10. Appendices

Appendix A: Air Quality and Greenhouse Gas Analysis

Carlton Senior Living IS/MND

Solano-San Francisco County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Medical Office Building	24.00	1000sqft	0.55	24,000.00	0
Parking Lot	180.00	Space	1.62	72,000.00	0
Congregate Care (Assisted Living)	156.00	Dwelling Unit	5.50	150,000.00	446

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	56
Climate Zone	4			**Operational Year**	2021
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - total lot acreage from project info and description

Construction Phase -

Demolition -

Architectural Coating - consistent with BAAQMD regulation 8 rule 3

Vehicle Trips - Trip rate obtained from ITE

Woodstoves - in compliance with BAAQMD Regulation 6, Rule 3 - wood burning devises

Energy Use - Updating energy efficiency to reflect the Title 24 2019 updates

Construction Off-road Equipment Mitigation - BAAQMD Best Managment Pratices fugitive dust

Energy Mitigation -

Water Mitigation -

Carlton Senior Living IS/MND - Solano-San Francisco County, Annual

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	150.00	50.00
tblArchitecturalCoating	EF_Parking	150.00	50.00
tblArchitecturalCoating	EF_Residential_Exterior	150.00	50.00
tblArchitecturalCoating	EF_Residential_Interior	100.00	50.00
tblEnergyUse	T24E	332.81	156.42
tblEnergyUse	T24E	6.11	4.28
tblEnergyUse	T24NG	5,484.45	2,577.69
tblEnergyUse	T24NG	16.31	11.42
tblFireplaces	NumberGas	23.40	49.92
tblFireplaces	NumberWood	26.52	0.00
tblLandUse	LandUseSquareFeet	156,000.00	150,000.00
tblLandUse	LotAcreage	9.75	5.50
tblVehicleTrips	ST_TR	2.20	2.61
tblVehicleTrips	SU_TR	2.44	2.61
tblVehicleTrips	WD_TR	2.74	3.44

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.4623	3.9858	3.2516	6.7900e-003	0.3400	0.2050	0.5450	0.1309	0.1919	0.3228	0.0000	609.0310	609.0310	0.1056	0.0000	611.6703
2020	0.5752	0.0176	0.0259	5.0000e-005	2.3800e-003	1.1300e-003	3.5100e-003	6.3000e-004	1.1200e-003	1.7600e-003	0.0000	4.7203	4.7203	2.5000e-004	0.0000	4.7266
Maximum	**0.5752**	**3.9858**	**3.2516**	**6.7900e-003**	**0.3400**	**0.2050**	**0.5450**	**0.1309**	**0.1919**	**0.3228**	**0.0000**	**609.0310**	**609.0310**	**0.1056**	**0.0000**	**611.6703**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.4622	3.9858	3.2516	6.7900e-003	0.2448	0.2050	0.4498	0.0836	0.1919	0.2755	0.0000	609.0305	609.0305	0.1056	0.0000	611.6698
2020	0.5752	0.0176	0.0259	5.0000e-005	2.3800e-003	1.1300e-003	3.5100e-003	6.3000e-004	1.1200e-003	1.7600e-003	0.0000	4.7203	4.7203	2.5000e-004	0.0000	4.7266
Maximum	**0.5752**	**3.9858**	**3.2516**	**6.7900e-003**	**0.2448**	**0.2050**	**0.4498**	**0.0836**	**0.1919**	**0.2755**	**0.0000**	**609.0305**	**609.0305**	**0.1056**	**0.0000**	**611.6698**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**27.81**	**0.00**	**17.36**	**35.94**	**0.00**	**14.56**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	11-6-2018	2-5-2019	1.1057	1.1057
2	2-6-2019	5-5-2019	1.0129	1.0129
3	5-6-2019	8-5-2019	0.9402	0.9402
4	8-6-2019	11-5-2019	0.9426	0.9426
5	11-6-2019	2-5-2020	0.5750	0.5750
6	2-6-2020	5-5-2020	0.4659	0.4659
		Highest	1.1057	1.1057

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.8521	0.0206	1.2764	4.6000e-004		0.0250	0.0250		0.0250	0.0250	2.4331	8.1277	10.5608	0.0133	1.1000e-004	10.9283
Energy	6.3100e-003	0.0547	0.0289	3.4000e-004		4.3600e-003	4.3600e-003		4.3600e-003	4.3600e-003	0.0000	360.8156	360.8156	0.0147	3.9400e-003	362.3557
Mobile	0.3358	1.9117	3.3709	0.0122	0.9111	0.0109	0.9220	0.2442	0.0102	0.2544	0.0000	1,122.9352	1,122.9352	0.0536	0.0000	1,124.2752
Waste						0.0000	0.0000		0.0000	0.0000	81.5110	0.0000	81.5110	4.8172	0.0000	201.9401
Water						0.0000	0.0000		0.0000	0.0000	4.1800	27.8483	32.0283	0.4306	0.0104	45.8915
Total	**1.1942**	**1.9870**	**4.6762**	**0.0130**	**0.9111**	**0.0403**	**0.9514**	**0.2442**	**0.0396**	**0.2838**	**88.1241**	**1,519.7268**	**1,607.8509**	**5.3294**	**0.0145**	**1,745.3908**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.8521	0.0206	1.2764	4.6000e-004		0.0250	0.0250		0.0250	0.0250	2.4331	8.1277	10.5608	0.0133	1.1000e-004	10.9283
Energy	6.3100e-003	0.0547	0.0289	3.4000e-004		4.3600e-003	4.3600e-003		4.3600e-003	4.3600e-003	0.0000	360.8156	360.8156	0.0147	3.9400e-003	362.3557
Mobile	0.3358	1.9117	3.3709	0.0122	0.9111	0.0109	0.9220	0.2442	0.0102	0.2544	0.0000	1,122.9352	1,122.9352	0.0536	0.0000	1,124.2752
Waste						0.0000	0.0000		0.0000	0.0000	81.5110	0.0000	81.5110	4.8172	0.0000	201.9401
Water						0.0000	0.0000		0.0000	0.0000	2.9260	18.7830	21.7090	0.3014	7.2700e-003	31.4104
Total	**1.1942**	**1.9870**	**4.6762**	**0.0130**	**0.9111**	**0.0403**	**0.9514**	**0.2442**	**0.0396**	**0.2838**	**86.8701**	**1,510.6615**	**1,597.5316**	**5.2002**	**0.0113**	**1,730.9098**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.42**	**0.60**	**0.64**	**2.42**	**21.66**	**0.83**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2019	1/28/2019	5	20	
2	Site Preparation	Site Preparation	1/4/2019	1/17/2019	5	10	
3	Building Construction	Building Construction	1/15/2019	12/2/2019	5	230	
4	Grading	Grading	1/18/2019	2/14/2019	5	20	
5	Paving	Paving	12/3/2019	12/30/2019	5	20	
6	Architectural Coating	Architectural Coating	1/31/2020	2/27/2020	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 10

Acres of Paving: 1.62

Residential Indoor: 303,750; Residential Outdoor: 101,250; Non-Residential Indoor: 36,000; Non-Residential Outdoor: 12,000; Striped Parking Area: 4,320 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	159.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	150.00	32.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	30.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0173	0.0000	0.0173	2.6100e-003	0.0000	2.6100e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0351	0.3578	0.2206	3.9000e-004		0.0180	0.0180		0.0167	0.0167	0.0000	34.6263	34.6263	9.6300e-003	0.0000	34.8672
Total	**0.0351**	**0.3578**	**0.2206**	**3.9000e-004**	**0.0173**	**0.0180**	**0.0352**	**2.6100e-003**	**0.0167**	**0.0193**	**0.0000**	**34.6263**	**34.6263**	**9.6300e-003**	**0.0000**	**34.8672**

3.2 Demolition - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	7.1000e-004	0.0236	3.9800e-003	6.0000e-005	1.3500e-003	9.0000e-005	1.4500e-003	3.7000e-004	9.0000e-005	4.6000e-004	0.0000	6.1636	6.1636	2.5000e-004	0.0000	6.1700
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.0000e-004	4.3000e-004	4.2200e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.2000e-003	3.2000e-004	1.0000e-005	3.2000e-004	0.0000	1.1191	1.1191	3.0000e-005	0.0000	1.1198
Total	**1.3100e-003**	**0.0240**	**8.2000e-003**	**7.0000e-005**	**2.5400e-003**	**1.0000e-004**	**2.6500e-003**	**6.9000e-004**	**1.0000e-004**	**7.8000e-004**	**0.0000**	**7.2827**	**7.2827**	**2.8000e-004**	**0.0000**	**7.2898**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					7.7600e-003	0.0000	7.7600e-003	1.1800e-003	0.0000	1.1800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0351	0.3578	0.2206	3.9000e-004		0.0180	0.0180		0.0167	0.0167	0.0000	34.6263	34.6263	9.6300e-003	0.0000	34.8671
Total	**0.0351**	**0.3578**	**0.2206**	**3.9000e-004**	**7.7600e-003**	**0.0180**	**0.0257**	**1.1800e-003**	**0.0167**	**0.0179**	**0.0000**	**34.6263**	**34.6263**	**9.6300e-003**	**0.0000**	**34.8671**

3.2 Demolition - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	7.1000e-004	0.0236	3.9800e-003	6.0000e-005	1.3500e-003	9.0000e-005	1.4500e-003	3.7000e-004	9.0000e-005	4.6000e-004	0.0000	6.1636	6.1636	2.5000e-004	0.0000	6.1700
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.0000e-004	4.3000e-004	4.2200e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.2000e-003	3.2000e-004	1.0000e-005	3.2000e-004	0.0000	1.1191	1.1191	3.0000e-005	0.0000	1.1198
Total	**1.3100e-003**	**0.0240**	**8.2000e-003**	**7.0000e-005**	**2.5400e-003**	**1.0000e-004**	**2.6500e-003**	**6.9000e-004**	**1.0000e-004**	**7.8000e-004**	**0.0000**	**7.2827**	**7.2827**	**2.8000e-004**	**0.0000**	**7.2898**

3.3 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0217	0.2279	0.1103	1.9000e-004		0.0120	0.0120		0.0110	0.0110	0.0000	17.0843	17.0843	5.4100e-003	0.0000	17.2195
Total	**0.0217**	**0.2279**	**0.1103**	**1.9000e-004**	**0.0903**	**0.0120**	**0.1023**	**0.0497**	**0.0110**	**0.0607**	**0.0000**	**17.0843**	**17.0843**	**5.4100e-003**	**0.0000**	**17.2195**

3.3 Site Preparation - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.6000e-004	2.6000e-004	2.5300e-003	1.0000e-005	7.1000e-004	1.0000e-005	7.2000e-004	1.9000e-004	0.0000	1.9000e-004	0.0000	0.6714	0.6714	2.0000e-005	0.0000	0.6719
Total	**3.6000e-004**	**2.6000e-004**	**2.5300e-003**	**1.0000e-005**	**7.1000e-004**	**1.0000e-005**	**7.2000e-004**	**1.9000e-004**	**0.0000**	**1.9000e-004**	**0.0000**	**0.6714**	**0.6714**	**2.0000e-005**	**0.0000**	**0.6719**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0407	0.0000	0.0407	0.0223	0.0000	0.0223	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0217	0.2279	0.1103	1.9000e-004		0.0120	0.0120		0.0110	0.0110	0.0000	17.0843	17.0843	5.4100e-003	0.0000	17.2195
Total	**0.0217**	**0.2279**	**0.1103**	**1.9000e-004**	**0.0407**	**0.0120**	**0.0526**	**0.0223**	**0.0110**	**0.0333**	**0.0000**	**17.0843**	**17.0843**	**5.4100e-003**	**0.0000**	**17.2195**

3.3 Site Preparation - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.6000e-004	2.6000e-004	2.5300e-003	1.0000e-005	7.1000e-004	1.0000e-005	7.2000e-004	1.9000e-004	0.0000	1.9000e-004	0.0000	0.6714	0.6714	2.0000e-005	0.0000	0.6719
Total	**3.6000e-004**	**2.6000e-004**	**2.5300e-003**	**1.0000e-005**	**7.1000e-004**	**1.0000e-005**	**7.2000e-004**	**1.9000e-004**	**0.0000**	**1.9000e-004**	**0.0000**	**0.6714**	**0.6714**	**2.0000e-005**	**0.0000**	**0.6719**

3.4 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2715	2.4241	1.9738	3.0900e-003		0.1483	0.1483		0.1395	0.1395	0.0000	270.3698	270.3698	0.0659	0.0000	272.0164
Total	**0.2715**	**2.4241**	**1.9738**	**3.0900e-003**		**0.1483**	**0.1483**		**0.1395**	**0.1395**	**0.0000**	**270.3698**	**270.3698**	**0.0659**	**0.0000**	**272.0164**

3.4 Building Construction - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0199	0.4650	0.1323	1.0600e-003	0.0243	3.4400e-003	0.0277	7.0100e-003	3.2900e-003	0.0103	0.0000	100.9490	100.9490	5.8300e-003	0.0000	101.0948
Worker	0.0687	0.0500	0.4858	1.4200e-003	0.1370	9.8000e-004	0.1380	0.0364	9.0000e-004	0.0373	0.0000	128.6918	128.6918	3.5700e-003	0.0000	128.7809
Total	**0.0886**	**0.5149**	**0.6181**	**2.4800e-003**	**0.1612**	**4.4200e-003**	**0.1657**	**0.0434**	**4.1900e-003**	**0.0476**	**0.0000**	**229.6408**	**229.6408**	**9.4000e-003**	**0.0000**	**229.8757**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2715	2.4241	1.9738	3.0900e-003		0.1483	0.1483		0.1395	0.1395	0.0000	270.3695	270.3695	0.0659	0.0000	272.0161
Total	**0.2715**	**2.4241**	**1.9738**	**3.0900e-003**		**0.1483**	**0.1483**		**0.1395**	**0.1395**	**0.0000**	**270.3695**	**270.3695**	**0.0659**	**0.0000**	**272.0161**

3.4 Building Construction - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0199	0.4650	0.1323	1.0600e-003	0.0243	3.4400e-003	0.0277	7.0100e-003	3.2900e-003	0.0103	0.0000	100.9490	100.9490	5.8300e-003	0.0000	101.0948
Worker	0.0687	0.0500	0.4858	1.4200e-003	0.1370	9.8000e-004	0.1380	0.0364	9.0000e-004	0.0373	0.0000	128.6918	128.6918	3.5700e-003	0.0000	128.7809
Total	**0.0886**	**0.5149**	**0.6181**	**2.4800e-003**	**0.1612**	**4.4200e-003**	**0.1657**	**0.0434**	**4.1900e-003**	**0.0476**	**0.0000**	**229.6408**	**229.6408**	**9.4000e-003**	**0.0000**	**229.8757**

3.5 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0655	0.0000	0.0655	0.0337	0.0000	0.0337	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0258	0.2835	0.1629	3.0000e-004		0.0140	0.0140		0.0129	0.0129	0.0000	26.6423	26.6423	8.4300e-003	0.0000	26.8530
Total	**0.0258**	**0.2835**	**0.1629**	**3.0000e-004**	**0.0655**	**0.0140**	**0.0795**	**0.0337**	**0.0129**	**0.0465**	**0.0000**	**26.6423**	**26.6423**	**8.4300e-003**	**0.0000**	**26.8530**

3.5 Grading - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.0000e-004	4.3000e-004	4.2200e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.2000e-003	3.2000e-004	1.0000e-005	3.2000e-004	0.0000	1.1191	1.1191	3.0000e-005	0.0000	1.1198
Total	**6.0000e-004**	**4.3000e-004**	**4.2200e-003**	**1.0000e-005**	**1.1900e-003**	**1.0000e-005**	**1.2000e-003**	**3.2000e-004**	**1.0000e-005**	**3.2000e-004**	**0.0000**	**1.1191**	**1.1191**	**3.0000e-005**	**0.0000**	**1.1198**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0295	0.0000	0.0295	0.0152	0.0000	0.0152	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0258	0.2835	0.1629	3.0000e-004		0.0140	0.0140		0.0129	0.0129	0.0000	26.6422	26.6422	8.4300e-003	0.0000	26.8530
Total	**0.0258**	**0.2835**	**0.1629**	**3.0000e-004**	**0.0295**	**0.0140**	**0.0435**	**0.0152**	**0.0129**	**0.0280**	**0.0000**	**26.6422**	**26.6422**	**8.4300e-003**	**0.0000**	**26.8530**

3.5 Grading - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.0000e-004	4.3000e-004	4.2200e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.2000e-003	3.2000e-004	1.0000e-005	3.2000e-004	0.0000	1.1191	1.1191	3.0000e-005	0.0000	1.1198
Total	**6.0000e-004**	**4.3000e-004**	**4.2200e-003**	**1.0000e-005**	**1.1900e-003**	**1.0000e-005**	**1.2000e-003**	**3.2000e-004**	**1.0000e-005**	**3.2000e-004**	**0.0000**	**1.1191**	**1.1191**	**3.0000e-005**	**0.0000**	**1.1198**

3.6 Paving - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0145	0.1524	0.1467	2.3000e-004		8.2500e-003	8.2500e-003		7.5900e-003	7.5900e-003	0.0000	20.4752	20.4752	6.4800e-003	0.0000	20.6371
Paving	2.1200e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0167**	**0.1524**	**0.1467**	**2.3000e-004**		**8.2500e-003**	**8.2500e-003**		**7.5900e-003**	**7.5900e-003**	**0.0000**	**20.4752**	**20.4752**	**6.4800e-003**	**0.0000**	**20.6371**

3.6 Paving - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.0000e-004	4.3000e-004	4.2200e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.2000e-003	3.2000e-004	1.0000e-005	3.2000e-004	0.0000	1.1191	1.1191	3.0000e-005	0.0000	1.1198
Total	**6.0000e-004**	**4.3000e-004**	**4.2200e-003**	**1.0000e-005**	**1.1900e-003**	**1.0000e-005**	**1.2000e-003**	**3.2000e-004**	**1.0000e-005**	**3.2000e-004**	**0.0000**	**1.1191**	**1.1191**	**3.0000e-005**	**0.0000**	**1.1198**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0145	0.1524	0.1467	2.3000e-004		8.2500e-003	8.2500e-003		7.5900e-003	7.5900e-003	0.0000	20.4752	20.4752	6.4800e-003	0.0000	20.6371
Paving	2.1200e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0167**	**0.1524**	**0.1467**	**2.3000e-004**		**8.2500e-003**	**8.2500e-003**		**7.5900e-003**	**7.5900e-003**	**0.0000**	**20.4752**	**20.4752**	**6.4800e-003**	**0.0000**	**20.6371**

3.6 Paving - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.0000e-004	4.3000e-004	4.2200e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.2000e-003	3.2000e-004	1.0000e-005	3.2000e-004	0.0000	1.1191	1.1191	3.0000e-005	0.0000	1.1198
Total	**6.0000e-004**	**4.3000e-004**	**4.2200e-003**	**1.0000e-005**	**1.1900e-003**	**1.0000e-005**	**1.2000e-003**	**3.2000e-004**	**1.0000e-005**	**3.2000e-004**	**0.0000**	**1.1191**	**1.1191**	**3.0000e-005**	**0.0000**	**1.1198**

3.7 Architectural Coating - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.5716					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.4200e-003	0.0168	0.0183	3.0000e-005		1.1100e-003	1.1100e-003		1.1100e-003	1.1100e-003	0.0000	2.5533	2.5533	2.0000e-004	0.0000	2.5582
Total	**0.5741**	**0.0168**	**0.0183**	**3.0000e-005**		**1.1100e-003**	**1.1100e-003**		**1.1100e-003**	**1.1100e-003**	**0.0000**	**2.5533**	**2.5533**	**2.0000e-004**	**0.0000**	**2.5582**

3.7 Architectural Coating - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0900e-003	7.7000e-004	7.5500e-003	2.0000e-005	2.3800e-003	2.0000e-005	2.4000e-003	6.3000e-004	2.0000e-005	6.5000e-004	0.0000	2.1670	2.1670	5.0000e-005	0.0000	2.1684
Total	**1.0900e-003**	**7.7000e-004**	**7.5500e-003**	**2.0000e-005**	**2.3800e-003**	**2.0000e-005**	**2.4000e-003**	**6.3000e-004**	**2.0000e-005**	**6.5000e-004**	**0.0000**	**2.1670**	**2.1670**	**5.0000e-005**	**0.0000**	**2.1684**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.5716					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.4200e-003	0.0168	0.0183	3.0000e-005		1.1100e-003	1.1100e-003		1.1100e-003	1.1100e-003	0.0000	2.5533	2.5533	2.0000e-004	0.0000	2.5582
Total	**0.5741**	**0.0168**	**0.0183**	**3.0000e-005**		**1.1100e-003**	**1.1100e-003**		**1.1100e-003**	**1.1100e-003**	**0.0000**	**2.5533**	**2.5533**	**2.0000e-004**	**0.0000**	**2.5582**

3.7 Architectural Coating - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0900e-003	7.7000e-004	7.5500e-003	2.0000e-005	2.3800e-003	2.0000e-005	2.4000e-003	6.3000e-004	2.0000e-005	6.5000e-004	0.0000	2.1670	2.1670	5.0000e-005	0.0000	2.1684
Total	**1.0900e-003**	**7.7000e-004**	**7.5500e-003**	**2.0000e-005**	**2.3800e-003**	**2.0000e-005**	**2.4000e-003**	**6.3000e-004**	**2.0000e-005**	**6.5000e-004**	**0.0000**	**2.1670**	**2.1670**	**5.0000e-005**	**0.0000**	**2.1684**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.3358	1.9117	3.3709	0.0122	0.9111	0.0109	0.9220	0.2442	0.0102	0.2544	0.0000	1,122.9352	1,122.9352	0.0536	0.0000	1,124.2752
Unmitigated	0.3358	1.9117	3.3709	0.0122	0.9111	0.0109	0.9220	0.2442	0.0102	0.2544	0.0000	1,122.9352	1,122.9352	0.0536	0.0000	1,124.2752

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Congregate Care (Assisted Living)	536.64	407.16	407.16	1,153,985	1,153,985
Medical Office Building	867.12	215.04	37.20	1,282,793	1,282,793
Parking Lot	0.00	0.00	0.00		
Total	1,403.76	622.20	444.36	2,436,778	2,436,778

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Congregate Care (Assisted	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3
Medical Office Building	9.50	7.30	7.30	29.60	51.40	19.00	60	30	10
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Congregate Care (Assisted Living)	0.584264	0.036754	0.174658	0.112986	0.019233	0.005457	0.009466	0.043414	0.003239	0.002257	0.006611	0.000609	0.001053
Medical Office Building	0.584264	0.036754	0.174658	0.112986	0.019233	0.005457	0.009466	0.043414	0.003239	0.002257	0.006611	0.000609	0.001053
Parking Lot	0.584264	0.036754	0.174658	0.112986	0.019233	0.005457	0.009466	0.043414	0.003239	0.002257	0.006611	0.000609	0.001053

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	298.3896	298.3896	0.0135	2.7900e-003	299.5588
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	298.3896	298.3896	0.0135	2.7900e-003	299.5588
NaturalGas Mitigated	6.3100e-003	0.0547	0.0289	3.4000e-004		4.3600e-003	4.3600e-003		4.3600e-003	4.3600e-003	0.0000	62.4260	62.4260	1.2000e-003	1.1400e-003	62.7970
NaturalGas Unmitigated	6.3100e-003	0.0547	0.0289	3.4000e-004		4.3600e-003	4.3600e-003		4.3600e-003	4.3600e-003	0.0000	62.4260	62.4260	1.2000e-003	1.1400e-003	62.7970

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Congregate Care (Assisted Living)	894300	4.8200e-003	0.0412	0.0175	2.6000e-004		3.3300e-003	3.3300e-003		3.3300e-003	3.3300e-003	0.0000	47.7232	47.7232	9.1000e-004	8.7000e-004	48.0068
Medical Office Building	275520	1.4900e-003	0.0135	0.0113	8.0000e-005		1.0300e-003	1.0300e-003		1.0300e-003	1.0300e-003	0.0000	14.7028	14.7028	2.8000e-004	2.7000e-004	14.7902
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**6.3100e-003**	**0.0547**	**0.0289**	**3.4000e-004**		**4.3600e-003**	**4.3600e-003**		**4.3600e-003**	**4.3600e-003**	**0.0000**	**62.4260**	**62.4260**	**1.1900e-003**	**1.1400e-003**	**62.7970**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Congregate Care (Assisted Living)	894300	4.8200e-003	0.0412	0.0175	2.6000e-004		3.3300e-003	3.3300e-003		3.3300e-003	3.3300e-003	0.0000	47.7232	47.7232	9.1000e-004	8.7000e-004	48.0068
Medical Office Building	275520	1.4900e-003	0.0135	0.0113	8.0000e-005		1.0300e-003	1.0300e-003		1.0300e-003	1.0300e-003	0.0000	14.7028	14.7028	2.8000e-004	2.7000e-004	14.7902
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**6.3100e-003**	**0.0547**	**0.0289**	**3.4000e-004**		**4.3600e-003**	**4.3600e-003**		**4.3600e-003**	**4.3600e-003**	**0.0000**	**62.4260**	**62.4260**	**1.1900e-003**	**1.1400e-003**	**62.7970**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Congregate Care (Assisted Living)	616506	179.3486	8.1100e-003	1.6800e-003	180.0513
Medical Office Building	384000	111.7100	5.0500e-003	1.0500e-003	112.1477
Parking Lot	25200	7.3310	3.3000e-004	7.0000e-005	7.3597
Total		**298.3896**	**0.0135**	**2.8000e-003**	**299.5588**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Congregate Care (Assisted Living)	616506	179.3486	8.1100e-003	1.6800e-003	180.0513
Medical Office Building	384000	111.7100	5.0500e-003	1.0500e-003	112.1477
Parking Lot	25200	7.3310	3.3000e-004	7.0000e-005	7.3597
Total		**298.3896**	**0.0135**	**2.8000e-003**	**299.5588**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.8521	0.0206	1.2764	4.6000e-004		0.0250	0.0250		0.0250	0.0250	2.4331	8.1277	10.5608	0.0133	1.1000e-004	10.9283
Unmitigated	0.8521	0.0206	1.2764	4.6000e-004		0.0250	0.0250		0.0250	0.0250	2.4331	8.1277	10.5608	0.0133	1.1000e-004	10.9283

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1196					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.6842					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0129	7.2000e-003	0.1137	4.0000e-004		0.0186	0.0186		0.0186	0.0186	2.4331	6.2320	8.6651	0.0115	1.1000e-004	8.9865
Landscaping	0.0354	0.0134	1.1627	6.0000e-005		6.4100e-003	6.4100e-003		6.4100e-003	6.4100e-003	0.0000	1.8957	1.8957	1.8400e-003	0.0000	1.9418
Total	**0.8521**	**0.0206**	**1.2764**	**4.6000e-004**		**0.0250**	**0.0250**		**0.0250**	**0.0250**	**2.4331**	**8.1277**	**10.5608**	**0.0133**	**1.1000e-004**	**10.9283**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1196					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.6842					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0129	7.2000e-003	0.1137	4.0000e-004		0.0186	0.0186		0.0186	0.0186	2.4331	6.2320	8.6651	0.0115	1.1000e-004	8.9865
Landscaping	0.0354	0.0134	1.1627	6.0000e-005		6.4100e-003	6.4100e-003		6.4100e-003	6.4100e-003	0.0000	1.8957	1.8957	1.8400e-003	0.0000	1.9418
Total	**0.8521**	**0.0206**	**1.2764**	**4.6000e-004**		**0.0250**	**0.0250**		**0.0250**	**0.0250**	**2.4331**	**8.1277**	**10.5608**	**0.0133**	**1.1000e-004**	**10.9283**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	21.7090	0.3014	7.2700e-003	31.4104
Unmitigated	32.0283	0.4306	0.0104	45.8915

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Congregate Care (Assisted Living)	10.164 / 6.40776	25.7483	0.3322	8.0300e-003	36.4469
Medical Office Building	3.01153 / 0.573625	6.2800	0.0984	2.3700e-003	9.4446
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**32.0283**	**0.4306**	**0.0104**	**45.8915**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Congregate Care (Assisted Living)	7.11482 / 3.84465	17.3714	0.2325	5.6200e-003	24.8578
Medical Office Building	2.10807 / 0.344175	4.3376	0.0689	1.6600e-003	6.5526
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**21.7090**	**0.3014**	**7.2800e-003**	**31.4104**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	81.5110	4.8172	0.0000	201.9401
Unmitigated	81.5110	4.8172	0.0000	201.9401

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Congregate Care (Assisted Living)	142.35	28.8958	1.7077	0.0000	71.5880
Medical Office Building	259.2	52.6153	3.1095	0.0000	130.3521
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**81.5110**	**4.8172**	**0.0000**	**201.9401**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Congregate Care (Assisted Living)	142.35	28.8958	1.7077	0.0000	71.5880
Medical Office Building	259.2	52.6153	3.1095	0.0000	130.3521
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**81.5110**	**4.8172**	**0.0000**	**201.9401**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Appendix B: Updated CNDDB Search

Table 1. Special-Status Plant Species Potential to Occur in the Project Area.

Species Name	Federal, State, and CNPS Listing Status[1]	Geographic Distribution	Habitat Preferences, Distribution Information, and Additional Notes	Flowering Phenology	Potential to Occur[2]
Alkali milk-vetch (*Astragalus tener* var. *tener*)	1B.2	Endemic to California. Found in Alameda, Merced, Napa, Solano, and Yolo counties. Thought to be extirpated from Contra Costa, Monterey, San Benito, Santa Clara, San Francisco, San Joaquin, Sonoma, and Stanislaus counties.	Alkali milk-vetch is an annual herb that is found in alkaline playas, valley and foothill grasslands with adobe clay soils, and vernal pools. It occurs at elevations below 197 feet.	March – June	One CNDDB occurrence for alkali milk-vetch has been documented within 5 miles of the project site. No suitable habitat for this species is present in the project area. **No Potential**
Big-scale balsamroot (*Balsamorhiza macrolepis*)	1B.2	Endemic to California. Found in Alameda, Amador, Butte, Colusa, El Dorado, Lake, Mariposa, Napa, Placer, Santa Clara, Shasta, Solano, Sonoma, Tehama, and Tuolumne counties.	Big-scale balsamroot is a perennial herb that is found in chaparral, cismontane woodland, and valley and foothill grassland. It is sometimes found in serpentinite soils. It occurs at elevations from 148 to 5,102 feet.	March – June	Two CNDDB occurrences for big-scale balsamroot have been documented within 5 miles of the project site. No suitable habitat for this species is present in the project area. **No Potential**
Big tarplant (*Blepharizonia plumosa*)	1B.1	Endemic to California. Found in Alameda, Contra Costa, San Joaquin, and Stanislaus counties. Thought to be extirpated from Solano County.	Big tarplant is an annual herb that is typically found in clay soils in valley and foothill grasslands. It occurs at elevations from 98 to 1,657 feet.	July – October	One CNDDB occurrence for Congdon's tarplant has been documented within 5 miles of the project site, although this occurrence is possibly extirpated. This species is thought to be extirpated from Solano County. No suitable habitat for this species is present in the project area. **No Potential**

Species Name	Federal, State, and CNPS Listing Status[1]	Geographic Distribution	Habitat Preferences, Distribution Information, and Additional Notes	Flowering Phenology	Potential to Occur[2]
Congdon's tarplant (*Centromadia parryi* ssp. *congdonii*)	1B.1	Endemic to California. Found in Alameda, Contra Costa, Monterey, Santa Clara, San Luis Obispo, and San Mateo counties. Thought to be extirpated from Santa Cruz and Solano counties.	Condon's tarplant is found in alkaline valley and foothill grassland habitats. It occurs at elevations below 750 feet.	May – November	One CNDDB occurrence for Congdon's tarplant has been documented within 5 miles of the project site, although this occurrence is extirpated. No suitable habitat for this species is present in the project area. **No Potential**
Two-fork clover (*Trifolium amoenum*)	FE 1B.1	Endemic to California. Found in Marin, San Mateo, and Sonoma counties. Thought to be extirpated from Napa, Santa Clara, and Solano counties.	Two-fork clover occurs in coastal bluff scrub and valley and foothill grasslands typically with serpentinite soils. It occurs at elevations from 16 to 1,362 feet.	April – June	One CNDDB occurrence for two-forked clover has been documented within 5 miles of the project site. This species is thought to be extirpated from Solano County. No suitable habitat for this species is present in the project area. **No Potential**
Saline clover (*Trifolium hydrophilum*)	1B.2	Endemic to California. Found in Alameda, Colusa, Monterey, Napa, San Benito, San Luis Obispo, San Mateo, Santa Clara, Santa Cruz, Solano, and Sonoma counties.	Saline clover occurs in marshes and swamps, mesic and alkaline valley and foothill grassland, and in vernal pool habitats. Many previously extant sites are thought likely to be extirpated. It occurs at elevations below 1,000 feet.	April – June	Two CNDDB occurrences for saline clover have been documented within 5 miles of the project site. No suitable habitat for this species is present in the project area. **No Potential**

Species Name	Federal, State, and CNPS Listing Status[1]	Geographic Distribution	Habitat Preferences, Distribution Information, and Additional Notes	Flowering Phenology	Potential to Occur[2]

[1] Status explanations:

Federal:

FE = Listed as endangered under the Federal Endangered Species Act.

California Rare Plant Rank:

Rank 1A = Presumed extinct in California;

Rank 1B = Rare, threatened, or endangered in California and elsewhere;

Additional threat ranks endangerment codes are assigned to each taxon or group as follows:

.1 = Seriously endangered in California (over 80% of occurrences threatened/high degree of immediacy of threat).

.2 = Fairly endangered in California (20-80% occurrences threatened).

.3 = Not very endangered in California (<20% of occurrences threatened or no current threats known).

[2] Potential Occurrence explanations:

Present: Species was observed in the project area, or recent species records (within five years) from literature are known within the project area.

High: The CNDDB or other reputable documents record the occurrence of the species off-site, but within a 5-mile radius of the project area and within the last 10 years. High-quality suitable habitat is present within the project area.

Moderate: Species does not meet all terms of High or Low category. For example: CNDDB or other reputable documents may record the occurrence of the species near, but beyond, a 5-mile radius of the project area, or some of the components representing suitable habitat are present within or adjacent to the project area, but the habitat is substantially degraded or fragmented.

Low: The CNDDB or other documents may or may not record the occurrence of the species within a 5-mile radius of the project area. However, few components of suitable habitat are present within or adjacent to the project area.

No: CNDDB or other documents do not record the occurrence of the species within or reasonably near the project area and within the last 10 years, and no or extremely few components of suitable habitat are present within or adjacent to the project area; or site is outside of specie's range.

Table 2. Special-Status Wildlife Species Potential to Occur in the Project Area.

Species Name	Federal and State Listing Status[1]	Geographic Distribution	Habitat Requirements	Potential to Occur[2]
Invertebrates				
Callippe silverspot butterfly (*Speyeria callippe callippe*)	FE	Restricted to the San Francisco Bay area, including San Bruno Mountain and Sign Hill near south San Francisco, in the hills near Pleasanton in Alameda County, at Sears Point in Sonoma County, and in the hills between Vallejo and Cordelia.	Found in coastal scrub and native grassland habitat. Hostplant is Johnny jump-up (*Viola pedunculata*). Most adults found on east-facing slopes; males congregate on hilltops in search of females during the breeding season.	Four CNDDB occurrences for callippe silverspot have been documented within 5 miles of the project site. No suitable grassland or coastal scrub habitat for this species is present in the project area. **No Potential**
Fish				
Delta smelt (*Hypomesus transpacificus*)	FT CE	Found only in the Sacramento-San Joaquin estuary in California. Historically, populations were found from Suisun Bay, east to the Delta area, and then upstream in the Sacramento River. Locations are dependent upon stage in the life cycle and extent of water outflow from the Sacramento and San Joaquin Rivers. When outflow is greater, delta smelt congrege in upper Suisun Bay and the Montezuma Slough. As a result of increasing water diversions and drought, the center of species range has shifted east to the Sacramento River channel in the Delta.	This species is a euryhaline (saltwater tolerant) species and is seldom found where sea water makes up more than one-third of the total water. Low outflows keep adult delta smelt and their larvae upstream in the deep, narrow channels of the rivers and delta, where food production is limited by the inability of sunlight to penetrate water depths.	Two CNDDB occurrences for delta smelt have been documented within 5 miles of the project site. No suitable aquatic habitat for this species is present in the project area. **No Potential**

Species Name	Federal and State Listing Status[1]	Geographic Distribution	Habitat Requirements	Potential to Occur[2]
Longfin smelt (*Spirinchus thaleichthys*)	FC CT CSSC	Found in nearshore coastal environments from San Francisco Bay north to Lake Earl, near the Oregon Border. Specifically, found in the Sacramento-San Joaquin Delta, San Pablo Bay, San Francisco Bay, the Gulf of Farallones, the Humboldt Bay, and the Eel River estuary.	Longfin smelt is found in open waters of estuaries, mostly in the middle or bottom of the water column. It prefers salinities of 15 to 30 parts per thousand, but it can be found in completely freshwater to almost pure saltwater.	Three CNDDB occurrences for longfin smelt have been documented within 5 miles of the project site. No suitable aquatic habitat for this species is present in the project area. **No Potential**
Sacramento splittail (*Pogonichthys macrolepidotus*)	CSSC	Endemic to California's Central Valley. Largely confined to the Delta, Suisun Bay, Suisun Marsh, Napa River, Petaluma River, Sacramento River, San Joaquin River, and other parts of the San Francisco Estuary, while spawning on upstream floodplains and channel edges. Non-spawning fish are found in Suisun Bay and Suisun Marsh and the Petaluma and Napa marshes. Adults from both populations are found to forage in open waters of Suisun Bay; however, Suisun Marsh is almost exclusively used by juveniles and adults from the Delta population.	Splittail are adapted for estuarine life so they are tolerant of a wide range of salinities and temperatures. This tolerance is demonstrated by year-round utilization of Suisun Marsh and the Petaluma River estuary, generally in sloughs less than 4 meters deep, where summer salinities are typically 6-10 parts per thousand and temperatures range from 15 to 23 degrees Although most young-of-year are reared in fresh water, some are reared in brackish water. Splittail require a rising hydrograph for upstream migration and flooded vegetation for spawning and rearing areas for their early life history stages. Large flooded areas need to be at least 1 meter deep with deeper, more open, areas as refuges from predation for adults and larger juveniles during the day. On floodplains, small juveniles prefer to be among vegetation in shallow water during the day but move into deeper water at night.	Four CNDDB occurrences for Sacramento splittail have been documented within 5 miles of the project site. No suitable aquatic habitat for this species is present in the project area. **No Potential**

Species Name	Federal and State Listing Status[1]	Geographic Distribution	Habitat Requirements	Potential to Occur[2]
Steelhead (Central California coast Distinct Population Segment [DPS]) (*Oncorhynchus mykiss irideus*)	FT	This DPS includes all populations of steelhead from the Russian River south to Aptos Creek. Steelhead in drainages of San Francisco, San Pablo, and Suisun Bays are also part of this DPS.	Adult steelhead migrate from the ocean into streams in the late fall, winter, or early spring seeking out deep pools within fast moving water to rest prior to spawning. Steelhead spawn in shallow-water gravel beds.	Two CNDDB occurrence for steelhead has been documented within 5 miles of the project site. No suitable aquatic habitat for this species is present in the project area. **No Potential**
Amphibians				
California red-legged frog (*Rana draytonii*)	FT CSSC	Found from Riverside County to Mendocino County along the Coast Range, from Calaveras County to Butte County in the Sierra Nevada, and in Baja California.	California red-legged frog is the largest frog native to California, reaching 5.25 inches in size. California red-legged frogs can inhabit perennial ponds, marshes, bogs, reservoirs, and slow-moving streams and can be found in a wide range of habitat types from grassland to forested areas. Adults typically remain near the streams or ponds, but some individuals have been observed more than two miles away, in upland habitat during wet weather or at night. Must have access to estivation habitat.	Nine CNDDB occurrences for California red-legged frog have been documented within 5 miles of the project site. No suitable aquatic habitat or upland estivation habitat for this species is present in the project area. The project area is surrounded by urban development, so it is unlikely that California red-legged frog will disperse through the area. **Low Potential**

Species Name	Federal and State Listing Status[1]	Geographic Distribution	Habitat Requirements	Potential to Occur[2]
Foothill yellow-legged frog (*Rana boylii*)	FC CSSC	Found in the Coast Ranges from the Oregon border south to the Transverse Mountains in Los Angeles County, in most of northern California west of the Cascade crest, and along the western flank of the Sierra Nevada south to Kern County.	Foothill yellow-legged frog inhabits partially shaded, shallow perennial stream habitats with at least some rocky or cobble substrate in forests, chaparral, and woodlands. When disturbed, this species will escape into deeper water and hide under cover. This species lays between 100 and 1,000 eggs on rocks submerged in water between April and July. Individuals hatch as a tadpole after approximately 1 week and usually undergo metamorphosis by October.	One CNDDB occurrences for foothill yellow-legged frog has been documented within 5 miles of the project site. No suitable aquatic habitat for this species is present in the project area. **No Potential**
Reptiles				
Alameda whipsnake (*Masticophis lateralis euryxanthus*)	FT CT	Restricted to the inner Coast Range in western and central Contra Costa and Alameda Counties.	Typically found in chaparral and scrub habitats but will also use adjacent grassland, oak savannah and woodland habitats. Mostly occurs on south-facing slopes and ravines, with rock outcrops, deep crevices or abundant rodent burrows.	One CNDDB occurrence for Alameda whipsnake has been documented within 5 miles of the project site. No suitable habitat for this species is present in the project area. **No Potential**
Western pond turtle (*Emys marmorata*)	CSSC	Found from Baja California, Mexico north through Klickitat County, Washington. In California, found west of the Sierra-Cascade crest. Absent from desert regions, except the Mojave Desert along the Mojave River and its tributaries.	Western pond turtle requires permanent or nearly permanent bodies of water including ponds, marshes, rivers, streams, and irrigation ditches. It requires basking sites, such as submerged rocks, logs, open mud banks, or floating vegetation mats. This species also requires sandy banks or grassy open fields up to 0.5 kilometers from the water's edge for egg laying.	Three CNDDB occurrences for western pond turtle have been documented within 5 miles of the project site. No suitable aquatic habitat, basking sites, or winter dispersal sites for this species is present in the project area. **No Potential**

Species Name	Federal and State Listing Status[1]	Geographic Distribution	Habitat Requirements	Potential to Occur[2]
Birds				
American peregrine falcon (*Falco peregrinus anatum*)	CFP	Occurs throughout the Central Valley, coastal areas, and northern mountains of California.	American peregrine falcon uses steep cliffs and buildings for nesting. It forages over a variety of habitats, especially wetlands.	Two CNDDB occurrences for American peregrine falcon have been documented within 5 miles of the project site. The project area is surrounded by urban development and no tall structure, which are preferred for nesting are present, although American peregrine falcon could nest on the existing buildings on-site. No suitable foraging habitat for this species is present in the project area. **Low Potential (Nesting), No Potential (Foraging)**
Burrowing owl (*Athene cunicularia*)	CSSC	Found year-round throughout much of California, except the coastal counties north of Marin and mountainous areas.	Burrowing owl is found in open, dry annual grasslands and scrublands characterized by low-growing vegetation. It is dependent upon burrowing mammals, especially the California ground squirrel for nesting and wintering sites.	Two CNDDB occurrences for burrowing owl have been documented within 5 miles of the project site. No suitable habitat for this species is present in the project site. **No Potential (Breeding or Wintering)**
California black rail (*Laterallus jamaicensis coturniculus*)	CT CFP	The majority found in the tidal salt marshes of the northern San Francisco Bay region, primarily in San Pablo and Suisun Bays. Smaller populations occur in San Francisco Bay, the Outer Coast of Marin County, freshwater marshes in the foothills of the Sierra Nevada, and in the Colorado River Area.	California black rail is found in marshlands with unrestricted tidal influence (estuarine, intertidal, emergent, or regularly flooded). It prefers areas dominated by pickleweed (*Salicornia virginica*), bulrushes (*Scirpus* sp.), matted salt grass (*Distichilis spicata*), and other marsh vegetation.	Six CNDDB occurrences for California black rail have been documented within 5 miles of the project site. No suitable tidal marsh habitat for this species is present in the project area. **No Potential (Nesting or Foraging)**

Species Name	Federal and State Listing Status[1]	Geographic Distribution	Habitat Requirements	Potential to Occur[2]
California Ridgway's rail (*Rallus obsoletus obsoletus*)	FE CE CFP	Found almost exclusively in the marshes of the San Francisco estuary in San Mateo, Santa Clara, Alameda, Contra Costa, Solano, Napa, Sonoma, and Marin counties.	California clapper rail is found in tidal saltwater and brackish marshes traversed by tidal sloughs in the vicinity of the San Francisco Bay. It prefers tall stands of pickleweed and pacific cordgrass (*Spartina foliosa*), but they are also associated with gumplant (*Grindelia* sp.), saltgrass (*Distichlis spicata*), and alkali heath (*Frankenia grandifolia*).	Seven CNDDB occurrences for California clapper rail have been documented within 5 miles of the project site. No suitable tidal marsh habitat for this species is present in the project area. **No Potential (Nesting or Foraging)**
Golden eagle (*Aquila chrysaetos*)	CFP	Inhabits foothills and mountains throughout California.	Nests on cliffs and escarpments or in tall trees overlooking open country; forages in annual grasslands, chaparral, and oak woodlands with plentiful medium and large-sized mammals.	Two CNDDB occurrences for golden eagle have been documented within 5 miles of the project site. The project is located in an urban area and no suitable open country is present nearby. As a result, no suitable nesting or foraging habitat is present. **No Potential (Nesting or Foraging)**
Northern harrier (*Circus cyaneus*)	CSSC	Breed from sea level near the coast to at least 9,000 feet in the Glass Mountain region of Mono County.	Northern harrier inhabits grasslands; wet meadows; weedy borders of lakes; annual and perennial grasslands; ungrazed or lightly grazed pastures; freshwater, brackish water, and saltwater marshes; and seasonal and agricultural wetlands. Breeds and forages in a variety of open (treeless) habitats that provide adequate vegetative cover; an abundance of suitable prey; and scattered hunting, plucking, and lookout perches such as shrubs and fenceposts.	One CNDDB occurrence for northern harrier has been documented within 5 miles of the project site. No suitable marsh or grassland habitat for this species is present in the project area. **No Potential (Nesting or Foraging)**

Species Name	Federal and State Listing Status[1]	Geographic Distribution	Habitat Requirements	Potential to Occur[2]
Saltmarsh common yellowthroat (*Geothylpis trichas sinuosa*)	CSSC	Found year-round in the vicinity of San Francisco Bay, from Tomales Bay in Marin County and Napa Sloughs in southern Sonoma County on the north, east to Carquinez Straight, and south to vicinity of San Jose in Santa Clara County. Historic locations of confirmed breeding include Lake Merced in San Francisco County, and Coyote Creek, Alviso, and Milpitas in Santa Clara County	Saltmarsh common yellowthroat nests and forages in fresh and saltwater marshes and seasonal wetlands. It breeds on the ground or up to 8 centimeters off the ground under the cover of dense shrubs and emergent aquatic vegetation.	Nine CNDDB occurrences for saltmarsh common yellowthroat have been documented within 5 miles of the project site. No suitable marsh or wetland nesting or foraging habitat for this species is present in the project area. **No Potential (Nesting or Foraging)**
San Pablo song sparrow (*Melospiza melodia samuelis*)	CSSC	Resident in the salt marshes along the north side of San Francisco and San Pablo bays.	Samuels Song Sparrows are found in virtually every tidal salt marsh in San Pablo Bay. As with all Song Sparrow subspecies, dense vegetation is required for nesting sites, for song perches, and as cover from predators. Samuels Song Sparrows are primarily associated with high marsh, particularly pickleweed (*Salicornia virginica*), and their territories are densest in areas where tidal channels are lined with gumplant.	Eight CNDDB occurrences for San Pablo song sparrow have been documented within 5 miles of the project site. No suitable marsh habitat for this species is present in the project area. **No Potential (Nesting or Foraging)**

Species Name	Federal and State Listing Status[1]	Geographic Distribution	Habitat Requirements	Potential to Occur[2]
Suisun song sparrow (*Melospiza melodia maxillaris*)	CSSC	Resident of the brackish estuarine marshes in the Suisun Bay from the vicinity of the confluence of the Sacramento and San Joaquin rivers west to the Carquinez Straits.	Suisun Song Sparrows are found in virtually every tidal salt marsh in the Suisun Bay. As with all Song Sparrow subspecies, dense vegetation is required for nesting sites, for song perches, and as cover from predators. Suisun Song Sparrows are associated primarily with tidal channels, especially in marshes where pickleweed dominates and gumplant lines the channels.	One CNDDB occurrence for Suisun song sparrow has been documented within 5 miles of the project site. No suitable marsh habitat for this species is present in the project area. **No Potential (Nesting or Foraging)**
Tricolored blackbird (*Agelaius tricolor*)	CPT CSSC	Breeding range extends from central southern Oregon south through interior California, and along the coast from central California south to localized areas in northwestern Baja California. Abundance is highest in central and central northern California (Breeding Bird Survey data); most of the largest colonies are in the Central Valley. During the nonbreeding period the range contracts somewhat as the species withdraws from several areas around the margins of the breeding range.	Inhabits freshwater marsh, marsh and swamp, swamp, and wetland habitats. Highly colonial species, most numerous in Central Valley and vicinity. Largely endemic to California. Requires open water, protected nesting substrate, and foraging area with insect prey within a few kilometers of the colony	Two CNDDB occurrences for tricolored blackbird have been documented within 5 miles of the project site. No suitable aquatic nesting or foraging habitat for this species is present in the project area. **No Potential (Nesting or Foraging)**

Species Name	Federal and State Listing Status[1]	Geographic Distribution	Habitat Requirements	Potential to Occur[2]
White-tailed kite (*Elanus leucurus*)	CFP	Found year-round in nearly all areas of California up to the western Sierra Nevada foothills and southeast deserts. Common in the Central Valley of California and along the entire length of the coast, possibly breeding in more arid regions east of the Sierra Nevada and Transverse Range (Inyo and eastern Kern Counties). Documented breeding in Imperial County, western Riverside County, and eastern San Diego County. In the Sacramento Valley, populations have predominantly increased in irrigated agricultural areas where the California vole (*Microtus californicus*) often occurs.	White-tailed kite nests in rolling foothills or valley margins with scattered oaks and river bottomlands or marshes next to deciduous woodland. It forages in open grasslands, meadows, or marshes with perching sites.	One CNDDB occurrence for white-tailed kite has been documented within 5 miles of the project site. Low-quality nesting habitat for this species is present within the trees in the project area. No suitable foraging habitat is present in the project area. The quality of the nesting habitat is low due to the urban nature of the project site. **Low Potential (Nesting), No Potential (Foraging)**
Mammals				
Pallid bat (*Antrozous pallidus*)	CSSC	Common throughout low elevations of California. No found in the high Sierra from Shasta to Kern counties and the northwestern corner of the State from Del Norte and western Siskiyou counties to northern Mendocino County.	Pallid bat is uncommon, especially in urban areas. This species roosts in caves and large trees and forages in grasslands and oak savannah. It is most common in open, dry habitats with rocky areas for roosting.	No CNDDB occurrences for pallid bat have been documented within 5 miles of the project site. Some trees are present in the project area that could provide roosting habitat for pallid bat; however, this habitat is low quality since it is very urban. **Low Potential**

Species Name	Federal and State Listing Status[1]	Geographic Distribution	Habitat Requirements	Potential to Occur[2]
Saltmarsh harvest mouse (*Reithrodontomys raviventris*)	FE CE	Occurs only in the saline emergent wetlands of the San Francisco Bay and its tributaries.	Saltmarsh harvest mouse is only found in saline emergent wetlands in the San Francisco Bay and its tributaries. It uses pickleweed as its primary cover. It also uses non-submerged, salt-tolerant vegetation for escape during extremely high tides.	Seven CNDDB occurrences for saltmarsh harvest mouse have been documented within 5 miles of the project site. No suitable habitat for this species is present in the project site. **No Potential**
Suisun shrew (*Sorex ornatus sinuosus*)	CSSC	Occurs in tidal and brackish marsh communities along the north shore of San Pablo and Suisun bays, from Sonoma Creek and Tubbs Island, Sonoma County on the west, eastward to Grizzly Island, Solano County.	Suisun shrew inhabits salt and brackish marshes around the northern margins of the San Pablo and Suisun bays. This species prefers areas of low, dense vegetation, which provide adequate cover and nesting places along with a plentiful supply of invertebrates. Contiguous upland habitats likely provide important refuge during the flooding of saltmarshes.	Six CNDDB occurrences for Suisun shrew have been documented within 5 miles of the project site. No suitable marsh habitat for this species is present in the project area. **No Potential**
Townsend's big-eared bat (*Corynorhinus townsendii*)	CPT CSSC	Found throughout California, but details of its distribution are not well known. Found in all but subalpine and alpine habitats.	Townsend's big-eared bat roosts in caves, mines, and large trees. It forages within woodlands and along stream edges. This species is extremely sensitive to human disturbance.	No CNDDB occurrences for Townsend's big-eared bat have been documented within 5 miles of the project site. This species could forage or roost within the trees at the project site. In addition, some hibernacula, as well as maternal or colony roosting habitat for this species is present in the trees and buildings at the site. However, this habitat is low quality since it is very urban. **Low Potential**

Species Name	Federal and State Listing Status[1]	Geographic Distribution	Habitat Requirements	Potential to Occur[2]

[1] Status explanations:

Federal:

FE = Listed as endangered under the Federal Endangered Species Act.

FT = Listed as threatened under the Federal Endangered Species Act.

FC = Candidate species to be listed under the Federal Endangered Species Act.

State:

CE = Listed as endangered under the California Endangered Species Act.

CT = Listed as threatened under the California Endangered Species Act.

CPT = Proposed as threatened under the California Endangered Species Act.

CSSC = Species of Special Concern designated by California Department of Fish and Wildlife.

CFP = Fully Protected Species under California Fish and Game Code.

[2] Potential Occurrence explanations:

Present: Species was observed on the project site, or recent species records (within five years) from literature are known within the project area.

High: The CNDDB or other reputable documents record the occurrence of the species off-site, but within a 10-mile radius of the project area and within the last 10 years. High-quality suitable habitat is present within the project area.

Moderate: Species does not meet all terms of High or Low category. For example: CNDDB or other reputable documents may record the occurrence of the species near but beyond a 10-mile radius of the project area, or some of the components representing suitable habitat are present within or adjacent to the project area, but the habitat is substantially degraded or fragmented.

Low: The CNDDB or other documents may or may not record the occurrence of the species within a 10-mile radius of the project area. However, few components of suitable habitat are present within or adjacent to the project area.

No: CNDDB or other documents do not record the occurrence of the species within or reasonably near the project area and within the last 10 years, and no or extremely few components of suitable habitat are present within or adjacent to the project area.

Appendix C: Traffic Report

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CARLTON SENIOR LIVING
2850 REDWOOD PARKWAY
CITY OF VALLEJO
TRAFFIC IMPACT ANALYSIS

City of Vallejo, California

October 31, 2018

Prepared for
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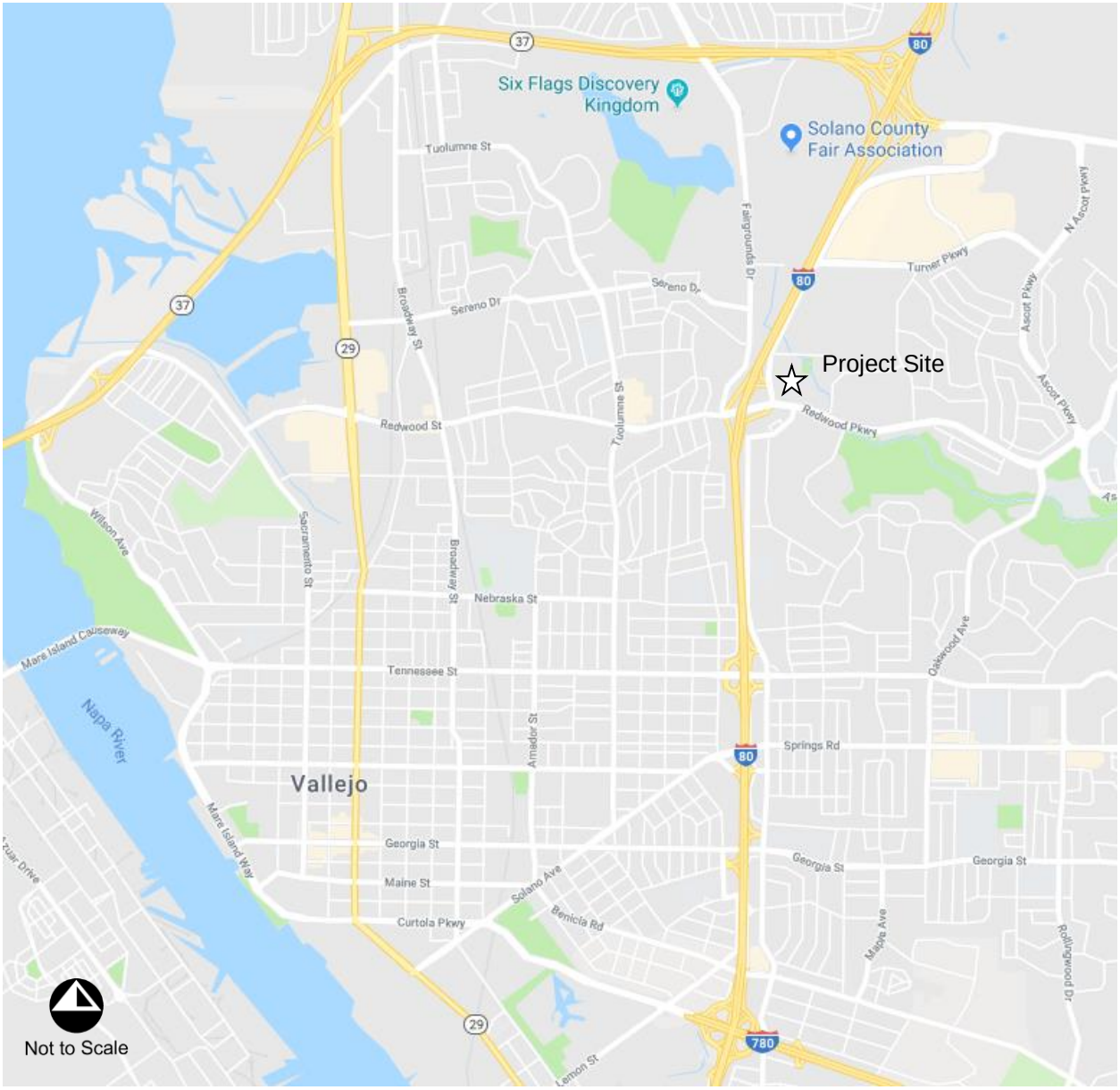
1.0 INTRODUCTION

This study analyzes the forecast traffic conditions and impacts associated with the proposed Carlton Senior Living at 2850 Redwood Parkway in City of Vallejo. The project site is generally located on the north side of Redwood Parkway between Admiral Callaghan Lane (west) and Cadloni Lane. Exhibit 1 shows the regional project site location.

Exhibit 1 – Regional Study Area



Source: Google

1.1 Proposed Project

The project site is generally located on the north side of Redwood Parkway between Admiral Callaghan Lane (west) and Cadloni Lane. The project site is currently vacant with existing buildings. The project proposes to demolish the existing buildings, recreational facilities (swimming pool and tennis courts), and associated parking lot and landscaped areas. The project proposes to construct a 150,000 square foot, 156 unit assisted living facility (Phase 1), with the potential to add 24,000 square feet of medical office space within the project site (Phase 2). Exhibit 2 shows the project site plan.

The project site will have two access points, one signalized full access driveway on Redwood Parkway at Admiral Callaghan Lane and a right-in/right-out access driveway west of the project site on Admiral Callaghan Lane.

1.2 Study Area

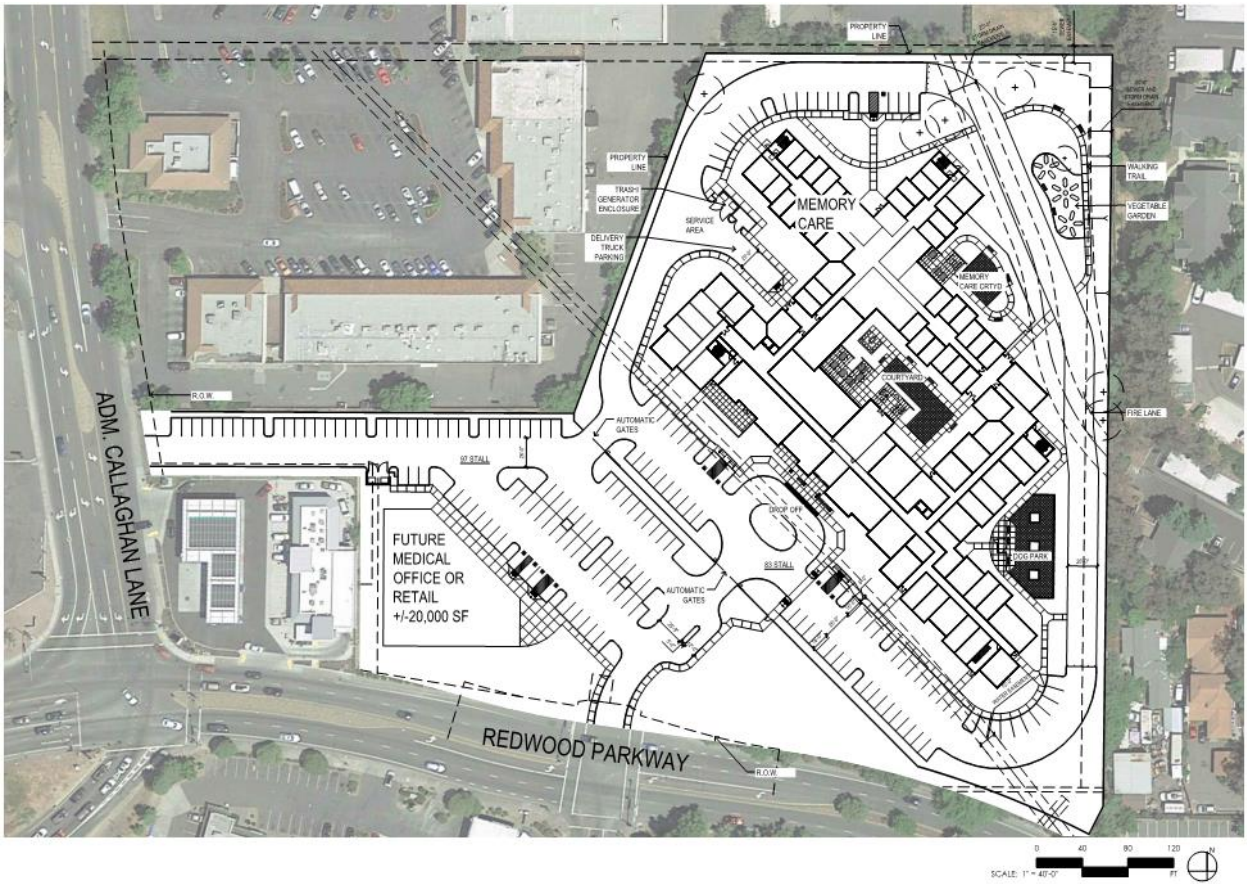
In coordination with City staff, the following six (6) intersections have been identified for analysis in this traffic study, which is shown in Exhibit 3:

1. Admiral Callaghan Lane and Rotary Way (unsignalized);
2. Admiral Callaghan Lane and I-80 Eastbound Ramps (unsignalized);
3. Admiral Callaghan Lane and West Project Driveway (unsignalized);
4. Admiral Callaghan Lane/I-80 Eastbound Off Ramp and Redwood Parkway (signalized);
5. Fairgrounds Drive/I-80 Westbound Ramps and Redwood Parkway (signalized); and
6. South Project Driveway/Admiral Callaghan Lane and Redwood Parkway (signalized).

The study area includes the following two (2) roadway links along Admiral Callaghan Lane and Redwood Parkway:

A. Admiral Callaghan Lane from Rotary Way to Redwood Parkway; and
B. Redwood Parkway from Fairgrounds Drive to South Project Driveway/Admiral Callaghan Lane.

Exhibit 2 – Project Site Plan



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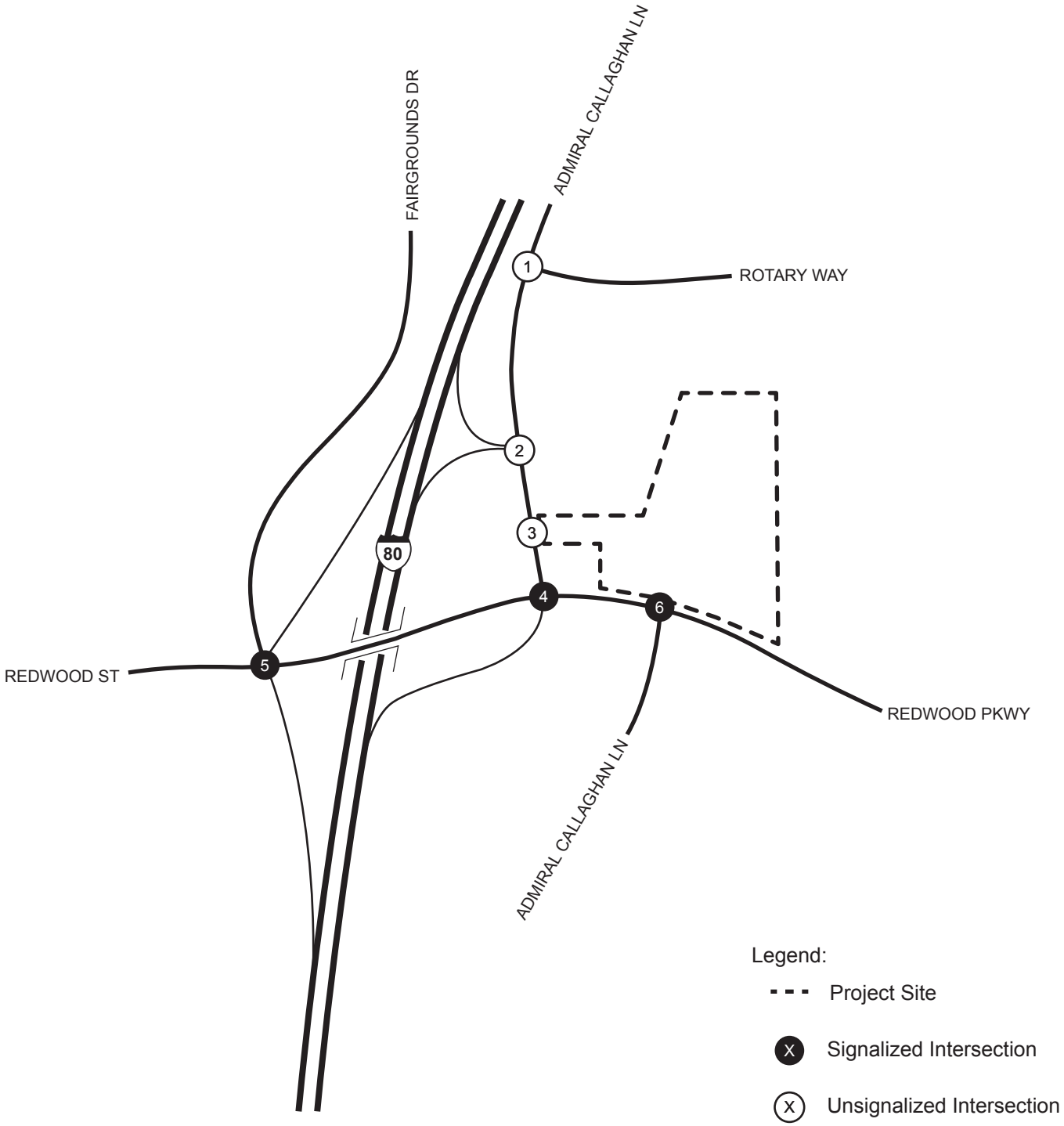

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Exhibit 3
Project Study Area

Carlton Senior Living at 2850 Redwood Parkway in City of Vallejo
Traffic Impact Analysis

1.3 Analysis Scenarios

The study intersections are analyzed for the following study scenarios:

1. Existing 2018 Conditions;
2. Opening Year 2020 without Cumulative, without Project Conditions;
3. Opening Year 2020 plus Cumulative Projects without Project Conditions;
4. Opening Year 2020 plus Cumulative Projects with Project Conditions;
5. Future Buildout Year 2040 Cumulative without Project Conditions; and
6. Future Buildout Year 2040 Cumulative with Project Conditions.

The "with Project Condition" scenarios analyzed the project with Phase 1 completed and with Phase 1 & 2 completed.

1.4 Analysis Time Period

The study area intersections are analyzed for the following time periods:

- Weekday AM Peak Hour – Peak hour within 7:00 AM and 9:00 AM
- Weekday PM Peak Hour – Peak hour within 4:00 PM and 6:00 PM
- Saturday Mid-Day (MD) Peak Hour – Peak hour within 12:00 AM and 2:00 PM

2.0 ANALYSIS METHODOLOGY

This section describes the intersection analysis, performance criteria, thresholds of significance, and traffic volume forecast methodologies utilized in this traffic analysis.

2.1 Intersection Analysis Methodology

Level of service (LOS) is commonly used as a qualitative description of intersection operation and is based on the capacity of the intersection and the volume of traffic using the intersection. The 2010 Highway Capacity Manual (HCM) analysis methodology is utilized to determine the operating service levels of the study area intersections.

The HCM analysis methodology describes the operation of an intersection using a range of LOS from LOS A (free-flow conditions) to LOS F (severely congested conditions), based on the corresponding ranges of stopped delay experienced per vehicle for signalized and unsignalized intersections shown in Table 1. LOS based on volume to capacity ratio is also shown in Table 1. HCM analysis methodology is utilized in this study for the study intersections.

Table 1 – Level of Service and Delay Ranges

Level of Service	Signalized Intersections		Un-Signalized Intersections	
	Delay (seconds/vehicle)	Volume/Capacity (V/C)	Delay (seconds/vehicle)	Volume/Capacity (V/C)
A	≤ 10.0	< 1.000	≤ 10.0	< 1.000
B	> 10.0 to ≤ 20.0	< 1.000	> 10.0 to ≤ 15.0	< 1.000
C	> 20.0 to ≤ 35.0	< 1.000	> 15.0 to ≤ 25.0	< 1.000
D	> 35.0 to ≤ 55.0	< 1.000	> 25.0 to ≤ 35.0	< 1.000
E	> 55.0 to ≤ 80.0	≤ 1.000	> 35.0 to ≤ 50.0	≤ 1.000
F	> 80.0	> 1.000	> 50.0	> 1.000

Source: *2010 Highway Capacity Manual (HCM)*

Level of service is based on the average stopped delay per vehicle for all movements of signalized intersections and all-way stop-controlled intersections; for one-way or two-way stop-controlled intersections, LOS is based on the worst stop-controlled approach.

2.2 Peak Hour Performance Criteria

The City of Vallejo has established an intersection operation standard of LOS D or better.

2.3 Traffic Impact Thresholds of Significance

Traffic impacts at an intersection are to be considered "significant" when any of the following changes in the volume-to-capacity (V/C) ratios occur between the "without project" and the "with project" conditions as listed in Table 2, and operating at worse than LOS D conditions:

Table 2 – Traffic Impact Threshold

LOS Without Project	V/C Ratio Project Difference
LOS C	> 0.04
LOS D	> 0.02
LOS E or F	> 0.01

Source: City of Vallejo Traffic Impact Analysis/Study Guidelines.

Mitigation must be identified for intersections that show a significant project impact per the thresholds show in Table 2 and operating at worse than LOS D conditions. The LOS with mitigation must be improved to LOS D or better for intersections and LOS C or better for roadway segments under "With Project" conditions.

2.4 Roadway Link Analysis Methodology

Roadway links are evaluated in terms of peak hour conditions based the Urban Streets section of the 2010 Highway Capacity Manual (HCM) using the Synchro and SimTraffic analysis software. Arterial level of service results are presented in terms of travel time (in seconds) and travel speed (in miles per hour).

Arterial LOS is based on average through-vehicle travel speed for the segment or for the entire street under consideration. Travel speed is the basic service measure for urban streets. The average travel speed is computed from the running times on the urban street and the control delay of through movements at signalized intersections.

The control delay is the portion of the total delay for a vehicle approaching and entering a signalized intersection that is attributable to traffic signal operation. Control delay includes the delays of initial deceleration, move-up time in the queue, stops, and reacceleration.

The LOS for urban streets is influenced both by the number of signals within a segment and by the intersection control delay. Inappropriate signal timing, poor progression, and increasing traffic flow can degrade the LOS substantially.

Table 3 below lists urban street LOS criteria based on average travel speed and urban street class.

Table 3 – Urban Street Level of Service

Urban Street Class	Free Flow Speed (mph)	Travel Speed Threshold (lower limit) by Level of Service (mph)				
		A	B	C	D	E
I	55	> 42	> 34	> 27	> 21	> 16
	50	42	34	27	21	16
	45	42	34	27	21	16
II	45	35	28	22	17	13
	40	35	28	22	17	13
	35	35	28	22	17	13
III	35	30	24	18	14	10
	30	30	24	18	14	10
IV	35	25	19	13	9	7
	30	25	19	13	9	7
	25	25	19	13	9	7

Source: *Highway Capacity Manual (HCM).*

3.0 EXISTING 2018 CONDITIONS

This section describes the existing 2018 conditions of the study area including the existing roadway description, intersection geometry and traffic volumes.

3.1 Roadway Description

Exhibit 4 illustrates the existing intersection controls and lane geometry for the study area. The characteristics of the roadway system in the vicinity of the project site are described below:

Admiral Callaghan Lane is a four-lane divided arterial north of Redwood Parkway, and it continues as a two-lane collector street south of Redwood Parkway at an offset of approximately 320 feet east of the I-80 eastbound off-ramp at the Redwood Parkway intersection. Admiral Callaghan Lane runs in a north-south direction. Admiral Callaghan Lane is a two-lane collector between Turner Parkway and Rotary Way where the eastern half-section width is not improved. The posted speed limit is 35 miles per hour on Admiral Callaghan Lane within the project vicinity; on-street parking is prohibited. On-street parking is permitted south of Redwood Parkway.

Redwood Parkway is a four-lane divided arterial with a raised center median west of Valle Vista Avenue; and a four-lane undivided arterial between Valle Vista Avenue and Fairgrounds Drive; and a four-lane divided arterial with a raised median between Fairgrounds Drive and Cadloni Lane trending in an east-west direction. Bike lanes exists on either side of the street in the vicinity of the project site. The posted speed limit is 35 miles per hour on Redwood Parkway; on-street parking is prohibited.

Rotary Way is a two-lane undivided collector street trending in an east-west direction. There is no posted speed limit on Rotary Way; on-street parking is permitted on the north side and south side of the street. The posted speed limit is 25 miles per hour on Rotary Way.

Fairgrounds Drive is a two-lane divided arterial with a two way-left turn lane trending in a north-south direction. The posted speed limit is 30 miles per hour on Fairgrounds Avenue; on-street parking is prohibited.

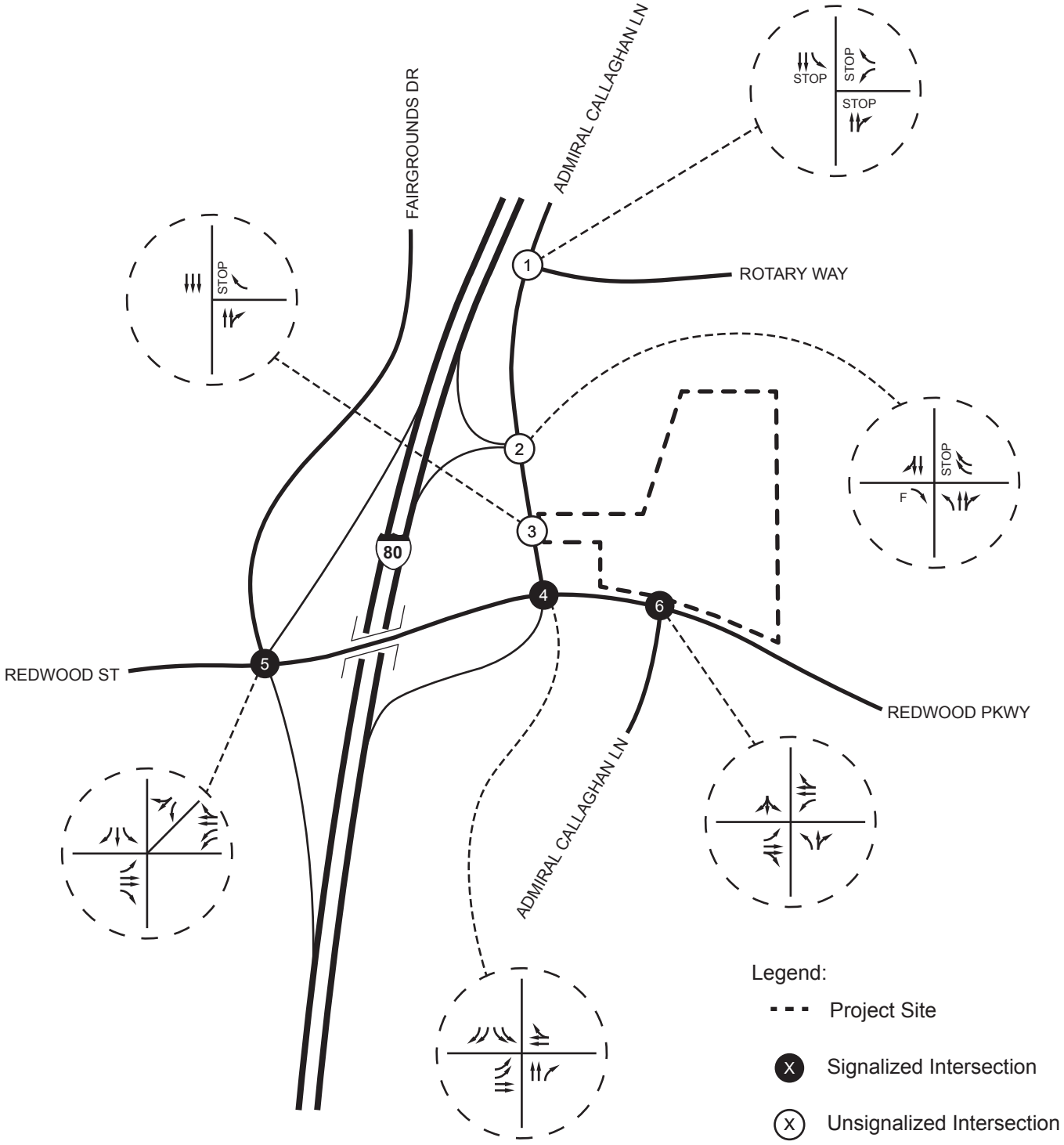

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Exhibit 4
Existing Intersection Geometry

Carlton Senior Living at 2850 Redwood Parkway in City of Vallejo
Traffic Impact Analysis

3.2 Existing 2018 Conditions Traffic Volumes

Weekday morning (AM) and weekday afternoon (PM) peak hour intersection movement counts were collected in September of 2018. Weekday morning peak period intersection counts were collected from 7:00 AM to 9:00 AM, and weekday afternoon peak period intersection counts were collected from 4:00 PM to 6:00 PM. Saturday Mid-Day (MD) peak period intersection counts were derived from the *In-N-Out at 720 Admiral Callaghan Lane Traffic Impact Analysis (June 2017)* and applied a growth factor of 1% per year to the 2016 intersection counts to forecast existing 2018 counts. Saturday MD traffic volumes were analyzed due to the proximity of the project to the Redwood Plaza Shopping Center, north of the project site. The counts used in this analysis were taken from the highest hour within the peak period counted. Traffic count data sheets are included in Appendix A of this report. 24-hour roadway segment counts were also collected on Admiral Callaghan Lane and Redwood Parkway, included in Appendix A. Exhibit 5 shows existing 2018 weekday AM and PM peak hour volumes. Exhibit 6 shows existing 2018 Saturday MD peak hour volumes. Exhibits 5 and 6 can be found in Appendix B.

3.3 Existing 2018 Conditions Intersection Analysis

Table 4 summarizes the intersection LOS analysis results for existing weekday AM, weekday PM, and Saturday Mid-Day peak hour conditions. Appendix C includes the existing conditions intersection operations analysis worksheets. As shown in Table 4, all study area intersections are operating at LOS D or better, except at the following location:

1. Admiral Callaghan Lane at Rotary Way – LOS E (MD).

3.4 Existing 2018 Conditions Roadway Link Analysis

Table 5 summarizes the roadway link analysis results for existing weekday AM, weekday PM and Saturday MD conditions. Appendix C includes the existing conditions roadway link analysis worksheets. As shown in Table 5, both roadway link segments are operating at LOS D or better.

Table 4

Existing 2018 Conditions Intersection Analysis Summary

Intersection			Existing Conditions								
			Weekday AM			Weekday PM			Saturday MD		
No.	Name	Type[1]	Delay[2]	V/C[3]	LOS[4]	Delay[2]	V/C[3]	LOS[4]	Delay[2]	V/C[3]	LOS[4]
1	Admiral Callaghan Ln at Rotary Way	AWS	10.3	0.307	B	26.2	0.449	D	43.1	0.503	E
2	Admiral Callaghan Ln at I-80 EB Ramps	YS	10.3	0.598	B	12.4	0.575	B	13.9	0.648	B
3	Admiral Callaghan Ln at West Project Dwy	OWS	0.0	0.229	A	0.0	0.319	A	0.0	0.387	A
4	Admiral Callaghan Ln / I-80 EB Ramps at Redwood Parkway	TS	22.2	0.619	C	23.6	0.619	C	28.6	0.706	C
5	Fairground Drive / I-80 WB Ramps at Redwood Parkway	TS	40.5	0.863	D	35.3	0.794	C	29.9	0.689	C
6	Admiral Callaghan Ln at Redwood Pkwy	TS	11.2	0.467	B	18.5	0.541	B	12.3	0.524	B

Note

1 Intersection Type: TS = Traffic Signal; AWS = All-Way Stop; OWS = One-Way Stop; TWS = Two-Way Stop; YS = Yield Sign

2 2010 Highway Capacity Manual (HCM) Signalized and Un-signalized Analysis Methods, Average Delay (seconds per vehicle)

3 Volume/Capacity (V/C) Ratio reported for the approach movement.

4 LOS = Level of Service; 2010 Highway Capacity Manual (HCM) Analysis Method

	Delay (seconds/vehicle)		Volume/Capacity
Level of Service	Signalized	Un-signalized	(V/C) Ratio
A	≤ 10.0	≤ 10.0	< 1.000
B	> 10.0 to ≤ 20.0	> 10.0 to ≤ 15.0	< 1.000
C	> 20.0 to ≤ 35.0	> 15.0 to ≤ 25.0	< 1.000
D	> 35.0 to ≤ 55.0	> 25.0 to ≤ 35.0	< 1.000
E	> 55.0 to ≤ 80.0	> 35.0 to ≤ 50.0	≤ 1.000
F	> 80.0	> 50.0	> 1.000

Table 5

Existing 2018 Conditions Roadway Link Analysis Summary

Roadway Link				Existing 2018 Conditions								
				Weekday AM			Weekday PM			Saturday MD		
No.	Name	Street Class	Flow	Time (sec.)	Speed (mph)[1]	LOS[2]	Time (sec.)	Speed (mph)[1]	LOS[2]	Time (sec.)	Speed (mph)[1]	LOS[2]
A	Admiral Callaghan Ln (Rotary Way to Redwood Pkwy)	III	NB	24.9	24.5	B	30.4	20.1	C	29.1	21.0	C
			SB	116.9	14.1	D	111.6	14.8	D	116.8	14.1	D
B	Redwood Pkwy (Fairgrounds Dr to South Project Dwy/Admiral Callaghan Ln)	III	EB	127.6	17.6	D	119.2	18.8	C	120.7	18.6	C
			WB	108.5	15.0	D	107.5	15.2	D	106.3	15.4	D

Note

[1] 2010 Highway Capacity Manual (HCM) Urban Street Analysis Method; Travel Speed (miles per hour)

[2] LOS = Level of Service; 2010 Highway Capacity Manual (HCM) Analysis Method

Street Class	Free Flow Speed (mph)	Travel Speed Threshold (lower limit) by Level of Service (mph)				
		A	B	C	D	E
I	55	> 42	> 34	> 27	> 21	> 16
	50	42	34	27	21	16
	45	42	34	27	21	16
II	45	35	28	22	17	13
	40	35	28	22	17	13
	35	35	28	22	17	13
III	35	30	24	18	14	10
	30	30	24	18	14	10
IV	35	25	19	13	9	7
	30	25	19	13	9	7
	25	25	19	13	9	7

4.0 PROJECT TRAFFIC

This section presents the methodology behind the project traffic generation, distribution and assignment. The project site is generally located on the north side of Redwood Parkway between Admiral Callaghan Lane (west) and Cadloni Lane. The project site is currently vacant with existing buildings. The project proposes to demolish the existing buildings, recreational facilities (swimming pool and tennis courts), and associated parking lot and landscaped areas. The project proposes to construct a 150,000 square foot, 156 unit assisted living facility (Phase 1), with the potential to add 24,000 square feet of medical office space within the project site (Phase 2). The project site will have two access points, one signalized full access driveway on Redwood Parkway at Admiral Callaghan Lane and a right-in/right-out access driveway west of the project site on Admiral Callaghan Lane.

4.1 Project Trip Generation

Table 6 summarizes the estimated project trip generation of the proposed project. Trip generation rates published in the *Institute of Transportation Engineers (ITE) Trip Generation Manual (9th Edition, 2012)* were used to estimate the number of trips that will be generated by the project. Phase 1 of the proposed project is most appropriately classified as Assisted Living (ITE Land Use Codd 254). However, there is not enough data and studies collected for this land use to result in an accurate trip generation. To be conservative, this project is classified as Senior Adult Housing – Attached (ITE Land Use Code 252), as it has higher trip generation rates and more studies/data collected. Phase 2 of the proposed project is most appropriately classified as Medical Office Building (ITE Land Use Code 720).

As shown in Table 6, Phase 1 of the proposed project will generate approximately 537 weekday daily trips with 31 weekday AM peak hour trips and 41 weekday PM peak hour trips; 407 Saturday daily trips with 48 Saturday MD peak hour trips. Phase 2 of the proposed project will generate approximately 867 weekday daily trips with 57 weekday AM peak hour trips and 86 weekday PM peak hour trips; 215 Saturday daily trips with 87 Saturday MD peak hour trips. The proposed project will generate a net project trip of 1,404 weekday daily trips with 88 weekday AM and 127 weekday PM peak hour trips; 622 Saturday daily trips with 135 Saturday MD peak hour trips.

It should be noted that according to the applicant, most residents will not own a vehicle, and vans will be used to transport residents to nearby shopping and service centers. It is also anticipated that many residents may walk to the adjacent shopping plaza, which has a grocery store, several retail and service businesses, as well as restaurants.

4.4 Project Trip Distribution

Due to the nature of the project land use, most of the trips are anticipated to travel from Interstate-80, nearby medical centers, and surrounding shopping plazas. Project trip distribution is estimated based on a review of surrounding land uses and existing traffic data. Exhibits 7 and 8 illustrate the project outbound and inbound trip distribution patterns for the Opening Year 2020 Phase 1 conditions. Exhibits 9 and 10 illustrate the project outbound and inbound trip distribution patterns for the Opening Year 2020 Phase 2 conditions.

Based on the planned I-80 Redwood Interchange modification, the intersection analysis for the Future Buildout 2040 conditions has incorporated the new interchange configuration. As a result,

the 2040 project trip distribution patterns will be different than the Opening Year 2020 conditions. Exhibits 11 and 12 show the project outbound and inbound trip distribution patterns for the Future Buildout Year 2040 Phase 1 conditions. Exhibits 13 and 14 show the project outbound and inbound trip distribution patterns for the Future Buildout Year 2040 Phase 2 conditions.

Table 6
Project Trip Generation

Trip Rates														
Project				Weekday Daily	AM Peak Hour			PM Peak Hour			Weekend Daily	MD Peak Hour		
No.	Land Use	Code*	Unit**		Total	In%	Out%	Total	In%	Out%		Total	In%	Out%
1	Senior Adult Housing - Attached	ITE 252	DU	***3.44***	***0.20***	*34%*	*66%*	***0.25***	*54%*	*46%*	***2.61***	***0.31***	*57%*	*43%*
2	Medical Office Building	ITE 720	TSF	***36.13***	***2.39***	*79%*	*21%*	***3.57***	*28%*	*72%*	***8.96***	***3.63***	*57%*	*43%*

Trip Generation													
Project			Weekday Daily	AM Peak Hour			PM Peak Hour			Weekend Daily	AM Peak Hour		
No.	Land Use	Quantity**		Total	In	Out	Total	In	Out		Total	In	Out
	Phase 1 Project Trips												
A	Senior Adult Housing - Attached	156 DU	**537**	**31**	11	20	**41**	22	19	**407**	**48**	28	20
	Phase 2 Project Trips												
B	Medical Office Building	24.000 TSF	**867**	**57**	45	12	**86**	24	62	**215**	**87**	50	37
		Net Project Trips	**1,404**	**88**	**56**	**32**	**127**	**46**	**81**	**622**	**135**	**78**	**57**

Note

* Institute of Transportation Engineers (ITE), Trip Generation Manual, 9th Edition, 2012

** DU = Dwelling Units, TSF = Thousand Square Feet

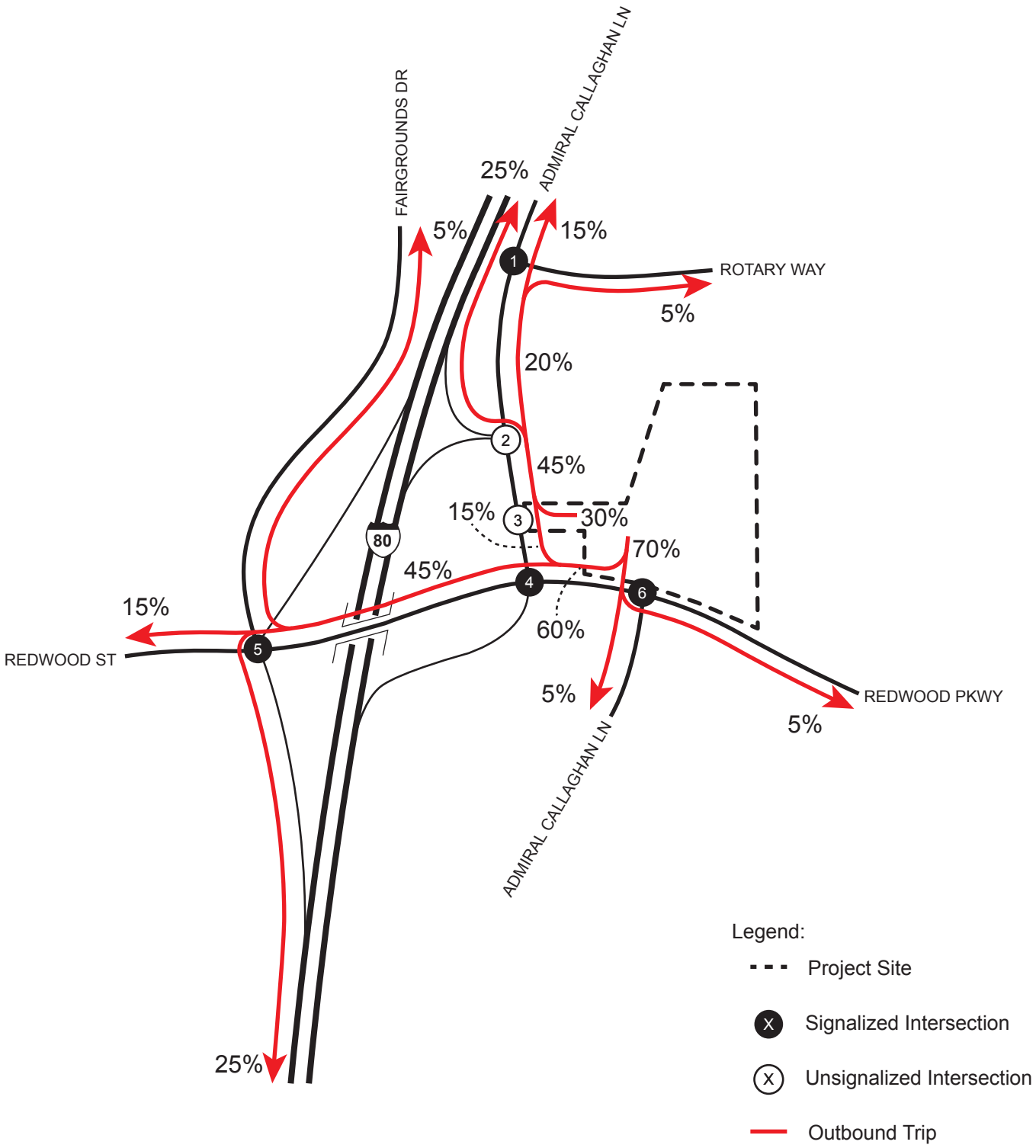

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Exhibit 7
Opening Year 2020 Phase 1 Project Outbound Trip Distribution

Carlton Senior Living at 2850 Redwood Parkway in City of Vallejo
Traffic Impact Analysis

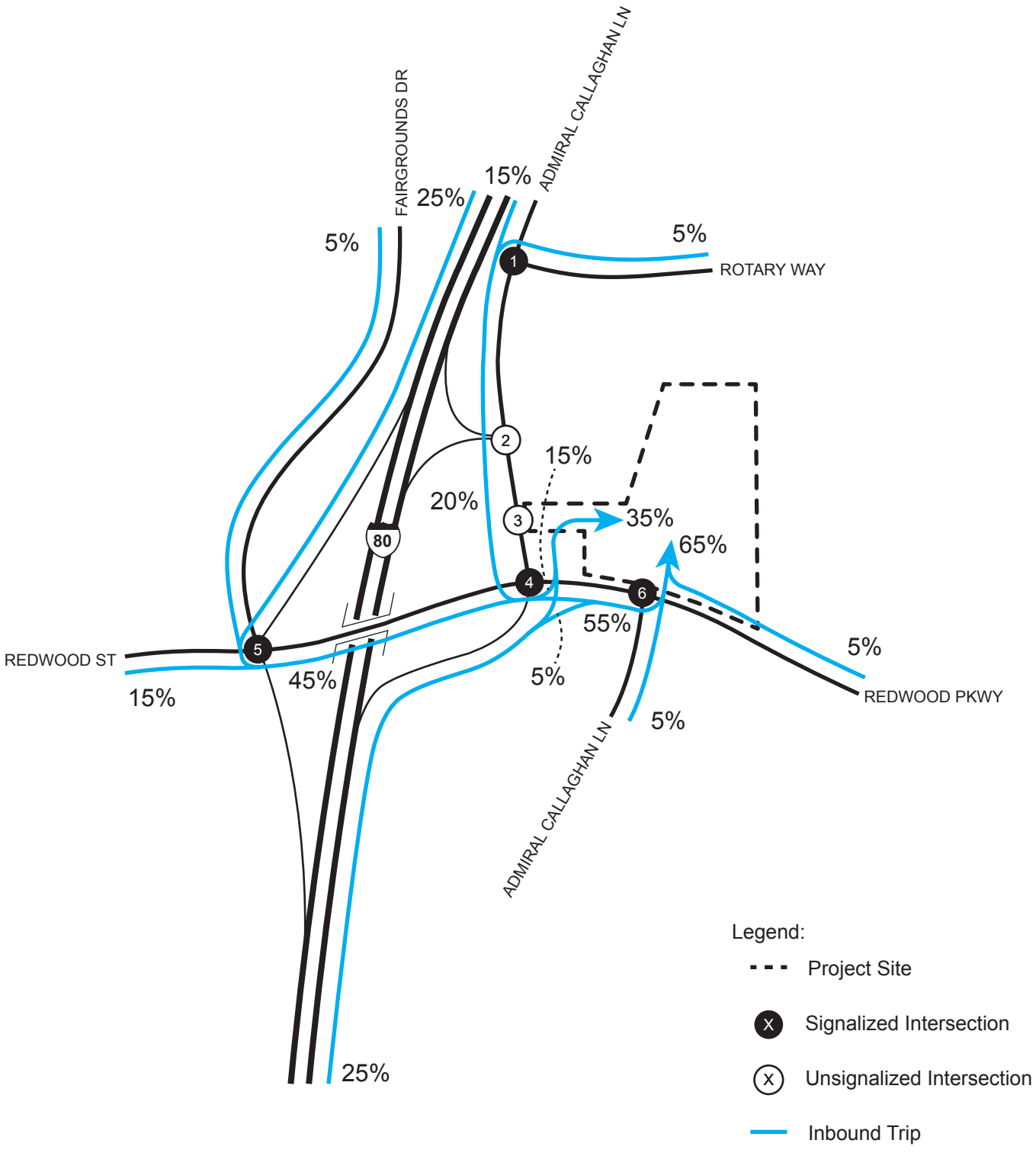

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Exhibit 8
Opening Year 2020 Phase 1 Project Inbound Trip Distribution

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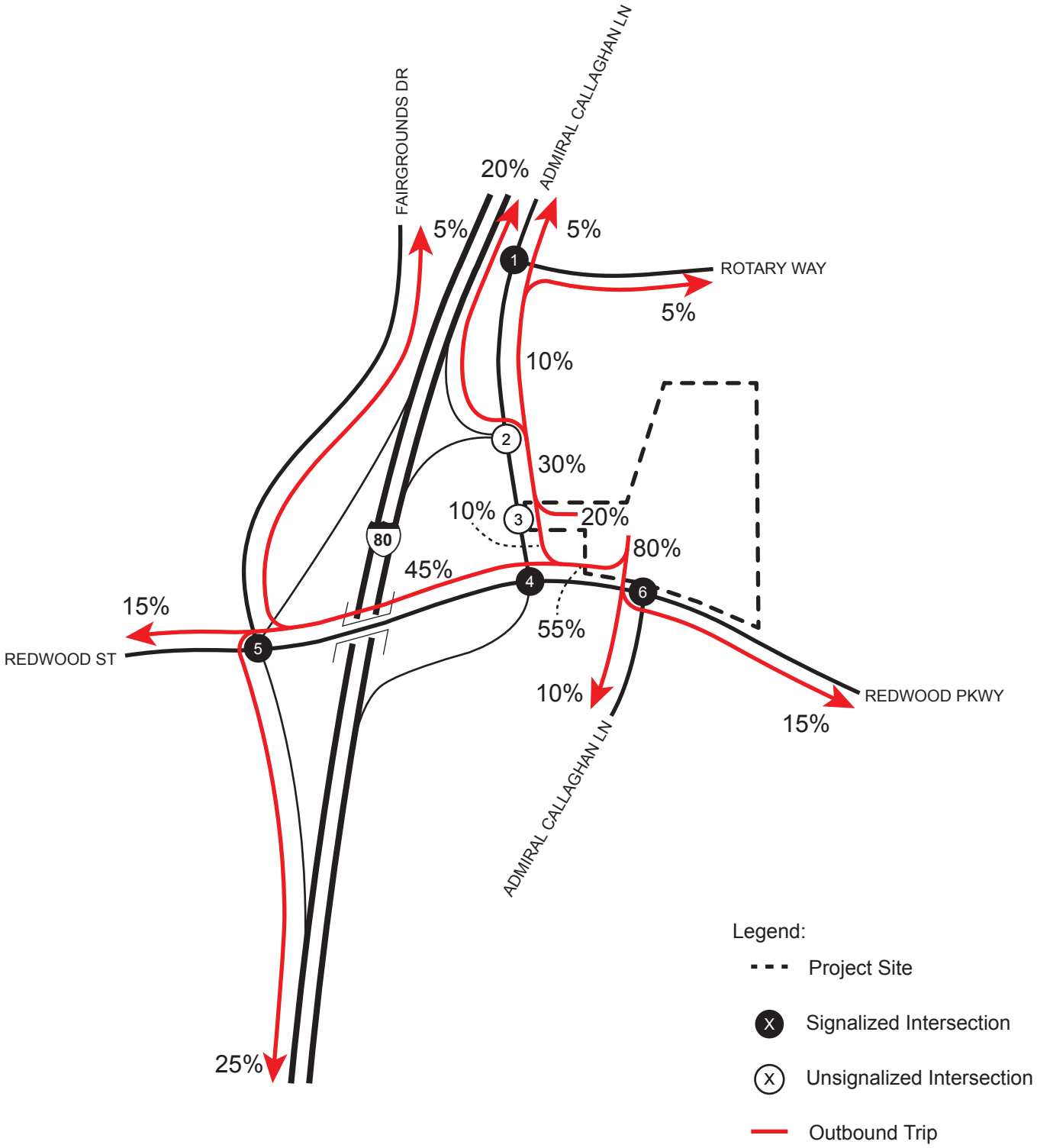

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Exhibit 9
Opening Year 2020 Phase 2 Project Outbound Trip Distribution

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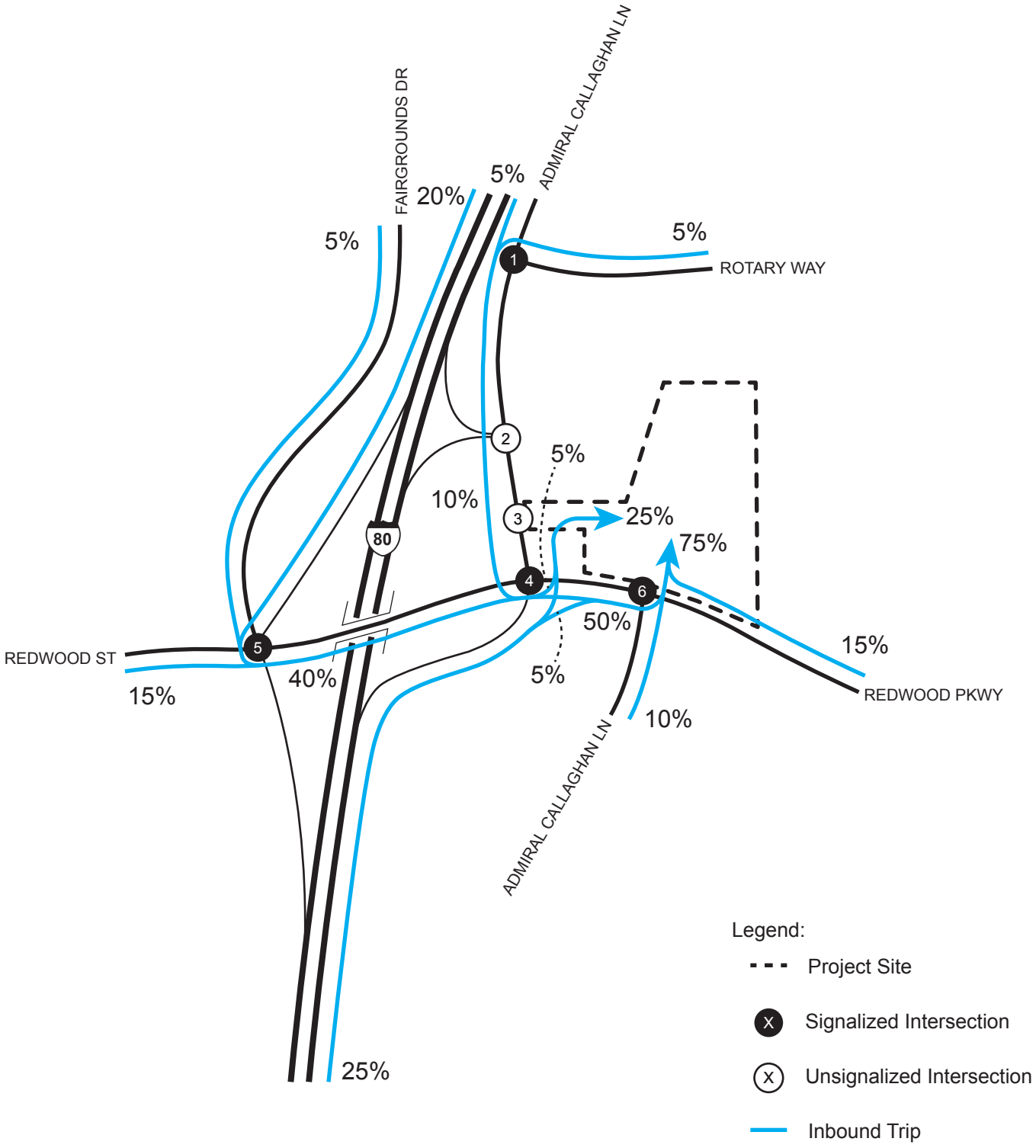

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Exhibit 10
Opening Year 2020 Phase 2 Project Inbound Trip Distribution

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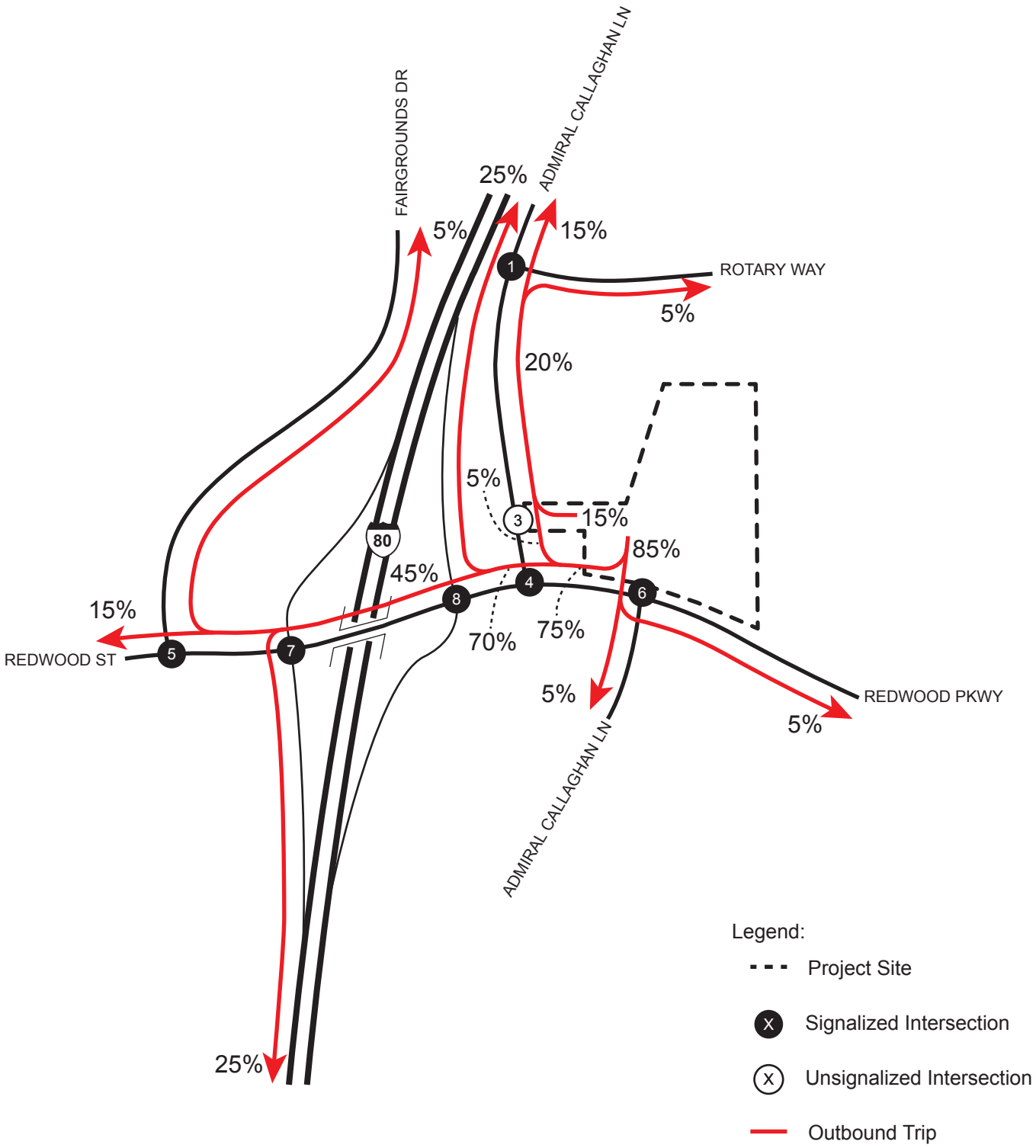

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Exhibit 11

Future Buildout Year 2040 Phase 1 Project Outbound Trip Distribution

Carlton Senior Living at 2850 Redwood Parkway in City of Vallejo
Traffic Impact Analysis

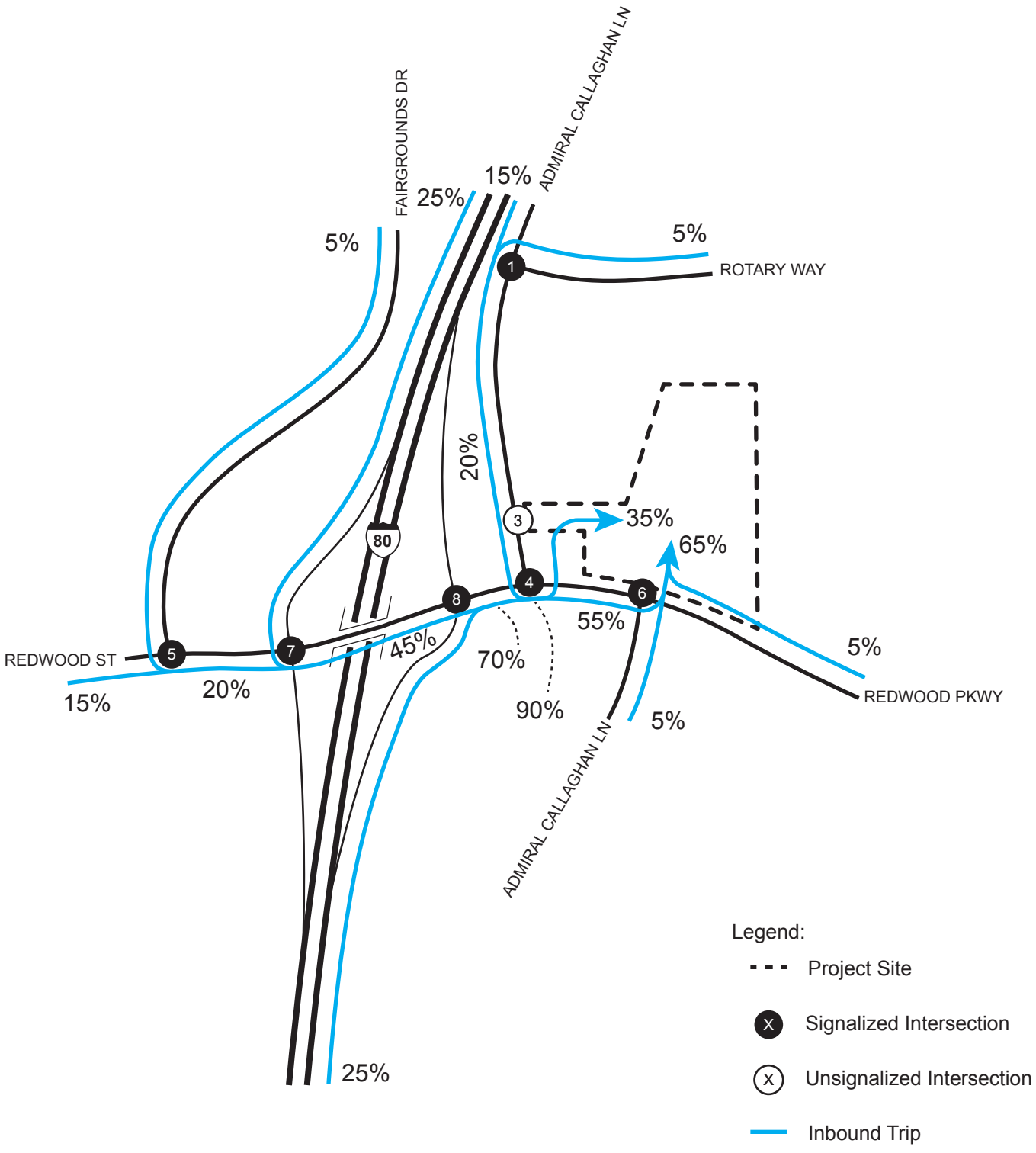

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Exhibit 12
Future Buildout Year 2040 Phase 1 Project Inbound Trip Distribution

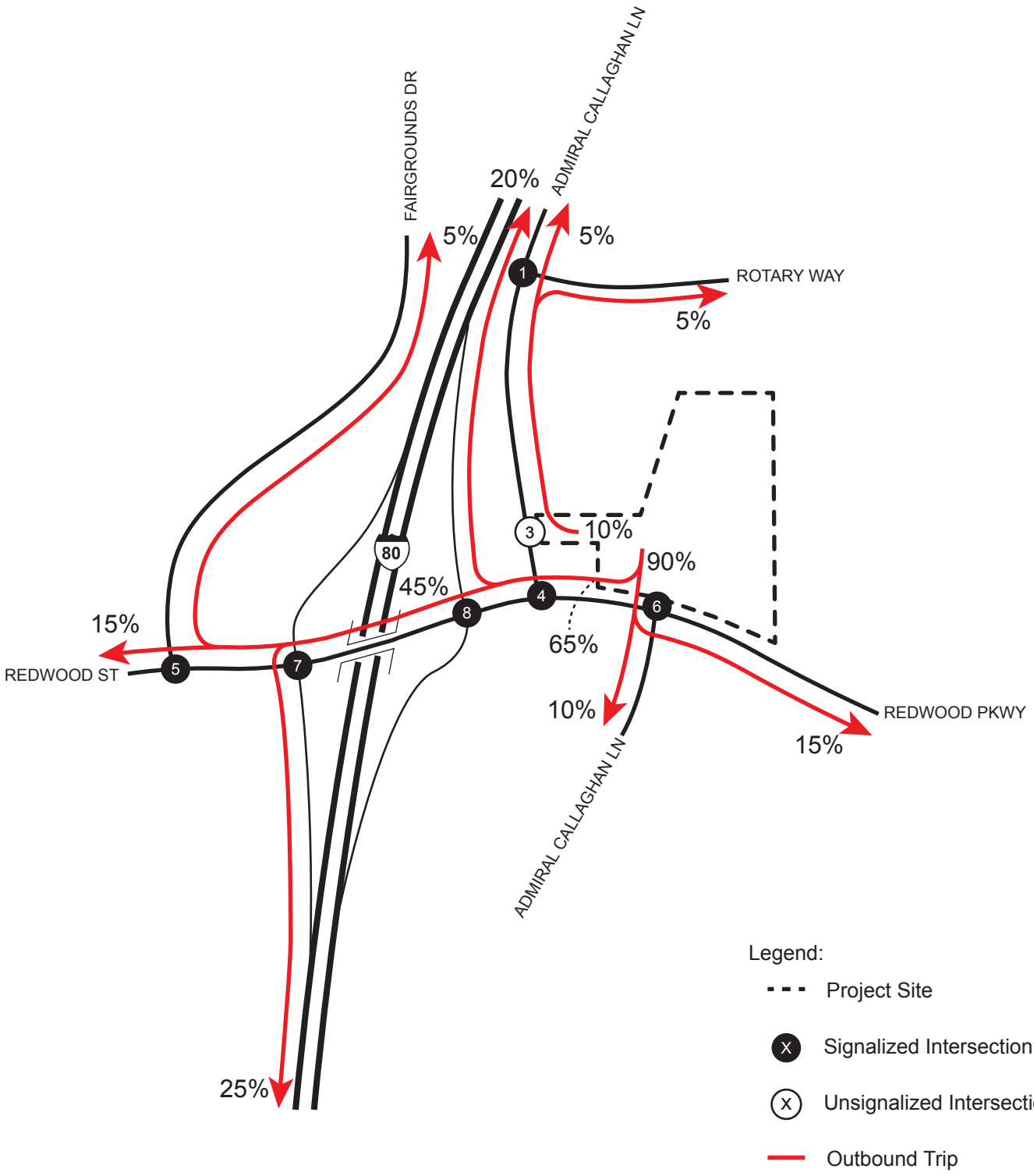

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Exhibit 13
Future Buildout Year 2040 Phase 2 Project Outbound Trip Distribution

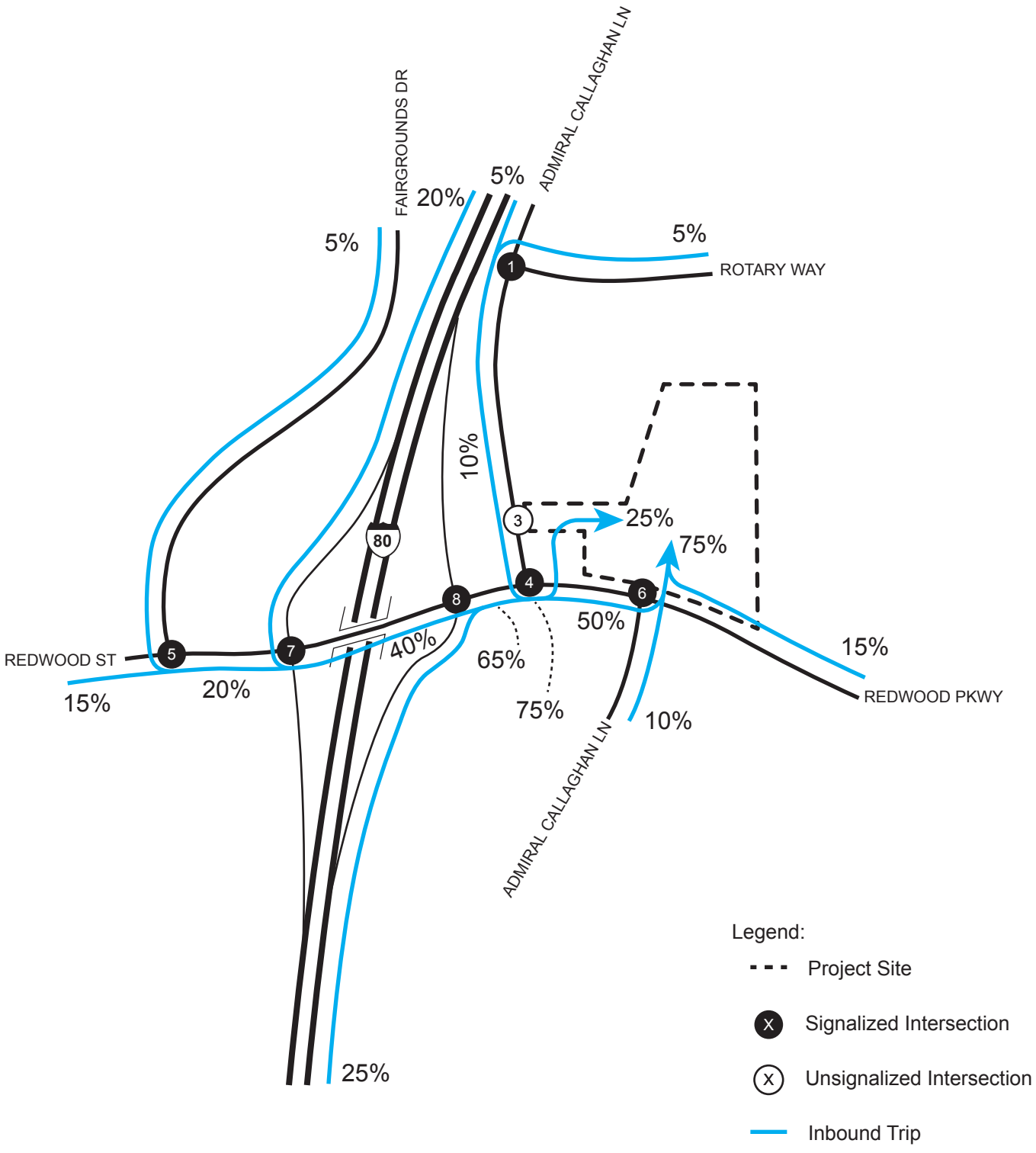

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Exhibit 14
Future Buildout Year 2040 Phase 2 Project Inbound Trip Distribution

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4.5 Project Traffic Assignment

Exhibit 15 and 16 shows the Opening Year 2020 project-only Phase 1 weekday AM and PM peak hour volumes and Opening Year 2020 project-only Phase 1 Saturday MD peak hour volumes, assuming the Opening Year 2018 trip distribution patterns shown in Exhibits 6 and 7.

Exhibit 17 and 18 shows the Opening Year 2020 project-only Phase 1 & 2 weekday AM and PM peak hour volumes and Opening Year 2020 project-only Phase 1 & 2 Saturday MD peak hour volumes assuming, the Opening Year 2018 trip distribution patterns shown in Exhibits 6 and 7.

Exhibit 19 and 20 shows the Future Buildout year 2040 project-only Phase 1 weekday AM and PM peak hour volumes and Future Buildout Year 2040 project-only Phase 1 Saturday MD peak hour volumes, assuming the Future Buildout Year 2040 trip distribution patterns shown in Exhibits 8 and 9.

Exhibit 21 and 22 shows the Future Buildout year 2040 project-only Phase 1 & 2 weekday AM and PM peak hour volumes and Future Buildout Year 2040 project-only Phase 1 & 2 Saturday MD peak hour volumes, assuming the Future Buildout Year 2040 trip distribution patterns shown in Exhibits 8 and 9.

Exhibits 15 through 22 can be found in Appendix B.

5.0 FUTURE TRAFFIC FORECAST

This section presents the future traffic forecast for each of the analysis scenarios evaluated in this study. The following future conditions are presented:

- Opening Year 2020 without Project Conditions;
- Opening Year 2020 plus Cumulative Projects without Project Conditions;
- Opening Year 2020 plus Cumulative Projects with Project Conditions;
- Future Buildout Year 2040 Cumulative without Project Conditions; and
- Future Buildout Year 2040 Cumulative with Project Conditions.

5.1 Ambient Growth Rate

A background ambient growth rate of 1% per year is used to account for the growth of existing traffic along the arterial roadways when the project is anticipated to open in Year 2020. A growth rate of 1% is based on the initial scoping process with the City which was approved by the City traffic engineer. From the Solano County Economic Forecast from Caltrans, Solano County is expected to grow by 1.0 percent per year over the 2017-2022 period.

5.2 Cumulative Development Traffic

In addition to the ambient growth rate, the future traffic forecast included projections from other approved and active projects in the study area. Based on the development status information provided by the City of Vallejo as well as information from *In-N-Out at 720 Admiral Callaghan Lane Traffic Impact Analysis (June 2017)*, the following three cumulative developments are located in the study area:

- Solano 360 Specific Plan – The site consists of the Solano County Fairgrounds, located along Fairgrounds Drive at the State Route 37 (SR-37)/I-80 interchange. The site is bounded by SR-37 to the north, I-80 to the east, Fairgrounds Drive to the west, and Coach Lane to the south. The existing fairgrounds will be improved and will continue to operate on the site, while allowing for new mixed-use development on the currently vacant portion of the site. The Plan is an opportunity for infill development on the currently under-utilized fairgrounds site.

- In-N-Out, City of Vallejo – The In-N-Out project site is located near the proposed project site, located along the east side of Admiral Callaghan Lane, between Rotary Way and Redwood Parkway within the existing Redwood Plaza Shopping Center. The project will demolish the previously occupied FedEx building, and will construct a 3,867 square feet In-N-Out fast-food restaurant, with a drive-through window. It should be noted that the intersection of Admiral Callaghan Lane and Rotary Way (Intersection #1) will be signalized as part of the In-N-Out project, and will be operational prior to the Opening Year 2020 conditions.

- Fairview at Northgate – This development project is located along the east side of Admiral Callaghan Lane, between Turner Parkway and Rotary Way, and is currently vacant. The project proposes to construct a Costco building along with four additional commercial buildings. The project also proposes to construct single family residential buildings on the

eastern half of the parcel. It is noted that this cumulative development is only included in the Future Buildout Year 2040 scenarios.

Appendix D contains the cumulative development traffic data that has been obtained from the traffic studies prepared for the cumulative developments. Exhibits 23 and 24 show cumulative development traffic volumes for Opening Year 2018 AM and PM peak hour volumes and Opening Year 2018 Saturday MD peak hour volumes. Exhibits 25 and 26 show cumulative development traffic volumes for Future Buildout Year 2040 weekday AM and PM peak hour volumes and Future Buildout Year 2040 Saturday MD peak hour volumes. Exhibits 23 through 26 can be found in Appendix B.

5.3 Long-Range 2040 Traffic Forecast

Traffic forecast data from the Solano Transportation Authority (STA) travel demand forecast model has been utilized to estimate the long-range 2040 baseline traffic conditions. Appendix E includes the traffic model forecast data.

The 2040 and 2015 traffic model data was reviewed and the total traffic growth percentages for the study area roadways during the PM peak hour was calculated. Appendix E summarizes the total 25 year growth percentages for the study area roadway segments adjacent to the analysis intersections. As shown in Appendix E, the following total 25 year growth percentages are observed for the study area roadways are:

- Admiral Callaghan Lane, north of Redwood Parkway: 5% to 22%
- Admiral Callaghan Lane, south of Redwood Parkway: 47%
- Rotary Way: 5%
- Redwood Parkway: 13% to 21%
- I-80 Eastbound Ramps at Admiral Callaghan Lane: 12%
- I-80 Eastbound Off-Ramp at Redwood Parkway: 47%
- Fairgrounds Drive: 16%
- I-80 Westbound Ramps at Redwood Parkway: 17%

Typically, PM peak hour volumes are greater than the AM peak hour and Saturday MD peak hour volumes. To be conservative in the Buildout Year 2040 traffic forecast, this study used the model growth trend observed for weekday PM peak hour traffic volumes between year 2015 and year 2040 conditions for both the weekday AM peak hour and Saturday MD peak hour.

In addition to the 25-year model growth rate, the long-range 2040 traffic forecast included traffic projections from the four cumulative developments that are located near the study area. Manual adjustments were made to achieve reasonable flow conservation along the roadway links between adjacent intersections. The Future Buildout 2040 analysis has incorporated the planned 2035 interchange modification for the I-80 Redwood interchange that are shown in Appendix L. The new interchange configuration is based on the alternative presented in the Redwood Parkway – Fairgrounds Drive Improvement Project Final Environmental Impact Report/Environmental Assessment (EIR/EA) prepared by Caltrans and Solano Transportation Authority in June 2015. Exhibit 27 shows the updated project study area as a result of the I-80 Redwood interchange modification. Exhibit 28 shows the planned 2035 interchange modification geometry.

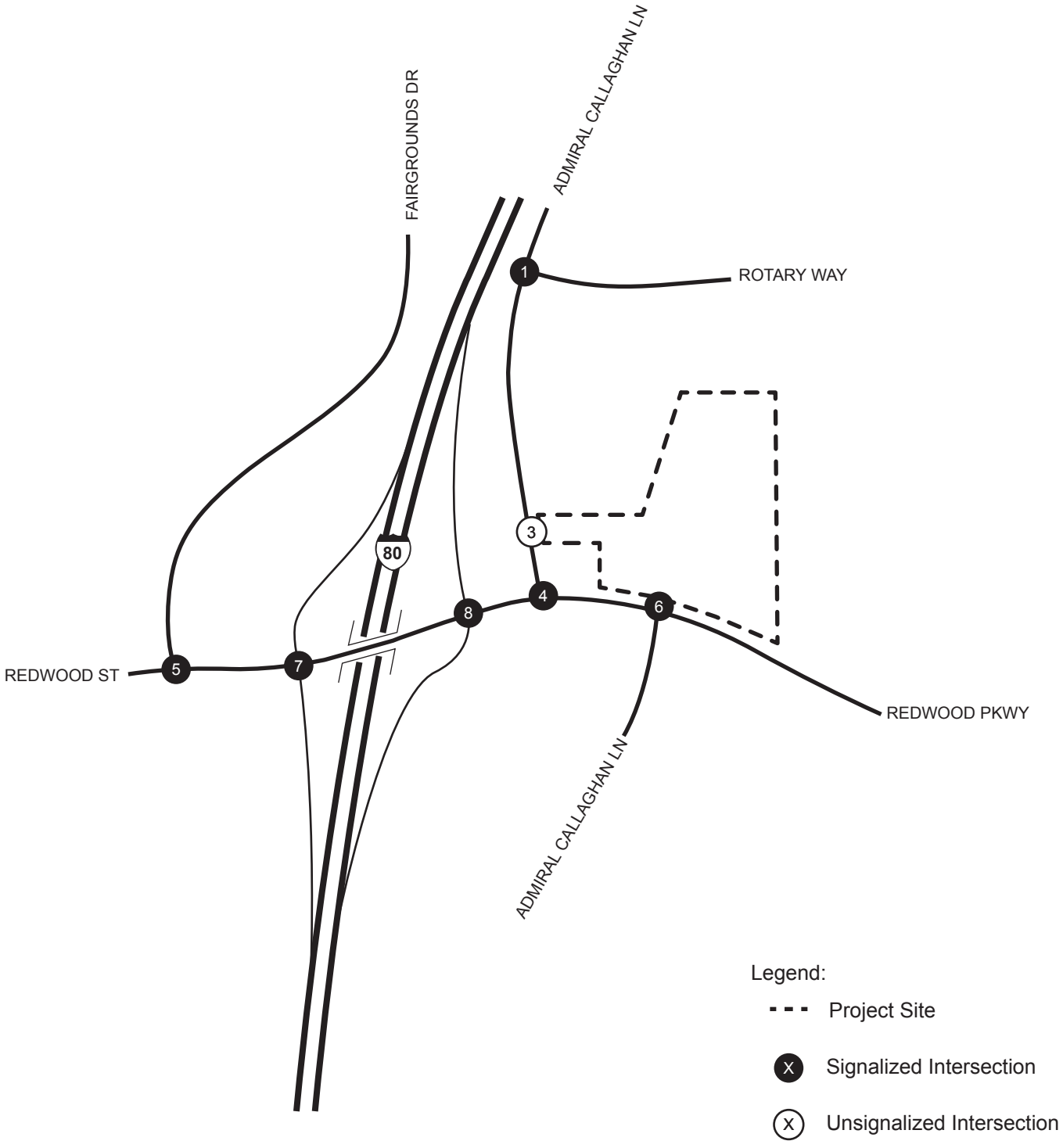

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Exhibit 27
Future Buildout Year 2040 Project Study Area

Carlton Senior Living at 2850 Redwood Parkway in City of Vallejo
Traffic Impact Analysis

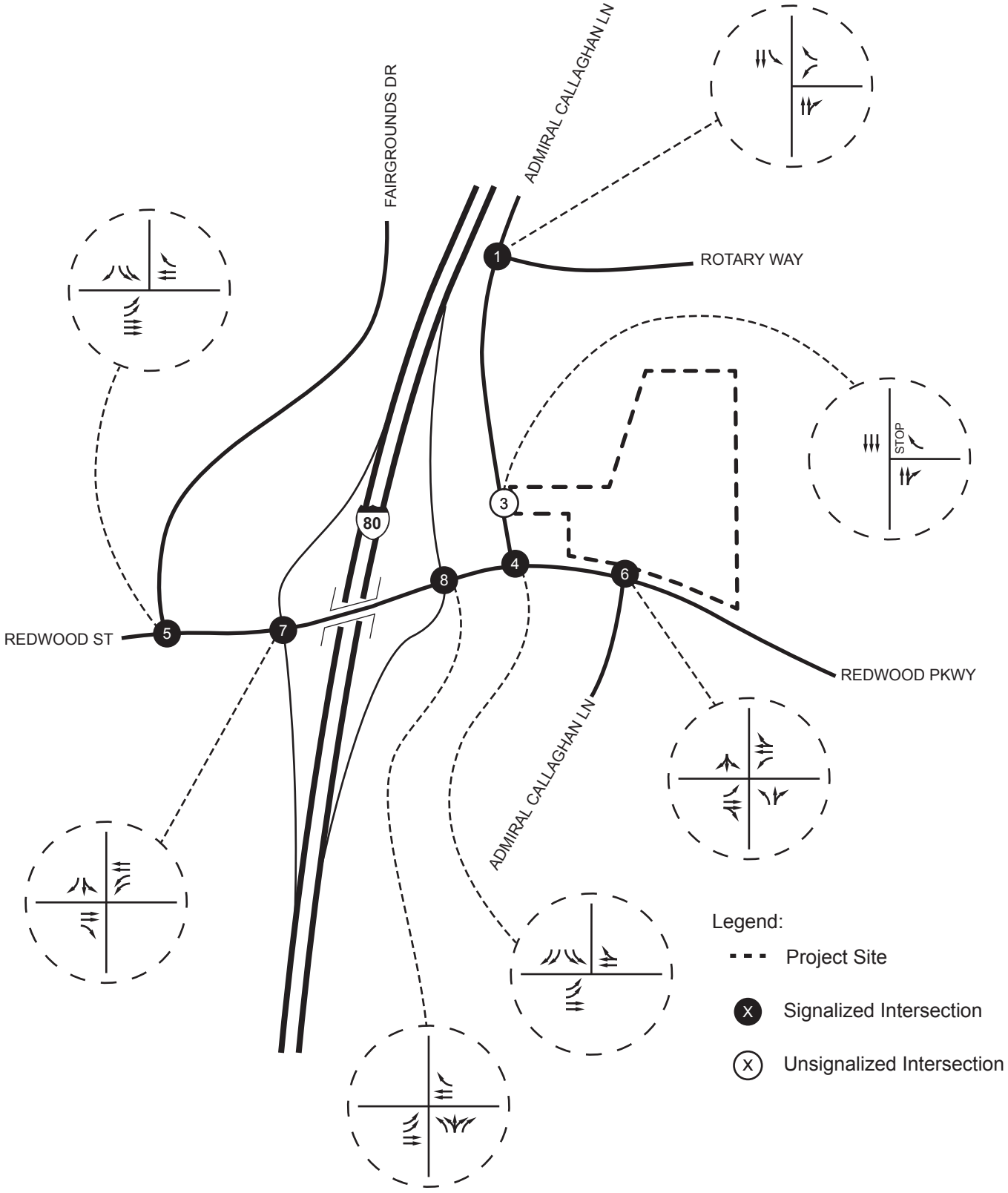

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Exhibit 28
2035 I-80 Redwood Parkway Interchange Geometry

Carlton Senior Living at 2850 Redwood Parkway in City of Vallejo
Traffic Impact Analysis

5.4 Opening Year 2020 without Cumulative, without Project Conditions Volumes

Exhibit 29 and 30 shows Opening Year 2020 without cumulative, without project conditions weekday AM and PM peak hour volumes and Opening Year 2020 without cumulative, without project conditions Saturday MD peak hour volumes

5.5 Opening Year 2020 Plus Cumulative, without Project Conditions Volumes

Exhibit 31 and 32 shows Opening Year 2020 plus cumulative, without project conditions weekday AM and PM peak hour volumes and Opening Year 2020 plus cumulative, without project conditions Saturday MD peak hour volumes

5.6 Opening Year 2020 Plus Cumulative, with Project Conditions Traffic Volumes

Exhibit 33 and 34 shows Opening Year 2020 plus cumulative, with project Phase 1 conditions weekday AM and PM peak hour volumes and Opening Year 2020 plus cumulative, with project Phase 1 conditions Saturday MD peak hour volumes.

Exhibit 35 and 36 shows Opening Year 2020 plus cumulative, with project Phase 1 & 2 conditions weekday AM and PM peak hour volumes and Opening Year 2020 plus cumulative, with project Phase 1 & 2 conditions Saturday MD peak hour volumes.

5.7 Future Buildout Year 2040 without Project Conditions Traffic Volumes

Exhibit 37 and 38 shows Future Buildout Year 2040 without project conditions weekday AM and PM peak hour volumes and Future Buildout Year 2040 without project conditions Saturday MD peak hour volumes.

5.8 Future Buildout Year 2040 with Project Conditions Traffic Volumes

Exhibit 39 and 40 shows Future Buildout Year 2040 with project Phase 1 conditions weekday AM and PM peak hour volumes and Future Buildout Year 2040 with project Phase 1 conditions Saturday MD peak hour volumes.

Exhibit 41 and 42 shows Future Buildout Year 2040 with project Phase 1 & 2 conditions weekday AM and PM peak hour volumes and Future Buildout Year 2040 with project Phase 1 & 2 conditions Saturday MD peak hour volumes.

Exhibits 29-42 are found in Appendix B

6.0 FUTURE CONDITIONS INTERSECTION ANALYSIS

This section presents the intersection operations analysis for the following future traffic scenarios, based on the analysis methodology found in section 2:

- Opening Year 2020 without cumulative, without Project Conditions;
- Opening Year 2020 plus Cumulative Projects, without Project Conditions;
- Opening Year 2020 plus Cumulative Projects, with Project Conditions;
- Future Buildout Year 2040 Cumulative without Project Conditions; and
- Future Buildout Year 2040 Cumulative with Project Conditions.

6.1 Opening Year 2020 without Cumulative, without Project Conditions Intersection Analysis

Table 7 summarizes the Opening Year 2020 without cumulative, without project conditions weekday AM, weekday PM, and Saturday MD intersection analysis, based on existing geometry. Appendix F includes the Opening Year 2020 without cumulative, without project conditions intersection operations analysis worksheets. As shown in Table 7, all study intersections are projected to operate at LOS D or better, except for the following intersection:

1. Admiral Callaghan Lane at Rotary Way – LOS E (MD).

6.2 Opening Year 2020 Plus Cumulative, without Project Conditions Intersection Analysis

Table 8 summarizes the Opening Year 2020 plus cumulative, without project conditions weekday AM, weekday PM, and Saturday MD intersection analysis, based on existing geometry. Appendix G includes the Opening Year 2020 plus cumulative, without project conditions intersection operations analysis worksheets. As noted in Section 5.2, the intersection of Admiral Callaghan Lane and Rotary Way (Intersection #1) will be signalized as part of the In-N-Out project. As shown in Table 8, all study area intersections are projected to operate at LOS D or better.

6.3 Opening Year 2020 Plus Cumulative, with Project Phase 1 Conditions Intersection Analysis

Table 8 summarizes the Opening Year 2020 plus cumulative, with project Phase 1 conditions weekday AM, weekday PM, and Saturday MD intersection analysis, based on existing geometry. Appendix H includes the Opening Year 2020 plus cumulative, with project Phase 1 conditions intersection operations analysis worksheets. As shown in Table 8, all study area intersections are projected to operate at LOS D or better.

Based on the traffic impact thresholds set by the City of Vallejo, the project is forecast to not generate a significant impact to any of the project study intersections for the Opening Year 2020 plus cumulative, with project Phase 1 conditions.

6.4 Opening Year 2020 Plus Cumulative, with Project Phase 1 & 2 Conditions Intersection Analysis

Table 9 summarizes the Opening Year 2020 plus cumulative, with project Phase 1 & 2 conditions weekday AM, weekday PM, and Saturday MD intersection analysis, based on existing geometry. Appendix H includes the Opening Year 2020 plus cumulative, with project Phase 1 & 2 conditions intersection operations analysis worksheets. As shown in Table 9, all study area intersections are projected to operate at LOS D or better.

Based on the traffic impact thresholds set by the City of Vallejo, the project is forecast to not generate a significant impact to any of the project study intersections for the Opening Year 2020 plus cumulative, with project Phase 1 & 2 conditions.

Table 7

Opening Year 2020 without Cumulative, without Project Conditions

Intersection Analysis Summary

Intersection			Opening Year 2020 without Cumulative, without Project Conditions								
			Weekday AM			Weekday PM			Saturday MD		
No.	Name	Type[1]	Delay[2]	V/C[3]	LOS[4]	Delay[2]	V/C[3]	LOS[4]	Delay[2]	V/C[3]	LOS[4]
1	Admiral Callaghan Ln at Rotary Way	AWS	10.4	0.310	B	28.1	0.456	D	45.6	0.511	E
2	Admiral Callaghan Ln at I-80 EB Ramps	YS	10.5	0.609	B	12.7	0.585	B	14.3	0.660	B
3	Admiral Callaghan Ln at West Project Dwy	OWS	0.0	0.233	A	0.0	0.325	A	0.0	0.394	A
4	Admiral Callaghan Ln / I-80 EB Ramps at Redwood Parkway	TS	22.6	0.630	C	24.0	0.630	C	29.1	0.719	C
5	Fairground Drive / I-80 WB Ramps at Redwood Parkway	TS	42.2	0.878	D	36.4	0.808	D	30.4	0.700	C
6	Admiral Callaghan Ln at Redwood Pkwy	TS	11.4	0.473	B	19.4	0.547	B	12.5	0.531	B

Note

1 Intersection Type: TS = Traffic Signal; AWS = All-Way Stop; OWS = One-Way Stop; TWS = Two-Way Stop; YS = Yield Sign

2 2010 Highway Capacity Manual (HCM) Signalized and Un-signalized Analysis Methods, Average Delay (seconds per vehicle)

3 Volume/Capacity (V/C) Ratio reported for the approach movement.

4 LOS = Level of Service; 2010 Highway Capacity Manual (HCM) Analysis Method

	Delay (seconds/vehicle)		Volume/Capacity
Level of Service	Signalized	Un-signalized	(V/C) Ratio
A	≤ 10.0	≤ 10.0	< 1.000
B	> 10.0 to ≤ 20.0	> 10.0 to ≤ 15.0	< 1.000
C	> 20.0 to ≤ 35.0	> 15.0 to ≤ 25.0	< 1.000
D	> 35.0 to ≤ 55.0	> 25.0 to ≤ 35.0	< 1.000
E	> 55.0 to ≤ 80.0	> 35.0 to ≤ 50.0	≤ 1.000
F	> 80.0	> 50.0	> 1.000

Table 8

Opening Year 2020 Plus Cumulative, without and with Project Phase 1 Conditions

Intersection Analysis Summary

Intersection			(EAC) Opening Year 2020 plus Cumulative Without Project Conditions									(EACP1) Opening Year 2020 plus Cumulative With Project Phase 1 Conditions									(3) Significant Project Impact			
			Weekday AM			Weekday PM			Saturday MD			Weekday AM			Weekday PM			Saturday MD			Increase			Project
No.	Name	Type[1]	Delay[2]	V/C[3]	LOS[4]	Delay[2]	V/C[3]	LOS[4]	Delay[2]	V/C[3]	LOS[4]	Delay[2]	V/C[3]	LOS[4]	Delay[2]	V/C[3]	LOS[4]	Delay[2]	V/C[3]	LOS[4]	AM	PM	MD	Impact[5]
1	Admiral Callaghan Ln at Rotary Way	TS	5.5	0.324	A	7.5	0.485	A	7.5	0.564	A	5.5	0.325	A	8.7	0.487	A	7.6	0.565	A	0.001	0.002	0.001	No
2	Admiral Callaghan Ln at I-80 EB Ramps	YS	10.9	0.636	B	12.1	0.622	B	13.8	0.723	C	10.9	0.637	B	12.4	0.623	B	14.0	0.725	B	0.001	0.001	0.002	No
3	Admiral Callaghan Ln at West Project Dwy	OWS	0.0	0.246	A	0.0	0.331	A	0.0	0.404	A	10.0	0.278	A	11.2	0.401	B	12.3	0.475	B	0.032	0.070	0.071	No
4	Admiral Callaghan Ln / I-80 EB Ramps at Redwood Parkway	TS	23.2	0.657	C	24.9	0.656	C	30.8	0.764	C	23.5	0.660	C	25.4	0.660	C	31.3	0.767	C	0.003	0.004	0.003	No
5	Fairground Drive / I-80 WB Ramps at Redwood Parkway	TS	48.6	0.936	D	41.5	0.857	D	34.5	0.764	C	48.7	0.937	D	41.6	0.858	D	35.0	0.765	C	0.001	0.001	0.001	No
6	Admiral Callaghan Ln at Redwood Pkwy	TS	11.4	0.475	B	16.2	0.553	B	12.9	0.540	B	12.9	0.475	B	13.8	0.553	B	15.0	0.540	B	0.000	0.000	0.000	No

Note

[1] Intersection Type: TS = Traffic Signal; AWS = All-Way Stop; OWS = One-Way Stop; YS = Yield Sign

[2] 2010 Highway Capacity Manual (HCM) Signalized and Un-signalized Analysis Methods, Average Delay (seconds per vehicle)

[3] Volume/Capacity (V/C) Ratio reported for approach movement.

[4] LOS = Level of Service; 2010 Highway Capacity Manual (HCM) Analysis Method

	Delay (seconds/vehicle)		Volume/Capacity
Level of Service	Signalized	Un-signalized	(V/C) Ratio
A	≤ 10.0	≤ 10.0	< 1.000
B	> 10.0 to ≤ 20.0	> 10.0 to ≤ 15.0	< 1.000
C	> 20.0 to ≤ 35.0	> 15.0 to ≤ 25.0	< 1.000
D	> 35.0 to ≤ 55.0	> 25.0 to ≤ 35.0	< 1.000
E	> 55.0 to ≤ 80.0	> 35.0 to ≤ 50.0	≤ 1.000
F	> 80.0	> 50.0	> 1.000

[5] Impacts at intersections are considered to be significant when the following changes in the volume-to-capacity (V/C) ratios occurs between the "without project" and the "with project" conditions, and operating at LOS D or worse:

Level of Service	Change in V/C
C	> 0.04
D	> 0.02
E, F	> 0.01

[6] Project driveway will function at acceptable LOS thus the project impact is not significant.

Table 9

Opening Year 2020 Plus Cumulative, without and with Project Phase 1 & 2 Conditions

Intersection Analysis Summary

Intersection			(EAC) Opening Year 2020 plus Cumulative Without Project Conditions									(EACP2) Opening Year 2020 plus Cumulative With Project Phase 1 & 2 Conditions									(3) Significant Project Impact			
			Weekday AM			Weekday PM			Saturday MD			Weekday AM			Weekday PM			Saturday MD			Increase			Project Impact[5]
No.	Name	Type[1]	Delay[2]	V/C[3]	LOS[4]	Delay[2]	V/C[3]	LOS[4]	Delay[2]	V/C[3]	LOS[4]	Delay[2]	V/C[3]	LOS[4]	Delay[2]	V/C[3]	LOS[4]	Delay[2]	V/C[3]	LOS[4]	AM	PM	MD	
1	Admiral Callaghan Ln at Rotary Way	TS	5.5	0.324	A	7.5	0.485	A	7.5	0.564	A	5.6	0.327	A	7.6	0.489	A	7.6	0.568	A	0.003	0.004	0.004	No
2	Admiral Callaghan Ln at I-80 EB Ramps	YS	10.9	0.636	B	12.1	0.622	B	13.8	0.723	C	11.0	0.638	B	12.4	0.623	B	14.3	0.726	B	0.002	0.001	0.003	No
3	Admiral Callaghan Ln at West Project Dwy	OWS	0.0	0.246	A	0.0	0.331	A	0.0	0.404	A	10.0	0.282	B	11.4	0.405	B	12.4	0.480	B	0.036	0.074	0.076	No
4	Admiral Callaghan Ln / I-80 EB Ramps at Redwood Parkway	TS	23.2	0.657	C	24.9	0.656	C	30.8	0.764	C	23.6	0.662	C	26.2	0.669	C	32.0	0.773	C	0.005	0.013	0.009	No
5	Fairground Drive / I-80 WB Ramps at Redwood Parkway	TS	48.6	0.936	D	41.5	0.857	D	34.5	0.764	C	48.8	0.938	D	41.7	0.862	D	35.7	0.768	D	0.002	0.005	0.004	No
6	Admiral Callaghan Ln at Redwood Pkwy	TS	11.4	0.475	B	16.2	0.553	B	12.9	0.540	B	13.5	0.475	B	17.1	0.553	B	15.6	0.540	B	0.000	0.000	0.000	No

Note

[1] Intersection Type: TS = Traffic Signal; AWS = All-Way Stop; OWS = One-Way Stop; TWS = Two-Way Stop; YS = Yield Sign

[2] 2010 Highway Capacity Manual (HCM) Signalized and Un-signalized Analysis Methods, Average Delay (seconds per vehicle)

[3] Volume/Capacity (V/C) Ratio reported for approach movement.

[4] LOS = Level of Service; 2010 Highway Capacity Manual (HCM) Analysis Method

	Delay (seconds/vehicle)		Volume/Capacity
Level of Service	Signalized	Un-signalized	(V/C) Ratio
A	≤ 10.0	≤ 10.0	< 1.000
B	> 10.0 to ≤ 20.0	> 10.0 to ≤ 15.0	< 1.000
C	> 20.0 to ≤ 35.0	> 15.0 to ≤ 25.0	< 1.000
D	> 35.0 to ≤ 55.0	> 25.0 to ≤ 35.0	< 1.000
E	> 55.0 to ≤ 80.0	> 35.0 to ≤ 50.0	≤ 1.000
F	> 80.0	> 50.0	> 1.000

[5] Impacts at intersections are considered to be significant when the following changes in the volume-to-capacity (V/C) ratios occurs between the "without project" and the "with project" conditions, and operating at LOS D or worse:

Level of Service	Change in V/C
C	> 0.04
D	> 0.02
E, F	> 0.01

[6] Project driveway will function at acceptable LOS thus the project impact is not significant.

6.5 Future Buildout 2040 without Project Conditions Intersection Analysis

Table 10 summarizes the Future Buildout Year 2040 without project conditions weekday AM, weekday PM, and Saturday MD intersection analysis, based on the planned 2035 interchange modification for the I-80 Redwood Parkway Interchange. Appendix I includes the Future Buildout Year 2040 without project conditions intersection operations analysis worksheets. As shown in Table 10, all study area intersections are projected to operate at LOS D or better.

6.6 Future Buildout 2040 with Project Phase 1 Conditions Intersection Analysis

Table 10 summarizes the Future Buildout Year 2040 with project Phase 1 conditions weekday AM, weekday PM, and Saturday MD intersection analysis, based on the planned 2035 interchange modification for the I-80 Redwood Parkway Interchange. Appendix J includes the Future Buildout Year 2040 with project Phase 1 conditions intersection operations analysis worksheets. As shown in Table 10, all study area intersections are projected to operate at LOS D or better.

Based on the traffic impact thresholds set by the City of Vallejo, the project is forecast to not generate a significant impact to any of the project study intersections for the Future Buildout Year 2040 with project Phase 1 conditions

6.7 Future Buildout 2040 with Project Phase 1 & 2 Conditions Intersection Analysis

Table 11 summarizes the Future Buildout Year 2040 with project Phase 1 & 2 conditions weekday AM, weekday PM, and Saturday MD intersection analysis, based on the planned 2035 interchange modification for the I-80 Redwood Parkway Interchange. Appendix J includes the Future Buildout Year 2040 with project Phase 1 & 2 conditions intersection operations analysis worksheets. As shown in Table 10, all study area intersections are projected to operate at LOS D or better.

Based on the traffic impact thresholds set by the City of Vallejo, the project is forecast to not generate a significant impact to any of the project study intersections for the Future Buildout Year 2040 with project Phase 1 & 2 conditions.

Table 10

Future Buildout Year 2040 without and with Project Phase 1 Conditions

Intersection Analysis Summary

Intersection			(2040) Future Buildout 2040 Without Project Conditions									(2040P1) Future Buildout 2040 With Project Phase 1 Conditions									(3) Significant Project Impact			
			Weekday AM			Weekday PM			Saturday MD			Weekday AM			Weekday PM			Saturday MD			Increase			Project
No.	Name	Type[1]	Delay[2]	V/C[3]	LOS[4]	Delay[2]	V/C[3]	LOS[4]	Delay[2]	V/C[3]	LOS[4]	Delay[2]	V/C[3]	LOS[4]	Delay[2]	V/C[3]	LOS[4]	Delay[2]	V/C[3]	LOS[4]	AM	PM	MD	Impact[5]
1	Admiral Callaghan Ln at Rotary Way	TS	5.4	0.363	A	8.3	0.593	A	12.9	0.728	B	5.5	0.365	A	8.3	0.594	A	12.9	0.730	B	0.002	0.001	0.002	No
3	Admiral Callaghan Ln at West Project Dwy	OWS	0.0	0.205	A	0.0	0.337	A	0.0	0.532	A	10.4	0.273	B	12.9	0.406	B	19.1	0.602	C	0.068	0.069	0.070	No[6]
4	Admiral Callaghan Ln / I-80 EB Ramps at Redwood Parkway	TS	11.8	0.542	B	16.0	0.631	B	30.2	0.851	C	12.0	0.547	B	16.4	0.638	B	31.2	0.860	C	0.005	0.007	0.009	No
5	Fairground Drive / I-80 WB Ramps at Redwood Parkway	TS	14.3	0.664	B	12.6	0.576	B	12.2	0.562	B	14.4	0.665	B	12.6	0.577	B	12.2	0.563	B	0.001	0.001	0.001	No
6	Admiral Callaghan Ln at Redwood Pkwy	TS	13.7	0.581	B	17.4	0.648	B	18.4	0.641	B	15.7	0.581	B	17.4	0.648	B	20.5	0.641	C	0.000	0.000	0.000	No
7	I-80 WB Ramps / at Redwood Pkwy	TS	19.4	0.870	B	31.3	0.923	C	25.5	0.866	C	19.6	0.870	B	31.5	0.928	C	26.0	0.871	C	0.000	0.005	0.005	No
8	I-80 EB Ramps / at Redwood Pkwy	TS	18.6	0.810	B	23.2	0.923	C	35.9	0.866	D	18.7	0.810	B	23.5	0.928	C	36.6	0.871	D	0.000	0.005	0.005	No

Note

[1] Intersection Type: TS = Traffic Signal; AWS = All-Way Stop; OWS = One-Way Stop; TWS = Two-Way Stop; YS = Yield Sign

[2] 2010 Highway Capacity Manual (HCM) Signalized and Un-signalized Analysis Methods, Average Delay (seconds per vehicle)

[3] Volume/Capacity (V/C) Ratio reported for approach movement.

[4] LOS = Level of Service; 2010 Highway Capacity Manual (HCM) Analysis Method

	Delay (seconds/vehicle)		Volume/Capacity
Level of Service	Signalized	Un-signalized	(V/C) Ratio
A	≤ 10.0	≤ 10.0	< 1.000
B	> 10.0 to ≤ 20.0	> 10.0 to ≤ 15.0	< 1.000
C	> 20.0 to ≤ 35.0	> 15.0 to ≤ 25.0	< 1.000
D	> 35.0 to ≤ 55.0	> 25.0 to ≤ 35.0	< 1.000
E	> 55.0 to ≤ 80.0	> 35.0 to ≤ 50.0	≤ 1.000
F	> 80.0	> 50.0	> 1.000

[5] Impacts at intersections are considered to be significant when the following changes in the volume-to-capacity (V/C) ratios occurs between the "without project" and the "with project" conditions, and operating at LOS D or worse:

Level of Service	Change in V/C
C	> 0.04
D	> 0.02
E, F	> 0.01

[6] Project driveway will function at acceptable LOS thus the project impact is not significant.

Table 11

Future Buildout Year 2040 without and with Project Phase 1 & 2 Conditions

Intersection Analysis Summary

Intersection			(2040) Future Buildout 2040 Without Project Conditions									(2040P2) Future Buildout 2040 With Project Phase 1 & 2 Conditions									(3) Significant Project Impact			
			Weekday AM			Weekday PM			Saturday MD			Weekday AM			Weekday PM			Saturday MD			Increase			Project
No.	Name	Type[1]	Delay[2]	V/C[3]	LOS[4]	Delay[2]	V/C[3]	LOS[4]	Delay[2]	V/C[3]	LOS[4]	Delay[2]	V/C[3]	LOS[4]	Delay[2]	V/C[3]	LOS[4]	Delay[2]	V/C[3]	LOS[4]	AM	PM	MD	Impact[5]
1	Admiral Callaghan Ln at Rotary Way	TS	5.4	0.363	A	8.3	0.593	A	12.9	0.728	B	5.5	0.366	A	8.4	0.596	A	13.2	0.732	B	0.003	0.003	0.004	No
3	Admiral Callaghan Ln at West Project Dwy	OWS	0.0	0.205	A	0.0	0.337	A	0.0	0.532	A	10.5	0.276	B	13.1	0.408	B	19.5	0.606	C	0.071	0.071	0.074	No[6]
4	Admiral Callaghan Ln / I-80 EB Ramps at Redwood Parkway	TS	11.8	0.542	B	16.0	0.631	B	30.2	0.851	C	12.6	0.552	B	16.9	0.651	B	32.7	0.872	C	0.010	0.020	0.021	No
5	Fairground Drive / I-80 WB Ramps at Redwood Parkway	TS	14.3	0.664	B	12.6	0.576	B	12.2	0.562	B	14.4	0.666	B	12.5	0.579	B	12.4	0.563	B	0.002	0.003	0.001	No
6	Admiral Callaghan Ln at Redwood Pkwy	TS	13.7	0.581	B	17.4	0.648	B	18.4	0.641	B	16.2	0.581	B	21.3	0.648	C	22.0	0.641	C	0.000	0.000	0.000	No
7	I-80 WB Ramps / at Redwood Pkwy	TS	19.4	0.870	B	31.3	0.923	C	25.5	0.866	C	19.9	0.870	B	32.6	0.935	C	26.9	0.880	C	0.000	0.012	0.014	No
8	I-80 EB Ramps / at Redwood Pkwy	TS	18.6	0.810	B	23.2	0.923	C	35.9	0.866	D	19.0	0.820	B	24.5	0.935	C	37.8	0.880	D	0.010	0.012	0.014	No

Note

1 Intersection Type: TS = Traffic Signal; AWS = All-Way Stop; OWS = One-Way Stop; TWS = Two-Way Stop; YS = Yield Sign

2 2010 Highway Capacity Manual (HCM) Signalized and Un-signalized Analysis Methods, Average Delay (seconds per vehicle)

3 Volume/Capacity (V/C) Ratio reported for approach movement.

4 LOS = Level of Service; 2010 Highway Capacity Manual (HCM) Analysis Method

	Delay (seconds/vehicle)		Volume/Capacity
Level of Service	Signalized	Un-signalized	(V/C) Ratio
A	≤ 10.0	≤ 10.0	< 1.000
B	> 10.0 to ≤ 20.0	> 10.0 to ≤ 15.0	< 1.000
C	> 20.0 to ≤ 35.0	> 15.0 to ≤ 25.0	< 1.000
D	> 35.0 to ≤ 55.0	> 25.0 to ≤ 35.0	< 1.000
E	> 55.0 to ≤ 80.0	> 35.0 to ≤ 50.0	≤ 1.000
F	> 80.0	> 50.0	> 1.000

5 Impacts at intersections are considered to be significant when the following changes in the volume-to-capacity (V/C) ratios occurs between the "without project" and the "with project" conditions, and operating at LOS D or worse:

Level of Service	Change in V/C
C	> 0.04
D	> 0.02
E, F	> 0.01

6 Project driveway will function at acceptable LOS thus the project impact is not significant.

7.0 FUTURE CONDITIONS ROADWAY LINK ANALYSIS

This section presents the roadway link analysis for the following future traffic scenarios, based on existing and future geometry:

- Opening Year 2020 without Project Conditions;
- Opening Year 2020 plus Cumulative Projects without Project Conditions;
- Opening Year 2020 plus Cumulative Projects with Project Conditions;
- Future Buildout Year 2040 Cumulative without Project Conditions; and
- Future Buildout Year 2040 Cumulative with Project Conditions.

7.1 Opening Year 2020 without Cumulative, without Project Conditions Roadway Link Analysis

Table 12 summarizes the Opening Year 2020 without cumulative, without project conditions weekday AM, weekday PM, and Saturday MD roadway link analysis, based on existing geometry. Appendix F includes the Opening Year 2020 without cumulative, without project conditions roadway link analysis worksheets. As shown in Table 12, both roadway link segments are operating at LOS D or better.

7.2 Opening Year 2020 Plus Cumulative, without Project Conditions Roadway Link Analysis

Table 13 summarizes the Opening Year 2020 plus cumulative, without project conditions weekday AM, weekday PM, and Saturday MD roadway link analysis, based on existing geometry. Appendix G includes the Opening Year 2020 plus cumulative, without project conditions roadway link analysis worksheets. As shown in Table 13, the following roadway link segments are operating at LOS E or worse:

A. Southbound on Admiral Callaghan Lane – LOS E (MD); and
B. Westbound on Redwood Parkway – LOS E (AM)

7.3 Opening Year 2020 Plus Cumulative, with Project Phase 1 Conditions Intersection Analysis Roadway Link Analysis

Table 13 summarizes the Opening Year 2020 plus cumulative, with project Phase 1 conditions weekday AM, weekday PM, and Saturday MD roadway link analysis, based on existing geometry. Appendix H includes the Opening Year 2020 plus cumulative, with project Phase 1 conditions roadway link analysis worksheets. As shown in Table 13, the following roadway link segments are operating at LOS E or worse:

A. Southbound on Admiral Callaghan Lane – LOS E (MD); and
B. Westbound on Redwood Parkway – LOS E (AM, MD)

The project causes very small changes to the travel times and travel speeds (less than 1 mph) on the Admiral Callaghan Lane and Redwood Parkway so it is forecasted that the project will not significantly impact the roadway link operations for Opening Year 2020 plus cumulative, with project Phase 1 conditions.

7.4 Opening Year 2020 Plus Cumulative, with Project Phase 1 & 2 Conditions Roadway Link Analysis

Table 14 summarizes the Opening Year 2020 plus cumulative, with project Phase 1 & 2 conditions weekday AM, weekday PM, and Saturday MD roadway link analysis, based on existing geometry. Appendix H includes the Opening Year 2020 plus cumulative, with project Phase 1 & 2 conditions roadway link analysis worksheets. As shown in Table 14, the following roadway link segments are operating at LOS E or worse:

A. Southbound on Admiral Callaghan Lane – LOS E (MD); and
B. Westbound on Redwood Parkway – LOS E (AM, PM, MD)

The project causes very small changes to the travel times and travel speeds (less than 1 mph) on the Admiral Callaghan Lane and Redwood Parkway so it is forecasted that the project will not significantly impact the roadway link operations for Opening Year 2020 plus cumulative, with project Phase 1 & 2 conditions.

Table 12

Opening Year 2020 without Cumulative, without Project Conditions

Roadway Link Analysis Summary

Roadway Link				(EA) Opening Year 2020 Conditions								
				Weekday AM			Weekday PM			Saturday MD		
No.	Name	Street Class	Flow	Time (sec.)	Speed (mph)[1]	LOS[2]	Time (sec.)	Speed (mph)[1]	LOS[2]	Time (sec.)	Speed (mph)[1]	LOS[2]
A	Admiral Callaghan Ln (Rotary Way to Redwood Pkwy)	III	NB	25.0	24.4	B	30.5	20.0	C	29.4	20.8	C
			SB	117.1	14.1	D	111.6	14.8	D	116.9	14.1	D
B	Redwood Pkwy (Fairgrounds Dr to South Project Dwy/Admiral Callaghan Ln)	III	EB	127.8	17.6	D	120.1	18.7	C	121.5	18.5	C
			WB	110.1	14.8	D	109.1	15.0	D	108.1	15.1	D

Note

[1] 2010 Highway Capacity Manual (HCM) Urban Street Analysis Method; Travel Speed (miles per hour)

[2] LOS = Level of Service; 2010 Highway Capacity Manual (HCM) Analysis Method

Street Class	Free Flow Speed (mph)	Travel Speed Threshold (lower limit) by Level of Service (mph) A	B	C	D	E
I	55	> 42	> 34	> 27	> 21	> 16
	50	42	34	27	21	16
	45	42	34	27	21	16
II	45	35	28	22	17	13
	40	35	28	22	17	13
	35	35	28	22	17	13
III	35	30	24	18	14	10
	30	30	24	18	14	10
IV	35	25	19	13	9	7
	30	25	19	13	9	7
	25	25	19	13	9	7

Table 13

Opening Year 2020 Plus Cumulative, without and with Project Phase 1 Conditions

Roadway Link Analysis Summary

Roadway Link				(EAC) Opening Year 2020 plus Cumulative Without Project Conditions									(EACP1) Opening Year 2020 plus Cumulative With Project Phase 1 Conditions									Project Change					
				Weekday AM			Weekday PM			Saturday MD			Weekday AM			Weekday PM			Saturday MD			AM		PM		MD	
No.	Name	Street Class	Flow	Time (sec.)	Speed (mph)[1]	LOS[2]	Time (sec.)	Speed (mph)[1]	LOS[2]	Time (sec.)	Speed (mph)[1]	LOS[2]	Time (sec.)	Speed (mph)[1]	LOS[2]	Time (sec.)	Speed (mph)[1]	LOS[2]	Time (sec.)	Speed (mph)[1]	LOS[2]	Time (sec.)	Speed (mph)	Time (sec.)	Speed (mph)	Time (sec.)	Speed (mph)
A	Admiral Callaghan Ln (Rotary Way to Redwood Pkwy)	III	NB	25.1	24.3	B	30.8	19.8	C	31.2	19.6	C	25.1	24.3	B	30.9	19.7	C	31.3	19.5	C	0.0	0.0	0.1	-0.1	0.1	-0.1
			SB	116.8	14.1	D	111.8	14.8	D	118.2	14.0	E	117.0	14.1	D	111.8	14.8	D	118.4	13.9	E	0.2	0.0	0.0	0.0	0.2	-0.1
B	Redwood Pkwy (Fairgrounds Dr to South Project Dwy/Admiral Callaghan Ln)	III	EB	129.7	17.3	D	121.5	18.5	C	126.0	17.8	D	129.8	17.3	D	121.6	18.5	C	127.0	17.7	D	0.1	0.0	0.1	0.0	1.0	-0.1
			WB	117.6	13.9	E	113.3	14.4	D	115.7	14.1	D	118.8	13.7	E	114.1	14.3	D	118.2	13.8	E	1.2	-0.2	0.8	-0.1	2.5	-0.3

Note

[1] 2010 Highway Capacity Manual (HCM) Urban Street Analysis Method; Travel Speed (miles per hour)

[2] LOS = Level of Service; 2010 Highway Capacity Manual (HCM) Analysis Method

Street Class	Free Flow Speed (mph)	Travel Speed Threshold (lower limit) by Level of Service (mph)				
		A	B	C	D	E
I	55	> 42	> 34	> 27	> 21	> 16
	50	42	34	27	21	16
	45	42	34	27	21	16
II	45	35	28	22	17	13
	40	35	28	22	17	13
	35	35	28	22	17	13
III	35	30	24	18	14	10
	30	30	24	18	14	10
IV	35	25	19	13	9	7
	30	25	19	13	9	7
	25	25	19	13	9	7

Table 14

Opening Year 2020 Plus Cumulative, without and with Project Phase 1 & 2 Conditions

Roadway Link Analysis Summary

Roadway Link				(EAC) Opening Year 2020 plus Cumulative Without Project Conditions									(EACP2) Opening Year 2020 plus Cumulative With Project Phase 1 & 2 Conditions									Project Change					
				Weekday AM			Weekday PM			Saturday MD			Weekday AM			Weekday PM			Saturday MD			AM		PM		MD	
No.	Name	Street Class	Flow	Time (sec.)	Speed (mph)[1]	LOS[2]	Time (sec.)	Speed (mph)[1]	LOS[2]	Time (sec.)	Speed (mph)[1]	LOS[2]	Time (sec.)	Speed (mph)[1]	LOS[2]	Time (sec.)	Speed (mph)[1]	LOS[2]	Time (sec.)	Speed (mph)[1]	LOS[2]	Time (sec.)	Speed (mph)	Time (sec.)	Speed (mph)	Time (sec.)	Speed (mph)
A	Admiral Callaghan Ln (Rotary Way to Redwood Pkwy)	III	NB	25.1	24.3	B	30.8	19.8	C	31.2	19.6	C	25.2	24.2	B	31.2	19.6	C	31.3	19.5	C	0.1	-0.1	0.4	-0.2	0.1	-0.1
			SB	116.8	14.1	D	111.8	14.8	D	118.2	14.0	E	117.1	14.1	D	111.8	14.8	D	118.6	13.9	E	0.3	0.0	0.0	0.0	0.4	-0.1
B	Redwood Pkwy (Fairgrounds Dr to South Project Dwy/Admiral Callaghan Ln)	III	EB	129.7	17.3	D	121.5	18.5	C	126.0	17.8	D	129.9	17.3	D	121.8	18.4	C	128.2	17.5	D	0.2	0.0	0.3	-0.1	2.2	-0.3
			WB	117.6	13.9	E	113.3	14.4	D	115.7	14.1	D	119.8	13.6	E	117.1	13.9	E	121.6	13.4	E	2.2	-0.3	3.8	-0.5	5.9	-0.7

Note

[1] 2010 Highway Capacity Manual (HCM) Urban Street Analysis Method; Travel Speed (miles per hour)

[2] LOS = Level of Service; 2010 Highway Capacity Manual (HCM) Analysis Method

Street Class	Free Flow Speed (mph)	Travel Speed Threshold (lower limit) by Level of Service (mph)				
		A	B	C	D	E
I	55	> 42	> 34	> 27	> 21	> 16
	50	42	34	27	21	16
	45	42	34	27	21	16
II	45	35	28	22	17	13
	40	35	28	22	17	13
	35	35	28	22	17	13
III	35	30	24	18	14	10
	30	30	24	18	14	10
IV	35	25	19	13	9	7
	30	25	19	13	9	7
	25	25	19	13	9	7

7.5 Future Buildout Year 2040 without Project Conditions Roadway Link Analysis

Table 15 summarizes the Future Buildout Year 2040 without project conditions weekday AM, weekday PM, and Saturday MD roadway link analysis, based on the planned 2035 interchange modification for the I-80 Redwood Parkway Interchange. Appendix I includes the Future Buildout Year 2040 without project conditions roadway link analysis worksheets. As shown in Table 15, both roadway link segments are operating at LOS D or better.

7.6 Future Buildout Year 2040 with Project Phase 1 Conditions Roadway Link Analysis

Table 15 summarizes the Future Buildout Year 2040 with project Phase 1 conditions weekday AM, weekday PM, and Saturday MD roadway link analysis, based on the planned 2035 interchange modification for the I-80 Redwood Parkway Interchange. Appendix J includes the Future Buildout Year 2040 with project Phase 1 conditions roadway link analysis worksheets. As shown in Table 15, both roadway link segments are operating at LOS D or better.

The project causes very small changes to the travel times and travel speeds (less than 1 mph) on the Admiral Callaghan Lane and Redwood Parkway so it is forecasted that the project will not significantly impact the roadway link operations for Future Buildout Year 2040 with project Phase 1 conditions.

7.7 Future Buildout Year 2040 with Project Phase 1 & 2 Conditions Roadway Link Analysis

Table 16 summarizes the Future Buildout Year 2040 with project Phase 1 & 2 conditions weekday AM, weekday PM, and Saturday MD roadway link analysis, based on the planned 2035 interchange modification for the I-80 Redwood Parkway Interchange. Appendix J includes the Future Buildout Year 2040 with project Phase 1 & 2 conditions roadway link analysis worksheets. As shown in Table 16, both roadway link segments are operating at LOS D or better.

The project causes very small changes to the travel times and travel speeds (less than 1 mph) on the Admiral Callaghan Lane and Redwood Parkway so it is forecasted that the project will not significantly impact the roadway link operations for Future Buildout Year 2040 with project Phase 1 & 2 conditions.

Table 15

Future Buildout Year 2040, without and with Project Phase 1 Conditions

Roadway Link Analysis Summary

Roadway Link				(2040) Future Buildout 2040 Without Project Conditions									(2040P1) Future Buildout 2040 With Project Conditions									Project Change					
				Weekday AM			Weekday PM			Saturday MD			Weekday AM			Weekday PM			Saturday MD			AM		PM		MD	
No.	Name	Street Class	Flow	Time (sec.)	Speed (mph)[1]	LOS[2]	Time (sec.)	Speed (mph)[1]	LOS[2]	Time (sec.)	Speed (mph)[1]	LOS[2]	Time (sec.)	Speed (mph)[1]	LOS[2]	Time (sec.)	Speed (mph)[1]	LOS[2]	Time (sec.)	Speed (mph)[1]	LOS[2]	Time (sec.)	Speed (mph)	Time (sec.)	Speed (mph)	Time (sec.)	Speed (mph)
A	Admiral Callaghan Ln (Rotary Way to Redwood Pkwy)	III	NB	23.7	25.7	B	28.7	21.3	C	26.9	22.7	C	23.7	25.7	B	28.8	21.2	C	26.9	22.7	C	0.0	0.0	0.1	-0.1	0.0	0.0
			SB	93.0	17.7	D	98.5	16.8	D	104.0	15.9	D	93.1	17.7	D	98.4	16.8	D	104.2	15.8	D	0.1	0.0	-0.1	0.0	0.2	-0.1
B	Redwood Pkwy (Fairgrounds Dr to South Project Dwy/Admiral Callaghan Ln)	IV	EB	129.5	17.3	C	127.8	17.5	C	147.8	15.2	C	129.7	17.3	C	128.1	17.5	C	148.6	15.1	C	0.2	0.0	0.3	0.0	0.8	-0.1
			WB	128.4	14.0	C	138.9	13.0	D	151.9	11.8	D	133.9	13.4	C	139.3	12.9	D	156.9	11.5	D	5.5	-0.6	0.4	-0.1	5.0	-0.3

Note

[1] 2010 Highway Capacity Manual (HCM) Urban Street Analysis Method; Travel Speed (miles per hour)

[2] LOS = Level of Service; 2010 Highway Capacity Manual (HCM) Analysis Method

Street Class	Free Flow Speed (mph)	Travel Speed Threshold (lower limit) by Level of Service (mph)				
		A	B	C	D	E
I	55	> 42	> 34	> 27	> 21	> 16
	50	42	34	27	21	16
	45	42	34	27	21	16
II	45	35	28	22	17	13
	40	35	28	22	17	13
	35	35	28	22	17	13
III	35	30	24	18	14	10
	30	30	24	18	14	10
IV	35	25	19	13	9	7
	30	25	19	13	9	7
	25	25	19	13	9	7

Table 16

Future Buildout Year 2040, without and with Project Phase 1 & 2 Conditions

Roadway Link Analysis Summary

Roadway Link				(2040) Future Buildout 2040 Without Project Conditions										(2040P2) Future Buildout 2040 With Project Conditions										Project Change					
				Weekday AM			Weekday PM			Saturday MD				Weekday AM			Weekday PM			Saturday MD				AM		PM		MD	
No.	Name	Street Class	Flow	Time (sec.)	Speed (mph)[1]	LOS[2]	Time (sec.)	Speed (mph)[1]	LOS[2]	Time (sec.)	Speed (mph)[1]	LOS[2]		Time (sec.)	Speed (mph)[1]	LOS[2]	Time (sec.)	Speed (mph)[1]	LOS[2]	Time (sec.)	Speed (mph)[1]	LOS[2]		Time (sec.)	Speed (mph)	Time (sec.)	Speed (mph)	Time (sec.)	Speed (mph)
A	Admiral Callaghan Ln (Rotary Way to Redwood Pkwy)	III	NB	23.7	25.7	B	28.7	21.3	C	26.9	22.7	C		23.6	25.9	B	28.9	21.1	C	26.8	22.8	C		-0.1	0.2	0.2	-0.2	-0.1	0.1
			SB	93.0	17.7	D	98.5	16.8	D	104.0	15.9	D		93.2	17.7	D	98.4	16.8	D	104.1	15.9	D		0.2	0.0	-0.1	0.0	0.1	0.0
B	Redwood Pkwy (Fairgrounds Dr to South Project Dwy/Admiral Callaghan Ln)	IV	EB	129.5	17.3	C	127.8	17.5	C	147.8	15.2	C		130.7	17.2	C	128.2	17.5	C	149.3	15.0	C		1.2	-0.1	0.4	0.0	1.5	-0.2
			WB	128.4	14.0	C	138.9	13.0	D	151.9	11.8	D		136.9	13.1	C	141.9	12.7	D	161.3	11.2	D		8.5	-0.9	3.0	-0.3	9.4	-0.6

Note

[1] 2010 Highway Capacity Manual (HCM) Urban Street Analysis Method; Travel Speed (miles per hour)

[2] LOS = Level of Service; 2010 Highway Capacity Manual (HCM) Analysis Method

Street Class	Free Flow Speed (mph)	Travel Speed Threshold (lower limit) by Level of Service (mph)				
		A	B	C	D	E
I	55	> 42	> 34	> 27	> 21	> 16
	50	42	34	27	21	16
	45	42	34	27	21	16
II	45	35	28	22	17	13
	40	35	28	22	17	13
	35	35	28	22	17	13
III	35	30	24	18	14	10
	30	30	24	18	14	10
IV	35	25	19	13	9	7
	30	25	19	13	9	7
	25	25	19	13	9	7

8.0 ON-SITE CIRCULATION

This section presents on-site parking assessment, sight distance analysis and project access assessment.

8.1 Parking Analysis

This study evaluates the adequacy of the off-street parking supply of the proposed project based on the City of Vallejo's parking code requirement, as well as the *Institute of Transportation Engineers (ITE) Parking Generation Manual (4th Edition, 2010).*

Table 17 shows the parking code parking requirement for the proposed project based on the City of Vallejo's parking code. The parking requirement for Phase 1 of the project was calculated using Standard B of the City's parking code. The parking requirement for Phase 2 of the project was calculated using Standard M of the City's parking code. As shown in Table 17, the total parking spaces required for the proposed project is 174 parking spaces. The project proposes to provide approximately 180 parking spaces, resulting in a surplus of 6 parking spaces.

Table 18 shows the recommended parking spaces of the proposed project based on different studies and data collected of similar land uses, utilizing the ITE Parking Generation Manual. The parking recommendation for Phase 1 of the project was calculated using ITE Code 254 – Assisted Living Facility. The parking recommendation for Phase 2 of the project was calculated using ITE Code 720 – Medical Office Building. As shown in Table 18, the total parking spaces recommended for the proposed project is 141 parking spaces. The project proposes to provide approximately 180 parking spaces, resulting in a surplus of 39 parking spaces.

Based on the parking analysis, there is adequate parking supply for the proposed project based on the City's parking code requirement, as well as the ITE Parking Generation Manual.

8.2 Project Driveway Sight Distance Analysis

The sight distance analysis has been assessed based on the *Caltrans Highway Design Manual (HDM)*, Section 405.1 sight distance and table 405.1A, and the *California Manual on Uniform Traffic Control Devices (MUTCD)* standards for sigh distance analysis. The purpose of the corner sight distance is to provide adequate time for a vehicle exiting the proposed project driveway to turn left or right in a safe manner without requiring through traffic on Admiral Callaghan Lane or Redwood Parkway to slow down significantly to avoid a collision.

Based on the posted speed limit of 35 miles per hour on Redwood Parkway, a corner sight distance of 385 feet is required per HDM standards for the south project driveway on Redwood Parkway. Based on the posted speed limit of 35 miles per hour on Admiral Callaghan Lane, a corner sight distance of 385 feet is required per HDM standards on the west project driveway on Admiral Callaghan Lane. A limited use area is determined by the sight distance requirement and the location of the driver, which limits any obstructions such as large trees or signs in this area. Based on this analysis, there is sufficient sight distance for vehicles exiting the proposed driveways. Exhibit 43 shows the required sight distance and the limited use area. It is recommended that as the proposed project moves into final design and construction, the designers and engineers will need to consider the placements of objects in the limited use area mentioned above.

Table 17
City of Vallejo Parking Code Requirement

Project Usage	Quantity*	City Parking Code**	Required Parking Space
Phase 1 - Assisted Living Facility (Standard B)[1]	156 DU	1 Space : 2 DU	78
Phase 2 - Medical Office Building (Standard M)[2]	24,000 SF	1 Space : 250 SF	96
		Project Subtotal	***174***
Phase 1 Parking Provided			83
Phase 2 Parking Provided			97
		Total Potential Project Parking Supply	**180**
		Overall Parking Surplus	**6**

Note:

* DU = Dwelling Units; SF = Square Feet

** City of Vallejo Municipal Code, Table 16.62.100 (Off-Street Parking Requirements and Standards).

1 City of Vallejo Standard B - Group Residential

2 City of Vallejo Standard M - Medical Services

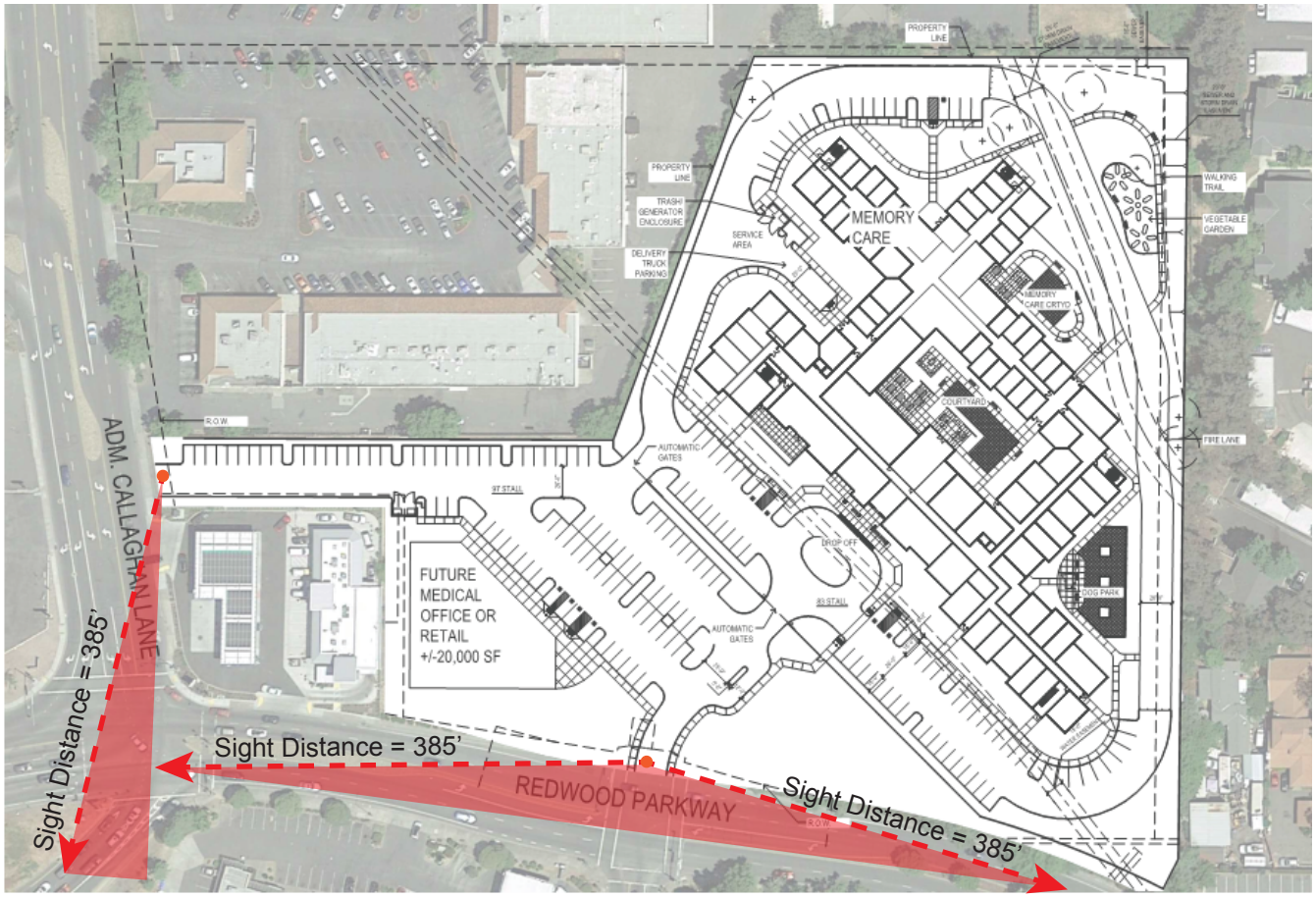
Table 18
ITE Parking Generation

Project Usage	Quantity*	ITE Parking Generation**	Required Parking Space
Phase 1 - Assisted Living Facility (ITE Code 254)	156 DU	0.41 Space : 1 DU	64
Phase 2 - Medical Office Building (ITE Code 720)	24,000 SF	3.20 Space : 1,000 SF	77
		Project Subtotal	***141***
Phase 1 Parking Provided			83
Phase 2 Parking Provided			97
		Total Potential Project Parking Supply	**180**
		Overall Parking Surplus	**39**

Note:

* DU = Dwelling Units; SF = Square Feet

** Institute of Transportation Engineers (ITE), Parking Generation, 4th Edition, 2010; Average Peak Period Parking Demand



Legend:

Limited Use Area

Not to Scale

Michael Baker INTERNATIONAL

H:\pdata\168122\Traffic\Exhibit

Exhibit 43
Sight Distance Analysis

Carlton Senior Living at 2850 Redwood Parkway in City of Vallejo
Traffic Impact Analysis

8.3 Project Driveway Queuing Analysis

Table 19 summarizes the turn lane queuing analysis at the following two project driveway locations (Intersections #3 and #6):

3. Admiral Callaghan Lane at West Project Driveway;
6. South Project Driveway at Redwood Parkway.

Table 19 summarizes the intersection queuing analysis results for Opening Year 2020 and Future Buildout Year 2040 traffic conditions. Appendix K includes the queuing analysis worksheets. The 95th percentile vehicular queue is calculated based on the Highway Capacity Manual (HCM) method using the Synchro analysis software. The queue length is calculated based on a typical car length of 25 feet per vehicle. As shown in Table 19, the project is assumed to have no significant queueing to occur at either project driveways. For Admiral Callaghan Lane at West Project Driveway (Intersection #3), the maximum queue occurring for the westbound right-turn movement is 25 feet. For South Project Driveway at Redwood Parkway (Intersection #6), the maximum queue occurring for the southbound movement is 25 feet, while the maximum queue occurring for the eastbound left-turn movement is 47 feet. It should be noted when striping for the south project driveway (Intersection #6), the designers and engineers consider the potential queueing length that may occur, as mentioned above.

Table 19

Project Driveway Intersection Queuing Analysis Summary

Intersection		Available Storage Length	Adequate Storage Length?	Maximum Queue Length[1]	95th Percentile Vehicular Queue (Feet)											
					2020 With Project Phase 1			2020 With Project Phase 1 & 2			2040 With Project Phase 1			2040 With Project Phase 1 & 2		
No.	Name				AM	PM	MD	AM	PM	MD	AM	PM	MD	AM	PM	MD
3	Admiral Callaghan Ln @ West Project Dwy															
	• WB Right Turn	N/A	Yes	25'	1'	1'	1'	1'	3'	2'	0'	0'	1'	0'	1'	2'
6	Admiral Callaghan Ln @ Northerly Proj Dwy															
	• SB Movement	N/A	Yes	25'	10'	10'	10'	14'	23'	19'	11'	9'	10'	14'	24'	19'
	• EB Left Turn	150'	Yes	47'	24'	38'	26'	39'	47'	45'	11'	19'	22'	32'	29'	42'

Note

[1] Maximum queue length rounded up to a minimum of one vehicle length of 25 feet.

9.0 CONCLUSIONS

The project site is generally located on the north side of Redwood Parkway between Admiral Callaghan Lane (west) and Cadloni Lane. The project site is currently vacant with existing buildings. The project proposes to demolish the existing buildings, recreational facilities (swimming pool and tennis courts), and associated parking lot and landscaped areas. The project proposes to construct a 150,000 square foot, 156 unit assisted living facility (Phase 1), with the potential to add 24,000 square feet of medical office space within the project site (Phase 2). The project site will have two access points, one signalized full access driveway on Redwood Parkway at Admiral Callaghan Lane and a right-in/right-out access driveway west of the project site on Admiral Callaghan Lane.

Phase 1 of the proposed project will generate approximately 537 weekday daily trips with 31 weekday AM peak hour trips and 41 weekday PM peak hour trips; 407 Saturday daily trips with 48 Saturday MD peak hour trips. Phase 2 of the proposed project will generate approximately 867 weekday daily trips with 57 weekday AM peak hour trips and 86 weekday PM peak hour trips; 215 Saturday daily trips with 87 Saturday MD peak hour trips. The proposed project will generate a net project trip of 1,404 weekday daily trips with 88 weekday AM and 127 weekday PM peak hour trips; 622 Saturday daily trips with 135 Saturday MD peak hour trips.

9.1 Intersection Analysis Results

For Existing Year 2018 conditions, all study area intersections are operating at LOS D or better, except at the following location:

1. Admiral Callaghan Lane at Rotary Way – LOS E (MD).

For Opening Year 2018 without cumulative, without project conditions, all study intersections are projected to operate at LOS D or better, except for the following intersection:

1. Admiral Callaghan Lane at Rotary Way – LOS E (MD).

As noted in Section 5.2, the intersection of Admiral Callaghan Lane and Rotary Way (Intersection #1) will be signalized as part of the In-N-Out project. For Opening Year 2020 plus cumulative, without project conditions, all study area intersections are projected to operate at LOS D or better.

For Opening Year 2020 plus cumulative, with project Phase 1 conditions, all study area intersections are projected to operate at LOS D or better.

For Opening Year 2020 plus cumulative, with project Phase 1 & 2 conditions, all study area intersections are projected to operate at LOS D or better.

Based on the traffic impact thresholds set by the City of Vallejo, the project is forecast to not generate a significant impact to any of the project study intersections for the Opening Year 2020 plus cumulative, with project Phase 1 & 2 conditions.

The Future Buildout 2040 analysis has incorporated the planned 2035 interchange modification for the I-80 Redwood interchange that are shown in Appendix L. The new interchange configuration is based on the alternative presented in the Redwood Parkway – Fairgrounds Drive

Improvement Project Final Environmental Impact Report/Environmental Assessment (EIR/EA) prepared by Caltrans and Solano Transportation Authority in June 2015.

For Future Buildout Year 2040 without project conditions, all study area intersections are projected to operate at LOS D or better.

For Future Buildout Year 2040 with project Phase 1 conditions, all study area intersections are projected to operate at LOS D or better.

For Future Buildout Year 2040 with project Phase 1 & 2 conditions, all study area intersections are projected to operate at LOS D or better.

Based on the traffic impact thresholds set by the City of Vallejo, the project is forecast to not generate a significant impact to any of the project study intersections for the Future Buildout Year 2040 with project Phase 1 & 2 conditions.

9.2 Roadway Link Analysis Results

For Existing 2018 conditions, both roadway link segments are operating at LOS D or better

For Opening Year 2020 without cumulative, without project conditions, both roadway link segments are operating at LOS D or better.

For Opening Year 2020 plus cumulative, without project conditions, the following roadway link segments are operating at LOS E or worse:

A. Southbound on Admiral Callaghan Lane – LOS E (MD); and
B. Westbound on Redwood Parkway – LOS E (AM)

For Opening Year 2020 plus cumulative, with project Phase 1 conditions, the following roadway link segments are operating at LOS E or worse:

A. Southbound on Admiral Callaghan Lane – LOS E (MD); and
B. Westbound on Redwood Parkway – LOS E (AM, MD)

For Opening Year 2020 plus cumulative, with project Phase 1 & 2 conditions, the following roadway link segments are operating at LOS E or worse:

A. Southbound on Admiral Callaghan Lane – LOS E (MD); and
B. Westbound on Redwood Parkway – LOS E (AM, PM, MD)

The project causes very small changes to the travel times and travel speeds (less than 1 mph) on the Admiral Callaghan Lane and Redwood Parkway so it is forecasted that the project will not significantly impact the roadway link operations for Opening Year 2020 plus cumulative, with project Phase 1 & 2 conditions.

For Future Buildout Year 2040 without project conditions, both roadway link segments are operating at LOS D or better.

For Future Buildout Year 2040 with project Phase 1 conditions, both roadway link segments are operating at LOS D or better.

For Future Buildout Year 2040 with project Phase 1 & 2 conditions, both roadway link segments are operating at LOS D or better.

The project causes very small changes to the travel times and travel speeds (less than 1 mph) on the Admiral Callaghan Lane and Redwood Parkway so it is forecasted that the project will not significantly impact the roadway link operations for Future Buildout Year 2040 with project Phase 1 & 2 conditions.

9.3 Parking Analysis

The study evaluated the adequacy of the off-street parking supply of the proposed project based on the City of Vallejo's parking code requirement, as well as the *Institute of Transportation Engineers (ITE) Parking Generation Manual (4th Edition, 2010).*

The parking requirement for Phase 1 of the project was calculated using Standard B of the City's parking code. The parking requirement for Phase 2 of the project was calculated using Standard M of the City's parking code. The total parking spaces required for the proposed project is 174 parking spaces. The project proposes to provide approximately 180 parking spaces, resulting in a surplus of 6 parking spaces.

The recommended parking spaces of the proposed project was analyzed based on different studies and data collected of similar land uses, utilizing the ITE Parking Generation Manual. The parking recommendation for Phase 1 of the project was calculated using ITE Code 254 – Assisted Living Facility. The parking recommendation for Phase 2 of the project was calculated using ITE Code 720 – Medical Office Building. The total parking spaces recommended for the proposed project is 141 parking spaces. The project proposes to provide approximately 180 parking spaces, resulting in a surplus of 39 parking spaces.

Based on the parking analysis, there is adequate parking supply for the proposed project based on the City's parking code requirement, as well as the ITE Parking Generation Manual.

9.4 Project Driveway Sight Distance Analysis

The sight distance analysis has been assessed based on the *Caltrans Highway Design Manual (HDM)*, Section 405.1 sight distance and table 405.1A, and the *California Manual on Uniform Traffic Control Devices (MUTCD)* standards for sigh distance analysis. The purpose of the corner sight distance is to provide adequate time for a vehicle exiting the proposed project driveway to turn left or right without in a safe manner without requiring through traffic on Admiral Callaghan Lane or Redwood Parkway to slow down significantly to avoid a collision.

Based on the posted speed limit of 35 miles per hour on Redwood Parkway, a corner sight distance of 385 feet is required per HDM standards for the south project driveway on Redwood Parkway. Based on the posted speed limit of 35 miles per hour on Admiral Callaghan Lane, a corner sight distance of 385 feet is required per HDM standards on the west project driveway on Admiral Callaghan Lane. A limited use area is determined by the sight distance requirement and the location of the driver, which limits any obstructions such as large trees or signs in this area. Based on this analysis, there is sufficient sight distance for vehicles exiting the proposed

driveways. It is recommended that as the proposed project moves into final design and construction, the designers and engineers will need to consider the placements of objects in the limited use area mentioned above.

9.5 Project Driveway Queuing Analysis

The 95th percentile vehicular queue is calculated based on the Highway Capacity Manual (HCM) method using the Synchro analysis software. The queue length is calculated based on a typical car length of 25 feet per vehicle. The project is assumed to have no significant queueing to occur at either project driveways. For Admiral Callaghan Lane at West Project Driveway (Intersection #3), the maximum queue occurring for the westbound right-turn movement is 25 feet. For South Project Driveway at Redwood Parkway (Intersection #6), the maximum queue occurring for the southbound movement is 25 feet, while the maximum queue occurring for the eastbound left-turn movement is 47 feet. It should be noted when striping for the south project driveway (Intersection #6), the designers and engineers consider the potential queueing length that may occur, as mentioned above.