoneridge & W Las Positas

1/24/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	43	600	293	234	423	140	125	438	45	481	962	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	5.0	3.0	3.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.96	1.00	1.00	1.00	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	3657	1598	3547	3657	1578	3547	3657	1636	3547	3657	1620
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	3657	1598	3547	3657	1578	3547	3657	1636	3547	3657	1620
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	46	638	312	249	450	149	133	466	48	512	1023	69
RTOR Reduction (vph)	0	0	121	0	0	97	0	0	36	0	0	23
Lane Group Flow (vph)	46	638	191	249	450	52	133	466	12	512	1023	46
Confl. Peds. (#/hr)			12			24			36			12
Turn Type	Prot		Perm	Prot		Perm	Prot		custom	Prot		custom
Protected Phases	7	4		3	8		5	2	2	1	6	6
Permitted Phases			4			8			2			4
Actuated Green, G (s)	3.7	25.1	25.1	11.5	32.9	32.9	7.1	22.5	22.5	19.0	33.4	58.5
Effective Green, g (s)	4.7	28.1	26.1	12.5	35.9	33.9	8.1	24.5	24.5	20.0	36.4	64.5
Actuated g/C Ratio	0.05	0.29	0.27	0.13	0.37	0.35	0.08	0.25	0.25	0.21	0.37	0.66
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	5.0	5.0	4.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	172	1058	430	457	1352	551	296	923	413	731	1371	1076
v/s Ratio Prot	0.01	c0.17		c0.07	0.12		0.04	0.13	0.01	c0.14	c0.28	0.02
v/s Ratio Perm			0.12			0.03						0.01
v/c Ratio	0.27	0.60	0.44	0.54	0.33	0.09	0.45	0.50	0.03	0.70	0.75	0.04
Uniform Delay, d1	44.5	29.7	29.5	39.6	22.0	21.3	42.4	31.1	27.3	35.8	26.3	5.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.8	1.0	0.7	1.3	0.1	0.1	1.1	0.4	0.0	3.0	2.3	0.0
Delay (s)	45.4	30.7	30.2	41.0	22.1	21.3	43.5	31.5	27.4	38.8	28.6	5.6
Level of Service	D	C	C	D	C	C	D	C	C	D	C	A
Approach Delay (s)		31.2			27.5			33.7			30.9	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	30.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	97.1	Sum of lost time (s)	9.0
Intersection Capacity Utilization	73.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
52: W Las Positas & Willow

1/24/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	82	603	11	2	582	49	50	6	23	90	4	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Util. Factor	1.00	0.91		1.00	0.95	1.00	1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	0.99			1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.88			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00			0.95	1.00
Satd. Flow (prot)	1829	5238		1829	3657	1636	1822	1674			1834	1609
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.69	1.00			0.71	1.00
Satd. Flow (perm)	1829	5238		1829	3657	1636	1326	1674			1368	1609
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	88	648	12	2	626	53	54	6	25	97	4	132
RTOR Reduction (vph)	0	3	0	0	0	30	0	19	0	0	0	102
Lane Group Flow (vph)	88	657	0	2	626	23	54	12	0	0	101	30
Confl. Peds. (#/hr)			1	1			6		2	2		6
Turn Type	Prot			Prot		Perm	Perm			Perm		Perm
Protected Phases	5	2		1	6			4			4	
Permitted Phases						6	4			4		4
Actuated Green, G (s)	3.2	16.6		0.8	14.2	14.2	6.9	6.9			6.9	6.9
Effective Green, g (s)	4.2	19.6		1.8	17.2	17.2	8.9	8.9			8.9	8.9
Actuated g/C Ratio	0.11	0.50		0.05	0.44	0.44	0.23	0.23			0.23	0.23
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0	5.0	5.0			5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	195	2612		84	1601	716	300	379			310	364
v/s Ratio Prot	c0.05	0.13		0.00	c0.17			0.01				
v/s Ratio Perm						0.01	0.04				c0.07	0.02
v/c Ratio	0.45	0.25		0.02	0.39	0.03	0.18	0.03			0.33	0.08
Uniform Delay, d1	16.5	5.6		17.9	7.5	6.3	12.3	11.8			12.7	12.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00			1.03	1.12
Incremental Delay, d2	1.7	0.1		0.1	0.2	0.0	0.3	0.0			0.6	0.1
Delay (s)	18.1	5.7		18.0	7.7	6.3	12.5	11.9			13.7	13.5
Level of Service	B	A		B	A	A	B	B			B	B
Approach Delay (s)		7.2			7.6			12.3			13.6	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	8.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	39.3	Sum of lost time (s)	9.0
Intersection Capacity Utilization	42.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
58: Gibraltar Dr (S) & Hacienda

1/24/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	26	20	49	35	11	23	8	180	14	11	195	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0			3.0		3.0	3.0			3.0	3.0
Lane Util. Factor		0.95			0.95		1.00	0.91			1.00	0.91
Frpb, ped/bikes		0.99			0.99		1.00	1.00			1.00	1.00
Flpb, ped/bikes		1.00			1.00		1.00	1.00			1.00	1.00
Frt		0.92			0.95		1.00	0.99			1.00	0.99
Flt Protected		0.99			0.98		0.95	1.00			0.95	1.00
Satd. Flow (prot)		3284			3346		1829	5188			1829	5197
Flt Permitted		0.86			0.79		0.95	1.00			0.95	1.00
Satd. Flow (perm)		2875			2723		1829	5188			1829	5197
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	27	21	51	36	11	24	8	188	15	11	203	14
RTOR Reduction (vph)	0	39	0	0	18	0	0	9	0	0	9	0
Lane Group Flow (vph)	0	60	0	0	53	0	8	194	0	11	208	0
Confl. Peds. (#/hr)	20		20	20		20			20			20
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4			4								
Actuated Green, G (s)		4.2			4.2		0.6	6.9		0.7	7.0	
Effective Green, g (s)		6.2			6.2		1.6	9.9		1.7	10.0	
Actuated g/C Ratio		0.23			0.23		0.06	0.37		0.06	0.37	
Clearance Time (s)		5.0			5.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		665			630		109	1916		116	1939	
v/s Ratio Prot							0.00	0.04		c0.01	c0.04	
v/s Ratio Perm		c0.02			0.02							
v/c Ratio		0.09			0.08		0.07	0.10		0.09	0.11	
Uniform Delay, d1		8.1			8.1		11.9	5.5		11.8	5.5	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1			0.1		0.3	0.0		0.4	0.0	
Delay (s)		8.1			8.1		12.2	5.6		12.2	5.5	
Level of Service		A			A		B	A		B	A	
Approach Delay (s)		8.1			8.1			5.8			5.8	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM Average Control Delay	6.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.09		
Actuated Cycle Length (s)	26.8	Sum of lost time (s)	6.0
Intersection Capacity Utilization	28.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
946: Gibraltar Dr (S) & Willow

1/24/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (veh/h)	38	5	9	22	2	43	29	1	114	27	2	38
Sign Control		Stop			Stop				Free			
Grade		0%			0%				0%			
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	48	6	11	28	2	54	0	1	142	34	0	48
Pedestrians		20			20				20			
Lane Width (ft)		13.0			13.0				13.0			
Walking Speed (ft/s)		4.0			4.0				4.0			
Percent Blockage		2			2				2			
Right turn flare (veh)												
Median type									None			
Median storage veh)												
Upstream signal (ft)									1264			
pX, platoon unblocked							0.00				0.00	
vC, conflicting volume	562	612	194	456	604	128	0	328			0	196
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	562	612	194	456	604	128	0	328			0	196
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	0.0	4.1			0.0	4.1
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	0.0	2.2			0.0	2.2
p0 queue free %	86	98	99	94	99	94	0	100			0	96
cM capacity (veh/h)	349	378	786	433	382	866	0	1207			0	1349

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	65	30	54	1	95	81	48	192	115
Volume Left	48	28	0	1	0	0	48	0	0
Volume Right	11	0	54	0	0	34	0	0	19
cSH	389	428	866	1207	1700	1700	1349	1700	1700
Volume to Capacity	0.17	0.07	0.06	0.00	0.06	0.05	0.04	0.11	0.07
Queue Length 95th (ft)	15	6	5	0	0	0	3	0	0
Control Delay (s)	16.1	14.0	9.4	8.0	0.0	0.0	7.8	0.0	0.0
Lane LOS	C	B	A	A			A		
Approach Delay (s)	16.1	11.1		0.1			1.0		
Approach LOS	C	B							

Intersection Summary				
Average Delay	3.5			
Intersection Capacity Utilization	42.4%	ICU Level of Service		A
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
946: Gibraltar Dr (S) & Willow

1/24/2014

Movement	SBT	SBR
Lane Configurations		
Volume (veh/h)	231	15
Sign Control	Free	
Grade	0%	
Peak Hour Factor	0.80	0.80
Hourly flow rate (vph)	289	19
Pedestrians	20	
Lane Width (ft)	13.0	
Walking Speed (ft/s)	4.0	
Percent Blockage	2	
Right turn flare (veh)		
Median type	None	
Median storage veh)		
Upstream signal (ft)		
pX, platoon unblocked		
vC, conflicting volume		
vC1, stage 1 conf vol		
vC2, stage 2 conf vol		
vCu, unblocked vol		
tC, single (s)		
tC, 2 stage (s)		
tF (s)		
p0 queue free %		
cM capacity (veh/h)		

Direction, Lane #

SummerHill Apartments Traffic Impact Study
PM Peak Hour Buildout Conditions plus Project

Synchro 7 - Report
W-Trans

Appendix B

Queuing Calculations

Queuing and Blocking Report
AM Peak Hour Existing plus Approved Project Conditions-No Project 12/3/2013

Intersection: 17: W Las Positas & Hacienda

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	TR	L	T	T	R	LT	R	L	LT
Maximum Queue (ft)	86	51	47	85	19	199	220	30	37	21	29	28
Average Queue (ft)	49	27	22	44	6	135	156	16	19	5	14	14
95th Queue (ft)	94	67	67	98	25	240	248	39	48	28	36	38
Link Distance (ft)		581	581	581		2482	2482	2482	182		704	704
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	300				150					35		
Storage Blk Time (%)						5			5	0		
Queuing Penalty (veh)						0			0	0		

Intersection: 17: W Las Positas & Hacienda

Movement	SB
Directions Served	R
Maximum Queue (ft)	57
Average Queue (ft)	36
95th Queue (ft)	67
Link Distance (ft)	704
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Queuing and Blocking Report
PM Peak Hour Existing plus Approved Projects Conditions-No Project 12/3/2013

Intersection: 17: W Las Positas & Hacienda

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	T	T	TR	T	T	R	LT	R	L	LT	R
Maximum Queue (ft)	91	91	90	126	122	131	31	29	1	63	84	55
Average Queue (ft)	52	56	54	85	71	84	16	12	0	39	55	33
95th Queue (ft)	102	103	104	147	136	148	39	32	2	67	94	59
Link Distance (ft)		581	581	581	2482	2482	2482	182		704	704	704
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	300								35			
Storage Blk Time (%)					1			3				
Queuing Penalty (veh)					0			0				

Queuing and Blocking Report
AM Peak Hour Existing plus Approved Project Conditions plus Project 1/24/2014

Intersection: 17: W Las Positas & Hacienda

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	UL	T	T	TR	L	T	T	R	L	TR	L	T
Maximum Queue (ft)	105	51	50	87	4	188	207	29	30	41	67	22
Average Queue (ft)	71	30	26	47	1	115	143	17	15	20	39	4
95th Queue (ft)	124	61	62	98	8	208	229	39	37	51	74	21
Link Distance (ft)		581	581	581		2482	2482	2482	182	182	704	704
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	300				150							
Storage Blk Time (%)						2						
Queuing Penalty (veh)						0						

Intersection: 17: W Las Positas & Hacienda

Movement	SB
Directions Served	R
Maximum Queue (ft)	46
Average Queue (ft)	32
95th Queue (ft)	53
Link Distance (ft)	704
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Queuing and Blocking Report
PM Peak Hour Existing plus Approved Projects Conditions plus Project 1/24/2014

Intersection: 17: W Las Positas & Hacienda

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	UL	T	T	TR	L	T	T	R	L	TR	L	T
Maximum Queue (ft)	106	88	113	122	24	133	143	36	21	37	146	55
Average Queue (ft)	63	51	71	90	13	71	87	14	9	18	96	20
95th Queue (ft)	127	96	122	136	34	137	150	41	25	47	181	59
Link Distance (ft)		581	581	581		2482	2482	2482	182	182	704	704
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	300				150							
Storage Blk Time (%)						0						
Queuing Penalty (veh)						0						

Intersection: 17: W Las Positas & Hacienda

Movement	SB
Directions Served	R
Maximum Queue (ft)	82
Average Queue (ft)	44
95th Queue (ft)	88
Link Distance (ft)	704
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Queuing and Blocking Report
AM Peak Hour Buildout Conditions-No Project 12/3/2013

Intersection: 17: W Las Positas & Hacienda

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	TR	L	T	T	R	LT	R	L	LT
Maximum Queue (ft)	90	71	66	90	18	220	257	46	21	3	40	47
Average Queue (ft)	57	33	30	52	5	134	158	22	7	1	19	23
95th Queue (ft)	104	81	76	110	23	268	291	54	28	4	46	53
Link Distance (ft)		581	581	581		2482	2482	2482	182		704	704
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	300				150					35		
Storage Blk Time (%)						5			2			
Queuing Penalty (veh)						0			0			

Intersection: 17: W Las Positas & Hacienda

Movement	SB
Directions Served	R
Maximum Queue (ft)	47
Average Queue (ft)	29
95th Queue (ft)	51
Link Distance (ft)	704
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Queuing and Blocking Report
PM Peak Hour Buildout Conditions-No Project 12/3/2013

Intersection: 17: W Las Positas & Hacienda

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	TR	L	T	T	R	LT	R	L	LT
Maximum Queue (ft)	108	106	122	139	4	112	128	38	55	1	75	76
Average Queue (ft)	58	63	70	94	1	84	98	23	28	0	47	48
95th Queue (ft)	118	125	129	148	8	137	152	46	60	1	81	83
Link Distance (ft)		581	581	581		2482	2482	2482	182		704	704
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	300				150					35		
Storage Blk Time (%)						1			9			
Queuing Penalty (veh)						0			0			

Intersection: 17: W Las Positas & Hacienda

Movement	SB
Directions Served	R
Maximum Queue (ft)	48
Average Queue (ft)	35
95th Queue (ft)	60
Link Distance (ft)	704
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Queuing and Blocking Report
AM Peak Hour Buildout Conditions plus Project 1/24/2014

Intersection: 17: W Las Positas & Hacienda

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	UL	T	T	TR	L	T	T	R	L	TR	L	T
Maximum Queue (ft)	127	55	48	61	24	260	312	41	43	64	62	22
Average Queue (ft)	87	28	21	41	9	146	182	22	19	27	41	8
95th Queue (ft)	149	67	53	75	27	292	334	47	48	74	68	28
Link Distance (ft)		581	581	581		2482	2482	2482	182	182	704	704
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	300				150							
Storage Blk Time (%)						5						
Queuing Penalty (veh)						0						

Intersection: 17: W Las Positas & Hacienda

Movement	SB
Directions Served	R
Maximum Queue (ft)	65
Average Queue (ft)	35
95th Queue (ft)	75
Link Distance (ft)	704
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Queuing and Blocking Report
PM Peak Hour Buildout Conditions plus Project 1/24/2014

Intersection: 17: W Las Positas & Hacienda

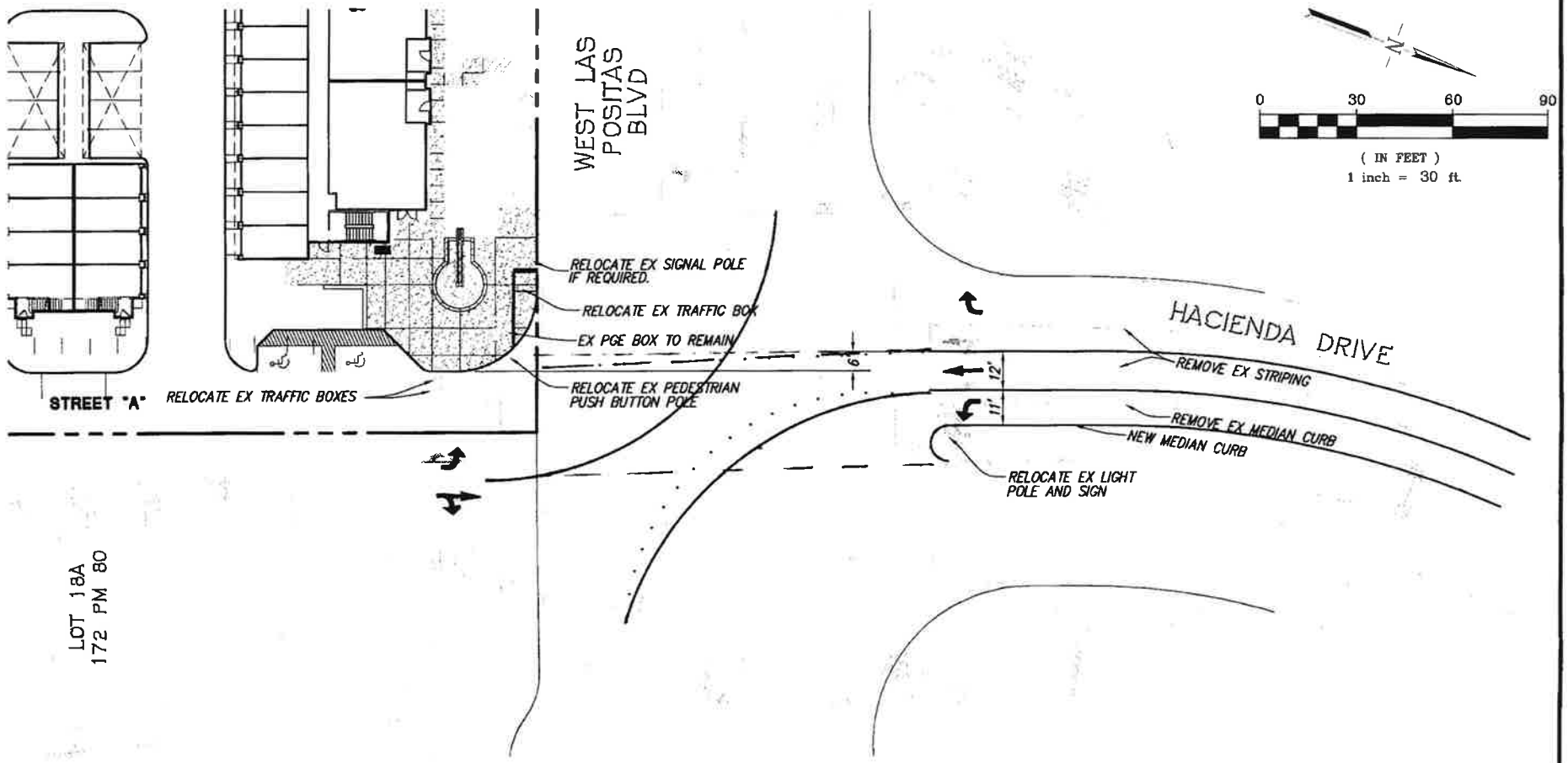
Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	UL	T	T	TR	L	T	T	R	L	TR	L	T
Maximum Queue (ft)	86	121	124	143	15	135	152	26	39	62	119	41
Average Queue (ft)	50	70	82	101	9	88	100	12	19	27	71	23
95th Queue (ft)	94	130	139	160	28	166	177	36	46	65	136	53
Link Distance (ft)		581	581	581		2482	2482	2482	182	182	704	704
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	300				150							
Storage Blk Time (%)						1						
Queuing Penalty (veh)						0						

Intersection: 17: W Las Positas & Hacienda

Movement	SB
Directions Served	R
Maximum Queue (ft)	53
Average Queue (ft)	35
95th Queue (ft)	57
Link Distance (ft)	704
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Appendix C

West Las Positas Boulevard/Hacienda Drive
Intersection Exhibit



INTERSECTION EXHIBIT

5850 WEST LAS POSITAS BLVD

CITY OF PLEASANTON, ALAMEDA COUNTY, CALIFORNIA

RJA
RUGGERI-JENSEN-AZAR
ENGINEERS • PLANNERS • SURVEYORS
4690 CHABOT DRIVE, SUITE 200 PLEASANTON, CA 94588
PHONE: (925) 227-9100 FAX: (925) 227-9300

DATE: JANUARY 16, 2014 JOB NO. 131045 SHEET 1 OF 1

G:\JOB2013\131045\EXHIBIT\INTERSECTION EXHIBIT_SB.DWG 1/17/2014 6:09:12 AM ROGER FONG

Appendix D

Collision Rate Calculations

Intersection Collision Rate Calculaions

SummerHill Apartments Project

Intersection # 1: Stoneridge Dr & Hacienda Dr
Date of Count: February, 2012

Number of Collisions: 12
Number of Injuries: 5
Number of Fatalities: 0
ADT: 21900
Start Date: January 1, 2007
End Date: December 31, 2011
Number of Years: 5

Intersection Type: Four-Legged
Control Type: Signals
Area: Urban

$$\text{collision rate} = \frac{\text{Number of Collisions} \times 1 \text{ Million}}{\text{ADT} \times 365 \text{ Days per Year} \times \text{Number of Years}}$$

$$\text{collision rate} = \frac{12 \times 1{,}000{,}000}{21{,}900 \times 365 \times 5}$$

	Collision Rate	Fatality Rate	Injury Rate
Study Intersection	**0.30 c/mve**	**0.0%**	**41.7%**
Statewide Average*	**0.36 c/mve**	**0.5%**	**39.5%**

ADT = average daily total vehicles entering intersection
c/mve = collisions per million vehicles entering intersection
* 2009 Collision Data on California State Highways, Caltrans

Intersection # 2: Willow Rd & Gibraltar Dr (south)
Date of Count: November, 2013

Number of Collisions: 0
Number of Injuries: 0
Number of Fatalities: 0
ADT: 10900
Start Date: January 1, 2007
End Date: December 31, 2011
Number of Years: 5

Intersection Type: Four-Legged
Control Type: Stop & Yield Controls
Area: Urban

$$\text{collision rate} = \frac{\text{Number of Collisions} \times 1 \text{ Million}}{\text{ADT} \times 365 \text{ Days per Year} \times \text{Number of Years}}$$

$$\text{collision rate} = \frac{0 \times 1{,}000{,}000}{10{,}900 \times 365 \times 5}$$

	Collision Rate	Fatality Rate	Injury Rate
Study Intersection	**0.00 c/mve**	**0.0%**	**0.0%**
Statewide Average*	**0.15 c/mve**	**0.8%**	**39.5%**

ADT = average daily total vehicles entering intersection
c/mve = collisions per million vehicles entering intersection
* 2009 Collision Data on California State Highways, Caltrans

Intersection Collision Rate Calculaions

SummerHill Apartments Project

Intersection # 3: Hacienda Dr & Gibraltar Dr (south)
Date of Count: February, 2012

Number of Collisions: 2
Number of Injuries: 1
Number of Fatalities: 0
ADT: 4500
Start Date: January 1, 2007
End Date: December 31, 2011
Number of Years: 5

Intersection Type: Four-Legged
Control Type: Signals
Area: Urban

$$\text{collision rate} = \frac{\text{Number of Collisions} \times 1 \text{ Million}}{\text{ADT} \times 365 \text{ Days per Year} \times \text{Number of Years}}$$

$$\text{collision rate} = \frac{2 \times 1{,}000{,}000}{4{,}500 \times 365 \times 5}$$

	Collision Rate	Fatality Rate	Injury Rate
Study Intersection	**0.24 c/mve**	**0.0%**	**50.0%**
Statewide Average*	**0.36 c/mve**	**0.5%**	**39.5%**

ADT = average daily total vehicles entering intersection
c/mve = collisions per million vehicles entering intersection
* 2009 Collision Data on California State Highways, Caltrans

Intersection # 4: West Las Positas Blvd & Hopyard Rd
Date of Count: February, 2012

Number of Collisions: 10
Number of Injuries: 6
Number of Fatalities: 0
ADT: 43900
Start Date: January 1, 2007
End Date: December 31, 2011
Number of Years: 5

Intersection Type: Four-Legged
Control Type: Signals
Area: Urban

$$\text{collision rate} = \frac{\text{Number of Collisions} \times 1 \text{ Million}}{\text{ADT} \times 365 \text{ Days per Year} \times \text{Number of Years}}$$

$$\text{collision rate} = \frac{10 \times 1{,}000{,}000}{43{,}900 \times 365 \times 5}$$

	Collision Rate	Fatality Rate	Injury Rate
Study Intersection	**0.12 c/mve**	**0.0%**	**60.0%**
Statewide Average*	**0.36 c/mve**	**0.5%**	**39.5%**

ADT = average daily total vehicles entering intersection
c/mve = collisions per million vehicles entering intersection
* 2009 Collision Data on California State Highways, Caltrans

Intersection Collision Rate Calculaions

SummerHill Apartments Project

Intersection # 5: West Las Positas Blvd & Willow Rd
Date of Count: February, 2012

Number of Collisions: 4
Number of Injuries: 3
Number of Fatalities: 0
ADT: 14000
Start Date: January 1, 2007
End Date: December 31, 2011
Number of Years: 5

Intersection Type: Four-Legged
Control Type: Signals
Area: Urban

$$\text{collision rate} = \frac{\text{Number of Collisions x 1 Million}}{\text{ADT x 365 Days per Year x Number of Years}}$$

$$\text{collision rate} = \frac{4 \times 1{,}000{,}000}{14{,}000 \times 365 \times 5}$$

	Collision Rate	Fatality Rate	Injury Rate
Study Intersection	**0.16 c/mve**	**0.0%**	**75.0%**
Statewide Average*	**0.36 c/mve**	**0.5%**	**39.5%**

ADT = average daily total vehicles entering intersection
c/mve = collisions per million vehicles entering intersection
* 2009 Collision Data on California State Highways, Caltrans

Intersection # 6: West Las Positas Blvd & Hacienda Dr
Date of Count: February, 2012

Number of Collisions: 3
Number of Injuries: 2
Number of Fatalities: 0
ADT: 12000
Start Date: January 1, 2007
End Date: December 31, 2011
Number of Years: 5

Intersection Type: Four-Legged
Control Type: Signals
Area: Urban

$$\text{collision rate} = \frac{\text{Number of Collisions x 1 Million}}{\text{ADT x 365 Days per Year x Number of Years}}$$

$$\text{collision rate} = \frac{3 \times 1{,}000{,}000}{12{,}000 \times 365 \times 5}$$

	Collision Rate	Fatality Rate	Injury Rate
Study Intersection	**0.14 c/mve**	**0.0%**	**66.7%**
Statewide Average*	**0.36 c/mve**	**0.5%**	**39.5%**

ADT = average daily total vehicles entering intersection
c/mve = collisions per million vehicles entering intersection
* 2009 Collision Data on California State Highways, Caltrans

Intersection # 7: West Las Positas Blvd & Stoneridge Dr

Date of Count: February, 2012

Number of Collisions: 12
Number of Injuries: 7
Number of Fatalities: 0
ADT: 25800
Start Date: January 1, 2007
End Date: December 31, 2011
Number of Years: 5

Intersection Type: Four-Legged
Control Type: Signals
Area: Urban

$$\text{collision rate} = \frac{\text{Number of Collisions x 1 Million}}{\text{ADT x 365 Days per Year x Number of Years}}$$

$$\text{collision rate} = \frac{12 \times 1{,}000{,}000}{25{,}800 \times 365 \times 5}$$

	Collision Rate	Fatality Rate	Injury Rate
Study Intersection	0.25 c/mve	0.0%	58.3%
Statewide Average*	0.36 c/mve	0.5%	39.5%

ADT = average daily total vehicles entering intersection
c/mve = collisions per million vehicles entering intersection
* 2009 Collision Data on California State Highways, Caltrans

Appendix E

Intersection Level of Service Calculations
(School Analysis)

HCM Signalized Intersection Capacity Analysis
35: W Las Positas & Hopyard

12/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	138	370	400	228	331	32	438	1169	327	151	642	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
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)	150	402	435	248	360	35	476	1271	355	164	698	67
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	36
Lane Group Flow (vph)	150	402	435	248	360	35	476	1271	355	164	698	31
Confl. Peds. (#/hr)			27			7			3			10
Turn Type	Prot		Free	Prot		Free	Prot		Free	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			Free			6
Actuated Green, G (s)	9.0	20.2	120.0	12.8	24.0	120.0	14.0	58.6	120.0	8.4	53.0	53.0
Effective Green, g (s)	10.0	23.2	120.0	13.8	27.0	120.0	15.0	61.6	120.0	9.4	56.0	56.0
Actuated g/C Ratio	0.08	0.19	1.00	0.12	0.22	1.00	0.12	0.51	1.00	0.08	0.47	0.47
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	5.0		1.8	5.0		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	296	707	1603	408	823	1613	443	2698	1615	278	2452	742
v/s Ratio Prot	0.04	c0.11		c0.07	0.10		c0.13	c0.24		c0.05	0.13	
v/s Ratio Perm			0.27			0.02			0.22			0.02
v/c Ratio	0.51	0.57	0.27	0.61	0.44	0.02	1.07	0.47	0.22	0.59	0.28	0.04
Uniform Delay, d1	52.6	43.9	0.0	50.5	40.0	0.0	52.5	18.7	0.0	53.4	19.7	17.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.76	0.47	1.00	1.25	0.65	0.84
Incremental Delay, d2	0.5	1.7	0.4	1.8	0.8	0.0	60.8	0.5	0.3	2.1	0.3	0.1
Delay (s)	53.1	45.6	0.4	52.3	40.8	0.0	100.7	9.3	0.3	69.0	13.0	14.7
Level of Service	D	D	A	D	D	A	F	A	A	E	B	B
Approach Delay (s)		26.8			43.0			28.4			23.0	
Approach LOS		C			D			C			C	

Intersection Summary				
HCM Average Control Delay	29.0	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.61			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.0	
Intersection Capacity Utilization	65.9%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
52: W Las Positas & Willow

12/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	263	405	15	19	473	141	9	4	0	29	14	158
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Util. Factor	1.00	0.91		1.00	0.95	1.00	1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00			1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.99	1.00			1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00			0.97	1.00
Satd. Flow (prot)	1829	5223		1829	3657	1636	1817	1925			1859	1605
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.72	1.00			0.83	1.00
Satd. Flow (perm)	1829	5223		1829	3657	1636	1379	1925			1601	1605
Peak-hour factor, PHF	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Adj. Flow (vph)	333	513	19	24	599	178	11	5	0	37	18	200
RTOR Reduction (vph)	0	2	0	0	0	122	0	0	0	0	0	162
Lane Group Flow (vph)	333	530	0	24	599	56	11	5	0	0	55	38
Confl. Peds. (#/hr)			1	1			6		2	2		6
Turn Type	Prot			Prot		Perm	Perm			Perm		Perm
Protected Phases	5	2		1	6			4			4	
Permitted Phases						6	4			4		4
Actuated Green, G (s)	20.8	34.8		2.4	16.4	16.4	9.9	9.9			9.9	9.9
Effective Green, g (s)	21.8	37.8		3.4	19.4	19.4	11.9	11.9			11.9	11.9
Actuated g/C Ratio	0.35	0.61		0.05	0.31	0.31	0.19	0.19			0.19	0.19
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0	5.0	5.0			5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	642	3179		100	1142	511	264	369			307	308
v/s Ratio Prot	c0.18	0.10		0.01	c0.16			0.00				
v/s Ratio Perm						0.03	0.01				c0.03	0.02
v/c Ratio	0.52	0.17		0.24	0.52	0.11	0.04	0.01			0.18	0.12
Uniform Delay, d1	16.0	5.3		28.1	17.6	15.2	20.5	20.3			21.0	20.8
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00			1.12	1.61
Incremental Delay, d2	0.7	0.0		1.2	0.4	0.1	0.1	0.0			0.3	0.2
Delay (s)	16.7	5.3		29.4	18.0	15.3	20.5	20.4			23.8	33.7
Level of Service	B	A		C	B	B	C	C			C	C
Approach Delay (s)		9.7			17.7			20.5			31.6	
Approach LOS		A			B			C			C	

Intersection Summary				
HCM Average Control Delay	16.0	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.44			
Actuated Cycle Length (s)	62.1	Sum of lost time (s)	9.0	
Intersection Capacity Utilization	47.4%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
59: W Las Positas & Hacienda

12/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	107	333	7	2	553	42	2	0	0	56	14	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	0.91		1.00	0.95	1.00		1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.95		0.95	0.97	1.00
Satd. Flow (prot)	1829	5238		1829	3657	1636		1829		1737	1775	1615
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.95		0.95	0.97	1.00
Satd. Flow (perm)	1829	5238		1829	3657	1636		1829		1737	1775	1615
Peak-hour factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	134	416	9	2	691	52	2	0	0	70	18	126
RTOR Reduction (vph)	0	1	0	0	0	29	0	0	0	0	0	106
Lane Group Flow (vph)	134	424	0	2	691	23	0	2	0	43	45	20
Confl. Peds. (#/hr)									3			1
Turn Type	Prot			Prot		Perm	Split		Perm	Split		Perm
Protected Phases	5	2		1	6		4	4		3	3	
Permitted Phases						6			4			3
Actuated Green, G (s)	8.9	35.5		0.7	27.3	27.3		2.9		8.0	8.0	8.0
Effective Green, g (s)	9.9	38.5		1.7	30.3	30.3		5.9		11.0	11.0	11.0
Actuated g/C Ratio	0.14	0.56		0.02	0.44	0.44		0.09		0.16	0.16	0.16
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	262	2918		45	1604	717		156		277	283	257
v/s Ratio Prot	c0.07	0.08		0.00	c0.19			c0.00		0.02	c0.03	
v/s Ratio Perm						0.01						0.01
v/c Ratio	0.51	0.15		0.04	0.43	0.03		0.01		0.16	0.16	0.08
Uniform Delay, d1	27.4	7.4		32.9	13.4	11.0		28.9		25.0	25.1	24.7
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2	1.7	0.1		0.4	0.2	0.0		0.0		0.3	0.3	0.1
Delay (s)	29.0	7.5		33.3	13.6	11.1		29.0		25.3	25.3	24.9
Level of Service	C	A		C	B	B		C		C	C	C
Approach Delay (s)		12.6			13.5			29.0			25.0	
Approach LOS		B			B			C			C	

Intersection Summary				
HCM Average Control Delay	14.8	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.35			
Actuated Cycle Length (s)	69.1	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	40.2%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
35: W Las Positas & Hopyard

12/2/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	111	274	390	381	284	69	309	760	202	78	987	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	128	315	448	438	326	79	355	874	232	90	1134	116
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	65
Lane Group Flow (vph)	128	315	448	438	326	79	355	874	232	90	1134	51
Confl. Peds. (#/hr)			27			7			3			10
Turn Type	Prot		Free	Prot		Free	Prot		Free	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			Free			6
Actuated Green, G (s)	8.5	18.0	120.0	18.4	27.9	120.0	14.0	56.4	120.0	7.2	49.6	49.6
Effective Green, g (s)	9.5	21.0	120.0	19.4	30.9	120.0	15.0	59.4	120.0	8.2	52.6	52.6
Actuated g/C Ratio	0.08	0.18	1.00	0.16	0.26	1.00	0.12	0.49	1.00	0.07	0.44	0.44
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	5.0		1.8	5.0		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	281	640	1603	573	942	1613	443	2601	1615	242	2303	697
v/s Ratio Prot	0.04	c0.09		c0.12	0.09		c0.10	0.17		0.03	c0.22	
v/s Ratio Perm			0.28			0.05			0.14			0.03
v/c Ratio	0.46	0.49	0.28	0.76	0.35	0.05	0.80	0.34	0.14	0.37	0.49	0.07
Uniform Delay, d1	52.8	44.7	0.0	48.1	36.3	0.0	51.1	18.4	0.0	53.4	24.1	19.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.72	0.47	1.00	1.17	0.67	1.10
Incremental Delay, d2	0.4	1.2	0.4	5.4	0.5	0.1	9.0	0.3	0.2	0.3	0.7	0.2
Delay (s)	53.2	45.9	0.4	53.5	36.8	0.1	45.7	8.9	0.2	62.9	16.9	21.6
Level of Service	D	D	A	D	D	A	D	A	A	E	B	C
Approach Delay (s)		24.1			42.0			16.4			20.4	
Approach LOS		C			D			B			C	

Intersection Summary				
HCM Average Control Delay	23.9	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.58			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	67.0%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
52: W Las Positas & Willow

12/2/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	194	421	7	5	401	86	10	15	4	40	0	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Util. Factor	1.00	0.91		1.00	0.95	1.00	1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00			1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.99	1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.97			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00			0.95	1.00
Satd. Flow (prot)	1829	5241		1829	3657	1636	1819	1856			1825	1607
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.73	1.00			0.74	1.00
Satd. Flow (perm)	1829	5241		1829	3657	1636	1389	1856			1426	1607
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	234	507	8	6	483	104	12	18	5	48	0	120
RTOR Reduction (vph)	0	1	0	0	0	72	0	4	0	0	0	100
Lane Group Flow (vph)	234	514	0	6	483	32	12	19	0	0	48	20
Confl. Peds. (#/hr)			1	1			6		2	2		6
Turn Type	Prot			Prot		Perm	Perm			Perm		Perm
Protected Phases	5	2		1	6			4			4	
Permitted Phases						6	4			4		4
Actuated Green, G (s)	16.7	28.5		0.9	12.7	12.7	6.7	6.7			6.7	6.7
Effective Green, g (s)	17.7	31.5		1.9	15.7	15.7	8.7	8.7			8.7	8.7
Actuated g/C Ratio	0.35	0.62		0.04	0.31	0.31	0.17	0.17			0.17	0.17
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0	5.0	5.0			5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	634	3231		68	1124	503	236	316			243	274
v/s Ratio Prot	c0.13	0.10		0.00	c0.13			0.01				
v/s Ratio Perm						0.02	0.01				c0.03	0.01
v/c Ratio	0.37	0.16		0.09	0.43	0.06	0.05	0.06			0.20	0.07
Uniform Delay, d1	12.5	4.2		23.8	14.1	12.5	17.7	17.8			18.2	17.8
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00			1.02	1.09
Incremental Delay, d2	0.4	0.0		0.6	0.3	0.1	0.1	0.1			0.4	0.1
Delay (s)	12.9	4.2		24.3	14.4	12.6	17.8	17.9			18.9	19.5
Level of Service	B	A		C	B	B	B	B			B	B
Approach Delay (s)		6.9			14.2			17.8			19.3	
Approach LOS		A			B			B			B	

Intersection Summary				
HCM Average Control Delay	11.3	HCM Level of Service		B
HCM Volume to Capacity ratio	0.36			
Actuated Cycle Length (s)	51.1	Sum of lost time (s)		9.0
Intersection Capacity Utilization	41.5%	ICU Level of Service		A
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
59: W Las Positas & Hacienda

12/2/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	137	716	0	10	620	14	0	15	5	28	42	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	0.91		1.00	0.95	1.00		1.00	1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00	0.99	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1829	5255		1829	3657	1636		1925	1613	1737	1823	1615
Flt Permitted	0.95	1.00		0.95	1.00	1.00		1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1829	5255		1829	3657	1636		1925	1613	1737	1823	1615
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	146	762	0	11	660	15	0	16	5	30	45	117
RTOR Reduction (vph)	0	0	0	0	0	9	0	0	4	0	0	99
Lane Group Flow (vph)	146	762	0	11	660	6	0	16	1	27	48	19
Confl. Peds. (#/hr)									3			1
Turn Type	Prot			Prot		Perm	Split		Perm	Split		Perm
Protected Phases	5	2		1	6		4	4		3	3	
Permitted Phases						6			4			3
Actuated Green, G (s)	8.9	35.0		0.8	26.9	26.9		4.3	4.3	8.1	8.1	8.1
Effective Green, g (s)	9.9	38.0		1.8	29.9	29.9		7.3	7.3	11.1	11.1	11.1
Actuated g/C Ratio	0.14	0.54		0.03	0.43	0.43		0.10	0.10	0.16	0.16	0.16
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0		6.0	6.0	6.0	6.0	6.0
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)	258	2845		47	1558	697		200	168	275	288	255
v/s Ratio Prot	c0.08	0.15		0.01	c0.18			c0.01		0.02	c0.03	
v/s Ratio Perm						0.00			0.00			0.01
v/c Ratio	0.57	0.27		0.23	0.42	0.01		0.08	0.00	0.10	0.17	0.07
Uniform Delay, d1	28.1	8.6		33.5	14.1	11.6		28.4	28.2	25.3	25.6	25.2
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	2.8	0.2		2.6	0.2	0.0		0.2	0.0	0.2	0.3	0.1
Delay (s)	31.0	8.9		36.1	14.3	11.6		28.6	28.2	25.4	25.8	25.3
Level of Service	C	A		D	B	B		C	C	C	C	C
Approach Delay (s)		12.4			14.6			28.5			25.4	
Approach LOS		B			B			C			C	

Intersection Summary				
HCM Average Control Delay	14.8	HCM Level of Service		B
HCM Volume to Capacity ratio	0.36			
Actuated Cycle Length (s)	70.2	Sum of lost time (s)		12.0
Intersection Capacity Utilization	43.7%	ICU Level of Service		A
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
35: W Las Positas & Hopyard

1/24/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	139	388	405	237	364	35	438	1169	327	151	642	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
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)	151	422	440	258	396	38	476	1271	355	164	698	67
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	36
Lane Group Flow (vph)	151	422	440	258	396	38	476	1271	355	164	698	31
Confl. Peds. (#/hr)			27			7			3			10
Turn Type	Prot		Free	Prot		Free	Prot		Free	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			Free			6
Actuated Green, G (s)	9.1	20.8	120.0	13.0	24.7	120.0	14.0	57.8	120.0	8.4	52.2	52.2
Effective Green, g (s)	10.1	23.8	120.0	14.0	27.7	120.0	15.0	60.8	120.0	9.4	55.2	55.2
Actuated g/C Ratio	0.08	0.20	1.00	0.12	0.23	1.00	0.12	0.51	1.00	0.08	0.46	0.46
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	5.0		1.8	5.0		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	299	725	1603	414	844	1613	443	2663	1615	278	2417	731
v/s Ratio Prot	0.04	c0.12		c0.07	0.11		c0.13	c0.24		c0.05	0.13	
v/s Ratio Perm			0.27			0.02			0.22			0.02
v/c Ratio	0.51	0.58	0.27	0.62	0.47	0.02	1.07	0.48	0.22	0.59	0.29	0.04
Uniform Delay, d1	52.6	43.6	0.0	50.5	39.8	0.0	52.5	19.3	0.0	53.4	20.2	17.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.76	0.48	1.00	1.25	0.65	0.83
Incremental Delay, d2	0.5	1.8	0.4	2.1	0.9	0.0	60.8	0.5	0.3	2.1	0.3	0.1
Delay (s)	53.0	45.4	0.4	52.6	40.7	0.0	100.7	9.7	0.3	68.6	13.4	15.0
Level of Service	D	D	A	D	D	A	F	A	A	E	B	B
Approach Delay (s)		27.0			42.9			28.7			23.2	
Approach LOS		C			D			C			C	

Intersection Summary				
HCM Average Control Delay	29.3	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.62			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.0	
Intersection Capacity Utilization	66.3%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
52: W Las Positas & Willow

1/24/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	263	423	15	19	514	157	9	4	0	29	14	161
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Util. Factor	1.00	0.91		1.00	0.95	1.00	1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00			1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.99	1.00			1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00			0.97	1.00
Satd. Flow (prot)	1829	5224		1829	3657	1636	1816	1925			1859	1605
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.72	1.00			0.83	1.00
Satd. Flow (perm)	1829	5224		1829	3657	1636	1379	1925			1599	1605
Peak-hour factor, PHF	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Adj. Flow (vph)	333	535	19	24	651	199	11	5	0	37	18	204
RTOR Reduction (vph)	0	2	0	0	0	135	0	0	0	0	0	166
Lane Group Flow (vph)	333	552	0	24	651	64	11	5	0	0	55	38
Confl. Peds. (#/hr)			1	1			6		2	2		6
Turn Type	Prot			Prot		Perm	Perm			Perm		Perm
Protected Phases	5	2		1	6			4			4	
Permitted Phases						6	4			4		4
Actuated Green, G (s)	21.1	36.2		2.4	17.5	17.5	9.9	9.9			9.9	9.9
Effective Green, g (s)	22.1	39.2		3.4	20.5	20.5	11.9	11.9			11.9	11.9
Actuated g/C Ratio	0.35	0.62		0.05	0.32	0.32	0.19	0.19			0.19	0.19
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0	5.0	5.0			5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	637	3225		98	1181	528	258	361			300	301
v/s Ratio Prot	c0.18	0.11		0.01	c0.18			0.00				
v/s Ratio Perm						0.04	0.01				c0.03	0.02
v/c Ratio	0.52	0.17		0.24	0.55	0.12	0.04	0.01			0.18	0.13
Uniform Delay, d1	16.5	5.2		28.8	17.7	15.2	21.1	21.0			21.7	21.5
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00			1.12	1.62
Incremental Delay, d2	0.8	0.0		1.3	0.6	0.1	0.1	0.0			0.3	0.2
Delay (s)	17.3	5.2		30.1	18.3	15.3	21.2	21.0			24.6	35.0
Level of Service	B	A		C	B	B	C	C			C	C
Approach Delay (s)		9.7			17.9			21.1			32.8	
Approach LOS		A			B			C			C	

Intersection Summary				
HCM Average Control Delay	16.3	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.46			
Actuated Cycle Length (s)	63.5	Sum of lost time (s)	9.0	
Intersection Capacity Utilization	48.6%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	27	111	342	13	2	553	42	32	4	4	59	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0
Lane Util. Factor		1.00	0.91		1.00	0.95	1.00	1.00	1.00		1.00	1.00
Frpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	0.99		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Frt		1.00	0.99		1.00	1.00	0.85	1.00	0.93		1.00	1.00
Flt Protected		0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00
Satd. Flow (prot)		1829	5226		1829	3657	1636	1829	1767		1829	1925
Flt Permitted		0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00
Satd. Flow (perm)		1829	5226		1829	3657	1636	1829	1767		1829	1925
Peak-hour factor, PHF	0.90	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	30	139	428	16	2	691	52	40	5	5	74	25
RTOR Reduction (vph)	0	0	3	0	0	0	31	0	4	0	0	0
Lane Group Flow (vph)	0	169	441	0	2	691	21	40	6	0	74	25
Confl. Peds. (#/hr)										3		
Turn Type	Prot	Prot			Prot		Perm	Prot			Prot	
Protected Phases	5	5	2		1	6		3	8		7	4
Permitted Phases							6					
Actuated Green, G (s)		8.4	36.2		0.8	28.6	28.6	8.6	11.1		9.3	11.8
Effective Green, g (s)		9.4	39.2		1.8	31.6	31.6	11.6	14.1		12.3	14.8
Actuated g/C Ratio		0.12	0.49		0.02	0.40	0.40	0.15	0.18		0.15	0.19
Clearance Time (s)		4.0	6.0		4.0	6.0	6.0	6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		217	2580		41	1455	651	267	314		283	359
v/s Ratio Prot		c0.09	0.08		0.00	c0.19		0.02	0.00		c0.04	0.01
v/s Ratio Perm							0.01					
v/c Ratio		0.78	0.17		0.05	0.47	0.03	0.15	0.02		0.26	0.07
Uniform Delay, d1		34.0	11.1		38.0	17.7	14.6	29.6	26.9		29.5	26.6
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2		16.0	0.1		0.5	0.2	0.0	0.3	0.0		0.5	0.1
Delay (s)		50.0	11.3		38.5	18.0	14.6	29.9	27.0		30.0	26.7
Level of Service		D	B		D	B	B	C	C		C	C
Approach Delay (s)			22.0			17.8			29.3			27.8
Approach LOS			C			B			C			C

Intersection Summary			
HCM Average Control Delay	21.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	79.4	Sum of lost time (s)	9.0
Intersection Capacity Utilization	47.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
59: W Las Positas & Hacienda 1/24/2014

Movement	SBR
Lane Configurations	
Volume (vph)	101
Ideal Flow (vphpl)	1900
Total Lost time (s)	3.0
Lane Util. Factor	1.00
Frpb, ped/bikes	0.99
Flpb, ped/bikes	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1615
Flt Permitted	1.00
Satd. Flow (perm)	1615
Peak-hour factor, PHF	0.80
Adj. Flow (vph)	126
RTOR Reduction (vph)	103
Lane Group Flow (vph)	23
Confl. Peds. (#/hr)	1
Turn Type	Perm
Protected Phases	
Permitted Phases	4
Actuated Green, G (s)	11.8
Effective Green, g (s)	14.8
Actuated g/C Ratio	0.19
Clearance Time (s)	6.0
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	301
v/s Ratio Prot	
v/s Ratio Perm	c0.01
v/c Ratio	0.08
Uniform Delay, d1	26.7
Progression Factor	1.00
Incremental Delay, d2	0.1
Delay (s)	26.8
Level of Service	C
Approach Delay (s)	
Approach LOS	

Intersection Summary

SummerHill Apartments Traffic Impact Study
AM Peak Hour Existing Conditions plus Project
Synchro 7 - Report
W-Trans

HCM Signalized Intersection Capacity Analysis
35: W Las Positas & Hopyard

1/24/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	111	305	390	381	315	69	309	760	202	78	987	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3547	3657	1603	3547	3657	1613	3547	5255	1615	3547	5255	1589
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	128	351	448	438	362	79	355	874	232	90	1134	116
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	66
Lane Group Flow (vph)	128	351	448	438	362	79	355	874	232	90	1134	50
Confl. Peds. (#/hr)			27			7			3			10
Turn Type	Prot		Free	Prot		Free	Prot		Free	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			Free			6
Actuated Green, G (s)	8.5	18.8	120.0	18.5	28.8	120.0	14.0	55.5	120.0	7.2	48.7	48.7
Effective Green, g (s)	9.5	21.8	120.0	19.5	31.8	120.0	15.0	58.5	120.0	8.2	51.7	51.7
Actuated g/C Ratio	0.08	0.18	1.00	0.16	0.27	1.00	0.12	0.49	1.00	0.07	0.43	0.43
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.8	5.0		1.8	5.0		1.8	5.0		1.8	5.0	5.0
Lane Grp Cap (vph)	281	664	1603	576	969	1613	443	2562	1615	242	2264	685
v/s Ratio Prot	0.04	c0.10		c0.12	0.10		c0.10	0.17		0.03	c0.22	
v/s Ratio Perm			0.28			0.05			0.14			0.03
v/c Ratio	0.46	0.53	0.28	0.76	0.37	0.05	0.80	0.34	0.14	0.37	0.50	0.07
Uniform Delay, d1	52.8	44.4	0.0	48.0	36.0	0.0	51.1	18.9	0.0	53.4	24.8	20.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.72	0.47	1.00	1.17	0.67	1.10
Incremental Delay, d2	0.4	1.4	0.4	5.3	0.5	0.1	9.0	0.3	0.2	0.3	0.8	0.2
Delay (s)	53.2	45.9	0.4	53.3	36.5	0.1	45.7	9.3	0.2	62.8	17.4	22.3
Level of Service	D	D	A	D	D	A	D	A	A	E	B	C
Approach Delay (s)		24.9			41.6			16.7			20.9	
Approach LOS		C			D			B			C	

Intersection Summary				
HCM Average Control Delay	24.3	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.59			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	67.4%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
52: W Las Positas & Willow

1/24/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	194	452	7	5	432	102	10	15	4	40	0	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Util. Factor	1.00	0.91		1.00	0.95	1.00	1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00			1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.99	1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.97			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00			0.95	1.00
Satd. Flow (prot)	1829	5242		1829	3657	1636	1819	1856			1825	1607
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.73	1.00			0.74	1.00
Satd. Flow (perm)	1829	5242		1829	3657	1636	1389	1856			1426	1607
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	234	545	8	6	520	123	12	18	5	48	0	120
RTOR Reduction (vph)	0	1	0	0	0	84	0	4	0	0	0	100
Lane Group Flow (vph)	234	552	0	6	520	39	12	19	0	0	48	20
Confl. Peds. (#/hr)			1	1			6		2	2		6
Turn Type	Prot			Prot		Perm	Perm			Perm		Perm
Protected Phases	5	2		1	6			4			4	
Permitted Phases						6	4			4		4
Actuated Green, G (s)	16.8	29.3		0.9	13.4	13.4	6.7	6.7			6.7	6.7
Effective Green, g (s)	17.8	32.3		1.9	16.4	16.4	6.7	6.7			6.7	6.7
Actuated g/C Ratio	0.34	0.62		0.04	0.32	0.32	0.17	0.17			0.17	0.17
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0	5.0	5.0			5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	627	3262		67	1156	517	233	311			239	269
v/s Ratio Prot	c0.13	0.11		0.00	c0.14			0.01				
v/s Ratio Perm						0.02	0.01				c0.03	0.01
v/c Ratio	0.37	0.17		0.09	0.45	0.08	0.05	0.06			0.20	0.07
Uniform Delay, d1	12.8	4.1		24.2	14.2	12.4	18.1	18.2			18.6	18.2
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00			1.02	1.09
Incremental Delay, d2	0.4	0.0		0.6	0.3	0.1	0.1	0.1			0.4	0.1
Delay (s)	13.2	4.2		24.7	14.4	12.5	18.2	18.2			19.3	20.0
Level of Service	B	A		C	B	B	B	B			B	B
Approach Delay (s)		6.9			14.2			18.2			19.8	
Approach LOS		A			B			B			B	

Intersection Summary				
HCM Average Control Delay	11.3	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.37			
Actuated Cycle Length (s)	51.9	Sum of lost time (s)	9.0	
Intersection Capacity Utilization	42.4%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	23	137	716	16	10	620	14	24	15	5	28	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0
Lane Util. Factor		1.00	0.91		1.00	0.95	1.00	1.00	1.00		1.00	1.00
Frpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	1.00	0.85	1.00	0.96		1.00	1.00
Flt Protected		0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00
Satd. Flow (prot)		1829	5238		1829	3657	1636	1829	1850		1829	1925
Flt Permitted		0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00
Satd. Flow (perm)		1829	5238		1829	3657	1636	1829	1850		1829	1925
Peak-hour factor, PHF	0.90	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	26	146	762	17	11	660	15	26	16	5	30	62
RTOR Reduction (vph)	0	0	1	0	0	0	9	0	4	0	0	0
Lane Group Flow (vph)	0	172	778	0	11	660	6	26	17	0	30	62
Confl. Peds. (#/hr)										3		
Turn Type	Prot	Prot			Prot		Perm	Prot			Prot	
Protected Phases	5	5	2		1	6		3	8		7	4
Permitted Phases							6					
Actuated Green, G (s)		7.9	33.3		0.8	26.2	26.2	4.3	8.2		4.3	8.2
Effective Green, g (s)		8.9	36.3		1.8	29.2	29.2	7.3	11.2		7.3	11.2
Actuated g/C Ratio		0.13	0.53		0.03	0.43	0.43	0.11	0.16		0.11	0.16
Clearance Time (s)		4.0	6.0		4.0	6.0	6.0	6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		237	2772		48	1557	696	195	302		195	314
v/s Ratio Prot		c0.09	0.15		0.01	c0.18		0.01	0.01		c0.02	c0.03
v/s Ratio Perm							0.00					
v/c Ratio		0.73	0.28		0.23	0.42	0.01	0.13	0.06		0.15	0.20
Uniform Delay, d1		28.7	8.9		32.7	13.8	11.4	27.8	24.2		27.8	24.8
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2		10.5	0.3		2.4	0.2	0.0	0.3	0.1		0.4	0.3
Delay (s)		39.2	9.2		35.2	14.0	11.4	28.1	24.3		28.2	25.1
Level of Service		D	A		D	B	B	C	C		C	C
Approach Delay (s)			14.6			14.3			26.4			25.2
Approach LOS			B			B			C			C

Intersection Summary			
HCM Average Control Delay	15.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	68.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	50.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
59: W Las Positas & Hacienda 1/24/2014

Movement	SBR
Lane Configurations	
Volume (vph)	110
Ideal Flow (vphpl)	1900
Total Lost time (s)	3.0
Lane Util. Factor	1.00
Frpb, ped/bikes	0.99
Flpb, ped/bikes	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1615
Flt Permitted	1.00
Satd. Flow (perm)	1615
Peak-hour factor, PHF	0.94
Adj. Flow (vph)	117
RTOR Reduction (vph)	98
Lane Group Flow (vph)	19
Confl. Peds. (#/hr)	1
Turn Type	Perm
Protected Phases	
Permitted Phases	4
Actuated Green, G (s)	8.2
Effective Green, g (s)	11.2
Actuated g/C Ratio	0.16
Clearance Time (s)	6.0
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	264
v/s Ratio Prot	
v/s Ratio Perm	0.01
v/c Ratio	0.07
Uniform Delay, d1	24.3
Progression Factor	1.00
Incremental Delay, d2	0.1
Delay (s)	24.4
Level of Service	C
Approach Delay (s)	
Approach LOS	

Intersection Summary

SummerHill Apartments Traffic Impact Study
School Midday PM Peak Hour Existing Conditions plus Project
Synchro 7 - Report
W-Trans

Appendix F

Queuing Calculations
(School Analysis)

Intersection: 35: W Las Positas & Hopyard

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	L	T	T	R	L	L	T	T	R	L	L
Maximum Queue (ft)	63	78	162	165	148	112	120	140	153	33	210	222
Average Queue (ft)	45	58	120	115	86	59	81	93	107	9	185	197
95th Queue (ft)	73	81	185	189	162	116	134	151	165	33	233	245
Link Distance (ft)			1050	1050			216	216	216			
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200	200			220	225				210	200	200
Storage Blk Time (%)			0	0							8	19
Queuing Penalty (veh)			0	1							31	74

Intersection: 35: W Las Positas & Hopyard

Movement	NB	NB	NB	NB	SB	SB	SB	SB	SB	SB
Directions Served	T	T	T	R	L	L	T	T	T	R
Maximum Queue (ft)	321	294	289	223	102	90	124	130	132	26
Average Queue (ft)	221	210	210	106	53	55	80	85	94	13
95th Queue (ft)	390	327	322	263	109	102	141	150	152	31
Link Distance (ft)	1076	1076	1076				502	502	502	
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)				200	260	260				275
Storage Blk Time (%)	1		6	0						
Queuing Penalty (veh)	6		18	0						

Intersection: 52: W Las Positas & Willow

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	TR	L	T	T	R	L	TR	LT	R
Maximum Queue (ft)	144	54	55	64	34	130	135	67	28	16	28	49
Average Queue (ft)	93	35	25	44	13	86	89	40	9	3	11	17
95th Queue (ft)	162	66	63	75	40	144	138	74	30	17	34	57
Link Distance (ft)		890	890	890		412	412	412		224	1176	1176
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	320				150				30			
Storage Blk Time (%)						1			4	1		
Queuing Penalty (veh)						0			0	0		

Intersection: 59: W Las Positas & Hacienda

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	SB	SB	SB
Directions Served	L	T	T	TR	L	T	T	R	LT	L	LT	R
Maximum Queue (ft)	79	27	37	55	10	109	135	28	3	25	38	42
Average Queue (ft)	54	12	14	34	2	66	86	16	1	7	23	31
95th Queue (ft)	86	36	43	78	14	131	144	37	6	26	52	45
Link Distance (ft)		586	586	586		2515	2515	2515	182	753	753	753
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	300				150							
Storage Blk Time (%)						0						
Queuing Penalty (veh)						0						

Zone Summary

Zone wide Queuing Penalty: 132

Intersection: 35: W Las Positas & Hopyard

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	L	T	T	R	L	L	T	T	R	L	L
Maximum Queue (ft)	49	78	137	151	189	171	211	108	124	69	158	154
Average Queue (ft)	26	58	92	85	122	123	138	68	82	22	105	117
95th Queue (ft)	60	85	159	165	216	181	221	125	135	69	169	172
Link Distance (ft)			1075	1075			218	218	218			
Upstream Blk Time (%)						0	2					
Queuing Penalty (veh)						0	3					
Storage Bay Dist (ft)	200	200			220	225				210	200	200
Storage Blk Time (%)					1	0	2				0	
Queuing Penalty (veh)					1	0	4				0	

Intersection: 35: W Las Positas & Hopyard

Movement	NB	NB	NB	NB	SB	SB	SB	SB	SB	SB
Directions Served	T	T	T	R	L	L	T	T	T	R
Maximum Queue (ft)	136	160	174	50	63	57	160	182	207	38
Average Queue (ft)	94	124	144	18	35	33	123	146	165	19
95th Queue (ft)	152	181	190	53	70	66	183	212	236	38
Link Distance (ft)	1076	1076	1076				907	907	907	
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)				200	260	260				275
Storage Blk Time (%)			0							
Queuing Penalty (veh)			0							

Intersection: 52: W Las Positas & Willow

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	TR	L	T	T	R	L	TR	LT	R
Maximum Queue (ft)	95	60	32	64	9	85	90	42	22	26	36	29
Average Queue (ft)	60	23	16	39	2	51	46	23	7	9	15	10
95th Queue (ft)	105	69	46	73	9	100	102	49	26	33	41	34
Link Distance (ft)		890	890	890		412	412	412		224	1176	1176
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	320				150				30			
Storage Blk Time (%)									3	3		
Queuing Penalty (veh)									1	0		

Intersection: 59: W Las Positas & Hacienda

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	TR	L	T	T	R	LT	R	L	LT
Maximum Queue (ft)	86	55	62	79	19	138	143	20	24	2	22	42
Average Queue (ft)	50	29	35	50	7	79	94	5	7	0	8	29
95th Queue (ft)	96	62	69	95	23	152	162	22	26	3	29	56
Link Distance (ft)		586	586	586		2515	2515	2515	182		753	753
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	300				150					35		
Storage Blk Time (%)						0			3			
Queuing Penalty (veh)						0			0			

Intersection: 59: W Las Positas & Hacienda

Movement	SB
Directions Served	R
Maximum Queue (ft)	43
Average Queue (ft)	31
95th Queue (ft)	44
Link Distance (ft)	753
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Zone Summary

Zone wide Queuing Penalty: 9

Intersection: 35: W Las Positas & Hopyard

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	L	T	T	R	L	L	T	T	R	L	L
Maximum Queue (ft)	82	115	178	213	152	118	132	118	146	17	203	222
Average Queue (ft)	52	70	132	145	97	82	91	78	105	3	164	192
95th Queue (ft)	96	135	206	248	176	135	149	133	165	19	228	250
Link Distance (ft)			375	375			203	203	203			
Upstream Blk Time (%)				0								
Queuing Penalty (veh)				2								
Storage Bay Dist (ft)	200	200			220	225				210	200	200
Storage Blk Time (%)			2	0	1						3	18
Queuing Penalty (veh)			2	1	2						11	69

Intersection: 35: W Las Positas & Hopyard

Movement	NB	NB	NB	NB	SB	SB	SB	SB	SB	SB
Directions Served	T	T	T	R	L	L	T	T	T	R
Maximum Queue (ft)	330	297	202	124	93	93	95	110	133	28
Average Queue (ft)	220	185	142	49	57	54	59	75	95	10
95th Queue (ft)	404	322	230	143	113	100	108	120	141	30
Link Distance (ft)	1076	1076	1076				1057	1057	1057	
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)				200	260	260				275
Storage Blk Time (%)	1		1	0						
Queuing Penalty (veh)	4		4	0						

Intersection: 52: W Las Positas & Willow

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	TR	L	T	T	R	L	TR	LT	R
Maximum Queue (ft)	149	62	45	68	8	98	113	41	17	5	27	25
Average Queue (ft)	97	25	15	41	2	57	62	26	5	1	7	10
95th Queue (ft)	175	71	50	76	11	117	126	49	22	10	29	34
Link Distance (ft)		890	890	890		396	396	396		224	1127	1127
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	320				150				30			
Storage Blk Time (%)									3	1		
Queuing Penalty (veh)									0	0		

Intersection: 59: W Las Positas & Hacienda

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	UL	T	T	TR	L	T	T	R	L	TR	L	T
Maximum Queue (ft)	92	49	42	74	5	113	136	31	26	7	48	28
Average Queue (ft)	52	21	19	42	1	65	87	12	12	2	23	9
95th Queue (ft)	106	67	54	88	9	127	149	36	30	8	51	30
Link Distance (ft)		581	581	581		2482	2482	2482	182	182	704	704
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	300				150							
Storage Blk Time (%)						0						
Queuing Penalty (veh)						0						

Intersection: 59: W Las Positas & Hacienda

Movement	SB
Directions Served	R
Maximum Queue (ft)	39
Average Queue (ft)	28
95th Queue (ft)	48
Link Distance (ft)	704
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Zone Summary

Zone wide Queuing Penalty: 96

Intersection: 35: W Las Positas & Hopyard

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	B487	NB
Directions Served	L	L	T	T	R	L	L	T	T	R	T	L
Maximum Queue (ft)	74	103	158	168	195	180	201	120	136	19	13	126
Average Queue (ft)	53	56	102	100	141	119	125	76	94	6	3	93
95th Queue (ft)	88	124	167	178	228	188	207	135	148	26	23	132
Link Distance (ft)			375	375			203	203	203		390	
Upstream Blk Time (%)						0	2					
Queuing Penalty (veh)						0	4					
Storage Bay Dist (ft)	200	200			220	225				210		200
Storage Blk Time (%)			0		1	0	2					
Queuing Penalty (veh)			0		2	0	4					

Intersection: 35: W Las Positas & Hopyard

Movement	NB	NB	NB	NB	NB	SB	SB	SB	SB	SB	SB
Directions Served	L	T	T	T	R	L	L	T	T	T	R
Maximum Queue (ft)	155	142	154	143	42	54	60	144	173	202	20
Average Queue (ft)	116	104	115	108	18	29	27	112	127	158	12
95th Queue (ft)	163	153	173	157	48	63	71	166	192	223	29
Link Distance (ft)		1076	1076	1076				1057	1057	1057	
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	200				200	260	260				275
Storage Blk Time (%)											
Queuing Penalty (veh)											

Intersection: 52: W Las Positas & Willow

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	TR	L	T	T	R	L	TR	LT	R
Maximum Queue (ft)	110	39	39	56	2	87	67	33	38	29	5	11
Average Queue (ft)	73	16	14	30	1	44	42	21	13	10	1	3
95th Queue (ft)	128	48	48	65	3	100	84	41	41	37	9	17
Link Distance (ft)		890	890	890		396	396	396		224	1127	1127
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	320				150				30			
Storage Blk Time (%)						0			5	5		
Queuing Penalty (veh)						0			1	1		

Intersection: 59: W Las Positas & Hacienda

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	UL	T	T	TR	L	T	T	R	L	TR	L	T
Maximum Queue (ft)	97	55	56	83	24	122	133	16	20	8	34	61
Average Queue (ft)	70	25	35	56	12	71	88	6	9	4	16	36
95th Queue (ft)	130	59	68	103	30	136	152	24	26	16	41	69
Link Distance (ft)		581	581	581		2482	2482	2482	182	182	704	704
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	300				150							
Storage Blk Time (%)						0						
Queuing Penalty (veh)						0						

Intersection: 59: W Las Positas & Hacienda

Movement	SB
Directions Served	R
Maximum Queue (ft)	42
Average Queue (ft)	30
95th Queue (ft)	54
Link Distance (ft)	704
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Zone Summary

Zone wide Queuing Penalty: 11

PUD-103 & P14-0086
PUD & Development Agreement
"RECEIVED JAN 24 2014"
EXHIBIT B

GreenPoint Rated Checklist: Multifamily

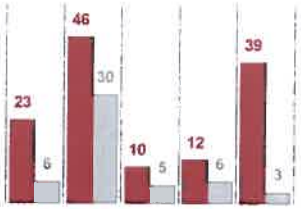
The GreenPoint Rated checklist tracks green features incorporated into the home. **A home is only GreenPoint Rated if all features are verified by a Certified GreenPoint Rater through Build It Green**. GreenPoint Rated is provided as a public service by Build It Green, a professional non-profit whose mission is to promote healthy, energy and resource efficient buildings in California.
The minimum requirements for a GreenPoint Rated home are: Earn a total of 50 points or more; obtain the following minimum points per category: Community (8), Energy (30), Indoor Air Quality/Health (5), Resources (8), and Water (3); and meet the prerequisites A2a, E2a, H4a. (for 2008 permitted projects), J1a, N1. and Q0.

This checklist accommodates the verification of mandatory CALGreen measures but does not signify compliance unless accepted by jurisdictional authority. All CALGreen measures within the checklist must be selected as "Yes" or "n/a" for compliance with GreenPoint Rated. Build It Green is not a code enforcement agency.

The green building practices listed below are described in the GreenPoint Rated Multifamily Rating Manual. For more information please visit **www.builditgreen.org/greenpointrated.**

GreenPointRATED
A PROGRAM OF BUILD IT GREEN

Total Targeted Points:	130



Multifamily New Home 2.2 / 2008 Title 24

REQUIRED: ENTER FLOOR AREAS AND LANDSCAPED AREA BEFORE BEGINNING CHECKLIST	
Enter Total Conditioned Floor Area of the Project:	206813
Enter Total Non-Residential Floor Area of Project:	0
Percent of Project Dedicated to Residential Use	**100%**
Percentage of Site Dedicated to Landscaping	**26%**

5850 West Las Positas Blvd, Pleasanton

		Points Achieved	Community	Energy	IAQ/Health	Resources	Water	Notes
AA. COMMUNITY DESIGN AND PLANNING			Possible Points					
	1. Develop Infill Sites							
Yes	a. Project is an Urban Infill Development	1	1					
30	b. Conserve Resources by Increasing Density -15 Units Per Acre or Greater (1 Point for every additional 5 dwelling units/acre) *Enter Project Density Number (In du/acre)*	4	10					
No	c. Project Includes the Redevelopment of At Least One Existing Building	0				1		
No	d. Build on Designated Brownfield Site or City-Designated Redevelopment Area	0	1					
	2. Design for Walking & Bicycling							
No	a. Sidewalks Are Buffered from Roadways & Are 5 Feet Wide (8 Feet in Retail Areas)	0	1					
No	b. Install Traffic Calming Strategies	0	1					
Yes	c. Provide Dedicated, Covered & Secure Bicycle Storage for 15% of Residents	1	1					See Sheet A1.2
No	d. Provide Secure Bicycle Storage for 5% of Non-Residential Tenant Employees & Visitors	0	1					
	3. Alternative Transportation							
	a. Site has Pedestrian Access Within ½ Mile of Community Services:							Hart Middle School, services at Hopyard and W Las Positas
4	TIER 1: *Enter number of services within ½ Mile:*							
	1) Day Care 2) Community Center 3) Public Park							
	4) Drug Store 5) Restaurant 6) School							
	7) Library 8) Farmer's Market 9) After School Programs							
	10) Convenience Store Where Meat & Produce are Sold							

5850 West Las Positas Blvd, Pleasanton	Points Achieved	Community	Energy	IAQ/Health	Resources	Water	Notes
3	TIER 2: *Enter number of services within ½ Mile:*						Services at Hopyard and W Las Positas
	1) Bank 2) Place of Worship 3) Laundry/Cleaners						
	4) Hardware 5) Theater/Entertainment 6) Fitness/Gym						
	7) Post Office 8) Senior Care Facility 9) Medical/Dental						
	10) Hair Care 11) Commercial Office or Major Employer 12) Full Scale Supermarket						
	i. 5 Services Listed Above (Tier 2 Services Count as 1/2 Service Value)	1	1				
	ii.10 Services Listed Above (Tier 2 Services Count as 1/2 Service Value)	0	1				
	b. Proximity to Public Transit: Development is Located Within						
No	i. 1/4 Mile of One Planned or Current Bus Line Stop	0	1				
No	ii. 1/2 Mile of a Major Transit Stop (Commuter Train/Light Rail Transit System OR Two or More Planned/Current Bus Line Stops	0	1				
	c. Reduced Parking Capacity						
No	i. Less than 1.5 Parking Spaces Per Unit	0	1				
No	ii. Less than 1.0 Parking Spaces Per Unit	0	1				
	4. Mixed-Use Developments						
No	a. At least 2% of Development Floor Space Supports Mixed-Use (Non-Residential Tenants)	0	1				
No	b. Half of the Non-Residential Floor Space is Dedicated to Community Services (See AA3a)	0	1				
	5. Outdoor Gathering Places						
Yes	a. Private or Semi-Public Outdoor Gathering Places for Residents (Minimum of 50 sf Per Unit) (mutually exclusive with AA5b)	1	1				44,530 SF of landscaped area
No	b. Outdoor Gathering Place of Compact Site Provides Natural Elements (mutually exclusive with AA5a) (Projects Must Be a Minimum of 50 du/acre)	0	1				
No	c. Public Outdoor Gathering Places have Direct Access to At Least Two Tier 1 Community Services (See AA3a)	0	1				
	6. Design for Safety and Vandalism Deterrence						
TBD	a. Residence Entries Have Views to Callers (Windows or Double Peep Holes) & Can Be Seen By Neighbors	0	1				
Yes	b. All Main Entrances to the Building and Site are Prominent and Visible from the Street	1	1				
	7. Passive Solar Design						
No	a. Provide Appropriate Orientation for Maximum Energy Efficiency	0	2				
No	b. Provide Appropriate Shading On All South-Facing Windows for Effective Passive Solar Control	0	1				
No	c. Provide Thermal Mass	0	2				
	8. Adaptable Buildings						
	a. Include Universal Design Principles in Units						
No	i. 50% of Units	0	1				
No	ii. 80% of Units	0	1				
No	b. Live/Work Units Include A Dedicated Commercial Entrance	0	1				

5850 West Las Positas Blvd, Pleasanton		Points Achieved	Community	Energy	IAQ/Health	Resources	Water	Notes
	9. Affordability							
	a. Units are Dedicated to Households Making 80% or Less of AMI							
Yes	i. 10% of All Units	1	1					Pleasanton IZO/BMR requires 15%
No	ii. 25%	0	1					
No	iii. 50% or More	0	1					
Yes	b. Development Includes Multiple Bedroom Units (Minimum of 2 3-Bdrm Units At or Less Than 80% AMI)	1	1					3 3-bedroom BMR units (per draft affordable housing agreement)
No	c. At least 20% of Units at 120% or Less of AMI are For-Sale	0	1					
	Total Available Points in Community Design and Planning: 42	11						
A. SITE			Possible Points					
	1. Protect Topsoil and Minimize Disruption of Existing Plants & Trees							
No	a. Protect Topsoil and Reuse After Construction	0	1			1		
No	b. Limit and Delineate Construction Footprint for Maximum Protection	0				1		
	2. Divert/Recycle Job Site Construction Waste (Including Green Waste and Existing Structures)							
Yes	a. Required: Divert 50% (by weight) of All Construction & Demolition Waste (Recycling or Reuse) (CALGreen code)	Y				R		
Yes	b. Divert 100% of Asphalt and Concrete and 65% (by weight) of Remaining Materials	2				2		
No	c. Divert 100% of Asphalt and Concrete and 80% (by weight) of Remaining Materials	0				2		
	3. Construction Environmental Quality Management Plan, Duct Sealing, and Pre-Occupancy Flush-Out [*This credit is a requirement associated with PJ1: EPA IAP]							
Yes	a. Duct openings and other related air distribution component openings shall be covered during construction. (CALGreen code if applicable)	1			1			
No	b. Full environmental quality management plan and pre-occupancy flush out is conducted (Prerequisite is A5a)	0			1			
No	**4. Use Recycled Content Aggregate (Minimum 25%)**	0				1		
Yes	**5. Cool Site: Reduce Heat Island Effect on Site**	1	1					Covered parking (Sheet A1.2)
	Total Available Points in Site: 11	4						
B. LANDSCAPE			Possible Points					
	1. Landscaping							
Yes	*Is the landscape ≥ 10% of the site area? Sites with less than 10% of the total site area dedicated to landscaping can only earn up to 4 points for measure B1a through B1g. Calculate the landscape area percentage by dividing the landscape area by the total site area. Include the building footprint(s) and all other developed portions of the site up to the site boundary.*							
Yes	a. Group Plants by Water Needs (Hydrozoning)	2					2	L3.0
Yes	b. Mulch All Planting Beds to the Greater of 3 Inches or Local Water Ordinance Requirement	2					2	To be confirmed in landscape notes.
	c. Construct Resource-Efficient Landscapes							
Yes	i. No Invasive Species Listed by Cal-IPC Are Planted	1				1		L3.0
No	ii. No Plant Species will Require Shearing	0				1		
Yes	iii. 75% of Plants are Drought-tolerant, California Natives, Mediterranean or Other Appropriate Species	3					3	To be confirmed in landscape notes.
	d. Minimize Turf in Landscape Installed by Builder							

5850 West Las Positas Blvd, Pleasanton		Points Achieved	Community	Energy	IAQ/Health	Resources	Water	Notes
Yes	i. Turf Shall Not Be Installed on Slopes Exceeding 10% and No Overhead Sprinklers Installed in Areas Less than 8 Feet Wide	2					2	To be confirmed in landscape notes.
Yes	ii. Turf Is ≤ 25% of Landscaped Area	2					2	To be confirmed in landscape notes.
	e. Install High-Efficiency Irrigation Systems							
Yes	i. System Uses Only Low-Flow Drip, Bubblers or Sprinklers	2					2	L3.0
Yes	ii. System Has Smart (Weather-based) Controller (CALGreen code if applicable)	3					3	L3.0
Yes	f. Incorporate Two Inches of Compost in the Top 6 to 12 Inches of Soil	3					3	To be confirmed in landscape notes.
	g. Design Landscape to Meet Water Budget							
Yes	i. Install Irrigation System That Will Be Operated at <70% Reference ET (B1a. and B1b. are Prerequisites for Credit)	1					1	To be confirmed in landscape notes.
No	ii. Install Irrigation System That Will Be Operated at <50% Reference ET (B1a., B1b. and B1ei. or B1eii. are Prerequisites for Credit)	0					1	
No	h. Incorporate Community Garden	0	1					
	2. Source Water Efficiency							
No	a. Use Recycled Water for Indoor and/or Outdoor Water Use	0					2	
No	b. Use Rainwater for Indoor and/or Outdoor Water Use	0					4	
	3. Outdoor Play Structures and Outdoor Furniture							
TBD	a. Play Structures & Surfaces Have an Average Recycled Content ≥20%	0				1		
No	b. Environmentally Preferable Exterior Site Furnishings	0				1		
Yes	**4. Reduce Light Pollution by Shielding Fixtures and Directing Light Downward**	1	1					
	Total Available Points in Landscape: 33	22						
C. DESIGN CONSIDERATIONS			Possible Points					
	1. Acoustics: Noise and Vibration Control (minimum 2 points for credit, including 1 Tier 1 measure, maximum of 4 points)							
Yes	TIER 1: 1) Exterior Noise Reduction	1	1					
No	2) Loud Single-Event Noise Reduction in Noise-Sensitive Spaces	0	1					
No	3) Airborne and Structure-borne Noise Reduction (e.g., walls, floor-ceilings)	0	1					
Yes	4) Mechanical Ventilation Noise and Vibration Control	1	1					
Yes	5) Plumbing Noise and Vibration Reduction	1	1					
Yes	TIER 2: 1) Minimize Stair Impact Noise	0.5	0.5					
TBD	2) Minimize Floor Squeaks	0	0.5					
Yes	3) Minimize Trash Chute Noise	0.5	0.5					
TBD	4) Mixed-Use Noise and Vibration Reduction	0	0.5					
	2. Mixed-Use Design Strategies							
No	a. Develop Green Tenant Improvement Requirements for Build Outs	0	2					
No	b. Commercial Loading Area Separated from Residential area	0			1			
No	c. Separate Mechanical and Plumbing Systems	0			1			
	3. Commissioning							
Yes	a. Design Phase (Define Owner's Project Requirements, Basis of Design, and Develop Plan)	2		1	1			Yes if 4 Stories and above. Required by code.
Yes	b. Construction Phase (Perform Functional Testing)	2		2				Yes if 4 Stories and above. Required by code.
Yes	c. Post-Construction Phase (Verify Compliance, Commissioning Report, Training and Warranty Review)	2	1	1				Yes if 4 Stories and above. Required by code.
	Total Available Points in Design Considerations: 14	10						
D. FOUNDATION, STRUCTURAL FRAME & BUILDING ENVELOPE			Possible Points					

5850 West Las Positas Blvd, Pleasanton		Points Achieved	Community	Energy	IAQ/Health	Resources	Water	Notes
No	**1. Replace Portland Cement in Concrete with Recycled Fly Ash and/or Slag (Minimum 20%)**	0				3		
No	**2. Design, Build and Maintain Structural Pest and Rot Controls (for low-rise projects)**	0			1	1		
	3. Construction Material Efficiencies							
No	a. Wall and Floor Assemblies (excluding solid wall assemblies) are Delivered Panelized from Supplier (Minimum of 80% square feet)	0				1		
No	b. Modular Components are Delivered Assembled to the Project (Minimum 25%)	0				6		
	c. Optimal Value Engineering							
No	i. Studs at 24 Inch on Center at Interior Non-Bearing Walls and Top Floor	0				1		
Yes	ii. Door & Window Headers Sized for Load	1				1		
No	iii. Use Only Cripple Studs Required for Load	0				1		
	4. Use Engineered Lumber							
No	a. Engineered Beams and Headers	0				1		
No	b. Wood I-Joists or Web Trusses for Floors	0				1		
No	c. Engineered Lumber for Roof Rafters	0				1		
No	d. Engineered or Finger-Jointed Studs for Vertical Applications	0				1		
Yes	e. Oriented Strand Board for Subfloor	1				1		
No	f. Oriented Strand Board for Wall and Roof Sheathing	0				1		
No	**5. Insulated Headers**	0		1				
	6. Use FSC-Certified Wood							
No	a. Dimensional Lumber, Studs and Timber (Minimum 40%)	0				4		
No	b. Panel Products (Minimum 40%)	0				2		
No	**7. Energy Heels on Roof Trusses for Low-Rise Projects**	0		1				
	8. Use Solid Wall Systems (Includes SIPS, ICFs, & Any Non-Stick Frame Assembly)							
No	a. Floors	0				2		
No	b. Walls	0				2		
No	c. Roofs	0				1		
	Total Available Points in Foundation, Structural Frame & Building Envelope: 34	2						
E. EXTERIOR			Possible Points					
	1. Drainage Planes and Durable Siding							
Yes	a. Install a Rain Screen Wall System	2				2		
Yes	b. Use Durable and Non-Combustible Siding Materials	1				1		
	2. Durable Roofing Options							
Yes	a. *Required:* All Roofing Has 3-Year Subcontractor Warranty and a 20-Year Manufacturer Warranty	Y				R		
Yes	b. Use Durable and Fire Resistant Roofing Materials or Assembly	1				1		
No	**3. Vegetated Roof** (2 points for 25%, 4 points for 50%)	0	4					
	Total Available Points in Exterior: 8	4						
F. INSULATION			Possible Points					
	1. Install Insulation with 75% Recycled Content							
TBD	a. Walls	0				1		
TBD	b. Ceilings	0				1		

5850 West Las Positas Blvd, Pleasanton		Points Achieved	Community	Energy	IAQ/Health	Resources	Water	Notes
TBD	c. Floors	0				1		
	Total Available Points in Insulation: 3	0						
G. PLUMBING				Possible Points				
	1. Water Efficient Fixtures							
	a. Install High Efficiency Toilets (Dual Flush or ≤ 1.28 Gallons Per Flush (gpf)) (CALGreen code if applicable)							
Yes	i. In All Residences	2					2	
Yes	ii. In All Non-Residential Areas	0					0	
	b. High Efficiency Urinals or No-Water Urinals Are Specified:							
Yes	i. Average Flush Rate is ≤0.5 gpf (CALGreen code if applicable)	1					1	
No	ii. Average Flush Rate is ≤0.1 gpf	0					1	
Yes	c. High Efficiency Showerheads Use ≤ 2.0 Gallons Per Minute (gpm) at 80 psi (CALGreen code if applicable)	3					3	
	d. Flow Limiters Or Flow Control Valves Are Installed on All Faucets							
Yes	i. Residences: Kitchen - ≤ 1.8 gpm (CALGreen code if applicable)	1					1	
Yes	ii. Non-Residential Areas: Kitchen - ≤ 1.8 gpm (CALGreen code applicable)	0					0	
Yes	iii. Residences: Bathroom Faucets- ≤ 1.5 gpm at 60psi	1					1	
Yes	iv. Non-Residential Areas: Bath Faucets - ≤ .5 gpm or .25 gal for meter faucets (CALGreen code if applicable)	Y					0	
	2. Distribute Domestic Hot Water Efficiently (G2a is a Prerequisite for credit for G2 b-e. Maximum 5 Points)							
Yes	a. Insulate All Hot Water Pipes [*This credit is a requirement associated with PJ1: EPA IAP]	2		1			1	Required by code.
No	b. Use Engineered Parallel Plumbing	0					1	
No	c. Use Engineered Parallel Plumbing with Demand Controlled Circulation Loop(s)	0					1	
Yes	d. Use Traditional Trunk, Branch and Twig Plumbing with Demand Controlled Circulation Loop(s)	3		1			2	
No	e. Use Central Core Plumbing	0		1		1	1	
Yes	**3. Water Submetering: Bill Tenants for Actual Usage**	4					4	
	Total Available Points in Plumbing: 18	17						
H. HEATING VENTILATION AND AIR CONDITIONING				Possible Points				
No	**1. Install High Performing Zoned Radiant Hydronic Heating**	0			2			
Yes	**2. Install High Efficiency Air Conditioning with Environmentally Preferable Refrigerants**	1	1					
	3. Advanced Ventilation Practices for Cooling							
No	a. Operable Windows or Skylights Are Placed To Induce Cross Ventilation In At Least One Room In 80% of Units	0		1	1			
	b. Mechanical Ventilation System for Cooling:							
No	i. ENERGY STAR Ceiling Fans and Light Kits in Living Areas & All Bedrooms	0		1				
N/A	ii. Whole House Fan (CALGreen code if applicable)	N/A		1				
	4. Advanced Mechanical Ventilation for IAQ							
Yes	a. *Required:* Compliance with ASHRAE 62.2 Mechanical Ventilation Standard (As Adopted in Title 24 Part 6). *N/A for projects permitted under 2005 Title 24*	Y			R			

5850 West Las Positas Blvd, Pleasanton		Points Achieved	Community	Energy	IAQ/Health	Resources	Water	Notes
Yes	b. Advanced Ventilation Practices (Continuous Operation, Sone Limit, Minimum Efficiency, Minimum Ventilation Rate, Homeowner Instructions)	1			1			
No	c. Outdoor Air Ducted to Bedroom and Living Areas of Home	0			2			
Yes	d. ENERGY STAR Bathroom Fans on Timer or Humidistat (CALGreen code if applicable)	1			1			
No	**5. Garage Ventilation Fans Are Controlled by Carbon Monoxide Sensors** (Passive Ventilation Not Eligible) [*This credit is a requirement associated with PJ1: EPA IAP]	0			1			
Yes	**6. Install Carbon Monoxide Alarms** (or No Combustion Appliances in Living Space and No Attached Garage) [*This credit is a requirement associated with PJ1: EPA IAP]	1			1			
	Total Available Points in Heating Ventilation and Air Conditioning: 13	4						
I. RENEWABLE ENERGY				Possible Points				
No	**1. Solar Hot Water System Preheats Domestic Hot Water**	0		4				
	2. Offset a Percentage of the Project's Estimated Electricity Demand with Onsite Renewable Generation							
No	a. 60% of Common Area Load	0	2	2				
No	b. 90% of Common Area Load	0	2	2				
TBD	c. 10% or More of Residential Units Load	0	2	2				
	Total Available Points in Renewable Energy: 16	0						
J. BUILDING PERFORMANCE				Possible Points				
	1. Building Performance Exceeds Title 24							
2008	*Is project permitted under 2005 Title 24 or 2008 Title 24?*							
	Enter the Percent Better Than Title 24 for Residential and Non-Residential Portions of the Project.							
15%	a. *Required:* Residences: Minimum 15% Better Than Title 24. 2 Points for Every 1% Better Than Title 24	30		30+				
0%	b. Non-Residential Spaces: 1 Point for Every 1% Better Than Title 24, adjusted for square footage	0		1+				
	2. Building Envelope Diagnostic Evaluations							
Yes	a. Duct Testing Results in Leakage < 6% [*This credit is a requirement associated with PJ1: EPA IAP]	1		1				
No	b. Blower Door Testing Results for Air Change per Hour is < 3.5 ACH_{50} [*This credit is a requirement associated with PJ1: EPA IAP]	0		2				
Yes	c. Verify Quality of Insulation Installation & Thermal Bypass Checklist before Drywall [*This credit is a requirement associated with PJ1: EPA IAP]	1		1				
No	**3. Design and Build Near Zero Energy Homes** *(Enter number of points, minimum of 2 and maximum of 6 points)*	0		0				
Yes	**4. Title 24 Prepared and Signed by a CABEC Certified Energy Plans Examiner (CEPE)**	1		1				
	5. Participation in Utility Program with Third Party Plan Review							
No	a. Energy Efficiency Program [*This credit is a requirement associated with PJ1: EPA IAP]	0		1				
No	b. Renewable Energy Program with Min. 30% Better Than Title 24 (High Performing Home)	0		1				

5850 West Las Positas Blvd, Pleasanton		Points Achieved	Community	Energy	IAQ/Health	Resources	Water	Notes
	Total Available Points in Building Performance: 43+	33						
K. FINISHES					Possible Points			
	1. Entryways							
No	a. Design Entryways to Reduce Tracked-In Contaminants for All Home Entrances	0			1			
No	b. Permanent Walk-Off Systems Are Provided at All Main Building Entrances & In Common Areas	0			1			
No	**2. Use Recycled Content Paint**	0				1		
	3. Low/No-VOC Paints & Coatings [*This credit is a requirement associated with PJ1: EPA IAP]							
	a. Low-VOC Interior Wall/Ceiling Paints (<50 grams per liter (gpl) VOCs regardless of sheen) (CALGreen code if applicable)							
Yes	i. In All Residences	1			1			
N/A	ii. In All Non-Residential Areas	N/A			0			
	b. Zero-VOC: Interior Wall/Ceiling Paints (<5 gpl regardless of sheen)							
No	i. In All Residences	0			1			
No	ii. In All Non-Residential Areas	0			0			
	c. Use Low-VOC Coatings That Meet SCAQMD Rule 1113 (CALGreen code if applicable)							
Yes	i. In All Residences	2			2			
N/A	ii. In All Non-Residential Areas	N/A			0			
Yes	**4. Use Low VOC Caulks, Construction Adhesives and Sealants that Meet SCAQMD Rule 1168** (CALGreen code if applicable)	1			1			
	5. Environmentally Preferable Materials for Interior Finish: A) FSC-Certified Wood, B) Reclaimed Lumber, C) Rapidly Renewable, D) Recycled-Content, E) Finger-Jointed, or F) Local							
	a. Residences: At Least 50% of Each Material:							
No	i. Cabinets	0				4		
No	ii. Interior Trim	0				2		
No	iii. Shelving	0				2		
No	iv. Doors	0				2		
No	v. Countertops	0				2		
	b. Non-Residential Areas: At Least 50% of Each Material:							
No	i. Cabinets	0				0		
No	ii. Interior Trim	0				0		
No	iii. Shelving	0				0		
No	iv. Doors	0				0		
No	v. Countertops	0				0		
Yes	**6. Reduce Formaldehyde in Interior Finish – Meet Current CARB Airborne Toxic Control Measure (ATCM) for Composite Wood Formaldehyde Limits by Mandatory Compliance Dates** (CALGreen code if applicable) [*This credit is a requirement associated with PJ1: EPA IAP]	Y			0			
	7. Reduce Formaldehyde in Interior Finish - Exceed Current CARB ATCM for Composite Wood Formaldehyde Limits Prior to Mandatory Compliance Dates							

5850 West Las Positas Blvd, Pleasanton		Points Achieved	Community	Energy	IAQ/Health	Resources	Water	Notes
	a. Residences: At Least 90% of Each Material:							
TBD	i. Doors	0			1			
TBD	ii. Cabinets and Countertops	0			2			
TBD	iii. Interior Trim and Shelving	0			1			
	b. Non-Residential Areas: At Least 90% of Each Material							
TBD	i. Doors	0			0			
TBD	ii. Cabinets and Countertops	0			0			
TBD	iii. Interior Trim and Shelving	0			0			
	8. Durable Cabinets							
TBD	a. Residences	0				1		
No	b. Non-Residential Areas	0				0		
No	**9. At Least 25% of All Newly Supplied Interior Furniture has Environmentally Preferable Attributes**	0				1		
	Total Available Points in Finishes: 26	4						
L. FLOORING				Possible Points				
	1. Use Environmentally Preferable Flooring (Minimum 15% of Floor Area) A) FSC-Certified Wood, B) Reclaimed or Refinished, C) Rapidly Renewable, D) Recycled-Content, E) Exposed Concrete, or F) Local. *Flooring Adhesives Must Meet SCAQMD Rule 1168 for VOCs*							
TBD	a. Residences	0				4		
TBD	b. Non-Residential Areas	0				0		
	2. Low-Emitting Flooring [*This credit is a requirement associated with PJ1: EPA IAP]							
TBD	a. Residences: Low Emitting Flooring (50% Minimum) (Section 01350, CRI Green Label Plus, Floorscore)	0			2			
TBD	b. Non-Residential Areas: Low-Emitting Flooring (50% Minimum) (Section 01350, CRI Green Label Plus, Floorscore)	0			0			
Yes	**3. All carpet and 50% of Resilient Flooring is low emitting.** (CALGreen code if applicable)	Y			0			
	Total Available Points in Flooring: 6	0						
M. APPLIANCES & LIGHTING				Possible Points				
	1. ENERGY STAR Appliances							
Yes	a. Install ENERGY STAR Dishwasher (Must Meet Current Specifications)	2		1			1	
	b. install ENERGY STAR Clothes Washer							
Yes	i. Meets ENERGY STAR and CEE Tier 2 Requirements (Modified Energy Factor ≥2.0; Water Factor ≤8.0) (Total 3 Points)	3		1			2	
TBD	ii Meets ENERGY STAR and CEE Tier 3 Requirements (Modified Energy Factor ≥2.2; Water Factor ≤4.5) (Total 5 Points)	0					2	
	c. Install ENERGY STAR Refrigerators in All Locations							
Yes	i. ENERGY STAR-Qualified & < 25 Cubic Feet Capacity	1		1				
No	ii. ENERGY STAR-Qualified & < 20 Cubic Feet Capacity	0		1				
No	**2. Common Laundry Facilities Are Provided for All Occupants**	0				1		
No	**3. Provide Built-in Recycling Center in Each Residential Unit**	0				1		
	4. Low-Mercury Lamps							

5850 West Las Positas Blvd, Pleasanton		Points Achieved	Community	Energy	IAQ/Health	Resources	Water	Notes
Yes	a. Low-Mercury Products Are Installed Wherever Linear Fluorescent Lamps Are Used or Replaced	1				1		
No	b. Low-Mercury Products Are Installed Wherever Compact Fluorescent Lamps Are Used or Replaced	0				1		
	5. Install High-Efficacy Lighting and Design Lighting System							
No	a. Install High-Efficacy Lighting	0		1				
No	b. Install a Lighting System to IESNA Footcandle Standards or Hire Lighting Consultant	0		1				
Yes	**6. Gearless Elevators Are Installed**	1		1				
	Total Available Points in Appliances & Lighting: 16	8						
N. OTHER			Possible Points					
Yes	**1. *Required:* Incorporate GreenPoint Rated Checklist in Blueprints** [*This credit is a requirement associated with PJ1: EPA IAP]	Y	R					
Yes	**2. Pre-Construction Kick-Off Meeting with Rater and Subs**	1	1					
	3. Operations & Maintenance Manuals and Training [*This credit is a requirement associated with PJ1: EPA IAP]							
Yes	a. Provide O&M Manual to Building Maintenance Staff (CALGreen code if applicable)	1		1				
Yes	b. Provide O&M Manual to Occupants and Orientation	2		1			1	
TBD	**4. Residents Are Offered Free or Discounted Transit Passes**	0	2					TBD (Wheels and BART)
TBD	**5. Educational Signage of Project's Green Features**	0	1					6 sq. ft. of signage required
No	**6. Install Home/Building System Monitor(s)**	0		1				
No	**7. Use Vandalism Deterrence Practices and Develop Vandalism Management Plan**	0	1					
	Total Available Points in Other: 9	4						
O. (Not Used)								
P. INNOVATIONS			Possible Points					
	A. Site							
	1. Stormwater Control: Prescriptive Path (Maximum of 3 Points, Mutually Exclusive With PA2)							
Yes	a. Use Permeable Paving for 25% of Driveways, Patios and Walkways	1	1					
Yes	b. Install Bio-Retention and Filtration Features	2	2					
Yes	c. Route Downspout Through Permeable Landscape	0	1					
TBD	d. Use Non-Leaching Roofing Materials	0	1					
No	e. Include Smart Street/Driveway Design	0	1					
	2. Stormwater Control: Performance Path (Mutually Exclusive With PA1):	0						
No	Perform a Soil Percolation Test and Capture and Treat 85% of Total Annual Runoff	0	3					
	D. Foundation, Structural Frame and Building Envelope							
No	1. Use Radon Resistant Construction [*This credit is a requirement associated with PJ1: EPA IAP]	0			2			
TBD	2. Install a Foundation Drainage System [*This credit is a requirement associated with PJ1: EPA IAP]	0				2		TBD; capillary break.
No	3. Moisture Controlled Crawlspace [*For projects with crawlspaces, this credit is a requirement associated with PJ1: EPA IAP]	0			2			
	E. Exterior							

5850 West Las Positas Blvd, Pleasanton		Points Achieved	Community	Energy	IAQ/Health	Resources	Water	Notes
Yes	1. Flashing Installation Techniques Specified and Third-Party Verified [*This credit is a requirement associated with PJ1: EPA IAP]	1				1		
	H. Heating Ventilation and Air Conditioning							
N/A	1. Design and Install HVAC System to ACCA Manual J, D, and S Recommendations (CALGreen code if applicable) [*This credit is a requirement associated with PJ1: EPA IAP]	N/A		4				
TBD	2. Pressure Relieve the Ductwork System (Mutually exclusive with H1) [*For projects with ducted systems, this credit is a requirement associated with PJ1: EPA IAP]	0		1				
Yes	3. Install High Efficiency HVAC Filter (MERV 6+, Mutually exclusive with H1.) [*This credit is a requirement associated with PJ1: EPA IAP]	1		1				
	J. Building Performance							
No	1. Obtain EPA Indoor airPlus Certification *(Total 39 possible points, not including Title 24 performance; read comment)*	0		2				
No	2. Third-Party Testing of Mechanical Ventilation Rates for IAQ (Meet ASHRAE 62.2) [*This credit is a requirement associated with PJ1: EPA IAP]	0			2			
No	3. ENERGY STAR New Homes: High-Rise Pilot Program	0		1				
	K. Finishes							
Yes	1. Use Moisture Resistant Material in Wet Areas: Kitchens, Bathrooms, Utility Rooms and Basements [*This credit is a requirement associated with PJ1: EPA IAP]	2			1	1		
No	2. Materials Meet SMaRT Criteria *(Select number of points, up to 5 points)*	0				5		
	N. Other							
	1. Innovation: List innovative measures that meet green building objectives. Enter in the number of points in each category in the blue cells for a maximum of 4 points for the measure. The "points achieved" column will be automatically fill in based on the sum of the points in each category. Points and measures will be evaluated by Build It Green.							
TBD	Innovation: Enter up to 4 Points in blue cells at right. Enter description here	0						
TBD	Innovation: Enter up to 4 Points in blue cells at right. Enter description here	0						
TBD	Innovation: Enter up to 4 Points in blue cells at right. Enter description here	0						
TBD	Innovation: Enter up to 4 Points in blue cells at right. Enter description here	0						
TBD	Innovation: Enter up to 4 Points in blue cells at right. Enter description here	0						
	Total Available Points in Innovation: 26+	7						
Q. CALGreen CODE			Possible Points					
Yes	**0. Home meets all applicable CALGreen measures listed in above Sections A - P of the GreenPoint Rated checklist.**	Y	R					
	The following measures are mandatory in the CALGreen code and do not earn points in the GreenPoint Rated Checklist but have been included in the Checklist for the convenience of jurisdictions. *The GreenPoint Rater is not a code enforcement official. The measures in this section may be verified by the GreenPoint Rater at their own discretion and/or discretion of the building official.*							

5850 West Las Positas Blvd, Pleasanton		Points Achieved	Community	Energy	IAQ/Health	Resources	Water	Notes
Yes	1. CALGreen 4.106.2 Storm water management during construction.	Y						
Yes	2. CALGreen 4.106.3 Design for surface water drainage away from buildings.	Y						
Yes	3. CALGreen 4.303.1 As an alternative to perscriptive compliance, a 20% reduction in baseline water use shall be demonstrated through calculation	Y						
Yes	4. CALGreen 4.406.1 Joints and openings. Annular spaces around pipes, electric cables, conduits, or other openings in plates at exterior walls shall be protected	Y						
Yes	5. CALGreen4.503.1 Gas fireplace shall be a direct-vent sealed-combustion type. Woodstove or pellet stove shall comply with US EPA Phase II emission limits	Y						
Yes	6. CALGreen 4.505.2 Vapor retarder and capillary break is installed at slab on grade foundations.	Y						
Yes	7. CALGreen 4.505.3 19% moisture content of building framing materials	Y						
Yes	8. CALGreen 702.1 HVAC system installers are trained and certified in the proper installation of HVAC systems.	Y						
	Total Available Points in CALGreen Code: 0	0						
Summary								
	Total Available Points		62	86+	35	87	48	
	Minimum Points Required		6	30	5	6	3	
	Total Points Achieved	130	23	46	10	12	39	

Project Has Met All Recommended Minimum Requirements

ORDINANCE NO. _____

AN ORDINANCE OF THE CITY OF PLEASANTON APPROVING A DEVELOPMENT AGREEMENT BETWEEN THE CITY OF PLEASANTON AND SHAC Las Positas Apartments, L.L.C. a California Limited Liability Company, AS FILED UNDER CASE _____

WHEREAS, Government Code, Sections 65865 through 65869.5, authorize a city to enter into binding development agreements with persons having legal interests in real property for the development of such property; and

WHEREAS, SHAC Las Positas Apartments, L.L.C. a California Limited Liability Company,, has applied to the City for a development agreement concerning its PUD development plan application for a high-density residential and medium-density residential development filed under Case No. PUD-_____ ("the Project"); and

WHEREAS, after public notice, on _____, 2014, the Planning Commission held a hearing and recommended approval of the Development Agreement; and

WHEREAS, at its meeting of _____, 2014, the City Council reviewed the staff report from the Director of Community Development together with a copy of the staff report to the Planning Commission on this matter; and

WHEREAS, on _____, 2014, a duly-noticed public hearing was held by the City Council, at which time the applicant and members of the public were offered an opportunity to present evidence regarding the development agreement; and

WHEREAS, the development agreement is for the Project, for which the City Council found (1) that the previously prepared Supplemental Environmental Impact Report (SEIR), including the adopted CEQA Findings and Statement of Overriding Considerations in City Council Resolution 12-492, and the Addendum to the SEIR for the project are adequate to serve as the environmental documentation for this project and satisfy all the requirements of CEQA, and (2) that the conditions described in California Environmental Quality Act (CEQA) Guidelines Section 15162 have not occurred; and

WHEREAS, the City Council finds that the proposed development agreement is consistent with the City's General Plan;

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF PLEASANTON DOES HEREBY ORDAIN AS FOLLOWS:

Section 1. The Development Agreement between the City of Pleasanton and SHAC Las Positas Apartments, L.L.C. a California Limited Liability Company,, of the general form and terms of which are attached hereto as Exhibit C and incorporated herein by this reference, is hereby approved, and the City Manager and City Attorney

are authorized to make minor changes to the Development Agreement to reflect the Project, as approved, prior to the City Manager executing the Development Agreement.

Section 2. A summary of this ordinance shall be published once within fifteen days after its adoption in the "Valley Times", a newspaper of general circulation published in the City of Pleasanton, and the complete ordinance shall be posted for fifteen days in the City Clerk's office within fifteen days of its adoption.

Section 3. This ordinance shall be effective thirty days after its passage and adoption.

The foregoing Ordinance was introduced at a regular meeting of the City Council of the City of Pleasanton on _____, 2014, by the following vote:

Ayes:
Noes:
Absent:
Abstain:

And adopted at a regular meeting of the City Council of the City of Pleasanton on _____, 2014, by the following vote:

Ayes:
Noes:
Absent:
Abstain:

_____
Jerry Thorne, Mayor

ATTEST:

_____
Karen Diaz, City Clerk

APPROVED AS TO FORM:

_____
Jonathan P. Lowell, City Attorney

RECORDING REQUESTED BY AND WHEN RECORDED MAIL TO:

City of Pleasanton
City Clerk's Office
123 Main Street
P.O. Box 520
Pleasanton, CA 94566

Recording Fees Exempt Pursuant to Government Code § 27383

SPACE ABOVE THIS LINE FOR RECORDER'S USE

DEVELOPMENT AGREEMENT

5850 WEST LAS POSITAS APARTMENTS

RECORDING REQUESTED BY AND WHEN RECORDED MAIL TO:

City of Pleasanton
City Clerk's Office
123 Main Street
P.O. Box 520
Pleasanton, CA 94566

Recording Fees Exempt Pursuant to Government Code § 27383

SPACE ABOVE THIS LINE FOR RECORDER'S USE

THIS DEVELOPMENT AGREEMENT ("**Agreement**") is made and entered into in the City of Pleasanton on this _____ day of _____ , 2014, by and between the City of Pleasanton, a municipal corporation (the "**City**"), and SHAC Las Positas Apartments, LLC, a California limited liability LLC, (the "**Developer**"), pursuant to the authority of California Government Code sections 65864 *et seq.*

RECITALS

A. To strengthen the public planning process, encourage private participation in comprehensive planning and reduce the economic risk of development, the Legislature of the State of California enacted California Government Code sections 65864 et seq. (the "**Development Agreement Statute**"), which authorizes City to enter into an agreement with any person having a legal or equitable interest in real property regarding the development of such property.

B. Developer has a legal interest in certain real property located in the City of Pleasanton, County of Alameda, California consisting of approximately 5.9 acres located at 5850 W. Las Positas Boulevard, as more particularly described in **DA Exhibit A-1** attached hereto, and as shown on the site plan attached hereto as **DA Exhibit A-2**. Developer contemplates developing a residential development project on such real property commonly referred to as "**5850 West Las Positas**" in Pleasanton, California.

C. In October 2010, the City Council confirmed an 11-member Housing Element Task Force (Task Force) with the mission to oversee the update of the City's Housing Element. After nine Task Force meetings, four community workshops, input from housing experts, and extensive community input, the Task Force recommended a draft list of sites for rezoning to residential uses. On recommendation of the Planning Commission, the City Council, at a duly noticed public hearing held on January 4, 2012, rezoned the real property referred to in Recital B above to Planned Unit Development-High Density Residential (PUD-HDR), with the high density portion of such real property to be developed at a minimum density of 30 units per acre. Such rezoning of the real property referred to in Recital B was approved by Ordinance No. 2030____ -to allow high-density and medium density residential use on the site consistent with the Task Force recommendations, the Housing Commission recommendations from its

November 17, 2011 hearing and the direction of the Planning Commission-City Council Joint Workshop held December 6, 2011.

D. City has undertaken several actions to meet its Regional Housing Needs Allocation ("**RHNA**"), to review and plan for the future constructive reuse of housing uses on this 5.9 acre site, including, without limitation, the following:

(1) CEQA Compliance. A Supplemental Environmental Impact Report was prepared and certified for the City of Pleasanton Housing Element and Climate Action Plan General Plan Amendment ("**Housing Element EIR**") and Rezonings on January 4, 2012. This recent Housing Element EIR anticipated that a high-density and medium density residential project of up to 177 apartments would be constructed on the Project Site (as defined below). Upon receipt of Developer's project applications, City prepared and considered an Addendum to the Housing Element EIR and determined that the Housing Element EIR fully analyzed all the impacts of the Project.

(2) Housing Site Development Standards and Design Guidelines. On September 4, 2012, the City Council adopted the Housing Site Development Standards and Design Guidelines ("**Design Guidelines**") to guide development on the rezoned sites, including the Project Site (as defined below).

(3) PUD Development Plan. Following review and recommendation by the City Planning Commission and after a duly noticed public hearing, preparation and consideration of an Addendum to the Housing Element EIR, the City Council, by Ordinance _____ approved the PUD Development Plan (the "**Project Design Review**") for the 5.9 acre residential housing site referred to above known as the "**5850 West Las Positas**," surface parking and related site improvements, and collectively referred to in this Agreement as the **Project Site**.

(4) Growth Management Agreement. Following review and approval of the Design Guidelines and the PUD Development Plan for the Project Site, the City Council, by Resolution determined that it was in the best interests of the City to approve a Growth Management Agreement covering the Project Site (the "**GMA**") and further determined that the City's obligations to meet its RHNA is best served if City issues the residential building permits for the Project Site consistent with the GMA.

(5) Affordable Housing Agreement. Following review and recommendation of the Housing Commission and after a duly noticed public hearing, the City Council, by Resolution ____ approved an Affordable Housing Agreement covering the Project Site (the "**AHA**").

(6) Development Agreement. Following review and recommendation by the City Planning Commission and after a duly noticed public hearing, the City Council, by Ordinance ____, determined that this Agreement was consistent with the City's General Plan and PUD-___, and approved this Agreement.

The approvals described in this Recital D are collectively referred to herein as the "**Project**" or the "**Project Approvals**" and applies to the 177 unit apartment project at 5850 West Las Positas.

In exchange for the benefits to City described in these recitals, including but not limited to assurance that a residential project consistent with the PUD Development Plan approval referred to above and Design Guidelines intended to meet the City's RHNA can proceed, together with the other public benefits that will result from the development of the Project Site, Developer will receive by this Agreement assurance that it may proceed with the Project in accordance with the "**Applicable Law**" (defined below), and therefore desires to enter into this Agreement.

NOW, THEREFORE, with reference to the foregoing recitals and in consideration of the mutual promises, obligations and covenants herein contained, City and Developer agree as follows:

AGREEMENT

Article I Description of Property, Effective Date and Term.

Section 1.01 Description of Property. The real property which is the subject of this Agreement is the 5850 West Las Positas site, as described in the attached **DA Exhibit A-1** and **DA Exhibit A-2**.

Section 1.02 Effective Date. This Agreement shall become effective upon the date the ordinance approving this Agreement becomes effective (the "**Effective Date**").

Section 1.03 Term. The term of this Agreement shall commence on the Effective Date and extend ten (10) years thereafter (the "**Term**").

Article II Standards, Laws and Procedures Governing the Project.

Section 2.01 Vested Right To Develop. Developer shall have a vested right to develop the Project Site in substantial conformance with the terms and conditions of the Project Approvals, the Subsequent Approvals (defined below) (as and when issued), the Applicable Law (defined below) and amendments as shall, from time to time, be approved pursuant to this Agreement. Specifically, while Developer contemplates constructing the Project Site in accordance with the Project Design Review, Developer shall have the vested right to develop the Project Site with 177 apartment units, surface parking and related site improvements, in accordance with the PUD Development Plan referred to above.

Section 2.02 Permitted Uses. The permitted uses and the density and intensity of use of the Project Site; the maximum height, bulk and size of the proposed buildings, apartments and single family homes; provisions for reservation or dedication of land for public purposes and the location of public improvements; the general location of public utilities; and other terms and conditions of development applicable to the Project, shall be as set forth in the Project Approvals, as and when they are issued (but not in any limitation of any right to develop as set forth in the Project Approvals), and any Subsequent Approvals (defined below).

Section 2.03 Applicable Law. "Applicable Law" shall mean the existing rules, regulations, official policies, standards and specifications governing permitted uses of the Project Site, governing density, and governing the design, improvements, the City's Residential Growth

Management Program (as set forth in Chapter 17.36 of the Pleasanton Municipal Code), the AHA and applicable City regulations, and construction standards and specifications applicable to the Project Site as set forth in this Agreement and the Project Approvals, and in force and effect on the Effective Date. During the Term, to the extent there are any conflicts between the Project Approvals (including but not limited to conditions to any of the Project Approvals) and this Agreement, the terms and conditions of this Agreement shall govern. Further, the parties acknowledge that the GMA, once approved, is a vested element of this Agreement, notwithstanding subsequent RHNA cycles, or existing timing provisions or subsequent changes to the City's Growth Management Ordinance (the "**GMO**"). Further, during the Term, to the extent there are any conflicts between the GMA and the GMO, the terms and conditions of the GMA shall govern.

Section 2.04 Moratorium, Initiatives and Conflicting Enactments. To the extent consistent with state law (and excepting a declaration of a local emergency or state emergency as defined in Government Code section 8558), if any ordinance, resolution or other measure is enacted subsequent to the Effective Date, whether by action of City, by initiative, referendum, or otherwise, that imposes a building moratorium, a limit on the rate of development, or a voter-approval requirement which would otherwise affect the timely development of the Project or Project Approvals or Subsequent Approvals on all or any part of the Project Site ("**City Law**"), City agrees that such ordinance, resolution or other measure shall not apply to the Project Site, this Agreement, the Project Approvals, or the Subsequent Approvals, if any, during the Term.

Section 2.05 Life of Project Approvals or Subsequent Approvals. The term of any Project Approval or Subsequent Approval shall automatically be extended for the longer of Term of this Agreement or the term otherwise applicable to such Project Approval or Subsequent Approval if this Agreement is no longer in effect. The Term of this Agreement, any other Project Approval or Subsequent Approval shall be extended by any period of time during which any applicable development or utility moratorium, lawsuit or the actions of other public agencies that regulate land use, delays construction of the Project.

Section 2.06 Development Timing. Subject to Applicable Law, including the GMA, Developer shall have the right to develop the Project on the Project Site in such order and at such rate and at such times as Developer deems appropriate within the exercise of its subjective business judgment.

Section 2.07 Compliance with State and Federal Law. This Agreement is subject to Developer's compliance with all applicable federal and state laws and regulations and compliance with the California Environmental Quality Act, Public Resources Code sections 21000 *et seq.* ("**CEQA**").

Article III Developer Obligations.

Section 3.01 Obligations of Developer Generally. The parties acknowledge and agree that the City's agreement to perform and abide by the covenants and obligations of City set forth in this Agreement is a material consideration for Developer's agreement to perform and abide by its long term covenants and obligations, as set forth herein. The parties acknowledge that many of Developer's long term obligations set forth in this Agreement are in addition to

Developer's agreement to perform all the mitigation measures identified in the Project Mitigation Monitoring and Reporting Program.

Section 3.02 Development Impact Fees. Except as otherwise specifically set forth in this Article 3 or otherwise herein, Developer shall only pay to City those legally enforceable development impact fees and exactions which are in effect as of the Effective Date. Developer shall pay those periodic cost of living or similar indexed increases, decreases or adjustments to such fees and exactions as are applicable and in effect at the time such fees or exactions would otherwise be payable to City. A complete list of these applicable development impact fees and exactions is attached as **DA Exhibit B**. Developer acknowledges that this Development Agreement does not control development related fees charged by entities other than the City of Pleasanton as more particularly described in the succeeding sections, and that Developer shall be responsible for payment of such fees charged by entities other than the City in effect at the time of building permit issuance notwithstanding the fact that the City may collect such fees on behalf of those other entities.

Section 3.03 Traffic Mitigation Measures; Traffic Impact Fees. Developer shall be obligated to mitigate the traffic related impacts of the Project in conformance with the Housing Element EIR, Mitigation Measure 4.N-7, which shall be deemed full compliance with General Plan policy, by complying with each of the following:

(a) Pleasanton Traffic Impact Fee. Developer shall pay to City the applicable Pleasanton Traffic Impact Fee in accordance with the City's fee schedule in effect on the Effective Date of this Agreement as may be applicable, and

(b) Tri-Valley Transportation Committee Fee. Developer shall pay the Tri-Valley Transportation Committee Fee to the City at time of building permit issuance, or to the extent permitted by law no later than at time of issuance of certificate of occupancy.

Below Market Rate Units. As more particularly set forth in the AHA, assuming Developer develops the 177 apartment unit project as contemplated by the GMA and the Project Design Review, Developer shall be obligated to make fifteen percent (15%) or twenty seven (27) affordable units available for rent within the Project Site, in accordance with the following:

(c) six (6) affordable units to households at or below 50% of the Area Median Income ("**AMI**");

(d) twelve (12) affordable units to households at or below 80% of the AMI; and, nine (9) affordable units to households at or below 100% of the AMI;

(e) The AHA shall more specifically identify the affordable unit mix, including required number of unit types, units for the physically disabled, unit construction quality and location, for these affordable units;

(f) The affordable unit rents shall be based on the following household sizes:

(1) 1 Bedroom Unit: Two (2) person household;

(2) 2 Bedroom Unit: Three (3) person household;

(3) 3 Bedroom Unit: Five (5) person household; and

(g) City acknowledges and finds that in recognition of the Project compliance with the fifteen percent (15%) affordable housing calculation provided in the City's inclusionary zoning ordinance, the Project is exempt from any obligation to pay the City's Lower Income Housing Fee.

(h) In lieu of providing any affordable units required by this Agreement and in full satisfaction of all requirements of developer under this Agreement, City may elect, not later than the first to occur of one year after the effective date of this Agreement or forty-five (45) days after Developer notifies City in writing of its intent to apply for a building permit, to require a one time in lieu fee in the amount of Two Million Three Hundred Thousand ($2,300,000), which shall be payable upon issuance of certificates of occupancy.

Section 3.04 School Fees. Developer shall pay fees in accordance with State Law as provided by the Housing Element EIR. Furthermore, Developer shall do the following with respect to the development of residential units on the Project Site: Developer shall work with the Pleasanton Unified School District (PUSD) to develop a program to offset this project's long term effect on school facility needs in Pleasanton. This program shall be designed to fund school facilities necessary to offset this project's reasonably related effect on the long-term need for expanded school facilities. The method and manner of providing these funds and/or facilities to PUSD by Developer shall be approved by PUSD and in place prior to building permit issuance. Written proof of compliance with this condition shall be provided by Developer to the City, on a form generated by PUSD, prior to building permit issuance. If required by PUSD, as part of the program developed to offset this project's long term effect on school facility needs in Pleasanton, Developer shall pay to PUSD the school impact fees and supplemental mitigation amounts that PUSD has in place at the time Developer files an application for a building permit for this project. To the extent Developer enters into a written agreement with PUSD concerning the payment of school fees and/or supplemental mitigation amounts with respect to the development of residential units on the Project Site, then, the preceding sentence to the contrary notwithstanding, Developer shall pay school fees and supplemental mitigation amounts, if any, in accordance with the written agreement entered into between Developer and PUSD and Developer shall provide to City, prior to building permit issuance, PUSD's written confirmation of such agreement.

Section 3.05 Processing Fees; Permit Fees

(a) Building Permit. Developer shall pay to City building permit fees in accordance with the City's building permit ordinance in effect at the time the applicable building permit is granted by City.

(b) Processing Fees. Developer shall pay to City the City's reasonable application processing fees for the Project in accordance with the City's fee

schedule in effect at the time Developer submits the applicable Project application for processing.

Section 3.06 Park Fees. Consistent with, and in satisfaction of Developer's Quimby Act (Gov't code section 66477) and City Park Fee Ordinance (Chapter 19.44 of the Pleasanton Municipal Code), Developer will pay City park fees totaling approximately One Million Four Hundred Ten Thousand Five Hundred Thirteen Dollars ($1,410,513). The precise amount of this contribution will be determined in accordance with the terms of the City's Park Land Fee Ordinance (Ordinance No. 1605) in effect on the Effective Date. Developer acknowledges that the inhabitants of the Project will benefit whether the City elects to apply these funds to the acquisition of parkland or to park and recreational improvements to the development of the Bernal Community Park or any other park requirement designated by the City.

Article IV City Obligations.

Section 4.01 Protection of Vested Rights. To the maximum extent permitted by law, City shall take any and all actions as may be necessary or appropriate to ensure that the vested rights provided by this Agreement can be enjoyed by Developer and to prevent any City Law from invalidating or prevailing over all or any part of this Agreement. City shall cooperate with Developer and shall undertake such actions as may be necessary to ensure this Agreement remains in full force and effect. City shall not support, adopt, or enact any City Law, or take any other action which would violate the express provisions or intent of the Project Approvals or the Subsequent Approvals (defined below).

Section 4.02 Availability of Public Services. To the maximum extent permitted by law and consistent with its authority, City shall assist Developer in reserving capacity for sewer, water and any other services as may be necessary to serve the Project.

Section 4.03 Developer's Right to Rebuild. City agrees that Developer may renovate or rebuild the Project Site within the Term of this Agreement should it become necessary due to natural disaster, changes in seismic requirements, or should the buildings located within the Project Site become functionally outdated, within Developer's sole discretion, due to changes in technology. Any such renovation or rebuilding shall be subject to the square footage and height limitations vested by this Agreement, and shall comply with the Project Approvals, the building codes existing at the time of such rebuilding or reconstruction, and the requirements of CEQA.

Section 4.04 Processing Subsequent Approvals. "**Subsequent Approvals**" shall mean those certain other land use approvals, entitlements, and permits other than the Project Approvals which are necessary or desirable for the development of the Project on the Project Site as determined by Developer. The Subsequent Approvals may include, without limitation, the following: amendments of the Project Approvals, lot line adjustments and/or subdivision maps, improvement agreements, grading permits, building permits, sewer and water connection permits, and certificates of occupancy. The Subsequent Approvals shall be deemed tools to implement those final policy decisions reflected by the Project Approvals and shall be issued by City so long as they comply with this Agreement and Applicable Law and are not

inconsistent with the Project Approvals. Without limiting the preceding provisions of this Section 4.04 or Sections 2.01-2.02, City shall not (a) impose any conditions of approval or other requirements upon any Subsequent Approvals that conflict with any Project Approvals or that could prevent or materially increase the cost of development of the Project pursuant to the Project Approvals; or (b) require any further legislative level entitlements to enable Developer to build out the Project on the Project Site.

Article V **Miscellaneous.**

Section 5.01 Amendment to Project Approvals.

(a) Administrative Project Amendments. Upon the written request of Developer for an amendment or modification to a Project Approval or Subsequent Approval, the Director of Community Development or his/her designee shall determine (i) whether the requested amendment or modification is minor when considered in light of the Project as a whole; and (ii) whether the requested amendment or modification is substantially consistent with this Agreement and Applicable Law. If the Director of Community Development or his/her designee finds that the proposed amendment or modification is minor, substantially consistent with this Agreement and Applicable Law, and will result in no new significant impacts not addressed and mitigated in the Housing Element EIR and Addendum thereto, the amendment shall be determined to be an "Administrative Project Amendment" and the Director of Community Development or his designee may, except to the extent otherwise required by law, approve the Administrative Project Amendment without notice and public hearing. Without limiting the generality of the foregoing, lot line adjustments, minor increases or reductions in the density which do not affect the number of required affordable units as described in Section 3.03 above, minor increases or decreases in the intensity, scale or scope of the Project, minor alterations in vehicle circulation patterns or vehicle access points, changes in trail alignments, substitutions of comparable landscaping for any landscaping shown on any final development plan or landscape plan, variations in the location of structures that do not substantially alter the design concepts of the Project, variations in the location or installation of utilities and other infrastructure connections or facilities that do not substantially alter the design concepts of the Project, and minor adjustments to the Project Site diagram or Project Site legal description shall be treated as Administrative Project Amendments.

(b) Other Project Amendments. Any request of Developer for an amendment or modification to a Project Approval or Subsequent Approval which does not satisfy the requirements for an Administrative Project Amendment shall be subject to the review, consideration and action by City pursuant to the Applicable Law and this Agreement.

Section 5.02 Amendment of Agreement. This Agreement may be amended from time to time, in whole or in part, by mutual written consent of the parties hereto or their successors in interest, as follows:

(a) Administrative Agreement Amendments. Any amendment to this Agreement which does not substantially affect (i) the Term of this Agreement, (ii) permitted uses of the Project Site, (iii) provisions for the reservation or dedication of land, (iv) conditions, terms, restrictions or requirements for subsequent discretionary actions, (v) the density or intensity of use of the Project Site or the maximum height or size of proposed buildings, or (vi) monetary contributions by Developer, shall not, except to the extent otherwise required by law, require notice or public hearing before the parties may execute an amendment hereto. Such amendment may be approved by the Community Development Director who shall make the determination in the context of the overall Project.

(b) Amendment Exemptions. No amendment of a Project Approval or Subsequent Approval shall require an amendment to this Agreement. Instead, any such amendment automatically shall be deemed to be incorporated into the Project and vested under this Agreement.

(c) Scope of Amendment. An amendment to this Agreement may properly address new impacts, if any, resulting from the proposed amendment and shall not serve as an opportunity for City to revisit vested rights unrelated to such amendment.

Section 5.03 Cooperation in Event of Legal Challenge. In the event of an administrative, legal or equitable action or other proceeding instituted by any person not a party to this Agreement challenging the validity of this Agreement or any Project Approval or Subsequent Approval, the parties shall cooperate in defending such action or proceeding. The parties shall use best efforts to select mutually agreeable legal counsel to defend such action, and Developer shall pay compensation for such legal counsel; provided, however, that such compensation shall include only compensation paid to counsel not otherwise employed as City staff and shall exclude, without limitation, City Attorney time and overhead costs and other City staff overhead costs and normal day-to-day business expenses incurred by City. Developer's obligation to pay for legal counsel shall not extend to fees incurred on appeal unless otherwise authorized by Developer. In the event City and Developer are unable to select mutually agreeable legal counsel to defend such action or proceeding, each party may select its own legal counsel at its own expense.

Section 5.04 Defaults. In the event City or Developer defaults under the terms of this Agreement, City or Developer shall have all rights and remedies provided under law. No default hereunder shall render invalid the lien of any deed of trust, mortgage or security interest in or upon the Project Site or any improvements or fixtures at any time located thereon.

Section 5.05 Periodic Review. Throughout the Term of this Agreement, at least once every twelve (12) months following the execution of this Agreement, City shall review the extent of good-faith compliance by Developer with the terms of this Agreement.

Section 5.06 California Law. This Agreement shall be construed and enforced in accordance with California Law.

Section 5.07 Attorneys Fees. In any legal action or other proceeding brought by either party to enforce or interpret a provision of this Agreement, the prevailing party is entitled to reasonable attorney's fees and any related costs incurred in that proceeding in addition to any other relief to which it is entitled.

Section 5.08 Severability. If any term or provision of this Agreement, or the application of any term or provision of this Agreement to a particular situation, is held by a court of competent jurisdiction to be invalid, void or unenforceable, the remaining terms and provisions of this Agreement, or the application of this Agreement to other situations, shall continue in full force and effect unless amended or modified by mutual consent of the parties.

Section 5.09 Covenants Running with the Land. All of the provisions contained in this Agreement shall be binding upon the parties and their respective heirs, successors and assigns, representatives, lessees, and all other persons acquiring all or a portion of the Project, or any interest therein, whether by operation of law or in any manner whatsoever. All of the provisions contained in this Agreement shall be enforceable as equitable servitudes and shall constitute covenants running with the land pursuant to California law *including, without limitation, California Civil Code section 1468.* This Agreement shall be binding on SHAC Las Positas Apartments, LLC only during its period of ownership of the Project Site, or applicable portion thereof, and if SHAC Las Positas Apartments, LLC sells, conveys or transfers all or any portion of the Project Site following the date hereof, SHAC Las Positas Apartments, LLC shall be released of its obligations hereunder accruing from and after the consummation of such sale, conveyance or transfer but solely with respect to such portion of the Project Site sold, conveyed or transferred by SHAC Las Positas Apartments, LLC following the date hereof.

Section 5.10 Assignment of Interests, Rights and Obligations. Developer may transfer or assign all or any portion of its interests, rights or obligations under this Agreement, the Project Approvals or Subsequent Approvals to third parties acquiring an interest or estate in the Project Site or any portion thereof including, without limitation, purchasers or ground lessees of lots, parcels or facilities.

Section 5.11 Notices. Any notice or communication required hereunder between City and Developer must be in writing, and may be given either personally, by telefacsimile (with original forwarded by regular U.S. Mail) by registered or certified mail (return receipt requested), or by Federal or other similar courier promising overnight delivery to the respective addresses specified by each party. Any party hereto may at any time, by giving ten (10) days written notice to the other party hereto, designate any other address in substitution of the address to which such notice or communication shall be given. Such notices or communications shall be given to the parties at their addresses set forth below:

If to City, to: City of Pleasanton
City Hall
123 Main Street
P.O. Box 520
Pleasanton, CA 94566
Attn: Nelson Fialho, City Manager

Telephone: (925) 931-5002
Facsimile: (925) 931-5482

With Copies to: City of Pleasanton
City Hall
123 Main Street
P.O. Box 520 Pleasanton, CA 94566
Attn: Jonathan Lowell, City Attorney
Telephone: (925) 931-5015
Facsimile: (925) 931-5482

If to Developer, to: SHAC Las Positas Apartments, LLC
777 S. California Avenue
Palo Alto, CA 94304
Attn: Kevin Ebrahemi
Telephone: (650) 842-2268
Facsimile: (650) 842-4465

With Copies to: Jason Biggs, Senior Counsel
777 S. California Avenue
Palo Alto, CA 94304
Telephone: (650) 842-2245
Facsimile: (650) 213-8183

Section 5.12 Exhibits. The following exhibits are attached to this Agreement and incorporated herein for all purposes:

DA EXHIBIT A-1.....Legal Description of 5850 WEST LAS POSITAS APARTMENTS

DA EXHIBIT A-2.....Diagram of 5850 WEST LAS POSITAS APARTMENTS

DA EXHIBIT B.....List of City Development Impact Fees

Section 5.13 Entire Agreement, Counterparts and Exhibits. This Agreement is executed in two (2) duplicate counterparts, each of which is deemed to be an original. This Agreement consists of ___ pages and three exhibits which constitute in full, the final and exclusive understanding and agreement of the parties and supersedes all negotiations or previous agreements of the parties with respect to all or any part of the subject matter hereof. All waivers of the provisions of this Agreement shall be in writing and signed by the appropriate authorities of City and the Developer.

Section 5.14 Estoppel Certificate. Developer may, at any time, and from time to time, deliver a written notice to City requesting City to certify in writing that: (a) this Agreement is in full force and effect and a binding obligation of the parties, (b) this Agreement has not been amended or modified either orally or in writing, and if so amended, identifying the amendments entered into by the parties, and (c) to the knowledge of City, neither party is or has been in default under this Agreement, or if any such default has to City's knowledge occurred,

describing the nature of any such event of default and any cure thereof. City shall execute and return such certificate to Developer within ten (10) days following City's receipt thereof, and if City fails so to do within such 10-day period, the information in Developer's notice shall conclusively be deemed true and correct in all respects. The Director of Community Development, on behalf of City, shall execute certificates requested by Developer hereunder. City acknowledges that any certificate hereunder may be relied upon by any transferee or mortgagee of any interest of Developer hereunder.

Section 5.15 Further Assurances. Each of the parties covenants, on behalf of itself and its successors and assigns, to take all actions and to execute, with acknowledgment or affidavit if required, any and all documents and writings, that may be reasonably necessary, proper or convenient to achieve the purposes and objectives of this Agreement.

Section 5.16 Interpretation. Captions and headings in this Agreement are for convenience of reference only and shall not affect the meaning or interpretation of any provision of this Agreement. As used herein: (a) the singular shall include the plural (and vice versa) and the masculine or neuter gender shall include the feminine gender (and vice versa) where the context so requires; (b) locative adverbs such as "herein," "hereto," and "hereunder" shall refer to this Agreement in its entirety and not to any specific section or paragraph; (c) the terms "include," "including," and similar terms shall be construed as though followed immediately by the phrase "but not limited to;" (d) "shall," "will," "must," "agrees," and "covenants," are mandatory and "may" is permissive; and (e) "or" is not exclusive. The parties have jointly participated in the negotiation and drafting of this Agreement, and this Agreement shall be construed fairly and equally as to the parties, without regard to any rules of construction relating to the party who drafted a particular provision of this Agreement.

Section 5.17 Recordation of Development Agreement. Pursuant to California Government Code section 65868.5, no later than ten (10) days after City enters into this Agreement, the City Clerk shall record an executed copy of this Agreement in the Official Records of the County of Alameda.

[Signatures on next page]

IN WITNESS WHEREOF, this Agreement has been entered into by and between Developer and City as of the day and year first above written.

"CITY"

Dated: _____

CITY OF PLEASANTON,

a municipal corporation

By: _____

Nelson Fialho
City Manager

Dated: _____

Approved as to form:

By: _____

Jonathan Lowell
City Attorney

"DEVELOPER"

Dated: _____

SHAC LAS POSITAS APARTMENTS, LLC

a California limited liability company

By:

SHAC CMC LLC, a California limited liability company, its sole member

By: _____

Name:

Title:

By:

SummerHill Apartment Communities,
a California corporation

By:

Name:

Title:

STATE OF CALIFORNIA

ss.

COUNTY OF _____

On _____, before me, _____, Notary Public, personally appeared _____ who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing is true and correct.

WITNESS my hand and official seal.

Signature _____ [Seal]

STATE OF CALIFORNIA

ss.

COUNTY OF _____

On _____, before me, _____, Notary Public, personally appeared _____ who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing is true and correct.

WITNESS my hand and official seal.

Signature _____ [Seal]

DA-EXHIBIT A-1

LEGAL DESCRIPTION OF PROPERTY

Real property in the City of Pleasanton, County of Alameda, State of California, described as follows:

PARCEL 1:

LOT 19, AMENDED PARCEL MAP 3858, FILED NOVEMBER 3, 1986, IN MAP BOOK 165, AT PAGES 1 THROUGH 20, INCLUSIVE, ALAMEDA COUNTY RECORDS.

PARCEL 2:

NON-EXCLUSIVE EASEMENT FOR INGRESS AND EGRESS OF VEHICLES AND PEDESTRIANS, AS GRANTED IN THAT CERTAIN "RECIPROCAL EASEMENT AGREEMENT", RECORDED JUNE 21, 2013 AS INSTRUMENT NO. 2013218769 OVER, ALONG AND ACROSS THE FOLLOWING STRIP OF LAND:

THE WESTERLY 15 FEET OF LOT 18A OF AMENDED PARCEL MAP 3922, FILED NOVEMBER 1987, IN BOOK 172, AT PAGE 80, ALAMEDA COUNTY RECORDS

APN: 941-2762-006

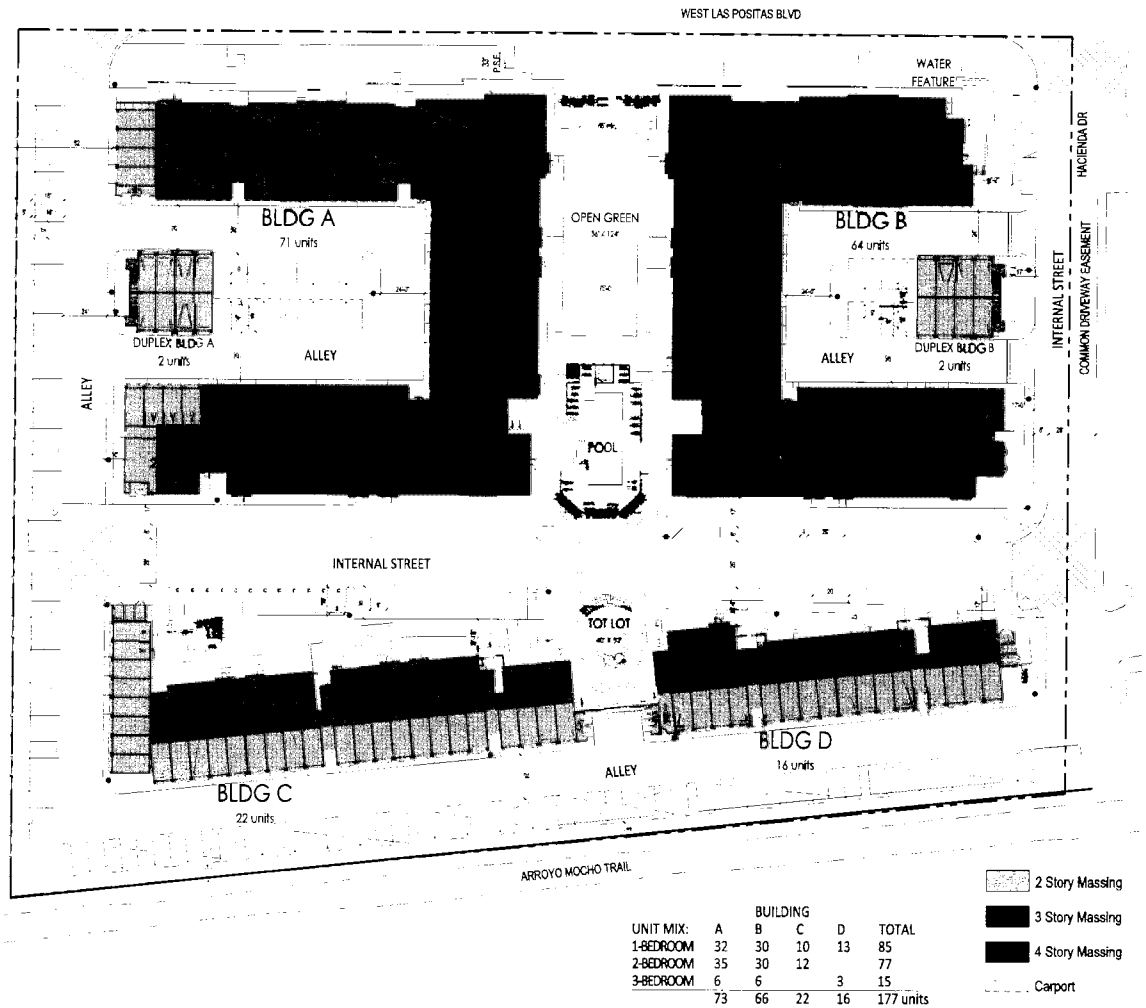
DA-EXHIBIT A-2

DIAGRAM OF 5850 WEST LAS POSITAS APARTMENTS

USE CURRENT SITE PLAN IN BLACK AND WHITE FOR RECORDING

DA-EXHIBIT B

LIST OF CITY DEVELOPMENT IMPACT FEES



UNIT MIX:	BUILDING A	B	C	D	TOTAL
1-BEDROOM	32	30	10	13	85
2-BEDROOM	35	30	12		77
3-BEDROOM	6	6		3	15
	73	66	22	16	177 units

2 Story Massing
3 Story Massing
4 Story Massing
Carport

PROJECT SUMMARY

Site Area:	5.9 acres or 257,283 sq. ft.	Gross Floor Area:	227,060 sq. ft.
Total Units:	177 DU	Building Footprint:	85,000 sq. ft.
Density:	30.0 DU/AC	Building Coverage:	33%
Building Heights:	2 to 4 Stories	Landscaped Area:	44,530 sq. ft.

DEVELOPMENT STANDARDS:
(Per Housing Site Design Guidelines)

Front Setbacks:	33' min. from public streets
	17' min. from internal streets
Side Setbacks:	8' min. to carports
	50' min. from west property line to bldg.
Rear Setback:	8' min. to carports
Alley Setbacks:*	5' min. to garage door
	3' min. to upper stories
Drive aisle widths:	26' min. internal streets
	24' min. alleys

PARKING REQUIRED:

1.5 spaces per 1-bedrm unit x 85 + 2 =	130 spaces
1.5 spaces per 2-bedrm unit x 77 =	116 spaces
2 spaces per 3-bedrm unit x 15 =	30 spaces
1 visitor space per 7 units x 177 =	25 spaces
	301 spaces required

PARKING PROVIDED:

Garage spaces - 10' x 20' min.	130 spaces (2 accessible)
Carport spaces - 9' x 18' min.**	124 spaces (2 accessible)
Uncovered spaces - 9' x 18' min.	38 spaces (4 accessible)
Compact spaces - 8' x 16' min.	12 spaces
	304 (8 accessible) spaces provided

SECURE BICYCLE PARKING REQUIRED:
0.8 per unit x 177 = **142 spaces required**

SECURE BICYCLE PARKING PROVIDED:

Inside Private Garages:	130 spaces
Inside Bicycle Storage Rooms:	20 spaces
	150 spaces provided

RESIDENTIAL STORAGE REQUIRED:
40 cu. ft. per unit x 177 = **7,080 cu. ft. storage required**

RESIDENTIAL STORAGE PROVIDED:

40 cu. ft. patio storage x 153 =	6,120 cu. ft. provided on patios
2'w x 3'd x 6'-8"h typ. locker x 152 =	6,080 cu. ft. provided in storage rooms
	12,200 cu. ft. storage provided

NOTES:
* Zero setbacks to face of carriage buildings, with 2' garage door recess
** Carport depth includes 2' vehicle overhang above landscaping

DA-EXHIBIT A-2

DIAGRAM OF 5850 WEST LAS POSITAS APARTMENTS

Scale 0 15 30 60

5850 WEST LAS POSITAS BLVD

CONCEPTUAL SITE PLAN

A1.4

PLEASANTON, CALIFORNIA
KTGY # 2013-0303 01/24/2014

SUMMERHILL COMMUNITIES OF DISTINCTION
SummerHill Apartment Communities
3000 Executive Parkway, Suite 450
San Ramon, CA 94583
650.842.2268
www.shapartments.com

KTGY Group, Inc.
Architecture+Planning
1733 Ocean Ave., Suite 250
Santa Monica, CA 90401
310.394.2623
ktgy.com

THE CITY OF PLEASANTON

BUILDING PERMIT AND DEVELOPMENT FEES

March 1, 2012

The values shown in this document are for estimating purposes only. *Many complex fees have been presented in a simplified form to assist the estimator.* ***The values shown in this document reflect the fee rates in effect at the time of publication and are subject to change without notification.***

Building Permit Fees are based upon the building permit fee schedule in effect at the time of permit application. Development Fees, however, are based upon the applicable rate in effect at the time of payment (usually permit issuance), not application date and are only application on newly constructed buildings or a change of use in an existing building. Plan Review fees are due at time of application submittal; building permit and impact fees are due at the time of permit issuance. Pre-payment of building permit fees or impact fees before issuance is not permitted.

Project valuation is the basis of all building permit and plan review fees. Alterations, Remodels and Tenant Improvements use the contract price for the work as the valuation, but new project valuation is determined from our valuation table. See a partial table below for a sample of some common project types. For uses not shown please contact the Building and Safety Division.

Use	Occupancy Group	Construction Type	Rate (per Sq Ft)
Single Family Dwelling	R-3	VB	$129.36
Private Garage	U	VB	$46.73
Licensed Residential Care Home	R-2.1	VA	$143.81
Warehouse, unconditioned	S-1	IIIB	$80.78
Office Building	B	VB	$148.66
Retail Store	M	VB	$112.04
Restaurant	A-2	VA	$145.67

1. ***Building Permit Fee***. Once a valuation has been determined for a project the Building Permit Fee can be calculated based on the table shown below. Many subsequent fees and charges are based on a percentage of this base fee.

Total Valuation	Base Fee	Rate per each Unit above Base
$1 to $500	$23.50	
$501 to $2,000	$23.50	$3.05 per 100*
$2001 to $25,000	$69.25	$14.00 per 1,000*
$25,001 to $50,000	$391.25	$10.10 per 1,000*
$50,001 to $100,000	$643.75	$7.00 per 1,000*
→ $100,001 to $500,000	$993.75	$5.60 per 1,000*
$500,001 to $1,000,000	$3,233.75	$4.75 per 1,000*
$1,000,001 and over	$5,608.75	$3.65 per 1,000*

*or fraction thereof over initial base amount

Example: A new 2,500 sf dwelling with a 650 sf garage:

First, calculate the total valuation
2500 x $129.36/sf: **$323,475.00** dwelling
650 x $46.73/sf: + **$30,374.50** garage
Total valuation **$353,849.50**

Then, calculate fees
Building Permit fee, based on $353,849.50:
[$993.75 + (**254**[a] x $5.60)] = **$2,416.15**
T-24 Energy Surcharge,
25% * $2416.15 = **$604.04**
Building Plan Review fee,
65% * $2,416.15 = **$1,570.50**
T-24 Energy Plan Review fee,
25% * $604.04 = **$151.01**

a. (**$353,849.50** –100,000)/1000 =253.8495*, use **254**

2. ***Title 24 Energy Code Surcharge.*** A 25% surcharge fee to both the permit and plan review is assessed on all building areas containing space subject to the provisions of the California Energy Code.

3. ***Disabled Access Surcharge.*** This 15% surcharge to the Building Permit Fee is assessed to all projects which are required by law to be accessible, commercial and multi-family buildings.

4. ***Electrical, Plumbing and Mechanical Permit Fees.*** Stand alone electrical, mechanical or plumbing (sub-trades) permit fees are assessed on a per item basis, as shown on pages 8-10. Sub-trade fees for all new residential construction are assessed on a cost per square foot basis. All other building permits with associated sub-trades are assessed a single permit fee, 25% of the building permit fee.

5. ***Plan Review Fees.*** Plan review fees are collected for all applicable plan reviews that apply to any given project. Fees for the initial plan review of buildings, structures and fire sprinkler systems are a percentage of the Building Permit Fee that was calculated in step number 1 above. Fees for revisions to previously approved plans are based upon the time needed for review at the current rate of the reviewer, with a minimum charge of one hour plus administrative charges.
   Note: A fast-track plan review is available for most reviews. Please contact the Building Division for specific details.
   Building Code plan review: 65% of the Building Permit fee, $98.48 minimum.
   Sub-Trades plan review: 25% of the Building Code plan review fee.
   Fire Department Life Safety/Egress plan review: 25% of the Building Permit fee.
   Green Building plan review (projects subject to Green Building only), $295.44 minimum.

6. ***Fire Sprinkler Plan Check and Permit Fee.*** These fees are based on the cost of the sprinkler system for new construction and alteration, and are calculated in the same manner as Items 1 & 5 above, but only use a valuation factor of **$4.39** per square foot. The minimum plan check fee is **$98.48**, based upon the current rate of our consultant. Both the Fire Sprinkler Plan Check Fee and Plan Review Fee are collected at the time of plan submittal.
   Note: The contract price is used for valuation to determine plan check and permit fees for small alterations to existing systems where fewer than five heads are added or relocated.

7. ***Fire Alarm Plan Check and Permit Fee.*** The minimum fee for fire alarm system installations and alterations is **$275.00**, collected at the time of submittal for plan review. The Fire Alarm Permit fee is based on the number of hours the Fire Department estimates the field inspection time will entail, plus administrative and archiving fees.

8. ***Hazardous Materials Plan Check and Permit fee.*** The initial plan submittal fee for the review and inspection of hazardous material installations is **$420.00**. The Hazardous Materials Permit fee is based on the Fire Department estimate of field inspection time, plus administrative & archiving fees.

9. ***On-Site Permits.*** On-Site permits are required for improvements outside of structures on private property such as curb & gutter, sidewalk, pavement, underground piping, site lighting, erosion control, etc. The plan review fee is 0.6% of the estimated value of the improvements, and the onsite permit fee is 1.4% of the estimated value of the improvements.

10. ***Strong Motion Instrumentation Program Fee (SMIP).*** *(3rd party fee collected for the State of California)* This fee applies to any proposed building construction for which a building permit is issued.

Residential, not including hotels & motels	**$0.10** per $1,000 valuation
Non-Residential	**$0.21** per $1,000 valuation

11. ***Building Standards Administration Special Revolving Fund Surcharge.*** *(3rd party fee collected for the State of California)* This fee applies to any proposed building construction for which a building permit is issued.

$1.00 for every $25,000.00 of permit valuation

12. ***Archival of Documents and Plan Fees.*** The City of Pleasanton collects fees for electronically archives plans and required documents submitted for plan review and permits.

Plans, 11" by 17" or larger	**$2.00** per page
Other required documents	**$0.25** per page.

13. ***Development Fees.*** Development fees are assessed on all new structures, additions to existing structures. Whenever the use of an existing space changes, such as tenant improvements, the sewer impact fees (both City and DSRSD) and traffic impact fees are reviewed to determine if this new or expanded use creates an increase in demand on the infrastructure. In all cases where it is determined that the use increases demand, a fee is assessed based on the difference between the previously purchased impact or capacity for the space and the new use impact or capacity.

Water Connection Fee

The connection fees for water services are based on the size of the water meter(s). The size is determined by the project designer, based on the fixture unit or minimum flow demand for the service. The Building and Safety Division collects fees for one- and two-family residential domestic meters. The Engineering Division collects fees for all other projects. Water Connection Fees are always based upon the rate in effect at the time of payment at permit issuance, not application date.

Note: For single-family homes that are required to have a 1" water meter solely because of fire sprinkler flow requirements, the "Meter Fee" and "City Connection Fee" are based upon the installed 1" meter size. However, if a ½" reducer is installed on the domestic water side of the meter, then the "Zone 7 Connection Fee" can be based on the 5/8" x ¾" meter rate.

Meter Size	Meter Type	Gallons per Min	Meter Fee	Connection Fees		Total Fee
				City**	Dist Zone 7*	(eff. 1/01/12)
5/8" x 3/4"	Displacement	10	$420	$1,200	$22,930	$24,550
3/4"	Displacement	15	$470	$1,800	$34,395	$36,665
1"	Displacement	25	$570	$3,000	$57,325	$60,895
1.5"	Displacement	50	$730	$6,000	$114,650	$121,380
2"	Displacement	80	$910	$9,600	$183,440	$193,950
2"	Omni C2	160	$1,640	$9,600	$366,880	$378,120
3"	***	400	$2,050	$21,000	***	***
4"	***	800	$3,280	$60,000	***	***
6"	***	1600	$5,330	$120,000	***	***

* 3rd party fee collected by the City of Pleasanton for the Zone 7 Water District

** In the North Pleasanton Improvement District (generally within the Hacienda Business Park & Stoneridge Mall Area) the City connection fee is reduced by 61%

***Connection fees for meters larger than 2-inch are determined by and collected by Zone 7 Water District.

Sewer Connection Fee

Connection fees for sewer are required for all new structures and commercial additions, and are analyzed at all changes of occupancy. A change in use that results in an increased demand in sewer flow or effluent type must pay the difference between the previously purchased capacity and the new capacity. Residential connection fees are a flat rate per dwelling unit, regardless of the size of building. All Sewer Connection Fees are based upon either verified actual water usage, or the following table (for uses not shown please contact the Building Division). Fees are calculated based upon the rate in effect at the time of payment or permit issuance. Dublin San Ramon Services District (DSRSD) is the agency handling sewage for the City of Pleasanton.

		Coeff Factor (gpd)	City of Pleasanton Connection Fee	DSRSD Connection Fee *effective 7/01/11*	Total Connection Fee (City+DSRSD)
RESIDENTIAL:					
Single Family Home, Townhouse	*per unit*	220	$500.00	$14,203.00	$14,703.00
Auxiliary (Secondary) Dwelling Unit	*per unit*	88	$200.00	$5,682.00	$5,882.00
Condominium	*per unit*	165	$375.00	$10,653.00	$11,028.00
Apartment, Mobile Home	*per unit*	1445	$330.00	$9,360.00	$9,690.00
COMMERCIAL:					
Auto shop/ Auto dealer	*per square foot*	0.11	$0.25	$7.10	$7.35
Bagel Shop*	*per square foot*	0.24	$0.55	$18.44	$18.99
Bakery/ Donut Shop*	*per square foot*	0.62	$1.41	$46.86	$48.27
Bank, Financial Office	*per square foot*	0.06	$0.14	$3.87	$4.01
Banquet Facility, intermittent use*	*per square foot*	0.27	$0.61	$19.02	$19.64
Barber shop, Beauty salon	*per square foot*	0.35	$0.68	$19.37	$20.05
Cafeteria, day use*	*per square foot*	0.40	$0.91	$28.18	$29.09
Car wash	*per square foot*	1.70	$3.86	$109.75	$113.61
Church	*per seat*	5	$11.36	$322.80	$334.16
Coffee Shop, no cooking on site	*per square foot*	0.37	$0.84	$23.89	$24.73
Commercial	*per square foot*	0.05	$0.11	$3.23	$3.34
Day Spa	*per square foot*	0.35	$0.68	$19.37	$20.05
Daycare	*per square foot*	0.10	$0.23	$6.46	$6.69
Deli	*per square foot*	0.71	$1.61	$45.84	$47.45
Dental Clinic	*per square foot*	0.14	$0.32	$9.04	$9.36
Gym, Health Club (with showers)	*per square foot*	0.42	$0.95	$27.11	$28.07
Hotel, Motel (excluding dining facilities)	*per room*	130	$295.45	$8,392.73	$8,688.18
Ice Cream/Yogurt Shop*	*per square foot*	0.21	$0.48	$15.87	$16.35
Institutional Use (Residential)	*per bed*	100	$227.27	$6,455.95	$6,683.22
Juice Bar	*per square foot*	0.21	$0.48	$13.56	$14.03
Market	*per square foot*	0.19	$0.43	$12.27	$12.70
Market w/ garbage disposal*	*per square foot*	0.19	$0.43	$14.15	$14.59
Medical Clinic	*per square foot*	0.37	$0.84	$23.89	$24.73
Medical/ Dental Complex	*per square foot*	0.22	$0.50	$14.20	$14.70
Office	*per square foot*	0.05	$0.11	$3.23	$3.34
Pizza Take-out only*	*per square foot*	0.26	$0.59	$17.64	$18.23
Restaurant, Fast Food type*	*per square foot*	0.60	$1.36	$40.72	$42.08
Restaurant, Full Service type*	*per square foot*	0.54	$1.23	$38.04	$39.27
Retail	*per square foot*	0.05	$0.11	$3.23	$3.34
Sandwich Shop	*per square foot*	0.16	$0.36	$10.33	$10.69
Warehouse, storage	*per square foot*	0.03	$0.07	$1.94	$2.00
Wine Tasting Room, no cooking	*per square foot*	0.175	$0.40	$11.30	$11.70
**Indicates variable strength wastewater SS and BOD factors*					
For uses not shown, please contact the Building Division					

Lower Income Housing Fee *(adjusted annually based on CPI; rates effective 1/01/12)*

Residential (per dwelling unit)	
Single-family detached (over 1,500 sq ft)	$10,382.00
Single-family detached (1,500 sq ft or less)	$2,573.00
Multi-family (Apartment, Condominium)	$2,573.00
Non-Residential (per square foot)	$2.74

Public Facilities Fee *(adjusted annually based on CCI; rates effective 1/01/12)*

	City	NPID Area Only
Residential		
Single-family detached	$4,421.00	$3,995.00
Single-family attached (Townhouse)	$3,302.00	$2,983.00
Multi-family (Apartment, Condominium)	$2,697.00	$2,436.00
Second Unit (In-law, Aupair, etc.)	$1,769.00	$1,598.00
Non-Residential (per square foot)		
Office	$0.83	$0.57
Research & Development	$0.67	$0.48
Light Manufacturing	$0.51	$0.39
Service/Commercial	$0.57	$0.42
Warehouse	$0.51	$0.39
Retail	$0.55	$0.42
Restaurant	$1.13	$0.73
Hotel/Motel	$0.40	$0.33

Traffic Development Fee *(adjusted annually based on CCI; rates effective 1/01/12)*

	City	NPID Area Only
Residential (per dwelling unit)		
Single-family detached	$4,401.00	$1,385.00
Single-family attached (Townhouse)	$4,401.00	$1,385.00
Multi-family (Apartment, Condominium)	$3,080.00	$969.00
Second Unit (In-law, Aupair, etc.)	$1,761.00	$555.00
Non-Residential (per square foot)		
Office	$5.86	$1.85
Commercial/Retail	$12.31	$3.88
Industrial	$4.40	$1.39
Other (per trip) --- Consult Traffic Engineer	$4,401.00	$1,385.00

Tri-Valley Transportation Committee Fee *(3rd party fee collected for TVTC; rates effective 3/01/12)*

Residential (per dwelling unit)	
Single-family detached	$2,279.00
Single-family attached (Townhouse)	$2,279.00
Multi-family (Apartment, Condominium)	$1,450.00
Second Unit (In-law, Aupair, etc.)	$621.00
Non-Residential (per square foot)	
Office, gross floor area	$4.09
Retail, gross floor area	$1.52
Industrial, gross floor area	$2.76
Other Uses, per average am/pm peak hour trip	$2,279.00

Impervious Surface Drainage Fee *(3rd party fee collected for the Alameda County Flood Control & Water Conservation District, Zone 7)*

Zone 7 Drainage District fees are collected for all newly constructed impervious area, and are based on the total square footage increase of all impervious surfaces on the lot or site. Drainage Fees are only payable at time of permit issuance, and are based upon the rate in effect at the time of payment, not application date.

Note: Impervious is defined by the Zone 7 Drainage District as any area occupied by buildings or structures, driveways, streets, sidewalks, parking, storage or any other area where surfacing is required, and any other surface including, but not limited to, asphalt, concrete, compacted gravel, or other nor-porous or semi-porous substance or substances which will cause, assist, or in any way contribute to the runoff in any appreciable amount or quantity of water or any associated liquid elements.

$1.00 per sq ft of impervious surface *(effective 01/01/11)*

In-Lieu Park Dedication Fee *(collected at final map approval, residential developments only, eff. 6/01/03)*

Single-Family Residential	**$9,707** per dwelling
Multi-Family Residential	**$7,969** per unit

G.I.S. Mapping Fee **$0.002 per sq. ft., per site**

School Impact Fee

This fee is not collected by the City of Pleasanton, but is paid by the applicant directly to the Pleasanton Unified School District (PUSD) for all new construction or additions exceeding 499 square feet in area. As required by State law, school impact fees must be paid prior to issuance of the building permit.

Applicants must first schedule an appointment with the School District, then pick up a copy of the approved plans from our office and bring them to the School District office for a review to determine the school impact fees. A copy of the school district receipt must be returned to the building division.

Pleasanton Unified School District. To schedule an appointment, and for current school impact fee rates on buildings constructed within the City of Pleasanton, please call PUSD at (925) 462-5500.

Other Development Fees *(applicable only on new projects in specific locations)*:

South Livermore Agricultural Land Trust Fee **$4.01/sf ($16,046.51 min.)**
(3rd party fee collected for Tri Valley Conservancy, rate effective 3/01/12)

Livermore Traffic Impact Fee **$7,655/ unit**
(3rd party fee collected for City of Livermore in Ruby Hill, rate effective 1/01/11)

Livermore Sewer Connection Fee **$4,633.70/ unit**
(3rd party fee in-lieu of the DSRSD Sewer Connection Fee in Ruby Hill, rate effective 1/01/11)

Downtown Revitalization District Parking In-Lieu Fee **$17,309.35/ parking space**
(When development within District cannot meet the onsite parking requirements, rate effective 4/01/11)

Vineyard Ave Corridor Specific Plan **$25,000**
(3rd party fee collected for Tri-Valley Conservancy at Sub-Division Map recordation, rate eff. 2/21/06)

City of Pleasanton Authorized Plan Check Consultants

The City of Pleasanton Building and Safety Division contracts with consultants to perform plan review on our behalf, and if requested by applicants, third party plan reviews. This service is only available for Building and Fire Code related reviews, and is not available for any other agency and Divisions, such as the City of Pleasanton Planning or Engineering Division or the Alameda County Environmental Health Department.

All plans and supporting documents must first be submitted to the City of Pleasanton Permit Center. All applicable plan review fees must be paid at the time of submittal, and in no case prior to review by any agency.

The City's normally plan review time is 10 working days for small jobs, 15 working days for additions, alterations and Tenant Improvements, and 25 days for new construction or unusually complex projects. Expedited plan review is based upon the availability of either in-house or consultant plan review personnel, and the applicant must contact the specific reviewer directly. An expedited plan review fee is due and if performed by the consultant, payable directly to the consulting firm. Length of time to complete any third party review is negotiated between the applicant and the consultant.

After the final review, plans are returned to the Permit Center, and may take two working days to process prior to permit issuance. Additional Building Counter Staff time may also be required if all required information is not submitted by the applicant.

	Interwest Consulting Group (ICG) 6280 W Las Positas Blvd, # 220, Pleasanton, CA **925-462-1114**	**ICG/Vernon Brown & Associates, Inc.** 6060 Sunrise Vista Dr., Suite 1425, Citrus Heights, CA 95610 **916-726-0404**	**RKA Associates** 2358 Fish Creek Place Danville, CA **925-820-4816**
Architectural/ Structural	**XXX**		**XXX**
Title 24 Energy	**XXX**		**XXX**
Accessibility	**XXX**		**XXX**
Plumbing	**XXX**		**XXX**
Mechanical	**XXX**		**XXX**
Electrical	**XXX**		**XXX**
Fire Sprinkler		**XXX**	
Fire Code	**XXX**	**XXX**	**XXX**

*Note: **All the above fees are estimates of fees to be collected by the Building and Safety Division only**. Actual fees will be determined at the time of permit submittal and issuance. There may be additional fees for your project required by the Public Works (925-931-5650) and/or Planning Divisions (925-931-5600). Contact those divisions directly for more information.*

In addition, Pleasanton School District fees (or in some cases Livermore, 925-606-3200) must be paid before building permits will be issued for additions and new construction exceeding 500 square feet. A receipt from the school district must be presented to the Building and Safety Division Counter before a permit will be issued. Call the Pleasanton Unified School District for appointments & fee estimates at 925-462-5500.

If you need help or further information, please contact the City of Pleasanton Building and Safety Division at 925-931-5300.

PLUMBING PERMIT WORKSHEET

ITEM	UNIT PRICE
Filing fee for a Plumbing Permit not included with an associated Building Permit	$23.50
New Single-Family Dwelling Plumbing permit fee Buildings up to 2,999 sf Buildings 3000sf or more	 $0.088 per square foot $0.072 per square foot
New Multi-Family Building Plumbing Permit fee	$0.133 per square foot
Plumbing Plan Review Fee	65% of Plumbing Permit fee, minimum one hour, $98.48
Additional Plan Review (more than one initial recheck, or for revisions to previously approved plans)	Minimum one hour, $98.48, or based upon actual review time multiplied by the current reviewer rate, plus a $20.00 admin fee
Backflow devices 2" or less Larger than 2"	 $12.30 each $24.65 each
Fixtures and or traps	$9.80 each
Gas outlets First 5 outlets After the first 5	 $6.15 each $1.10 each
Irrigation Protection devices	$14.80 each
Miscellaneous Appliances or devices	$9.80 each
Pools or Spa Private pool Private spa Public pool Public spa	 $60.75 $30.25 $91.25 $60.75
Re-circulating water heaters	$48.00 each
Reconnect meter PG&E inspections	$24.00 each meter
Rainwater leaders	$9.80 per leader
Sewer lift stations/ grinder pumps	$74.50 each
Sewer piping (inside or outside of building)	$24.65 per building
Water heaters	$12.30 each
Water line connections	$4.80 each
Water laterals (from meter to building)	$32.00 each
Water softeners	$12.00 each

MECHANICAL PERMIT WORKSHEET

ITEM	UNIT PRICE
Filing fee for Mechanical Permit not included with an associated Building Permit	$23.50
New Single-Family Dwelling Mechanical Permit fee	
Buildings up to 2,999 sf	$0.043 per square foot
Buildings 3000sf or more	$0.051 per square foot
New Multi-Family Mechanical Permit fee	$0.061 per square foot
Mechanical Plan Review Fee	25% of Mechanical Permit fee, minimum one hour, $98.48
Additional Plan Review (more than one initial recheck, or for revisions to previously approved plans)	Minimum one hour, $98.48, or based upon review time multiplied by the current reviewer rate, plus a $20.00 admin fee
Air handling units	
Up to 10,000 cfm	$10.65 each
Over 10,000 cfm	$18.10 each
Appliance vents	$7.25 each
Boilers, Compressors, Absorption Systems	
Up to 3 HP (≤ 100 kBTU)	$14.70 each
Over 3 and up to 15 HP (≤ 500 kBTU)	$27.15 each
Over 15 and up to 30 HP (≤ 1 mBTU)	$37.25 each
Over 30 and up to 50 HP (≤ 1.75 mBTU)	$55.45 each
Over 50 HP (> 1.75 mBTU)	$92.65 each
Cooling units, Refrigeration units	$13.70 each
Ducting	
Flex duct	$35.20 per floor level
Rigid duct	$56.00 per floor level
Exhaust hoods	$10.65 each
Factory built fireplaces	$10.40 each
Furnaces (forced air, wall or floor type)	
Up to 100 kBTU	$14.80 each
Over 100 kBTU	$18.20 each
Heat pumps	$15.20 each
Miscellaneous Appliances or Equipment	$10.65 each
Miscellaneous ventilation systems	$10.65 each
Suspended or recessed heaters	$14.80 each
Variable Air Volume boxes (VAV)	$15.20 each
Vent fans	$7.25 each
Wood burning stoves	$40.00 each

ELECTRICAL PERMIT WORKSHEET

ITEM	UNIT PRICE
Filing fee for Electrical Permit not included with an associated Building Permit	$23.50
New Single-Family Dwelling Electrical Permit Fee	$0.056 per square foot
New Multi-Family Electrical Permit Fee	$0.050 per square foot
Electrical Plan Review Fee	25% of Electrical Permit fee, minimum one hour, $98.48
Additional Plan Review (more than one initial recheck, or for revisions to previously approved plans)	Minimum one hour, $98.48, or based upon review time multiplied by the current reviewer rate, plus a $20.00 admin fee
Appliances	$4.75 each
Busways	$7.25 per 100 lineal feet
General Circuits	$5.25 per circuit
Generators (under 10 kVA)	$23.50 each
Lighting Fixtures First 20 fixtures Fixtures exceeding 20	 $1.10 each $0.73 each
Miscellaneous Electrical Apparatus	$18.20 each
Motors or Generators Up to 1 HP (≤ 1 kVA) Up to 10 HP (≤ 10 kVA) Up to 50 HP (≤ 50 kVA) Up to 100 HP (≤ 100 kVA) Over 100 HP (> 100 kVA)	 $4.75 each $12.30 each $24.60 each $49.50 each $74.50 each
Photo-Voltaic Installations	$150.00 per residential system $30.00 per kw for commercial systems
Receptacles, Switches, Other Outlets First 20 outlets Outlets exceeding 20	 $1.10 each $0.73 each
Service panels Up to 199 amp (under 600 volts) Up to 999 amp (under 600 volts) 1000 amp or more, or panels over 600 v	 $30.50 each $62.15 each $124.30 each
Signs, marquees	$24.60 each
Private Spa or Swimming Pool	$49.50 each
Temporary Power (Pole or Pedestal)	$23.50 each
Temporary Power Distribution (for construction sites, seasonal lots, etc., per pole or pedestal)	$12.30 each
Transformers	$66.50 each

REVISED: March 1, 2012; January 1, 2012; Oct. 6, 2011; July 1, 2011; March 1, 2011; January 1, 2011; November 15, 2010; August 1, 2010; July 1, 2010; Feb 24, 2010; Jan 1, 2009; Oct 30, 2008; July 1, 2008; Jan 1, 2008; Dec. 10,2007; Jan. 3, 2007; Jan 1, 2007; Dec 1, 2006; Nov 13, 2006; July 14, 2006; Jan 3, 2006; July 14, 2005; Nov 7, 2004; July 2, 2004; May 10, 2004; March 3, 2003; Jan 31, 3004; April 12, 2002, March 15, 2002, Sept. 6, 2001, Jan. 5, 2001.