APPENDIX 1

FEHR & PEERS

MEMORANDUM

Date: March 6, 2020

To: Nick Pappani, Raney Planning & Management

From: Greg Behrens & John Gard, Fehr & Peers

Subject: ***Aggie Research Campus MXD+ Model Information***

RS19-3828.01

In light of discussions held on February 29, 2020 at City of Davis offices regarding the ARC's trip generation, we prepared this memorandum to document our technical approach and demonstrate using substantial evidence that it is defensible and accurate means for estimating the project's trips.

Table 8-26 of the Draft EIR indicates that the Proposed Project would generate 24,650 new daily vehicle trips, 2,325 new AM peak hour vehicle trips, and 2,561 new PM peak hour vehicle trips. Pages 8-207 through 8-209 describe the MXD+ methodology that was used to develop these estimates. In very simple terms, MXD+ works as follows:

- It begins with the latest ITE *Trip Generation Manual* trip rates, and then estimates internal trips and external walk, bike, and transit trips. Those estimates are then subtracted from the raw ITE trips to yield the external/new vehicle trips the project would generate

MXD+ has been in use by Fehr & Peers for many years including multiple applications in the City of Davis. Despite its widespread use and acceptance, we do occasionally encounter agencies and staff that remain skeptical.

In Fall 2019, Fehr & Peers used its own Research & Development funds to investigate whether MXD+ is still producing accurate estimates of external vehicle trip generation for mixed-use projects. To accomplish this, we performed vehicle trip generation data collection at 15 mixed-use sites across the United States, ranging in size from 4 to 4,000 acres. Four of these sites contained large amounts of office space. These sites, which are situated in California and Georgia, are shown in **Table 1**.

Table 2 shows how MXD+ performed for each of these four sites in terms of its accuracy of matching the actual measured vehicle trip generation at each of these sites. Key findings from this table include:

1. For all three time periods and four sites, MXD+ estimates were within 12 percent or less of the actual, measured count.
2. The average absolute error for the four sites was 8 percent under daily conditions, 7 percent under AM peak hour conditions, and 3 percent under PM peak hour conditions.

This is particularly important because traffic volumes may often fluctuate by 5 percent or more from day to day. Thus, the variation in MXD+ estimates are comparable to, and in some cases, even less than the variation in daily traffic.

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Table 1 Fehr & Peers' Mixed-Use Research Sites with Heavy Employment Uses			
Mixed-Use Location	**Site Acreage**	**Amount of Office Space**	**Land Use Mix / Transit Availability**
Sunnyvale, Ca	12 acres	564 KSF	Dense complementary land uses located adjacent to a light rail station
Sacramento, Ca	221 acres	1,084 KSF	Suburban setting with complementary land uses limited primarily to residential. Not well served by transit
Santa Clara, Ca	68 acres	1,707 KSF	Good diversity of land uses. 15-minute bus service provided.
Alpharetta, Ga	79 acres	582 KSF	Excellent diversity of land uses. Modest bus service provided.

Source: Fehr & Peers, 2020.

Table 2 External Vehicle Trip Generation Comparison for Fehr & Peers' Mixed-Use Research Sites with Heavy Employment Uses						
Mixed-Use Location	**External Vehicle Trips**					
	Daily		**AM Peak Hour**		**PM Peak Hour**	
	MXD+ Estimate	**Actual**	**MXD+ Estimate**	**Actual**	**MXD+ Estimate**	**Actual**
Sunnyvale, Ca	8,975 (+3%)	8,707	604 (-13%)	693	702 (0%)	705
Sacramento, Ca	21,583 (+11%)	19,362	1,732 (-7%)	1,863	1,945 (-2%)	1,985
Santa Clara, Ca	26,624 (-12%)	30,330	1,924 (-2%)	1,959	2,335 (-9%)	2,549
Alpharetta, Ga	34,840 (+5%)	33,301	1,610 (-4%)	1,685	2,500 (-2%)	2,543

Note: Value shown in parentheses represent the percentage that the MXD+ estimate over or underpredicts the actual value.
Source: Fehr & Peers, 2020.

Despite the above conclusions, some may continue to be skeptical of MXD+ and wonder if other tools may be equally or more effective at estimating external vehicle trips generated by an employment-oriented mixed-use project. Such a tool does exist, and it is contained in ITE's *Trip Generation Handbook*[1]. **Table 3** compares how the "ITE Internalization Method" compares to MXD+ for the four research sites. This table demonstrates that ITE Internalization method results substantially higher (i.e., less accurate) average absolute error values than the MXD+ method.

Table 3
Comparison of Absolute Error in MXD+ and ITE Internalization Method Vehicle Trip Generation for Fehr & Peers' Mixed-Use Research Sites with Heavy Employment Uses

Mixed-Use Location	Absolute Error of Estimate					
	Daily		AM Peak Hour		PM Peak Hour	
	MXD+	ITE Internalization Method	MXD+	ITE Internalization Method	MXD+	ITE Internalization Method
Sunnyvale, Ca	3%	Method not provided for daily conditions	13%	1%	0%	25%
Sacramento, Ca	11%		7%	13%	2%	17%
Santa Clara, Ca	12%		2%	16%	9%	5%
Alpharetta, Ga	5%		4%	28%	2%	13%
Average	8%		7%	15%	3%	15%

Note: Value shown in parentheses represent the percentage that the MXD+ estimate over or underpredicts the actual value.
Source: Fehr & Peers, 2020.

In conclusion, we believe the MXD+ model is the best tool available to accurately estimate a mixed-use project's trip generation. This memorandum demonstrated its accuracy in matching observed trips from four employment-oriented mix-use projects of similar size to the proposed project.

1 ITE's methodology is *NCHRP 684: Enhancing Internal Trip Capture Estimation for Mixed-Use Developments* (2011). Page 3 of that report states that "researchers do not recommend use of this method for suburban activity centers or new town types of development: the researchers do not believe it will be applicable". MXD+ blends the predictive equations from NCHRP 684 and the Environmental Protection Agency (EPA) MXD model to better utilize the strengths and minimize the weaknesses of each approach.

APPENDIX 2

ARC - Construction Phase I (Overlap)

Yolo County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Research & Development	540.00	1000sqft	12.40	540,000.00	0
Other Asphalt Surfaces	0.60	Acre	0.60	26,136.00	0
Parking Lot	568.00	Space	5.11	227,200.00	0
Unenclosed Parking with Elevator	723.00	Space	6.51	289,200.00	0
Apartments Mid Rise	181.00	Dwelling Unit	4.76	181,000.00	518
Condo/Townhouse	28.00	Dwelling Unit	1.75	28,000.00	80

1.2 Other Project Characteristics

Urbanization Urban **Wind Speed (m/s)** 6.8 **Precipitation Freq (Days)** 54

Climate Zone 2 **Operational Year** 2028

Utility Company Pacific Gas & Electric Company

CO2 Intensity (lb/MWhr) 198.63 **CH4 Intensity (lb/MWhr)** 0.029 **N2O Intensity (lb/MWhr)** 0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 Intensity Factor adjusted to reflect PG&E's calculated progress towards RPS

Land Use - Based on Phase I of ARC

Construction Phase - Construction schedule adjusted based on applicant provided information and to account for overlap of building construction

Trips and VMT - Haul truck trip lengths adjusted per project-specific route of material movement; number of haul trucks based on 12 CY capacity trucks

Grading - Grading area updated for project construction information and off-site improvement areas

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	35.00	1,782.00
tblConstructionPhase	NumDays	35.00	365.00
tblConstructionPhase	NumDays	500.00	1,782.00
tblConstructionPhase	NumDays	500.00	365.00
tblConstructionPhase	NumDays	45.00	28.00
tblConstructionPhase	NumDays	35.00	10.00
tblConstructionPhase	NumDays	20.00	7.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblGrading	AcresOfGrading	70.00	112.50
tblGrading	MaterialExported	0.00	161,333.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	198.63
tblTripsAndVMT	HaulingTripLength	20.00	2.15
tblTripsAndVMT	HaulingTripNumber	20,167.00	26,888.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	1.0869	5.9729	4.2056	0.0163	63.0247	0.1287	63.1534	6.4620	0.1209	6.5829	0.0000	1,492.8386	1,492.8386	0.1486	0.0000	1,496.5526
2023	7.5037	12.1892	12.0782	0.0454	221.5068	0.2975	221.8043	22.4685	0.2813	22.7498	0.0000	4,148.6074	4,148.6074	0.2986	0.0000	4,156.0714
2024	1.9589	5.8886	5.8886	0.0225	111.9347	0.1321	112.0667	11.3540	0.1248	11.4788	0.0000	2,055.8870	2,055.8870	0.1469	0.0000	2,059.5594
2025	1.7113	5.6253	5.6542	0.0220	111.0457	0.1137	111.1594	11.2638	0.1074	11.3713	0.0000	2,011.7389	2,011.7389	0.1435	0.0000	2,015.3265
2026	1.6940	5.5830	5.5071	0.0217	111.0457	0.1135	111.1592	11.2638	0.1073	11.3711	0.0000	1,982.4939	1,982.4939	0.1418	0.0000	1,986.0384
2027	0.5995	1.8465	1.8049	7.1600e-003	37.3971	0.0379	37.4350	3.7933	0.0359	3.8291	0.0000	654.1367	654.1367	0.0466	0.0000	655.3019
Maximum	**7.5037**	**12.1892**	**12.0782**	**0.0454**	**221.5068**	**0.2975**	**221.8043**	**22.4685**	**0.2813**	**22.7498**	**0.0000**	**4,148.6074**	**4,148.6074**	**0.2986**	**0.0000**	**4,156.0714**

2.1 Overall Construction

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					
2022	1.0869	5.9729	4.2056	0.0163	0.8500	0.1287	0.9787	0.2577	0.1209	0.3786	0.0000	1,492.8382	1,492.8382	0.1486	0.0000	1,496.5522
2023	7.5037	12.1892	12.0782	0.0454	2.1193	0.2975	2.4168	0.5764	0.2813	0.8577	0.0000	4,148.6063	4,148.6063	0.2986	0.0000	4,156.0703
2024	1.9589	5.8886	5.8886	0.0225	1.0706	0.1320	1.2027	0.2911	0.1248	0.4160	0.0000	2,055.8864	2,055.8864	0.1469	0.0000	2,059.5588
2025	1.7113	5.6253	5.6542	0.0220	1.0623	0.1137	1.1760	0.2889	0.1074	0.3963	0.0000	2,011.7383	2,011.7383	0.1435	0.0000	2,015.3259
2026	1.6940	5.5830	5.5071	0.0217	1.0623	0.1135	1.1758	0.2889	0.1073	0.3961	0.0000	1,982.4933	1,982.4933	0.1418	0.0000	1,986.0379
2027	0.5995	1.8465	1.8049	7.1600e-003	0.3575	0.0379	0.3954	0.0972	0.0359	0.1331	0.0000	654.1365	654.1365	0.0466	0.0000	655.3017
Maximum	**7.5037**	**12.1892**	**12.0782**	**0.0454**	**2.1193**	**0.2975**	**2.4168**	**0.5764**	**0.2813**	**0.8577**	**0.0000**	**4,148.6063**	**4,148.6063**	**0.2986**	**0.0000**	**4,156.0703**

	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**	**99.01**	**0.00**	**98.88**	**97.30**	**0.00**	**96.17**	**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	**5-1-2022**	**7-31-2022**	3.3491	3.3491
2	**8-1-2022**	**10-31-2022**	2.2348	2.2348
3	**11-1-2022**	**1-31-2023**	3.9972	3.9972
4	**2-1-2023**	**4-30-2023**	7.8020	7.8020
5	**5-1-2023**	**7-31-2023**	8.0435	8.0435

6	**8-1-2023**	**10-31-2023**	8.0544	8.0544
7	**11-1-2023**	**1-31-2024**	6.6857	6.6857
8	**2-1-2024**	**4-30-2024**	3.2455	3.2455
9	**5-1-2024**	**7-31-2024**	3.3104	3.3104
10	**8-1-2024**	**10-31-2024**	3.3141	3.3141
11	**11-1-2024**	**1-31-2025**	2.8282	2.8282
12	**2-1-2025**	**4-30-2025**	1.7944	1.7944
13	**5-1-2025**	**7-31-2025**	1.8485	1.8485
14	**8-1-2025**	**10-31-2025**	1.8517	1.8517
15	**11-1-2025**	**1-31-2026**	1.8528	1.8528
16	**2-1-2026**	**4-30-2026**	1.7794	1.7794
17	**5-1-2026**	**7-31-2026**	1.8333	1.8333
18	**8-1-2026**	**10-31-2026**	1.8364	1.8364
19	**11-1-2026**	**1-31-2027**	1.8374	1.8374
20	**2-1-2027**	**4-30-2027**	1.7650	1.7650
21	**5-1-2027**	**7-31-2027**	0.0725	0.0725
		Highest	8.0544	8.0544

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	22.9464	0.3606	25.5777	0.0435		3.3757	3.3757		3.3757	3.3757	320.9072	93.1080	414.0152	0.3024	0.0244	428.8313
Energy	0.0669	0.6012	0.4604	3.6500e-003		0.0462	0.0462		0.0462	0.0462	0.0000	1,213.3022	1,213.3022	0.0932	0.0288	1,224.2110
Mobile	0.9100	8.0909	9.2300	0.0493	246.8486	0.0293	246.8779	25.2555	0.0273	25.2828	0.0000	4,570.7389	4,570.7389	0.1488	0.0000	4,574.4594
Waste						0.0000	0.0000		0.0000	0.0000	27.8463	0.0000	27.8463	1.6457	0.0000	68.9880
Water						0.0000	0.0000		0.0000	0.0000	88.5557	138.7882	227.3438	9.1158	0.2190	520.4876
Total	**23.9233**	**9.0527**	**35.2680**	**0.0964**	**246.8486**	**3.4511**	**250.2998**	**25.2555**	**3.4492**	**28.7047**	**437.3091**	**6,015.9372**	**6,453.2464**	**11.3059**	**0.2721**	**6,816.9772**

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	22.9464	0.3606	25.5777	0.0435		3.3757	3.3757		3.3757	3.3757	320.9072	93.1080	414.0152	0.3024	0.0244	428.8313
Energy	0.0669	0.6012	0.4604	3.6500e-003		0.0462	0.0462		0.0462	0.0462	0.0000	1,213.3022	1,213.3022	0.0932	0.0288	1,224.2110
Mobile	0.9100	8.0909	9.2300	0.0493	246.8486	0.0293	246.8779	25.2555	0.0273	25.2828	0.0000	4,570.7389	4,570.7389	0.1488	0.0000	4,574.4594
Waste						0.0000	0.0000		0.0000	0.0000	27.8463	0.0000	27.8463	1.6457	0.0000	68.9880
Water						0.0000	0.0000		0.0000	0.0000	88.5557	138.7882	227.3438	9.1158	0.2190	520.4876
Total	**23.9233**	**9.0527**	**35.2680**	**0.0964**	**246.8486**	**3.4511**	**250.2998**	**25.2555**	**3.4492**	**28.7047**	**437.3091**	**6,015.9372**	**6,453.2464**	**11.3059**	**0.2721**	**6,816.9772**

	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**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	5/1/2022	5/7/2022	7	7	
2	Grading	Grading	5/8/2022	6/4/2022	7	28	
3	Paving	Paving	6/5/2022	6/14/2022	7	10	
4	Building Construction	Building Construction	6/15/2022	5/1/2027	7	1782	
5	Architectural Coating	Architectural Coating	6/29/2022	5/15/2027	7	1782	
6	Building Construction 2	Building Construction	1/1/2023	12/31/2023	7	365	
7	Architectural Coating 2	Architectural Coating	1/15/2023	1/14/2024	7	365	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 112.5

Acres of Paving: 12.22

Residential Indoor: 423,225; Residential Outdoor: 141,075; Non-Residential Indoor: 810,000; Non-Residential Outdoor: 270,000; Striped Parking Area: 32,552 (Architectural Coating – sqft)

<u>OffRoad Equipment</u>

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	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
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
Architectural Coating	Air Compressors	1	6.00	78	0.48
Building Construction 2	Cranes	1	7.00	231	0.29
Building Construction 2	Forklifts	3	8.00	89	0.20
Building Construction 2	Generator Sets	1	8.00	84	0.74
Building Construction 2	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction 2	Welders	1	8.00	46	0.45
Architectural Coating 2	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
Site Preparation	7	18.00	0.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	26,888.00	10.00	7.00	2.15	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	551.00	200.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	110.00	0.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 2	9	551.00	200.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating 2	1	110.00	0.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2022

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					0.0632	0.0000	0.0632	0.0348	0.0000	0.0348	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0111	0.1158	0.0689	1.3000e-004		5.6400e-003	5.6400e-003		5.1900e-003	5.1900e-003	0.0000	11.7038	11.7038	3.7900e-003	0.0000	11.7984
Total	**0.0111**	**0.1158**	**0.0689**	**1.3000e-004**	**0.0632**	**5.6400e-003**	**0.0689**	**0.0348**	**5.1900e-003**	**0.0400**	**0.0000**	**11.7038**	**11.7038**	**3.7900e-003**	**0.0000**	**11.7984**

3.2 Site Preparation - 2022

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	1.9000e-004	1.2000e-004	1.2800e-003	0.0000	0.0478	0.0000	0.0478	4.8500e-003	0.0000	4.8500e-003	0.0000	0.3789	0.3789	1.0000e-005	0.0000	0.3791
Total	**1.9000e-004**	**1.2000e-004**	**1.2800e-003**	**0.0000**	**0.0478**	**0.0000**	**0.0478**	**4.8500e-003**	**0.0000**	**4.8500e-003**	**0.0000**	**0.3789**	**0.3789**	**1.0000e-005**	**0.0000**	**0.3791**

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					0.0632	0.0000	0.0632	0.0348	0.0000	0.0348	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0111	0.1158	0.0689	1.3000e-004		5.6400e-003	5.6400e-003		5.1900e-003	5.1900e-003	0.0000	11.7038	11.7038	3.7900e-003	0.0000	11.7984
Total	**0.0111**	**0.1158**	**0.0689**	**1.3000e-004**	**0.0632**	**5.6400e-003**	**0.0689**	**0.0348**	**5.1900e-003**	**0.0400**	**0.0000**	**11.7038**	**11.7038**	**3.7900e-003**	**0.0000**	**11.7984**

3.2 Site Preparation - 2022

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	1.9000e-004	1.2000e-004	1.2800e-003	0.0000	4.4000e-004	0.0000	4.4000e-004	1.2000e-004	0.0000	1.2000e-004	0.0000	0.3789	0.3789	1.0000e-005	0.0000	0.3791
Total	**1.9000e-004**	**1.2000e-004**	**1.2800e-003**	**0.0000**	**4.4000e-004**	**0.0000**	**4.4000e-004**	**1.2000e-004**	**0.0000**	**1.2000e-004**	**0.0000**	**0.3789**	**0.3789**	**1.0000e-005**	**0.0000**	**0.3791**

3.3 Grading - 2022

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					0.1835	0.0000	0.1835	0.0588	0.0000	0.0588	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0508	0.5438	0.4066	8.7000e-004		0.0229	0.0229		0.0211	0.0211	0.0000	76.3484	76.3484	0.0247	0.0000	76.9658
Total	**0.0508**	**0.5438**	**0.4066**	**8.7000e-004**	**0.1835**	**0.0229**	**0.2064**	**0.0588**	**0.0211**	**0.0798**	**0.0000**	**76.3484**	**76.3484**	**0.0247**	**0.0000**	**76.9658**

3.3 Grading - 2022

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	0.0307	1.4364	0.1839	2.4700e-003	2.1982	1.7300e-003	2.2000	0.2235	1.6500e-003	0.2252	0.0000	234.8958	234.8958	0.0276	0.0000	235.5857
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	8.6000e-004	5.3000e-004	5.7100e-003	2.0000e-005	0.2126	1.0000e-005	0.2126	0.0215	1.0000e-005	0.0216	0.0000	1.6841	1.6841	4.0000e-005	0.0000	1.6850
Total	**0.0316**	**1.4369**	**0.1897**	**2.4900e-003**	**2.4109**	**1.7400e-003**	**2.4126**	**0.2451**	**1.6600e-003**	**0.2467**	**0.0000**	**236.5799**	**236.5799**	**0.0276**	**0.0000**	**237.2707**

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					0.1835	0.0000	0.1835	0.0588	0.0000	0.0588	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0508	0.5438	0.4066	8.7000e-004		0.0229	0.0229		0.0211	0.0211	0.0000	76.3484	76.3484	0.0247	0.0000	76.9657
Total	**0.0508**	**0.5438**	**0.4066**	**8.7000e-004**	**0.1835**	**0.0229**	**0.2064**	**0.0588**	**0.0211**	**0.0798**	**0.0000**	**76.3484**	**76.3484**	**0.0247**	**0.0000**	**76.9657**

3.3 Grading - 2022

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	0.0307	1.4364	0.1839	2.4700e-003	0.0235	1.7300e-003	0.0253	6.5100e-003	1.6500e-003	8.1600e-003	0.0000	234.8958	234.8958	0.0276	0.0000	235.5857
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	8.6000e-004	5.3000e-004	5.7100e-003	2.0000e-005	1.9500e-003	1.0000e-005	1.9700e-003	5.2000e-004	1.0000e-005	5.3000e-004	0.0000	1.6841	1.6841	4.0000e-005	0.0000	1.6850
Total	**0.0316**	**1.4369**	**0.1897**	**2.4900e-003**	**0.0255**	**1.7400e-003**	**0.0272**	**7.0300e-003**	**1.6600e-003**	**8.6900e-003**	**0.0000**	**236.5799**	**236.5799**	**0.0276**	**0.0000**	**237.2707**

3.4 Paving - 2022

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	5.5100e-003	0.0556	0.0729	1.1000e-004		2.8400e-003	2.8400e-003		2.6100e-003	2.6100e-003	0.0000	10.0138	10.0138	3.2400e-003	0.0000	10.0948
Paving	7.4800e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0130**	**0.0556**	**0.0729**	**1.1000e-004**		**2.8400e-003**	**2.8400e-003**		**2.6100e-003**	**2.6100e-003**	**0.0000**	**10.0138**	**10.0138**	**3.2400e-003**	**0.0000**	**10.0948**

3.4 Paving - 2022

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	2.3000e-004	1.4000e-004	1.5300e-003	0.0000	0.0570	0.0000	0.0570	5.7700e-003	0.0000	5.7700e-003	0.0000	0.4511	0.4511	1.0000e-005	0.0000	0.4514
Total	**2.3000e-004**	**1.4000e-004**	**1.5300e-003**	**0.0000**	**0.0570**	**0.0000**	**0.0570**	**5.7700e-003**	**0.0000**	**5.7700e-003**	**0.0000**	**0.4511**	**0.4511**	**1.0000e-005**	**0.0000**	**0.4514**

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	5.5100e-003	0.0556	0.0729	1.1000e-004		2.8400e-003	2.8400e-003		2.6100e-003	2.6100e-003	0.0000	10.0138	10.0138	3.2400e-003	0.0000	10.0947
Paving	7.4800e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0130**	**0.0556**	**0.0729**	**1.1000e-004**		**2.8400e-003**	**2.8400e-003**		**2.6100e-003**	**2.6100e-003**	**0.0000**	**10.0138**	**10.0138**	**3.2400e-003**	**0.0000**	**10.0947**

3.4 Paving - 2022

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	2.3000e-004	1.4000e-004	1.5300e-003	0.0000	5.2000e-004	0.0000	5.3000e-004	1.4000e-004	0.0000	1.4000e-004	0.0000	0.4511	0.4511	1.0000e-005	0.0000	0.4514
Total	**2.3000e-004**	**1.4000e-004**	**1.5300e-003**	**0.0000**	**5.2000e-004**	**0.0000**	**5.3000e-004**	**1.4000e-004**	**0.0000**	**1.4000e-004**	**0.0000**	**0.4511**	**0.4511**	**1.0000e-005**	**0.0000**	**0.4514**

3.5 Building Construction - 2022

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	0.1706	1.5616	1.6363	2.6900e-003		0.0809	0.0809		0.0761	0.0761	0.0000	231.7252	231.7252	0.0555	0.0000	233.1131
Total	**0.1706**	**1.5616**	**1.6363**	**2.6900e-003**		**0.0809**	**0.0809**		**0.0761**	**0.0761**	**0.0000**	**231.7252**	**231.7252**	**0.0555**	**0.0000**	**233.1131**

3.5 Building Construction - 2022

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	0.0499	2.0039	0.3286	5.3600e-003	10.6539	4.0600e-003	10.6580	1.0862	3.8900e-003	1.0901	0.0000	508.9523	508.9523	0.0236	0.0000	509.5419
Worker	0.1690	0.1046	1.1227	3.6600e-003	41.8402	2.5300e-003	41.8428	4.2395	2.3300e-003	4.2418	0.0000	331.4095	331.4095	7.2100e-003	0.0000	331.5898
Total	**0.2189**	**2.1085**	**1.4513**	**9.0200e-003**	**52.4941**	**6.5900e-003**	**52.5007**	**5.3256**	**6.2200e-003**	**5.3319**	**0.0000**	**840.3618**	**840.3618**	**0.0308**	**0.0000**	**841.1317**

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	0.1706	1.5616	1.6363	2.6900e-003		0.0809	0.0809		0.0761	0.0761	0.0000	231.7250	231.7250	0.0555	0.0000	233.1128
Total	**0.1706**	**1.5616**	**1.6363**	**2.6900e-003**		**0.0809**	**0.0809**		**0.0761**	**0.0761**	**0.0000**	**231.7250**	**231.7250**	**0.0555**	**0.0000**	**233.1128**

3.5 Building Construction - 2022

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	0.0499	2.0039	0.3286	5.3600e-003	0.1207	4.0600e-003	0.1248	0.0351	3.8900e-003	0.0390	0.0000	508.9523	508.9523	0.0236	0.0000	509.5419
Worker	0.1690	0.1046	1.1227	3.6600e-003	0.3846	2.5300e-003	0.3872	0.1027	2.3300e-003	0.1050	0.0000	331.4095	331.4095	7.2100e-003	0.0000	331.5898
Total	**0.2189**	**2.1085**	**1.4513**	**9.0200e-003**	**0.5053**	**6.5900e-003**	**0.5119**	**0.1378**	**6.2200e-003**	**0.1440**	**0.0000**	**840.3618**	**840.3618**	**0.0308**	**0.0000**	**841.1317**

3.5 Building Construction - 2023

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	0.2870	2.6252	2.9645	4.9200e-003		0.1277	0.1277		0.1202	0.1202	0.0000	423.0437	423.0437	0.1006	0.0000	425.5596
Total	**0.2870**	**2.6252**	**2.9645**	**4.9200e-003**		**0.1277**	**0.1277**		**0.1202**	**0.1202**	**0.0000**	**423.0437**	**423.0437**	**0.1006**	**0.0000**	**425.5596**

3.5 Building Construction - 2023

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	0.0669	3.0310	0.5026	9.5700e-003	19.4433	2.9600e-003	19.4463	1.9823	2.8300e-003	1.9851	0.0000	909.5964	909.5964	0.0318	0.0000	910.3916
Worker	0.2887	0.1716	1.8797	6.4300e-003	76.3584	4.5200e-003	76.3630	7.7370	4.1600e-003	7.7412	0.0000	581.9999	581.9999	0.0118	0.0000	582.2948
Total	**0.3556**	**3.2025**	**2.3823**	**0.0160**	**95.8018**	**7.4800e-003**	**95.8093**	**9.7193**	**6.9900e-003**	**9.7263**	**0.0000**	**1,491.5963**	**1,491.5963**	**0.0436**	**0.0000**	**1,492.6864**

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	0.2870	2.6252	2.9645	4.9200e-003		0.1277	0.1277		0.1202	0.1202	0.0000	423.0432	423.0432	0.1006	0.0000	425.5590
Total	**0.2870**	**2.6252**	**2.9645**	**4.9200e-003**		**0.1277**	**0.1277**		**0.1202**	**0.1202**	**0.0000**	**423.0432**	**423.0432**	**0.1006**	**0.0000**	**425.5590**

3.5 Building Construction - 2023

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	0.0669	3.0310	0.5026	9.5700e-003	0.2203	2.9600e-003	0.2232	0.0640	2.8300e-003	0.0669	0.0000	909.5964	909.5964	0.0318	0.0000	910.3916
Worker	0.2887	0.1716	1.8797	6.4300e-003	0.7019	4.5200e-003	0.7065	0.1874	4.1600e-003	0.1916	0.0000	581.9999	581.9999	0.0118	0.0000	582.2948
Total	**0.3556**	**3.2025**	**2.3823**	**0.0160**	**0.9222**	**7.4800e-003**	**0.9297**	**0.2515**	**6.9900e-003**	**0.2585**	**0.0000**	**1,491.5963**	**1,491.5963**	**0.0436**	**0.0000**	**1,492.6864**

3.5 Building Construction - 2024

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	0.2693	2.4602	2.9585	4.9300e-003		0.1122	0.1122		0.1056	0.1056	0.0000	424.2839	424.2839	0.1003	0.0000	426.7921
Total	**0.2693**	**2.4602**	**2.9585**	**4.9300e-003**		**0.1122**	**0.1122**		**0.1056**	**0.1056**	**0.0000**	**424.2839**	**424.2839**	**0.1003**	**0.0000**	**426.7921**

3.5 Building Construction - 2024

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	0.0651	3.0095	0.4808	9.5400e-003	19.4966	2.8900e-003	19.4995	1.9877	2.7600e-003	1.9904	0.0000	906.0438	906.0438	0.0310	0.0000	906.8181
Worker	0.2723	0.1552	1.7438	6.2000e-003	76.5676	4.4300e-003	76.5721	7.7582	4.0800e-003	7.7623	0.0000	560.8071	560.8071	0.0107	0.0000	561.0735
Total	**0.3374**	**3.1647**	**2.2247**	**0.0157**	**96.0642**	**7.3200e-003**	**96.0715**	**9.7459**	**6.8400e-003**	**9.7527**	**0.0000**	**1,466.8509**	**1,466.8509**	**0.0416**	**0.0000**	**1,467.8916**

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	0.2693	2.4602	2.9585	4.9300e-003		0.1122	0.1122		0.1056	0.1056	0.0000	424.2834	424.2834	0.1003	0.0000	426.7916
Total	**0.2693**	**2.4602**	**2.9585**	**4.9300e-003**		**0.1122**	**0.1122**		**0.1056**	**0.1056**	**0.0000**	**424.2834**	**424.2834**	**0.1003**	**0.0000**	**426.7916**

3.5 Building Construction - 2024

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	0.0651	3.0095	0.4808	9.5400e-003	0.2209	2.8900e-003	0.2238	0.0642	2.7600e-003	0.0670	0.0000	906.0438	906.0438	0.0310	0.0000	906.8181
Worker	0.2723	0.1552	1.7438	6.2000e-003	0.7039	4.4300e-003	0.7083	0.1880	4.0800e-003	0.1920	0.0000	560.8071	560.8071	0.0107	0.0000	561.0735
Total	**0.3374**	**3.1647**	**2.2247**	**0.0157**	**0.9247**	**7.3200e-003**	**0.9321**	**0.2522**	**6.8400e-003**	**0.2590**	**0.0000**	**1,466.8509**	**1,466.8509**	**0.0416**	**0.0000**	**1,467.8916**

3.5 Building Construction - 2025

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	0.2496	2.2757	2.9355	4.9200e-003		0.0963	0.0963		0.0906	0.0906	0.0000	423.2530	423.2530	0.0995	0.0000	425.7403
Total	**0.2496**	**2.2757**	**2.9355**	**4.9200e-003**		**0.0963**	**0.0963**		**0.0906**	**0.0906**	**0.0000**	**423.2530**	**423.2530**	**0.0995**	**0.0000**	**425.7403**

3.5 Building Construction - 2025

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	0.0631	2.9722	0.4593	9.4500e-003	19.4433	2.8100e-003	19.4461	1.9822	2.6900e-003	1.9849	0.0000	897.9538	897.9538	0.0299	0.0000	898.7023
Worker	0.2563	0.1403	1.6083	5.9300e-003	76.3584	4.3300e-003	76.3628	7.7370	3.9900e-003	7.7410	0.0000	536.7750	536.7750	9.6100e-003	0.0000	537.0152
Total	**0.3194**	**3.1125**	**2.0675**	**0.0154**	**95.8017**	**7.1400e-003**	**95.8089**	**9.7192**	**6.6800e-003**	**9.7259**	**0.0000**	**1,434.7288**	**1,434.7288**	**0.0396**	**0.0000**	**1,435.7176**

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	0.2496	2.2757	2.9355	4.9200e-003		0.0963	0.0963		0.0906	0.0906	0.0000	423.2525	423.2525	0.0995	0.0000	425.7398
Total	**0.2496**	**2.2757**	**2.9355**	**4.9200e-003**		**0.0963**	**0.0963**		**0.0906**	**0.0906**	**0.0000**	**423.2525**	**423.2525**	**0.0995**	**0.0000**	**425.7398**

3.5 Building Construction - 2025

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	0.0631	2.9722	0.4593	9.4500e-003	0.2202	2.8100e-003	0.2230	0.0640	2.6900e-003	0.0667	0.0000	897.9538	897.9538	0.0299	0.0000	898.7023
Worker	0.2563	0.1403	1.6083	5.9300e-003	0.7019	4.3300e-003	0.7063	0.1874	3.9900e-003	0.1914	0.0000	536.7750	536.7750	9.6100e-003	0.0000	537.0152
Total	**0.3194**	**3.1125**	**2.0675**	**0.0154**	**0.9222**	**7.1400e-003**	**0.9293**	**0.2515**	**6.6800e-003**	**0.2582**	**0.0000**	**1,434.7288**	**1,434.7288**	**0.0396**	**0.0000**	**1,435.7176**

3.5 Building Construction - 2026

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	0.2496	2.2757	2.9355	4.9200e-003		0.0963	0.0963		0.0906	0.0906	0.0000	423.2530	423.2530	0.0995	0.0000	425.7403
Total	**0.2496**	**2.2757**	**2.9355**	**4.9200e-003**		**0.0963**	**0.0963**		**0.0906**	**0.0906**	**0.0000**	**423.2530**	**423.2530**	**0.0995**	**0.0000**	**425.7403**

3.5 Building Construction - 2026

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	0.0618	2.9446	0.4461	9.3900e-003	19.4433	2.7500e-003	19.4460	1.9822	2.6300e-003	1.9849	0.0000	892.6791	892.6791	0.0293	0.0000	893.4105
Worker	0.2430	0.1281	1.4966	5.7100e-003	76.3584	4.2100e-003	76.3626	7.7370	3.8800e-003	7.7409	0.0000	516.7938	516.7938	8.7500e-003	0.0000	517.0124
Total	**0.3047**	**3.0727**	**1.9427**	**0.0151**	**95.8017**	**6.9600e-003**	**95.8087**	**9.7192**	**6.5100e-003**	**9.7258**	**0.0000**	**1,409.4728**	**1,409.4728**	**0.0380**	**0.0000**	**1,410.4228**

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	0.2496	2.2757	2.9355	4.9200e-003		0.0963	0.0963		0.0906	0.0906	0.0000	423.2525	423.2525	0.0995	0.0000	425.7398
Total	**0.2496**	**2.2757**	**2.9355**	**4.9200e-003**		**0.0963**	**0.0963**		**0.0906**	**0.0906**	**0.0000**	**423.2525**	**423.2525**	**0.0995**	**0.0000**	**425.7398**

3.5 Building Construction - 2026

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	0.0618	2.9446	0.4461	9.3900e-003	0.2202	2.7500e-003	0.2230	0.0640	2.6300e-003	0.0667	0.0000	892.6791	892.6791	0.0293	0.0000	893.4105
Worker	0.2430	0.1281	1.4966	5.7100e-003	0.7019	4.2100e-003	0.7062	0.1874	3.8800e-003	0.1913	0.0000	516.7938	516.7938	8.7500e-003	0.0000	517.0124
Total	**0.3047**	**3.0727**	**1.9427**	**0.0151**	**0.9222**	**6.9600e-003**	**0.9291**	**0.2515**	**6.5100e-003**	**0.2580**	**0.0000**	**1,409.4728**	**1,409.4728**	**0.0380**	**0.0000**	**1,410.4228**

3.5 Building Construction - 2027

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	0.0827	0.7544	0.9731	1.6300e-003		0.0319	0.0319		0.0300	0.0300	0.0000	140.3113	140.3113	0.0330	0.0000	141.1358
Total	**0.0827**	**0.7544**	**0.9731**	**1.6300e-003**		**0.0319**	**0.0319**		**0.0300**	**0.0300**	**0.0000**	**140.3113**	**140.3113**	**0.0330**	**0.0000**	**141.1358**

3.5 Building Construction - 2027

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	0.0201	0.9673	0.1442	3.1000e-003	6.4456	8.9000e-004	6.4465	0.6571	8.6000e-004	0.6580	0.0000	294.3435	294.3435	9.4600e-003	0.0000	294.5799
Worker	0.0761	0.0388	0.4625	1.8300e-003	25.3133	1.3300e-003	25.3147	2.5649	1.2200e-003	2.5661	0.0000	165.4058	165.4058	2.6400e-003	0.0000	165.4718
Total	**0.0962**	**1.0061**	**0.6067**	**4.9300e-003**	**31.7589**	**2.2200e-003**	**31.7611**	**3.2220**	**2.0800e-003**	**3.2241**	**0.0000**	**459.7492**	**459.7492**	**0.0121**	**0.0000**	**460.0516**

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	0.0827	0.7544	0.9731	1.6300e-003		0.0319	0.0319		0.0300	0.0300	0.0000	140.3111	140.3111	0.0330	0.0000	141.1357
Total	**0.0827**	**0.7544**	**0.9731**	**1.6300e-003**		**0.0319**	**0.0319**		**0.0300**	**0.0300**	**0.0000**	**140.3111**	**140.3111**	**0.0330**	**0.0000**	**141.1357**

3.5 Building Construction - 2027

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	0.0201	0.9673	0.1442	3.1000e-003	0.0730	8.9000e-004	0.0739	0.0212	8.6000e-004	0.0221	0.0000	294.3435	294.3435	9.4600e-003	0.0000	294.5799
Worker	0.0761	0.0388	0.4625	1.8300e-003	0.2327	1.3300e-003	0.2340	0.0621	1.2200e-003	0.0634	0.0000	165.4058	165.4058	2.6400e-003	0.0000	165.4718
Total	**0.0962**	**1.0061**	**0.6067**	**4.9300e-003**	**0.3057**	**2.2200e-003**	**0.3079**	**0.0834**	**2.0800e-003**	**0.0854**	**0.0000**	**459.7492**	**459.7492**	**0.0121**	**0.0000**	**460.0516**

3.6 Architectural Coating - 2022

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	0.5402					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0190	0.1310	0.1687	2.8000e-004		7.6000e-003	7.6000e-003		7.6000e-003	7.6000e-003	0.0000	23.7453	23.7453	1.5500e-003	0.0000	23.7839
Total	**0.5592**	**0.1310**	**0.1687**	**2.8000e-004**		**7.6000e-003**	**7.6000e-003**		**7.6000e-003**	**7.6000e-003**	**0.0000**	**23.7453**	**23.7453**	**1.5500e-003**	**0.0000**	**23.7839**

3.6 Architectural Coating - 2022

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	0.0314	0.0194	0.2084	6.8000e-004	7.7682	4.7000e-004	7.7686	0.7871	4.3000e-004	0.7875	0.0000	61.5303	61.5303	1.3400e-003	0.0000	61.5638
Total	**0.0314**	**0.0194**	**0.2084**	**6.8000e-004**	**7.7682**	**4.7000e-004**	**7.7686**	**0.7871**	**4.3000e-004**	**0.7875**	**0.0000**	**61.5303**	**61.5303**	**1.3400e-003**	**0.0000**	**61.5638**

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	0.5402					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0190	0.1310	0.1687	2.8000e-004		7.6000e-003	7.6000e-003		7.6000e-003	7.6000e-003	0.0000	23.7452	23.7452	1.5500e-003	0.0000	23.7839
Total	**0.5592**	**0.1310**	**0.1687**	**2.8000e-004**		**7.6000e-003**	**7.6000e-003**		**7.6000e-003**	**7.6000e-003**	**0.0000**	**23.7452**	**23.7452**	**1.5500e-003**	**0.0000**	**23.7839**

3.6 Architectural Coating - 2022

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	0.0314	0.0194	0.2084	6.8000e-004	0.0714	4.7000e-004	0.0719	0.0191	4.3000e-004	0.0195	0.0000	61.5303	61.5303	1.3400e-003	0.0000	61.5638
Total	**0.0314**	**0.0194**	**0.2084**	**6.8000e-004**	**0.0714**	**4.7000e-004**	**0.0719**	**0.0191**	**4.3000e-004**	**0.0195**	**0.0000**	**61.5303**	**61.5303**	**1.3400e-003**	**0.0000**	**61.5638**

3.6 Architectural Coating - 2023

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	1.0600					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0350	0.2378	0.3305	5.4000e-004		0.0129	0.0129		0.0129	0.0129	0.0000	46.5969	46.5969	2.7900e-003	0.0000	46.6666
Total	**1.0950**	**0.2378**	**0.3305**	**5.4000e-004**		**0.0129**	**0.0129**		**0.0129**	**0.0129**	**0.0000**	**46.5969**	**46.5969**	**2.7900e-003**	**0.0000**	**46.6666**

3.6 Architectural Coating - 2023

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	0.0576	0.0343	0.3753	1.2800e-003	15.2440	9.0000e-004	15.2449	1.5446	8.3000e-004	1.5454	0.0000	116.1887	116.1887	2.3500e-003	0.0000	116.2476
Total	**0.0576**	**0.0343**	**0.3753**	**1.2800e-003**	**15.2440**	**9.0000e-004**	**15.2449**	**1.5446**	**8.3000e-004**	**1.5454**	**0.0000**	**116.1887**	**116.1887**	**2.3500e-003**	**0.0000**	**116.2476**

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	1.0600					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0350	0.2378	0.3305	5.4000e-004		0.0129	0.0129		0.0129	0.0129	0.0000	46.5968	46.5968	2.7900e-003	0.0000	46.6665
Total	**1.0950**	**0.2378**	**0.3305**	**5.4000e-004**		**0.0129**	**0.0129**		**0.0129**	**0.0129**	**0.0000**	**46.5968**	**46.5968**	**2.7900e-003**	**0.0000**	**46.6665**

3.6 Architectural Coating - 2023

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	0.0576	0.0343	0.3753	1.2800e-003	0.1401	9.0000e-004	0.1410	0.0374	8.3000e-004	0.0383	0.0000	116.1887	116.1887	2.3500e-003	0.0000	116.2476
Total	**0.0576**	**0.0343**	**0.3753**	**1.2800e-003**	**0.1401**	**9.0000e-004**	**0.1410**	**0.0374**	**8.3000e-004**	**0.0383**	**0.0000**	**116.1887**	**116.1887**	**2.3500e-003**	**0.0000**	**116.2476**

3.6 Architectural Coating - 2024

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	1.0629					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0331	0.2230	0.3313	5.4000e-004		0.0112	0.0112		0.0112	0.0112	0.0000	46.7245	46.7245	2.6300e-003	0.0000	46.7903
Total	**1.0960**	**0.2230**	**0.3313**	**5.4000e-004**		**0.0112**	**0.0112**		**0.0112**	**0.0112**	**0.0000**	**46.7245**	**46.7245**	**2.6300e-003**	**0.0000**	**46.7903**

3.6 Architectural Coating - 2024

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	0.0544	0.0310	0.3481	1.2400e-003	15.2857	8.8000e-004	15.2866	1.5488	8.1000e-004	1.5496	0.0000	111.9579	111.9579	2.1300e-003	0.0000	112.0110
Total	**0.0544**	**0.0310**	**0.3481**	**1.2400e-003**	**15.2857**	**8.8000e-004**	**15.2866**	**1.5488**	**8.1000e-004**	**1.5496**	**0.0000**	**111.9579**	**111.9579**	**2.1300e-003**	**0.0000**	**112.0110**

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	1.0629					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0331	0.2230	0.3313	5.4000e-004		0.0112	0.0112		0.0112	0.0112	0.0000	46.7245	46.7245	2.6300e-003	0.0000	46.7903
Total	**1.0960**	**0.2230**	**0.3313**	**5.4000e-004**		**0.0112**	**0.0112**		**0.0112**	**0.0112**	**0.0000**	**46.7245**	**46.7245**	**2.6300e-003**	**0.0000**	**46.7903**

3.6 Architectural Coating - 2024

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	0.0544	0.0310	0.3481	1.2400e-003	0.1405	8.8000e-004	0.1414	0.0375	8.1000e-004	0.0383	0.0000	111.9579	111.9579	2.1300e-003	0.0000	112.0110
Total	**0.0544**	**0.0310**	**0.3481**	**1.2400e-003**	**0.1405**	**8.8000e-004**	**0.1414**	**0.0375**	**8.1000e-004**	**0.0383**	**0.0000**	**111.9579**	**111.9579**	**2.1300e-003**	**0.0000**	**112.0110**

3.6 Architectural Coating - 2025

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	1.0600					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0312	0.2091	0.3302	5.4000e-004		9.4000e-003	9.4000e-003		9.4000e-003	9.4000e-003	0.0000	46.5969	46.5969	2.5400e-003	0.0000	46.6604
Total	**1.0912**	**0.2091**	**0.3302**	**5.4000e-004**		**9.4000e-003**	**9.4000e-003**		**9.4000e-003**	**9.4000e-003**	**0.0000**	**46.5969**	**46.5969**	**2.5400e-003**	**0.0000**	**46.6604**

3.6 Architectural Coating - 2025

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	0.0512	0.0280	0.3211	1.1800e-003	15.2440	8.7000e-004	15.2448	1.5446	8.0000e-004	1.5454	0.0000	107.1602	107.1602	1.9200e-003	0.0000	107.2081
Total	**0.0512**	**0.0280**	**0.3211**	**1.1800e-003**	**15.2440**	**8.7000e-004**	**15.2448**	**1.5446**	**8.0000e-004**	**1.5454**	**0.0000**	**107.1602**	**107.1602**	**1.9200e-003**	**0.0000**	**107.2081**

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	1.0600					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0312	0.2091	0.3302	5.4000e-004		9.4000e-003	9.4000e-003		9.4000e-003	9.4000e-003	0.0000	46.5968	46.5968	2.5400e-003	0.0000	46.6604
Total	**1.0912**	**0.2091**	**0.3302**	**5.4000e-004**		**9.4000e-003**	**9.4000e-003**		**9.4000e-003**	**9.4000e-003**	**0.0000**	**46.5968**	**46.5968**	**2.5400e-003**	**0.0000**	**46.6604**

3.6 Architectural Coating - 2025

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	0.0512	0.0280	0.3211	1.1800e-003	0.1401	8.7000e-004	0.1410	0.0374	8.0000e-004	0.0382	0.0000	107.1602	107.1602	1.9200e-003	0.0000	107.2081
Total	**0.0512**	**0.0280**	**0.3211**	**1.1800e-003**	**0.1401**	**8.7000e-004**	**0.1410**	**0.0374**	**8.0000e-004**	**0.0382**	**0.0000**	**107.1602**	**107.1602**	**1.9200e-003**	**0.0000**	**107.2081**

3.6 Architectural Coating - 2026

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	1.0600					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0312	0.2091	0.3302	5.4000e-004		9.4000e-003	9.4000e-003		9.4000e-003	9.4000e-003	0.0000	46.5969	46.5969	2.5400e-003	0.0000	46.6604
Total	**1.0912**	**0.2091**	**0.3302**	**5.4000e-004**		**9.4000e-003**	**9.4000e-003**		**9.4000e-003**	**9.4000e-003**	**0.0000**	**46.5969**	**46.5969**	**2.5400e-003**	**0.0000**	**46.6604**

3.6 Architectural Coating - 2026

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	0.0485	0.0256	0.2988	1.1400e-003	15.2440	8.4000e-004	15.2448	1.5446	7.7000e-004	1.5454	0.0000	103.1712	103.1712	1.7500e-003	0.0000	103.2148
Total	**0.0485**	**0.0256**	**0.2988**	**1.1400e-003**	**15.2440**	**8.4000e-004**	**15.2448**	**1.5446**	**7.7000e-004**	**1.5454**	**0.0000**	**103.1712**	**103.1712**	**1.7500e-003**	**0.0000**	**103.2148**

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	1.0600					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0312	0.2091	0.3302	5.4000e-004		9.4000e-003	9.4000e-003		9.4000e-003	9.4000e-003	0.0000	46.5968	46.5968	2.5400e-003	0.0000	46.6604
Total	**1.0912**	**0.2091**	**0.3302**	**5.4000e-004**		**9.4000e-003**	**9.4000e-003**		**9.4000e-003**	**9.4000e-003**	**0.0000**	**46.5968**	**46.5968**	**2.5400e-003**	**0.0000**	**46.6604**

3.6 Architectural Coating - 2026

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	0.0485	0.0256	0.2988	1.1400e-003	0.1401	8.4000e-004	0.1410	0.0374	7.7000e-004	0.0382	0.0000	103.1712	103.1712	1.7500e-003	0.0000	103.2148
Total	**0.0485**	**0.0256**	**0.2988**	**1.1400e-003**	**0.1401**	**8.4000e-004**	**0.1410**	**0.0374**	**7.7000e-004**	**0.0382**	**0.0000**	**103.1712**	**103.1712**	**1.7500e-003**	**0.0000**	**103.2148**

3.6 Architectural Coating - 2027

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	0.3921					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0115	0.0773	0.1221	2.0000e-004		3.4800e-003	3.4800e-003		3.4800e-003	3.4800e-003	0.0000	17.2345	17.2345	9.4000e-004	0.0000	17.2580
Total	**0.4036**	**0.0773**	**0.1221**	**2.0000e-004**		**3.4800e-003**	**3.4800e-003**		**3.4800e-003**	**3.4800e-003**	**0.0000**	**17.2345**	**17.2345**	**9.4000e-004**	**0.0000**	**17.2580**

3.6 Architectural Coating - 2027

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	0.0170	8.6400e-003	0.1030	4.1000e-004	5.6382	3.0000e-004	5.6385	0.5713	2.7000e-004	0.5716	0.0000	36.8418	36.8418	5.9000e-004	0.0000	36.8564
Total	**0.0170**	**8.6400e-003**	**0.1030**	**4.1000e-004**	**5.6382**	**3.0000e-004**	**5.6385**	**0.5713**	**2.7000e-004**	**0.5716**	**0.0000**	**36.8418**	**36.8418**	**5.9000e-004**	**0.0000**	**36.8564**

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	0.3921					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0115	0.0773	0.1221	2.0000e-004		3.4800e-003	3.4800e-003		3.4800e-003	3.4800e-003	0.0000	17.2344	17.2344	9.4000e-004	0.0000	17.2580
Total	**0.4036**	**0.0773**	**0.1221**	**2.0000e-004**		**3.4800e-003**	**3.4800e-003**		**3.4800e-003**	**3.4800e-003**	**0.0000**	**17.2344**	**17.2344**	**9.4000e-004**	**0.0000**	**17.2580**

3.6 Architectural Coating - 2027

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	0.0170	8.6400e-003	0.1030	4.1000e-004	0.0518	3.0000e-004	0.0521	0.0138	2.7000e-004	0.0141	0.0000	36.8418	36.8418	5.9000e-004	0.0000	36.8564
Total	**0.0170**	**8.6400e-003**	**0.1030**	**4.1000e-004**	**0.0518**	**3.0000e-004**	**0.0521**	**0.0138**	**2.7000e-004**	**0.0141**	**0.0000**	**36.8418**	**36.8418**	**5.9000e-004**	**0.0000**	**36.8564**

3.7 Building Construction 2 - 2023

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	0.2870	2.6252	2.9645	4.9200e-003		0.1277	0.1277		0.1202	0.1202	0.0000	423.0437	423.0437	0.1006	0.0000	425.5596
Total	**0.2870**	**2.6252**	**2.9645**	**4.9200e-003**		**0.1277**	**0.1277**		**0.1202**	**0.1202**	**0.0000**	**423.0437**	**423.0437**	**0.1006**	**0.0000**	**425.5596**

3.7 Building Construction 2 - 2023

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	0.0669	3.0310	0.5026	9.5700e-003	19.4433	2.9600e-003	19.4463	1.9823	2.8300e-003	1.9851	0.0000	909.5964	909.5964	0.0318	0.0000	910.3916
Worker	0.2887	0.1716	1.8797	6.4300e-003	76.3584	4.5200e-003	76.3630	7.7370	4.1600e-003	7.7412	0.0000	581.9999	581.9999	0.0118	0.0000	582.2948
Total	**0.3556**	**3.2025**	**2.3823**	**0.0160**	**95.8018**	**7.4800e-003**	**95.8093**	**9.7193**	**6.9900e-003**	**9.7263**	**0.0000**	**1,491.5963**	**1,491.5963**	**0.0436**	**0.0000**	**1,492.6864**

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	0.2870	2.6252	2.9645	4.9200e-003		0.1277	0.1277		0.1202	0.1202	0.0000	423.0432	423.0432	0.1006	0.0000	425.5590
Total	**0.2870**	**2.6252**	**2.9645**	**4.9200e-003**		**0.1277**	**0.1277**		**0.1202**	**0.1202**	**0.0000**	**423.0432**	**423.0432**	**0.1006**	**0.0000**	**425.5590**

3.7 Building Construction 2 - 2023

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	0.0669	3.0310	0.5026	9.5700e-003	0.2203	2.9600e-003	0.2232	0.0640	2.8300e-003	0.0669	0.0000	909.5964	909.5964	0.0318	0.0000	910.3916
Worker	0.2887	0.1716	1.8797	6.4300e-003	0.7019	4.5200e-003	0.7065	0.1874	4.1600e-003	0.1916	0.0000	581.9999	581.9999	0.0118	0.0000	582.2948
Total	**0.3556**	**3.2025**	**2.3823**	**0.0160**	**0.9222**	**7.4800e-003**	**0.9297**	**0.2515**	**6.9900e-003**	**0.2585**	**0.0000**	**1,491.5963**	**1,491.5963**	**0.0436**	**0.0000**	**1,492.6864**

3.8 Architectural Coating 2 - 2023

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	4.9768					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0336	0.2287	0.3179	5.2000e-004		0.0124	0.0124		0.0124	0.0124	0.0000	44.8096	44.8096	2.6800e-003	0.0000	44.8766
Total	**5.0104**	**0.2287**	**0.3179**	**5.2000e-004**		**0.0124**	**0.0124**		**0.0124**	**0.0124**	**0.0000**	**44.8096**	**44.8096**	**2.6800e-003**	**0.0000**	**44.8766**

3.8 Architectural Coating 2 - 2023

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	0.0554	0.0329	0.3609	1.2400e-003	14.6593	8.7000e-004	14.6601	1.4854	8.0000e-004	1.4862	0.0000	111.7322	111.7322	2.2600e-003	0.0000	111.7888
Total	**0.0554**	**0.0329**	**0.3609**	**1.2400e-003**	**14.6593**	**8.7000e-004**	**14.6601**	**1.4854**	**8.0000e-004**	**1.4862**	**0.0000**	**111.7322**	**111.7322**	**2.2600e-003**	**0.0000**	**111.7888**

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	4.9768					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0336	0.2287	0.3179	5.2000e-004		0.0124	0.0124		0.0124	0.0124	0.0000	44.8096	44.8096	2.6800e-003	0.0000	44.8766
Total	**5.0104**	**0.2287**	**0.3179**	**5.2000e-004**		**0.0124**	**0.0124**		**0.0124**	**0.0124**	**0.0000**	**44.8096**	**44.8096**	**2.6800e-003**	**0.0000**	**44.8766**

3.8 Architectural Coating 2 - 2023

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	0.0554	0.0329	0.3609	1.2400e-003	0.1348	8.7000e-004	0.1356	0.0360	8.0000e-004	0.0368	0.0000	111.7322	111.7322	2.2600e-003	0.0000	111.7888
Total	**0.0554**	**0.0329**	**0.3609**	**1.2400e-003**	**0.1348**	**8.7000e-004**	**0.1356**	**0.0360**	**8.0000e-004**	**0.0368**	**0.0000**	**111.7322**	**111.7322**	**2.2600e-003**	**0.0000**	**111.7888**

3.8 Architectural Coating 2 - 2024

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	0.1985					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.2700e-003	8.5300e-003	0.0127	2.0000e-005		4.3000e-004	4.3000e-004		4.3000e-004	4.3000e-004	0.0000	1.7873	1.7873	1.0000e-004	0.0000	1.7898
Total	**0.1998**	**8.5300e-003**	**0.0127**	**2.0000e-005**		**4.3000e-004**	**4.3000e-004**		**4.3000e-004**	**4.3000e-004**	**0.0000**	**1.7873**	**1.7873**	**1.0000e-004**	**0.0000**	**1.7898**

3.8 Architectural Coating 2 - 2024

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	2.0800e-003	1.1900e-003	0.0133	5.0000e-005	0.5847	3.0000e-005	0.5847	0.0592	3.0000e-005	0.0593	0.0000	4.2825	4.2825	8.0000e-005	0.0000	4.2846
Total	**2.0800e-003**	**1.1900e-003**	**0.0133**	**5.0000e-005**	**0.5847**	**3.0000e-005**	**0.5847**	**0.0592**	**3.0000e-005**	**0.0593**	**0.0000**	**4.2825**	**4.2825**	**8.0000e-005**	**0.0000**	**4.2846**

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	0.1985					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.2700e-003	8.5300e-003	0.0127	2.0000e-005		4.3000e-004	4.3000e-004		4.3000e-004	4.3000e-004	0.0000	1.7873	1.7873	1.0000e-004	0.0000	1.7898
Total	**0.1998**	**8.5300e-003**	**0.0127**	**2.0000e-005**		**4.3000e-004**	**4.3000e-004**		**4.3000e-004**	**4.3000e-004**	**0.0000**	**1.7873**	**1.7873**	**1.0000e-004**	**0.0000**	**1.7898**

3.8 Architectural Coating 2 - 2024

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	2.0800e-003	1.1900e-003	0.0133	5.0000e-005	5.3800e-003	3.0000e-005	5.4100e-003	1.4400e-003	3.0000e-005	1.4700e-003	0.0000	4.2825	4.2825	8.0000e-005	0.0000	4.2846
Total	**2.0800e-003**	**1.1900e-003**	**0.0133**	**5.0000e-005**	**5.3800e-003**	**3.0000e-005**	**5.4100e-003**	**1.4400e-003**	**3.0000e-005**	**1.4700e-003**	**0.0000**	**4.2825**	**4.2825**	**8.0000e-005**	**0.0000**	**4.2846**

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	0.9100	8.0909	9.2300	0.0493	246.8486	0.0293	246.8779	25.2555	0.0273	25.2828	0.0000	4,570.7389	4,570.7389	0.1488	0.0000	4,574.4594
Unmitigated	0.9100	8.0909	9.2300	0.0493	246.8486	0.0293	246.8779	25.2555	0.0273	25.2828	0.0000	4,570.7389	4,570.7389	0.1488	0.0000	4,574.4594

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	1,203.65	1,156.59	1060.66	3,087,440	3,087,440
Condo/Townhouse	162.68	158.76	135.52	415,263	415,263
Other Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Research & Development	4,379.40	1,026.00	599.40	7,377,182	7,377,182
Unenclosed Parking with Elevator	0.00	0.00	0.00		
Total	5,745.73	2,341.35	1,795.58	10,879,884	10,879,884

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
Apartments Mid Rise	10.00	5.00	7.00	46.00	13.00	41.00	86	11	3
Condo/Townhouse	10.00	5.00	7.00	46.00	13.00	41.00	86	11	3
Other Asphalt Surfaces	10.00	5.00	7.00	0.00	0.00	0.00	0	0	0
Parking Lot	10.00	5.00	7.00	0.00	0.00	0.00	0	0	0
Research & Development	10.00	5.00	7.00	33.00	48.00	19.00	82	15	3
Unenclosed Parking with	10.00	5.00	7.00	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
Apartments Mid Rise	0.505773	0.035704	0.212085	0.105468	0.014725	0.004480	0.068989	0.043685	0.001015	0.001418	0.005344	0.000705	0.000608
Condo/Townhouse	0.505773	0.035704	0.212085	0.105468	0.014725	0.004480	0.068989	0.043685	0.001015	0.001418	0.005344	0.000705	0.000608
Other Asphalt Surfaces	0.505773	0.035704	0.212085	0.105468	0.014725	0.004480	0.068989	0.043685	0.001015	0.001418	0.005344	0.000705	0.000608
Parking Lot	0.505773	0.035704	0.212085	0.105468	0.014725	0.004480	0.068989	0.043685	0.001015	0.001418	0.005344	0.000705	0.000608
Research & Development	0.505773	0.035704	0.212085	0.105468	0.014725	0.004480	0.068989	0.043685	0.001015	0.001418	0.005344	0.000705	0.000608
Unenclosed Parking with Elevator	0.505773	0.035704	0.212085	0.105468	0.014725	0.004480	0.068989	0.043685	0.001015	0.001418	0.005344	0.000705	0.000608

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	551.3006	551.3006	0.0805	0.0167	558.2754
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	551.3006	551.3006	0.0805	0.0167	558.2754
NaturalGas Mitigated	0.0669	0.6012	0.4604	3.6500e-003		0.0462	0.0462		0.0462	0.0462	0.0000	662.0016	662.0016	0.0127	0.0121	665.9355
NaturalGas Unmitigated	0.0669	0.6012	0.4604	3.6500e-003		0.0462	0.0462		0.0462	0.0462	0.0000	662.0016	662.0016	0.0127	0.0121	665.9355

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	1.76441e+006	9.5100e-003	0.0813	0.0346	5.2000e-004		6.5700e-003	6.5700e-003		6.5700e-003	6.5700e-003	0.0000	94.1554	94.1554	1.8000e-003	1.7300e-003	94.7150
Condo/Townhouse	575435	3.1000e-003	0.0265	0.0113	1.7000e-004		2.1400e-003	2.1400e-003		2.1400e-003	2.1400e-003	0.0000	30.7074	30.7074	5.9000e-004	5.6000e-004	30.8899
Other Asphalt Surfaces	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
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
Research & Development	1.00656e+007	0.0543	0.4934	0.4145	2.9600e-003		0.0375	0.0375		0.0375	0.0375	0.0000	537.1388	537.1388	0.0103	9.8500e-003	540.3307
Unenclosed Parking with Elevator	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		**0.0669**	**0.6012**	**0.4604**	**3.6500e-003**		**0.0462**	**0.0462**		**0.0462**	**0.0462**	**0.0000**	**662.0016**	**662.0016**	**0.0127**	**0.0121**	**665.9355**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	1.76441e+006	9.5100e-003	0.0813	0.0346	5.2000e-004		6.5700e-003	6.5700e-003		6.5700e-003	6.5700e-003	0.0000	94.1554	94.1554	1.8000e-003	1.7300e-003	94.7150
Condo/Townhouse	575435	3.1000e-003	0.0265	0.0113	1.7000e-004		2.1400e-003	2.1400e-003		2.1400e-003	2.1400e-003	0.0000	30.7074	30.7074	5.9000e-004	5.6000e-004	30.8899
Other Asphalt Surfaces	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
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
Research & Development	1.00656e+007	0.0543	0.4934	0.4145	2.9600e-003		0.0375	0.0375		0.0375	0.0375	0.0000	537.1388	537.1388	0.0103	9.8500e-003	540.3307
Unenclosed Parking with Elevator	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		**0.0669**	**0.6012**	**0.4604**	**3.6500e-003**		**0.0462**	**0.0462**		**0.0462**	**0.0462**	**0.0000**	**662.0016**	**662.0016**	**0.0127**	**0.0121**	**665.9355**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	770419	69.4125	0.0101	2.1000e-003	70.2907
Condo/Townhouse	144976	13.0619	1.9100e-003	3.9000e-004	13.2272
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	79520	7.1645	1.0500e-003	2.2000e-004	7.2552
Research & Development	4.563e +006	411.1129	0.0600	0.0124	416.3141
Unenclosed Parking with Elevator	561048	50.5488	7.3800e-003	1.5300e-003	51.1883
Total		**551.3006**	**0.0805**	**0.0167**	**558.2754**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	770419	69.4125	0.0101	2.1000e-003	70.2907
Condo/Townhouse	144976	13.0619	1.9100e-003	3.9000e-004	13.2272
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	79520	7.1645	1.0500e-003	2.2000e-004	7.2552
Research & Development	4.563e+006	411.1129	0.0600	0.0124	416.3141
Unenclosed Parking with Elevator	561048	50.5488	7.3800e-003	1.5300e-003	51.1883
Total		**551.3006**	**0.0805**	**0.0167**	**558.2754**

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	22.9464	0.3606	25.5777	0.0435		3.3757	3.3757		3.3757	3.3757	320.9072	93.1080	414.0152	0.3024	0.0244	428.8313
Unmitigated	22.9464	0.3606	25.5777	0.0435		3.3757	3.3757		3.3757	3.3757	320.9072	93.1080	414.0152	0.3024	0.0244	428.8313

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	0.5175					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	2.9603					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	19.4205	0.3426	24.0105	0.0434		3.3670	3.3670		3.3670	3.3670	320.9072	90.5404	411.4475	0.2999	0.0244	426.2008
Landscaping	0.0481	0.0180	1.5672	8.0000e-005		8.6600e-003	8.6600e-003		8.6600e-003	8.6600e-003	0.0000	2.5677	2.5677	2.5100e-003	0.0000	2.6305
Total	**22.9465**	**0.3606**	**25.5777**	**0.0435**		**3.3757**	**3.3757**		**3.3757**	**3.3757**	**320.9072**	**93.1080**	**414.0152**	**0.3024**	**0.0244**	**428.8312**

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	0.5175					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	2.9603					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	19.4205	0.3426	24.0105	0.0434		3.3670	3.3670		3.3670	3.3670	320.9072	90.5404	411.4475	0.2999	0.0244	426.2008
Landscaping	0.0481	0.0180	1.5672	8.0000e-005		8.6600e-003	8.6600e-003		8.6600e-003	8.6600e-003	0.0000	2.5677	2.5677	2.5100e-003	0.0000	2.6305
Total	**22.9465**	**0.3606**	**25.5777**	**0.0435**		**3.3757**	**3.3757**		**3.3757**	**3.3757**	**320.9072**	**93.1080**	**414.0152**	**0.3024**	**0.0244**	**428.8312**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	227.3438	9.1158	0.2190	520.4876
Unmitigated	227.3438	9.1158	0.2190	520.4876

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	11.7929 / 7.43464	11.8350	0.3855	9.3200e-003	24.2481
Condo/Townhouse	1.82431 / 1.15011	1.8308	0.0596	1.4400e-003	3.7511
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Research & Development	265.515 / 0	213.6780	8.6707	0.2082	492.4885
Unenclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**227.3438**	**9.1158**	**0.2190**	**520.4876**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	11.7929 / 7.43464	11.8350	0.3855	9.3200e-003	24.2481
Condo/Townhouse	1.82431 / 1.15011	1.8308	0.0596	1.4400e-003	3.7511
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Research & Development	265.515 / 0	213.6780	8.6707	0.2082	492.4885
Unenclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**227.3438**	**9.1158**	**0.2190**	**520.4876**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	27.8463	1.6457	0.0000	68.9880
Unmitigated	27.8463	1.6457	0.0000	68.9880

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	83.26	16.9010	0.9988	0.0000	41.8716
Condo/Townhouse	12.88	2.6145	0.1545	0.0000	6.4774
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Research & Development	41.04	8.3308	0.4923	0.0000	20.6391
Unenclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Total		**27.8463**	**1.6457**	**0.0000**	**68.9880**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	83.26	16.9010	0.9988	0.0000	41.8716
Condo/Townhouse	12.88	2.6145	0.1545	0.0000	6.4774
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Research & Development	41.04	8.3308	0.4923	0.0000	20.6391
Unenclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Total		**27.8463**	**1.6457**	**0.0000**	**68.9880**

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

ARC - Construction Phase I (Overlap)

Yolo County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Research & Development	540.00	1000sqft	12.40	540,000.00	0
Other Asphalt Surfaces	0.60	Acre	0.60	26,136.00	0
Parking Lot	568.00	Space	5.11	227,200.00	0
Unenclosed Parking with Elevator	723.00	Space	6.51	289,200.00	0
Apartments Mid Rise	181.00	Dwelling Unit	4.76	181,000.00	518
Condo/Townhouse	28.00	Dwelling Unit	1.75	28,000.00	80

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	6.8	**Precipitation Freq (Days)**	54
Climate Zone	2			**Operational Year**	2028
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	198.63	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 Intensity Factor adjusted to reflect PG&E's calculated progress towards RPS

Land Use - Based on Phase I of ARC

Construction Phase - Construction schedule adjusted based on applicant provided information and to account for overlap of building construction

Trips and VMT - Haul truck trip lengths adjusted per project-specific route of material movement; number of haul trucks based on 12 CY capacity trucks

Grading - Grading area updated for project construction information and off-site improvement areas

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	35.00	1,782.00
tblConstructionPhase	NumDays	35.00	365.00
tblConstructionPhase	NumDays	500.00	1,782.00
tblConstructionPhase	NumDays	500.00	365.00
tblConstructionPhase	NumDays	45.00	28.00
tblConstructionPhase	NumDays	35.00	10.00
tblConstructionPhase	NumDays	20.00	7.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblGrading	AcresOfGrading	70.00	112.50
tblGrading	MaterialExported	0.00	161,333.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	198.63
tblTripsAndVMT	HaulingTripLength	20.00	2.15
tblTripsAndVMT	HaulingTripNumber	20,167.00	26,888.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

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	lb/day										lb/day					
2022	10.5394	142.0516	40.7809	0.2460	713.2940	1.7509	714.2548	72.2067	1.6150	73.1155	0.0000	25,282.0675	25,282.0675	3.9976	0.0000	25,382.0073
2023	42.7734	66.2819	70.1063	0.2592	1,426.5877	1.6323	1,428.2200	144.4133	1.5436	145.9569	0.0000	26,085.0405	26,085.0405	1.8031	0.0000	26,130.1175
2024	38.7364	33.2295	37.8386	0.1378	811.2177	0.7845	812.0022	82.1103	0.7447	82.8550	0.0000	13,848.2237	13,848.2237	0.9124	0.0000	13,871.0347
2025	9.6165	30.5688	32.6295	0.1253	713.2936	0.6227	713.9163	72.2066	0.5885	72.7951	0.0000	12,610.0914	12,610.0914	0.8649	0.0000	12,631.7136
2026	9.5061	30.3482	31.7218	0.1234	713.2935	0.6216	713.9152	72.2065	0.5875	72.7940	0.0000	12,417.7491	12,417.7491	0.8540	0.0000	12,439.1000
2027	9.3972	30.1400	30.9027	0.1216	713.2934	0.6200	713.9134	72.2065	0.5859	72.7925	0.0000	12,245.7684	12,245.7684	0.8436	0.0000	12,266.8577
Maximum	**42.7734**	**142.0516**	**70.1063**	**0.2592**	**1,426.5877**	**1.7509**	**1,428.2200**	**144.4133**	**1.6150**	**145.9569**	**0.0000**	**26,085.0405**	**26,085.0405**	**3.9976**	**0.0000**	**26,130.1175**

2.1 Overall Construction (Maximum Daily Emission)

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	lb/day										lb/day					
2022	10.5394	142.0516	40.7809	0.2460	18.1961	1.7509	19.8094	9.9653	1.6150	11.4496	0.0000	25,282.0675	25,282.0675	3.9976	0.0000	25,382.0073
2023	42.7734	66.2819	70.1063	0.2592	12.0104	1.6323	13.6427	3.2565	1.5436	4.8000	0.0000	26,085.0405	26,085.0405	1.8031	0.0000	26,130.1175
2024	38.7364	33.2295	37.8386	0.1378	6.7982	0.7845	7.5827	1.8394	0.7447	2.5842	0.0000	13,848.2237	13,848.2237	0.9124	0.0000	13,871.0347
2025	9.6165	30.5688	32.6295	0.1253	6.0050	0.6227	6.6277	1.6281	0.5885	2.2166	0.0000	12,610.0914	12,610.0914	0.8649	0.0000	12,631.7136
2026	9.5061	30.3482	31.7218	0.1234	6.0049	0.6216	6.6265	1.6281	0.5875	2.2156	0.0000	12,417.7491	12,417.7491	0.8540	0.0000	12,439.1000
2027	9.3972	30.1400	30.9027	0.1216	6.0048	0.6200	6.6247	1.6281	0.5859	2.2140	0.0000	12,245.7684	12,245.7684	0.8436	0.0000	12,266.8577
Maximum	**42.7734**	**142.0516**	**70.1063**	**0.2592**	**18.1961**	**1.7509**	**19.8094**	**9.9653**	**1.6150**	**11.4496**	**0.0000**	**26,085.0405**	**26,085.0405**	**3.9976**	**0.0000**	**26,130.1175**

	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**	**98.92**	**0.00**	**98.80**	**96.13**	**0.00**	**95.10**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	493.2623	8.5551	603.0346	1.0588		82.2180	82.2180		82.2180	82.2180	8,627.7949	2,465.6836	11,093.4784	8.0941	0.6546	11,490.8992
Energy	0.3665	3.2944	2.5224	0.0200		0.2532	0.2532		0.2532	0.2532		3,998.5306	3,998.5306	0.0766	0.0733	4,022.2918
Mobile	7.6540	53.2449	67.6986	0.3483	1,646.3740	0.1950	1,646.5690	168.5624	0.1821	168.7445		35,559.1919	35,559.1919	1.0954		35,586.5775
Total	**501.2828**	**65.0945**	**673.2556**	**1.4270**	**1,646.3740**	**82.6662**	**1,729.0402**	**168.5624**	**82.6533**	**251.2157**	**8,627.7949**	**42,023.4061**	**50,651.2010**	**9.2662**	**0.7279**	**51,099.7686**

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	lb/day										lb/day					
Area	493.2623	8.5551	603.0346	1.0588		82.2180	82.2180		82.2180	82.2180	8,627.7949	2,465.6836	11,093.4784	8.0941	0.6546	11,490.8992
Energy	0.3665	3.2944	2.5224	0.0200		0.2532	0.2532		0.2532	0.2532		3,998.5306	3,998.5306	0.0766	0.0733	4,022.2918
Mobile	7.6540	53.2449	67.6986	0.3483	1,646.3740	0.1950	1,646.5690	168.5624	0.1821	168.7445		35,559.1919	35,559.1919	1.0954		35,586.5775
Total	**501.2828**	**65.0945**	**673.2556**	**1.4270**	**1,646.3740**	**82.6662**	**1,729.0402**	**168.5624**	**82.6533**	**251.2157**	**8,627.7949**	**42,023.4061**	**50,651.2010**	**9.2662**	**0.7279**	**51,099.7686**

	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	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	5/1/2022	5/7/2022	7	7	
2	Grading	Grading	5/8/2022	6/4/2022	7	28	
3	Paving	Paving	6/5/2022	6/14/2022	7	10	
4	Building Construction	Building Construction	6/15/2022	5/1/2027	7	1782	
5	Architectural Coating	Architectural Coating	6/29/2022	5/15/2027	7	1782	
6	Building Construction 2	Building Construction	1/1/2023	12/31/2023	7	365	
7	Architectural Coating 2	Architectural Coating	1/15/2023	1/14/2024	7	365	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 112.5

Acres of Paving: 12.22

Residential Indoor: 423,225; Residential Outdoor: 141,075; Non-Residential Indoor: 810,000; Non-Residential Outdoor: 270,000; Striped Parking Area: 32,552 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	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
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
Architectural Coating	Air Compressors	1	6.00	78	0.48
Building Construction 2	Cranes	1	7.00	231	0.29
Building Construction 2	Forklifts	3	8.00	89	0.20
Building Construction 2	Generator Sets	1	8.00	84	0.74
Building Construction 2	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction 2	Welders	1	8.00	46	0.45
Architectural Coating 2	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
Site Preparation	7	18.00	0.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	26,888.00	10.00	7.00	2.15	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	551.00	200.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	110.00	0.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 2	9	551.00	200.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating 2	1	110.00	0.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2022

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	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836		3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**18.0663**	**1.6126**	**19.6788**	**9.9307**	**1.4836**	**11.4143**		**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

3.2 Site Preparation - 2022

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	lb/day										lb/day					
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
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
Worker	0.0635	0.0309	0.4274	1.3200e-003	16.0239	8.3000e-004	16.0247	1.6206	7.6000e-004	1.6214		131.4614	131.4614	2.8800e-003		131.5335
Total	**0.0635**	**0.0309**	**0.4274**	**1.3200e-003**	**16.0239**	**8.3000e-004**	**16.0247**	**1.6206**	**7.6000e-004**	**1.6214**		**131.4614**	**131.4614**	**2.8800e-003**		**131.5335**

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	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836	0.0000	3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**18.0663**	**1.6126**	**19.6788**	**9.9307**	**1.4836**	**11.4143**	**0.0000**	**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

3.2 Site Preparation - 2022

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	lb/day										lb/day					
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
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
Worker	0.0635	0.0309	0.4274	1.3200e-003	0.1298	8.3000e-004	0.1306	0.0346	7.6000e-004	0.0353		131.4614	131.4614	2.8800e-003		131.5335
Total	**0.0635**	**0.0309**	**0.4274**	**1.3200e-003**	**0.1298**	**8.3000e-004**	**0.1306**	**0.0346**	**7.6000e-004**	**0.0353**		**131.4614**	**131.4614**	**2.8800e-003**		**131.5335**

3.3 Grading - 2022

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	lb/day										lb/day					
Fugitive Dust					13.1086	0.0000	13.1086	4.1982	0.0000	4.1982			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041		6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**13.1086**	**1.6349**	**14.7434**	**4.1982**	**1.5041**	**5.7023**		**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

3.3 Grading - 2022

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	lb/day										lb/day					
Hauling	2.0997	103.1738	11.2645	0.1825	184.0358	0.1151	184.1509	18.6687	0.1101	18.7788		19,124.5887	19,124.5887	2.0502		19,175.8431
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
Worker	0.0706	0.0344	0.4749	1.4700e-003	17.8044	9.2000e-004	17.8053	1.8007	8.5000e-004	1.8015		146.0682	146.0682	3.2100e-003		146.1483
Total	**2.1703**	**103.2082**	**11.7394**	**0.1840**	**201.8402**	**0.1160**	**201.9562**	**20.4693**	**0.1109**	**20.5803**		**19,270.6569**	**19,270.6569**	**2.0534**		**19,321.9914**

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	lb/day										lb/day					
Fugitive Dust					13.1086	0.0000	13.1086	4.1982	0.0000	4.1982			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041	0.0000	6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**13.1086**	**1.6349**	**14.7434**	**4.1982**	**1.5041**	**5.7023**	**0.0000**	**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

3.3 Grading - 2022

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	lb/day										lb/day					
Hauling	2.0997	103.1738	11.2645	0.1825	1.7289	0.1151	1.8440	0.4768	0.1101	0.5868		19,124.5887	19,124.5887	2.0502		19,175.8431
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
Worker	0.0706	0.0344	0.4749	1.4700e-003	0.1442	9.2000e-004	0.1451	0.0384	8.5000e-004	0.0393		146.0682	146.0682	3.2100e-003		146.1483
Total	**2.1703**	**103.2082**	**11.7394**	**0.1840**	**1.8732**	**0.1160**	**1.9891**	**0.5152**	**0.1109**	**0.6261**		**19,270.6569**	**19,270.6569**	**2.0534**		**19,321.9914**

3.4 Paving - 2022

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	lb/day										lb/day					
Off-Road	1.1028	11.1249	14.5805	0.0228		0.5679	0.5679		0.5225	0.5225		2,207.6603	2,207.6603	0.7140		2,225.5104
Paving	1.4960					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**2.5988**	**11.1249**	**14.5805**	**0.0228**		**0.5679**	**0.5679**		**0.5225**	**0.5225**		**2,207.6603**	**2,207.6603**	**0.7140**		**2,225.5104**

3.4 Paving - 2022

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	lb/day										lb/day					
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
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
Worker	0.0529	0.0258	0.3561	1.1000e-003	13.3533	6.9000e-004	13.3540	1.3505	6.4000e-004	1.3511		109.5512	109.5512	2.4000e-003		109.6113
Total	**0.0529**	**0.0258**	**0.3561**	**1.1000e-003**	**13.3533**	**6.9000e-004**	**13.3540**	**1.3505**	**6.4000e-004**	**1.3511**		**109.5512**	**109.5512**	**2.4000e-003**		**109.6113**

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	lb/day										lb/day					
Off-Road	1.1028	11.1249	14.5805	0.0228		0.5679	0.5679		0.5225	0.5225	0.0000	2,207.6603	2,207.6603	0.7140		2,225.5104
Paving	1.4960					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**2.5988**	**11.1249**	**14.5805**	**0.0228**		**0.5679**	**0.5679**		**0.5225**	**0.5225**	**0.0000**	**2,207.6603**	**2,207.6603**	**0.7140**		**2,225.5104**

3.4 Paving - 2022

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	lb/day										lb/day					
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
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
Worker	0.0529	0.0258	0.3561	1.1000e-003	0.1082	6.9000e-004	0.1088	0.0288	6.4000e-004	0.0294		109.5512	109.5512	2.4000e-003		109.6113
Total	**0.0529**	**0.0258**	**0.3561**	**1.1000e-003**	**0.1082**	**6.9000e-004**	**0.1088**	**0.0288**	**6.4000e-004**	**0.0294**		**109.5512**	**109.5512**	**2.4000e-003**		**109.6113**

3.5 Building Construction - 2022

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	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.5 Building Construction - 2022

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	lb/day										lb/day					
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
Vendor	0.4886	19.7673	3.0324	0.0542	124.8603	0.0397	124.9000	12.6947	0.0379	12.7326		5,678.659 1	5,678.659 1	0.2462		5,684.813 4
Worker	1.9436	0.9467	13.0823	0.0404	490.5098	0.0253	490.5351	49.6084	0.0233	49.6317		4,024.178 8	4,024.178 8	0.0883		4,026.386 6
Total	**2.4322**	**20.7140**	**16.1147**	**0.0946**	**615.3701**	**0.0650**	**615.4351**	**62.3031**	**0.0613**	**62.3643**		**9,702.837 9**	**9,702.837 9**	**0.3345**		**9,711.199 9**

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	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.333 6	2,554.333 6	0.6120		2,569.632 2
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.333 6**	**2,554.333 6**	**0.6120**		**2,569.632 2**

3.5 Building Construction - 2022

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	lb/day										lb/day					
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
Vendor	0.4886	19.7673	3.0324	0.0542	1.2393	0.0397	1.2790	0.3589	0.0379	0.3968		5,678.659 1	5,678.659 1	0.2462		5,684.813 4
Worker	1.9436	0.9467	13.0823	0.0404	3.9729	0.0253	3.9982	1.0582	0.0233	1.0815		4,024.178 8	4,024.178 8	0.0883		4,026.386 6
Total	**2.4322**	**20.7140**	**16.1147**	**0.0946**	**5.2122**	**0.0650**	**5.2772**	**1.4170**	**0.0613**	**1.4783**		**9,702.837 9**	**9,702.837 9**	**0.3345**		**9,711.199 9**

3.5 Building Construction - 2023

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	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.209 9	2,555.209 9	0.6079		2,570.406 1
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.209 9**	**2,555.209 9**	**0.6079**		**2,570.406 1**

3.5 Building Construction - 2023

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	lb/day										lb/day					
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
Vendor	0.3591	16.4321	2.5654	0.0531	124.8602	0.0159	124.8760	12.6946	0.0152	12.7098		5,560.6960	5,560.6960	0.1819		5,565.2442
Worker	1.8174	0.8511	12.0308	0.0388	490.5098	0.0248	490.5346	49.6084	0.0228	49.6312		3,872.1431	3,872.1431	0.0791		3,874.1214
Total	**2.1764**	**17.2832**	**14.5962**	**0.0919**	**615.3700**	**0.0406**	**615.4106**	**62.3030**	**0.0380**	**62.3410**		**9,432.8392**	**9,432.8392**	**0.2611**		**9,439.3656**

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	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

3.5 Building Construction - 2023

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	lb/day										lb/day					
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
Vendor	0.3591	16.4321	2.5654	0.0531	1.2392	0.0159	1.2551	0.3588	0.0152	0.3740		5,560.6960	5,560.6960	0.1819		5,565.2442
Worker	1.8174	0.8511	12.0308	0.0388	3.9729	0.0248	3.9977	1.0582	0.0228	1.0810		3,872.1431	3,872.1431	0.0791		3,874.1214
Total	**2.1764**	**17.2832**	**14.5962**	**0.0919**	**5.2121**	**0.0406**	**5.2527**	**1.4170**	**0.0380**	**1.4550**		**9,432.8392**	**9,432.8392**	**0.2611**		**9,439.3656**

3.5 Building Construction - 2024

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	lb/day										lb/day					
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769		2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**		**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

3.5 Building Construction - 2024

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	lb/day										lb/day					
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
Vendor	0.3484	16.2733	2.4490	0.0527	124.8600	0.0155	124.8755	12.6946	0.0148	12.7094		5,523.2803	5,523.2803	0.1767		5,527.6966
Worker	1.7072	0.7682	11.1504	0.0373	490.5098	0.0242	490.5340	49.6084	0.0223	49.6307		3,720.7497	3,720.7497	0.0713		3,722.5317
Total	**2.0556**	**17.0414**	**13.5994**	**0.0901**	**615.3698**	**0.0397**	**615.4095**	**62.3030**	**0.0371**	**62.3401**		**9,244.0299**	**9,244.0299**	**0.2479**		**9,250.2283**

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	lb/day										lb/day					
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769	0.0000	2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**	**0.0000**	**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

3.5 Building Construction - 2024

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	lb/day										lb/day					
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
Vendor	0.3484	16.2733	2.4490	0.0527	1.2390	0.0155	1.2546	0.3588	0.0148	0.3736		5,523.2803	5,523.2803	0.1767		5,527.6966
Worker	1.7072	0.7682	11.1504	0.0373	3.9729	0.0242	3.9971	1.0582	0.0223	1.0805		3,720.7497	3,720.7497	0.0713		3,722.5317
Total	**2.0556**	**17.0414**	**13.5994**	**0.0901**	**5.2119**	**0.0397**	**5.2517**	**1.4169**	**0.0371**	**1.4540**		**9,244.0299**	**9,244.0299**	**0.2479**		**9,250.2283**

3.5 Building Construction - 2025

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	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

3.5 Building Construction - 2025

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	lb/day										lb/day					
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
Vendor	0.3390	16.1181	2.3469	0.0524	124.8599	0.0152	124.8751	12.6945	0.0145	12.7090		5,488.4154	5,488.4154	0.1712		5,492.6959
Worker	1.6095	0.6965	10.3271	0.0358	490.5098	0.0238	490.5336	49.6084	0.0219	49.6303		3,570.8748	3,570.8748	0.0645		3,572.4871
Total	**1.9485**	**16.8146**	**12.6741**	**0.0882**	**615.3697**	**0.0389**	**615.4086**	**62.3029**	**0.0364**	**62.3393**		**9,059.2902**	**9,059.2902**	**0.2357**		**9,065.1830**

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	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

3.5 Building Construction - 2025

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	lb/day										lb/day					
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
Vendor	0.3390	16.1181	2.3469	0.0524	1.2389	0.0152	1.2541	0.3587	0.0145	0.3732		5,488.415 4	5,488.415 4	0.1712		5,492.695 9
Worker	1.6095	0.6965	10.3271	0.0358	3.9729	0.0238	3.9967	1.0582	0.0219	1.0800		3,570.874 8	3,570.874 8	0.0645		3,572.487 1
Total	**1.9485**	**16.8146**	**12.6741**	**0.0882**	**5.2118**	**0.0389**	**5.2507**	**1.4169**	**0.0364**	**1.4532**		**9,059.290 2**	**9,059.290 2**	**0.2357**		**9,065.183 0**

3.5 Building Construction - 2026

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	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.474 4	2,556.474 4	0.6010		2,571.498 1
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.474 4**	**2,556.474 4**	**0.6010**		**2,571.498 1**

3.5 Building Construction - 2026

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	lb/day										lb/day					
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
Vendor	0.3316	15.9699	2.2814	0.0521	124.8598	0.0149	124.8747	12.6945	0.0142	12.7087		5,455.6204	5,455.6204	0.1673		5,459.8022
Worker	1.5237	0.6361	9.6251	0.0345	490.5098	0.0231	490.5329	49.6084	0.0213	49.6296		3,437.8784	3,437.8784	0.0587		3,439.3469
Total	**1.8553**	**16.6060**	**11.9065**	**0.0866**	**615.3696**	**0.0380**	**615.4076**	**62.3029**	**0.0355**	**62.3383**		**8,893.4989**	**8,893.4989**	**0.2260**		**8,899.1491**

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	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

3.5 Building Construction - 2026

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	lb/day										lb/day					
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
Vendor	0.3316	15.9699	2.2814	0.0521	1.2388	0.0149	1.2537	0.3587	0.0142	0.3729		5,455.620 4	5,455.620 4	0.1673		5,459.802 2
Worker	1.5237	0.6361	9.6251	0.0345	3.9729	0.0231	3.9960	1.0582	0.0213	1.0794		3,437.878 4	3,437.878 4	0.0587		3,439.346 9
Total	**1.8553**	**16.6060**	**11.9065**	**0.0866**	**5.2117**	**0.0380**	**5.2497**	**1.4169**	**0.0355**	**1.4523**		**8,893.498 9**	**8,893.498 9**	**0.2260**		**8,899.149 1**

3.5 Building Construction - 2027

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	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.474 4	2,556.474 4	0.6010		2,571.498 1
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.474 4**	**2,556.474 4**	**0.6010**		**2,571.498 1**

3.5 Building Construction - 2027

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	lb/day										lb/day					
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
Vendor	0.3252	15.8272	2.2250	0.0518	124.8597	0.0146	124.8743	12.6944	0.0140	12.7084		5,425.913 5	5,425.913 5	0.1631		5,429.990 4
Worker	1.4382	0.5815	8.9893	0.0333	490.5098	0.0219	490.5317	49.6084	0.0202	49.6286		3,319.2811	3,319.2811	0.0535		3,320.618 9
Total	**1.7634**	**16.4087**	**11.2143**	**0.0851**	**615.3695**	**0.0365**	**615.4060**	**62.3028**	**0.0341**	**62.3370**		**8,745.194 6**	**8,745.194 6**	**0.2166**		**8,750.609 3**

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	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.474 4	2,556.474 4	0.6010		2,571.498 1
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.474 4**	**2,556.474 4**	**0.6010**		**2,571.498 1**

3.5 Building Construction - 2027

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	lb/day										lb/day					
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
Vendor	0.3252	15.8272	2.2250	0.0518	1.2387	0.0146	1.2533	0.3586	0.0140	0.3726		5,425.913 5	5,425.913 5	0.1631		5,429.990 4
Worker	1.4382	0.5815	8.9893	0.0333	3.9729	0.0219	3.9948	1.0582	0.0202	1.0784		3,319.2811	3,319.2811	0.0535		3,320.618 9
Total	**1.7634**	**16.4087**	**11.2143**	**0.0851**	**5.2116**	**0.0365**	**5.2482**	**1.4168**	**0.0341**	**1.4510**		**8,745.194 6**	**8,745.194 6**	**0.2166**		**8,750.609 3**

3.6 Architectural Coating - 2022

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	lb/day										lb/day					
Archit. Coating	5.8084					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817		281.4481	281.4481	0.0183		281.9062
Total	**6.0129**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**		**281.4481**	**281.4481**	**0.0183**		**281.9062**

3.6 Architectural Coating - 2022

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	lb/day										lb/day					
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
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
Worker	0.3880	0.1890	2.6117	8.0600e-003	97.9239	5.0600e-003	97.9290	9.9037	4.6600e-003	9.9083		803.3751	803.3751	0.0176		803.8158
Total	**0.3880**	**0.1890**	**2.6117**	**8.0600e-003**	**97.9239**	**5.0600e-003**	**97.9290**	**9.9037**	**4.6600e-003**	**9.9083**		**803.3751**	**803.3751**	**0.0176**		**803.8158**

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	lb/day										lb/day					
Archit. Coating	5.8084					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817	0.0000	281.4481	281.4481	0.0183		281.9062
Total	**6.0129**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**	**0.0000**	**281.4481**	**281.4481**	**0.0183**		**281.9062**

3.6 Architectural Coating - 2022

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	lb/day										lb/day					
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
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
Worker	0.3880	0.1890	2.6117	8.0600e-003	0.7931	5.0600e-003	0.7982	0.2113	4.6600e-003	0.2159		803.3751	803.3751	0.0176		803.8158
Total	**0.3880**	**0.1890**	**2.6117**	**8.0600e-003**	**0.7931**	**5.0600e-003**	**0.7982**	**0.2113**	**4.6600e-003**	**0.2159**		**803.3751**	**803.3751**	**0.0176**		**803.8158**

3.6 Architectural Coating - 2023

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	lb/day										lb/day					
Archit. Coating	5.8084					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708		281.4481	281.4481	0.0168		281.8690
Total	**6.0001**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**		**281.4481**	**281.4481**	**0.0168**		**281.8690**

3.6 Architectural Coating - 2023

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	lb/day										lb/day					
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
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
Worker	0.3628	0.1699	2.4018	7.7500e-003	97.9239	4.9400e-003	97.9289	9.9037	4.5500e-003	9.9082		773.0231	773.0231	0.0158		773.4181
Total	**0.3628**	**0.1699**	**2.4018**	**7.7500e-003**	**97.9239**	**4.9400e-003**	**97.9289**	**9.9037**	**4.5500e-003**	**9.9082**		**773.0231**	**773.0231**	**0.0158**		**773.4181**

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	lb/day										lb/day					
Archit. Coating	5.8084					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708	0.0000	281.4481	281.4481	0.0168		281.8690
Total	**6.0001**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**	**0.0000**	**281.4481**	**281.4481**	**0.0168**		**281.8690**

3.6 Architectural Coating - 2023

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	lb/day										lb/day					
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
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
Worker	0.3628	0.1699	2.4018	7.7500e-003	0.7931	4.9400e-003	0.7981	0.2113	4.5500e-003	0.2158		773.0231	773.0231	0.0158		773.4181
Total	**0.3628**	**0.1699**	**2.4018**	**7.7500e-003**	**0.7931**	**4.9400e-003**	**0.7981**	**0.2113**	**4.5500e-003**	**0.2158**		**773.0231**	**773.0231**	**0.0158**		**773.4181**

3.6 Architectural Coating - 2024

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	lb/day										lb/day					
Archit. Coating	5.8084					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609		281.4481	281.4481	0.0159		281.8443
Total	**5.9892**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**		**281.4481**	**281.4481**	**0.0159**		**281.8443**

3.6 Architectural Coating - 2024

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	lb/day										lb/day					
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
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
Worker	0.3408	0.1534	2.2260	7.4500e-003	97.9239	4.8300e-003	97.9288	9.9037	4.4500e-003	9.9081		742.7994	742.7994	0.0142		743.1552
Total	**0.3408**	**0.1534**	**2.2260**	**7.4500e-003**	**97.9239**	**4.8300e-003**	**97.9288**	**9.9037**	**4.4500e-003**	**9.9081**		**742.7994**	**742.7994**	**0.0142**		**743.1552**

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	lb/day										lb/day					
Archit. Coating	5.8084					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609	0.0000	281.4481	281.4481	0.0159		281.8443
Total	**5.9892**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**	**0.0000**	**281.4481**	**281.4481**	**0.0159**		**281.8443**

3.6 Architectural Coating - 2024

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	lb/day										lb/day					
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
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
Worker	0.3408	0.1534	2.2260	7.4500e-003	0.7931	4.8300e-003	0.7980	0.2113	4.4500e-003	0.2157		742.7994	742.7994	0.0142		743.1552
Total	**0.3408**	**0.1534**	**2.2260**	**7.4500e-003**	**0.7931**	**4.8300e-003**	**0.7980**	**0.2113**	**4.4500e-003**	**0.2157**		**742.7994**	**742.7994**	**0.0142**		**743.1552**

3.6 Architectural Coating - 2025

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	lb/day										lb/day					
Archit. Coating	5.8084					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
Total	**5.9793**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**		**281.4481**	**281.4481**	**0.0154**		**281.8319**

3.6 Architectural Coating - 2025

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	lb/day										lb/day					
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
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
Worker	0.3213	0.1390	2.0617	7.1500e-003	97.9239	4.7400e-003	97.9287	9.9037	4.3600e-003	9.9080		712.8788	712.8788	0.0129		713.2007
Total	**0.3213**	**0.1390**	**2.0617**	**7.1500e-003**	**97.9239**	**4.7400e-003**	**97.9287**	**9.9037**	**4.3600e-003**	**9.9080**		**712.8788**	**712.8788**	**0.0129**		**713.2007**

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	lb/day										lb/day					
Archit. Coating	5.8084					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515	0.0000	281.4481	281.4481	0.0154		281.8319
Total	**5.9793**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**	**0.0000**	**281.4481**	**281.4481**	**0.0154**		**281.8319**

3.6 Architectural Coating - 2025

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	lb/day										lb/day					
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
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
Worker	0.3213	0.1390	2.0617	7.1500e-003	0.7931	4.7400e-003	0.7979	0.2113	4.3600e-003	0.2156		712.8788	712.8788	0.0129		713.2007
Total	**0.3213**	**0.1390**	**2.0617**	**7.1500e-003**	**0.7931**	**4.7400e-003**	**0.7979**	**0.2113**	**4.3600e-003**	**0.2156**		**712.8788**	**712.8788**	**0.0129**		**713.2007**

3.6 Architectural Coating - 2026

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	lb/day										lb/day					
Archit. Coating	5.8084					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
Total	**5.9793**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**		**281.4481**	**281.4481**	**0.0154**		**281.8319**

3.6 Architectural Coating - 2026

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	lb/day										lb/day					
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
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
Worker	0.3042	0.1270	1.9215	6.8800e-003	97.9239	4.6100e-003	97.9285	9.9037	4.2400e-003	9.9079		686.3278	686.3278	0.0117		686.6210
Total	**0.3042**	**0.1270**	**1.9215**	**6.8800e-003**	**97.9239**	**4.6100e-003**	**97.9285**	**9.9037**	**4.2400e-003**	**9.9079**		**686.3278**	**686.3278**	**0.0117**		**686.6210**

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	lb/day										lb/day					
Archit. Coating	5.8084					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515	0.0000	281.4481	281.4481	0.0154		281.8319
Total	**5.9793**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**	**0.0000**	**281.4481**	**281.4481**	**0.0154**		**281.8319**

3.6 Architectural Coating - 2026

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	lb/day										lb/day					
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
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
Worker	0.3042	0.1270	1.9215	6.8800e-003	0.7931	4.6100e-003	0.7978	0.2113	4.2400e-003	0.2155		686.3278	686.3278	0.0117		686.6210
Total	**0.3042**	**0.1270**	**1.9215**	**6.8800e-003**	**0.7931**	**4.6100e-003**	**0.7978**	**0.2113**	**4.2400e-003**	**0.2155**		**686.3278**	**686.3278**	**0.0117**		**686.6210**

3.6 Architectural Coating - 2027

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	lb/day										lb/day					
Archit. Coating	5.8084					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
Total	**5.9793**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**		**281.4481**	**281.4481**	**0.0154**		**281.8319**

3.6 Architectural Coating - 2027

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	lb/day										lb/day					
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
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
Worker	0.2871	0.1161	1.7946	6.6400e-003	97.9239	4.3800e-003	97.9283	9.9037	4.0300e-003	9.9077		662.6514	662.6514	0.0107		662.9185
Total	**0.2871**	**0.1161**	**1.7946**	**6.6400e-003**	**97.9239**	**4.3800e-003**	**97.9283**	**9.9037**	**4.0300e-003**	**9.9077**		**662.6514**	**662.6514**	**0.0107**		**662.9185**

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	lb/day										lb/day					
Archit. Coating	5.8084					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515	0.0000	281.4481	281.4481	0.0154		281.8319
Total	**5.9793**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**	**0.0000**	**281.4481**	**281.4481**	**0.0154**		**281.8319**

3.6 Architectural Coating - 2027

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	lb/day										lb/day					
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
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
Worker	0.2871	0.1161	1.7946	6.6400e-003	0.7931	4.3800e-003	0.7975	0.2113	4.0300e-003	0.2153		662.6514	662.6514	0.0107		662.9185
Total	**0.2871**	**0.1161**	**1.7946**	**6.6400e-003**	**0.7931**	**4.3800e-003**	**0.7975**	**0.2113**	**4.0300e-003**	**0.2153**		**662.6514**	**662.6514**	**0.0107**		**662.9185**

3.7 Building Construction 2 - 2023

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	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

3.7 Building Construction 2 - 2023

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	lb/day										lb/day					
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
Vendor	0.3591	16.4321	2.5654	0.0531	124.8602	0.0159	124.8760	12.6946	0.0152	12.7098		5,560.6960	5,560.6960	0.1819		5,565.2442
Worker	1.8174	0.8511	12.0308	0.0388	490.5098	0.0248	490.5346	49.6084	0.0228	49.6312		3,872.1431	3,872.1431	0.0791		3,874.1214
Total	**2.1764**	**17.2832**	**14.5962**	**0.0919**	**615.3700**	**0.0406**	**615.4106**	**62.3030**	**0.0380**	**62.3410**		**9,432.8392**	**9,432.8392**	**0.2611**		**9,439.3656**

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	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

3.7 Building Construction 2 - 2023

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	lb/day										lb/day					
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
Vendor	0.3591	16.4321	2.5654	0.0531	1.2392	0.0159	1.2551	0.3588	0.0152	0.3740		5,560.6960	5,560.6960	0.1819		5,565.2442
Worker	1.8174	0.8511	12.0308	0.0388	3.9729	0.0248	3.9977	1.0582	0.0228	1.0810		3,872.1431	3,872.1431	0.0791		3,874.1214
Total	**2.1764**	**17.2832**	**14.5962**	**0.0919**	**5.2121**	**0.0406**	**5.2527**	**1.4170**	**0.0380**	**1.4550**		**9,432.8392**	**9,432.8392**	**0.2611**		**9,439.3656**

3.8 Architectural Coating 2 - 2023

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	lb/day										lb/day					
Archit. Coating	28.3577					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708		281.4481	281.4481	0.0168		281.8690
Total	**28.5493**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**		**281.4481**	**281.4481**	**0.0168**		**281.8690**

3.8 Architectural Coating 2 - 2023

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	lb/day										lb/day					
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
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
Worker	0.3628	0.1699	2.4018	7.7500e-003	97.9239	4.9400e-003	97.9289	9.9037	4.5500e-003	9.9082		773.0231	773.0231	0.0158		773.4181
Total	**0.3628**	**0.1699**	**2.4018**	**7.7500e-003**	**97.9239**	**4.9400e-003**	**97.9289**	**9.9037**	**4.5500e-003**	**9.9082**		**773.0231**	**773.0231**	**0.0158**		**773.4181**

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	lb/day										lb/day					
Archit. Coating	28.3577					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708	0.0000	281.4481	281.4481	0.0168		281.8690
Total	**28.5493**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**	**0.0000**	**281.4481**	**281.4481**	**0.0168**		**281.8690**

3.8 Architectural Coating 2 - 2023

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	lb/day										lb/day					
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
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
Worker	0.3628	0.1699	2.4018	7.7500e-003	0.7931	4.9400e-003	0.7981	0.2113	4.5500e-003	0.2158		773.0231	773.0231	0.0158		773.4181
Total	**0.3628**	**0.1699**	**2.4018**	**7.7500e-003**	**0.7931**	**4.9400e-003**	**0.7981**	**0.2113**	**4.5500e-003**	**0.2158**		**773.0231**	**773.0231**	**0.0158**		**773.4181**

3.8 Architectural Coating 2 - 2024

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	lb/day										lb/day					
Archit. Coating	28.3577					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609		281.4481	281.4481	0.0159		281.8443
Total	**28.5384**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**		**281.4481**	**281.4481**	**0.0159**		**281.8443**

3.8 Architectural Coating 2 - 2024

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	lb/day										lb/day					
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
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
Worker	0.3408	0.1534	2.2260	7.4500e-003	97.9239	4.8300e-003	97.9288	9.9037	4.4500e-003	9.9081		742.7994	742.7994	0.0142		743.1552
Total	**0.3408**	**0.1534**	**2.2260**	**7.4500e-003**	**97.9239**	**4.8300e-003**	**97.9288**	**9.9037**	**4.4500e-003**	**9.9081**		**742.7994**	**742.7994**	**0.0142**		**743.1552**

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	lb/day										lb/day					
Archit. Coating	28.3577					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609	0.0000	281.4481	281.4481	0.0159		281.8443
Total	**28.5384**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**	**0.0000**	**281.4481**	**281.4481**	**0.0159**		**281.8443**

3.8 Architectural Coating 2 - 2024

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	lb/day										lb/day					
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
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
Worker	0.3408	0.1534	2.2260	7.4500e-003	0.7931	4.8300e-003	0.7980	0.2113	4.4500e-003	0.2157		742.7994	742.7994	0.0142		743.1552
Total	**0.3408**	**0.1534**	**2.2260**	**7.4500e-003**	**0.7931**	**4.8300e-003**	**0.7980**	**0.2113**	**4.4500e-003**	**0.2157**		**742.7994**	**742.7994**	**0.0142**		**743.1552**

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	lb/day										lb/day					
Mitigated	7.6540	53.2449	67.6986	0.3483	1,646.3740	0.1950	1,646.5690	168.5624	0.1821	168.7445		35,559.1919	35,559.1919	1.0954		35,586.5775
Unmitigated	7.6540	53.2449	67.6986	0.3483	1,646.3740	0.1950	1,646.5690	168.5624	0.1821	168.7445		35,559.1919	35,559.1919	1.0954		35,586.5775

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	1,203.65	1,156.59	1060.66	3,087,440	3,087,440
Condo/Townhouse	162.68	158.76	135.52	415,263	415,263
Other Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Research & Development	4,379.40	1,026.00	599.40	7,377,182	7,377,182
Unenclosed Parking with Elevator	0.00	0.00	0.00		
Total	5,745.73	2,341.35	1,795.58	10,879,884	10,879,884

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
Apartments Mid Rise	10.00	5.00	7.00	46.00	13.00	41.00	86	11	3
Condo/Townhouse	10.00	5.00	7.00	46.00	13.00	41.00	86	11	3
Other Asphalt Surfaces	10.00	5.00	7.00	0.00	0.00	0.00	0	0	0
Parking Lot	10.00	5.00	7.00	0.00	0.00	0.00	0	0	0
Research & Development	10.00	5.00	7.00	33.00	48.00	19.00	82	15	3
Unenclosed Parking with	10.00	5.00	7.00	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
Apartments Mid Rise	0.505773	0.035704	0.212085	0.105468	0.014725	0.004480	0.068989	0.043685	0.001015	0.001418	0.005344	0.000705	0.000608
Condo/Townhouse	0.505773	0.035704	0.212085	0.105468	0.014725	0.004480	0.068989	0.043685	0.001015	0.001418	0.005344	0.000705	0.000608
Other Asphalt Surfaces	0.505773	0.035704	0.212085	0.105468	0.014725	0.004480	0.068989	0.043685	0.001015	0.001418	0.005344	0.000705	0.000608
Parking Lot	0.505773	0.035704	0.212085	0.105468	0.014725	0.004480	0.068989	0.043685	0.001015	0.001418	0.005344	0.000705	0.000608
Research & Development	0.505773	0.035704	0.212085	0.105468	0.014725	0.004480	0.068989	0.043685	0.001015	0.001418	0.005344	0.000705	0.000608
Unenclosed Parking with Elevator	0.505773	0.035704	0.212085	0.105468	0.014725	0.004480	0.068989	0.043685	0.001015	0.001418	0.005344	0.000705	0.000608

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	lb/day										lb/day					
NaturalGas Mitigated	0.3665	3.2944	2.5224	0.0200		0.2532	0.2532		0.2532	0.2532		3,998.5306	3,998.5306	0.0766	0.0733	4,022.2918
NaturalGas Unmitigated	0.3665	3.2944	2.5224	0.0200		0.2532	0.2532		0.2532	0.2532		3,998.5306	3,998.5306	0.0766	0.0733	4,022.2918

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	lb/day										lb/day					
Apartments Mid Rise	4833.99	0.0521	0.4455	0.1896	2.8400e-003		0.0360	0.0360		0.0360	0.0360		568.7046	568.7046	0.0109	0.0104	572.0842
Condo/Townhouse	1576.53	0.0170	0.1453	0.0618	9.3000e-004		0.0118	0.0118		0.0118	0.0118		185.4746	185.4746	3.5500e-003	3.4000e-003	186.5768
Other Asphalt Surfaces	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
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
Research & Development	27577	0.2974	2.7036	2.2711	0.0162		0.2055	0.2055		0.2055	0.2055		3,244.3513	3,244.3513	0.0622	0.0595	3,263.6309
Unenclosed Parking with Elevator	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
Total		**0.3665**	**3.2944**	**2.5224**	**0.0200**		**0.2533**	**0.2533**		**0.2533**	**0.2533**		**3,998.5306**	**3,998.5306**	**0.0766**	**0.0733**	**4,022.2918**

5.2 Energy by Land Use - NaturalGas

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	lb/day										lb/day					
Apartments Mid Rise	4.83399	0.0521	0.4455	0.1896	2.8400e-003		0.0360	0.0360		0.0360	0.0360		568.7046	568.7046	0.0109	0.0104	572.0842
Condo/Townhouse	1.57653	0.0170	0.1453	0.0618	9.3000e-004		0.0118	0.0118		0.0118	0.0118		185.4746	185.4746	3.5500e-003	3.4000e-003	186.5768
Other Asphalt Surfaces	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
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
Research & Development	27.577	0.2974	2.7036	2.2711	0.0162		0.2055	0.2055		0.2055	0.2055		3,244.3513	3,244.3513	0.0622	0.0595	3,263.6309
Unenclosed Parking with Elevator	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
Total		**0.3665**	**3.2944**	**2.5224**	**0.0200**		**0.2533**	**0.2533**		**0.2533**	**0.2533**		**3,998.5306**	**3,998.5306**	**0.0766**	**0.0733**	**4,022.2918**

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	lb/day										lb/day					
Mitigated	493.2623	8.5551	603.0346	1.0588		82.2180	82.2180		82.2180	82.2180	8,627.7949	2,465.6836	11,093.4784	8.0941	0.6546	11,490.8992
Unmitigated	493.2623	8.5551	603.0346	1.0588		82.2180	82.2180		82.2180	82.2180	8,627.7949	2,465.6836	11,093.4784	8.0941	0.6546	11,490.8992

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	lb/day										lb/day					
Architectural Coating	2.8358					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	16.2208					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	473.6714	8.3550	585.6216	1.0578		82.1217	82.1217		82.1217	82.1217	8,627.7949	2,434.2353	11,062.0302	8.0633	0.6546	11,458.6816
Landscaping	0.5344	0.2001	17.4130	9.2000e-004		0.0963	0.0963		0.0963	0.0963		31.4483	31.4483	0.0308		32.2176
Total	**493.2623**	**8.5551**	**603.0346**	**1.0587**		**82.2180**	**82.2180**		**82.2180**	**82.2180**	**8,627.7949**	**2,465.6836**	**11,093.4784**	**8.0941**	**0.6546**	**11,490.8992**

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	lb/day										lb/day					
Architectural Coating	2.8358					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	16.2208					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	473.6714	8.3550	585.6216	1.0578		82.1217	82.1217		82.1217	82.1217	8,627.7949	2,434.2353	11,062.0302	8.0633	0.6546	11,458.6816
Landscaping	0.5344	0.2001	17.4130	9.2000e-004		0.0963	0.0963		0.0963	0.0963		31.4483	31.4483	0.0308		32.2176
Total	**493.2623**	**8.5551**	**603.0346**	**1.0587**		**82.2180**	**82.2180**		**82.2180**	**82.2180**	**8,627.7949**	**2,465.6836**	**11,093.4784**	**8.0941**	**0.6546**	**11,490.8992**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

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

ARC - Construction Phase I (Overlap)

Yolo County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Research & Development	540.00	1000sqft	12.40	540,000.00	0
Other Asphalt Surfaces	0.60	Acre	0.60	26,136.00	0
Parking Lot	568.00	Space	5.11	227,200.00	0
Unenclosed Parking with Elevator	723.00	Space	6.51	289,200.00	0
Apartments Mid Rise	181.00	Dwelling Unit	4.76	181,000.00	518
Condo/Townhouse	28.00	Dwelling Unit	1.75	28,000.00	80

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	6.8	**Precipitation Freq (Days)**	54
Climate Zone	2			**Operational Year**	2028
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	198.63	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 Intensity Factor adjusted to reflect PG&E's calculated progress towards RPS

Land Use - Based on Phase I of ARC

Construction Phase - Construction schedule adjusted based on applicant provided information and to account for overlap of building construction

Trips and VMT - Haul truck trip lengths adjusted per project-specific route of material movement; number of haul trucks based on 12 CY capacity trucks

Grading - Grading area updated for project construction information and off-site improvement areas

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	35.00	1,782.00
tblConstructionPhase	NumDays	35.00	365.00
tblConstructionPhase	NumDays	500.00	1,782.00
tblConstructionPhase	NumDays	500.00	365.00
tblConstructionPhase	NumDays	45.00	28.00
tblConstructionPhase	NumDays	35.00	10.00
tblConstructionPhase	NumDays	20.00	7.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblGrading	AcresOfGrading	70.00	112.50
tblGrading	MaterialExported	0.00	161,333.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	198.63
tblTripsAndVMT	HaulingTripLength	20.00	2.15
tblTripsAndVMT	HaulingTripNumber	20,167.00	26,888.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

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	lb/day										lb/day					
2022	10.4005	139.7984	45.2485	0.2316	713.2940	1.7703	714.2571	72.2067	1.6337	73.1178	0.0000	23,765.6335	23,765.6335	4.2905	0.0000	23,872.8952
2023	42.5103	67.0169	67.2247	0.2453	1,426.5877	1.6338	1,428.2215	144.4133	1.5450	145.9584	0.0000	24,678.9474	24,678.9474	1.8302	0.0000	24,724.7026
2024	38.5948	33.6065	36.1700	0.1302	811.2177	0.7852	812.0028	82.1103	0.7454	82.8557	0.0000	13,082.1319	13,082.1319	0.9246	0.0000	13,105.2474
2025	9.5091	30.8845	31.3391	0.1188	713.2936	0.6233	713.9169	72.2066	0.5890	72.7956	0.0000	11,954.5805	11,954.5805	0.8787	0.0000	11,976.5485
2026	9.4101	30.6437	30.5016	0.1171	713.2935	0.6221	713.9157	72.2065	0.5880	72.7945	0.0000	11,783.2394	11,783.2394	0.8681	0.0000	11,804.9411
2027	9.3120	30.4165	29.7451	0.1155	713.2934	0.6204	713.9139	72.2065	0.5864	72.7929	0.0000	11,629.7137	11,629.7137	0.8577	0.0000	11,651.1558
Maximum	**42.5103**	**139.7984**	**67.2247**	**0.2453**	**1,426.5877**	**1.7703**	**1,428.2215**	**144.4133**	**1.6337**	**145.9584**	**0.0000**	**24,678.9474**	**24,678.9474**	**4.2905**	**0.0000**	**24,724.7026**

2.1 Overall Construction (Maximum Daily Emission)

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	lb/day										lb/day					
2022	10.4005	139.7984	45.2485	0.2316	18.1961	1.7703	19.8094	9.9653	1.6337	11.4496	0.0000	23,765.6335	23,765.6335	4.2905	0.0000	23,872.8952
2023	42.5103	67.0169	67.2247	0.2453	12.0104	1.6338	13.6442	3.2565	1.5450	4.8015	0.0000	24,678.9474	24,678.9474	1.8302	0.0000	24,724.7026
2024	38.5948	33.6065	36.1700	0.1302	6.7982	0.7852	7.5834	1.8394	0.7454	2.5848	0.0000	13,082.1319	13,082.1319	0.9246	0.0000	13,105.2474
2025	9.5091	30.8845	31.3391	0.1188	6.0050	0.6233	6.6283	1.6281	0.5890	2.2172	0.0000	11,954.5805	11,954.5805	0.8787	0.0000	11,976.5485
2026	9.4101	30.6437	30.5016	0.1171	6.0049	0.6221	6.6270	1.6281	0.5880	2.2161	0.0000	11,783.2394	11,783.2394	0.8681	0.0000	11,804.9411
2027	9.3120	30.4165	29.7451	0.1155	6.0048	0.6204	6.6252	1.6281	0.5864	2.2145	0.0000	11,629.7137	11,629.7137	0.8577	0.0000	11,651.1558
Maximum	**42.5103**	**139.7984**	**67.2247**	**0.2453**	**18.1961**	**1.7703**	**19.8094**	**9.9653**	**1.6337**	**11.4496**	**0.0000**	**24,678.9474**	**24,678.9474**	**4.2905**	**0.0000**	**24,724.7026**

	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**	**98.92**	**0.00**	**98.80**	**96.13**	**0.00**	**95.10**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	493.2623	8.5551	603.0346	1.0588		82.2180	82.2180		82.2180	82.2180	8,627.7949	2,465.6836	11,093.4784	8.0941	0.6546	11,490.8992
Energy	0.3665	3.2944	2.5224	0.0200		0.2532	0.2532		0.2532	0.2532		3,998.5306	3,998.5306	0.0766	0.0733	4,022.2918
Mobile	5.7325	54.7854	64.6460	0.3225	1,646.3740	0.1961	1,646.5701	168.5624	0.1831	168.7455		32,960.4231	32,960.4231	1.1411		32,988.9502
Total	**499.3613**	**66.6350**	**670.2030**	**1.4012**	**1,646.3740**	**82.6673**	**1,729.0413**	**168.5624**	**82.6543**	**251.2167**	**8,627.7949**	**39,424.6373**	**48,052.4321**	**9.3118**	**0.7279**	**48,502.1413**

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	lb/day										lb/day					
Area	493.2623	8.5551	603.0346	1.0588		82.2180	82.2180		82.2180	82.2180	8,627.7949	2,465.6836	11,093.4784	8.0941	0.6546	11,490.8992
Energy	0.3665	3.2944	2.5224	0.0200		0.2532	0.2532		0.2532	0.2532		3,998.5306	3,998.5306	0.0766	0.0733	4,022.2918
Mobile	5.7325	54.7854	64.6460	0.3225	1,646.3740	0.1961	1,646.5701	168.5624	0.1831	168.7455		32,960.4231	32,960.4231	1.1411		32,988.9502
Total	**499.3613**	**66.6350**	**670.2030**	**1.4012**	**1,646.3740**	**82.6673**	**1,729.0413**	**168.5624**	**82.6543**	**251.2167**	**8,627.7949**	**39,424.6373**	**48,052.4321**	**9.3118**	**0.7279**	**48,502.1413**

	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**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	5/1/2022	5/7/2022	7	7	
2	Grading	Grading	5/8/2022	6/4/2022	7	28	
3	Paving	Paving	6/5/2022	6/14/2022	7	10	
4	Building Construction	Building Construction	6/15/2022	5/1/2027	7	1782	
5	Architectural Coating	Architectural Coating	6/29/2022	5/15/2027	7	1782	
6	Building Construction 2	Building Construction	1/1/2023	12/31/2023	7	365	
7	Architectural Coating 2	Architectural Coating	1/15/2023	1/14/2024	7	365	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 112.5

Acres of Paving: 12.22

Residential Indoor: 423,225; Residential Outdoor: 141,075; Non-Residential Indoor: 810,000; Non-Residential Outdoor: 270,000; Striped Parking Area: 32,552 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	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
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
Architectural Coating	Air Compressors	1	6.00	78	0.48
Building Construction 2	Cranes	1	7.00	231	0.29
Building Construction 2	Forklifts	3	8.00	89	0.20
Building Construction 2	Generator Sets	1	8.00	84	0.74
Building Construction 2	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction 2	Welders	1	8.00	46	0.45
Architectural Coating 2	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
Site Preparation	7	18.00	0.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	26,888.00	10.00	7.00	2.15	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	551.00	200.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	110.00	0.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 2	9	551.00	200.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating 2	1	110.00	0.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2022

<u>Unmitigated Construction On-Site</u>

	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	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836		3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**18.0663**	**1.6126**	**19.6788**	**9.9307**	**1.4836**	**11.4143**		**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

3.2 Site Preparation - 2022

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	lb/day										lb/day					
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
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
Worker	0.0589	0.0385	0.3731	1.1600e-003	16.0239	8.3000e-004	16.0247	1.6206	7.6000e-004	1.6214		116.0494	116.0494	2.5700e-003		116.1137
Total	**0.0589**	**0.0385**	**0.3731**	**1.1600e-003**	**16.0239**	**8.3000e-004**	**16.0247**	**1.6206**	**7.6000e-004**	**1.6214**		**116.0494**	**116.0494**	**2.5700e-003**		**116.1137**

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	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836	0.0000	3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**18.0663**	**1.6126**	**19.6788**	**9.9307**	**1.4836**	**11.4143**	**0.0000**	**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

3.2 Site Preparation - 2022

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	lb/day										lb/day					
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
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
Worker	0.0589	0.0385	0.3731	1.1600e-003	0.1298	8.3000e-004	0.1306	0.0346	7.6000e-004	0.0353		116.0494	116.0494	2.5700e-003		116.1137
Total	**0.0589**	**0.0385**	**0.3731**	**1.1600e-003**	**0.1298**	**8.3000e-004**	**0.1306**	**0.0346**	**7.6000e-004**	**0.0353**		**116.0494**	**116.0494**	**2.5700e-003**		**116.1137**

3.3 Grading - 2022

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	lb/day										lb/day					
Fugitive Dust					13.1086	0.0000	13.1086	4.1982	0.0000	4.1982			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041		6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**13.1086**	**1.6349**	**14.7434**	**4.1982**	**1.5041**	**5.7023**		**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

3.3 Grading - 2022

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	lb/day										lb/day					
Hauling	2.3234	100.9122	15.7925	0.1682	184.0358	0.1345	184.1704	18.6687	0.1287	18.7974		17,625.2792	17,625.2792	2.3434		17,683.8642
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
Worker	0.0655	0.0428	0.4145	1.2900e-003	17.8044	9.2000e-004	17.8053	1.8007	8.5000e-004	1.8015		128.9438	128.9438	2.8600e-003		129.0152
Total	**2.3889**	**100.9549**	**16.2070**	**0.1695**	**201.8402**	**0.1355**	**201.9756**	**20.4693**	**0.1296**	**20.5989**		**17,754.2230**	**17,754.2230**	**2.3463**		**17,812.8794**

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	lb/day										lb/day					
Fugitive Dust					13.1086	0.0000	13.1086	4.1982	0.0000	4.1982			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041	0.0000	6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**13.1086**	**1.6349**	**14.7434**	**4.1982**	**1.5041**	**5.7023**	**0.0000**	**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

3.3 Grading - 2022

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	lb/day										lb/day					
Hauling	2.3234	100.9122	15.7925	0.1682	1.7289	0.1345	1.8635	0.4768	0.1287	0.6055		17,625.2792	17,625.2792	2.3434		17,683.8642
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
Worker	0.0655	0.0428	0.4145	1.2900e-003	0.1442	9.2000e-004	0.1451	0.0384	8.5000e-004	0.0393		128.9438	128.9438	2.8600e-003		129.0152
Total	**2.3889**	**100.9549**	**16.2070**	**0.1695**	**1.8732**	**0.1355**	**2.0086**	**0.5152**	**0.1296**	**0.6447**		**17,754.2230**	**17,754.2230**	**2.3463**		**17,812.8794**

3.4 Paving - 2022

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	lb/day										lb/day					
Off-Road	1.1028	11.1249	14.5805	0.0228		0.5679	0.5679		0.5225	0.5225		2,207.6603	2,207.6603	0.7140		2,225.5104
Paving	1.4960					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**2.5988**	**11.1249**	**14.5805**	**0.0228**		**0.5679**	**0.5679**		**0.5225**	**0.5225**		**2,207.6603**	**2,207.6603**	**0.7140**		**2,225.5104**

3.4 Paving - 2022

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	lb/day										lb/day					
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
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
Worker	0.0491	0.0321	0.3109	9.7000e-004	13.3533	6.9000e-004	13.3540	1.3505	6.4000e-004	1.3511		96.7078	96.7078	2.1400e-003		96.7614
Total	**0.0491**	**0.0321**	**0.3109**	**9.7000e-004**	**13.3533**	**6.9000e-004**	**13.3540**	**1.3505**	**6.4000e-004**	**1.3511**		**96.7078**	**96.7078**	**2.1400e-003**		**96.7614**

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	lb/day										lb/day					
Off-Road	1.1028	11.1249	14.5805	0.0228		0.5679	0.5679		0.5225	0.5225	0.0000	2,207.6603	2,207.6603	0.7140		2,225.5104
Paving	1.4960					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**2.5988**	**11.1249**	**14.5805**	**0.0228**		**0.5679**	**0.5679**		**0.5225**	**0.5225**	**0.0000**	**2,207.6603**	**2,207.6603**	**0.7140**		**2,225.5104**

3.4 Paving - 2022

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	lb/day										lb/day					
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
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
Worker	0.0491	0.0321	0.3109	9.7000e-004	0.1082	6.9000e-004	0.1088	0.0288	6.4000e-004	0.0294		96.7078	96.7078	2.1400e-003		96.7614
Total	**0.0491**	**0.0321**	**0.3109**	**9.7000e-004**	**0.1082**	**6.9000e-004**	**0.1088**	**0.0288**	**6.4000e-004**	**0.0294**		**96.7078**	**96.7078**	**2.1400e-003**		**96.7614**

3.5 Building Construction - 2022

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	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.5 Building Construction - 2022

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	lb/day										lb/day					
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
Vendor	0.5171	19.9745	3.6491	0.0527	124.8603	0.0420	124.9023	12.6947	0.0402	12.7348		5,515.786 4	5,515.786 4	0.2790		5,522.761 9
Worker	1.8041	1.1778	11.4194	0.0356	490.5098	0.0253	490.5351	49.6084	0.0233	49.6317		3,552.400 4	3,552.400 4	0.0787		3,554.368 1
Total	**2.3212**	**21.1523**	**15.0685**	**0.0883**	**615.3701**	**0.0673**	**615.4374**	**62.3031**	**0.0635**	**62.3666**		**9,068.186 8**	**9,068.186 8**	**0.3577**		**9,077.129 9**

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	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.333 6	2,554.333 6	0.6120		2,569.632 2
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.333 6**	**2,554.333 6**	**0.6120**		**2,569.632 2**

3.5 Building Construction - 2022

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	lb/day										lb/day					
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
Vendor	0.5171	19.9745	3.6491	0.0527	1.2393	0.0420	1.2813	0.3589	0.0402	0.3990		5,515.7864	5,515.7864	0.2790		5,522.7619
Worker	1.8041	1.1778	11.4194	0.0356	3.9729	0.0253	3.9982	1.0582	0.0233	1.0815		3,552.4004	3,552.4004	0.0787		3,554.3681
Total	**2.3212**	**21.1523**	**15.0685**	**0.0883**	**5.2122**	**0.0673**	**5.2795**	**1.4170**	**0.0635**	**1.4805**		**9,068.1868**	**9,068.1868**	**0.3577**		**9,077.1299**

3.5 Building Construction - 2023

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	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

3.5 Building Construction - 2023

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	lb/day										lb/day					
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
Vendor	0.3796	16.5512	3.0220	0.0516	124.8602	0.0167	124.8768	12.6946	0.0159	12.7105		5,401.9711	5,401.9711	0.2061		5,407.122 2
Worker	1.6906	1.0581	10.4492	0.0343	490.5098	0.0248	490.5346	49.6084	0.0228	49.6312		3,418.404 6	3,418.404 6	0.0703		3,420.162 9
Total	**2.0702**	**17.6093**	**13.4712**	**0.0859**	**615.3700**	**0.0414**	**615.4114**	**62.3030**	**0.0387**	**62.3417**		**8,820.375 6**	**8,820.375 6**	**0.2764**		**8,827.285 1**

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	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.209 9	2,555.209 9	0.6079		2,570.406 1
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**	**0.0000**	**2,555.209 9**	**2,555.209 9**	**0.6079**		**2,570.406 1**

3.5 Building Construction - 2023

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	lb/day										lb/day					
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
Vendor	0.3796	16.5512	3.0220	0.0516	1.2392	0.0167	1.2558	0.3588	0.0159	0.3747		5,401.9711	5,401.9711	0.2061		5,407.1222
Worker	1.6906	1.0581	10.4492	0.0343	3.9729	0.0248	3.9977	1.0582	0.0228	1.0810		3,418.4046	3,418.4046	0.0703		3,420.1629
Total	**2.0702**	**17.6093**	**13.4712**	**0.0859**	**5.2121**	**0.0414**	**5.2535**	**1.4170**	**0.0387**	**1.4557**		**8,820.3756**	**8,820.3756**	**0.2764**		**8,827.2851**

3.5 Building Construction - 2024

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	lb/day										lb/day					
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769		2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**		**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

3.5 Building Construction - 2024

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	lb/day										lb/day					
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
Vendor	0.3679	16.3894	2.8800	0.0512	124.8600	0.0162	124.8762	12.6946	0.0155	12.7100		5,366.9463	5,366.9463	0.2001		5,371.9493
Worker	1.5921	0.9546	9.6500	0.0329	490.5098	0.0242	490.5340	49.6084	0.0223	49.6307		3,284.9823	3,284.9823	0.0632		3,286.5627
Total	**1.9600**	**17.3440**	**12.5299**	**0.0842**	**615.3698**	**0.0404**	**615.4102**	**62.3030**	**0.0378**	**62.3407**		**8,651.9287**	**8,651.9287**	**0.2633**		**8,658.5121**

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	lb/day										lb/day					
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769	0.0000	2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**	**0.0000**	**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

3.5 Building Construction - 2024

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	lb/day										lb/day					
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
Vendor	0.3679	16.3894	2.8800	0.0512	1.2390	0.0162	1.2552	0.3588	0.0155	0.3742		5,366.946 3	5,366.946 3	0.2001		5,371.949 3
Worker	1.5921	0.9546	9.6500	0.0329	3.9729	0.0242	3.9971	1.0582	0.0223	1.0805		3,284.982 3	3,284.982 3	0.0632		3,286.562 7
Total	**1.9600**	**17.3440**	**12.5299**	**0.0842**	**5.2119**	**0.0404**	**5.2523**	**1.4169**	**0.0378**	**1.4547**		**8,651.928 7**	**8,651.928 7**	**0.2633**		**8,658.512 1**

3.5 Building Construction - 2025

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	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.474 4	2,556.474 4	0.6010		2,571.498 1
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.474 4**	**2,556.474 4**	**0.6010**		**2,571.498 1**

3.5 Building Construction - 2025

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	lb/day										lb/day					
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
Vendor	0.3576	16.2314	2.7550	0.0509	124.8599	0.0157	124.8756	12.6945	0.0151	12.7096		5,334.3498	5,334.3498	0.1940		5,339.1986
Worker	1.5045	0.8651	8.9112	0.0316	490.5098	0.0238	490.5336	49.6084	0.0219	49.6303		3,152.8772	3,152.8772	0.0571		3,154.3041
Total	**1.8621**	**17.0966**	**11.6663**	**0.0825**	**615.3697**	**0.0395**	**615.4092**	**62.3029**	**0.0369**	**62.3398**		**8,487.2270**	**8,487.2270**	**0.2510**		**8,493.5027**

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	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

3.5 Building Construction - 2025

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	lb/day										lb/day					
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
Vendor	0.3576	16.2314	2.7550	0.0509	1.2389	0.0157	1.2547	0.3587	0.0151	0.3738		5,334.349 8	5,334.349 8	0.1940		5,339.198 6
Worker	1.5045	0.8651	8.9112	0.0316	3.9729	0.0238	3.9967	1.0582	0.0219	1.0800		3,152.877 2	3,152.877 2	0.0571		3,154.304 1
Total	**1.8621**	**17.0966**	**11.6663**	**0.0825**	**5.2118**	**0.0395**	**5.2513**	**1.4169**	**0.0369**	**1.4538**		**8,487.227 0**	**8,487.227 0**	**0.2510**		**8,493.502 7**

3.5 Building Construction - 2026

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	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.474 4	2,556.474 4	0.6010		2,571.498 1
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.474 4**	**2,556.474 4**	**0.6010**		**2,571.498 1**

3.5 Building Construction - 2026

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	lb/day										lb/day					
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
Vendor	0.3496	16.0809	2.6738	0.0506	124.8598	0.0154	124.8752	12.6945	0.0147	12.7092		5,303.780 6	5,303.780 6	0.1895		5,308.518 9
Worker	1.4286	0.7899	8.2809	0.0304	490.5098	0.0231	490.5329	49.6084	0.0213	49.6296		3,035.531 8	3,035.531 8	0.0519		3,036.828 8
Total	**1.7782**	**16.8708**	**10.9547**	**0.0811**	**615.3696**	**0.0385**	**615.4081**	**62.3029**	**0.0360**	**62.3388**		**8,339.312 5**	**8,339.312 5**	**0.2414**		**8,345.347 7**

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	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.474 4	2,556.474 4	0.6010		2,571.498 1
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.474 4**	**2,556.474 4**	**0.6010**		**2,571.498 1**

3.5 Building Construction - 2026

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	lb/day										lb/day					
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
Vendor	0.3496	16.0809	2.6738	0.0506	1.2388	0.0154	1.2542	0.3587	0.0147	0.3734		5,303.7806	5,303.7806	0.1895		5,308.5189
Worker	1.4286	0.7899	8.2809	0.0304	3.9729	0.0231	3.9960	1.0582	0.0213	1.0794		3,035.5318	3,035.5318	0.0519		3,036.8288
Total	**1.7782**	**16.8708**	**10.9547**	**0.0811**	**5.2117**	**0.0385**	**5.2502**	**1.4169**	**0.0360**	**1.4528**		**8,339.3125**	**8,339.3125**	**0.2414**		**8,345.3477**

3.5 Building Construction - 2027

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	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

3.5 Building Construction - 2027

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	lb/day										lb/day					
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
Vendor	0.3426	15.9353	2.6043	0.0504	124.8597	0.0151	124.8748	12.6944	0.0144	12.7089		5,276.0108	5,276.0108	0.1848		5,280.6313
Worker	1.3527	0.7219	7.7082	0.0294	490.5098	0.0219	490.5317	49.6084	0.0202	49.6286		2,930.7035	2,930.7035	0.0472		2,931.8823
Total	**1.6953**	**16.6572**	**10.3125**	**0.0797**	**615.3695**	**0.0370**	**615.4065**	**62.3028**	**0.0346**	**62.3374**		**8,206.7143**	**8,206.7143**	**0.2320**		**8,212.5136**

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	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

3.5 Building Construction - 2027

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	lb/day										lb/day					
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
Vendor	0.3426	15.9353	2.6043	0.0504	1.2387	0.0151	1.2538	0.3586	0.0144	0.3730		5,276.010 8	5,276.010 8	0.1848		5,280.631 3
Worker	1.3527	0.7219	7.7082	0.0294	3.9729	0.0219	3.9948	1.0582	0.0202	1.0784		2,930.703 5	2,930.703 5	0.0472		2,931.882 3
Total	**1.6953**	**16.6572**	**10.3125**	**0.0797**	**5.2116**	**0.0370**	**5.2486**	**1.4168**	**0.0346**	**1.4514**		**8,206.714 3**	**8,206.714 3**	**0.2320**		**8,212.513 6**

3.6 Architectural Coating - 2022

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	lb/day										lb/day					
Archit. Coating	5.8084					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817		281.4481	281.4481	0.0183		281.9062
Total	**6.0129**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**		**281.4481**	**281.4481**	**0.0183**		**281.9062**

3.6 Architectural Coating - 2022

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	lb/day										lb/day					
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
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
Worker	0.3602	0.2351	2.2797	7.1200e-003	97.9239	5.0600e-003	97.9290	9.9037	4.6600e-003	9.9083		709.1906	709.1906	0.0157		709.5835
Total	**0.3602**	**0.2351**	**2.2797**	**7.1200e-003**	**97.9239**	**5.0600e-003**	**97.9290**	**9.9037**	**4.6600e-003**	**9.9083**		**709.1906**	**709.1906**	**0.0157**		**709.5835**

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	lb/day										lb/day					
Archit. Coating	5.8084					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817	0.0000	281.4481	281.4481	0.0183		281.9062
Total	**6.0129**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**	**0.0000**	**281.4481**	**281.4481**	**0.0183**		**281.9062**

3.6 Architectural Coating - 2022

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	lb/day										lb/day					
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
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
Worker	0.3602	0.2351	2.2797	7.1200e-003	0.7931	5.0600e-003	0.7982	0.2113	4.6600e-003	0.2159		709.1906	709.1906	0.0157		709.5835
Total	**0.3602**	**0.2351**	**2.2797**	**7.1200e-003**	**0.7931**	**5.0600e-003**	**0.7982**	**0.2113**	**4.6600e-003**	**0.2159**		**709.1906**	**709.1906**	**0.0157**		**709.5835**

3.6 Architectural Coating - 2023

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	lb/day										lb/day					
Archit. Coating	5.8084					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708		281.4481	281.4481	0.0168		281.8690
Total	**6.0001**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**		**281.4481**	**281.4481**	**0.0168**		**281.8690**

3.6 Architectural Coating - 2023

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	lb/day										lb/day					
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
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
Worker	0.3375	0.2112	2.0861	6.8500e-003	97.9239	4.9400e-003	97.9289	9.9037	4.5500e-003	9.9082		682.4401	682.4401	0.0140		682.7911
Total	**0.3375**	**0.2112**	**2.0861**	**6.8500e-003**	**97.9239**	**4.9400e-003**	**97.9289**	**9.9037**	**4.5500e-003**	**9.9082**		**682.4401**	**682.4401**	**0.0140**		**682.7911**

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	lb/day										lb/day					
Archit. Coating	5.8084					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708	0.0000	281.4481	281.4481	0.0168		281.8690
Total	**6.0001**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**	**0.0000**	**281.4481**	**281.4481**	**0.0168**		**281.8690**

3.6 Architectural Coating - 2023

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	lb/day										lb/day					
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
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
Worker	0.3375	0.2112	2.0861	6.8500e-003	0.7931	4.9400e-003	0.7981	0.2113	4.5500e-003	0.2158		682.4401	682.4401	0.0140		682.7911
Total	**0.3375**	**0.2112**	**2.0861**	**6.8500e-003**	**0.7931**	**4.9400e-003**	**0.7981**	**0.2113**	**4.5500e-003**	**0.2158**		**682.4401**	**682.4401**	**0.0140**		**682.7911**

3.6 Architectural Coating - 2024

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	lb/day										lb/day					
Archit. Coating	5.8084					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609		281.4481	281.4481	0.0159		281.8443
Total	**5.9892**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**		**281.4481**	**281.4481**	**0.0159**		**281.8443**

3.6 Architectural Coating - 2024

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	lb/day										lb/day					
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
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
Worker	0.3178	0.1906	1.9265	6.5800e-003	97.9239	4.8300e-003	97.9288	9.9037	4.4500e-003	9.9081		655.8041	655.8041	0.0126		656.1196
Total	**0.3178**	**0.1906**	**1.9265**	**6.5800e-003**	**97.9239**	**4.8300e-003**	**97.9288**	**9.9037**	**4.4500e-003**	**9.9081**		**655.8041**	**655.8041**	**0.0126**		**656.1196**

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	lb/day										lb/day					
Archit. Coating	5.8084					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609	0.0000	281.4481	281.4481	0.0159		281.8443
Total	**5.9892**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**	**0.0000**	**281.4481**	**281.4481**	**0.0159**		**281.8443**

3.6 Architectural Coating - 2024

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	lb/day										lb/day					
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
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
Worker	0.3178	0.1906	1.9265	6.5800e-003	0.7931	4.8300e-003	0.7980	0.2113	4.4500e-003	0.2157		655.8041	655.8041	0.0126		656.1196
Total	**0.3178**	**0.1906**	**1.9265**	**6.5800e-003**	**0.7931**	**4.8300e-003**	**0.7980**	**0.2113**	**4.4500e-003**	**0.2157**		**655.8041**	**655.8041**	**0.0126**		**656.1196**

3.6 Architectural Coating - 2025

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	lb/day										lb/day					
Archit. Coating	5.8084					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
Total	**5.9793**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**		**281.4481**	**281.4481**	**0.0154**		**281.8319**

3.6 Architectural Coating - 2025

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	lb/day										lb/day					
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
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
Worker	0.3004	0.1727	1.7790	6.3100e-003	97.9239	4.7400e-003	97.9287	9.9037	4.3600e-003	9.9080		629.4310	629.4310	0.0114		629.7159
Total	**0.3004**	**0.1727**	**1.7790**	**6.3100e-003**	**97.9239**	**4.7400e-003**	**97.9287**	**9.9037**	**4.3600e-003**	**9.9080**		**629.4310**	**629.4310**	**0.0114**		**629.7159**

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	lb/day										lb/day					
Archit. Coating	5.8084					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515	0.0000	281.4481	281.4481	0.0154		281.8319
Total	**5.9793**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**	**0.0000**	**281.4481**	**281.4481**	**0.0154**		**281.8319**

3.6 Architectural Coating - 2025

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	lb/day										lb/day					
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
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
Worker	0.3004	0.1727	1.7790	6.3100e-003	0.7931	4.7400e-003	0.7979	0.2113	4.3600e-003	0.2156		629.4310	629.4310	0.0114		629.7159
Total	**0.3004**	**0.1727**	**1.7790**	**6.3100e-003**	**0.7931**	**4.7400e-003**	**0.7979**	**0.2113**	**4.3600e-003**	**0.2156**		**629.4310**	**629.4310**	**0.0114**		**629.7159**

3.6 Architectural Coating - 2026

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	lb/day										lb/day					
Archit. Coating	5.8084					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
Total	**5.9793**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**		**281.4481**	**281.4481**	**0.0154**		**281.8319**

3.6 Architectural Coating - 2026

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	lb/day										lb/day					
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
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
Worker	0.2852	0.1577	1.6532	6.0700e-003	97.9239	4.6100e-003	97.9285	9.9037	4.2400e-003	9.9079		606.0045	606.0045	0.0104		606.2635
Total	**0.2852**	**0.1577**	**1.6532**	**6.0700e-003**	**97.9239**	**4.6100e-003**	**97.9285**	**9.9037**	**4.2400e-003**	**9.9079**		**606.0045**	**606.0045**	**0.0104**		**606.2635**

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	lb/day										lb/day					
Archit. Coating	5.8084					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515	0.0000	281.4481	281.4481	0.0154		281.8319
Total	**5.9793**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**	**0.0000**	**281.4481**	**281.4481**	**0.0154**		**281.8319**

3.6 Architectural Coating - 2026

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	lb/day										lb/day					
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
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
Worker	0.2852	0.1577	1.6532	6.0700e-003	0.7931	4.6100e-003	0.7978	0.2113	4.2400e-003	0.2155		606.0045	606.0045	0.0104		606.2635
Total	**0.2852**	**0.1577**	**1.6532**	**6.0700e-003**	**0.7931**	**4.6100e-003**	**0.7978**	**0.2113**	**4.2400e-003**	**0.2155**		**606.0045**	**606.0045**	**0.0104**		**606.2635**

3.6 Architectural Coating - 2027

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	lb/day										lb/day					
Archit. Coating	5.8084					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
Total	**5.9793**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**		**281.4481**	**281.4481**	**0.0154**		**281.8319**

3.6 Architectural Coating - 2027

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	lb/day										lb/day					
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
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
Worker	0.2701	0.1441	1.5389	5.8600e-003	97.9239	4.3800e-003	97.9283	9.9037	4.0300e-003	9.9077		585.0769	585.0769	9.4100e-003		585.3123
Total	**0.2701**	**0.1441**	**1.5389**	**5.8600e-003**	**97.9239**	**4.3800e-003**	**97.9283**	**9.9037**	**4.0300e-003**	**9.9077**		**585.0769**	**585.0769**	**9.4100e-003**		**585.3123**

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	lb/day										lb/day					
Archit. Coating	5.8084					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515	0.0000	281.4481	281.4481	0.0154		281.8319
Total	**5.9793**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**	**0.0000**	**281.4481**	**281.4481**	**0.0154**		**281.8319**

3.6 Architectural Coating - 2027

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	lb/day										lb/day					
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
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
Worker	0.2701	0.1441	1.5389	5.8600e-003	0.7931	4.3800e-003	0.7975	0.2113	4.0300e-003	0.2153		585.0769	585.0769	9.4100e-003		585.3123
Total	**0.2701**	**0.1441**	**1.5389**	**5.8600e-003**	**0.7931**	**4.3800e-003**	**0.7975**	**0.2113**	**4.0300e-003**	**0.2153**		**585.0769**	**585.0769**	**9.4100e-003**		**585.3123**

3.7 Building Construction 2 - 2023

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	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

3.7 Building Construction 2 - 2023

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	lb/day										lb/day					
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
Vendor	0.3796	16.5512	3.0220	0.0516	124.8602	0.0167	124.8768	12.6946	0.0159	12.7105		5,401.9711	5,401.9711	0.2061		5,407.1222
Worker	1.6906	1.0581	10.4492	0.0343	490.5098	0.0248	490.5346	49.6084	0.0228	49.6312		3,418.4046	3,418.4046	0.0703		3,420.1629
Total	**2.0702**	**17.6093**	**13.4712**	**0.0859**	**615.3700**	**0.0414**	**615.4114**	**62.3030**	**0.0387**	**62.3417**		**8,820.3756**	**8,820.3756**	**0.2764**		**8,827.2851**

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	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

3.7 Building Construction 2 - 2023

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	lb/day										lb/day					
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
Vendor	0.3796	16.5512	3.0220	0.0516	1.2392	0.0167	1.2558	0.3588	0.0159	0.3747		5,401.9711	5,401.9711	0.2061		5,407.122 2
Worker	1.6906	1.0581	10.4492	0.0343	3.9729	0.0248	3.9977	1.0582	0.0228	1.0810		3,418.404 6	3,418.404 6	0.0703		3,420.162 9
Total	**2.0702**	**17.6093**	**13.4712**	**0.0859**	**5.2121**	**0.0414**	**5.2535**	**1.4170**	**0.0387**	**1.4557**		**8,820.375 6**	**8,820.375 6**	**0.2764**		**8,827.285 1**

3.8 Architectural Coating 2 - 2023

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	lb/day										lb/day					
Archit. Coating	28.3577					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708		281.4481	281.4481	0.0168		281.8690
Total	**28.5493**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**		**281.4481**	**281.4481**	**0.0168**		**281.8690**

3.8 Architectural Coating 2 - 2023

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	lb/day										lb/day					
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
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
Worker	0.3375	0.2112	2.0861	6.8500e-003	97.9239	4.9400e-003	97.9289	9.9037	4.5500e-003	9.9082		682.4401	682.4401	0.0140		682.7911
Total	**0.3375**	**0.2112**	**2.0861**	**6.8500e-003**	**97.9239**	**4.9400e-003**	**97.9289**	**9.9037**	**4.5500e-003**	**9.9082**		**682.4401**	**682.4401**	**0.0140**		**682.7911**

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	lb/day										lb/day					
Archit. Coating	28.3577					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708	0.0000	281.4481	281.4481	0.0168		281.8690
Total	**28.5493**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**	**0.0000**	**281.4481**	**281.4481**	**0.0168**		**281.8690**

3.8 Architectural Coating 2 - 2023

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	lb/day										lb/day					
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
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
Worker	0.3375	0.2112	2.0861	6.8500e-003	0.7931	4.9400e-003	0.7981	0.2113	4.5500e-003	0.2158		682.4401	682.4401	0.0140		682.7911
Total	**0.3375**	**0.2112**	**2.0861**	**6.8500e-003**	**0.7931**	**4.9400e-003**	**0.7981**	**0.2113**	**4.5500e-003**	**0.2158**		**682.4401**	**682.4401**	**0.0140**		**682.7911**

3.8 Architectural Coating 2 - 2024

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	lb/day										lb/day					
Archit. Coating	28.3577					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609		281.4481	281.4481	0.0159		281.8443
Total	**28.5384**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**		**281.4481**	**281.4481**	**0.0159**		**281.8443**

3.8 Architectural Coating 2 - 2024

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	lb/day										lb/day					
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
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
Worker	0.3178	0.1906	1.9265	6.5800e-003	97.9239	4.8300e-003	97.9288	9.9037	4.4500e-003	9.9081		655.8041	655.8041	0.0126		656.1196
Total	**0.3178**	**0.1906**	**1.9265**	**6.5800e-003**	**97.9239**	**4.8300e-003**	**97.9288**	**9.9037**	**4.4500e-003**	**9.9081**		**655.8041**	**655.8041**	**0.0126**		**656.1196**

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	lb/day										lb/day					
Archit. Coating	28.3577					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609	0.0000	281.4481	281.4481	0.0159		281.8443
Total	**28.5384**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**	**0.0000**	**281.4481**	**281.4481**	**0.0159**		**281.8443**

3.8 Architectural Coating 2 - 2024

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	lb/day										lb/day					
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
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
Worker	0.3178	0.1906	1.9265	6.5800e-003	0.7931	4.8300e-003	0.7980	0.2113	4.4500e-003	0.2157		655.8041	655.8041	0.0126		656.1196
Total	**0.3178**	**0.1906**	**1.9265**	**6.5800e-003**	**0.7931**	**4.8300e-003**	**0.7980**	**0.2113**	**4.4500e-003**	**0.2157**		**655.8041**	**655.8041**	**0.0126**		**656.1196**

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	lb/day										lb/day					
Mitigated	5.7325	54.7854	64.6460	0.3225	1,646.374 0	0.1961	1,646.570 1	168.5624	0.1831	168.7455		32,960.42 31	32,960.42 31	1.1411		32,988.95 02
Unmitigated	5.7325	54.7854	64.6460	0.3225	1,646.374 0	0.1961	1,646.570 1	168.5624	0.1831	168.7455		32,960.42 31	32,960.42 31	1.1411		32,988.95 02

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	1,203.65	1,156.59	1060.66	3,087,440	3,087,440
Condo/Townhouse	162.68	158.76	135.52	415,263	415,263
Other Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Research & Development	4,379.40	1,026.00	599.40	7,377,182	7,377,182
Unenclosed Parking with Elevator	0.00	0.00	0.00		
Total	5,745.73	2,341.35	1,795.58	10,879,884	10,879,884

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
Apartments Mid Rise	10.00	5.00	7.00	46.00	13.00	41.00	86	11	3
Condo/Townhouse	10.00	5.00	7.00	46.00	13.00	41.00	86	11	3
Other Asphalt Surfaces	10.00	5.00	7.00	0.00	0.00	0.00	0	0	0
Parking Lot	10.00	5.00	7.00	0.00	0.00	0.00	0	0	0
Research & Development	10.00	5.00	7.00	33.00	48.00	19.00	82	15	3
Unenclosed Parking with	10.00	5.00	7.00	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
Apartments Mid Rise	0.505773	0.035704	0.212085	0.105468	0.014725	0.004480	0.068989	0.043685	0.001015	0.001418	0.005344	0.000705	0.000608
Condo/Townhouse	0.505773	0.035704	0.212085	0.105468	0.014725	0.004480	0.068989	0.043685	0.001015	0.001418	0.005344	0.000705	0.000608
Other Asphalt Surfaces	0.505773	0.035704	0.212085	0.105468	0.014725	0.004480	0.068989	0.043685	0.001015	0.001418	0.005344	0.000705	0.000608
Parking Lot	0.505773	0.035704	0.212085	0.105468	0.014725	0.004480	0.068989	0.043685	0.001015	0.001418	0.005344	0.000705	0.000608
Research & Development	0.505773	0.035704	0.212085	0.105468	0.014725	0.004480	0.068989	0.043685	0.001015	0.001418	0.005344	0.000705	0.000608
Unenclosed Parking with Elevator	0.505773	0.035704	0.212085	0.105468	0.014725	0.004480	0.068989	0.043685	0.001015	0.001418	0.005344	0.000705	0.000608

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	lb/day										lb/day					
NaturalGas Mitigated	0.3665	3.2944	2.5224	0.0200		0.2532	0.2532		0.2532	0.2532		3,998.5306	3,998.5306	0.0766	0.0733	4,022.2918
NaturalGas Unmitigated	0.3665	3.2944	2.5224	0.0200		0.2532	0.2532		0.2532	0.2532		3,998.5306	3,998.5306	0.0766	0.0733	4,022.2918

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	lb/day										lb/day					
Apartments Mid Rise	4833.99	0.0521	0.4455	0.1896	2.8400e-003		0.0360	0.0360		0.0360	0.0360		568.7046	568.7046	0.0109	0.0104	572.0842
Condo/Townhouse	1576.53	0.0170	0.1453	0.0618	9.3000e-004		0.0118	0.0118		0.0118	0.0118		185.4746	185.4746	3.5500e-003	3.4000e-003	186.5768
Other Asphalt Surfaces	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
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
Research & Development	27577	0.2974	2.7036	2.2711	0.0162		0.2055	0.2055		0.2055	0.2055		3,244.3513	3,244.3513	0.0622	0.0595	3,263.6309
Unenclosed Parking with Elevator	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
Total		**0.3665**	**3.2944**	**2.5224**	**0.0200**		**0.2533**	**0.2533**		**0.2533**	**0.2533**		**3,998.5306**	**3,998.5306**	**0.0766**	**0.0733**	**4,022.2918**

5.2 Energy by Land Use - NaturalGas

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	lb/day										lb/day					
Apartments Mid Rise	4.83399	0.0521	0.4455	0.1896	2.8400e-003		0.0360	0.0360		0.0360	0.0360		568.7046	568.7046	0.0109	0.0104	572.0842
Condo/Townhouse	1.57653	0.0170	0.1453	0.0618	9.3000e-004		0.0118	0.0118		0.0118	0.0118		185.4746	185.4746	3.5500e-003	3.4000e-003	186.5768
Other Asphalt Surfaces	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
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
Research & Development	27.577	0.2974	2.7036	2.2711	0.0162		0.2055	0.2055		0.2055	0.2055		3,244.3513	3,244.3513	0.0622	0.0595	3,263.6309
Unenclosed Parking with Elevator	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
Total		**0.3665**	**3.2944**	**2.5224**	**0.0200**		**0.2533**	**0.2533**		**0.2533**	**0.2533**		**3,998.5306**	**3,998.5306**	**0.0766**	**0.0733**	**4,022.2918**

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	lb/day										lb/day					
Mitigated	493.2623	8.5551	603.0346	1.0588		82.2180	82.2180		82.2180	82.2180	8,627.7949	2,465.6836	11,093.4784	8.0941	0.6546	11,490.8992
Unmitigated	493.2623	8.5551	603.0346	1.0588		82.2180	82.2180		82.2180	82.2180	8,627.7949	2,465.6836	11,093.4784	8.0941	0.6546	11,490.8992

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	lb/day										lb/day					
Architectural Coating	2.8358					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	16.2208					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	473.6714	8.3550	585.6216	1.0578		82.1217	82.1217		82.1217	82.1217	8,627.7949	2,434.2353	11,062.0302	8.0633	0.6546	11,458.6816
Landscaping	0.5344	0.2001	17.4130	9.2000e-004		0.0963	0.0963		0.0963	0.0963		31.4483	31.4483	0.0308		32.2176
Total	**493.2623**	**8.5551**	**603.0346**	**1.0587**		**82.2180**	**82.2180**		**82.2180**	**82.2180**	**8,627.7949**	**2,465.6836**	**11,093.4784**	**8.0941**	**0.6546**	**11,490.8992**

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	lb/day										lb/day					
Architectural Coating	2.8358					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	16.2208					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	473.6714	8.3550	585.6216	1.0578		82.1217	82.1217		82.1217	82.1217	8,627.7949	2,434.2353	11,062.0302	8.0633	0.6546	11,458.6816
Landscaping	0.5344	0.2001	17.4130	9.2000e-004		0.0963	0.0963		0.0963	0.0963		31.4483	31.4483	0.0308		32.2176
Total	**493.2623**	**8.5551**	**603.0346**	**1.0587**		**82.2180**	**82.2180**		**82.2180**	**82.2180**	**8,627.7949**	**2,465.6836**	**11,093.4784**	**8.0941**	**0.6546**	**11,490.8992**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

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

ARC - Construction Phase I (Overlap)

Yolo County, Mitigation Report

Construction Mitigation Summary

Phase	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Building Construction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Building Construction 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Site Preparation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

OFFROAD Equipment Mitigation

Equipment Type	Fuel Type	Tier	Number Mitigated	Total Number of Equipment	DPF	Oxidation Catalyst
Air Compressors	Diesel	No Change	0	2	No Change	0.00
Cranes	Diesel	No Change	0	2	No Change	0.00
Excavators	Diesel	No Change	0	2	No Change	0.00
Forklifts	Diesel	No Change	0	6	No Change	0.00
Generator Sets	Diesel	No Change	0	2	No Change	0.00
Graders	Diesel	No Change	0	1	No Change	0.00
Pavers	Diesel	No Change	0	2	No Change	0.00
Paving Equipment	Diesel	No Change	0	2	No Change	0.00
Rollers	Diesel	No Change	0	2	No Change	0.00
Rubber Tired Dozers	Diesel	No Change	0	4	No Change	0.00
Scrapers	Diesel	No Change	0	2	No Change	0.00
Tractors/Loaders/Backhoes	Diesel	No Change	0	12	No Change	0.00
Welders	Diesel	No Change	0	2	No Change	0.00

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	Unmitigated tons/yr						Unmitigated mt/yr					
Air Compressors	1.95880E-001	1.32446E+000	1.94342E+000	3.19000E-003	6.68000E-002	6.68000E-002	0.00000E+000	2.74092E+002	2.74092E+002	1.57700E-002	0.00000E+000	2.74486E+002
Cranes	3.14450E-001	3.32529E+000	1.68213E+000	5.42000E-003	1.39570E-001	1.28410E-001	0.00000E+000	4.76188E+002	4.76188E+002	1.54010E-001	0.00000E+000	4.80038E+002
Excavators	5.67000E-003	4.97600E-002	9.11400E-002	1.40000E-004	2.41000E-003	2.21000E-003	0.00000E+000	1.27010E+001	1.27010E+001	4.11000E-003	0.00000E+000	1.28037E+001
Forklifts	3.08990E-001	2.89723E+000	3.67238E+000	4.92000E-003	1.69850E-001	1.56260E-001	0.00000E+000	4.32485E+002	4.32485E+002	1.39870E-001	0.00000E+000	4.35982E+002
Generator Sets	3.10160E-001	2.76892E+000	3.93452E+000	7.06000E-003	1.22360E-001	1.22360E-001	0.00000E+000	6.06750E+002	6.06750E+002	2.48300E-002	0.00000E+000	6.07371E+002
Graders	5.81000E-003	7.36100E-002	2.41000E-002	9.00000E-005	2.34000E-003	2.15000E-003	0.00000E+000	8.14462E+000	8.14462E+000	2.63000E-003	0.00000E+000	8.21047E+000
Pavers	2.07000E-003	2.09900E-002	2.88400E-002	5.00000E-005	1.00000E-003	9.20000E-004	0.00000E+000	4.13003E+000	4.13003E+000	1.34000E-003	0.00000E+000	4.16342E+000
Paving Equipment	1.78000E-003	1.73800E-002	2.54600E-002	4.00000E-005	8.50000E-004	7.80000E-004	0.00000E+000	3.57856E+000	3.57856E+000	1.16000E-003	0.00000E+000	3.60749E+000
Rollers	1.66000E-003	1.72600E-002	1.86000E-002	3.00000E-005	9.90000E-004	9.20000E-004	0.00000E+000	2.30519E+000	2.30519E+000	7.50000E-004	0.00000E+000	2.32383E+000
Rubber Tired Dozers	2.05100E-002	2.15440E-001	8.77600E-002	2.10000E-004	1.02300E-002	9.41000E-003	0.00000E+000	1.83817E+001	1.83817E+001	5.95000E-003	0.00000E+000	1.85303E+001
Scrapers	2.29400E-002	2.50420E-001	1.78520E-001	4.30000E-004	9.78000E-003	8.99000E-003	0.00000E+000	3.73472E+001	3.73472E+001	1.20800E-002	0.00000E+000	3.76492E+001
Tractors/Loaders/ Backhoes	4.11890E-001	4.16852E+000	6.38366E+000	8.91000E-003	1.92430E-001	1.77040E-001	0.00000E+000	7.82913E+002	7.82913E+002	2.53210E-001	0.00000E+000	7.89243E+002
Welders	2.57230E-001	1.48851E+000	1.78926E+000	2.74000E-003	5.25900E-002	5.25900E-002	0.00000E+000	2.02055E+002	2.02055E+002	2.08700E-002	0.00000E+000	2.02577E+002

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Mitigated tons/yr							Mitigated mt/yr					
Air Compressors	1.95880E-001	1.32446E+000	1.94342E+000	3.19000E-003	6.68000E-002	6.68000E-002	0.00000E+000	2.74091E+002	2.74091E+002	1.57700E-002	0.00000E+000	2.74486E+002
Cranes	3.14450E-001	3.32529E+000	1.68213E+000	5.42000E-003	1.39570E-001	1.28410E-001	0.00000E+000	4.76188E+002	4.76188E+002	1.54010E-001	0.00000E+000	4.80038E+002
Excavators	5.67000E-003	4.97600E-002	9.11400E-002	1.40000E-004	2.41000E-003	2.21000E-003	0.00000E+000	1.27010E+001	1.27010E+001	4.11000E-003	0.00000E+000	1.28037E+001
Forklifts	3.08990E-001	2.89723E+000	3.67238E+000	4.92000E-003	1.69850E-001	1.56260E-001	0.00000E+000	4.32485E+002	4.32485E+002	1.39870E-001	0.00000E+000	4.35982E+002
Generator Sets	3.10160E-001	2.76892E+000	3.93452E+000	7.06000E-003	1.22360E-001	1.22360E-001	0.00000E+000	6.06749E+002	6.06749E+002	2.48300E-002	0.00000E+000	6.07370E+002
Graders	5.81000E-003	7.36100E-002	2.41000E-002	9.00000E-005	2.34000E-003	2.15000E-003	0.00000E+000	8.14461E+000	8.14461E+000	2.63000E-003	0.00000E+000	8.21046E+000
Pavers	2.07000E-003	2.09900E-002	2.88400E-002	5.00000E-005	1.00000E-003	9.20000E-004	0.00000E+000	4.13003E+000	4.13003E+000	1.34000E-003	0.00000E+000	4.16342E+000
Paving Equipment	1.78000E-003	1.73800E-002	2.54600E-002	4.00000E-005	8.50000E-004	7.80000E-004	0.00000E+000	3.57855E+000	3.57855E+000	1.16000E-003	0.00000E+000	3.60749E+000
Rollers	1.66000E-003	1.72600E-002	1.86000E-002	3.00000E-005	9.90000E-004	9.20000E-004	0.00000E+000	2.30519E+000	2.30519E+000	7.50000E-004	0.00000E+000	2.32383E+000
Rubber Tired Dozers	2.05100E-002	2.15440E-001	8.77600E-002	2.10000E-004	1.02300E-002	9.41000E-003	0.00000E+000	1.83817E+001	1.83817E+001	5.95000E-003	0.00000E+000	1.85303E+001
Scrapers	2.29400E-002	2.50420E-001	1.78520E-001	4.30000E-004	9.78000E-003	8.99000E-003	0.00000E+000	3.73472E+001	3.73472E+001	1.20800E-002	0.00000E+000	3.76491E+001
Tractors/Loaders/Backhoes	4.11890E-001	4.16852E+000	6.38365E+000	8.91000E-003	1.92430E-001	1.77040E-001	0.00000E+000	7.82912E+002	7.82912E+002	2.53210E-001	0.00000E+000	7.89242E+002
Welders	2.57230E-001	1.48851E+000	1.78926E+000	2.74000E-003	5.25900E-002	5.25900E-002	0.00000E+000	2.02055E+002	2.02055E+002	2.08700E-002	0.00000E+000	2.02576E+002

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Air Compressors	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.20398E-006	1.20398E-006	0.00000E+000	0.00000E+000	1.20225E-006
Cranes	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.19701E-006	1.19701E-006	0.00000E+000	0.00000E+000	1.18741E-006
Excavators	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	7.87341E-007	7.87341E-007	0.00000E+000	0.00000E+000	1.56205E-006
Forklifts	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.20235E-006	1.20235E-006	0.00000E+000	0.00000E+000	1.19271E-006
Generator Sets	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.18665E-006	1.18665E-006	0.00000E+000	0.00000E+000	1.18544E-006
Graders	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.22780E-006	1.22780E-006	0.00000E+000	0.00000E+000	1.21796E-006
Pavers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Paving Equipment	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	2.79442E-006	2.79442E-006	0.00000E+000	0.00000E+000	0.00000E+000
Rollers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Rubber Tired Dozers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.08804E-006	1.08804E-006	0.00000E+000	0.00000E+000	1.07931E-006
Scrapers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.07103E-006	1.07103E-006	0.00000E+000	0.00000E+000	1.06244E-006
Tractors/Loaders/Backhoes	0.00000E+000	0.00000E+000	1.56650E-006	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.18787E-006	1.18787E-006	0.00000E+000	0.00000E+000	1.19101E-006
Welders	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.23729E-006	1.23729E-006	0.00000E+000	0.00000E+000	1.18474E-006

Fugitive Dust Mitigation

Yes/No	Mitigation Measure	Mitigation Input		Mitigation Input		Mitigation Input	
No	Soil Stabilizer for unpaved Roads	PM10 Reduction		PM2.5 Reduction			
No	Replace Ground Cover of Area Disturbed	PM10 Reduction		PM2.5 Reduction			
No	Water Exposed Area	PM10 Reduction		PM2.5 Reduction		Frequency (per day)	

No	Unpaved Road Mitigation	Moisture Content %		Vehicle Speed (mph)	0.00		
No	Clean Paved Road	% PM Reduction	0.00				

		Unmitigated		Mitigated		Percent Reduction	
Phase	Source	PM10	PM2.5	PM10	PM2.5	PM10	PM2.5
Architectural Coating	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	Roads	74.42	7.54	0.68	0.18	0.99	0.98
Architectural Coating 2	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating 2	Roads	15.24	1.54	0.14	0.04	0.99	0.98
Building Construction	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Building Construction	Roads	467.72	47.45	4.50	1.23	0.99	0.97
Building Construction 2	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Building Construction 2	Roads	95.80	9.72	0.92	0.25	0.99	0.97
Grading	Fugitive Dust	0.18	0.06	0.18	0.06	0.00	0.00
Grading	Roads	2.41	0.25	0.03	0.01	0.99	0.97
Paving	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Paving	Roads	0.06	0.01	0.00	0.00	0.99	0.98
Site Preparation	Fugitive Dust	0.06	0.03	0.06	0.03	0.00	0.00
Site Preparation	Roads	0.05	0.00	0.00	0.00	0.99	0.98

Operational Percent Reduction Summary

Category	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electricity	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Natural Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Indoor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Outdoor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Operational Mobile Mitigation

Project Setting:

Mitigation Selected	Category	Measure	% Reduction	Input Value 1	Input Value 2	Input Value 3
No	Land Use	Increase Density	0.00			
No	Land Use	Increase Diversity	0.19	0.47		
No	Land Use	Improve Walkability Design	0.00			
No	Land Use	Improve Destination Accessibility	0.00			
No	Land Use	Increase Transit Accessibility	0.25			
No	Land Use	Integrate Below Market Rate Housing	0.00			
	Land Use	Land Use SubTotal	0.00			

No	Neighborhood Enhancements	Improve Pedestrian Network				
No	Neighborhood Enhancements	Provide Traffic Calming Measures				
No	Neighborhood Enhancements	Implement NEV Network	0.00			
	Neighborhood Enhancements	Neighborhood Enhancements Subtotal	0.00			
No	Parking Policy Pricing	Limit Parking Supply	0.00			
No	Parking Policy Pricing	Unbundle Parking Costs	0.00			
No	Parking Policy Pricing	On-street Market Pricing	0.00			
	Parking Policy Pricing	Parking Policy Pricing Subtotal	0.00			
No	Transit Improvements	Provide BRT System	0.00			
No	Transit Improvements	Expand Transit Network	0.00			
No	Transit Improvements	Increase Transit Frequency	0.00			
	Transit Improvements	Transit Improvements Subtotal	0.00			
		Land Use and Site Enhancement Subtotal	0.00			
No	Commute	Implement Trip Reduction Program				
No	Commute	Transit Subsidy				
No	Commute	Implement Employee Parking "Cash Out"				
No	Commute	Workplace Parking Charge				
No	Commute	Encourage Telecommuting and Alternative Work Schedules	0.00			
No	Commute	Market Commute Trip Reduction Option	0.00			
No	Commute	Employee Vanpool/Shuttle	0.00		2.00	
No	Commute	Provide Ride Sharing Program				
	Commute	Commute Subtotal	0.00			

No	School Trip	Implement School Bus Program	0.00			
		Total VMT Reduction	0.00			

Area Mitigation

Measure Implemented	Mitigation Measure	Input Value
No	Only Natural Gas Hearth	
No	No Hearth	
No	Use Low VOC Cleaning Supplies	
No	Use Low VOC Paint (Residential Interior)	100.00
No	Use Low VOC Paint (Residential Exterior)	100.00
No	Use Low VOC Paint (Non-residential Interior)	150.00
No	Use Low VOC Paint (Non-residential Exterior)	150.00
No	Use Low VOC Paint (Parking)	150.00
No	% Electric Lawnmower	
No	% Electric Leafblower	
No	% Electric Chainsaw	

Energy Mitigation Measures

Measure Implemented	Mitigation Measure	Input Value 1	Input Value 2
No	Exceed Title 24		
No	Install High Efficiency Lighting		
No	On-site Renewable		

Appliance Type	Land Use Subtype	% Improvement
ClothWasher		30.00
DishWasher		15.00
Fan		50.00
Refrigerator		15.00

Water Mitigation Measures

Measure Implemented	Mitigation Measure	Input Value 1	Input Value 2
No	Apply Water Conservation on Strategy		
No	Use Reclaimed Water		
No	Use Grey Water		
No	Install low-flow bathroom faucet	32.00	
No	Install low-flow Kitchen faucet	18.00	
No	Install low-flow Toilet	20.00	
No	Install low-flow Shower	20.00	
No	Turf Reduction		
No	Use Water Efficient Irrigation Systems	6.10	
No	Water Efficient Landscape		

Solid Waste Mitigation

Mitigation Measures	Input Value

Institute Recycling and Composting Services Percent Reduction in Waste Disposed	

APPENDIX 3

RESOLUTION NO. 17-125, SERIES 2017

RESOLUTION OF THE CITY COUNCIL OF THE CITY OF DAVIS CERTIFYING THE FINAL ENVIRONMENTAL IMPACT REPORT FOR THE MACE RANCH INNOVATION CENTER PROJECT

WHEREAS, on September 25, 2014 the applicant filed with the City of Davis Planning Application #14-54 (including General Plan Amendment Application #6-14; Prezoning/ Preliminary Planned Development Application #4-14; and Development Agreement Application #2-14) for the Mace Ranch Innovation Center (MRIC) for up to 2,654,00 square feet of industrial, commercial, and retail uses on 212 acres located northeast of Mace Boulevard and Interstate 80 comprised of APNs 033-630-009, 033-650-009, and 033-650-026; and

WHEREAS, to ensure that an unincorporated island would not be created, among other reasons, the City included with the MRIC application the "Mace Triangle" properties assuming up to 71,056 acres of general commercial uses on 16.6 acres comprised of APNs 033-630-006, 033-630-011, and 033-630-012; and

WHEREAS, pursuant to the California Environmental Quality Act (Public Resources Code § 21000 *et seq.*) ("CEQA"), the City of Davis as the lead agency determined that an Environmental Impact Report ("EIR") should be prepared to analyze all potential adverse environmental impacts of the proposed MRIC and the Mace Triangle properties ("Proposed Project"); and

WHEREAS, the City prepared a Notice of Preparation ("NOP") of a Draft EIR (which can be found in Appendix A of the Draft EIR) which was circulated for 30-days commencing November 6, 2014 and ending December 8, 2014, to invite comments from responsible and trustee agencies, the public, and other interested parties regarding the scope of the EIR; and

WHEREAS, a duly noticed public scoping meeting was held November 17, 2014 for the purpose of informing the public about the project and the EIR, and receiving comments on the appropriate scope of the environmental analysis to be prepared; and

WHEREAS, the City received oral and written comments in response to the NOP (which are included in Appendix B of the Draft EIR) which assisted the City in determining the scope and analysis for the Draft EIR; and

WHEREAS, the Draft EIR (comprised of four volumes) was delivered to the State Clearinghouse (SCH #2014112012) and made available to all parties for a 47-day review and comment period commencing August 13, 2015 and ending September 28, 2015; and

WHEREAS, on September 1, 2015 the City Council voted to extend the public comment period on the Draft EIR to November 12, 2015 for community comments; and

WHEREAS, two duly noticed public comment meetings were held on the Draft EIR before the Planning Commission, the first on September 9, 2015 and the second on October 28, 2015; and

WHEREAS, eleven duly noticed public comment meetings were also held before five advisory commissions on the following dates:

Open Space and Habitat Commission: August 17, September 14, October 5, and November 2, 2015

Bicycle, Transportation, and Street Safety Commission: September 10 and October 8, 2015

Recreation and Park Commission: September 17 and October 15, 2015

Natural Resources Commission: September 28 and October 26, 2015

Finance and Budget Commission: September 14, 2015

WHEREAS, the City received oral and written comments on the Draft EIR during the public review period for the Draft EIR; and

WHEREAS, following the close of the public comment period and after review of the comments received on the Draft EIR, the City prepared and released on January 14, 2016, a Final EIR, consisting of three volumes containing comments received on the Draft EIR, written responses to those comments, revisions and errata to the Draft EIR, and various appendices; and

WHEREAS, on February 23, 2016, in response to a request from the applicant to consider a project alternative that included housing, the Council directed staff to continue to process the application as originally proposed (with no housing component); and

WHEREAS, on April 13, 2016 the applicant notified the City that they were putting the project "on hold" to re-evaluate its feasibility but did not withdraw the application; and

WHEREAS, on June 14, 2016, in response from a request by the applicant to consider revised project phasing and a bifurcated Measure R vote, the Council took no action; and

WHEREAS, on June 16, 2015 the applicant notified the City that they were "ceasing" their processing efforts on the project but did not withdraw the application; and

WHEREAS, on February 21, 2017 in response to an October 5, 2016 request from the applicant to certify the project FEIR, the Council directed staff to move forward with processing the request to certify the FEIR separate from any deliberation or action on the merits of the project; and

WHEREAS, on May 24 and July 19, 2017 the Planning Commission held two duly noticed public meetings to consider certification of the FEIR pursuant to Section 15090 of the State CEQA Guidelines, separate from any deliberation or action on the merits of the project, and voted to recommend certification to the City Council including a clarification to page 7-202 of the Draft EIR that the Mixed Use Alternative is only environmentally superior assuming a legally enforceable mechanism regarding employee occupancy of housing; specifically that at least one employee occupies 60 percent of the 850 on-site units; and

WHEREAS, on September 19, 2017 the City Council held a duly noticed public meeting to consider certification on the FEIR pursuant to Section 15090 of the State CEQA Guidelines, separate from any deliberation or action on the merits of the project; and

WHEREAS, Section 21000 et. seq. of the Public Resources Code and Section 15000 et. seq. of Title 14 of the California Code of Regulations (State CEQA Guidelines) which govern preparation, content, and processing of EIRs, have been fully implemented in the preparation of the FEIR; and

WHEREAS, the City Council has been presented with, reviewed, and considered the information and data in the administrative record pertaining to the preparation and adequacy of the FEIR, and oral and written evidence presented to it during the meetings and hearings on the FEIR, all of which are incorporated herein by this reference; and

WHEREAS, all other legal prerequisites to the adoption of this Resolution have occurred.

NOW THEREFORE, BE IT RESOLVED that the City Council of the City of Davis does hereby resolve as follows:

1. Certification of the FEIR. In accordance with State CEQA Guidelines section 15090, the City Council of the City of Davis hereby certifies that:

A. The Mace Ranch Innovation Center Project FEIR (SCH # 2014112012) is an accurate and objective analysis that has been completed in compliance with CEQA and the State CEQA Guidelines.

B. The City Council has been presented with, and has reviewed and considered, the information contained in the FEIR.

C. The FEIR reflects the independent judgment and analysis of the City Council.

D. The FEIR is hereby modified to including a clarification to page 7-202 of the Draft EIR that the Mixed Use Alternative is only environmentally superior assuming a legally enforceable mechanism regarding employee occupancy of housing; specifically that at least one employee occupies 60 percent of the 850 on-site units.

2. No Action on the Project. This action is not an approval of the project.

PASSED AND ADOPTED by the City Council of the City of Davis on this 19th day of September, 2017, by the following vote:

AYES: Arnold, Frerichs, Swanson, Davis

NOES: Lee

Robb Davis
Mayor

ATTEST:

Zoe S. Mirabile, CMC
City Clerk

APPENDIX 4

Aggie Research Campus

Transportation Demand Management Plan

LSC
TRANSPORTATION CONSULTANTS, INC.

Aggie Research Campus
Transportation Demand Management Plan

Prepared for

Ramco Enterprises, Buzz Oates, and Reynolds & Brown

Prepared by

LSC Transportation Consultants, Inc.
PO Box 5875
2690 Lake Forest Road, Suite C
Tahoe City, California, 96145
530 583-4053

April 7, 2020

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Chapter 1
Introduction

The Aggie Research Campus (ARC) is proposed to consist of commercial and advanced manufacturing employers, multifamily housing, and open space. The site consists of 187 acres immediately east of Mace Boulevard and north of 2nd Street, adjacent to the City of Davis (Davis) within unincorporated Yolo County.

The proponent of the project, Ramco Enterprises, Buzz Oates, and Reynolds & Brown, aware of the importance of reducing transportation and associated environmental effects of new development, has commissioned this Transportation Demand Management Study. Using the services of LSC Transportation Consultants, Inc., this study assesses existing alternative transportation modes serving the study area, analyzes current plans for improvements to these auto alternative modes, and provides strategies that the landowner can implement to expand alternative access.

The following chapter presents a summary of existing transit services and planning documents. This is then followed by a discussion of bicycle, pedestrian and microtransit conditions. An overall analysis of alternative transportation conditions is then provided. Finally, recommendations are provided for action items that can expand non-auto access and help meet local and regional goals for expansion in transit, pedestrian and bicycle travel.

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Chapter 2
Existing Transit Services

This chapter provides an overview of various transit systems serving the site as well as current plans for improvements. The site is currently directly served by two public transit programs, Yolobus and UNITRANS, as shown in Figure 1. In addition, the Capital Corridor Amtrak provides rail service to Davis and expands non-auto options to the site through local connections.

EXISTING SERVICE TO THE PROJECT SITE

Yolobus

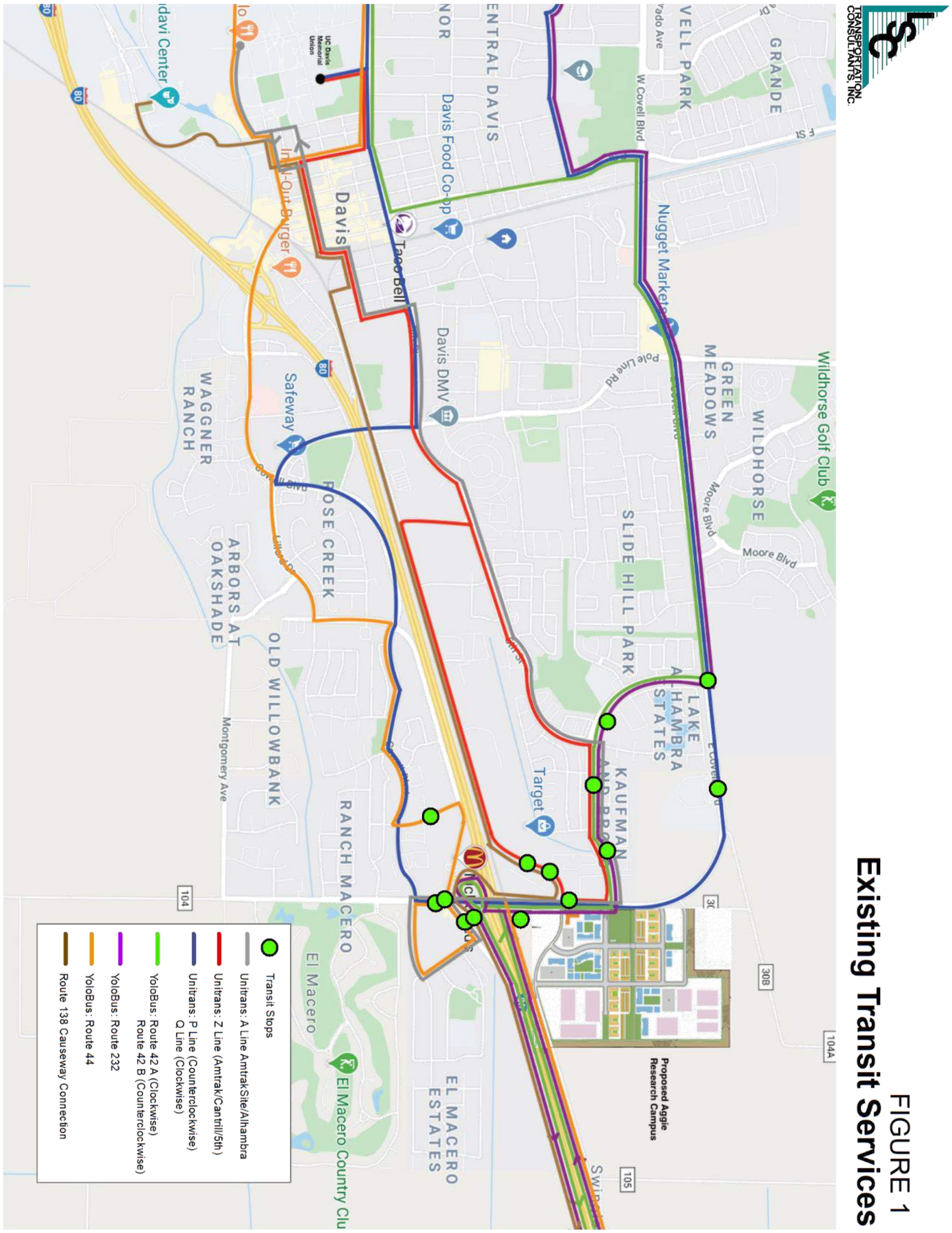
Yolobus currently runs 14 regular fixed route services, 5 commuter services, and 8 express bus services throughout Yolo County. Of these 27 services, 4 routes serve the proposed project area within the eastern Davis. The following provides a brief description of each route and their service hours:

- Routes 42A and 42B both provide hourly service, seven days a week. Route 42A is an intercity loop going clockwise, starting in downtown Sacramento, moving through West Sacramento, Davis, Woodland, the Sacramento Airport, and ending in downtown Sacramento. Route 42B is an intercity loop going counter-clockwise, opposite the 42A. Service along these routes are provided between 4:30 AM and 11:45 PM Monday through Friday, and 6:30 AM to 10:45 PM Saturdays, Sundays and holidays.

  Popular destinations and major transfer points for connections to other routes include: Woodland County Fair Mall Transit Center, UC Davis Memorial Union Terminal (connections with Unitrans & Solano), West Sacramento Transit Center, and downtown Sacramento (connections with Sacramento Regional Transit and other regional agencies).

- Route 232 is an express bus providing one morning and one afternoon trip during weekdays only between central and east Davis and downtown Sacramento. Service on this route is provided between 6:30 AM and 7:30 AM and between 5:30 PM and 7:00 PM.

FIGURE 1
Existing Transit Services



- Route 44 is an express bus providing three morning and three afternoon trips during weekdays only between central and south Davis and downtown Sacramento. Service is provided between 6:00 AM and 8:30 AM and between 4:15 PM and 6:15 PM.

- Route 138 - The "Causeway Connection" was planned to begin service April 6th, 2020 but due to recent Covid-19 precautions, has been postponed to April 30th. This service will be run by Yolobus in partnership with Sacramento Regional Transit to connect Davis with the UC Davis Medical Center in Sacramento. This service will also serve the Mace Boulevard Park and Ride as one of its stops in Davis between the hours of 6 AM and 8 AM with return drop off between 4 PM and 8 PM. The Causeway Connection is fully electric and will operate Monday through Friday between the hours of 6:15 AM and 8:50 PM. It will provide service between the site and downtown Sacramento / UC Davis Med Center within roughly 30 minutes.

UNITRANS

The UNITRANS program, operated by the Associated Students of UC Davis (ASUCD), provides 19 fixed routes within Davis. Of these services, four routes currently serve the proposed project area on a half-hourly basis. The following provides a brief description of each route and their service hours:

- The A Line provides service every 30 minutes Monday through Thursday between 6:50 AM and 11:00 PM and Friday from 6:53 AM to 9:00 PM. The service runs between the UC Davis Silo east towards the Amtrak station with stops located along 5th street near the Post Office, DMV, and Police Department. The route continues down Mace Boulevard to the Park and Ride lots located along El Cemonte Avenue before returning along the same route west towards the Silo.

- The P and Q Lines provide service seven days a week. Regular service is provided every 30 minutes Monday through Thursday from 6:30 AM to 11:00 PM, Friday from 6:30 AM to 9:00 PM, and hourly service on weekends from 8:20 AM to 7:00 PM. These services are described as being the Davis "perimeter" lines as they travel along Covell and 14th Street on the north side of Davis and along Cowell and Russell on the south s ide of Davis.

- The Z Line runs Monday through Friday from 7:00 AM to 6:50 PM with 30-minute headways. This route begins at the Memorial Union stop, heads east on Russell before turning south on B Street. Its route is similar to the A Line but rather than continuing

down Mace Boulevard towards the Park and Ride lot, it turns west on 2nd Street and loops back up the 5th Street before returning back towards Memorial Union.

Major Bus Stop Average Daily Boarding and Alightings

As shown in Figure 1, there are nine bus stops within ½ mile walking distance to the proposed project site. The stops average daily usage is summarized in Table 1. As shown, the transit stop located at 2nd Street and Target has the most average daily use (100 passengers a day), followed by Alhambra Drive and Mace Boulevard (97.6 passengers a day).

TABLE 1: UNITRANS Boarding and Alightings within 1/2 Mile of ARC

Bus Stop		Total Daily Boarding & Alightings	Amenities
2nd St. & Target Drive (WB)		100.0	Shelter & Bench
Alhambra Dr & Mace Blvd (EB)		97.6	Bus Stop Sign Only
Mace Blvd & Cowell Blvd (NB)		74.2	Bus Stop Sign Only
Mace Blvd & Chiles Rd (SB)		73.9	Bus Stop Sign Only
Cowell & Mace Blvd (WB)		66.3	Bus Stop Sign Only
Alhambra Dr & Mace Blvd (WB)		65.7	Bus Stop Sign Only
Mace Blvd & 2nd St (SB)		52.6	Bus Stop Sign Only
Mace Blvd & 2nd St (NB)		45.8	Bus Stop Sign Only
Covell & Mace Blvd (EB)		33.1	Bus Stop Sign Only
	Total	**609.1**	

Source: UNITRANS Ridership FY 2018-19

Transit systems serving small to mid-sized cities typically strive to provide seating (such as a bench) for stops that average 5 or more boardings per day, and shelter for stops that average 10 or more boardings per day. Currently, the only bus stop with a shelter and bench is located at the 2nd Street Target bus stop. None of the other transit stops located in the proximity of the project site have large enough sidewalk pads, shelters, benches, wayfinding signage, or bicycle racks to facilitate high rates of average daily ridership.

Amtrak Capitol Corridor

The Capitol Corridor is an intercity passenger train system that provides service along the congested Interstate (I-) 80, I-680 and I-880 freeways through 18 stations in 8 Northern California counties: Placer, Sacramento, Yolo, Solano, Contra Costa, Alameda, San Francisco,

and Santa Clara. The service is a partnership between Amtrak, Caltrans, and the Union Pacific Railyard with 11 trains running east- and westbound through the Davis station between 4:50 AM and 12:12 AM Monday through Friday and between 6:25 AM and 11:40 PM Saturdays and Sundays. There are future planned expansions between Roseville and the Capital Corridor outlined in the *Capital Corridor Vision Plan,* which include expansion to up to 40 trains per day in each direction. The timeline of these improvements is currently unknown.

PLANNED EXPANSION OF SERVICE TO THE PROJECT SITE

The most recent Yolo County Transportation District (YCTD) Short Range Transit Plan (SRTP) was prepared by the Sacramento Area County of Governments (SACOG). The SRTP analyzed issues specific to Yolobus's service to Davis and presented recommendations to accommodate increased student ridership between Woodland and UC Davis through route and schedule alternatives to Routes 42 and 242 (which both currently serve the proposed project's location). Alternatives to ease over-crowding on Route 42 included the addition of one bus throughout the entire day of service or the use of an additional bus only during peak capacity times (commuting AM and PM hours).

Most recently, YCTD completed a 2020 Comprehensive Operational Analysis (COA) focusing on current conditions, cost allocation methodology, administrative policies, and operational performance. A thorough review of both their Yolo County fixed route and ADA paratransit services was presented for public input through a series of outreach meetings and stakeholder interviews. The analysis concluded with the following recommendations affecting service to the project site:

- Increase weekday frequency on Routes 42A/42B to every 30 minutes.
- Streamline Routes 42A/42B in downtown Sacramento and consider streamlining Routes 42A/42B in Davis. The streamlining of 42A/42B maintains its current Mace Boulevard services.
- Discontinue unproductive service to reduce the financial impact of 30-minute service on Routes 42A/42B. Single-trip express/commute routes, local Route 35 in West Sacramento, and other express/commute routes are proposed for discontinuation depending on the financial scenario.

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Chapter 3

Bicycle, Pedestrian and Micromobility Conditions

Davis has over 70 miles of pathways and 50 miles of bicycle lanes. A total of 75 percent of all roads have a speed limit of 25 miles per hour and with 25 at-grade separated crossings 4 overpasses and 21 underpass crossings, the city is one of the most bicycle friendly areas in the Sacramento-Bay Area region. The following provides an overview of existing bicycle and pedestrian facilities serving the project site as well as planned improvements.

EXISTING BICYCLE AND PEDESTRIAN FACILITIES SERVING THE SITE

As shown in Figure 2, there are two protected shared bicycle and pedestrian paths and six major bicycle lanes serving the project site. As part of the greater Davis mobility network, there is a protected shared pedestrian and bicycle path along both sides of Alhambra Drive from Covell Boulevard to Mace Boulevard. These paths link to the neighborhoods both north and south of Alhambra Drive. On this same corridor there is a Class II separated bicycle lane on both sides of the street as well. The other two sets of Class II bicycle lanes run north and south along Mace Boulevard/Covell Boulevard as well as east and west along 2nd Street.

PLANNED IMPROVEMENTS NEAR THE PROJECT SITE

Planned bicycle improvements are also shown in Figure 2. Davis plans to initiate design for safety-related improvements on 2nd Street between Mace Boulevard and L Street over the next year. There are also design revisions currently occurring to the recently constructed improvements on Mace Boulevard just south of the I-80, between Cowell Boulevard and Red Bud Drive. Lastly there are road realignments and safety improvements in conceptual design for County Road 32A at County Road 105 in Yolo County.

In addition to the city-planned bicycle infrastructure improvements, the ARC proposes the addition of a 2 ¼ mile long bike path and adjacent pedestrian trail encircling the site. This bike path would connect to the existing Class II bike lane located along CR 32A at the project's southeastern corner. The Class II bike lane on CR 32A provides connectivity to the following:

- Old Lincoln Highway Class I (separated) bike path along I-80 via the Union Pacific Railroad (UPRR) train tracks at-grade crossing.
- Class II (striped) bicycle lanes on CR 32A east of CR 105 and the UPRR crossing.

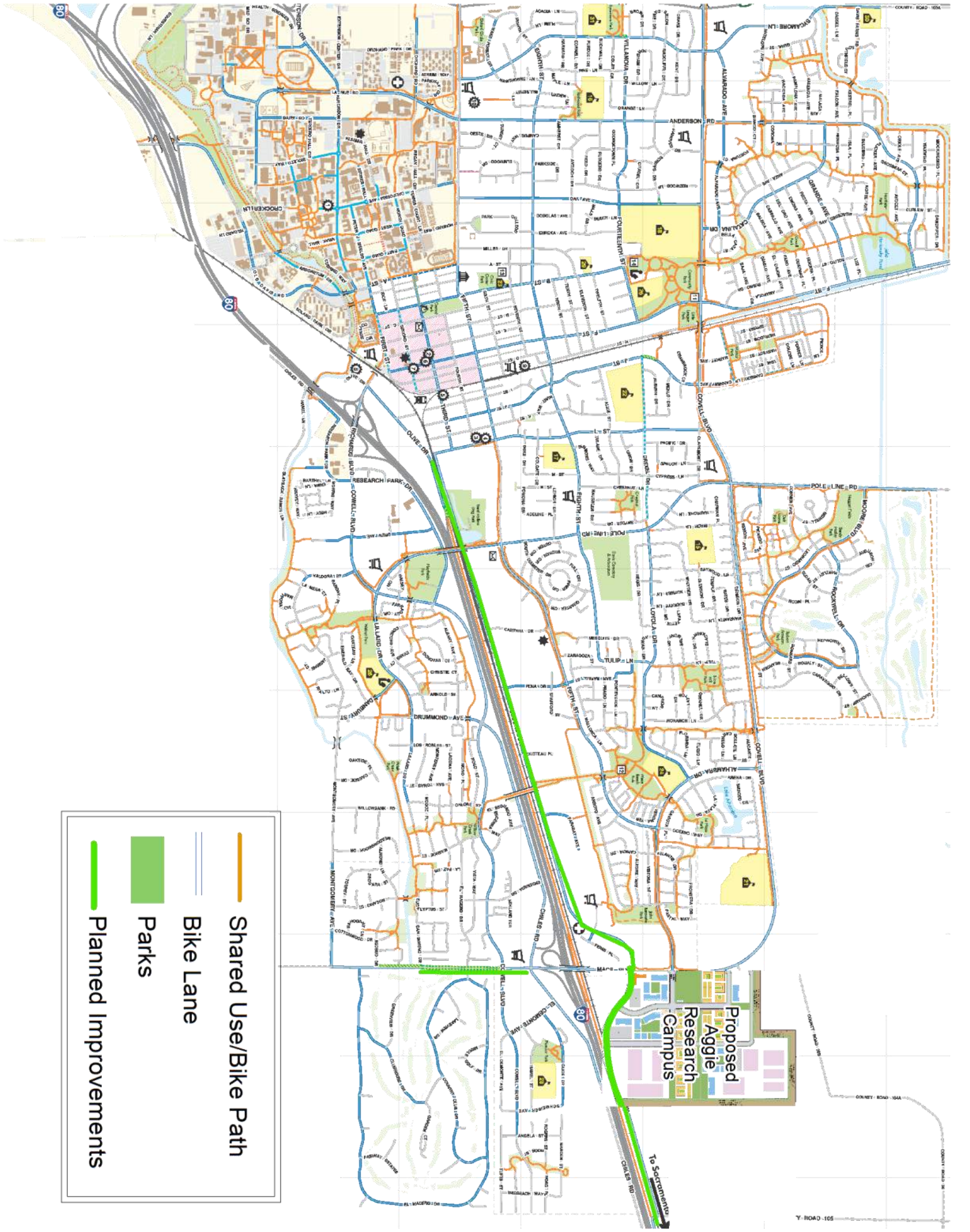

FIGURE 2
Existing Bicycle Facilities

- Class I bicycle path on the Yolo Causeway.

- Class II (striped) bicycle lanes on CR 32A east of CR 105 and the UPRR crossing.

- Class I bicycle path on the Yolo Causeway.

EXISTING MICROMOBILITY SERVICES

JUMP provides on-demand bicycle rental through an app-based program throughout Davis. JUMP currently has approximately 150 electric-assist bicycles operating in the area. However, during the COVID-19 outbreak, they have reclaimed their bicycles and will redeploy once it is safe to do so. While JUMP also offers electric scooter rental in other regions, electric scooter-share is prohibited by City of Davis Ordinance 22.18.020.

Current JUMP electric bicycle charging stations are located at The Spoke Apartment complex at 8th Street and J Street. There are also plans to install two additional charging stations at Davis City Hall (Between A and B Street along Russell Boulevard) and within ¼ mile of the project site at the Residence Inn on Fermi Place and Mace Boulevard.

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Chapter 4
Transportation and Mobility Analysis

This chapter provides a summary of the proposed project followed by an analysis of existing transit and mobility services as they relate directly to the project.

Project Description

The proposed ARC project is located on a 187-acre site northeast of Mace Boulevard and 2nd Street. ARC is approximately 2.5 miles east of downtown Davis, 3 miles from UC Davis, and 10 miles west of downtown Sacramento and the State Capitol. Once completed, the development will include a total of 2,654,000 square feet of commercial uses such as office, research, laboratory, prototyping, and advanced manufacturing (Table 2).

TABLE 2: ARC Project Land Uses by Type

Land Use	Size
Office, Research, and Development/Laboratory	1,510,000 sf
Advanced Manufacturing/Prototyping	884,000 sf
Residential (avg. density 30 units per acre)	850 Units
Ancillary Retail	100,000 sf
Hotel/Conference	160,000 sf
Green Space	49.1 acres
Transit Plaza	0.6 acres
Total Acres	**187**
Total Square Footage	**2,654,000**

Source: Project Description, October 23, 2019

At completion, there will also be 850 residential units of varying size and affordability in addition to supportive uses such as hotel, conference, and retail space. The project is estimated to provide approximately 5,882 jobs[1] and 2,119 project residents according to Appendix F:

[1] ARC employment estimates taken from the *City of Davis Economic Evaluation of Innovation Park Proposals* (BAE, 2015)

Transportation Impact Analysis of the Aggie Research Campus Subsequent Environmental Impact Report Draft (March 2020).

Existing Commute Patterns

Table 3 summarizes commute patterns gathered by the US Census 2017 Longitudinal Employer Household Dynamics (LEHD). It is important to consider that this data does not include the commute patterns of UC Davis faculty and residents which, though distinct and unique, are undeniably tied to the City of Davis. It also includes information for employees that do not necessarily report to work on a daily or consistent basis and can include persons who have a permanent residence in one location but stay elsewhere during their work week. Nevertheless, despite these omissions, the LEHD provides the best available picture of commuting patterns associated with the City of Davis.

TABLE 3: City of Davis Commute Patterns

Where Davis Residents Work		
City/Town	**# of Persons**	**% of Total**
Sacramento	4,619	18.8%
City of Davis	4,197	17.1%
City of Woodland	949	3.9%
City of Vacaville	540	2.2%
Fairfield	457	1.9%
Roseville	443	1.8%
San Francisco	421	1.7%
West Sacramento	406	1.7%
Arden-Arcade CDP	329	1.3%
Rancho Cordova	275	1.1%
All Other Locations	11,921	48.5%
Total	***24,557***	-

Where Employees Working in Davis Commute From		
City/Town	**# of Persons**	**% of Total**
City of Davis	4,197	27.7%
Sacramento	1,570	10.3%
City of Woodland	1,285	8.5%
West Sacramento	465	3.1%
City of Vacaville	402	2.6%
City of Dixon	343	2.3%
City Elk Grove	329	2.2%
San Jose	164	1.1%
Arden-Arcade	163	1.1%
San Francisco	163	1.1%
All Other Locations	6,097	40.2%
Total	***15,178***	-

Source: LEHD Census Data, 2017

As shown in Table 3, nearly 19 percent of working residents living in Davis work in Sacramento. Another 15 percent of all working-aged residents commute to other neighboring communities such as Woodland, Vacaville, Fairfield, and Roseville. Only about 17 percent of Davis residents work in Davis (though it can be assumed that a portion of those captured within "All Other Locations" work at UC Davis). Of the 48.5 percent of Davis residents working at All Other Locations, those not working at UCD are either physically commuting to, or remotely working from, areas such as Stockton, Pleasanton, San Jose and Oakland. Even without the exact UC Davis data, it is safe to surmise that the majority of working Davis residents commute out of town for employment.

On the other side of Table 3, amongst those currently working within Davis, 27.7 percent of them are also residents of Davis, followed by 10.3 percent commuting from Sacramento and 8.5 percent commuting from the City of Woodland. Another 13.4 percent of those working in Davis commute from the neighboring communities of West Sacramento, Vacaville, Dixon, and Elk Grove. The remaining 40.2 percent of those working to Davis include those coming from areas such as Stockton, Yuba City, Roseville, and Fairfield. In sum, Davis imports a considerable percentage of its workforce but primarily from Sacramento and the immediately adjacent jurisdictions.

Fixed Route Transit Access

The average walking distance to be considered "accessible" to a pedestrian is between ¼ and ½ mile. Figure 3 indicates the various transit stops within these distances. As shown in Figures 1 and 3, the following transit stops and transit services are within ¼ mile of the project site:

- Alhambra Drive and Mace Boulevard (westbound/eastbound)
    - Served by UNITRANS Lines A and Z and Yolobus Routes 42 A/B and 232.

- Mace Boulevard and 2nd Street (northbound/southbound)
    - Served by UNITRANS Lines A, Z, P, Q and Yolobus Routes 42 A/B, 43, 232 and Yolobus/SACRT Route 138 Causeway Connection

The following transit stops and transit services are within ½ mile of the project site:

- 2nd Street and Target (westbound)
    - Served by UNITRANS O and Yolobus/SACRT Route 138 Causeway Connection

- Chiles Road and Mace Boulevard (southbound/northbound)
    - Served by UNITRANS A, P, Q and Yolobus Routes 44, 232

- Chiles Road and Mace Boulevard (eastbound)
    - Served by UNITRANS A and Yolobus Route 42 A/B, 44, 232, 232

Summary of Existing Transit Accessibility to the Site

Considered as a whole, the existing transit services provide the ability for ARC employees and residents to travel to and from the following communities with the identified travel times:

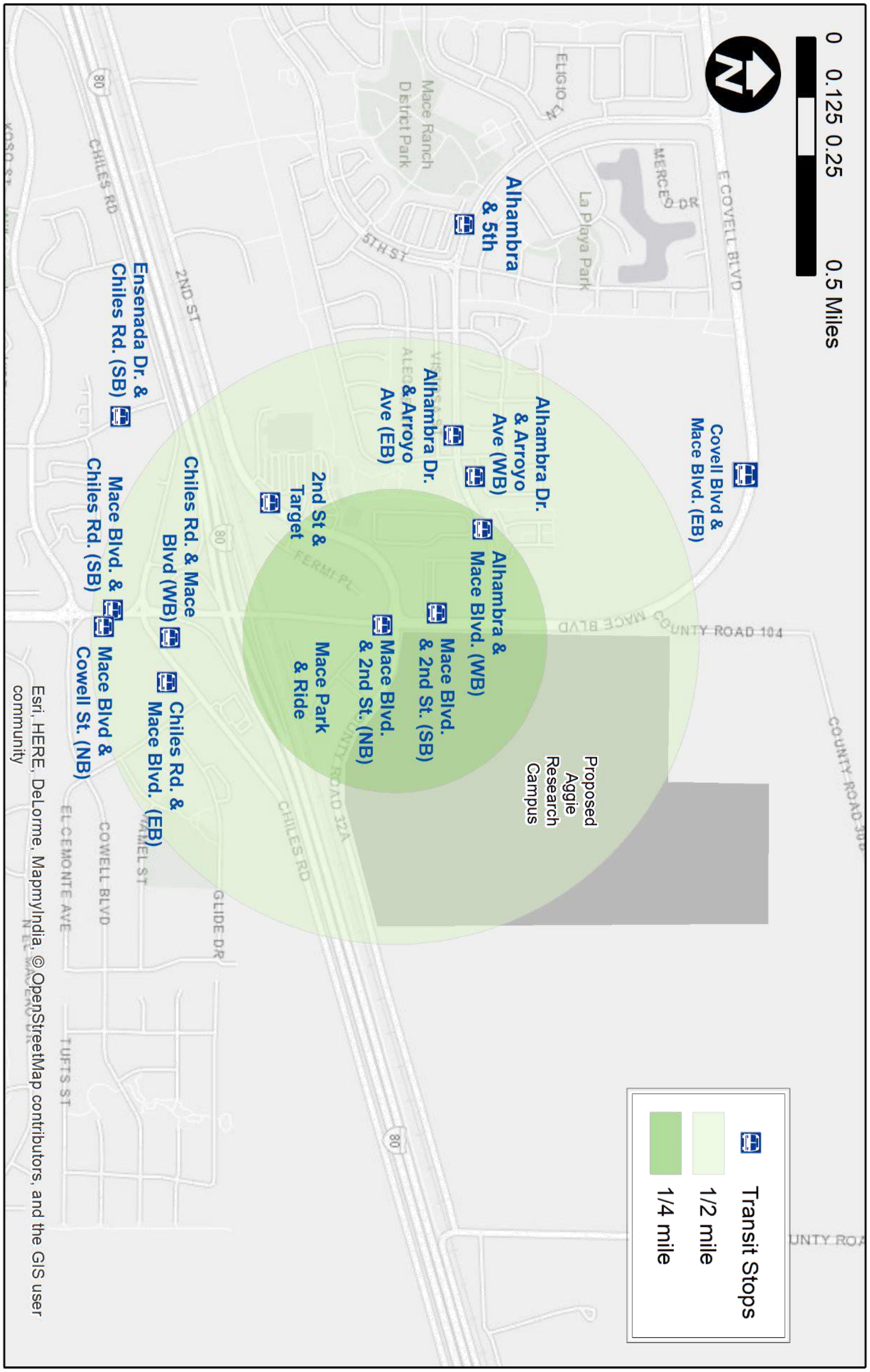

FIGURE 3
Existing Transit Stops within ½ and ¼ Mile

15-Minute Travel Time

- Davis Neighborhoods of Wildhorse, Green Meadows, Covell Farms, Slide Hill Park, Lake Alhambra, Kaufman and Broad, Mace Ranch, Rancho Yolo, Ranch Macero, Willowcreek, and El Macero Estates.

30-Minute Travel Time

- Davis Neighborhoods of Rose Creek, Willowbank, South Cape, Wagner Ranch, Arbors at Oakshade, Arrowhead, Covell Park, Central Davis, Evergreen Meadows, Aspen, Stonegate, and UC Davis.

- West Sacramento

60-Minute Travel Time

- One may take a 20 minute bus ride to and from the Amtrak Capitol Corridor station in Davis, followed by a 33-minute train ride to and from the Sacramento Valley station for a total of 53-55 minutes.

- The 42 A/B provides 45 minute service between Mace Boulevard and downtown Sacramento.

Future Transit Accessibility

Planned expansion of transit services will expand the areas that can be reached by public transit within various travel times. In particular, Route 138 (the Causeway Connection) will provide 30-minute service from the Mace Boulevard Park and Ride to the UC Davis Medical Center. The inter-regional commuter will pick passengers up from the Mace Park and Ride at 6:23 AM, 7:10 AM, 8:10 AM, and 9:10 AM with return service to the Park and Ride at 4:16 PM, 5:16 PM and 6:10 PM.

Discussion of Transit Demand

The key generators of demand for transit services will be the employment on site and residents.

Employment Transit Demand

At buildout, ARC will be a major employment center. The most recent available data (2017) indicates 15,178 jobs in the City of Davis (per the *American Community Survey*), while ARC is forecast to add 5,882 new jobs. Setting aside job growth in other areas of Davis, if built today ARC would constitute 28 percent of all employment in Davis.

Persons employed within ARC will have a substantial number of convenient transit options to commute to and from the site:

- UNITRANS provides a total of 82 arrivals to ARC (and an equal number of departures) each weekday over the 4 routes serving the site, from 6:30 AM to 10:00 PM, providing service within 30 minutes to all of Davis.

- Yolobus currently provides a total of 40 arrivals from Woodland (an increasingly important location of relatively affordable housing) and 6 arrivals from West Sacramento and Sacramento each weekday, from 6:30 AM to 10:30 PM. The new Causeway Connection will add 3 new daily arrivals and will reduce travel times to downtown and mid-town Sacramento to roughly a half-hour.

- The *Capital Corridor* rail service provides 11 trains per day that provide regional access from the Bay Area and Sacramento Region. As I-80 congestion increases, this is an increasingly attractive commute mode, and is now the third-busiest passenger rail route in the nation. Of note, existing UNITRANS routes already provide a total of 52 daily trips from the Amtrak train station to the ARC site (typically a 20 minute trip), from roughly 7:00 AM to 10:00 PM and up to 4 trips per hour per direction.

Travel Mode Share

City of Davis

As shown in Table 4, 7.2 percent of Davis residents commute by public transit. To a degree, this figure reflects the unique travel characteristics of the UC Davis campus. A more realistic "transit mode split" is 3.5 percent, consistent with the average proportion of commuting by transit for the Sacramento Region as a whole. Applying this figure to the 5,882 jobs indicates a daily transit ridership generation of approximately 410 one-way passenger-trips. Over the course of a year, this is equal to roughly 103,000 additional passenger boardings.

TABLE 4: Davis Commuter Mode of Travel		
	Population	
Mode	**#**	**%**
Car Truck or Van	19,257	60.3%
Drove Alone	17,469	54.7%
Bicycled	6,004	18.8%
Public Transportation	2,299	7.2%
Carpooled	1,820	5.7%
Walked	958	3.0%
Taxi	479	1.5%
Worked at Home	2,938	9.2%
Total Workforce	*31,936*	-

Source: 2018 American Community Survey Census Data

UC Davis Campus

The most recently completed UC Davis Campus Travel Survey (2018-19) found that about 45,000 people physically travel to and from the UC Davis campus on an average weekday. Of those surveyed, 37 percent bicycled, 31 percent drove alone, 16 percent rode the bus, 9 percent walk or skate, 6 percent carpool or get a ride, 1 percent ride the train, and 0.4 percent use ride hailing services such as Lyft and Uber. This survey indicated that nearly 62 percent of those travelling to and from campus do not use a personal vehicle to do so.

Resident Transit Demand

ARC residents will also benefit from the high level of existing (and higher level of future) transit accessibility of the site. In particular, the high frequency of UNITRANS service providing connections to shopping, downtown, UC Davis and the train station will make transit a convenient mode for many travel needs. A reasonably conservative transit mode split for ARC residents is 5 percent. As identified in the ARC Transportation Impact Study, there will be 5,179 total vehicle-trips generated (prior to the non-auto reduction). This value multiplied by the 5 percent transit mode split indicates that transit service reduces the total residential trip generation by 259 daily vehicle-trips. At a typical average vehicle occupancy of 1.7 persons per vehicle, this equates to 440 passenger-trips per weekday. As weekend daily transit ridership is

typically on the order of half that of weekday ridership, over the course of the year this equates to 132,000 transit passenger-trips.

Total Transit Demand

In total, at buildout the ARC will generate approximately 860 new transit boardings per weekday, or 237,000 boardings over the course of a year. At buildout, this level of transit ridership will warrant routes that deviate off of Mace Boulevard to serve an internal transit hub (and avoids the need for half of the passengers to cross Mace Boulevard). However, during the initial phases of development when demand is relatively low, it is good transit route planning to keep the routes on Mace Boulevard, serving improved bus stops on either side of the street.

Summary of Bicycle and Pedestrian Accessibility to the Site

The project site currently has good bicycle/pedestrian accessibility, particularly provided by the Class I shared use paths along Alhambra Drive and the 5th Street Corridor. Planned improvements (including a grade separated path across Mace Boulevard and connections to the eastern end of the existing Class I facility at Frances Harper Junior High School, and improved connections to the Yolo Causeway Class I facility) will further enhance bicycling and walking as viable options for travel to/from the site.

Figure 4 depicts the areas of Davis that are accessible by bicycle within a 10-minute, 20-minute and 30-minute travel time. As shown, virtually all of the city as well as the UC Davis campus is within a 30-minute travel time by bicycle. Downtown Davis as well as the Davis Senior High School is within a 20-minute ride. A 10-minute ride from the site allows access to supermarkets, parks and the junior high school. Along with the bicycle-supportive TDM policies proposed for the development, bicycling and (to a lesser degree) walking are viable travel modes for ARC employees and residents.

Micromobility

As discussed in the previous chapter, bicycle and pedestrian infrastructure is robust with most of its infrastructure occurring nearest the University and downtown. According to the 2018 American Community Survey, approximately 19 percent of those commuting within Davis (Table 4)

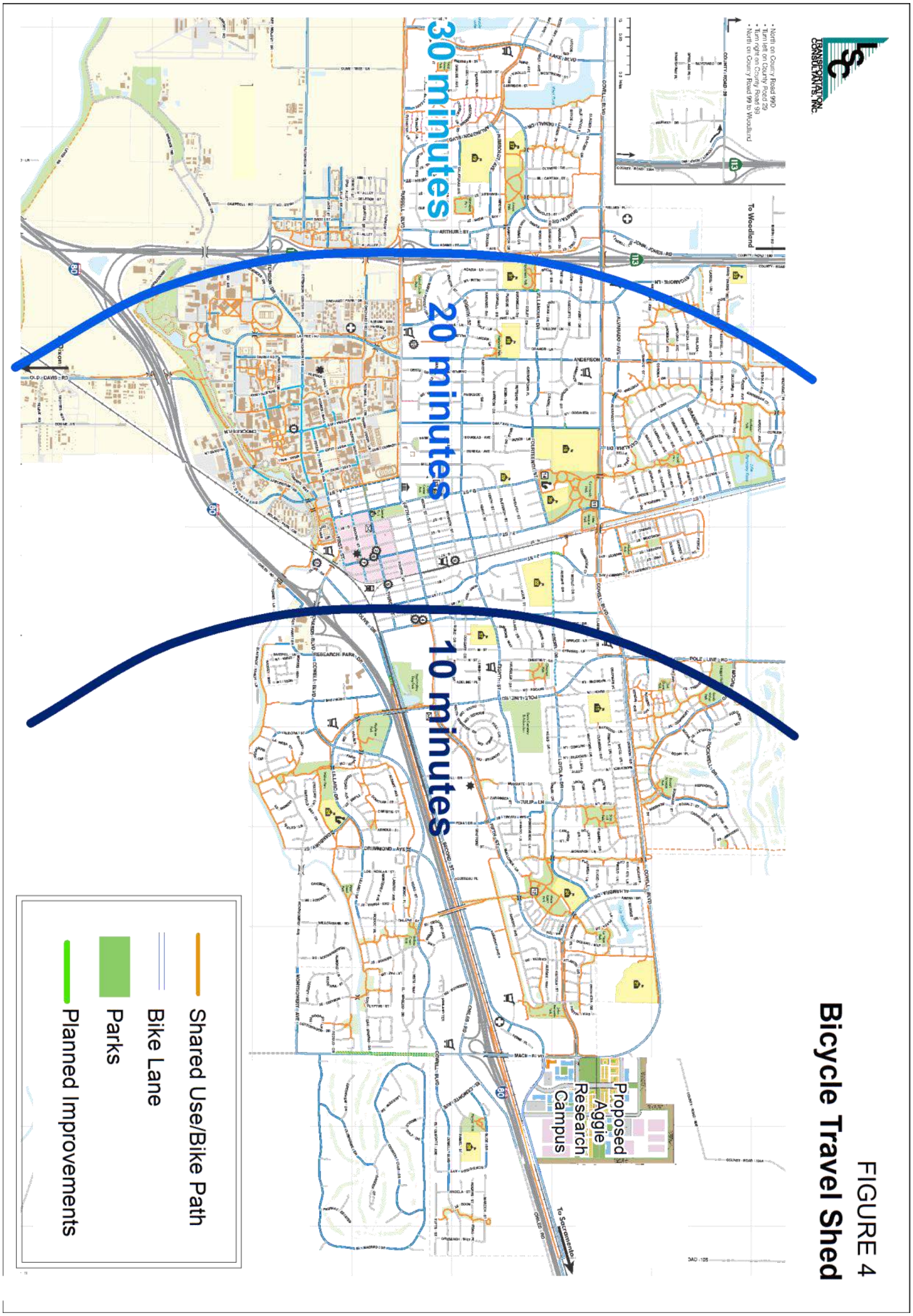

FIGURE 4
Bicycle Travel Shed

Those who typically travel by bicycle do so for approximately 10 minutes or 2 miles. As shown in Figure 4, there are two major commercial centers located within a 2 mile bicycle ride from the site: the Target shopping center along 2nd Street and the Nugget Market shopping center south of I-80 at Chiles Road and Mace Boulevard. In addition to accessibility to nearby activity centers, the southeast corner of the project site connects to the Yolo Causeway via CR 32A. To support the existing JUMP bicycle infrastructure within Davis, a charging station is currently being designed within ¼ mile of the project site on Fermi Place and Mace Boulevard (Residence Inn).

Chapter 5
Transportation Demand Management Program

This chapter outlines potential transit and micromobility improvements to better serve ARC. The following transportation demand management (TDM) program recommendations have the most potential to reduce vehicle trips, vehicle miles travelled (VMT), and greenhouse gas emissions.

1. Transit Incentives and Improvements

<u>Action 1.1: Improve Existing Bus Stop Infrastructure</u>

Increasing concrete sidewalk pads, shelters, seating and bicycle racks at the major bus stops near the project site would greatly improve existing facilities that are lacking. These added amenities have the capacity to increase ridership by 5 to 10 percent and are vital in attracting discretionary riders.

<u>Action 1.2: Provide Transit Subsidies</u>

Offering free transit passes to those working and living on the project site encourages transit use. Subsidies may be provided by either employers or property managers depending on agreements with local transit providers. Providing “free rides” typically generates a 40 to 50 percent increase in ridership.

<u>Action 1.3: Improve Amtrak Station Connections</u>

Coordinating with the City of Davis to provide fair-share funding for improved bus connections with the Davis Amtrak Station would encourage increased ridership. These improved connections could include a shuttle bus or other similar efforts. Providing convenient access to the Capital Corridor railway system can expand the ability for people living throughout the I-80 corridor (from Roseville to the Bay Area) to access ARC employment opportunities, while allowing ARC residents to access jobs throughout the corridor as well.

<u>Action 1.4: Research Campus Transportation Coordinator</u>

Requiring residential property managers and future employer tenants to join the Yolo TMA and designate a Transportation Coordinator would better assist residents and employees with

transit trip planning. Designating a single contact person responsible for alternative transportation helps to ensure long-term focus on alternative modes of travel and reduced auto use overall.

2. Bicycle, Pedestrian and Micromobility Infrastructure Improvements

Action 2.1: Encourage Bicycle Share Programs

Incentives and subsidies for employees and residents to use local bicycle share programs, such as JUMP, may be provided by either employers or property managers. This would encourage bicycle use throughout Davis while providing first and last mile connections between transit stops and ARC employment and housing.

Action 2.2: Provide Micromobility Infrastructure throughout ARC

Constructing multiple bicycle facilities for those using their own or shared micromobility alternatives would further promote cycling to, from, and within the project site. Providing bicycle lanes, protected bicycle paths, racks, and proper lighting is important for supporting cycling safety. The project may also provide a charging station on-site for bicycle share programs such as JUMP. Providing convenient locations for bicycle parking, bicycle share, and connecting facilities near transit stops support first and last mile connections for cycling commuters as well.

Action 2.3: Bicycle Route Enhancements

Contributing funding towards bicycle route enhancements will better connect the project to existing and proposed infrastructure. These improvements would include those described in the project description and project EIR. The following bicycle route enhancements are currently planned to support the ARC project:

- Construction of a 2 ¼ mile bicycle and pedestrian path surrounding the northern and eastern boundaries of the project site.

- Installation of a grade-separated bicycle and pedestrian crossing at Mace Boulevard.

- Extension of existing bicycle lanes up around the Mace Boulevard curve towards Covell Boulevard.

- Construction of a connection to the existing Class II bicycle lane on CR 32A at the project's southeastern corner. The Class II bike lane on CR 32A provides connectivity to the following: 1) Old Lincoln Highway Class I (separated) bike path along Interstate 80 (I-80) via the Union Pacific Railroad (UPRR) train tracks at-grade crossing; 2) Class II (striped) bicycle lanes on CR 32A east of CR 105 and the UPRR crossing; and 3) Class I bicycle path on the Yolo Causeway.

Action 2.4: Bicycle Repair Facilities

Providing bicycle repair stations throughout site (to include air compressor, allen wrenches, and tire levers) encourages bicycle ridership and ensures a sense of safety in the case of bicycle mechanical issues for cycling commuters.

Action 2.5: End-of-Trip Bicycle Support Facilities

Supplying end-of-trip facilities for major on-site employers such as showers, lockers, and changing rooms is most important to those making longer bicycle commute trips by bicycle, such as causeway cyclists from Sacramento and West Sacramento

Action 2.6: Bicycle Storage Rooms

Requiring internal and secure bicycle storage rooms and/or bicycle lockers of sufficient capacity to accommodate minimum required long-term bicycle parking spaces near each residential building and employer entrances encourages people to ride their bikes as a primary means of transportation. These rooms and/or lockers should be located on the ground floor so they can provide easy access to and from bicycle infrastructure on site such as bicycle lanes and multi-use paths.

3. Parking Pricing and Supply Management

Action 3.1: Rent or Lease Residential Parking Spaces

"Unbundled parking" is the act of providing on-site parking separate from residential units. The project could implement unbundled parking from their multifamily-residential in an effort to discourage auto-use to and from ARC. Recent research has suggested that unbundled parking methods can reduce VMT by 3 to 13 percent.[2]

[2] Quantifying Greenhouse Gas Mitigation Measures, California Air Pollution Control Officers Association, 2010.

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Kimley»Horn

Memorandum

To: Dan Ramos, Aggie Research Campus Project Manager

From: Darryl dePencier, AICP, GISP, RSP$_1$
Matt Weir, P.E., T.E., PTOE

Re: Aggie Research Campus
Vehicle Miles Traveled (VMT) Review – *Davis, California*

Date: April 27, 2020

With the passage of SB 743, VMT has become an important indicator for determining if a new development will result in a "significant transportation impact". Although jurisdictions (lead agencies) have until July 1, 2020, to adopt thresholds of significance and fully implement the requirements of SB 743, it is increasingly becoming a best practice to provide this information to clarify a development's potential impact even if a jurisdiction has yet to fully implement the act as is the case with the City of Davis.

VMT simply describes the amount of traffic that covers a distance (vehicles x miles travelled = VMT). VMT in its most simple form is influenced by two fundamental transportation considerations*: trip generation* (the number of trips generated by a land use) and *average trip length* (the average distance traveled by trips).

The Aggie Research Campus's *Draft Subsequent Environmental Impact Report (SEIR)*[1] and *Transportation Impact Study*[2] evaluate the VMT impacts associated with the proposed development project. This analysis determines the Project's VMT impacts to be significant and unavoidable because they do not achieve the reduction targets identified in the report.

While methods used to calculate and the project's VMT values follow common best practices, it is our professional opinion that the analysis utilizes conservative estimates. Stated another way, while we believe that the analysis documented in the SEIR is technically sound, there are several contributing factors that suggest that the actual VMT of the development at full build-out will be less than indicated in the SEIR and which warrant noting for the benefit of the decisionmakers. These factors include:

- *Intercept Commutes*: Sacramento Region commuters that divert to the site from current Bay Area employment destinations could reduce overall commute in the region
- *Internal Trip Generation*: The site may capture more trips internally based on current trends and preferences.
- *Davis' jobs/housing balance:* The City of Davis has a relatively low vacancy rate suggesting that if more housing were available more people would live closer to their jobs in the City of Davis.
- *Active transportation trips:* The project will result in a larger percentage of employees and residents commuting by active transportation than currently assumed, more reflective of the City of Davis' averages.
- *Travel demand management (TDM) considerations:* The TDM measures will be more effective at converting single occupancy vehicle trips to transit ridership than is assumed.

The following is a discussion of these additional factors that could be considered when assessing the project's anticipated VMT.

1 *Aggie Research Campus Project, Draft Subsequent Environmental Impact Report*, Raney Planning & Management, Inc., March 2020.
2 *Aggie Research Campus Volume 1 – Transportation Impact Study*, Fehr & Peers, March 2020.

Intercept Commutes

According to the Longitudinal Employment-Housing Dynamic's (LEHD) Origin Destination Employment Statistics (LODES) dataset, approximately 112,000 residents of Sacramento, Placer, and El Dorado Counties have jobs in Bay Area counties. Many of the very long-distance commuters will telecommute or work alternative schedules, so this analysis focused on the 61,500 that live within 100 miles of their Assuming that 75-percent of those workers (46,125 people) commute via single occupancy vehicles (SOV), they are estimated to produce nearly 4,600,000 VMT per day, with virtually all passing through Davis along I-80. Adding more high-wage jobs in the Sacramento region (inclusive of Davis) is anticipated to create new opportunities for people to work more locally than they do today. If even half of those who take jobs in the project site are part of that group of 61,500 people, regional VMT would be reduced by as much as 227,000 per day. That level of reduction represents approximately 71-percent of the 320,000 daily total site VMT estimated in Table 3-39. This level of reduction would be a considerable VMT benefit for the region and Northern California. While we agree that it is too speculative for SEIR analysis to make an assumption on who the employees at ARC will be and what current commutes might be altered by the future employment opportunities at this site, we do believe that such considerations are relevant when contemplating major land use approvals and VMT on a more holistic scale.

Internal Trip Capture

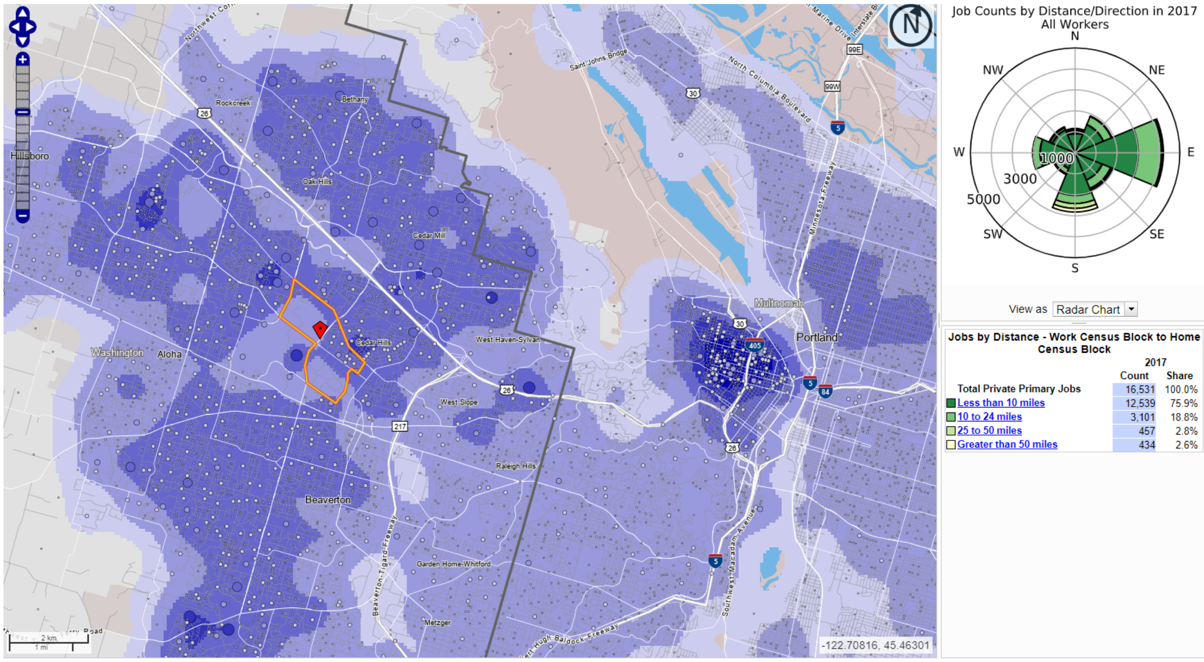
The SEIR estimated that 13-percent of the site trips would originate with another land use on site, making the trip fully internal and therefore having no impact to the surrounding and regional transportation system. To assist with adding additional context to this operational dynamic, we completed a review of two suburban, mixed use campuses – Intel and Nike near Portland, Oregon, and observed that the assumed internal capture estimate to be a good average. These sites were chosen because of their distance from the City center, and the similarity in size between the Sacramento and Portland MSAs. Campuses in the Silicon Valley area are situated in a more heavily populated region, and could therefore have differing commute patterns. Data from the Intel and Nike campuses also show a strong preference on the part of their workers to live near work if sufficient housing is available. Neither of these campuses built housing as part of their project sites. Nevertheless as much as 15-percent of the housing stock near these campuses is occupied by campus workers. Between two-thirds and three-quarters of campus employees live within 10 miles of the campus locations. Exhibit 1 and Exhibit 2 show the places where these campus' workers live relative to the campus sites.

One difference between the Aggie Research Campus and those of Nike and Intel is that the campus will have multiple employers and could serve several industries. The campus will also incorporate housing more directly than the study campuses, increasing the potential for internally captured trips even further.

Davis' Jobs/Housing Balance

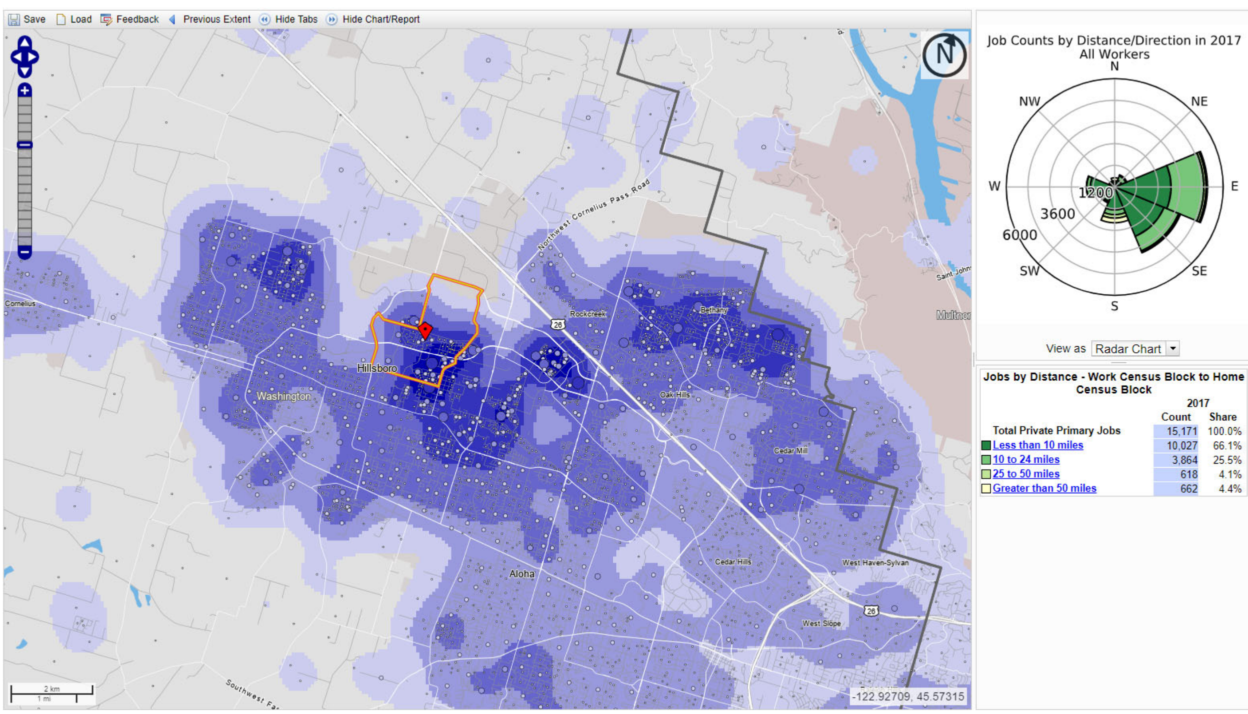
The City's *General Plan* includes several policies and programs that are focused on increasing housing availability in the City. Over the past several years, the City has approved several student-oriented housing projects and the University is actively building housing to better accommodate student needs. These efforts could relieve some pressure on the existing housing stock. The City is also in the midst of updating its Downtown Specific Plan which will modify the zoning to accommodate considerable new housing units. Should the City in the future decide to increase its housing stock and housing options, more people working in the City will be able to live there. This change will reduce the City's average VMT for all employment centers, including the Aggie Research Campus which is projected to produce less than the average VMT per job in Davis.

Exhibit 1 – Nike World Headquarters, Beaverton, OR



	2017	
	Count	Share
Total Private Primary Jobs	16,531	100.0%
Less than 10 miles	12,539	75.9%
10 to 24 miles	3,101	18.8%
25 to 50 miles	457	2.8%
Greater than 50 miles	434	2.6%

Exhibit 2 – Intel Main Campus, Hillsboro, OR



	2017	
	Count	Share
Total Private Primary Jobs	15,171	100.0%
Less than 10 miles	10,027	66.1%
10 to 24 miles	3,864	25.5%
25 to 50 miles	618	4.1%
Greater than 50 miles	662	4.4%

Active Transportation Trips

According to the American Community Survey, Davis has an exceptionally high rate of bicycle commuters. Approximately 19-percent of Davis residents commute by bicycle compared with 1.3-percent in the Sacramento Metropolitan Statistical Area (MSA). The data also reveals that 3.0-percent also commute by walking which is nearly double the MSA rate of 1.7-percent. The SEIR assumed that fewer than 1-percent of trips to the Aggie Research Campus would be made by active transportation modes based on the assumed commute distance and characteristics of the land use and transportation network around the site, and its distance from other likely active transportation trip generators. Table 3-29 in the SEIR has only 17 bicycle and pedestrian trips into the campus each morning and only 13 out in the afternoon. Given the culture of bicycling, the nature of employment in the Research Center, and likely future land use and infrastructure changes as the City grows active transportation will play a larger role in the campus' transportation mode share.

<u>Travel Demand Management (TDM)</u>
Mitigation 3-72(a) in the SEIR requires that site management implement and maintain travel demand management strategies, including carpool/vanpool programs, transit subsidies, parking management strategies, and several other means to reduce the number of vehicles needed to serve commute trips. The SEIR correctly stated that the benefits of these measures are highly variable and difficult to quantify due to the large number of variables including level of investment, location specific constraints, preferences of the worker population, and how different measures interact with and complement each other. Trip reductions due to TDM strategies were not applied to the EIR's estimates because they are intended to mitigate the site's VMT.

The impact of program implementation will depend on its components and level of investment. In an effort to provide a quantitative estimate, site information was entered into the Trip Reduction Impacts of Mobility Managements Strategies (TRIMMS) 4.0 software with some simple TDM measures that were included in the mitigation to assess potential benefits for the site:

- Carpool, vanpool, and transit subsidies will be provided
- Site will avoid providing unlimited free parking
- Program investment of $50,000/year

When calibrated for the Sacramento MSA, TRIMMS estimates that the program would reduce daily single occupant vehicle trips to the site by 1,300. That reduction represents just over 5-percent of site generated trips. TDM measures tend to focus on reducing longer trips, so it would be conservative to estimate a corresponding 5-percent site VMT reduction related to the TDM strategies. A 5-percent VMT reduction would eliminate 16,000 VMT per day. As required through the mitigations identified in the SEIR, a more focused TDM study will be conducted as development occurs to help determine the most effective TDM measures at each given stage of site development.

<u>Conclusions</u>
The supplemental discussion in the above sections is intended to support the findings of the SEIR while illustrating that there is a likely build-out scenario that may result in less trip generation and VMT. Our hope is to provide additional context to assist the decisionmakers in their review of this project and consideration of its potential traffic impacts. Our findings are summarized as follows:

- Project VMT generation could be significantly offset by removing up to 125,000 VMT from the region's total commute VMT.
- Should the City introduce more housing stock, more latent demand will be satisfied, allowing more people to live closer to work.
- Active transportation commutes in Davis are significantly higher than average for the Sacramento MSA, but the SEIR takes a conservative estimate assuming that the site will not benefit from that local cultural tendency.
- Travel demand management strategies were included as mitigations but did not have quantified benefits in the SEIR. A basic TDM plan could reduce daily vehicle trips to the campus by more than 5-percent.

ENVIRONMENTAL SUSTAINABILITY GUIDING PRINCIPLES

In recognition of the City's declaration of a climate emergency (RESOLUTION 19-023), the Developer and the City have agreed to the following Sustainability Guiding Principles for the Aggie Research Campus ("Project"). These Guiding Principles are a means for mandating, implementing and maintaining Project features that are designed to address and mitigate identified environmental concerns, including but not limited to impacts to global climate change, and to ensure sustainability for the life of the project.

Measurement and Verification

Critical to the success of the Aggie Research Campus is its ability to demonstrate continuous advancements in site sustainability during buildout and into campus operations. Many of the Sustainability Guiding Principles are designed to gradually increase site sustainability and further reduce Project impacts over time, such as improved air quality, reduced carbon emissions, greater electrical efficiency and reduced single-occupancy vehicle travel. These Guiding Principles will work in tandem with Project mitigation measures to reduce Project-related environmental impacts. To ensure accurate tracking and reporting, Developer will establish a Master Owners Association which reports to the City and is responsible for measurement, verification and assuring compliance with Project sustainability obligations and mitigation measures.

Building Standards

The Project shall meet and exceed Title 24, Cal Green Tier 1 and will utilize the City of Davis' Residential Energy Reach Code standards.

Energy Efficiency and Usage

The Developer is committed to maximizing clean energy production onsite and to implementing a program within the Project to ensure that all structures consume 100 percent renewable electricity. In furtherance of this pledge, the Developer commits as follows:

- To maximize and optimize onsite solar energy generation (and future clean energy use) by mandating photovoltaics on every conducive structure and in parking areas.
- Project will enter into a purchase and sale agreement with Valley Clean Energy (or another electric utility company) to which it will sell, and through which it will distribute, all electricity generated onsite. This arrangement will ensure that all power generated onsite which is not used onsite is utilized locally.
- All onsite residential units will be all-electric.
- To achieve a Project that is fueled by 100% clean energy, Developer commits all structures, residential and non-residential, to purchase power from solely renewable sources such as Valley Clean Energy's "UltraGreen" 100% renewable program or its equivalent, to offset any electric deficit.
- Achieve net zero for outdoor lighting.

- In anticipation of improved solar-connected energy storage, the Project will be designed and pre-wired for future microgrid capacity and energy storage.

Transportation Demand Management Plan

The Project shall implement a Transportation Demand Management Plan (TDM plan) with measurable results to quantitatively shift away from single occupancy vehicle (SOV) use and incentivize a mode shift to bicycling, public transit, private transit, or car pool and to determine which traffic mitigations are needed at each phase of Project development. Prior to, or concurrent with, adoption of Final Planned Development, Developer shall finalize a TDM plan acceptable to the City which shall include, in part, the following:

- Prior to the commencement of construction of each phase, a traffic study shall be prepared which measures in- and out-flow from the Project and identifies traffic patterns. This analysis will be shared with the City to determine which traffic mitigation measures are necessary to accommodate each phase of development. This will also serve to inform the City on mode share and to trigger the need for increased transit services.
- The Project shall be designed to accommodate internal, local and regional transit. It will include a centralized transit plaza that will serve as the hub for a variety of mode shares.
- At Phase 1, Developer will implement an electric shuttle service running weekdays from the AM to PM peaks, connecting the ARC to UCD and the Amtrak station.
- Developer will participate in and support Caltrans led efforts to add HOV lanes on I-80 from West Sacramento to Davis.
- Developer will continue its relationship with Yolobus and Unitrans, both of which have bus service contiguous to the site, to increase the frequency and capacity of bus service as the Project develops. Prior to the commencement of Phase 3, Developer will petition to reroute Unitrans and Yolobus service into and through the Project site. The transit plaza shall be designed with specifications to accommodate local and regional bus service.

Parking Lots and Internal Streets

To further incentivize a mode shift to bicycling, public transit, private transit, or car pool and to reduce the heat island effect, as well as visual and aesthetic impacts, Developer shall implement the following features in its parking areas and/or along the Project's internal roadway system:

- All streets and surface-level parking shall utilize low-impact development (LID) features such as bioswales to capture and filter runoff and to maximize groundwater recharge. Piping of runoff will be discouraged and only utilized when necessary.
- All parking surfaces or street-adjacent sidewalks utilizing tree shading shall use structured soil or suspended substrate to allow successful tree root development. Developer shall size pavement treatment area to accommodate the tree varietal's intended tree size.
- Landscaping shall provide 80% shading of pedestrian walkways and off-street Class I bike paths. 50% parking lot shading shall be achieved through either shade trees of photovoltaic arrays. These requirements shall be demonstrated at building permit for PV or shall be achieved with in 15 years of planting for areas shaded by trees. Failure to meet shading requirements shall be considered a code violation and subject to penalty until remedied.
- Parking preference and priority will be given to high occupancy vehicles (HOV) and electric vehicles (EV). Not including handicap parking, only HOV and EV parking shall

be allowed adjacent to buildings. All stalls designated for EV will have charging stations pre-installed.
- All commercial parking areas will be designed with infrastructure to gradually phase-in the installation of EV charging stations as demand grows.
- All housing shall include one Level 2 EV charger per unit or, if a multifamily building is parked at a ratio of less than 1:1, one Level 2 EV charger per parking stall. Townhomes, if built to accommodate two vehicles, will be prewired to allow for the installation of a second charger.

Landscaping and Water Conservation

To reduce Project demand on groundwater and potable water the Developer commits to the following measures:
- Native and drought tolerant plants shall predominate the plant palette. A diversity of native habitats shall be disbursed and managed throughout the site, primarily within the agricultural buffer and along the channel, including but not limited to riparian and California oak savanna.
- Turf will be strongly discouraged and utilized only in areas programmed for activities such as the Oval.
- Developer shall engage with the Center for Land Based Learning, the Davis Arboretum, or other local expert to design and manage its open and landscaped buffer areas. Landscape plans will be subject to City review including the Open Space and Habitat Commission and the Tree Commission.
- Developer will install recycled “purple pipe” infrastructure which will convey non-potable water for use in all landscaping. Developer will convert this system to reclaimed water if and when such service is made available.
- All runoff will be captured, conveyed and detained onsite in a series of bioswales intended to filtrate and clean the run-off and maximize groundwater recharge.

Housing

Housing at ARC is included to maximize the environmental benefits of mixed-use development. The inclusion of housing and an overall complementary mix of uses reduces the number and distance of project-related vehicular trips, encourages walking and bicycle trips, reduces air quality impacts and reduces the overall carbon footprint of the project. To further increase the sustainability benefits of onsite housing, the Developer commits as follows:
- Housing will be medium- and high-density with a range of 15-50 units per acre. No single-family detached housing will be permitted.
- Housing will be designed to meet the housing needs of the workforce and will not resemble student-oriented housing found elsewhere in the City. No unit will be greater than three bedrooms. Rental apartments will not exceed two bedrooms.
- Housing construction will be directly linked to the development of commercial space at a ratio of one home per 2,000 square feet of nonresidential space. This linkage will correlate the availability of housing with the creation of jobs which will maximize ARC employee occupancy of the housing.
- Housing will be all-electric and utilize the Residential Energy Reach Code.

- Multifamily rental units shall be charged separately for parking so that any resident may have the option of renting car-free housing.

Mitigation Measures

The project shall comply with Mitigation Measures identified in the Approved Mitigation Monitoring Reporting Plan.

APPENDIX 5

From: John Young <John.Young@yolocounty.org>
Sent: Thursday, March 12, 2020 12:40 PM
To: Ashley Feeney <AFeeney@cityofdavis.org>
Cc: 'Matt Keasling' <mkeasling@taylor-wiley.com>; Patrick Blacklock <Patrick.Blacklock@yolocounty.org>
Subject: Re: Aggie Research Campus and Setback from Neighboring Farming Operations

Dear Mr. Feeney:

This email confirms that I met with the Aggie Research Campus applicant, Dan Ramos and his representative, Matt Keasling. We reviewed the ARC land use plans and discussed the project's potential impact on neighboring agricultural operations, particularly the ability to apply pesticides and avoid nuisance claims. There is a relatively new almond orchard next to the project on two sides, the east and north.

I informed Dan and Matt that the County has its standard setback requirement of 500-feet for aerial spray and 300-feet for ground application to address potential pesticide drift to neighboring development projects. Since the neighboring property is in orchards, the 300-foot setback is appropriate to consider for this project. The project shows a 150-agricultural buffer and there is an additional 20-foot setback before the orchard, for an overall 170-foot separation distance. This does not meet the County's minimum standard.

Uses that need to be set back from neighboring agricultural operations are typically residential uses and areas in which people congregate like parks. Due to the nature of the use, the manufacturing buildings shown at the project's periphery are not a concern, but the owner should consider building placements that increase the distance from neighboring ag uses. However, any residential use should be set back from the neighboring agriculture by 300-feet. If housing is proposed within 300-feet, which it appears to be along one portion of the eastern edge of the project, the applicant can mitigate for pesticide drift through barrier plantings utilizing the planting standards established by the Natural Resources Conservation Service. I provided these planting standards to the applicant. Through the use of appropriate planting methods when combined with the 170-foot setback, the potential for pesticide drift can be adequately addressed.

We also discussed the inclusion of a recreational trail within the 150-foot agricultural buffer. The County considers recreational trails incompatible with neighboring agricultural operations when pesticides are being applied (no farmer wants to accidentally spray a cyclist). I suggested that the applicant address this incompatibility by entering into an agreement with the neighboring farmer to provide notice before any pesticide application and the applicant should then close the trail during those times. This approach has proven effective at other locations in the County where recreation abuts ag fields. Alternatively, the applicant could shield the entire trail from pesticide drift through barrier plantings in the same manner discussed previously for the residential uses.

If none of the measures identified are put in place to mitigate for the impact of placing sensitive areas near existing farms that apply pesticides, the project will be determined to have impeded the neighboring farmer's operation in such a manner that it requires mitigation for the loss of agriculture. The applicant would need to mitigate for an additional 130-foot swath of the neighboring orchard that abuts the project at a minimum ratio of 3:1 consistent with county mitigation requirements. The 130-feet is the additional distance needed to result in a 300-foot setback which would then meet County standards. However, Dan Ramos indicated – and I believe – that the measures identified above can be successfully implemented so as not result in incompatibilities and detrimental impacts to existing farming operations.

John Young
Agricultural Commissioner/Sealer
Yolo Certified Organic Agriculture
Yolo County Department of Agriculture

APPENDIX 6

Appendix A

MEMO

TO: City of Davis Commissions: (1) **Natural Resources Commission;** (2) Open Space and Habitat Commission (previously sent)
FROM: Greg Rowe
DATE: **April 15, 2020**
SUBJECT: **Comments on Draft Subsequent EIR (SEIR) for Proposed Aggie Research Campus Project (March 2020)**

This memo is intended to facilitate discussion by City commissions. The information herein generally appears in the same order as the draft SEIR, although notes and comments on some subjects are aggregated because information occurs in multiple SEIR sections. Examples include the 25-acre parcel annexation discussion and the Western Burrowing Owl commentary. Comments on the proposed off-site excavation for stormwater detention is another example; the SEIR addresses this subject in both the drainage section and in the air quality section because the project applicant has proposed to transport some of the excavated soil to the ARC site for grading purposes, which would entail an air quality impact.

Structure of the Comments: (1) Most topics start with text under the heading of "Notes," which summarizes the subject appearing in the draft SEIR. (2) The "Comments/Recommendations" text conveys concerns for which substantive response by the City is requested. (3) The "Actions Suggested" text conveys recommendations for action the City should consider implementing to protect the interests of the City, the public and/or the environment. Some comments and recommendations are **bold font** for emphasis. In some case the "Section" column refers to a proposed mitigation measure number. Obtaining a full understanding of the proposed ARC project often requires cross referencing the August 2015 Draft EIR (DEIR) for the previous iteration of this project, the Mace Ranch Innovation Center (MRIC), particularly Chapter 8, a CEQA "equal weight" examination of the "Mixed Use Alternative" that forms the basis for the proposed ARC project. This memo conveys my thoughts as a private citizen, not as planning commissioner.

Primary Issues of Concern:

1. Proposed partial use of a 25-acre City-owned "Measure O" open space parcel to meet the City's 150-foot agricultural buffer requirement.
2. Proposed use of City-owned open space land (a public asset) for off-site stormwater detention and to augment deficient topsoil at the ARC site.
3. Vehicle trips for the ARC Project would greatly exceed projections for the previous MRIC project. VMT impacts will be significant and unavoidable.
4. Roadway enhancements (lane extensions, more lanes, etc.) that allow more traffic may discourage alternative commute modes (biking and walking).
5. Inability of proposed transportation/circulation enhancements to fully mitigate traffic impacts coupled with indeterminate funding sources.
6. Limited control by the City of Davis over the scope and timing of traffic improvements on I-80.
7. The schedule of land cover mitigation payments by the ARC Project to the Yolo Habitat Conservancy is not specified. Will payment occur in phases or all at once when the first grading permits are issued? (Note: The fee was recently increased to $14,950/acre.)
8. Affordable Housing: the ARC Project thus far lacks a specific commitment to on-site affordable housing, as pointed out by the County of Yolo.
9. Potential competition by other Sacramento region innovation/tech centers, including Aggie Square and Woodland Research and Technology Park.

Page	Section	Subject	Notes, Comments and Suggestions
1-2 1-7 3-1 3-14	1.3 1.3	Development Footprint and 25-acre City parcel Use of City Open Space to Meet the City's for Agricultural Buffer Requirement	**NOTES:** The SEIR reveals that the contiguous City-owned 25-acre open space parcel located on the northwest border of the ARC Project site ("Mace 25") is not included in the ARC project.[1] As such, the Mace 25 would remain under the City's Agriculture Zone designation. The SEIR discloses, however, that the applicant wants to designate 6.8 acres of the Mace 25 for an easement that would comprise a portion of the 150-foot agricultural buffer required by City policy[2]. A footnote on SEIR p. 3-1 clarifies that the applicant does not have any rights to the City property, so **the terms of the easement would need to be negotiated with the City.[3]** The applicant's project description and text on SEIR p. 3-14 indicate that the 150-foot wide ag buffer area on the east and north boundaries of the project site would include bicycle and pedestrian paths within the inner 50 feet of the buffer but public access to the outer 100 feet would be restricted to minimize conflicts with adjacent agricultural activities and to maximize habitat values. The SEIR asserts that the 6.8 acres will *not* count toward the total acreage requiring mitigation. • The following note on the City's website makes it vague as to how and when the proposed easement would be structured: "The placement of the agricultural buffer easement will be considered as part of the larger entitlement application discussion at a future meeting."
3.41	3.5	Discrepancy with Yolo County Agricultural Policy	<u>Yolo County and LAFCo Positions on Adequacy of Agricultural Buffer</u>: The adequacy of the 150-wide agriculture buffer was challenged in an SEIR scoping comment letter from the Director of the County of Yolo Department of Community Services[4] ("County Director Letter"). The letter encouraged the City to "…refer to policies in the Countywide General Plan that seek to protect existing farm operations from impacts related to the encroachment of urban uses through use of an increased minimum buffer, as opposed to the City's minimum standard…" Policy LU-2.1 in the County's Land Use and Community Character Element "…recommends a minimum 300-foot setback for *ensuring the proposed development will not adversely affect the economic viability or constrain the farming practices of agricultural operations*" (emphasis in County Director Letter). Further, "County staff concur with Yolo County Local Agency Formation Commission (LAFCo) that **provision of a 'minimum' agricultural buffer as prescribed by the City's Municipal Code "…may be insufficient for the significance of the proposed project."** • The County and LAFCo comments connote that the SEIR's analysis of potential impacts on surrounding farmland may be insufficient.

[1] Please note that the entire Mace 25 parcel was included in the previous MRIC project.
[2] *Background and Midterm Progress Report on Measure O–The Open Space Protection Special Tax Fund.* City of Davis, 2017. The 150-foot ag buffer requirement was enacted in 1995, p. 9.
[3] See Figure 3-1, p. 3-2 and the explanation on SEIR pages 3-4 and 3-14.
[4] Taro Echiburu, Director – Yolo County Department of Community Services, December 9, 2019. See Appendix A (Public Comment Letters), ARC draft SEIR.

Page	Section	Subject	Notes, Comments and Suggestions
		Annexation of 25-acre City Parcel Entitlement Procedures Size of Buffer Use of Measure O Open Space	**NOTES/BACKGROUND**: The first paragraph under the heading of "Development Footprint" states that the 25-acre City-owned open space parcel would still be included in the applicant's annexation proposal even though no project development is proposed on the parcel. **COMMENTS/SUGGESTIONS:** • There appears to be no compelling reason to annex the Mace 25 because it is already described in the City's Measure O *Midterm Progress Report* as protected open space within the Davis Planning Area and is owned in fee title by the City of Davis. See attached Figure 17, reprinted from the City's *Background and Midterm Progress Report on Measure O,* 2017. To discourage further interest in the property on the part of the applicant, it would be sufficient to simply retain the parcel within the Davis Planning Area. • Entitlement Discussion at a Future Meeting: This statement on the City website prompts questions such as "which meetings" and "when"? Just Planning Commission and City Council, or will discussions also occur at other Commission meetings (Finance and Budget, Natural Resources, Open Space and Habitat?) • Fair Market Appraisal: If the City decides to allow the applicant to use 6.8 acres of the Mace 25 to meet its agriculture buffer obligations, the value of the easement should be determined through an independent fair market appraisal; i.e., it should not be left for negotiation after the ballot vote. The Measure R Ballot Baseline Features document and Development Agreement should specify that the applicant shall pay the City for the easement before a grading permit is issued. The amount and timing of the applicant's easement payment to the City should ideally be "locked" into the Baseline Features. It should not be deferred for future inclusion in the Development Agreement (DA). Payment for the value of the easement should be required a grading permit is issued. • Larger Buffer is Needed: The City should strongly consider requiring the Applicant to revise the proposed project to increase the width of the agricultural buffer from 150 feet to a minimum of 300 feet, as proposed by the County of Yolo. This action would make the project consistent with County Policy LU-2. If the Davis City Council desires to annex County land, the City may want to ameliorate County concerns by requiring the applicant to conform to the existing minimum agricultural buffer policy, as recommended in the County Director Letter and by LAFCo. • Use of Measure O Open Space: A public comment summarized on SEIR p. 1-7 states that the applicant's proposal to designate 6.8 acres of the City open space parcel for agricultural buffer should not be allowed because the 25-acre parcel was acquired with Davis Measure O funds. More than 70% of Davis voters approved Measure O, a parcel tax designed to be a long-term, stable funding source to acquire, maintain

			and improve open space areas.[5] Measure O is codified in Davis Municipal Code Section 15.17 – Open Space Protection Tax. • <u>Allowable Uses of Measure O Funds:</u> The 25-acres parcel on the east side of the "Mace Curve" (the "Mace 25") was acquired in fee title by the City in 2011.[6] Pursuant to Municipal Code Section 15.17.070 (Limitations on Disposition of Revenue), Measure O funds may only be used for the following purposes: (1) open space land acquisition; (2) restoration, management, monitoring and enhancement of City open space land; (3) bicycle trail connectors acquisition, improvement and operation; (4) open space facility construction and maintenance; and (5) administrative incidental expenses.[7] See Section 15.17.070 at the end of this memo for the full text of Section 15.17.070 (Attachment 1). In summary, this section of the Municipal Code specifies that "…all new developments adjacent to designated agricultural, agricultural reserve, agricultural open space, greenbelt/agricultural buffer, Davis greenbelt or environmentally sensitive habitat areas according to the land use and open space element maps shall be required to provide an agricultural buffer/agricultural transition area…" and "…the land shall be dedicated to the city." • <u>Inappropriate Use of Measure O Open Space Land:</u> Based on the above information, the City would be well advised to take into the consideration the purpose of Measure O in negotiating conveyance of an easement on land acquired with Measure O funds, especially when the purpose of the easement would be to facilitate development of private property. **The City may want to consider negotiating a conveyance price that would enable it to obtain a greater amount of open space/agricultural land elsewhere (i.e., more than 6.8 acres),** either through easement or in fee title. Although the applicant has proposed conveyance of a City *easement* on the 6.8 acres, rather than outright acquisition in fee title, the City should obtain a legal opinion on whether conveying an easement to the applicant for property acquired with Measure O funds could be deemed an in-lieu gift of public funds. Moreover, how can the applicant logically propose to use part of a City-owned agricultural open space parcel as a buffer for the rest of the parcel, when the land is already owned by the City for this purpose? **An objective observer could deem the SEIR deficient because it does not point out these discrepancies.** • It is worth noting that although the Mace 25 parcel is depicted as "protected" on Figure 18 (p. 22) of the *Measure O Progress Report*, **this open space cannot in actuality be construed as "protected" if the ARC applicant is allowed to designate 27% of the parcel to meet its agricultural buffer obligations.**

[5] Open Space Ordinance 2033, July 19, 2000.
[6] *Background and Midterm Progress Report on Measure O – The Open Space Protection Special Tax Fund.* City of Davis, 2017 Figure 16, page 20.
[7] Ibid, Page 4.

Page	Section	Subject	Notes, Comments and Suggestions
			• <u>Breach of Public Trust:</u> Granting a public property easement to a private entity to facilitate development of the grantee's property seems completely at odds with the intent of Davis voters when they overwhelmingly passed Measure O in 2000. As stated in an SEIR scoping comment, counting 6.8 acres of City taxpayer funded open space toward meeting the applicant's agricultural buffer obligations would essentially amount to a net reduction in City open space. The applicant should be held responsible for using its own resources to comply with the City's agricultural buffer requirements. **A far better approach would be for the agricultural buffer to be included solely within the applicant's property,** thereby leaving all of the City's 25 acres intact for the intended purpose of maintaining and preserving open space. Assuming a 150-foot wide buffer (although 300 feet would be preferable), this would result in only a 6.8-acre contraction in the applicant's development proposal. SEIR Figure 3-1 (Annexation Area Map) on p. 3-2 would need to be modified accordingly to show placement of the entire 150-foot wide buffer on the Applicant's property; plus, Figure 3-5 (ARC Project Open Space Plan), p. 3-13, and Figure 3-9 (Requested Annexation), p. 3-35. As mentioned previously, a minimum 300-foot buffer would provide better long-term assurance to the County of Yolo that farmland bordering the ARC Project would be protected. **<u>ACTION SUGGESTION:</u>** If the ARC project proposal is placed on the ballot, verbiage such as the suggestion below should be included in <u>both</u> the DA and project Baseline Features. This is similar to a condition included in the Nishi Gateway baseline features ballot measure. Including this verbiage in the baseline features is important because placing t solely in the DA would enable a future City Council to amend or eliminate this provision. "**City-owned land shall not be utilized in any manner, including but not limited to conveyance of easements or transfer in fee title, to fulfill any component of the project's agricultural, open space and/or potential habitat impact mitigation obligations. City-owned land shall also not be utilized for the purposes of meeting the project's off-site stormwater conveyance and/or storage needs. This prohibition includes but is not limited to the "Mace 25" parcel and the "Howatt/Clayton Ranch" properties."**
1-8 3-13	1 3	Western Burrowing Owl (BUOW)	**NOTES:** Some commenters contend that the MRIC analysis of BUOW impacts is inadequate because they assert that the surveys for the MRIC EIR were not conducted in accordance with the CA Dept of Fish and Wildlife (CDFW) Staff Report. They assert that cumulative impacts to the regional BUOW population were not assessed. The commenters also maintain that mitigation measures including preconstruction surveys and passive relocations, do not qualify as mitigation measures.

Page	Section	Subject	Notes, Comments and Suggestions
3-78	3	BUOW Mitigation	The first 50 feet of the 150-foot wide Ag buffer would provide BUOW buffer “dually” with bike/ped recreation. The outer 100 feet would be designated BUOW habitat, as discussed in SEIR section 3-18.
3-95	3-18	BUOW Setting	Even though no BUOWs have been identified within the proposed 150-foot ag buffer area, BUOWs have been found nearby. It is asserted by SEIR scoping commenters that the ARC Project site—including the proposed buffer area—provides suitable BUOW foraging habitat.
3-96 & 97	3-18	Buffer Mitigation	**NOTE**: Four mitigations are listed for the external 100-foot section of the 150-foot buffer. See SEIR Fig 3-13. BUOWs were sighted during surveys on February 21 and March 4,2020, at Sites A, B, C, D and E. (No sightings were at Site F but there were signs of BUOW presence). Table 3-16, p. 98, shows 7 owls seen. See Figure 3-13.
3-96 & 98	3-18	BUOW Field Survey Results	**<u>COMMENT</u>**: In light of recent sightings, why has the City specified reduced mowing on the adjacent City-owned mitigation land? Short grass facilitates BUOW foraging. City Measure O area, APN 033-650-26, is within the ARC Biological Study Area, so it would appear this area should adhere to BUOW foraging protocols.
3-100 3-116	3-26	Impacted Area - Conclusion BUOW Movement Areas	“BUOW show high site fidelity.” The location of occupied sites within 500 feet of the Study Area are well known. The distribution and abundance of occupied sites is not expected to change substantially as the results of additional BUOW surveys become available. Suitable habitat exists within the ARC BSA and Stormwater BSA. Impacts to BUOW habitat within the ARC project site and Mace Triangle would be addressed through the applicant’s payment of Land Cover fees for the impacted acreage where suitable habitat exists, as determined by the Yolo HCP/NCCP. (The SEIR contends that because the Mace 25 property is excluded, impacts are less than described for the MRIC.) The SEIR goes on to say, however, that a portion of the 6.8 acres could be considered impacted acreage, thereby requiring land cover fees per the Yolo HCP/NCCP in order to protect burrowing owl. Payment of the land cover fees should be required before grading permits are issued.
			<u>COMMENT</u>: Creation of the bike/walking trail within the first 50-foot part of the buffer could result in permanent impacts to burrowing owl habitat. The proposal to obtain “dual” BUOW habitat and bicycle/recreation benefits would appear to be an attempt at “double dipping.” In my 13 years of experience as an environmental planner for 5 airports in Sacramento County, I observed that BUOWs on airport property became readily habituated to vehicles driving on airfield maintenance and security patrol roads, but would quickly retreat to burrows (culverts, etc.) when people got out of the vehicles. It would seem, therefore, that owls may not become accustomed to trail walkers and bikers.

Page	Section	Subject	Notes, Comments and Suggestions
			<u>COMMENT</u>: When would the impact fees be paid? Would they be paid at the start of each of the four phases? How much would they be? The fees should be paid before ground disturbance starts. A portion of the 6.8-acre mitigation area could be considered impacted area, thus requiring payment of HCP/NCCP impact fees. This page says the adjacent ag areas would provide wildlife movement areas, but recently issued City policy directing removal of BUOW habitat in adjacent areas would seem to contradict this assertion.
2-10 2-11	2-6	Environmentally Superior Alternative	**NOTE:** The SEIR finds that the Reduced Site Size Alternative is the Environmentally Superior Alternative (ESA). **<u>COMMENT/SUGGESTION:</u>** The draft SEIR advises, however, that while "…the ARC Project's significant impacts related to site disturbance/extent of development footprint would be lessened under this alternative, the impacts would not be fully avoided (e.g., substantially degrade visual character or quality of site, agricultural land conversion)." The caveat is added on SEIR p. 2-11, however, that the Reduced Site Size Alternative would not achieve the fundamental objectives of the City or the applicant to develop an integrated innovation campus of at least 200 acres…to meet demand over 20-25 years. • As pointed out in subsequent sections of the SEIR ("Urban Decay"), it is questionable whether the ARC will indeed attract new users versus simply causing a relocation of existing Davis "innovation" companies.
3-21	3.3	Drainage – ARC Project; Proposed Use of City property for private project stormwater detention	**NOTE:** The 2nd and 3rd paragraphs of SEIR p. 3.21 state that two engineering solutions for handling ARC Project drainage have been identified: off-site replacement storage or a small pump station. The preferred location for the "off-site replacement storage area" (detention pond option) is the easternmost open space parcel owned by the City of Davis, adjacent to the Mace Drainage Channel (MDC). [See SEIR Fig 3-10, p. 3-81]. Information on this aspect of the project proposal appears in subsequent SEIR pages, but **there appears to be no analysis of the potential impacts of altering approximately 100 acres of land by excavating up to 2.5 feet of topsoil**. Such action could have impacts on water quality, wildlife habitat, etc., which the SEIR does not appear to disclose. The air quality impacts of more than 10,000 diesel-powered dump truck trips hauling 130,000 cubic yards of soil two miles westward for stockpiling at the ARC site is also not specifically analyzed. **<u>COMMENTS/SUGGESTION:</u>** The concept of using City-owned open space as a detention facility for the sole benefit of a private development could constitute an unwarranted public subsidy; i.e., a gift of public funds. The proposal to use City-owned open space in this manner appears to some commenters as a continuation of the applicant's apparent past attempts to leverage taxpayer acquired open space property for financial gain.

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			• During the previous MRIC iteration of this project in 2015-16, the applicant (Ramco Enterprises) proposed that the same City-owned open space (the former 774-Howatt/Clayton Ranch) be used to attain the required 2:1 mitigation ratio for displaced agricultural land.[8] The applicant attempted to frame this appropriation of public property under the pretext of establishing a "living lab" for agriculturally-related MRIC tenants. See attached aerial view of the site published in the *Davis Enterprise,* February 17, 2016. • The City's Mayor Pro Tempore at the time, Robb Davis, told the *Davis Enterprise* that attempting to use City-owned land for mitigation would not be looked upon favorably, stating that "We need to ask them to look elsewhere." **It would seem reasonable and consistent for the City to reiterate this position.** **<u>ACTION SUGGESTION:</u>** The City should not allow further consideration of this ill-conceived proposal for project-related stormwater detention. Again, it is therefore imperative that the following or substantially similar verbiage be included in both the development agreement and ballot Baseline Features for the ARC Project: "**City-owned land shall not be utilized in any manner, including but not limited to conveyance of easements or transfer in fee title, to fulfill any component of the project's agricultural, open space and/or potential habitat impact mitigation obligations. City-owned land shall also not be utilized for the purposes of meeting the project's off-site stormwater conveyance and/or storage needs. This prohibition includes but is not limited to the "Mace 25" parcel and the "Howatt/Clayton Ranch" properties."**
3-42	3.5	Permanent Loss of Ag Land and Required Mitigation	**NOTE:** There would be a permanent conversion of ag land to urban uses, even taking into account the 2:1 mitigation ratio. This is a significant and unavoidable impact. The mitigation on a 2:1 ratio can be implemented in phases parallel to the development phases, or all at once at the beginning of the project. I suggest it be done all at once; rationale is explained below. **<u>COMMENT/SUGGESTION:</u>** The impact would indeed be avoidable by simply not implementing the project. As stated in the County Director Letter dated December 9, 2019, "…the loss of ag land can never be fully mitigated. Agricultural land is a limited resource that can never be replaced once removed from ag production" (p. 1, paragraph 3). As such, regardless of a land cover mitigation payment to the Yolo Habitat Conservancy, a permanent and irrevocable loss of agricultural land would occur. • **Mitigation:** How can the City be assured that the applicant will actually provide the required mitigation at each phase? What enforceability mechanism will be put in place? Based on the past actions of the

[8] "MRIC looks to adjacent farmland as a 'living lab.'" Felicia Alvarez, *Davis Enterprise*, February 17, 2016.

Page	Section	Subject	Notes, Comments and Suggestions
			applicant relative to the Mace Ranch development, as documented on the City website, it could be fore-seeable that the applicant could later attempt to achieve a "bait and switch."
3-43	3-6	Ag Mitigation Using City's 25-acre Open Space Parcel	**NOTE**: The SEIR contends that because, unlike the MRIC project, the 25-acre City parcel would remain in an Agricultural designation, the potential conflicts with Ag zoned land would be less than the MRIC project. **COMMENT**: The validity of this unsubstantiated statement is questionable. The existence of the ARC innovation and tech park could conceivably create future pressures to override the provisions of the Davis Open Space ordinance in order to convert other City agricultural preserve land to development.
3-44	3-7	Mitigation for Off-Site Sewer Pipe	**NOTE:** Footnote 6 on the bottom of p. 3-4 states that an undetermined amount of ag land would be impacted by sewer pipe construction, and that the precise amount of land will not be known for some time. **COMMENT/SUGGESTION:** Before the applicant receives grading permits, a "worst case" scenario needs to be developed for sewer pipe construction impacts, with a commensurate amount of money placed in an escrow account by the applicant to ensure that adequate mitigation occurs. This is vitally important to make sure that applicant does not run out of funds before mitigation is completed.
3-47	3-48	Incompatible Uses in Buffer	**NOTE:** The County Ag Commissioner has stated that using a part of the buffer for recreational uses (biking, pedestrians) could be incompatible near ag parcels that use restricted substances (pesticides, herbicides). **COMMENT**: Consider restricting recreational uses in the buffer, or alternatively making the buffer wider than 150 feet (perhaps a minimum of 300 feet as suggested in the County Director Letter).
3-79 to	Bio	Field Surveys and HCP/NCCP Land Cover Mitigation Fees	**NOTES:** The SEIR section (p. 3-80) states that the project applicant(s) will need to pay $14,033/acre in HCP/NCCP Land Cover fees for 4 different land cover types.[9] Table 3-15 on SEIR p. 3-83, however, lists 5 land cover types with a cumulative total of 815.34 acres. Multiplying $14,033/acre times this number of acres yields a payment of $11,441,666 that would need to be made to the Yolo Conservancy (the plan operator for the HCP/NCCP) before grading permits could be issued by the City of Davis. **COMMENTS/SUGGESTION:** This section of the SEIR warrants greater explanation and detail. For example: • Why does the narrative on p. 3-80 discuss 4 land cover types, but the table on p. 3-83 lists 5 types? • Consider adding a new table that shows the land cover types, the per acre fee for each land cover category, and the resulting total mitigation fee. This could also be achieved by modifying Table 3-15 to add more columns, with the last column (to the right) showing the fee for each land cover type. For example,

[9] Habitat Conservation Plan/Natural Community Conservation Plan. HCPs are federal plans and NCCPs are the California equivalent, although there are differences.

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			the field crops row could show 733.86 x $14,033, with the result of $10,298,257. (Note: the fee is now $14,950/acre, which will produce higher totals.) • The narrative should be more explicit in explaining that the 815.34 acres is a combination of the 265.09-acre ARC Biological Study Area (BSA), as explained on p. 3-79, and the 550.25-acre Stormwater BSA, explained on the top of p. 3-80. • Some HCPs (such as Natomas Basin) are based on the assumption that every developed acre sustains an impact that must be mitigated at a specified ratio. (I believe the Natomas HCP ratio is 0.5 acre of mitigation for each acre developed.) Other HCPs, however, require mitigation only for actual habitat impacted. It would be helpful if the SEIR explained that the Yolo HCP/NCCP is a fee-based plan that addresses all of the various land types in the County. It is structured in a simple and direct manner that requires payment of a per/acre mitigation fee to the Yolo Habitat Conservancy (Conservancy). For more information, see chapter 8 of the Yolo HCP/NCCP. • The Field Surveys section does not explain when the HCP/NCCP Land Cover mitigation fees will be paid to the Conservancy by the applicant(s). According to Conservancy Executive Director Dirk Brazil, the fees are typically due and payable when the applicant receives a grading permit and the Conservancy is notified by the relevant jurisdiction (in this case, City of Davis) that everything is in order.[10] • Will the total amount of $11,441,666 be payable when the initial grading permit is issued, or, will the fees be due in accordance with the planned phased construction of the project? • **If payments are made in phases, those payments should be in accordance with the per acre Yolo Conservancy mitigation fee in place when the grading permit(s) for that phase are issued, and NOT the mitigation fee in effect when the project was initially approved.** In other words, the mitigation fee should increase incrementally throughout the anticipated 20-year buildout of the project. • <u>Suggestion:</u> consider requiring applicant payment of the full $11,441,666 to the Yolo Conservancy before any construction activity occurs; i.e., as soon as initial grading permits are issued. • **Fee Adjustment**: The following notice appeared on the Conservancy website on March 18, 2020: "The annual fee adjustment for 2020 is in effect as of March 15, 2020. All applications received after March 15, 2020 are subject to the updated fees. The current standard land cover fee is $14,950/acre." This change needs to be reflected in the Final SEIR. With reference to preceding bullet, this would revise the total payment to $12,189,333 (815.34 x $14,950/acre).

[10] Telephone conversation with Conservancy Executive Director Dirk Brazil, March 18, 2020.

Page	Section	Subject	Notes, Comments and Suggestions
3-84	3	Plant Surveys	**NOTES:** The Conclusion states that USFWS only considers plant surveys to be valid for 3 years, and that if construction activity occurs after 3 years from the date of the survey, impacts to special-status species that may have colonized the survey area could be impacted. **COMMENT/SUGGESTION**: The SEIR should include a mitigation measure that would explicitly require updated plant and animal surveys throughout the project's phased build-out period if more than 3 years have transpired since the last survey. The area used by plant and animal species for breeding, shelter and feeding habitat constantly changes, so field surveys need to keep pace.
3-165 Thru 3-179	Hydrology	Runoff Volume and Runoff Mitigation Alternatives See especially pages 3-168 thru 170	**TYPO**: The first paragraph on the top of SEIR p. 3-165 and the middle paragraph in the "Conclusion" section on p. 3-172 reference comparative runoff data on Table 3-19, p. 3-168. However, Table 3-19 appears on a preceding page and addresses GHG emissions. The proper reference should be to Table 3-22 that appears on page 3-168. Additional text should be checked for correct references. **NOTES**: The ARC project will have a greater volume of surface runoff than the MRIC Project because impervious surface is estimated to be 11 percent greater. It is also stated (p. 3-170) that up to 71,056 SF of research /Office/R&D and/or ancillary retail could occur on the Mace Triangle Site, which would increase the percentage of impervious surface at the Ikeda "Triangle" site from two to 90 percent. On-site detention at the Triangle site would be sufficient to handle the extra flow, but **offsite drainage facilities would be needed for the ARC Project site.** Off-site drainage facilities would be needed to detain and control the increased runoff volume from the ARC site when the flow from the Mace Drainage Channel (MCD) into the Yolo Bypass is blocked by high water levels in the Yolo Bypass (SEIR p. 3-174). The "Conclusion" discussion (SEIR p. 3-172) states: "The ARC Project development needs to address this increased volume by either constructing off-site replacement storage, installing a pump station, or some other acceptable engineering alternative…Otherwise, the project would result in an increase in downstream flooding of the City's agricultural property and adjacent properties during heavy storm events." The "Replacement Storage Alternative" discussion starts on SEIR p. 3-168. This option involves storing the increased runoff volume off-site until Yolo Bypass flows recede. The applicant's preferred runoff storage site for "off-line detention" is a City-owned 204-acre parcel adjacent to the MDC and Yolo Bypass Levee (APN 033-300-015, SEIR Fig 3-14, page 3-169). This parcel was previously identified as the preferred off-site detention location in the August 2015 draft EIR for the MRIC; see attached Figure 4 of the MRIC Drainage Study.[11] **This**

[11] *Drainage Study for Mace Ranch Innovation Center.* Watermark Engineering, June 15, 2015, p. 14 (DEIR Appendix F-1). The study was updated in 2020 for the ARC SEIR, Appendix D – Drainage Memo.

Page	Section	Subject	Notes, Comments and Suggestions
3-54 3-259	3-74	 Some Soil Excavated from City Land Would Be Used to Correct Topsoil Conditions at the ARC Site The Land Proposed for Excavation Was Acquired with Stormwater and Sewer Fees Truck Transport of Excavated Soil from	**continues to be the applicant's preferred location** because it is some of the lowest agricultural land in the area, but the draft SEIR states that two other City-owned parcels between the ARC site and the parcel adjacent to the Yolo Bypass Levee could alternatively be lowered by excavation to provide the necessary storage. These parcels are APN 033-300-001, 248 acres; and 300-650-006, 327 acres. Under the "Replacement Storage Alternative," up to 2.5 feet of topsoil would be temporarily removed from approximately 100 acres, the lowered field(s) would be graded, and then the uppermost layer of removed topsoil would be placed back in the fields. "Excavated materials, not including the temporarily removed topsoil, would [then]be imported to the ARC site" (p. 3-168). To understand why the applicant wants to move soil from City-owned land near the Yolo Bypass Levee, it is necessary to read Chapter 8 of the August 2015 DEIR for the MRIC project, which includes a discussion of "Unsuitable Topsoils" at the MRIC (now ARC) site.[12] It states that "Due to the presence of disturbed/soft surface and near-surface soils within the upper one to two feet of major portions of the site, a combination of over-excavation, processing, moisture conditioning and uniform recompaction of the surface and near-surface soils will likely be required to achieve stable support conditions for the proposed improvements associated with the innovation center" (MRIC DEIR p. 8-70). It therefore appears **the applicant wants to use soil removed from City-owned open space for the dual purpose of providing off-site stormwater storage and correcting unsuitable soil conditions at the ARC site in preparation for development.** The SEIR does not mention reimbursement to the City for this soil. **NOTE:** The City-owned land the applicant proposes for excavation would create a stormwater detention area while also providing improved soil conditions at the ARC. This property is identified as open space in the City's *Measure O Progress Report*. However, this land was <u>not</u> acquired with Measure O funds. According to the City's Leases and Open Space Manager, the Howatt/Clayton Ranch property was acquired with stormwater/sewer fees,[13] pursuant to City Municipal Code Article 30.08[14] <u>Truck Transport of Excavated Soil:</u> The SEIR air quality impact section states (p. 3-54) that if the off-site detention basin option is selected, there would be disturbance of approximately 100 acres. Approximately 130,000 cubic yards (CY) of soil would be imported to the ARC project site and used for project grading. The intention

[12] As required by CEQA, the DEIR for the MRIC analyzed a number of project alternatives, among which was an "equal weight" analysis of a Mixed-Use Alternative which is very similar to the current ARC project proposal; see chapter 8 of the MRIC DEIR, August 2015.
[13] Email to Greg Rowe from Tracie Reynolds, April 6, 2020.
[14] See section 30.08.060 – Charges for Storm Drainage and Flood Control Facilities and Article 33 – Sewers and Sewage Disposal (see section 33.03.130 – Fees).

		Howatt/Clayton Ranch to ARC Site	to transport this soil from the proposed off-site stormwater attenuation (detention) site, should this option be used, is further discussed on SEIR p. 3-259. It is forecast that approximately 10,833 truck trips would be required to transport the excavated soil the 2-mile distance westward from the Howatt/Clayton Ranch property to the ARC site for stockpiling. This would amount to 720 trucks/day over 30 work days, assuming each dump truck would equal 12 CY.[15] As pointed out in the County Director Letter, both temporary and permanent increases in traffic on County Road 32 could interfere with waste collection trucks and agricultural equipment that use that road. **<u>COMMENTS/SUGGESTION:</u>** <u>Implications of Using City-Owned Open Space for the Applicant's Benefit:</u> It is important to recognize that the three City-owned parcels are protected open space within the Davis Planning Area, as shown on attached Figure 17 (p. 21) of the 2017 City report, *Background and Midterm Progress Report on Measure O.* The City owns all 3 parcels in fee title. Although the parcels were acquired with stormwater/sewer fees, **the property is nonetheless a City asset acquired with public funds.** • Because the parcels were acquired with City funds, transferring soil excavated from those parcels to the ARC site, without fair market compensation to the City, could constitute a gift of public funds. **The City must conduct an independent fair market appraisal of the approximately 130,000 CY of topsoil desired by the applicant, and specify in the project's ballot baseline features that the City must be appropriately reimbursed for the value of this public asset.** • The County Director Letter (p. 3) stipulates that if agricultural lands are required for storm water retention or other improvements, mitigation for the loss of such land should be required regardless of whether the loss is temporary or permanent. • The option for temporary storage of storm water (i.e., detention) should be expunged from any further consideration by the applicant and the City because its implementation would diminish the inherent open space value of this City-owned property. Other alternatives, such as the "Pumping Alternative" (p. 3-169) or portable trailer-mounted, self-contained pump (p. 3-170), should be further evaluated and deployed. <u>Alternative Drainage and Flood Control Measures</u>: Under the heading of "Hydrology/Water Quality," the Annexation Policy Framework attachment to the County Director Letter indirectly suggests that water runoff from the ARC Project site "…may be obviated by onsite detention or retention facilities." This option appears

[15] Email to Greg Rowe from Principal Planner Sherri Metzker, conveying information from SEIR consultant. April 8, 2020.

Page	Section	Subject	Notes, Comments and Suggestions
			to not have been considered in either the 2015 MRIC Drainage Study nor SEIR Appendix D (“Applicability of MRIC Drainage Study [2015] for Aggie Research Campus Development Project”). **The applicant might want to consider commissioning a study of potential on-site detention/retention facilities. S**uch options could include a concrete underground storage tank similar to the combined stormwater and sewage storage water vault now being constructed below McKinley Park in Sacramento.[16] The City of Sacramento Utilities website says the project is expected to be completed by summer 2021. <u>Improved Cross-Referencing of Information:</u> The ability of readers to comprehend the project and correlate the description of various impacts would be enhanced if subjects were better cross-referenced. For example, the hydrological discussion of the proposed detention facilities starting on SEIR p. 3-168 should direct the reader to the vehicle trip discussion of truck transport of excavated soil on p. 3-261 and the air quality discussion on p. 3-54. <u>Use of Public Property</u>: I have professional experience with a similar “earth borrow” project in my former capacity as Senior Environmental Analyst for the County of Sacramento Department of Airports. In 2007 the Sacramento Area Flood Control Agency (SAFCA) proposed excavating approximately one foot of topsoil on 768 acres of aircraft approach and departure “buffer” property north of Elverta Road at Sacramento International Airport (SMF). As a component of the landside portion of the Natomas Levee Improvement Program (NLIP), the four million cubic yards of soil was used to bolster the adjacent Sacramento River flood control levee. Because the airport property had been acquired with a combination of County public funds and grants from the Federal Aviation Administration (FAA), a fair market appraisal of the excavated soil was performed to ensure appropriate compensation to the County (which was achieved with a “land swap” and stormwater channel improvements provided by SAFCA on airport property). The estimated value of the soil was one dollar per CY, or $4 million.[17] Absent such an arrangement, SAFCA’s relocation of soil to the levee would have been construed as an uncompensated transfer of public funds. As project manager, I helped draft the project’s Master Agreement approved by the Sacramento County Board of Supervisors in February 2009. Based on this experience**, I question the legitimacy of using City-owned property to control, direct and detain stormwater emanating solely from a private project. If this component of the ARC Project is ultimately approved, the City must receive compensation commensurate with the value of the stormwater protection and improved site conditions received by the ARC applicants.**

[16] “Sacramento Plans Giant Sewage Tank Underneath McKinley Park to Keep Spillage Out of The Streets.” Bob Moffit, Capital Public Radio. October 10, 2018.

[17] “A Collaborative Approach for Providing Flood Protection and Continuity of Airport Operations in the Natomas Basin, California.” Sacramento County Airport System and Sacramento Flood Control Agency, November 19, 2008. Table 2 – Monetary Transaction Summary, page 27. (I was the principal Airport System author.)

Attachment 1

Davis Municipal Code - Chapter 15 – Finance and Taxation. Article 15.17 – Open Space Protection Tax

15.17.070 Limitation on disposition of revenue.

Revenues collected under the provisions of this article shall be deposited in a special fund called the open space preservation special tax fund. The special tax fund shall be used only for the following purposes:

(a) Acquisition in fee or easement of open space lands within the Davis planning area;

(b) For the improvement, operation, maintenance and/or monitoring of open space lands currently owned by the city in fee or easement of acquired by the city in the future, including, but not limited to, the restoration, enhancement and preservation of habitat areas, maintenance of open space lands, and monitoring of habitat and agricultural conservation easements;

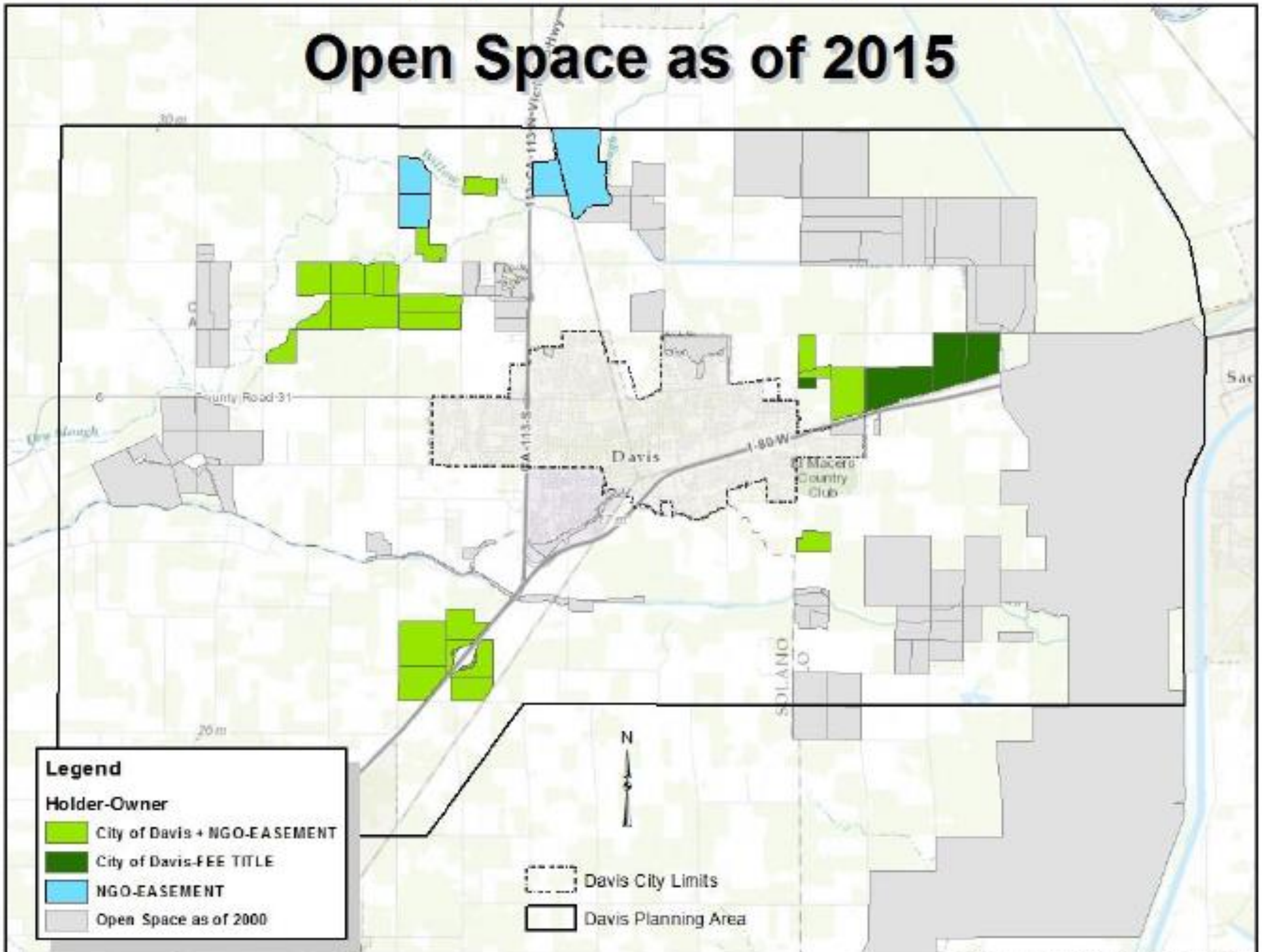
(c) For the acquisition, improvement, and operation of only those bicycle trails designed to connect Davis to open space areas outside the city and with other regional bicycle facilities;

(d) For the construction and maintenance of facilities necessary to preserve or enhance open space properties for open space purposes (i.e., the construction of maintenance of water wells and irrigation systems to serve the property and land uses, the creation and/or maintenance of access facilities where appropriate to promote public education and enjoyment of the open space, etc.); and

(e) For the incidental expenses incurred in the administration of this tax, including, but not limited to, the cost of elections, and the cost of collection. Revenues may be used to operate, maintain and monitor properties owned in fee or easement jointly by the city and other public agencies and/or land trusts whose mission includes the preservation of open space lands within the Davis planning area. (Ord. 2033 § 1, 2000).

Page	Section	Subject	Notes, Comments and Suggestions

Figure 17: Protected Open Space within Davis Planning Area (between 2000 and 2015)



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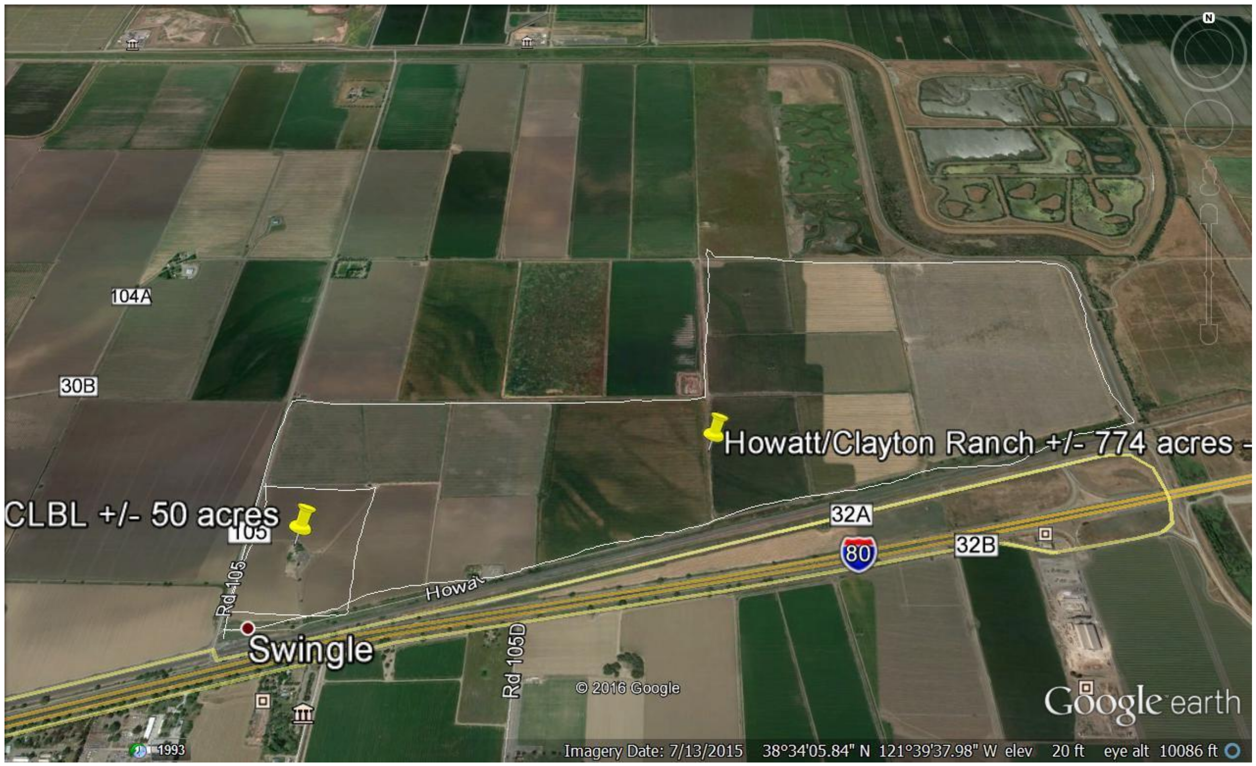
Aerial View of City-Owned Open Space Property Proposed by the MRIC To Mitigate for Displaced Agricultural Land
Source: Davis Enterprise, February 17, 2016. Used by Permission.[18]



[18] Email from Sebastian Onate, Editor – *Davis Enterprise.* March 2, 2020.

Exhibit Showing Preferred Location of MRIC Detention Basin

Source: Drainage Study for Mace Ranch Innovation Center. Watermark Engineering, June 15, 2015

FIGURE 4. Location of City-owned properties and example of lowered area for storage.

APPENDIX 7

Kenneth Shawn Smallwood
Curriculum Vitae

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Born May 3, 1963 in
Sacramento,

Married, father of

Ecologist

Expertise

- Finding solutions to controversial problems related to wildlife interactions with human industry, infrastructure, and activities;
- Wildlife monitoring and field study using GPS, thermal imaging, behavior surveys;
- Using systems analysis and experimental design principles to identify meaningful ecological patterns that inform management decisions.

Education

Ph.D. Ecology, University of California, Davis. September 1990.
M.S. Ecology, University of California, Davis. June 1987.
B.S. Anthropology, University of California, Davis. June 1985.
Corcoran High School, Corcoran, California. June 1981.

Experience

- 486 professional publications, including:
- 88 peer reviewed publications
- 24 in non-reviewed proceedings
- 372 reports, declarations, posters and book reviews
- 8 in mass media outlets
- 87 public presentations of research results

Editing for scientific journals: Guest Editor, *Wildlife Society Bulletin*, 2012-2013, of invited papers representing international views on the impacts of wind energy on wildlife and how to mitigate the impacts. Associate Editor, *Journal of Wildlife Management*, March 2004 to 30 June 2007. Editorial Board Member, *Environmental Management*, 10/1999 to 8/2004. Associate Editor, *Biological Conservation*, 9/1994 to 9/1995.

Member, Alameda County Scientific Review Committee (SRC), August 2006 to April 2011. The five-member committee investigated causes of bird and bat collisions in the Altamont Pass Wind Resource Area, and recommended mitigation and monitoring measures. The SRC reviewed the science underlying the Alameda County Avian Protection Program, and advised the County on how to reduce wildlife fatalities.

Consulting Ecologist, 2004-2007, California Energy Commission (CEC). Provided consulting services as needed to the CEC on renewable energy impacts, monitoring and research, and produced several reports. Also collaborated with Lawrence-Livermore National Lab on research to understand and reduce wind turbine impacts on wildlife.

Consulting Ecologist, 1999-2013, U.S. Navy. Performed endangered species surveys, hazardous waste site monitoring, and habitat restoration for the endangered San Joaquin kangaroo rat, California tiger salamander, California red-legged frog, California clapper rail, western burrowing owl, salt marsh harvest mouse, and other species at Naval Air Station Lemoore; Naval Weapons Station, Seal Beach, Detachment Concord; Naval Security Group Activity, Skaggs Island; National Radio Transmitter Facility, Dixon; and, Naval Outlying Landing Field Imperial Beach.

Part-time Lecturer, 1998-2005, California State University, Sacramento. Instructed Mammalogy, Behavioral Ecology, and Ornithology Lab, Contemporary Environmental Issues, Natural Resources Conservation.

Senior Ecologist, 1999-2005, BioResource Consultants. Designed and implemented research and monitoring studies related to avian fatalities at wind turbines, avian electrocutions on electric distribution poles across California, and avian fatalities at transmission lines.

Chairman, Conservation Affairs Committee, The Wildlife Society--Western Section, 1999-2001. Prepared position statements and led efforts directed toward conservation issues, including travel to Washington, D.C. to lobby Congress for more wildlife conservation funding.

Systems Ecologist, 1995-2000, Institute for Sustainable Development. Headed ISD’s program on integrated resources management. Developed indicators of ecological integrity for large areas, using remotely sensed data, local community involvement and GIS.

Associate, 1997-1998, Department of Agronomy and Range Science, University of California, Davis. Worked with Shu Geng and Mingua Zhang on several studies related to wildlife interactions with agriculture and patterns of fertilizer and pesticide residues in groundwater across a large landscape.

Lead Scientist, 1996-1999, National Endangered Species Network. Informed academic scientists and environmental activists about emerging issues regarding the Endangered Species Act and other environmental laws. Testified at public hearings on endangered species issues.

Ecologist, 1997-1998, Western Foundation of Vertebrate Zoology. Conducted field research to determine the impact of past mercury mining on the status of California red-legged frogs in Santa Clara County, California.

Senior Systems Ecologist, 1994-1995, EIP Associates, Sacramento, California. Provided consulting services in environmental planning, and quantitative assessment of land units for their conservation and restoration opportunities basedon ecological resource requirements of 29 special-status species. Developed ecological indicators for prioritizing areas within Yolo County to receive mitigation funds for habitat easements and restoration.

Post-Graduate Researcher, 1990-1994, Department of Agronomy and Range Science, *U.C. Davis*. Under Dr. Shu Geng's mentorship, studied landscape and management effects on temporal and spatial patterns of abundance among pocket gophers and species of Falconiformes and Carnivora in the Sacramento Valley. Managed and analyzed a data base of energy use in California agriculture. Assisted with landscape (GIS) study of groundwater contamination across Tulare County, California.

Work experience in graduate school: Co-taught Conservation Biology with Dr. Christine Schonewald, 1991 & 1993, UC Davis Graduate Group in Ecology; Reader for Dr. Richard Coss's course on Psychobiology in 1990, UC Davis Department of Psychology; Research Assistant to Dr. Walter E. Howard, 1988-1990, UC Davis Department of Wildlife and Fisheries Biology, testing durable baits for pocket gopher management in forest clearcuts; Research Assistant to Dr. Terrell P. Salmon, 1987-1988, UC Wildlife Extension, Department of Wildlife and Fisheries Biology, developing empirical models of mammal and bird invasions in North America, and a rating system for priority research and control of exotic species based on economic, environmental and human health hazards in California. Student Assistant to Dr. E. Lee Fitzhugh, 1985-1987, UC Cooperative Extension, Department of Wildlife and Fisheries Biology, developing and implementing statewide mountain lion track count for long-term monitoring.

Fulbright Research Fellow, Indonesia, 1988. Tested use of new sampling methods for numerical monitoring of Sumatran tiger and six other species of endemic felids, and evaluated methods used by other researchers.

Projects

Repowering wind energy projects through careful siting of new wind turbines using map-based collision hazard models to minimize impacts to volant wildlife. Funded by wind companies (principally NextEra Renewable Energy, Inc.), California Energy Commission and East Bay Regional Park District, I have collaborated with a GIS analyst and managed a crew of five field biologists performing golden eagle behavior surveys and nocturnal surveys on bats and owls. The goal is to quantify flight patterns for development of predictive models to more carefully site new wind turbines in repowering projects. Focused behavior surveys began May 2012 and continue. Collision hazard models have been prepared for seven wind projects, three of which were built. Planning for additional repowering projects is underway.

Test avian safety of new mixer-ejector wind turbine (MEWT). Designed and implemented a before-after, control-impact experimental design to test the avian safety of a new, shrouded wind turbine developed by Ogin Inc. (formerly known as FloDesign Wind Turbine Corporation). Supported by a $718,000 grant from the California Energy Commission's Public Interest Energy

Research program and a 20% match share contribution from Ogin, I managed a crew of seven field biologists who performed periodic fatality searches and behavior surveys, carcass detection trials, nocturnal behavior surveys using a thermal camera, and spatial analyses with the collaboration of a GIS analyst. Field work began 1 April 2012 and ended 30 March 2015 without Ogin installing its MEWTs, but we still achieved multiple important scientific advances.

Reduce avian mortality due to wind turbines at Altamont Pass. Studied wildlife impacts caused by 5,400 wind turbines at the world's most notorious wind resource area. Studied how impacts are perceived by monitoring and how they are affected by terrain, wind patterns, food resources, range management practices, wind turbine operations, seasonal patterns, population cycles, infrastructure management such as electric distribution, animal behavior and social interactions.

Reduce avian mortality on electric distribution poles. Directed research toward reducing bird electrocutions on electric distribution poles, 2000-2007. Oversaw 5 founds of fatality searches at 10,000 poles from Orange County to Glenn County, California, and produced two large reports.

Cook *et al*. v. Rockwell International *et al*., No. 90-K-181 (D. Colorado). Provided expert testimony on the role of burrowing animals in affecting the fate of buried and surface-deposited radioactive and hazardous chemical wastes at the Rocky Flats Plant, Colorado. Provided expert reports based on four site visits and an extensive document review of burrowing animals. Conducted transect surveys for evidence of burrowing animals and other wildlife on and around waste facilities. Discovered substantial intrusion of waste structures by burrowing animals. I testified in federal court in November 2005, and my clients were subsequently awarded a $553,000,000 judgment by a jury. After appeals the award was increased to two billion dollars.

Hanford Nuclear Reservation Litigation. Provided expert testimony on the role of burrowing animals in affecting the fate of buried radioactive wastes at the Hanford Nuclear Reservation, Washington. Provided three expert reports based on three site visits and extensive document review. Predicted and verified a certain population density of pocket gophers on buried waste structures, as well as incidence of radionuclide contamination in body tissue. Conducted transect surveys for evidence of burrowing animals and other wildlife on and around waste facilities. Discovered substantial intrusion of waste structures by burrowing animals.

Expert testimony and declarations on proposed residential and commercial developments, gas-fired power plants, wind, solar and geothermal projects, water transfers and water transfer delivery systems, endangered species recovery plans, Habitat Conservation Plans and Natural Communities Conservation Programs. Testified before multiple government agencies, Tribunals, Boards of Supervisors and City Councils, and participated with press conferences and depositions. Prepared expert witness reports and court declarations, which are summarized under Reports (below).

Protocol-level surveys for special-status species. Used California Department of Fish and Wildlife and US Fish and Wildlife Service protocols to search for California red-legged frog, California tiger salamander, arroyo southwestern toad, blunt-nosed leopard lizard, western pond turtle, giant kangaroo rat, San Joaquin kangaroo rat, San Joaquin kit fox, western burrowing owl, Swainson's hawk, Valley elderberry longhorn beetle and other special-status species.

Conservation of San Joaquin kangaroo rat. Performed research to identify factors responsible for the decline of this endangered species at Lemoore Naval Air Station, 2000-2013, and implemented habitat enhancements designed to reverse the trend and expand the population.

Impact of West Nile Virus on yellow-billed magpies. Funded by Sacramento-Yolo Mosquito and Vector Control District, 2005-2008, compared survey results pre- and post-West Nile Virus epidemic for multiple bird species in the Sacramento Valley, particularly on yellow-billed magpie and American crow due to susceptibility to WNV.

Workshops on HCPs. Assisted Dr. Michael Morrison with organizing and conducting a 2-day workshop on Habitat Conservation Plans, sponsored by Southern California Edison, and another 1-day workshop sponsored by PG&E. These Workshops were attended by academics, attorneys, and consultants with HCP experience. We guest-edited a Proceedings published in Environmental Management.

Mapping of biological resources along Highways 101, 46 and 41. Used GPS and GIS to delineate vegetation complexes and locations of special-status species along 26 miles of highway in San Luis Obispo County, 14 miles of highway and roadway in Monterey County, and in a large area north of Fresno, including within reclaimed gravel mining pits.

GPS mapping and monitoring at restoration sites and at Caltrans mitigation sites. Monitored the success of elderberry shrubs at one location, the success of willows at another location, and the response of wildlife to the succession of vegetation at both sites. Also used GPS to monitor the response of fossorial animals to yellow star-thistle eradication and natural grassland restoration efforts at Bear Valley in Colusa County and at the decommissioned Mather Air Force Base in Sacramento County.

Mercury effects on Red-legged Frog. Assisted Dr. Michael Morrison and US Fish and Wildlife Service in assessing the possible impacts of historical mercury mining on the federally listed California red-legged frog in Santa Clara County. Also measured habitat variables in streams.

Opposition to proposed No Surprises rule. Wrote a white paper and summary letter explaining scientific grounds for opposing the incidental take permit (ITP) rules providing ITP applicants and holders with general assurances they will be free of compliance with the Endangered Species Act once they adhere to the terms of a “properly functioning HCP.” Submitted 188 signatures of scientists and environmental professionals concerned about No Surprises rule US Fish and Wildlife Service, National Marine Fisheries Service, all US Senators.

Natomas Basin Habitat Conservation Plan alternative. Designed narrow channel marsh to increase the likelihood of survival and recovery in the wild of giant garter snake, Swainson’s hawk and Valley Elderberry Longhorn Beetle. The design included replication and interspersion of treatments for experimental testing of critical habitat elements. I provided a report to Northern Territories, Inc.

Assessments of agricultural production system and environmental technology transfer to China. Twice visited China and interviewed scientists, industrialists, agriculturalists, and the Directors of the Chinese Environmental Protection Agency and the Department of Agriculture to assess the need and possible pathways for environmental clean-up technologies and trade opportunities between the US and China.

Yolo County Habitat Conservation Plan. Conducted landscape ecology study of Yolo County to spatially prioritize allocation of mitigation efforts to improve ecosystem functionality within the County from the perspective of 29 special-status species of wildlife and plants. Used a hierarchically structured indicators approach to apply principles of landscape and ecosystem ecology, conservation biology, and local values in rating land units. Derived GIS maps to help guide the conservation area design, and then developed implementation strategies.

Mountain lion track count. Developed and conducted a carnivore monitoring program throughout California since 1985. Species counted include mountain lion, bobcat, black bear, coyote, red and gray fox, raccoon, striped skunk, badger, and black-tailed deer. Vegetation and land use are also monitored. Track survey transect was established on dusty, dirt roads within randomly selected quadrats.

Sumatran tiger and other felids. Upon award of Fulbright Research Fellowship, I designed and initiated track counts for seven species of wild cats in Sumatra, including Sumatran tiger, fishing cat, and golden cat. Spent four months on Sumatra and Java in 1988, and learned Bahasa Indonesia, the official Indonesian language.

Wildlife in agriculture. Beginning as post-graduate research, I studied pocket gophers and other wildlife in 40 alfalfa fields throughout the Sacramento Valley, and I surveyed for wildlife along a 200 mile road transect since 1989 with a hiatus of 1996-2004. The data are analyzed using GIS and methods from landscape ecology, and the results published and presented orally to farming groups in California and elsewhere. I also conducted the first study of wildlife in cover crops used on vineyards and orchards.

Agricultural energy use and Tulare County groundwater study. Developed and analyzed a data base of energy use in California agriculture, and collaborated on a landscape (GIS) study of groundwater contamination across Tulare County, California.

Pocket gopher damage in forest clear-cuts. Developed gopher sampling methods and tested various poison baits and baiting regimes in the largest-ever field study of pocket gopher management in forest plantations, involving 68 research plots in 55 clear-cuts among 6 National Forests in northern California.

Risk assessment of exotic species in North America. Developed empirical models of mammal and bird species invasions in North America, as well as a rating system for assigning priority research and control to exotic species in California, based on economic, environmental, and human health hazards.

Peer Reviewed Publications

Smallwood, K. S. 2020. USA wind energy-caused bat fatalities increase with shorter fatality search intervals. Diversity 12(98); doi:10.3390/d12030098.

Smallwood, K. S., D. A. Bell, and S. Standish. 2020. Dogs detect larger wind energy impacts on bats and birds. Journal of Wildlife Management 1-13: 10.1002/jwmg.21863.

Smallwood, K. S., and D. A. Bell. 2020. Relating bat passage rates to wind turbine fatalities. Diversity 12(84); doi:10.3390/d12020084.

Smallwood, K. S., and D. A. Bell. 2020. Effects of wind turbine curtailment on bird and bat fatalities. Journal of Wildlife Management. In press. DOI: 10.1002/jwmg.21844

Kitano, M., M. Ino, K. S. Smallwood, and S. Shiraki. 2020. Seasonal difference in carcass persistence rates at wind farms with snow, Hokkaido, Japan. Ornithological Science 19: 63 – 71.

Smallwood, K. S. and M. L. Morrison. 2018. Nest-site selection in a high-density colony of burrowing owls. Journal of Raptor Research 52:454-470.

Smallwood, K. S., D. A. Bell, E. L. Walther, E. Leyvas, S. Standish, J. Mount, B. Karas. 2018. Estimating wind turbine fatalities using integrated detection trials. Journal of Wildlife Management 82:1169-1184.

Smallwood, K. S. 2017. Long search intervals under-estimate bird and bat fatalities caused by wind turbines. Wildlife Society Bulletin 41:224-230.

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Smallwood, K. S. 2017. Monitoring birds. M. Perrow, Ed., Wildlife and Wind Farms - Conflicts and Solutions, Volume 2. Pelagic Publishing, Exeter, United Kingdom. www.bit.ly/2v3cR9Q

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Johnson, D. H., S. R. Loss, K. S. Smallwood, W. P. Erickson. 2016. Avian fatalities at wind energy facilities in North America: A comparison of recent approaches. Human–Wildlife Interactions 10(1):7-18.

Sadar, M. J., D. S.-M. Guzman, A. Mete, J. Foley, N. Stephenson, K. H. Rogers, C. Grosset, K. S. Smallwood, J. Shipman, A. Wells, S. D. White, D. A. Bell, and M. G. Hawkins. 2015. Mange Caused by a novel Micnemidocoptes mite in a Golden Eagle (*Aquila chrysaetos*). Journal of Avian Medicine and Surgery 29(3):231-237.

Smallwood, K. S. 2015. Habitat fragmentation and corridors. Pages 84-101 in M. L. Morrison and H. A. Mathewson, Eds., Wildlife habitat conservation: concepts, challenges, and solutions. John Hopkins University Press, Baltimore, Maryland, USA.

Mete, A., N. Stephenson, K. Rogers, M. G. Hawkins, M. Sadar, D. Guzman, D. A. Bell, J. Shipman, A. Wells, K. S. Smallwood, and J. Foley. 2014. Emergence of Knemidocoptic mange in wild Golden Eagles (Aquila chrysaetos) in California. Emerging Infectious Diseases 20(10):1716-1718.

Smallwood, K. S. 2013. Introduction: Wind-energy development and wildlife conservation. Wildlife Society Bulletin 37: 3-4.

Smallwood, K. S. 2013. Comparing bird and bat fatality-rate estimates among North American wind-energy projects. Wildlife Society Bulletin 37:19-33. + Online Supplemental Material.

Smallwood, K. S., L. Neher, J. Mount, and R. C. E. Culver. 2013. Nesting Burrowing Owl Abundance in the Altamont Pass Wind Resource Area, California. Wildlife Society Bulletin: 37:787-795.

Smallwood, K. S., D. A. Bell, B. Karas, and S. A. Snyder. 2013. Response to Huso and Erickson Comments on Novel Scavenger Removal Trials. Journal of Wildlife Management 77: 216-225.

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Smallwood, K. S., D. A. Bell, S. A. Snyder, and J. E. DiDonato. 2010. Novel scavenger removal trials increase estimates of wind turbine-caused avian fatality rates. Journal of Wildlife Management 74: 1089-1097 + Online Supplemental Material.

Smallwood, K. S., L. Neher, and D. A. Bell. 2009. Map-based repowering and reorganization of a wind resource area to minimize burrowing owl and other bird fatalities. Energies 2009(2):915-943. http://www.mdpi.com/1996-1073/2/4/915

Smallwood, K. S. and B. Nakamoto. 2009. Impacts of West Nile Virus Epizootic on Yellow-Billed Magpie, American Crow, and other Birds in the Sacramento Valley, California. The Condor 111:247-254.

Smallwood, K. S., L. Rugge, and M. L. Morrison. 2009. Influence of Behavior on Bird Mortality in Wind Energy Developments: The Altamont Pass Wind Resource Area, California. Journal of Wildlife Management 73:1082-1098.

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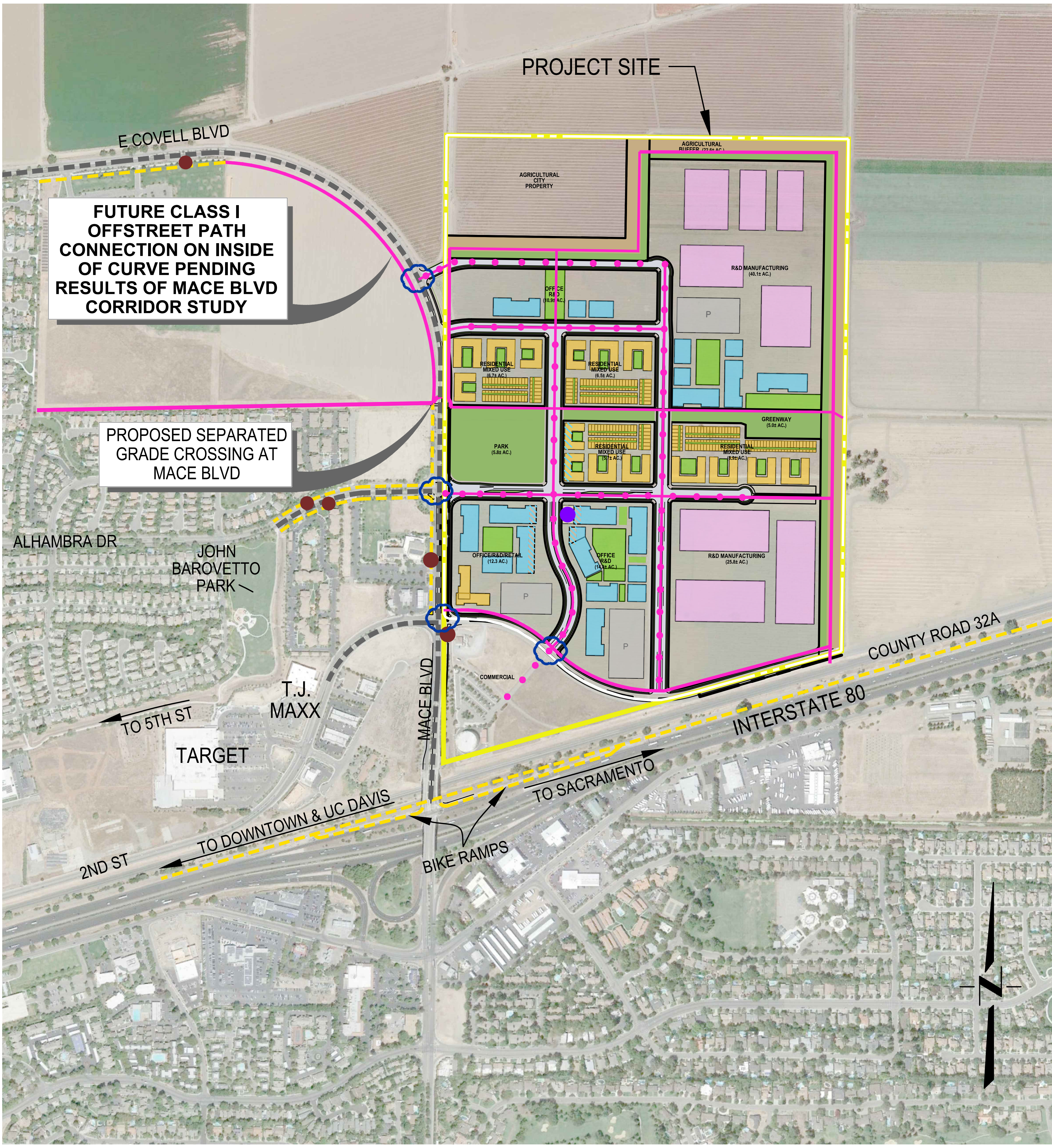
APPENDIX 8

SITE AERIAL IMAGERY ACQUIRED JUNE 2014 FROM GOOGLE EARTH PRO. COPYRIGHT GOOGLE 2014.

S:\Projects\1200\1239 Mace East Davis\AutoCAD\1239-10 EXHIBITS\1239-10 BTSS EXHIBIT\1239-10-BIKE-ACCESS-OFFSITE.dwg – OFFSITE 4/03/2020 – 11:30AM Plotted by: Liz



LEGEND

EXISTING OFF STREET (CLASS I) BIKE/PEDESTRIAN PATH

EXISTING ON STREET (CLASS II) BIKE LANES

PROPOSED BIKE/PEDESTRIAN PATH (CLASS I)

PROPOSED BIKE LANE (CLASS II)

PROPOSED (CLASS I & II) BIKE PATH AND LANES

PROPOSED ENHANCED INTERSECTION FEATURES

EXISTING BUS STOP

PROPOSED TRANSIT CENTER

Aggie Research Campus

Transportation Demand Management Plan

TRANSPORTATION CONSULTANTS, INC.

Aggie Research Campus
Transportation Demand Management Plan

Prepared for

Ramco Enterprises, Buzz Oates, and Reynolds & Brown

Prepared by

LSC Transportation Consultants, Inc.
PO Box 5875
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Tahoe City, California, 96145
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April 7, 2020

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Introduction

The Aggie Research Campus (ARC) is proposed to consist of commercial and advanced manufacturing employers, multifamily housing, and open space. The site consists of 187 acres immediately east of Mace Boulevard and north of 2nd Street, adjacent to the City of Davis (Davis) within unincorporated Yolo County.

The proponent of the project, Ramco Enterprises, Buzz Oates, and Reynolds & Brown, aware of the importance of reducing transportation and associated environmental effects of new development, has commissioned this Transportation Demand Management Study. Using the services of LSC Transportation Consultants, Inc., this study assesses existing alternative transportation modes serving the study area, analyzes current plans for improvements to these auto alternative modes, and provides strategies that the landowner can implement to expand alternative access.

The following chapter presents a summary of existing transit services and planning documents. This is then followed by a discussion of bicycle, pedestrian and microtransit conditions. An overall analysis of alternative transportation conditions is then provided. Finally, recommendations are provided for action items that can expand non-auto access and help meet local and regional goals for expansion in transit, pedestrian and bicycle travel.

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Chapter 2
Existing Transit Services

This chapter provides an overview of various transit systems serving the site as well as current plans for improvements. The site is currently directly served by two public transit programs, Yolobus and UNITRANS, as shown in Figure 1. In addition, the Capital Corridor Amtrak provides rail service to Davis and expands non-auto options to the site through local connections.

EXISTING SERVICE TO THE PROJECT SITE

Yolobus

Yolobus currently runs 14 regular fixed route services, 5 commuter services, and 8 express bus services throughout Yolo County. Of these 27 services, 4 routes serve the proposed project area within the eastern Davis. The following provides a brief description of each route and their service hours:

- Routes 42A and 42B both provide hourly service, seven days a week. Route 42A is an intercity loop going clockwise, starting in downtown Sacramento, moving through West Sacramento, Davis, Woodland, the Sacramento Airport, and ending in downtown Sacramento. Route 42B is an intercity loop going counter-clockwise, opposite the 42A. Service along these routes are provided between 4:30 AM and 11:45 PM Monday through Friday, and 6:30 AM to 10:45 PM Saturdays, Sundays and holidays.

  Popular destinations and major transfer points for connections to other routes include: Woodland County Fair Mall Transit Center, UC Davis Memorial Union Terminal (connections with Unitrans & Solano), West Sacramento Transit Center, and downtown Sacramento (connections with Sacramento Regional Transit and other regional agencies).

- Route 232 is an express bus providing one morning and one afternoon trip during weekdays only between central and east Davis and downtown Sacramento. Service on this route is provided between 6:30 AM and 7:30 AM and between 5:30 PM and 7:00 PM.

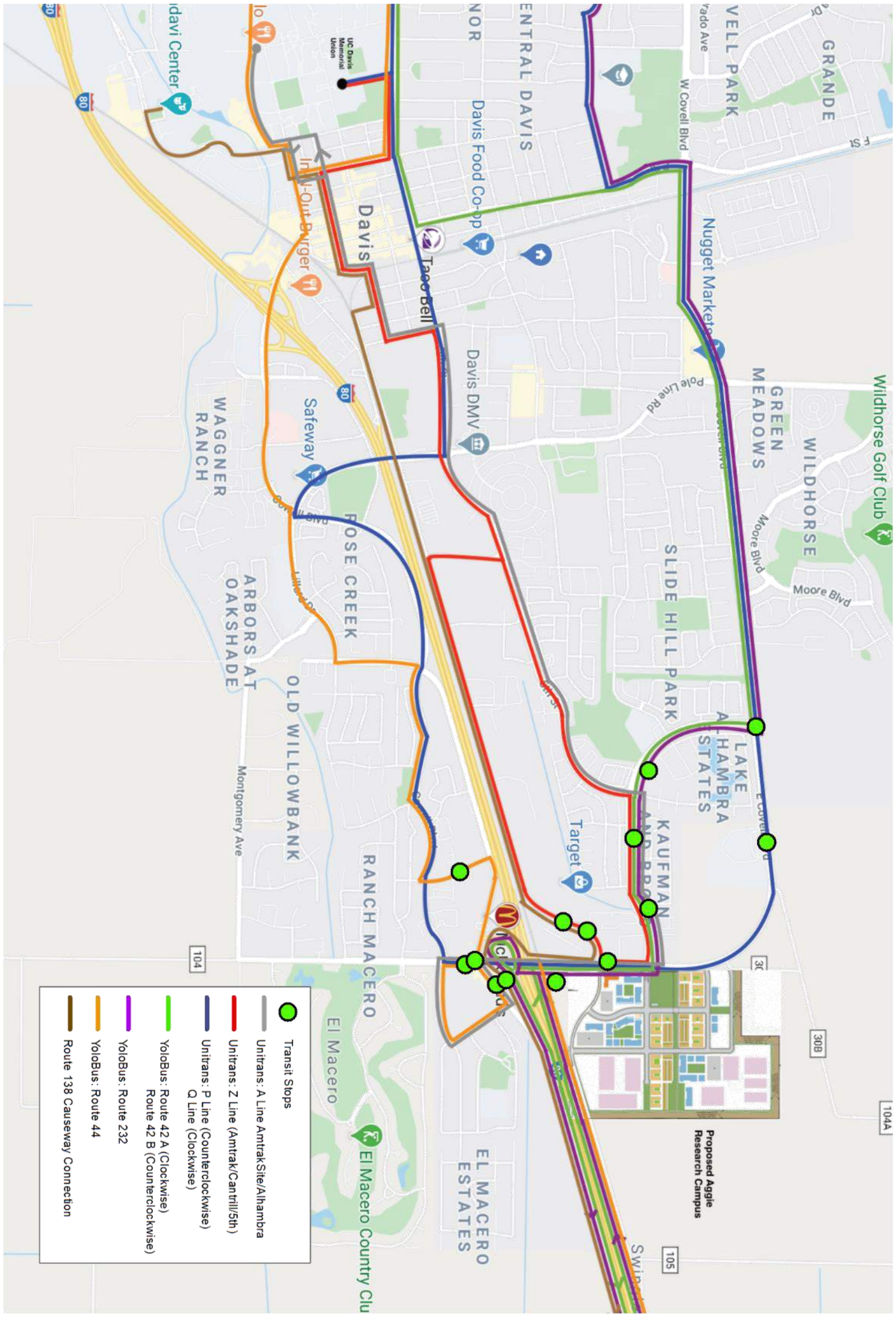

FIGURE 1
Existing Transit Services

- Route 44 is an express bus providing three morning and three afternoon trips during weekdays only between central and south Davis and downtown Sacramento. Service is provided between 6:00 AM and 8:30 AM and between 4:15 PM and 6:15 PM.

- Route 138 - The “Causeway Connection” was planned to begin service April 6th, 2020 but due to recent Covid-19 precautions, has been postponed to April 30th. This service will be run by Yolobus in partnership with Sacramento Regional Transit to connect Davis with the UC Davis Medical Center in Sacramento. This service will also serve the Mace Boulevard Park and Ride as one of its stops in Davis between the hours of 6 AM and 8 AM with return drop off between 4 PM and 8 PM. The Causeway Connection is fully electric and will operate Monday through Friday between the hours of 6:15 AM and 8:50 PM. It will provide service between the site and downtown Sacramento / UC Davis Med Center within roughly 30 minutes.

UNITRANS

The UNITRANS program, operated by the Associated Students of UC Davis (ASUCD), provides 19 fixed routes within Davis. Of these services, four routes currently serve the proposed project area on a half-hourly basis. The following provides a brief description of each route and their service hours:

- The A Line provides service every 30 minutes Monday through Thursday between 6:50 AM and 11:00 PM and Friday from 6:53 AM to 9:00 PM. The service runs between the UC Davis Silo east towards the Amtrak station with stops located along 5th street near the Post Office, DMV, and Police Department. The route continues down Mace Boulevard to the Park and Ride lots located along El Cemonte Avenue before returning along the same route west towards the Silo.

- The P and Q Lines provide service seven days a week. Regular service is provided every 30 minutes Monday through Thursday from 6:30 AM to 11:00 PM, Friday from 6:30 AM to 9:00 PM, and hourly service on weekends from 8:20 AM to 7:00 PM. These services are described as being the Davis “perimeter” lines as they travel along Covell and 14th Street on the north side of Davis and along Cowell and Russell on the south s ide of Davis.

- The Z Line runs Monday through Friday from 7:00 AM to 6:50 PM with 30-minute headways. This route begins at the Memorial Union stop, heads east on Russell before turning south on B Street. Its route is similar to the A Line but rather than continuing

down Mace Boulevard towards the Park and Ride lot, it turns west on 2nd Street and loops back up the 5th Street before returning back towards Memorial Union.

Major Bus Stop Average Daily Boarding and Alightings

As shown in Figure 1, there are nine bus stops within ½ mile walking distance to the proposed project site. The stops average daily usage is summarized in Table 1. As shown, the transit stop located at 2nd Street and Target has the most average daily use (100 passengers a day), followed by Alhambra Drive and Mace Boulevard (97.6 passengers a day).

TABLE 1: UNITRANS Boarding and Alightings within 1/2 Mile of ARC

Bus Stop		Total Daily Boarding & Alightings	Amenities
2nd St. & Target Drive (WB)		100.0	Shelter & Bench
Alhambra Dr & Mace Blvd (EB)		97.6	Bus Stop Sign Only
Mace Blvd & Cowell Blvd (NB)		74.2	Bus Stop Sign Only
Mace Blvd & Chiles Rd (SB)		73.9	Bus Stop Sign Only
Cowell & Mace Blvd (WB)		66.3	Bus Stop Sign Only
Alhambra Dr & Mace Blvd (WB)		65.7	Bus Stop Sign Only
Mace Blvd & 2nd St (SB)		52.6	Bus Stop Sign Only
Mace Blvd & 2nd St (NB)		45.8	Bus Stop Sign Only
Covell & Mace Blvd (EB)		33.1	Bus Stop Sign Only
	Total	**609.1**	

Source: UNITRANS Ridership FY 2018-19

Transit systems serving small to mid-sized cities typically strive to provide seating (such as a bench) for stops that average 5 or more boardings per day, and shelter for stops that average 10 or more boardings per day. Currently, the only bus stop with a shelter and bench is located at the 2nd Street Target bus stop. None of the other transit stops located in the proximity of the project site have large enough sidewalk pads, shelters, benches, wayfinding signage, or bicycle racks to facilitate high rates of average daily ridership.

Amtrak Capitol Corridor

The Capitol Corridor is an intercity passenger train system that provides service along the congested Interstate (I-) 80, I-680 and I-880 freeways through 18 stations in 8 Northern California counties: Placer, Sacramento, Yolo, Solano, Contra Costa, Alameda, San Francisco,

and Santa Clara. The service is a partnership between Amtrak, Caltrans, and the Union Pacific Railyard with 11 trains running east- and westbound through the Davis station between 4:50 AM and 12:12 AM Monday through Friday and between 6:25 AM and 11:40 PM Saturdays and Sundays. There are future planned expansions between Roseville and the Capital Corridor outlined in the *Capital Corridor Vision Plan,* which include expansion to up to 40 trains per day in each direction. The timeline of these improvements is currently unknown.

PLANNED EXPANSION OF SERVICE TO THE PROJECT SITE

The most recent Yolo County Transportation District (YCTD) Short Range Transit Plan (SRTP) was prepared by the Sacramento Area County of Governments (SACOG). The SRTP analyzed issues specific to Yolobus's service to Davis and presented recommendations to accommodate increased student ridership between Woodland and UC Davis through route and schedule alternatives to Routes 42 and 242 (which both currently serve the proposed project's location). Alternatives to ease over-crowding on Route 42 included the addition of one bus throughout the entire day of service or the use of an additional bus only during peak capacity times (commuting AM and PM hours).

Most recently, YCTD completed a 2020 Comprehensive Operational Analysis (COA) focusing on current conditions, cost allocation methodology, administrative policies, and operational performance. A thorough review of both their Yolo County fixed route and ADA paratransit services was presented for public input through a series of outreach meetings and stakeholder interviews. The analysis concluded with the following recommendations affecting service to the project site:

- Increase weekday frequency on Routes 42A/42B to every 30 minutes.

- Streamline Routes 42A/42B in downtown Sacramento and consider streamlining Routes 42A/42B in Davis. The streamlining of 42A/42B maintains its current Mace Boulevard services.

- Discontinue unproductive service to reduce the financial impact of 30-minute service on Routes 42A/42B. Single-trip express/commute routes, local Route 35 in West Sacramento, and other express/commute routes are proposed for discontinuation depending on the financial scenario.

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Chapter 3
Bicycle, Pedestrian and Micromobility Conditions

Davis has over 70 miles of pathways and 50 miles of bicycle lanes. A total of 75 percent of all roads have a speed limit of 25 miles per hour and with 25 at-grade separated crossings 4 overpasses and 21 underpass crossings, the city is one of the most bicycle friendly areas in the Sacramento-Bay Area region. The following provides an overview of existing bicycle and pedestrian facilities serving the project site as well as planned improvements.

EXISTING BICYCLE AND PEDESTRIAN FACILITIES SERVING THE SITE

As shown in Figure 2, there are two protected shared bicycle and pedestrian paths and six major bicycle lanes serving the project site. As part of the greater Davis mobility network, there is a protected shared pedestrian and bicycle path along both sides of Alhambra Drive from Covell Boulevard to Mace Boulevard. These paths link to the neighborhoods both north and south of Alhambra Drive. On this same corridor there is a Class II separated bicycle lane on both sides of the street as well. The other two sets of Class II bicycle lanes run north and south along Mace Boulevard/Covell Boulevard as well as east and west along 2nd Street.

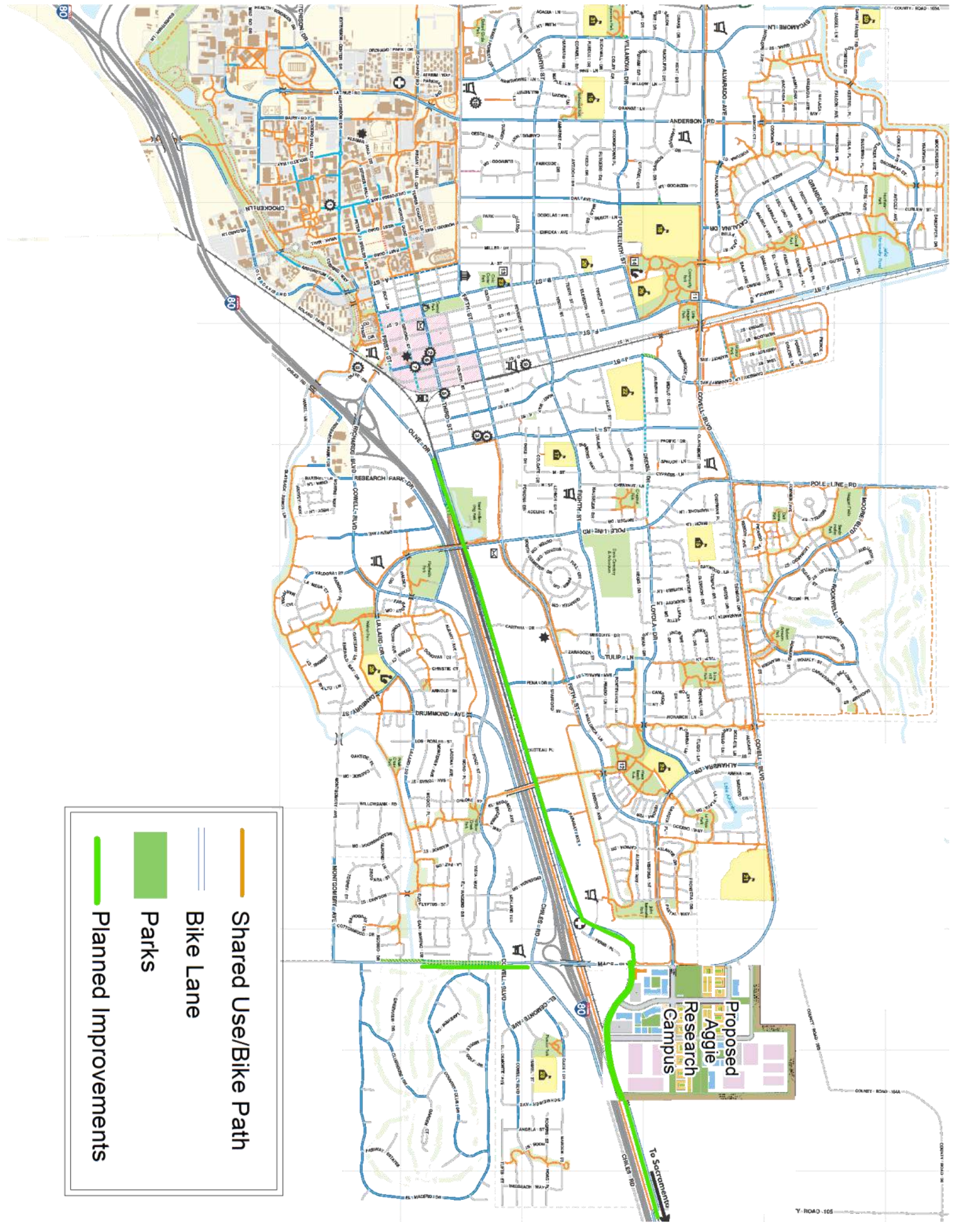
PLANNED IMPROVEMENTS NEAR THE PROJECT SITE

Planned bicycle improvements are also shown in Figure 2. Davis plans to initiate design for safety-related improvements on 2nd Street between Mace Boulevard and L Street over the next year. There are also design revisions currently occurring to the recently constructed improvements on Mace Boulevard just south of the I-80, between Cowell Boulevard and Red Bud Drive. Lastly there are road realignments and safety improvements in conceptual design for County Road 32A at County Road 105 in Yolo County.

In addition to the city-planned bicycle infrastructure improvements, the ARC proposes the addition of a 2 ¼ mile long bike path and adjacent pedestrian trail encircling the site. This bike path would connect to the existing Class II bike lane located along CR 32A at the project's southeastern corner. The Class II bike lane on CR 32A provides connectivity to the following:

- Old Lincoln Highway Class I (separated) bike path along I-80 via the Union Pacific Railroad (UPRR) train tracks at-grade crossing.
- Class II (striped) bicycle lanes on CR 32A east of CR 105 and the UPRR crossing.

FIGURE 2
Existing Bicycle Facilities



- Class I bicycle path on the Yolo Causeway.
- Class II (striped) bicycle lanes on CR 32A east of CR 105 and the UPRR crossing.
- Class I bicycle path on the Yolo Causeway.

EXISTING MICROMOBILITY SERVICES

JUMP provides on-demand bicycle rental through an app-based program throughout Davis. JUMP currently has approximately 150 electric-assist bicycles operating in the area. However, during the COVID-19 outbreak, they have reclaimed their bicycles and will redeploy once it is safe to do so. While JUMP also offers electric scooter rental in other regions, electric scooter-share is prohibited by City of Davis Ordinance 22.18.020.

Current JUMP electric bicycle charging stations are located at The Spoke Apartment complex at 8th Street and J Street. There are also plans to install two additional charging stations at Davis City Hall (Between A and B Street along Russell Boulevard) and within ¼ mile of the project site at the Residence Inn on Fermi Place and Mace Boulevard.

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Chapter 4

Transportation and Mobility Analysis

This chapter provides a summary of the proposed project followed by an analysis of existing transit and mobility services as they relate directly to the project.

Project Description

The proposed ARC project is located on a 187-acre site northeast of Mace Boulevard and 2nd Street. ARC is approximately 2.5 miles east of downtown Davis, 3 miles from UC Davis, and 10 miles west of downtown Sacramento and the State Capitol. Once completed, the development will include a total of 2,654,000 square feet of commercial uses such as office, research, laboratory, prototyping, and advanced manufacturing (Table 2).

TABLE 2: ARC Project Land Uses by Type

Land Use	Size
Office, Research, and Development/Laboratory	1,510,000 sf
Advanced Manufacturing/Prototyping	884,000 sf
Residential (avg. density 30 units per acre)	850 Units
Ancillary Retail	100,000 sf
Hotel/Conference	160,000 sf
Green Space	49.1 acres
Transit Plaza	0.6 acres
Total Acres	**187**
Total Square Footage	**2,654,000**

Source: Project Description, October 23, 2019

At completion, there will also be 850 residential units of varying size and affordability in addition to supportive uses such as hotel, conference, and retail space. The project is estimated to provide approximately 5,882 jobs[1] and 2,119 project residents according to Appendix F:

[1] ARC employment estimates taken from the *City of Davis Economic Evaluation of Innovation Park Proposals* (BAE, 2015)

Transportation Impact Analysis of the Aggie Research Campus Subsequent Environmental Impact Report Draft (March 2020).

Existing Commute Patterns

Table 3 summarizes commute patterns gathered by the US Census 2017 Longitudinal Employer Household Dynamics (LEHD). It is important to consider that this data does not include the commute patterns of UC Davis faculty and residents which, though distinct and unique, are undeniably tied to the City of Davis. It also includes information for employees that do not necessarily report to work on a daily or consistent basis and can include persons who have a permanent residence in one location but stay elsewhere during their work week. Nevertheless, despite these omissions, the LEHD provides the best available picture of commuting patterns associated with the City of Davis.

TABLE 3: City of Davis Commute Patterns

Where Davis Residents Work

City/Town	# of Persons	% of Total
Sacramento	4,619	18.8%
City of Davis	4,197	17.1%
City of Woodland	949	3.9%
City of Vacaville	540	2.2%
Fairfield	457	1.9%
Roseville	443	1.8%
San Francisco	421	1.7%
West Sacramento	406	1.7%
Arden-Arcade CDP	329	1.3%
Rancho Cordova	275	1.1%
All Other Locations	11,921	48.5%
Total	***24,557***	-

Where Employees Working in Davis Commute From

City/Town	# of Persons	% of Total
City of Davis	4,197	27.7%
Sacramento	1,570	10.3%
City of Woodland	1,285	8.5%
West Sacramento	465	3.1%
City of Vacaville	402	2.6%
City of Dixon	343	2.3%
City Elk Grove	329	2.2%
San Jose	164	1.1%
Arden-Arcade	163	1.1%
San Francisco	163	1.1%
All Other Locations	6,097	40.2%
Total	***15,178***	-

Source: LEHD Census Data, 2017

As shown in Table 3, nearly 19 percent of working residents living in Davis work in Sacramento. Another 15 percent of all working-aged residents commute to other neighboring communities such as Woodland, Vacaville, Fairfield, and Roseville. Only about 17 percent of Davis residents work in Davis (though it can be assumed that a portion of those captured within “All Other Locations” work at UC Davis). Of the 48.5 percent of Davis residents working at All Other Locations, those not working at UCD are either physically commuting to, or remotely working from, areas such as Stockton, Pleasanton, San Jose and Oakland. Even without the exact UC Davis data, it is safe to surmise that the majority of working Davis residents commute out of town for employment.

On the other side of Table 3, amongst those currently working within Davis, 27.7 percent of them are also residents of Davis, followed by 10.3 percent commuting from Sacramento and 8.5 percent commuting from the City of Woodland. Another 13.4 percent of those working in Davis commute from the neighboring communities of West Sacramento, Vacaville, Dixon, and Elk Grove. The remaining 40.2 percent of those working to Davis include those coming from areas such as Stockton, Yuba City, Roseville, and Fairfield. In sum, Davis imports a considerable percentage of its workforce but primarily from Sacramento and the immediately adjacent jurisdictions.

Fixed Route Transit Access

The average walking distance to be considered "accessible" to a pedestrian is between ¼ and ½ mile. Figure 3 indicates the various transit stops within these distances. As shown in Figures 1 and 3, the following transit stops and transit services are within ¼ mile of the project site:

- Alhambra Drive and Mace Boulevard (westbound/eastbound)
    - Served by UNITRANS Lines A and Z and Yolobus Routes 42 A/B and 232.

- Mace Boulevard and 2nd Street (northbound/southbound)
    - Served by UNITRANS Lines A, Z, P, Q and Yolobus Routes 42 A/B, 43, 232 and Yolobus/SACRT Route 138 Causeway Connection

The following transit stops and transit services are within ½ mile of the project site:

- 2nd Street and Target (westbound)
    - Served by UNITRANS O and Yolobus/SACRT Route 138 Causeway Connection

- Chiles Road and Mace Boulevard (southbound/northbound)
    - Served by UNITRANS A, P, Q and Yolobus Routes 44, 232

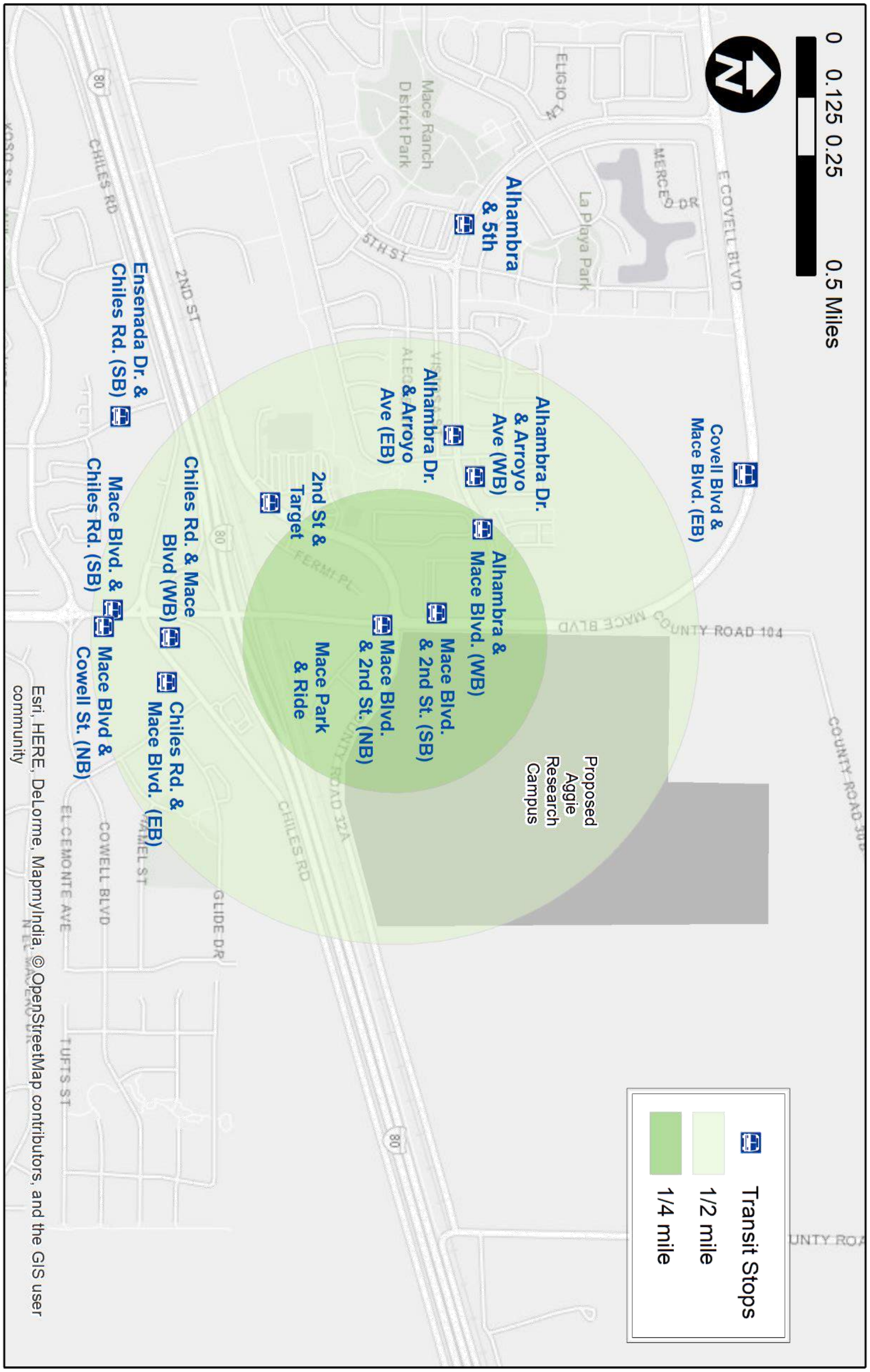
- Chiles Road and Mace Boulevard (eastbound)
    - Served by UNITRANS A and Yolobus Route 42 A/B, 44, 232, 232

Summary of Existing Transit Accessibility to the Site

Considered as a whole, the existing transit services provide the ability for ARC employees and residents to travel to and from the following communities with the identified travel times:

FIGURE 3

Existing Transit Stops within ½ and ¼ Mile



15-Minute Travel Time

- Davis Neighborhoods of Wildhorse, Green Meadows, Covell Farms, Slide Hill Park, Lake Alhambra, Kaufman and Broad, Mace Ranch, Rancho Yolo, Ranch Macero, Willowcreek, and El Macero Estates.

30-Minute Travel Time

- Davis Neighborhoods of Rose Creek, Willowbank, South Cape, Wagner Ranch, Arbors at Oakshade, Arrowhead, Covell Park, Central Davis, Evergreen Meadows, Aspen, Stonegate, and UC Davis.

- West Sacramento

60-Minute Travel Time

- One may take a 20 minute bus ride to and from the Amtrak Capitol Corridor station in Davis, followed by a 33-minute train ride to and from the Sacramento Valley station for a total of 53-55 minutes.

- The 42 A/B provides 45 minute service between Mace Boulevard and downtown Sacramento.

Future Transit Accessibility

Planned expansion of transit services will expand the areas that can be reached by public transit within various travel times. In particular, Route 138 (the Causeway Connection) will provide 30-minute service from the Mace Boulevard Park and Ride to the UC Davis Medical Center. The inter-regional commuter will pick passengers up from the Mace Park and Ride at 6:23 AM, 7:10 AM, 8:10 AM, and 9:10 AM with return service to the Park and Ride at 4:16 PM, 5:16 PM and 6:10 PM.

Discussion of Transit Demand

The key generators of demand for transit services will be the employment on site and residents.

Employment Transit Demand

At buildout, ARC will be a major employment center. The most recent available data (2017) indicates 15,178 jobs in the City of Davis (per the *American Community Survey*), while ARC is forecast to add 5,882 new jobs. Setting aside job growth in other areas of Davis, if built today ARC would constitute 28 percent of all employment in Davis.

Persons employed within ARC will have a substantial number of convenient transit options to commute to and from the site:

- UNITRANS provides a total of 82 arrivals to ARC (and an equal number of departures) each weekday over the 4 routes serving the site, from 6:30 AM to 10:00 PM, providing service within 30 minutes to all of Davis.

- Yolobus currently provides a total of 40 arrivals from Woodland (an increasingly important location of relatively affordable housing) and 6 arrivals from West Sacramento and Sacramento each weekday, from 6:30 AM to 10:30 PM. The new Causeway Connection will add 3 new daily arrivals and will reduce travel times to downtown and mid-town Sacramento to roughly a half-hour.

- The *Capital Corridor* rail service provides 11 trains per day that provide regional access from the Bay Area and Sacramento Region. As I-80 congestion increases, this is an increasingly attractive commute mode, and is now the third-busiest passenger rail route in the nation. Of note, existing UNITRANS routes already provide a total of 52 daily trips from the Amtrak train station to the ARC site (typically a 20 minute trip), from roughly 7:00 AM to 10:00 PM and up to 4 trips per hour per direction.

Travel Mode Share

City of Davis

As shown in Table 4, 7.2 percent of Davis residents commute by public transit. To a degree, this figure reflects the unique travel characteristics of the UC Davis campus. A more realistic "transit mode split" is 3.5 percent, consistent with the average proportion of commuting by transit for the Sacramento Region as a whole. Applying this figure to the 5,882 jobs indicates a daily transit ridership generation of approximately 410 one-way passenger-trips. Over the course of a year, this is equal to roughly 103,000 additional passenger boardings.

TABLE 4: Davis Commuter Mode of Travel

Mode	Population #	Population %
Car Truck or Van	19,257	60.3%
Drove Alone	17,469	54.7%
Bicycled	6,004	18.8%
Public Transportation	2,299	7.2%
Carpooled	1,820	5.7%
Walked	958	3.0%
Taxi	479	1.5%
Worked at Home	2,938	9.2%
Total Workforce	*31,936*	-

Source: 2018 American Community Survey Census Data

UC Davis Campus

The most recently completed UC Davis Campus Travel Survey (2018-19) found that about 45,000 people physically travel to and from the UC Davis campus on an average weekday. Of those surveyed, 37 percent bicycled, 31 percent drove alone, 16 percent rode the bus, 9 percent walk or skate, 6 percent carpool or get a ride, 1 percent ride the train, and 0.4 percent use ride hailing services such as Lyft and Uber. This survey indicated that nearly 62 percent of those travelling to and from campus do not use a personal vehicle to do so.

Resident Transit Demand

ARC residents will also benefit from the high level of existing (and higher level of future) transit accessibility of the site. In particular, the high frequency of UNITRANS service providing connections to shopping, downtown, UC Davis and the train station will make transit a convenient mode for many travel needs. A reasonably conservative transit mode split for ARC residents is 5 percent. As identified in the ARC Transportation Impact Study, there will be 5,179 total vehicle-trips generated (prior to the non-auto reduction). This value multiplied by the 5 percent transit mode split indicates that transit service reduces the total residential trip generation by 259 daily vehicle-trips. At a typical average vehicle occupancy of 1.7 persons per vehicle, this equates to 440 passenger-trips per weekday. As weekend daily transit ridership is

typically on the order of half that of weekday ridership, over the course of the year this equates to 132,000 transit passenger-trips.

Total Transit Demand

In total, at buildout the ARC will generate approximately 860 new transit boardings per weekday, or 237,000 boardings over the course of a year. At buildout, this level of transit ridership will warrant routes that deviate off of Mace Boulevard to serve an internal transit hub (and avoids the need for half of the passengers to cross Mace Boulevard). However, during the initial phases of development when demand is relatively low, it is good transit route planning to keep the routes on Mace Boulevard, serving improved bus stops on either side of the street.

Summary of Bicycle and Pedestrian Accessibility to the Site

The project site currently has good bicycle/pedestrian accessibility, particularly provided by the Class I shared use paths along Alhambra Drive and the 5th Street Corridor. Planned improvements (including a grade separated path across Mace Boulevard and connections to the eastern end of the existing Class I facility at Frances Harper Junior High School, and improved connections to the Yolo Causeway Class I facility) will further enhance bicycling and walking as viable options for travel to/from the site.

Figure 4 depicts the areas of Davis that are accessible by bicycle within a 10-minute, 20-minute and 30-minute travel time. As shown, virtually all of the city as well as the UC Davis campus is within a 30-minute travel time by bicycle. Downtown Davis as well as the Davis Senior High School is within a 20-minute ride. A 10-minute ride from the site allows access to supermarkets, parks and the junior high school. Along with the bicycle-supportive TDM policies proposed for the development, bicycling and (to a lesser degree) walking are viable travel modes for ARC employees and residents.

Micromobility

As discussed in the previous chapter, bicycle and pedestrian infrastructure is robust with most of its infrastructure occurring nearest the University and downtown. According to the 2018 American Community Survey, approximately 19 percent of those commuting within Davis (Table 4)

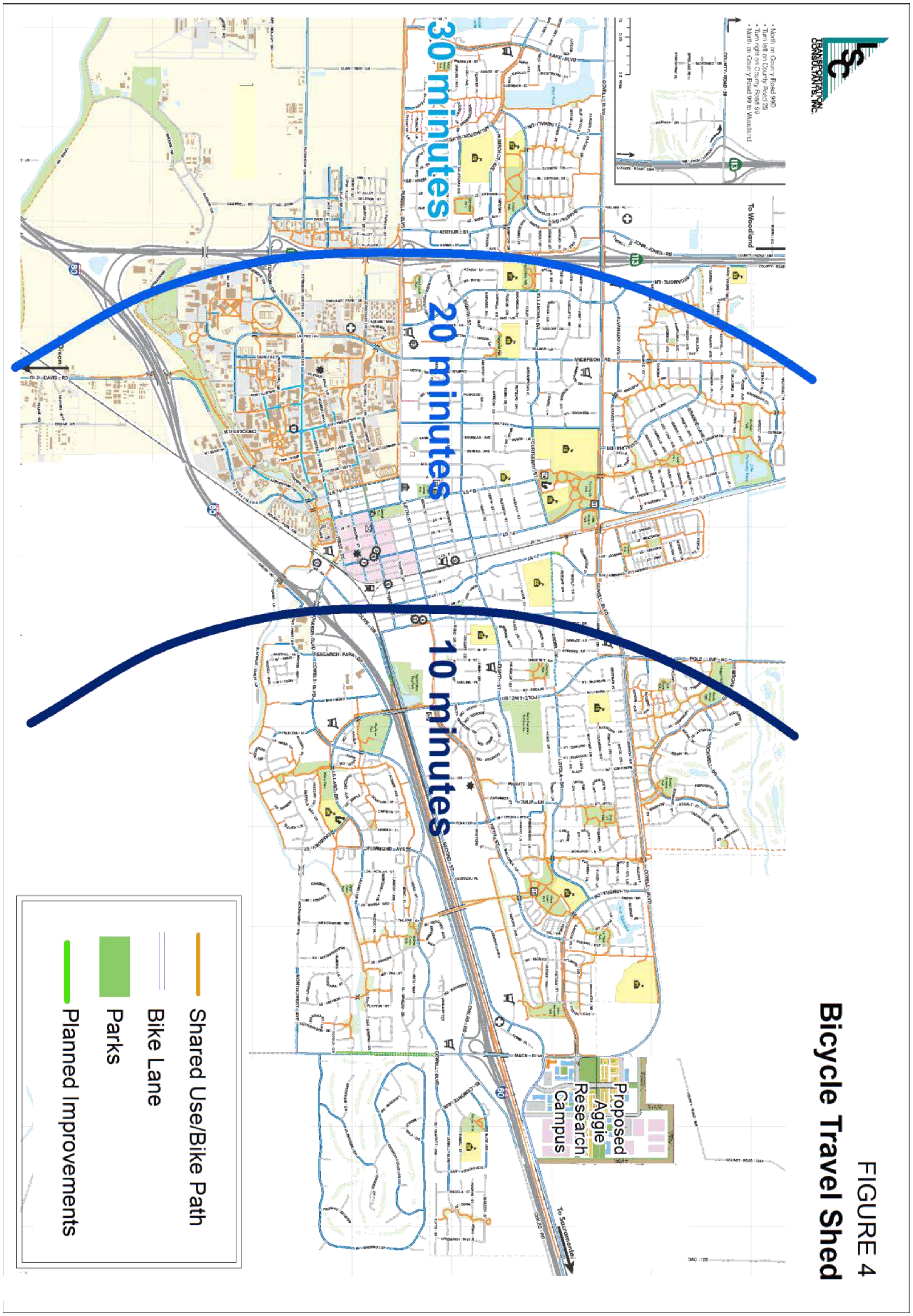


FIGURE 4
Bicycle Travel Shed

Those who typically travel by bicycle do so for approximately 10 minutes or 2 miles. As shown in Figure 4, there are two major commercial centers located within a 2 mile bicycle ride from the site: the Target shopping center along 2nd Street and the Nugget Market shopping center south of I-80 at Chiles Road and Mace Boulevard. In addition to accessibility to nearby activity centers, the southeast corner of the project site connects to the Yolo Causeway via CR 32A. To support the existing JUMP bicycle infrastructure within Davis, a charging station is currently being designed within ¼ mile of the project site on Fermi Place and Mace Boulevard (Residence Inn).

Chapter 5

Transportation Demand Management Program

This chapter outlines potential transit and micromobility improvements to better serve ARC. The following transportation demand management (TDM) program recommendations have the most potential to reduce vehicle trips, vehicle miles travelled (VMT), and greenhouse gas emissions.

1. Transit Incentives and Improvements

Action 1.1: Improve Existing Bus Stop Infrastructure

Increasing concrete sidewalk pads, shelters, seating and bicycle racks at the major bus stops near the project site would greatly improve existing facilities that are lacking. These added amenities have the capacity to increase ridership by 5 to 10 percent and are vital in attracting discretionary riders.

Action 1.2: Provide Transit Subsidies

Offering free transit passes to those working and living on the project site encourages transit use. Subsidies may be provided by either employers or property managers depending on agreements with local transit providers. Providing “free rides” typically generates a 40 to 50 percent increase in ridership.

Action 1.3: Improve Amtrak Station Connections

Coordinating with the City of Davis to provide fair-share funding for improved bus connections with the Davis Amtrak Station would encourage increased ridership. These improved connections could include a shuttle bus or other similar efforts. Providing convenient access to the Capital Corridor railway system can expand the ability for people living throughout the I-80 corridor (from Roseville to the Bay Area) to access ARC employment opportunities, while allowing ARC residents to access jobs throughout the corridor as well.

Action 1.4: Research Campus Transportation Coordinator

Requiring residential property managers and future employer tenants to join the Yolo TMA and designate a Transportation Coordinator would better assist residents and employees with

transit trip planning. Designating a single contact person responsible for alternative transportation helps to ensure long-term focus on alternative modes of travel and reduced auto use overall.

2. Bicycle, Pedestrian and Micromobility Infrastructure Improvements

Action 2.1: Encourage Bicycle Share Programs

Incentives and subsidies for employees and residents to use local bicycle share programs, such as JUMP, may be provided by either employers or property managers. This would encourage bicycle use throughout Davis while providing first and last mile connections between transit stops and ARC employment and housing.

Action 2.2: Provide Micromobility Infrastructure throughout ARC

Constructing multiple bicycle facilities for those using their own or shared micromobility alternatives would further promote cycling to, from, and within the project site. Providing bicycle lanes, protected bicycle paths, racks, and proper lighting is important for supporting cycling safety. The project may also provide a charging station on-site for bicycle share programs such as JUMP. Providing convenient locations for bicycle parking, bicycle share, and connecting facilities near transit stops support first and last mile connections for cycling commuters as well.

Action 2.3: Bicycle Route Enhancements

Contributing funding towards bicycle route enhancements will better connect the project to existing and proposed infrastructure. These improvements would include those described in the project description and project EIR. The following bicycle route enhancements are currently planned to support the ARC project:

- Construction of a 2 ¼ mile bicycle and pedestrian path surrounding the northern and eastern boundaries of the project site.

- Installation of a grade-separated bicycle and pedestrian crossing at Mace Boulevard.

- Extension of existing bicycle lanes up around the Mace Boulevard curve towards Covell Boulevard.

- Construction of a connection to the existing Class II bicycle lane on CR 32A at the project's southeastern corner. The Class II bike lane on CR 32A provides connectivity to the following: 1) Old Lincoln Highway Class I (separated) bike path along Interstate 80 (I-80) via the Union Pacific Railroad (UPRR) train tracks at-grade crossing; 2) Class II (striped) bicycle lanes on CR 32A east of CR 105 and the UPRR crossing; and 3) Class I bicycle path on the Yolo Causeway.

Action 2.4: Bicycle Repair Facilities

Providing bicycle repair stations throughout site (to include air compressor, allen wrenches, and tire levers) encourages bicycle ridership and ensures a sense of safety in the case of bicycle mechanical issues for cycling commuters.

Action 2.5: End-of-Trip Bicycle Support Facilities

Supplying end-of-trip facilities for major on-site employers such as showers, lockers, and changing rooms is most important to those making longer bicycle commute trips by bicycle, such as causeway cyclists from Sacramento and West Sacramento

Action 2.6: Bicycle Storage Rooms

Requiring internal and secure bicycle storage rooms and/or bicycle lockers of sufficient capacity to accommodate minimum required long-term bicycle parking spaces near each residential building and employer entrances encourages people to ride their bikes as a primary means of transportation. These rooms and/or lockers should be located on the ground floor so they can provide easy access to and from bicycle infrastructure on site such as bicycle lanes and multi-use paths.

3. Parking Pricing and Supply Management

Action 3.1: Rent or Lease Residential Parking Spaces

"Unbundled parking" is the act of providing on-site parking separate from residential units. The project could implement unbundled parking from their multifamily-residential in an effort to discourage auto-use to and from ARC. Recent research has suggested that unbundled parking methods can reduce VMT by 3 to 13 percent.[2]

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[2] Quantifying Greenhouse Gas Mitigation Measures, California Air Pollution Control Officers Association, 2010.

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ENVIRONMENTAL SUSTAINABILITY GUIDING PRINCIPLES

In recognition of the City's declaration of a climate emergency (RESOLUTION 19-023), the Developer and the City have agreed to the following Sustainability Guiding Principles for the Aggie Research Campus ("Project"). These Guiding Principles are a means for mandating, implementing and maintaining Project features that are designed to address and mitigate identified environmental concerns, including but not limited to impacts to global climate change, and to ensure sustainability for the life of the project.

Measurement and Verification

Critical to the success of the Aggie Research Campus is its ability to demonstrate continuous advancements in site sustainability during buildout and into campus operations. Many of the Sustainability Guiding Principles are designed to gradually increase site sustainability and further reduce Project impacts over time, such as improved air quality, reduced carbon emissions, greater electrical efficiency and reduced single-occupancy vehicle travel. These Guiding Principles will work in tandem with Project mitigation measures to reduce Project-related environmental impacts. To ensure accurate tracking and reporting, Developer will establish a Master Owners Association which reports to the City and is responsible for measurement, verification and assuring compliance with Project sustainability obligations and mitigation measures.

Building Standards

The Project shall meet and exceed Title 24, Cal Green Tier 1 and will utilize the City of Davis' Residential Energy Reach Code standards.

Energy Efficiency and Usage

The Developer is committed to maximizing clean energy production onsite and to implementing a program within the Project to ensure that all structures consume 100 percent renewable electricity. In furtherance of this pledge, the Developer commits as follows:

- To maximize and optimize onsite solar energy generation (and future clean energy use) by mandating photovoltaics on every conducive structure and in parking areas.
- Project will enter into a purchase and sale agreement with Valley Clean Energy (or another electric utility company) to which it will sell, and through which it will distribute, all electricity generated onsite. This arrangement will ensure that all power generated onsite which is not used onsite is utilized locally.
- All onsite residential units will be all-electric.
- To achieve a Project that is fueled by 100% clean energy, Developer commits all structures, residential and non-residential, to purchase power from solely renewable sources such as Valley Clean Energy's "UltraGreen" 100% renewable program or its equivalent, to offset any electric deficit.
- Achieve net zero for outdoor lighting.

- In anticipation of improved solar-connected energy storage, the Project will be designed and pre-wired for future microgrid capacity and energy storage.

Transportation Demand Management Plan

The Project shall implement a Transportation Demand Management Plan (TDM plan) with measurable results to quantitatively shift away from single occupancy vehicle (SOV) use and incentivize a mode shift to bicycling, public transit, private transit, or car pool and to determine which traffic mitigations are needed at each phase of Project development. Prior to, or concurrent with, adoption of Final Planned Development, Developer shall finalize a TDM plan acceptable to the City which shall include, in part, the following:

- Prior to the commencement of construction of each phase, a traffic study shall be prepared which measures in- and out-flow from the Project and identifies traffic patterns. This analysis will be shared with the City to determine which traffic mitigation measures are necessary to accommodate each phase of development. This will also serve to inform the City on mode share and to trigger the need for increased transit services.
- The Project shall be designed to accommodate internal, local and regional transit. It will include a centralized transit plaza that will serve as the hub for a variety of mode shares.
- At Phase 1, Developer will implement an electric shuttle service running weekdays from the AM to PM peaks, connecting the ARC to UCD and the Amtrak station.
- Developer will participate in and support Caltrans led efforts to add HOV lanes on I-80 from West Sacramento to Davis.
- Developer will continue its relationship with Yolobus and Unitrans, both of which have bus service contiguous to the site, to increase the frequency and capacity of bus service as the Project develops. Prior to the commencement of Phase 3, Developer will petition to reroute Unitrans and Yolobus service into and through the Project site. The transit plaza shall be designed with specifications to accommodate local and regional bus service.

Parking Lots and Internal Streets

To further incentivize a mode shift to bicycling, public transit, private transit, or car pool and to reduce the heat island effect, as well as visual and aesthetic impacts, Developer shall implement the following features in its parking areas and/or along the Project's internal roadway system:

- All streets and surface-level parking shall utilize low-impact development (LID) features such as bioswales to capture and filter runoff and to maximize groundwater recharge. Piping of runoff will be discouraged and only utilized when necessary.
- All parking surfaces or street-adjacent sidewalks utilizing tree shading shall use structured soil or suspended substrate to allow successful tree root development. Developer shall size pavement treatment area to accommodate the tree varietal's intended tree size.
- Landscaping shall provide 80% shading of pedestrian walkways and off-street Class I bike paths. 50% parking lot shading shall be achieved through either shade trees of photovoltaic arrays. These requirements shall be demonstrated at building permit for PV or shall be achieved with in 15 years of planting for areas shaded by trees. Failure to meet shading requirements shall be considered a code violation and subject to penalty until remedied.
- Parking preference and priority will be given to high occupancy vehicles (HOV) and electric vehicles (EV). Not including handicap parking, only HOV and EV parking shall

be allowed adjacent to buildings. All stalls designated for EV will have charging stations pre-installed.

- All commercial parking areas will be designed with infrastructure to gradually phase-in the installation of EV charging stations as demand grows.
- All housing shall include one Level 2 EV charger per unit or, if a multifamily building is parked at a raio of less than 1:1, one Level 2 EV charger per parking stall. Townhomes, if built to accommodate two vehicles, will be prewired to allow for the installation of a second charger.

Landscaping and Water Conservation

To reduce Project demand on groundwater and potable water the Developer commits to the following measures:

- Native and drought tolerant plants shall predominate the plant pallet. A diversity of native habitats shall be disbursed and managed throughout the site, primarily within the agricultural buffer and along the channel, including but not limited to riparian and California oak savanna.
- Turf will be strongly discouraged and utilized only in areas programmed for activities such as the Oval.
- Developer shall engage with the Center for Land Based Learning, the Davis Arboretum, or other local expert to design and manage its open and landscaped buffer areas. Landscape plans will be subject to City review including the Open Space and Habitat Commission and the Tree Commission.
- Developer will install recycled “purple pipe” infrastructure which will convey non-potable water for use in all landscaping. Developer will convert this system to reclaimed water if and when such service is made available.
- All runoff will be captured, conveyed and detained onsite in a series of bioswales intended to filtrate and clean the run-off and maximize groundwater recharge.

Housing

Housing at ARC is included to maximize the environmental benefits of mixed-use development. The inclusion of housing and an overall complementary mix of uses reduces the number and distance of project-related vehicular trips, encourages walking and bicycle trips, reduces air quality impacts and reduces the overall carbon footprint of the project. To further increase the sustainability benefits of onsite housing, the Developer commits as follows:

- Housing will be medium- and high-density with a range of 15-50 units per acre. No single-family detached housing will be permitted.
- Housing will be designed to meet the housing needs of the workforce and will not resemble student-oriented housing found elsewhere in the City. No unit will be greater than three bedrooms. Rental apartments will not exceed two bedrooms.
- Housing construction will be directly linked to the development of commercial space at a ratio of one home per 2,000 square feet of nonresidential space. This linkage will correlate the availability of housing with the creation of jobs which will maximize ARC employee occupancy of the housing.
- Housing will be all-electric and utilize the Residential Energy Reach Code.

- Multifamily rental units shall be charged separately for parking so that any resident may have the option of renting car-free housing.

Mitigation Measures

The project shall comply with Mitigation Measures identified in the Approved Mitigation Monitoring Reporting Plan.

Aggie Research Campus – Recreation and Parks Commitments

Overview of the ARC's Park, Recreation, Open and Gathering Areas:

- The Project site, including a proposed offsite 6.8-acre agricultural buffer easement area, is a total of ±194 acres. 49.8 acres of the Project site, or roughly 25%, is dedicated to public gathering spaces and open areas, which include a mix of parks, plazas, greenbelts, courtyards and the agricultural buffer. The approximately 50-acres of various forms of green space does not include a landscaped setback area that will encircle the site or the open-air stormwater bioswales that will be located within and adjacent to all paved areas.
- The Project includes up to 850 residences primarily geared toward accommodating the housing needs of ARC employees. Utilizing Code section 36.08.040, the 850 units necessitates that the Project provide 11.14 acres of parks. (MuniCode 36.08.040; Policy POS 4.2 (p248) see also POS 6.2(b); Parks and Rec Master Plan p.82.) As demonstrated on the Preliminary Open Space Plan, the Project will provide 12.7 acres of park space.
- The onsite parks will be anchored by a roughly 7.5-acre neighborhood/special use park at Mace Blvd and Alhambra Dr. This main park feature is located within 3/8 mile of all residential units. It will include a community gathering venue and be programmed to accommodate sporting activities. This area is envisioned to serve the needs of ARC sports leagues (i.e., corporate softball) and other community leagues. The remaining three parks range from 1-acre to 2.5-acres and will primarily serve the needs of the residents and employees alike, though all ARC parks will be open to the public.
- The General Plan also requires that the Project provide greenbelts for recreational purposes as well as providing bicycle access to the site. (POS 3.1 & 3.2) The Project site is encircled by greenbelts in the form of the Agricultural Transition area (±7.5 acres) and is bisected by a greenbelt that will parallel the Mace Drainage Channel. Each of these greenbelts will include Class 1 bake paths and pedestrian walking trails.
- Between the peripheral ring trail (2.25-miles) and the trail that parallel the Mace Drainage Channel (0.5-miles), there will be approximately 2.75 miles of new walking and biking trails onsite, this does not include numerous other internal pathways that will be used for casual recreation.
- Native and drought tolerant plants will predominate the plant pallet. A diversity of native habitats shall be disbursed and managed throughout the site, primarily within the agricultural buffer and along the Mace drainage channel, including but not limited to riparian and California oak savanna.
- Turf will be strongly discouraged and utilized only in areas programmed for activities such as the Oval and other programmed spaces.
- Park design will be the subject of subsequent entitlements with precise design to be reviewed by the City, including the Recreation and Parks Commission at Final PD or Tentative Subdivision Map.

Ownership, Maintenance, and Use

- The Agricultural Transition area (interior 50-feet of the ag buffer) will be deeded to the City but privately maintained by the ARC Master Owners' Association or a landscape and lighting district.
- The internal parks and greenbelts will be privately owned and maintained to ensure that the park amenities meet and exceed the standards expected at Class-A commercial facility. A public access and recreation easement will be recorded against all parks and greenbelts for the benefit and use of the public at large.
- Additional communal gathering spaces and recreational needs will be provided for in several private courtyards associated with clusters of commercial buildings or multifamily buildings. These spaces will be designated for tenants only.

Recreation & Park Commitments:

- Developer will ensure public access through fee or easement to 7.5 acres of peripheral trail which will include a walking path and a class 1 bike trail.
- Developer will ensure public access through a recorded easement to a minimum of 12 acres of onsite parks.
- Developer will be responsible to construct and maintain all onsite parks and open spaces relieving the City of a considerable financial burden.
- Parks and recreational areas will minimize the use of turf while balancing the needs of certain sporting activities.
- The Project will include a peripheral trail that fully encircles the site to accommodate the daily recreational needs of residents and employees, and which will also be open to use by the public at large.
- A class 1 bike trail will parallel the Mace Drainage Channel, be serviced by an off-grade crossing of Mace Blvd, connect with the City easement located east of the Project site, and enhance overall regional bicycling connections.

ATTACHMENT 8

Aggie Research Campus - Landscaping Overview and Tree Commitments

Overview of the ARC's landscaped area:

- The Project site, including a proposed offsite 6.8-acre agricultural buffer easement area, is 194 acres. 49.8 acres of the Project site, or roughly 25 percent, is dedicated to public gathering spaces and open areas which include parks, plazas, greenways, courtyards and the agricultural buffer. The roughly 50-acre calculation does not include a landscaped setback area that will encircle the Project site or the open-air stormwater bioswales that will be located within and adjacent to all paved areas.
- An assessment of the Project site has determined that ARC can accommodate the planting of approximately 1,000-1,500 trees.
- While the parking areas will primarily be shaded with photovoltaic arrays, tress will also be utilized to provide a portion of parking lot shading.
- A proposed plant palette will be submitted with the application for Final Planned Development and will indicate the specific tree species for use onsite. Native and drought tolerant plants shall predominate the plant palette. A diversity of native habitats shall be disbursed and managed throughout the site, primarily within the agricultural buffer and along the Mace drainage channel, including but not limited to riparian and California oak savanna.
- Turf will be strongly discouraged and utilized only in areas programmed for activities such as the Oval and other programmed spaces.

Tree Commitments:

- The Project site will include a minimum of 1,000 trees.
- Developer shall engage with Tree Davis, the Center for Land Based Learning, the UC Davis Arboretum, or other local expert to assist with design, selection of species, and management of trees and all landscaped areas of the Project site.
- Prior to construction, Developer will submit formal landscape plans for City review and approval. Landscape plans will be subject to review by City staff and will be heard by the Open Space and Habitat Commission and the Tree Commission.
- Landscaping shall provide 80% shading of pedestrian walkways and off-street Class I bike paths that are not otherwise shaded by photovoltaics or other renewable energy generation.
- Developer will utilize best practices for tree planting and root establishment. Specifically, Developer commits to the use of structured soils or suspended substrate to allow successful tree root development, to the satisfaction of the City's Urban Forest Manager.
- When planting in parking areas or along paved walkways, Developer will size pavement treatment area to adequately accommodate the tree varietal's intended size.

- Planting practice and tree health shall be subject to 3rd party verification by the City's Urban Forest Manager. If, five years from the original date of planting, a tree is not growing at its anticipated rate or is otherwise showing signs of failure, that tree will be identified by the Urban Forest Manger who, at his or her discretion, may require tree replacement.
- Attainment of shading requirements shall be demonstrated within 15 years of planting. Failure to meet shading requirements shall be considered a code violation and subject to penalty until remedied through additional plantings.

APPENDIX 9

Exhibit A

ARC Business Park Draft Subsequent EIR Comments
Submitted by Colin Walsh
April 27, 2020

Gmail

Colin Walsh <colintm@gmail.com>

ARC SEIR

1 message

Colin Walsh <colintm@gmail.com> Mon, Apr 27, 2020 at 2:19 PM
To: Zoe Mirabile <zmirabile@cityofdavis.org>, Sherri Metzker <SMetzker@cityofdavis.org>
Cc: City Council Members <citycouncilmembers@cityofdavis.org>, Mike Webb <MWebb@cityofdavis.org>, Ashley Feeney <afeeney@cityofdavis.org>, Anne Ternus-Bellamy <aternus@davisenterprise.net>
Bcc: Roberta L Millstein <roberta.millstein@rlm.net>, Rik Keller <rik@rikkeller.com>

Zoe and Sheri,
There are documents missing from the City of Davis website and their absence is preventing me from completing my comments on the ARC Draft Subsequent EIR as a result, I request you extend the deadline for comment submissions.

I am looking for the City Council meeting minutes from November 19, 2013. They are missing from the City website. Additionally, the city council video for this meeting is missing the relevant portion of the video with council deliberation and voting on the Leland Ranch Property. The fact that both places where information about the council decision relating to the Leland ranch property and Mace 25 are missing from the City website is very significant.

Since the Mace 25 property that is included in the ARC Draft Subsequent EIR was discussed at this meeting and may or may not have been protected by easements during this meeting it is directly relevant for the ARC Draft Subsequent EIR which has comments do today by 5PM. It is also relevant what direction the Council may have given staff relating to Mace 25 if it was split from the rest of the Leland Ranch properties. Further, it is impossible to determine what actions the Council directed staff to take on Mace 25. The Leland Ranch property and and the parcel known as Mace 25 was discussed and the subject of Nov 19, 2013 Council meeting, Council direction and decision during that meeting. Some of this property is included in the DSEIR or is immediately adjacent. The decisions about these properties have direct implications for the ARC DSEIR and the public must have access to these decisions to adequately comment on the EIR.

If you can not provide the Minutes and missing council video within a timely way today and publicly post them allowing myself and others time to comment on the DSEIR. I request you extend the deadline for comments on the ARC DSEIR

This is an image of the City website demonstrating that the minutes are missing.

2013

- Minutes 2013-01-15 City Council Meeting
- Minutes 2013-01-29 City Council Meeting
- Minutes 2013-02-05 City Council Meeting
- Minutes 2013-02-12 City Council Meeting
- Minutes 2013-02-26 City Council Meeting
- Minutes 2013-03-05 City Council Meeting
- Minutes 2013-03-19 City Council Meeting
- Minutes 2013-03-26 City Council Meeting
- Minutes 2013-04-09 City Council Meeting
- Minutes 2013-04-23 City Council Meeting
- Minutes 2013-04-30 City Council Meeting
- Minutes 2013-05-21 City Council Meeting
- Minutes 2013-05-28 City Council Meeting
- Minutes 2013-06-11 City Council Meeting
- Minutes 2013-06-25 City Council Meeting
- Minutes 2013-07-02 City Council Meeting
- Minutes 2013-07-09 City Council Meeting
- Minutes 2013-09-24 City Council Meeting
- Minutes 2013-10-01 City Council Meeting
- Minutes 2013-11-12 City Council Meeting

The video of the November 19th Council meeting posted on the City website cuts 2:26:04 during the public comment period on the Leland Ranch property and picks up at an intermission before the next agenda item. All council discussion and any possible vote on the Leland Ranch property and Mace 25 are missing.

It is very unusual that multiple sources of information about the same council decision would go missing. Especially considering a portion of a video appears to have been removed. In tight of these very unusual circumstances, it is only proper for the city to extend the deadline for comment on the ARC DSEIR.

Please advise me as soon as possible since this missing material from the city website directly inhibits my ability to complete my comments on the ARC DSEIR.

Sincerely,
Colin Walsh

Exhibit

B

ARC Business Park Draft Subsequent EIR Comments
Submitted by Colin Walsh
April 27, 2020

CITY OF DAVIS
CITY COUNCIL AGENDA
COMMUNITY CHAMBERS, 23 RUSSELL BOULEVARD, DAVIS, CA 95616
TUESDAY, NOVEMBER 19, 2013
5:30 P.M.

Members of the City Council:	
Joe Krovoza, Mayor	
Dan Wolk, Mayor Pro Tem	
Lucas Frerichs	
Brett Lee	*Steven Pinkerton, City Manager*
Rochelle Swanson	*Harriet Steiner, City Attorney*

PLEASE NOTE – The numerical order of items on this agenda is for convenience of reference; **times listed are estimates**. Items may be taken out of order upon request of the Mayor or Council Members. A 4/5 vote of the Council is required to begin consideration of a new item of business after 11:30 p.m.

Roll Call

Approval of Agenda

Item 1
5:30 Closed Session pursuant to Government Code §54954.5:

A. Conference with Real Property Negotiators:

Property:	Yolo County Assessor Parcel Number 69-060-01
Negotiating Party:	Cassidy Turley
Properties:	Yolo County Assessor Parcel Numbers 71-140-06 & 71-262-23
Negotiating Party:	Dave Taormino
Agency Negotiators:	Property Management Coordinator Anne Brunette, City Attorney Harriet Steiner
Under Negotiation:	Price and terms of payment

B. Conference with Legal Counsel. Anticipated Litigation: Initiation of litigation pursuant to Government Code Section 54956.9(c): 1 case.

C. Conference with Labor Negotiators:
Agency Designated Representatives: City Manager Steve Pinkerton; Assistant City Manager/Administrative Services Director Yvonne Quiring; City Attorney Stacey Sheston; Human Resources Administrator Melissa Chaney; Tim Yeung, Renne Sloan Holtzman Sakai, LLP
Employee Groups/Organizations (under discussion): Davis City Employees Association and Firefighters Local 3494

D. Public Employee Performance Evaluation: City Manager

Item 2
6:30 City Manager Brief Announcements/Communications

Item 3
6:35 **Public Comments**

At this time, any member of the public may address the City Council on matters which are not listed on this agenda. Speakers will be asked to state their name for the record. Comments are usually limited to no more than 3 minutes per speaker. If possible, citizens should reserve their comments for matters listed on this agenda at the time the item is considered by the Council. However, members of the public who are not able to stay until their item is heard are welcome to speak during the general Public Comments period. (Please note: comments for official Public Hearings should only occur during the hearing.)

The Public Comments section is for the City Council to receive comments; except for brief questions for clarification, no discussion or action may be taken on any item that is not listed on the agenda. Public comment may be continued to the end of the meeting if the time allotted for public comment expires.

Consent Calendar

Item 4
6:55 All matters listed under the Consent Calendar are considered routine and non-controversial, require no discussion and are expected to have unanimous Council support and may be enacted by the Council in one motion in the form listed below. There will be no separate discussion of these items; however, before the Council votes on the motion to adopt, members of the Council, staff, or the public may request that specific items be removed from the Consent Calendar for separate discussion and action. Item(s) removed will be discussed later in the meeting as time permits.

A. Revised Integrated Pest Management (IPM) Policy (*Asset Manager Brad Von Striver/Parks Manager David Luckscheider/IPM Coordinator Martin Guerena*)
Recommendation: Approve Resolution Adopting the Revised Integrated Pest Management Policy

B. Public Parking License Agreement for Davis Commons, 500 First Street (*Police Chief Landy Black*)
Recommendation: Approve Resolution Authorizing the City Manager to Execute the Public Parking License Agreement to Perform Parking Enforcement Services in the Parking Lot Located at 500 First Street, Commonly Known as Davis Commons

C. Formation of a Utility Rate Advisory Commission (URAC) and Acknowledging the Services of and Disbanding the Water Advisory Committee (WAC) (*General Manager Utilities, Development & Operations Herb Niederberger/Principal Civil Engineer Dianna Jensen*)
Recommendation:
1. Approve Resolution Recognizing the WAC for Their Work and Disbanding the Committee
2. Approve Resolution Establishing the URAC

D. Federal Transit Administration (FTA) Grant Application (*Public Works Director Robert Clarke/Senior Civil Engineer Roxanne Namazi*)
Recommendation: Approve Resolution Authorizing the City Manager to Execute FTA Grant Application for the University of California-Davis, for Operations and Capital Assistance of Unitrans [CA-90-Z095]

E. Tree Preservation Fund Expenditure for Tree Planting (*Asset Manager Brad Von Striver/Urban Forest Manager Rob Cain*)
Recommendation: Approve Budget Adjustment #55 ($12,500) – allocating Tree Preservation funds

F. Amendments to Chapter 8-Buildings of the Davis Municipal Code; 2013 Edition of the California Building Standards Code (*Community Development & Sustainability Director Mike Webb/Chief Building Official Gregory Mahoney*)
Recommendation: Introduce Ordinance Repealing Articles 8.02, 8.09, 8.13, 8.15 and 8.16, and Repealing and Re-Enacting Article 8.01 of Chapter 8 of the Davis Municipal Code, and Adopting By Reference the California Code of Regulations Title 24, 2013 Edition of the California Building Standards Code Including the Following Parts: Part 2 California Building Code, Part 2.5 California Residential Code, Part 3 California Electrical Code, Part 4 California Mechanical Code, Part 5 California Plumbing Code, Part 6 California Energy Code, Part 11 California Green Standards Code; and Amending Those California Building Standards Codes as Identified Herein, Through Express Findings of Local Necessity

G. 2013 Edition of the California Fire Code (*Interim Fire Chief Steve Pierce/Fire Marshal Timothy Annis*)
Recommendation: Introduce Ordinance Amending Chapter 13 Article 13.01 of the Davis Municipal Code, and Adopting by Reference the California Code of Regulations Title 24, 2013 Edition of the California Building Standards Code Including the Following Part: Part 9 California Fire Code; and, Amending Those California Building Standards as Identified Herein, Through Express Findings of Local Necessity

H. Removing East and West Stop Signs on Drexel Drive at Chestnut Lane - Drexel Bicycle Boulevard, CIP No. 8237 (*Public Works Director Robert Clarke/Associate Civil Engineer Terry Jue/Bicycle & Pedestrian Coordinator David Kemp*)
Recommendation:
1. Introduce Ordinance Amending Section 22.07.030 of the Davis Municipal Code Relating to Stop Intersection Designation
2. Approve the installation of two advisory signs indicating "Cross Traffic Does Not Stop" on the remaining north and south stop signs

I. Second Reading: Ordinance Amending Lifeline Water Utility Rate Assistance Program to Expand the Program to Qualifying Households in Owner Occupied Units in Master Meter Multifamily Developments
Recommendation: Adopt (Introduced 11/12/2013)

J. Second Reading: Ordinance Amending Section 23.01.030 of the Davis Municipal Code Regarding the Definition of Public Nuisances
Recommendation: Adopt (Introduced 11/12/2013)

K. City-UCD Student Liaison Commission Minutes of September 11, 2013
Recommendation: Informational

Regular Calendar

Item 5
7:00 City's Last, Best and Final Offer to Davis City Employee's Association (DCEA) (*Lead City Negotiator Tim Yeung-Renne, Sloan, Holtzman, Sakai/City Manager Steve Pinkerton*)
Recommendation: Approve Resolution to Impose Last, Best, Final Offer to the Davis City Employee's Association (DCEA), pursuant to Government Code Section 3505.7 with an effective date of November 25, 2013

Item 6
7:30 Options for the Mace 391/Leland Ranch Property (*Chief Innovation Officer Rob White/ Community Development & Sustainability Director Mike Webb/Sustainability Program Manager Mitch Sears*)
Recommendation:
1. Reaffirm acceptance of the USDA Natural Resource Conservation Service (NRCS) grant and continue to work towards a resell of the property with a conservation easement by March 31, 2014.
2. Direct staff to facilitate discussions with the community and other stakeholders in exploring concepts that have been identified as a result of community dialogue, including collaboration between the agricultural, conservation, business and technology sectors.

Item 7
8:15 Continued from November 12, 2013: The Cannery Project / 1111 Covell Boulevard at J Street; Planning Application #11-20 (C*ommunity Development & Sustainability Director Mike Webb/Community Development Administrator Katherine Hess*)
Recommendation:
1. Approve Resolution Adopting CEQA Findings of Fact; Adopting A Statement of Overriding Considerations; Adopting a Mitigation Monitoring Plan; and Certifying the Final Environmental Impact Report (SCH#2012032022).
2. Approve Resolution to Amend the General Plan of the City of Davis for the Cannery Development Project (GP Amendment #01-11).
3. Introduce Ordinance Amending Section 40.01.090 of Chapter 40 of the Davis Municipal Code by Rezoning the Cannery Property (APN #035-970-034, 035-970-035, 035-97-037, 035-970-051 and 035-970-052) Located North of East Covell Boulevard and East of the Union Pacific Railroad and F Street Open Drainage Channel, of Approximately 100.1+ Acres, from PD-1-00 (Planned Development – Light Industrial) to Planned Development #1-11 (Rezoning/Preliminary PD #01-11).

4. Introduce Ordinance Adopting the Development Agreement (DA #01-11) by and between the City of Davis, ConAgra Food Packaged Foods, LLC and TNHC Land Company, LLC Relating to the Development of the Property Commonly Known as The Cannery.
5. Approve the following entitlement applications:
   a. Final Planned Development #03-11
   b. Tentative Subdivision Map #01-11
   c. Affordable Housing Plan #01-11
   d. Site Plan and Architectural Review #05-11 (by accepting the Design Guidelines)

Item 8
10:35 A. City Council Brief Communications. This item includes brief announcements, questions to be referred to staff and reports on various 2x2 meetings with other agencies, as well as AB 1234 reporting of meetings attended at City expense.

B. City Council Long Range Calendar. The calendar is a fluid, working document used by the Mayor and City Manager to support efficient and effective meetings. The calendar is subject to change to best fit items into the time schedule of the Council meetings. At this time, Council may request items be placed on a future meeting agenda.

Item 9
10:45 Closed Session pursuant to Government Code §54954.5: Conference with Real Property Negotiators.

Property:	Yolo County Assessor Parcel Numbers 033-290-58, 033-290-01 & 033-290-04
Agency Negotiators:	City Manager Steve Pinkerton, Community Development & Sustainability Director Mike Webb, Sustainability Program Manager Mitch Sears, City Attorney Harriet Steiner
Under Negotiation:	Price and terms of payment

Adjournment

The foregoing agenda for the November 19, 2013 regular meeting of the Davis City Council was delivered to each Councilmember and posted on the outside public bulletin board at City Hall, 23 Russell Boulevard on November 15, 2013 and made available to the public during normal business hours.

How to obtain City Council Agendas: View on the internet: http://city-council.cityofdavis.org; Hard copies available at City Hall, main hallway, 23 Russell Boulevard.

City Council Agenda packets are available for review or copying at the following locations: Review: View on the internet: http://city-council.cityofdavis.org; City Hall, main hallway, 23 Russell Boulevard; During Council meetings: rear of Community Chambers. Copying: City Hall, City Clerk's Office, 23 Russell Boulevard.

City Council meetings are televised live on City of Davis Government Channel 16 (available to those who subscribe to cable television) and replayed at the following schedule: Wednesday at 9:00 a.m.; Thursday at 7:00 a.m., 1:00 p.m. and 7:00 p.m.; and Saturday at 1:00 p.m. Meetings are also televised live and available for review for three months on the web at http://archive.cityofdavis.org/media/. Videotapes of City Council meetings since 1995 are available for review at the Davis Branch of the Yolo County Library. The tape of the most recent meeting will normally be available by the Monday following the meeting. If you have any questions regarding televised meetings or the Government Channel in general, please call 757-5667.

General Notes:

- Meeting facilities are accessible to persons with disabilities. By request, alternative agenda document formats are available to persons with disabilities. To arrange an alternative agenda document format or to arrange aid or services to modify or accommodate persons with a disability to participate in a public meeting, contact the City Clerk by calling 757-5648 (voice) or 757-5666 (TDD).
- Any writing related to an agenda item for the open session of this meeting distributed to the City Council less than 72 hours before this meeting is available for inspection at City Hall, City Clerk's Office, 23 Russell Blvd. These writings will also be available for review at the City Council meeting in the public access binder in the rear of the Community Chambers.
- Staff recommendations are guidelines to the City Council. On any item, the Council may take action which varies from that recommended by staff.
- The City does not transcribe its proceedings. Anyone who desires a verbatim record of this meeting should arrange for attendance by a court reporter or for other acceptable means of recordation. Such arrangements will be at the sole expense of the individual requesting the recordation.
- For questions about this agenda, please call the City Clerk's Office (530) 757-5648.

Exhibit C

ARC Business Park Draft Subsequent EIR Comments
Submitted by Colin Walsh
April 27, 2020

Mace 391/
Leland Ranch Options
City Council Presentation

City of Davis

Nov 19, 2013

Purpose

Oct 22nd City Council Meeting

- Council directed Staff to conduct cursory review of options for Mace 391/Leland Ranch Property
- Council requested information on legal use of City funds
- Council requested information for comparison of similar innovation parks (i.e. size)
- Council expressed concern about documenting if there was potential for damage to YLT for future grants

<u>Option 1</u> - Finalize NRCS Conservation Easement (current Council direction)

<u>Option 2</u> - Status Quo -Keep Property as City-owned Asset

<u>Option 3</u> - Resell Mace 391 without NRCS Conservation Easement

<u>Option 4</u> - Use Portion of Mace 391 for Business Park

<u>Option 5</u> - Use Most of Mace 391 for Business Park

Davis California

Option 1 – Finalize NRCS Conservation Easement

PROS

- Maximize farmland protection –
  - ü single easement, one farmstead area
- No revision of NRCS Cooperative agreement
- Shortest timeline/least staff effort
- Simplifies monitoring expense
- Rebates significant portion of City's original acquisition cost
- Provides for City-owned 27 acres
  - ü uses could include community farm, community garden, natural open space, recreation/sports park, or business park
- Allows agricultural research fields in close proximity to potential innovation business park

CONS

- Narrows potential uses of the property to only traditional agriculture
  - ü no significant greenhouse use
- Property is spread out/poorly configured
- Inability to leverage property to acquire more complete conservation buffer
- Maximum size of innovation park
  - ü 212 acres (w/ City's 27 acres incl.)

Option 1 – Finalize NRCS Conservation Easement

Community Farm Proposal

CC and Open Space & Habitat Commission discussed concepts/policies starting in 2004

As proposed, community farms would serve to:

1. educate the community about agricultural, food and nutrition issues
2. provide volunteer opportunities
3. train new farmers and gardeners
4. provide a source of local agricultural products, and
5. provide alternative outdoor recreation opportunities for the community.

27 acres retained could serve as a community farm.

- Proposal by the Open Space and Habitat Commission (most recent proposal updated Dec 2012)
- Community farm proposal not yet considered or approved by the City Council

Option 1 – Finalize NRCS Conservation Easement

Community Farm Proposal (continued)

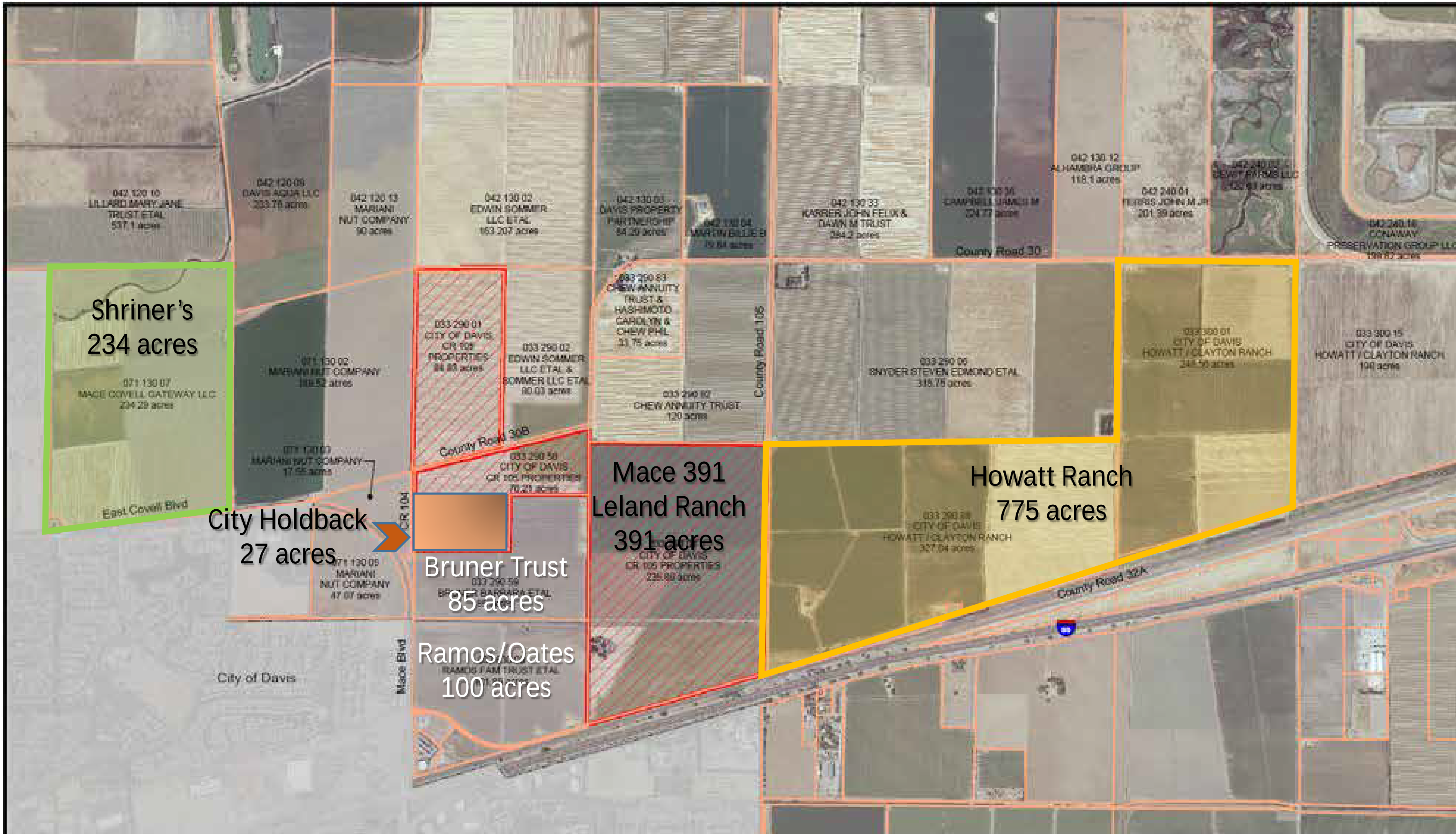
General costs include

- Land value deferment
  - ü estimated at about $121,500
  - ü based on $4500 per acre
- Community farm infrastructure improvements
  - ü estimate $133,000 for basic infrastructure
  - ü estimate $334, 260 for a more intensive infrastructure plan
  - ü source of funds not determined at this time

  (NOTE: Infrastructure estimates provided primarily by Greg House, a member of the OS&H Commission)

Proposed community farm plan assumes

- 25 acres of the site would be leased long-term to a single tenant
- 2-acre community garden could be set up to serve the Davis community



Mace 391/Leland Ranch (City-owned) = 391 +/- acres

Shriner's/ Mace Covell Gateway = 234 +/- acres

Howatt Ranch (City-owned) = 775 +/- acres

Option 1 – Finalize NRCS Conservation Easement

<u>POTENTIAL FISCAL IMPACTS</u>

REVENUE

- Repayment of $2.475M Roadway Impact Fee loan
- Potential excess revenue from resell - $ amount unknown

EXPENDITURE

- Closing costs, broker fee – to be paid from resell

<u>POTENTIAL FISCAL IMPACTS – Community Farm Proposal</u>

REVENUE

- Ongoing community farm lease revenue - projected to be about $4,000 annually.

EXPENDITURE

- Revenue (resell) deferment for 27 acre site assumed to be $270,000
- Community farm infrastructure costs estimates range between:
  - ü $133,000 for basic infrastructure improvements
  - ü $334,000 for intensive infrastructure improvements

Davis California

Option 2 – Status Quo/Keep Property City-Owned Asset

PROS

- Council/community have ample time to discuss and make decisions
- Land can be put into future conservation easement with less restrictions
  - ü greenhouses not an issue
- City can sell property in future at possibly higher values
  - ü property is close to desirable infrastructure
- Cost-sharing strategies potential for long-term revenue stream for City
  - ü Fees, assessments
- Deadlines do not drive decision-making

CONS

- Forego $1.125M NRCS grant
- Potentially impact future opportunities for federal/NRCS grant awards
- Potential negative impact on City and Yolo Land Trust resources invested to date

Davis California

Option 2 – Status Quo/Keep Property City-Owned Asset

POTENTIAL FISCAL IMPACTS

REVENUE

- Could result in a greater valuation than the $3.8 million purchase price
  - ü Purchase price @ $9,718/acre
  - ü Current valuation at least $10,000+/acre (w/ potential for nut trees)

EXPENDITURE

- Repayment of the City's internal funds:
  - ü Measure O = $1.325M
  - ü Roadway Impact Fee = $2.475M

Davis
California

Option 3 – Resell Mace 391 w/o NRCS Easement

PROS

- Council/community have ample time to discuss and make decisions
- Land can be put into future conservation easement with less restrictions
  - ü greenhouses not an issue
- City can sell property in future at possibly higher values
  - ü property is close to desirable infrastructure
- Cost-sharing strategies potential for long-term revenue stream for City
- Deadlines do not drive decision-making
- Conservation easement could be used to create mitigation for innovation park development

CONS

- Forego $1.125M NRCS grant
- Potentially impact future opportunities for federal/NRCS grant awards
- Potential negative impact on City and Yolo Land Trust resources invested to date

Option 3 – Resell Mace 391 w/o NRCS Easement

POTENTIAL FISCAL IMPACTS

REVENUE

- Sales price could be greater than $12,000+
  - ü Estimated sale = $4.692M vs. Purchase = $3.8M – Net of about $820,000
  - ü City loan from Roadway Impact Fee is repaid
  - ü Measure O funds are repaid and available for use on other projects

EXPENDITURE

- Closing costs, broker fees – included in resell

Option 4 – Use Portion of Mace 391 for Innovation Park

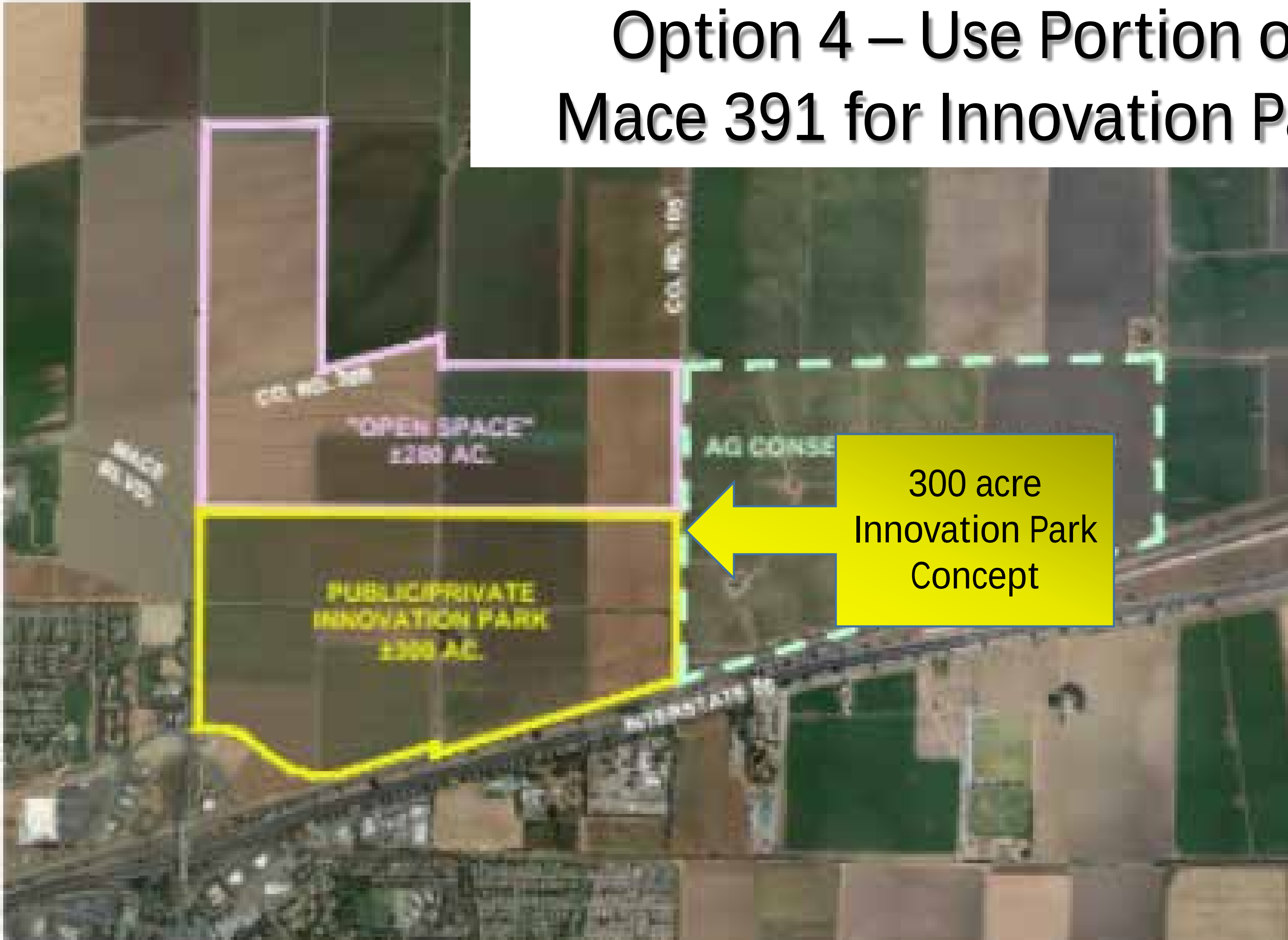
PROS

- Council/community have ample time to discuss and make decisions
- Northern parcel could be future conservation easement with less restrictions
  - ü greenhouses not an issue
- Deadlines do not drive decision-making
- Conservation easement could be used to create mitigation for innovation park development
- City leverage equity piece to create one-time and ongoing revenue streams
  - ü Cost-sharing strategies potential for long-term revenue stream for City

CONS

- Forego $1.125M NRCS grant
- Potentially impact future opportunities for federal/NRCS grant awards
- Potential negative impact on City and Yolo Land Trust resources invested to date
- Depending on City participation, could be partially responsible for entitlement/development costs

Option 4 – Use Portion of Mace 391 for Innovation Park



NOTE: For illustrative purposes only. Not an actual proposal.

Option 4 – Use Portion of Mace 391 for Innovation Park

POTENTIAL FISCAL IMPACTS

REVENUE

- Resell of 120 acres of Innovation Park land (pre-Measure J)
  - ü $25,000 to $40,000 per acre = $3M to $4.8M
- Resell of 120 acres of entitled Innovation Park land (post-Measure J)
  - ü $50,000 to $100,000 per acre = $6M to $12M
- Resell of 120 acres of improved Innovation Park land (infrastructure in place)
  - ü $300,000 to $400,000 per acre* = $36M to $48M
- Remaining 271 acres sold for conservation – ($7500/acre) = $2M

NOTE: Repayment of Measure O funding could be done under all scenarios

EXPENDITURE

- Closing costs, broker fees - for resell as speculative Innovation Park land
- Entitlement costs, fees - for resell as entitled Innovation Park land
  - ü Ranges from 10% to 40% of value of land
- Entitlement costs, fees - for resell as improved Innovation Park land
  - ü Ranges from 30% to 70% of value of land (due to infrastructure)

NOTE: Revenue amounts are very cursory and reflect only current market conditions.
* Range for improved Innovation Park land sourced from Davis Chamber of Commerce letter

Option 5 – Use Most of Mace 391 for Innovation Park

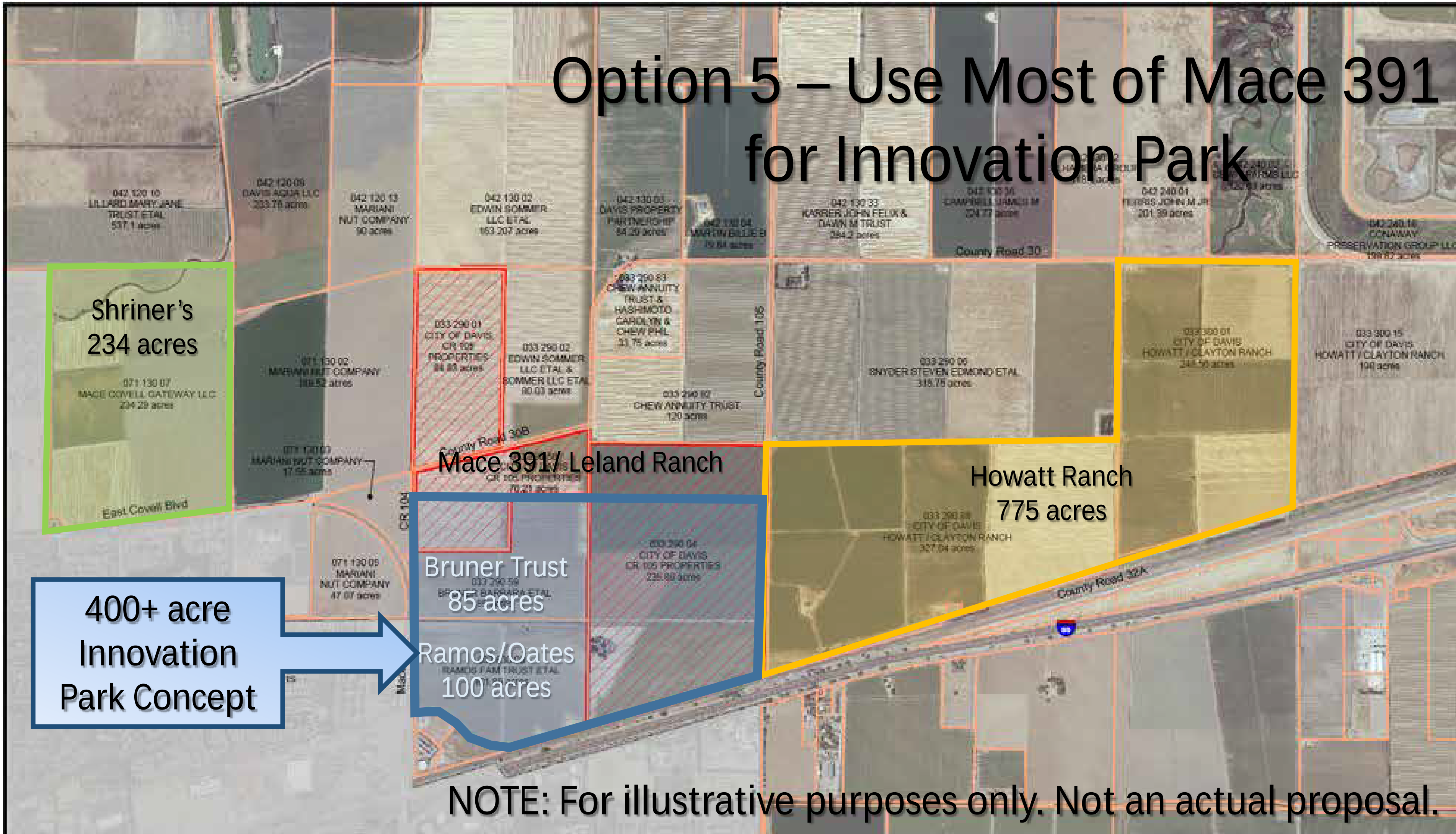
PROS

- Council/community have ample time to discuss and make decisions
- Northern parcel could be future conservation easement with less restrictions
  - ü greenhouses not an issue
- Deadlines do not drive decision-making
- Conservation easement could be used to create mitigation for innovation park development
- City leverage equity piece to create one-time and ongoing revenue streams
  - ü Cost-sharing strategies potential for long-term revenue stream for City

CONS

- Forego $1.125M NRCS grant
- Potentially impact future opportunities for federal/NRCS grant awards
- Potential negative impact on City and Yolo Land Trust resources invested to date
- Depending on City participation, could be partially responsible for entitlement/development costs

Option 5 – Use Most of Mace 391 for Innovation Park



NOTE: For illustrative purposes only. Not an actual proposal.

- Mace 391/Leland Ranch (City-owned) = 391 +/- acres
- Shriner's/ Mace Covell Gateway = 234 +/- acres
- Howatt Ranch (City-owned) = 775 +/- acres
- 400+ acre Innovation Park Concept

Option 5 – Use Most of Mace 391 for Innovation Park

POTENTIAL FISCAL IMPACTS

REVENUE

- Resell of 220 acres of Innovation Park land (pre-Measure J)
  - ü $25,000 to $40,000 per acre = $5.5M to $8.8M
- Resell of 220 acres of entitled Innovation Park land (post-Measure J)
  - ü $50,000 to $100,000 per acre = $11M to $22M
- Resell of 220 acres of improved Innovation Park land (infrastructure in place)
  - ü $300,000 to $400,000 per acre* = $66M to $88M
- Remaining 171 acres sold for conservation – ($7500/acre) = $1.282M

NOTE: Repayment of Measure O funding could be done under all scenarios

EXPENDITURE

- Closing costs, broker fees - for resell as speculative Innovation Park land
- Entitlement costs, fees - for resell as entitled Innovation Park land
  - ü Ranges from 10% to 40% of value of land
- Entitlement costs, fees - for resell as improved Innovation Park land
  - ü Ranges from 30% to 70% of value of land (due to infrastructure)

NOTE: Revenue amounts are very cursory and reflect only current market conditions.
* Range for improved Innovation Park land sourced from Davis Chamber of Commerce letter

Option 4 and 5 – Additional Potential Revenue

REVENUE

- As <u>potential</u> Innovation Park land (pre-Measure J)
  - ü Property tax (not public lands)
  - ü Entitlement fees – planning, environmental analysis
- As <u>entitled</u> Innovation Park land (post-Measure J)
  - ü Improvement and infrastructure fees
- As <u>improved</u> Innovation Park land (infrastructure in place)
  - ü Construction fees
  - ü Development Agreement assessments

<u>Maximum approx. value</u> of Total construction/Project – (Floor Area Ratio of 0.5)

- Option 4 = 6M+ square feet x average const cost (all types) ($150/ft) = $900M
- Option 5 = 8.7M+ square feet x average const cost (all types) ($150/ft) = $1.3B

EXPENDITURE

- Loss of farming rents
- Loss of NRCS grant funds ($1.125M)
- Cost of entitlements and/or infrastructure, depending on resell timing

NOTE: Revenue amounts are very cursory and reflect many assumptions.

Davis California

Use of Funds

- Measure O Funds must be used for open space and related costs (City Code 15.17.070)
- Short Term Borrowing may be done from City funds so long as they are repaid with interest (see Government Code section 53601(d) authoring a local agency to invest in its own indebtedness)
- City can use its funds for short term purposes with repayment to the funds
- City would be required to repay Measure O in full if the property is not used for open space purposes

Size of Innovation Park

STUDIO 30 COMPARISON SITES		
Name	**Size**	**Location**
City of Boulder Dispersed Business Park Model	Scattered throughout 25 sq. miles of city	Boulder, CO
Sandia and Lawrence Livermore National Labs Open Campus	110 acres	Livermore, CA
Iowa State University Research Park	approx. 135 acres	Coralville, IA
Sonoma Mountain Village	200 acres	Rohnert Park, CA
University of Illinois Research & Innovation Park	200 acres	Champaign-Urbana, IL
Innovista Research Park	500 acres	Columbia, SC

SACRAMENTO BUSINESS JOURNAL COMPARISON SITES				
Name	**Founded**	**Location/Acres**	**# Companies**	**# Employees**
Research Triangle Park, NC	1959	7,000 acres near 14 colleges and universities, including Duke University, North Carolina State University, and the University of North Carolina, Chapel Hill	170	52,000
Stanford Research Park, Palo Alto, CA	1951	700 acres adjacent to the Stanford University	140	23,000
University Research Park, Irvine, CA	1996	185 acres adjacent to the University of California, Irvine	67	3,500
University of Illinois Research & Innovation Park Champaign-Urbana, IL	2001	200 acres total – 45 acres have been used to construct 13 buildings by private developer	100	1,400
Sacramento Center for Innovation Sacramento, CA	Planning Stages	240 acres south of Sacramento State	None	None

Staff Recommendations

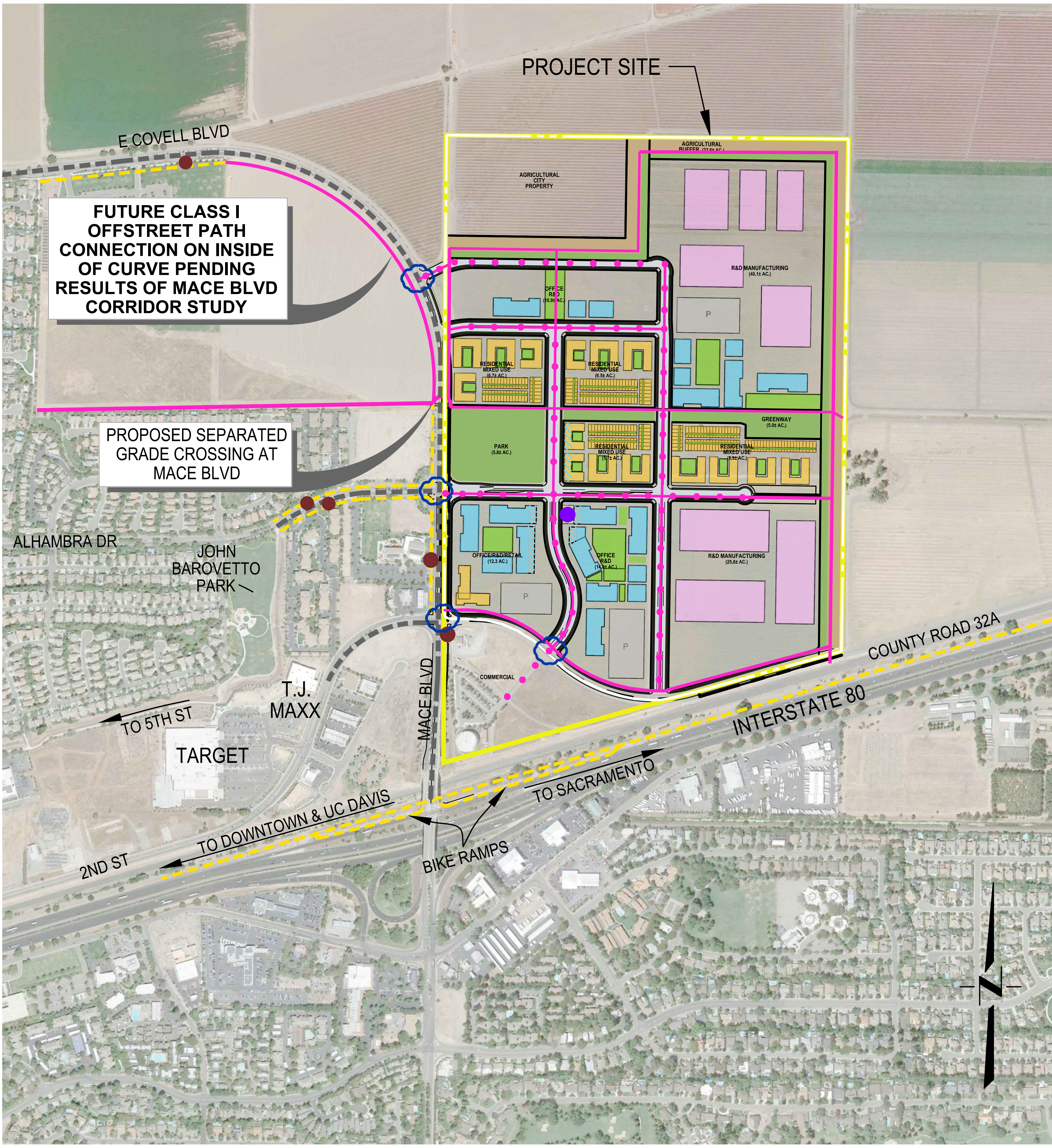
- Based on the letter received from USDA Natural Resource Conservation Service (Attachment 1) and the negative implications based on Council direction at the City Council meeting on October 22, 2013 to ensure that the Yolo Land Trust was not harmed by rejecting the grant, staff recommends reaffirming acceptance of the NRCS grant and continue to work towards a resell of the property with a conservation easement by March 31, 2013.

- Direct staff to facilitate discussions with the community and other stakeholders in exploring concepts that have been identified as a result of this community dialogue, including collaboration between the agricultural, conservation, business and technology sectors.

Exhibit
1

ARC Business Park Draft Subsequent EIR Comments
Submitted by Colin Walsh
April 27, 2020

SITE AERIAL IMAGERY ACQUIRED JUNE 2014 FROM GOOGLE EARTH PRO. COPYRIGHT GOOGLE 2014.



LEGEND

- EXISTING OFF STREET (CLASS I) BIKE/PEDESTRIAN PATH
- EXISTING ON STREET (CLASS II) BIKE LANES
- PROPOSED BIKE/PEDESTRIAN PATH (CLASS I)
- PROPOSED BIKE LANE (CLASS II)
- PROPOSED (CLASS I & II) BIKE PATH AND LANES
- PROPOSED ENHANCED INTERSECTION FEATURES
- EXISTING BUS STOP
- PROPOSED TRANSIT CENTER

S:\Projects\1200\1239 Mace East Davis\AutoCAD\1239-10 EXHIBITS\1239-10 BTSS EXHIBIT\1239-10-BIKE-ACCESS-OFFSITE.dwg – OFFSITE 4/03/2020 – 11:30AM Plotted by: Liz

Exhibit
2

ARC Business Park Draft Subsequent EIR Comments
Submitted by Colin Walsh
April 27, 2020

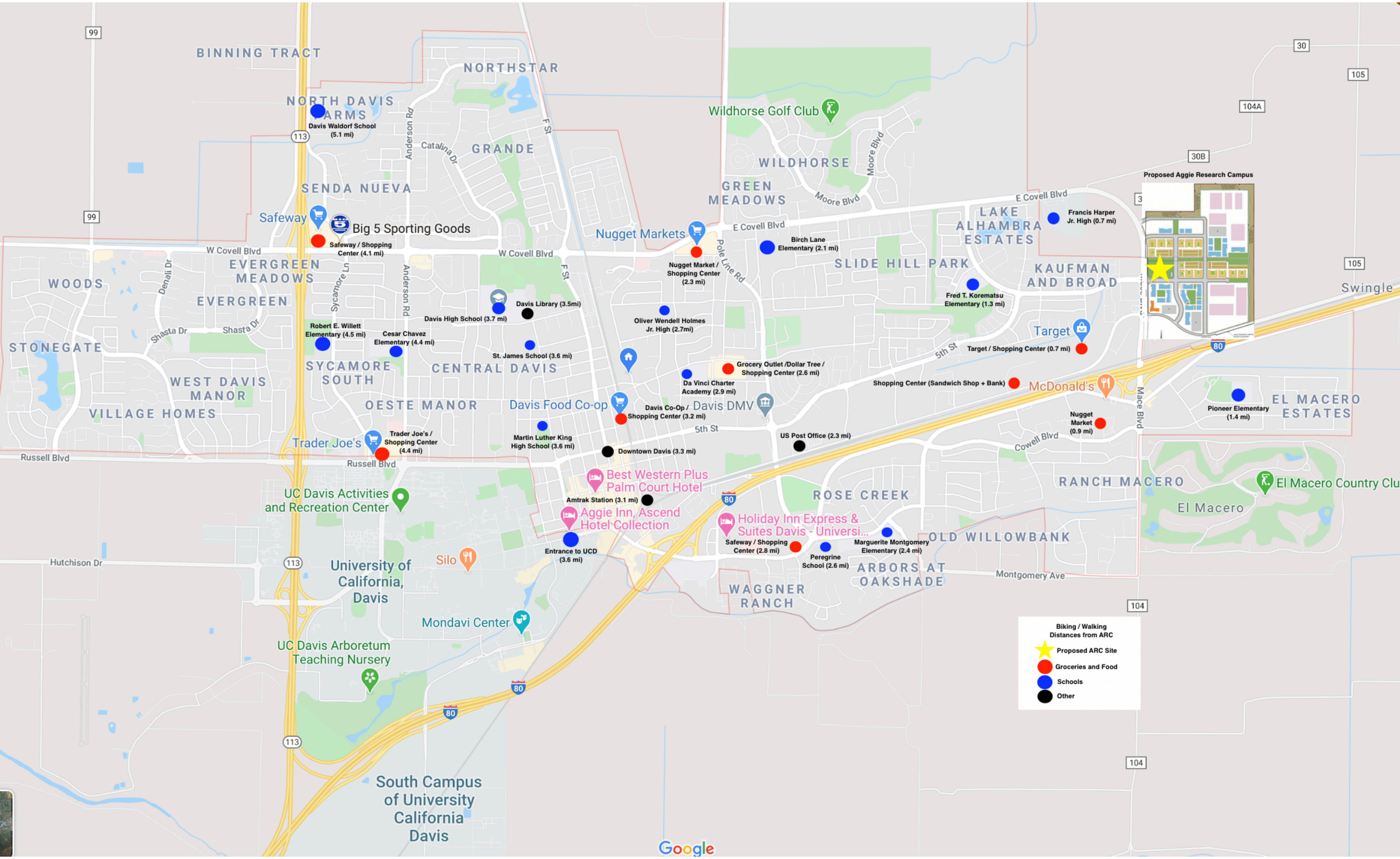

Proposed Aggie Research Campus
Davis Waldorf School (5.1 mi)
Safeway / Shopping Center (4.1 mi)
Big 5 Sporting Goods
Safeway
Nugget Markets
Nugget Market / Shopping Center (2.3 mi)
Birch Lane Elementary (2.1 mi)
Francis Harper Jr. High (0.7 mi)
Fred T. Korematsu Elementary (1.3 mi)
Target
Target / Shopping Center (0.7 mi)
Davis Library (3.5mi)
Davis High School (3.7 mi)
Oliver Wendell Holmes Jr. High (2.7mi)
Robert E. Willett Elementary (4.5 mi)
Cesar Chavez Elementary (4.4 mi)
St. James School (3.6 mi)
Grocery Outlet /Dollar Tree / Shopping Center (2.6 mi)
Da Vinci Charter Academy (2.9 mi)
Shopping Center (Sandwich Shop + Bank)
McDonald's
Davis Food Co-op
Davis Co-Op / Shopping Center (3.2 mi)
Davis DMV
Nugget Market (0.9 mi)
Pioneer Elementary (1.4 mi)
Martin Luther King High School (3.6 mi)
Trader Joe's
Trader Joe's / Shopping Center (4.4 mi)
Downtown Davis (3.3 mi)
US Post Office (2.3 mi)
Best Western Plus Palm Court Hotel
Amtrak Station (3.1 mi)
Aggie Inn, Ascend Hotel Collection
Entrance to UCD (3.6 mi)
Holiday Inn Express & Suites Davis - Universi...
Safeway / Shopping Center (2.8 mi)
Peregrine School (2.6 mi)
Marguerite Montgomery Elementary (2.4 mi)
UC Davis Activities and Recreation Center
University of California, Davis
Silo
Mondavi Center
UC Davis Arboretum Teaching Nursery
South Campus of University California Davis
Wildhorse Golf Club
El Macero Country Club
BINNING TRACT
NORTHSTAR
NORTH DAVIS FARMS
GRANDE
SENDA NUEVA
WILDHORSE
GREEN MEADOWS
LAKE ALHAMBRA ESTATES
SLIDE HILL PARK
KAUFMAN AND BROAD
WOODS
EVERGREEN MEADOWS
EVERGREEN
STONEGATE
WEST DAVIS MANOR
VILLAGE HOMES
SYCAMORE SOUTH
CENTRAL DAVIS
OESTE MANOR
EL MACERO ESTATES
RANCH MACERO
ROSE CREEK
El Macero
OLD WILLOWBANK
ARBORS AT OAKSHADE
WAGGNER RANCH
Swingle
W Covell Blvd
E Covell Blvd
Russell Blvd
Hutchison Dr
5th St
Cowell Blvd
Montgomery Ave
Mace Blvd
Pole Line Rd
F St
Anderson Rd
Catalina Dr
Moore Blvd
Sycamore Ln
Denali Dr
Shasta Dr
Biking / Walking Distances from ARC
Proposed ARC Site
Groceries and Food
Schools
Other
Google

Exhibit 3

ARC Business Park Draft Subsequent EIR Comments
Submitted by Colin Walsh
April 27, 2020

Aggie Research Campus

Transportation Demand Management Plan

TRANSPORTATION CONSULTANTS, INC.

Aggie Research Campus
Transportation Demand Management Plan

Prepared for

Ramco Enterprises, Buzz Oates, and Reynolds & Brown

Prepared by

LSC Transportation Consultants, Inc.
PO Box 5875
2690 Lake Forest Road, Suite C
Tahoe City, California, 96145
530 583-4053

April 7, 2020

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Chapter 1
Introduction

The Aggie Research Campus (ARC) is proposed to consist of commercial and advanced manufacturing employers, multifamily housing, and open space. The site consists of 187 acres immediately east of Mace Boulevard and north of 2nd Street, adjacent to the City of Davis (Davis) within unincorporated Yolo County.

The proponent of the project, Ramco Enterprises, Buzz Oates, and Reynolds & Brown, aware of the importance of reducing transportation and associated environmental effects of new development, has commissioned this Transportation Demand Management Study. Using the services of LSC Transportation Consultants, Inc., this study assesses existing alternative transportation modes serving the study area, analyzes current plans for improvements to these auto alternative modes, and provides strategies that the landowner can implement to expand alternative access.

The following chapter presents a summary of existing transit services and planning documents. This is then followed by a discussion of bicycle, pedestrian and microtransit conditions. An overall analysis of alternative transportation conditions is then provided. Finally, recommendations are provided for action items that can expand non-auto access and help meet local and regional goals for expansion in transit, pedestrian and bicycle travel.

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Chapter 2
Existing Transit Services

This chapter provides an overview of various transit systems serving the site as well as current plans for improvements. The site is currently directly served by two public transit programs, Yolobus and UNITRANS, as shown in Figure 1. In addition, the Capital Corridor Amtrak provides rail service to Davis and expands non-auto options to the site through local connections.

EXISTING SERVICE TO THE PROJECT SITE

Yolobus

Yolobus currently runs 14 regular fixed route services, 5 commuter services, and 8 express bus services throughout Yolo County. Of these 27 services, 4 routes serve the proposed project area within the eastern Davis. The following provides a brief description of each route and their service hours:

- Routes 42A and 42B both provide hourly service, seven days a week. Route 42A is an intercity loop going clockwise, starting in downtown Sacramento, moving through West Sacramento, Davis, Woodland, the Sacramento Airport, and ending in downtown Sacramento. Route 42B is an intercity loop going counter-clockwise, opposite the 42A. Service along these routes are provided between 4:30 AM and 11:45 PM Monday through Friday, and 6:30 AM to 10:45 PM Saturdays, Sundays and holidays.

  Popular destinations and major transfer points for connections to other routes include: Woodland County Fair Mall Transit Center, UC Davis Memorial Union Terminal (connections with Unitrans & Solano), West Sacramento Transit Center, and downtown Sacramento (connections with Sacramento Regional Transit and other regional agencies).

- Route 232 is an express bus providing one morning and one afternoon trip during weekdays only between central and east Davis and downtown Sacramento. Service on this route is provided between 6:30 AM and 7:30 AM and between 5:30 PM and 7:00 PM.

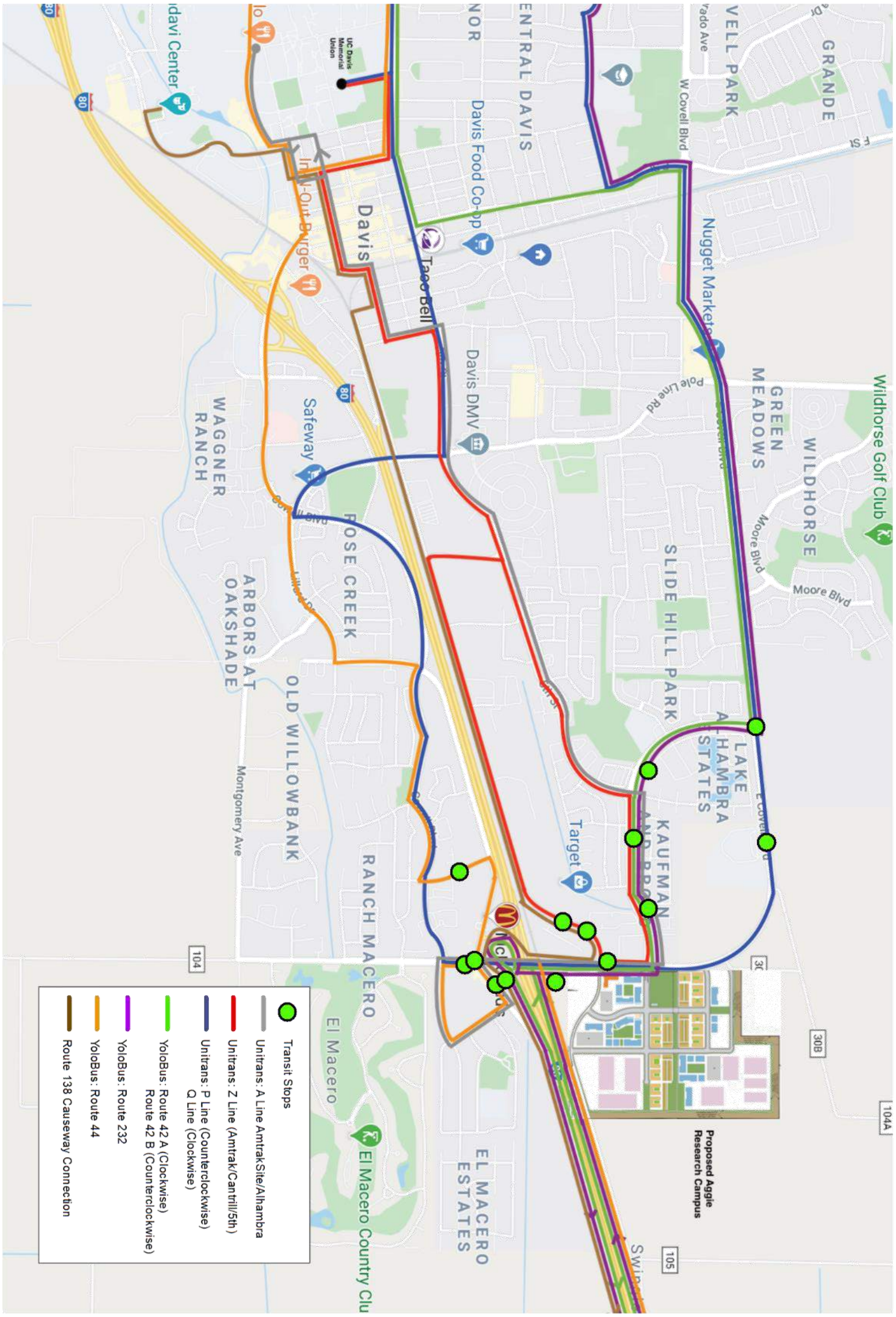

FIGURE 1
Existing Transit Services

- Route 44 is an express bus providing three morning and three afternoon trips during weekdays only between central and south Davis and downtown Sacramento. Service is provided between 6:00 AM and 8:30 AM and between 4:15 PM and 6:15 PM.

- Route 138 - The "Causeway Connection" was planned to begin service April 6th, 2020 but due to recent Covid-19 precautions, has been postponed to April 30th. This service will be run by Yolobus in partnership with Sacramento Regional Transit to connect Davis with the UC Davis Medical Center in Sacramento. This service will also serve the Mace Boulevard Park and Ride as one of its stops in Davis between the hours of 6 AM and 8 AM with return drop off between 4 PM and 8 PM. The Causeway Connection is fully electric and will operate Monday through Friday between the hours of 6:15 AM and 8:50 PM. It will provide service between the site and downtown Sacramento / UC Davis Med Center within roughly 30 minutes.

UNITRANS

The UNITRANS program, operated by the Associated Students of UC Davis (ASUCD), provides 19 fixed routes within Davis. Of these services, four routes currently serve the proposed project area on a half-hourly basis. The following provides a brief description of each route and their service hours:

- The A Line provides service every 30 minutes Monday through Thursday between 6:50 AM and 11:00 PM and Friday from 6:53 AM to 9:00 PM. The service runs between the UC Davis Silo east towards the Amtrak station with stops located along 5th street near the Post Office, DMV, and Police Department. The route continues down Mace Boulevard to the Park and Ride lots located along El Cemonte Avenue before returning along the same route west towards the Silo.

- The P and Q Lines provide service seven days a week. Regular service is provided every 30 minutes Monday through Thursday from 6:30 AM to 11:00 PM, Friday from 6:30 AM to 9:00 PM, and hourly service on weekends from 8:20 AM to 7:00 PM. These services are described as being the Davis "perimeter" lines as they travel along Covell and 14th Street on the north side of Davis and along Cowell and Russell on the south s ide of Davis.

- The Z Line runs Monday through Friday from 7:00 AM to 6:50 PM with 30-minute headways. This route begins at the Memorial Union stop, heads east on Russell before turning south on B Street. Its route is similar to the A Line but rather than continuing

down Mace Boulevard towards the Park and Ride lot, it turns west on 2nd Street and loops back up the 5th Street before returning back towards Memorial Union.

Major Bus Stop Average Daily Boarding and Alightings

As shown in Figure 1, there are nine bus stops within ½ mile walking distance to the proposed project site. The stops average daily usage is summarized in Table 1. As shown, the transit stop located at 2nd Street and Target has the most average daily use (100 passengers a day), followed by Alhambra Drive and Mace Boulevard (97.6 passengers a day).

TABLE 1: UNITRANS Boarding and Alightings within 1/2 Mile of ARC

Bus Stop		**Total Daily Boarding & Alightings**	**Amenities**
2nd St. & Target Drive (WB)		100.0	Shelter & Bench
Alhambra Dr & Mace Blvd (EB)		97.6	Bus Stop Sign Only
Mace Blvd & Cowell Blvd (NB)		74.2	Bus Stop Sign Only
Mace Blvd & Chiles Rd (SB)		73.9	Bus Stop Sign Only
Cowell & Mace Blvd (WB)		66.3	Bus Stop Sign Only
Alhambra Dr & Mace Blvd (WB)		65.7	Bus Stop Sign Only
Mace Blvd & 2nd St (SB)		52.6	Bus Stop Sign Only
Mace Blvd & 2nd St (NB)		45.8	Bus Stop Sign Only
Covell & Mace Blvd (EB)		33.1	Bus Stop Sign Only
	Total	**609.1**	

Source: UNITRANS Ridership FY 2018-19

Transit systems serving small to mid-sized cities typically strive to provide seating (such as a bench) for stops that average 5 or more boardings per day, and shelter for stops that average 10 or more boardings per day. Currently, the only bus stop with a shelter and bench is located at the 2nd Street Target bus stop. None of the other transit stops located in the proximity of the project site have large enough sidewalk pads, shelters, benches, wayfinding signage, or bicycle racks to facilitate high rates of average daily ridership.

Amtrak Capitol Corridor

The Capitol Corridor is an intercity passenger train system that provides service along the congested Interstate (I-) 80, I-680 and I-880 freeways through 18 stations in 8 Northern California counties: Placer, Sacramento, Yolo, Solano, Contra Costa, Alameda, San Francisco,

and Santa Clara. The service is a partnership between Amtrak, Caltrans, and the Union Pacific Railyard with 11 trains running east- and westbound through the Davis station between 4:50 AM and 12:12 AM Monday through Friday and between 6:25 AM and 11:40 PM Saturdays and Sundays. There are future planned expansions between Roseville and the Capital Corridor outlined in the *Capital Corridor Vision Plan,* which include expansion to up to 40 trains per day in each direction. The timeline of these improvements is currently unknown.

PLANNED EXPANSION OF SERVICE TO THE PROJECT SITE

The most recent Yolo County Transportation District (YCTD) Short Range Transit Plan (SRTP) was prepared by the Sacramento Area County of Governments (SACOG). The SRTP analyzed issues specific to Yolobus's service to Davis and presented recommendations to accommodate increased student ridership between Woodland and UC Davis through route and schedule alternatives to Routes 42 and 242 (which both currently serve the proposed project's location). Alternatives to ease over-crowding on Route 42 included the addition of one bus throughout the entire day of service or the use of an additional bus only during peak capacity times (commuting AM and PM hours).

Most recently, YCTD completed a 2020 Comprehensive Operational Analysis (COA) focusing on current conditions, cost allocation methodology, administrative policies, and operational performance. A thorough review of both their Yolo County fixed route and ADA paratransit services was presented for public input through a series of outreach meetings and stakeholder interviews. The analysis concluded with the following recommendations affecting service to the project site:

- Increase weekday frequency on Routes 42A/42B to every 30 minutes.

- Streamline Routes 42A/42B in downtown Sacramento and consider streamlining Routes 42A/42B in Davis. The streamlining of 42A/42B maintains its current Mace Boulevard services.

- Discontinue unproductive service to reduce the financial impact of 30-minute service on Routes 42A/42B. Single-trip express/commute routes, local Route 35 in West Sacramento, and other express/commute routes are proposed for discontinuation depending on the financial scenario.

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Chapter 3
Bicycle, Pedestrian and Micromobility Conditions

Davis has over 70 miles of pathways and 50 miles of bicycle lanes. A total of 75 percent of all roads have a speed limit of 25 miles per hour and with 25 at-grade separated crossings 4 overpasses and 21 underpass crossings, the city is one of the most bicycle friendly areas in the Sacramento-Bay Area region. The following provides an overview of existing bicycle and pedestrian facilities serving the project site as well as planned improvements.

EXISTING BICYCLE AND PEDESTRIAN FACILITIES SERVING THE SITE

As shown in Figure 2, there are two protected shared bicycle and pedestrian paths and six major bicycle lanes serving the project site. As part of the greater Davis mobility network, there is a protected shared pedestrian and bicycle path along both sides of Alhambra Drive from Covell Boulevard to Mace Boulevard. These paths link to the neighborhoods both north and south of Alhambra Drive. On this same corridor there is a Class II separated bicycle lane on both sides of the street as well. The other two sets of Class II bicycle lanes run north and south along Mace Boulevard/Covell Boulevard as well as east and west along 2nd Street.

PLANNED IMPROVEMENTS NEAR THE PROJECT SITE

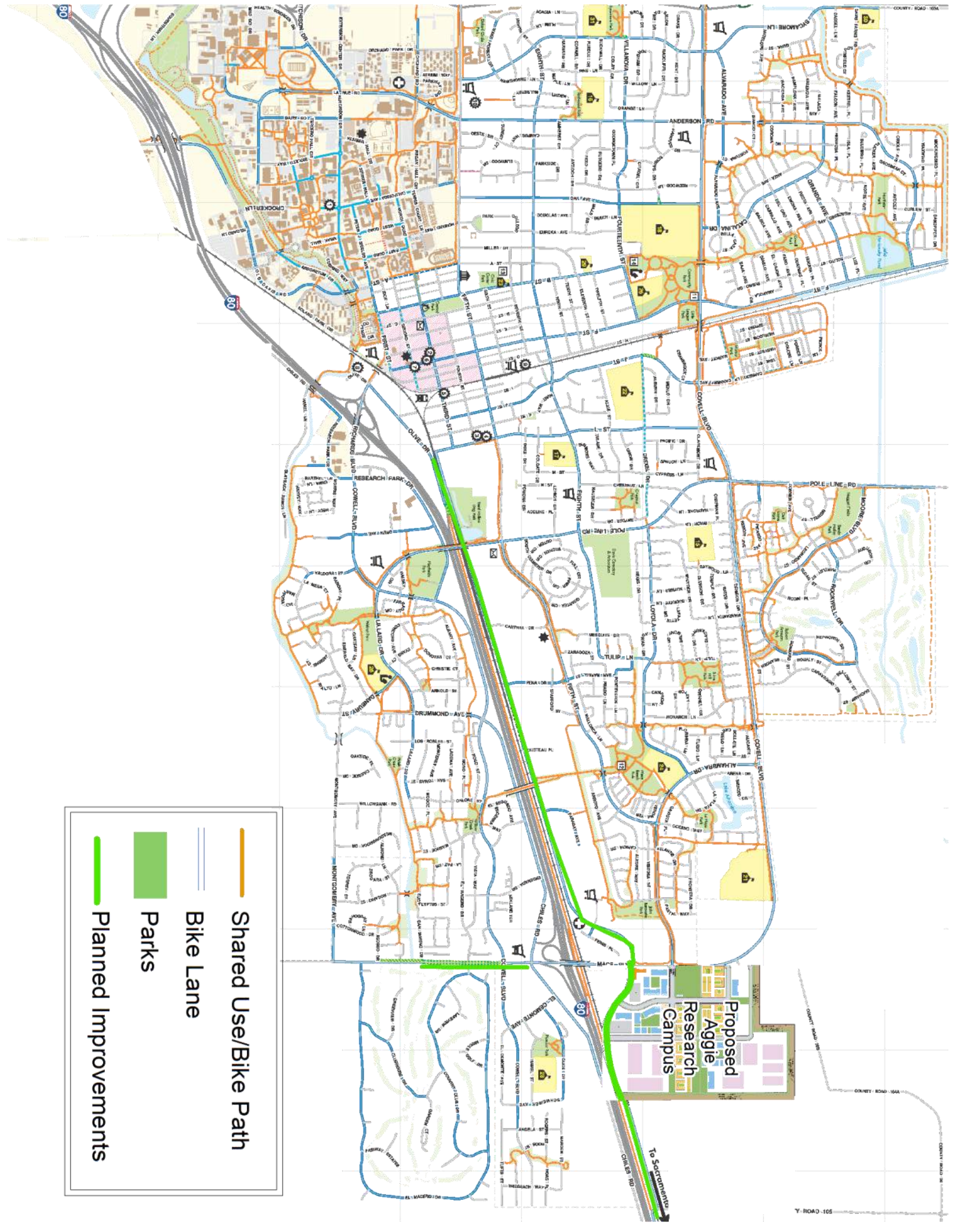
Planned bicycle improvements are also shown in Figure 2. Davis plans to initiate design for safety-related improvements on 2nd Street between Mace Boulevard and L Street over the next year. There are also design revisions currently occurring to the recently constructed improvements on Mace Boulevard just south of the I-80, between Cowell Boulevard and Red Bud Drive. Lastly there are road realignments and safety improvements in conceptual design for County Road 32A at County Road 105 in Yolo County.

In addition to the city-planned bicycle infrastructure improvements, the ARC proposes the addition of a 2 ¼ mile long bike path and adjacent pedestrian trail encircling the site. This bike path would connect to the existing Class II bike lane located along CR 32A at the project's southeastern corner. The Class II bike lane on CR 32A provides connectivity to the following:

- Old Lincoln Highway Class I (separated) bike path along I-80 via the Union Pacific Railroad (UPRR) train tracks at-grade crossing.

- Class II (striped) bicycle lanes on CR 32A east of CR 105 and the UPRR crossing.

FIGURE 2
Existing Bicycle Facilities



- Class I bicycle path on the Yolo Causeway.
- Class II (striped) bicycle lanes on CR 32A east of CR 105 and the UPRR crossing.
- Class I bicycle path on the Yolo Causeway.

EXISTING MICROMOBILITY SERVICES

JUMP provides on-demand bicycle rental through an app-based program throughout Davis. JUMP currently has approximately 150 electric-assist bicycles operating in the area. However, during the COVID-19 outbreak, they have reclaimed their bicycles and will redeploy once it is safe to do so. While JUMP also offers electric scooter rental in other regions, electric scooter-share is prohibited by City of Davis Ordinance 22.18.020.

Current JUMP electric bicycle charging stations are located at The Spoke Apartment complex at 8th Street and J Street. There are also plans to install two additional charging stations at Davis City Hall (Between A and B Street along Russell Boulevard) and within ¼ mile of the project site at the Residence Inn on Fermi Place and Mace Boulevard.

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Chapter 4

Transportation and Mobility Analysis

This chapter provides a summary of the proposed project followed by an analysis of existing transit and mobility services as they relate directly to the project.

Project Description

The proposed ARC project is located on a 187-acre site northeast of Mace Boulevard and 2nd Street. ARC is approximately 2.5 miles east of downtown Davis, 3 miles from UC Davis, and 10 miles west of downtown Sacramento and the State Capitol. Once completed, the development will include a total of 2,654,000 square feet of commercial uses such as office, research, laboratory, prototyping, and advanced manufacturing (Table 2).

TABLE 2: ARC Project Land Uses by Type

Land Use	Size
Office, Research, and Development/Laboratory	1,510,000 sf
Advanced Manufacturing/Prototyping	884,000 sf
Residential (avg. density 30 units per acre)	850 Units
Ancillary Retail	100,000 sf
Hotel/Conference	160,000 sf
Green Space	49.1 acres
Transit Plaza	0.6 acres
Total Acres	**187**
Total Square Footage	**2,654,000**

Source: Project Description, October 23, 2019

At completion, there will also be 850 residential units of varying size and affordability in addition to supportive uses such as hotel, conference, and retail space. The project is estimated to provide approximately 5,882 jobs[1] and 2,119 project residents according to Appendix F:

[1] ARC employment estimates taken from the *City of Davis Economic Evaluation of Innovation Park Proposals* (BAE, 2015)

Transportation Impact Analysis of the Aggie Research Campus Subsequent Environmental Impact Report Draft (March 2020).

Existing Commute Patterns

Table 3 summarizes commute patterns gathered by the US Census 2017 Longitudinal Employer Household Dynamics (LEHD). It is important to consider that this data does not include the commute patterns of UC Davis faculty and residents which, though distinct and unique, are undeniably tied to the City of Davis. It also includes information for employees that do not necessarily report to work on a daily or consistent basis and can include persons who have a permanent residence in one location but stay elsewhere during their work week. Nevertheless, despite these omissions, the LEHD provides the best available picture of commuting patterns associated with the City of Davis.

TABLE 3: City of Davis Commute Patterns

Where Davis Residents Work		
City/Town	**# of Persons**	**% of Total**
Sacramento	4,619	18.8%
City of Davis	4,197	17.1%
City of Woodland	949	3.9%
City of Vacaville	540	2.2%
Fairfield	457	1.9%
Roseville	443	1.8%
San Francisco	421	1.7%
West Sacramento	406	1.7%
Arden-Arcade CDP	329	1.3%
Rancho Cordova	275	1.1%
All Other Locations	11,921	48.5%
Total	***24,557***	-

Where Employees Working in Davis Commute From		
City/Town	**# of Persons**	**% of Total**
City of Davis	4,197	27.7%
Sacramento	1,570	10.3%
City of Woodland	1,285	8.5%
West Sacramento	465	3.1%
City of Vacaville	402	2.6%
City of Dixon	343	2.3%
City Elk Grove	329	2.2%
San Jose	164	1.1%
Arden-Arcade	163	1.1%
San Francisco	163	1.1%
All Other Locations	6,097	40.2%
Total	***15,178***	-

Source: LEHD Census Data, 2017

As shown in Table 3, nearly 19 percent of working residents living in Davis work in Sacramento. Another 15 percent of all working-aged residents commute to other neighboring communities such as Woodland, Vacaville, Fairfield, and Roseville. Only about 17 percent of Davis residents work in Davis (though it can be assumed that a portion of those captured within “All Other Locations” work at UC Davis). Of the 48.5 percent of Davis residents working at All Other Locations, those not working at UCD are either physically commuting to, or remotely working from, areas such as Stockton, Pleasanton, San Jose and Oakland. Even without the exact UC Davis data, it is safe to surmise that the majority of working Davis residents commute out of town for employment.

On the other side of Table 3, amongst those currently working within Davis, 27.7 percent of them are also residents of Davis, followed by 10.3 percent commuting from Sacramento and 8.5 percent commuting from the City of Woodland. Another 13.4 percent of those working in Davis commute from the neighboring communities of West Sacramento, Vacaville, Dixon, and Elk Grove. The remaining 40.2 percent of those working to Davis include those coming from areas such as Stockton, Yuba City, Roseville, and Fairfield. In sum, Davis imports a considerable percentage of its workforce but primarily from Sacramento and the immediately adjacent jurisdictions.

Fixed Route Transit Access

The average walking distance to be considered “accessible” to a pedestrian is between ¼ and ½ mile. Figure 3 indicates the various transit stops within these distances. As shown in Figures 1 and 3, the following transit stops and transit services are within ¼ mile of the project site:

- Alhambra Drive and Mace Boulevard (westbound/eastbound)
    - Served by UNITRANS Lines A and Z and Yolobus Routes 42 A/B and 232.

- Mace Boulevard and 2nd Street (northbound/southbound)
    - Served by UNITRANS Lines A, Z, P, Q and Yolobus Routes 42 A/B, 43, 232 and Yolobus/SACRT Route 138 Causeway Connection

The following transit stops and transit services are within ½ mile of the project site:

- 2nd Street and Target (westbound)
    - Served by UNITRANS O and Yolobus/SACRT Route 138 Causeway Connection

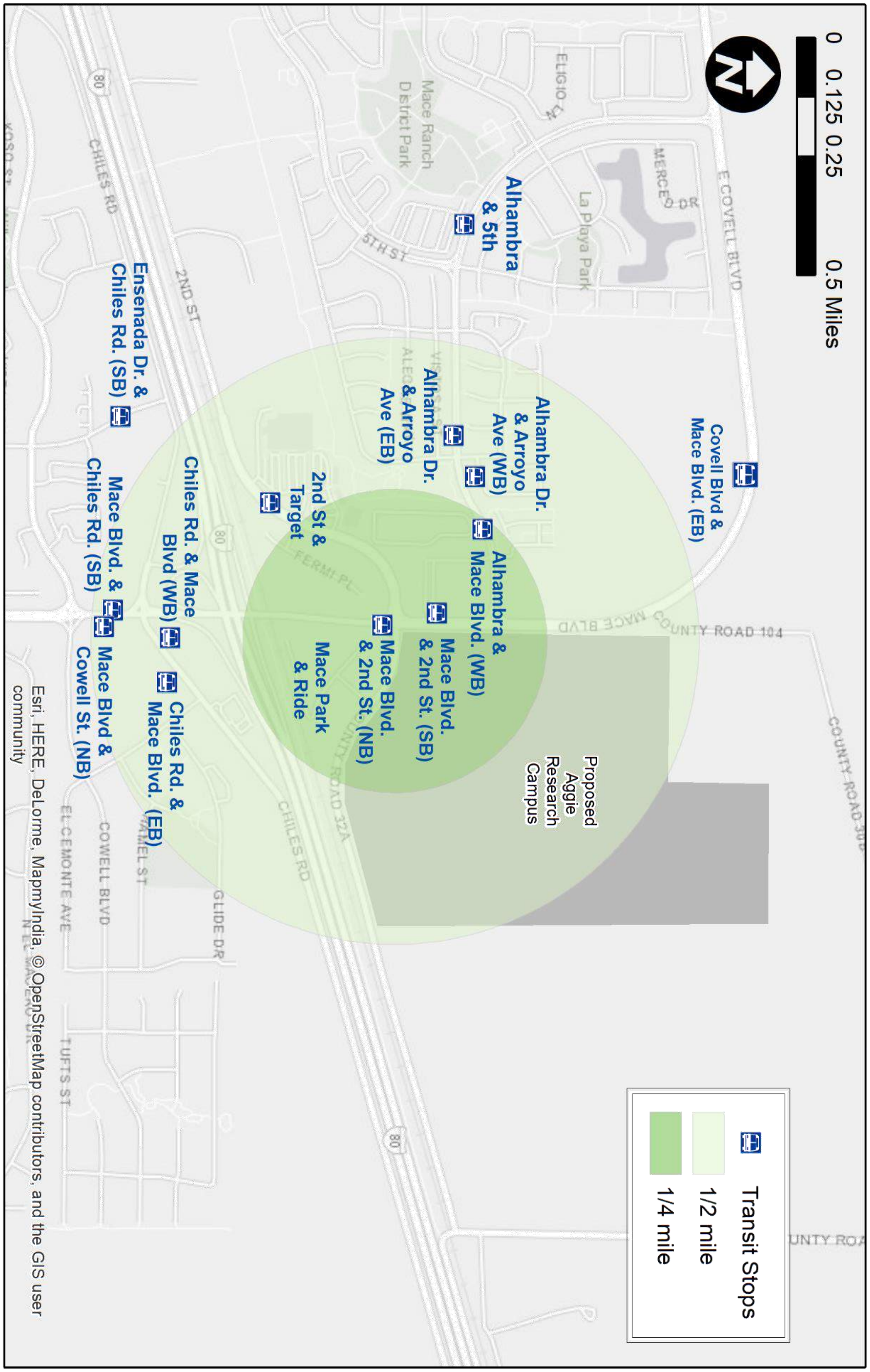
- Chiles Road and Mace Boulevard (southbound/northbound)
    - Served by UNITRANS A, P, Q and Yolobus Routes 44, 232

- Chiles Road and Mace Boulevard (eastbound)
    - Served by UNITRANS A and Yolobus Route 42 A/B, 44, 232, 232

Summary of Existing Transit Accessibility to the Site

Considered as a whole, the existing transit services provide the ability for ARC employees and residents to travel to and from the following communities with the identified travel times:

FIGURE 3
Existing Transit Stops within ½ and ¼ Mile



15-Minute Travel Time

- Davis Neighborhoods of Wildhorse, Green Meadows, Covell Farms, Slide Hill Park, Lake Alhambra, Kaufman and Broad, Mace Ranch, Rancho Yolo, Ranch Macero, Willowcreek, and El Macero Estates.

30-Minute Travel Time

- Davis Neighborhoods of Rose Creek, Willowbank, South Cape, Wagner Ranch, Arbors at Oakshade, Arrowhead, Covell Park, Central Davis, Evergreen Meadows, Aspen, Stonegate, and UC Davis.

- West Sacramento

60-Minute Travel Time

- One may take a 20 minute bus ride to and from the Amtrak Capitol Corridor station in Davis, followed by a 33-minute train ride to and from the Sacramento Valley station for a total of 53-55 minutes.

- The 42 A/B provides 45 minute service between Mace Boulevard and downtown Sacramento.

Future Transit Accessibility

Planned expansion of transit services will expand the areas that can be reached by public transit within various travel times. In particular, Route 138 (the Causeway Connection) will provide 30-minute service from the Mace Boulevard Park and Ride to the UC Davis Medical Center. The inter-regional commuter will pick passengers up from the Mace Park and Ride at 6:23 AM, 7:10 AM, 8:10 AM, and 9:10 AM with return service to the Park and Ride at 4:16 PM, 5:16 PM and 6:10 PM.

Discussion of Transit Demand

The key generators of demand for transit services will be the employment on site and residents.

Employment Transit Demand

At buildout, ARC will be a major employment center. The most recent available data (2017) indicates 15,178 jobs in the City of Davis (per the *American Community Survey*), while ARC is forecast to add 5,882 new jobs. Setting aside job growth in other areas of Davis, if built today ARC would constitute 28 percent of all employment in Davis.

Persons employed within ARC will have a substantial number of convenient transit options to commute to and from the site:

- UNITRANS provides a total of 82 arrivals to ARC (and an equal number of departures) each weekday over the 4 routes serving the site, from 6:30 AM to 10:00 PM, providing service within 30 minutes to all of Davis.

- Yolobus currently provides a total of 40 arrivals from Woodland (an increasingly important location of relatively affordable housing) and 6 arrivals from West Sacramento and Sacramento each weekday, from 6:30 AM to 10:30 PM. The new Causeway Connection will add 3 new daily arrivals and will reduce travel times to downtown and mid-town Sacramento to roughly a half-hour.

- The *Capital Corridor* rail service provides 11 trains per day that provide regional access from the Bay Area and Sacramento Region. As I-80 congestion increases, this is an increasingly attractive commute mode, and is now the third-busiest passenger rail route in the nation. Of note, existing UNITRANS routes already provide a total of 52 daily trips from the Amtrak train station to the ARC site (typically a 20 minute trip), from roughly 7:00 AM to 10:00 PM and up to 4 trips per hour per direction.

Travel Mode Share

City of Davis

As shown in Table 4, 7.2 percent of Davis residents commute by public transit. To a degree, this figure reflects the unique travel characteristics of the UC Davis campus. A more realistic "transit mode split" is 3.5 percent, consistent with the average proportion of commuting by transit for the Sacramento Region as a whole. Applying this figure to the 5,882 jobs indicates a daily transit ridership generation of approximately 410 one-way passenger-trips. Over the course of a year, this is equal to roughly 103,000 additional passenger boardings.

TABLE 4: Davis Commuter Mode of Travel

Mode	Population #	Population %
Car Truck or Van	19,257	60.3%
Drove Alone	17,469	54.7%
Bicycled	6,004	18.8%
Public Transportation	2,299	7.2%
Carpooled	1,820	5.7%
Walked	958	3.0%
Taxi	479	1.5%
Worked at Home	2,938	9.2%
Total Workforce	*31,936*	-

Source: 2018 American Community Survey Census Data

UC Davis Campus

The most recently completed UC Davis Campus Travel Survey (2018-19) found that about 45,000 people physically travel to and from the UC Davis campus on an average weekday. Of those surveyed, 37 percent bicycled, 31 percent drove alone, 16 percent rode the bus, 9 percent walk or skate, 6 percent carpool or get a ride, 1 percent ride the train, and 0.4 percent use ride hailing services such as Lyft and Uber. This survey indicated that nearly 62 percent of those travelling to and from campus do not use a personal vehicle to do so.

Resident Transit Demand

ARC residents will also benefit from the high level of existing (and higher level of future) transit accessibility of the site. In particular, the high frequency of UNITRANS service providing connections to shopping, downtown, UC Davis and the train station will make transit a convenient mode for many travel needs. A reasonably conservative transit mode split for ARC residents is 5 percent. As identified in the ARC Transportation Impact Study, there will be 5,179 total vehicle-trips generated (prior to the non-auto reduction). This value multiplied by the 5 percent transit mode split indicates that transit service reduces the total residential trip generation by 259 daily vehicle-trips. At a typical average vehicle occupancy of 1.7 persons per vehicle, this equates to 440 passenger-trips per weekday. As weekend daily transit ridership is

typically on the order of half that of weekday ridership, over the course of the year this equates to 132,000 transit passenger-trips.

<u>Total Transit Demand</u>

In total, at buildout the ARC will generate approximately 860 new transit boardings per weekday, or 237,000 boardings over the course of a year. At buildout, this level of transit ridership will warrant routes that deviate off of Mace Boulevard to serve an internal transit hub (and avoids the need for half of the passengers to cross Mace Boulevard). However, during the initial phases of development when demand is relatively low, it is good transit route planning to keep the routes on Mace Boulevard, serving improved bus stops on either side of the street.

Summary of Bicycle and Pedestrian Accessibility to the Site

The project site currently has good bicycle/pedestrian accessibility, particularly provided by the Class I shared use paths along Alhambra Drive and the 5th Street Corridor. Planned improvements (including a grade separated path across Mace Boulevard and connections to the eastern end of the existing Class I facility at Frances Harper Junior High School, and improved connections to the Yolo Causeway Class I facility) will further enhance bicycling and walking as viable options for travel to/from the site.

Figure 4 depicts the areas of Davis that are accessible by bicycle within a 10-minute, 20-minute and 30-minute travel time. As shown, virtually all of the city as well as the UC Davis campus is within a 30-minute travel time by bicycle. Downtown Davis as well as the Davis Senior High School is within a 20-minute ride. A 10-minute ride from the site allows access to supermarkets, parks and the junior high school. Along with the bicycle-supportive TDM policies proposed for the development, bicycling and (to a lesser degree) walking are viable travel modes for ARC employees and residents.

Micromobility

As discussed in the previous chapter, bicycle and pedestrian infrastructure is robust with most of its infrastructure occurring nearest the University and downtown. According to the 2018 American Community Survey, approximately 19 percent of those commuting within Davis (Table 4)

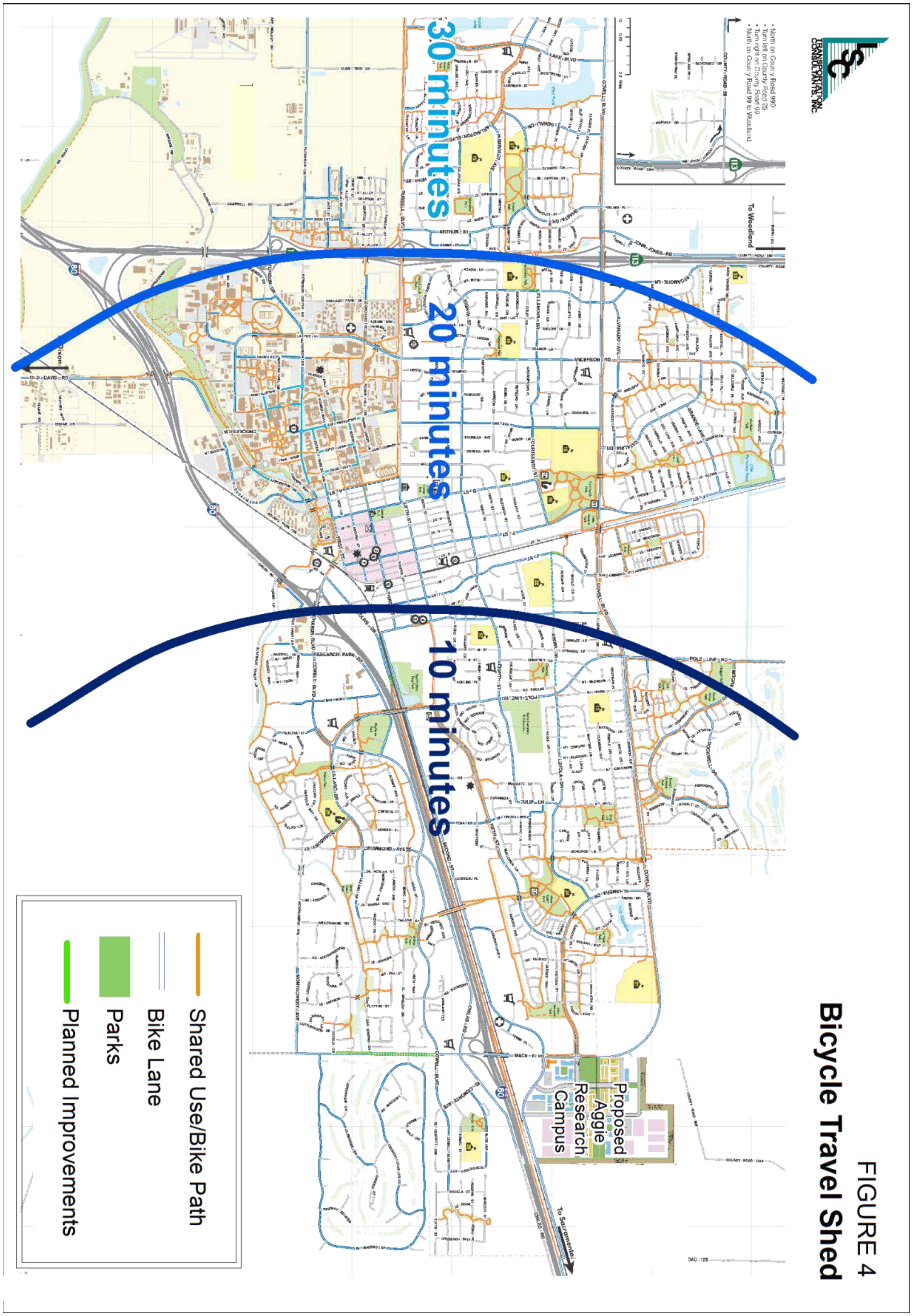


FIGURE 4
Bicycle Travel Shed

Those who typically travel by bicycle do so for approximately 10 minutes or 2 miles. As shown in Figure 4, there are two major commercial centers located within a 2 mile bicycle ride from the site: the Target shopping center along 2nd Street and the Nugget Market shopping center south of I-80 at Chiles Road and Mace Boulevard. In addition to accessibility to nearby activity centers, the southeast corner of the project site connects to the Yolo Causeway via CR 32A. To support the existing JUMP bicycle infrastructure within Davis, a charging station is currently being designed within ¼ mile of the project site on Fermi Place and Mace Boulevard (Residence Inn).

Chapter 5

Transportation Demand Management Program

This chapter outlines potential transit and micromobility improvements to better serve ARC. The following transportation demand management (TDM) program recommendations have the most potential to reduce vehicle trips, vehicle miles travelled (VMT), and greenhouse gas emissions.

1. Transit Incentives and Improvements

Action 1.1: Improve Existing Bus Stop Infrastructure

Increasing concrete sidewalk pads, shelters, seating and bicycle racks at the major bus stops near the project site would greatly improve existing facilities that are lacking. These added amenities have the capacity to increase ridership by 5 to 10 percent and are vital in attracting discretionary riders.

Action 1.2: Provide Transit Subsidies

Offering free transit passes to those working and living on the project site encourages transit use. Subsidies may be provided by either employers or property managers depending on agreements with local transit providers. Providing “free rides” typically generates a 40 to 50 percent increase in ridership.

Action 1.3: Improve Amtrak Station Connections

Coordinating with the City of Davis to provide fair-share funding for improved bus connections with the Davis Amtrak Station would encourage increased ridership. These improved connections could include a shuttle bus or other similar efforts. Providing convenient access to the Capital Corridor railway system can expand the ability for people living throughout the I-80 corridor (from Roseville to the Bay Area) to access ARC employment opportunities, while allowing ARC residents to access jobs throughout the corridor as well.

Action 1.4: Research Campus Transportation Coordinator

Requiring residential property managers and future employer tenants to join the Yolo TMA and designate a Transportation Coordinator would better assist residents and employees with

transit trip planning. Designating a single contact person responsible for alternative transportation helps to ensure long-term focus on alternative modes of travel and reduced auto use overall.

2. Bicycle, Pedestrian and Micromobility Infrastructure Improvements

Action 2.1: Encourage Bicycle Share Programs

Incentives and subsidies for employees and residents to use local bicycle share programs, such as JUMP, may be provided by either employers or property managers. This would encourage bicycle use throughout Davis while providing first and last mile connections between transit stops and ARC employment and housing.

Action 2.2: Provide Micromobility Infrastructure throughout ARC

Constructing multiple bicycle facilities for those using their own or shared micromobility alternatives would further promote cycling to, from, and within the project site. Providing bicycle lanes, protected bicycle paths, racks, and proper lighting is important for supporting cycling safety. The project may also provide a charging station on-site for bicycle share programs such as JUMP. Providing convenient locations for bicycle parking, bicycle share, and connecting facilities near transit stops support first and last mile connections for cycling commuters as well.

Action 2.3: Bicycle Route Enhancements

Contributing funding towards bicycle route enhancements will better connect the project to existing and proposed infrastructure. These improvements would include those described in the project description and project EIR. The following bicycle route enhancements are currently planned to support the ARC project:

- Construction of a 2 ¼ mile bicycle and pedestrian path surrounding the northern and eastern boundaries of the project site.

- Installation of a grade-separated bicycle and pedestrian crossing at Mace Boulevard.

- Extension of existing bicycle lanes up around the Mace Boulevard curve towards Covell Boulevard.

- Construction of a connection to the existing Class II bicycle lane on CR 32A at the project's southeastern corner. The Class II bike lane on CR 32A provides connectivity to the following: 1) Old Lincoln Highway Class I (separated) bike path along Interstate 80 (I-80) via the Union Pacific Railroad (UPRR) train tracks at-grade crossing; 2) Class II (striped) bicycle lanes on CR 32A east of CR 105 and the UPRR crossing; and 3) Class I bicycle path on the Yolo Causeway.

Action 2.4: Bicycle Repair Facilities

Providing bicycle repair stations throughout site (to include air compressor, allen wrenches, and tire levers) encourages bicycle ridership and ensures a sense of safety in the case of bicycle mechanical issues for cycling commuters.

Action 2.5: End-of-Trip Bicycle Support Facilities

Supplying end-of-trip facilities for major on-site employers such as showers, lockers, and changing rooms is most important to those making longer bicycle commute trips by bicycle, such as causeway cyclists from Sacramento and West Sacramento

Action 2.6: Bicycle Storage Rooms

Requiring internal and secure bicycle storage rooms and/or bicycle lockers of sufficient capacity to accommodate minimum required long-term bicycle parking spaces near each residential building and employer entrances encourages people to ride their bikes as a primary means of transportation. These rooms and/or lockers should be located on the ground floor so they can provide easy access to and from bicycle infrastructure on site such as bicycle lanes and multi-use paths.

3. Parking Pricing and Supply Management

Action 3.1: Rent or Lease Residential Parking Spaces

"Unbundled parking" is the act of providing on-site parking separate from residential units. The project could implement unbundled parking from their multifamily-residential in an effort to discourage auto-use to and from ARC. Recent research has suggested that unbundled parking methods can reduce VMT by 3 to 13 percent.[2]

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[2] Quantifying Greenhouse Gas Mitigation Measures, California Air Pollution Control Officers Association, 2010.

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Exhibit
4

ENVIRONMENTAL SUSTAINABILITY GUIDING PRINCIPLES

In recognition of the City's declaration of a climate emergency (RESOLUTION 19-023), the Developer and the City have agreed to the following Sustainability Guiding Principles for the Aggie Research Campus ("Project"). These Guiding Principles are a means for mandating, implementing and maintaining Project features that are designed to address and mitigate identified environmental concerns, including but not limited to impacts to global climate change, and to ensure sustainability for the life of the project.

Measurement and Verification

Critical to the success of the Aggie Research Campus is its ability to demonstrate continuous advancements in site sustainability during buildout and into campus operations. Many of the Sustainability Guiding Principles are designed to gradually increase site sustainability and further reduce Project impacts over time, such as improved air quality, reduced carbon emissions, greater electrical efficiency and reduced single-occupancy vehicle travel. These Guiding Principles will work in tandem with Project mitigation measures to reduce Project-related environmental impacts. To ensure accurate tracking and reporting, Developer will establish a Master Owners Association which reports to the City and is responsible for measurement, verification and assuring compliance with Project sustainability obligations and mitigation measures.

Building Standards

The Project shall meet and exceed Title 24, Cal Green Tier 1 and will utilize the City of Davis' Residential Energy Reach Code standards.

Energy Efficiency and Usage

The Developer is committed to maximizing clean energy production onsite and to implementing a program within the Project to ensure that all structures consume 100 percent renewable electricity. In furtherance of this pledge, the Developer commits as follows:

- To maximize and optimize onsite solar energy generation (and future clean energy use) by mandating photovoltaics on every conducive structure and in parking areas.
- Project will enter into a purchase and sale agreement with Valley Clean Energy (or another electric utility company) to which it will sell, and through which it will distribute, all electricity generated onsite. This arrangement will ensure that all power generated onsite which is not used onsite is utilized locally.
- All onsite residential units will be all-electric.
- To achieve a Project that is fueled by 100% clean energy, Developer commits all structures, residential and non-residential, to purchase power from solely renewable sources such as Valley Clean Energy's "UltraGreen" 100% renewable program or its equivalent, to offset any electric deficit.
- Achieve net zero for outdoor lighting.

- In anticipation of improved solar-connected energy storage, the Project will be designed and pre-wired for future microgrid capacity and energy storage.

Transportation Demand Management Plan

The Project shall implement a Transportation Demand Management Plan (TDM plan) with measurable results to quantitatively shift away from single occupancy vehicle (SOV) use and incentivize a mode shift to bicycling, public transit, private transit, or car pool and to determine which traffic mitigations are needed at each phase of Project development. Prior to, or concurrent with, adoption of Final Planned Development, Developer shall finalize a TDM plan acceptable to the City which shall include, in part, the following:

- Prior to the commencement of construction of each phase, a traffic study shall be prepared which measures in- and out-flow from the Project and identifies traffic patterns. This analysis will be shared with the City to determine which traffic mitigation measures are necessary to accommodate each phase of development. This will also serve to inform the City on mode share and to trigger the need for increased transit services.
- The Project shall be designed to accommodate internal, local and regional transit. It will include a centralized transit plaza that will serve as the hub for a variety of mode shares.
- At Phase 1, Developer will implement an electric shuttle service running weekdays from the AM to PM peaks, connecting the ARC to UCD and the Amtrak station.
- Developer will participate in and support Caltrans led efforts to add HOV lanes on I-80 from West Sacramento to Davis.
- Developer will continue its relationship with Yolobus and Unitrans, both of which have bus service contiguous to the site, to increase the frequency and capacity of bus service as the Project develops. Prior to the commencement of Phase 3, Developer will petition to reroute Unitrans and Yolobus service into and through the Project site. The transit plaza shall be designed with specifications to accommodate local and regional bus service.

Parking Lots and Internal Streets

To further incentivize a mode shift to bicycling, public transit, private transit, or car pool and to reduce the heat island effect, as well as visual and aesthetic impacts, Developer shall implement the following features in its parking areas and/or along the Project's internal roadway system:

- All streets and surface-level parking shall utilize low-impact development (LID) features such as bioswales to capture and filter runoff and to maximize groundwater recharge. Piping of runoff will be discouraged and only utilized when necessary.
- All parking surfaces or street-adjacent sidewalks utilizing tree shading shall use structured soil or suspended substrate to allow successful tree root development. Developer shall size pavement treatment area to accommodate the tree varietal's intended tree size.
- Landscaping shall provide 80% shading of pedestrian walkways and off-street Class I bike paths. 50% parking lot shading shall be achieved through either shade trees of photovoltaic arrays. These requirements shall be demonstrated at building permit for PV or shall be achieved with in 15 years of planting for areas shaded by trees. Failure to meet shading requirements shall be considered a code violation and subject to penalty until remedied.
- Parking preference and priority will be given to high occupancy vehicles (HOV) and electric vehicles (EV). Not including handicap parking, only HOV and EV parking shall

be allowed adjacent to buildings. All stalls designated for EV will have charging stations pre-installed.

- All commercial parking areas will be designed with infrastructure to gradually phase-in the installation of EV charging stations as demand grows.
- All housing shall include one Level 2 EV charger per unit or, if a multifamily building is parked at a raio of less than 1:1, one Level 2 EV charger per parking stall. Townhomes, if built to accommodate two vehicles, will be prewired to allow for the installation of a second charger.

Landscaping and Water Conservation

To reduce Project demand on groundwater and potable water the Developer commits to the following measures:

- Native and drought tolerant plants shall predominate the plant pallet. A diversity of native habitats shall be disbursed and managed throughout the site, primarily within the agricultural buffer and along the channel, including but not limited to riparian and California oak savanna.
- Turf will be strongly discouraged and utilized only in areas programmed for activities such as the Oval.
- Developer shall engage with the Center for Land Based Learning, the Davis Arboretum, or other local expert to design and manage its open and landscaped buffer areas. Landscape plans will be subject to City review including the Open Space and Habitat Commission and the Tree Commission.
- Developer will install recycled "purple pipe" infrastructure which will convey non-potable water for use in all landscaping. Developer will convert this system to reclaimed water if and when such service is made available.
- All runoff will be captured, conveyed and detained onsite in a series of bioswales intended to filtrate and clean the run-off and maximize groundwater recharge.

Housing

Housing at ARC is included to maximize the environmental benefits of mixed-use development. The inclusion of housing and an overall complementary mix of uses reduces the number and distance of project-related vehicular trips, encourages walking and bicycle trips, reduces air quality impacts and reduces the overall carbon footprint of the project. To further increase the sustainability benefits of onsite housing, the Developer commits as follows:

- Housing will be medium- and high-density with a range of 15-50 units per acre. No single-family detached housing will be permitted.
- Housing will be designed to meet the housing needs of the workforce and will not resemble student-oriented housing found elsewhere in the City. No unit will be greater than three bedrooms. Rental apartments will not exceed two bedrooms.
- Housing construction will be directly linked to the development of commercial space at a ratio of one home per 2,000 square feet of nonresidential space. This linkage will correlate the availability of housing with the creation of jobs which will maximize ARC employee occupancy of the housing.
- Housing will be all-electric and utilize the Residential Energy Reach Code.

- Multifamily rental units shall be charged separately for parking so that any resident may have the option of renting car-free housing.

Mitigation Measures

The project shall comply with Mitigation Measures identified in the Approved Mitigation Monitoring Reporting Plan.

Exhibit
5

ARC Business Park Draft Subsequent EIR Comments
Submitted by Colin Walsh
April 27, 2020

Aggie Research Campus – Recreation and Parks Commitments

Overview of the ARC's Park, Recreation, Open and Gathering Areas:

- The Project site, including a proposed offsite 6.8-acre agricultural buffer easement area, is a total of ±194 acres. 49.8 acres of the Project site, or roughly 25%, is dedicated to public gathering spaces and open areas, which include a mix of parks, plazas, greenbelts, courtyards and the agricultural buffer. The approximately 50-acres of various forms of green space does not include a landscaped setback area that will encircle the site or the open-air stormwater bioswales that will be located within and adjacent to all paved areas.
- The Project includes up to 850 residences primarily geared toward accommodating the housing needs of ARC employees. Utilizing Code section 36.08.040, the 850 units necessitates that the Project provide 11.14 acres of parks. (MuniCode 36.08.040; Policy POS 4.2 (p248) see also POS 6.2(b); Parks and Rec Master Plan p.82.) As demonstrated on the Preliminary Open Space Plan, the Project will provide 12.7 acres of park space.
- The onsite parks will be anchored by a roughly 7.5-acre neighborhood/special use park at Mace Blvd and Alhambra Dr. This main park feature is located within 3/8 mile of all residential units. It will include a community gathering venue and be programmed to accommodate sporting activities. This area is envisioned to serve the needs of ARC sports leagues (i.e., corporate softball) and other community leagues. The remaining three parks range from 1-acre to 2.5-acres and will primarily serve the needs of the residents and employees alike, though all ARC parks will be open to the public.
- The General Plan also requires that the Project provide greenbelts for recreational purposes as well as providing bicycle access to the site. (POS 3.1 & 3.2) The Project site is encircled by greenbelts in the form of the Agricultural Transition area (±7.5 acres) and is bisected by a greenbelt that will parallel the Mace Drainage Channel. Each of these greenbelts will include Class 1 bake paths and pedestrian walking trails.
- Between the peripheral ring trail (2.25-miles) and the trail that parallel the Mace Drainage Channel (0.5-miles), there will be approximately 2.75 miles of new walking and biking trails onsite, this does not include numerous other internal pathways that will be used for casual recreation.
- Native and drought tolerant plants will predominate the plant pallet. A diversity of native habitats shall be disbursed and managed throughout the site, primarily within the agricultural buffer and along the Mace drainage channel, including but not limited to riparian and California oak savanna.
- Turf will be strongly discouraged and utilized only in areas programmed for activities such as the Oval and other programmed spaces.
- Park design will be the subject of subsequent entitlements with precise design to be reviewed by the City, including the Recreation and Parks Commission at Final PD or Tentative Subdivision Map.

Ownership, Maintenance, and Use

- The Agricultural Transition area (interior 50-feet of the ag buffer) will be deeded to the City but privately maintained by the ARC Master Owners' Association or a landscape and lighting district.
- The internal parks and greenbelts will be privately owned and maintained to ensure that the park amenities meet and exceed the standards expected at Class-A commercial facility. A public access and recreation easement will be recorded against all parks and greenbelts for the benefit and use of the public at large.
- Additional communal gathering spaces and recreational needs will be provided for in several private courtyards associated with clusters of commercial buildings or multifamily buildings. These spaces will be designated for tenants only.

Recreation & Park Commitments:

- Developer will ensure public access through fee or easement to 7.5 acres of peripheral trail which will include a walking path and a class 1 bike trail.
- Developer will ensure public access through a recorded easement to a minimum of 12 acres of onsite parks.
- Developer will be responsible to construct and maintain all onsite parks and open spaces relieving the City of a considerable financial burden.
- Parks and recreational areas will minimize the use of turf while balancing the needs of certain sporting activities.
- The Project will include a peripheral trail that fully encircles the site to accommodate the daily recreational needs of residents and employees, and which will also be open to use by the public at large.
- A class 1 bike trail will parallel the Mace Drainage Channel, be serviced by an off-grade crossing of Mace Blvd, connect with the City easement located east of the Project site, and enhance overall regional bicycling connections.

Exhibit
6

ARC Business Park Draft Subsequent EIR Comments
Submitted by Colin Walsh
April 27, 2020

ATTACHMENT 8

Aggie Research Campus - Landscaping Overview and Tree Commitments

Overview of the ARC's landscaped area:

- The Project site, including a proposed offsite 6.8-acre agricultural buffer easement area, is 194 acres. 49.8 acres of the Project site, or roughly 25 percent, is dedicated to public gathering spaces and open areas which include parks, plazas, greenways, courtyards and the agricultural buffer. The roughly 50-acre calculation does not include a landscaped setback area that will encircle the Project site or the open-air stormwater bioswales that will be located within and adjacent to all paved areas.
- An assessment of the Project site has determined that ARC can accommodate the planting of approximately 1,000-1,500 trees.
- While the parking areas will primarily be shaded with photovoltaic arrays, tress will also be utilized to provide a portion of parking lot shading.
- A proposed plant palette will be submitted with the application for Final Planned Development and will indicate the specific tree species for use onsite. Native and drought tolerant plants shall predominate the plant palette. A diversity of native habitats shall be disbursed and managed throughout the site, primarily within the agricultural buffer and along the Mace drainage channel, including but not limited to riparian and California oak savanna.
- Turf will be strongly discouraged and utilized only in areas programmed for activities such as the Oval and other programmed spaces.

Tree Commitments:

- The Project site will include a minimum of 1,000 trees.
- Developer shall engage with Tree Davis, the Center for Land Based Learning, the UC Davis Arboretum, or other local expert to assist with design, selection of species, and management of trees and all landscaped areas of the Project site.
- Prior to construction, Developer will submit formal landscape plans for City review and approval. Landscape plans will be subject to review by City staff and will be heard by the Open Space and Habitat Commission and the Tree Commission.
- Landscaping shall provide 80% shading of pedestrian walkways and off-street Class I bike paths that are not otherwise shaded by photovoltaics or other renewable energy generation.
- Developer will utilize best practices for tree planting and root establishment. Specifically, Developer commits to the use of structured soils or suspended substrate to allow successful tree root development, to the satisfaction of the City's Urban Forest Manager.
- When planting in parking areas or along paved walkways, Developer will size pavement treatment area to adequately accommodate the tree varietal's intended size.

- Planting practice and tree health shall be subject to 3rd party verification by the City's Urban Forest Manager. If, five years from the original date of planting, a tree is not growing at its anticipated rate or is otherwise showing signs of failure, that tree will be identified by the Urban Forest Manger who, at his or her discretion, may require tree replacement.
- Attainment of shading requirements shall be demonstrated within 15 years of planting. Failure to meet shading requirements shall be considered a code violation and subject to penalty until remedied through additional plantings.

APPENDIX 10

Aggie Research Campus

Volume 1 – Transportation Impact Study

Prepared for:
Raney Planning & Management, Inc.

March 2020

RS19-3828.01

FEHR PEERS

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1. Introduction

This study describes existing transportation conditions (environmental and regulatory) and analyzes the potential of the proposed Aggie Research Campus project (the project) to affect the surrounding transportation environment in accordance with current CEQA Guidelines. The analysis evaluates potential impacts to vehicle miles traveled (VMT) and transit, bicycle, and pedestrian components of the transportation system that may result from the proposed project, as well as impacts during project construction. Where necessary and feasible, mitigation measures are identified to reduce these impacts.

An accompanying document, the Aggie Research Campus Traffic Operations Analysis (Volume 2) presents an analysis of the potential effects of the proposed project with respect to traffic operations (i.e., vehicle delay) on roadway facilities within the vicinity of the project site. This analysis is deliberately separate from the transportation impact study in Volume 1 in accordance with the CEQA Guidelines, which no longer permit the use of vehicle delay or level of service (LOS) for the purposes of identifying environmental impacts for land use projects. This analysis has been prepared for two primary reasons. First, it informs other components of the transportation impact analysis (e.g., potential impacts to transit services) and other topics addressed in the Aggie Research Campus SEIR (e.g., air quality, noise, GHG, etc.). Second, it directly addresses the proposed project's consistency with City of Davis General Plan policies related to traffic operations and level of service.

Purpose

This impact analysis supports the Supplemental Environmental Impact Report (SEIR) prepared for the ARC project. The SEIR evaluates the extent to which changes to the project, changes to background circumstances, and/or new information would result in new significant environmental effects or a substantial increase in the severity of previously identified significant effects as described in the Mace Ranch Innovation Center (MRIC) Final Environmental Impact Report (EIR), certified by the City of Davis in September 2017. An overview of those changed conditions is described in the following section.

Changes to Project, Changes to Background Circumstances, and New Information

The following describes the meaningful changes in analysis methods, background travel conditions, environmental thresholds, and other considerations between the publication of the MRIC Final EIR and present conditions:

1. **Mace Boulevard Traffic –** The existing conditions analysis and subsequent impact analyses in the MRIC Final EIR utilized baseline traffic count data collected in October 2014. Traffic counts conducted in May and October of 2019 indicate that peak hour traffic volumes on roadways within the vicinity of the project site have increased substantially since that time, particularly during the PM peak hour. This is primarily due to increased delays and extended periods of congested conditions on eastbound I-80, diverted regional travel demand onto local roadways, the increased prevalence of navigation apps (e.g., WAZE), and changes to roadway capacity and operations, particularly modifications to the eastbound I-80 ramp meters and the four-to-two lane reduction on Mace Boulevard south of Cowell Boulevard. Therefore, the baseline traffic conditions that the project would interact with on study area roadways reflect higher levels of traffic volumes and delay than those studied in the Certified Final EIR. For example, these changed conditions affect southbound Mace Boulevard north of the interchange, a critical movement to which the project would add substantial PM peak hour travel demand. Thus, as a result, project effects may differ for various modes of travel, new travel routes may be selected, and the types of and site access improvements may change. This is discussed in more detail in Volume 2.

2. **Changes to the Project Description** – Although land uses have not technically changed, several subtle modifications to the project description for the mixed-use alternative analyzed in the MRIC EIR have occurred. This includes differing assumptions regarding the extent to which the project's housing and retail component complements its other uses, as well as modifications to project access and off-site transportation improvements. This is discussed in more detail in Chapter 3.

3. **Updated Trip Generation Rates Published by the Institute of Transportation Engineers (ITE)** – the MRIC EIR relied upon the then most recent *Trip Generation Manual*, which was the 9th edition released in 2010. The 10th edition was released in 2017. It includes several new land use categories, and material changes in trip rates for certain land use categories that are part of the proposed project.

4. **New Travel Demand Model** – In 2016, an updated travel demand model was developed as part of the UC Davis Long Range Development Plan (LDRP). This updated model covers the entire City of Davis and UC Davis campus, is calibrated to 2019 conditions, and has a 2036 horizon year. In contrast, the 2014 MRIC EIR relied upon the then most recent version of the City's travel demand model, which was originally developed in 2004.

5. **New Highway Capacity Manual (HCM)** – The 6th Edition of the HCM (Transportation Research Board, 2016) is used in this study, whereas the 2010 HCM was used in the MRIC EIR.

6. **Changes to the CEQA Guidelines** – SB 743 will go into effect statewide starting July 1, 2020. This law states that intersection level of service (or similar measures) should not be used in CEQA documents for purposes of identifying significant impacts of land use projects. Instead, Vehicle

Miles of Travel (VMT) should be used. The California Office of Planning & Research (OPR) released a *Technical Advisory on Evaluating Transportation Impacts in CEQA* in 2018 that described appropriate methods for estimating VMT, threshold setting for significance criteria, and related topics. Intersection LOS results are presented in Volume 2 for informational purposes and to help properly size project access intersections.

Analysis Scenarios

The following scenarios are analyzed in this study:

- **Existing Conditions –** Establishes the existing setting, which is used to measure the significance of project impacts.
- **Existing Plus Project Conditions –** Adds changes to travel demand resulting from buildout of the proposed project to existing conditions.
- **Cumulative No Project Conditions –** Represents cumulative travel demand based on reasonably foreseeable local and regional land use and transportation system changes. For the purposes of this study, the cumulative year is 2036. This scenario assumes the project site remains vacant.
- **Cumulative Plus Project Conditions –** Adds changes to travel demand resulting from buildout of the proposed project to Cumulative No Project conditions.

Evaluations are performed for each element of the transportation system for each of these scenarios.

2. Analysis Methodology

This section describes the methods utilized to analyze the transportation system.

Travel Demand Forecasting

This study utilized several tools to forecast travel demand changes associated with the proposed project as well as planned local and regional land use development and transportation system modifications.

The local UC Davis/City of Davis travel demand model was used for the purposes of forecasting travel demand within the City of Davis and UC Davis vicinity. This model has a base year of 2016 and forecast years of 2030 and 2036. The model was developed in close coordination with the City of Davis and UC Davis in order to incorporate planned land use and transportation system changes both within the City and its sphere of influence and on the UC Davis campus. The coordination effort included the following elements of model development:

- **TAZ system –** The traffic analysis zone (TAZ) development included review by City and UC Davis staff to ensure sufficient detail for both existing and new growth areas.
- **Land use inputs –** Inputs were initially obtained from the SACOG 2012 parcel database used in developing regional model inputs for the 2016 SACOG MTP/SCS. These inputs were reviewed for each TAZ with City and UC Davis staff to develop a complete inventory representing 2016 conditions, which is the model's base year. Similarly, land use forecasts for 2030 and 2036 conditions were developed in cooperation with City staff and UC Davis staff. Land use forecasts for 2030 and 2036 were based on future land use changes throughout the region projected in the 2016 SACOG MTP/SCS. The land use forecasts were refined based on input from City staff and UC Davis staff according to planned City of Davis General Plan growth, planned UC Davis 2018 Long Range Development Plan (LRDP) growth, approved development projects, pipeline development projects, and other reasonably foreseeable land development activities.
- **Roadway network inputs –** The local model roadway network was developed from GIS data representing local, collector, arterial, and freeway functional classifications. Input data included the number of travel lanes and free-flow travel speeds based on the previous UC Davis/City of Davis model developed for the 2003 LRDP update, plus new data from field observations and Google Maps imagery. Capacity inputs for each roadway classification were estimated from reference documents including the HCM 6th Edition and the *Travel Demand Forecasting: Parameters and Techniques, National Cooperative Highway Research Program, Report 716*,

(Transportation Research Board, 2012). Changes to the roadway networks for future year scenarios were provided by City and UC Davis staff as noted above.

- **Vehicle trip rates –** The vehicle trip rates were derived from a variety of sources including the UC Davis Campus Travel Survey, the California Household Travel Survey, local residential trip generation estimates based on observed traffic counts, and the *Trip Generation Manual*, 10th Edition. The rates were estimated for the following trip purposes.
  - Home-Based Work (HBW): trips between a residence and a workplace
  - Home-Based Shop (HBS): trips between a residence and a retail destination
  - Home-Based School (HBK): trips between a residence and a school (K-12)
  - Home-Based Other (HBO): trips between a residence and any other destination
  - Non-Home-Based (OO): trips that do not begin or end at a residence, such as traveling from a workplace to a restaurant, or from a retail store to a bank
  - College (COLL): trips to and from a Community College
  - UC Davis (UCD): trips to and from UC Davis
  - Highway Commercial (HC): trips to and from highway commercial destinations
- **Vehicle trip lengths and external trip patterns –** The vehicle trip lengths and the proportion of vehicle trips that occur exclusively within the model area versus those that have origins or destinations external to the model area were obtained from the UC Davis Campus Travel Survey, the California Household Travel Survey, and the American Community Survey. This information was extracted for each trip purpose above. Trips traveling through the model area without stopping such as those on I-80, were estimated from the regional SACOG SACSIM model developed for the 2016 SACOG MTP/SCS.
- **Trip assignment –** Trip assignment relies on conventional algorithms that assign trips between origin and destination zones based on travel times that reflect the influence of roadway capacity and speeds. A unique aspect of the assignment process is that UC Davis generated trips had to be associated with parking areas on and off-campus since that is where trips start and end. These parking areas were mapped in collaboration with UC Davis staff and iterative testing of the assignment results was used to refine the association.

Consistent with standard practice, the base year model was calibrated and then validated against actual travel conditions present in 2016. The model passed all applicable validation tests.

Vehicle Miles Traveled (VMT)

This study uses vehicles miles traveled (VMT) as the primary metric for transportation impacts. By definition, one VMT is defined as a motor vehicle being driven one mile. VMT is expressed on a daily basis, and in this context, for a typical weekday. VMT values in this study represent the full length of a given trip, and are not truncated at city, county, or region boundaries.

This analysis uses the VMT per service population metric for the purposes of analyzing potential impacts to VMT. This methodology calculates VMT by summing the "VMT from" and "VMT to" a specified area. The VMT accounting is:

VMT = (II + IX) + (II +XI) = (2 x II) + IX +XI

- Internal-internal (II): The full length of all trips made entirely within the geographic area limits is counted.
- Internal-external (IX): The full length of all trips with an origin within the geographic area and destination outside of the area is counted.
- External-internal (XI): The full length of all trips with an origin outside of the geographic area and destination within the area is counted.

The intra-zonal VMT and VMT between traffic analysis zones, or TAZs, that are both in the study area are double counted. To cancel out the double counting, the VMT is divided by the service population (residential population plus employment population), the generators of both trip ends of the VMT. This is necessary when expressing VMT as an efficiency metric that also represents the VMT generation rate of the service population. The resulting VMT is then compared to the existing VMT and a determination made as to whether the project VMT exceeds the applicable thresholds.

VMT estimates were prepared utilizing the UC Davis/City of Davis travel demand model, SACOG's SACSIM travel demand model, and the California Statewide Travel Demand Model. For project-generated VMT calculations, the following calculations were performed:

- Project-Generated VMT = project's estimated weekday external vehicle trips x average trip length

The average trip lengths were derived from the UC Davis/City of Davis travel demand model, with extra distance appended to project trips with trip ends outside of that local model's boundaries using the SACMET travel demand model and the California Statewide Travel Demand Model (e.g., to capture longer trips to/from the Bay Area that would not otherwise be reflected in the local model).

The following process was employed to prepare estimates for VMT generated at the local and regional level:

- **Local VMT generated by the City of Davis and UC Davis –** The UC Davis/City of Davis travel demand model was used to estimate VMT associated with trips ends within the model boundaries (i.e., the City of Davis sphere of influence and the UC Davis campus). This model was selected for this purpose due to its smaller TAZ structure relative to other available travel demand models, which allows for a more granular evaluation of trips internal to the model boundaries (i.e., to avoid underreporting VMT associated with internal-internal trips associated with a given TAZ). Extra distance was added to trips with trip ends outside of the local model boundaries using the SACSIM travel demand model and the California Statewide Travel Demand Model. Land use inputs for the TAZ containing the project site were calibrated to match the estimated (for Existing Plus Project and Cumulative Plus Project conditions) daily trip generation associated with the project site based on the project trip generation estimates described in the Project Travel Characteristics section.
- **Regional VMT generated by the SACOG region –** The SACSIM travel demand model, prepared by SACOG for regional travel demand forecasting purposes, was utilized to estimate VMT associated with trips with trip ends within the model boundaries (i.e., the SACOG region). Extra distance was added to trips with trip ends outside of the SACSIM model boundaries (e.g., based on actual distance from edge of model to destinations within Solano or Napa Counties, for instance) using the California Statewide Travel Demand Model. VMT associated with SACSIM trips with trip ends within the City of Davis sphere of influence or the UC Davis campus were deleted and replaced with the VMT calculated from the UC Davis/City of Davis travel demand model as described in the previous step.

3. Environmental Setting

This section describes the existing environmental setting, which is the baseline scenario upon which project-specific impacts are evaluated. The environmental setting components include roadway, pedestrian, bicycle, and transit networks in the vicinity of the project site.

Project Location

The proposed project site is located in unincorporated Yolo County immediately east of the City of Davis city limits. The project site is situated east of Mace Boulevard and north of Interstate 80 (I-80) near the "Mace Curve". The project site is located approximately three miles east of Downtown Davis and the University of California, Davis (UC Davis) campus and approximately ten miles west of Downtown Sacramento. The project site is bordered on the west by Mace Boulevard, on the south by County Road 32A (CR 32A), and agricultural fields on the north and east. **Figure 1** displays the project site and surrounding roadway network.

Roadway System

Mace Boulevard, Alhambra Drive, CR 32A, and County Road 30B/104A (CR 30B/104A) provide vehicular access to the project site. Other key roadways in the project vicinity include East Covell Boulevard, Second Street, and Interstate 80. These roadways are described below.

Interstate 80 (I-80) is an east-west interstate freeway near the southern boundary of the project site. From Davis, I-80 connects with the San Francisco Bay Area to the west and Sacramento and the Lake Tahoe Basin to the east. I-80 provides three travel lanes per direction in the vicinity of the project site. I-80 serves Davis via interchanges at Mace Boulevard and Richards Boulevard, as well as a westbound off-ramp at Olive Drive. Additional I-80 interchanges within the vicinity of Davis include the Old Davis Road interchange at the UC Davis campus and the County Road 32A interchange in Yolo County. I-80 and its interchanges are owned and operated by Caltrans.

Mace Boulevard is a two- to four-lane north-south major arterial that borders the west edge of the project site. The roadway provides four lanes south of Alhambra Drive and transitions to two lanes separated by a striped median north of Alhambra Drive, where it becomes East Covell Boulevard. The speed limit is 40 miles per hour (mph).

East Covell Boulevard is a four-lane east-west major arterial that connects Mace Boulevard at Alhambra Drive to State Route 113 and points west. West of the project site, East Covell Boulevard has a posted speed limit of 40 mph from Mace Boulevard to Wright Boulevard.

Alhambra Drive is a two-lane minor arterial that connects Mace Boulevard to East Covell Boulevard. The speed limit is 30 mph.

County Road 32A (CR 32A) is a two-lane east-west minor arterial that borders the south side of the project site. There is an advisory 35 mph speed signed along the curve adjacent to the project site; on the rest of the roadway, the speed limit is 55 mph except for the curve near the railroad grade crossing. The roadway has soft shoulders and bike lanes. West of Mace Boulevard, CR 32A becomes Second Street. CR 32A is owned and operated by Yolo County.

Second Street is a two- to four-lane east-west minor arterial connecting Mace Boulevard to L Street and Downtown Davis. The speed limit in the project vicinity is 35 mph.

County Road 30B/104A (CR 30B/104A) is a two-lane roadway that connects East Covell Boulevard to CR 105 northeast of the project site. There are no speed limit signs in the project vicinity, so the assumed prima facie speed limit is 55 mph. There is an advisory 15 mph sign at the curve located north of the project site. The roadway has soft shoulders, and no sidewalks or bike lanes are provided.

Refer to Volume 2 (Traffic Operations Analysis) for an analysis of the existing peak hour operations of these roadway facilities.

Figure 1
Study Area

Pedestrian Facilities

The City of Davis has an extensive system of off-street shared-use paths, sidewalks, and crosswalks available for use by pedestrians. Sidewalk coverage on the key roadways in the project vicinity is discussed in the Roadway System section above. In addition, the following shared-use paths are located in the vicinity of the proposed project site:

- East-west path situated between I-80 and the Union Pacific main line, beginning at the eastern terminus of Olive Drive and terminating at CR 105. Users of this path continue east to the causeway bike path;
- East-west path on the south side of East Covell Boulevard to an eastern terminus point at the eastern boundary of Harper Junior High School, approximately 2,500 feet north of the Mace Boulevard/Alhambra Drive intersection. A grade-separated bicycle crossing underneath East Covell Boulevard east of Monarch Lane connects this path to a complementary path on the north side of East Covell Boulevard towards Wildhorse;
- East-west path on both sides of Alhambra Drive between Mace Boulevard and Fifth Street;
- East-west path paralleling Arroyo Avenue with connections to the Fifth Street path to the west and the Alhambra Drive path (via John Barovetto Park) to the east. This path also provides a connection to the Dave Pelz Bicycle Overcrossing, which connects Mace Ranch and South Davis over I-80 and the Union Pacific main line;
- The approximately 12-mile Davis Bike Loop, which passes through Mace Ranch Park. The City-wide bike loop is a combination of on-street bicycle facilities and off-street shared-use paths; and
- Several internal paths in the Mace Ranch neighborhood.

Additionally, the site plan for the Offices @ Mace Ranch project (located at the northwest corner of the Mace Boulevard/Alhambra Drive intersection) includes a path along its frontages of Mace Boulevard and Alhambra Drive. This project is currently under construction and scheduled for completion in 2020.

Pedestrian facilities do not exist along the proposed project site boundaries as the land is currently undeveloped. The signalized intersection of Mace Boulevard/Second Street/CR 32A, located at the southwest corner of the proposed project site, has crosswalks with pedestrian push buttons on all four legs, but there is no connecting sidewalk on the site frontages to the north and east. The signalized intersection of Mace Boulevard/Alhambra Drive, located on the proposed project's western edge, has a crosswalk only on the west leg (crossing Alhambra Drive). There are no pedestrian facilities on the access road to the Park-and-Ride lot southwest of the proposed project site.

Bicycle Facilities

The project site is situated on the edge of the City of Davis bicycle network, which is comprised of an extensive network of on- and off-street bicycle facilities. Bicycle facilities are typically categorized in the following classifications:

- **Class I Multi-Use Off-Street Paths** (also known as shared-use paths) are paved trails that are separated from roadways and allow for shared use by both cyclists and pedestrians.
- **Class II On-Street Bike Lanes** are designated for use by bicycles by striping, pavement legends, and signs.
- **Class III On-Street Bike Routes** are designated by signage for shared bicycle use with vehicles but do not necessarily include any additional pavement width for bicyclists.
- **Class IV Separated Bikeways** (also known as protected bikeways or cycle tracks) are separated bikeways improve upon buffered bike lanes by providing vertical separation between bike lanes and the adjacent travel lanes. Vertical separation can be provided with concrete curb and gutter, bollards or on-street parking.

Figure 2 displays existing bicycle facilities in the proposed project vicinity. In addition to the previously discussed shared-use paths, on-street bicycle facilities are located on the following roadways near the proposed project site:

- Class II Bike Lanes
  - Mace Boulevard in both directions from East Covell Boulevard to Cowell Boulevard;
  - East Covell Boulevard from Mace Boulevard to the westerly city limits;
  - Alhambra Boulevard in both directions from Mace Boulevard to East Covell Boulevard;
  - CR 32A in both directions from Mace Boulevard to CR 32B; and
  - Second Street from Mace Boulevard to L Street.
- Class IV Separated Bikeways
  - Mace Boulevard from Cowell Boulevard to Redbud Drive, including one-way separated bikeways on both sides of the roadway between Cowell Boulevard San Marino Drive and a two-way separated bikeway on the west side of the roadway between San Marino Drive and Redbud Drive.

East Covell Boulevard, which becomes Mace Boulevard along the proposed project frontage, is the only continuous east-west arterial that traverses the entire City of Davis. To facilitate bicycle and pedestrian travel across this high-volume facility, the City of Davis has required the construction of bicycle/pedestrian grade separations for new developments located on the north side of Covell Boulevard. Existing grade separations on Covell Boulevard are located west of F Street, east of F Street (to/from The Cannery), and east of Monarch Lane. A future facility is planned on West Covell east of Denali Drive, as shown in the *City of Davis General Plan*.

Transit Service and Facilities

Transit serving the project site includes local bus service connecting the project site to destinations throughout the City of Davis (e.g., Downtown Davis, the Davis Train Depot, etc.) and the UC Davis campus. Additionally, the project site is served by intercity bus service that is primarily oriented towards serving Davis residents commuting to and from work in Downtown Sacramento.

Transit service in the City of Davis is provided by Unitrans (local bus), Yolobus (intercity bus), Amtrak (intercity rail), and Davis Community Transit (local paratransit):

- **Unitrans** provides local fixed route bus service to the project site. Jointly operated between the Associated Students, UC Davis (ASUCD) and the City of Davis, Unitrans offers 19 routes serving the UC Davis campus and City of Davis neighborhoods, shopping centers, schools, and medical centers. Unitrans operates as a radial bus system with the UC Davis campus serving as the central hub. The main terminals on the UC Davis campus are at the Memorial Union on Howard Way and at the Silo along Hutchison Drive.

  Specific service spans and frequencies vary by route. Generally, Unitrans operates from 6:30 a.m. to 11:30 p.m. Monday through Thursday and until 9:00 p.m. on Fridays. Weekend service is available from 8:30 a.m. to 7:00 p.m. Unitrans routes operate every 15 or 30 minutes during weekdays and every 60 minutes during weekends and evenings. **Table 1** summarizes the weekday and weekend frequency and span for Unitrans bus routes serving the project site.

  The current Unitrans one-way fare is $1.25, with monthly, quarterly, and annual passes available at a discounted price. Free rides are available to UC Davis undergraduate students (fee assessed quarterly with registration), seniors, disabled passengers, City of Davis employees, and transferring Sacramento Regional Transit, Yolobus, Capitol Corridor, and Fairfield Transit passengers.

Table 1: Unitrans Route Summary – Project Site Vicinity

Route	Weekday (M-Th)		Friday		Weekend	
	Peak Frequency (min)	Span	Peak Frequency (min)	Span	Peak Frequency (min)	Span
A – Silo/Amtrak/5th/Alhambra	30	7 a.m. to 11 p.m.	30	7 a.m. to 9 p.m.	--	--
O – MU/Amtrak/5th/Alhambra/Target	--	--	--	--	60	9 a.m. to 7 p.m.
P – MU/Davis Perimeter Counter Clockwise	30	6 a.m. to 11 p.m.	30	6 a.m. to 9 p.m.	60	8 a.m. to 7 p.m.
Q – MU/Davis Perimeter Clockwise	30	6 a.m. to 11 p.m.	30	6 a.m. to 9 p.m.	60	8 a.m. to 7 p.m.
Z – MU/Amtrak/Cantrill/5th	30	7 a.m. to 7 p.m.	30	7 a.m. to 7 p.m.	--	--

Source: Unitrans, 2020.

- **Yolobus** provides fixed route bus and paratransit service throughout Yolo County, as well as commuter bus service to downtown Sacramento. Single rides are available for $2.25 and $3.25 for local and express services, respectively. Discounted daily and monthly passes are also available.

  Local bus routes serving the project site include Routes 42A and 42B, which provide clockwise/counterclockwise loop service between Davis, Woodland, Sacramento International Airport, Downtown Sacramento, and West Sacramento on hourly headways. Express bus routes serving the project site include Routes 43 and 232, both of which are oriented towards serving Davis residents working in Downtown Sacramento (i.e., morning service is eastbound-only and afternoon/evening service is westbound-only).

- **Amtrak** serves the Davis Transit Depot near Second and G Streets in downtown Davis, approximately three miles west of the project site. Amtrak Capitol Corridor service is available at the depot, connecting passengers to Sacramento and Roseville to the east and the Bay Area to the west. Currently, 15 daily Capitol Corridor round-trips are available at the station during regular weekday service. In addition to regular Capitol Corridor service, Amtrak serves the Davis Transit Depot with daily Coast Starlight service (to Los Angeles and Seattle) and intercity bus connections to other Amtrak rail lines (e.g., the Amtrak San Joaquin lines at Sacramento Valley Station).

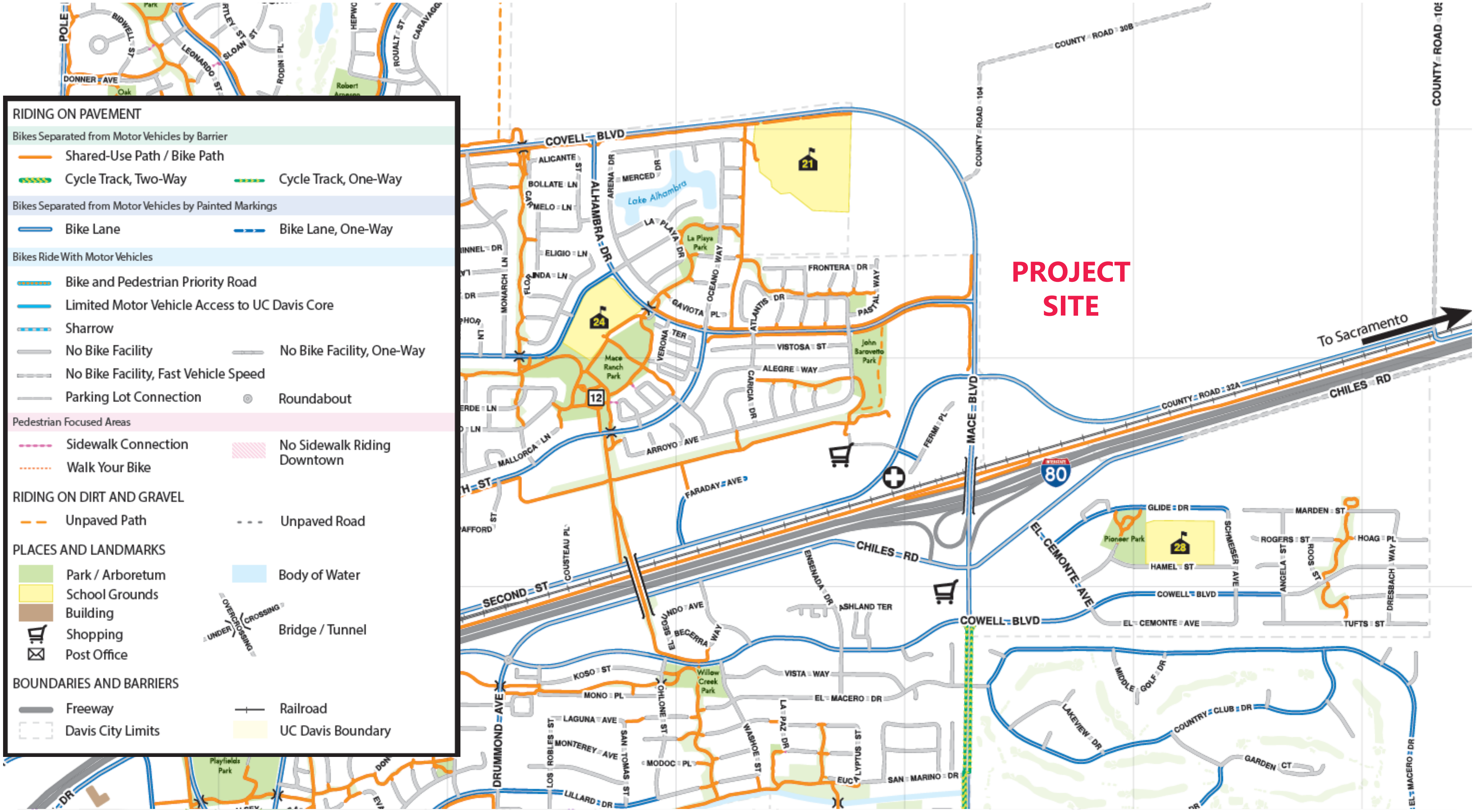
UC Davis, together with operating partners Yolobus and the Sacramento Regional Transit District, is launching the Causeway Connection bus service in April 2020. This service will connect the UC Davis main campus in Davis and the UC Davis Health Campus in Sacramento, replacing the existing inter-campus shuttle. The planned schedule identifies the Mace park-and-ride as a stop for select eastbound trips in the morning and westbound trips in the evening. The park-and-ride will be served hourly during peak periods.

Figure 3 displays the bus stops and routes serving the project site vicinity. The primary bus stops serving the project site are located at the Mace park-and-ride, on southbound Mace Boulevard midblock between Alhambra Drive and Second Street, and on northbound Mace Boulevard immediately north of Second Street.

Rail Transportation

Union Pacific Railroad Company (UPRR) operates a railroad line that runs east-west through the City of Davis. The railroad tracks border the western edge of the project site and are grade-separated with Mace Boulevard. At-grade crossings exist to the south within the study area at County Road 105. The rail crossing includes advanced warning signs, pavement markings, and highway stop signs. According to the Federal Railroad Administration[1], this line is used by an average of 53 trains per day, including freight trains and Amtrak passenger trains. Yolo County, together with UPRR and the City of Davis, is currently evaluating potential modifications to the County Road 105 at-grade crossing to reduce the potential for conflicts with rail operations.

[1] http://safetydata.fra.dot.gov/officeofsafety/publicsite/crossing/xingqryloc.aspx



Source: Davis Bike Map, City of Davis

Figure 2

Existing Bicycle Facilities

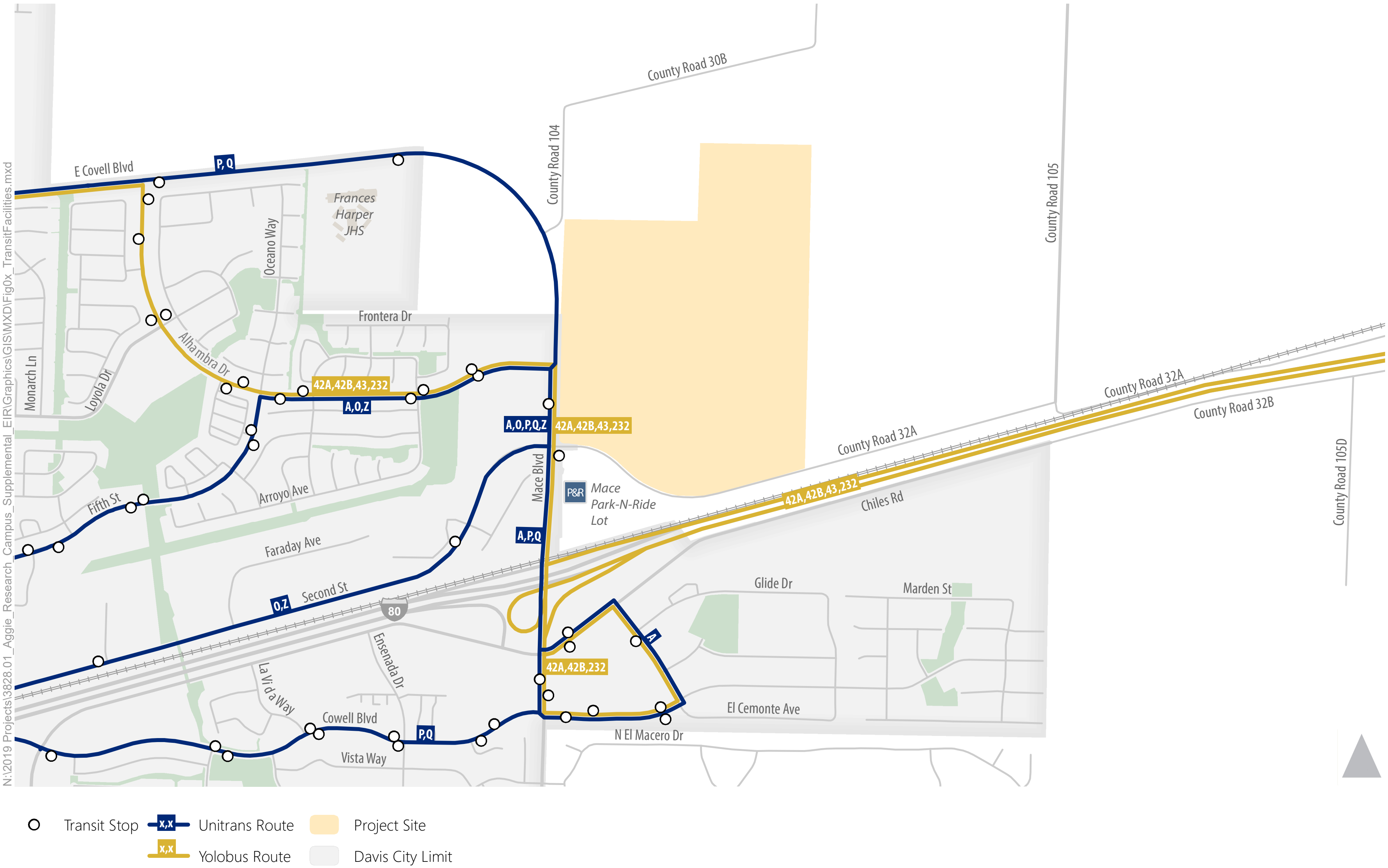


Figure 3

Existing Transit Service and Facilities

4. Regulatory Setting

Existing transportation policies, laws, and regulations that would apply to the project are summarized below. This information provides a context for the impact discussion related to the project's consistency with applicable regulatory conditions and development of significance criteria for evaluating project impacts.

State

California Department of Transportation

The California Department of Transportation (Caltrans) is responsible for planning, designing, constructing, operating, and maintaining the State Highway System (SHS). Federal highway standards are implemented in California by Caltrans. Any improvements or modifications to the SHS within the study area would need to be approved by Caltrans.

Caltrans' Local Development – Intergovernmental Review Program (LD-IGR) provides guidance on the evaluation of traffic impacts to State highway facilities. In light of Senate Bill 743 (discussed below) and related changes to the CEQA Guidelines, Caltrans has announced in its *Caltrans Draft VMT-Focused Transportation Impact Study Guide* (Caltrans, February 2020) that it will use VMT as the CEQA transportation impact metric for projects on the State highway system and has indicated it will rely on the Governor's Office of Planning and Research (OPR) *Technical Advisory on Evaluating Transportation Impacts in CEQA* when preparing LD-IGR comments on local agency land use projects.

Senate Bill 743

Senate Bill 743 (Stats. 2013, ch. 386) (SB 743) creates or encourages several statewide CEQA improvements. First, it requires OPR to establish new metrics for determining the significance of transportation impacts of projects within transit priority areas (TPAs) and allows OPR to extend use of the metric beyond TPAs. OPR selected vehicle miles of travel (VMT) as the preferred transportation impact metric and applied their discretion to require its use statewide. Second, it establishes that aesthetic and parking impacts of a residential, mixed-use residential, or employment center projects on an infill site within a TPA shall not be considered significant impacts on the environment. Third, once the new CEQA Guidelines go into effect, which occurred on April 27, 2019, vehicle LOS and similar measures related to delay shall not be used as the sole basis for determining the significance of transportation impacts. Finally, it establishes a new CEQA exemption for a residential, mixed-use, and employment center project a) within a transit priority area, b) consistent with a specific plan for which an EIR has been certified, and c) consistent with a Sustainable Communities Strategy. This exemption requires further review if the project or circumstances changes significantly.

Local

City of Davis General Plan

The *City of Davis General Plan* Transportation Element was last updated in 2013. The following goals and policies related to transportation and circulation are applicable to the project. Most of the listed goals and policies are relevant at a project-level scale, versus City-wide.

Goal #1: Davis will provide a comprehensive, integrated, connected transportation system that provides choices between different modes of transportation.

Performance Objective #1.1: Achieve at least the following mode share distribution for all trips by 2035:

- 10% of trips by walking
- 10% of trips by public transportation
- 30% of trips by bicycle

Performance Objective #1.2: Increase use of walking, bicycling, and public transportation to and from the following places:

- Work
- Schools (elementary, junior high, and senior high)
- UC Davis,
- Downtown

Goal #2: The Davis transportation system will evolve to improve air quality, reduce carbon emissions, and improve public health by encouraging usage of clean, energy-efficient, active (i.e. human powered), and economically sustainable means of travel.

Performance Objective #2.1: Reduce carbon emissions from the transportation sector 61 percent by 2035.

Performance Objective #2.2: Reduce vehicle miles traveled (VMT) by 39 percent by 2035.

Performance Objective #2.3: Annually increase funding for maintenance and operation needs of the transportation system, until fully funded.

Goal #3: Davis will provide a safe and convenient Complete Streets network that meets the needs of all users, including children, families, older adults, and people with disabilities.

Performance Objective #3.1: Improve the quality of service for all users of the transportation system.

Performance Objective #3.2: Reduce the total number of collisions between motor vehicles and bicyclists or pedestrians by 50% by 2035.

Goal #4: Davis will strengthen its status as a premier bicycling community in the nation by continuing to encourage bicycling as a healthy, affordable, efficient, and low-impact mode of transportation accessible to riders of all abilities, and by continuously improving the bicycling infrastructure.

Performance Objective #4.1: Commit a minimum amount of funding for bicycle programming and infrastructure as identified in the "Beyond Platinum – Bicycle Action Plan".

Policy TRANS 1.6: Reduce carbon emissions from the transportation system in Davis by encouraging the use of non-motorized and low carbon transportation modes.

Policy TRANS 1.7: Promote the use of electric vehicles and other low-polluting vehicles, including Neighborhood Electric Vehicles (NEV).

Policy TRANS 2.1: Provide Complete Streets to meet the needs of drivers, public transportation vehicles and riders, bicyclists, and pedestrians of all ages and abilities in all transportation planning, programming, design, construction, reconstruction, retrofit, operations, and maintenance activities and products. The City shall view all transportation improvements as opportunities to improve safety, access, and mobility for all travelers in Davis, and recognizes bicycle, pedestrian, fixed-route transit, and demand-response para-transit modes as integral elements of the transportation system along with motor vehicles. This policy also includes the following language pertaining to automobile level of service:

- LOS D or better is acceptable during non-peak traffic hours.
- LOS E or better is acceptable during peak traffic hours.
- LOS F is acceptable during peak traffic hours in the Core Area and Richards Boulevard/Olive Drive area.
- LOS F is acceptable during peak traffic hours in other areas if approved by City Council.

Action TRANS 2.1(i): Establish a multi-modal Level of Service (LOS) standard to address the needs of all users of the street, including bicyclists and pedestrians, at intersections.

Action TRANS 2.1(k): Work with citizens and technical experts to review the street width and "Greenstreet" standards to reflect pedestrian and bicycle friendly policies in this chapter, including but not limited to the following:

- Design/redesign residential and collector streets to slow vehicular traffic to 25 mph or less.
- Design travel lanes to prioritize pedestrians and bicycles, including provisions for a marked "buffer space" to further separate bicycles from both moving and parked motor vehicles, where right-of-way allows.
- Eliminate intersection standards that allow high speed right turns for motor vehicles.
- Adjust intersection signal operations to smooth traffic flow, reduce automobile idle time, and to adequately service bicycles and pedestrians by giving priority and to maintain momentum.

Roadways within the study area with a Greenstreet designation include Mace Boulevard, Covell Boulevard, Second Street, Chiles Road, Cowell Boulevard, and Pole Line Road.

Action TRANS 2.1(l): Preserve rights-of-way for future transportation use.

Action TRANS 2.1(m): Ensure transit stops have adequate curb space for loading and unloading passengers.

Policy TRANS 2.2: Implement state-of-the-art street design solutions to improve bicycle/pedestrian access, comfort, and safety that may include:

- Bicycle boxes at intersections
- Cycletracks
- Shared lane markings (sharrows)
- Contraflow bicycle lanes
- Improved bicycle detection at intersections
- Two-stage turn queue boxes
- Colored bicycle lanes
- Bicycle route wayfinding

Policy TRANS 2.3: Apply best practices in sustainability to new streets and redesigns of existing streets/corridors.

Policy TRANS 2.4: As part of the initial project review for any new project, a project-specific traffic study may be required. Studies shall identify impacted transportation modes and recommend mitigation measures designed to reduce these impacts to acceptable levels.

Policy TRANS 2.5: Create a network of street and bicycle facilities that provides for multiple routes between various origins and destinations.

Policy TRANS 2.7: Minimize impacts of vehicle traffic on local streets to maintain or enhance livability of the neighborhoods. Consider traffic calming measures along collector and minor arterial streets, where appropriate and feasible, to slow speeds.

Policy TRANS 2.8: Improve the function, safety, and appearance of selected corridors as illustrated.

Action: Develop "corridor plans" for selected streets which warrant special treatment because of existing impact problems or operational issues. Corridor plans should take into consideration adjacent land uses and result in streets that are both functional and aesthetic. The plans should utilize innovative means of slowing traffic, where appropriate, and provide safe access for pedestrians and bicyclists. Mitigation shall be incorporated to protect residences and sensitive receptors from noise, air pollution and other traffic related impacts. The corridor plans may deviate from the standards established in the General Plan, if deviates improve the livability of the area. Covell Boulevard from SR 113 to the west City limit is included in this program.

Policy TRANS 2.10: Prohibit through truck traffic on streets other than identified truck routes shown in the Transportation Element.

Policy TRANS 3.1: Facilitate the provision of convenient, reliable, safe, and attractive fixed route, commuter, and demand responsive public transportation that meets the needs of the Davis community, including exploring innovative methods to meet specialized transportation needs.

Policy TRANS 3.3: Require new development to be designed to maximize transit potential.

Policy TRANS 4.2: Develop a continuous trails and bikeway network for both recreation and transportation that serves the Core, neighborhoods, neighborhood shopping centers, employment centers, schools and other institutions; minimize conflicts between pedestrians, bicyclists, equestrians, and automobiles; and minimize impacts on wildlife. Greenbelts and separated bike paths on arterials should serve as the backbone of much of this network.

Policy TRANS 4.3: Continue to build transportation improvements specifically targeted at bicycles. Refer to Bicycle Plan and Transportation Implementation Plan for list of bicycle-related projects.

Policy TRANS 4.5: Establish and implement bicycle parking standards for new developments and significant redevelopment.

Policy TRANS 4.7: Develop a system of trails around the edge of the city and within the city for recreational use and to allow pedestrians and bicyclists to reach open space and natural areas.

Policy TRANS 5.1: Use parking management techniques to efficiently manage motor vehicle parking supply and promote sustainability.

Policy TRANS 5.2: Existing and future off-street parking lots in development should contribute to the quality of the urban environment and support the goals of this chapter to the greatest extent possible.

Beyond Platinum – City of Davis Bicycle Action Plan

This document included discussions regarding goals and objectives, bicycle facility guidelines, engineering standards, and implementation and funding. The Plan was heard before and adopted by the City Council in February 2014. This document includes numerous goals and policies regarding enforcement, education, and engineering design. The following policies are particularly relevant to this study:

Goal: Provide bike lanes along arterial and collector streets. Provide separated bike paths adjacent to arterial and collector streets only where justified, with full consideration of the potential safety problems this type of facility can create.

Goal: Consider bicycle-operating characteristics in the design of bikeways, intersections, and traffic control systems.

In addition, Appendix C of this document shows a variety of proposed bicycle facilities throughout the City, including the following proposed bicycle facility enhancements within the vicinity of the project site:

- Buffered bike lanes on Second Street between Mace Boulevard and L Street
- Bike lane conflict markings and bike intersection crossing markings on Mace Boulevard at the I-80 interchange ramps

Sacramento Area Council of Governments

The Sacramento Area Council of Governments (SACOG) is responsible for the preparation of, and updates to, its Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS) and the corresponding Metropolitan Transportation Improvement Program (MTIP) for the six-county Sacramento region. The MTP/SCS provides a 20-year transportation vision and corresponding list of projects. The MTIP identifies short-term projects (seven-year horizon) in more detail. The current 2020 MTP/SCS was adopted by the SACOG board in 2019. The accompanying EIR certified by the SACOG board is currently under legal challenge. The previous MTP/SCS was adopted by the SACOG board in 2016.

5. Project Travel Characteristics

This chapter describes the expected travel characteristics of the proposed project. These characteristics will be used in the development of the Existing Plus Project condition. The Cumulative Plus Project condition will also use many of these same estimates, but will additionally consider changed conditions in the vicinity of the project site (e.g., buildout of nearby planned and approved development) between the two scenarios.

Project Description

The proposed ARC project would consist of a mix of land uses including office/R&D, advanced manufacturing, ancillary retail, residential, and a hotel on 194 acres. The project is anticipated to be built out gradually in four phases over twenty to twenty-five years. **Table 2** presents the buildout development program for the project as proposed by the project applicant.

Table 2: Aggie Research Campus Project – Proposed Land Use Program

Land Use	Units[1]	Buildout Quantities
Office/R&D	KSF	1,510
Advanced Manufacturing	KSF	884
Hotel/Conference	Rooms/KSF	150/160
Ancillary Retail[2]	KSF	100
Total Non-Residential Development	**KSF**	**2,654**
Single-Family Residential	DU	280
Multi-Family Residential	DU	570
Total Residential Development	**DU**	**850**

Notes: [1] KSF = Thousand Square Feet of floor space. DU = Dwelling Unit.
[2] Ancillary retail, as defined in the ARC project description, is intended to provide employees, residents, and visitors with basic conveniences such as: lodging/accommodations, health and fitness center, convenient coffee, and dining opportunities all located within walking distance of the Project's primary businesses and workforce housing uses.
Source: Aggie Research Campus Project Description, October 2019.

The proposed project also includes additional development of the Mace Triangle located on the property bounded by Mace Boulevard, CR 32A, and the Union Pacific railroad tracks. The Mace Triangle development would include 46,000 square feet of office/R&D and 25,000 square feet of ancillary retail.

The proposed project would include the following vehicular access points:

- Full access via existing signalized intersection at Mace Boulevard/Alhambra Drive. The project would construct a new fourth leg (east leg) at the intersection. The project site plan shows the construction of channelized right-turns for the northbound and westbound approaches.
- Full access via a connection from County Road 30B immediately east of its existing unsignalized full access intersection with Mace Boulevard.
- Partial access (right-in/right-out only) on Mace Boulevard between Alhambra Drive and County Road 30B. This would be a new unsignalized intersection with an east leg serving the project site.
- Full access on County Road 32A at the existing unsignalized intersection with the existing driveway to the Mace park-and-ride. The project would construct a new fourth leg) north leg at the intersection.
- Full access on County Road 32A at a new project roadway located east of the existing driveway to the Mace park-and-ride. This would be a new unsignalized intersection with a north leg serving the project site.

According to the ARC Project Description, the project would also include the following on- and off-site transportation infrastructure and programs:

- Three east-west and two north-south internal roadways.
- Approximately 2.25 miles of on-site paths for bicyclists and pedestrians.
- On-site Transit Plaza with dedicated Unitrans bus stops, dedicated pick-up/drop-off facilities for ridehailing services (e.g., Uber and Lyft), and accommodations for a dedicated ARC shuttle that would connect the project site with off-site destinations in the City of Davis and on the UC Davis campus.
- Construction of a new grade-separated bicycle and pedestrian crossing of Mace Boulevard located near the Mace Drainage Channel (north of Alhambra Drive).
- Construction of a new Class I shared-use path on the inside of the Mace Curve between the new grade-separated bicycle and pedestrian crossing and Harper Junior High School.
- Construction of a landscaped pedestrian connection between the project site and the existing Mace park-and-ride.
- Up to 5,858 on-site vehicle parking spaces, to be built gradually as warranted by on-site parking demand.
- TDM strategies such as carpooling, bus transit, shuttles, carshare, and other smart phone technologies to assist in providing transportation options for employees.
- Support for a Transportation Manager who will coordinate transportation options for the site and help to facilitate the use of alternative modes for all workers and residents.

- Provision of bicycle support facilities such as bicycle racks, storage lockers, a repair station, and showers to encourage and help establish the use of bicycles as a predominant mode of transportation to the site.

Details regarding the nature, timing, funding, and implementing/operating responsibility of the transit services and TDM strategies described above are not provided in the ARC Project Description or supporting materials. Therefore, their potential associated effects on project travel characteristics cannot be quantified, and are thus not included in the analysis described below.

Methodology

Prior to 2007, conventional methods available to transportation engineers systematically overestimated the trips generated by and impacts of mixed-use development because they did not accurately reflect the amount of internal trip making or the level of external trips made by transit, biking, and/or walking. This resulted in increased development costs, due to oversized infrastructure, skewed public perception, and resistance to approving smart growth. While the Institute of Transportation Engineers (ITE) Trip Generation Handbook (2017) does include a methodology for estimating internal trips, methods are only provided for AM and PM peak hour conditions, and not for the most critical daily condition (which is a needed input for VMT estimation which is a daily metric).

In the early 2000's, two significant research studies provided the opportunity to improve the state of practice. One study sponsored by the US EPA (MXD) and another by the Transportation Research Board (NCHRP 684) have developed means to improve trip generation estimation for mixed-use development (MXD). The two studies examined over 240 mixed-use development sites throughout the U.S. and, using different approaches, developed new quantification methods. Fehr & Peers has reviewed the two methods, including the basis, capabilities, and appropriate uses of each, to produce a new method (MXD+) that combines the strengths of the two individual tools to establish a new best practice. MXD+ recognizes that traffic generation by mixed-use and other forms of sustainable development relate closely to the density, diversity, design, destination accessibility, transit proximity, and scale of development.

The MXD+ method explains 97 percent of the variation in trip generation among mixed-use developments, compared to 65 percent for the methods previously recommended by ITE. While remaining slightly (2 to 4 percent) conservative to avoid systematically understating impacts, it substantially reduces the 35 to 37 percent average overestimate of traffic generation produced by conventional ITE methods.

Fehr & Peers has applied MXD+ on hundreds of EIRs throughout California over the past decade, including EIRs for several projects in the City of Davis such as The Cannery and the West Davis Active Adult Community.

Project Trip Generation

Table 3 summarizes the estimated weekday and peak hour trip generation for the ARC project using the MXD+ tool. As shown in this table, the ARC project would generate an estimated 23,888 new external daily vehicle trips, 2,232 new external AM peak hour vehicle trips, and 2,479 new external PM peak hour vehicle trips during a typical weekday. The Mace Triangle would generate an estimated 762 new external daily vehicle trips, 93 new external AM peak hour vehicle trips, and 82 new external PM peak hour vehicle trips during a typical weekday.

The following factors influence the estimated trip reductions resulting from internalization and shifts to transit, walk, and bike trips:

- Suburban location on the edge of the developed area
- Low-density surroundings
- Low on- and off-site intersection density, which is a proxy for walkability within the site and overall internal trip-making
- Poor walk/bike access to off-site trip generators/activity centers, particularly due to long travel distances[2]
- Poor intercity/commuter transit access for project employees. Adjacent intercity transit routes are currently designed to serve Davis residents working in Sacramento, but not the 'reverse commute' in the opposite direction.
- High jobs/population ratio (approximately 2.78 jobs for every resident), which would result in the project attracting a large number of commute trips from outside the project site
- Recent housing data indicates low vacancy rates in the City of Davis, resulting in a significant percentage of ARC employees that would reside outside of Davis under Existing Plus Project conditions. Given the long trip distances and the lack of intercity/commuter transit services, these external commute trips would not be candidates for walk, bike, or transit trips.
- Lack of uses complementary to residential land uses (e.g., grocery retailer)

Note that in the MRIC EIR, the trip generation and internalization estimates for the Mixed-Use Alternative were adjusted based upon the presumption that on average, one MRIC employee would reside within each MRIC dwelling unit. Conversely, this study does not establish any explicit association between ARC dwelling units and ARC employees, and instead relies upon empirical data in the MXD+ model (i.e., trip

[2] US Census American Community Survey (ACS) journey to work data from 2017 indicates that approximately nine percent of existing workers living near the project site (i.e., Mace Ranch and South Davis) commute to work via bicycling or walking, compared to a City-wide average of approximately 26 percent. Moreover, Target and Nugget Market, the nearest existing major shopping destinations, are located 0.65 miles and 0.81 miles from project residential uses, respectively. Additionally, access to Nugget Market would require a bicyclist or pedestrian to traverse the Mace Boulevard interchange at I-80.

generation data collected at other mixed-use project sites) to estimate the degree to which on-site residential and commercial uses at the ARC would internalize travel.

Table 3: Aggie Research Campus Project – Vehicle Trip Generation

Land Use	Units	ITE Code	Quantity	Daily	AM In	AM Out	AM Total	PM In	PM Out	PM Total
ARC Project Component										
Net New Uses										
Office/R&D	1,000 Sq. Ft. GLA	710[1]	1,610	16,383	1,392	226	1,618	274	1,436	1,710
Manufacturing	1,000 Sq. Ft. GLA	140[2]	884	3,474	422	126	548	184	408	592
Hotel	Rooms	310[3]	150	1,267	41	29	70	44	42	86
Single Family Residential	Dwelling Units	220[4]	280	2,076	29	98	127	96	55	148
Multifamily Residential	Dwelling Units	221[5]	570	3,103	49	142	191	148	94	242
Raw External Project Trips				*26,303*	*1,933*	*621*	*2,554*	*743*	*2,035*	*2,778*
Reductions										
Internal Capture				-2,032	-204	-66	-270	-68	-188	-256
External Walk and Bike				-183	-17	-5	-22	-5	-13	-18
External Transit				-200	-20	-10	-30	-10	-15	-25
Total Reductions				*-2,415*	*-241*	*-81*	*-322*	*-83*	*-216*	*-299*
Net New External Project Trips				**23,888**	**1,692**	**540**	**2,232**	**660**	**1,819**	**2,479**
Mace Triangle Project Component										
Office/R&D	1,000 Sq. Ft. GLA	710[1]	81	762	80	13	93	13	69	82
Project Total (ARC + Mace Triangle)										
Net New External Project Trips				**24,650**	**1,772**	**553**	**2,325**	**673**	**1,888**	**2,561**

Notes:

[1] ITE Trip Generation land use category (710) – General Office Building (Adj Streets, 7-9A, 4-6P). Includes 100,000 sq. ft. of proposed ancillary retail space for ARC and 25,000 sq. ft. of proposed ancillary retail space for the Mace Triangle, as permitted by ITE for this land use category.

- Daily: $Ln(T) = 0.97 * ln(X) + 2.50$
- AM Peak Hour: $T = 0.94(X) + 26.49$ (88% in, 12% out)
- PM Peak Hour: $Ln(T) = 0.95 * ln(X) + 0.36$ (17% in, 83% out)

[2] ITE Trip Generation land use category (140) - Manufacturing (Adj Streets, 7-9A, 4-6P)

- Daily: $T = 3.93(X)$

- AM Peak Hour: T = 0.62(X) (73% in, 27% out)
- PM Peak Hour: T = 0.67(X) (44% in, 56% out)

[3] ITE Trip Generation land use category (310) - Hotel (Adj Streets, 7-9A, 4-6P)

- Daily: T = 11.29(X) + -426.97
- AM Peak Hour: T = 0.50(X) + -5.34 (59% in, 41% out)
- PM Peak Hour: T = 0.75(X) + -26.02 (51% in, 49% out)

[4] ITE Trip Generation land use category (220) - Multifamily Housing Low Rise (Adj Streets, 7-9A, 4-6P). This land use category was selected for use for the proposed 290 dwelling units of single-family housing. ITE indicates that this land use category is appropriate for use for attached housing between one and three stories in height, which is aligned with the proposed single-family housing product as described in the project description. Alternative options identified by ITE include detached single-family housing and mid-rise multi-family housing, neither of which align with the proposed single-family housing product as described in the project description.

- Daily: T = 7.56(X) + -40.86
- AM Peak Hour: Ln(T) = 0.95 * ln(X) + -0.51 (20% in, 80% out)
- PM Peak Hour: Ln(T) = 0.89 * ln(X) + -0.02 (65% in, 35% out

[5] ITE Trip Generation land use category (221) - Multifamily Housing Mid-Rise (Adj Streets, 7-9A, 4-6P)

- Daily: T = 5.45(X) + -1.75
- AM Peak Hour: Ln(T) = 0.98 * ln(X) + -0.98 (21% in, 79% out)
- PM Peak Hour: Ln(T) = 0.96 * ln(X) + -0.63 (65% in, 35% out)

Sources: Institute of Transportation Engineers (ITE) *Trip Generation Manual, 10th Edition*, 2017; Fehr & Peers, 2020.

Vehicle Miles Traveled (VMT)

In this study, vehicle miles traveled (VMT) estimates were prepared for the purposes of identifying potential transportation impacts, as well as to inform other EIR sections including air quality, noise, energy, and greenhouse gas emissions. Project-generated VMT estimates were derived from the process previously described in the Analysis Methodology section.

The proposed ARC project is estimated to generate 309,000 VMT under existing conditions and 253,000 VMT under cumulative conditions on a typical weekday. The Mace Triangle project component is estimated to generate 10,800 VMT under existing conditions and 8,500 VMT under cumulative conditions on a typical weekday.

Changes to project-generated VMT estimates between Existing Plus Project and Cumulative Plus Project can be primarily attributed to changes in travel distances made by project residents and employees. They occur because of different local and regional land use patterns that would alter travel behavior within and between the City of Davis and neighboring jurisdictions (e.g., planned residential development within the City of Davis and on the UC Davis campus would enable a greater number of project employees to live locally, thereby reducing their work commute trip distance).

6. Significance Criteria

This section describes the thresholds or criteria that determine whether the project would cause an adverse effect to the roadway system (via its VMT contribution) as well as to the bicycle, pedestrian, and transit systems. These thresholds are based on policies from the *City of Davis General Plan*, policies from owner/operators of affected transportation facilities (e.g., Caltrans), criteria utilized in previous transportation studies prepared by the City, and professional judgment.

Roadway System VMT Criteria

The project is considered to result in a significant impact to the roadway system (via its VMT contribution) if the project-generated VMT per service population exceeds any of the following thresholds relative to existing local or regional VMT per service population averages:

- VMT Threshold #1: Project-generated VMT per service population would be less than or equal to local or regional VMT per service population averages, as analyzed for recent City of Davis CEQA documents;
- VMT Threshold #2: Project-generated VMT per service population would be less than or equal to 15 percent lower than the local or regional VMT per service population averages, as recommended by OPR in the Technical Advisory on Evaluating Transportation Impacts in CEQA; and
- VMT Threshold #3: Project-generated VMT per service population would be less than or equal to 14.3 percent lower than the local or regional VMT per service population averages, the threshold needing to be met in order to be consistent with the 2017 Scoping Plan Update and to achieve State climate goals as defined by the California Air Resources Board (CARB) in the Technical Advisory on Evaluating Transportation Impacts in CEQA.

Bicycle Facility Criteria

The project is considered to result in a significant impact to bicycle facilities if:

- The project conflicts with existing, planned, or possible future bicycle facilities; or
- The project otherwise decreases the performance or safety of such facilities.

Pedestrian Facility Criteria

The project is considered to result in a significant impact to pedestrian facilities if:

- The project conflicts with existing, planned, or possible future pedestrian facilities; or
- The project otherwise decreases the performance or safety of such facilities.

Transit Service and Facilities Criteria

The project is considered to result in a significant impact to transit facilities and services if:

- The project conflicts with existing, planned, or possible future transit facilities and services; or
- The project otherwise decreases the performance or safety of such facilities and services.

Other Transportation Considerations

The project is considered to result in a significant impact if any of the following conditions occur:

- The project does not provide for adequate emergency vehicle access and on-site circulation; or
- Construction-related traffic causes adverse effects as defined by the transportation system criteria described above.

7. Impacts and Mitigation Measures

This section describes the evaluation of potential transportation impacts associated with the construction of the project and, in instances where the project would cause a significant impact, identifies potential mitigation measures that would lessen the severity of the impact.

For the purposes of the SEIR, each impact described in this section concludes with a comparison to the relevant impact findings for the proposed MRIC project as described in Sections 4.14 (Transportation and Circulation) and Section 5 (Cumulative Impacts) of the MRIC EIR. Within the MRIC EIR, Impact Statements 4.14-1, 4.14-2, 4.14-3, 4.14-4, 5-21, 5-22, 5-23, and 5-24 all pertain to vehicle delay and LOS. Therefore, these are no longer considered environmental impacts under CEQA, and are not addressed further in this study. Refer to Volume 2 for a discussion of the project's anticipated effects on roadway operations and recommendations to ameliorate such effects for General Plan consistency purposes.

Project Impacts and Mitigation Measures

Impact 1: Impacts to vehicle miles traveled (VMT) on the roadway system.

Implementation of the proposed project would change local and regional VMT per service population in a manner that would exceed relevant local and State thresholds. This impact would therefore be **significant**.

The potential impact to VMT was evaluated by comparing the estimated VMT per service population (defined as project residents plus employees) that would be generated by the project to the local and regional VMT per service population averages. For the purposes of this study, the ARC Project is considered to result in a significant impact if the project-generated VMT per service population exceeds any of the following thresholds relative to the existing local or regional VMT per service population averages:

- VMT Threshold #1: Project-generated VMT per service population would be less than or equal to the existing local or regional VMT per service population averages , as analyzed for recent City of Davis CEQA documents;
- VMT Threshold #2: Project-generated VMT per service population would be less than or equal to 15 percent lower than the local or regional VMT per service population averages, as

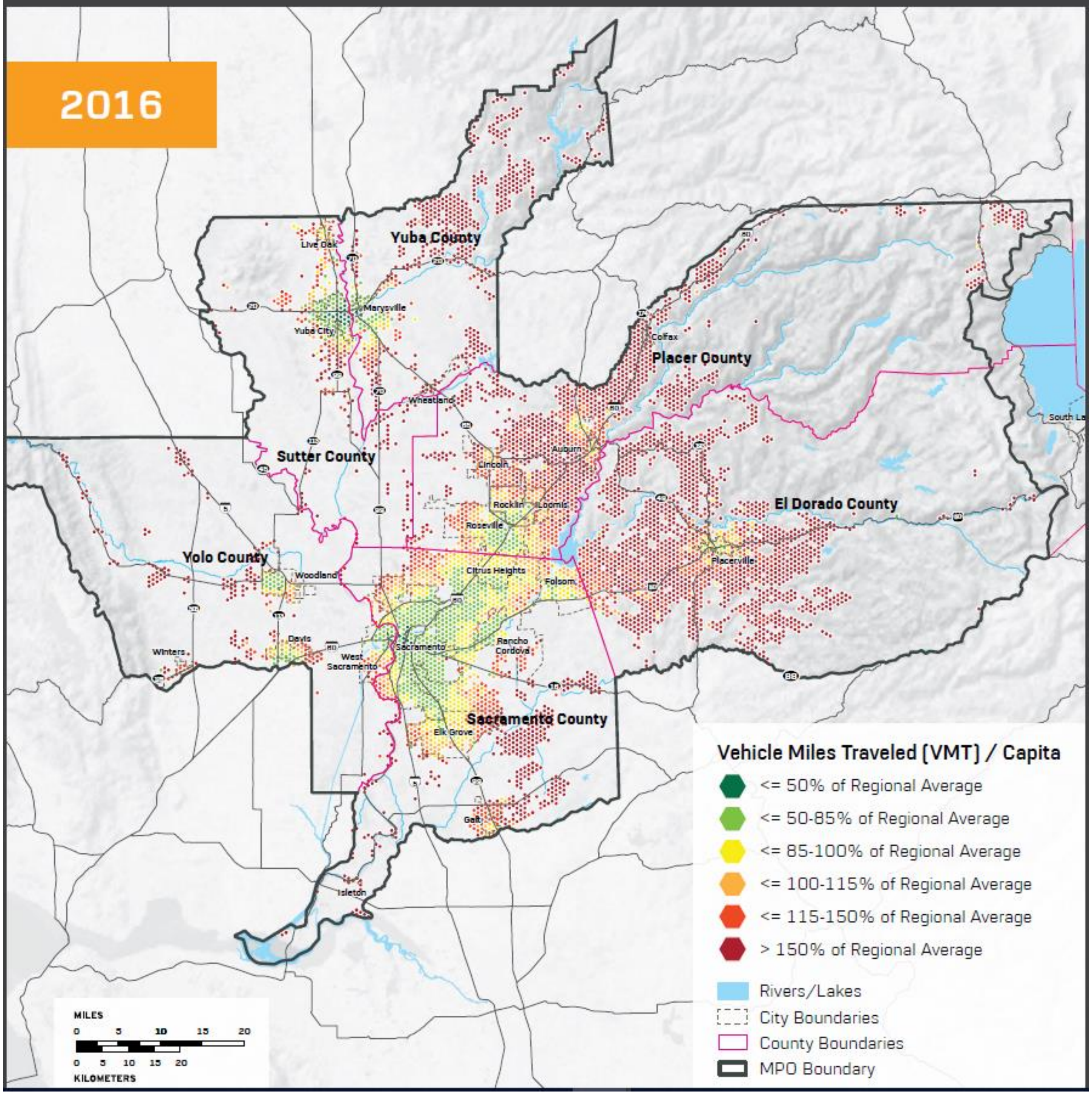
recommended by OPR in the Technical Advisory on Evaluating Transportation Impacts in CEQA; and

- VMT Threshold #3: Project-generated VMT per service population would be less than or equal to 14.3 percent lower than the local or regional VMT per service population averages, the threshold needing to be met in order to be consistent with the 2017 Scoping Plan Update and to achieve State climate goals as defined by the California Air Resources Board (CARB) in the Technical Advisory on Evaluating Transportation Impacts in CEQA.

Table 4 presents the results of the VMT analysis. The proposed ARC Project and future buildout of the Mace Triangle are estimated to generate 309,000 VMT and 10,800 VMT, respectively, under Existing Plus Project conditions on a typical weekday. The project would generate an estimated 39.20 VMT per service population (i.e., residents plus employees) under Existing Plus Project conditions. The total VMT that would be generated by the ARC is equal to nine percent of the total VMT generated by the City of Davis under existing conditions.

The 2020 SACOG MTP/SCS analyzed existing (2016) and future (2040) VMT per capita for geographic areas throughout the SACOG region. The image on the following page illustrates the VMT per capita of the ARC Site vicinity relative to the regional VMT per capita average in 2016. According to the SACOG analysis, the ARC Site is located within a high VMT generating area, where VMT per capita levels measure between 115 and 150 percent of the regional average.

FIGURE 3.10 2016 Vehicle Miles Traveled per Capita



Analyses were performed using US Census OnTheMap database for 2017 conditions, which is the most recent year of available data. The analysis determined that there is a sizeable number of persons residing in the Sacramento metropolitan area that commute long distances to work destinations west of Davis, including many in the Bay Area. If the employment component of the ARC Project could induce some of these employers to relocate their operations or operate satellite work centers at the project site, many of these trips could be ‘intercepted’, resulting in considerably shortened trip distances. This would reduce the project-generated VMT and VMT per service population below the estimates presented in this analysis.

Data currently does not exist to enable quantification of the expected number of ‘regional commute’ employees that would shift their work destination to the ARC Project. Thus, the VMT estimates presented herein are accurate, if not somewhat conservative, so as to ensure impacts are not understated. Potential information that would provide supporting evidence on this topic would include, but is not limited to, surveys of prospective ARC employers, employees, and residents and a detailed economic analysis of existing and anticipated future local and regional housing and employment trends (specifically those related to the City of Davis and UC Davis).

As shown in the Table 4, using this methodology, project-generated VMT per service population would measure below the average VMT per service population generated by the City of Davis and by the City of Davis with UC Davis but above the average VMT per service population generated by the SACOG region. Therefore, the ARC Project would exceed thresholds #1 (excluding local VMT), #2, and #3 listed above, and a **significant** impact would occur.

Table 4: Weekday VMT per Service Population – Existing Plus Project Conditions

Metric	Project Site[1]	City of Davis[2]	City of Davis & UC Davis[3]	SACOG Region[4]
Total VMT	319,800	3,411,358	4,268,554	123,034,634
Residents	2,119	71,755	80,794	2,374,910
Employees	6,040	13,987	26,365	940,683
Service Population	8,159	85,742	106,159	3,315,593
Total VMT per Service Population	39.20	39.79	40.21	37.11
VMT Significance Criteria Comparison				
% Difference between ARC project-generated VMT per service population and existing local/regional VMT per service population		-1.48%	-2.51%	+5.63%
Exceed VMT Threshold #1 (+0%)?		No	No	Yes
Exceed VMT Threshold #2 (-15%)?		Yes	Yes	Yes
Exceed VMT Threshold #3 (-14.3%)?		Yes	Yes	Yes

Notes: [1] Includes both the ARC and the Mace Triangle. ARC and Mace Triangle employee estimates derived from *City of Davis Economic Evaluation of Innovation Park Proposals* (BAE, July 2015) as follows: 5,882 ARC employees + 158 Mace Triangle employees = 6,040 total project employees. ARC resident estimates derived from American Community Survey unit occupancy estimates for the City of Davis as follows: (570 multi-family units x 2.44 occupants per unit) + (280 single-family units x 2.6 occupants per unit) = 2,119 total project residents.
[2] Resident and employee totals derived from the UC Davis/City of Davis Travel Demand Model land use inputs. Includes UC Davis residential uses located off-campus in the City of Davis (e.g., 8th and Wake Apartments).
[3] Resident and employee totals derived from the UC Davis/City of Davis Travel Demand Model land use inputs. Includes both City of Davis residents and employees and UC Davis on-campus residents and employees.
[4] Resident and employee totals derived from the UC Davis/City of Davis Travel Demand Model and SACSIM travel demand model land use inputs.
City of Davis, City of Davis with UC Davis, and SACOG region VMT per service population represent existing conditions.
Source: Fehr & Peers, 2020.

Mitigation Measure 1.1. Develop a TDM program and implement TDM strategies to reduce project-generated VMT.

Prior to issuance of the first building permit in the first phase of development, the applicant shall develop a TDM program for the entire proposed project, including any anticipated phasing, and shall submit the TDM program to the City Department of Public Works for review and approval. To the extent feasible, the TDM program should be designed to accomplish the following goals:

1) Reduce project-generated VMT such that the project achieves all three VMT-related significance thresholds; and

2) Achieve an average vehicle ridership (AVR) of 1.5 for peak period commute trips in accordance with Davis Municipal Code Section 22.15.060.

The Master Owners' Association (MOA) shall be responsible for implementing the TDM program:

1) The MOA shall be responsible for funding and overseeing the delivery of trip reduction/TDM proposed programs and strategies to achieve the project-generated VMT and AVR targets, which may include, but are not limited to, the following:
    a. Establishment of carpool, buspool, or vanpool programs;
    b. Vanpool purchase incentives;
    c. Cash allowances, passes, or other public transit subsidies and purchase incentives;
    d. Low emission vehicle purchase incentives/subsidies;
    e. Parking management strategies including limiting parking supply, charging parking fees, unbundling parking costs, and providing parking cash-out programs;
    f. Full or partial parking subsidies for ridesharing vehicles;
    g. Preferential parking locations for ridesharing vehicles;
    h. Computerized commuter rideshare matching service;
    i. Guaranteed ride-home program for ridesharing;
    j. Alternative workweek and flex-time schedules;
    k. Telecommuting or work-at-home programs;
    l. On-site lunch rooms/cafeterias;
    m. On-site commercial services such as banks, restaurants, groceries, and small retail;
    n. On-site day care facilities;
    o. Bicycle programs including bike purchase incentives, storage, maintenance programs, and on-site education program;
    p. Car share and bike share services;
    q. Enhancements to Unitrans, Yolobus, or other regional bus service;
    r. Enhancements to Capitol Corridor or other regional rail service;
    s. Enhancements to the citywide bicycle network;
    t. Dedicated employee housing located either on-site or elsewhere in the City of Davis;
    u. Designation of an on-site transportation coordinator for the project;
    v. Implement a fair value commuting program where fees charged to SOV commuters (e.g., through parking pricing) are tied to project vehicle trip reduction targets and

fee revenue is rebated to non-SOV commuters, or other pricing of vehicle travel and parking;

w. Support management strategies (e.g., pricing, vehicle occupancy requirements) on roadways or roadway lanes, particularly I-80 over the causeway;

x. Contribute to a VMT mitigation bank or exchange to support VMT reductions elsewhere in the City or region;

y. Change the project to increase project trip internalization (e.g., decrease employment uses and/or increase residential uses).

2) Single-phase development projects shall achieve project-generated VMT and AVR targets within five (5) years of issuance of any certificate of occupancy. Multi-phased projects shall achieve the project-generated VMT and AVR targets for each phase within three (3) years of the issuance of any certificate of occupancy.

3) In conjunction with final map approval, recorded codes, covenants and restrictions (CC&Rs) shall include provisions to guarantee adherence to the TDM objectives and perpetual operation of the TDM program regardless of property ownership, inform all subsequent property owners of the requirements imposed herein, and identify potential consequences of nonperformance.

   Each space use agreement (i.e., lease document) shall also include TDM provisions for the site as a means to inform and commit tenants to, and participate in, helping specific applicable developments meet TDM performance requirements.

4) Mace Triangle businesses shall implement a TDM program, which could be fulfilled by participation within the ARC TDM program.

5) Ongoing reporting:

   1) Annual TDM Report. The MOA for the Project shall submit an annual status report on the TDM program to the City Department of Public Works beginning a year after the issuance of any certificate of occupancy. Data shall be collected in October of each year and the Annual Report submitted by December 31 of each year. The report shall be prepared in the form and format designated by the City, which must either approve or disapprove the program.

      i. The TDM performance reports shall focus on the trip reduction incentives offered by the project, their effectiveness, the estimated greenhouse gas (GHG) emissions generated by the project, and the methods by which a continued trajectory towards carbon neutrality in 2050 can be achieved consistent with Mitigation Measure 1.1. The report shall:

- Report the project-generated VMT levels attained;
- Report the AVR levels attained;
- Verify the TDM plan incentives that have been offered;
- Describe the use of those incentives offered by employers;
- Evaluate why the plan did or did not work to achieve the project-generated VMT and AVR targets and explain why the revised plan is more likely to achieve the project-generated VMT and AVR target levels;
- List additional incentives which can be reasonably expected to correct deficiencies;
- Evaluate the feasibility and effectiveness of trip reduction/TDM program and strategies, as implemented;
- Estimate the greenhouse gas emissions generated by project transportation operations; and
- Identify off-setting GHG credits to be secured by the project to achieve carbon neutrality.

ii. The MOA shall develop and implement an annual monitoring program to determine if project-generated VMT and AVR targets are being met. The monitoring program could include employee travel surveys, traffic counts at project site ingress/egress points, and other relevant information.

iii. If the project-generated VMT and/or AVR targets are not met for any two consecutive years, the applicant or current owner of the site will contribute funding to be determined in a separate study toward the provision of additional or more intensive travel demand management programs, such as enhanced regional transit service to the site, employee shuttles, and other potential measures.

iv. In the event that other TDM objectives are not met as documented in the Annual Monitoring Report submitted by December 31 of each year, the MOA shall:

- Submit to the City within thirty (30) days of submittal of the annual report, a list of TDM measures that will be implemented to meet the TDM objectives within one hundred eighty (180) days of submittal of annual report. At the end of the one-hundred-eighty-day period, the MOA shall submit a revised performance report to determine compliance with TDM objectives. No further measures will be necessary if the TDM objectives are met.

Should the TDM objectives not be satisfied by the end of the one-hundred-eighty-day period, the MOA shall pay a TDM penalty fee to the City in an amount determined by resolution of the City Council. Said penalty fee may be used to provide new transit service and/or subsidize existing transit service, construct bicycle facilities, and/or improve street capacity through construction of physical improvements to be selected by the City of Davis from the list of area-wide improvements identified in the City's CIP.

Significance after Mitigation

Implementation of Mitigation Measure 1.1 would reduce project-generated VMT per service population by instituting a TDM program to reduce external vehicle trips generated by the project. However, the effectiveness of the TDM strategies is not known and subsequent vehicle trip reduction effects cannot be guaranteed. Existing evidence indicates that the effectiveness of TDM strategies with regards to vehicle trip reduction can vary based on a variety of factors, including the context of the surrounding built environment (e.g., urban versus suburban) and the aggregate effect of multiple TDM strategies deployed together. Moreover, many TDM strategies are not just site specific, but also rely on implementation and/or adoption by private entities (e.g., elective use of carpool program by office building tenants).

As noted above, due to uncertainties regarding the ability for the aforementioned mitigation measure to reduce VMT impacts to less-than-significant levels, VMT impacts would be considered **significant and unavoidable**.

Comparison to MRIC EIR

This represents a new unmitigable significant impact when compared to the MRIC EIR, which found impacts to VMT to be less-than-significant with mitigation (see Impact 4.14-6 from the MRIC EIR). This can be explained by the following changes from the MRIC EIR:

- Changes to the project description
- Changes to the VMT significance criteria
- Changes to baseline local and regional land uses
- Changes to VMT analysis methods (e.g., use of new travel demand models)
- Changes to current understanding of efficacy of TDM strategies

Impact 2: Impacts to bicycle and pedestrian facilities.

Implementation of the proposed project would increase bicycle, pedestrian, and vehicle trips within the vicinity of the project site, which could increase the competition for physical space between modes and increase the potential for conflicts involving bicyclists and pedestrians. This impact would therefore be **significant**.

Existing facilities adjacent to the project include Class II bike lanes on Mace Boulevard and Alhambra Drive, and a shared-use path on Alhambra Drive. Existing intersections near the project site are typical of suburban roadway systems in that they were designed and constructed to prioritize the movement of vehicles over other modes of travel. Defining features of these intersections include channelized right-turn lanes, multiple travel lanes for each approach, long crossing distances for bicyclists and pedestrians, and uncontrolled mixing areas between bicyclists, pedestrians, and high-speed vehicular traffic. Altogether, these intersection characteristics can diminish the safety and comfort of bicycle and pedestrian facilities and discourage walking and biking as a mode of travel.

The project would provide a bike path within the 50-foot transition zone of the on-site agricultural buffer, which would connect to the existing Class II bike lane on County Road 32A at the project's southeastern corner. The project would provide bicycle support facilities such as bicycle racks, storage lockers, a repair station, and showers.

The project would construct a grade-separated bicycle and pedestrian crossing of Mace Boulevard north of Alhambra Drive. Additionally, the project would construct a Class I shared-use path on the west side of Mace Boulevard from the proposed grade-separated bicycle and pedestrian crossing to Harper Junior High School. This path improvement along the inside of the Mace Curve would close an existing gap in the off-street path network in the project vicinity. In addition to facilitating bicycle and pedestrian travel to/from the project site, this gap closure project would accommodate students walking and biking to/from Harper Junior High School along Mace Boulevard with a bicycle and pedestrian facility separated from vehicular traffic. The Offices @ Mace Ranch project located at the northwest corner of the Mace Boulevard/Alhambra Drive intersection will also provide a path connection to the proposed grade-separated crossing along its Mace Boulevard and Alhambra Drive frontages. This project is currently under construction and scheduled for completion in 2020.

Project-generated bicycle and pedestrian trips would primarily utilize the following facilities for travel to and from the project site:

- Proposed grade-separated bicycle and pedestrian crossing of Mace Boulevard and path connection to Harper Junior High School
- Existing Class I shared-use path on the south side of Covell Boulevard to/from Wildhorse, Oak Tree Plaza, and North Davis
- Existing Class I shared-use paths throughout Mace Ranch and Class II bike lanes on Alhambra Drive to/from Mace Ranch, East Davis, Central Davis, Downtown Davis, and UC Davis

- Existing Class II bike lanes on Second Street to/from Target Shopping Center, Second Street employment centers, Downtown Davis, and UC Davis
- Existing Class II bike lanes on Mace Boulevard to/from the El Macero Shopping Center and South Davis
- Existing Class II bike lanes on County Road 32A to/from Sacramento
- Existing sidewalks, paths, bike lanes, marked crosswalks, and/or crossings at the following intersections:
    - Mace Boulevard/Alhambra Drive
    - Mace Boulevard/Second Street/County Road 32A
    - Mace Boulevard/I-80 WB Ramps
    - Mace Boulevard/I-80 EB Ramps
    - Mace Boulevard/Chiles Road

The substantial amount of project-generated vehicle trips (as described in Volume 2) would largely utilize the same roadway facilities for travel to and from the project site. Therefore, due to increases in bicycle, pedestrian, and vehicle trips generated by the project within the vicinity of the project site, transportation facilities that require mixing of vehicles, bicyclists, and pedestrians would experience increases in the competition for physical space between the modes and, in turn, an increase in the potential for conflicts involving bicyclists and pedestrians. These conditions could diminish the safety and performance of bicycle and pedestrian facilities, particularly at locations where bicyclists and pedestrians experience long crossing distances, long exposure times, uncontrolled conflicts with high-speed vehicular traffic, or blockages due to queued vehicles. The project's contributions to these conditions would be substantial at the following locations:

- Mace Boulevard/Alhambra Drive
    - Existing southbound channelized right-turn lane due to project increases to bicycle and pedestrian crossings (bicycle-vehicle and pedestrian-vehicle conflicts)
    - Existing eastbound channelized right-turn lane due to project increases to diverted traffic from eastbound Covell Boulevard to Alhambra Drive and increases in bicycle and pedestrian crossings. Moreover, the inability for eastbound vehicles to turn right onto Mace Boulevard (due to worsened traffic congestion on southbound Mace Boulevard caused by the project) could cause queue spillbacks that block the crosswalk (bicycle-vehicle and pedestrian-vehicle conflicts)
    - Proposed northbound and westbound channelized right-turn lanes due to project increases to vehicle traffic and bicycle and pedestrian crossings. Moreover, the inability for westbound vehicles to turn right onto Mace Boulevard (due to worsened traffic congestion on northbound Mace Boulevard caused by the project) could cause queue

spillbacks that block the crosswalk in the westbound channelized right-turn lane (bicycle-vehicle and pedestrian-vehicle conflicts)

- Mace Boulevard/Second Street/County Road 32A
  - Existing southbound channelized right-turn lane due to project increases to vehicle traffic and bicycle and pedestrian crossings (bicycle-vehicle and pedestrian-vehicle conflicts)
  - Existing eastbound channelized right-turn lane due to project increases to bicycle and pedestrian crossings. Moreover, the inability for eastbound vehicles to turn right onto Mace Boulevard (due to worsened traffic congestion on southbound Mace Boulevard caused by the project) could cause queue spillbacks that block the crosswalk (bicycle-vehicle and pedestrian-vehicle conflicts)
- Mace Boulevard/I-80 WB Ramps
  - Existing westbound channelized right-turn lane due to project increases to vehicle traffic and bicycle and pedestrian crossings. Moreover, the inability for westbound vehicles to turn right onto Mace Boulevard (due to worsened traffic congestion on northbound Mace Boulevard caused by the project) could cause queue spillbacks that block the crosswalk (bicycle-vehicle and pedestrian-vehicle conflicts)
  - Existing southbound approach bike lane and upstream unmarked bicycle-vehicle mixing zone due project increases to vehicle queue spillbacks into mixing zone (bicycle-vehicle conflict)
- Mace Boulevard/I-80 EB Ramps
  - Existing southbound slip ramp due to lengthy unmarked bicycle-vehicle mixing zones and project increases to vehicle traffic and bicycle crossings (bicycle-vehicle conflict)
  - Existing northbound slip ramp due to lengthy unmarked bicycle-vehicle mixing zones, unmarked pedestrian crosswalks, and project increases to vehicle traffic and bicycle and pedestrian crossings (bicycle-vehicle and pedestrian-vehicle conflicts)
- Mace Boulevard/Chiles Road
  - Existing southbound channelized right-turn lane due to project increases to vehicle traffic and bicycle crossings (bicycle-vehicle conflict)
  - Existing eastbound channelized right-turn lane due to project increases to bicycle and pedestrian crossings (bicycle-vehicle and pedestrian-vehicle conflicts)
  - Existing northbound channelized right-turn lane due to project increases to vehicle traffic and bicycle and pedestrian crossings (bicycle-vehicle and pedestrian-vehicle conflicts)
- County Road 32A
  - The increase in vehicle trips on County Road 32A could adversely affect bicycle flow along County Road 32A between County Road 105 and the access to the causeway bicycle path. The combination of the existing lane width (11 feet in each direction), high travel speeds,

and soft shoulders plus the addition of project vehicle trips could disrupt bicycle flows on County Road 32A. Bicycle flows could also be disrupted for westbound bicycle traffic on County Road 32A that continues onto the path west of County Road 105. These cyclists must cross vehicle traffic on County Road 32A just southeast of the at-grade rail crossing where County Road 32A has a sharp curve. Similarly, eastbound bicyclists accessing the causeway shared-use path must cross oncoming vehicle traffic on County Road 32A just east of the I-80 off-ramp where County Road 32A has a curve. The addition of project peak hour vehicle trips to County Road 32A has the potential to negatively affect bicyclists making these uncontrolled movements.

Note that except for the proposed westbound and northbound channelized right-turn lanes at the Mace Boulevard/Alhambra Drive intersection, all of the locations described above are existing features of the transportation system. Therefore, while the project would exacerbate the detrimental effects of these features, portions or all of these facilities may be considered existing deficiencies with respect to the bicycle and pedestrian environment.

As described previously, the project would be built-out in four phases over a twenty to twenty-five year time period. Since this analysis examines the hypothetical scenario where the project at buildout would be added to the existing transportation setting, it cannot reasonably identify the associated bicycle and pedestrian impacts of each phase of development based on the timing of the development phase and the surrounding transportation circumstances at that time.

The project would neither construct nor interfere with the implementation of planned bicycle facilities identified in the *City of Davis General Plan* or the *Beyond Platinum Bicycle Action Plan*. Proposed bicycle enhancements in the *City of Davis Beyond Platinum Bicycle Action Plan* include buffered bike lanes along Second Street between Mace Boulevard and L Street, as well as bike lane conflict markings and bike intersection crossing markings on Mace Boulevard at the I-80 interchange ramps. Several of the roadways near the project site, including Mace Boulevard, Covell Boulevard, Second Street, and Chiles Road are designated as Greenstreets in the *City of Davis General Plan*. Action TRANS 2.1(k) calls for the City to review standards for these roadways to reflect other bicycle and pedestrian friendly policies in the Circulation Element, including the elimination of intersection standards that allow high speed right turns for motor vehicles.

The project also would not interfere with planned regional bicycle projects identified in the SACOG MTP/SCS.

Altogether, these factors would constitute a significant impact to bicycle facilities.

Mitigation Measure 2.1. Construct proposed off-site bicycle and pedestrian facilities.

Prior to issuance of the first certificate of occupancy of the ARC, the applicant shall construct the following proposed off-site bicycle and pedestrian facilities as described in the project description and shown on the project site plan:

1) Grade-separated bicycle and pedestrian crossing of Mace Boulevard north of Alhambra Drive
2) Class I shared-use path on the west side of Mace Boulevard between proposed grade-separated crossing and Harper Junior High School
3) Pedestrian and landscaping improvements on the access road between the Mace park-and-ride and County Road 32A

Implementation of these improvements would improve bicycle and pedestrian facilities on Mace Boulevard by reducing the potential for bicycle-vehicle and pedestrian-vehicle conflicts.

Mitigation Measure 2.2. Improve bicycle facilities on County Road 32A.

Prior to issuance of the first certificate of occupancy of the ARC, the applicant shall contribute fair share funding to cover their proportionate cost of the following improvements:

- Widen County Road 32A between County Road 105 and the Causeway Bicycle Path Access to meet Yolo County standards for a two-lane arterial (14-foot travel lanes and 6-foot shoulder/on-street bike lanes).
- Westbound bicycle crossing improvements at the existing at-grade railroad crossing at County Road 32A and County Road 105. Potential improvements include a marked bicycle crossing for westbound bicyclists with advanced warning devices for vehicle traffic. These improvements would facilitate westbound bicyclists continuing west onto the shared-use path located between the Union Pacific Railroad mainline and I-80 (e.g., to the west of County Road 105). As noted earlier, Yolo County, together with Union Pacific and the City of Davis, are currently evaluating potential modifications to this at-grade crossing to reduce the potential for conflicts with rail operations. Therefore, the ultimate improvements constructed at this crossing should be consistent with the preferred modifications identified in this County-led study.
- Eastbound bicycle crossing improvements for bicyclists turning left from County Road 32A onto the causeway shared-use path. Potential improvements include the installation of a

marked crossing on the east leg of the County Road 32A/I-80 WB off-ramp intersection and construction of a two-way path on the north side of County Road 32A between the County Road 32A/I-80 WB off-ramp intersection and the entrance to the causeway path.

- Widen County Road 32A between County Road 105 and the causeway shared-use path access point to meet Yolo County standards for a two-lane arterial (14-foot travel lanes and 6-foot shoulder/on-street bike lanes).

Implementation of these improvements, or a set of improvements of equal effectiveness, would improve bicycle facilities on County Road 32A by reducing the potential for bicycle-vehicle conflicts.

Mitigation Measure 2.3. Identify and construct complete streets improvements on the Mace Boulevard corridor.

The applicant shall identify and construct complete streets improvements on the Mace Boulevard corridor, including the following actions:

1) Prior to issuance of the first building permit for the ARC, the applicant shall fund and complete (in conjunction with City staff) a corridor plan for the Mace Boulevard corridor between Harper Junior High School and Cowell Boulevard.[3] At a minimum, the corridor plan shall identify complete streets improvements that achieve the following goals:
    1) Provide safe and comfortable access for pedestrian and bicyclists
    2) Minimize the potential for bicycle-vehicle and pedestrian-vehicle conflicts
    3) Provide fast and efficient transit operations
    4) Minimize cut-through traffic on residential roadways
    5) Avoid operating conditions that degrade roadway safety (e.g., off-ramp queue spillback to freeway mainline)

    The corridor plan shall be prepared to the satisfaction of the City of Davis Public Works Department and be approved by the City of Davis City Council. The corridor plan should also include a thorough public engagement process to understand the transportation priorities of

[3] Policy TRANS 2.8 of the *City of Davis General Plan* calls for the preparation of corridor plans for selected corridors throughout the City. The segment of Mace Boulevard referenced in Mitigation Measure 2.3-3 includes all of corridor #15 (Mace Boulevard – Harper Junior High School to Interstate 80) and portions of corridors #2 (Chiles Road – Drummond Avenue to East City Limit) and #16 (Mace Boulevard – Interstate 80 to South City Limit) as shown in Map 5 of the *General Plan* Circulation Element. Corridors #2 and #15 do not currently have corridor plans. Corridor #16 south of Cowell Boulevard was recently modified based on prior corridor planning efforts. The segment of Corridor #16 between Cowell Boulevard and Interstate 80 was excluded from those efforts and does not currently have a corridor plan.

the surrounding community. This should include an initial hearing before the Planning Commission and the Bicycling, Transportation, and Street Safety Commission (BTSSC) to solicit initial input and a second hearing for review of the draft plan.

2) In conjunction with submittal of a final planned development or tentative map, whichever occurs first, for each ARC project phase, the MOA for the project shall submit a focused transportation impact study for the phase under review. The study shall document current conditions at the time and identify the anticipated transportation system effects associated with the development proposed for the phase under review and the necessary transportation system improvements to ameliorate these effects in accordance with the methods and significance thresholds used in this transportation impact analysis. Improvements should be consistent with the complete streets goals and improvements identified in the Mace Boulevard corridor plan to be funded and completed by the applicant as described above. The study should also address the degree to which improvements would address any significant impacts caused by the project at buildout as identified in this transportation impact analysis. Potential improvements include, but are not limited to, the following:

    1) Improvements to on- and off-street bicycle facilities on Mace Boulevard and connecting roadways, including Covell Boulevard, Alhambra Drive, Second Street, County Road 32A, and Chiles Road

    2) Improvements to bicycle and pedestrian crossings at the following intersections:

        a. Mace Boulevard/Alhambra Drive
        b. Mace Boulevard/Second Street/County Road 32A
        c. Mace Boulevard/I-80 WB Ramps
        d. Mace Boulevard/I-80 EB Ramps
        e. Mace Boulevard/Chiles Road

        Crossing improvements should reduce the potential for bicycle-vehicle and pedestrian-vehicle conflicts and provide for safe and comfortable access for pedestrians and bicyclists. Potential crossing improvements include, but are not limited to bike lane conflict markings, intersection crossing markings, reductions to crossing distances, and physically separating bicyclists from vehicles (e.g., conversion to a protected intersection). Additionally, crossing improvements should include the modification of existing channelized right-turn lanes to either a) remove and replace the lanes with standard right-turn lanes, or b) retrofit the lanes to reduce vehicles speeds and increase yield compliance rates.

3) Roadway capacity and operations improvements, as described in the Recommendations section of Volume 2. In particular, roadway capacity and operations improvements should address any adverse project effects to transit travel times and on-time performance, as well as operating conditions that degrade roadway safety (e.g., off-ramp queue spillback to freeway mainline).

Improvements identified in the focused transportation impact study should achieve the following performance measures:

1) Reduce the number and/or severity of bicycle-vehicle and pedestrian-vehicle conflict points at intersections and intersection approaches.
2) Eliminate otherwise anticipated increases in transit travel times and/or adverse changes to transit on-time performance that would be caused by the project in accordance with standards established by Unitrans, Yolobus, and other potential future transit operators.
3) Eliminate otherwise anticipated adverse effects to emergency vehicle response times that would be caused by the project in accordance with standards established by the City of Davis Fire Chief.
4) Eliminate otherwise anticipated increases in cut-through traffic on residential roadways that would be caused by the project.
5) Eliminate otherwise anticipated vehicle queuing that would be caused by the project that would adversely affect roadway safety, including off-ramp queue spillbacks to the freeway mainline, queue spillbacks that block bicycle and/or pedestrian facilities, and queue spillbacks that exceed available turn pocket storage and block adjacent through travel lanes.

The focused transportation impact study should also identify the funding and implementing responsibilities for each improvement, including whether the improvement should be constructed by the applicant or if the applicant should contribute fair share funding to cover their proportionate cost for the improvements. The applicant shall construct the improvement and/or contribute fair share funding prior to the issuance of the first certificate of occupancy for each project phase under review.

Secondary Impacts After Mitigation

Elements of Mitigation Measure 2.3, particularly the potential for roadway operations and capacity improvements along the Mace Boulevard corridor, have the potential to exacerbate impacts to VMT described in Impact 1. Existing evidence indicates that Covell Boulevard, Mace Boulevard, and connecting roadways such as Second Street and Chiles Road are utilized as regional cut-through routes when I-80 experiences significant speed reductions and delays during p.m. peak periods (see Volume 2). Therefore, improving operations and reducing delays along these local roadways could increase the attractiveness of these routes as alternatives to I-80 and induce additional regional cut-through activity on local roadways. Parallel local routes require longer trip distances than remaining on I-80, therefore, regional travel demand use of local routes would yield more VMT than use of I-80.

Significance after Mitigation

Implementation of Mitigation Measures 2.1, 2.2, and 2.3 would reduce potential significant impacts associated with bicycle facilities to a less-than-significant level by supporting bicycling to and from the project site and reducing conflicts between bicycles and other travel modes.

However, elements of each mitigation measure would occur within Caltrans, Yolo County, and/or UPRR rights-of-way and would be subject to final approval and actions by others. Moreover, since the remaining fair share contributions needed for the construction of those mitigation measure elements requiring the project's fair share contribution have not been identified by the relevant lead agency, fair share payment by the project applicant would not ensure construction. Finally, the ultimate improvements resulting from Mitigation Measure 2.3 are subject to change pending the outcome of the Mace Boulevard Corridor Plan process described in Mitigation Measure 2.3. Therefore, the implementation and effectiveness of these mitigation measures cannot be guaranteed. As noted above, due to uncertainties regarding the ability for the aforementioned mitigation measures to reduce impacts to bicycle and pedestrian facilities, bicycle and pedestrian facility impacts would be considered **significant and unavoidable**.

Comparison to MRIC EIR

This represents a new unmitigable significant impact when compared to the MRIC EIR, which found impacts to bicycle and pedestrian facilities to be less-than-significant with mitigation (see Impact 4.14-9 from the MRIC EIR). This can be explained by the following changes from the MRIC EIR:

- Changes to the project description
- Changes to the bicycle and pedestrian significance criteria, particularly a new focus on safety and performance of bicycle and pedestrian facilities
- Changes to the feasibility of mitigation measures, particularly those requiring approval and actions by other entities

Impact 3: Impacts to transit service and facilities.

Implementation of the proposed project would increase the number of passengers utilizing transit service and facilities. New transit passenger demand would be accommodated by existing transit services. However, increases to transit travel times caused by the project would adversely affect the on-time performance and service quality of existing transit services. This impact would therefore be **significant**.

The ARC would introduce new office, manufacturing, and retail land uses that are situated in close proximity to the current transit stops (near Mace Boulevard/Second Street) for the A, O, P, Q, and Z bus routes operated by Unitrans. These routes serve a variety of retail, employment, medical, institutional, and recreational destinations throughout the City, and operate with 30-minute headways, and long service hours. The *City of Davis Short Range Transit Plan* indicates that 91 to 95 percent of all riders are UC Davis undergraduate students, three to six percent of riders are UC Davis graduate students, and just over 5 percent of riders are not UC Davis affiliates.

The *Unitrans General Manager's Report for Fiscal Year 2018-19* indicates that Unitrans experiences high levels of crowding (i.e., more than 60 passengers on standard bus or more than 100 passengers on a double-decker bus) on 3.5 percent of all bus trips.

Table 5 summarizes route-level ridership, productivity (passengers per revenue hour), and on-time performance for Unitrans routes serving the project site. Unitrans policy is to increase daily headways from 30 minutes to 15 minutes on routes with more than 60 passengers per hour. The five routes that serve the project site have ridership levels that are well under the 60 passenger per hour threshold and the project would not result in an increase above that threshold. While the project is expected to increase transit ridership on Unitrans, given the expected number of project transit riders and existing transit patronage, the project would not cause a demand above that which is provided or planned.

Table 5: Unitrans Route Performance Summary – Project Site Vicinity

Route	Annual Ridership	Passengers per Revenue Hour	On-Time Performance
A – Silo/Amtrak/5th/Alhambra	231,493	41.1	85%
O – MU/Amtrak/5th/Alhambra/Target	30,541	37.8	Not Reported
P – MU/Davis Perimeter Counter Clockwise	252,649	30.9	80%
Q – MU/Davis Perimeter Clockwise	259,039	32.6	68%
Z – MU/Amtrak/Cantrill/5th	105,990	26.2	90%

Source: *Unitrans General Manager's Report for Fiscal Year 2018-19.*

On-time performance is defined by Unitrans as a as a bus arriving at the terminal before the scheduled time or within five minutes of the scheduled time. Arriving more than five minutes late is defined as “late”. Unitrans has a systemwide on-time performance target of 90 percent. Systemwide, Unitrans on-time performance was 88 percent during the 2018-19 fiscal year, and thus failed to meet their on-time performance target. This constitutes a five percent drop in systemwide on-time performance from four years prior. Unitrans indicates that they may consider significant route changes on the A, P, Q, and Z lines in FY 2020 to help reduce travel time and improve on-time performance in East Davis. As described in Volume 2, the project would cause substantial increases to vehicle travel demand and peak hour delay on roadways within the project site vicinity. Affected roadways include Mace Boulevard, Alhambra Drive, and Second Street, all of which are utilized by Unitrans routes serving the study area. Since Unitrans service would experience increases to peak hour delays at a level commensurate with general vehicle traffic, the project would cause adverse effects to Unitrans travel times and on-time performance. Reductions to route-level and systemwide on-time performance caused by the project would require Unitrans to restructure service or increase operating costs in order to maintain acceptable on-time performance thresholds.

Yolobus currently operates both intercity and express bus service in the City of Davis. Routes 42A and 42B are intercity routes that provide hourly service between downtown Sacramento, West Sacramento, Davis, Woodland, and the Sacramento International Airport. The routes have a scheduled bus stop at the intersection of Mace Boulevard and Second Street. The express bus routes operated by Yolobus in Davis are currently programmed to serve inbound commute trips to Sacramento in the morning peak period and return trips to Davis in the evening commute peak period. Since the project is an employment center expected to serve trips in the reverse direction, project employees are not expected to use the existing express bus routes. While the project is expected to result in a small increase in transit ridership on Yolobus, given the expected number of project transit riders and existing transit patronage, the ARC would not cause demand to exceed provided or planned Yolobus capacity. Similar to Unitrans routes serving the study area, Yolobus routes serving the study area would be subject to delay increases due to project-generated vehicle traffic and peak hour delay increases.

The ARC proposes the construction of Transit Plaza within the site that would be accessed via the new project access located on the east leg of the existing Mace Boulevard/Alhambra Drive intersection. This would require that Unitrans and Yolobus buses divert from Mace Boulevard into the project site to serve the transit plaza. This would result in additional travel time that would impact scheduling for the individual routes.

Because the ARC Project would adversely affect transit operations, particularly along the Mace Boulevard corridor, a **significant** impact to transit service and operations would occur as a result of the ARC Project.

Mitigation Measure 3.1. Construct enhanced bus stops on Mace Boulevard near Alhambra Drive.

Prior to the issuance of the first certificate of occupancy of the first ARC project phase, the project applicant shall fund and construct new bus stops with turnouts on both sides of Mace Boulevard at the new primary project access point at Alhambra Drive. The project applicant shall prepare design plans, to be reviewed and approved by the City of Davis Public Works Department, and construct bus stops with shelters, paved pedestrian waiting areas, lighting, real time transit information signage, and pedestrian connections between the new bus stops and all buildings on the project site. Responsibility for implementation of this mitigation measure shall be assigned to the ARC and Mace Triangle on a fair share basis. Upon completion of the ARC transit center, in consultation with Unitrans and Yolobus, the bus stops shall be moved to the ARC transit center at the expense of the ARC.

Mitigation Measure 3.2. Identify and construct complete streets improvements on the Mace Boulevard corridor.

Implement Mitigation Measure 2.3 (Identify and construct complete streets improvements on the Mace Boulevard corridor).

Significance after Mitigation

Implementation of Mitigation Measures 3.1 and 3.2 would reduce potential significant impacts associated with transit service and facilities by supporting transit use to and from the project site and minimizing adverse effects to transit operations that would be caused by the project.

However, elements of Mitigation Measure 3.2 would occur within Caltrans rights-of-way and would be subject to final approval and actions by others. Moreover, since the remaining fair share contributions needed for the construction of mitigation measure elements requiring the project's fair share contribution have not been identified by the relevant lead agency, fair share payment by the project applicant would not ensure construction. Finally, the ultimate improvements resulting from Mitigation Measure 3.2 are subject to change pending the outcome of the Mace Boulevard Corridor Plan process described in Mitigation Measure 3.2. Therefore, the implementation of these mitigation measures and their effectiveness cannot be guaranteed.

As noted above, due to uncertainties regarding the ability for the aforementioned mitigation measures to reduce impacts to transit service and facilities, transit service and facility impacts would be considered **significant and unavoidable**.

Comparison to MRIC EIR

This represents a new unmitigable significant impact when compared to the MRIC EIR, which found impacts to transit service and facilities to be less-than-significant with mitigation (see Impact 4.14-10 from the MRIC EIR). This can be explained by the following changes from the MRIC EIR:

- Changes to the project description
- Changes to the feasibility of mitigation measures, particularly those requiring approval and actions by other entities (e.g., Caltrans)

Impact 4: Impacts to emergency vehicle access.

Implementation of the proposed project would not impede emergency vehicle access. This impact would therefore be **less than significant**.

The proposed project would include three vehicular access points on Mace Boulevard (two full access, and one right-in/right-out only) and two vehicular access points on County Road 32A (both full access). Altogether, these connections would provide multiple opportunities and routes for emergency vehicles to access the site from multiple directions.

Fire access from the South Davis fire station (located one-half mile south of the project site on Mace Boulevard) would be available via northbound Mace Boulevard. Fire access from the Downtown Davis fire station (located nearly three miles west of the project site) would be available via eastbound Fifth Street and Alhambra Drive. Medical emergency service access to/from Sutter Davis Hospital (located over four miles west of the project site) would be available via Covell Boulevard. Each of these corridors have traffic signals equipped with emergency vehicle pre-emption, providing signal priority to emergency vehicles in the event of an emergency.

The design of the on-site roadways and intersections will be subject to City of Davis code and Public Works Department staff review and approval.

Therefore, this impact is considered **less-than-significant**.

Mitigation Measures

None required.

Impact 5: Construction-related impacts.

Implementation of the proposed project would result in construction activities that would disrupt the surrounding multi-modal transportation system. This impact would therefore be **significant**.

Construction of the project, including site preparation and construction, and delivery activities, would generate employee trips and a variety of construction-related vehicles. Construction activities would include disruptions to the transportation network near the project site, including the possibility of temporary lane closures, street closures, sidewalk closures, and bikeway closures. Bicycle and transit access may also be disrupted.

The most concentrated period of heavy truck traffic is anticipated to occur when excavated soil from the off-site storage pond is transported over to the ARC project site. It is forecast that a total of approximately 10,833 trucks will access the site over 30 work days, resulting in an average of approximately 720 truck trips per day (i.e., 360 truck loads per day, with two trips – one loaded trip to the site, one return empty trip – for each load). Trucks are projected to travel to and from the east end of the Howatt Ranch property near the levee adjacent to the Yolo Bypass. Trucks would access the southern portion of the site via County Road 32A, with trucks traveling to the Howatt Ranch site via County Road 32A and County Road 105. Use of County Road 32A by construction trucks could cause a short-term adverse impact to bicyclists using existing bike lanes.

These activities could also result in degraded roadway conditions. Altogether, these factors would result in a significant impact related to project construction.

Mitigation Measure 5.1. Prepare a Construction Traffic Control Plan.

Prior to any construction activities for the project site, the project applicant shall prepare a detailed Construction Traffic Control Plan and submit it for review and approval by the City Department of Public Works. The applicant and the City shall consult with Yolo County, Caltrans, Unitrans, Yolobus, and local emergency service providers for their input prior to approving the Plan. The plan shall ensure that acceptable operating conditions on local roadways and freeway facilities are maintained during construction. At a minimum, the plan shall include:

- The number of truck trips, time, and day of street closures
- Time of day of arrival and departure of trucks
- Limitations on the size and type of trucks, provision of a staging area with a limitation on the number of trucks that can be waiting

- Provision of a truck circulation pattern that minimizes effects on existing vehicle traffic during peak travel periods and maintains safe bicycle circulation
- Minimize use of County Road 32A by construction traffic during peak travel periods
- Resurface and/or repair any damage to roadways that occurs as a result of construction traffic
- Provision of driveway access plan so that safe vehicular, pedestrian, and bicycle movements are maintained (e.g., steel plates, minimum distances of open trenches, and private vehicle pick up and drop off areas)
- Maintain safe and efficient access routes for emergency vehicles
- Manual traffic control when necessary
- Proper advance warning and posted signage concerning street closures
- Provisions for pedestrian safety

A copy of the construction traffic control plan shall be submitted to local emergency response agencies and these agencies shall be notified at least 14 days before the commencement of construction that would partially or fully obstruct roadways.

Significance after Mitigation
Implementation of Mitigation Measure 5.1 would reduce potential significant impacts associated with project construction activity to a **less-than-significant** level by minimizing the effects of project construction to the surrounding multi-modal transportation system.

Cumulative Impacts and Mitigation Measures

Cumulative transportation impacts consider those that would result from the construction of the proposed project combined with other future land use and transportation system changes anticipated to occur by 2036. The project's contribution to cumulative impacts may be considerable if it worsens or results in a significant cumulative impact. Under cumulative conditions, the project would cause an impact if both of the following criteria are met:

- An unacceptable condition would exist; and
- The project would have a cumulatively considerable contribution to the unacceptable condition.

The proposed project is anticipated to be constructed in four phases over a 20 to 25-year period. Under cumulative conditions, the proposed project site plan and off-site transportation system modifications would not differ from those described in the project-specific impact analysis provided above.

The cumulative transportation impact analysis considered reasonably foreseeable land use and transportation system changes expected to occur by the 2036 analysis year, including the completion of the proposed Aggie Research Campus project. These changes include, but are not limited to, the following planned, approved, or under construction land use and transportation projects relevant to the proposed project:

- Land Use Projects
    - UC Davis 2018 Long Range Development Plan (LRDP) – The LRDP anticipates the addition of 5,175 students, 2,135 employees, and 10,958 residents (9,050 students, 485 employees, and 1,423 dependents) on the UC Davis campus between 2016 and 2030. Individual components of the LRDP include the following:
        - West Village Expansion – located west of SR-113 and south of Russell Boulevard, will include an additional 3,300 student beds and 485 employee residents. The student housing portion of the project has been approved by the UC Regents and is currently under construction.
        - Orchard Park Redevelopment – located east of SR-113 and south of Russell Boulevard, will include an additional 200 student family housing units and up to 1,200 student beds.
        - Emerson Hall Replacement (Shasta Hall) – located on Oxford Circle west of Sycamore Lane and north of Russell Boulevard, will include the demolition of an existing 500-bed dormitory and the construction of a new dormitory with capacity for up to 800 student beds.
    - Other mid- to large-sized planned or approved development projects within the City of Davis located over one mile from the project site, including University Commons, the West Davis Active Adult Community, the Nishi Residential Project, Lincoln40, Sterling 5th Street Apartments, Davis Live Plaza 2555, and the 3820 Chiles Road Apartments.
    - Including the City of Davis development projects listed above, residential and employment growth equal to 2036 control totals projected for the City of Davis by SACOG in the adopted 2016 Metropolitan Community Plan/Sustainable Communities Strategy.
    - Residential and employment growth elsewhere in the SACOG region (e.g., Sacramento, West Sacramento, Woodland, etc.) equal to 2036 forecasts projected by SACOG in the adopted 2016 Metropolitan Transportation Plan/Sustainable Communities Strategy.
- Transportation System Projects
    - I-80 HOV lanes from Richards Boulevard to Sacramento.
    - I-80/Richards Boulevard interchange improvements.
    - Anderson Road four-to-two lane reduction between West Covell Boulevard and Villanova Drive.
    - Fifth Street four-to-two lane reduction between L Street and Pole Line Road.

Impact 6: Cumulative impacts to vehicle miles traveled (VMT) on the roadway system.

Under cumulative conditions, implementation of the proposed project would change local and regional VMT per service population in a manner that would exceed relevant local and State thresholds. This impact would therefore be **significant**.

Impact 1 provides an evaluation of potential project impacts to VMT under Existing Plus Project conditions. Under Existing Plus Project conditions, the project would cause a significant impact to VMT by virtue of resulting in project-generated VMT per service population measuring above the applicable significance thresholds relative to existing local and regional VMT per service population averages. The VMT impact analysis for Existing Plus Project conditions applies to Cumulative Plus Project conditions for the following reasons:

- The VMT significance threshold compares project-generated VMT per service population to that of existing local and regional development. This comparison is useful because it provides information regarding how the project aligns with long-term environmental goals related to VMT established based on existing development levels. Use of VMT significance thresholds based on existing development levels is recommended in the OPR Technical Advisory on Evaluating Transportation Impacts in CEQA.
- The OPR Technical Advisory on Evaluating Transportation Impacts in CEQA indicates that VMT efficiency metrics, such as VMT per service population, are not appropriate for CEQA cumulative analysis. Instead, the Technical Advisory recommends that an impact finding from an efficiency-based project-specific VMT analysis (i.e., Existing Plus Project conditions) would imply an identical impact finding for a cumulative VMT analysis. An example provided by OPR explains that a project that falls below an efficiency-based threshold that is aligned with long-term environmental goals and relevant plans would have no cumulative impact distinct from the project impact.

Based on the above, the ARC Project's cumulative VMT impact would be considered **significant**.

Mitigation Measure 6.1. Develop a TDM program and implement TDM strategies to reduce project-generated VMT.

Implement Mitigation Measure 1.1 (Develop a TDM program and implement TDM strategies to reduce project-generated VMT).

Significance after Mitigation

Implementation of Mitigation Measure 6.1 would reduce project-generated VMT per service population by instituting a TDM program to reduce external vehicle trips generated by the project. However, the effectiveness of the TDM strategies is not known and subsequent vehicle trip reduction effects cannot be guaranteed. Existing evidence indicates that the effectiveness of TDM strategies with regards to vehicle trip reduction can vary based on a variety of factors, including the context of the surrounding built environment (e.g., urban versus suburban) and the aggregate effect of multiple TDM strategies deployed together. Moreover, many TDM strategies are not just site specific, but also rely on implementation and/or adoption by private entities (e.g., elective use of carpool program by office building tenants).

As noted above, due to uncertainties regarding the ability for the aforementioned mitigation measure to reduce cumulative VMT impacts to less-than-significant levels, cumulative VMT impacts would be considered **significant and unavoidable**.

Comparison to MRIC EIR

This represents a new unmitigable significant impact when compared to the MRIC EIR, which did not analyze potential cumulative VMT impacts.

Impact 7: Cumulative impacts to bicycle and pedestrian facilities.

Together with increases vehicle traffic caused by reasonably foreseeable land use growth, implementation of the proposed project would increase bicycle, pedestrian, and vehicle trips within the vicinity of the project site, which could increase the competition for physical space between modes and increase the potential for conflicts involving bicyclists and pedestrians. This impact would therefore be **significant**.

No reasonably foreseeable new bicycle or pedestrian facilities would be constructed within the vicinity of the project site under cumulative conditions. Under cumulative conditions, given the limited amount of reasonably foreseeable land use development near the project site, only modest increases in background bicycle and pedestrian activity would occur within the vicinity of the project site. More substantial increases in background vehicle traffic would occur on study area roadways due to growth elsewhere in and around Davis. However, growth in background vehicle traffic would not materially change the adverse effects to bicycle and pedestrian that would be attributable to the project. Therefore, the project-specific bicycle and pedestrian impact analysis provided in Impact 2 would similarly apply to cumulative plus project conditions.

This would constitute a significant impact to bicycle and pedestrian facilities under cumulative conditions.

Mitigation Measure 7.1. Construct proposed off-site bicycle and pedestrian facilities.

Implement Mitigation Measure 2.1 (Construct proposed off-site bicycle and pedestrian facilities).

Mitigation Measure 7.2. Improve bicycle facilities on County Road 32A.

Implement Mitigation Measure 2.2 (Improve bicycle facilities on County Road 32A).

Mitigation Measure 7.3. Identify and construct complete streets improvements on the Mace Boulevard corridor.

Mitigation Measure 2.3 (Identify and construct complete streets improvements on the Mace Boulevard corridor).

Secondary Impacts After Mitigation

Elements of Mitigation Measure 7.3, particularly the potential for roadway operations and capacity improvements along the Mace Boulevard corridor, have the potential to exacerbate impacts to VMT described in Impact 6. Existing evidence indicates that Covell Boulevard, Mace Boulevard, and connecting roadways such as Second Street and Chiles Road are utilized as regional cut-through routes when I-80 experiences significant speed reductions and delays during p.m. peak periods (see Volume 2). Therefore, improving operations and reducing delays along these local roadways could increase the attractiveness of these routes as alternatives to I-80 and induce additional regional cut-through activity on local roadways. Parallel local routes require longer trip distances than remaining on I-80, therefore, regional travel demand use of local routes would yield more VMT than use of I-80.

Significance after Mitigation

Implementation of Mitigation Measures 7.1, 7.2, and 7.3 would reduce potential significant impacts associated with bicycle facilities to a less-than-significant level by supporting bicycling to and from the project site and minimizing conflicts between bicycles and other travel modes.

However, elements of each mitigation measure would occur within Caltrans, Yolo County, and/or UPRR rights-of-way and would be subject to final approval and actions by others. Moreover, since the remaining fair share contributions needed for the construction of mitigation measure elements requiring the project's fair share contribution have not been identified by the relevant lead agency, fair share payment by the project applicant would not ensure construction. Finally, the ultimate improvements resulting from Mitigation Measure 7.3 are subject to change pending the outcome of the Mace Boulevard Corridor Plan process described in Mitigation Measure 2.3. Therefore, the implementation of these mitigation measures cannot be guaranteed.

As noted above, due to uncertainties regarding the ability for the aforementioned mitigation measures to reduce impacts to bicycle and pedestrian facilities, cumulative impacts to bicycle and pedestrian facilities would be considered **significant and unavoidable**.

<u>Comparison to MRIC EIR</u>
This represents a new unmitigable significant impact when compared to the MRIC EIR, which found cumulative impacts to bicycle and pedestrian facilities to be less-than-significant with mitigation (see Impact 4.14-9 from the MRIC EIR). This can be explained by the following changes from the MRIC EIR:

- Changes to the project description
- Changes to the bicycle and pedestrian significance criteria, particularly a new focus on safety and performance of bicycle and pedestrian facilities
- Changes to the feasibility of mitigation measures, particularly those requiring approval and actions by other entities (e.g., Caltrans)

Impact 8: Cumulative impacts to transit service and facilities.

Implementation of the proposed project would increase the number of passengers utilizing transit service and facilities. New transit passenger demand would be accommodated by transit services anticipated to be in service under cumulative conditions. However, increases to transit travel times caused by the project as well as reasonably foreseeable land use growth would adversely affect the on-time performance and service quality of transit services under cumulative conditions. This impact would therefore be **significant**.

The only anticipated change to transit service in the study area under cumulative conditions is the implementation of the Causeway Connection bus service between UC Davis and the UC Davis Health Campus in Sacramento. This service will serve the Mace park-and-ride once per hour in the eastbound direction during the morning peak period and once per hour in the westbound direction during the evening peak period. Given this schedule, use of the Causeway Connection service by the project would be nominal since project employee will primarily generate commute transit demand in the opposite direction.

Under cumulative conditions, substantial increases in background vehicle traffic would occur on study area roadways due to growth elsewhere in and around Davis. Together with the substantial increase in vehicle traffic caused by the project, this would cause adverse effects to transit operations by increasing transit service delay and running times. However, growth in background vehicle traffic would not materially change the adverse effects to transit services that would be attributable to the project. Therefore, the project-specific transit service and facility impact analysis provided in Impact 3 would similarly apply to cumulative plus project conditions.

This would constitute a significant impact to transit service and facilities under cumulative conditions.

Mitigation Measure 8.1. Construct enhanced bus stops on Mace Boulevard near Alhambra Drive.

Implement Mitigation Measure 3.1 (Construct enhanced bus stops on Mace Boulevard near Alhambra Drive).

Mitigation Measure 8.2. Identify and construct complete streets improvements on the Mace Boulevard corridor.

Implement Mitigation Measure 2.3 (Identify and construct complete streets improvements on the Mace Boulevard corridor).

Secondary Impacts After Mitigation

Elements of Mitigation Measure 8.2, particularly the potential for roadway operations and capacity improvements along the Mace Boulevard corridor, have the potential to exacerbate impacts to VMT described in Impact 6. Existing evidence indicates that Covell Boulevard, Mace Boulevard, and connecting roadways such as Second Street and Chiles Road are utilized as regional cut-through routes when I-80 experiences significant speed reductions and delays during p.m. peak periods (see Volume 2). Therefore, improving operations and reducing delays along these local roadways could increase the attractiveness of these routes as alternatives to I-80 and induce additional regional cut-through activity on local roadways. Parallel local routes require longer trip distances than remaining on I-80, therefore, regional travel demand use of local routes would yield more VMT than use of I-80.

Significance after Mitigation

Implementation of Mitigation Measures 8.1 and 8.2 would reduce potential significant impacts associated with transit service and facilities to a less-than-significant level by supporting transit use to and from the project site and minimizing adverse effects to transit operations that would be caused by the project.

However, elements of Mitigation Measure 8.2 would occur within Caltrans rights-of-way and would be subject to final approval and actions by others. Moreover, since the remaining fair share contributions needed for the construction of mitigation measure elements requiring the project's fair share contribution have not been identified by the relevant lead agency, fair share payment by the project applicant would not ensure construction. Finally, the ultimate improvements resulting from Mitigation Measure 8.2 are subject to change pending the outcome of the Mace Boulevard Corridor Plan process described in Mitigation Measure 3.2. Therefore, the implementation of these mitigation measures cannot be guaranteed.

As noted above, due to uncertainties regarding the ability for the aforementioned mitigation measures to reduce impacts to transit service and facilities, cumulative impacts to transit service and facility would be considered **significant and unavoidable**.

Comparison to MRIC EIR

This represents a new unmitigable significant impact when compared to the MRIC EIR, which did not address potential cumulative impacts to transit service and facilities.

Impact 9: Cumulative impacts to emergency vehicle access.

Implementation of the proposed project would not impede emergency vehicle access. This impact would therefore be **less than significant**.

The proposed project would include three vehicular access points on Mace Boulevard (two full access, and one right-in/right-out only) and two vehicular access points on County Road 32A (both full access). Altogether, these connections would provide multiple opportunities and routes for emergency vehicles to access the site from multiple directions.

Fire access from the South Davis fire station (located one-half mile south of the project site on Mace Boulevard) would be available via northbound Mace Boulevard. Fire access from the Downtown Davis fire station (located nearly three miles west of the project site) would be available via eastbound Fifth Street and Alhambra Drive. Medical emergency service access to/from Sutter Davis Hospital (located over four miles west of the project site) would be available via Covell Boulevard. Each of these corridors have traffic signals equipped with emergency vehicle pre-emption, providing signal priority to emergency vehicle in the event of an emergency.

The design of the on-site roadways and intersections will be subject to City of Davis code and Public Works Department staff review and approval.

Therefore, this is considered a **less-than-significant** impact.

Mitigation Measures

None required.

Impact 10: Cumulative construction-related impacts.

Implementation of the proposed project would result in construction activities that would disrupt the surrounding multi-modal transportation system. This impact would therefore be **significant**.

Construction of the project, including site preparation and construction, and delivery activities, would generate employee trips and a variety of construction-related vehicles. Construction activities would include disruptions to the transportation network near the project site, including the possibility of temporary lane closures, street closures, sidewalk closures, and bikeway closures. Bicycle and transit access may also be disrupted. The project is planned for construction in four phases over a twenty to twenty-five year timeframe. Thus, the construction activities related to the project could occur during the cumulative analysis year.

The most concentrated period of heavy truck traffic is anticipated to occur during the period that the existing detention basin on the site is being filled. It is forecast that a total of approximately 10,833 trucks will access the site over 30 work days, resulting in an average of approximately 720 truck trips per day (i.e., 360 truck loads per day, with two trips – one loaded trip to the site, one return empty trip – for each load). Trucks are projected to travel to and from the east end of the Howatt Ranch property near the levee adjacent to the Yolo Bypass. Trucks would access the southern portion of the site via County Road 32A, with trucks traveling to the Howatt Ranch site via County Road 32A and County Road 105. Use of County Road 32A by construction trucks could cause a short-term adverse impact to bicyclists using existing bike lanes.

These activities could also result in degraded roadway conditions. Altogether, these factors would result in a significant impact related to project construction.

Mitigation Measure 10.1. Prepare a Construction Traffic Control Plan.

Implement Mitigation Measure 5.1 (Prepare a Construction Traffic Control Plan).

Significance after Mitigation

Implementation of Mitigation Measure 10.1 would reduce potential cumulative impacts associated with project construction activity to a **less-than-significant** level by minimizing the effects of project construction to the surrounding multi-modal transportation system.

Aggie Research Campus

Technical Appendix

March 2020

RS19-3828.01

FEHR & PEERS

FEHR PEERS

MEMORANDUM

Date: January 22, 2020

To: Nick Pappani, Raney Planning & Management

From: Greg Behrens, AICP, Fehr & Peers

Subject: Aggie Research Campus Project Trip Generation

RS19-3828.01

This memorandum provides a brief description of the proposed Aggie Research Campus (ARC) project land uses and the estimated weekday daily and peak hour project trip generation. These estimates will be used in the development of the "Existing Plus Project" condition. The "Cumulative Plus Project" condition will also use many of these same estimates, but will additionally consider changed conditions within the vicinity of the project site (e.g., buildout of nearby planned and approved development projects) between the two scenarios.

Project Description

The proposed project would consist of a mix of land uses including office/R&D, advanced manufacturing, ancillary retail, residential, and hotel on 194 acres. The project site is situated immediately east of the City of Davis city limit, northeast of the Interstate 80 (I-80) interchange at Mace Boulevard.

Table 1 presents the buildout development program for the project as proposed by the project applicant.

Table 1
Aggie Research Campus Project – Proposed Land Use Program

Land Use	Units	Buildout Quantities
Office/R&D	KSF	1,510
Advanced Manufacturing	KSF	884
Hotel/Conference	Rooms/KSF	150/160
Ancillary Retail	KSF	100
Residential[1]	DU	850
Total Non-Residential Development (KSF)		2,654

Source: Aggie Research Campus Project Description, October 2019.
Note: [1]Per direction from City staff, residential would be comprised of one-third single-family dwelling units and two-thirds multi-family dwelling units.

Methodology

MXD+

Prior to 2007, conventional methods available to transportation engineers systematically overestimated the trips generated by and impacts of mixed-use development because they did not accurately reflect the amount of internal trip linking or the level of external trips made by transit, biking, and/or walking. This resulted in increased development costs, due to oversized infrastructure, skewed public perception, and resistance to approving smart growth. While the Institute of Transportation Engineers (ITE) *Trip Generation Handbook* does include a methodology for estimating internal trips, it only applies to AM and PM peak hour conditions and has been shown to be less accurate than more academically-oriented efforts.

In the early 2000's, two significant research studies provided the opportunity to improve the state of practice. One study sponsored by the US EPA (MXD) and another by the Transportation Research Board (NCHRP 684) have developed means to improve trip generation estimation for mixed-use development (MXD). The two studies examined over 240 mixed-use development sites throughout the U.S. and, using different approaches, developed new quantification methods. Fehr & Peers has reviewed the two methods, including the basis, capabilities, and appropriate uses of each, to produce a new method (MXD+) that combines the strengths of the two individual tools to establish a new best practice. MXD+ recognizes that traffic generation by mixed-use and other forms of sustainable development relate closely to the density, diversity, design, destination accessibility, transit proximity, and scale of development.

The MXD+ method explains 97 percent of the variation in trip generation among mixed-use developments, compared to 65 percent for the methods previously recommended by ITE. While remaining slightly (2 to 4 percent) conservative to avoid systematically understating impacts, it substantially reduces the 35 to 37 percent average overestimate of traffic generation produced by conventional ITE methods.

MXD+ improves the accuracy of impact estimation and gives planners a tool to rationally balance land use mix and to incorporate urban design, context compatibility, and transit orientation to create lower impact development. Fehr & Peers has applied MXD+ on hundreds of EIRs throughout California over the past decade, including EIRs for several projects in the City of Davis such as The Cannery and the West Davis Active Adult Community.

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FEHR PEERS

Project Trip Generation

Table 2 summarizes the estimated weekday and peak hour trip generation for the ARC project using the MXD+ tool. As shown in Table 2, the project would generate an estimated 23,888 net daily trips, 2,232 net AM peak hour trips, and 2,479 net PM peak hour trips during a typical weekday.

The following factors influence the estimated trip reductions resulting from internalization and shifts to transit, walk, and bike trips:

- Suburban location on the edge of the developed area
- Low-density surroundings
- Poor walk/bike access to off-site trip generators/activity centers, particularly due to long travel distances
- Poor intercity/commuter transit access
- High jobs/population ratio (approximately 2.78 jobs for every resident), which would result in the project attracting a large number of commute trips without producing a commensurate number of commute trips (i.e., these must be fulfilled by external trips)
- Lack of uses complementary to residential land uses (e.g., neighborhood commercial)

Table 2
Aggie Research Campus Project – Vehicle Trip Generation

Land Use	Units	ITE Code	Quantity	Daily	AM In	AM Out	AM Total	PM In	PM Out	PM Total
Net New Uses										
General Office Building	1,000 Sq. Ft. GLA	710[1]	1,610	16,383	1,392	226	1,618	274	1,436	1,710
Manufacturing	1,000 Sq. Ft. GLA	140[2]	884	3,474	422	126	548	184	408	592
Hotel	Rooms	310[3]	150	1,267	41	29	70	44	42	86
Multifamily Housing Low Rise	Dwelling Units	220[4]	280	2,076	29	98	127	96	55	148
Multifamily Housing Mid Rise	Dwelling Units	221[5]	570	3,103	49	142	191	148	94	242
Raw External Project Trips				*26,303*	*1,933*	*621*	*2,554*	*743*	*2,035*	*2,778*
Reductions										
Internal Capture				-2,032	-204	-66	-270	-68	-188	-256
External Walk and Bike				-183	-17	-5	-22	-5	-13	-18
External Transit				-200	-20	-10	-30	-10	-15	-25
Total Reductions				*-2,415*	*-241*	*-81*	*-322*	*-83*	*-216*	*-299*
Net New External Project Trips				**23,888**	**1,692**	**540**	**2,232**	**660**	**1,819**	**2,479**

Sources: Institute of Transportation Engineers (ITE) *Trip Generation Manual, 10th Edition*, 2017; Fehr & Peers, 2020.

Notes:

[1] ITE Trip Generation land use category (710) – General Office Building (Adj Streets, 7-9A, 4-6P). Includes 100,000 sq. ft. of proposed ancillary retail space, as permitted by ITE for this land use category.

- Daily: Ln(T) = 0.97 * ln(X) + 2.50
- AM Peak Hour: T = 0.94(X) + 26.49 (88% in, 12% out)
- PM Peak Hour: Ln(T) = 0.95 * ln(X) + 0.36 (17% in, 83% out)

[2] ITE Trip Generation land use category (140) - Manufacturing (Adj Streets, 7-9A, 4-6P)

- Daily: T = 3.93(X)
- AM Peak Hour: T = 0.62(X) (73% in, 27% out)
- PM Peak Hour: T = 0.67(X) (44% in, 56% out)

[3] ITE Trip Generation land use category (310) - Hotel (Adj Streets, 7-9A, 4-6P)

- Daily: T = 11.29(X) + -426.97
- AM Peak Hour: T = 0.50(X) + -5.34 (59% in, 41% out)
- PM Peak Hour: T = 0.75(X) + -26.02 (51% in, 49% out)

[4] ITE Trip Generation land use category (220) - Multifamily Housing Low Rise (Adj Streets, 7-9A, 4-6P). This land use category was selected for use for the proposed 290 dwelling units of single-family housing. ITE indicates that this land use category is appropriate for use for attached housing between one and three stories in height, which is aligned with the proposed single-family housing product as described in the project description. Alternative options identified by ITE include detached single-family housing and mid-rise multi-family housing, neither of which align with the proposed single-family housing product as described in the project description.

- Daily: T = 7.56(X) + -40.86
- AM Peak Hour: Ln(T) = 0.95 * ln(X) + -0.51 (20% in, 80% out)
- PM Peak Hour: Ln(T) = 0.89 * ln(X) + -0.02 (65% in, 35% out

[5] ITE Trip Generation land use category (221) - Multifamily Housing Mid-Rise (Adj Streets, 7-9A, 4-6P)

- Daily: T = 5.45(X) + -1.75
- AM Peak Hour: Ln(T) = 0.98 * ln(X) + -0.98 (21% in, 79% out)
- PM Peak Hour: Ln(T) = 0.96 * ln(X) + -0.63 (65% in, 35% out)

FEHR & PEERS

MEMORANDUM

Date: March 6, 2020

To: Nick Pappani, Raney Planning & Management

From: Greg Behrens & John Gard, Fehr & Peers

Subject: Aggie Research Campus MXD+ Model Information

RS19-3828.01

In light of discussions held on February 29, 2020 at City of Davis offices regarding the ARC's trip generation, we prepared this memorandum to document our technical approach and demonstrate using substantial evidence that it is defensible and accurate means for estimating the project's trips.

Table 8-26 of the Draft EIR indicates that the Proposed Project would generate 24,650 new daily vehicle trips, 2,325 new AM peak hour vehicle trips, and 2,561 new PM peak hour vehicle trips. Pages 8-207 through 8-209 describe the MXD+ methodology that was used to develop these estimates. In very simple terms, MXD+ works as follows:

- It begins with the latest ITE *Trip Generation Manual* trip rates, and then estimates internal trips and external walk, bike, and transit trips. Those estimates are then subtracted from the raw ITE trips to yield the external/new vehicle trips the project would generate

MXD+ has been in use by Fehr & Peers for many years including multiple applications in the City of Davis. Despite its widespread use and acceptance, we do occasionally encounter agencies and staff that remain skeptical.

In Fall 2019, Fehr & Peers used its own Research & Development funds to investigate whether MXD+ is still producing accurate estimates of external vehicle trip generation for mixed-use projects. To accomplish this, we performed vehicle trip generation data collection at 15 mixed-use sites across the United States, ranging in size from 4 to 4,000 acres. Four of these sites contained large amounts of office space. These sites, which are situated in California and Georgia, are shown in **Table 1**.

Table 2 shows how MXD+ performed for each of these four sites in terms of its accuracy of matching the actual measured vehicle trip generation at each of these sites. Key findings from this table include:

1. For all three time periods and four sites, MXD+ estimates were within 12 percent or less of the actual, measured count.
2. The average absolute error for the four sites was 8 percent under daily conditions, 7 percent under AM peak hour conditions, and 3 percent under PM peak hour conditions.

This is particularly important because traffic volumes may often fluctuate by 5 percent or more from day to day. Thus, the variation in MXD+ estimates are comparable to, and in some cases, even less than the variation in daily traffic.

Table 1
Fehr & Peers' Mixed-Use Research Sites with Heavy Employment Uses

Mixed-Use Location	Site Acreage	Amount of Office Space	Land Use Mix / Transit Availability
Sunnyvale, Ca	12 acres	564 KSF	Dense complementary land uses located adjacent to a light rail station
Sacramento, Ca	221 acres	1,084 KSF	Suburban setting with complementary land uses limited primarily to residential. Not well served by transit
Santa Clara, Ca	68 acres	1,707 KSF	Good diversity of land uses. 15-minute bus service provided.
Alpharetta, Ga	79 acres	582 KSF	Excellent diversity of land uses. Modest bus service provided.

Source: Fehr & Peers, 2020.

Table 2
External Vehicle Trip Generation Comparison for Fehr & Peers' Mixed-Use Research Sites with Heavy Employment Uses

Mixed-Use Location	External Vehicle Trips					
	Daily		AM Peak Hour		PM Peak Hour	
	MXD+ Estimate	Actual	MXD+ Estimate	Actual	MXD+ Estimate	Actual
Sunnyvale, Ca	8,975 (+3%)	8,707	604 (-13%)	693	702 (0%)	705
Sacramento, Ca	21,583 (+11%)	19,362	1,732 (-7%)	1,863	1,945 (-2%)	1,985
Santa Clara, Ca	26,624 (-12%)	30,330	1,924 (-2%)	1,959	2,335 (-9%)	2,549
Alpharetta, Ga	34,840 (+5%)	33,301	1,610 (-4%)	1,685	2,500 (-2%)	2,543

Note: Value shown in parentheses represent the percentage that the MXD+ estimate over or underpredicts the actual value.
Source: Fehr & Peers, 2020.

Despite the above conclusions, some may continue to be skeptical of MXD+ and wonder if other tools may be equally or more effective at estimating external vehicle trips generated by an employment-oriented mixed-use project. Such a tool does exist, and it is contained in ITE's *Trip Generation Handbook*[1]. **Table 3** compares how the "ITE Internalization Method" compares to MXD+ for the four research sites. This table demonstrates that ITE Internalization method results substantially higher (i.e., less accurate) average absolute error values than the MXD+ method.

Table 3
Comparison of Absolute Error in MXD+ and ITE Internalization Method Vehicle Trip Generation for Fehr & Peers' Mixed-Use Research Sites with Heavy Employment Uses

<table>
<tr><th rowspan="3">Mixed-Use Location</th><th colspan="6">Absolute Error of Estimate</th></tr>
<tr><th colspan="2">Daily</th><th colspan="2">AM Peak Hour</th><th colspan="2">PM Peak Hour</th></tr>
<tr><th>MXD+</th><th>ITE Internalization Method</th><th>MXD+</th><th>ITE Internalization Method</th><th>MXD+</th><th>ITE Internalization Method</th></tr>
<tr><td>Sunnyvale, Ca</td><td>3%</td><td rowspan="5">Method not provided for daily conditions</td><td>13%</td><td>1%</td><td>0%</td><td>25%</td></tr>
<tr><td>Sacramento, Ca</td><td>11%</td><td>7%</td><td>13%</td><td>2%</td><td>17%</td></tr>
<tr><td>Santa Clara, Ca</td><td>12%</td><td>2%</td><td>16%</td><td>9%</td><td>5%</td></tr>
<tr><td>Alpharetta, Ga</td><td>5%</td><td>4%</td><td>28%</td><td>2%</td><td>13%</td></tr>
<tr><td>Average</td><td>8%</td><td>7%</td><td>15%</td><td>3%</td><td>15%</td></tr>
</table>

Note: Value shown in parentheses represent the percentage that the MXD+ estimate over or underpredicts the actual value.
Source: Fehr & Peers, 2020.

In conclusion, we believe the MXD+ model is the best tool available to accurately estimate a mixed-use project's trip generation. This memorandum demonstrated its accuracy in matching observed trips from four employment-oriented mix-use projects of similar size to the proposed project.

[1] ITE's methodology is *NCHRP 684: Enhancing Internal Trip Capture Estimation for Mixed-Use Developments* (2011). Page 3 of that report states that "researchers do not recommend use of this method for suburban activity centers or new town types of development: the researchers do not believe it will be applicable". MXD+ blends the predictive equations from NCHRP 684 and the Environmental Protection Agency (EPA) MXD model to better utilize the strengths and minimize the weaknesses of each approach.

Aggie Research Campus

Volume 2 – Traffic Operations Analysis

Prepared for:
Raney Planning & Management, Inc.

May 2020

RS19-3828.01

FEHR PEERS

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1. Introduction

This document presents an analysis of the potential effects of the proposed Aggie Research Campus project (the project) with respect to traffic operations (i.e., vehicle delay) on roadway facilities within the vicinity of the project site. This analysis is deliberately separate from the transportation impact study in Volume 1 in accordance with the CEQA Guidelines, which no longer permit the use of vehicle delay or level of service (LOS) for the purposes of identifying environmental impacts for land use projects. This analysis has been prepared for two primary reasons. First, it informs other components of the transportation impact analysis (e.g., potential impacts to transit services) and other topics addressed in the Aggie Research Campus SEIR (e.g., air quality, noise, GHG, etc.). Second, it directly addresses the proposed project's consistency with City of Davis General Plan policies related to traffic operations and level of service.

An accompanying document, the Aggie Research Campus Transportation Impact Study (Volume 1) describes existing transportation conditions and analyzes the potential for the proposed project to affect the surrounding transportation environment in accordance with current CEQA Guidelines. This includes potential impacts to vehicle miles traveled (VMT) and transit, bicycle, and pedestrian components of the transportation system that may result from the proposed project, as well as impacts during project construction. Where necessary and feasible, mitigation measures are identified to reduce these impacts.

Analysis Scenarios

The following scenarios are analyzed in this study:

- **Existing Conditions –** Establishes the existing setting, which is used to measure project-specific transportation effects.
- **Existing Plus Project Conditions –** Adds changes to travel demand resulting from buildout of the proposed project to existing conditions.
- **Cumulative No Project Conditions –** Represents cumulative travel demand based on reasonably foreseeable local and regional land use and transportation system changes. For the purposes of this study, the cumulative year is 2036. This scenario assumes the project site remains vacant.
- **Cumulative Plus Project Conditions –** Adds changes to travel demand resulting from buildout of the proposed project to Cumulative No Project conditions.

Evaluations are performed for each element of the transportation system for each of these scenarios.

2. Analysis Methodology

This section describes the methods utilized to analyze roadway traffic operations.

Analysis Locations

Figure 1 displays the locations of the study intersections and roadway segments, which were selected in consultation with City of Davis staff and based on the project's expected travel characteristics (i.e., project location and amount of project trips) as well as facilities susceptible to being affected by the project. This analysis includes the following study locations:

Study Intersections

1. East Covell Boulevard/Pole Line Road
2. East Covell Boulevard/Birch Lane
3. East Covell Boulevard/Baywood Lane
4. East Covell Boulevard/Manzanita Lane
5. East Covell Boulevard/Wright Boulevard
6. East Covell Boulevard/Monarch Lane
7. East Covell Boulevard/Alhambra Drive
8. East Covell Boulevard/Harper Junior High School
9. Mace Boulevard/Alhambra Drive/South ARC Driveway
10. Second Street/Fermi Place/Target Driveway
11. Mace Boulevard/Second Street/County Road 32A
12. County Road 32A/Mace Park-and-Ride Driveway/West ARC Driveway
13. Mace Boulevard/I-80 WB Ramps
14. Mace Boulevard/Chiles Road
15. Chiles Road/I-80 EB Ramp
16. Mace Boulevard/Cowell Boulevard
17. Mace Boulevard/El Macero Drive
18. County Road 32A/County Road 105
19. County Road 32A/I-80 WB Ramps
20. County Road 32B/Chiles Road/I-80 EB Ramps
21. Mace Boulevard/Central ARC Driveway
22. Mace Boulevard/County Road 30B/North ARC Driveway
23. County Road 32A/East ARC Driveway

Study Roadway Segments

1. East Covell Boulevard: west of Pole Line Road
2. East Covell Boulevard: east of Pole Line Road
3. Pole Line Road: north of East Covell Boulevard
4. Pole Line Road: south of East Covell Boulevard
5. East Covell Boulevard: west of Alhambra Drive
6. East Covell Boulevard: east of Harper Junior High School
7. Alhambra Drive: south of East Covell Boulevard
8. Alhambra Drive: west of Mace Boulevard
9. Second Street: west of the Fermi Place
10. County Road 32A: east of project site
11. Chiles Road: west of I-80 EB Off-Ramp
12. Chiles Road: east of Mace Boulevard
13. Cowell Boulevard: west of Mace Boulevard
14. Mace Boulevard: south of El Macero Drive

Note that the Certified Final EIR transportation study considered the transportation system effects of not just the MRIC project, but also the proposed Davis Innovation Center and Nishi Gateway projects, for which the combined transportation system effects were expected to cover a larger geographic area and a greater number of local and regional roadway facilities. Because this analysis is being prepared for the ARC project alone, the study area has been revised to focus on roadway facilities susceptible to being impacted by the ARC Project, particularly along the Mace Boulevard and East Covell Boulevard corridors. This results in fewer study intersections and roadway segments analyzed in this analysis when compared to those analyzed in the Certified Final EIR.

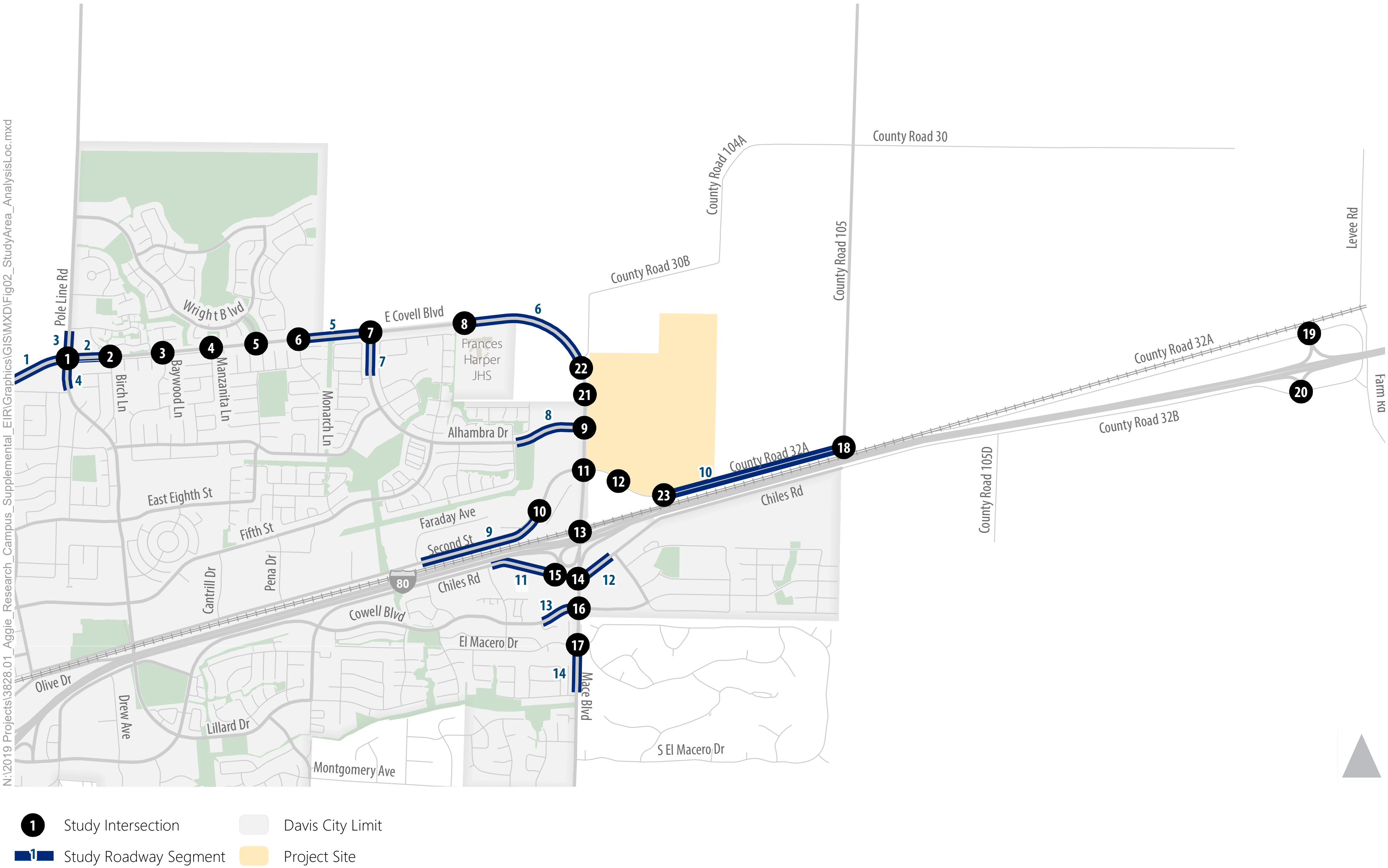

Figure 1

Study Area and Analysis Locations

Roadway System Operations

This study analyzes roadway operating conditions using intersection level of service (LOS) as a primary measure of operational performance. Motorized vehicle LOS is a qualitative measure of traffic flow from the perspective of motorists and is an indication of the comfort and convenience associated with driving. Typical factors that affect motorized vehicle LOS include speed, travel time, traffic interruptions, and freedom to maneuver. Empirical LOS criteria and methods of calculation have been documented in the *Highway Capacity Manual, 6th Edition* (HCM) published by the Transportation Research Board of the National Academies of Science (Transportation Research Board, 2016). The HCM defines six levels of service ranging from LOS A (representing free-flow vehicular traffic conditions with little to no congestion) to LOS F (oversaturated conditions where traffic demand exceeds capacity resulting in long queues and delays). The LOS definitions and calculations contained in the HCM are the prevailing measurement standard used throughout the United States and are used in this study. Motorized vehicle LOS definitions for signalized and unsignalized intersection are discussed below.

Study Intersections

The LOS at signalized intersections is based on the average control delay (i.e., delay resulting from initial deceleration, queue move-up time, time stopped on an intersection approach, and final acceleration) experienced per vehicle traveling through the intersection. **Table 1** summarizes the relationship between delay and LOS for signalized intersections.

Table 1: Signalized Intersection LOS Criteria

Level of Service	Description	Average Control Delay[1]
A	Volume-to-capacity ratio is low and either progression is exceptionally favorable or cycle length is very short.	≤ 10
B	Volume-to-capacity ratio is low and either progression is highly favorable or the cycle length is short. More vehicles stop than with LOS A.	>10 to 20
C	Progression is favorable or the cycle length is moderate. Individual cycle failures (i.e., one or more queued vehicles are not able to depart as a result of insufficient capacity during the cycle) may begin to appear at this level. The number of vehicles stopping is significant, although many vehicles still pass through the intersection without stopping.	>20 to 35
D	Volume-to-capacity ratio is high and either progression is ineffective or the cycle length is long. Many vehicles stop and individual cycle failures are noticeable.	>35 to 55
E	Volume-to-capacity ratio is high, progression is unfavorable, and the cycle length is long. Individual cycle failures are frequent.	>55 to 80
F	Volume-to-capacity ratio is very high, progression is very poor, and the cycle length is long. Most cycles fail to clear the queue.	>80

Note: [1] Average control delay presented in seconds per vehicle. Delay values are rounded to the nearest second and evaluated for LOS based on the above thresholds (i.e., 10 seconds per vehicle = LOS A).
Source: *Highway Capacity Manual, 6th Edition,* Transportation Research Board, 2016.

Similar to signalized intersections, the HCM 6th Edition methodology for stop-controlled intersections reports the LOS based on the control delay experienced by motorists traveling through the intersection. As shown in **Table 2**, the delay ranges for stop-controlled intersections are lower than for signalized intersections. The HCM anticipates that motorists expect signalized intersections to carry higher traffic volume that results in greater delay than a stop-controlled intersection. Stop controls are associated with more uncertainty as delays are less predictable, which can reduce users' delay tolerance.

Table 2: Stop-Controlled Intersection LOS Criteria

Level of Service	Average Control Delay[1]
A	≤ 10
B	>10 to 15
C	>15 to 25
D	>25 to 35
E	>35 to 50
F	>50

Note: [1] Average control delay presented in seconds per vehicle. Delay values are rounded to the nearest second and evaluated for LOS based on the above thresholds (i.e., 10 seconds per vehicle = LOS A).
Source: *Highway Capacity Manual, 6th Edition,* Transportation Research Board, 2016.

As described in Chapter 21 of the HCM 6th Edition, the LOS for all-way stop controlled intersections is based on the average control delay for the entire intersection. For side-street stop-controlled intersections, the LOS is determined separately for each minor-street movement (or shared movement) and may also be basis on major-street left-turn movements, per Chapter 20 of the HCM 6th Edition. However, in previous City of Davis traffic studies, the LOS for side-street stop-controlled intersections was based on the average control delay for the intersection as a whole.

To be consistent with both the HCM 6th Edition and recent City of Davis studies, this analysis documents the LOS for side-street stop-controlled intersections in two forms:

- Intersection LOS: based on the weighted average of the control delay experienced by each movement of the intersection. Note that this is not a recognized LOS metric for side-street stop-controlled intersections per the HCM 6th Edition. However, the City of Davis has previously expressed side-street stop-controlled intersection delay using this measure.
- Worst-case LOS: based on the movement (or shared movement) with the greatest control delay at the intersection, which may consist of minor-street stop-controlled movements or major street left-turns.

Note that the term LOS only applies to intersection delay as measured per the HCM 6th Edition. Other forms of assessing intersection delay are acceptable but they should not be associated with a LOS term that was only intended for the specific HCM measurement.

Use of Micro-Simulation Traffic Operations Analysis

This study analyzes 11 of the 23 existing study intersections using Trafficware's Synchro 10 software. Synchro 10 calculates the control delay consistent with the HCM methodology. These intersections are situated along Covell Boulevard between Pole Line Road and the Mace Boulevard curve, as well as along County Roads 32A and 32B. To account for the effects of turn-pocket overflows, vehicle queuing interactions between adjacent intersections, and interactions between vehicles, bicyclists, and pedestrians, micro-simulation analysis was performed for the remaining 12 study intersections along Mace Boulevard and at/near the I-80/Mace Boulevard interchange were analyzed using the SimTraffic micro-simulation software. It captures the nature of driver behavior and models the interaction between vehicles in a study network. SimTraffic better accounts for the effects of turn-pocket queue overflows, queue blocking, queue interactions between adjacent intersections, and pedestrian crossing interactions when compared to conventional, deterministic analysis methods, such as those outlined in the HCM 6th Edition and applied in Synchro 10. The SimTraffic model was calibrated and validated to existing conditions based on travel time data, peak hour volumes, and observed maximum queue lengths.

Because micro-simulation models rely on the random arrival of vehicles into the network, multiple runs are needed to provide a reasonable level of statistical accuracy and validity. The SimTraffic models were run up to twenty times (each using a different random seed number) and ten of those runs were selected and averaged to determine final model outputs. Selected runs were screened to exclude outliers that under- or over-emphasized delay compared to observed conditions.

Study Roadway Segments

The study roadway segments were evaluated based on the a.m. and p.m. peak hour traffic volumes. Roadway segment analysis is included for purposes of evaluating future year traffic operations. Intersections tend to govern peak hour traffic operations of the local roadway network since they represent the location where traffic movements conflict and capacity of the roadway segment is reduced based on the allocation of right-of-way by traffic control devices such as traffic signals. However, performing intersection analysis for future conditions beyond five to ten years can be speculative given the difficulty of accurately predicting inputs such as individual turning movement volumes and traffic signal operations. To gauge the adequacy of roadway capacity for future conditions, roadway segment analysis can be used instead. The specific methodology involves developing roadway segment volume thresholds correlated to peak hour LOS expectations based on the HCM 6^{th} Edition.

The HCM procedures consider a variety of capacity factors associated with the type of roadway and how intersections are controlled but does not require forecasting individual turning movement volumes. The technical calculations used to derive the volume thresholds for each roadway type and LOS value are shown in **Table 3**.

Table 3: Roadway Segment LOS Criteria

Functional Class	Lanes	LOS Volume Threshold[1]				
		A	B	C	D	E
Arterial	2	-	-	980	1,450	1,690
	4	-	-	2,110	2,730	3,310
Collector	2	-	-	560	930	1,190
Highway	2	-	-	450	970	2,130
Freeway	2	1,270	2,070	2,950	3,650	4,160
	2 + Auxiliary	1,670	3,040	3,990	4,720	5,460
	3	1,910	3,120	4,430	5,470	6,240
	3 + Auxiliary	2,220	4,030	5,270	6,220	7.180
	4	2,490	4,070	5,810	7,210	8,230
	4 + Auxiliary	2,800	5,120	6,700	7,930	9,180

Note: Volumes for Arterials, Collectors, and Highways represent the peak hour two-way segment total. Volumes for Freeways represent peak hour one-way segment totals and thresholds are applied separately for each direction of travel.
Source: *Highway Capacity Manual, 6th Edition,* Transportation Research Board, 2016; Fehr & Peers, 2020.

Travel Demand Forecasting

For the purposes of forecasting traffic volumes for the study intersections and roadway segments, the local UC Davis/City of Davis travel demand model was utilized. This model has an original base year of 2016 and forecast years of 2030 and 2036. The model was developed in close coordination with the City of Davis and UC Davis in order to incorporate planned land use and transportation system changes both within the City and its sphere of influence and on the UC Davis campus. The coordination effort included the following elements of model development:

- **TAZ system –** The traffic analysis zone (TAZ) development included review by City and UC Davis staff to ensure sufficient detail for both existing and new growth areas.
- **Land use inputs –** Inputs were initially obtained from the SACOG 2012 parcel database used in developing regional model inputs for the 2016 SACOG MTP/SCS. These inputs were reviewed for each TAZ with City and UC Davis staff to develop a complete inventory representing 2016 conditions, which is the model's base year. Similarly, land use forecasts for 2030 and 2036 conditions were developed in cooperation with City staff and UC Davis staff. Land use forecasts for 2030 and 2036 were based on future land use changes throughout the region projected in the 2016 SACOG MTP/SCS. The land use forecasts were refined based on input from City staff and UC Davis staff according to planned City of Davis General Plan growth, planned UC Davis 2018 Long

Range Development Plan (LRDP) growth, approved development projects, pipeline development projects, and other reasonably foreseeable land development activities.

- **Roadway network inputs –** The Local Model roadway network was developed from GIS data representing local, collector, arterial, and freeway functional classifications. Input data included the number of travel lanes and free-flow travel speeds based on the previous UC Davis/City of Davis Local Model developed for the 2003 LRDP update, plus new data from field observations and Google Maps imagery. Capacity inputs for each roadway classification were estimated from reference documents including the HCM 6th Edition and the *Travel Demand Forecasting: Parameters and Techniques, National Cooperative Highway Research Program, Report 716*, (Transportation Research Board, 2012). Changes to the roadway networks for future year scenarios were provided by City and UC Davis staff as noted above.
- **Vehicle trip rates –** The vehicle trip rates were derived from a variety of sources including the UC Davis Campus Travel Survey, the California Household Travel Survey, local residential trip generation estimates based on observed traffic counts, and the Trip Generation Manual, 10th Edition (Institute of Transportation Engineers, 2017). The rates were estimated for the following trip purposes.
  - Home-Based Work (HBW): trips between a residence and a workplace
  - Home-Based Shop (HBS): trips between a residence and a retail destination
  - Home-Based School (HBK): trips between a residence and a school (K-12)
  - Home-Based Other (HBO): trips between a residence and any other destination
  - Non-Home-Based (OO): trips that do not begin or end at a residence, such as traveling from a workplace to a restaurant, or from a retail store to a bank
  - College (COLL): trips to and from a Community College
  - UC Davis (UCD): trips to and from UC Davis
  - Highway Commercial (HC): trips to and from highway commercial destinations
- **Vehicle trip lengths and external trip patterns –** The vehicle trip lengths and the proportion of vehicle trips that occur exclusively within the model area versus those that have origins or destinations external to the model area were obtained from the UC Davis Campus Travel Survey, the California Household Travel Survey, and the American Community Survey. This information was extracted for each trip purpose above. Trips traveling through the model area without stopping such as those on I-80, were estimated from the regional SACOG SACSIM model developed for the 2016 SACOG MTP/SCS.

- **Trip assignment –** Trip assignment relies on conventional algorithms that assign trips between origin and destination zones based on travel times that reflect the influence of roadway capacity and speeds. A unique aspect of the assignment process is that UC Davis generated trips had to be associated with parking areas on and off-campus since that is where trips start and end. These parking areas were mapped in collaboration with UC Davis staff and iterative testing of the assignment results was used to refine the association.

The UC Davis/City of Davis travel demand model was applied to generate study intersection traffic volume forecast inputs for the cumulative analysis scenarios described above, as well as to inform the distribution and assignment of project trips under all "plus project" analysis scenarios. Separate model runs were performed for each scenario and the model-produced volume forecasts were extracted for final adjustments to account for differences between the model's base year volume estimates and observed traffic counts. The adjustment involves isolating the incremental change in volume between the base year model and the future year analysis scenario and adding that difference to the baseline (2019) traffic counts. This adjustment process helps to minimize potential errors in the model's base year estimates and is based on the methodology contained in *Analytical Travel Forecasting Approaches for Project-Level Planning and Design, National Cooperative Highway Research Program (NCHRP) Report 765* (Transportation Research Board, 2014).

Roadway Operations Performance Criteria

The following criteria are used to identify operational deficiencies based on the traffic operations analysis.

City of Davis

Per the City of Davis General Plan Transportation Element, LOS E is the minimum acceptable LOS for the majority of intersections within the City, and for each City-operated study intersection in the study area. LOS F is acceptable for other areas (e.g., Downtown Davis and the Richards Boulevard corridor) as established in the General Plan and contingent on approval by the City Council. For the purposes of this analysis, adverse effects to City of Davis roadway operations are defined when the addition of project traffic would cause any of the following:

- For signalized intersections, cause overall intersection operations to deteriorate from an acceptable level (LOS E or better) to an unacceptable level (LOS F);
- For signalized intersections, exacerbate unacceptable (LOS F) operations by increasing an intersection's average delay by five seconds or more;

- For unsignalized intersections, cause the worst-case movement (or average of all movements for all-way stop-controlled intersections) to worsen from an acceptable level (LOS E or better) to an unacceptable level (LOS F) and meet the peak hour signal warrant;
- For unsignalized intersections that operate unacceptably (LOS F) and meet the peak hour signal warrant without the project, worsen operations by increasing the overall intersection's volume served by more than one percent; or
- For unsignalized intersections that operate unacceptably but do not meet the peak hour signal warrant without the project, add sufficient volume to meet the warrant.
- For roadway segments, cause peak hour operations to deteriorate from an acceptable level (LOS E or better) to an unacceptable level (LOS F).
- For roadway segments that operate unacceptably, cause an increase in volume by more than 10 percent. The 10 percent allowance is based on the normal fluctuation in weekday traffic that occurs and the level of variability associated with traffic forecasts.

Yolo County

Per the Yolo County General Plan, LOS C is the minimum acceptable LOS in the unincorporated county, except as specified on designated roadways. LOS D is the minimum acceptable LOS for County Road 32A. For the purposes of this analysis, adverse effects to Yolo County roadway operations are defined when the addition of project traffic would cause any of the following:

- For intersections in the unincorporated county with the exceptions noted below, cause peak hour intersection operations to deteriorate from an acceptable level (LOS C) to an unacceptable level (LOS D or worse);
- For intersections on County Road 32A, cause peak hour intersection operations to deteriorate from an acceptable level (LOS D) to an unacceptable level (LOS E or worse);
- An intersection or roadway segment operates unacceptably under a no project scenario and the project adds 10 or more peak hour trips;
- The project adds 100 daily passenger vehicle trips (or Truck Trip Equivalencies) to an existing roadway that does not meet current County design standards (e.g., structural section, horizontal and vertical curves, lane and shoulder width, etc.); or
- The addition of project traffic causes an all-way stop-controlled or side street stop-controlled intersection to meet MUTCD signal warrant criteria.

Caltrans

Caltrans' Local Development – Intergovernmental Review Program (LD-IGR) provides guidance on the evaluation of traffic effects on State highway facilities. In light of Senate Bill 743 and related changes to the CEQA Guidelines, Caltrans has announced in its *Caltrans Draft VMT-Focused Transportation Impact Study Guide (Caltrans, February 2020)* that it will use VMT as the CEQA transportation impact metric for projects on the State highway system and has indicated it will rely on the Governor's Office of Planning and Research (OPR) *Technical Advisory on Evaluating Transportation Impacts in CEQA* when preparing LD-IGR comments on local agency land use projects.

To analyze potential LOS impacts to the State highway system, this study utilizes the performance expectations established in the Caltrans District 3 Interstate 80 Transportation Concept Report (TCR) (August 2017). According to the I-80 TCR, the horizon year LOS for I-80 within the study area (including ramp terminal intersections) is LOS F. Therefore, LOS F is considered the design operating goal on the I-80 mainline and at I-80 ramp terminal intersections. However, for the purposes of this traffic analysis, significant traffic impacts to I-80 are defined when the addition of proposed project traffic causes any of the following:

- For signalized intersections, causes operations to deteriorate to LOS F and increases an intersection's average delay by five seconds or more;
- For signalized intersections, exacerbate LOS F operations by increasing an intersection's average delay by five seconds or more;
- For unsignalized intersections, causes the worst-case movement (or average of all movements for all-way stop-controlled intersections) to deteriorate to LOS F and meet the California Manual on Uniform Traffic Control Devices (MUTCD) peak hour signal warrant;
- For unsignalized intersections that operate at LOS F and meet MUTCD's peak hour signal warrant without the project, exacerbate operations by increasing the overall intersection's volume by more than one percent;
- For freeway segments, causes operations to deteriorate to LOS F and increases peak hour traffic volume by more than five percent;
- For freeway segments, exacerbate LOS F operations by increasing peak hour traffic volume by more than five percent; or
- Causes off-ramp queues to spill onto freeway.

3. Existing Conditions

Intersection turning movement counts were conducted during the morning (7:00 a.m. to 9:00 a.m.) and evening (4:00 p.m. to 6:00 p.m.) peak periods on Thursday, May 30, 2019 and Thursday, October 16, 2019. Intersection counts included volumes for vehicles, bicyclists, and pedestrians. During the traffic counts, local schools and UC Davis were in regular session and weather conditions were dry and clear. Based on the traffic data collection, the a.m. peak hour within the study area occurred from 7:45 to 8:45 a.m., and the p.m. peak hour occurred from 5:00 to 6:00 p.m.. Peak hour traffic volumes derived from the intersection turning movement counts are illustrated in the Appendix.

Additionally, peak period field observations were conducted by Fehr & Peers staff during the peak period traffic counts. The field observations, including observed maximum queues, were utilized to calibrate the existing conditions traffic operations analysis described in the subsequent section.

Table 4 presents the a.m. and p.m. peak hour LOS for each study intersection under existing conditions.

During the a.m. peak hour, vehicle traffic within the study area generally progresses smoothly. Queues generally do not extend to the adjacent upstream intersection and clear within one cycle at signalized intersections.

During the p.m. peak hour, considerable delay and queuing occurs on local roadways within the vicinity of the Mace Boulevard interchange at I-80. Field observations, data collection, and analysis conducted by Fehr & Peers over the past year indicate that these conditions can be attributed to the following factors:

- Diverted local and regional traffic onto study area roadways due to extended periods of very low travel speeds on eastbound I-80 from the causeway, through Davis, and into Solano County. During congested conditions, low mainline travel speeds substantially increase travel times for motorists on eastbound I-80. Hence, diverting off of I-80 onto local roadways often provides a faster alternative to remaining on the freeway through Davis. Similarly, locally generated traffic utilizing eastbound I-80 can experience faster travel times by accessing I-80 as far east as possible (e.g., motorists departing Downtown Davis for Sacramento accessing I-80 at Mace Boulevard or CR 32A instead of Richards Boulevard). Moreover, the increased prevalence and use of navigation apps (e.g., Google Maps, WAZE, etc.) in recent years provides motorists with real-time and predictive travel time information that can influence route selection.
- Ramp metering at the eastbound I-80 on-ramps controls the amount of study area traffic that can enter the freeway from Mace Boulevard. The ramp meters are designed to improve operating conditions on eastbound I-80 by increasing or decreasing on-ramp flow rates according to

mainline traffic volumes. Therefore, when congested conditions occur on eastbound I-80, flow rates decrease for the Mace Boulevard on-ramps, causing additional delays and queueing on Mace Boulevard and connecting local roadways.

Based on field observations by Fehr & Peers staff and anecdotal information provided by City staff, these conditions are particularly prevalent on Wednesday, Thursday, and Friday afternoons and evenings.

On the day that p.m. peak period traffic counts were collected for this study (Thursday, October 16, 2019), field observations indicated that congested conditions were present on both eastbound I-80 and local roadways surrounding the Mace Boulevard interchange. Queue spillbacks were observed on southbound Mace Boulevard from the eastbound I-80 on-ramp to beyond Alhambra Drive and on northbound Mace Boulevard from the eastbound I-80 on-ramp to beyond San Marino Drive. Queue spillbacks were also observed on eastbound and westbound Chiles Road near the I-80 on-ramp. This congestion is reflected in the results in shown in Table 4.

4. Existing Plus Project Conditions

Project trips were assigned to the study intersections and driveways in accordance with the expected trip generation described in Chapter 5 of Volume 1, and the geographic distribution of project trips, which was determined based existing travel patterns, relative travel times between competing routes, and complementary land uses (i.e., likely residence locations for project employees).

Project Effects Within the Project Vicinity

Table 4 displays intersection LOS and delay under existing plus project conditions. Technical calculations are provided in the Appendix. This table indicates that the intersections along Mace Boulevard at Alhambra Boulevard and Second Street would degrade from LOS C or better under current conditions to LOS F with the project during the a.m. and p.m. peak hours. During the a.m. peak hour, vehicle queues on the I-80 EB off-ramp approach to Chiles Road would spill back onto the freeway mainline.

All project accesses along Mace Boulevard and County Road 32A would operate at LOS F during one or both peak hours. Initial micro-simulation model runs showed that motorists traveling eastbound on East Covell Boulevard toward southbound Mace Boulevard would experience considerable queuing due to this congestion along the project site. Accordingly, it is expected that some background trips as well as project trips would divert to Alhambra Boulevard (a two-lane collector street) to bypass this congestion. This traffic reassignment was incorporated into the Existing Plus Project analysis.

Table 5 displays the 95th percentile freeway off-ramp queue at the I-80/Mace Boulevard/Chiles Road and I-80/County Road 32A interchanges under Existing Plus Project conditions. Technical calculations are provided in the Appendix. This table indicates that the 95th percentile vehicle queues at the Mace Boulevard and Chiles Road off-ramps would spill back onto the freeway mainline during the a.m. peak hour.

Table 4: Peak Hour Intersection Operations – Existing Plus Project Conditions

Intersection	Traffic Control	Jurisdiction	Existing Conditions				Existing Plus Project Conditions			
			A.M. Peak Hour		P.M. Peak Hour		A.M. Peak Hour		P.M. Peak Hour	
			Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1. E. Covell Blvd./ Pole Line Road	Signal	City of Davis	24	C	32	C	30	C	39	D
2. E. Covell Blvd./ Birch Lane	TWSC	City of Davis	12	B	14	B	14	B	14	B
3. E. Covell Blvd./ Baywood Lane	TWSC	City of Davis	2 (34)	A (D)	1 (44)	A (E)	2 (89)	A (F)	2 (102)	A (F)
4. E. Covell Blvd./ Manzanita Lane	TWSC	City of Davis	1 (26)	A (D)	1 (35)	A (D)	2 (58)	A (F)	2 (74)	A (F)
5. E. Covell Blvd./ Wright Blvd.	Signal	City of Davis	9	A	8	A	9	A	9	A
6. E. Covell Blvd./ Monarch Lane	TWSC	City of Davis	2 (23)	A (C)	1 (34)	A (D)	3 (61)	A (F)	2 (83)	A (F)
7. E. Covell Blvd./ Alhambra Drive	Signal	City of Davis	10	A	9	A	8	A	14	B
8. E. Covell Blvd./ Harper Jr. H.S.	Signal	City of Davis	11	A	5	A	45	D	14	B
9. Mace Blvd./ Alhambra Dr./ South ARC Driveway	Signal	City of Davis	17	B	21	C	**159**	**F**	**166**	**F**
10. Second Street/ Fermi Place/ Target Driveway	Signal	City of Davis	7	A	15	B	7	A	41	D
11. Mace Blvd./ Second Street/ CR 32A	Signal	City of Davis	34	C	27	C	**155**	**F**	**145**	**F**
12. CR 32A/Mace Park-and-Ride Driveway/West ARC Driveway	TWSC	Yolo County/City of Davis[2]	1 (4)	A (A)	2 (6)	A (A)	6 (18)	A (C)	**107 (605)**	**F (F)**
13. Mace Blvd./I-80 WB Ramps	Signal	Caltrans	20	C	48	D	78	E	70	E

14. Mace Blvd./ Chiles Road	Signal	City of Davis	33	C	69	E	59	E	77	E
15. Chiles Road/ I-80 EB Ramp	Signal	Caltrans	11	B	41	D	**383**	**F**	**131**	**F**
16. Mace Blvd./ Cowell Blvd.	Signal	City of Davis	21	C	68	E	22	C	65	E
17. Mace Blvd./ El Macero Drive	AWSC	City of Davis	8	A	28	D	8	A	34	D
18. CR 32A/CR 105	TWSC	Yolo County	5 (9)	A (A)	7 (10)	A (B)	8 (11)	A (B)	22 (28)	C (D)
19. CR 32A/ I-80 WB Ramps	TWSC	Caltrans	6 (10)	A (A)	4 (12)	A (B)	9 (14)	A (B)	**12 (59)**	**B (F)**
20. CR 32B/ Chiles Rd./ I-80 EB Ramps[1]	TWSC	Caltrans	4 (12)	A (B)	5 (9)	A (A)	3 (12)	A (B)	**4 (14)**	**A (B)**
21. Mace Blvd./ Central ARC Driveway	TWSC	City of Davis	-	-	-	-	59 (101)	E (F)	**32 (69)**	**D (F)**
22. Mace Blvd./ CR 30B/North ARC Driveway	TWSC	City of Davis	-	-	-	-	**143 (230)**	**F (F)**	**55 (325)**	**F (F)**
23. CR 32A/East ARC Driveway	TWSC	Yolo County/City of Davis[2]	-	-	-	-	3 (11)	A (B)	**56 (177)**	**F (F)**

Notes: For signalized intersections, average intersection delay is reported in seconds per vehicle for all approaches. For two-way stop-controlled intersections, average intersection delay is reported in seconds per vehicle for all approaches with the delay and LOS for the worst-case movement reported in parentheses.
Shaded cells indicate locations with unacceptable peak hour LOS.
Shaded and bold cells indicate locations where the project would cause adverse effects to peak hour intersection operations in accordance with the performance criteria.
TWSC = Two-Way Stop Control. AWSC = All-Way Stop Control. "-" = Does not exist.
[1] P.M. peak hour LOS does not match observed conditions due to the freeway ramp meter and on-ramp vehicle demand (Synchro traffic operations analysis software cannot capture the operational effects of ramp metering). Field observations indicate that the eastbound left-turn and westbound right-turn operate at LOS F during the p.m. peak hour under existing conditions. The addition of the project would exacerbate these conditions.
[2] The segment of CR 32A along the ARC site southern frontage would be annexed into the City of Davis along with the project site. Thus, City of Davis performance criteria related to roadway performance would apply to study intersections #12 and #23 under Existing Plus Project conditions.
Source: Fehr & Peers, 2020.

Table 5: Freeway Off-Ramp Queuing – Existing Plus Project Conditions

Off-Ramp	Off-Ramp Distance[1]	95th Percentile Queue Length[2]			
		Existing Conditions		Existing Plus Project Conditions[3]	
		A.M. Peak Hour	P.M. Peak Hour	A.M. Peak Hour	P.M. Peak Hour
Mace Boulevard/I-80 WB Off-Ramp	1,200 feet	175 feet	175 feet	1,900 feet	700 feet
Chiles Road/I-80 EB Off-Ramp	1,100 feet	100 feet	100 feet	3,300 feet	225 feet
CR 32A/I-80 WB Off-Ramp	1,200 feet	25 feet	25 feet	75 feet	175 feet
Chiles Road/CR 32B/I-80 EB Off-Ramp	1,000 feet	25 feet	75 feet	25 feet	75 feet

Notes: [1] Measured from the intersection stop bar to the gore point of the freeway off-ramp. Does not include auxiliary lane on freeway mainline.
[2] Results at the Mace Boulevard/Chiles Road interchange are based on results from SimTraffic micro-simulation model. Results at the County Road 32A interchange are based on results from Synchro traffic operations analysis software. Queues are maximum per lane, rounded to the nearest 25 feet.
[3] Shaded cells represent conditions in which the queue would spill onto the freeway mainline.

Source: Fehr & Peers, 2020.

Potential Operational Enhancements

Through an iterative process using the SimTraffic micro-simulation model, the following physical improvements and signal timing changes were identified to enhance roadway operations in the study area under Existing Plus Project conditions (see **Figure 2**):

- Southbound Mace Boulevard: Extend the second eastbound/southbound lane from Harper Junior High School to Alhambra Drive. Add a third southbound lane from Second Street to connect with the dedicated right-turn lane onto the I-80 WB on-ramps.
- Northbound Mace Boulevard: Extend the third northbound lane from the I-80 WB off-ramps to connect with a new northbound "trap" right-turn lane at the Mace Boulevard/Second Street/County Road 32A intersection. Add a second northbound/westbound lane from Alhambra Drive to the Harper Junior High School signalized intersection.
- Mace Boulevard/Chiles Road and Chiles Road/I-80 EB Off-Ramp Intersections: This pair of tightly spaced intersections (situated 450 feet apart) requires signal coordination/timing adjustments and a lane reassignment on the eastbound Chiles Road approach to Mace Boulevard due to the heavy project-related off-ramp volume during the a.m. peak hour. Modifying the eastbound through lane to a shared left/through lane would require the east and west approaches to operate with split phasing. Signal coordination (particularly critical during the a.m. peak hour) would synchronize the green interval for the I-80 off-ramp movement with the eastbound approach on Chiles Road at Mace Boulevard to facilitate the flow of motorists off of I-80. The signal would be modified to operate the southbound left-turn and westbound right-turn during a shared overlap phase. This modification would also require the prohibition of southbound U-turns.
- I-80 Eastbound Loop On-Ramp: This on-ramp consists of a single entry lane from southbound Mace Boulevard, which widens to a metered general purpose lane and an unmetered HOV bypass lane. During the p.m. peak hour, the addition of project trips would cause queue spillback from the ramp meter onto the overpass, thereby causing queue spillback to extend further upstream. The recommended modification from an unmetered HOV bypass lane to a metered general purpose lane was found to provide more ramp metering storage, and reduced effects on the surface street. Similar modifications have been considered by Caltrans elsewhere in the Sacramento region.
- Mace Boulevard/Second Street/County Road 32A Intersection: Modify the northbound approach to add a "trap" right-turn lane. Modify the westbound approach to two left-turn lanes and a shared through-right lane. Modify westbound County Road 32A between this intersection and the adjacent County Road 32A/Mace park-and-ride/West ARC Driveway intersection to two through lanes.

- Mace Boulevard/Alhambra Drive/South ARC Driveway Intersection: Modify the westbound approach to two left-turn lanes and a shared through-right lane. Provide a southbound left-turn lane, two through lanes, and a right-turn lane.
- Mace Boulevard/County Road 30B/North ARC Driveway Intersection: Install a traffic signal. Provide a southbound left-turn lane and two through lanes. Provide a northbound through lane and shared through-right lane. Provide an eastbound left-turn lane.
- County Road 32A/Mace park-and-ride/West ARC Driveway Intersection: Install a traffic signal. Provide a southbound left-turn lane and a shared through-right lane.

Table 6 displays the resulting intersection delay and LOS under Existing Plus Project conditions with these operational enhancements in place. Technical calculations are provided in the Appendix. This table indicates that the total number of intersections operating with an average intersection LOS of LOS F during one or both peak hours would be decreased from seven to zero.

Note that while the improvements listed above provide benefits to peak hour roadway operations for vehicles, they could diminish the bicycle and pedestrian environment by increasing crossing distances and bicycle and pedestrian exposure times at intersections. Moreover, the additional roadway capacity resulting from these improvements could induce additional vehicle miles traveled (VMT) on study area roadways. Existing evidence indicates that Covell Boulevard, Mace Boulevard, and connecting roadways such as Second Street and Chiles Road are utilized as regional cut-through routes when I-80 experiences significant speed reductions and delays during p.m. peak periods. Therefore, improving operations and reducing delays along these local roadways could increase the attractiveness of these routes as alternatives to I-80 and induce additional regional cut-through activity on local roadways. Parallel local routes require longer trip distances than remaining on I-80, therefore, regional travel demand use of local routes would yield more VMT than use of I-80.

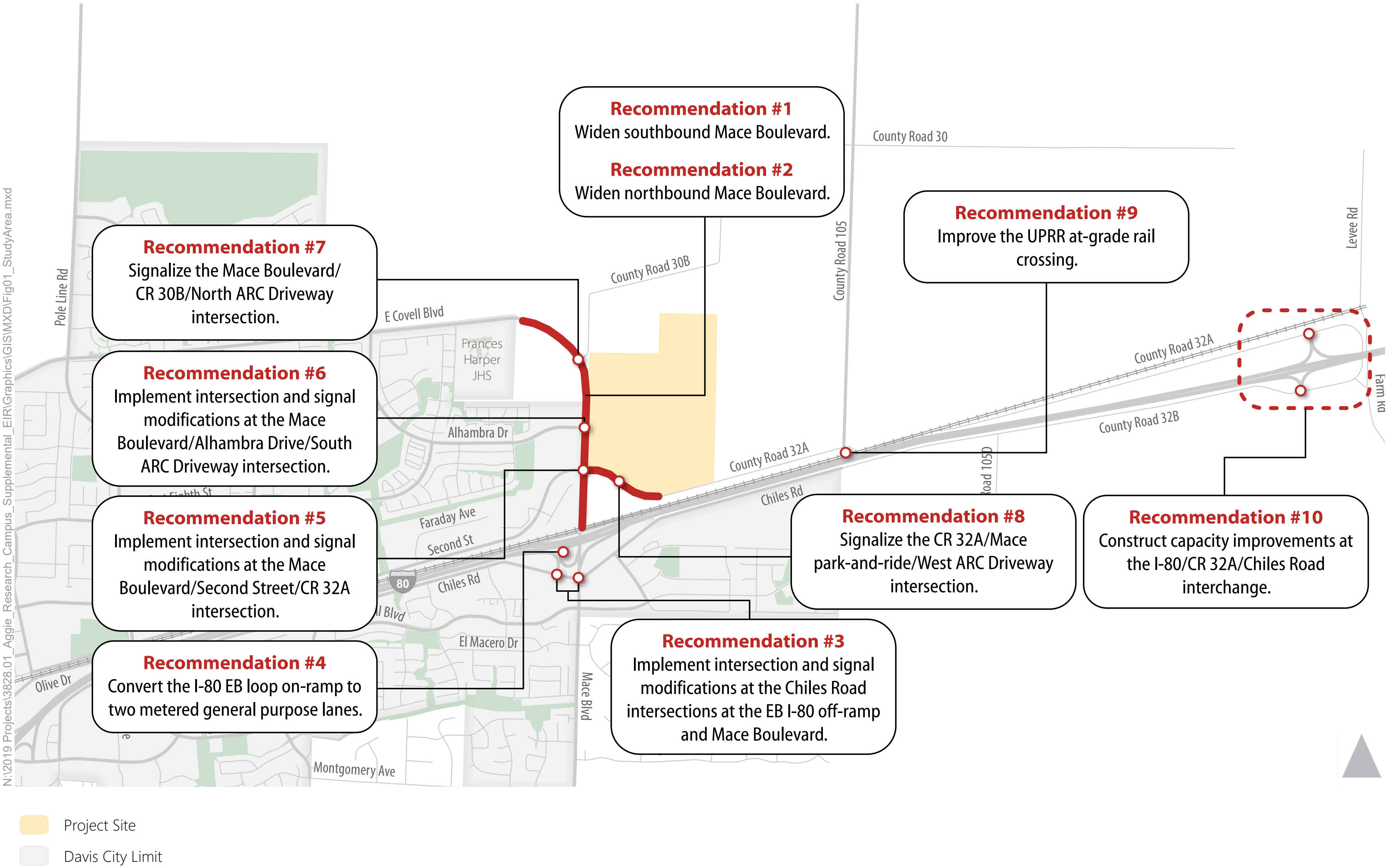

Figure 2

Proposed Operational Enhancements

Table 6: Peak Hour Intersection Operations – Existing Plus Project Conditions with Potential Operational Enhancements

Intersection	Traffic Control	Jurisdiction	Existing Conditions				Existing Plus Project Conditions				Existing Plus Project Conditions with Potential Operational Enhancements			
			A.M. Peak Hour		P.M. Peak Hour		A.M. Peak Hour		P.M. Peak Hour		A.M. Peak Hour		P.M. Peak Hour	
			Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
7. E. Covell Blvd./ Alhambra Drive	Signal	City of Davis	10	A	9	A	8	A	14	B	10	A	20	B
8. E. Covell Blvd./ Harper Jr. H.S.	Signal	City of Davis	11	A	5	A	45	D	14	B	17	B	17	B
9. Mace Blvd./ Alhambra Dr./ South ARC Driveway	Signal	City of Davis	17	B	21	C	**159**	**F**	**166**	**F**	26	C	49	D
10. Second Street/ Fermi Place/ Target Driveway	Signal	City of Davis	7	A	15	B	7	A	41	D	7	A	18	B
11. Mace Blvd./ Second Street/ CR 32A	Signal	City of Davis	34	C	27	C	**155**	**F**	**145**	**F**	60	E	67	E
12. CR 32A/Mace Park-and-Ride Driveway/West ARC Driveway	TWSC/ Signal	Yolo County/City of Davis[1]	1 (4)	A (A)	2 (6)	A (A)	6 (18)	A (C)	**107 (605)**	**F (F)**	17	B	21	C
13. Mace Blvd./I-80 WB Ramps	Signal	Caltrans	20	C	48	D	78	E	70	E	51	D	38	D

14. Mace Blvd./ Chiles Road	Signal	City of Davis	33	C	69	E	59	E	77	E	50	D	59	E
15. Chiles Road/ I-80 EB Ramp	Signal	Caltrans	11	B	41	D	**383**	**F**	**131**	**F**	23	C	71	E
16. Mace Blvd./ Cowell Blvd.	Signal	City of Davis	21	C	68	E	22	C	65	E	38	D	33	C
17. Mace Blvd./ El Macero Drive	AWSC	City of Davis	8	A	28	D	8	A	34	D	10	A	9	A
21. Mace Blvd./ Central ARC Driveway	TWSC	City of Davis	-	-	-	-	59 (101)	E (F)	**32 (69)**	**D (F)**	3 (4)	A (A)	3 (7)	A (A)
22. Mace Blvd./ CR 30B/North ARC Driveway	TWSC/ Signal	Yolo County	-	-	-	-	**143 (230)**	**F (F)**	**55 (325)**	**F (F)**	21	C	4	A
23. CR 32A/East ARC Driveway	TWSC	Yolo County/City of Davis[1]	-	-	-	-	3 (11)	A (B)	**56 (177)**	**F (F)**	4 (12)	A (B)	16 (42)	C (E)

Notes: For signalized intersections, average intersection delay is reported in seconds per vehicle for all approaches. For two-way stop-controlled intersections, average intersection delay is reported in seconds per vehicle for all approaches with the delay and LOS for the worst-case movement reported in parentheses.
Shaded cells indicate locations with unacceptable peak hour LOS.
Shaded and bold cells indicate locations where the project would cause adverse effects to peak hour intersection operations in accordance with the performance criteria.
TWSC = Two-Way Stop Control. AWSC = All-Way Stop Control. "-" = Does not exist.
[1] The segment of CR 32A along the ARC site southern frontage would be annexed into the City of Davis along with the project site. Thus, City of Davis performance criteria related to roadway performance would apply to study intersections #12 and #23 under Existing Plus Project conditions.

Source: Fehr & Peers, 2020.

Table 7 summarizes how the percentage of peak hour travel demand is able to be served within the portion of the study area covered by the micro-simulation model (i.e., along Mace Boulevard from east of Harper Junior High School southerly to El Macero Drive and including the connections to I-80, Chiles Road, and County Road 32A). When the percent demand served drops well below 100 percent, the demand for travel cannot be served within a single hour due to either upstream or downstream bottlenecks. This can lead to 'peak hour spreading', which is generally defined as more than one hour of congested, stop-and-go conditions. As shown in the table, the project causes the system-wide percent demand served to decrease to 82 percent during the a.m. peak hour and 85 percent during the p.m. peak hour. With the potential operational enhancements, these percentages increase to 99 percent during the a.m. peak hour and 97 percent during the p.m. peak hour, a substantial improvement. This table also shows the substantial benefit these improvements would offer at individual intersections.

Lastly, **Table 8** illustrates how the operational enhancements would benefit freeway off-ramp queuing at the I-80/Mace Boulevard interchange. As shown, vehicle queues would no longer spill back onto the I-80 mainline with implementation of these enhancements.

Table 7: Percent of Peak Hour Demand Served – Existing Plus Project Conditions with Potential Operational Enhancements

Location	Existing Conditions[1]				Existing Plus Project Conditions[1]				Existing Plus Project Conditions with Potential Operational Enhancements[1,2]			
	A.M. Peak Hour		P.M. Peak Hour		A.M. Peak Hour		P.M. Peak Hour		A.M. Peak Hour		P.M. Peak Hour	
	Hourly Demand	Vehicles Served (%)	Hourly Demand	Vehicles Served (%)	Hourly Demand	Vehicles Served (%)	Hourly Demand	Vehicles Served (%)	Hourly Demand	Vehicles Served (%)	Hourly Demand	Vehicles Served (%)
Overall System[3]	14,246	14,231 (100%)	15,332	14,844 (97%)	20,185	16,526 (82%)	20,538	17,555 (85%)	20,192	19,923 (99%)	20,551	20,014 (97%)
Mace Boulevard/ Alhambra Drive	1,767	1,750 (99%)	1,746	1,725 (99%)	2,959	2,383 (81%)	2,928	2,513 (86%)	2,959	2,925 (99%)	2,928	2,869 (98%)
Mace Boulevard/ Second Street	2,655	2,652 (100%)	2,917	2,899 (99%)	4,040	3,288 (81%)	4,207	3,534 (84%)	4,040	3,989 (99%)	4,207	4,081 (97%)
Mace Boulevard/ I-80 WB Ramps	3,172	3,169 (100%)	3,066	2,983 (97%)	4,409	3,669 (83%)	4,066	3,503 (86%)	4,409	4,322 (98%)	4,066	3,933 (97%)
Mace Boulevard/ Chiles Road	2,529	2,535 (100%)	2,746	2,558 (93%)	3,138	2,496 (80%)	3,078	2,681 (87%)	3,145	3,072 (98%)	3,091	3,011 (97%)

Notes: [1] Based on results of SimTraffic micro-simulation model.
[2] Refer to Figure 2 for an illustration of potential operational enhancements.
[3] Includes study intersections 9 through 17.

Source: Fehr & Peers, 2020.

Table 8: Freeway Off-Ramp Queuing – Existing Plus Project Conditions with Potential Operational Enhancements

Off-Ramp	Off-Ramp Distance[1]	95th Percentile Queue Length[2]					
		Existing Conditions		Existing Plus Project Conditions[3]		Existing Plus Project Conditions with Potential Operational Enhancements[3]	
		A.M. Peak Hour	P.M. Peak Hour	A.M. Peak Hour	P.M. Peak Hour	A.M. Peak Hour	P.M. Peak Hour
Mace Boulevard/ I-80 WB Off-Ramp	1,200 feet	175 feet	175 feet	1,900 feet	700 feet	825 feet	175 feet
Chiles Road/I-80 EB Off-Ramp	1,100 feet	100 feet	100 feet	3,300 feet	225 feet	250 feet	175 feet

Notes: [1] Measured from the intersection stop bar to the gore point of the freeway off-ramp. Does not include auxiliary lane on freeway mainline.
[2] Results at the Mace Boulevard/Chiles Road interchange are based on results from SimTraffic micro-simulation model.
[3] Shaded cells represent conditions in which the queue would spill onto the freeway mainline.

Source: Fehr & Peers, 2020.

Project Effects Beyond the Project Vicinity

The proposed project would add several hundred new peak hour vehicle trips between the project site and the I-80/County Road 32A interchange located to the east of the project site. These trips would be generated by project employees and residents traveling between the project site and Sacramento (and surrounding communities) via the I-80 causeway. These trips are expected to utilize the I-80/County Road 32A interchange instead of the I-80/Mace Boulevard interchange due to delays on Mace Boulevard within the interchange vicinity that would make use of the I-80/County Road 32A interchange more attractive from a travel time standpoint.

These additional project vehicle trips would primarily use County Road 32A to travel between the project site and the I-80/County Road 32A interchange. This would have the following adverse effects on multimodal operations:

- Adverse effects to the UPRR at-grade rail crossing: UPRR operates an at-grade rail crossing of County Road 32A immediately south of the County Road 32A/County Road 105 stop-controlled intersection. It is not uncommon for trespassing events (i.e., vehicles on the tracks) and vehicle-train collisions to occur at this location due to the current physical configuration of the crossing. Yolo County, together with Union Pacific and the City of Davis, is currently evaluating potential modifications to this at-grade crossing to reduce the potential for conflicts with rail operations. The addition of several hundred peak hour project vehicle trips could increase the potential for conflicts with rail operations at this location.
- Adverse effects to the I-80/County Road 32A interchange: The I-80/County Road 32A interchange experiences high volumes of vehicle trips during the p.m. peak hour, particularly on days when regional cut-through activity is prevalent. The combination of high travel demand and the ramp meter at the Chiles Road/I-80 EB on-ramp causes substantial peak hour delay and queuing on roadways within the interchange vicinity, particularly on eastbound and westbound Chiles Road near the I-80 EB ramps (near the Yolo Fruit Stand) and eastbound County Road 32A (due to queue spillback from the I-80 EB on-ramp). The addition of several hundred peak hour project trips would exacerbate these conditions.

Potential Operational Enhancements

The following operational improvements would lessen the adverse effects of the project described above:

- UPRR at-grade rail crossing improvements: The UPRR track/County Road 32A crossing should be converted from an at-grade crossing to a grade-separated crossing. A near-term improvement prior to provision of the grade separation would consist of relocating the County Road 32A/County Road 105 intersection about 200 feet to the north and installing double gates on the south approach to the grade crossing in order to improve safety and traffic functionality at the grade crossing.

- I-80/County Road 32A interchange improvements: Construct capacity improvements at the County Road 32 interchange and along County Road 32A to allow this interchange to serve more project traffic, including:
  - Reconstruction, widening, and potential relocation to the west, of the eastbound and westbound on- and off-ramps to provide more storage capacity, and to provide traffic signals or roundabouts at the ramp terminal intersections. Provision of an auxiliary lane between the relocated eastbound on-ramp merge and the causeway structure.
  - Re-configuration of the County Road 32A/County Road 105 intersection to provide uninterrupted County Road 32A flow with County Road 105 under stop control.

The improvements described above would require coordination with and approvals by Yolo County, UPRR, and Caltrans. The timing of each improvement relative to the ARC project should be addressed in the focused transportation impact studies prepared for each phase of development of the ARC project. The project should make a fair share funding contribution towards each improvement.

Project Effects on Freeways

Regional and corridor analysis by SACOG, MTC, and Caltrans have already evaluated I-80 within the vicinity of the project site. These analyses include the following documents:

- 2016 SACOG MTP/SCS (SACOG 2016). This document is the RTP for the six-county Sacramento region, which includes Yolo County.
- District System Management and Development Plan, Caltrans District 3 (Caltrans 2013).
- I-80 and Capital City Freeway Corridor System Management Plan (Caltrans 2009).
- Transportation Concept Report I-80, District 3 (Caltrans 2017).
- Transportation Concept Report SR 113, District 3 (Caltrans 2014).
- Interstate 80/United States 50 Davis to Downtown Sacramento Preliminary Investigation (Caltrans 2014).
- I-80/Richards Blvd Interchange Project Study Report – Project Development Support (PSR-PDS) (Caltrans 2017).
- Plan Bay Area 2040 (MTP and ABAG 2017). This document is the RTP/SCS for the nine-county Bay Area region, which includes Solano County.
- Caltrans District 4 Transportation System Development Plan (Caltrans 2011).
- I-80 East Corridor System Management Plan District 4 (Caltrans 2017).

Of the various studies, Caltrans analysis tends to be the most detailed with regards to roadway operations performance. According to the I-80/United States US 50 Davis to Downtown Sacramento Preliminary Investigation, District 3 (Caltrans 2014), much of the I-80 corridor in the study area has low travel speeds during the p.m. peak period while the a.m. peak period has a few isolated areas of low travel speeds (see graphic below). As shown in the graphic below, I-80 travelers experience slow speeds (i.e., LOS F conditions) for select westbound locations during the morning peak period and more severe and extended areas of slow speeds in the eastbound direction during the evening peak period. More recent observed conditions reveal that a.m. and p.m. traffic speeds have continued to degrade such that more segments of I-80 perform poorly over extended periods of time.

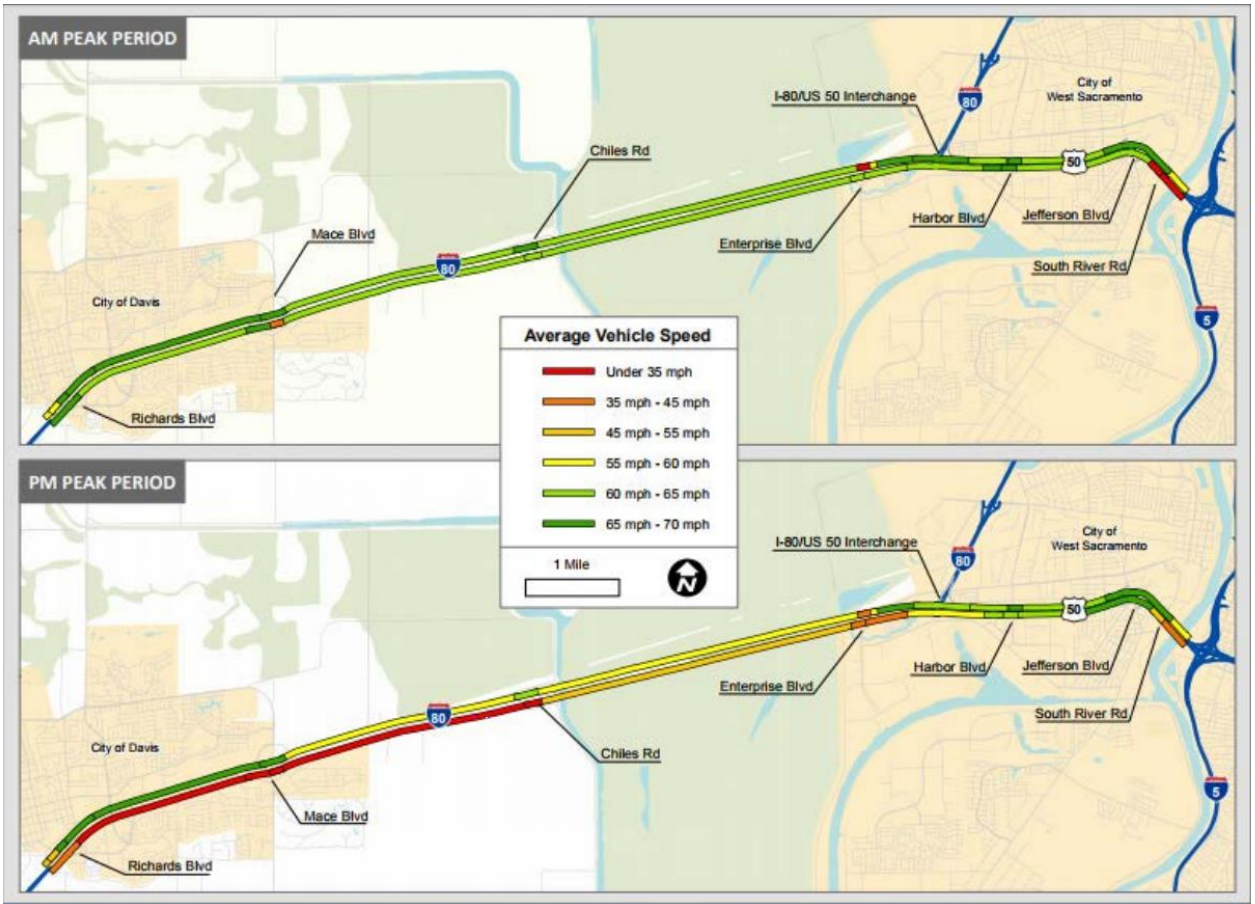

FIGURE 5: Existing Conditions - Segmental Travel Speed (from microsimulation model)

The Caltrans District 3 Interstate 80 Transportation Concept Report (Caltrans 2017) describes existing and anticipated future operating conditions on I-80 throughout the greater Sacramento area. As documented in the I-80 TCR, the segment of I-80 between Mace Boulevard and West Sacramento (Post Mile 2.68 to 9.55) operates at LOS F (see table image below).

SYSTEM CHARACTERISTICS, CONCEPT FACILITY, AND CORRIDOR PERFORMANCE

Figure 2

SYSTEM CHARACTERISTICS AND CONCEPT FACILITY															BASIC SYSTEM OPERATIONS						
				Existing Facility Base Year					Concept Facility Horizon Year						Level of Service (LOS)				Average Daily Traffic (ADT)		
				Base Year (BY)					Build Facility-Horizon Year (HY)					Ultimate Facility (HY)							
Segment	County	Post Miles (Begin/End)		Facility Type	General Purpose Lanes	Centerline Miles	Lane Miles	Designated Lane	Facility Type	General Purpose Lanes	Centerline Miles	Lane Miles	Designated Lane	General Purpose Lane/ Facility Type (project to achieve LOS - Ultimate concept)	Base Year (BY) 2014	No Build Horizon Year (HY) 2035	Build (HY)	Ultimate Concept	(BY) 2014	No Build (HY) 2035	Build (HY)
1	YOL	0.000	2.680	6	F	2.68	16.08	-	6	F	2.68	16.08	-	6F	E	F	F	D	122,000	145,000	150,000
2	YOL	2.68	9.55	6	F	6.870	41.22	-	6	F	6.870	41.22	-	6F	F	F	F	E	149,000	177,000	189,000
3	YOL	9.55	R11.718	6	F	2.168	11.72	-	6	F	2.170	11.72	-	6F	C	D	D	E	86,000	108,000	109,000

A review of similar information for I-80 in Solano County (e.g., (I-80 East Corridor System Management Plan District 4, [Caltrans 2017]) revealed evidence that slow freeway speeds (i.e., LOS F conditions) occur near the Yolo/Solano County line in the eastbound direction during the evening peak period.

The combination of SACOG and MTC region growth, including that associated with the proposed ARC project, would exacerbate the current I-80 performance problems related to slow speeds and unreliable travel times described above. In response, Caltrans, in cooperation with SACOG, developed the carpool lane project on I-80 between Davis and Downtown Sacramento, which is included in the SACOG MTP/SCS as shown below (SACOG 2016). This project would extend between Richards Boulevard in Davis to the I-5/US 50 interchange in Sacramento.

Project ID	Included in DPS	COUNTY	LEAD AGENC	TITLE	PROJECT DESCRIPTION	Completion Timing	TOTAL COST (2015 Dollars)	Status
CAL18812	Yes	Multiple Counties	Caltrans D3	I-80 / U.S. 50 Bus/Carpool Lanes in both directions	Bus/Carpool Lanes in both directions from Richards Blvd. (in Davis) to the I-5/US 50 Interchange. Inc. new bike bridge across the Yolo Causeway.	2021-2036	$300,000,000	Planned

In addition, as shown below, the SACOG MTP/SCS includes expansion of the Capitol Corridor service from two round trips to ten round trips between Sacramento and Roseville. This expansion would improve the viability of using transit for longer distance trips to/from Davis that would otherwise be using I-80.

Project ID	Included in DPS	COUNTY	LEAD AGENCY	TITLE	PROJECT DESCRIPTION	Completion Timing	TOTAL COST (2015 Dollars)	Status
CAL18320	Yes	Multiple Counties	Capitol Corridor JPA	Sacramento to Roseville Third Main Track - Phase 1	On the Union Pacific mainline, from near the Sacramento and Placer County boarder to the Roseville Station area in Placer County: Construct a layover facility, install various Union Pacific Railroad Yard track improvements, required signaling, and construct the most northern eight miles of third mainline track between Sacramento and Roseville (largely all in Placer County), which will allow up to two additional round trips (for a total of three round trips) between Sacramento and Roseville.	2021	$82,980,000	Programmed
VAR56199	Yes	Multiple Counties	Capitol Corridor JPA	Sacramento to Roseville Third Main Track - Phase 2	On the UP mainline, from Sacramento Valley Station approximately 9.8 miles toward the Placer County line: Construct third mainline track including all bridges and required signaling. Project improvements will permit service capacity increases for Capitol Corridor in Placer County, with up to seven additional round trips added to Phase 1-CAL18320 (for a total of ten round trips) between Sacramento to Roseville including track and station improvements.	2021	$167,820,000	Programmed

The Capitol Corridor projects are already programmed according to the SACOG MTP/SCS and the carpool lane project is projected to have sufficient funding for implementation by 2036. These projects are not expected to eliminate the LOS F conditions on I-80 in the study area but will reduce the severity of congestion and provide more reliable travel options for those opting to carpool or use Capitol Corridor service.

A review of similar information for I-80 in Solano County (e.g., (I-80 East Corridor System Management Plan District 4 [Caltrans 2017]) revealed evidence that slow freeway speeds (i.e., LOS F conditions) near the Yolo/Solano County line in the eastbound direction during the evening peak period will continue to occur under 2030 conditions.

Caltrans analysis of this location contained in the I-80 East Corridor System Management Plan District 4, Caltrans, June 2017, does not include specific improvements to address this problem location. The plan does include the planned expansion of I-80 between Dixon and Davis, as shown in the highlighted text in the graphic labeled "Solano County Table," which is a location that could experience an increase in traffic from the proposed ARC project.

SOLANO COUNTY TABLE

CO	RTE	Beg PM	End PM	Project Description/Location	Improv. Type	Project Cost (millions)*	T-2040 Status	RTP #	Facility Type	IRRS Status	Delivery Status	Compl. By (year)	Comments
SOL	080	25.30	28.40	Extend the EB HOV-2 lane from Alamo Dr. to I-505.	HWY	$19.2	na	na	F	HE	Planned	na	I-80 East CSMP
SOL	080	25.30	28.40	Extend the WB HOV-2 lane from Alamo Dr. to I-505.	HWY	$32.8	na	na	F	HE	Planned	na	I-80 East CSMP
SOL	080	26.50	27.00	Provide an EB auxiliary lane between Cliffside Dr. and Allison Dr. with a 2-lane off-ramp at Allison Dr.	HWY	$3.5	na	na	F	HE	Planned	na	I-80 East CSMP
SOL	080	28.40	28.40	I-80/I-505 I/C redesign to accommodate express lane and eliminate lane drop from WB I-80 at I505.	HWY	na	na	na	F	HE	Planned	na	Solano 2040 Additional
SOL	080	30.00	40.00	Provide a 4th EB general purpose lane extending from E. of Leisure Town Rd. to W. of Kidwell Rd. Potentially HOV/HOT lane.	HWY	$78.0	na	na	F	HE	Planned	na	I-80 East CSMP
SOL	080	30.00	40.00	Provide a 4th WB general purpose lane between W. of Kidwell Rd. and E. of Leisure Town Rd. Potentially HOV/HOT lane.	HWY	$132.3	na	na	F	HE	Planned	na	I-80 East CSMP
SOL	080	30.90	40.70	Widen I-80 from 6 to 8 lanes, from West of Meridian Rd. to West of Kidwell Road	HWY	$83.0	na	na	F	HE	Planned	na	
SOL	080	35.35	35.68	I-80/West A Street Interchange Improvements - Ramp and eventually bridge improvements to increase capacity.	HWY	$25.0	New Com	240248	F	HE		2022	MIS/ Corridor Study
SOL	080	39.74	39.98	I-80/Pedrick Road Interchange Improvements - Ramp and eventually bridge improvements to increase capacity. Roadway provides access to northeast area business park of Dixon	HWY	$25.0	New Com	240178	F	HE	Planned	2022	
SOL	080	R11.40	19.17	Install ITS gap between Red Top Road and Air Base Parkway. This will consist of CCTV cameras, Highway Advisory Radio and communications infrastructure	HWY	$6.0	na	na	F	HE	Planned	na	I-80 East CSMP
SOL	080	R11.98	12.85	Provide WB braided ramp configurations as necessary between SR-12 West and I-680 to improve weave and merge maneuvers	HWY	$4.2	na	na	F	HE	Planned	na	I-80 East CSMP
SOL	080	R25.30	R28.34	Extend ITS in EB direction between Alamo Drive and I-505	HWY	$2.3	na	na	F	HE	Planned	na	I-80 East CSMP
SOL	080	R25.30	R28.34	Extend ITS in the WB direction between I-505 and Alamo Drive	HWY	$2.0	na	na	F	HE	Planned	na	I-80 East CSMP

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Despite this information, MTC did not include any capacity expansion projects for the I-80 corridor in eastern Solano County as part of Plan Bay Area 2040. As such, regional growth (including the ARC Project) would likely exacerbate the congested conditions previously identified by Caltrans.

Additional employee and residential growth with the ARC Project would generate new peak period vehicle trips that would contribute to existing and future LOS F conditions on the I-80 mainline. For example, approximately one-third of peak hours trips generated by the ARC Project are estimated to travel to/from the Sacramento vicinity on I-80 on the Yolo Causeway (east of Davis), equal to approximately 820 and 870 additional vehicle trips during the a.m. and p.m. peak hours, respectively, under Existing Plus Project conditions. According to the I-80 TCR, this segment of I-80 served 12,200 peak hour trips during the base year (2014). Therefore, the project would increase I-80 mainline volumes on the Yolo Causeway by more than five percent.

Potential Operational Enhancements

The following actions would lessen anticipated project-related effects on I-80 mainline operations:

- At the time of the issuance of the first certificate of occupancy and as a component of the ARC TDM program, the Master Owners' Association (MOA) for the Project should establish the baseline peak hour I-80 mainline vehicle trips by which to determine the project's change to peak hour I-80 vehicle trips. Baseline a.m. and p.m. peak hour vehicle trips on I-80 shall be calculated on the following segments:
    1. Between Pedrick Road and Kidwell Road
    2. Between Richards Boulevard and Mace Boulevard
    3. East of Chiles Road (i.e., the Yolo Causeway)

  During the annual TDM reporting, the MOA should determine the number of a.m. and p.m. peak hour project vehicle trips that utilize I-80 on the segments listed above. In instances where these figures exceed baseline levels by five percent or more, the MOA should institute TDM strategies to reduce project-related peak hour vehicle trips on I-80. The implementation of TDM strategies should reduce peak hour project vehicle trips on I-80 to an amount less than five percent of baseline levels, to the extent feasible.

  TDM strategies that would reduce peak hour vehicle trips on I-80 include strategies to reduce commute and business vehicle trips to and from ARC using I-80. If these TDM strategies are not sufficient to reduce peak hour trips to baseline levels, additional TDM measures or adjustments to existing measures should be implemented, as needed to reduce peak hour trips to an amount less than five percent of baseline levels.
- The MOA for the Project should contribute a proportional share to the local contribution portion of freeway improvement projects to construct carpool lanes on I-80 between Richards Boulevard and West Sacramento.

5. Cumulative Plus Project Conditions

The cumulative analysis assumes the same roadway system and intersection improvements as is currently present. This is because the City's Capital Improvement Program (CIP) does not include any specific improvements within the study area. Additionally, there are no plans to upgrade the I-80/Mace Boulevard interchange. A high-occupancy-vehicle (HOV) or carpool lane is planned to be added on the adjacent segment of I-80, which has been considered in the traffic forecasts. Consistent with standard practice, traffic signal timings were optimized due to changes in travel demand between current and cumulative conditions.

Table 9 displays intersection LOS and delay under cumulative conditions, without and with the project. Note that the analysis is focused only on the study intersections along the project frontage and near the I-80/Mace Boulevard interchange. Technical calculations are provided in the Appendix. This table indicates that many of the study intersections would operate at LOS F without the project. The addition of the project would cause LOS F conditions or worsen already projected LOS F conditions by five seconds or more at 11 study intersections.

Table 10 displays the 95th percentile freeway off-ramp queue at the I-80/Mace Boulevard interchange off-ramps under cumulative conditions, without and with the project. This table indicates that vehicle queues would spill back out of both off-ramps onto I-80 under cumulative no project conditions during the a.m. peak hour. The project would exacerbate these queue spillbacks during the a.m. peak hour and also cause the queue to spill back to the freeway during the p.m. peak hour.

Table 11 displays roadway segment LOS under cumulative conditions, without and with the project. All study roadway segments would operate acceptably under both Cumulative No Project and Cumulative Plus Project conditions except for Pole Line Road north of Covell Boulevard, which would operate at LOS F during the p.m. peak hour under both Cumulative No Project and Cumulative Plus Project conditions. The project would not cause an increase in p.m. peak hour volume by more than 10 percent, therefore, in accordance with the roadway segment performance thresholds, the project would not have a cumulatively considerable effect on this unacceptable condition.

Table 9: Peak Hour Intersection Operations – Cumulative Plus Project Conditions

Intersection	Traffic Control	Jurisdiction	Cumulative Conditions				Cumulative Plus Project Conditions			
			A.M. Peak Hour		P.M. Peak Hour		A.M. Peak Hour		P.M. Peak Hour	
			Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
9. Mace Blvd./ Alhambra Dr./ South ARC Driveway	Signal	City of Davis	100	F	242	F	**191**	**F**	**301**	**F**
10. Second Street/ Fermi Place/ Target Driveway	Signal	City of Davis	16	B	118	F	17	B	102	F
11. Mace Blvd./ Second Street/ CR 32A	Signal	City of Davis	110	F	115	F	**133**	**F**	**204**	**F**
12. CR 32A/Mace Park-and-Ride Driveway/West ARC Driveway	TWSC	Yolo County/City of Davis[1]	1 (4)	A (A)	2 (6)	A (A)	**19 (40)**	**A (E)**	**133 (674)**	**F (F)**
13. Mace Blvd./I-80 WB Ramps	Signal	Caltrans	168	F	100	F	145	F	**137**	**F**
14. Mace Blvd./ Chiles Road	Signal	City of Davis	97	F	146	F	**122**	**F**	125	F
15. Chiles Road/ I-80 EB Ramp	Signal	Caltrans	271	F	219	F	**359**	**F**	**275**	**F**
16. Mace Blvd./ Cowell Blvd.	Signal	City of Davis	62	E	200	F	**89**	**F**	190	F
17. Mace Blvd./ El Macero Drive	AWSC	City of Davis	27	D	299	F	44	E	**314**	**F**
21. Mace Blvd./ Central ARC Driveway	TWSC	City of Davis	-	-	-	-	**62 (107)**	**F (F)**	**61 (200)**	**F (F)**
22. Mace Blvd./ CR 30B/North ARC Driveway	TWSC	Yolo County	-	-	-	-	**151 (249)**	**F (F)**	**144 (769)**	**F (F)**
23. CR 32A/East ARC Driveway	TWSC	Yolo County/City of Davis[1]	-	-	-	-	3 (10)	A (A)	**97 (285)**	**F (F)**

Notes: For signalized intersections, average intersection delay is reported in seconds per vehicle for all approaches. For two-way stop-controlled intersections, average intersection delay is reported in seconds per vehicle for all approaches with the delay and LOS for the worst-case movement reported in parentheses.

Results provided only for intersections analyzed using micro-simulation.
Shaded cells indicate locations with unacceptable peak hour LOS.
Shaded and bold cells indicate locations where the project would cause adverse effects to peak hour intersection operations in accordance with the performance criteria.
TWSC = Two-Way Stop Control. AWSC = All-Way Stop Control. "-" = Does not exist.
[1] The segment of CR 32A along the ARC site southern frontage would be annexed into the City of Davis along with the project site. Thus, City of Davis performance criteria related to roadway performance would apply to study intersections #12 and #23 under Cumulative Plus Project conditions.
Source: Fehr & Peers, 2020.

Table 10: Freeway Off-Ramp Queuing – Cumulative Plus Project Conditions

Off-Ramp	Off-Ramp Distance[1]	95th Percentile Queue Length[2]			
		Cumulative Conditions		Cumulative Plus Project Conditions[3]	
		A.M. Peak Hour	P.M. Peak Hour	A.M. Peak Hour	P.M. Peak Hour
Mace Boulevard/I-80 WB Off-Ramp	1,200 feet	2,600 feet[4]	450 feet	2,600 feet[4]	2,600 feet[4]
Chiles Road/I-80 EB Off-Ramp	1,100 feet	2,175 feet	1,050 feet	3,050 feet	2,375 feet

Notes: [1] Measured from the intersection stop bar to the gore point of the freeway off-ramp. Does not include auxiliary lane on freeway mainline.

[2] Results at the Mace Boulevard/Chiles Road interchange are based on results from SimTraffic micro-simulation model.

[3] Shaded cells represent conditions in which the queue would spill onto the freeway mainline.

[4] Results are identical for these scenarios and time periods because queue spills out of model network.

Source: Fehr & Peers, 2020.

Table 11: Peak Hour Roadway Segment Operations – Cumulative Conditions

Study Roadway Segment	Functional Classification (# of Lanes)	Jurisdiction	Cumulative Conditions				Cumulative Plus Project Conditions			
			A.M. Peak Hour		P.M. Peak Hour		A.M. Peak Hour		P.M. Peak Hour	
			Two-Way Volume	LOS	Two-Way Volume	LOS	Two-Way Volume	LOS	Two-way Volume	LOS
1. East Covell Boulevard: west of Pole Line Road	Arterial (4)	City of Davis	1,710	C	2,200	D	1,990	C	2,570	D
2. East Covell Boulevard: east of Pole Line Road	Arterial (4)	City of Davis	1,460	C	1,740	C	1,890	C	2,270	D
3. Pole Line Road: north of East Covell Boulevard	Arterial (2)	City of Davis	1,460	E	1,730	F	1,610	E	1,890	F
4. Pole Line Road: south of East Covell Boulevard	Arterial (2)	City of Davis	1,090	D	1,270	D	1,090	D	1,270	D
5. East Covell Boulevard: west of Alhambra Drive	Arterial (4)	City of Davis	1,490	C	1,710	C	1,950	C	2,290	D
6. East Covell Boulevard: east of Harper Junior High School	Arterial (4)	City of Davis	1,460	C	1,430	C	1,750	C	1,940	C
7. Alhambra Drive: south of East Covell Boulevard	Arterial (2)	City of Davis	350	C	350	C	540	C	420	C
8. Alhambra Drive: west of Mace Boulevard	Arterial (2)	City of Davis	830	C	910	C	1,150	D	1,180	D
9. Second Street: west of the Fermi Place	Arterial (2)	City of Davis	1,080	D	1,280	D	1,190	D	1,410	D
10. CR 32A: east of project site	Highway (2)	Yolo County	170	C	320	C	500	D	900	D

11. Chiles Road: west of I-80 EB Off-Ramp	Arterial (2)	City of Davis	1,120	D	1,000	D	1,230	D	1,250	D
12. Chiles Road: east of Mace Boulevard	Arterial (2)	City of Davis	1,070	D	1,390	D	1,100	D	1,440	D
13. Cowell Boulevard: west of Mace Boulevard	Arterial (2)	City of Davis	480	C	680	C	500	C	700	C
14. Mace Boulevard: south of El Macero Drive	Arterial (2)	City of Davis	490	C	590	C	500	C	610	C

Notes: Shaded cells indicate locations with unacceptable peak hour LOS.
Shaded and bold cells indicate locations where the project would cause adverse effects to peak hour roadway segment operations in accordance with the performance criteria.

Source: Fehr & Peers, 2020.

Potential Operational Enhancements

The potential operational enhancements illustrated on Figure 2 were tested under cumulative plus project conditions. **Table 12** displays the resulting intersection LOS and delay under cumulative plus project conditions with these operational enhancements in place. **Table 13** summarizes how the percentage of peak hour travel demand is able to be served within the portion of the study area covered by the micro-simulation model. **Table 14** summarizes illustrates how the operational enhancements would affect freeway off-ramp queues at the I-80/Mace Boulevard interchange.

The results in these tables reveal several important conclusions:

- Background traffic growth will require improvements within this portion of the study area regardless of whether the project is developed.
- The project would further worsen operations in this area, though the operational enhancements would provide some benefit. For instance, in the p.m. peak hour, the percent demand served under cumulative plus project conditions would increase from 65 percent to 83 percent with the enhancements. However, the operational enhancements are not sufficient, in and of themselves, to improve conditions to LOS E or better.

Table 12: Peak Hour Intersection Operations – Cumulative Plus Project Conditions with Potential Operational Enhancements

Intersection	Traffic Control	Jurisdiction	Cumulative Conditions				Cumulative Plus Project Conditions				Cumulative Plus Project Conditions with Potential Operational Enhancements			
			A.M. Peak Hour		P.M. Peak Hour		A.M. Peak Hour		P.M. Peak Hour		A.M. Peak Hour		P.M. Peak Hour	
			Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
9. Mace Blvd./ Alhambra Dr./ South ARC Driveway	Signal	City of Davis	100	F	242	F	**191**	**F**	**301**	**F**	**136**	**F**	**266**	**F**
10. Second Street/ Fermi Place/ Target Driveway	Signal	City of Davis	16	B	118	F	17	B	102	F	16	B	33	C
11. Mace Blvd./ Second Street/ CR 32A	Signal	City of Davis	110	F	115	F	**133**	**F**	**204**	**F**	97	F	117	F
12. CR 32A/Mace Park-and-Ride Driveway/West ARC Driveway	TWSC/ Signal	Yolo County/City of Davis[1]	1 (4)	A (A)	2 (6)	A (A)	**19 (40)**	**A (E)**	**133 (674)**	**F (F)**	12	B	96	F
13. Mace Blvd./I-80 WB Ramps	Signal	Caltrans	168	F	100	F	145	F	**137**	**F**	144	F	**114**	**F**
14. Mace Blvd./ Chiles Road	Signal	City of Davis	97	F	146	F	**122**	**F**	125	F	**133**	**F**	57	E
15. Chiles Road/ I-80 EB Ramp	Signal	Caltrans	271	F	219	F	**359**	**F**	**275**	**F**	**303**	**F**	157	F
16. Mace Blvd./ Cowell Blvd.	Signal	City of Davis	62	E	200	F	**89**	**F**	190	F	**224**	**F**	109	F

17. Mace Blvd./ El Macero Drive	AWSC	City of Davis	27	D	299	F	44	E	**314**	**F**	**334**	**F**	116	F
21. Mace Blvd./ Central ARC Driveway	TWSC	City of Davis	-	-	-	-	**62 (107)**	**F (F)**	**61 (200)**	**F (F)**	**58 (93)**	**F (F)**	**54 (167)**	**F (F)**
22. Mace Blvd./ CR 30B/North ARC Driveway	TWSC/ Signal	Yolo County	-	-	-	-	**151 (249)**	**F (F)**	**144 (769)**	**F (F)**	**136 (214)**	**F (F)**	**175 (764)**	**F (F)**
23. CR 32A/East ARC Driveway	TWSC	Yolo County/City of Davis[1]	-	-	-	-	3 (10)	A (A)	**97 (285)**	**F (F)**	3 (9)	A (A)	**67 (263)**	**F (F)**

Notes: For signalized intersections, average intersection delay is reported in seconds per vehicle for all approaches. For two-way stop-controlled intersections, average intersection delay is reported in seconds per vehicle for all approaches with the delay and LOS for the worst-case movement reported in parentheses.
Results provided only for intersections analyzed using micro-simulation.
Shaded cells indicate locations with unacceptable peak hour LOS.
Shaded and bold cells indicate locations where the project would cause adverse effects to peak hour intersection operations in accordance with the performance criteria.
TWSC = Two-Way Stop Control. AWSC = All-Way Stop Control. "-" = Does not exist.
[1] The segment of CR 32A along the ARC site southern frontage would be annexed into the City of Davis along with the project site. Thus, City of Davis performance criteria related to roadway performance would apply to study intersections #12 and #23 under Cumulative Plus Project conditions.

Source: Fehr & Peers, 2020.

Table 13: Percent of Peak Hour Demand Served – Cumulative Plus Project Conditions with Potential Operational Enhancements

Location	Cumulative Conditions[1]				Cumulative Plus Project Conditions[1]				Cumulative Plus Project Conditions with Potential Operational Enhancements[1,2]			
	A.M. Peak Hour		P.M. Peak Hour		A.M. Peak Hour		P.M. Peak Hour		A.M. Peak Hour		P.M. Peak Hour	
	Hourly Demand	Vehicles Served (%)	Hourly Demand	Vehicles Served (%)	Hourly Demand	Vehicles Served (%)	Hourly Demand	Vehicles Served (%)	Hourly Demand	Vehicles Served (%)	Hourly Demand	Vehicles Served (%)
Overall System[3]	18,350	15,964 (87%)	20,035	14,646 (73%)	24,289	17,051 (70%)	25,265	16,431 (65%)	24,289	17,823 (73%)	25,265	21,054 (83%)

Notes: [1] Based on results of SimTraffic micro-simulation model.
[2] Refer to Figure 2 for an illustration of potential operational enhancements.
[3] Includes study intersections 9 through 17.
Source: Fehr & Peers, 2020.

Table 14: Freeway Off-Ramp Queuing – Cumulative Plus Project Conditions with Potential Operational Enhancements

Off-Ramp	Off-Ramp Distance[1]	95th Percentile Queue Length[2]					
		Cumulative Conditions		Cumulative Plus Project Conditions[3]		Cumulative Plus Project Conditions with Potential Operational Enhancements[3]	
		A.M. Peak Hour	P.M. Peak Hour	A.M. Peak Hour	P.M. Peak Hour	A.M. Peak Hour	P.M. Peak Hour
Mace Boulevard/ I-80 WB Off-Ramp	1,200 feet	2,600 feet	450 feet	2,600 feet	2,600 feet	2,275 feet	2,600 feet
Chiles Road/I-80 EB Off-Ramp	1,100 feet	2,175 feet	1,050 feet	3,050 feet	2,375 feet	3,050 feet	500 feet

Notes: [1] Measured from the intersection stop bar to the gore point of the freeway off-ramp. Does not include auxiliary lane on freeway mainline.
[2] Results at the Mace Boulevard/Chiles Road interchange are based on results from SimTraffic micro-simulation model.
[3] Shaded cells represent conditions in which the queue would spill onto the freeway mainline.

Source: Fehr & Peers, 2020.

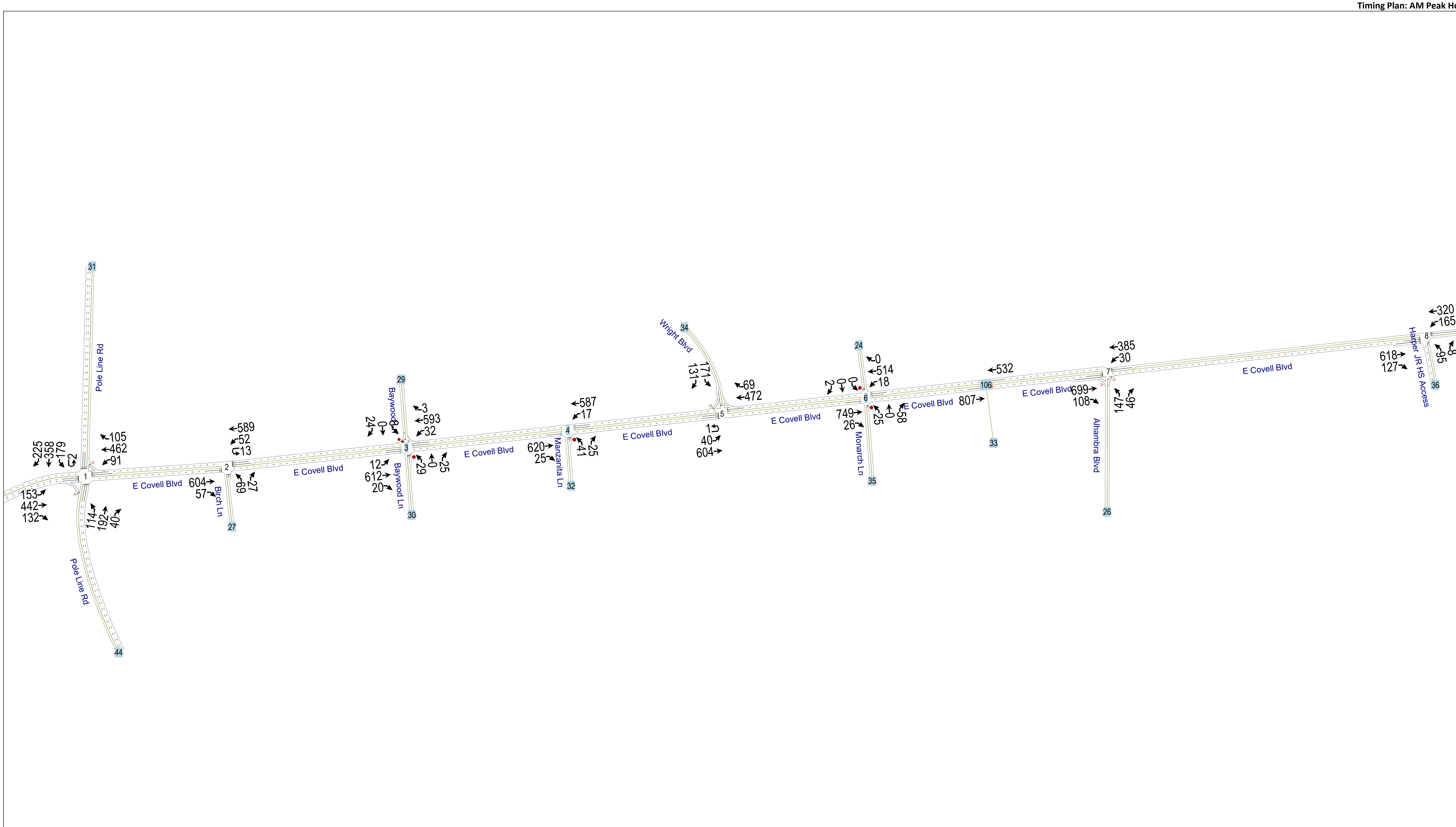
Aggie Research Campus

Technical Appendix

March 2020

RS19-3828.01

FEHR & PEERS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Monarch Ln
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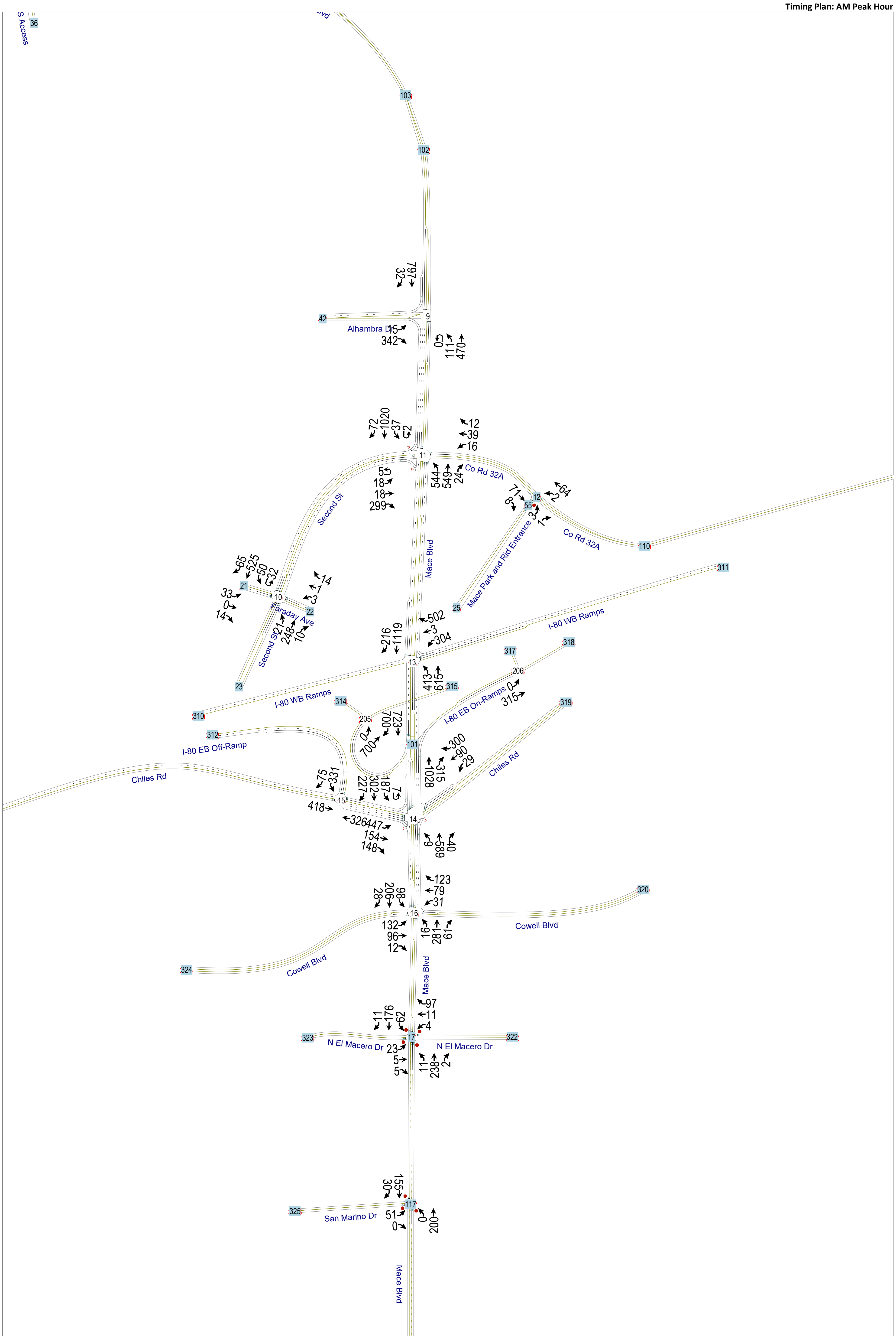
Harper JR HS Access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Mace Blvd
Mace Park and Rid Entrance
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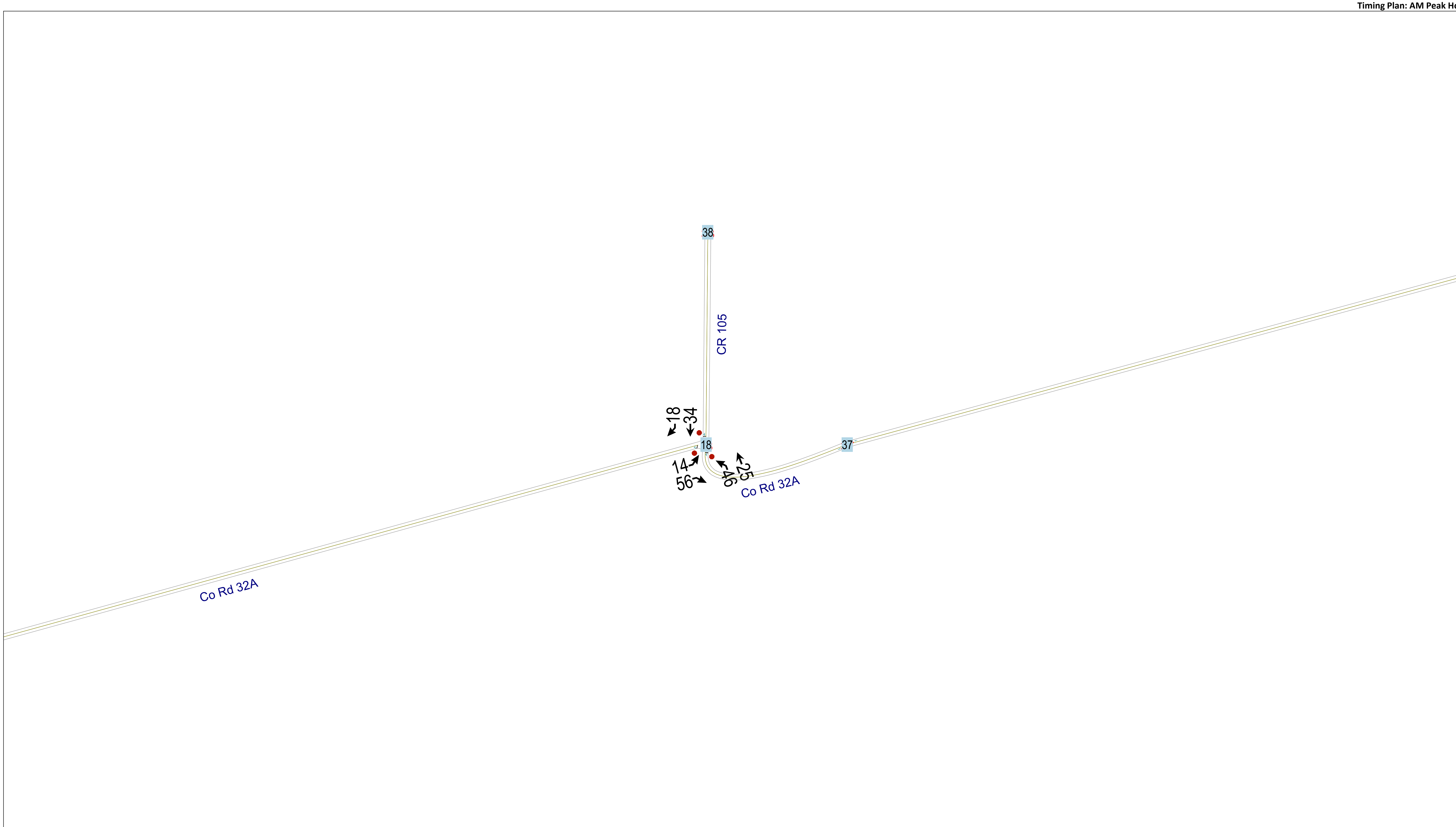
I-80 WB Ramps
I-80 EB On-Ramps
I-80 EB Off-Ramp
Chiles Rd
Cowell Blvd
N El Macero Dr
San Marino Dr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14
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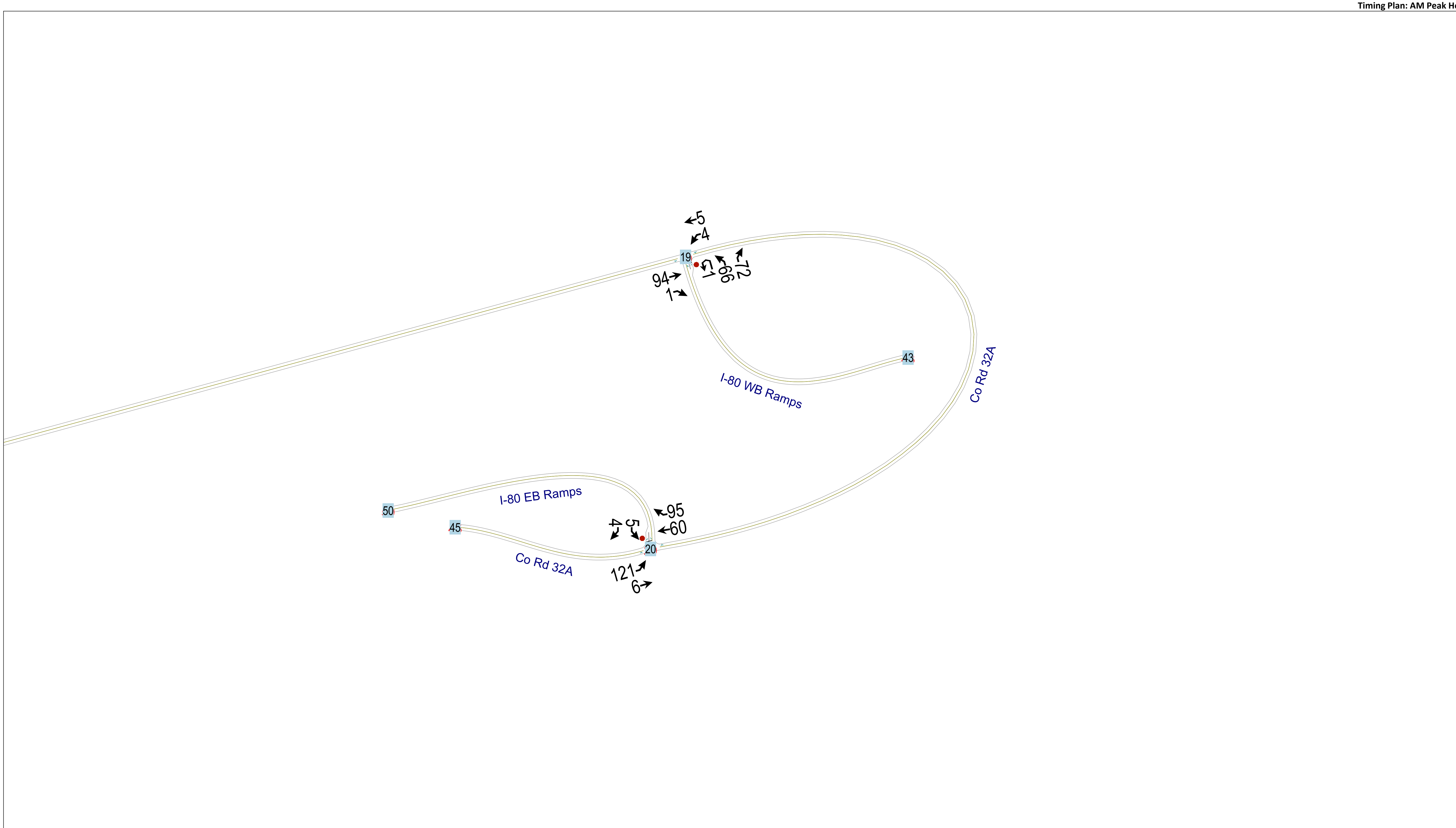
Co Rd 32A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5
60
20
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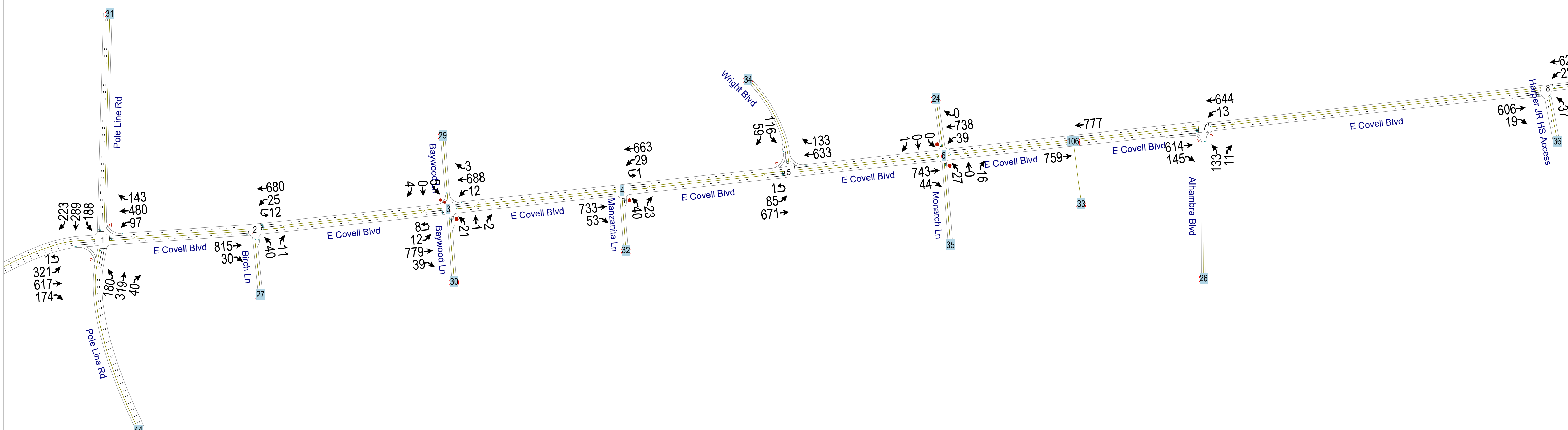
121
6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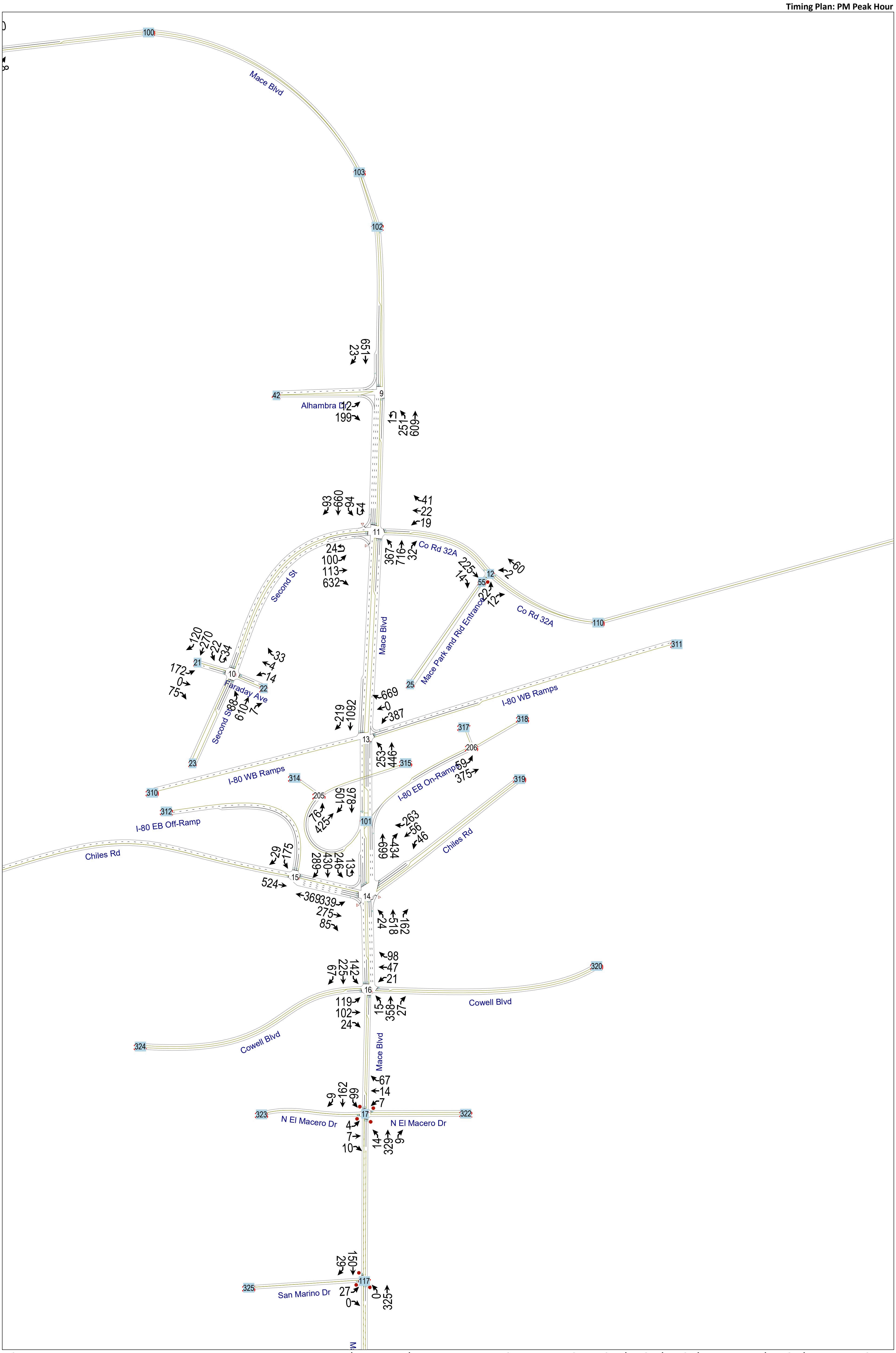
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Chiles Rd
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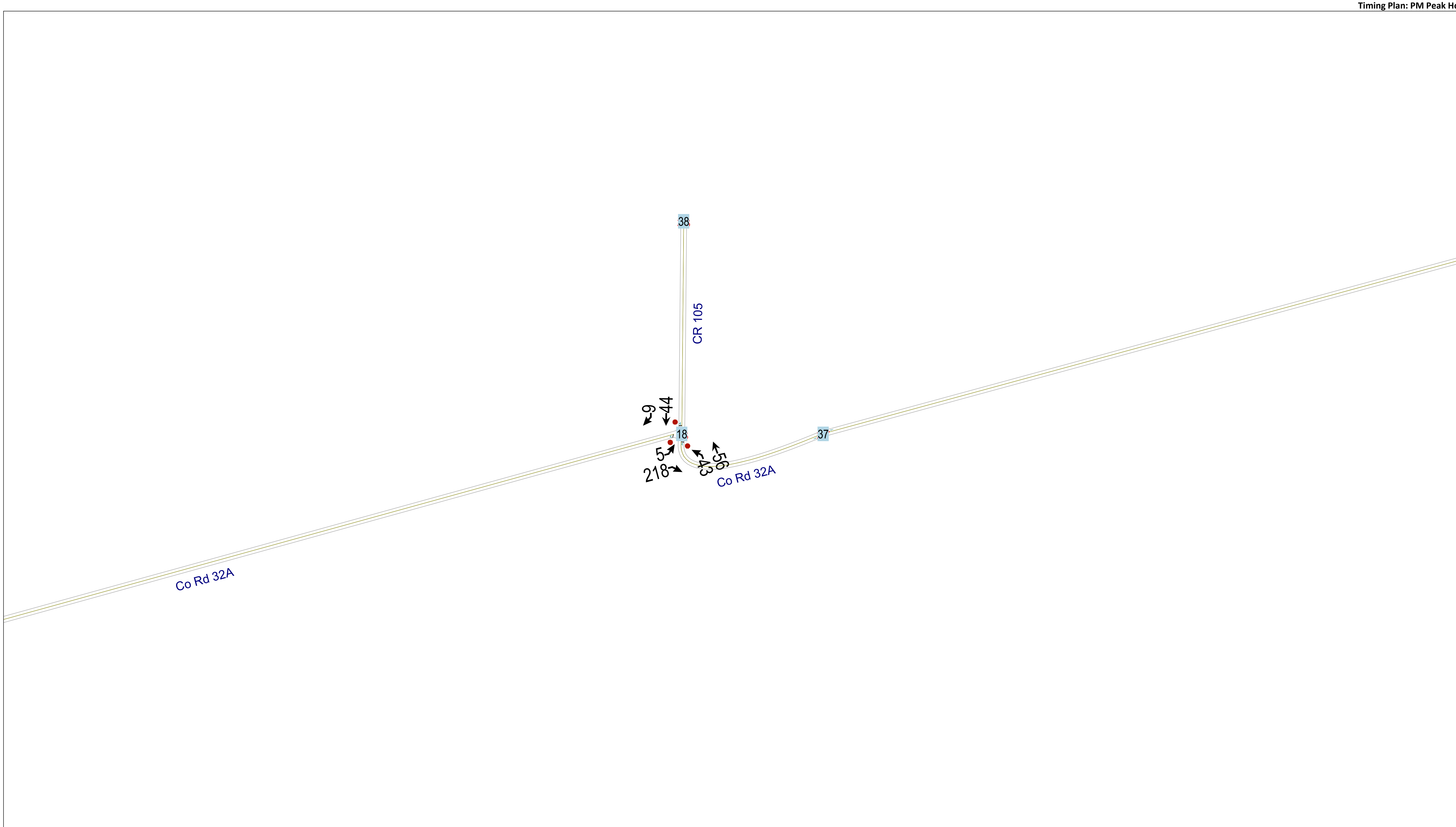
N El Macero Dr
San Marino Dr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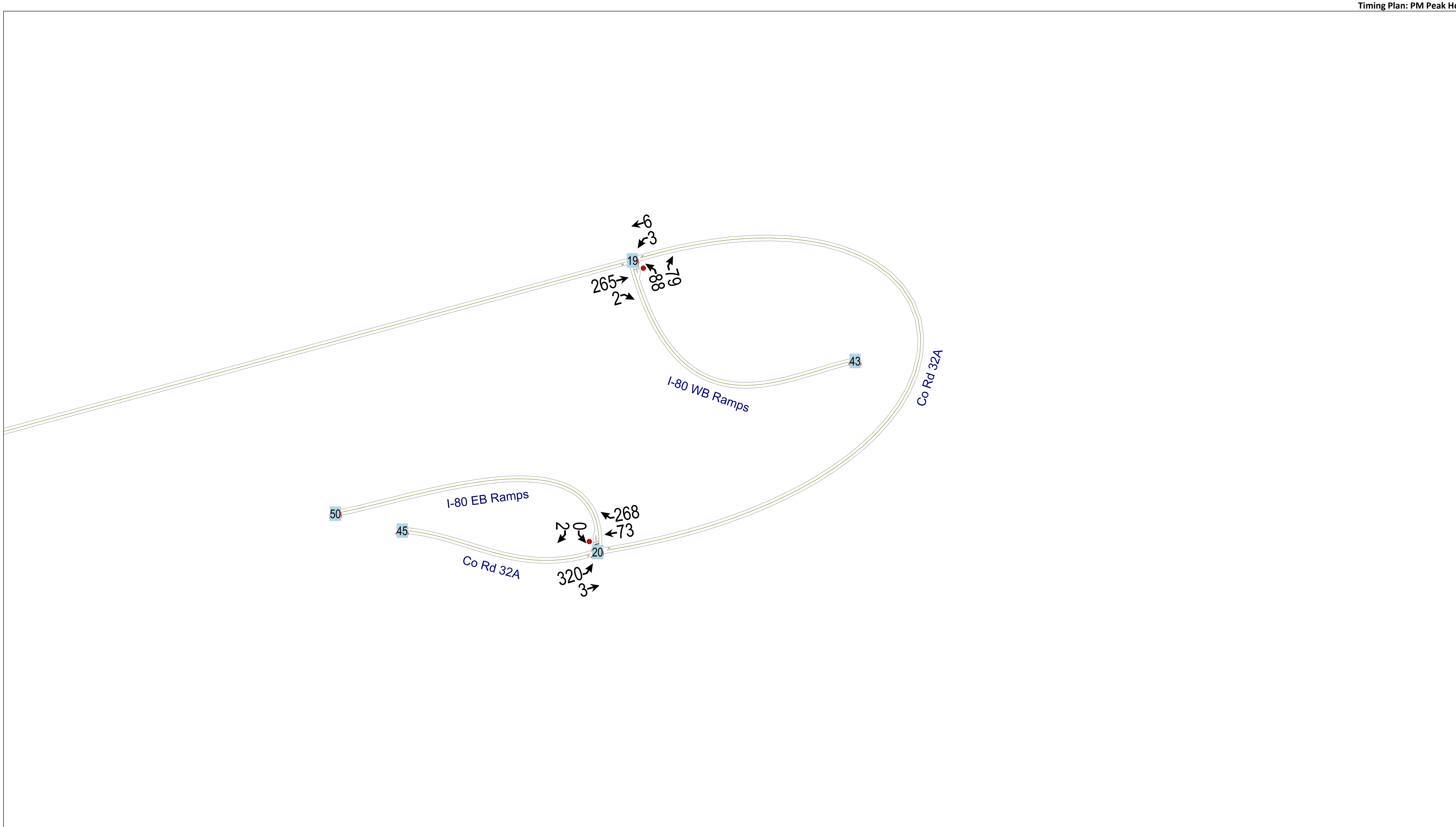
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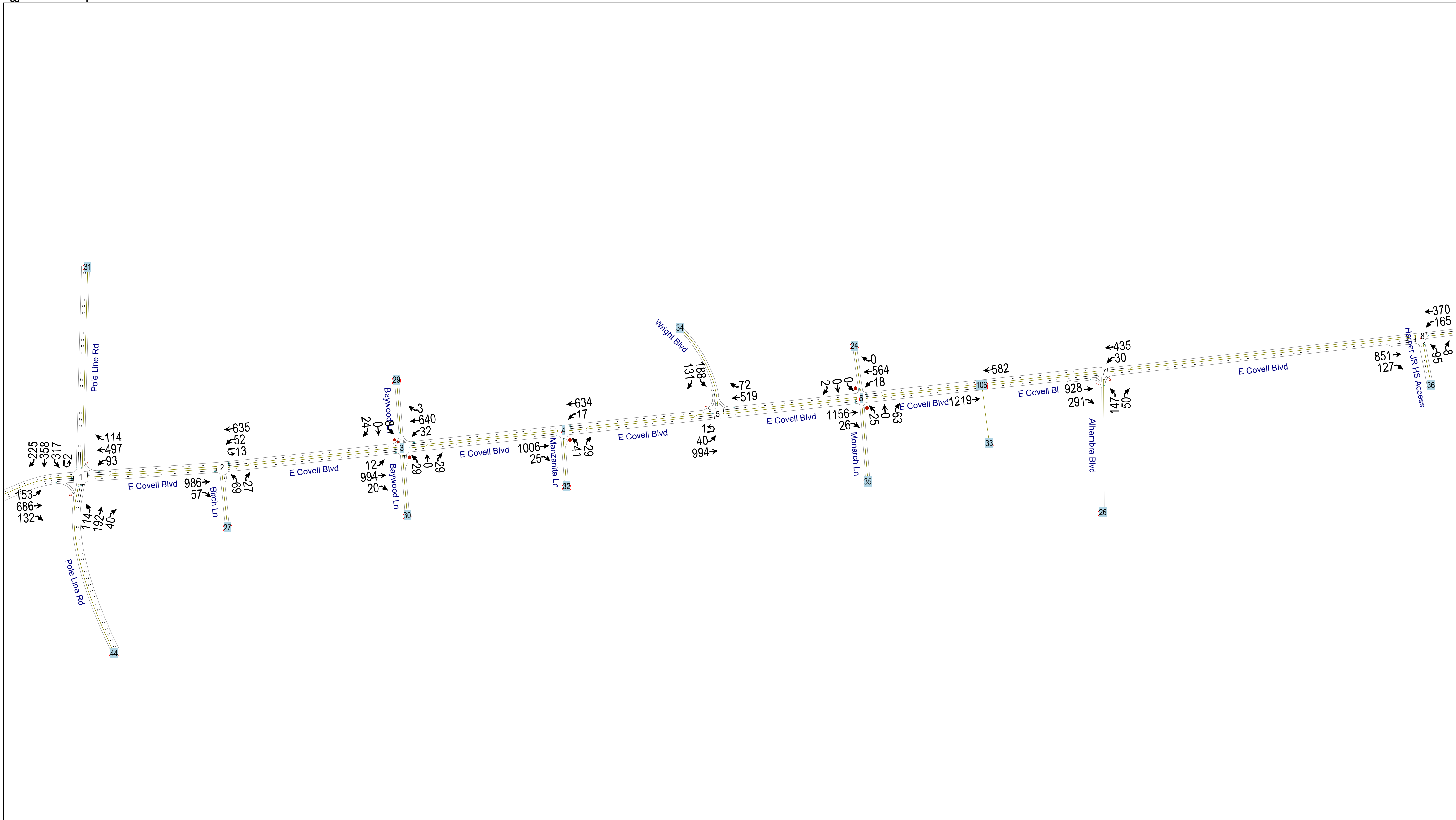
3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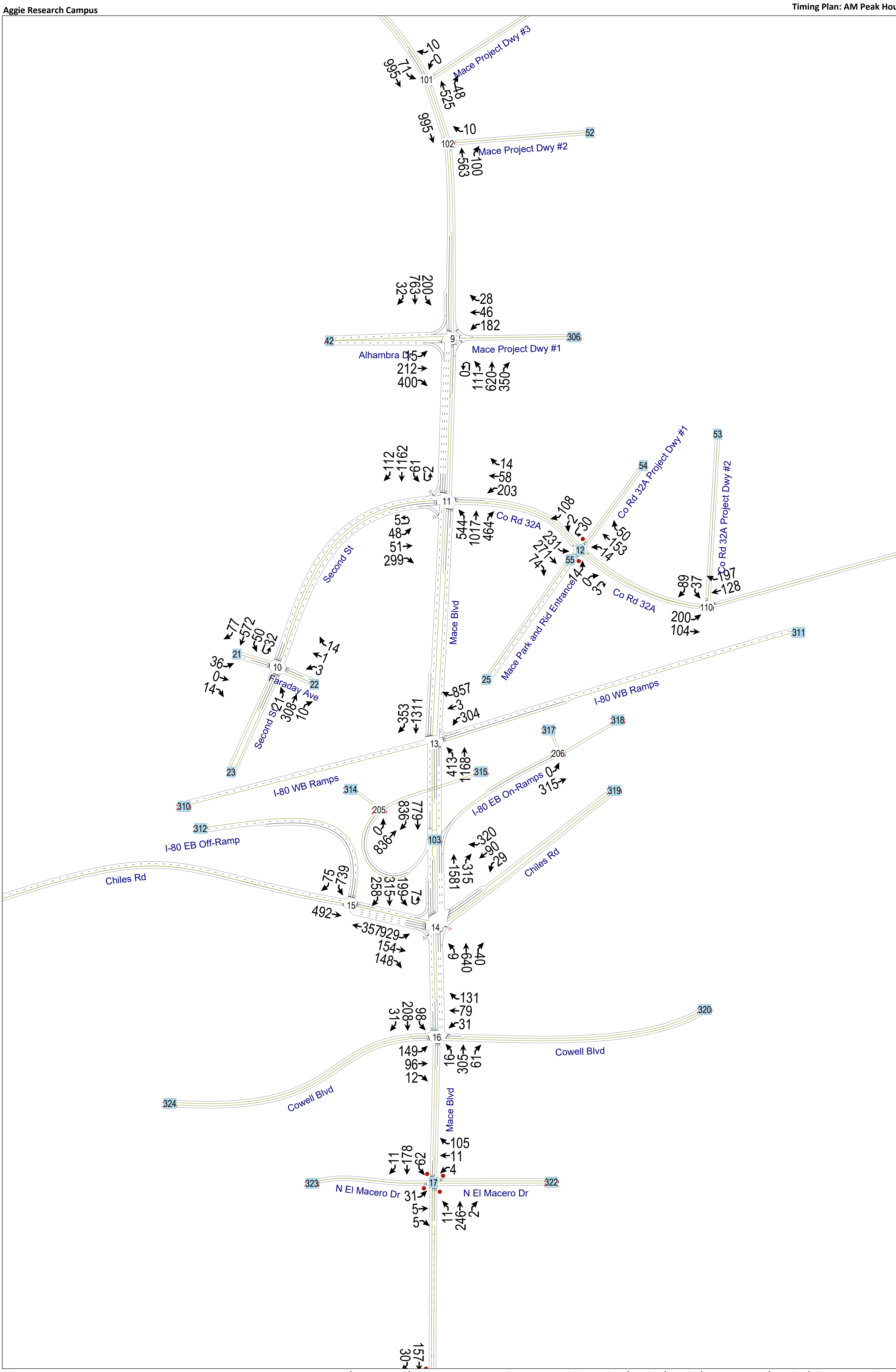
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Co Rd 32A Project Dwy #1
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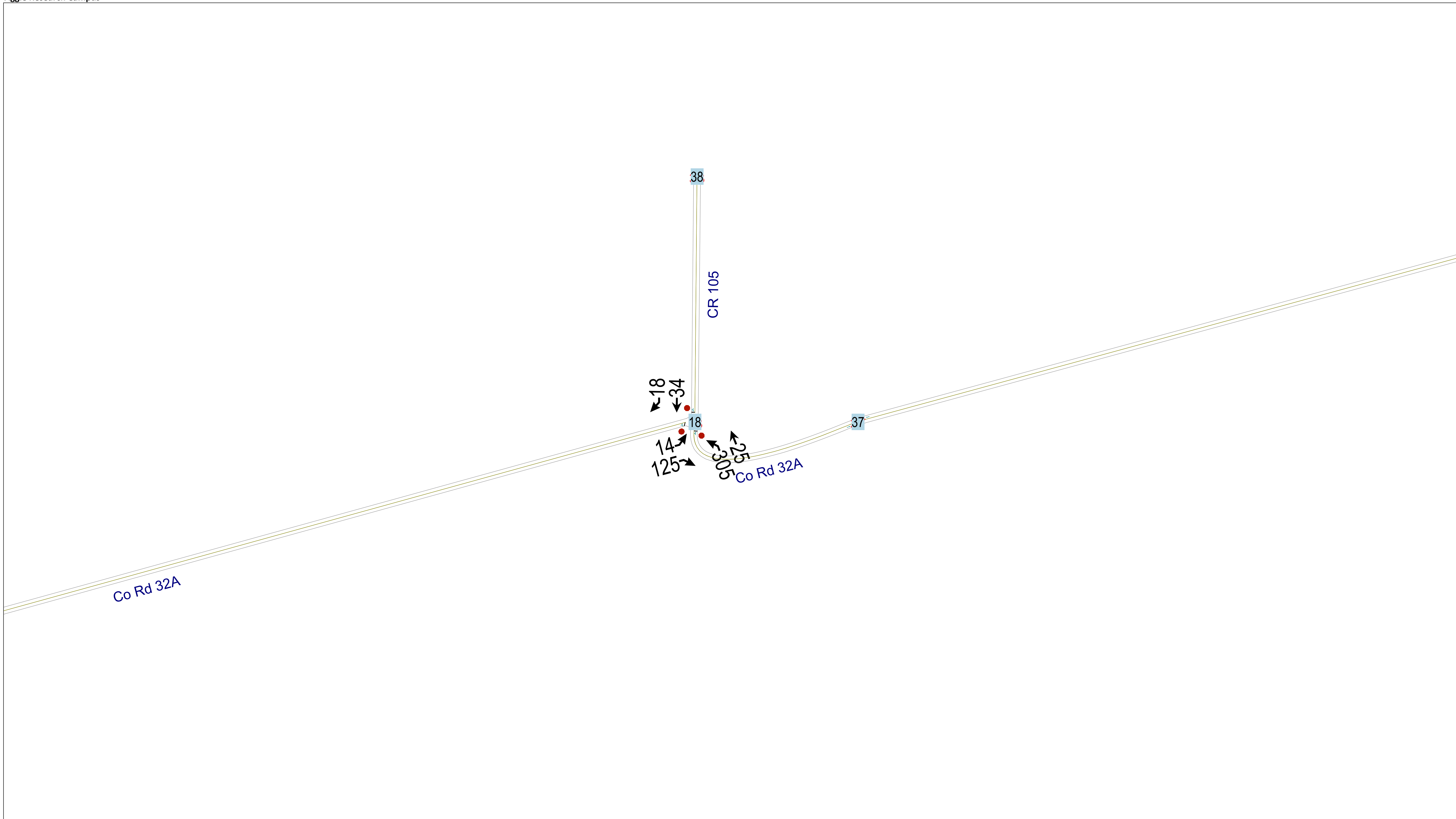
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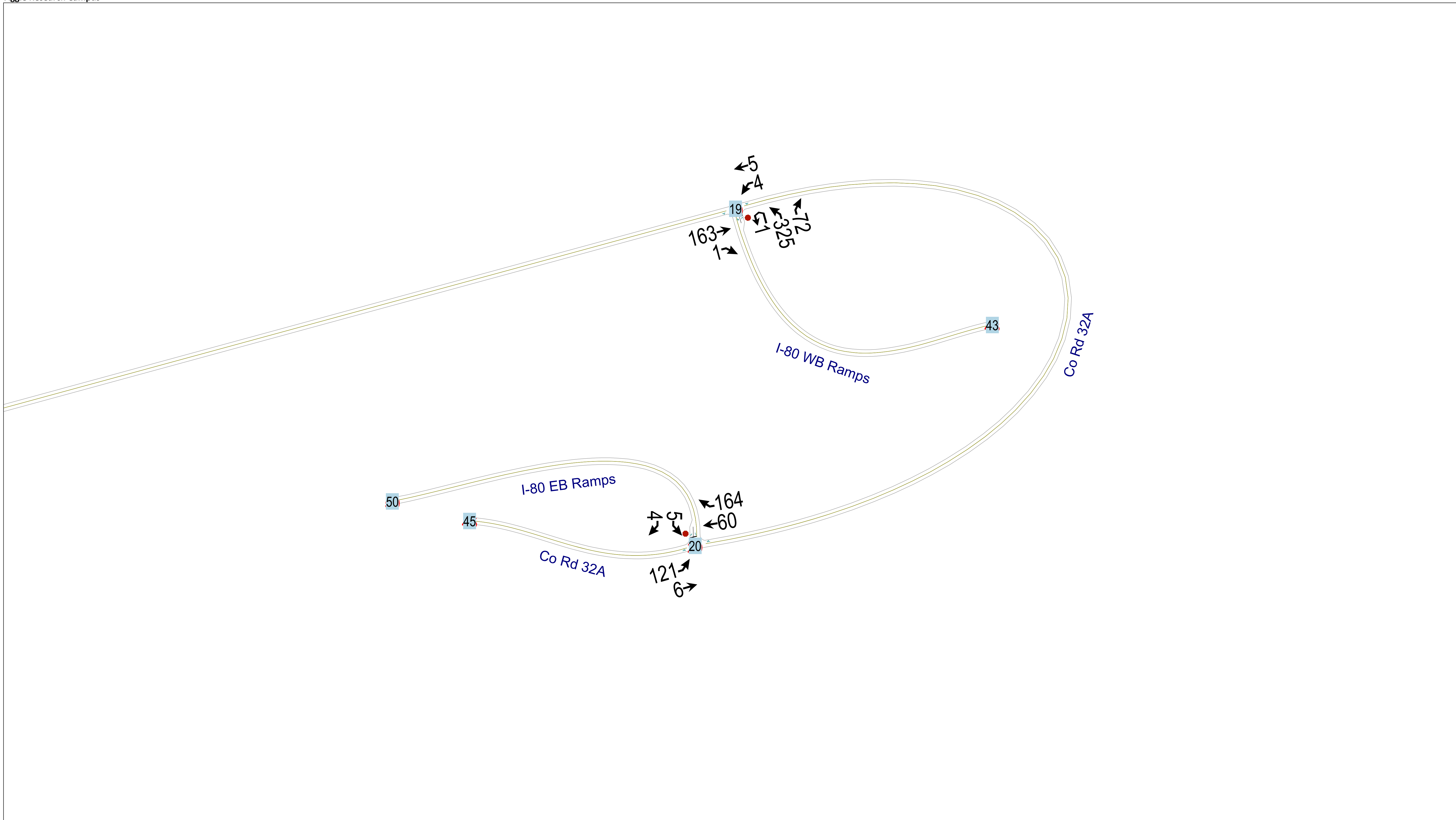
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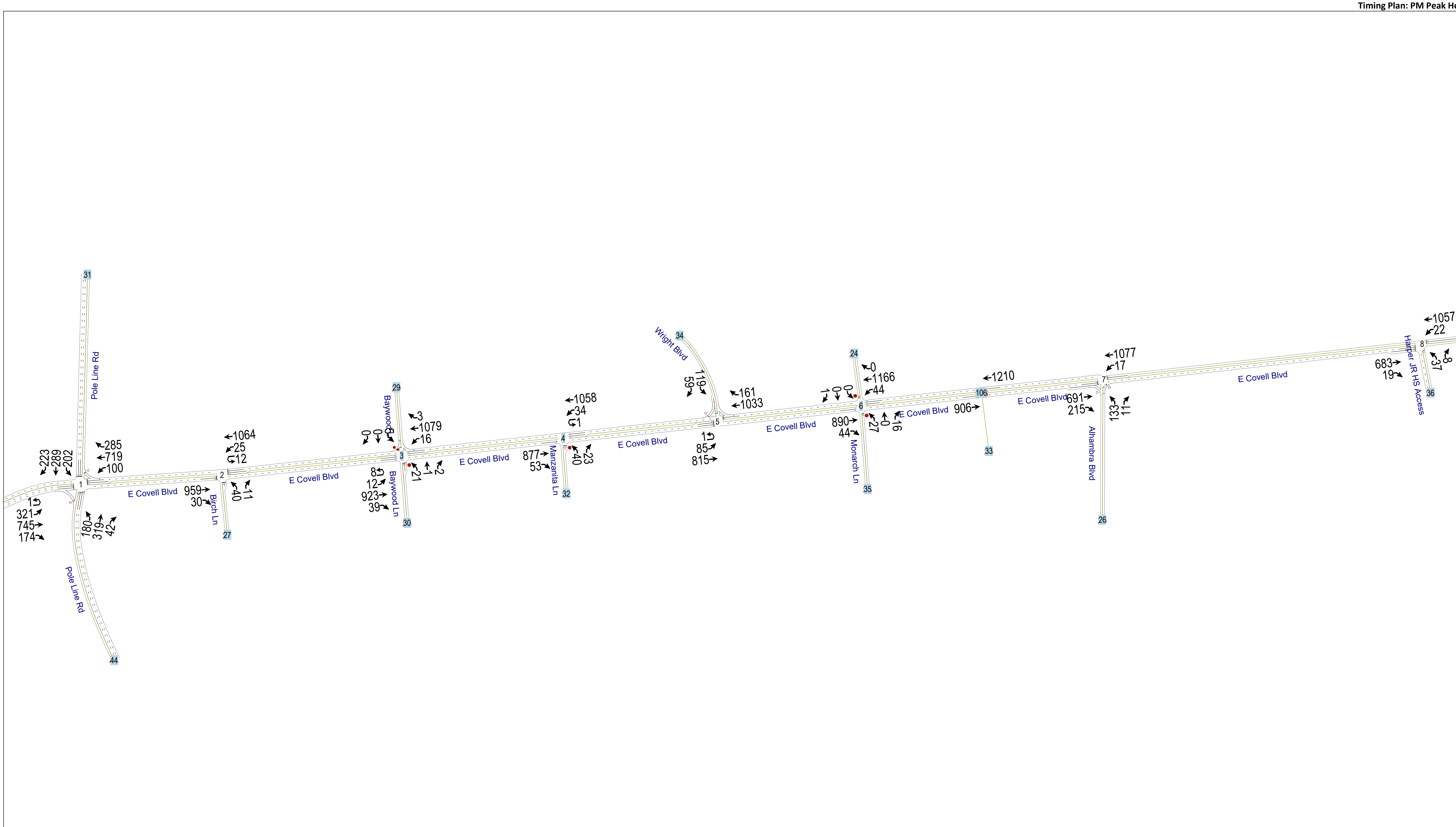
6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Manzanita Ln
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Alhambra Blvd
Harper JR HS Access
223
289
202
285
719
100
1
321
745
174
180
319
42
1064
25
12
959
30
40
11
3
1079
16
0
0
8
12
923
39
21
1
2
1058
34
1
877
53
40
23
119
59
161
1033
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85
815
0
1166
44
1
0
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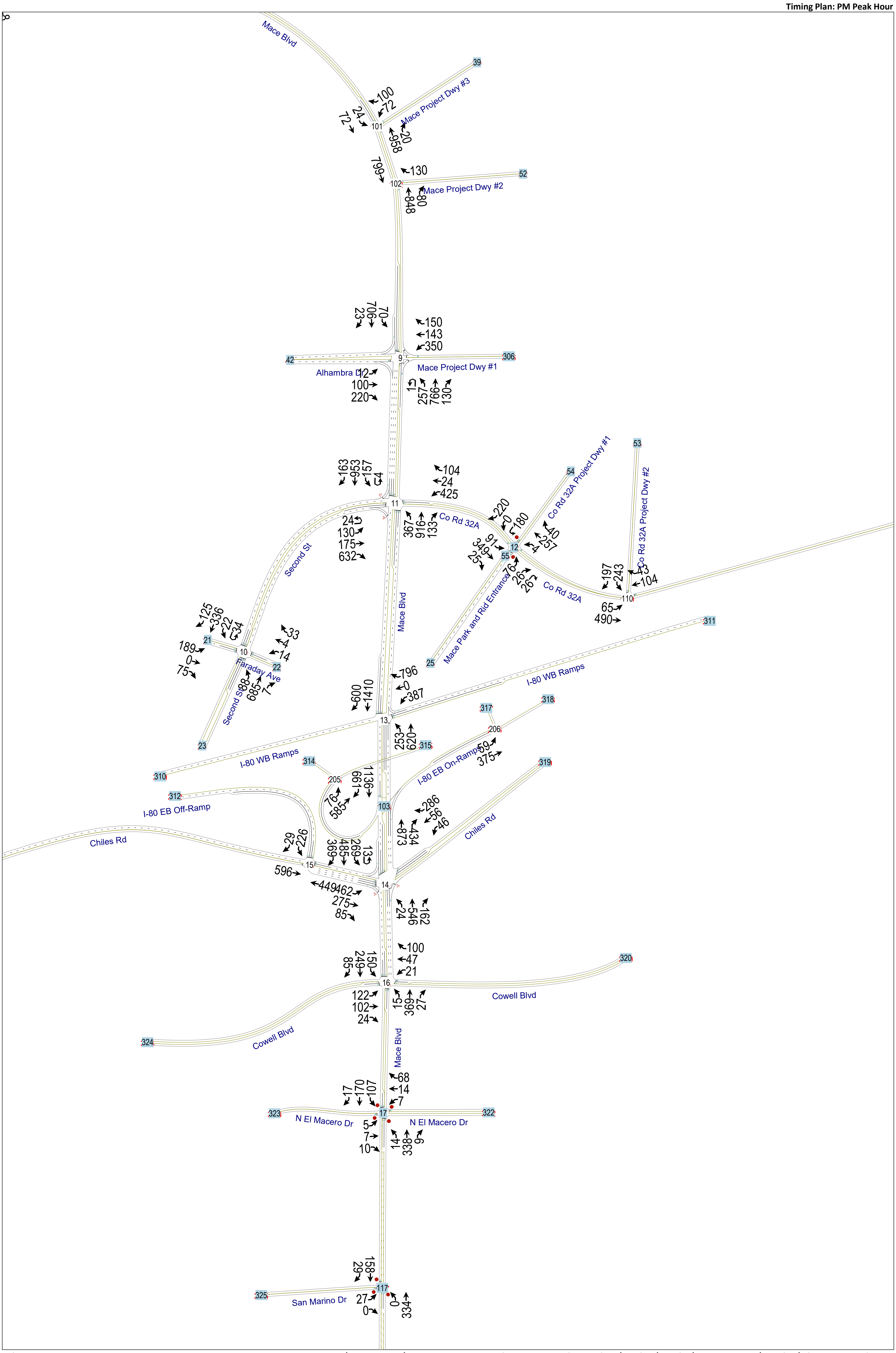
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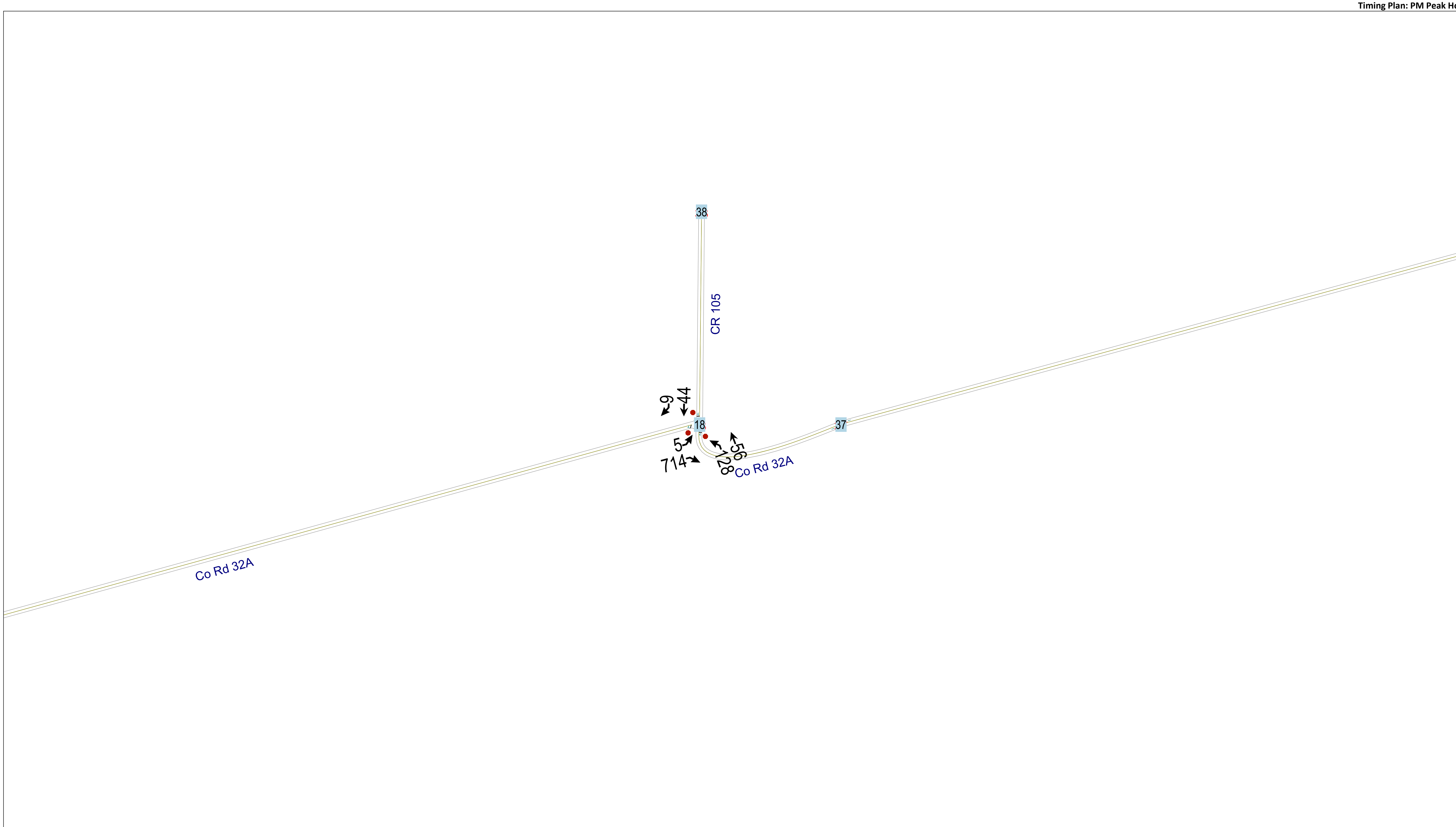
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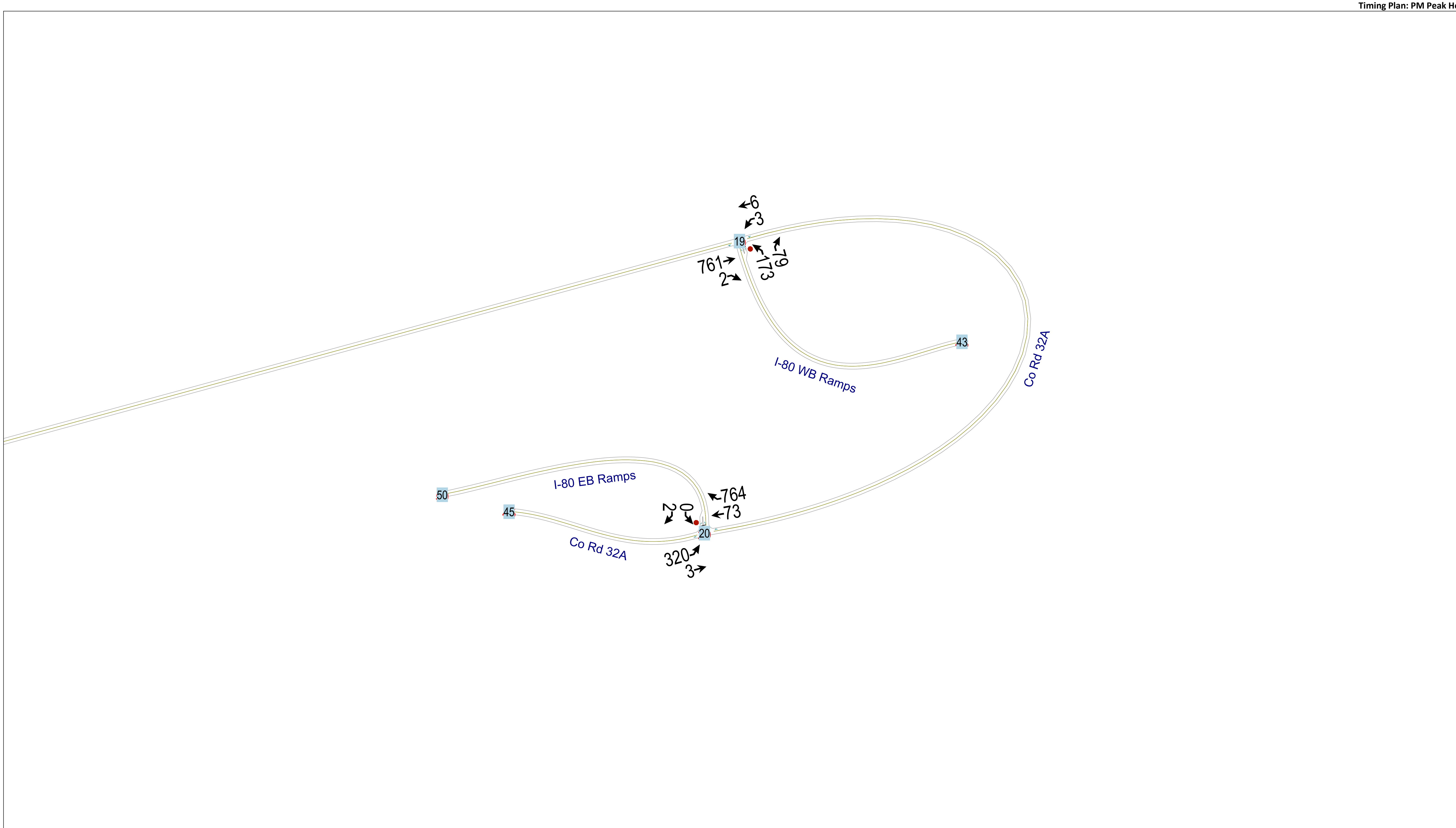
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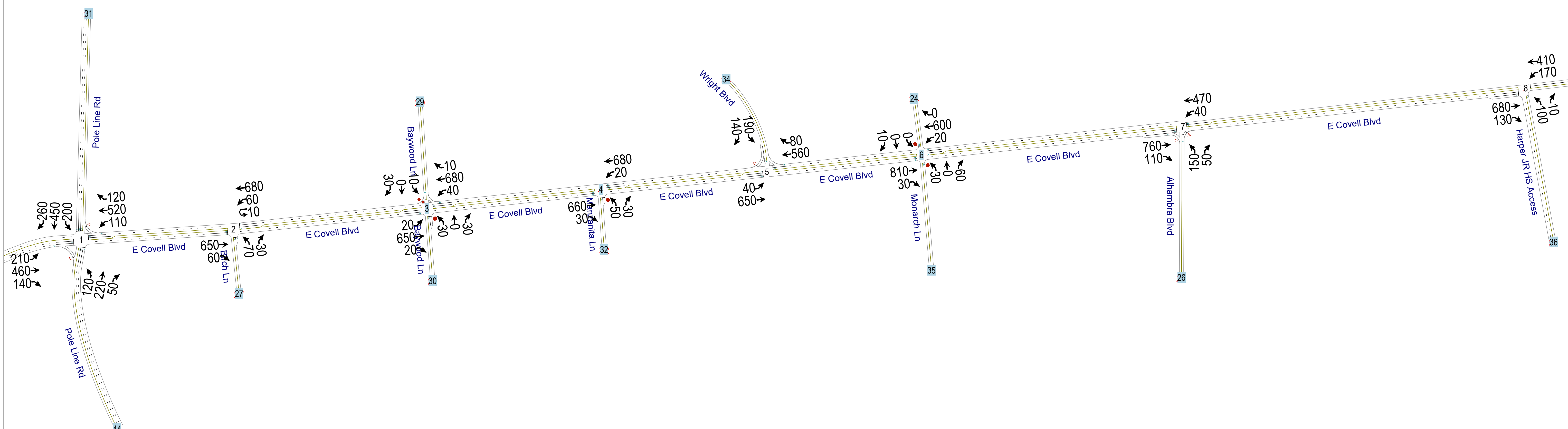
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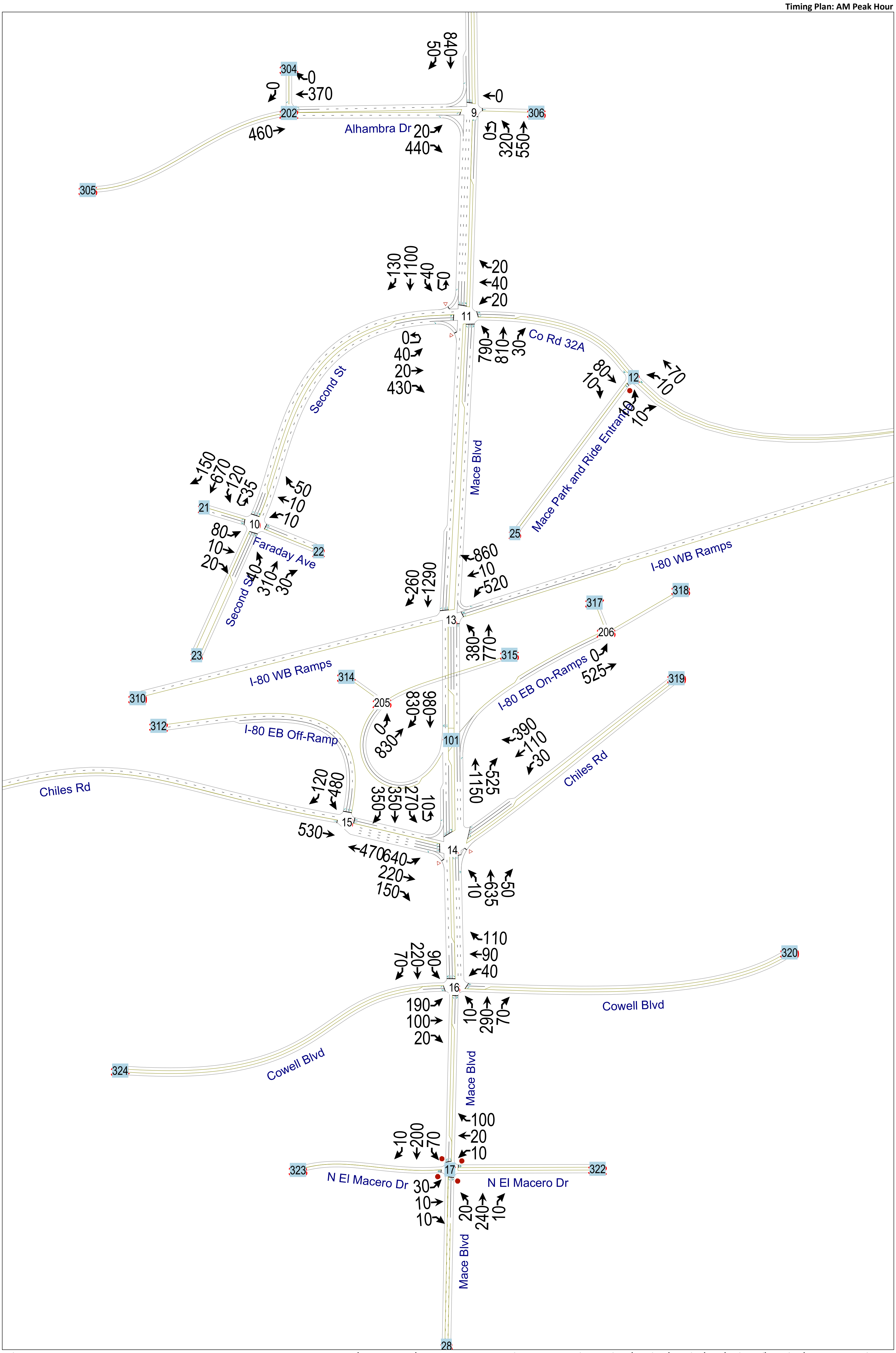
Wright Blvd
Monarch Ln
Alhambra Blvd
Harper JR HS Access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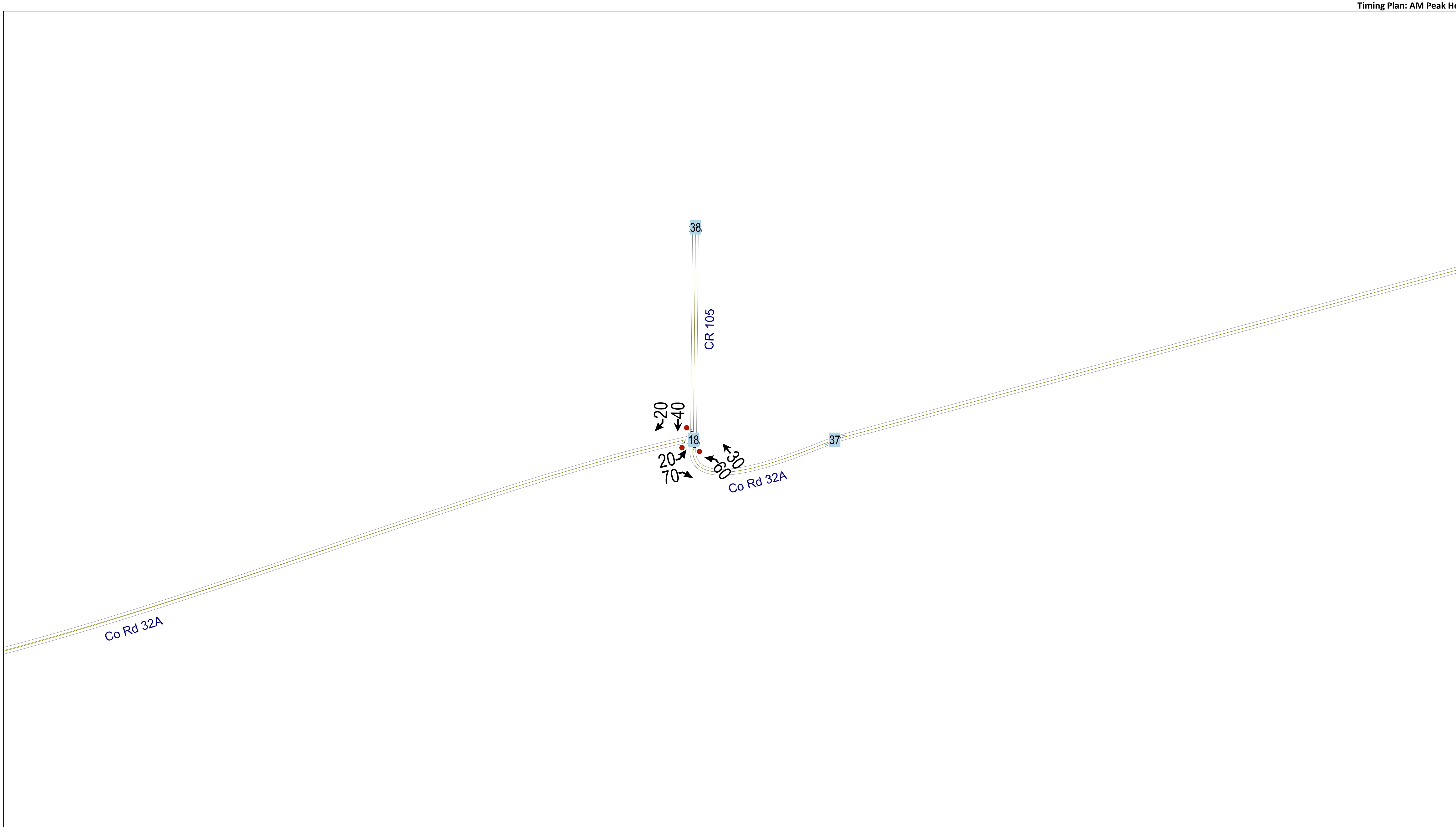
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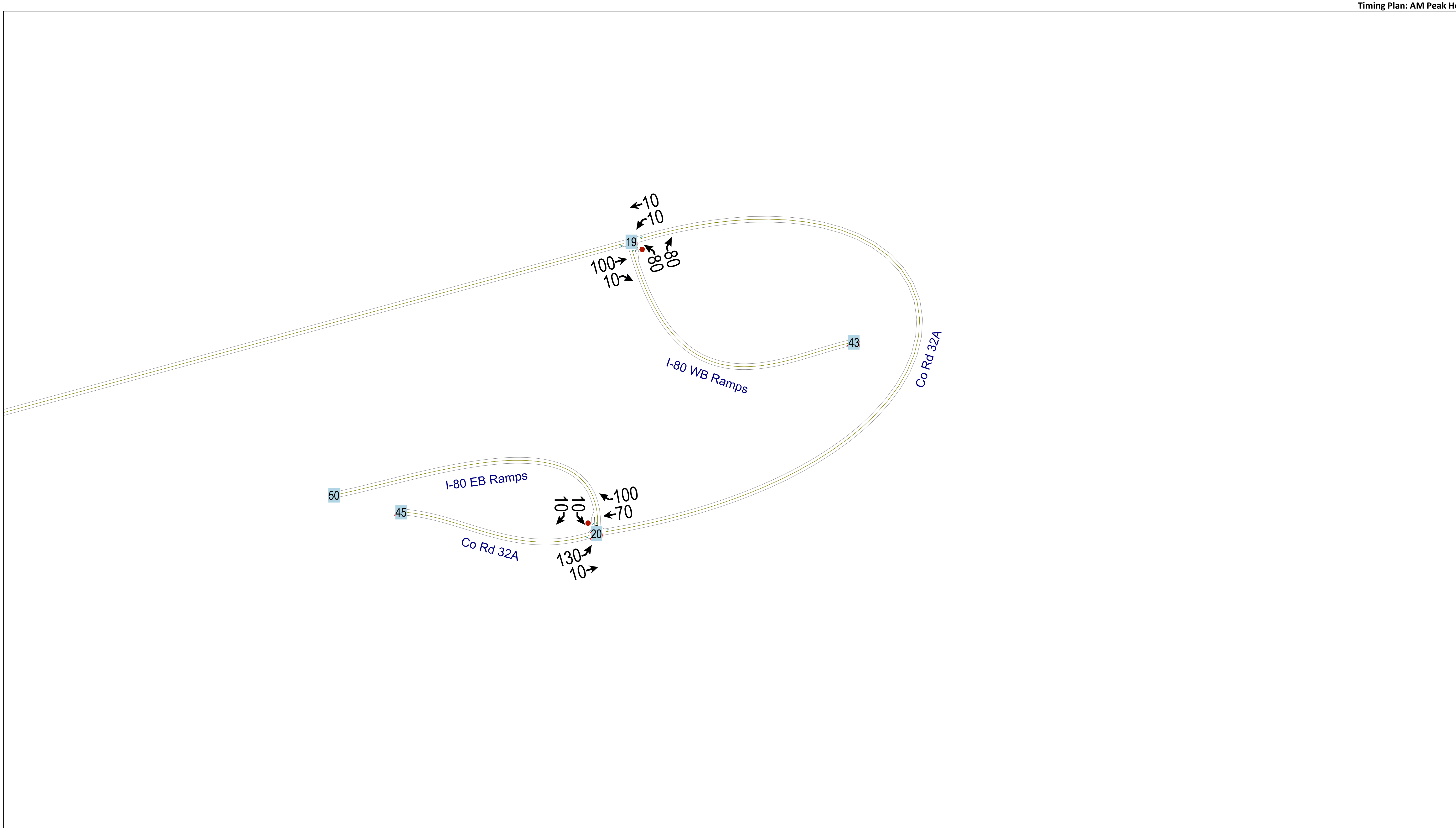
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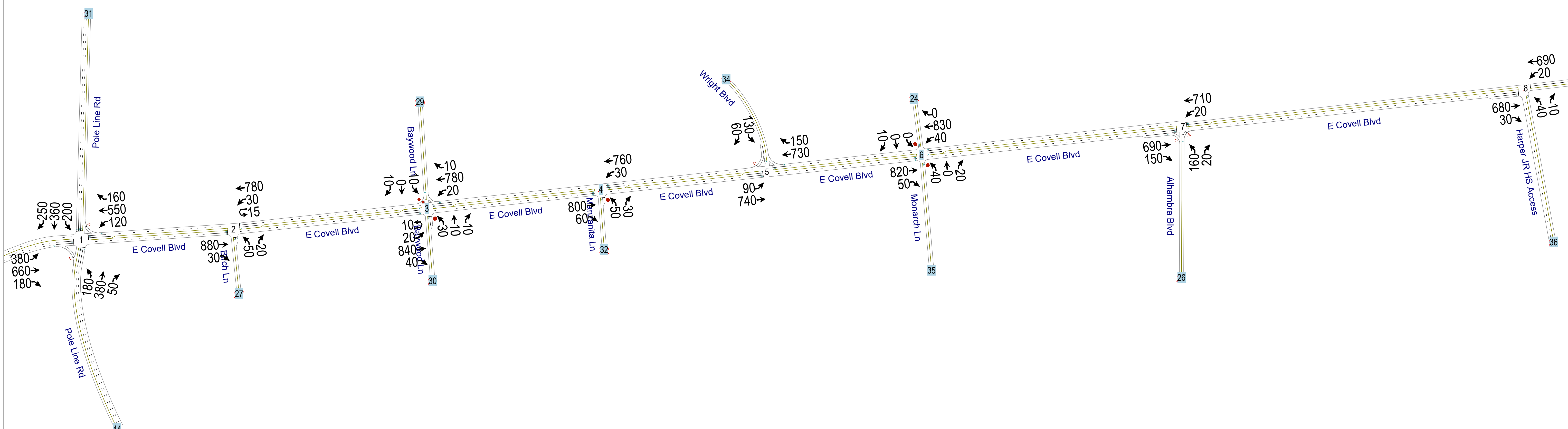
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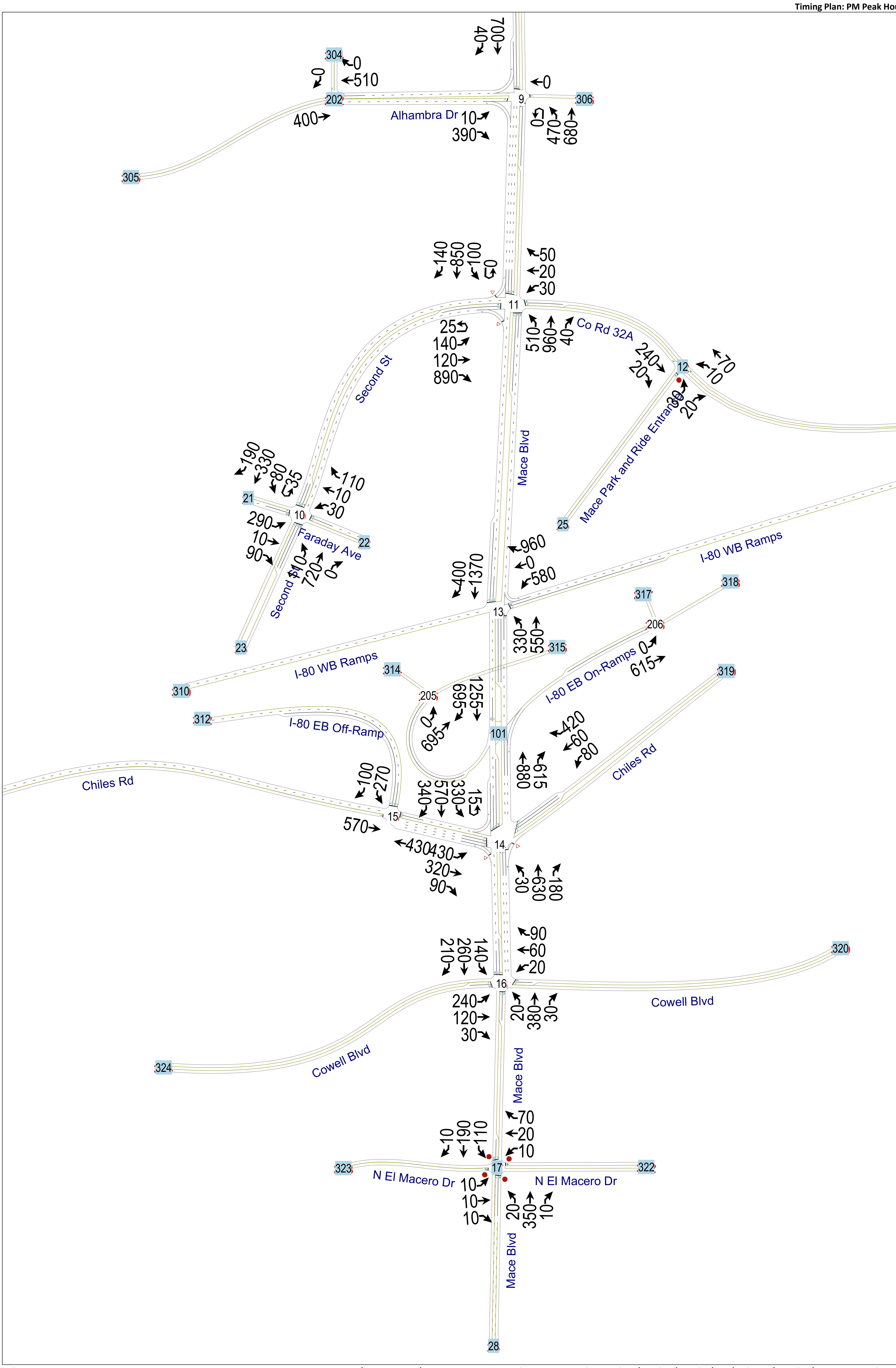
Pole Line Rd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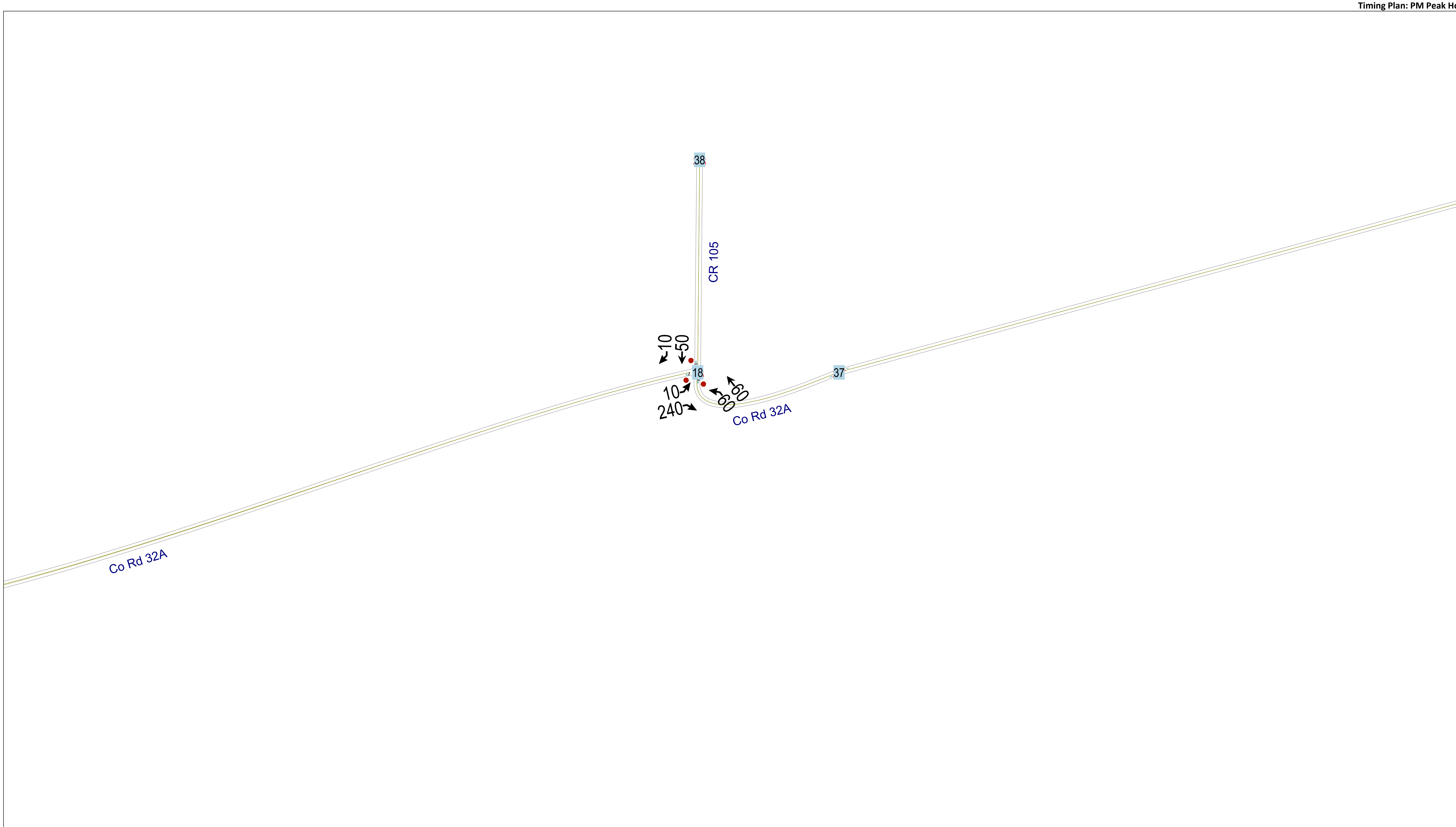
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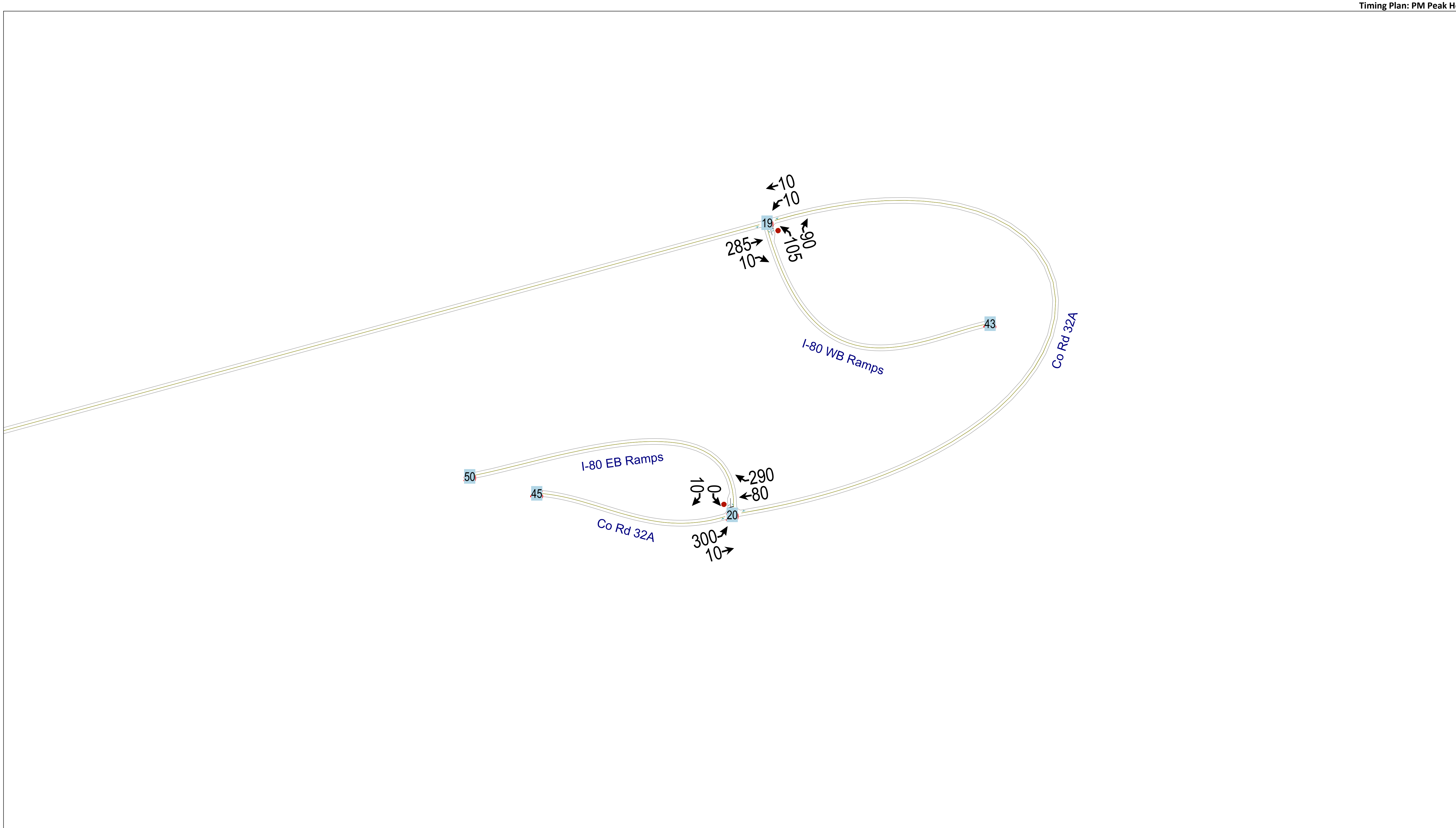
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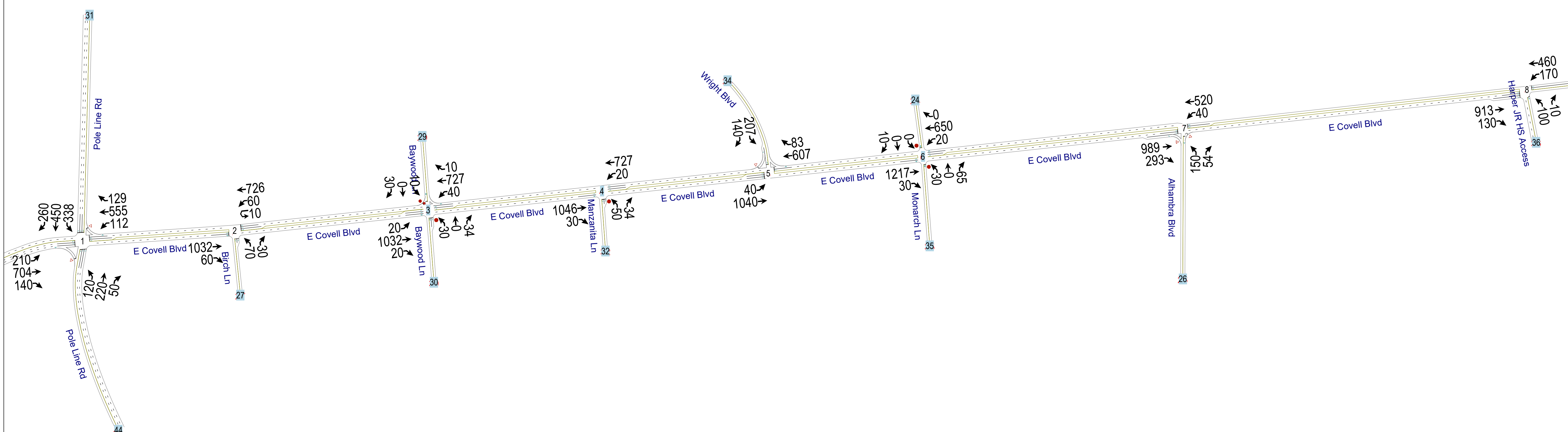
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450
338
129
555
112
210
704
140
120
220
50
726
60
10
1032
60
70
30
10
727
40
30
0
10
20
1032
20
30
0
34
727
20
1046
30
50
34
207
140
83
607
40
1040
0
650
20
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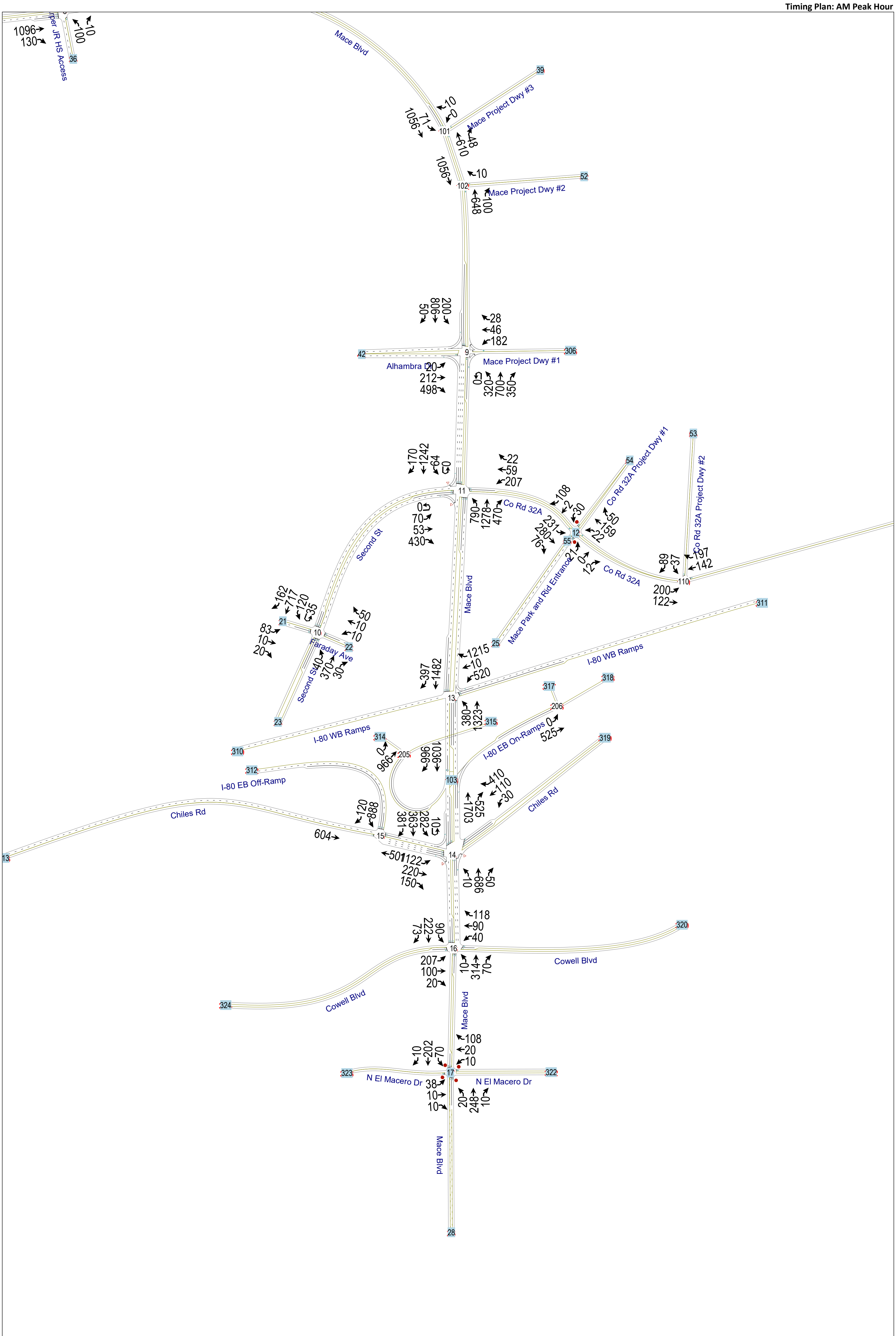
10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I-80 EB On-Ramps
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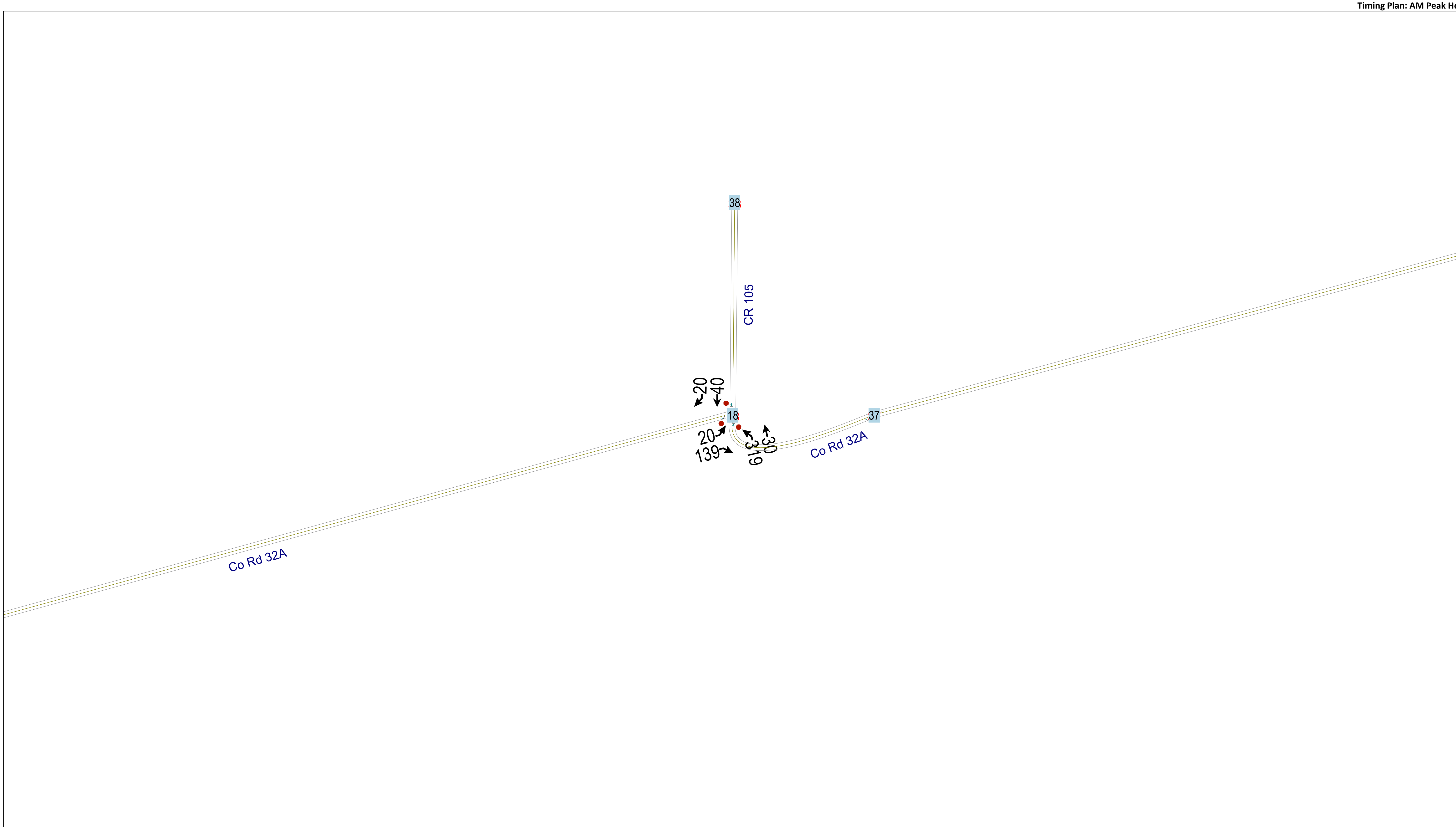
Cowell Blvd
N El Macero Dr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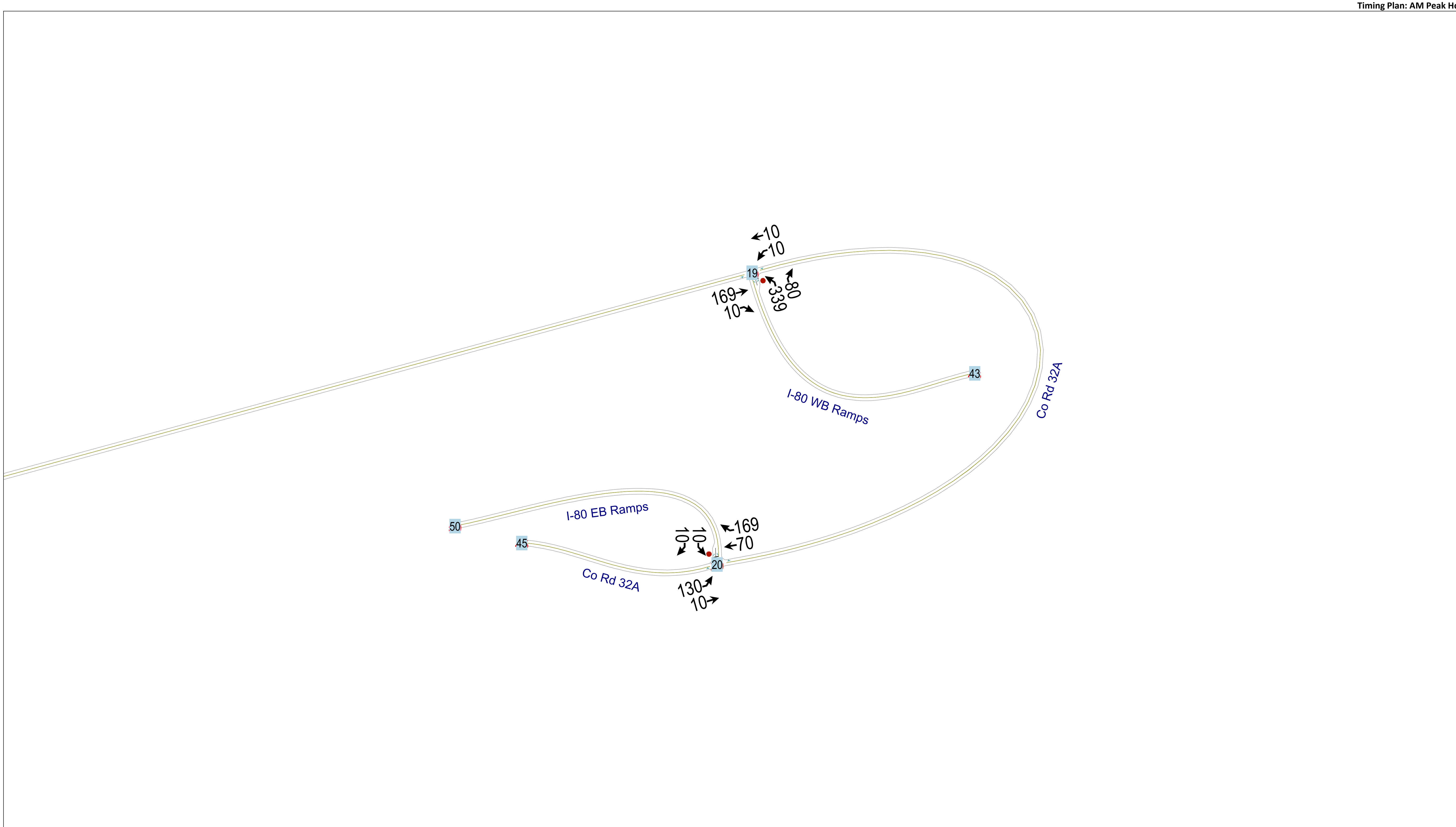
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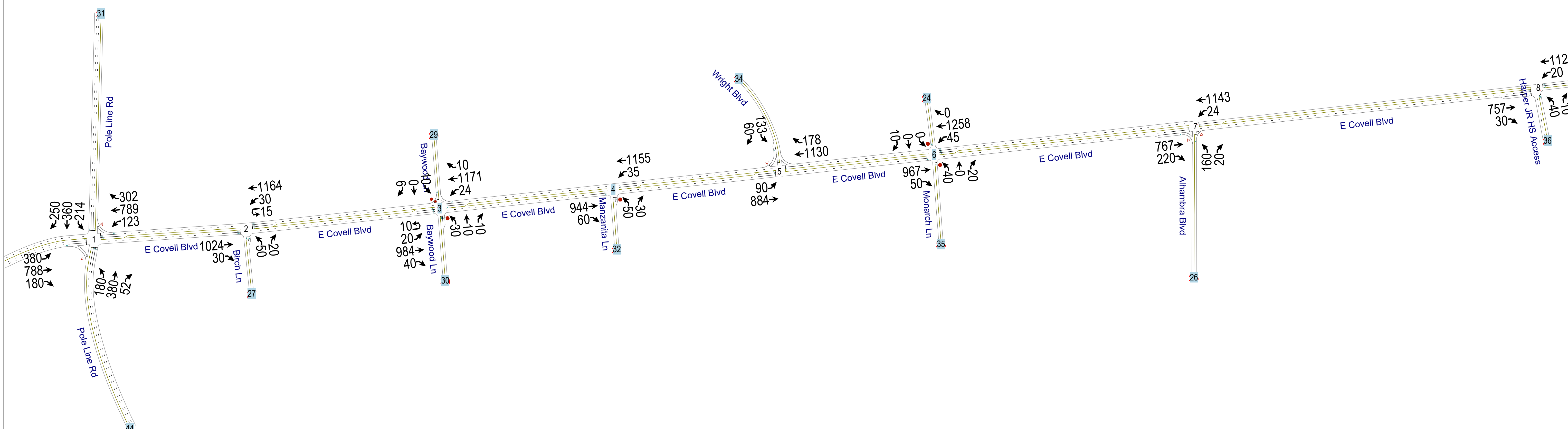
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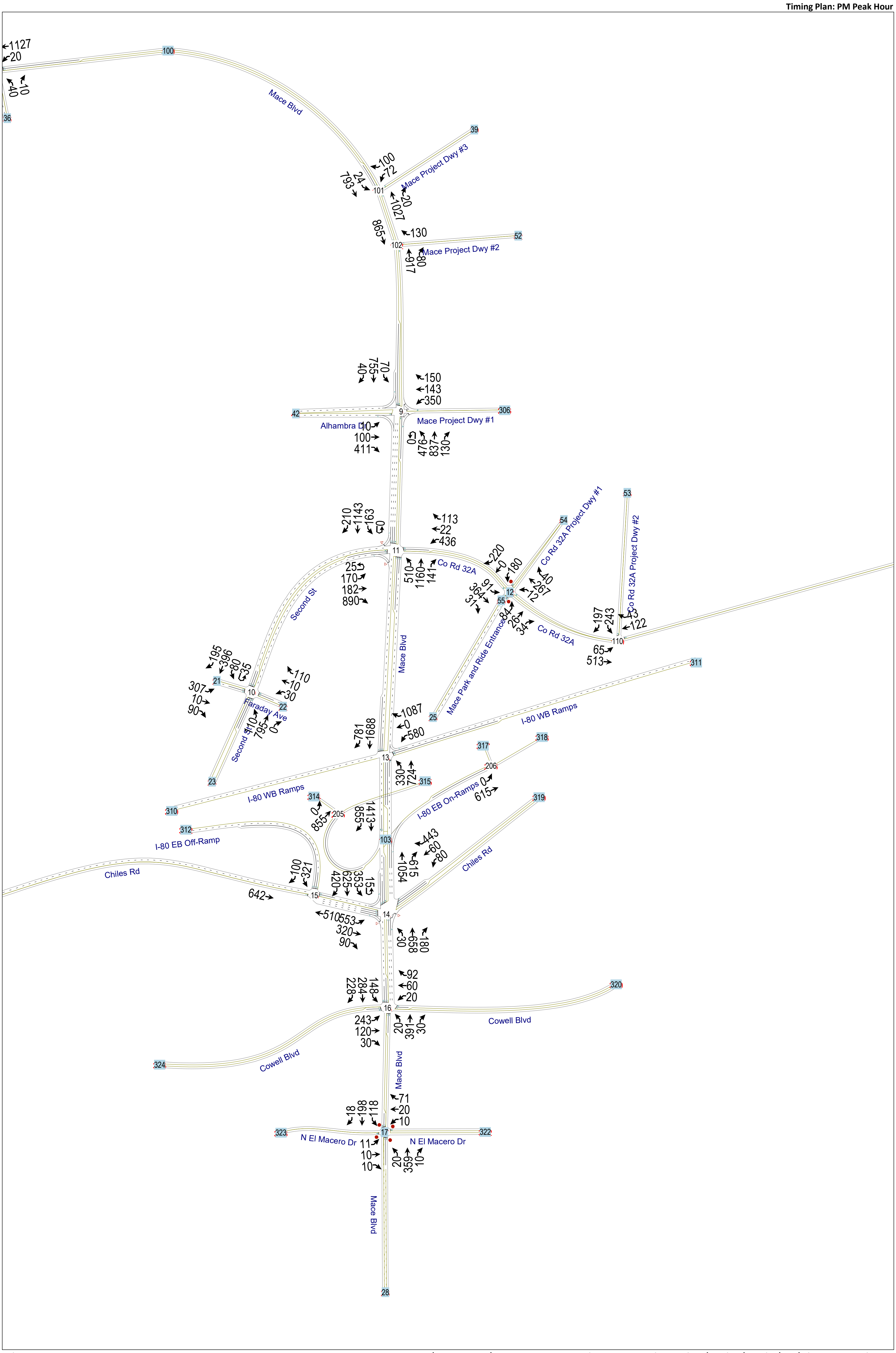
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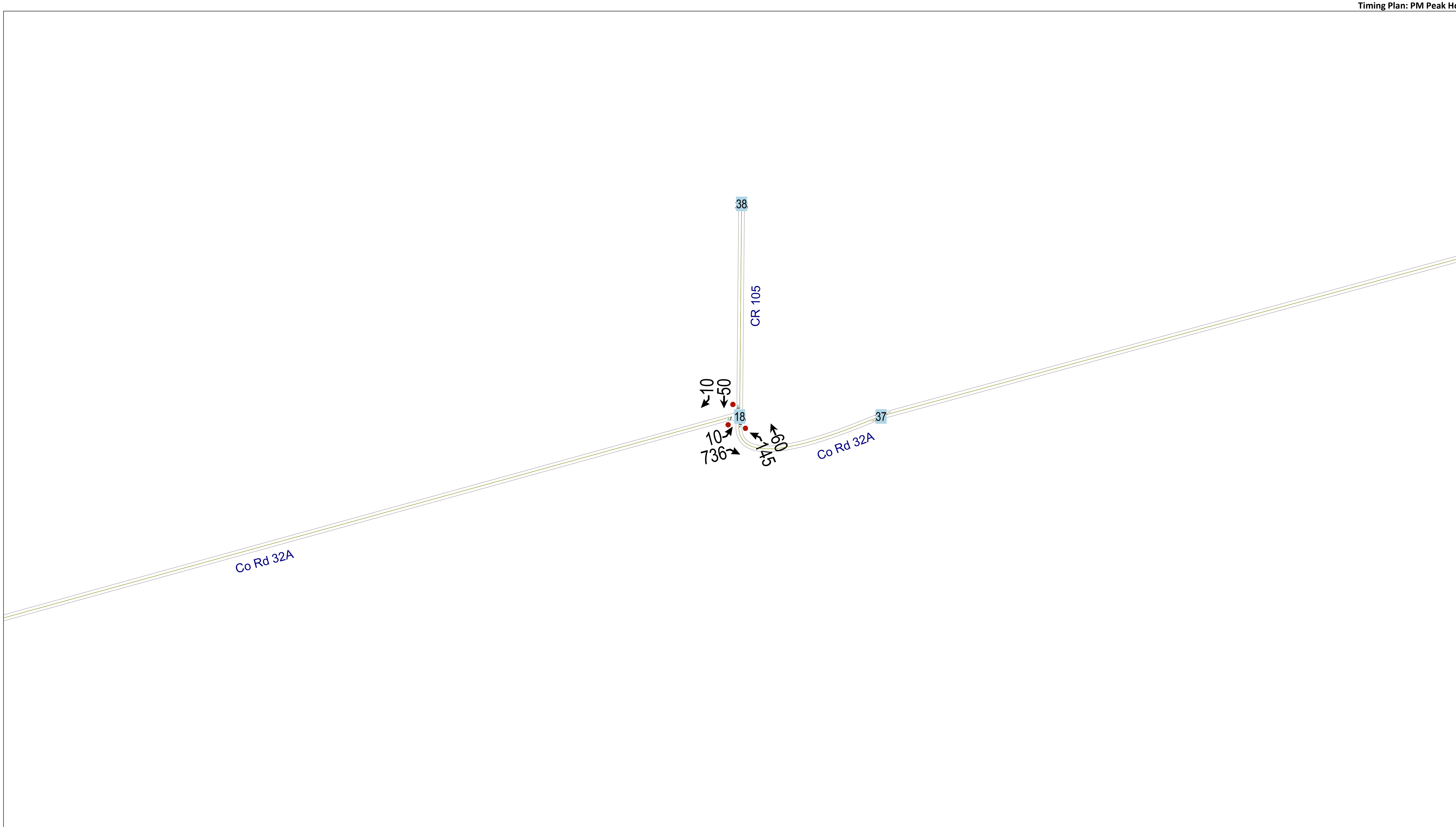
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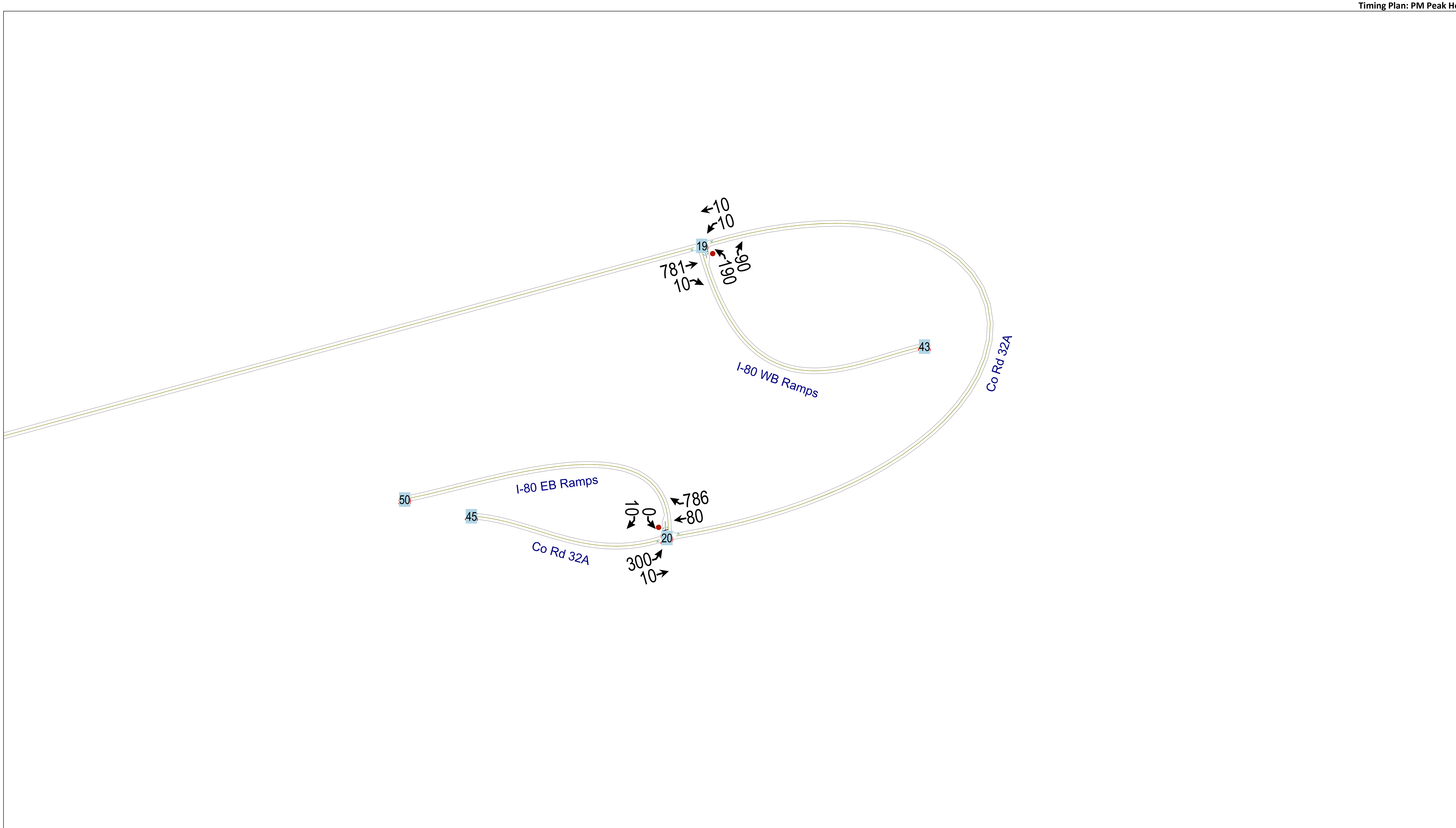
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786
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0
80
20
Co Rd 32A
300
10

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Traffic Volume (veh/h)	153	442	132	91	462	105	114	192	40	2	179	358
Future Volume (veh/h)	153	442	132	91	462	105	114	192	40	2	179	358
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0		0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.96		1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Work Zone On Approach		No			No			No				No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870		1870	1870
Adj Flow Rate, veh/h	168	486	0	100	508	0	125	211	4		197	393
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91		0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2		2	2
Cap, veh/h	221	949		133	773		166	395	323		254	486
Arrive On Green	0.12	0.27	0.00	0.07	0.22	0.00	0.09	0.21	0.21		0.14	0.26
Sat Flow, veh/h	1781	3647	0	1781	3647	0	1781	1870	1529		1781	1870
Grp Volume(v), veh/h	168	486	0	100	508	0	125	211	4		197	393
Grp Sat Flow(s),veh/h/ln	1781	1777	0	1781	1777	0	1781	1870	1529		1781	1870
Q Serve(g_s), s	5.4	6.9	0.0	3.3	7.7	0.0	4.0	5.9	0.1		6.3	11.6
Cycle Q Clear(g_c), s	5.4	6.9	0.0	3.3	7.7	0.0	4.0	5.9	0.1		6.3	11.6
Prop In Lane	1.00		0.00	1.00		0.00	1.00		1.00		1.00	
Lane Grp Cap(c), veh/h	221	949		133	773		166	395	323		254	486
V/C Ratio(X)	0.76	0.51		0.75	0.66		0.75	0.53	0.01		0.78	0.81
Avail Cap(c_a), veh/h	1055	2346		905	1745		754	728	595		694	728
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00		1.00	1.00
Uniform Delay (d), s/veh	25.0	18.4	0.0	26.8	21.1	0.0	26.1	20.7	18.4		24.4	20.5
Incr Delay (d2), s/veh	5.3	0.4	0.0	8.2	1.0	0.0	6.7	1.1	0.0		5.1	4.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	2.6	0.0	1.6	3.0	0.0	1.9	2.5	0.0		2.8	5.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.3	18.8	0.0	34.9	22.1	0.0	32.8	21.9	18.4		29.5	24.6
LnGrp LOS	C	B		C	C		C	C	B		C	C
Approach Vol, veh/h		654	A		608	A		340				630
Approach Delay, s/veh		21.8			24.2			25.8				25.6
Approach LOS		C			C			C				C

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.3	17.9	9.5	20.4	8.4	20.8	12.4	17.5
Change Period (Y+Rc), s	4.0	5.0	4.0	5.0	4.0	5.0	4.0	5.0
Max Green Setting (Gmax), s	35.0	29.0	25.0	23.0	30.0	39.0	23.0	23.0
Max Q Clear Time (g_c+I1), s	7.4	9.7	6.0	13.6	5.3	8.9	8.3	7.9
Green Ext Time (p_c), s	0.5	3.1	0.3	1.7	0.2	3.4	0.5	1.0

Intersection Summary	
HCM 6th Ctrl Delay	24.1
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

User approved ignoring U-Turning movement.

Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	225
Future Volume (veh/h)	225
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus, Adj	1.00
Work Zone On Approach	
Adj Sat Flow, veh/h/ln	1870
Adj Flow Rate, veh/h	40
Peak Hour Factor	0.91
Percent Heavy Veh, %	2
Cap, veh/h	412
Arrive On Green	0.26
Sat Flow, veh/h	1585
Grp Volume(v), veh/h	40
Grp Sat Flow(s),veh/h/ln	1585
Q Serve(g_s), s	1.1
Cycle Q Clear(g_c), s	1.1
Prop In Lane	1.00
Lane Grp Cap(c), veh/h	412
V/C Ratio(X)	0.10
Avail Cap(c_a), veh/h	617
HCM Platoon Ratio	1.00
Upstream Filter(I)	1.00
Uniform Delay (d), s/veh	16.6
Incr Delay (d2), s/veh	0.1
Initial Q Delay(d3),s/veh	0.0
%ile BackOfQ(50%),veh/ln	0.4
Unsig. Movement Delay, s/veh	
LnGrp Delay(d),s/veh	16.7
LnGrp LOS	B
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	

Timer - Assigned Phs

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	604	57	65	589	0	69	0	27	0	69	0
Future Volume (veh/h)	0	604	57	65	589	0	69	0	27	0	69	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0	1870	0	1870	0	1870	0
Adj Flow Rate, veh/h	0	657	62	71	640	0	75	0	29	0	75	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0	2	0	2	0	2	0
Cap, veh/h	0	1028	97	118	1674	0	159	0	0	0	307	0
Arrive On Green	0.00	0.31	0.31	0.07	0.47	0.00	0.09	0.00	0.00	0.00	0.16	0.00
Sat Flow, veh/h	0	3376	309	1781	3647	0	1781	75		0	1870	0
Grp Volume(v), veh/h	0	355	364	71	640	0	75	21.0		0	75	0
Grp Sat Flow(s),veh/h/ln	0	1777	1815	1781	1777	0	1781	C		0	1870	0
Q Serve(g_s), s	0.0	7.5	7.5	1.7	5.1	0.0	1.7			0.0	1.5	0.0
Cycle Q Clear(g_c), s	0.0	7.5	7.5	1.7	5.1	0.0	1.7			0.0	1.5	0.0
Prop In Lane	0.00		0.17	1.00		0.00	1.00			0.00		0.00
Lane Grp Cap(c), veh/h	0	557	569	118	1674	0	159			0	307	0
V/C Ratio(X)	0.00	0.64	0.64	0.60	0.38	0.00	0.47			0.00	0.24	0.00
Avail Cap(c_a), veh/h	0	1141	1165	653	2118	0	1062			0	901	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00	1.00			0.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	12.9	12.9	19.8	7.4	0.0	18.9			0.0	15.9	0.0
Incr Delay (d2), s/veh	0.0	1.2	1.2	4.9	0.1	0.0	2.1			0.0	0.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.5	2.6	0.8	1.3	0.0	0.7			0.0	0.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	14.1	14.1	24.7	7.6	0.0	21.0			0.0	16.3	0.0
LnGrp LOS	A	B	B	C	A	A	C			A	B	A
Approach Vol, veh/h		719			711						75	
Approach Delay, s/veh		14.1			9.3						16.3	
Approach LOS		B			A						B	

Timer - Assigned Phs	1	2	3	4		6
Phs Duration (G+Y+Rc), s	6.9	17.7	7.9	11.2		24.6
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	16.0	28.0	26.0	21.0		26.0
Max Q Clear Time (g_c+I1), s	3.7	9.5	3.7	3.5		7.1
Green Ext Time (p_c), s	0.1	4.2	0.2	0.3		4.1

Intersection Summary	
HCM 6th Ctrl Delay	12.4
HCM 6th LOS	B

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	612	20	32	593	3	29	0	25	8	0	24
Future Vol, veh/h	12	612	20	32	593	3	29	0	25	8	0	24
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Free	-	-	None	-	-	Stop
Storage Length	100	-	-	100	-	-	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	665	22	35	645	3	32	0	27	9	0	26

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	645	0	0	687	0	0	1095	1417	344	1074	1428	323
Stage 1	-	-	-	-	-	-	702	702	-	715	715	-
Stage 2	-	-	-	-	-	-	393	715	-	359	713	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	936	-	-	903	-	0	168	136	652	174	134	673
Stage 1	-	-	-	-	-	0	395	439	-	388	433	-
Stage 2	-	-	-	-	-	0	603	433	-	632	434	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	936	-	-	903	-	-	155	129	652	160	127	673
Mov Cap-2 Maneuver	-	-	-	-	-	-	155	129	-	160	127	-
Stage 1	-	-	-	-	-	-	389	433	-	383	416	-
Stage 2	-	-	-	-	-	-	557	416	-	597	428	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.5	23.3	10.9
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	155	652	936	-	-	903	-	640
HCM Lane V/C Ratio	0.203	0.042	0.014	-	-	0.039	-	0.054
HCM Control Delay (s)	34.1	10.8	8.9	-	-	9.1	-	10.9
HCM Lane LOS	D	B	A	-	-	A	-	B
HCM 95th %tile Q(veh)	0.7	0.1	0	-	-	0.1	-	0.2

Intersection	
Int Delay, s/veh	1.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	620	25	17	587	41	25
Future Vol, veh/h	620	25	17	587	41	25
Conflicting Peds, #/hr	0	1	2	0	0	5
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	25
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	674	27	18	638	45	27

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	703	0	1045	358
Stage 1	-	-	-	-	690	-
Stage 2	-	-	-	-	355	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	890	-	224	638
Stage 1	-	-	-	-	459	-
Stage 2	-	-	-	-	681	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	889	-	219	634
Mov Cap-2 Maneuver	-	-	-	-	219	-
Stage 1	-	-	-	-	458	-
Stage 2	-	-	-	-	667	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	20
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	219	634	-	-	889	-
HCM Lane V/C Ratio	0.203	0.043	-	-	0.021	-
HCM Control Delay (s)	25.6	10.9	-	-	9.1	-
HCM Lane LOS	D	B	-	-	A	-
HCM 95th %tile Q(veh)	0.7	0.1	-	-	0.1	-

Movement	EBU	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (veh/h)	1	40	604	472	69	171	131
Future Volume (veh/h)	1	40	604	472	69	171	131
Initial Q (Qb), veh		0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00			1.00	1.00	1.00
Parking Bus, Adj		1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach			No	No		No	
Adj Sat Flow, veh/h/ln		1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h		46	694	543	0	197	0
Peak Hour Factor		0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %		3	3	3	3	3	3
Cap, veh/h		73	1904	1362		266	
Arrive On Green		0.04	0.54	0.39	0.00	0.15	0.00
Sat Flow, veh/h		1767	3618	3711	0	1767	1572
Grp Volume(v), veh/h		46	694	543	0	197	0
Grp Sat Flow(s),veh/h/ln		1767	1763	1763	0	1767	1572
Q Serve(g_s), s		0.9	4.0	4.0	0.0	3.8	0.0
Cycle Q Clear(g_c), s		0.9	4.0	4.0	0.0	3.8	0.0
Prop In Lane		1.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h		73	1904	1362		266	
V/C Ratio(X)		0.63	0.36	0.40		0.74	
Avail Cap(c_a), veh/h		647	3969	3969		995	
HCM Platoon Ratio		1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)		1.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh		16.8	4.7	7.9	0.0	14.4	0.0
Incr Delay (d2), s/veh		8.8	0.3	0.4	0.0	4.0	0.0
Initial Q Delay(d3),s/veh		0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln		0.5	0.7	1.0	0.0	1.5	0.0
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh		25.6	4.9	8.3	0.0	18.5	0.0
LnGrp LOS		C	A	A		B	
Approach Vol, veh/h			740	543	A	197	A
Approach Delay, s/veh			6.2	8.3		18.5	
Approach LOS			A	A		B	

Timer - Assigned Phs		2		4	5	6	
Phs Duration (G+Y+Rc), s		25.2		10.3	5.5	19.7	
Change Period (Y+Rc), s		6.0		5.0	4.0	6.0	
Max Green Setting (Gmax), s		40.0		20.0	13.0	40.0	
Max Q Clear Time (g_c+I1), s		6.0		5.8	2.9	6.0	
Green Ext Time (p_c), s		10.0		0.4	0.0	7.3	

Intersection Summary			
HCM 6th Ctrl Delay			8.6
HCM 6th LOS			A

Notes

User approved ignoring U-Turning movement.

Unsignalized Delay for [WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	749	26	18	514	0	25	0	58	0	0	2
Future Vol, veh/h	0	749	26	18	514	0	25	0	58	0	0	2
Conflicting Peds, #/hr	0	0	7	0	0	7	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	85	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	832	29	20	571	0	28	0	64	0	0	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	868	0	0	1180	1472	438	1034	1486	293
Stage 1	-	-	-	-	-	-	854	854	-	618	618	-
Stage 2	-	-	-	-	-	-	326	618	-	416	868	-
Critical Hdwy	-	-	-	4.16	-	-	7.56	6.56	6.96	7.56	6.56	6.96
Critical Hdwy Stg 1	-	-	-	-	-	-	6.56	5.56	-	6.56	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.56	5.56	-	6.56	5.56	-
Follow-up Hdwy	-	-	-	2.23	-	-	3.53	4.03	3.33	3.53	4.03	3.33
Pot Cap-1 Maneuver	0	-	-	765	-	-	144	125	564	185	122	700
Stage 1	0	-	-	-	-	-	318	371	-	441	477	-
Stage 2	0	-	-	-	-	-	658	477	-	582	365	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	-	-	-	761	-	-	140	120	561	159	117	696
Mov Cap-2 Maneuver	-	-	-	-	-	-	140	120	-	159	117	-
Stage 1	-	-	-	-	-	-	318	369	-	441	462	-
Stage 2	-	-	-	-	-	-	639	462	-	515	363	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.3	22.7	10.2
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	294	-	-	761	-	-	696
HCM Lane V/C Ratio	0.314	-	-	0.026	-	-	0.003
HCM Control Delay (s)	22.7	-	-	9.9	-	-	10.2
HCM Lane LOS	C	-	-	A	-	-	B
HCM 95th %tile Q(veh)	1.3	-	-	0.1	-	-	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	699	108	30	385	147	46
Future Volume (veh/h)	699	108	30	385	147	46
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1900	1900
Adj Flow Rate, veh/h	803	0	34	443	169	0
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	1220		141	988	390	
Arrive On Green	0.34	0.00	0.08	0.53	0.22	0.00
Sat Flow, veh/h	3647	1585	1781	1870	1771	0
Grp Volume(v), veh/h	803	0	34	443	170	0
Grp Sat Flow(s),veh/h/ln	1777	1585	1781	1870	1782	0
Q Serve(g_s), s	7.2	0.0	0.7	5.5	3.1	0.0
Cycle Q Clear(g_c), s	7.2	0.0	0.7	5.5	3.1	0.0
Prop In Lane		1.00	1.00		0.99	0.00
Lane Grp Cap(c), veh/h	1220		141	988	392	
V/C Ratio(X)	0.66		0.24	0.45	0.43	
Avail Cap(c_a), veh/h	3291		1037	1732	1179	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	10.5	0.0	16.3	5.5	12.7	0.0
Incr Delay (d2), s/veh	0.2	0.0	0.3	0.1	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	0.0	0.2	1.0	1.0	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	10.8	0.0	16.7	5.6	13.0	0.0
LnGrp LOS	B		B	A	B	
Approach Vol, veh/h	803	A		477	170	A
Approach Delay, s/veh	10.8			6.4	13.0	
Approach LOS	B			A	B	

Timer - Assigned Phs	1	2	6	8
Phs Duration (G+Y+Rc), s	7.0	18.5	25.5	12.3
Change Period (Y+Rc), s	4.0	5.5	5.5	4.0
Max Green Setting (Gmax), s	22.0	35.0	35.0	25.0
Max Q Clear Time (g_c+I1), s	2.7	9.2	7.5	5.1
Green Ext Time (p_c), s	0.0	3.6	1.6	0.2

Intersection Summary	
HCM 6th Ctrl Delay	9.6
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	618	127	165	320	95	8
Future Volume (veh/h)	618	127	165	320	95	8
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1900	1900
Adj Flow Rate, veh/h	824	40	220	427	127	6
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Percent Heavy Veh, %	3	3	3	3	0	0
Cap, veh/h	1516	673	319	1305	185	9
Arrive On Green	0.43	0.43	0.18	0.70	0.11	0.11
Sat Flow, veh/h	3618	1565	1767	1856	1666	79
Grp Volume(v), veh/h	824	40	220	427	134	0
Grp Sat Flow(s),veh/h/ln	1763	1565	1767	1856	1758	0
Q Serve(g_s), s	7.5	0.6	5.0	3.8	3.2	0.0
Cycle Q Clear(g_c), s	7.5	0.6	5.0	3.8	3.2	0.0
Prop In Lane		1.00	1.00		0.95	0.04
Lane Grp Cap(c), veh/h	1516	673	319	1305	196	0
V/C Ratio(X)	0.54	0.06	0.69	0.33	0.69	0.00
Avail Cap(c_a), veh/h	3354	1489	1066	1765	1061	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	9.1	7.2	16.5	2.5	18.4	0.0
Incr Delay (d2), s/veh	0.4	0.1	5.6	0.2	4.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	0.2	2.1	0.2	1.4	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	9.6	7.2	22.1	2.7	22.6	0.0
LnGrp LOS	A	A	C	A	C	A
Approach Vol, veh/h	864			647	134	
Approach Delay, s/veh	9.5			9.3	22.6	
Approach LOS	A			A	C	

Timer - Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	11.8	22.5				34.3		8.8
Change Period (Y+Rc), s	4.0	4.0				4.0		4.0
Max Green Setting (Gmax), s	26.0	41.0				41.0		26.0
Max Q Clear Time (g_c+I1), s	7.0	9.5				5.8		5.2
Green Ext Time (p_c), s	1.3	9.0				4.0		0.3

Intersection Summary			
HCM 6th Ctrl Delay			10.5
HCM 6th LOS			B

Notes

User approved volume balancing among the lanes for turning movement.

Intersection						
Int Delay, s/veh	5.2					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	14	56	46	25	34	18
Future Vol, veh/h	14	56	46	25	34	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	18	18	18	18	18	18
Mvmt Flow	17	69	57	31	42	22

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	198	53	64	0	-	0
Stage 1	53	-	-	-	-	-
Stage 2	145	-	-	-	-	-
Critical Hdwy	6.58	6.38	4.28	-	-	-
Critical Hdwy Stg 1	5.58	-	-	-	-	-
Critical Hdwy Stg 2	5.58	-	-	-	-	-
Follow-up Hdwy	3.662	3.462	2.362	-	-	-
Pot Cap-1 Maneuver	756	971	1442	-	-	-
Stage 1	930	-	-	-	-	-
Stage 2	845	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	726	971	1442	-	-	-
Mov Cap-2 Maneuver	726	-	-	-	-	-
Stage 1	893	-	-	-	-	-
Stage 2	845	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.4	4.9	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1442	-	910	-	-
HCM Lane V/C Ratio	0.039	-	0.095	-	-
HCM Control Delay (s)	7.6	0	9.4	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-

Intersection	
Int Delay, s/veh	5.6

Movement	EBT	EBR	WBL	WBT	NBU	NBL	NBR
Lane Configurations							
Traffic Vol, veh/h	94	1	4	5	1	66	72
Future Vol, veh/h	94	1	4	5	1	66	72
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	None	-	None	-	-	None
Storage Length	-	-	-	-	-	0	25
Veh in Median Storage, #	0	-	-	0	-	0	-
Grade, %	0	-	-	0	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89
Heavy Vehicles, %	15	15	15	15	15	15	15
Mvmt Flow	106	1	4	6	1	74	81

Major/Minor	Major1		Major2		Minor1		
Conflicting Flow All	0	0	107	0	0	121	107
Stage 1	-	-	-	-	0	107	-
Stage 2	-	-	-	-	0	14	-
Critical Hdwy	-	-	4.25	-	-	6.55	6.35
Critical Hdwy Stg 1	-	-	-	-	-	5.55	-
Critical Hdwy Stg 2	-	-	-	-	-	5.55	-
Follow-up Hdwy	-	-	2.335	-	-	3.635	3.435
Pot Cap-1 Maneuver	-	-	1406	-	0	844	913
Stage 1	-	-	-	-	0	886	-
Stage 2	-	-	-	-	0	976	-
Platoon blocked, %	-	-		-	-		
Mov Cap-1 Maneuver	-	-	1406	-	0	841	913
Mov Cap-2 Maneuver	-	-	-	-	0	841	-
Stage 1	-	-	-	-	0	886	-
Stage 2	-	-	-	-	0	973	-

Approach	EB		WB		NB
HCM Control Delay, s	0		3.4		9.5
HCM LOS					A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	841	913	-	-	1406	-
HCM Lane V/C Ratio	0.088	0.089	-	-	0.003	-
HCM Control Delay (s)	9.7	9.3	-	-	7.6	0
HCM Lane LOS	A	A	-	-	A	A
HCM 95th %tile Q(veh)	0.3	0.3	-	-	0	-

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	121	6	60	95	5	4
Future Vol, veh/h	121	6	60	95	5	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	30
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	132	7	65	103	5	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	168	0	-	0	388	117
Stage 1	-	-	-	-	117	-
Stage 2	-	-	-	-	271	-
Critical Hdwy	4.16	-	-	-	6.46	6.26
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	2.254	-	-	-	3.554	3.354
Pot Cap-1 Maneuver	1386	-	-	-	608	924
Stage 1	-	-	-	-	898	-
Stage 2	-	-	-	-	765	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1386	-	-	-	550	924
Mov Cap-2 Maneuver	-	-	-	-	550	-
Stage 1	-	-	-	-	812	-
Stage 2	-	-	-	-	765	-

Approach	EB	WB	SB
HCM Control Delay, s	7.5	0	10.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1386	-	-	-	550	924
HCM Lane V/C Ratio	0.095	-	-	-	0.01	0.005
HCM Control Delay (s)	7.9	0	-	-	11.6	8.9
HCM Lane LOS	A	A	-	-	B	A
HCM 95th %tile Q(veh)	0.3	-	-	-	0	0

SimTraffic Post-Processor | **Aggie Research Campus**
Average Results from 10 Runs | **Existing Conditions**
Volume and Delay by Movement | **AM Peak Hour**

Intersection 9 | **Mace Blvd/Alhambra Blvd** | **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	111	110	98.7%	34.5	3.5	C
	Through	470	460	97.9%	11.6	1.9	B
	Right Turn						
	Subtotal	581	570	98.1%	16.1	1.8	B
SB	Left Turn						
	Through	797	790	99.1%	23.9	2.1	C
	Right Turn	32	35	109.4%	9.5	2.2	A
	Subtotal	829	825	99.5%	23.3	2.0	C
EB	Left Turn	15	15	97.3%	44.3	12.1	D
	Through						
	Right Turn	342	341	99.6%	2.9	0.3	A
	Subtotal	357	355	99.5%	4.5	0.5	A
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,767	1,750	99.0%	17.0	1.3	B

Intersection 10 | **Second St/Fermi Place** | **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	3	3	100.0%	11.5	13.4	B
	Through	1	2	160.0%	2.3	7.3	A
	Right Turn	14	17	122.9%	4.1	1.2	A
	Subtotal	18	22	121.1%	6.3	2.4	A
SB	Left Turn	33	32	96.7%	16.3	4.9	B
	Through						
	Right Turn	14	15	106.4%	5.5	3.3	A
	Subtotal	47	47	99.6%	13.2	3.9	B
EB	Left Turn	21	22	106.7%	15.1	5.4	B
	Through	248	249	100.4%	5.6	1.2	A
	Right Turn	10	9	89.0%	3.6	3.1	A
	Subtotal	279	280	100.5%	6.5	1.4	A
WB	Left Turn	82	86	104.6%	17.4	4.6	B
	Through	525	522	99.4%	4.8	1.5	A
	Right Turn	65	71	108.9%	0.9	0.4	A
	Subtotal	672	679	101.0%	6.0	1.5	A
Total		1,016	1,027	101.1%	6.5	1.4	A

SimTraffic Post-Processor | **Aggie Research Campus**
Average Results from 10 Runs | **Existing Conditions**
Volume and Delay by Movement | **AM Peak Hour**

Intersection 11 **Mace Blvd/Second St-Co Rd 32A** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	544	553	101.7%	32.7	14.3	C
	Through	549	540	98.3%	6.2	2.0	A
	Right Turn	24	26	106.7%	2.6	1.5	A
	Subtotal	1,117	1,119	100.2%	19.6	8.5	B
SB	Left Turn	39	37	95.6%	55.1	13.6	E
	Through	1,020	1,006	98.6%	57.6	14.4	E
	Right Turn	72	72	100.6%	24.1	10.3	C
	Subtotal	1,131	1,115	98.6%	55.4	14.2	E
EB	Left Turn	23	21	92.6%	41.8	15.9	D
	Through	18	23	125.0%	38.7	10.0	D
	Right Turn	299	306	102.2%	4.1	0.8	A
	Subtotal	340	349	102.8%	8.7	1.3	A
WB	Left Turn	16	16	101.3%	43.9	12.0	D
	Through	39	40	103.1%	39.8	8.9	D
	Right Turn	12	12	98.3%	18.5	15.3	B
	Subtotal	67	68	101.8%	37.1	6.4	D
Total		2,655	2,652	99.9%	33.9	7.6	C

Intersection 12 **Mace Park and Ride Entrance/Co Rd 32A** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	3	3	90.0%	4.1	2.0	A
	Through						
	Right Turn	1	2	210.0%	4.1	1.8	A
	Subtotal	4	5	120.0%	4.2	3.1	A
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	71	74	104.4%	1.4	0.4	A
	Right Turn	8	9	110.0%	1.0	1.0	A
	Subtotal	79	83	104.9%	1.4	0.3	A
WB	Left Turn	2	2	90.0%	0.6	1.0	A
	Through	64	65	100.9%	0.2	0.2	A
	Right Turn						
	Subtotal	66	66	100.6%	0.3	0.1	A
Total		149	154	103.4%	1.1	0.3	A

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Aggie Research Campus
Existing Conditions
AM Peak Hour

Intersection 13 **Mace Blvd/I-80 WB Ramps** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	413	405	98.0%	34.1	5.1	C
	Through	615	610	99.1%	6.7	1.6	A
	Right Turn						
	Subtotal	1,028	1,014	98.6%	17.8	2.2	B
SB	Left Turn						
	Through	1,119	1,112	99.3%	29.2	7.4	C
	Right Turn	216	224	103.5%	13.6	2.3	B
	Subtotal	1,335	1,335	100.0%	26.6	6.5	C
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	304	311	102.4%	30.2	2.2	C
	Through	3	3	96.7%	7.8	10.6	A
	Right Turn	502	505	100.6%	3.5	0.4	A
	Subtotal	809	819	101.3%	14.0	1.4	B
Total		3,172	3,169	99.9%	20.3	3.1	C

Intersection 14 **Mace Blvd/Chiles Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	9	9	98.9%	39.4	21.3	D
	Through	589	588	99.8%	33.4	3.0	C
	Right Turn	40	43	108.0%	13.5	3.7	B
	Subtotal	638	640	100.3%	32.2	2.9	C
SB	Left Turn	194	205	105.8%	50.8	15.1	D
	Through	302	307	101.7%	22.8	3.2	C
	Right Turn	227	220	96.8%	10.0	3.3	A
	Subtotal	723	732	101.3%	27.9	6.0	C
EB	Left Turn	447	443	99.0%	70.8	27.2	E
	Through	154	155	100.9%	24.7	4.8	C
	Right Turn	148	149	100.6%	1.9	0.2	A
	Subtotal	749	747	99.7%	47.1	17.1	D
WB	Left Turn	29	27	91.7%	36.5	7.1	D
	Through	90	88	97.9%	29.2	5.1	C
	Right Turn	300	301	100.4%	14.3	1.4	B
	Subtotal	419	416	99.3%	19.0	1.4	B
Total		2,529	2,535	100.2%	33.4	5.5	C

Intersection 15 **I-80 EB Off-Ramp/Chiles Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	331	326	98.6%	5.3	1.0	A
	Through						
	Right Turn	75	77	102.4%	2.9	0.6	A
	Subtotal	406	403	99.3%	4.8	0.8	A
EB	Left Turn						
	Through	418	421	100.8%	15.9	4.7	B
	Right Turn						
	Subtotal	418	421	100.8%	15.9	4.7	B
WB	Left Turn						
	Through	326	319	97.8%	10.7	1.6	B
	Right Turn						
	Subtotal	326	319	97.8%	10.7	1.6	B
Total		1,150	1,143	99.4%	10.5	1.9	B

Intersection 16 **Mace Blvd/Cowell Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	16	14	88.1%	40.1	13.1	D
	Through	281	289	102.8%	23.2	3.2	C
	Right Turn	61	60	97.7%	16.3	3.8	B
	Subtotal	358	363	101.3%	22.6	3.2	C
SB	Left Turn	98	90	91.8%	31.4	5.7	C
	Through	206	205	99.7%	15.2	3.0	B
	Right Turn	28	30	107.5%	6.5	1.6	A
	Subtotal	332	326	98.0%	19.1	2.4	B
EB	Left Turn	132	125	94.5%	27.1	4.8	C
	Through	96	96	99.5%	16.3	4.4	B
	Right Turn	12	13	105.0%	8.7	5.6	A
	Subtotal	240	233	97.0%	21.8	3.5	C
WB	Left Turn	31	30	96.8%	34.5	8.7	C
	Through	79	78	98.6%	22.2	4.5	C
	Right Turn	123	121	98.3%	13.3	4.4	B
	Subtotal	233	229	98.2%	18.8	4.5	B
Total		1,163	1,150	98.8%	20.6	2.6	C

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Aggie Research Campus
Existing Conditions
AM Peak Hour

Intersection 17 **Mace Blvd/El Marcero Dr** **All-way Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)		
			Average	Percent	Average	Std. Dev.	LOS
NB	Left Turn	11	12	105.5%	5.1	1.8	A
	Through	238	250	105.0%	9.2	1.0	A
	Right Turn	2	3	140.0%	3.1	3.9	A
	Subtotal	251	264	105.3%	9.0	1.0	A
SB	Left Turn	62	59	95.6%	7.4	1.2	A
	Through	176	174	99.0%	10.2	1.0	B
	Right Turn	11	14	130.9%	5.1	2.2	A
	Subtotal	249	248	99.6%	9.3	0.9	A
EB	Left Turn	23	21	92.6%	4.9	0.5	A
	Through	5	5	100.0%	3.6	2.5	A
	Right Turn	5	6	112.0%	1.9	1.7	A
	Subtotal	33	32	96.7%	4.7	0.4	A
WB	Left Turn	4	3	82.5%	4.0	3.6	A
	Through	11	13	121.8%	6.9	2.7	A
	Right Turn	97	91	94.2%	4.2	1.1	A
	Subtotal	112	108	96.5%	4.6	1.2	A
Total		645	652	101.1%	8.3	0.8	A

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (veh/h)	1	321	617	174	97	480	143	180	319	40	188	289
Future Volume (veh/h)	1	321	617	174	97	480	143	180	319	40	188	289
Initial Q (Qb), veh		0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00		1.00	1.00		1.00	1.00		0.94	1.00	
Parking Bus, Adj		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach			No			No			No			No
Adj Sat Flow, veh/h/ln		1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h		338	649	0	102	505	0	189	336	7	198	304
Peak Hour Factor		0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %		1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h		391	1203		134	692		234	437	347	243	446
Arrive On Green		0.22	0.34	0.00	0.07	0.19	0.00	0.13	0.23	0.23	0.14	0.24
Sat Flow, veh/h		1795	3676	0	1795	3676	0	1795	1885	1497	1795	1885
Grp Volume(v), veh/h		338	649	0	102	505	0	189	336	7	198	304
Grp Sat Flow(s),veh/h/ln		1795	1791	0	1795	1791	0	1795	1885	1497	1795	1885
Q Serve(g_s), s		14.7	11.9	0.0	4.5	10.7	0.0	8.3	13.5	0.3	8.7	11.9
Cycle Q Clear(g_c), s		14.7	11.9	0.0	4.5	10.7	0.0	8.3	13.5	0.3	8.7	11.9
Prop In Lane		1.00		0.00	1.00		0.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h		391	1203		134	692		234	437	347	243	446
V/C Ratio(X)		0.87	0.54		0.76	0.73		0.81	0.77	0.02	0.81	0.68
Avail Cap(c_a), veh/h		776	1724		665	1282		554	535	425	510	535
HCM Platoon Ratio		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)		1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh		30.6	21.8	0.0	36.8	30.7	0.0	34.2	29.1	24.0	34.0	28.1
Incr Delay (d2), s/veh		5.8	0.4	0.0	8.4	1.5	0.0	6.5	5.4	0.0	6.5	2.7
Initial Q Delay(d3),s/veh		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln		6.7	4.8	0.0	2.2	4.6	0.0	3.9	6.6	0.1	4.1	5.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh		36.4	22.2	0.0	45.2	32.2	0.0	40.7	34.6	24.1	40.5	30.9
LnGrp LOS		D	C		D	C		D	C	C	D	C
Approach Vol, veh/h			987	A		607	A		532			688
Approach Delay, s/veh			27.1			34.4			36.6			32.8
Approach LOS			C			C			D			C

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.6	20.7	14.6	24.2	10.1	32.2	15.0	23.8
Change Period (Y+Rc), s	4.0	5.0	4.0	5.0	4.0	5.0	4.0	5.0
Max Green Setting (Gmax), s	35.0	29.0	25.0	23.0	30.0	39.0	23.0	23.0
Max Q Clear Time (g_c+I1), s	16.7	12.7	10.3	13.9	6.5	13.9	10.7	15.5
Green Ext Time (p_c), s	0.9	2.9	0.4	1.7	0.2	4.5	0.4	1.2

Intersection Summary	
HCM 6th Ctrl Delay	31.8
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.
User approved ignoring U-Turning movement.
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	223
Future Volume (veh/h)	223
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus, Adj	1.00
Work Zone On Approach	
Adj Sat Flow, veh/h/ln	1885
Adj Flow Rate, veh/h	186
Peak Hour Factor	0.95
Percent Heavy Veh, %	1
Cap, veh/h	378
Arrive On Green	0.24
Sat Flow, veh/h	1596
Grp Volume(v), veh/h	186
Grp Sat Flow(s),veh/h/ln	1596
Q Serve(g_s), s	8.2
Cycle Q Clear(g_c), s	8.2
Prop In Lane	1.00
Lane Grp Cap(c), veh/h	378
V/C Ratio(X)	0.49
Avail Cap(c_a), veh/h	453
HCM Platoon Ratio	1.00
Upstream Filter(I)	1.00
Uniform Delay (d), s/veh	26.7
Incr Delay (d2), s/veh	1.0
Initial Q Delay(d3),s/veh	0.0
%ile BackOfQ(50%),veh/ln	3.1
Unsig. Movement Delay, s/veh	
LnGrp Delay(d),s/veh	27.7
LnGrp LOS	C
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	
Timer - Assigned Phs	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	815	30	37	680	0	40	0	11	0	3	0
Future Volume (veh/h)	0	815	30	37	680	0	40	0	11	0	3	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0	1870	0	1870	0	1870	0
Adj Flow Rate, veh/h	0	867	32	39	723	0	43	0	12	0	3	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	2	2	2	2	0	2	0	2	0	2	0
Cap, veh/h	0	1221	45	74	1667	0	113	0	0	0	437	0
Arrive On Green	0.00	0.35	0.35	0.04	0.47	0.00	0.06	0.00	0.00	0.00	0.23	0.00
Sat Flow, veh/h	0	3585	129	1781	3647	0	1781	43		0	1870	0
Grp Volume(v), veh/h	0	441	458	39	723	0	43	25.2		0	3	0
Grp Sat Flow(s),veh/h/ln	0	1777	1844	1781	1777	0	1781	C		0	1870	0
Q Serve(g_s), s	0.0	11.0	11.0	1.1	7.0	0.0	1.2			0.0	0.1	0.0
Cycle Q Clear(g_c), s	0.0	11.0	11.0	1.1	7.0	0.0	1.2			0.0	0.1	0.0
Prop In Lane	0.00		0.07	1.00		0.00	1.00			0.00		0.00
Lane Grp Cap(c), veh/h	0	621	645	74	1667	0	113			0	437	0
V/C Ratio(X)	0.00	0.71	0.71	0.53	0.43	0.00	0.38			0.00	0.01	0.00
Avail Cap(c_a), veh/h	0	969	1005	555	1799	0	902			0	765	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00	1.00			0.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	14.4	14.4	24.1	9.1	0.0	23.1			0.0	15.1	0.0
Incr Delay (d2), s/veh	0.0	1.5	1.5	5.7	0.2	0.0	2.1			0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.9	4.0	0.5	2.1	0.0	0.5			0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	16.0	15.9	29.8	9.3	0.0	25.2			0.0	15.1	0.0
LnGrp LOS	A	B	B	C	A	A	C			A	B	A
Approach Vol, veh/h		899			762						3	
Approach Delay, s/veh		15.9			10.3						15.1	
Approach LOS		B			B						B	

Timer - Assigned Phs	1	2	3	4		6
Phs Duration (G+Y+Rc), s	6.1	22.0	7.3	16.0		28.1
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	16.0	28.0	26.0	21.0		26.0
Max Q Clear Time (g_c+I1), s	3.1	13.0	3.2	2.1		9.0
Green Ext Time (p_c), s	0.0	4.9	0.1	0.0		4.5

Intersection Summary	
HCM 6th Ctrl Delay	13.7
HCM 6th LOS	B

Intersection	
Int Delay, s/veh	1

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	8	12	779	39	12	688	3	21	1	2	5	0	4
Future Vol, veh/h	8	12	779	39	12	688	3	21	1	2	5	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	-	None	-	-	Free	-	-	None	-	-	Stop
Storage Length	-	100	-	-	100	-	-	-	-	50	-	-	-
Veh in Median Storage, #	-	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	13	829	41	13	732	3	22	1	2	5	0	4

Major/Minor	Major1				Major2			Minor1			Minor2		
Conflicting Flow All	732	732	0	0	870	0	0	1286	1652	435	1217	1672	366
Stage 1	-	-	-	-	-	-	-	894	894	-	758	758	-
Stage 2	-	-	-	-	-	-	-	392	758	-	459	914	-
Critical Hdwy	6.44	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.52	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	493	868	-	-	770	-	0	122	98	569	137	95	631
Stage 1	-	-	-	-	-	-	0	302	358	-	365	413	-
Stage 2	-	-	-	-	-	-	0	604	413	-	551	350	-
Platoon blocked, %			-	-		-							
Mov Cap-1 Maneuver	663	663	-	-	770	-	-	117	93	569	130	90	631
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	117	93	-	130	90	-
Stage 1	-	-	-	-	-	-	-	292	347	-	353	406	-
Stage 2	-	-	-	-	-	-	-	590	406	-	530	339	-

Approach	EB				WB			NB			SB		
HCM Control Delay, s	0.3				0.2			41			21		
HCM LOS								E			C		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	116	569	663	-	-	770	-	234
HCM Lane V/C Ratio	0.202	0.004	0.032	-	-	0.017	-	0.041
HCM Control Delay (s)	43.7	11.4	10.6	-	-	9.8	-	21
HCM Lane LOS	E	B	B	-	-	A	-	C
HCM 95th %tile Q(veh)	0.7	0	0.1	-	-	0.1	-	0.1

Intersection	
Int Delay, s/veh	1.2

Movement	EBT	EBR	WBU	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Vol, veh/h	733	53	1	29	663	40	23
Future Vol, veh/h	733	53	1	29	663	40	23
Conflicting Peds, #/hr	0	1	1	0	0	0	4
Sign Control	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	-	None	-	None
Storage Length	-	-	-	100	-	0	25
Veh in Median Storage, #	0	-	-	-	0	0	-
Grade, %	0	-	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2
Mvmt Flow	780	56	1	31	705	43	24

Major/Minor	Major1		Major2			Minor1	
Conflicting Flow All	0	0	836	837	0	1226	423
Stage 1	-	-	-	-	-	809	-
Stage 2	-	-	-	-	-	417	-
Critical Hdwy	-	-	6.44	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.52	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	423	793	-	171	579
Stage 1	-	-	-	-	-	398	-
Stage 2	-	-	-	-	-	633	-
Platoon blocked, %	-	-			-		
Mov Cap-1 Maneuver	-	-	768	768	-	164	577
Mov Cap-2 Maneuver	-	-	-	-	-	164	-
Stage 1	-	-	-	-	-	398	-
Stage 2	-	-	-	-	-	606	-

Approach	EB		WB			NB
HCM Control Delay, s	0		0.4			26.1
HCM LOS						D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	164	577	-	-	768	-
HCM Lane V/C Ratio	0.259	0.042	-	-	0.042	-
HCM Control Delay (s)	34.5	11.5	-	-	9.9	-
HCM Lane LOS	D	B	-	-	A	-
HCM 95th %tile Q(veh)	1	0.1	-	-	0.1	-

Movement	EBU	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (veh/h)	1	85	671	633	133	116	59
Future Volume (veh/h)	1	85	671	633	133	116	59
Initial Q (Qb), veh		0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00			1.00	1.00	1.00
Parking Bus, Adj		1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach			No	No		No	
Adj Sat Flow, veh/h/ln		1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h		89	699	659	0	121	0
Peak Hour Factor		0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %		2	2	2	2	2	2
Cap, veh/h		115	2161	1548		171	
Arrive On Green		0.06	0.61	0.44	0.00	0.10	0.00
Sat Flow, veh/h		1781	3647	3741	0	1781	1585
Grp Volume(v), veh/h		89	699	659	0	121	0
Grp Sat Flow(s),veh/h/ln		1781	1777	1777	0	1781	1585
Q Serve(g_s), s		1.8	3.6	4.8	0.0	2.4	0.0
Cycle Q Clear(g_c), s		1.8	3.6	4.8	0.0	2.4	0.0
Prop In Lane		1.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h		115	2161	1548		171	
V/C Ratio(X)		0.77	0.32	0.43		0.71	
Avail Cap(c_a), veh/h		623	3826	3826		959	
HCM Platoon Ratio		1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)		1.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh		17.1	3.6	7.3	0.0	16.3	0.0
Incr Delay (d2), s/veh		10.4	0.2	0.4	0.0	5.3	0.0
Initial Q Delay(d3),s/veh		0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln		0.9	0.5	1.1	0.0	1.1	0.0
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh		27.5	3.7	7.7	0.0	21.6	0.0
LnGrp LOS		C	A	A		C	
Approach Vol, veh/h			788	659	A	121	A
Approach Delay, s/veh			6.4	7.7		21.6	
Approach LOS			A	A		C	

Timer - Assigned Phs		2		4	5	6	
Phs Duration (G+Y+Rc), s		28.6		8.6	6.4	22.2	
Change Period (Y+Rc), s		6.0		5.0	4.0	6.0	
Max Green Setting (Gmax), s		40.0		20.0	13.0	40.0	
Max Q Clear Time (g_c+I1), s		5.6		4.4	3.8	6.8	
Green Ext Time (p_c), s		10.1		0.2	0.1	9.0	

Intersection Summary			
HCM 6th Ctrl Delay			8.1
HCM 6th LOS			A

Notes

User approved ignoring U-Turning movement.

Unsignalized Delay for [WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	743	44	39	738	0	27	0	16	0	0	1
Future Vol, veh/h	0	743	44	39	738	0	27	0	16	0	0	1
Conflicting Peds, #/hr	0	0	4	0	0	4	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	85	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	782	46	41	777	0	28	0	17	0	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	832	0	0	1280	-	418	1254	1695	393
Stage 1	-	-	-	-	-	-	809	-	-	863	863	-
Stage 2	-	-	-	-	-	-	471	-	-	391	832	-
Critical Hdwy	-	-	-	4.14	-	-	7.54	-	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	-	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	-	-	6.54	5.54	-
Follow-up Hdwy	-	-	-	2.22	-	-	3.52	-	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	0	-	-	796	-	-	123	0	584	128	92	606
Stage 1	0	-	-	-	-	-	340	0	-	316	370	-
Stage 2	0	-	-	-	-	-	542	0	-	605	382	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	-	-	-	793	-	-	118	-	582	119	87	604
Mov Cap-2 Maneuver	-	-	-	-	-	-	118	-	-	119	87	-
Stage 1	-	-	-	-	-	-	340	-	-	316	350	-
Stage 2	-	-	-	-	-	-	513	-	-	587	381	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.5	34.2	11
HCM LOS			D	B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	168	-	-	793	-	-	604
HCM Lane V/C Ratio	0.269	-	-	0.052	-	-	0.002
HCM Control Delay (s)	34.2	-	-	9.8	-	-	11
HCM Lane LOS	D	-	-	A	-	-	B
HCM 95th %tile Q(veh)	1	-	-	0.2	-	-	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	614	145	13	644	133	11
Future Volume (veh/h)	614	145	13	644	133	11
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1900	1900
Adj Flow Rate, veh/h	646	0	14	678	140	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	1141		65	901	394	
Arrive On Green	0.32	0.00	0.04	0.48	0.22	0.00
Sat Flow, veh/h	3647	1585	1781	1870	1769	0
Grp Volume(v), veh/h	646	0	14	678	141	0
Grp Sat Flow(s),veh/h/ln	1777	1585	1781	1870	1782	0
Q Serve(g_s), s	4.9	0.0	0.2	9.5	2.1	0.0
Cycle Q Clear(g_c), s	4.9	0.0	0.2	9.5	2.1	0.0
Prop In Lane		1.00	1.00		0.99	0.00
Lane Grp Cap(c), veh/h	1141		65	901	397	
V/C Ratio(X)	0.57		0.22	0.75	0.36	
Avail Cap(c_a), veh/h	3868		1219	2036	1385	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	9.1	0.0	15.0	6.8	10.5	0.0
Incr Delay (d2), s/veh	0.2	0.0	0.6	0.5	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	0.1	1.5	0.6	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	9.2	0.0	15.7	7.3	10.8	0.0
LnGrp LOS	A		B	A	B	
Approach Vol, veh/h	646	A		692	141	A
Approach Delay, s/veh	9.2			7.4	10.8	
Approach LOS	A			A	B	

Timer - Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	5.2	15.8				21.0		11.2
Change Period (Y+Rc), s	4.0	5.5				5.5		4.0
Max Green Setting (Gmax), s	22.0	35.0				35.0		25.0
Max Q Clear Time (g_c+I1), s	2.2	6.9				11.5		4.1
Green Ext Time (p_c), s	0.0	2.8				2.8		0.2

Intersection Summary	
HCM 6th Ctrl Delay	8.5
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	606	19	22	620	37	8
Future Volume (veh/h)	606	19	22	620	37	8
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.98	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1900	1900
Adj Flow Rate, veh/h	652	12	24	667	40	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	1	1	1	1	0	0
Cap, veh/h	1624	709	66	1207	103	0
Arrive On Green	0.45	0.45	0.04	0.64	0.06	0.00
Sat Flow, veh/h	3676	1564	1795	1885	1754	0
Grp Volume(v), veh/h	652	12	24	667	41	0
Grp Sat Flow(s),veh/h/ln	1791	1564	1795	1885	1797	0
Q Serve(g_s), s	3.2	0.1	0.3	5.2	0.6	0.0
Cycle Q Clear(g_c), s	3.2	0.1	0.3	5.2	0.6	0.0
Prop In Lane		1.00	1.00		0.98	0.00
Lane Grp Cap(c), veh/h	1624	709	66	1207	106	0
V/C Ratio(X)	0.40	0.02	0.36	0.55	0.39	0.00
Avail Cap(c_a), veh/h	5519	2410	1754	2905	1756	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	4.9	4.0	12.5	2.7	12.1	0.0
Incr Delay (d2), s/veh	0.2	0.0	7.1	0.6	2.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.2	0.2	0.2	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	5.1	4.0	19.6	3.2	14.4	0.0
LnGrp LOS	A	A	B	A	B	A
Approach Vol, veh/h	664			691	41	
Approach Delay, s/veh	5.1			3.8	14.4	
Approach LOS	A			A	B	

Timer - Assigned Phs	1	2	6	8
Phs Duration (G+Y+Rc), s	5.0	16.1	21.0	5.6
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	26.0	41.0	41.0	26.0
Max Q Clear Time (g_c+I1), s	2.3	5.2	7.2	2.6
Green Ext Time (p_c), s	0.1	6.8	7.2	0.1

Intersection Summary	
HCM 6th Ctrl Delay	4.7
HCM 6th LOS	A

Notes
User approved volume balancing among the lanes for turning movement.

Intersection						
Int Delay, s/veh	6.8					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	218	43	56	44	9
Future Vol, veh/h	5	218	43	56	44	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	266	52	68	54	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	232	60	65	0	-	0
Stage 1	60	-	-	-	-	-
Stage 2	172	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	756	1005	1537	-	-	-
Stage 1	963	-	-	-	-	-
Stage 2	858	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	730	1005	1537	-	-	-
Mov Cap-2 Maneuver	730	-	-	-	-	-
Stage 1	929	-	-	-	-	-
Stage 2	858	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10	3.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1537	-	997	-	-
HCM Lane V/C Ratio	0.034	-	0.273	-	-
HCM Control Delay (s)	7.4	0	10	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	1.1	-	-

Intersection	
Int Delay, s/veh	4.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	265	2	3	6	88	79
Future Vol, veh/h	265	2	3	6	88	79
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	25
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	340	3	4	8	113	101

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	343	0	358	342
Stage 1	-	-	-	-	342	-
Stage 2	-	-	-	-	16	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1216	-	640	701
Stage 1	-	-	-	-	719	-
Stage 2	-	-	-	-	1007	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1216	-	638	701
Mov Cap-2 Maneuver	-	-	-	-	638	-
Stage 1	-	-	-	-	719	-
Stage 2	-	-	-	-	1004	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.7	11.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	638	701	-	-	1216	-
HCM Lane V/C Ratio	0.177	0.144	-	-	0.003	-
HCM Control Delay (s)	11.9	11	-	-	8	0
HCM Lane LOS	B	B	-	-	A	A
HCM 95th %tile Q(veh)	0.6	0.5	-	-	0	-

Intersection						
Int Delay, s/veh	4.5					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	320	3	73	268	0	2
Future Vol, veh/h	320	3	73	268	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	30
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	348	3	79	291	0	2

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	370	0	-	0	924	225
Stage 1	-	-	-	-	225	-
Stage 2	-	-	-	-	699	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1183	-	-	-	298	812
Stage 1	-	-	-	-	810	-
Stage 2	-	-	-	-	491	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1183	-	-	-	210	812
Mov Cap-2 Maneuver	-	-	-	-	210	-
Stage 1	-	-	-	-	571	-
Stage 2	-	-	-	-	491	-

Approach	EB	WB	SB
HCM Control Delay, s	9.2	0	9.4
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1183	-	-	-	-	812
HCM Lane V/C Ratio	0.294	-	-	-	-	0.003
HCM Control Delay (s)	9.3	0	-	-	0	9.4
HCM Lane LOS	A	A	-	-	A	A
HCM 95th %tile Q(veh)	1.2	-	-	-	-	0

SimTraffic Post-Processor | **Aggie Research Campus**
Average Results from 10 Runs | **Existing Conditions**
Volume and Delay by Movement | **PM Peak Hour**

Intersection 9 **Mace Blvd/Alhambra Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	252	253	100.5%	42.8	5.7	D
	Through	609	606	99.5%	14.1	3.1	B
	Right Turn						
	Subtotal	861	859	99.8%	22.8	3.0	C
SB	Left Turn						
	Through	651	652	100.2%	23.8	3.2	C
	Right Turn	23	23	100.0%	7.1	2.5	A
	Subtotal	674	675	100.2%	23.3	3.2	C
EB	Left Turn	12	11	92.5%	37.5	14.0	D
	Through						
	Right Turn	199	195	97.9%	2.1	0.2	A
	Subtotal	211	206	97.6%	4.1	1.1	A
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,746	1,740	99.7%	20.7	2.5	C

Intersection 10 **Second St/Fermi Place** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	14	12	87.1%	41.5	9.5	D
	Through	4	4	97.5%	23.6	26.7	C
	Right Turn	33	31	93.0%	7.8	2.4	A
	Subtotal	51	47	91.8%	19.7	5.3	B
SB	Left Turn	172	171	99.3%	22.9	4.6	C
	Through						
	Right Turn	75	74	98.5%	4.9	1.3	A
	Subtotal	247	245	99.1%	17.3	3.0	B
EB	Left Turn	88	87	98.4%	28.5	4.0	C
	Through	610	619	101.4%	13.2	2.0	B
	Right Turn	7	7	101.4%	12.2	9.8	B
	Subtotal	705	712	101.0%	15.2	2.0	B
WB	Left Turn	56	55	98.4%	29.6	6.8	C
	Through	270	269	99.5%	15.1	2.3	B
	Right Turn	120	121	100.9%	3.9	1.0	A
	Subtotal	446	445	99.7%	13.7	2.1	B
Total		1,449	1,449	100.0%	15.2	1.6	B

SimTraffic Post-Processor **Aggie Research Campus**
Average Results from 10 Runs **Existing Conditions**
Volume and Delay by Movement **PM Peak Hour**

Intersection 11 **Mace Blvd/Second St-Co Rd 32A** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	367	371	101.0%	31.6	2.8	C
	Through	716	712	99.5%	21.9	4.6	C
	Right Turn	32	31	98.1%	15.7	4.2	B
	Subtotal	1,115	1,114	99.9%	25.1	3.5	C
SB	Left Turn	98	98	100.0%	48.9	5.8	D
	Through	660	661	100.2%	39.2	3.9	D
	Right Turn	93	90	96.9%	9.5	1.7	A
	Subtotal	851	850	99.8%	37.2	3.1	D
EB	Left Turn	124	122	98.7%	35.0	5.0	C
	Through	113	119	105.0%	29.3	4.7	C
	Right Turn	632	632	100.0%	12.7	2.8	B
	Subtotal	869	873	100.4%	17.9	2.0	B
WB	Left Turn	19	19	98.4%	44.7	11.1	D
	Through	22	19	86.4%	41.2	10.2	D
	Right Turn	41	47	113.4%	11.7	8.4	B
	Subtotal	82	84	102.7%	26.8	9.0	C
Total		2,917	2,921	100.1%	26.6	1.6	C

Intersection 12 **Mace Park and Ride Entrance/Co Rd 32A** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	22	25	111.8%	5.5	1.2	A
	Through						
	Right Turn	12	13	110.8%	2.7	0.8	A
	Subtotal	34	38	111.5%	4.6	1.0	A
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	225	229	102.0%	2.6	0.5	A
	Right Turn	14	15	105.7%	2.3	0.6	A
	Subtotal	239	244	102.2%	2.5	0.5	A
WB	Left Turn	2	1	60.0%	0.3	0.7	A
	Through	60	59	98.8%	0.2	0.2	A
	Right Turn						
	Subtotal	62	61	97.6%	0.2	0.2	A
Total		335	343	102.3%	2.4	0.4	A

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Aggie Research Campus
Existing Conditions
PM Peak Hour

Intersection 13 **Mace Blvd/I-80 WB Ramps** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	253	233	92.0%	33.6	8.1	C
	Through	446	430	96.3%	7.0	2.0	A
	Right Turn						
	Subtotal	699	662	94.7%	15.9	3.3	B
SB	Left Turn						
	Through	1,092	1,057	96.8%	100.5	84.3	F
	Right Turn	219	222	101.5%	55.9	55.9	E
	Subtotal	1,311	1,279	97.6%	93.7	80.7	F
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	387	387	99.9%	30.0	7.5	C
	Through						
	Right Turn	669	682	102.0%	4.3	0.4	A
	Subtotal	1,056	1,069	101.2%	13.3	2.3	B
Total		3,066	3,010	98.2%	47.6	34.2	D

Intersection 14 **Mace Blvd/Chiles Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	24	21	87.5%	96.2	21.6	F
	Through	518	457	88.1%	121.9	24.1	F
	Right Turn	162	140	86.4%	101.5	26.0	F
	Subtotal	704	618	87.7%	117.0	24.1	F
SB	Left Turn	259	246	94.8%	91.7	42.1	F
	Through	430	425	98.8%	43.6	13.7	D
	Right Turn	289	283	97.9%	28.8	13.3	C
	Subtotal	978	953	97.5%	52.3	20.8	D
EB	Left Turn	339	310	91.3%	132.2	52.5	F
	Through	275	264	96.0%	25.7	5.1	C
	Right Turn	85	80	94.0%	2.1	0.5	A
	Subtotal	699	654	93.5%	77.7	31.0	E
WB	Left Turn	46	46	99.8%	36.2	8.4	D
	Through	56	54	95.9%	29.5	6.2	C
	Right Turn	263	261	99.2%	34.7	16.6	C
	Subtotal	365	361	98.8%	34.2	12.3	C
Total		2,746	2,585	94.1%	69.4	6.3	E

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Aggie Research Campus
Existing Conditions
PM Peak Hour

Intersection 15 **I-80 EB Off-Ramp/Chiles Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	175	170	97.0%	16.6	13.6	B
	Through						
	Right Turn	29	27	93.8%	3.1	0.7	A
	Subtotal	204	197	96.6%	14.3	10.5	B
EB	Left Turn						
	Through	524	490	93.6%	92.2	131.1	F
	Right Turn						
	Subtotal	524	490	93.6%	92.2	131.1	F
WB	Left Turn						
	Through	369	357	96.8%	8.5	1.3	A
	Right Turn						
	Subtotal	369	357	96.8%	8.5	1.3	A
Total		1,097	1,045	95.2%	41.4	42.9	D

Intersection 16 **Mace Blvd/Cowell Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	15	15	98.0%	144.0	95.2	F
	Through	358	328	91.7%	168.5	117.6	F
	Right Turn	27	24	87.4%	154.2	109.7	F
	Subtotal	400	367	91.7%	167.1	116.4	F
SB	Left Turn	142	141	99.4%	36.3	8.4	D
	Through	225	215	95.4%	16.4	4.5	B
	Right Turn	67	62	93.0%	6.6	1.5	A
	Subtotal	434	418	96.3%	21.8	4.5	C
EB	Left Turn	119	111	93.1%	53.2	32.2	D
	Through	102	100	98.1%	25.5	15.0	C
	Right Turn	24	25	105.4%	18.9	21.4	B
	Subtotal	245	236	96.4%	37.7	22.6	D
WB	Left Turn	21	20	94.8%	45.5	27.0	D
	Through	47	50	106.8%	42.9	19.4	D
	Right Turn	98	98	100.1%	36.4	21.6	D
	Subtotal	166	168	101.3%	38.7	19.1	D
Total		1,245	1,189	95.5%	67.5	34.0	E

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Aggie Research Campus
Existing Conditions
PM Peak Hour

Intersection 17 **Mace Blvd/El Marcero Dr** **All-way Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)		
			Average	Percent	Average	Std. Dev.	LOS
NB	Left Turn	14	12	86.4%	30.4	54.0	D
	Through	329	313	95.2%	54.9	72.3	F
	Right Turn	9	10	108.9%	54.3	72.0	F
	Subtotal	352	335	95.2%	53.8	71.3	F
SB	Left Turn	99	95	96.4%	8.0	1.0	A
	Through	162	156	96.2%	10.1	1.0	B
	Right Turn	9	9	102.2%	5.2	2.0	A
	Subtotal	270	260	96.4%	9.2	1.0	A
EB	Left Turn	4	4	92.5%	2.2	2.8	A
	Through	7	8	114.3%	6.7	4.0	A
	Right Turn	10	11	106.0%	3.5	1.2	A
	Subtotal	21	22	106.2%	4.8	1.2	A
WB	Left Turn	7	7	100.0%	10.0	15.8	A
	Through	14	14	100.7%	15.1	18.8	C
	Right Turn	67	69	102.2%	20.3	26.4	C
	Subtotal	88	90	101.8%	17.8	21.7	C
Total		731	707	96.8%	28.1	30.0	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Traffic Volume (veh/h)	153	686	132	93	497	114	114	192	40	2	317	358
Future Volume (veh/h)	153	686	132	93	497	114	114	192	40	2	317	358
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0		0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.96		1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Work Zone On Approach		No			No			No				No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870		1870	1870
Adj Flow Rate, veh/h	168	754	0	102	546	0	125	211	4		348	393
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91		0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2		2	2
Cap, veh/h	214	1053		135	894		163	312	253		398	558
Arrive On Green	0.12	0.30	0.00	0.08	0.25	0.00	0.09	0.17	0.17		0.22	0.30
Sat Flow, veh/h	1781	3647	0	1781	3647	0	1781	1870	1519		1781	1870
Grp Volume(v), veh/h	168	754	0	102	546	0	125	211	4		348	393
Grp Sat Flow(s),veh/h/ln	1781	1777	0	1781	1777	0	1781	1870	1519		1781	1870
Q Serve(g_s), s	6.9	14.3	0.0	4.2	10.3	0.0	5.2	8.0	0.2		14.2	14.1
Cycle Q Clear(g_c), s	6.9	14.3	0.0	4.2	10.3	0.0	5.2	8.0	0.2		14.2	14.1
Prop In Lane	1.00		0.00	1.00		0.00	1.00		1.00		1.00	
Lane Grp Cap(c), veh/h	214	1053		135	894		163	312	253		398	558
V/C Ratio(X)	0.78	0.72		0.76	0.61		0.77	0.68	0.02		0.88	0.70
Avail Cap(c_a), veh/h	825	1834		707	1364		589	569	462		542	569
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00		1.00	1.00
Uniform Delay (d), s/veh	32.3	23.8	0.0	34.2	25.0	0.0	33.5	29.6	26.3		28.3	23.5
Incr Delay (d2), s/veh	6.2	0.9	0.0	8.3	0.7	0.0	7.3	2.6	0.0		11.5	3.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	5.7	0.0	2.1	4.1	0.0	2.5	3.7	0.1		7.1	6.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.5	24.7	0.0	42.6	25.7	0.0	40.9	32.1	26.3		39.9	27.4
LnGrp LOS	D	C		D	C		D	C	C		D	C
Approach Vol, veh/h		922	A		648	A		340				781
Approach Delay, s/veh		27.2			28.3			35.3				32.5
Approach LOS		C			C			D				C

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.1	24.0	10.9	27.5	9.7	27.4	20.9	17.6
Change Period (Y+Rc), s	4.0	5.0	4.0	5.0	4.0	5.0	4.0	5.0
Max Green Setting (Gmax), s	35.0	29.0	25.0	23.0	30.0	39.0	23.0	23.0
Max Q Clear Time (g_c+I1), s	8.9	12.3	7.2	16.1	6.2	16.3	16.2	10.0
Green Ext Time (p_c), s	0.4	3.2	0.3	1.4	0.2	5.3	0.6	0.9

Intersection Summary	
HCM 6th Ctrl Delay	30.0
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

User approved ignoring U-Turning movement.

Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	225
Future Volume (veh/h)	225
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus, Adj	1.00
Work Zone On Approach	
Adj Sat Flow, veh/h/ln	1870
Adj Flow Rate, veh/h	40
Peak Hour Factor	0.91
Percent Heavy Veh, %	2
Cap, veh/h	473
Arrive On Green	0.30
Sat Flow, veh/h	1585
Grp Volume(v), veh/h	40
Grp Sat Flow(s),veh/h/ln	1585
Q Serve(g_s), s	1.4
Cycle Q Clear(g_c), s	1.4
Prop In Lane	1.00
Lane Grp Cap(c), veh/h	473
V/C Ratio(X)	0.08
Avail Cap(c_a), veh/h	483
HCM Platoon Ratio	1.00
Upstream Filter(I)	1.00
Uniform Delay (d), s/veh	19.1
Incr Delay (d2), s/veh	0.1
Initial Q Delay(d3),s/veh	0.0
%ile BackOfQ(50%),veh/ln	0.5
Unsig. Movement Delay, s/veh	
LnGrp Delay(d),s/veh	19.2
LnGrp LOS	B
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	
Timer - Assigned Phs	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	986	57	65	635	0	69	0	27	0	69	0
Future Volume (veh/h)	0	986	57	65	635	0	69	0	27	0	69	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0	1870	0	1870	0	1870	0
Adj Flow Rate, veh/h	0	1072	62	71	690	0	75	0	29	0	75	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0	2	0	2	0	2	0
Cap, veh/h	0	1400	81	108	1938	0	143	0	0	0	281	0
Arrive On Green	0.00	0.41	0.41	0.06	0.55	0.00	0.08	0.00	0.00	0.00	0.15	0.00
Sat Flow, veh/h	0	3508	197	1781	3647	0	1781	75		0	1870	0
Grp Volume(v), veh/h	0	558	576	71	690	0	75	26.6		0	75	0
Grp Sat Flow(s),veh/h/ln	0	1777	1835	1781	1777	0	1781	C		0	1870	0
Q Serve(g_s), s	0.0	14.5	14.5	2.1	5.9	0.0	2.2			0.0	1.9	0.0
Cycle Q Clear(g_c), s	0.0	14.5	14.5	2.1	5.9	0.0	2.2			0.0	1.9	0.0
Prop In Lane	0.00		0.11	1.00		0.00	1.00			0.00		0.00
Lane Grp Cap(c), veh/h	0	729	753	108	1938	0	143			0	281	0
V/C Ratio(X)	0.00	0.77	0.77	0.66	0.36	0.00	0.52			0.00	0.27	0.00
Avail Cap(c_a), veh/h	0	927	957	531	1938	0	863			0	732	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00	1.00			0.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	13.6	13.6	24.7	6.9	0.0	23.7			0.0	20.2	0.0
Incr Delay (d2), s/veh	0.0	2.9	2.9	6.5	0.1	0.0	2.9			0.0	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	5.2	5.4	1.0	1.6	0.0	1.0			0.0	0.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	16.6	16.5	31.2	7.0	0.0	26.6			0.0	20.7	0.0
LnGrp LOS	A	B	B	C	A	A	C			A	C	A
Approach Vol, veh/h		1134			761						75	
Approach Delay, s/veh		16.5			9.3						20.7	
Approach LOS		B			A						C	
Timer - Assigned Phs	1	2	3	4		6						
Phs Duration (G+Y+Rc), s	7.3	26.0	8.3	12.1		33.3						
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0		4.0						
Max Green Setting (Gmax), s	16.0	28.0	26.0	21.0		26.0						
Max Q Clear Time (g_c+I1), s	4.1	16.5	4.2	3.9		7.9						
Green Ext Time (p_c), s	0.1	5.5	0.2	0.3		4.4						

Intersection Summary		
HCM 6th Ctrl Delay		14.3
HCM 6th LOS		B

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	994	20	32	640	3	29	0	29	8	0	24
Future Vol, veh/h	12	994	20	32	640	3	29	0	29	8	0	24
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Free	-	-	None	-	-	Stop
Storage Length	100	-	-	100	-	-	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	1080	22	35	696	3	32	0	32	9	0	26

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	696	0	0	1102	0	0	1535	1883	551	1332	1894	348
Stage 1	-	-	-	-	-	-	1117	1117	-	766	766	-
Stage 2	-	-	-	-	-	-	418	766	-	566	1128	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	896	-	-	629	-	0	79	70	478	112	69	648
Stage 1	-	-	-	-	-	0	221	281	-	361	410	-
Stage 2	-	-	-	-	-	0	583	410	-	476	278	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	896	-	-	629	-	-	72	65	478	99	64	648
Mov Cap-2 Maneuver	-	-	-	-	-	-	72	65	-	99	64	-
Stage 1	-	-	-	-	-	-	218	277	-	356	387	-
Stage 2	-	-	-	-	-	-	528	387	-	438	274	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.5	51.2	15
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	72	478	896	-	-	629	-	396
HCM Lane V/C Ratio	0.438	0.066	0.015	-	-	0.055	-	0.088
HCM Control Delay (s)	89.3	13.1	9.1	-	-	11.1	-	15
HCM Lane LOS	F	B	A	-	-	B	-	C
HCM 95th %tile Q(veh)	1.7	0.2	0	-	-	0.2	-	0.3

Intersection	
Int Delay, s/veh	1.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1006	25	17	634	41	29
Future Vol, veh/h	1006	25	17	634	41	29
Conflicting Peds, #/hr	0	1	2	0	0	5
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	25
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1093	27	18	689	45	32

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1122	0	1490	567
Stage 1	-	-	-	-	1109	-
Stage 2	-	-	-	-	381	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	618	-	115	467
Stage 1	-	-	-	-	277	-
Stage 2	-	-	-	-	660	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	617	-	111	464
Mov Cap-2 Maneuver	-	-	-	-	111	-
Stage 1	-	-	-	-	276	-
Stage 2	-	-	-	-	641	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	39.3
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	111	464	-	-	617	-
HCM Lane V/C Ratio	0.401	0.068	-	-	0.03	-
HCM Control Delay (s)	57.7	13.3	-	-	11	-
HCM Lane LOS	F	B	-	-	B	-
HCM 95th %tile Q(veh)	1.7	0.2	-	-	0.1	-

Movement	EBU	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (veh/h)	1	40	994	519	72	188	131
Future Volume (veh/h)	1	40	994	519	72	188	131
Initial Q (Qb), veh		0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00			1.00	1.00	1.00
Parking Bus, Adj		1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach			No	No		No	
Adj Sat Flow, veh/h/ln		1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h		46	1143	597	0	216	0
Peak Hour Factor		0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %		3	3	3	3	3	3
Cap, veh/h		68	2115	1671		283	
Arrive On Green		0.04	0.60	0.47	0.00	0.16	0.00
Sat Flow, veh/h		1767	3618	3711	0	1767	1572
Grp Volume(v), veh/h		46	1143	597	0	216	0
Grp Sat Flow(s),veh/h/ln		1767	1763	1763	0	1767	1572
Q Serve(g_s), s		1.2	8.8	4.9	0.0	5.4	0.0
Cycle Q Clear(g_c), s		1.2	8.8	4.9	0.0	5.4	0.0
Prop In Lane		1.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h		68	2115	1671		283	
V/C Ratio(X)		0.67	0.54	0.36		0.76	
Avail Cap(c_a), veh/h		501	3077	3077		771	
HCM Platoon Ratio		1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)		1.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh		21.7	5.4	7.6	0.0	18.4	0.0
Incr Delay (d2), s/veh		10.9	0.5	0.3	0.0	4.3	0.0
Initial Q Delay(d3),s/veh		0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln		0.6	1.8	1.3	0.0	2.3	0.0
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh		32.6	5.9	7.9	0.0	22.7	0.0
LnGrp LOS		C	A	A		C	
Approach Vol, veh/h			1189	597	A	216	A
Approach Delay, s/veh			6.9	7.9		22.7	
Approach LOS			A	A		C	

Timer - Assigned Phs	2	4	5	6
Phs Duration (G+Y+Rc), s	33.5	12.3	5.8	27.7
Change Period (Y+Rc), s	6.0	5.0	4.0	6.0
Max Green Setting (Gmax), s	40.0	20.0	13.0	40.0
Max Q Clear Time (g_c+I1), s	10.8	7.4	3.2	6.9
Green Ext Time (p_c), s	16.7	0.5	0.0	8.0

Intersection Summary	
HCM 6th Ctrl Delay	8.9
HCM 6th LOS	A

Notes

User approved ignoring U-Turning movement.

Unsignalized Delay for [WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1156	26	18	564	0	25	0	63	0	0	2
Future Vol, veh/h	0	1156	26	18	564	0	25	0	63	0	0	2
Conflicting Peds, #/hr	0	0	7	0	0	7	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	85	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	1284	29	20	627	0	28	0	70	0	0	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	1320	0	0	1660	1980	664	1316	1994	321
Stage 1	-	-	-	-	-	-	1306	1306	-	674	674	-
Stage 2	-	-	-	-	-	-	354	674	-	642	1320	-
Critical Hdwy	-	-	-	4.16	-	-	7.56	6.56	6.96	7.56	6.56	6.96
Critical Hdwy Stg 1	-	-	-	-	-	-	6.56	5.56	-	6.56	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.56	5.56	-	6.56	5.56	-
Follow-up Hdwy	-	-	-	2.23	-	-	3.53	4.03	3.33	3.53	4.03	3.33
Pot Cap-1 Maneuver	0	-	-	514	-	-	63	60	401	114	59	672
Stage 1	0	-	-	-	-	-	167	226	-	408	449	-
Stage 2	0	-	-	-	-	-	633	449	-	427	223	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	-	-	-	511	-	-	61	57	399	91	56	668
Mov Cap-2 Maneuver	-	-	-	-	-	-	61	57	-	91	56	-
Stage 1	-	-	-	-	-	-	167	225	-	408	429	-
Stage 2	-	-	-	-	-	-	606	429	-	352	222	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.4	61.3	10.4
HCM LOS			F	B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	155	-	-	511	-	-	668
HCM Lane V/C Ratio	0.631	-	-	0.039	-	-	0.003
HCM Control Delay (s)	61.3	-	-	12.3	-	-	10.4
HCM Lane LOS	F	-	-	B	-	-	B
HCM 95th %tile Q(veh)	3.5	-	-	0.1	-	-	0

Intersection	
Int Delay, s/veh	7.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	14	125	305	25	34	18
Future Vol, veh/h	14	125	305	25	34	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	18	18	18	18	18	18
Mvmt Flow	17	154	377	31	42	22

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	838	53	64	0	-	0
Stage 1	53	-	-	-	-	-
Stage 2	785	-	-	-	-	-
Critical Hdwy	6.58	6.38	4.28	-	-	-
Critical Hdwy Stg 1	5.58	-	-	-	-	-
Critical Hdwy Stg 2	5.58	-	-	-	-	-
Follow-up Hdwy	3.662	3.462	2.362	-	-	-
Pot Cap-1 Maneuver	316	971	1442	-	-	-
Stage 1	930	-	-	-	-	-
Stage 2	423	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	232	971	1442	-	-	-
Mov Cap-2 Maneuver	232	-	-	-	-	-
Stage 1	683	-	-	-	-	-
Stage 2	423	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.4	7.7	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1442	-	735	-	-
HCM Lane V/C Ratio	0.261	-	0.233	-	-
HCM Control Delay (s)	8.4	0	11.4	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	1.1	-	0.9	-	-

Intersection							
Int Delay, s/veh	9.3						

Movement	EBT	EBR	WBL	WBT	NBU	NBL	NBR
Lane Configurations							
Traffic Vol, veh/h	163	1	4	5	1	325	72
Future Vol, veh/h	163	1	4	5	1	325	72
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	None	-	None	-	-	None
Storage Length	-	-	-	-	-	0	25
Veh in Median Storage, #	0	-	-	0	-	0	-
Grade, %	0	-	-	0	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89
Heavy Vehicles, %	15	15	15	15	15	15	15
Mvmt Flow	183	1	4	6	1	365	81

Major/Minor	Major1		Major2		Minor1		
Conflicting Flow All	0	0	184	0	0	198	184
Stage 1	-	-	-	-	0	184	-
Stage 2	-	-	-	-	0	14	-
Critical Hdwy	-	-	4.25	-	-	6.55	6.35
Critical Hdwy Stg 1	-	-	-	-	-	5.55	-
Critical Hdwy Stg 2	-	-	-	-	-	5.55	-
Follow-up Hdwy	-	-	2.335	-	-	3.635	3.435
Pot Cap-1 Maneuver	-	-	1316	-	0	762	826
Stage 1	-	-	-	-	0	817	-
Stage 2	-	-	-	-	0	976	-
Platoon blocked, %	-	-		-	-		
Mov Cap-1 Maneuver	-	-	1316	-	0	760	826
Mov Cap-2 Maneuver	-	-	-	-	0	760	-
Stage 1	-	-	-	-	0	817	-
Stage 2	-	-	-	-	0	973	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.4	13.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	760	826	-	-	1316	-
HCM Lane V/C Ratio	0.48	0.098	-	-	0.003	-
HCM Control Delay (s)	14	9.8	-	-	7.7	0
HCM Lane LOS	B	A	-	-	A	A
HCM 95th %tile Q(veh)	2.6	0.3	-	-	0	-

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	121	6	60	164	5	4
Future Vol, veh/h	121	6	60	164	5	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	30
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	132	7	65	178	5	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	243	0	-	0	425	154
Stage 1	-	-	-	-	154	-
Stage 2	-	-	-	-	271	-
Critical Hdwy	4.16	-	-	-	6.46	6.26
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	2.254	-	-	-	3.554	3.354
Pot Cap-1 Maneuver	1300	-	-	-	578	882
Stage 1	-	-	-	-	864	-
Stage 2	-	-	-	-	765	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1300	-	-	-	519	882
Mov Cap-2 Maneuver	-	-	-	-	519	-
Stage 1	-	-	-	-	776	-
Stage 2	-	-	-	-	765	-

Approach	EB	WB	SB
HCM Control Delay, s	7.7	0	10.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1300	-	-	-	519	882
HCM Lane V/C Ratio	0.101	-	-	-	0.01	0.005
HCM Control Delay (s)	8.1	0	-	-	12	9.1
HCM Lane LOS	A	A	-	-	B	A
HCM 95th %tile Q(veh)	0.3	-	-	-	0	0

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Aggie Research Campus
Existing Plus Project
AM Peak Hour

Intersection 9 **Mace Blvd/Alhambra Blvd-ARC Dwy 1** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	111	85	76.8%	80.0	13.8	E
	Through	620	499	80.4%	70.8	9.6	E
	Right Turn	350	287	82.1%	59.4	10.9	E
	Subtotal	1,081	871	80.6%	68.0	10.7	E
SB	Left Turn	200	161	80.6%	239.2	53.2	F
	Through	763	570	74.8%	265.3	23.4	F
	Right Turn	32	23	72.8%	209.2	57.1	F
	Subtotal	995	755	75.9%	259.1	14.9	F
EB	Left Turn	15	14	90.7%	97.4	56.7	F
	Through	212	212	100.1%	94.2	51.4	F
	Right Turn	400	381	95.2%	113.4	89.5	F
	Subtotal	627	607	96.8%	107.5	74.8	F
WB	Left Turn	182	93	50.9%	637.0	86.9	F
	Through	46	36	78.5%	160.5	127.8	F
	Right Turn	28	22	77.9%	146.4	158.0	F
	Subtotal	256	151	58.8%	482.3	137.8	F
Total		2,959	2,383	80.5%	159.4	20.0	F

Intersection 10 **Second St/Fermi Place** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	3	2	76.7%	5.0	11.9	A
	Through	1	1	70.0%	2.4	7.7	A
	Right Turn	14	15	105.0%	3.9	1.0	A
	Subtotal	18	18	98.3%	4.8	2.0	A
SB	Left Turn	36	34	95.0%	19.0	5.9	B
	Through						
	Right Turn	14	14	102.1%	4.7	3.8	A
	Subtotal	50	49	97.0%	15.0	4.6	B
EB	Left Turn	21	19	91.0%	17.5	5.8	B
	Through	308	301	97.8%	5.4	1.4	A
	Right Turn	10	9	90.0%	1.9	1.6	A
	Subtotal	339	329	97.2%	6.1	1.3	A
WB	Left Turn	82	66	80.2%	19.0	4.6	B
	Through	572	483	84.4%	5.5	1.6	A
	Right Turn	77	62	80.5%	0.9	0.4	A
	Subtotal	731	611	83.5%	6.5	1.5	A
Total		1,138	1,006	88.4%	6.8	1.5	A

SimTraffic Post-Processor | **Aggie Research Campus**
Average Results from 10 Runs | **Existing Plus Project**
Volume and Delay by Movement | **AM Peak Hour**

Intersection 11 **Mace Blvd/Second St-Co Rd 32A** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	544	449	82.5%	173.5	22.9	F
	Through	1,017	817	80.4%	184.3	40.8	F
	Right Turn	464	374	80.7%	171.3	36.5	F
	Subtotal	2,025	1,641	81.0%	178.6	34.1	F
SB	Left Turn	63	46	72.4%	160.5	8.6	F
	Through	1,162	871	74.9%	181.8	8.2	F
	Right Turn	112	86	76.8%	128.8	7.5	F
	Subtotal	1,337	1,003	75.0%	176.4	8.4	F
EB	Left Turn	53	45	84.7%	95.1	35.0	F
	Through	51	48	94.7%	46.6	13.0	D
	Right Turn	299	292	97.8%	6.2	1.0	A
	Subtotal	403	386	95.7%	22.8	6.4	C
WB	Left Turn	203	188	92.7%	160.5	82.4	F
	Through	58	58	99.5%	108.0	65.8	F
	Right Turn	14	13	95.0%	107.2	89.4	F
	Subtotal	275	259	94.3%	146.7	80.7	F
Total		4,040	3,288	81.4%	155.3	16.7	F

Intersection 211 **ARC Dwy 4-Mace Park and Ride Entrance/Co Rd 32A** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	14	14	99.3%	13.6	14.5	B
	Through						
	Right Turn	3	3	90.0%	2.2	2.6	A
	Subtotal	17	17	97.6%	12.8	14.8	B
SB	Left Turn	30	34	111.7%	17.0	12.5	C
	Through	2	2	85.0%	1.6	3.6	A
	Right Turn	108	101	93.1%	17.7	20.1	C
	Subtotal	140	136	96.9%	17.7	18.1	C
EB	Left Turn	231	180	78.0%	4.2	0.5	A
	Through	271	223	82.2%	2.3	0.4	A
	Right Turn	74	63	85.7%	1.5	0.4	A
	Subtotal	576	466	81.0%	2.9	0.3	A
WB	Left Turn	14	14	102.1%	3.2	1.5	A
	Through	153	151	98.8%	7.1	10.1	A
	Right Turn	50	54	108.8%	6.0	12.5	A
	Subtotal	217	220	101.3%	6.8	9.9	A
Total		950	839	88.3%	6.2	5.2	A

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Aggie Research Campus
Existing Plus Project
AM Peak Hour

Intersection 13 **Mace Blvd/I-80 WB Ramps** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	413	323	78.2%	78.3	39.1	E
	Through	1,168	878	75.2%	119.1	62.1	F
	Right Turn						
	Subtotal	1,581	1,201	76.0%	108.7	56.1	F
SB	Left Turn						
	Through	1,311	1,065	81.2%	23.0	3.5	C
	Right Turn	353	282	79.8%	12.3	1.0	B
	Subtotal	1,664	1,347	80.9%	20.7	2.7	C
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	304	297	97.8%	53.8	43.9	D
	Through	3	2	80.0%	5.1	10.7	A
	Right Turn	857	821	95.8%	138.8	78.5	F
	Subtotal	1,164	1,121	96.3%	116.3	67.6	F
Total		4,409	3,669	83.2%	77.6	30.8	E

Intersection 14 **Mace Blvd/Chiles Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	9	9	98.9%	49.5	23.2	D
	Through	640	638	99.7%	46.2	19.8	D
	Right Turn	40	41	101.5%	27.7	19.8	C
	Subtotal	689	688	99.8%	45.2	19.6	D
SB	Left Turn	206	177	85.9%	39.0	8.5	D
	Through	315	280	89.0%	21.3	2.9	C
	Right Turn	258	231	89.5%	7.7	1.0	A
	Subtotal	779	688	88.3%	21.3	2.5	C
EB	Left Turn	929	502	54.0%	173.4	27.5	F
	Through	154	84	54.7%	32.1	9.4	C
	Right Turn	148	82	55.5%	2.2	0.3	A
	Subtotal	1,231	669	54.3%	133.5	21.5	F
WB	Left Turn	29	30	103.8%	47.5	25.8	D
	Through	90	95	105.4%	32.1	13.0	C
	Right Turn	320	326	102.0%	26.2	15.3	C
	Subtotal	439	451	102.8%	28.8	14.1	C
Total		3,138	2,496	79.5%	59.0	8.4	E

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Aggie Research Campus
Existing Plus Project
AM Peak Hour

Intersection 15 **I-80 EB Off-Ramp/Chiles Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	739	423	57.2%	578.7	38.6	F
	Through						
	Right Turn	75	42	56.3%	498.1	68.9	F
	Subtotal	814	465	57.1%	570.1	37.6	F
EB	Left Turn						
	Through	492	245	49.8%	556.0	36.8	F
	Right Turn						
	Subtotal	492	245	49.8%	556.0	36.8	F
WB	Left Turn						
	Through	357	335	93.7%	14.6	2.0	B
	Right Turn						
	Subtotal	357	335	93.7%	14.6	2.0	B
Total		1,663	1,044	62.8%	383.0	16.8	F

Intersection 16 **Mace Blvd/Cowell Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	16	18	113.1%	34.7	15.7	C
	Through	305	308	100.9%	25.3	6.1	C
	Right Turn	61	63	103.8%	14.1	2.1	B
	Subtotal	382	389	101.9%	24.1	5.6	C
SB	Left Turn	98	80	81.5%	27.4	3.8	C
	Through	208	171	82.0%	13.8	3.6	B
	Right Turn	31	26	83.5%	3.0	0.7	A
	Subtotal	337	276	82.0%	16.6	3.4	B
EB	Left Turn	149	147	98.6%	28.1	9.4	C
	Through	96	95	98.6%	16.9	4.5	B
	Right Turn	12	11	94.2%	6.9	6.2	A
	Subtotal	257	253	98.4%	23.4	7.1	C
WB	Left Turn	31	31	100.3%	32.4	13.7	C
	Through	79	78	98.4%	25.2	6.3	C
	Right Turn	131	134	101.9%	15.2	6.7	B
	Subtotal	241	242	100.5%	20.5	6.1	C
Total		1,217	1,161	95.4%	21.5	4.5	C

SimTraffic Post-Processor **Aggie Research Campus**
Average Results from 10 Runs **Existing Plus Project**
Volume and Delay by Movement **AM Peak Hour**

Intersection 17 **Mace Blvd/El Marcero Dr** **All-way Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	11	10	92.7%	6.4	1.4	A
	Through	246	252	102.5%	9.2	1.2	A
	Right Turn	2	2	115.0%	3.6	3.2	A
	Subtotal	259	265	102.2%	9.0	1.1	A
SB	Left Turn	62	55	87.9%	7.7	1.4	A
	Through	178	150	84.3%	10.3	1.2	B
	Right Turn	11	10	91.8%	7.4	2.4	A
	Subtotal	251	215	85.5%	9.5	1.1	A
EB	Left Turn	31	29	92.3%	4.7	0.4	A
	Through	5	5	106.0%	3.9	2.8	A
	Right Turn	5	6	118.0%	3.3	1.8	A
	Subtotal	41	40	97.1%	4.7	0.2	A
WB	Left Turn	4	4	90.0%	3.8	3.5	A
	Through	11	9	85.5%	7.9	5.6	A
	Right Turn	105	108	102.9%	5.1	1.9	A
	Subtotal	120	121	100.8%	5.3	2.0	A
Total		671	640	95.4%	8.2	0.9	A

Intersection 7 **Alhambra Blvd/Covell Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	147	114	77.3%	17.4	3.7	B
	Through						
	Right Turn	50	40	79.8%	7.4	2.5	A
	Subtotal	197	154	78.0%	14.9	3.8	B
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	928	914	98.5%	7.8	1.0	A
	Right Turn	291	296	101.8%	5.0	0.5	A
	Subtotal	1,219	1,211	99.3%	7.1	0.8	A
WB	Left Turn	30	24	78.7%	17.4	4.0	B
	Through	435	365	83.9%	8.6	1.3	A
	Right Turn						
	Subtotal	465	389	83.6%	9.2	1.3	A
Total		1,881	1,753	93.2%	8.3	0.8	A

SimTraffic Post-Processor | **Aggie Research Campus**
Average Results from 10 Runs | **Existing Plus Project**
Volume and Delay by Movement | **AM Peak Hour**

Intersection 8 | **Harper Jr High Entrance/Covell Blvd** | **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	95	93	97.8%	22.8	6.8	C
	Through						
	Right Turn	8	9	117.5%	18.4	19.7	B
	Subtotal	103	102	99.3%	22.3	7.3	C
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	851	806	94.7%	62.0	73.6	E
	Right Turn	127	122	96.0%	45.3	70.4	D
	Subtotal	978	928	94.9%	59.8	73.2	E
WB	Left Turn	165	135	81.8%	24.0	4.9	C
	Through	370	296	79.9%	20.6	4.2	C
	Right Turn						
	Subtotal	535	431	80.5%	21.7	3.5	C
Total		1,616	1,461	90.4%	44.8	45.4	D

Intersection 209 | **Mace Blvd/ARC Dwy 2** | **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	563	454	80.7%	5.7	1.0	A
	Right Turn	100	82	81.5%	5.5	2.2	A
	Subtotal	663	536	80.8%	5.7	0.9	A
SB	Left Turn						
	Through	995	815	81.9%	101.3	10.0	F
	Right Turn						
	Subtotal	995	815	81.9%	101.3	10.0	F
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	10	12	119.0%	3.2	2.3	A
	Subtotal	10	12	119.0%	3.2	2.3	A
Total		1,668	1,362	81.7%	59.2	4.2	E

SimTraffic Post-Processor | **Aggie Research Campus**
Average Results from 10 Runs | **Existing Plus Project**
Volume and Delay by Movement | **AM Peak Hour**

Intersection 210 **Mace Blvd/Co Rd 30B-ARC Dwy 3** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	525	426	81.2%	1.3	0.2	A
	Right Turn	48	40	82.9%	0.6	0.3	A
	Subtotal	573	466	81.4%	1.2	0.2	A
SB	Left Turn	71	60	83.8%	208.3	29.6	F
	Through	995	837	84.1%	229.5	22.8	F
	Right Turn						
	Subtotal	1,066	896	84.1%	228.1	22.5	F
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	10	9	89.0%	4.7	3.0	A
	Subtotal	10	9	89.0%	4.7	3.0	A
Total		1,649	1,371	83.2%	143.3	9.6	F

Intersection 212 **Project Dwy 5/Co Rd 32A** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	37	35	93.8%	10.9	4.6	B
	Through						
	Right Turn	89	90	101.0%	4.9	1.7	A
	Subtotal	126	125	98.9%	6.5	2.0	A
EB	Left Turn	200	167	83.4%	5.1	0.7	A
	Through	104	91	87.4%	0.8	0.3	A
	Right Turn						
	Subtotal	304	258	84.8%	3.7	0.7	A
WB	Left Turn						
	Through	128	130	101.3%	2.1	0.9	A
	Right Turn	197	197	99.8%	1.1	0.3	A
	Subtotal	325	326	100.4%	1.5	0.5	A
Total		755	709	93.9%	3.1	0.6	A

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations		↰	↑↑↱		↰	↑↑↱		↰	↑	↱	↰	↑
Traffic Volume (veh/h)	1	321	745	174	100	719	285	180	319	42	202	289
Future Volume (veh/h)	1	321	745	174	100	719	285	180	319	42	202	289
Initial Q (Qb), veh		0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00		1.00	1.00		1.00	1.00		0.93	1.00	
Parking Bus, Adj		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach			No			No			No			No
Adj Sat Flow, veh/h/ln		1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h		338	784	0	105	757	0	189	336	9	213	304
Peak Hour Factor		0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %		1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h		381	1387		136	899		227	401	317	251	427
Arrive On Green		0.21	0.39	0.00	0.08	0.25	0.00	0.13	0.21	0.21	0.14	0.23
Sat Flow, veh/h		1795	3676	0	1795	3676	0	1795	1885	1490	1795	1885
Grp Volume(v), veh/h		338	784	0	105	757	0	189	336	9	213	304
Grp Sat Flow(s),veh/h/ln		1795	1791	0	1795	1791	0	1795	1885	1490	1795	1885
Q Serve(g_s), s		17.9	16.8	0.0	5.6	19.6	0.0	10.0	16.7	0.5	11.3	14.5
Cycle Q Clear(g_c), s		17.9	16.8	0.0	5.6	19.6	0.0	10.0	16.7	0.5	11.3	14.5
Prop In Lane		1.00		0.00	1.00		0.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h		381	1387		136	899		227	401	317	251	427
V/C Ratio(X)		0.89	0.57		0.77	0.84		0.83	0.84	0.03	0.85	0.71
Avail Cap(c_a), veh/h		643	1429		551	1062		459	443	350	422	443
HCM Platoon Ratio		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)		1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh		37.4	23.5	0.0	44.4	34.8	0.0	41.7	36.9	30.5	41.0	34.9
Incr Delay (d2), s/veh		8.2	0.5	0.0	9.0	5.5	0.0	7.7	12.2	0.0	8.0	5.1
Initial Q Delay(d3),s/veh		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln		8.5	6.9	0.0	2.8	9.0	0.0	4.9	8.9	0.2	5.5	7.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh		45.6	24.0	0.0	53.3	40.3	0.0	49.3	49.1	30.5	49.0	40.0
LnGrp LOS		D	C		D	D		D	D	C	D	D
Approach Vol, veh/h			1122	A		862	A		534			703
Approach Delay, s/veh			30.5			41.9			48.9			41.2
Approach LOS			C			D			D			D
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	24.7	29.5	16.4	27.1	11.4	42.9	17.7	25.8				
Change Period (Y+Rc), s	4.0	5.0	4.0	5.0	4.0	5.0	4.0	5.0				
Max Green Setting (Gmax), s	35.0	29.0	25.0	23.0	30.0	39.0	23.0	23.0				
Max Q Clear Time (g_c+I1), s	19.9	21.6	12.0	16.5	7.6	18.8	13.3	18.7				
Green Ext Time (p_c), s	0.9	2.9	0.4	1.4	0.2	5.3	0.4	0.8				
Intersection Summary												
HCM 6th Ctrl Delay			38.9									
HCM 6th LOS			D									

Notes

User approved pedestrian interval to be less than phase max green.
User approved ignoring U-Turning movement.
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	223
Future Volume (veh/h)	223
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus, Adj	1.00
Work Zone On Approach	
Adj Sat Flow, veh/h/ln	1885
Adj Flow Rate, veh/h	186
Peak Hour Factor	0.95
Percent Heavy Veh, %	1
Cap, veh/h	361
Arrive On Green	0.23
Sat Flow, veh/h	1595
Grp Volume(v), veh/h	186
Grp Sat Flow(s),veh/h/ln	1595
Q Serve(g_s), s	10.0
Cycle Q Clear(g_c), s	10.0
Prop In Lane	1.00
Lane Grp Cap(c), veh/h	361
V/C Ratio(X)	0.52
Avail Cap(c_a), veh/h	375
HCM Platoon Ratio	1.00
Upstream Filter(I)	1.00
Uniform Delay (d), s/veh	33.1
Incr Delay (d2), s/veh	1.1
Initial Q Delay(d3),s/veh	0.0
%ile BackOfQ(50%),veh/ln	3.9
Unsig. Movement Delay, s/veh	
LnGrp Delay(d),s/veh	34.3
LnGrp LOS	C
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	
Timer - Assigned Phs	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	959	30	37	1064	0	40	0	11	0	3	0
Future Volume (veh/h)	0	959	30	37	1064	0	40	0	11	0	3	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0	1870	0	1870	0	1870	0
Adj Flow Rate, veh/h	0	1020	32	39	1132	0	43	0	12	0	3	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	2	2	2	2	0	2	0	2	0	2	0
Cap, veh/h	0	1353	42	73	1774	0	109	0	0	0	411	0
Arrive On Green	0.00	0.38	0.38	0.04	0.50	0.00	0.06	0.00	0.00	0.00	0.22	0.00
Sat Flow, veh/h	0	3608	110	1781	3647	0	1781	43		0	1870	0
Grp Volume(v), veh/h	0	516	536	39	1132	0	43	27.0		0	3	0
Grp Sat Flow(s),veh/h/ln	0	1777	1848	1781	1777	0	1781	C		0	1870	0
Q Serve(g_s), s	0.0	13.7	13.7	1.2	12.8	0.0	1.3			0.0	0.1	0.0
Cycle Q Clear(g_c), s	0.0	13.7	13.7	1.2	12.8	0.0	1.3			0.0	0.1	0.0
Prop In Lane	0.00		0.06	1.00		0.00	1.00			0.00		0.00
Lane Grp Cap(c), veh/h	0	684	711	73	1774	0	109			0	411	0
V/C Ratio(X)	0.00	0.75	0.75	0.54	0.64	0.00	0.39			0.00	0.01	0.00
Avail Cap(c_a), veh/h	0	911	948	522	1774	0	848			0	720	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00	1.00			0.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	14.5	14.5	25.7	10.0	0.0	24.7			0.0	16.6	0.0
Incr Delay (d2), s/veh	0.0	2.5	2.4	6.0	0.8	0.0	2.3			0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	5.0	5.2	0.6	3.9	0.0	0.6			0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	17.1	17.0	31.7	10.8	0.0	27.0			0.0	16.6	0.0
LnGrp LOS	A	B	B	C	B	A	C			A	B	A
Approach Vol, veh/h		1052			1171						3	
Approach Delay, s/veh		17.0			11.5						16.6	
Approach LOS		B			B						B	

Timer - Assigned Phs	1	2	3	4		6
Phs Duration (G+Y+Rc), s	6.2	25.0	7.3	16.0		31.2
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	16.0	28.0	26.0	21.0		26.0
Max Q Clear Time (g_c+I1), s	3.2	15.7	3.3	2.1		14.8
Green Ext Time (p_c), s	0.0	5.3	0.1	0.0		5.8

Intersection Summary	
HCM 6th Ctrl Delay	14.4
HCM 6th LOS	B

Intersection	
Int Delay, s/veh	1.5

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	8	12	923	39	16	1079	3	21	1	2	5	0	0
Future Vol, veh/h	8	12	923	39	16	1079	3	21	1	2	5	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	-	None	-	-	Free	-	-	None	-	-	Stop
Storage Length	-	100	-	-	100	-	-	-	-	50	-	-	-
Veh in Median Storage, #	-	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	13	982	41	17	1148	3	22	1	2	5	0	0

Major/Minor	Major1				Major2			Minor1			Minor2		
Conflicting Flow All	1148	1148	0	0	1023	0	0	1655	2229	512	1718	2249	574
Stage 1	-	-	-	-	-	-	-	1047	1047	-	1182	1182	-
Stage 2	-	-	-	-	-	-	-	608	1182	-	536	1067	-
Critical Hdwy	6.44	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.52	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	267	604	-	-	674	-	0	64	42	507	58	41	462
Stage 1	-	-	-	-	-	-	0	244	303	-	201	262	-
Stage 2	-	-	-	-	-	-	0	450	262	-	496	297	-
Platoon blocked, %			-	-		-							
Mov Cap-1 Maneuver	401	401	-	-	674	-	-	60	39	507	53	38	462
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	60	39	-	53	38	-
Stage 1	-	-	-	-	-	-	-	231	287	-	191	255	-
Stage 2	-	-	-	-	-	-	-	439	255	-	466	282	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.2	94.1	80.4
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	59	507	401	-	-	674	-	53
HCM Lane V/C Ratio	0.397	0.004	0.053	-	-	0.025	-	0.1
HCM Control Delay (s)	101.5	12.1	14.5	-	-	10.5	-	80.4
HCM Lane LOS	F	B	B	-	-	B	-	F
HCM 95th %tile Q(veh)	1.5	0	0.2	-	-	0.1	-	0.3

Intersection	
Int Delay, s/veh	1.7

Movement	EBT	EBR	WBU	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Vol, veh/h	877	53	1	34	1058	40	23
Future Vol, veh/h	877	53	1	34	1058	40	23
Conflicting Peds, #/hr	0	1	1	0	0	0	4
Sign Control	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	-	None	-	None
Storage Length	-	-	-	100	-	0	25
Veh in Median Storage, #	0	-	-	-	0	0	-
Grade, %	0	-	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2
Mvmt Flow	933	56	1	36	1126	43	24

Major/Minor	Major1		Major2			Minor1	
Conflicting Flow All	0	0	989	990	0	1599	500
Stage 1	-	-	-	-	-	962	-
Stage 2	-	-	-	-	-	637	-
Critical Hdwy	-	-	6.44	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.52	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	337	694	-	97	516
Stage 1	-	-	-	-	-	331	-
Stage 2	-	-	-	-	-	489	-
Platoon blocked, %	-	-			-		
Mov Cap-1 Maneuver	-	-	671	671	-	92	514
Mov Cap-2 Maneuver	-	-	-	-	-	92	-
Stage 1	-	-	-	-	-	331	-
Stage 2	-	-	-	-	-	462	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	51.6
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	92	514	-	-	671	-
HCM Lane V/C Ratio	0.463	0.048	-	-	0.055	-
HCM Control Delay (s)	74.1	12.4	-	-	10.7	-
HCM Lane LOS	F	B	-	-	B	-
HCM 95th %tile Q(veh)	2	0.1	-	-	0.2	-

Movement	EBU	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (veh/h)	1	85	815	1033	161	119	59
Future Volume (veh/h)	1	85	815	1033	161	119	59
Initial Q (Qb), veh		0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00			1.00	1.00	1.00
Parking Bus, Adj		1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach			No	No		No	
Adj Sat Flow, veh/h/ln		1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h		89	849	1076	0	124	0
Peak Hour Factor		0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %		2	2	2	2	2	2
Cap, veh/h		115	2437	1921		165	
Arrive On Green		0.06	0.69	0.54	0.00	0.09	0.00
Sat Flow, veh/h		1781	3647	3741	0	1781	1585
Grp Volume(v), veh/h		89	849	1076	0	124	0
Grp Sat Flow(s),veh/h/ln		1781	1777	1777	0	1781	1585
Q Serve(g_s), s		2.4	4.9	9.9	0.0	3.4	0.0
Cycle Q Clear(g_c), s		2.4	4.9	9.9	0.0	3.4	0.0
Prop In Lane		1.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h		115	2437	1921		165	
V/C Ratio(X)		0.77	0.35	0.56		0.75	
Avail Cap(c_a), veh/h		466	2863	2863		717	
HCM Platoon Ratio		1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)		1.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh		22.9	3.2	7.5	0.0	22.0	0.0
Incr Delay (d2), s/veh		10.3	0.2	0.6	0.0	6.7	0.0
Initial Q Delay(d3),s/veh		0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln		1.2	0.8	2.5	0.0	1.6	0.0
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh		33.2	3.4	8.1	0.0	28.7	0.0
LnGrp LOS		C	A	A		C	
Approach Vol, veh/h			938	1076	A	124	A
Approach Delay, s/veh			6.2	8.1		28.7	
Approach LOS			A	A		C	

Timer - Assigned Phs		2		4	5	6	
Phs Duration (G+Y+Rc), s		40.1		9.6	7.2	32.8	
Change Period (Y+Rc), s		6.0		5.0	4.0	6.0	
Max Green Setting (Gmax), s		40.0		20.0	13.0	40.0	
Max Q Clear Time (g_c+I1), s		6.9		5.4	4.4	11.9	
Green Ext Time (p_c), s		12.6		0.2	0.1	14.9	

Intersection Summary		
HCM 6th Ctrl Delay		8.5
HCM 6th LOS		A

Notes
User approved ignoring U-Turning movement.
Unsignalized Delay for [WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	890	44	44	1166	0	27	0	16	0	0	1
Future Vol, veh/h	0	890	44	44	1166	0	27	0	16	0	0	1
Conflicting Peds, #/hr	0	0	4	0	0	4	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	85	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	937	46	46	1227	0	28	0	17	0	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	987	0	0	1670	2287	496	1792	2310	618
Stage 1	-	-	-	-	-	-	964	964	-	1323	1323	-
Stage 2	-	-	-	-	-	-	706	1323	-	469	987	-
Critical Hdwy	-	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	-	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	0	-	-	696	-	-	63	39	519	51	38	432
Stage 1	0	-	-	-	-	-	274	332	-	165	224	-
Stage 2	0	-	-	-	-	-	393	224	-	544	324	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	-	-	-	694	-	-	59	36	517	47	35	431
Mov Cap-2 Maneuver	-	-	-	-	-	-	59	36	-	47	35	-
Stage 1	-	-	-	-	-	-	274	331	-	165	209	-
Stage 2	-	-	-	-	-	-	366	209	-	526	323	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.4	83	13.4
HCM LOS			F	B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	88	-	-	694	-	-	431
HCM Lane V/C Ratio	0.514	-	-	0.067	-	-	0.002
HCM Control Delay (s)	83	-	-	10.6	-	-	13.4
HCM Lane LOS	F	-	-	B	-	-	B
HCM 95th %tile Q(veh)	2.2	-	-	0.2	-	-	0

Intersection	
Int Delay, s/veh	22

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	714	128	56	44	9
Future Vol, veh/h	5	714	128	56	44	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	871	156	68	54	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	440	60	65	0	-	0
Stage 1	60	-	-	-	-	-
Stage 2	380	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	574	1005	1537	-	-	-
Stage 1	963	-	-	-	-	-
Stage 2	691	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	514	1005	1537	-	-	-
Mov Cap-2 Maneuver	514	-	-	-	-	-
Stage 1	862	-	-	-	-	-
Stage 2	691	-	-	-	-	-

Approach	EB		NB		SB	
HCM Control Delay, s	27.9		5.3		0	
HCM LOS	D					

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1537	-	998	-	-
HCM Lane V/C Ratio	0.102	-	0.879	-	-
HCM Control Delay (s)	7.6	0	27.9	-	-
HCM Lane LOS	A	A	D	-	-
HCM 95th %tile Q(veh)	0.3	-	12.1	-	-

Intersection						
Int Delay, s/veh	11.7					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	761	2	3	6	173	79
Future Vol, veh/h	761	2	3	6	173	79
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	25
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	976	3	4	8	222	101

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	979	0	994	978
Stage 1	-	-	-	-	978	-
Stage 2	-	-	-	-	16	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	705	-	272	304
Stage 1	-	-	-	-	364	-
Stage 2	-	-	-	-	1007	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	705	-	270	304
Mov Cap-2 Maneuver	-	-	-	-	270	-
Stage 1	-	-	-	-	364	-
Stage 2	-	-	-	-	1001	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.4	47.6
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	270	304	-	-	705	-
HCM Lane V/C Ratio	0.821	0.333	-	-	0.005	-
HCM Control Delay (s)	59	22.6	-	-	10.1	0
HCM Lane LOS	F	C	-	-	B	A
HCM 95th %tile Q(veh)	6.6	1.4	-	-	0	-

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	320	3	73	764	0	2
Future Vol, veh/h	320	3	73	764	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	30
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	348	3	79	830	0	2

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	909	0	-	0	1193	494
Stage 1	-	-	-	-	494	-
Stage 2	-	-	-	-	699	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	745	-	-	-	206	573
Stage 1	-	-	-	-	611	-
Stage 2	-	-	-	-	491	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	745	-	-	-	110	573
Mov Cap-2 Maneuver	-	-	-	-	110	-
Stage 1	-	-	-	-	325	-
Stage 2	-	-	-	-	491	-

Approach	EB	WB	SB
HCM Control Delay, s	13.9	0	11.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	745	-	-	-	-	573
HCM Lane V/C Ratio	0.467	-	-	-	-	0.004
HCM Control Delay (s)	14	0	-	-	0	11.3
HCM Lane LOS	B	A	-	-	A	B
HCM 95th %tile Q(veh)	2.5	-	-	-	-	0

Intersection 9 **Mace Blvd/Alhambra Blvd-ARC Dwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	258	227	87.9%	64.4	11.9	E
	Through	766	677	88.4%	43.2	6.5	D
	Right Turn	130	117	89.6%	37.3	7.7	D
	Subtotal	1,154	1,021	88.4%	47.1	6.2	D
SB	Left Turn	70	61	87.1%	379.7	204.4	F
	Through	706	594	84.2%	417.5	223.8	F
	Right Turn	23	18	79.1%	350.8	230.5	F
	Subtotal	799	673	84.3%	411.2	219.7	F
EB	Left Turn	12	9	78.3%	59.6	24.2	E
	Through	100	104	103.5%	52.5	11.5	D
	Right Turn	220	222	100.9%	28.4	39.0	C
	Subtotal	332	335	100.9%	38.9	26.4	D
WB	Left Turn	350	238	68.0%	538.4	208.0	F
	Through	143	121	84.7%	164.6	121.9	F
	Right Turn	150	125	83.1%	167.3	148.9	F
	Subtotal	643	484	75.2%	328.8	180.0	F
Total		2,928	2,513	85.8%	166.1	53.4	F

Intersection 10 **Second St/Fermi Place** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	14	12	85.7%	24.8	17.2	C
	Through	4	3	80.0%	17.5	26.5	B
	Right Turn	33	31	93.9%	26.3	30.8	C
	Subtotal	51	46	90.6%	28.5	22.8	C
SB	Left Turn	189	187	98.7%	54.9	52.0	D
	Through						
	Right Turn	75	72	95.3%	5.2	3.1	A
	Subtotal	264	258	97.8%	41.4	40.3	D
EB	Left Turn	88	83	93.8%	64.6	80.8	E
	Through	685	650	94.9%	77.4	129.2	E
	Right Turn	7	7	102.9%	104.3	181.7	F
	Subtotal	780	740	94.9%	77.4	127.3	E
WB	Left Turn	56	51	91.8%	55.9	48.3	E
	Through	336	310	92.2%	22.0	5.0	C
	Right Turn	126	115	91.1%	7.8	1.6	A
	Subtotal	518	476	91.9%	21.6	7.6	C
Total		1,613	1,520	94.3%	40.9	39.5	D

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

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Intersection 11 **Mace Blvd/Second St-Co Rd 32A** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	367	357	97.2%	100.5	66.1	F
	Through	916	861	94.0%	118.9	79.9	F
	Right Turn	133	132	99.2%	111.9	79.7	F
	Subtotal	1,416	1,350	95.4%	113.6	76.7	F
SB	Left Turn	161	133	82.4%	179.1	30.2	F
	Through	953	767	80.5%	196.1	39.9	F
	Right Turn	163	134	81.9%	129.3	29.1	F
	Subtotal	1,277	1,033	80.9%	185.3	37.3	F
EB	Left Turn	154	133	86.4%	268.8	189.8	F
	Through	175	166	95.0%	172.3	117.5	F
	Right Turn	632	580	91.8%	83.2	49.6	F
	Subtotal	961	879	91.5%	131.1	63.8	F
WB	Left Turn	425	212	49.9%	246.7	67.2	F
	Through	24	13	52.9%	183.7	63.1	F
	Right Turn	104	47	44.7%	188.8	62.1	F
	Subtotal	553	271	49.0%	235.9	66.5	F
Total		4,207	3,534	84.0%	145.2	39.9	F

Intersection 211 **ARC Dwy 4/Co Rd 32A** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	76	23	29.7%	590.6	191.7	F
	Through	1	1	50.0%	200.8	338.8	F
	Right Turn	26	7	26.2%	604.7	165.4	F
	Subtotal	103	30	29.0%	413.7	231.8	F
SB	Left Turn	180	20	11.1%	604.7	187.0	F
	Through						
	Right Turn	220	23	10.3%	611.5	154.3	F
	Subtotal	400	43	10.7%	608.5	164.9	F
EB	Left Turn	91	85	93.2%	5.3	1.8	A
	Through	349	317	90.9%	3.0	0.5	A
	Right Turn	25	25	98.0%	2.0	0.6	A
	Subtotal	465	427	91.7%	3.4	0.5	A
WB	Left Turn	4	3	75.0%	27.0	45.8	D
	Through	257	225	87.6%	152.6	110.2	F
	Right Turn	40	41	102.0%	155.0	117.8	F
	Subtotal	301	269	89.4%	152.6	111.0	F
Total		1,269	768	60.5%	106.8	21.0	F

SimTraffic Post-Processor
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Existing + Project
PM Peak Hour

Intersection 13 **Mace Blvd/I-80 WB Ramps** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	253	220	87.1%	41.3	6.5	D
	Through	620	574	92.5%	13.5	12.1	B
	Right Turn						
	Subtotal	873	794	90.9%	22.0	7.6	C
SB	Left Turn						
	Through	1,410	1,052	74.6%	144.6	58.4	F
	Right Turn	600	461	76.9%	80.6	39.5	F
	Subtotal	2,010	1,514	75.3%	125.6	53.7	F
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	387	395	102.1%	36.1	4.7	D
	Through						
	Right Turn	796	800	100.5%	33.4	59.2	C
	Subtotal	1,183	1,195	101.0%	34.2	39.3	C
Total		4,066	3,503	86.1%	70.4	25.5	E

Intersection 14 **Mace Blvd/Chiles Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	24	22	92.1%	91.6	15.0	F
	Through	546	484	88.7%	118.2	15.3	F
	Right Turn	162	141	86.8%	98.5	26.1	F
	Subtotal	732	647	88.4%	113.2	17.5	F
SB	Left Turn	282	238	84.5%	91.0	16.7	F
	Through	485	402	82.9%	47.8	4.1	D
	Right Turn	369	308	83.6%	35.2	3.7	D
	Subtotal	1,136	949	83.5%	54.3	6.0	D
EB	Left Turn	462	388	84.0%	155.1	27.3	F
	Through	275	237	86.1%	31.3	7.2	C
	Right Turn	85	74	86.6%	2.2	0.3	A
	Subtotal	822	699	85.0%	98.0	17.9	F
WB	Left Turn	46	47	101.3%	52.4	33.7	D
	Through	56	58	102.9%	35.5	14.1	D
	Right Turn	286	282	98.7%	54.7	50.4	D
	Subtotal	388	387	99.6%	52.3	44.2	D
Total		3,078	2,681	87.1%	77.1	8.6	E

Intersection 15 **I-80 EB Off-Ramp/Chiles Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	226	216	95.7%	49.3	33.0	D
	Through						
	Right Turn	29	27	92.4%	4.4	2.3	A
	Subtotal	255	243	95.3%	45.7	31.3	D
EB	Left Turn						
	Through	596	485	81.4%	321.0	148.7	F
	Right Turn						
	Subtotal	596	485	81.4%	321.0	148.7	F
WB	Left Turn						
	Through	449	390	86.8%	12.1	2.3	B
	Right Turn						
	Subtotal	449	390	86.8%	12.1	2.3	B
Total		1,300	1,118	86.0%	131.3	53.9	F

Intersection 16 **Mace Blvd/Cowell Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	15	15	98.7%	143.3	107.3	F
	Through	369	347	93.9%	151.5	104.5	F
	Right Turn	27	24	89.3%	143.0	108.3	F
	Subtotal	411	386	93.8%	150.3	104.0	F
SB	Left Turn	150	127	84.4%	35.3	5.9	D
	Through	249	215	86.4%	17.7	3.7	B
	Right Turn	85	69	81.4%	6.8	2.0	A
	Subtotal	484	411	84.9%	21.5	2.3	C
EB	Left Turn	122	112	92.0%	51.8	25.2	D
	Through	102	103	100.9%	23.5	13.0	C
	Right Turn	24	26	107.1%	10.0	6.6	B
	Subtotal	248	241	97.1%	34.7	17.6	C
WB	Left Turn	21	18	86.2%	42.5	10.3	D
	Through	47	49	103.4%	40.2	30.0	D
	Right Turn	100	92	92.3%	39.6	28.4	D
	Subtotal	168	159	94.6%	41.0	24.9	D
Total		1,311	1,196	91.3%	65.1	33.1	E

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

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Existing + Project
PM Peak Hour

Intersection 17 **Mace Blvd/El Marcero Dr** **All-way Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	14	13	92.9%	38.6	45.8	E
	Through	338	334	98.8%	58.1	59.1	F
	Right Turn	9	9	95.6%	51.4	61.8	F
	Subtotal	361	355	98.4%	57.3	58.4	F
SB	Left Turn	107	95	88.5%	9.0	1.9	A
	Through	170	150	88.2%	10.2	0.8	B
	Right Turn	17	14	80.6%	6.0	1.9	A
	Subtotal	294	258	87.9%	9.5	1.0	A
EB	Left Turn	5	4	88.0%	17.5	44.4	C
	Through	7	7	98.6%	2.7	2.9	A
	Right Turn	10	12	116.0%	3.4	1.3	A
	Subtotal	22	23	104.1%	6.0	7.2	A
WB	Left Turn	7	5	77.1%	19.3	27.4	C
	Through	14	14	99.3%	22.8	39.3	C
	Right Turn	68	67	98.1%	19.5	18.3	C
	Subtotal	89	86	96.6%	20.5	19.7	C
Total		766	723	94.3%	34.3	31.8	D

Intersection 7 **Alhambra Blvd/Covell Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	133	115	86.3%	16.0	2.7	B
	Through						
	Right Turn	11	9	84.5%	6.0	4.1	A
	Subtotal	144	124	86.2%	15.1	2.5	B
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	691	693	100.3%	8.6	0.9	A
	Right Turn	215	216	100.2%	6.5	0.3	A
	Subtotal	906	908	100.3%	8.1	0.7	A
WB	Left Turn	17	15	88.2%	24.7	10.6	C
	Through	1,077	958	89.0%	18.9	5.9	B
	Right Turn						
	Subtotal	1,094	973	88.9%	19.0	5.8	B
Total		2,144	2,006	93.5%	13.8	3.1	B

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Aggie Research Campus
Existing + Project
PM Peak Hour

Intersection 8 **Harper Jr High Dwy/Covell Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	37	36	95.9%	18.4	3.1	B
	Through						
	Right Turn	8	11	136.3%	4.4	3.7	A
	Subtotal	45	46	103.1%	15.0	2.6	B
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	683	680	99.5%	6.4	0.6	A
	Right Turn	19	20	107.4%	3.8	2.5	A
	Subtotal	702	700	99.7%	6.3	0.6	A
WB	Left Turn	22	20	90.5%	30.7	7.2	C
	Through	1,057	934	88.3%	19.1	2.8	B
	Right Turn						
	Subtotal	1,079	954	88.4%	19.3	2.9	B
Total		1,826	1,700	93.1%	14.0	1.6	B

Intersection 209 **Mace Blvd/ARC Dwy 2** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	848	738	87.0%	7.3	1.4	A
	Right Turn	80	75	93.6%	6.0	3.0	A
	Subtotal	928	813	87.6%	7.2	1.3	A
SB	Left Turn						
	Through	799	726	90.8%	68.6	49.3	F
	Right Turn						
	Subtotal	799	726	90.8%	68.6	49.3	F
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	130	129	99.0%	12.6	2.8	B
	Subtotal	130	129	99.0%	12.6	2.8	B
Total		1,857	1,667	89.8%	32.0	18.9	D

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Aggie Research Campus
Existing + Project
PM Peak Hour

Intersection 210 **Mace Blvd/Co Rd 30B-Arc Dwy 3** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)		
			Average	Percent	Average	Std. Dev.	LOS
NB	Left Turn						
	Through	958	847	88.4%	1.4	0.3	A
	Right Turn	20	20	101.5%	0.8	0.3	A
	Subtotal	978	867	88.7%	1.4	0.3	A
SB	Left Turn	24	23	94.6%	91.4	102.2	F
	Through	727	685	94.3%	103.1	110.9	F
	Right Turn						
	Subtotal	751	708	94.3%	102.8	110.6	F
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	72	58	80.8%	325.3	300.8	F
	Through						
	Right Turn	100	82	82.4%	306.1	292.0	F
	Subtotal	172	141	81.7%	315.7	295.1	F
Total		1,901	1,716	90.3%	54.8	49.6	F

Intersection 212 **ARC Dwy 5/Co Rd 32A** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)		
			Average	Percent	Average	Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	243	207	85.1%	177.2	186.2	F
	Through						
	Right Turn	197	167	84.6%	156.0	162.9	F
	Subtotal	440	374	84.9%	167.7	175.3	F
EB	Left Turn	65	42	64.0%	2.6	0.5	A
	Through	490	304	62.0%	1.0	0.2	A
	Right Turn						
	Subtotal	555	345	62.2%	1.2	0.3	A
WB	Left Turn						
	Through	104	103	98.9%	19.7	23.1	C
	Right Turn	43	45	104.0%	11.5	14.1	B
	Subtotal	147	148	100.4%	17.7	21.0	C
Total		1,142	867	75.9%	55.8	43.4	F

Intersection 9 **Mace Blvd/Alhambra Blvd-ARC Dwy 1** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	111	107	96.5%	51.9	6.7	D
	Through	620	601	96.9%	15.8	5.6	B
	Right Turn	350	343	97.9%	7.7	2.3	A
	Subtotal	1,081	1,051	97.2%	17.1	4.1	B
SB	Left Turn	200	199	99.4%	77.5	22.4	E
	Through	763	770	100.9%	24.8	8.6	C
	Right Turn	32	36	111.3%	7.7	5.1	A
	Subtotal	995	1,004	100.9%	34.7	10.9	C
EB	Left Turn	15	13	89.3%	46.9	21.8	D
	Through	212	207	97.4%	46.2	4.8	D
	Right Turn	400	400	100.1%	5.4	1.1	A
	Subtotal	627	620	98.9%	19.8	1.9	B
WB	Left Turn	182	177	97.3%	61.5	38.0	E
	Through	46	45	97.4%	28.1	6.1	C
	Right Turn	28	29	101.8%	2.4	1.0	A
	Subtotal	256	250	97.8%	49.1	25.8	D
Total		2,959	2,925	98.9%	26.4	6.8	C

Intersection 10 **Second St/Fermi Place** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	3	3	83.3%	9.6	14.0	A
	Through	1	1	90.0%	0.0	0.0	A
	Right Turn	14	16	111.4%	4.0	0.8	A
	Subtotal	18	19	105.6%	7.2	5.9	A
SB	Left Turn	36	36	99.4%	22.9	7.0	C
	Through						
	Right Turn	14	15	105.0%	5.0	4.3	A
	Subtotal	50	51	101.0%	18.0	3.3	B
EB	Left Turn	21	21	99.5%	19.0	5.6	B
	Through	308	305	98.9%	5.1	1.3	A
	Right Turn	10	11	113.0%	2.1	2.3	A
	Subtotal	339	337	99.4%	5.9	1.4	A
WB	Left Turn	82	81	99.0%	19.1	3.7	B
	Through	572	567	99.1%	6.2	1.7	A
	Right Turn	77	77	99.7%	1.2	0.5	A
	Subtotal	731	725	99.2%	7.2	1.5	A
Total		1,138	1,131	99.4%	7.3	1.2	A

Intersection 11 **Mace Blvd/Second St-Co Rd 32A** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	544	540	99.3%	52.5	10.3	D
	Through	1,017	986	97.0%	58.2	18.5	E
	Right Turn	464	459	98.9%	92.9	29.0	F
	Subtotal	2,025	1,985	98.0%	64.7	16.5	E
SB	Left Turn	63	60	95.2%	74.1	21.6	E
	Through	1,162	1,158	99.6%	69.8	23.7	E
	Right Turn	112	113	101.2%	39.5	21.1	D
	Subtotal	1,337	1,331	99.6%	67.5	23.5	E
EB	Left Turn	53	50	95.1%	47.8	8.1	D
	Through	51	51	100.4%	46.6	13.4	D
	Right Turn	299	300	100.2%	11.6	3.2	B
	Subtotal	403	401	99.6%	20.4	3.0	C
WB	Left Turn	203	203	100.0%	45.0	4.3	D
	Through	58	55	95.3%	40.8	7.7	D
	Right Turn	14	13	95.0%	13.3	11.3	B
	Subtotal	275	272	98.7%	43.0	3.0	D
Total		4,040	3,989	98.7%	60.2	6.9	E

Intersection 12 **ARC Dwy 4-Mace Park and Ride Entrance/Co Rd 32A** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	14	14	97.1%	18.4	10.6	B
	Through						
	Right Turn	3	4	140.0%	1.5	2.5	A
	Subtotal	17	18	104.7%	16.2	10.8	B
SB	Left Turn	30	28	93.7%	23.8	7.1	C
	Through	2	2	110.0%	1.9	5.6	A
	Right Turn	108	108	99.6%	3.7	0.6	A
	Subtotal	140	138	98.5%	8.0	2.4	A
EB	Left Turn	231	229	99.2%	21.1	3.1	C
	Through	271	267	98.5%	9.7	1.7	A
	Right Turn	74	72	97.8%	5.3	1.5	A
	Subtotal	576	568	98.7%	14.0	2.1	B
WB	Left Turn	14	15	107.1%	40.4	7.5	D
	Through	153	149	97.4%	29.8	4.3	C
	Right Turn	50	49	98.2%	22.5	4.5	C
	Subtotal	217	213	98.2%	29.0	3.9	C
Total		950	937	98.7%	16.8	1.8	B

Intersection 13 **Mace Blvd/I-80 WB Ramps** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	413	407	98.6%	38.8	4.9	D
	Through	1,168	1,141	97.7%	22.9	15.8	C
	Right Turn						
	Subtotal	1,581	1,549	97.9%	27.3	12.1	C
SB	Left Turn						
	Through	1,311	1,288	98.3%	91.8	41.0	F
	Right Turn	353	350	99.0%	18.0	13.2	B
	Subtotal	1,664	1,638	98.4%	76.2	35.2	E
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	304	291	95.8%	41.1	19.3	D
	Through	3	2	60.0%	7.4	15.7	A
	Right Turn	857	843	98.3%	53.6	78.0	D
	Subtotal	1,164	1,136	97.6%	50.7	62.9	D
Total		4,409	4,322	98.0%	51.1	19.3	D

Intersection 14 **Mace Blvd/Chiles Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	9	9	95.6%	100.7	26.1	F
	Through	640	622	97.2%	86.8	6.2	F
	Right Turn	40	39	97.5%	62.8	11.5	E
	Subtotal	689	669	97.2%	85.8	6.0	F
SB	Left Turn	206	195	94.5%	110.4	46.6	F
	Through	315	304	96.3%	41.3	7.2	D
	Right Turn	258	248	96.0%	15.6	4.1	B
	Subtotal	779	746	95.8%	51.7	17.0	D
EB	Left Turn	929	914	98.4%	36.5	4.0	D
	Through	154	149	96.9%	38.9	6.5	D
	Right Turn	148	151	102.2%	1.8	0.1	A
	Subtotal	1,231	1,214	98.6%	32.3	3.3	C
WB	Left Turn	29	27	91.7%	38.6	12.9	D
	Through	90	88	97.6%	45.5	6.1	D
	Right Turn	327	328	100.4%	29.3	3.7	C
	Subtotal	446	443	99.3%	32.9	2.8	C
Total		3,145	3,072	97.7%	49.7	4.5	D

SimTraffic Post-Processor | **Aggie Research Campus**
Average Results from 10 Runs | **Existing Plus Project - Mitigated**
Volume and Delay by Movement | **AM Peak Hour**

Intersection 15 **I-80 EB Off-Ramp/Chiles Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	739	727	98.4%	14.3	1.7	B
	Through						
	Right Turn	75	85	113.5%	8.9	1.3	A
	Subtotal	814	812	99.8%	13.8	1.6	B
EB	Left Turn						
	Through	492	485	98.5%	42.4	11.7	D
	Right Turn						
	Subtotal	492	485	98.5%	42.4	11.7	D
WB	Left Turn						
	Through	357	344	96.4%	17.5	3.5	B
	Right Turn						
	Subtotal	357	344	96.4%	17.5	3.5	B
Total		1,663	1,641	98.7%	23.0	3.9	C

Intersection 16 **Mace Blvd/Cowell Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	16	17	106.3%	48.1	28.2	D
	Through	305	308	101.0%	70.0	49.9	E
	Right Turn	61	64	104.8%	62.6	50.1	E
	Subtotal	382	389	101.8%	67.7	48.1	E
SB	Left Turn	98	95	97.1%	35.2	5.7	D
	Through	208	202	97.2%	14.1	3.3	B
	Right Turn	31	31	101.0%	3.6	2.9	A
	Subtotal	337	329	97.5%	19.9	3.8	B
EB	Left Turn	149	149	100.1%	34.9	10.3	C
	Through	96	100	103.9%	20.4	4.1	C
	Right Turn	12	13	111.7%	16.0	11.6	B
	Subtotal	257	262	102.0%	28.8	7.3	C
WB	Left Turn	31	33	105.8%	38.6	18.4	D
	Through	79	81	102.8%	31.7	13.8	C
	Right Turn	131	136	103.5%	21.5	10.6	C
	Subtotal	241	250	103.6%	27.0	11.7	C
Total		1,217	1,229	101.0%	38.4	18.3	D

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Aggie Research Campus
Existing Plus Project - Mitigated
AM Peak Hour

Intersection 17 **Mace Blvd/El Marcero Dr** **All-way Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	11	12	109.1%	5.9	0.5	A
	Through	246	248	100.8%	11.1	6.2	B
	Right Turn	2	1	70.0%	1.3	1.6	A
	Subtotal	259	261	100.9%	10.8	6.1	B
SB	Left Turn	62	62	100.2%	8.3	0.6	A
	Through	178	176	98.9%	10.6	1.0	B
	Right Turn	11	10	87.3%	7.1	2.6	A
	Subtotal	251	248	98.7%	9.9	0.8	A
EB	Left Turn	31	32	102.9%	5.8	3.1	A
	Through	5	4	88.0%	3.5	4.4	A
	Right Turn	5	6	112.0%	2.1	1.7	A
	Subtotal	41	42	102.2%	5.7	3.0	A
WB	Left Turn	4	4	87.5%	4.7	3.0	A
	Through	11	12	110.0%	7.7	8.8	A
	Right Turn	105	109	103.4%	6.1	5.5	A
	Subtotal	120	124	103.5%	6.2	5.5	A
Total		671	675	100.6%	9.5	3.7	A

Intersection 7 **Alhambra Blvd/Covell Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	147	143	97.0%	17.1	2.5	B
	Through						
	Right Turn	50	51	102.2%	7.9	2.2	A
	Subtotal	197	194	98.3%	15.1	2.1	B
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	928	936	100.8%	9.0	1.4	A
	Right Turn	291	293	100.8%	5.3	0.2	A
	Subtotal	1,219	1,229	100.8%	8.1	1.0	A
WB	Left Turn	30	27	88.3%	23.5	4.5	C
	Through	435	429	98.5%	10.1	1.2	B
	Right Turn						
	Subtotal	465	455	97.9%	10.9	1.2	B
Total		1,881	1,878	99.8%	9.5	0.9	A

Intersection 8 **Harper Jr High Entrance/Covell Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	95	99	103.8%	22.3	3.5	C
	Through						
	Right Turn	8	11	132.5%	11.3	16.7	B
	Subtotal	103	109	106.0%	21.8	3.9	C
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	851	852	100.1%	12.8	1.2	B
	Right Turn	127	134	105.5%	9.1	1.5	A
	Subtotal	978	986	100.8%	12.3	1.2	B
WB	Left Turn	165	158	95.6%	27.2	3.7	C
	Through	370	357	96.5%	23.8	5.5	C
	Right Turn						
	Subtotal	535	515	96.2%	24.9	3.6	C
Total		1,616	1,610	99.6%	16.8	0.9	B

Intersection 209 **Mace Blvd/ARC Dwy 2** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	563	543	96.4%	3.6	0.6	A
	Right Turn	100	99	99.0%	4.2	1.6	A
	Subtotal	663	642	96.8%	3.7	0.7	A
SB	Left Turn						
	Through	995	1,005	101.0%	2.5	0.3	A
	Right Turn						
	Subtotal	995	1,005	101.0%	2.5	0.3	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	10	9	89.0%	4.1	2.8	A
	Subtotal	10	9	89.0%	4.1	2.8	A
Total		1,668	1,656	99.3%	3.0	0.4	A

Intersection 210 **Mace Blvd/Co Rd 30B-ARC Dwy 3** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	525	504	96.0%	22.4	2.2	C
	Right Turn	48	46	95.6%	18.3	5.2	B
	Subtotal	573	550	95.9%	22.1	2.3	C
SB	Left Turn	71	74	103.7%	31.3	7.3	C
	Through	995	1,007	101.2%	14.8	1.6	B
	Right Turn						
	Subtotal	1,066	1,080	101.3%	15.8	1.6	B
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	10	12	116.0%	3.2	2.1	A
	Subtotal	10	12	116.0%	3.2	2.1	A
Total		1,649	1,642	99.5%	17.9	1.4	B

Intersection 212 **Project Dwy 5/Co Rd 32A** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	37	37	100.5%	11.5	3.7	B
	Through						
	Right Turn	89	86	96.4%	4.7	0.8	A
	Subtotal	126	123	97.6%	6.8	1.3	A
EB	Left Turn	200	195	97.5%	6.2	1.2	A
	Through	104	103	98.8%	1.9	0.5	A
	Right Turn						
	Subtotal	304	298	97.9%	4.7	1.0	A
WB	Left Turn						
	Through	128	127	99.1%	2.1	0.6	A
	Right Turn	197	198	100.4%	1.1	0.3	A
	Subtotal	325	325	99.9%	1.5	0.4	A
Total		755	745	98.7%	3.6	0.5	A

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Aggie Research Campus
Existing + Project - Mitigated
PM Peak Hour

Intersection 9 **Mace Blvd/Alhambra Blvd-ARC Dwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	258	256	99.1%	37.0	8.2	D
	Through	766	753	98.3%	17.9	5.5	B
	Right Turn	130	127	97.8%	6.5	1.7	A
	Subtotal	1,154	1,136	98.4%	21.1	3.0	C
SB	Left Turn	70	69	99.1%	64.4	28.0	E
	Through	706	691	97.8%	74.6	48.9	E
	Right Turn	23	23	99.1%	22.6	30.1	C
	Subtotal	799	783	98.0%	72.0	46.2	E
EB	Left Turn	12	10	80.0%	40.1	30.8	D
	Through	100	101	100.5%	45.7	6.8	D
	Right Turn	220	228	103.6%	5.3	1.3	A
	Subtotal	332	338	101.8%	18.0	2.6	B
WB	Left Turn	350	318	90.7%	172.3	131.4	F
	Through	143	140	97.8%	31.7	3.0	C
	Right Turn	150	155	103.3%	10.2	3.4	B
	Subtotal	643	612	95.2%	91.3	51.8	F
Total		2,928	2,869	98.0%	48.8	16.7	D

Intersection 10 **Second St/Fermi Place** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	14	12	87.1%	38.0	18.3	D
	Through	4	4	110.0%	34.5	28.1	C
	Right Turn	33	32	96.4%	11.7	5.0	B
	Subtotal	51	48	94.9%	24.1	8.2	C
SB	Left Turn	189	186	98.5%	24.2	4.4	C
	Through						
	Right Turn	75	77	103.1%	5.2	1.6	A
	Subtotal	264	263	99.8%	18.0	3.0	B
EB	Left Turn	88	85	96.8%	33.3	4.9	C
	Through	685	676	98.7%	14.5	3.3	B
	Right Turn	7	8	112.9%	8.6	14.1	A
	Subtotal	780	769	98.6%	16.5	3.0	B
WB	Left Turn	56	52	93.2%	39.3	6.9	D
	Through	336	329	97.9%	21.0	4.0	C
	Right Turn	126	123	97.3%	8.5	1.2	A
	Subtotal	518	504	97.2%	20.0	3.2	B
Total		1,613	1,585	98.2%	18.1	2.3	B

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Aggie Research Campus
Existing + Project - Mitigated
PM Peak Hour

Intersection 11 **Mace Blvd/Second St-Co Rd 32A** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	367	353	96.2%	56.5	16.9	E
	Through	916	910	99.3%	28.0	2.7	C
	Right Turn	133	130	97.5%	8.5	1.2	A
	Subtotal	1,416	1,392	98.3%	33.8	6.4	C
SB	Left Turn	161	151	93.7%	140.5	15.7	F
	Through	953	905	95.0%	126.6	24.5	F
	Right Turn	163	157	96.4%	79.8	20.7	E
	Subtotal	1,277	1,213	95.0%	122.4	21.4	F
EB	Left Turn	154	150	97.3%	39.9	6.9	D
	Through	175	169	96.7%	41.1	4.6	D
	Right Turn	632	623	98.6%	5.9	0.5	A
	Subtotal	961	942	98.0%	17.4	1.5	B
WB	Left Turn	425	408	96.0%	140.2	68.1	F
	Through	24	26	106.3%	49.0	9.8	D
	Right Turn	104	100	95.7%	21.6	7.8	C
	Subtotal	553	533	96.4%	116.6	55.8	F
Total		4,207	4,081	97.0%	67.4	11.2	E

Intersection 12 **ARC Dwy 4/Co Rd 32A** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	76	74	97.5%	40.1	57.1	E
	Through	1	1	120.0%	0.2	0.6	A
	Right Turn	26	29	111.9%	6.1	2.8	A
	Subtotal	103	104	101.4%	30.3	39.1	D
SB	Left Turn	180	183	101.6%	22.5	4.3	C
	Through						
	Right Turn	220	216	98.3%	5.5	2.7	A
	Subtotal	400	399	99.8%	13.2	3.6	B
EB	Left Turn	91	84	91.8%	31.8	7.7	D
	Through	349	339	97.1%	13.5	1.6	B
	Right Turn	25	25	100.8%	10.4	5.3	B
	Subtotal	465	448	96.3%	16.9	2.5	C
WB	Left Turn	4	4	90.0%	25.8	19.3	D
	Through	257	252	97.9%	41.4	80.6	E
	Right Turn	40	40	99.5%	31.1	64.2	D
	Subtotal	301	295	98.0%	40.2	78.2	E
Total		1,269	1,246	98.2%	22.0	22.2	C

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Aggie Research Campus
Existing + Project - Mitigated
PM Peak Hour

Intersection 13 **Mace Blvd/I-80 WB Ramps** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	253	245	96.9%	34.4	4.5	C
	Through	620	607	97.9%	7.4	1.0	A
	Right Turn						
	Subtotal	873	852	97.6%	15.2	1.5	B
SB	Left Turn						
	Through	1,410	1,330	94.3%	75.1	47.2	E
	Right Turn	600	586	97.7%	36.0	27.7	D
	Subtotal	2,010	1,915	95.3%	63.6	41.9	E
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	387	381	98.3%	30.3	2.5	C
	Through						
	Right Turn	796	785	98.6%	5.2	0.4	A
	Subtotal	1,183	1,166	98.5%	13.7	1.4	B
Total		4,066	3,933	96.7%	38.2	20.0	D

Intersection 14 **Mace Blvd/Chiles Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	24	20	82.1%	85.2	13.4	F
	Through	546	549	100.6%	78.9	9.9	E
	Right Turn	162	159	98.0%	54.4	10.3	D
	Subtotal	732	728	99.4%	73.9	10.1	E
SB	Left Turn	282	259	91.7%	140.6	44.4	F
	Through	485	477	98.4%	50.3	14.4	D
	Right Turn	369	358	96.9%	20.4	11.4	C
	Subtotal	1,136	1,093	96.2%	62.6	21.1	E
EB	Left Turn	462	438	94.8%	56.8	3.7	E
	Through	275	271	98.7%	80.2	7.3	F
	Right Turn	85	85	99.9%	2.4	0.3	A
	Subtotal	822	794	96.6%	59.2	4.6	E
WB	Left Turn	46	43	94.3%	34.5	8.4	C
	Through	56	56	99.5%	36.1	7.4	D
	Right Turn	299	297	99.2%	14.7	5.0	B
	Subtotal	401	396	98.7%	20.9	3.5	C
Total		3,091	3,011	97.4%	58.8	8.1	E

SimTraffic Post-Processor | **Aggie Research Campus**
Average Results from 10 Runs | **Existing + Project - Mitigated**
Volume and Delay by Movement | **PM Peak Hour**

Intersection 15 **I-80 EB Off-Ramp/Chiles Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	226	220	97.2%	20.7	10.4	C
	Through						
	Right Turn	29	28	96.6%	3.6	1.7	A
	Subtotal	255	248	97.1%	18.7	9.4	B
EB	Left Turn						
	Through	596	576	96.6%	133.2	87.8	F
	Right Turn						
	Subtotal	596	576	96.6%	133.2	87.8	F
WB	Left Turn						
	Through	449	433	96.3%	10.8	1.8	B
	Right Turn						
	Subtotal	449	433	96.3%	10.8	1.8	B
Total		1,300	1,256	96.6%	70.8	43.0	E

Intersection 16 **Mace Blvd/Cowell Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	15	17	112.7%	58.1	41.4	E
	Through	369	356	96.6%	51.0	41.1	D
	Right Turn	27	25	92.2%	46.5	48.4	D
	Subtotal	411	398	96.9%	51.2	41.5	D
SB	Left Turn	150	148	98.3%	36.3	6.0	D
	Through	249	237	95.3%	16.4	3.0	B
	Right Turn	85	85	100.5%	8.1	1.9	A
	Subtotal	484	470	97.1%	21.1	3.3	C
EB	Left Turn	122	126	103.4%	32.8	16.6	C
	Through	102	100	98.2%	23.1	15.4	C
	Right Turn	24	23	97.5%	18.1	32.0	B
	Subtotal	248	250	100.7%	27.4	17.6	C
WB	Left Turn	21	21	98.1%	31.0	12.5	C
	Through	47	46	97.0%	28.7	10.7	C
	Right Turn	100	104	103.5%	17.2	4.9	B
	Subtotal	168	170	101.0%	21.8	4.5	C
Total		1,311	1,288	98.2%	32.6	16.8	C

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Aggie Research Campus
Existing + Project - Mitigated
PM Peak Hour

Intersection 17 **Mace Blvd/El Marcero Dr** **All-way Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	14	17	118.6%	6.3	1.8	A
	Through	338	330	97.6%	10.0	1.1	A
	Right Turn	9	11	122.2%	5.5	3.5	A
	Subtotal	361	358	99.1%	9.8	1.2	A
SB	Left Turn	107	100	93.1%	8.7	1.3	A
	Through	170	164	96.2%	10.6	1.7	B
	Right Turn	17	18	107.1%	7.4	1.8	A
	Subtotal	294	281	95.7%	9.7	1.5	A
EB	Left Turn	5	3	68.0%	2.6	2.9	A
	Through	7	6	88.6%	4.6	1.7	A
	Right Turn	10	10	103.0%	3.1	0.6	A
	Subtotal	22	20	90.5%	4.0	0.4	A
WB	Left Turn	7	6	88.6%	3.9	2.1	A
	Through	14	14	97.9%	4.9	1.8	A
	Right Turn	68	68	99.3%	4.1	0.4	A
	Subtotal	89	87	98.2%	4.4	0.4	A
Total		766	746	97.4%	9.0	0.8	A

Intersection 7 **Alhambra Blvd/Covell Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	133	131	98.6%	18.9	2.4	B
	Through						
	Right Turn	11	11	97.3%	6.4	4.7	A
	Subtotal	144	142	98.5%	17.8	2.4	B
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	691	688	99.6%	8.7	1.2	A
	Right Turn	215	226	105.2%	6.2	0.4	A
	Subtotal	906	914	100.9%	8.1	1.0	A
WB	Left Turn	17	18	105.3%	41.0	6.4	D
	Through	1,077	1,067	99.0%	29.4	8.9	C
	Right Turn						
	Subtotal	1,094	1,084	99.1%	29.6	8.8	C
Total		2,144	2,141	99.8%	19.9	4.8	B

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Aggie Research Campus
Existing + Project - Mitigated
PM Peak Hour

Intersection 8 **Harper Jr High Dwy/Covell Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	37	34	92.4%	15.5	5.9	B
	Through						
	Right Turn	8	8	101.3%	5.6	2.5	A
	Subtotal	45	42	94.0%	13.4	4.8	B
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	683	681	99.6%	5.7	1.5	A
	Right Turn	19	18	95.8%	4.5	2.0	A
	Subtotal	702	699	99.5%	5.7	1.5	A
WB	Left Turn	22	22	98.2%	35.1	7.7	D
	Through	1,057	1,049	99.2%	25.7	7.0	C
	Right Turn						
	Subtotal	1,079	1,070	99.2%	25.8	6.8	C
Total		1,826	1,811	99.2%	17.4	3.9	B

Intersection 209 **Mace Blvd/ARC Dwy 2** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	848	833	98.2%	4.8	0.7	A
	Right Turn	80	82	102.0%	5.9	1.8	A
	Subtotal	928	914	98.5%	4.9	0.8	A
SB	Left Turn						
	Through	799	794	99.4%	0.5	0.1	A
	Right Turn						
	Subtotal	799	794	99.4%	0.5	0.1	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	130	131	100.5%	7.1	1.2	A
	Subtotal	130	131	100.5%	7.1	1.2	A
Total		1,857	1,839	99.0%	3.1	0.4	A

SimTraffic Post-Processor | **Aggie Research Campus**
Average Results from 10 Runs | **Existing + Project - Mitigated**
Volume and Delay by Movement | **PM Peak Hour**

Intersection 210 **Mace Blvd/Co Rd 30B-Arc Dwy 3** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	958	943	98.4%	0.8	0.1	A
	Right Turn	20	20	100.0%	1.0	0.8	A
	Subtotal	978	963	98.4%	0.8	0.1	A
SB	Left Turn	24	23	97.1%	8.3	3.4	A
	Through	727	723	99.4%	2.2	0.3	A
	Right Turn						
	Subtotal	751	746	99.3%	2.4	0.3	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	72	70	97.6%	31.2	16.8	C
	Through						
	Right Turn	100	107	106.6%	21.4	13.0	C
	Subtotal	172	177	102.8%	25.3	14.4	C
Total		1,901	1,886	99.2%	4.1	1.8	A

Intersection 212 **ARC Dwy 5/Co Rd 32A** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	243	250	102.7%	42.4	45.8	E
	Through						
	Right Turn	197	196	99.7%	36.2	37.9	E
	Subtotal	440	446	101.4%	39.6	42.2	E
EB	Left Turn	65	66	100.9%	3.8	0.4	A
	Through	490	487	99.4%	2.2	0.2	A
	Right Turn						
	Subtotal	555	553	99.6%	2.3	0.2	A
WB	Left Turn						
	Through	104	100	95.7%	2.0	3.4	A
	Right Turn	43	43	99.8%	0.7	1.1	A
	Subtotal	147	142	96.9%	1.5	2.4	A
Total		1,142	1,141	99.9%	16.4	14.3	C

SimTraffic Post-Processor **Aggie Research Campus**
Average Results from 10 Runs **Cumulative No Project**
Volume and Delay by Movement **AM Peak Hour**

Intersection 9 **Mace Blvd/Alhambra Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	320	266	83.0%	60.4	21.3	E
	Through	550	460	83.7%	14.4	4.5	B
	Right Turn						
	Subtotal	870	726	83.4%	31.5	11.4	C
SB	Left Turn						
	Through	840	778	92.7%	210.3	91.6	F
	Right Turn	50	48	95.4%	185.1	105.7	F
	Subtotal	890	826	92.8%	208.8	92.6	F
EB	Left Turn	20	20	100.0%	45.1	17.4	D
	Through						
	Right Turn	440	428	97.3%	21.7	31.6	C
	Subtotal	460	448	97.4%	22.7	30.3	C
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,220	2,000	90.1%	99.6	34.5	F

Intersection 10 **Second St/Fermi Place** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	10	9	94.0%	27.0	13.5	C
	Through	10	9	94.0%	23.9	14.1	C
	Right Turn	50	55	109.0%	6.5	1.9	A
	Subtotal	70	73	104.7%	12.0	4.2	B
SB	Left Turn	80	77	96.1%	22.0	1.4	C
	Through	10	13	126.0%	19.5	7.5	B
	Right Turn	20	20	98.0%	9.2	5.6	A
	Subtotal	110	109	99.2%	18.8	1.7	B
EB	Left Turn	40	36	90.5%	30.5	8.6	C
	Through	310	300	96.8%	12.8	2.8	B
	Right Turn	30	31	102.7%	7.9	4.2	A
	Subtotal	380	367	96.6%	14.1	3.0	B
WB	Left Turn	155	136	87.9%	33.5	4.6	C
	Through	670	564	84.1%	15.5	2.4	B
	Right Turn	150	130	86.3%	7.1	0.3	A
	Subtotal	975	829	85.0%	17.4	2.5	B
Total		1,535	1,379	89.8%	16.3	2.2	B

Intersection 11 **Mace Blvd/Second St-Co Rd 32A** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	790	655	83.0%	161.4	7.3	F
	Through	810	669	82.6%	69.6	4.2	E
	Right Turn	30	28	93.7%	66.9	5.0	E
	Subtotal	1,630	1,352	83.0%	115.3	6.1	F
SB	Left Turn	40	36	90.5%	133.1	19.4	F
	Through	1,100	988	89.8%	155.4	21.3	F
	Right Turn	130	118	90.8%	107.1	16.4	F
	Subtotal	1,270	1,143	90.0%	149.4	20.4	F
EB	Left Turn	40	35	87.8%	40.6	11.8	D
	Through	20	21	102.5%	41.6	19.1	D
	Right Turn	430	417	96.9%	9.4	5.5	A
	Subtotal	490	472	96.4%	13.4	4.8	B
WB	Left Turn	20	19	96.5%	36.5	13.1	D
	Through	40	42	105.5%	31.0	5.8	C
	Right Turn	20	20	100.0%	12.6	7.3	B
	Subtotal	80	82	101.9%	27.3	4.9	C
Total		3,470	3,049	87.9%	109.9	7.6	F

Intersection 12 **Mace Park and Ride Entrance/Co Rd 32A** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	10	9	94.0%	4.1	1.7	A
	Through						
	Right Turn	10	11	111.0%	2.3	0.6	A
	Subtotal	20	21	102.5%	3.1	0.6	A
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	80	73	91.5%	1.5	0.4	A
	Right Turn	10	12	123.0%	1.2	0.6	A
	Subtotal	90	86	95.0%	1.5	0.3	A
WB	Left Turn	10	11	108.0%	2.0	1.4	A
	Through	70	72	102.1%	0.3	0.2	A
	Right Turn						
	Subtotal	80	82	102.9%	0.6	0.3	A
Total		190	188	99.1%	1.3	0.2	A

Intersection 13 **Mace Blvd/I-80 WB Ramps** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	380	309	81.4%	128.4	22.5	F
	Through	770	628	81.6%	186.2	43.9	F
	Right Turn						
	Subtotal	1,150	938	81.5%	167.5	37.4	F
SB	Left Turn						
	Through	1,290	1,157	89.7%	153.5	52.6	F
	Right Turn	260	239	92.0%	92.4	39.8	F
	Subtotal	1,550	1,396	90.1%	143.3	51.1	F
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	520	469	90.2%	118.6	15.3	F
	Through	10	11	111.0%	121.5	57.6	F
	Right Turn	860	745	86.6%	251.5	22.4	F
	Subtotal	1,390	1,225	88.1%	200.5	18.7	F
Total		4,090	3,559	87.0%	167.7	25.5	F

Intersection 14 **Mace Blvd/Chiles Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	10	10	99.0%	84.6	25.0	F
	Through	635	598	94.2%	101.3	33.5	F
	Right Turn	50	49	98.0%	66.2	26.5	E
	Subtotal	695	657	94.5%	98.7	33.4	F
SB	Left Turn	280	255	91.1%	128.6	72.2	F
	Through	350	311	88.8%	48.5	20.2	D
	Right Turn	350	312	89.2%	29.4	14.4	C
	Subtotal	980	878	89.6%	66.4	34.8	E
EB	Left Turn	640	409	63.9%	223.7	35.3	F
	Through	220	140	63.8%	33.2	7.0	C
	Right Turn	150	91	60.3%	2.3	0.2	A
	Subtotal	1,010	640	63.3%	150.7	19.7	F
WB	Left Turn	30	28	91.7%	84.7	42.4	F
	Through	110	103	94.0%	80.7	48.0	F
	Right Turn	390	387	99.3%	96.4	57.3	F
	Subtotal	530	518	97.8%	93.0	54.7	F
Total		3,215	2,692	83.7%	97.1	21.8	F

SimTraffic Post-Processor | **Aggie Research Campus**
Average Results from 10 Runs | **Cumulative No Project**
Volume and Delay by Movement | **AM Peak Hour**

Intersection 15 **I-80 EB Off-Ramp/Chiles Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	480	391	81.4%	396.0	83.0	F
	Through						
	Right Turn	120	111	92.8%	270.3	135.0	F
	Subtotal	600	502	83.7%	366.4	95.7	F
EB	Left Turn						
	Through	530	250	47.1%	581.1	50.8	F
	Right Turn						
	Subtotal	530	250	47.1%	581.1	50.8	F
WB	Left Turn						
	Through	470	424	90.2%	14.7	1.7	B
	Right Turn						
	Subtotal	470	424	90.2%	14.7	1.7	B
Total		1,600	1,175	73.5%	270.5	40.4	F

Intersection 16 **Mace Blvd/Cowell Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	10	10	103.0%	92.9	81.8	F
	Through	290	282	97.3%	112.2	85.4	F
	Right Turn	70	71	101.7%	95.3	65.0	F
	Subtotal	370	364	98.3%	108.8	81.0	F
SB	Left Turn	90	72	79.7%	36.6	7.8	D
	Through	220	188	85.5%	16.8	4.7	B
	Right Turn	70	59	83.6%	7.6	1.5	A
	Subtotal	380	318	83.8%	19.2	3.4	B
EB	Left Turn	190	190	99.8%	67.5	53.5	E
	Through	100	97	97.1%	46.1	49.2	D
	Right Turn	20	20	101.0%	41.6	61.9	D
	Subtotal	310	307	99.0%	60.5	52.5	E
WB	Left Turn	40	37	92.3%	45.9	20.8	D
	Through	90	90	99.4%	47.9	33.4	D
	Right Turn	110	107	96.8%	44.3	38.9	D
	Subtotal	240	233	97.0%	46.7	33.4	D
Total		1,300	1,222	94.0%	62.4	40.2	E

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Aggie Research Campus
Cumulative No Project
AM Peak Hour

Intersection 17 **Mace Blvd/El Marcero Dr** **All-way Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	20	19	96.5%	37.3	70.1	E
	Through	240	242	100.9%	47.2	76.6	E
	Right Turn	10	10	97.0%	40.6	77.3	E
	Subtotal	270	271	100.4%	46.0	75.7	E
SB	Left Turn	70	64	91.1%	8.3	1.3	A
	Through	200	170	84.9%	10.3	0.8	B
	Right Turn	10	10	100.0%	4.7	1.8	A
	Subtotal	280	244	87.0%	9.6	0.8	A
EB	Left Turn	30	30	101.3%	9.5	7.4	A
	Through	10	12	121.0%	5.8	1.6	A
	Right Turn	10	11	107.0%	2.9	1.7	A
	Subtotal	50	53	106.4%	7.6	4.5	A
WB	Left Turn	10	12	116.0%	4.5	1.8	A
	Through	20	20	98.0%	11.1	10.1	B
	Right Turn	100	100	100.1%	12.5	14.6	B
	Subtotal	130	131	101.0%	11.9	12.5	B
Total		730	699	95.8%	27.0	41.5	D

Intersection 9 **Mace Blvd/Alhambra Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	470	408	86.7%	37.4	4.6	D
	Through	680	585	86.1%	18.9	1.6	B
	Right Turn						
	Subtotal	1,150	993	86.3%	26.6	2.8	C
SB	Left Turn						
	Through	700	482	68.8%	674.4	56.7	F
	Right Turn	40	30	74.3%	674.8	97.1	F
	Subtotal	740	512	69.1%	673.8	57.1	F
EB	Left Turn	10	8	79.0%	213.2	142.9	F
	Through						
	Right Turn	390	353	90.4%	306.8	185.8	F
	Subtotal	400	361	90.2%	305.0	184.6	F
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,290	1,865	81.4%	242.2	40.7	F

Intersection 10 **Second St/Fermi Place** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	30	28	94.3%	42.5	15.8	D
	Through	10	10	102.0%	100.4	48.5	F
	Right Turn	110	109	99.2%	93.4	42.4	F
	Subtotal	150	148	98.4%	84.7	35.4	F
SB	Left Turn	290	161	55.6%	300.6	147.7	F
	Through	10	5	49.0%	26.5	30.5	C
	Right Turn	90	58	64.6%	10.7	9.2	B
	Subtotal	390	224	57.5%	238.9	164.3	F
EB	Left Turn	110	78	71.2%	134.8	37.8	F
	Through	720	472	65.5%	231.6	78.2	F
	Right Turn						
	Subtotal	830	550	66.2%	218.9	73.5	F
WB	Left Turn	115	102	88.9%	92.7	49.0	F
	Through	330	287	87.0%	32.7	19.9	C
	Right Turn	190	154	81.2%	4.3	1.1	A
	Subtotal	635	544	85.6%	37.9	22.7	D
Total		2,005	1,465	73.1%	117.5	21.6	F

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Aggie Research Campus
Cumulative No Project
PM Peak Hour

Intersection 11 **Mace Blvd/Second St-Co Rd 32A** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	510	447	87.5%	37.6	5.1	D
	Through	960	842	87.7%	20.1	3.6	C
	Right Turn	40	35	86.3%	14.9	7.0	B
	Subtotal	1,510	1,323	87.6%	26.3	3.1	C
SB	Left Turn	100	75	75.4%	209.6	32.8	F
	Through	850	620	73.0%	260.6	48.1	F
	Right Turn	140	100	71.1%	177.1	33.3	F
	Subtotal	1,090	795	73.0%	245.7	45.6	F
EB	Left Turn	165	110	66.9%	47.6	7.7	D
	Through	120	75	62.5%	51.0	9.5	D
	Right Turn	890	553	62.1%	204.8	45.1	F
	Subtotal	1,175	738	62.8%	163.9	30.8	F
WB	Left Turn	30	32	106.7%	61.7	37.0	E
	Through	20	23	116.0%	37.3	13.1	D
	Right Turn	50	54	107.0%	13.6	7.3	B
	Subtotal	100	109	108.7%	31.1	15.2	C
Total		3,875	2,965	76.5%	114.7	8.6	F

Intersection 12 **Mace Park and Ride Entrance/Co Rd 32A** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	30	35	117.0%	5.9	1.1	A
	Through						
	Right Turn	20	18	92.0%	3.3	0.9	A
	Subtotal	50	54	107.0%	5.2	0.8	A
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	240	172	71.7%	2.3	0.4	A
	Right Turn	20	13	65.0%	1.8	0.8	A
	Subtotal	260	185	71.2%	2.3	0.3	A
WB	Left Turn	10	9	87.0%	2.1	1.6	A
	Through	70	74	105.9%	0.2	0.2	A
	Right Turn						
	Subtotal	80	83	103.5%	0.5	0.3	A
Total		390	321	82.4%	2.2	0.3	A

SimTraffic Post-Processor | **Aggie Research Campus**
Average Results from 10 Runs | **Cumulative No Project**
Volume and Delay by Movement | **PM Peak Hour**

Intersection 13 **Mace Blvd/I-80 WB Ramps** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	330	213	64.6%	39.7	6.0	D
	Through	550	360	65.4%	12.2	2.4	B
	Right Turn						
	Subtotal	880	573	65.1%	22.6	3.7	C
SB	Left Turn						
	Through	1,370	894	65.3%	261.1	41.6	F
	Right Turn	400	264	66.1%	168.5	30.9	F
	Subtotal	1,770	1,159	65.5%	242.1	41.3	F
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	580	567	97.7%	64.9	35.1	E
	Through						
	Right Turn	960	953	99.3%	7.0	1.0	A
	Subtotal	1,540	1,520	98.7%	28.4	13.3	C
Total		4,190	3,251	77.6%	99.5	11.8	F

Intersection 14 **Mace Blvd/Chiles Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	30	14	47.0%	156.4	45.2	F
	Through	630	299	47.5%	201.4	51.1	F
	Right Turn	180	83	46.1%	184.8	58.2	F
	Subtotal	840	396	47.2%	196.4	52.2	F
SB	Left Turn	345	268	77.7%	204.2	54.0	F
	Through	570	453	79.4%	85.1	22.1	F
	Right Turn	340	275	81.0%	57.2	15.7	E
	Subtotal	1,255	996	79.4%	111.1	30.1	F
EB	Left Turn	430	245	56.9%	193.8	15.2	F
	Through	320	180	56.2%	31.0	10.9	C
	Right Turn	90	51	57.1%	2.2	0.3	A
	Subtotal	840	476	56.7%	111.1	7.6	F
WB	Left Turn	80	70	87.9%	199.3	22.4	F
	Through	60	53	88.2%	207.2	38.5	F
	Right Turn	420	365	86.9%	230.8	27.8	F
	Subtotal	560	488	87.2%	224.2	25.4	F
Total		3,495	2,356	67.4%	146.0	13.6	F

SimTraffic Post-Processor **Aggie Research Campus**
Average Results from 10 Runs **Cumulative No Project**
Volume and Delay by Movement **PM Peak Hour**

Intersection 15 **I-80 EB Off-Ramp/Chiles Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	270	231	85.5%	276.3	94.6	F
	Through						
	Right Turn	100	99	98.6%	23.1	29.7	C
	Subtotal	370	329	89.0%	203.2	70.9	F
EB	Left Turn						
	Through	570	246	43.1%	541.0	52.1	F
	Right Turn						
	Subtotal	570	246	43.1%	541.0	52.1	F
WB	Left Turn						
	Through	430	344	79.9%	15.1	1.9	B
	Right Turn						
	Subtotal	430	344	79.9%	15.1	1.9	B
Total		1,370	919	67.1%	218.8	30.4	F

Intersection 16 **Mace Blvd/Cowell Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	20	9	42.5%	418.5	201.6	F
	Through	380	149	39.1%	475.0	181.3	F
	Right Turn	30	12	39.7%	460.0	204.2	F
	Subtotal	430	169	39.3%	471.8	182.4	F
SB	Left Turn	140	103	73.7%	42.3	7.3	D
	Through	260	200	76.7%	18.5	3.0	B
	Right Turn	210	152	72.2%	8.1	1.6	A
	Subtotal	610	454	74.5%	20.7	1.9	C
EB	Left Turn	240	149	62.0%	448.7	43.1	F
	Through	120	71	59.4%	430.7	45.2	F
	Right Turn	30	19	63.0%	367.2	62.6	F
	Subtotal	390	239	61.3%	437.8	38.2	F
WB	Left Turn	20	17	87.0%	139.8	110.2	F
	Through	60	57	94.8%	132.9	126.0	F
	Right Turn	90	83	91.8%	146.6	108.1	F
	Subtotal	170	157	92.3%	141.3	113.2	F
Total		1,600	1,019	63.7%	199.8	22.2	F

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Aggie Research Campus
Cumulative No Project
PM Peak Hour

Intersection 17 **Mace Blvd/El Marcero Dr** **All-way Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)		
			Average	Percent	Average	Std. Dev.	LOS
NB	Left Turn	20	8	39.0%	1095.6	323.3	F
	Through	350	131	37.5%	1068.3	234.6	F
	Right Turn	10	4	43.0%	831.5	440.1	F
	Subtotal	380	143	37.7%	1064.8	237.7	F
SB	Left Turn	110	86	78.5%	8.9	1.4	A
	Through	190	141	74.3%	11.3	1.5	B
	Right Turn	10	10	95.0%	6.4	2.7	A
	Subtotal	310	237	76.5%	10.3	1.3	B
EB	Left Turn	10	9	86.0%	84.4	73.3	F
	Through	10	9	86.0%	29.2	33.6	D
	Right Turn	10	11	107.0%	16.1	32.3	C
	Subtotal	30	28	93.0%	32.7	38.6	D
WB	Left Turn	10	7	72.0%	345.0	263.1	F
	Through	20	16	80.0%	327.4	215.4	F
	Right Turn	70	53	75.9%	336.2	184.1	F
	Subtotal	100	76	76.3%	330.3	191.6	F
Total		820	484	59.1%	299.3	54.0	F

SimTraffic Post-Processor | **Aggie Research Campus**
Average Results from 10 Runs | **Cumulative Plus Project**
Volume and Delay by Movement | **AM Peak Hour**

Intersection 9 **Mace Blvd/Alhambra Blvd-ARC Dwy 1** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	320	211	65.9%	100.9	28.1	F
	Through	700	479	68.5%	42.7	8.4	D
	Right Turn	350	243	69.4%	31.7	8.7	C
	Subtotal	1,370	933	68.1%	52.9	9.9	D
SB	Left Turn	200	140	70.2%	213.4	21.0	F
	Through	806	546	67.7%	279.6	25.7	F
	Right Turn	50	33	66.2%	247.9	42.3	F
	Subtotal	1,056	719	68.1%	266.4	23.3	F
EB	Left Turn	20	17	84.5%	207.7	36.6	F
	Through	212	183	86.2%	221.4	39.5	F
	Right Turn	498	396	79.6%	298.8	70.1	F
	Subtotal	730	596	81.6%	274.9	64.7	F
WB	Left Turn	182	79	43.2%	694.7	79.7	F
	Through	46	33	70.9%	248.0	153.9	F
	Right Turn	28	19	68.6%	280.0	231.0	F
	Subtotal	256	130	50.9%	574.2	147.5	F
Total		3,412	2,379	69.7%	190.9	14.4	F

Intersection 10 **Second St/Fermi Place** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	10	9	85.0%	26.2	14.6	C
	Through	10	11	113.0%	33.6	11.1	C
	Right Turn	50	53	105.2%	8.3	2.3	A
	Subtotal	70	72	103.4%	14.5	2.5	B
SB	Left Turn	83	83	100.5%	24.3	4.9	C
	Through	10	11	108.0%	16.9	10.4	B
	Right Turn	20	19	94.0%	6.9	3.4	A
	Subtotal	113	113	100.0%	21.3	3.4	C
EB	Left Turn	40	40	100.0%	28.5	8.9	C
	Through	370	378	102.2%	12.8	2.6	B
	Right Turn	30	30	101.0%	9.7	3.5	A
	Subtotal	440	448	101.9%	14.0	2.6	B
WB	Left Turn	155	112	72.1%	36.4	7.3	D
	Through	717	494	68.8%	17.8	3.2	B
	Right Turn	162	114	70.6%	7.5	0.9	A
	Subtotal	1,034	720	69.6%	19.2	2.6	B
Total		1,657	1,354	81.7%	17.3	2.0	B

Intersection 11 **Mace Blvd/Second St-Co Rd 32A** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	790	530	67.1%	187.1	17.3	F
	Through	1,278	848	66.3%	111.4	37.7	F
	Right Turn	470	320	68.1%	103.7	35.1	F
	Subtotal	2,538	1,698	66.9%	133.2	29.9	F
SB	Left Turn	64	46	72.0%	176.5	18.3	F
	Through	1,242	832	67.0%	196.3	17.0	F
	Right Turn	170	111	65.2%	138.8	13.2	F
	Subtotal	1,476	989	67.0%	189.0	17.2	F
EB	Left Turn	70	63	89.7%	85.1	64.9	F
	Through	53	53	100.2%	47.7	7.3	D
	Right Turn	430	438	101.8%	13.4	6.6	B
	Subtotal	553	554	100.1%	27.1	12.2	C
WB	Left Turn	207	209	100.7%	164.5	109.9	F
	Through	59	60	102.4%	115.9	86.4	F
	Right Turn	22	21	94.5%	96.5	92.1	F
	Subtotal	288	290	100.6%	152.5	104.1	F
Total		4,855	3,530	72.7%	132.6	23.2	F

Intersection 211 **ARC Dwy 4-Mace Park and Ride Entrance/Co Rd 32A** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	21	19	91.4%	40.0	78.3	E
	Through						
	Right Turn	12	13	107.5%	18.5	47.4	C
	Subtotal	33	32	97.3%	30.9	66.7	D
SB	Left Turn	30	29	97.3%	71.3	130.3	F
	Through	2	2	90.0%	7.7	15.2	A
	Right Turn	108	115	106.1%	77.4	154.8	F
	Subtotal	140	146	104.0%	76.5	150.2	F
EB	Left Turn	231	163	70.6%	4.2	0.6	A
	Through	280	202	72.1%	2.4	0.4	A
	Right Turn	76	56	73.4%	1.6	0.5	A
	Subtotal	587	421	71.7%	3.0	0.4	A
WB	Left Turn	22	21	95.9%	21.6	57.5	C
	Through	159	155	97.4%	24.9	55.4	C
	Right Turn	50	55	110.2%	15.5	35.0	C
	Subtotal	231	231	100.0%	23.2	52.9	C
Total		991	830	83.7%	18.6	29.6	C

SimTraffic Post-Processor **Aggie Research Campus**
Average Results from 10 Runs **Cumulative Plus Project**
Volume and Delay by Movement **AM Peak Hour**

Intersection 13 **Mace Blvd/I-80 WB Ramps** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	380	230	60.6%	146.6	14.1	F
	Through	1,323	809	61.1%	202.0	16.9	F
	Right Turn						
	Subtotal	1,703	1,039	61.0%	190.3	16.2	F
SB	Left Turn						
	Through	1,482	1,149	77.6%	88.4	49.1	F
	Right Turn	397	297	74.9%	41.2	33.7	D
	Subtotal	1,879	1,447	77.0%	78.8	45.9	E
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	520	387	74.4%	117.7	7.4	F
	Through	10	8	82.0%	108.4	72.0	F
	Right Turn	1,215	885	72.8%	212.8	22.7	F
	Subtotal	1,745	1,280	73.4%	184.0	19.0	F
Total		5,327	3,766	70.7%	144.7	18.0	F

Intersection 14 **Mace Blvd/Chiles Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	10	10	97.0%	90.2	24.7	F
	Through	686	617	89.9%	113.3	12.9	F
	Right Turn	50	42	83.8%	85.7	15.0	F
	Subtotal	746	668	89.6%	111.6	12.9	F
SB	Left Turn	292	224	76.8%	69.3	19.6	E
	Through	363	273	75.2%	32.8	4.7	C
	Right Turn	381	284	74.5%	22.8	3.9	C
	Subtotal	1,036	781	75.4%	39.4	7.0	D
EB	Left Turn	1,122	378	33.7%	234.7	34.0	F
	Through	220	73	33.0%	34.5	6.8	C
	Right Turn	150	44	29.3%	2.0	0.5	A
	Subtotal	1,492	495	33.2%	185.6	28.7	F
WB	Left Turn	30	24	78.7%	197.9	45.1	F
	Through	110	95	86.3%	224.0	62.0	F
	Right Turn	410	358	87.3%	244.4	59.0	F
	Subtotal	550	477	86.6%	239.7	58.7	F
Total		3,824	2,421	63.3%	122.3	10.1	F

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Aggie Research Campus
Cumulative Plus Project
AM Peak Hour

Intersection 15 **I-80 EB Off-Ramp/Chiles Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	888	311	35.0%	614.5	35.9	F
	Through						
	Right Turn	120	38	31.8%	553.8	56.9	F
	Subtotal	1,008	349	34.6%	607.2	32.6	F
EB	Left Turn						
	Through	604	186	30.9%	597.4	40.1	F
	Right Turn						
	Subtotal	604	186	30.9%	597.4	40.1	F
WB	Left Turn						
	Through	501	389	77.6%	14.0	1.9	B
	Right Turn						
	Subtotal	501	389	77.6%	14.0	1.9	B
Total		2,113	924	43.7%	358.8	17.5	F

Intersection 16 **Mace Blvd/Cowell Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	10	8	84.0%	169.2	84.3	F
	Through	314	295	94.0%	162.3	63.4	F
	Right Turn	70	66	94.7%	158.0	62.0	F
	Subtotal	394	370	93.9%	161.9	63.1	F
SB	Left Turn	90	56	61.9%	37.3	6.3	D
	Through	222	143	64.3%	19.0	3.6	B
	Right Turn	73	51	69.9%	6.8	1.1	A
	Subtotal	385	249	64.8%	20.4	2.8	C
EB	Left Turn	207	206	99.4%	95.5	72.2	F
	Through	100	106	105.5%	71.4	68.9	E
	Right Turn	20	20	99.0%	57.3	76.5	E
	Subtotal	327	331	101.2%	85.3	70.1	F
WB	Left Turn	40	37	92.3%	48.1	22.2	D
	Through	90	85	94.0%	46.1	24.0	D
	Right Turn	118	116	98.0%	40.3	29.5	D
	Subtotal	248	237	95.6%	43.7	25.5	D
Total		1,354	1,187	87.7%	89.3	37.6	F

SimTraffic Post-Processor **Aggie Research Campus**
Average Results from 10 Runs **Cumulative Plus Project**
Volume and Delay by Movement **AM Peak Hour**

Intersection 17 **Mace Blvd/El Marcero Dr** **All-way Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	20	18	91.0%	54.0	75.3	F
	Through	248	238	96.0%	89.7	107.4	F
	Right Turn	10	12	115.0%	64.7	90.5	F
	Subtotal	278	268	96.4%	86.6	104.5	F
SB	Left Turn	70	49	70.0%	7.7	1.6	A
	Through	202	143	70.7%	10.4	0.9	B
	Right Turn	10	8	77.0%	4.8	2.5	A
	Subtotal	282	200	70.7%	9.6	0.8	A
EB	Left Turn	38	40	106.1%	28.1	36.7	D
	Through	10	9	93.0%	12.4	19.4	B
	Right Turn	10	13	125.0%	4.7	3.6	A
	Subtotal	58	62	107.1%	21.6	27.0	C
WB	Left Turn	10	9	88.0%	34.2	40.7	D
	Through	20	18	91.0%	25.6	36.6	D
	Right Turn	108	105	97.0%	36.0	44.0	E
	Subtotal	138	132	95.5%	35.2	42.5	E
Total		756	661	87.5%	44.3	47.8	E

Intersection 7 **Alhambra Blvd/Covell Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	150	98	65.4%	16.8	2.9	B
	Through						
	Right Turn	54	38	70.4%	5.0	1.0	A
	Subtotal	204	136	66.7%	13.4	1.7	B
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	989	961	97.1%	9.1	4.2	A
	Right Turn	293	296	101.2%	5.7	1.8	A
	Subtotal	1,282	1,257	98.0%	8.3	3.6	A
WB	Left Turn	40	30	74.5%	19.8	4.5	B
	Through	520	390	75.0%	9.2	1.5	A
	Right Turn						
	Subtotal	560	420	74.9%	10.0	1.4	A
Total		2,046	1,813	88.6%	9.1	2.6	A

Intersection 8 **Harper Jr High Entrance/Covell Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	100	100	100.4%	32.4	11.9	C
	Through						
	Right Turn	10	9	94.0%	48.5	87.7	D
	Subtotal	110	110	99.8%	32.2	12.1	C
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	913	798	87.4%	223.4	94.8	F
	Right Turn	130	109	84.0%	220.5	121.8	F
	Subtotal	1,043	908	87.0%	222.9	97.9	F
WB	Left Turn	170	112	65.9%	29.8	4.2	C
	Through	460	324	70.3%	24.3	7.1	C
	Right Turn						
	Subtotal	630	436	69.1%	25.5	5.3	C
Total		1,783	1,453	81.5%	139.9	53.3	F

Intersection 209 **Mace Blvd/ARC Dwy 2** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	648	446	68.8%	4.8	0.8	A
	Right Turn	100	70	69.5%	4.5	1.8	A
	Subtotal	748	515	68.9%	4.7	0.6	A
SB	Left Turn						
	Through	1,056	765	72.5%	107.1	14.7	F
	Right Turn						
	Subtotal	1,056	765	72.5%	107.1	14.7	F
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	10	10	101.0%	2.8	0.9	A
	Subtotal	10	10	101.0%	2.8	0.9	A
Total		1,814	1,291	71.1%	62.1	5.5	E

SimTraffic Post-Processor | **Aggie Research Campus**
Average Results from 10 Runs | **Cumulative Plus Project**
Volume and Delay by Movement | **AM Peak Hour**

Intersection 210 | **Mace Blvd/Co Rd 30B-ARC Dwy 3** | **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	610	422	69.2%	1.1	0.3	A
	Right Turn	48	33	69.4%	0.8	0.4	A
	Subtotal	658	455	69.2%	1.1	0.2	A
SB	Left Turn	71	51	71.3%	218.4	44.6	F
	Through	1,056	787	74.5%	248.7	26.7	F
	Right Turn						
	Subtotal	1,127	838	74.3%	247.1	26.9	F
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	10	12	122.0%	3.7	1.8	A
	Subtotal	10	12	122.0%	3.7	1.8	A
Total		1,795	1,305	72.7%	151.4	10.4	F

Intersection 212 | **Project Dwy 5/Co Rd 32A** | **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	37	37	98.6%	10.0	3.3	A
	Through						
	Right Turn	89	93	104.9%	4.4	0.9	A
	Subtotal	126	130	103.1%	6.0	1.1	A
EB	Left Turn	200	153	76.4%	5.3	1.0	A
	Through	122	89	73.0%	0.7	0.3	A
	Right Turn						
	Subtotal	322	242	75.1%	3.6	0.7	A
WB	Left Turn						
	Through	142	137	96.5%	2.4	0.6	A
	Right Turn	197	195	99.1%	1.3	0.3	A
	Subtotal	339	332	98.1%	1.8	0.4	A
Total		787	704	89.5%	3.2	0.4	A

SimTraffic Post-Processor | **Aggie Research Campus**
Average Results from 10 Runs | **Cumulative Plus Project**
Volume and Delay by Movement | **PM Peak Hour**

Intersection 9 **Mace Blvd/Alhambra Blvd-ARC Dwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	476	353	74.1%	53.9	11.5	D
	Through	837	637	76.1%	28.6	6.6	C
	Right Turn	130	97	74.8%	20.5	6.4	C
	Subtotal	1,443	1,087	75.4%	36.2	7.3	D
SB	Left Turn	70	35	50.6%	966.3	198.7	F
	Through	755	386	51.1%	1062.2	204.1	F
	Right Turn	40	23	56.5%	1037.2	247.8	F
	Subtotal	865	444	51.3%	1055.0	204.7	F
EB	Left Turn	10	9	94.0%	255.2	71.5	F
	Through	100	81	81.1%	275.8	55.6	F
	Right Turn	411	328	79.7%	378.1	81.8	F
	Subtotal	521	418	80.2%	358.6	75.6	F
WB	Left Turn	350	155	44.2%	597.9	164.8	F
	Through	143	76	53.2%	293.5	228.8	F
	Right Turn	150	85	56.7%	287.4	237.7	F
	Subtotal	643	316	49.1%	449.9	192.6	F
Total		3,472	2,265	65.2%	300.7	23.0	F

Intersection 10 **Second St/Fermi Place** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	30	30	100.7%	35.2	11.1	D
	Through	10	11	112.0%	56.0	37.6	E
	Right Turn	110	105	95.6%	67.5	43.2	E
	Subtotal	150	147	97.7%	60.4	30.0	E
SB	Left Turn	307	199	64.8%	191.0	55.4	F
	Through	10	6	55.0%	27.6	26.6	C
	Right Turn	90	62	69.2%	9.1	5.3	A
	Subtotal	407	267	65.5%	143.0	37.2	F
EB	Left Turn	110	77	70.2%	142.1	94.1	F
	Through	795	538	67.7%	193.5	100.7	F
	Right Turn						
	Subtotal	905	615	68.0%	187.3	98.8	F
WB	Left Turn	115	81	70.0%	89.4	88.4	F
	Through	396	288	72.8%	28.2	8.2	C
	Right Turn	195	141	72.5%	8.0	1.4	A
	Subtotal	706	510	72.3%	27.7	5.7	C
Total		2,168	1,539	71.0%	101.6	24.6	F

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Aggie Research Campus
Cumulative Plus Project
PM Peak Hour

Intersection 11 **Mace Blvd/Second St-Co Rd 32A** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	510	409	80.2%	178.0	32.4	F
	Through	1,160	922	79.4%	201.3	34.8	F
	Right Turn	141	112	79.7%	197.8	40.5	F
	Subtotal	1,811	1,443	79.7%	194.3	34.3	F
SB	Left Turn	163	101	61.7%	215.3	16.3	F
	Through	1,143	645	56.4%	246.7	24.0	F
	Right Turn	210	118	56.0%	163.1	14.8	F
	Subtotal	1,516	863	56.9%	230.9	21.6	F
EB	Left Turn	195	130	66.6%	299.0	122.1	F
	Through	182	123	67.6%	161.3	115.5	F
	Right Turn	890	582	65.4%	163.1	27.5	F
	Subtotal	1,267	835	65.9%	182.0	34.6	F
WB	Left Turn	436	187	42.9%	278.0	64.9	F
	Through	22	9	42.7%	232.8	85.4	F
	Right Turn	113	49	43.6%	211.7	41.6	F
	Subtotal	571	246	43.1%	261.4	56.5	F
Total		5,165	3,387	65.6%	204.2	20.7	F

Intersection 211 **ARC Dwy 4/Co Rd 32A** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	84	20	23.7%	632.1	176.5	F
	Through	26	6	24.2%	549.4	273.0	F
	Right Turn	34	9	25.3%	535.0	315.0	F
	Subtotal	144	35	24.2%	438.9	257.0	F
SB	Left Turn	180	21	11.6%	673.8	197.7	F
	Through						
	Right Turn	220	22	9.9%	705.2	189.5	F
	Subtotal	400	43	10.7%	510.6	308.8	F
EB	Left Turn	91	62	68.2%	4.4	2.0	A
	Through	364	250	68.7%	2.5	0.5	A
	Right Turn	31	23	74.8%	2.0	0.9	A
	Subtotal	486	335	69.0%	2.9	0.7	A
WB	Left Turn	12	9	71.7%	189.3	160.1	F
	Through	267	203	75.9%	319.2	173.7	F
	Right Turn	40	32	80.0%	315.7	206.9	F
	Subtotal	319	243	76.2%	321.2	173.5	F
Total		1,349	656	48.6%	133.1	33.3	F

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Aggie Research Campus
Cumulative Plus Project
PM Peak Hour

Intersection 13 **Mace Blvd/I-80 WB Ramps** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	330	216	65.3%	42.9	7.0	D
	Through	724	472	65.2%	26.0	18.2	C
	Right Turn						
	Subtotal	1,054	688	65.2%	31.3	14.1	C
SB	Left Turn						
	Through	1,688	941	55.8%	203.0	30.3	F
	Right Turn	781	424	54.3%	122.7	22.3	F
	Subtotal	2,469	1,365	55.3%	179.0	29.2	F
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	580	539	92.9%	111.2	25.9	F
	Through						
	Right Turn	1,087	989	90.9%	164.5	50.2	F
	Subtotal	1,667	1,528	91.6%	146.1	40.9	F
Total		5,190	3,580	69.0%	137.0	22.1	F

Intersection 14 **Mace Blvd/Chiles Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	30	17	56.0%	136.6	20.3	F
	Through	658	363	55.2%	165.6	33.9	F
	Right Turn	180	97	54.1%	146.1	36.2	F
	Subtotal	868	477	55.0%	160.3	33.7	F
SB	Left Turn	368	258	70.1%	129.0	55.0	F
	Through	625	445	71.3%	54.5	11.7	D
	Right Turn	420	285	67.8%	37.8	6.1	D
	Subtotal	1,413	988	69.9%	68.4	20.4	E
EB	Left Turn	553	291	52.6%	172.4	10.1	F
	Through	320	154	48.3%	30.9	6.5	C
	Right Turn	90	42	46.2%	2.1	0.4	A
	Subtotal	963	487	50.6%	114.2	4.7	F
WB	Left Turn	80	64	80.5%	196.6	34.8	F
	Through	60	53	88.8%	197.3	20.6	F
	Right Turn	443	376	84.8%	240.7	37.9	F
	Subtotal	583	494	84.6%	230.8	34.0	F
Total		3,827	2,446	63.9%	125.4	11.0	F

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Aggie Research Campus
Cumulative Plus Project
PM Peak Hour

Intersection 15 **I-80 EB Off-Ramp/Chiles Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	321	253	78.7%	426.7	134.0	F
	Through						
	Right Turn	100	81	80.6%	334.3	234.3	F
	Subtotal	421	333	79.1%	401.0	161.1	F
EB	Left Turn						
	Through	642	232	36.2%	568.1	75.5	F
	Right Turn						
	Subtotal	642	232	36.2%	568.1	75.5	F
WB	Left Turn						
	Through	510	354	69.4%	14.6	1.3	B
	Right Turn						
	Subtotal	510	354	69.4%	14.6	1.3	B
Total		1,573	920	58.5%	274.6	36.5	F

Intersection 16 **Mace Blvd/Cowell Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	20	9	43.0%	327.5	130.1	F
	Through	391	197	50.4%	395.1	136.1	F
	Right Turn	30	15	48.7%	369.4	99.7	F
	Subtotal	441	220	49.9%	393.0	133.5	F
SB	Left Turn	148	95	64.3%	39.9	7.9	D
	Through	284	190	66.7%	18.9	5.3	B
	Right Turn	228	154	67.5%	8.1	1.8	A
	Subtotal	660	439	66.4%	19.4	2.4	B
EB	Left Turn	243	171	70.3%	406.9	80.9	F
	Through	120	85	70.8%	414.9	102.9	F
	Right Turn	30	21	68.7%	366.4	92.4	F
	Subtotal	393	276	70.3%	406.0	82.4	F
WB	Left Turn	20	20	97.5%	85.8	57.8	F
	Through	60	57	95.2%	101.4	69.6	F
	Right Turn	92	89	96.3%	104.0	67.9	F
	Subtotal	172	165	96.0%	100.7	66.5	F
Total		1,666	1,100	66.0%	189.8	24.1	F

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Aggie Research Campus
Cumulative Plus Project
PM Peak Hour

Intersection 17 **Mace Blvd/El Marcero Dr** **All-way Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	20	10	50.5%	1003.9	331.9	F
	Through	359	169	47.0%	1076.4	204.0	F
	Right Turn	10	6	58.0%	907.1	299.1	F
	Subtotal	389	185	47.5%	1068.3	204.0	F
SB	Left Turn	118	80	67.7%	8.6	1.0	A
	Through	198	137	69.3%	11.4	1.6	B
	Right Turn	18	13	74.4%	7.8	4.7	A
	Subtotal	334	231	69.0%	10.4	1.2	B
EB	Left Turn	11	12	105.5%	58.6	38.2	F
	Through	10	12	118.0%	20.8	28.3	C
	Right Turn	10	10	100.0%	28.6	28.5	D
	Subtotal	31	33	107.7%	40.9	24.5	E
WB	Left Turn	10	9	89.0%	279.2	140.7	F
	Through	20	17	87.0%	230.3	150.4	F
	Right Turn	71	63	88.0%	264.6	165.4	F
	Subtotal	101	89	87.9%	254.6	155.4	F
Total		855	538	62.9%	314.1	43.6	F

Intersection 7 **Alhambra Blvd/Covell Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	160	109	68.1%	24.0	7.6	C
	Through						
	Right Turn	20	15	76.0%	9.1	12.0	A
	Subtotal	180	124	68.9%	21.8	6.8	C
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	767	715	93.3%	121.6	173.3	F
	Right Turn	220	215	97.5%	91.5	165.6	F
	Subtotal	987	930	94.2%	114.1	172.2	F
WB	Left Turn	24	19	77.9%	36.4	14.5	D
	Through	1,143	852	74.6%	17.8	7.0	B
	Right Turn						
	Subtotal	1,167	871	74.6%	18.3	7.1	B
Total		2,334	1,925	82.5%	48.1	41.4	D

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Aggie Research Campus
Cumulative Plus Project
PM Peak Hour

Intersection 8 **Harper Jr High Dwy/Covell Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	40	39	98.5%	28.4	19.5	C
	Through						
	Right Turn	10	9	92.0%	53.8	51.0	D
	Subtotal	50	49	97.2%	33.9	24.8	C
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	757	563	74.3%	516.5	97.3	F
	Right Turn	30	21	71.0%	473.3	153.9	F
	Subtotal	787	584	74.2%	515.2	96.8	F
WB	Left Turn	20	14	70.5%	37.6	12.0	D
	Through	1,127	832	73.8%	23.3	8.4	C
	Right Turn						
	Subtotal	1,147	846	73.7%	23.5	8.3	C
Total		1,984	1,478	74.5%	151.4	20.8	F

Intersection 209 **Mace Blvd/ARC Dwy 2** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	917	675	73.6%	6.5	1.3	A
	Right Turn	80	60	74.6%	5.2	1.5	A
	Subtotal	997	734	73.7%	6.4	1.2	A
SB	Left Turn						
	Through	865	496	57.3%	199.5	51.0	F
	Right Turn						
	Subtotal	865	496	57.3%	199.5	51.0	F
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	130	127	97.7%	11.5	5.3	B
	Subtotal	130	127	97.7%	11.5	5.3	B
Total		1,992	1,357	68.1%	61.3	4.1	F

Intersection 210 **Mace Blvd/Co Rd 30B-Arc Dwy 3** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,027	788	76.7%	1.1	0.2	A
	Right Turn	20	15	76.0%	0.6	0.4	A
	Subtotal	1,047	803	76.7%	1.1	0.2	A
SB	Left Turn	24	16	65.8%	459.3	140.8	F
	Through	793	491	61.9%	446.7	80.6	F
	Right Turn						
	Subtotal	817	506	62.0%	446.3	80.3	F
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	72	27	37.6%	769.3	91.1	F
	Through						
	Right Turn	100	38	37.5%	766.2	94.5	F
	Subtotal	172	65	37.6%	674.4	249.1	F
Total		2,036	1,374	67.5%	144.0	13.4	F

Intersection 212 **ARC Dwy 5/Co Rd 32A** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	243	181	74.4%	271.2	160.3	F
	Through						
	Right Turn	197	141	71.8%	285.0	160.9	F
	Subtotal	440	322	73.2%	276.5	158.8	F
EB	Left Turn	65	31	47.7%	3.0	1.4	A
	Through	513	251	48.9%	0.8	0.2	A
	Right Turn						
	Subtotal	578	282	48.8%	1.0	0.3	A
WB	Left Turn						
	Through	122	113	92.6%	88.8	79.1	F
	Right Turn	43	42	97.2%	75.4	78.0	F
	Subtotal	165	155	93.8%	85.7	78.7	F
Total		1,183	759	64.2%	96.7	41.3	F

SimTraffic Post-Processor **Aggie Research Campus**
Average Results from 10 Runs **Cumulative Plus Project w/ Operational Improvements**
Volume and Delay by Movement **AM Peak Hour**

Intersection 9 **Mace Blvd/Alhambra Blvd-ARC Dwy 1** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	320	202	63.1%	112.4	60.4	F
	Through	700	451	64.5%	17.9	4.8	B
	Right Turn	350	231	66.1%	7.1	1.1	A
	Subtotal	1,370	884	64.6%	35.9	15.0	D
SB	Left Turn	200	169	84.6%	230.9	39.7	F
	Through	806	649	80.5%	238.1	25.7	F
	Right Turn	50	40	80.4%	210.9	70.2	F
	Subtotal	1,056	858	81.3%	235.7	20.7	F
EB	Left Turn	20	19	96.5%	92.0	40.4	F
	Through	212	205	96.6%	93.5	31.9	F
	Right Turn	498	488	98.1%	115.1	55.6	F
	Subtotal	730	713	97.6%	108.5	47.6	F
WB	Left Turn	182	115	63.1%	487.7	145.0	F
	Through	46	44	95.4%	65.7	51.6	E
	Right Turn	28	27	96.4%	48.8	88.7	D
	Subtotal	256	186	72.6%	341.8	119.4	F
Total		3,412	2,641	77.4%	136.1	13.4	F

Intersection 10 **Second St/Fermi Place** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	10	12	122.0%	21.6	11.0	C
	Through	10	10	98.0%	19.8	13.8	B
	Right Turn	50	53	105.4%	6.0	0.8	A
	Subtotal	70	75	106.7%	10.9	2.7	B
SB	Left Turn	83	82	98.9%	23.6	3.6	C
	Through	10	11	106.0%	24.0	13.3	C
	Right Turn	20	22	110.0%	4.6	2.2	A
	Subtotal	113	115	101.5%	20.1	3.9	C
EB	Left Turn	40	41	103.5%	24.1	6.4	C
	Through	370	365	98.5%	11.1	2.4	B
	Right Turn	30	30	101.0%	8.6	3.4	A
	Subtotal	440	436	99.1%	12.0	2.2	B
WB	Left Turn	155	103	66.3%	33.2	3.8	C
	Through	717	499	69.5%	17.3	2.0	B
	Right Turn	162	107	66.1%	7.6	0.8	A
	Subtotal	1,034	709	68.5%	18.3	1.9	B
Total		1,657	1,334	80.5%	16.0	1.2	B

Intersection 11 **Mace Blvd/Second St-Co Rd 32A** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	790	497	62.9%	172.5	11.2	F
	Through	1,278	807	63.1%	75.2	7.5	E
	Right Turn	470	297	63.1%	54.5	6.5	D
	Subtotal	2,538	1,600	63.0%	102.1	10.7	F
SB	Left Turn	64	56	87.7%	129.9	9.6	F
	Through	1,242	1,014	81.6%	144.6	9.8	F
	Right Turn	170	138	81.4%	100.8	6.8	F
	Subtotal	1,476	1,208	81.8%	138.3	9.1	F
EB	Left Turn	70	63	90.4%	42.5	16.9	D
	Through	53	51	95.3%	47.6	13.6	D
	Right Turn	430	424	98.6%	5.3	0.5	A
	Subtotal	553	538	97.3%	14.3	4.0	B
WB	Left Turn	207	206	99.6%	48.4	31.1	D
	Through	59	59	100.3%	40.1	9.1	D
	Right Turn	22	21	97.3%	26.2	33.4	C
	Subtotal	288	287	99.6%	45.1	26.1	D
Total		4,855	3,633	74.8%	97.2	7.8	F

Intersection 12 **ARC Dwy 4-Mace Park and Ride Entrance/Co Rd 32A** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	21	20	92.9%	15.7	5.1	C
	Through						
	Right Turn	12	11	90.8%	2.4	1.9	A
	Subtotal	33	30	92.1%	12.6	5.5	B
SB	Left Turn	30	29	97.3%	22.3	6.3	C
	Through	2	2	85.0%	9.6	17.0	A
	Right Turn	108	106	98.1%	4.6	0.8	A
	Subtotal	140	137	97.8%	8.5	1.8	A
EB	Left Turn	231	152	65.6%	20.4	2.8	C
	Through	280	197	70.5%	8.7	1.1	A
	Right Turn	76	54	71.4%	4.8	1.5	A
	Subtotal	587	403	68.7%	12.4	1.3	B
WB	Left Turn	22	19	87.3%	24.1	4.5	C
	Through	159	160	100.8%	13.8	1.8	B
	Right Turn	50	54	108.0%	7.6	2.5	A
	Subtotal	231	234	101.1%	13.3	1.8	B
Total		991	804	81.1%	12.0	0.7	B

SimTraffic Post-Processor | **Aggie Research Campus**
Average Results from 10 Runs | **Cumulative Plus Project w/ Operational Improvements**
Volume and Delay by Movement | **AM Peak Hour**

Intersection 13 **Mace Blvd/I-80 WB Ramps** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)		
			Average	Percent	Average	Std. Dev.	LOS
NB	Left Turn	380	247	65.1%	125.4	12.5	F
	Through	1,323	885	66.9%	172.1	21.6	F
	Right Turn						
	Subtotal	1,703	1,132	66.5%	161.6	19.7	F
SB	Left Turn						
	Through	1,482	1,296	87.4%	89.9	54.1	F
	Right Turn	397	346	87.2%	35.8	30.7	D
	Subtotal	1,879	1,642	87.4%	78.4	48.4	E
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	520	308	59.3%	138.1	8.9	F
	Through	10	6	59.0%	106.7	79.5	F
	Right Turn	1,215	717	59.0%	273.6	19.7	F
	Subtotal	1,745	1,032	59.1%	232.5	16.8	F
Total		5,327	3,806	71.4%	143.6	19.3	F

Intersection 14 **Mace Blvd/Chiles Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)		
			Average	Percent	Average	Std. Dev.	LOS
NB	Left Turn	10	7	65.0%	158.0	31.1	F
	Through	686	428	62.4%	190.1	28.4	F
	Right Turn	50	35	70.0%	144.9	42.3	F
	Subtotal	746	470	62.9%	186.4	29.4	F
SB	Left Turn	292	211	72.3%	181.0	43.8	F
	Through	363	268	73.8%	51.6	14.3	D
	Right Turn	381	284	74.4%	21.3	10.4	C
	Subtotal	1,036	763	73.6%	78.8	22.3	E
EB	Left Turn	1,122	716	63.8%	130.9	21.3	F
	Through	220	138	62.8%	59.0	15.5	E
	Right Turn	150	95	63.1%	2.0	0.2	A
	Subtotal	1,492	948	63.6%	108.0	15.2	F
WB	Left Turn	30	26	85.3%	208.7	47.1	F
	Through	110	89	81.0%	220.2	27.7	F
	Right Turn	420	349	83.0%	204.6	21.9	F
	Subtotal	560	463	82.7%	208.9	20.9	F
Total		3,834	2,644	69.0%	132.5	11.2	F

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Aggie Research Campus
Cumulative Plus Project w/ Operational Improvements
AM Peak Hour

Intersection 15 **I-80 EB Off-Ramp/Chiles Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	888	699	78.7%	368.3	63.1	F
	Through						
	Right Turn	120	96	79.7%	336.3	68.9	F
	Subtotal	1,008	795	78.8%	364.1	62.0	F
EB	Left Turn						
	Through	604	264	43.7%	539.1	62.2	F
	Right Turn						
	Subtotal	604	264	43.7%	539.1	62.2	F
WB	Left Turn						
	Through	501	381	75.9%	12.7	1.7	B
	Right Turn						
	Subtotal	501	381	75.9%	12.7	1.7	B
Total		2,113	1,439	68.1%	303.2	31.6	F

Intersection 16 **Mace Blvd/Cowell Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	10	6	57.0%	320.0	111.5	F
	Through	314	189	60.1%	397.6	49.1	F
	Right Turn	70	44	63.1%	380.4	68.6	F
	Subtotal	394	239	60.6%	392.1	53.6	F
SB	Left Turn	90	63	70.4%	37.0	7.4	D
	Through	222	147	66.4%	17.5	3.4	B
	Right Turn	73	53	71.9%	8.1	1.7	A
	Subtotal	385	263	68.4%	20.1	2.1	C
EB	Left Turn	207	161	77.7%	345.8	78.8	F
	Through	100	81	80.9%	312.7	119.5	F
	Right Turn	20	16	78.0%	337.8	128.5	F
	Subtotal	327	257	78.7%	332.6	95.4	F
WB	Left Turn	40	38	94.0%	192.3	99.4	F
	Through	90	83	92.2%	194.0	92.0	F
	Right Turn	118	118	100.2%	205.6	93.1	F
	Subtotal	248	239	96.3%	199.7	93.1	F
Total		1,354	998	73.7%	223.5	39.0	F

SimTraffic Post-Processor **Aggie Research Campus**
Average Results from 10 Runs **Cumulative Plus Project w/ Operational Improvements**
Volume and Delay by Movement **AM Peak Hour**

Intersection 17 **Mace Blvd/El Marcero Dr** **All-way Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	20	13	64.0%	970.4	223.4	F
	Through	248	139	56.2%	1066.9	156.3	F
	Right Turn	10	6	58.0%	992.2	344.8	F
	Subtotal	278	158	56.8%	1060.7	158.0	F
SB	Left Turn	70	47	67.3%	8.4	1.0	A
	Through	202	144	71.0%	11.7	1.6	B
	Right Turn	10	8	79.0%	3.8	2.2	A
	Subtotal	282	199	70.4%	10.8	1.5	B
EB	Left Turn	38	38	100.3%	76.3	44.7	F
	Through	10	12	115.0%	47.1	70.9	E
	Right Turn	10	10	96.0%	32.8	49.4	D
	Subtotal	58	59	102.1%	64.6	46.1	F
WB	Left Turn	10	8	79.0%	299.1	203.6	F
	Through	20	17	85.0%	371.6	113.5	F
	Right Turn	108	83	76.9%	369.5	120.0	F
	Subtotal	138	108	78.3%	364.5	104.9	F
Total		756	524	69.3%	333.8	26.0	F

Intersection 7 **Alhambra Blvd/Covell Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	150	106	70.7%	19.2	4.7	B
	Through						
	Right Turn	54	39	71.7%	7.7	6.0	A
	Subtotal	204	145	70.9%	16.5	4.6	B
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	989	982	99.3%	8.0	1.1	A
	Right Turn	293	295	100.7%	5.3	0.8	A
	Subtotal	1,282	1,277	99.6%	7.3	1.0	A
WB	Left Turn	40	30	74.0%	21.0	3.5	C
	Through	520	383	73.6%	8.9	1.5	A
	Right Turn						
	Subtotal	560	412	73.6%	9.9	1.7	A
Total		2,046	1,834	89.6%	8.7	1.3	A

SimTraffic Post-Processor | **Aggie Research Campus**
Average Results from 10 Runs | **Cumulative Plus Project w/ Operational Improvements**
Volume and Delay by Movement | **AM Peak Hour**

Intersection 8 **Harper Jr High Entrance/Covell Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	100	95	95.1%	20.9	3.3	C
	Through						
	Right Turn	10	10	104.0%	9.3	8.0	A
	Subtotal	110	106	95.9%	20.3	3.2	C
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	913	898	98.4%	10.5	1.8	B
	Right Turn	130	129	99.2%	7.2	1.1	A
	Subtotal	1,043	1,027	98.5%	10.1	1.7	B
WB	Left Turn	160	104	65.2%	22.8	3.6	C
	Through	460	319	69.4%	20.5	5.5	C
	Right Turn						
	Subtotal	620	424	68.3%	21.0	3.7	C
Total		1,773	1,556	87.8%	13.8	1.7	B

Intersection 209 **Mace Blvd/ARC Dwy 2** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	648	435	67.1%	2.7	0.4	A
	Right Turn	100	68	67.6%	3.7	1.4	A
	Subtotal	748	502	67.2%	2.8	0.4	A
SB	Left Turn						
	Through	1,056	916	86.8%	92.8	11.5	F
	Right Turn						
	Subtotal	1,056	916	86.8%	92.8	11.5	F
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	10	10	97.0%	2.1	1.5	A
	Subtotal	10	10	97.0%	2.1	1.5	A
Total		1,814	1,428	78.7%	57.5	4.3	F

SimTraffic Post-Processor **Aggie Research Campus**
Average Results from 10 Runs **Cumulative Plus Project w/ Operational Improvements**
Volume and Delay by Movement **AM Peak Hour**

Intersection 210 **Mace Blvd/Co Rd 30B-ARC Dwy 3** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	610	413	67.7%	0.7	0.2	A
	Right Turn	48	32	66.0%	0.5	0.4	A
	Subtotal	658	445	67.6%	0.7	0.2	A
SB	Left Turn	71	69	97.3%	180.8	96.4	F
	Through	1,056	940	89.0%	214.2	92.8	F
	Right Turn						
	Subtotal	1,127	1,009	89.5%	212.1	92.9	F
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	10	10	99.0%	2.2	1.1	A
	Subtotal	10	10	99.0%	2.2	1.1	A
Total		1,795	1,464	81.5%	135.6	52.3	F

Intersection 212 **Project Dwy 5/Co Rd 32A** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	37	36	98.1%	8.6	1.9	A
	Through						
	Right Turn	89	89	100.2%	4.7	1.0	A
	Subtotal	126	126	99.6%	5.8	1.2	A
EB	Left Turn	200	146	73.2%	6.1	1.1	A
	Through	122	89	73.0%	1.8	0.3	A
	Right Turn						
	Subtotal	322	235	73.1%	4.5	0.7	A
WB	Left Turn						
	Through	142	143	101.0%	2.5	0.6	A
	Right Turn	197	199	100.9%	1.4	0.3	A
	Subtotal	339	342	100.9%	1.9	0.3	A
Total		787	703	89.3%	3.4	0.4	A

Intersection 9 **Mace Blvd/Alhambra Blvd-ARC Dwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	476	406	85.4%	98.1	39.0	F
	Through	837	734	87.6%	23.3	3.8	C
	Right Turn	130	115	88.3%	8.4	2.5	A
	Subtotal	1,443	1,255	87.0%	47.5	14.6	D
SB	Left Turn	70	44	63.4%	917.9	150.8	F
	Through	755	470	62.3%	1017.9	208.3	F
	Right Turn	40	25	61.5%	952.1	182.6	F
	Subtotal	865	539	62.3%	1009.0	202.6	F
EB	Left Turn	10	11	106.0%	109.1	86.9	F
	Through	100	100	99.9%	100.2	77.5	F
	Right Turn	411	391	95.1%	109.7	119.8	F
	Subtotal	521	501	96.2%	108.0	111.6	F
WB	Left Turn	350	180	51.4%	536.9	154.9	F
	Through	143	94	65.5%	195.8	86.6	F
	Right Turn	150	98	65.3%	165.4	68.6	F
	Subtotal	643	371	57.8%	381.1	119.6	F
Total		3,472	2,667	76.8%	266.2	19.7	F

Intersection 10 **Second St/Fermi Place** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	30	29	96.7%	34.6	11.8	C
	Through	10	9	94.0%	26.8	19.6	C
	Right Turn	110	113	102.5%	17.9	6.9	B
	Subtotal	150	151	100.7%	22.0	6.6	C
SB	Left Turn	307	308	100.2%	44.4	18.3	D
	Through	10	10	104.0%	22.7	17.0	C
	Right Turn	90	89	99.3%	7.0	2.5	A
	Subtotal	407	407	100.1%	34.4	12.3	C
EB	Left Turn	110	107	97.1%	49.1	8.9	D
	Through	795	786	98.9%	36.9	23.1	D
	Right Turn						
	Subtotal	905	893	98.7%	38.0	20.1	D
WB	Left Turn	115	100	86.8%	56.2	9.5	E
	Through	396	320	80.8%	29.8	5.9	C
	Right Turn	195	155	79.5%	8.8	1.5	A
	Subtotal	706	575	81.4%	28.3	5.2	C
Total		2,168	2,026	93.5%	32.8	10.9	C

SimTraffic Post-Processor | **Aggie Research Campus**
Average Results from 10 Runs | **Cumulative Plus Project w/ Operational Improvements**
Volume and Delay by Movement | **PM Peak Hour**

Intersection 11 **Mace Blvd/Second St-Co Rd 32A** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	510	428	83.9%	174.4	6.6	F
	Through	1,160	988	85.2%	86.3	6.8	F
	Right Turn	141	119	84.5%	53.0	6.1	D
	Subtotal	1,811	1,535	84.8%	108.1	6.5	F
SB	Left Turn	163	116	71.2%	189.5	23.8	F
	Through	1,143	776	67.9%	194.8	20.5	F
	Right Turn	210	143	68.2%	133.9	14.9	F
	Subtotal	1,516	1,035	68.3%	186.8	19.1	F
EB	Left Turn	195	198	101.5%	68.2	62.8	E
	Through	182	179	98.2%	61.4	44.2	E
	Right Turn	890	874	98.2%	23.2	13.3	C
	Subtotal	1,267	1,251	98.7%	37.5	21.0	D
WB	Left Turn	436	349	80.1%	299.3	55.8	F
	Through	22	22	98.2%	67.1	25.6	E
	Right Turn	113	102	89.8%	44.9	26.9	D
	Subtotal	571	473	82.7%	231.9	41.1	F
Total		5,165	4,294	83.1%	116.9	7.8	F

Intersection 12 **ARC Dwy 4/Co Rd 32A** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	84	75	89.0%	265.4	217.3	F
	Through	26	23	90.0%	20.6	11.4	C
	Right Turn	34	32	93.5%	6.6	3.1	A
	Subtotal	144	130	90.3%	121.1	68.8	F
SB	Left Turn	180	177	98.3%	40.7	24.2	E
	Through						
	Right Turn	220	215	97.7%	122.8	117.4	F
	Subtotal	400	392	98.0%	84.8	70.0	F
EB	Left Turn	91	78	85.8%	44.7	9.9	E
	Through	364	309	84.8%	18.2	5.8	C
	Right Turn	31	26	83.9%	13.3	6.8	B
	Subtotal	486	413	84.9%	22.7	6.5	C
WB	Left Turn	12	10	85.0%	253.0	155.3	F
	Through	267	212	79.3%	267.3	114.4	F
	Right Turn	40	33	83.0%	280.5	144.6	F
	Subtotal	319	255	80.0%	269.9	117.2	F
Total		1,349	1,190	88.2%	95.7	41.2	F

Intersection 13 **Mace Blvd/I-80 WB Ramps** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	330	292	88.4%	41.9	3.7	D
	Through	724	620	85.6%	27.1	7.7	C
	Right Turn						
	Subtotal	1,054	911	86.5%	32.2	5.5	C
SB	Left Turn						
	Through	1,688	1,329	78.7%	137.7	25.4	F
	Right Turn	781	639	81.8%	81.0	22.4	F
	Subtotal	2,469	1,968	79.7%	119.7	24.2	F
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	580	513	88.4%	107.1	27.3	F
	Through						
	Right Turn	1,087	940	86.5%	190.7	53.9	F
	Subtotal	1,667	1,453	87.2%	161.4	44.4	F
Total		5,190	4,332	83.5%	113.7	15.0	F

Intersection 14 **Mace Blvd/Chiles Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	30	23	75.7%	100.2	26.3	F
	Through	658	585	88.9%	88.2	6.8	F
	Right Turn	180	158	87.6%	63.2	4.7	E
	Subtotal	868	765	88.1%	83.0	6.1	F
SB	Left Turn	368	322	87.4%	85.8	20.4	F
	Through	625	511	81.7%	35.0	2.8	C
	Right Turn	420	344	82.0%	13.3	2.4	B
	Subtotal	1,413	1,177	83.3%	42.7	7.4	D
EB	Left Turn	553	355	64.1%	76.5	6.6	E
	Through	320	209	65.2%	105.5	7.5	F
	Right Turn	90	57	63.2%	2.1	0.3	A
	Subtotal	963	620	64.4%	78.7	6.6	E
WB	Left Turn	80	76	94.8%	48.6	10.7	D
	Through	60	58	96.5%	51.5	11.7	D
	Right Turn	443	466	105.1%	25.3	4.3	C
	Subtotal	583	599	102.8%	31.1	4.5	C
Total		3,827	3,161	82.6%	56.9	2.7	E

Intersection 15 **I-80 EB Off-Ramp/Chiles Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	321	322	100.2%	72.5	30.7	E
	Through						
	Right Turn	100	95	95.2%	4.4	0.8	A
	Subtotal	421	417	99.0%	58.3	24.0	E
EB	Left Turn						
	Through	642	299	46.6%	495.7	36.5	F
	Right Turn						
	Subtotal	642	299	46.6%	495.7	36.5	F
WB	Left Turn						
	Through	510	424	83.2%	13.7	1.4	B
	Right Turn						
	Subtotal	510	424	83.2%	13.7	1.4	B
Total		1,573	1,140	72.5%	157.2	9.6	F

Intersection 16 **Mace Blvd/Cowell Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	20	20	98.0%	164.7	32.6	F
	Through	391	349	89.3%	231.4	37.1	F
	Right Turn	30	26	85.0%	226.7	46.4	F
	Subtotal	441	394	89.4%	228.3	37.9	F
SB	Left Turn	148	119	80.7%	43.4	7.2	D
	Through	284	227	80.1%	20.9	4.1	C
	Right Turn	228	184	80.7%	9.4	2.1	A
	Subtotal	660	531	80.4%	22.1	3.2	C
EB	Left Turn	243	227	93.6%	158.9	67.1	F
	Through	120	123	102.3%	137.6	73.9	F
	Right Turn	30	29	96.3%	130.7	84.0	F
	Subtotal	393	379	96.4%	150.7	69.6	F
WB	Left Turn	20	20	101.5%	54.5	16.6	D
	Through	60	62	102.7%	36.9	13.6	D
	Right Turn	92	91	99.3%	30.3	11.1	C
	Subtotal	172	173	100.8%	35.9	11.1	D
Total		1,666	1,477	88.7%	108.7	22.5	F

SimTraffic Post-Processor
Average Results from 10 Runs
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Aggie Research Campus
Cumulative Plus Project w/ Operational Improvements
PM Peak Hour

Intersection 17 **Mace Blvd/El Marcero Dr** **All-way Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	20	18	91.0%	206.3	121.9	F
	Through	359	332	92.4%	237.7	124.0	F
	Right Turn	10	9	91.0%	211.1	112.4	F
	Subtotal	389	359	92.3%	235.5	122.7	F
SB	Left Turn	118	99	84.2%	9.4	1.5	A
	Through	198	164	82.6%	11.3	1.0	B
	Right Turn	18	14	78.3%	8.3	2.1	A
	Subtotal	334	277	82.9%	10.4	1.1	B
EB	Left Turn	11	11	97.3%	10.5	9.3	B
	Through	10	10	98.0%	6.8	4.4	A
	Right Turn	10	10	96.0%	3.2	1.3	A
	Subtotal	31	30	97.1%	7.9	3.2	A
WB	Left Turn	10	11	106.0%	14.1	20.4	B
	Through	20	21	107.0%	17.8	12.8	C
	Right Turn	71	69	97.6%	26.9	13.0	D
	Subtotal	101	101	100.3%	24.2	12.8	C
Total		855	767	89.7%	116.0	55.4	F

Intersection 7 **Alhambra Blvd/Covell Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	160	132	82.4%	18.8	2.7	B
	Through						
	Right Turn	20	19	92.5%	6.5	2.8	A
	Subtotal	180	150	83.5%	17.0	3.0	B
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	767	761	99.2%	9.6	1.5	A
	Right Turn	220	222	101.1%	6.4	0.5	A
	Subtotal	987	983	99.6%	8.9	1.2	A
WB	Left Turn	24	20	84.6%	40.3	14.8	D
	Through	1,143	966	84.5%	27.3	9.1	C
	Right Turn						
	Subtotal	1,167	986	84.5%	27.6	9.2	C
Total		2,334	2,120	90.8%	18.7	4.9	B

Intersection 8 **Harper Jr High Dwy/Covell Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	40	39	96.8%	14.7	5.7	B
	Through						
	Right Turn	10	10	98.0%	3.9	4.4	A
	Subtotal	50	49	97.0%	13.5	5.4	B
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	757	735	97.1%	43.4	49.8	D
	Right Turn	30	27	91.3%	33.5	42.5	C
	Subtotal	787	762	96.9%	43.0	49.3	D
WB	Left Turn	20	18	88.5%	32.8	11.6	C
	Through	1,127	941	83.5%	22.2	7.3	C
	Right Turn						
	Subtotal	1,147	959	83.6%	22.3	7.3	C
Total		1,984	1,770	89.2%	29.0	21.9	C

Intersection 209 **Mace Blvd/ARC Dwy 2** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	917	779	85.0%	4.3	0.6	A
	Right Turn	80	67	84.0%	4.7	1.7	A
	Subtotal	997	847	84.9%	4.3	0.6	A
SB	Left Turn						
	Through	865	590	68.2%	167.4	52.3	F
	Right Turn						
	Subtotal	865	590	68.2%	167.4	52.3	F
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	130	134	102.8%	6.9	1.4	A
	Subtotal	130	134	102.8%	6.9	1.4	A
Total		1,992	1,570	78.8%	54.4	5.1	F

SimTraffic Post-Processor
Average Results from 10 Runs
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PM Peak Hour

Intersection 210 **Mace Blvd/Co Rd 30B-Arc Dwy 3** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,027	894	87.1%	0.8	0.1	A
	Right Turn	20	20	100.5%	0.8	0.5	A
	Subtotal	1,047	914	87.3%	0.8	0.1	A
SB	Left Turn	24	18	75.4%	473.2	107.1	F
	Through	793	585	73.8%	491.0	81.4	F
	Right Turn						
	Subtotal	817	603	73.8%	490.5	81.1	F
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	72	28	39.2%	759.3	79.8	F
	Through						
	Right Turn	100	39	39.2%	764.3	69.4	F
	Subtotal	172	67	39.2%	759.0	75.3	F
Total		2,036	1,585	77.8%	175.3	27.1	F

Intersection 212 **ARC Dwy 5/Co Rd 32A** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	243	203	83.4%	262.6	200.1	F
	Through						
	Right Turn	197	162	82.0%	249.7	178.3	F
	Subtotal	440	364	82.8%	254.7	186.7	F
EB	Left Turn	65	60	92.9%	5.7	4.4	A
	Through	513	457	89.0%	3.6	5.0	A
	Right Turn						
	Subtotal	578	517	89.5%	3.9	4.9	A
WB	Left Turn						
	Through	122	115	94.2%	69.7	101.2	F
	Right Turn	43	44	101.6%	69.4	92.3	F
	Subtotal	165	159	96.1%	69.1	98.5	F
Total		1,183	1,040	87.9%	66.9	36.6	F