

# **APPENDIX G**

## **TRAFFIC IMPACT ANALYSIS**

## MEMORANDUM

**DATE:** July 15, 2025

**To:** Brian Lee, General Manager, San Antonio Water Company

**FROM:** Ambarish Mukherjee, AICP, PE

**SUBJECT:** San Antonio Water Company Headquarters Project – Driveway Sensitivity Analysis Memorandum (LSA Project # 20241723)

This memorandum has been prepared to determine the project’s effect on the study area previously analyzed in the *San Antonio Water Headquarters Traffic Impact Analysis*, dated November 2024 (referred as November 2024 TIA) as a result of modifications to the proposed project driveways after submittal of the November 2024 TIA. Figure 1 illustrates the updated conceptual site plan for the proposed project. The updated site plan’s changes include removal of the proposed Project Driveway 2 previously analyzed in November 2024 TIA, while the project land use intensities and description remain the same. The project is anticipated to be screened out from a VMT analysis and no revisions for the VMT analysis will be required.

### Project Description

The revised site plan has the same land use intensities and project description that was analyzed in the November 2024 TIA. As described in the November 2024 TIA, the proposed project proposes to develop a new 3,698-square-foot SAWCO headquarters and associated improvements including a 4,066-square-foot maintenance building, maintenance yard, driveway, parking, solar cover, landscaping, and utility improvements. The existing water storage tank, pump station, and signal buildings and tower would remain in place. The project is anticipated to be completed by 2027.

As analyzed in the November 2024 TIA, the project was accessed via three full-access driveways:

- **Project Driveway 1 on 20<sup>th</sup> Street:** This westerly driveway along the northern property boundary provides access for SAWCO patrons and customers;
- **Project Driveway 2 on 20<sup>th</sup> Street:** This driveway is located in the middle of the northeastern corner of the project site and provides access for the SAWCO employee parking area and maintenance facilities; This driveway was removed in the updated conceptual site plan and
- **Project Driveway 3 on Campus Avenue:** This easterly driveway located on the northeastern corner of the project site and will be a future connection with the intersection of Campus Avenue and 20<sup>th</sup> Street.

As shown in Figure 1, the updated site plan shows the project can be accessed via two full-access driveways:

- **Project Driveway 1 on 20th Street:** This westerly driveway along the northern property boundary provides access for SAWCO patrons and customers; and
- **Project Driveway 2 on Campus Avenue (previously Project Driveway 3 in November 2024 TIA):** This easterly driveway is located on the northeastern corner of the project site and will provide a future connection with the intersection of Campus Avenue and 20th Street.

### Study Area

The November 2024 TIA examined traffic operations at the proposed 3 project driveways along 20<sup>th</sup> Street. Since the updated site plan removed the previous middle driveway this memorandum will examine traffic operations at the following intersections:

1. Project Driveway 1 on 20th Street
2. Project Driveway 2 on Campus Avenue (previously Project Driveway 3 in November 2024 TIA):

Traffic operations at all study intersections will be analyzed during the weekday a.m. and p.m. peak hours. The a.m. peak hour is defined as the one hour period of the highest traffic volume occurring between 7:00 and 9:00 a.m. while the p.m. peak hour is defined as the one hour period of the highest traffic volume occurring between 4:00 and 6:00 p.m. Intersection LOS will be calculated using the *Highway Capacity Manual* 7th Edition (HCM 7) analysis methodologies and by using the Synchro 12 software. Thus this memorandum's intersection methodology is consistent with that in the November 2024 TIA.

### Project Trip Generation

Since the project land use intensities and description remains unchanged, the project trip generation remains the same as analyzed in November 2024 TIA. As described in the November 2024 TIA, the trip generation for the proposed project was developed as follows:

### Employee Trip Generation

The project is anticipated to have 10 full-time employees. The November 2024 TIA, analyzed all 10 employees are anticipated to arrive at the facility in the a.m. peak hour and leave the facility in the p.m. peak hour. Therefore, the project is estimated to generate 20 daily employee trips with 10 inbound a.m. peak hour trips and 10 outbound p.m. peak hour trips.

Additionally, based on the project description and operational information, the project was anticipated to have six trucks for the operations. Based on information from the applicant, the truck trips were described as follows:

- **Truck #1 (Two-Axle Light-Duty Truck):** This truck is considered a standby vehicle and will average around 80–90 miles per day.

- **Truck #2 (Two-Axle Light-Duty Truck):** Truck #2 is considered a retired standby vehicle/support vehicle for construction jobs and will average around 20–25 miles per day.
- **Truck #3 (Two-Axle Light-Duty Truck):** This truck is considered a general maintenance/support vehicle for construction jobs and will average around 20–25 miles per day. It is likely only to be driven for around 75 percent of work week.
- **Truck #4 (Two-Axle Medium-Duty Truck):** Truck #4 is considered a dump truck. This vehicle will average 20–25 miles per day and is usually only driven about 4–5 days per month.
- **Truck #5 (Two-Axle Medium-Duty Truck):** This truck is considered a service truck and planned to be used for larger construction jobs and heavy maintenance. This vehicle will average around 20–25 miles per day and likely only to be driven for around 75 percent of the work week.
- **Truck #6 (Two-Axle Light-Duty Truck):** This vehicle has an auxiliary fuel tank that will be used for refueling the project’s tractors. Occasionally used for short runs for parts and supplies. It will average around 20–25 miles per day and likely only to be driven for around 5–6 days per month.

In the November 2024 TIA, all trucks were considered to be two-axle trucks and operating within the same day as a conservative estimate. Therefore, it was estimated that the project will be generating 12 daily employee truck trips (inbound and outbound combined). Based on the operational hours, these trips could be estimated as peak-hour trips, with six outbound truck trips occurring during a.m. peak hour and six inbound truck trips occurring during the p.m. peak hour. All truck trips were converted to PCE trips using a 1.5 PCE factor for two-axle trucks based on the traffic guidelines.

### Customer Trip Generation

- **Headquarter Building:** The trip generation for this component was developed using rates from the Institute of Transportation Engineers (ITE) *Trip Generation Manual* (11<sup>th</sup> Edition) for Land Use 712 – “Small Office Building.”

Table A summarizes the project trip generation as included in the November 2024 TIA. As shown in Table A, the project was anticipated to generate 91 total net daily PCE trips, with 25 net PCE trips occurring during the a.m. peak hour and 27 net PCE trips occurring during the p.m. peak hour.

### Project Trip Distribution

The removal of Project Driveway 2 causes employee’s passenger vehicle project trips to be rerouted from Project Driveway 2 (November 2024 TIA) to Project Driveway 2 on Campus Avenue (previously Project Driveway 3 in November 2024 TIA). All other distributions analyzed in November 2024 TIA remain the same.

Figure 2 illustrates the project trip distribution for the employees. Figure 3 illustrates the project trip distribution for the maintenance trucks. Figure 4 illustrates the customer trip distribution. The project trip assignment at the study intersections is the product of the project trip generation and the corresponding trip distribution percentages. Figure 5 illustrates the total project trip assignment.

## Volume Development

For purposes of this analysis, the same analysis scenarios analyzed in the November 2024 TIA has been included in this analysis. As such, the “without project” scenarios traffic volumes from the November 2024 TIA were used for this analysis.

Due to the removal of the previously analyzed Project Driveway 2 in the November 2024 TIA, all “plus project” scenarios include re-routing of employee project trips to the easterly driveway on Campus Avenue (previously Project Driveway 3 in November 2024 TIA). Figure 6 illustrates the Opening Year (2027) plus project volumes, and Horizon Year (2050) plus project traffic volumes. Detailed volume development worksheets are included in Appendix A.

## Level of Service Analysis

The intersection LOS analysis was conducted using methodologies consistent with that of the November 2024 TIA. Tables B and C summarize the results of the LOS analysis under all plus project scenarios. As shown in Tables B and C, all study intersections are forecast to operate at a satisfactory LOS with the removal of the middle driveway and rerouted project trips. Detailed LOS worksheets are included in Appendix B.

## Conclusion

In summary, the revised site plan changes include a removal of the middle project driveway from the November 2024 TIA. Additionally, since the project land use intensities and description remain unchanged except for the removal of middle project driveway, the LOS analysis shows no additional traffic operations deficiencies are forecast to occur similar to the results in the November 2024 TIA. Since the project description and land use intensities remain unchanged, the project is screened out from a VMT analysis and no revisions for the VMT analysis will be required.

## ATTACHMENTS:

### Figures

- Figure 1: Conceptual Site Plan
- Figure 2: Project Trip Distribution – Employee
- Figure 3: Project Trip Distribution - Maintenance Trucks
- Figure 4: Project Trip Distribution - Customers
- Figure 5: Total Project Trip Assignment
- Figure 6: Peak Hour Traffic Volumes

### Tables

- Table A: Project Trip Generation
- Table B: Opening Year (2027) Intersection Levels of Service
- Table C: Horizon Year (2050) Intersection Levels of Service

**Appendix**

Appendix A: Volume Development Worksheets

Appendix B: Intersection Levels of Service Worksheets

TABLES

**Table A: Project Trip Generation**

Land Uses	Units	A.M. Peak Hour			P.M. Peak Hour			Daily
		In	Out	Total	In	Out	Total	
<b>San Antonio Water Headquarters &amp; Maintenance Buildings</b>								
Employee Trip Generation <sup>1</sup>		10	0	10	0	10	10	20
Employee Maintenance Truck Trip Generation <sup>2</sup>		0	6	6	6	0	6	12
Employee Maintenance Truck PCE Trip Generation <sup>3</sup>		0	9	9	9	0	9	18
<b>Headquarter Building</b>								
Headquarters Building Trip/Unit <sup>4</sup>	3.698 TSF	1.37	0.30	1.67	0.73	1.43	2.16	14.39
Headquarters Building Customer Trip Generation		5	1	6	3	5	8	53
<b>Total PCE Trip Generation</b>		<b>15</b>	<b>10</b>	<b>25</b>	<b>12</b>	<b>15</b>	<b>27</b>	<b>91</b>

**Notes:**

TSF = thousand square-feet

<sup>1</sup> The employee trip generation was developed based on the project description and operational information.

<sup>2</sup> The maintenance truck trip generation was developed based on the project's operational information. All trucks are 2-axle trucks.

<sup>3</sup> All maintenance truck trips were converted to passenger PCEs using a 1.5 PCE factor for 2-axle trucks based on City of Upland's *Traffic Impact Analysis Guidelines*, dated July 2020.

<sup>4</sup> Rates from Institute of Transportation Engineers (ITE) *Trip Generation Manual*, (11th Edition) for Land Use 712 - "Small Office Building", Setting/Location - 'General Urban/Suburban'.

**Table B: Opening Year (2027) Intersection Levels of Service**

Intersection	Jurisdiction	LOS Standard	Control	Plus Project			
				A.M. Peak Hour		P.M. Peak Hour	
				Delay (sec.)	LOS	Delay (sec.)	LOS
1 . Winston Court - Project Driveway 1/20th Street	Upland	D	TWSC	8.7	A	8.7	A
2 . Campus Avenue/Project Driveway 2 - 20th Street <sup>1</sup>	Upland	D	TWSC	5.6	A	10.5	B

**Notes:**

OWSC = One-Way Stop Control; TWSC = Two-Way Stop Control; LOS = Level of Service

Delay = Average control delay in seconds (For OWSC/TWSC intersections, reported delay is for worst-case movement).

\* Exceeds LOS Standard

<sup>1</sup> For the purpose of this analysis, intersection was analyzed as a OWSC under ' without project" and TWSC under 'plus project' scenarios. Delay reported from SimTraffic under 'plus project' scenarios.

**Table C: Horizon Year (2050) Intersection Levels of Service**

Intersection	Jurisdiction	LOS Standard	Control	Plus Project			
				A.M. Peak Hour		P.M. Peak Hour	
				Delay (sec.)	LOS	Delay (sec.)	LOS
1 . Winston Court - Project Driveway 1/20th Street	Upland	D	TWSC	8.6	A	8.6	A
2 . Campus Avenue/Project Driveway 2 - 20th Street <sup>1</sup>	Upland	D	TWSC	5.4	A	10.6	B

**Notes:**

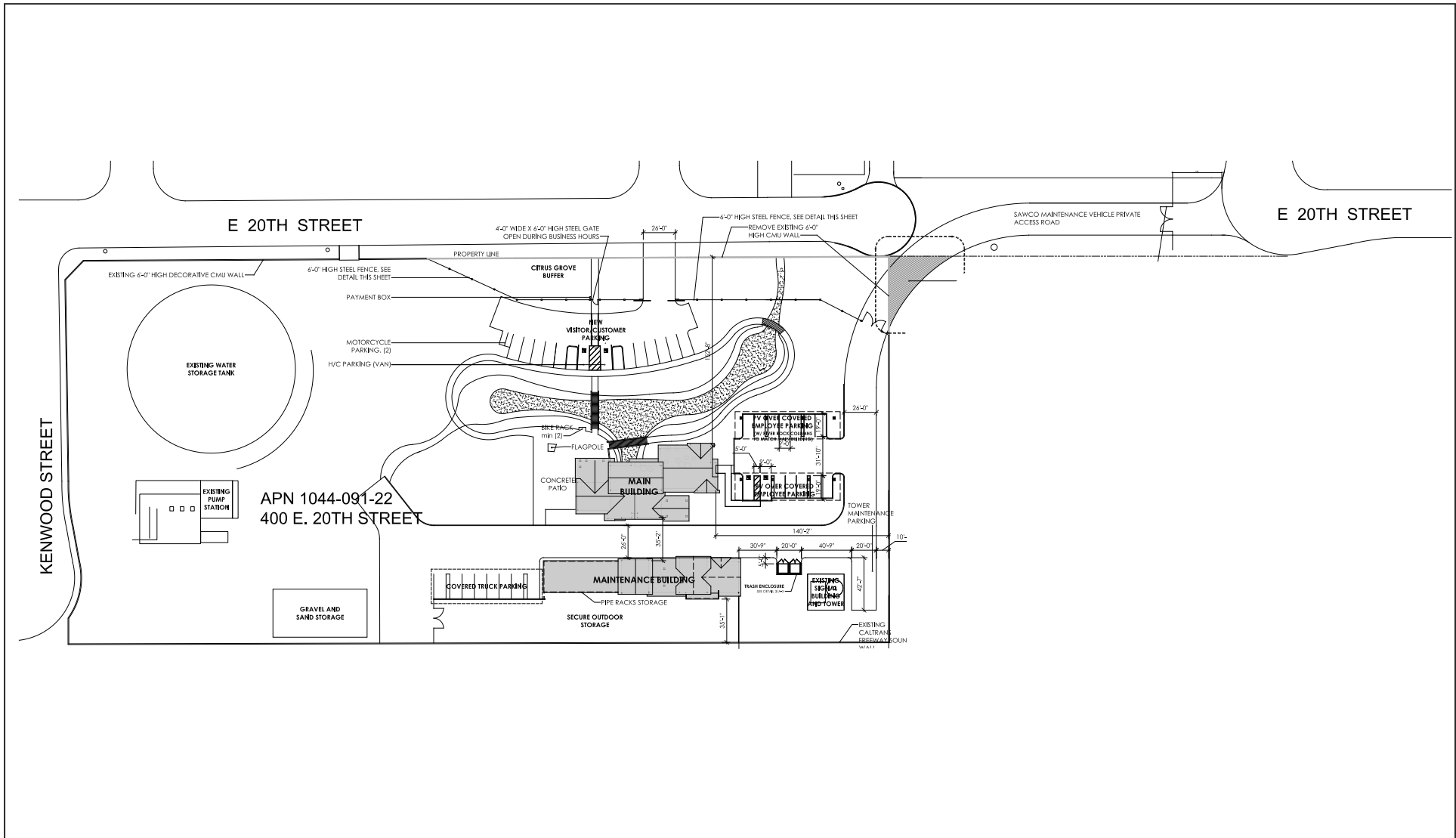
OWSC = One-Way Stop Control; TWSC = Two-Way Stop Control; LOS = Level of Service

Delay = Average control delay in seconds (For OWSC/TWSC intersections, reported delay is for worst-case movement).

\* Exceeds LOS Standard

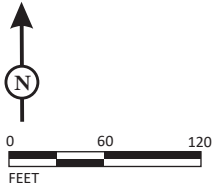
<sup>1</sup> For the purpose of this analysis, intersection was analyzed as a OWSC under ' without project" and TWSC under 'plus project' scenarios. Delay reported from SimTraffic under 'plus project' scenarios.

**FIGURES**



LSA

FIGURE 1



San Antonio Water Company Headquarters  
 Driveway Sensitivity Analysis Memorandum

Conceptual Site Plan

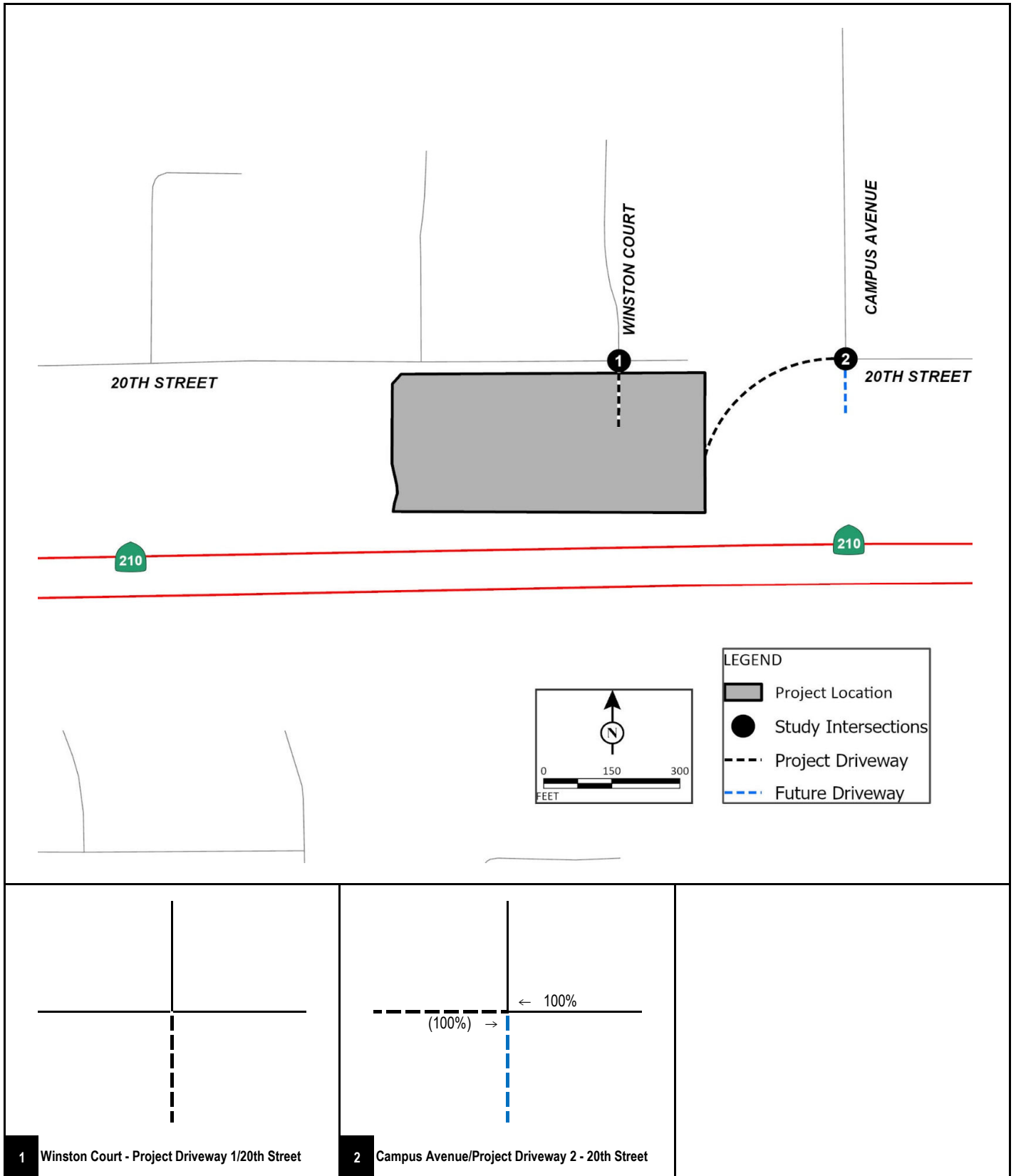


FIGURE 2

**LSA**

XXX% (YYY%)  
Inbound (Outbound) Distribution

--- Project Driveway  
--- Future Driveway

San Antonio Water Company Headquarters  
Driveway Sensitivity Analysis Memorandum

Project Trip Distribution – Employees

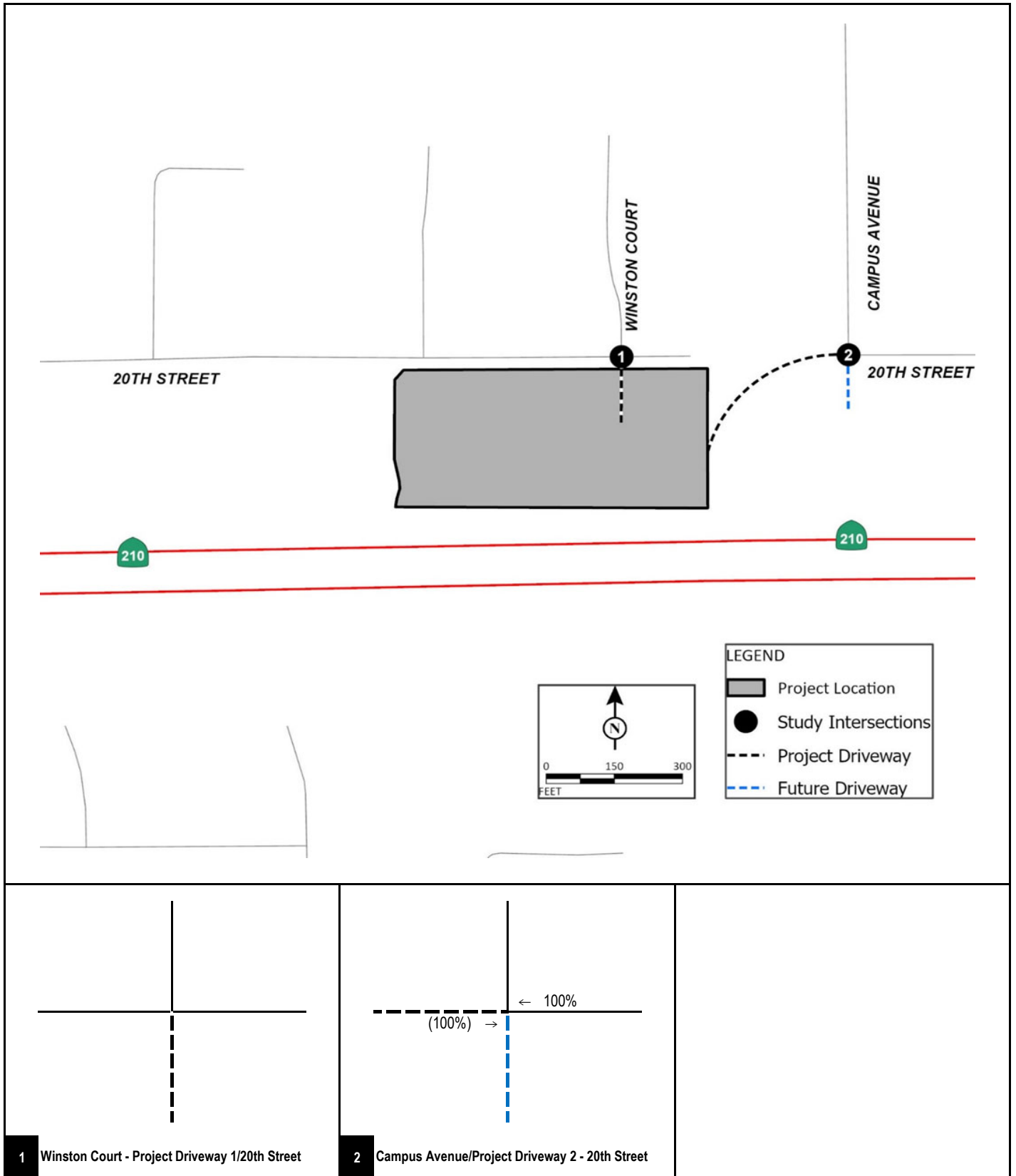


FIGURE 3



XXX% (YYY%)  
Inbound (Outbound) Distribution

--- Project Driveway  
--- Future Driveway

San Antonio Water Company Headquarters  
Traffic Impact Analysis

Project Trip Distribution – Maintenance Trucks

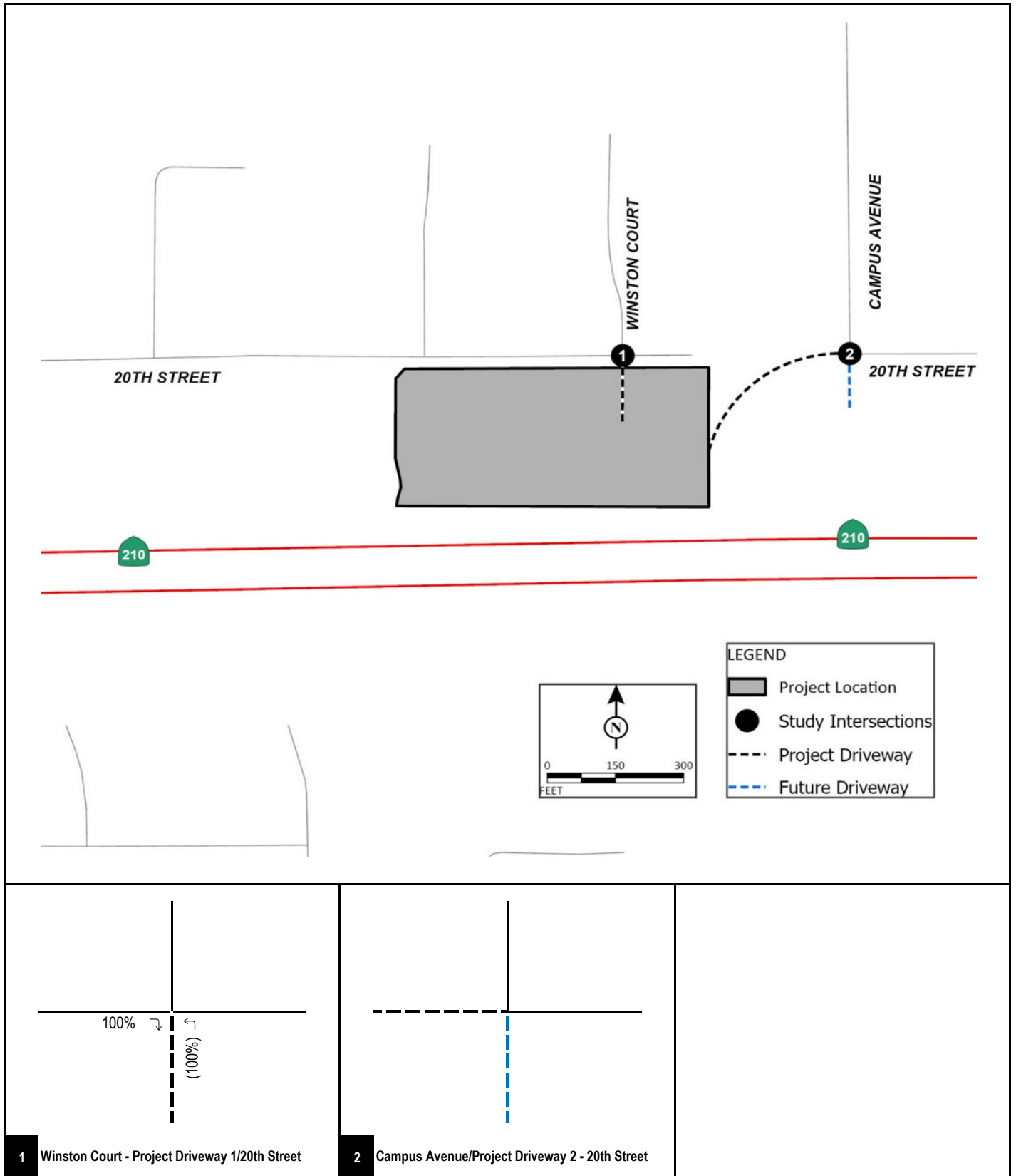


FIGURE 4

**LSA**

XXX% (YYY%)  
Inbound (Outbound) Distribution

--- Project Driveway  
- - - Future Driveway

San Antonio Water Company Headquarters  
Traffic Impact Analysis

Project Trip Distribution – Customers

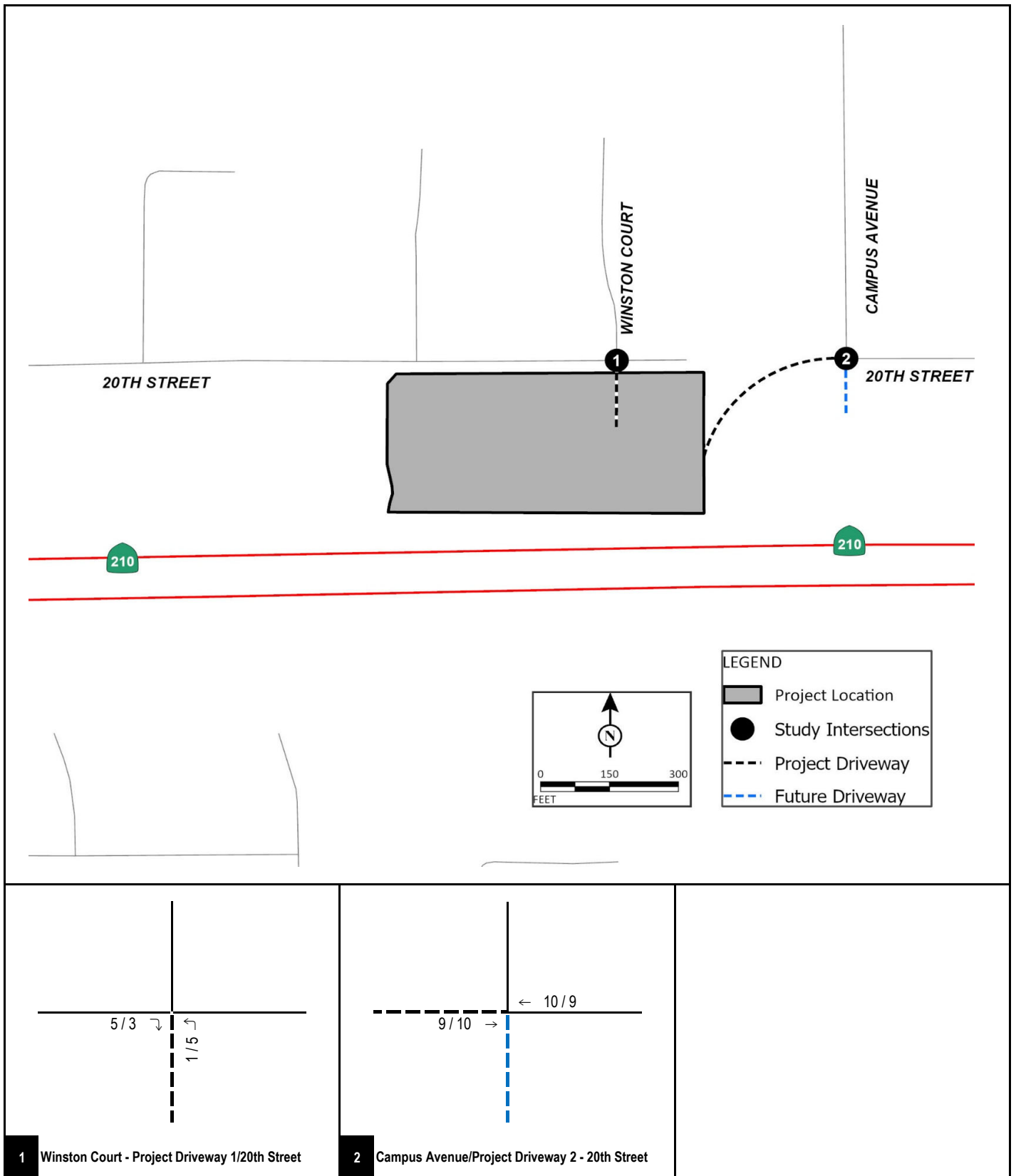


FIGURE 5

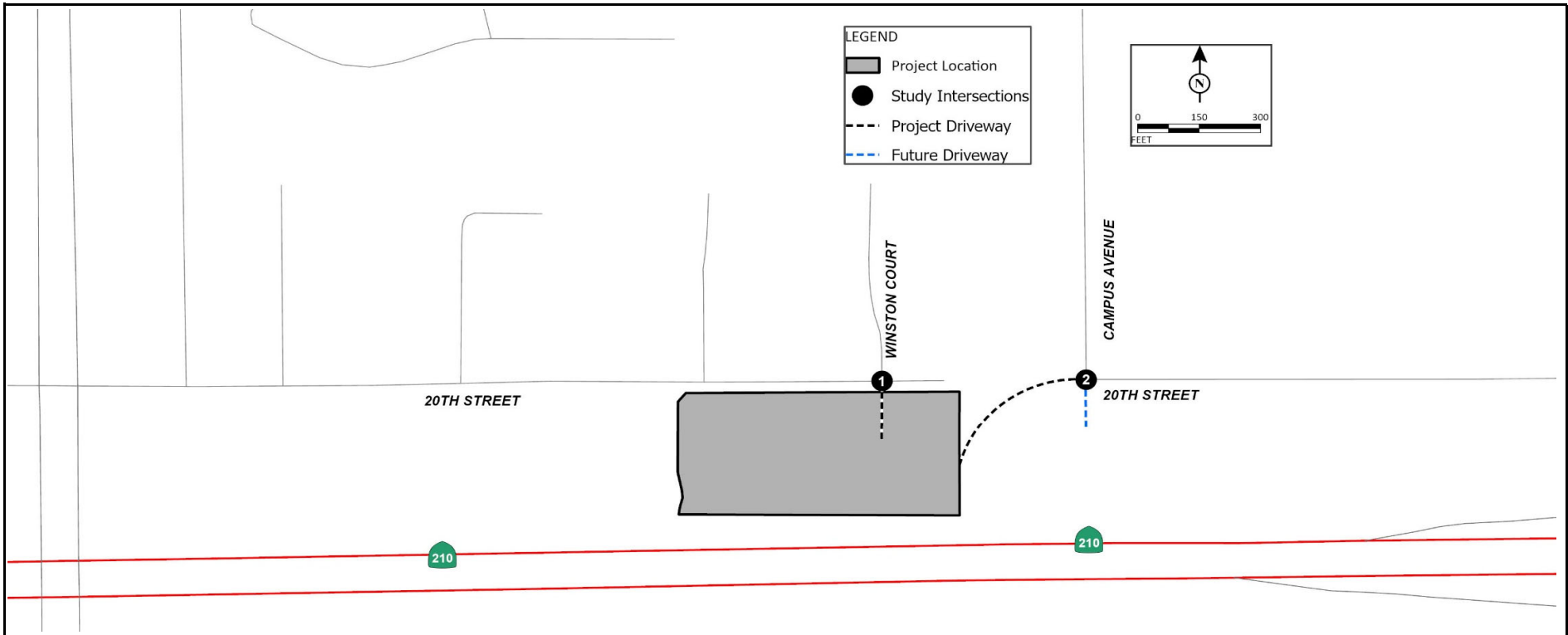
**LSA**

XX / YY  
 AM / PM Peak Hour PCE Trips

--- Project Driveway  
 --- Future Driveway

San Antonio Water Company Headquarters  
 Driveway Sensitivity Analysis Memorandum

Total Project Trip Assignment



Opening Year (2027) plus Project		Horizon Year (2050) plus Project	
<p><b>1</b> Winston Court - Project Driveway 1/20th Street</p>	<p><b>2</b> Campus Avenue/Project Driveway 2 - 20th Street</p>	<p><b>1</b> Winston Court - Project Driveway 1/20th Street</p>	<p><b>2</b> Campus Avenue/Project Driveway 2 - 20th Street</p>



XXX / YYY  
AM / PM PCE Peak Hour Trips

--- Project Driveway  
- - - Future Driveway

FIGURE 6

San Antonio Water Company Headquarters  
Driveway Sensitivity Analysis Memorandum

Peak Hour Traffic Volumes

**APPENDICES**



**Appendix A - Opening Year (2027) Peak Hour PCE Volume Summary**

	AM Peak Hour						PM Peak Hour					
	Existing	2024	Approved	OY (2027)	OY (2027)	Project	Existing	2024	Approved	OY (2027)	OY (2027)	
	w/o Project	to 2027	and Pending	w/o Project	w/ Project		w/o Project	to 2027	and Pending	w/o Project	Project	w/ Project
Volumes	Growth	Project Trips	Volumes	Trips	Volumes	Volumes	Growth	Project Trips	Volumes	Trips	Volumes	
<b>1 Winston Court - Project Driveway 1/20th Street</b>												
NBL	0	0	0	0	1	1	0	0	0	0	5	5
NBT	0	0	0	0	0	0	0	0	0	0	0	0
NBR	0	0	0	0	0	0	0	0	0	0	0	0
SBL	0	0	0	0	0	0	0	0	0	0	0	0
SBT	0	0	0	0	0	0	0	0	0	0	0	0
SBR	5	0	1	6	0	6	3	0	1	4	0	4
EBL	2	0	1	3	0	3	5	0	1	6	0	6
EBT	4	0	0	4	0	4	0	0	0	0	0	0
EBR	0	0	0	0	5	5	0	0	0	0	3	3
WBL	0	0	0	0	0	0	0	0	0	0	0	0
WBT	4	0	0	4	0	4	0	0	0	0	0	0
WBR	2	0	0	2	0	2	0	0	0	0	0	0
<b>North Leg</b>												
Approach	5	0	1	6	0	6	3	0	1	4	0	4
Departure	4	0	1	5	0	5	5	0	1	6	0	6
Total	9	0	2	11	0	11	8	0	2	10	0	10
<b>South Leg</b>												
Approach	0	0	0	0	1	1	0	0	0	0	5	5
Departure	0	0	0	0	5	5	0	0	0	0	3	3
Total	0	0	0	0	6	6	0	0	0	0	8	8
<b>East Leg</b>												
Approach	6	0	0	6	0	6	0	0	0	0	0	0
Departure	4	0	0	4	0	4	0	0	0	0	0	0
Total	10	0	0	10	0	10	0	0	0	0	0	0
<b>West Leg</b>												
Approach	6	0	1	7	5	12	5	0	1	6	3	9
Departure	9	0	1	10	1	11	3	0	1	4	5	9
Total	15	0	2	17	6	23	8	0	2	10	8	18
<b>Total Approaches</b>												
Approach	17	0	2	19	6	25	8	0	2	10	8	18
Departure	17	0	2	19	6	25	8	0	2	10	8	18
Total	34	0	4	38	12	50	16	0	4	20	16	36



**Appendix A - Opening Year (2027) Peak Hour PCE Volume Summary**

	AM Peak Hour						PM Peak Hour					
	Existing w/o Project Volumes	2024 to 2027 Growth	Approved and Pending Project Trips	OY (2027) w/o Project Volumes	Project Trips	OY (2027) w/ Project Volumes	Existing w/o Project Volumes	2024 to 2027 Growth	Approved and Pending Project Trips	OY (2027) w/o Project Volumes	Project Trips	OY (2027) w/ Project Volumes
<b>2 Campus Avenue/Project Driveway 2 - 20th Street</b>												
NBL	0	0	0	0	0	0	0	0	0	0	0	0
NBT	0	0	1	1	0	1	0	0	3	3	0	3
NBR	0	0	2	2	0	2	0	0	5	5	0	5
SBL	247	15	3	265	0	265	551	33	6	590	0	590
SBT	0	0	2	2	0	2	0	0	3	3	0	3
SBR	0	0	0	0	0	0	0	0	0	0	0	0
EBL	0	0	0	0	0	0	0	0	0	0	0	0
EBT	0	0	0	0	9	9	0	0	0	0	10	10
EBR	0	0	0	0	0	0	0	0	0	0	0	0
WBL	0	0	3	3	0	3	0	0	4	4	0	4
WBT	0	0	0	0	10	10	0	0	0	0	9	9
WBR	197	12	5	214	0	214	240	14	4	258	0	258
<b>North Leg</b>												
Approach	247	15	5	267	0	267	551	33	9	593	0	593
Departure	197	12	6	215	0	215	240	14	7	261	0	261
Total	444	27	11	482	0	482	791	47	16	854	0	854
<b>South Leg</b>												
Approach	0	0	3	3	0	3	0	0	8	8	0	8
Departure	0	0	5	5	0	5	0	0	7	7	0	7
Total	0	0	8	8	0	8	0	0	15	15	0	15
<b>East Leg</b>												
Approach	197	12	8	217	10	227	240	14	8	262	9	271
Departure	247	15	5	267	9	276	551	33	11	595	10	605
Total	444	27	13	484	19	503	791	47	19	857	19	876
<b>West Leg</b>												
Approach	0	0	0	0	9	9	0	0	0	0	10	10
Departure	0	0	0	0	10	10	0	0	0	0	9	9
Total	0	0	0	0	19	19	0	0	0	0	19	19
<b>Total Approaches</b>												
Approach	444	27	16	487	19	506	791	47	25	863	19	882
Departure	444	27	16	487	19	506	791	47	25	863	19	882
Total	888	54	32	974	38	1,012	1,582	94	50	1,726	38	1,764



**Appendix A - Horizon Year (2050) Peak Hour Volume Summary**

	AM Peak Hour			PM Peak Hour		
	HY (2050)		HY (2050)	HY (2050)		HY (2050)
	w/o Project Volumes	Project Trips	w/ Project Volumes	w/o Project Volumes	Project Trips	w/ Project Volumes
<b>1 Winston Court - Project Driveway 1/20th Street</b>						
NBL	0	1	1	0	5	5
NBT	0	0	0	0	0	0
NBR	0	0	0	0	0	0
SBL	0	0	0	0	0	0
SBT	0	0	0	0	0	0
SBR	6	0	6	4	0	4
EBL	3	0	3	6	0	6
EBT	4	0	4	0	0	0
EBR	0	5	5	0	3	3
WBL	0	0	0	0	0	0
WBT	4	0	4	0	0	0
WBR	2	0	2	0	0	0
<b>North Leg</b>						
Approach	6	0	6	4	0	4
Departure	5	0	5	6	0	6
Total	11	0	11	10	0	10
<b>South Leg</b>						
Approach	0	1	1	0	5	5
Departure	0	5	5	0	3	3
Total	0	6	6	0	8	8
<b>East Leg</b>						
Approach	6	0	6	0	0	0
Departure	4	0	4	0	0	0
Total	10	0	10	0	0	0
<b>West Leg</b>						
Approach	7	5	12	6	3	9
Departure	10	1	11	4	5	9
Total	17	6	23	10	8	18
<b>Total Approaches</b>						
Approach	19	6	25	10	8	18
Departure	19	6	25	10	8	18
Total	38	12	50	20	16	36

Appendix A - Horizon Year (2050) Peak Hour Volume Summary

	AM Peak Hour			PM Peak Hour		
	HY (2050) w/o Project Volumes	Project Trips	HY (2050) w/ Project Volumes	HY (2050) w/o Project Volumes	Project Trips	HY (2050) w/ Project Volumes
<b>2 Campus Avenue/Project Driveway 2 - 20th Street</b>						
NBL	0	0	0	0	0	0
NBT	1	0	1	3	0	3
NBR	2	0	2	5	0	5
SBL	278	0	278	649	0	649
SBT	2	0	2	3	0	3
SBR	0	0	0	0	0	0
EBL	0	0	0	0	0	0
EBT	0	9	9	0	10	10
EBR	0	0	0	0	0	0
WBL	3	0	3	4	0	4
WBT	0	10	10	0	9	9
WBR	361	0	361	271	0	271
North Leg						
Approach	280	0	280	652	0	652
Departure	362	0	362	274	0	274
Total	642	0	642	926	0	926
South Leg						
Approach	3	0	3	8	0	8
Departure	5	0	5	7	0	7
Total	8	0	8	15	0	15
East Leg						
Approach	364	10	374	275	9	284
Departure	280	9	289	654	10	664
Total	644	19	663	929	19	948
West Leg						
Approach	0	9	9	0	10	10
Departure	0	10	10	0	9	9
Total	0	19	19	0	19	19
Total Approaches						
Approach	647	19	666	935	19	954
Departure	647	19	666	935	19	954
Total	1,294	38	1,332	1,870	38	1,908

**Intersection**

Int Delay, s/veh 3.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	4	5	0	4	2	1	0	0	0	0	6
Future Vol, veh/h	3	4	5	0	4	2	1	0	0	0	0	6
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	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	4	5	7	0	5	3	1	0	0	0	0	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	8	0	0	12	0	0	22	25	9	20	27	7
Stage 1	-	-	-	-	-	-	17	17	-	7	7	-
Stage 2	-	-	-	-	-	-	5	8	-	13	20	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1625	-	-	1620	-	-	995	873	1079	998	870	1082
Stage 1	-	-	-	-	-	-	1008	886	-	1020	894	-
Stage 2	-	-	-	-	-	-	1022	893	-	1012	883	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1625	-	-	1620	-	-	986	870	1079	996	868	1082
Mov Cap-2 Maneuver	-	-	-	-	-	-	986	870	-	996	868	-
Stage 1	-	-	-	-	-	-	1006	883	-	1020	894	-
Stage 2	-	-	-	-	-	-	1014	893	-	1010	880	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	1.81	0	8.66	8.35
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	986	405	-	-	1620	-	-	1082
HCM Lane V/C Ratio	0.001	0.002	-	-	-	-	-	0.007
HCM Ctrl Dly (s/v)	8.7	7.2	0	-	0	-	-	8.4
HCM Lane LOS	A	A	A	-	A	-	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

2: Private Driveway /Campus Avenue & Project Driveway 2/20th Street Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.2	0.1	0.3	0.2
Total Delay (hr)	0.0	0.1	0.0	0.1	0.2
Total Del/Veh (s)	5.6	0.9	2.7	0.9	1.0
Stop Delay (hr)	0.0	0.0	0.0	0.0	0.0
Stop Del/Veh (s)	3.0	0.0	2.4	0.0	0.1

Intersection												
Int Delay, s/veh	6.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	0	3	0	0	0	5	0	0	0	0	4
Future Vol, veh/h	6	0	3	0	0	0	5	0	0	0	0	4
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	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	67	67	67	67	67	67	67	67	67	67	67	67
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	9	0	4	0	0	0	7	0	0	0	0	6

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1	0	0	4	0	0	22	22	2	19	24	1
Stage 1	-	-	-	-	-	-	20	20	-	1	1	-
Stage 2	-	-	-	-	-	-	1	1	-	18	22	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1634	-	-	1630	-	-	996	876	1088	999	874	1089
Stage 1	-	-	-	-	-	-	1004	883	-	1027	899	-
Stage 2	-	-	-	-	-	-	1027	899	-	1007	881	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1634	-	-	1630	-	-	985	871	1088	994	869	1089
Mov Cap-2 Maneuver	-	-	-	-	-	-	985	871	-	994	869	-
Stage 1	-	-	-	-	-	-	998	878	-	1027	899	-
Stage 2	-	-	-	-	-	-	1021	899	-	1001	876	-

Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	4.81			0			8.68			8.32		
HCM LOS							A			A		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	985	1000	-	-	1630	-	-	1089
HCM Lane V/C Ratio	0.008	0.005	-	-	-	-	-	0.005
HCM Ctrl Dly (s/v)	8.7	7.2	0	-	0	-	-	8.3
HCM Lane LOS	A	A	A	-	A	-	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

2: Private Driveway /Campus Avenue & Project Driveway 2/20th Street Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	0.1	0.1
Denied Del/Veh (s)	0.1	0.3	0.1	0.6	0.5
Total Delay (hr)	0.0	0.1	0.0	0.4	0.6
Total Del/Veh (s)	10.5	1.2	6.4	2.2	2.1
Stop Delay (hr)	0.0	0.0	0.0	0.0	0.1
Stop Del/Veh (s)	8.3	0.0	5.0	0.1	0.2

Intersection												
Int Delay, s/veh	3.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	4	5	0	4	2	1	0	0	0	0	6
Future Vol, veh/h	3	4	5	0	4	2	1	0	0	0	0	6
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	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	3	4	5	0	4	2	1	0	0	0	0	6

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	6	0	0	9	0	0	17	19	7	16	21	5
Stage 1	-	-	-	-	-	-	13	13	-	5	5	-
Stage 2	-	-	-	-	-	-	4	6	-	11	16	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1628	-	-	1623	-	-	1002	878	1082	1005	877	1084
Stage 1	-	-	-	-	-	-	1012	889	-	1022	895	-
Stage 2	-	-	-	-	-	-	1023	894	-	1016	886	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1628	-	-	1623	-	-	995	877	1082	1003	875	1084
Mov Cap-2 Maneuver	-	-	-	-	-	-	995	877	-	1003	875	-
Stage 1	-	-	-	-	-	-	1010	887	-	1022	895	-
Stage 2	-	-	-	-	-	-	1017	894	-	1014	885	-

Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	1.8			0			8.62			8.34		
HCM LOS							A			A		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	995	405	-	-	1623	-	-	1084
HCM Lane V/C Ratio	0.001	0.002	-	-	-	-	-	0.006
HCM Ctrl Dly (s/v)	8.6	7.2	0	-	0	-	-	8.3
HCM Lane LOS	A	A	A	-	A	-	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

2: Private Driveway /Campus Avenue & Project Driveway 2/20th Street Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.1	0.3	0.1	0.3	0.3
Total Delay (hr)	0.0	0.2	0.0	0.1	0.3
Total Del/Veh (s)	5.4	1.6	2.7	1.1	1.5
Stop Delay (hr)	0.0	0.0	0.0	0.0	0.0
Stop Del/Veh (s)	2.9	0.0	2.4	0.0	0.1

Intersection												
Int Delay, s/veh	6.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	0	3	0	0	0	5	0	0	0	0	4
Future Vol, veh/h	6	0	3	0	0	0	5	0	0	0	0	4
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	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	6	0	3	0	0	0	5	0	0	0	0	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1	0	0	3	0	0	15	15	2	14	17	1
Stage 1	-	-	-	-	-	-	14	14	-	1	1	-
Stage 2	-	-	-	-	-	-	1	1	-	13	16	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1635	-	-	1632	-	-	1005	883	1089	1008	881	1089
Stage 1	-	-	-	-	-	-	1011	888	-	1027	899	-
Stage 2	-	-	-	-	-	-	1027	899	-	1013	886	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1635	-	-	1632	-	-	998	880	1089	1004	878	1089
Mov Cap-2 Maneuver	-	-	-	-	-	-	998	880	-	1004	878	-
Stage 1	-	-	-	-	-	-	1007	884	-	1027	899	-
Stage 2	-	-	-	-	-	-	1023	899	-	1009	883	-

Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	4.81			0			8.63			8.32		
HCM LOS							A			A		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	998	1000	-	-	1632	-	-	1089
HCM Lane V/C Ratio	0.005	0.004	-	-	-	-	-	0.004
HCM Ctrl Dly (s/v)	8.6	7.2	0	-	0	-	-	8.3
HCM Lane LOS	A	A	A	-	A	-	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

2: Private Driveway /Campus Avenue & Project Driveway 2/20th Street Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	0.1	0.1
Denied Del/Veh (s)	0.1	0.3	0.1	0.6	0.5
Total Delay (hr)	0.0	0.1	0.0	0.4	0.6
Total Del/Veh (s)	10.6	1.4	7.0	2.3	2.2
Stop Delay (hr)	0.0	0.0	0.0	0.0	0.1
Stop Del/Veh (s)	8.4	0.1	5.7	0.1	0.2

# **TRAFFIC IMPACT ANALYSIS**

**SAN ANTONIO WATER HEADQUARTERS PROJECT  
CITY OF UPLAND  
SAN BERNARDINO COUNTY, CALIFORNIA**

This Traffic Impact Analysis has been prepared under the supervision of  
Ambarish Mukherjee, P.E.



November 2024

# **TRAFFIC IMPACT ANALYSIS**

**SAN ANTONIO WATER HEADQUARTERS PROJECT  
CITY OF UPLAND  
SAN BERNARDINO COUNTY, CALIFORNIA**

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## LIST OF ABBREVIATIONS AND ACRONYMS

Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
City	City of Upland
CMP	Congestion Management Plan
General Plan	City of Upland <i>General Plan 2035</i>
HCM	Highway Capacity Manual
HDM	Caltrans Highway Design Manual
ITE	Institute of Transportation Engineers
LOS	level(s) of service
mph	mile(s) per hour
PCE	passenger car equivalent
project	San Antonio Water Headquarters Project
SAWCO	San Antonio Water Co.
SBCTA	San Bernardino County Transportation Authority
SCE	Southern California Edison
SR-210	State Route 210
TIA	Traffic Impact Analysis
TPA	Transit Priority Area
VMT	vehicle miles traveled

## 1.0 EXECUTIVE SUMMARY

The proposed San Antonio Water Headquarters Project (project) in Upland proposes to develop a new 3,698-square-foot San Antonio Water Co. (SAWCO) headquarters and associated improvements, including a 4,066-square-foot maintenance building, a maintenance yard, a driveway, parking, solar cover, landscaping, and utility improvements. The existing water storage tank, pump station, and signal buildings and tower would remain in place.

The project is located at 400 East 20<sup>th</sup> Street in Upland. In addition, the project site is located in northwest Upland in an area primarily consisting of residential, commercial, and industrial uses. The project site is bound by East 20<sup>th</sup> Street to the north, Southern California Edison (SCE) easement (open space) to the east, State Route 210 (SR-210) to the south, and Flower Court to the west. There are currently existing structures on the project site: a 1-million-gallon water storage tank located at the northwestern corner of the parcel, a pump station located at the southwestern corner of the parcel, and a signal building and tower located at the southeastern corner of the parcel. The project is anticipated to be completed by 2027.

The project can be accessed via three full-access driveways:

- **Project Driveway 1 on 20<sup>th</sup> Street:** This westerly driveway along the northern property boundary provides access for SAWCO patrons and customers;
- **Project Driveway 2 on 20<sup>th</sup> Street:** This driveway is located in the middle of the northeastern corner of the project site and provides access for the SAWCO employee parking area and maintenance facilities; and
- **Project Driveway 3 on Campus Avenue:** This easterly driveway located on the northeastern corner of the project site and will be a future connection with the intersection of Campus Avenue and 20<sup>th</sup> Street.

The project is forecast to generate 25 net passenger car equivalent (PCE) trips in the a.m. peak hour, 27 net PCE trips in the p.m. peak hour, and 91 net PCE daily trips.

The study area for the project was finalized based on the criteria defined in the City of Upland (City) *Traffic Impact Analysis (TIA) Guidelines* (dated July 2020). Based on the City's TIA Guidelines and discussions with City staff during the scoping agreement process, the study area includes three intersections.

Traffic conditions were examined for the weekday a.m. and p.m. peak-hour conditions under the following scenarios:

- Existing Condition
- Opening Year without Project Conditions
- Opening Year plus Project Conditions
- Horizon Year without Project Conditions

- Horizon Year plus Project Conditions

## 1.1 EXISTING CONDITIONS SUMMARY

Based on the criteria as discussed in Section 3.2, Level of Service Procedures and Criteria, of this report, all study intersections are currently operating at a satisfactory level of service (LOS) under existing conditions.

## 1.2 OPENING YEAR (2027) CONDITIONS SUMMARY

Based on the criteria as discussed in Section 3.2, Level of Service Procedures and Criteria, of this report, under both opening year without and plus project conditions, all intersections are forecast to operate at a satisfactory LOS.

## 1.3 HORIZON YEAR (2050) CONDITIONS SUMMARY

Based on the criteria as discussed in Section 3.2, Level of Service Procedures and Criteria, of this report, under both horizon year without and plus project conditions, all intersections are forecast to operate at a satisfactory LOS.

## 1.4 CALIFORNIA ENVIRONMENTAL QUALITY ACT ASSESSMENT—VEHICLE MILES TRAVELED ANALYSIS AND ACTIVE TRANSPORTATION AND PUBLIC TRANSIT ANALYSIS SUMMARY

### 1.4.1 Vehicle Miles Traveled Analysis Summary

A vehicle mile traveled (VMT) analysis was prepared to meet California Environmental Quality Act (CEQA) requirements for the proposed project. The project VMT analysis is prepared consistent with the City's TIA Guidelines. The TIA Guidelines include the VMT screening criteria, VMT analysis methodology, VMT impact thresholds, and VMT mitigation measures (if required) for the City.

The TIA Guidelines provide multiple screening criteria for land use projects. The VMT screening criteria in the "Analysis Methodology" section of the TIA Guidelines were reviewed to determine whether the proposed project could be screened out from a VMT analysis. Following is a brief description of the proposed project in relation to the VMT screening criteria:

- **Project Located in Transit Priority Area (TPA):** The proposed project is not located within a TPA; therefore, this screening criterion does not apply.
- **Residential or Office Project Located in Low-VMT Area:** The project is not a residential or office project; therefore, this criterion does not apply.
- **Project Type (Land Use) Screening:** According to the TIA Guidelines, "Projects generating less than 250 daily vehicle trips" may be presumed to have a less than significant impact. The proposed project is anticipated to generate fewer than 250 daily vehicle trips.

Since the project meets the Project Type (Land Use) Screening criteria, the project is presumed to have less than significant VMT impact and may be screened from a full VMT analysis.

---

### **1.4.2 Active Transportation and Public Transit Analysis Summary**

The project does not conflict with any existing or proposed bicycle, pedestrian, or public transit facilities. Therefore, it can be considered to conform to all adopted policies, plans, or programs concerning these facilities and will not have a significant impact. It should be noted that at present, there are no proposed service changes in Omnitrans' transit network.

### **1.5 RECOMMENDED IMPROVEMENTS SUMMARY**

Based on the results of the LOS analysis and VMT screening analysis, all study intersections are forecast to operate at a satisfactory LOS under all scenarios and the project is not anticipated to have any significant VMT impact. Therefore, no circulation improvements or VMT related improvements are required for the project.

## 2.0 INTRODUCTION

The TIA has been prepared for the proposed project to be located at 400 East 20<sup>th</sup> Street in Upland. The project site is located in northwest Upland in an area primarily consisting of residential, commercial, and industrial uses. The project site is bound by East 20<sup>th</sup> Street to the north, SCE easement (open space) to the east, SR-210 to the south, and Flower Court to the west. There are currently existing structures on the project site: a 1-million-gallon water storage tank at the northwestern corner of the parcel, a pump station at the southwestern corner of the parcel, and a signal building and tower at the southeastern corner of the parcel. The existing structures will continue to operate and remain on-site after the project is built. Figure 2-1 illustrates the regional and project location. (Figures and tables are located at the end of each chapter.)

This report is intended to satisfy the requirements established by the City of Upland *Traffic Impact Analysis Guidelines for Vehicle Miles Traveled and Level of Service Assessment* (dated July 2020). The scope of work for this TIA, including trip generation, trip distribution, study area, and analysis methodologies, has been approved by City staff via the Scoping Agreement process. A copy of the Scoping Agreement is included in Appendix A.

This study examines traffic operations in the vicinity of the proposed project under the following five scenarios:

- Existing Conditions;
- Project Opening Year without Project Conditions;
- Project Opening Year plus Project Conditions;
- Horizon Year without Project Conditions; and
- Horizon Year plus Project Conditions.

Traffic conditions were examined for the weekday a.m. and p.m. peak-hour conditions. The a.m. peak hour is defined as the 1 hour of highest traffic volumes occurring between 7:00 and 9:00 a.m. The p.m. peak hour is the 1 hour of highest traffic volumes occurring between 4:00 and 6:00 p.m.

### 2.1 PROJECT DESCRIPTION

The proposed project proposes to develop new 3,698-square-foot SAWCO headquarters and associated improvements including a 4,066-square-foot maintenance building, maintenance yard, driveway, parking, solar cover, landscaping, and utility improvements. The existing water storage tank, pump station, and signal buildings and tower would remain in place. The project is anticipated to be completed by 2027. Figure 2-2 illustrates the conceptual site plan for the proposed project.

As shown on Figure 2-2, the project can be accessed via three full-access driveways:

- **Project Driveway 1 on 20<sup>th</sup> Street:** This westerly driveway along the northern property boundary provides access for SAWCO patrons and customers;

- **Project Driveway 2 on 20<sup>th</sup> Street:** This driveway is located in the middle of the northeastern corner of the project site and provides access for the SAWCO employee parking area and maintenance facilities; and
- **Project Driveway 3 on Campus Avenue:** This easterly driveway located on the northeastern corner of the project site and will be a future connection with the intersection of Campus Avenue and 20<sup>th</sup> Street.

## 2.2 LIST OF CHAPTER 2.0 FIGURES

- Figure 2-1: Regional and Project Location
- Figure 2-2: Conceptual Site Plan

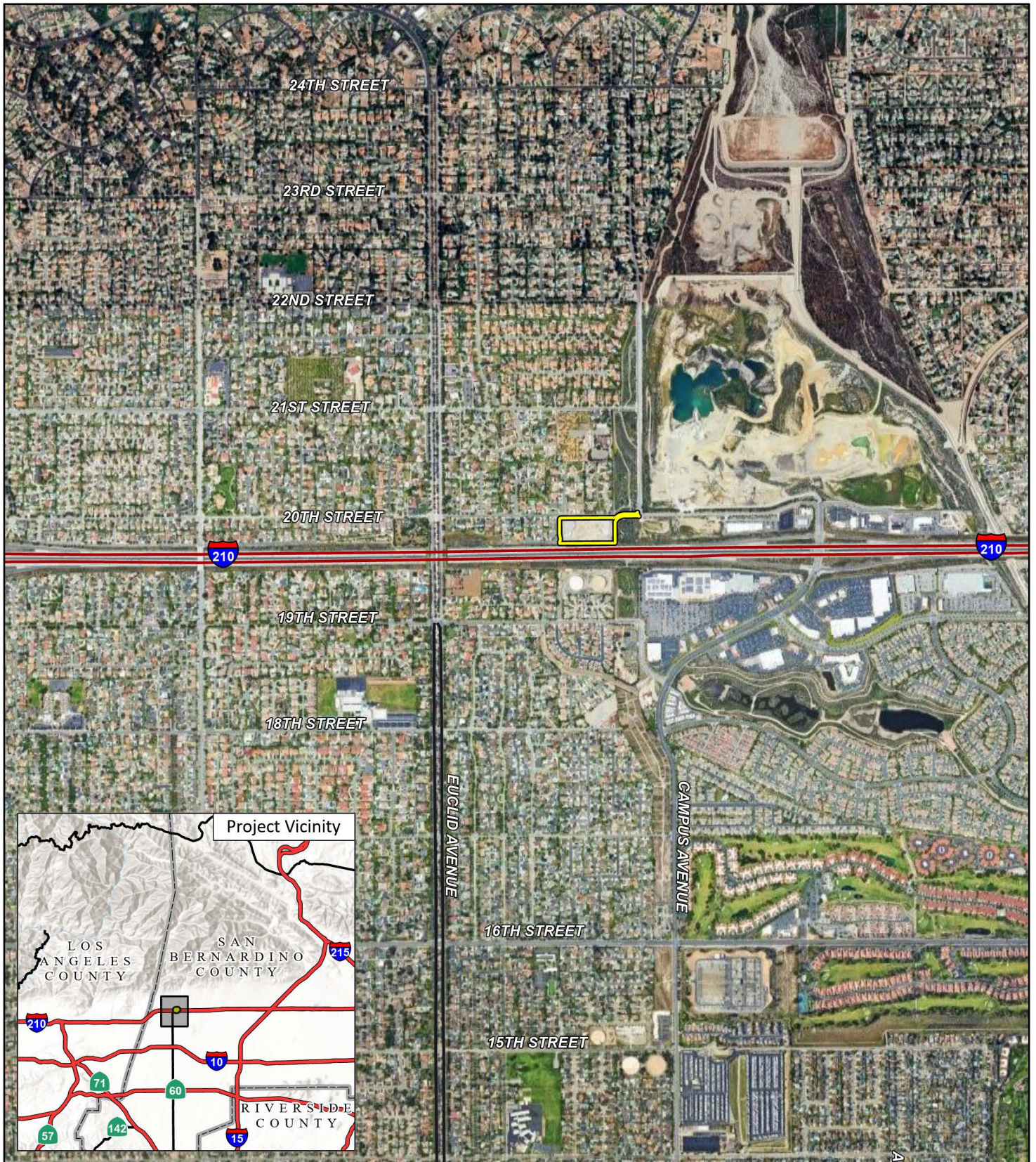


FIGURE 2-1

LSA

LEGEND

 Project Location



0 830 1660  
FEET

SOURCE: ESRI Streetmap, 2021; Google Earth, 2023

I:\2024\20241723\GIS\Pro\San Antonio Water Company Headquarters\San Antonio Water Company Headquarters.aprx (12/23/2024)

San Antonio Water Headquarters  
Traffic Impact Analysis  
Regional and Project Location

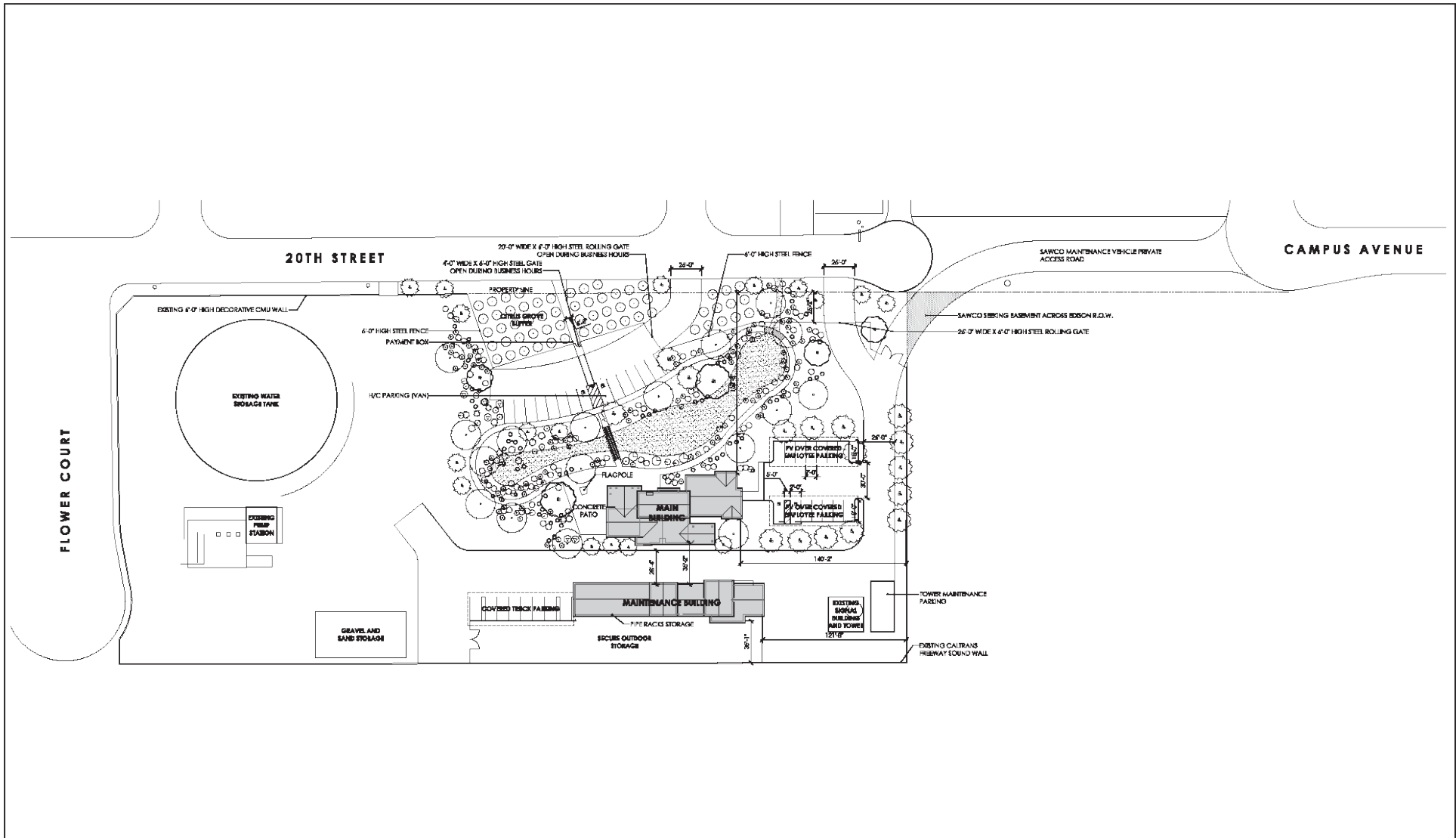
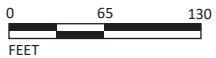


FIGURE 2-2

LSA



San Antonio Water Headquarters  
 Traffic Impact Analysis  
 Conceptual Site Plan

## 3.0 ANALYSIS METHODOLOGY AND CRITERIA

### 3.1 LEVEL OF SERVICE DEFINITIONS

Level of service (LOS) can be characterized for the whole intersection, by each intersection approach, and by each lane group. Control delay alone is used to characterize LOS for the entire intersection. Control delay quantifies the increase in travel time due to the traffic signal control and is a surrogate measure of driver discomfort and fuel consumption.

A complete description of the meaning of LOS can be found in the Transportation Research Board Special Report 209, *Highway Capacity Manual* (HCM). The HCM establishes LOS A through F for intersections. A description of LOS for signalized and unsignalized intersections is summarized in Table 3.A.

Table 3.B shows the LOS criteria for unsignalized and signalized intersections. For all study area intersections, the *Highway Capacity Manual 7<sup>th</sup> Edition* (HCM 7) analysis methodologies were used to determine intersection LOS. Intersection LOS was calculated using the Synchro 12 software, which uses the HCM 7 methodologies.

### 3.2 LEVEL OF SERVICE PROCEDURES AND CRITERIA

Study intersections analyzed in this report are under the jurisdiction of the City of Upland. The City uses LOS D as its minimum level of service criterion for all intersections.

### 3.3 LIST OF CHAPTER 3.0 TABLES

- Table 3.A: Intersection Level of Service Definitions
- Table 3.B: Level of Service Criteria for Unsignalized and Signalized Intersections

**Table 3.A: Intersection Level of Service Definitions**

LOS	Description
A	Traffic operations with a control delay of 10 seconds per vehicle or less and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is low and either progression is exceptionally favorable or the cycle length is very short. If LOS A is the result of favorable progression, most vehicles arrive during the green indication and travel through the intersection without stopping.
B	Traffic operations with control delay between 10 seconds per vehicle and 20 seconds per vehicle and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the 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.
C	Traffic operations with control delay between 20 and 35 seconds per vehicle and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when 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 the 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.
D	Traffic operations with control delay between 35 and 55 seconds per vehicle and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the 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.
E	Traffic operations with control delay between 55 and 80 seconds per vehicle and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when volume-to-capacity ratio is high, progression is unfavorable, and the cycle length is long. Individual cycle failures are frequent.
F	Traffic operations with control delay exceeding 80 seconds per vehicle or a volume-to-capacity ratio greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is very high, progression is very poor, and the cycle length is long. Most cycles fail to clear the queue.

Source: Highway Capacity Manual (7<sup>th</sup> Edition).

LOS = level(s) of service

**Table 3.B: Level of Service Criteria for Unsignalized and Signalized Intersections**

Level of Service	Unsignalized Intersection Average Delay per Vehicle (sec.)	Signalized Intersection Average Delay per Vehicle (sec.)
A	≤ 10	≤ 10
B	> 10 and ≤ 15	> 10 and ≤ 20
C	> 15 and ≤ 25	> 20 and ≤ 35
D	> 25 and ≤ 35	> 35 and ≤ 55
E	> 35 and ≤ 50	> 55 and ≤ 80
F	> 50	> 80

Source: Highway Capacity Manual (7<sup>th</sup> Edition).

sec = second(s)

## 4.0 EXISTING CONDITIONS

### 4.1 STUDY AREA

Based on the City's TIA Guidelines, at a minimum, the study area must include all freeway links with 100 or more two-way peak-hour project trips and other Congestion Management Plan (CMP) roadways with 50 or more two-way peak-hour project trips within 5 miles of the project site. The project is not anticipated to add 100 or more two-way peak-hour trips to any freeway segment. Therefore, no freeway links were analyzed as part of this analysis. All analysis intersections were approved by the City as part of the scoping process.

#### 4.1.1 Study Intersections

Per the Scoping Agreement (Appendix A), intersections analyzed in this study are as follows:

1. Winston Court–Project Driveway 1/20<sup>th</sup> Street (Upland);
2. Project Driveway 2/20<sup>th</sup> Street (Upland); and
3. Campus Avenue/Project Driveway 3–20<sup>th</sup> Street (Upland);

Figure 4-1 illustrates the locations of all study intersections.

### 4.2 EXISTING ROADWAY NETWORK

This section provides a description of the circulation network within the study area. Within Upland, all major roadways are classified based on the Existing Roadway System and Classifications provided in the Circulation Element of the City of Upland *General Plan 2035* (General Plan). Following is a brief description of major roadways within the study area:

- **20<sup>th</sup> Street:** Within the study area, 20<sup>th</sup> Street is segmented into two separate sections as 20<sup>th</sup> Street terminates at the SCE easement. The segment of 20<sup>th</sup> Street west of the SCE easement is a two-lane undivided Collector. The segment of 20<sup>th</sup> Street east of the SCE easement is a two-lane undivided Secondary Arterial with a posted speed limit of 35 miles per hour (mph). There are no bike facilities along either direction of these segments. There is provision for on-street parking on either side of both segments.
- **Winston Court:** Within the study area, Winston Court is a two-lane undivided local street with a speed limit of 25 mph. Winston Court terminates as a cul-de-sac directly north of the project site. There are no bike facilities along either direction of this segment. There is provision for on-street parking on either side of this segment.
- **Campus Avenue:** Within the study area, Campus Avenue is a two-lane undivided Secondary Arterial with a posted speed limit of 40 mph. There are no bike facilities along either direction of this segment. There is no provision for on-street parking on either side of this segment.

Figure 4-2 illustrates the existing study intersection geometrics and traffic control. Figure 4-3 illustrates the study intersection geometrics and traffic control under future “without project”

scenarios Figure 4-4 illustrates the study intersection geometrics and traffic control under future “plus project” scenarios. Figure 4-5 illustrates the Master Plan of Roadways for the City.

### **4.3 BICYCLE, PEDESTRIAN, TRANSIT, AND TRUCK FACILITIES**

#### **4.3.1 Bicycle Facilities**

The City of Upland promotes bicycling for recreation and mobility. Bicycling can be a viable alternative to local work commutes and offers children a healthy way to get to school. To facilitate and encourage bicycle trips, the City has adopted a Bicycle and Pedestrian Master Plan that includes a network of proposed facilities and capital improvement projects.

According to the City of Upland General Plan, the bikeway network within Upland is classified into three categories: Class I – Off-Street Bike Paths and Class II/III – On-Street Bike Lanes. Class I bike routes are physically separated by automobile traffic and may be used by both bicyclists and pedestrians. Class II bike routes are marked routes delineated by signs and striped bicycle lanes. Class III bike routes are similar to Class II bike routes, with the exception that the bicycle lanes are not striped along the facility and are typically delineated with signage.

As part of the City’s Bikeway Network, Class III bike routes exist on both directions of Campus Avenue north of SR-210 within the study area. Figure 4-6 illustrates the existing and proposed bikeways within Upland.

#### **4.3.2 Pedestrian Facilities**

The implementation of enhanced pedestrian linkage with a comprehensive trails system links residential areas, schools, parks, and commercial centers so that residents can travel within the community without driving. Safe and attractive sidewalks and walkways improve the walkability of Upland. Citywide, sidewalks are generally provided on both sides of the streets. Additionally, standard paved trails and nonstandard unpaved trails are frequently used by bicyclists and pedestrians in the city. Some trails are also available for equestrian riders. The existence of trails and sidewalks provides accessible facilities, provides safety features, and improves walkability in Upland. According to the City’s General Plan, the study area on Campus Avenue and 20<sup>th</sup> Street east of the SCE easement has been identified as areas that needs sidewalks. Figure 4-7 illustrates the pedestrian facilities within the city.

#### **4.3.3 Transit Facilities**

Omnitrans is the Public Transit Agency for San Bernardino County and is responsible for coordinating transit services throughout the approximately 480-square-mile service area. Omnitrans provides both local and regional services throughout the region, with 30 fixed routes and 5 OmniGo routes using 178 vehicles. There are no Omnitrans bus routes that operate within the study area.

#### **4.3.4 Truck Facilities**

According to the City of Upland General Plan, the City has a specific ordinance (Ordinance No. 1540) that defines weight restrictions, specifies the ability of trucks to enter areas not designated as truck routes, and defines the truck routes within the city. Truck routes are defined by weight restrictions

and classified as “Unrestricted Access,” “Restricted to 18 Tons,” and “Restricted to 5 Tons.” Figure 4-8 illustrates the network of truck routes within Upland.

## 4.4 EXISTING TRAFFIC VOLUMES

Traffic volumes for existing conditions were developed using existing count data collected by Counts Unlimited in October 2024 at study intersections when schools were in session. Vehicle classification counts were collected at selected study area intersections. Detailed count sheets are included in Appendix B.

Vehicle classification counts were conducted at all study intersections. At these locations, counts were converted to PCE volumes. The concept of PCEs accounts for the larger impact of trucks on traffic operations. It does so by assigning each type of truck a PCE factor that represents the number of passenger vehicles that could travel through an intersection in the same time that a particular type of truck could. PCE volumes at study intersections were computed using a factor of 1.5 for two-axle trucks, 2.0 for three-axle trucks, and 3.0 for trucks with four or more axles, consistent with City of Upland TIA guidelines.

Detailed volume development worksheets are included in Appendix C.

## 4.5 EXISTING LEVELS OF SERVICE

### 4.5.1 Study Intersections

An intersection LOS analysis was conducted for existing conditions using the methodologies previously discussed. Table 4.A summarizes the results of this analysis and shows that all intersections are currently operating at a satisfactory LOS under existing conditions. Detailed LOS worksheets are included in Appendix D.

## 4.6 LIST OF CHAPTER 4.0 FIGURES AND TABLES

- Figure 4-1: Study Area Intersections
- Figure 4-2: Existing Study Intersection Geometrics and Traffic Control
- Figure 4-3: Study Intersection Geometrics and Traffic Control under ‘Without Project’ Scenarios
- Figure 4-4: Study Intersection Geometrics and Traffic Control under ‘Plus Project’ Scenarios
- Figure 4-5: City of Upland Roadway Classification
- Figure 4-6: City of Upland Bicycle Routes
- Figure 4-7: City of Upland Pedestrian Facilities
- Figure 4-8: City of Upland Truck Routes
- Figure 4-9: Existing Peak Hour Traffic Volumes
- Table 4.A: Existing Intersection Levels of Service

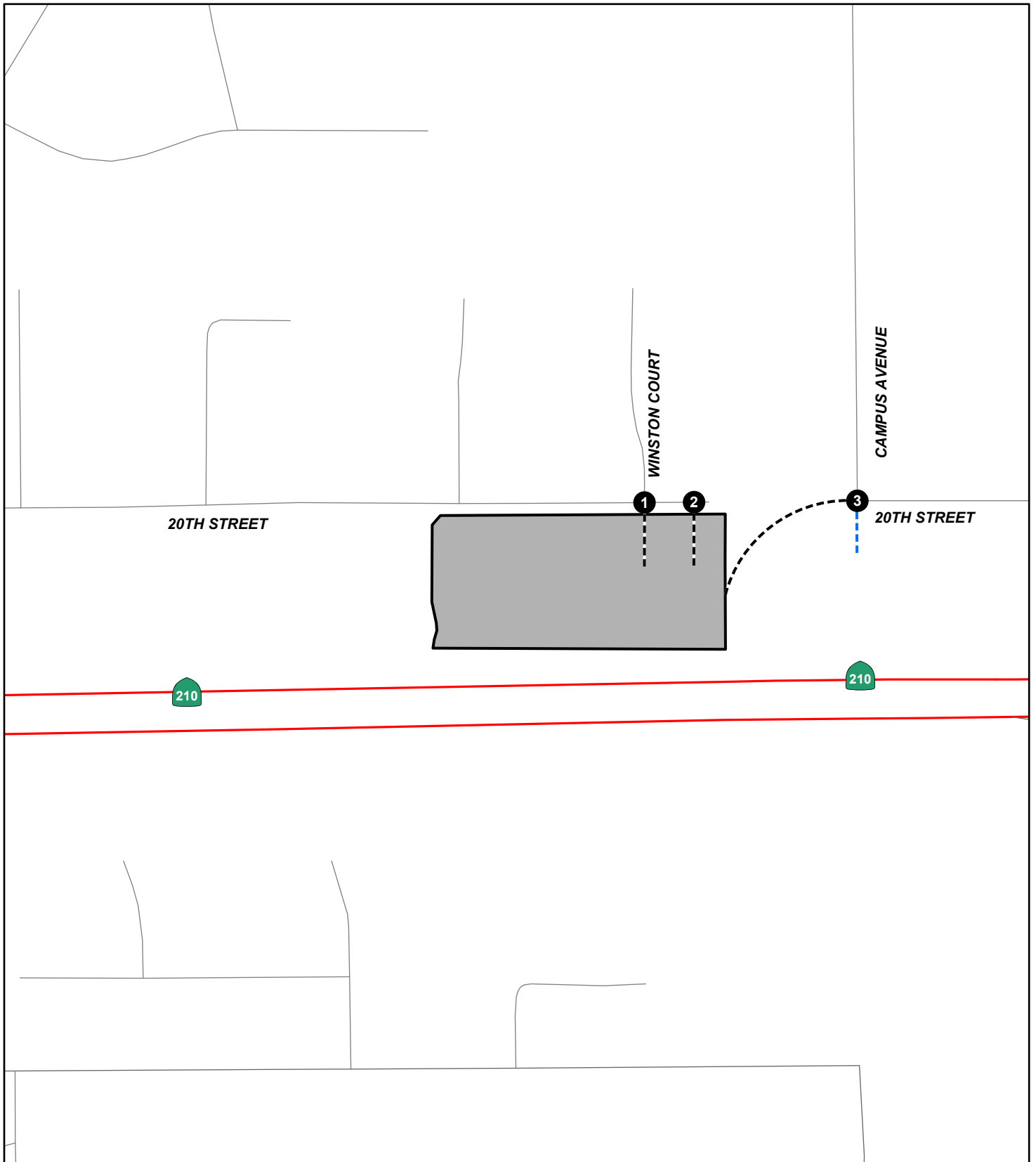
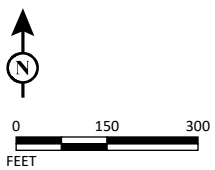


FIGURE 4-1

LSA

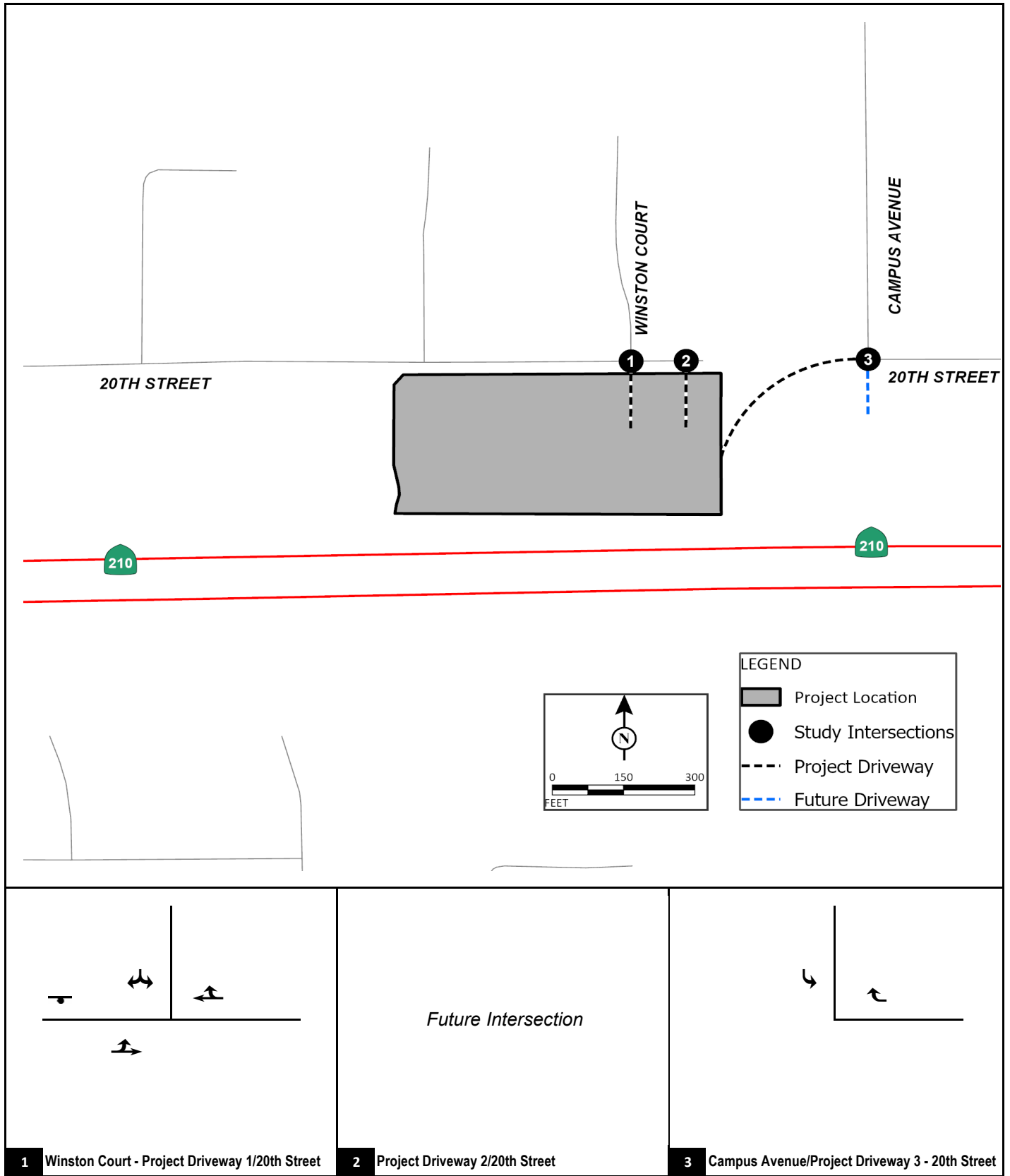
LEGEND

- Project Location
- Study Intersections
- Project Driveway
- Future Driveway



SOURCE:

San Antonio Water Headquarters  
 Traffic Impact Analysis  
 Study Area Intersections



1 Winston Court - Project Driveway 1/20th Street    2 Project Driveway 2/20th Street    3 Campus Avenue/Project Driveway 3 - 20th Street

LSA

FIGURE 4-2

Legend      - - - Project Driveway      - Stop Sign  
 - - - Future Driveway

San Antonio Water Headquarters  
 Traffic Impact Analysis

Existing Study Intersection Geometrics and Traffic Control

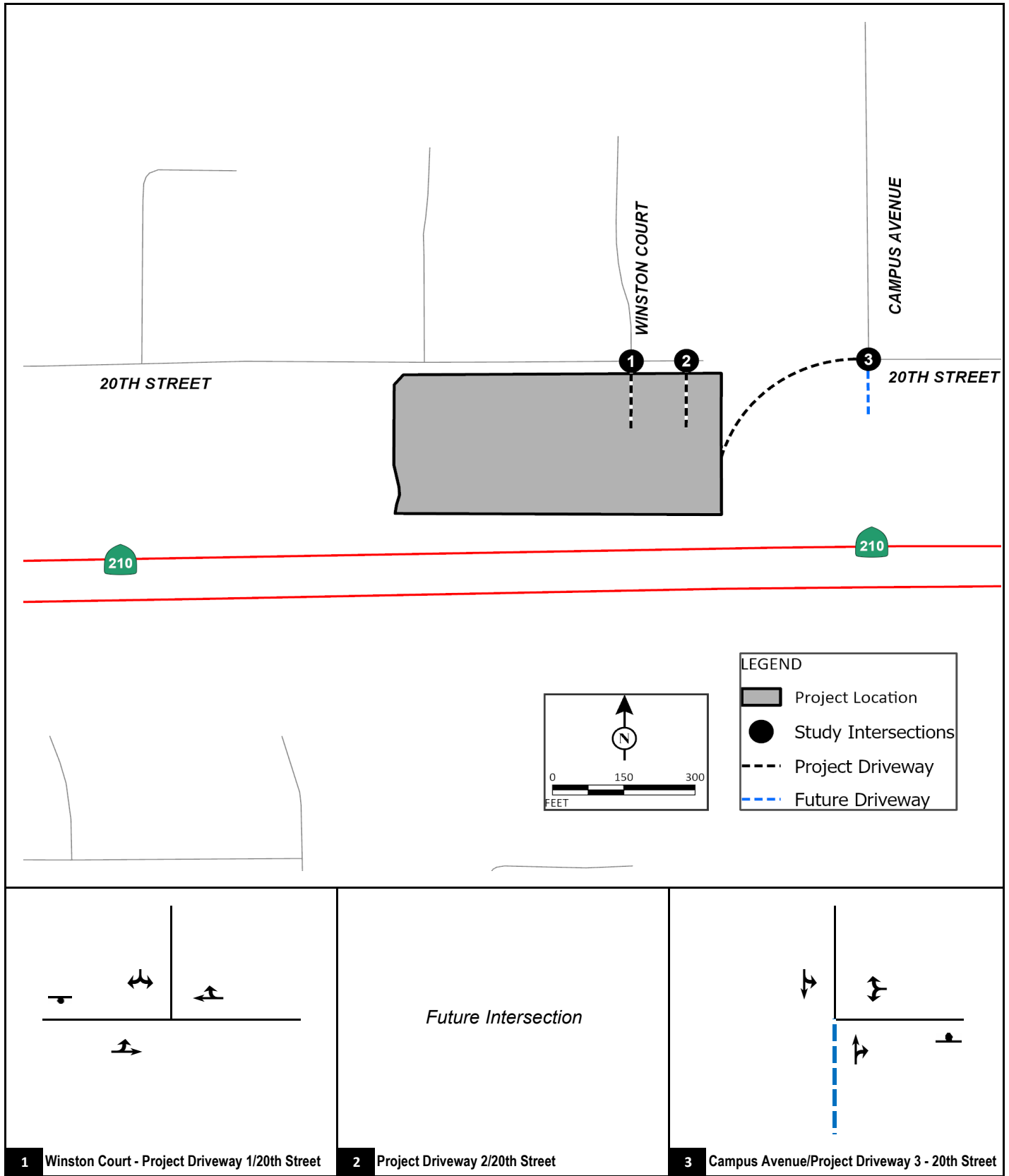


FIGURE 4-3

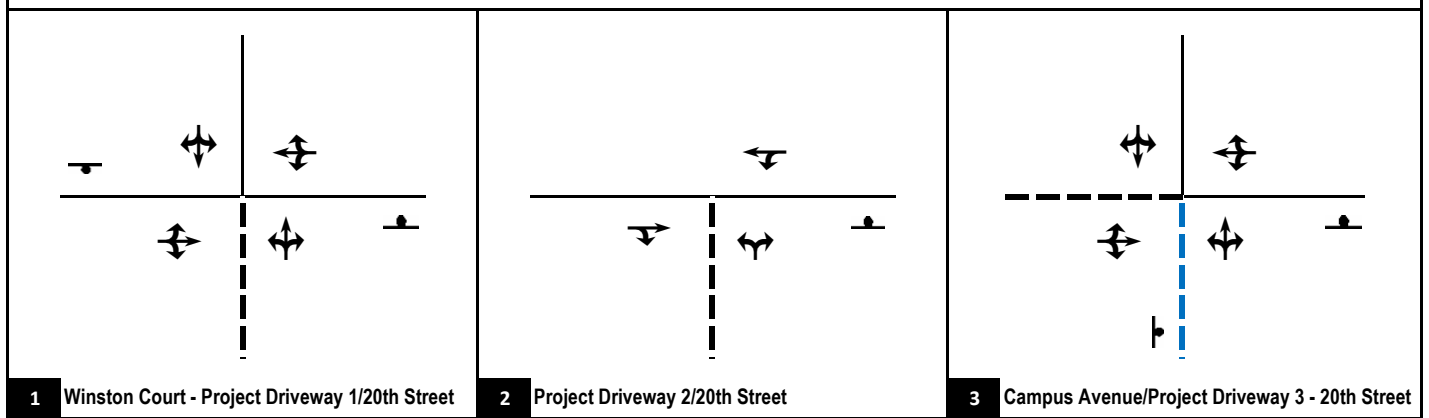
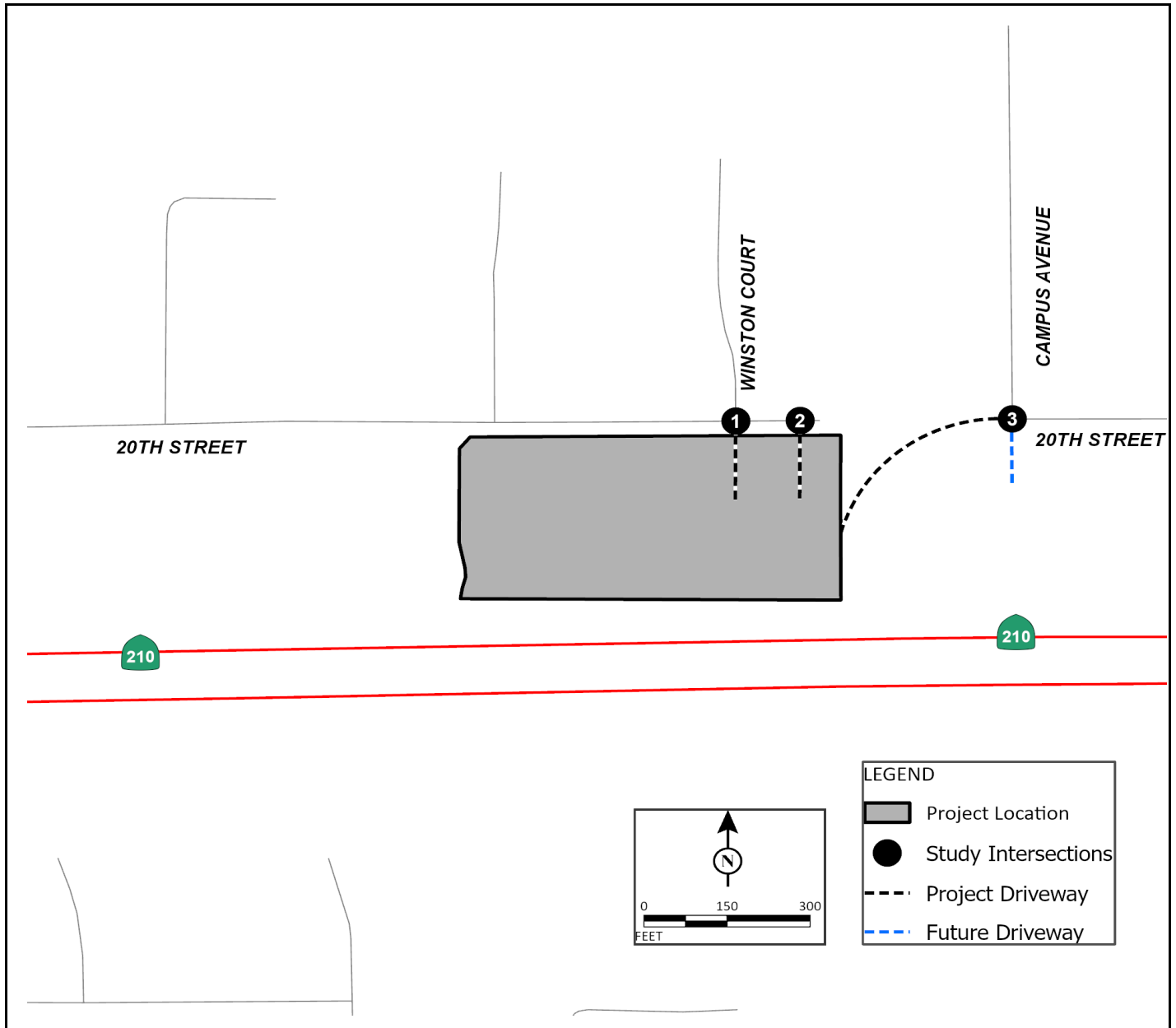
LSA

Legend

- Project Driveway
- Future Driveway
- ⊥ Stop Sign

San Antonio Water Headquarters  
Traffic Impact Analysis

Study Intersection Geometrics and Traffic Control under Future 'Without Project' Scenarios



1 Winston Court - Project Driveway 1/20th Street    2 Project Driveway 2/20th Street    3 Campus Avenue/Project Driveway 3 - 20th Street

FIGURE 4-4

LSA

Legend      - - - Project Driveway      - Stop Sign  
 - - - Future Driveway

San Antonio Water Headquarters  
 Traffic Impact Analysis

Study Intersection Geometrics and Traffic Control under Future 'Plus Project' Scenarios

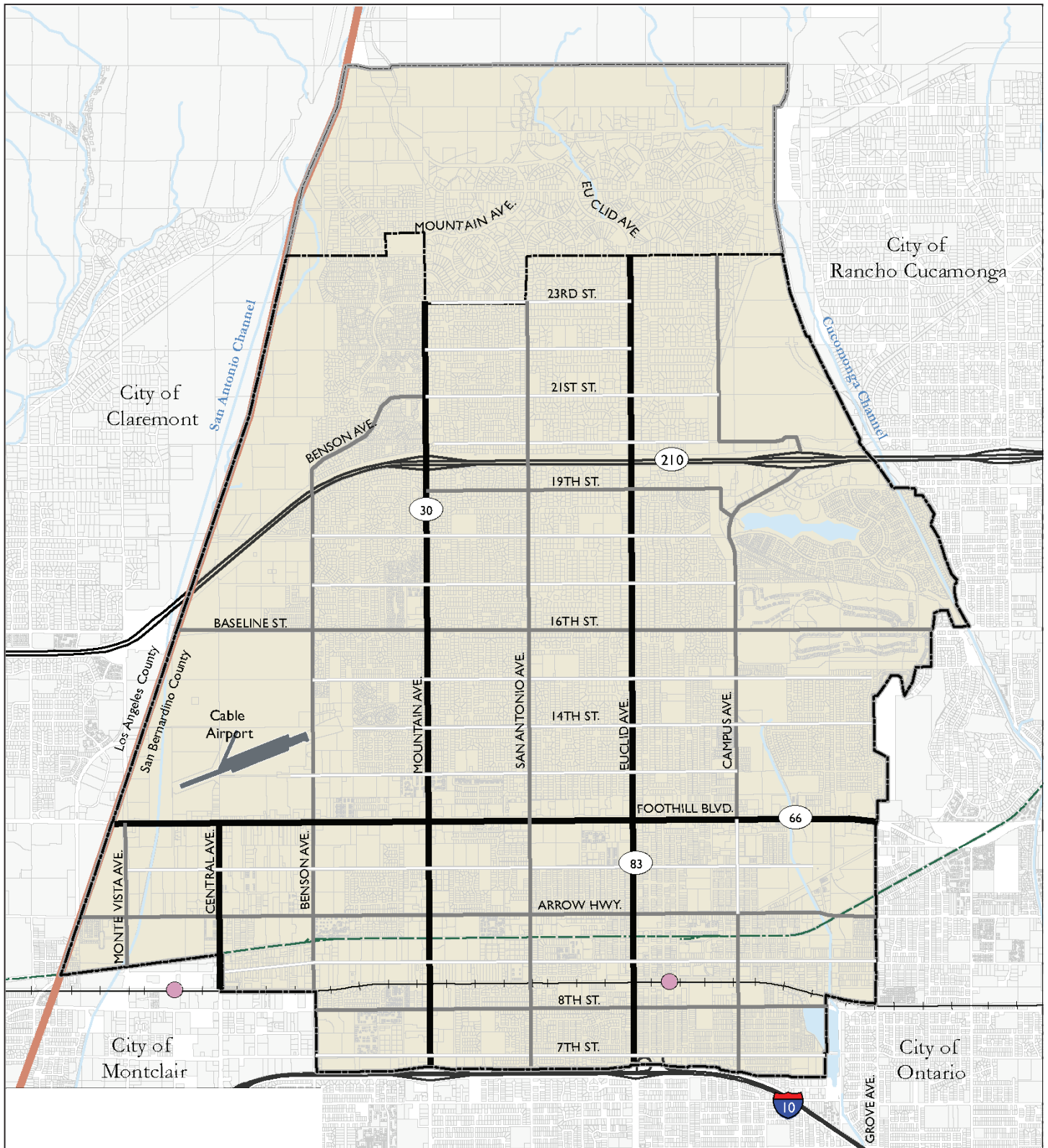













FIGURE 4-5

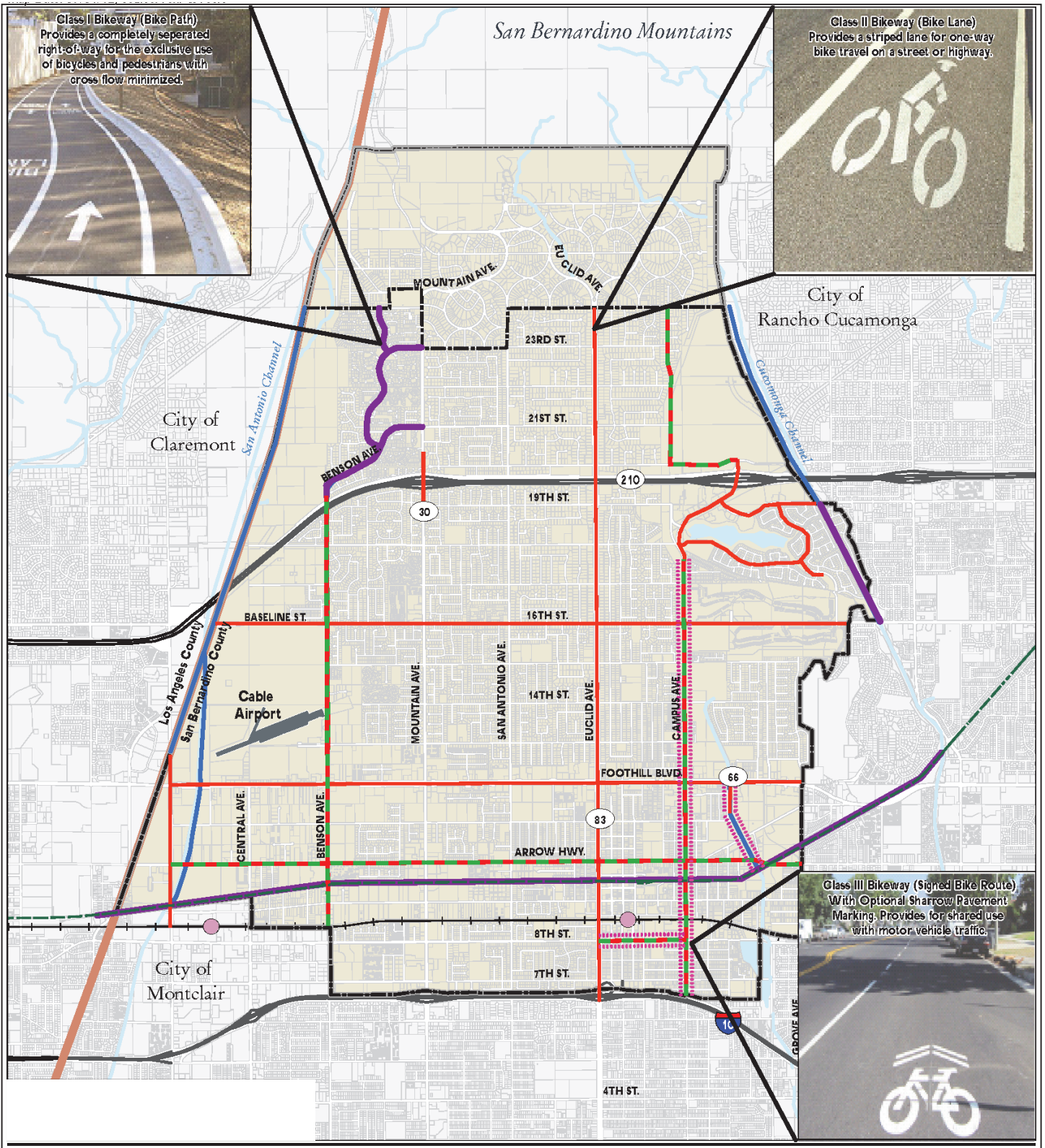
LSA



- |   |                        |   |                     |
|---|------------------------|---|---------------------|
|  | County Boundary        |  | Street Type         |
|  | Sphere of Influence    |  | Major Arterials     |
|  | City Limits            |  | Secondary Arterials |
|  | Upland Parcel          |  | Collector Streets   |
|  | Southern Pacific Trail |   |                     |
|  | Rail Line              |   |                     |
|  | Metrolink Station      |   |                     |

San Antonio Water Headquarters  
Traffic Impact Analysis

City of Upland Roadway Classification



LSA



- City Limits
- Sphere of Influence
- County Boundary
- Metrolink Station
- Rail Line
- Southern Pacific Trail
- Existing Bicycle Routes**
- Class I
- Class II/III
- Existing Class III; Upgrade to Class II
- Future Bicycle Routes**
- Class I
- Priority Bike Lanes\*

FIGURE 4-6

San Antonio Water Headwaters  
Traffic Impact Analysis  
City of Upland Bicycle Routes

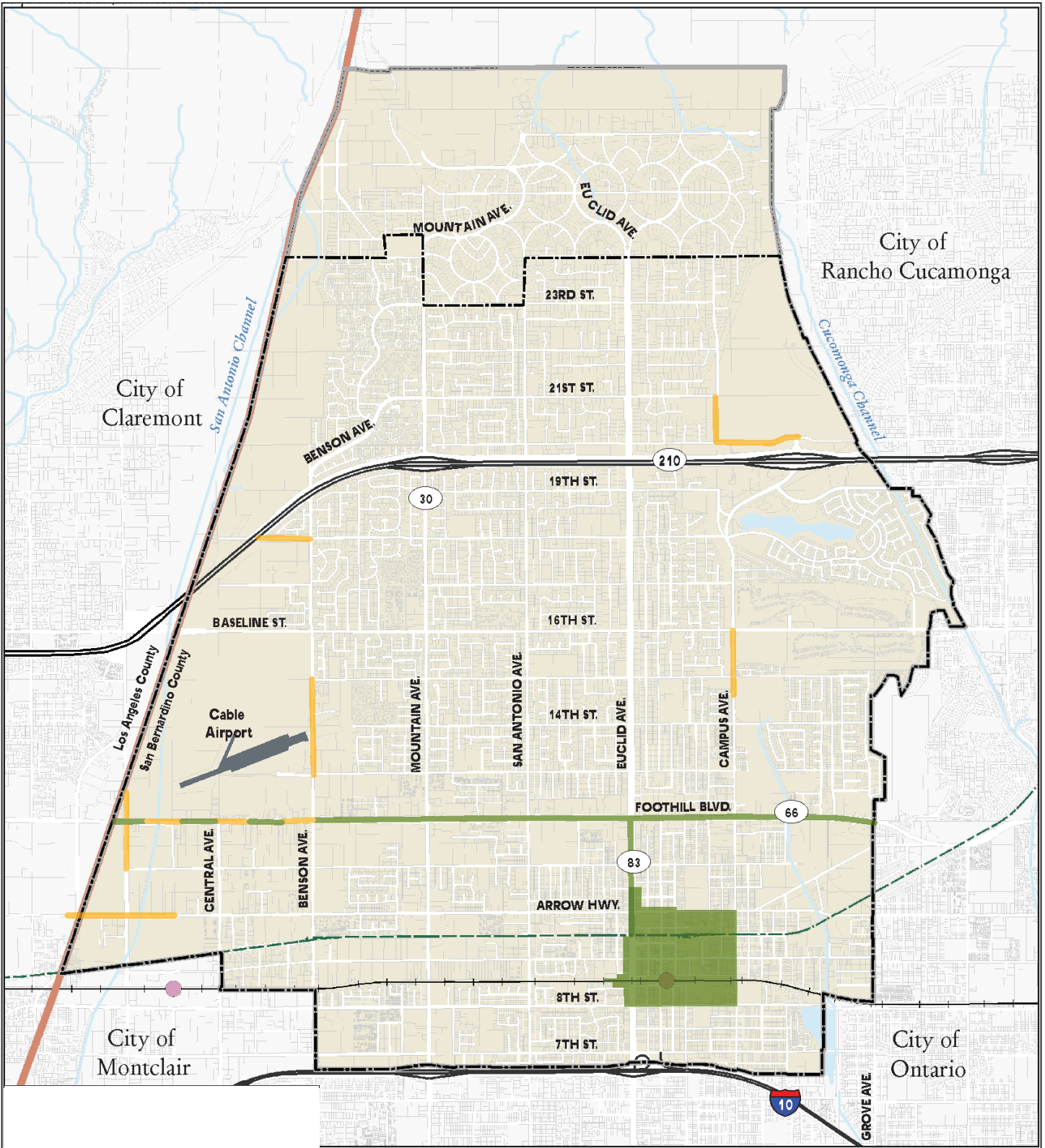











FIGURE 4-7

LSA

-  County Boundary
-  Pedestrian Multimodal Priority Area\*
-  Sphere of Influence
-  Pedestrian Needs Priority Area\*\*
-  City Limits
-  Upland Parcel
-  Southern Pacific Trail
-  Rail Line
-  Metrolink Station



San Antonio Water Headquarters  
Traffic Impact Analysis

City of Upland Pedestrian Facilities

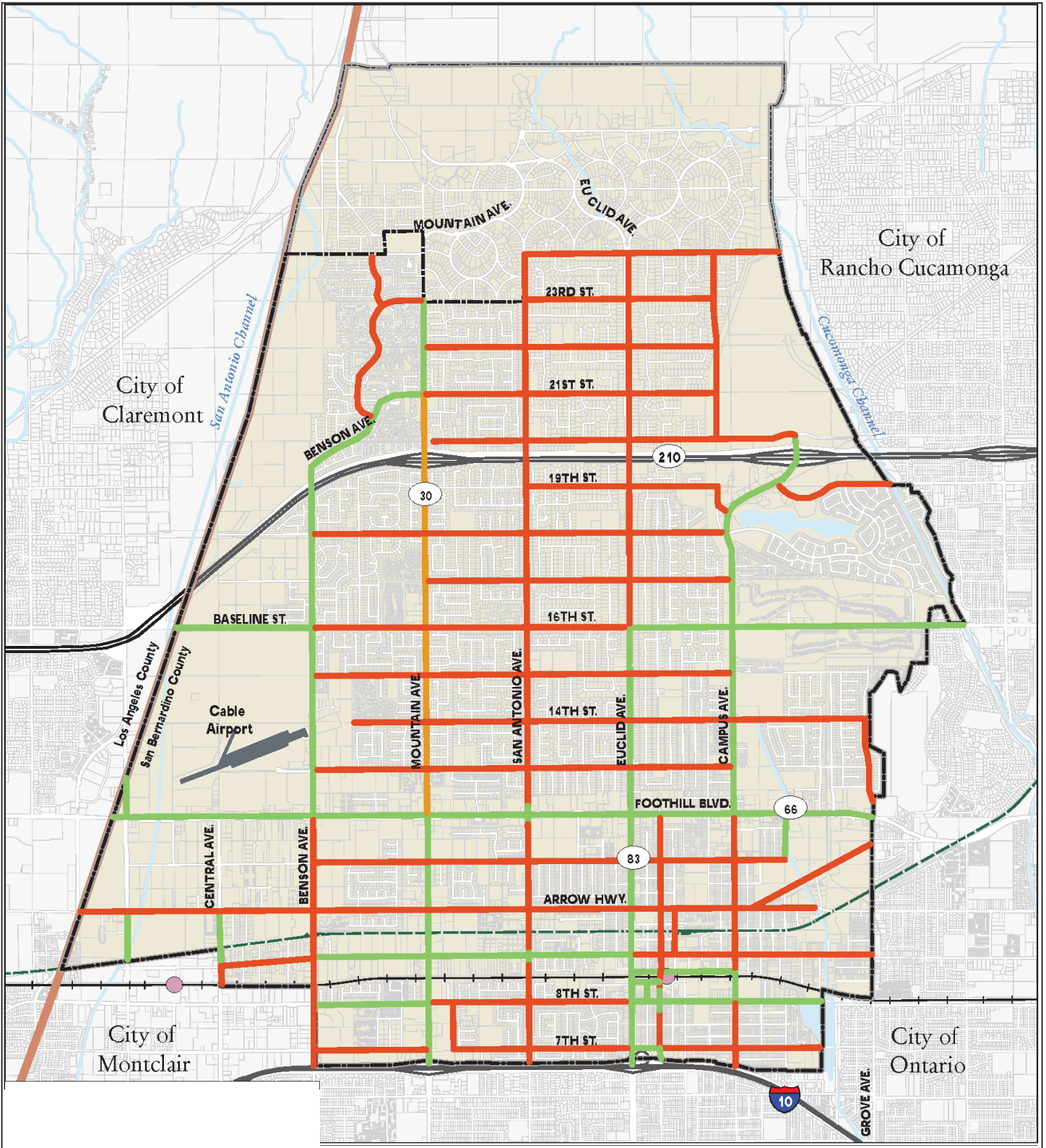




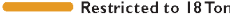







FIGURE 4-8

LSA

- |   |                        |   |                       |
|---|------------------------|---|-----------------------|
|  | County Boundary        | <b>Truck Routes</b>   |                       |
|  | Sphere of Influence    |  | Unrestricted Access   |
|  | City Limits            |  | Restricted to 18 Tons |
|  | Upland Parcel          |  | Restricted to 5 Tons  |
|  | Southern Pacific Trail |   |                       |
|  | Rail Line              |   |                       |
|  | Metrolink Station      |   |                       |

SOURCE: City of Upland General Plan Circulation Element

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San Antonio Water Headquarters  
 Traffic Impact Analysis  
 City of Upland Truck Routes

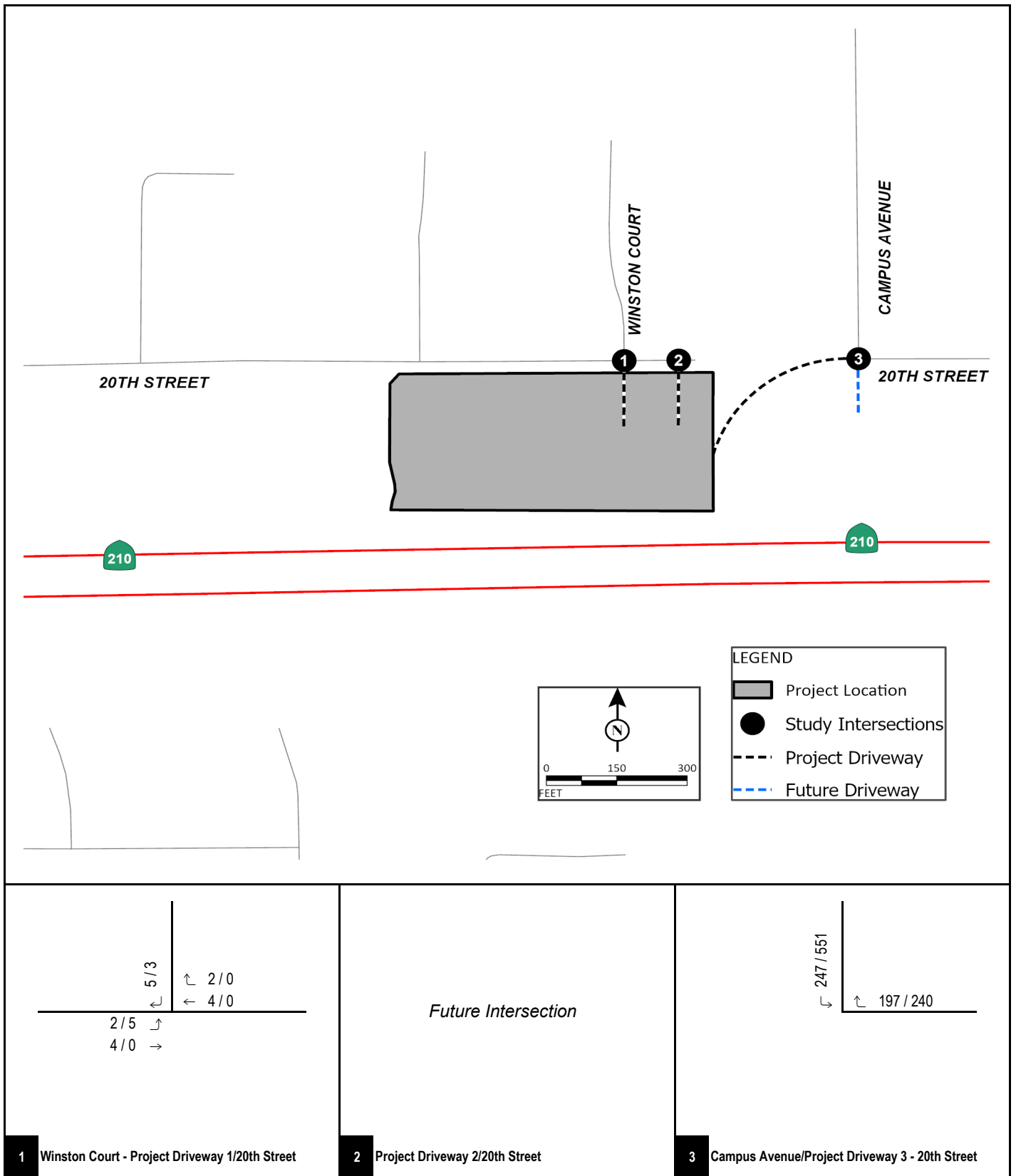


FIGURE 4-9

**LSA**

XXX / YYY

AM / PM PCE Peak Hour Trips

--- Project Driveway

- - - Future Driveway

San Antonio Water Headquarters

Traffic Impact Analysis

Existing Peak Hour Traffic Volumes

Table 4.A: Existing Intersection Levels of Service

Intersection	Jurisdiction	LOS Standard	Without Project				
			Control	A.M. Peak Hour		P.M. Peak Hour	
				Delay (sec.)	LOS	Delay (sec.)	LOS
1 . Winston Court - Project Driveway 1/20th Street	Upland	D	OWSC	8.3	A	8.3	A
2 . Project Driveway 2/20th Street	Upland	D	--	<i>Future Intersection</i>		<i>Future Intersection</i>	
3 . Campus Avenue/Project Driveway 3 - 20th Street	Upland	D	--	<i>No Conflicting Movements</i>		<i>No Conflicting Movements</i>	

Notes:

OWSC = One-Way Stop Control; LOS = Level of Service

Delay = Average control delay in seconds (For OWSC/TWSC intersections, reported delay is for worst-case movement).

\* Exceeds LOS Standard

## 5.0 PROJECT TRAFFIC

### 5.1 PROJECT TRIP GENERATION

The trip generation for the proposed project was developed as follows.

#### 5.1.1 Employee Trip Generation

Based on the project description and operational information, the project is anticipated to have 10 full-time employees. For purposes of this analysis, all 10 employees are anticipated to arrive at the facility in the a.m. peak hour and leave the facility in the p.m. peak hour. Therefore, the project is estimated to generate 20 daily employee trips with 10 inbound a.m. peak-hour trips and 10 outbound p.m. peak-hour trips.

Additionally, based on the project description and operational information, the project is anticipated to have six trucks for the operations. Based on information from the applicant, the truck trips are described as followed:

- **Truck #1 (Two-Axle Light-Duty Truck):** This truck is considered a standby vehicle and will average around 80–90 miles per day.
- **Truck #2 (Two-Axle Light-Duty Truck):** Truck #2 is considered a retired standby vehicle/support vehicle for construction jobs and will average around 20–25 miles per day.
- **Truck #3 (Two-Axle Light-Duty Truck):** This truck is considered a general maintenance/support vehicle for construction jobs and will average around 20–25 miles per day. It is likely only to be driven for around 75 percent of work week.
- **Truck #4 (Two-Axle Medium-Duty Truck):** Truck #4 is considered a dump truck. This vehicle will average 20–25 miles per day and is usually only driven about 4–5 days per month.
- **Truck #5 (Two-Axle Medium-Duty Truck):** This truck is considered a service truck and planned to be used for larger construction jobs and heavy maintenance. This vehicle will average around 20–25 miles per day and likely only to be driven for around 75 percent of the work week.
- **Truck #6 (Two-Axle Light-Duty Truck):** This vehicle has an auxiliary fuel tank that will be used for refueling the project's tractors. Occasionally used for short runs for parts and supplies. It will average around 20–25 miles per day and likely only to be driven for around 5–6 days per month.

For purposes of this analysis, all trucks were considered to be two-axle trucks and operating within the same day as a conservative estimate. Therefore, it could be estimated that the project will be generating 12 daily employee truck trips (inbound and outbound combined). Based on the operational hours, these trips could be estimated as peak-hour trips, with six outbound truck trips occurring during a.m. peak hour and six inbound truck trips occurring during the p.m. peak hour. All truck trips were converted to PCE trips using a 1.5 PCE factor for two-axle trucks based on the TIA Guidelines.

### 5.1.2 Customer Trip Generation

- **Headquarter Building:** The trip generation for this component was developed using rates from the Institute of Transportation Engineers (ITE) *Trip Generation Manual* (11<sup>th</sup> Edition) for Land Use 712 – “Small Office Building.”

The project trip generation is summarized in Table 5.A. As shown in Table 5.A, the project is anticipated to generate 91 total net daily PCE trips, with 25 net PCE trips occurring during the a.m. peak hour and 27 net PCE trips occurring during the p.m. peak hour.

## 5.2 PROJECT TRIP DISTRIBUTION AND ASSIGNMENT

The project trip distribution patterns were based on the regional roadway network and the location of residential, employment, and commercial centers in relation to the proposed project. Figure 5-1 illustrates the project trip distribution for the employees. Figure 5-2 illustrates the project trip distribution for the maintenance trucks. Figure 5-3 illustrates the customer trip distribution.

The project trip assignment at the study intersections is the product of the project trip generation and the corresponding trip distribution percentages. Figure 5-4 illustrates the trip assignment for employees. Figure 5-5 illustrates the trip assignment for maintenance trucks trips. Figure 5-6 illustrates the trip assignment for customers. Figure 5-7 illustrates the total project trip assignment.

## 5.3 LIST OF CHAPTER 5.0 FIGURES AND TABLES

- Figure 5-1: Project Trip Distribution – Employees
- Figure 5-2: Project Trip Distribution – Maintenance Trucks
- Figure 5-3: Project Trip Distribution – Customers
- Figure 5-4: Project Trip Assignment – Employees
- Figure 5-5: Project Trip Assignment – Maintenance Trucks
- Figure 5-6: Project Trip Assignment – Customers
- Figure 5-7: Total Project Trip Assignment
- Table 5.A: Project Trip Generation

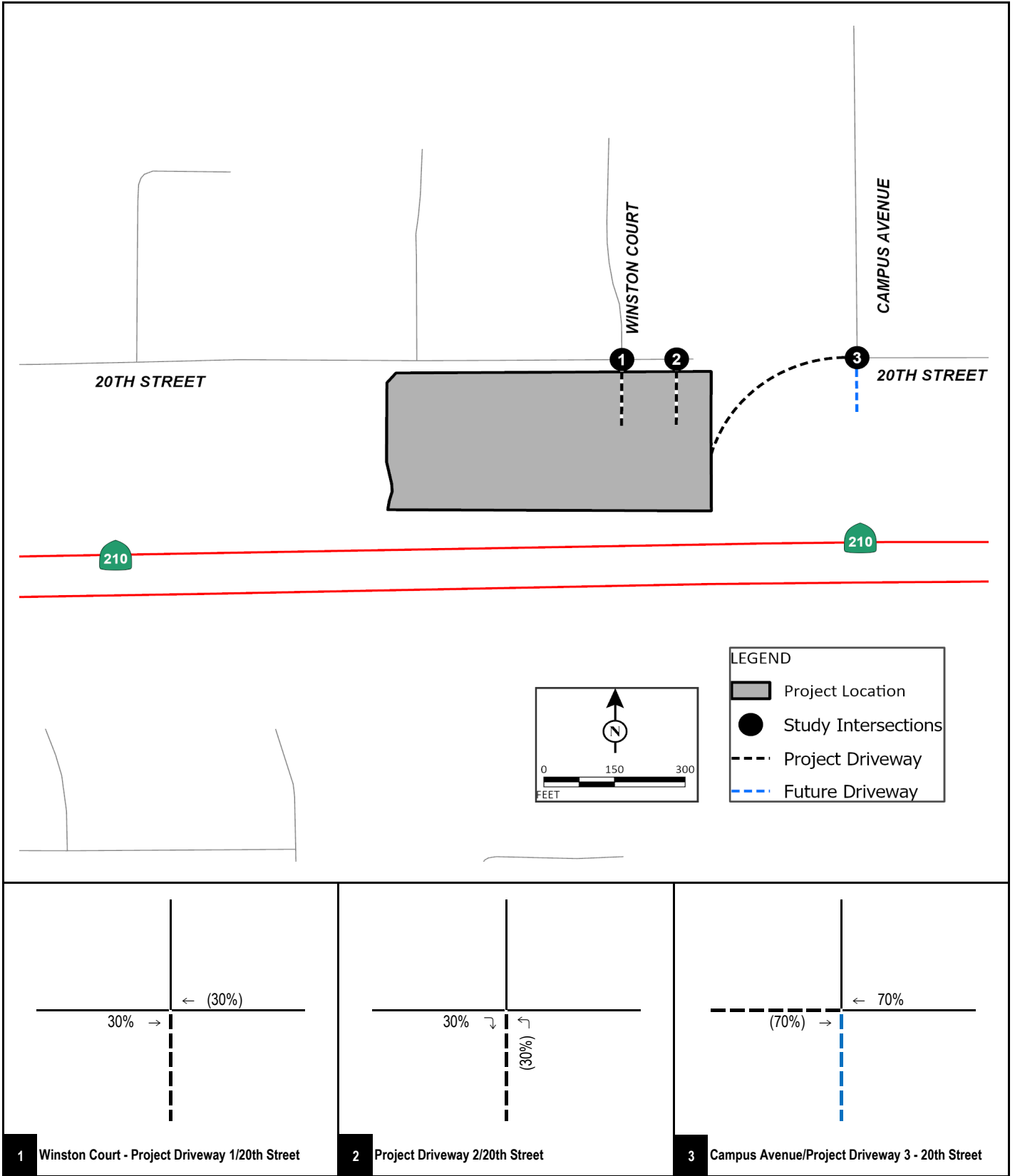


FIGURE 5-1



XX% (YY%)  
Inbound (Outbound) Distribution

--- Project Driveway  
--- Future Driveway

San Antonio Water Headquarters  
Traffic Impact Analysis

Project Trip Distribution – Employees

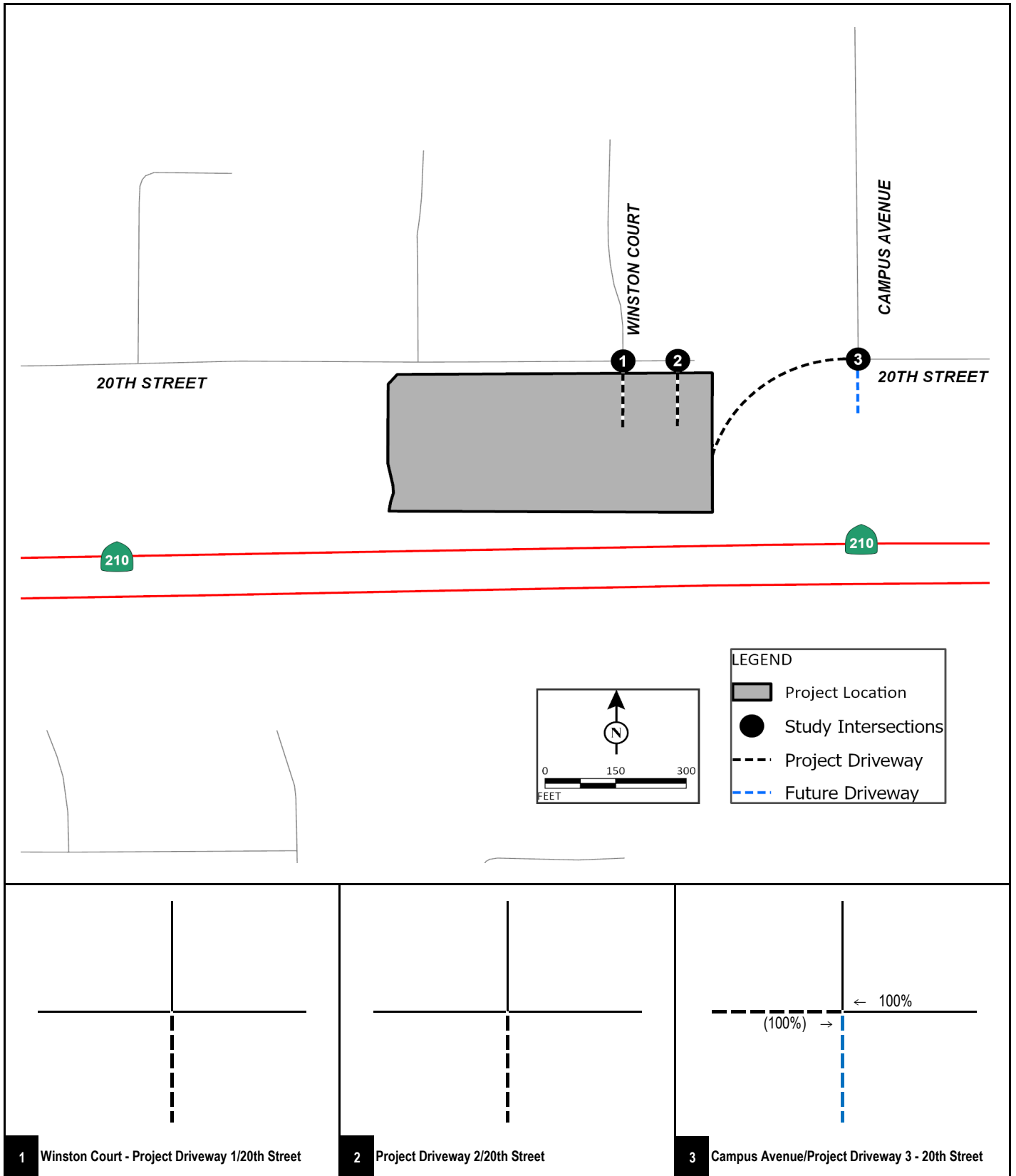


FIGURE 5-2

**LSA**

XXX% (YYY%)  
Inbound (Outbound) Distribution

--- Project Driveway  
--- Future Driveway

San Antonio Water Headquarters  
Traffic Impact Analysis

Project Trip Distribution – Maintenance Trucks

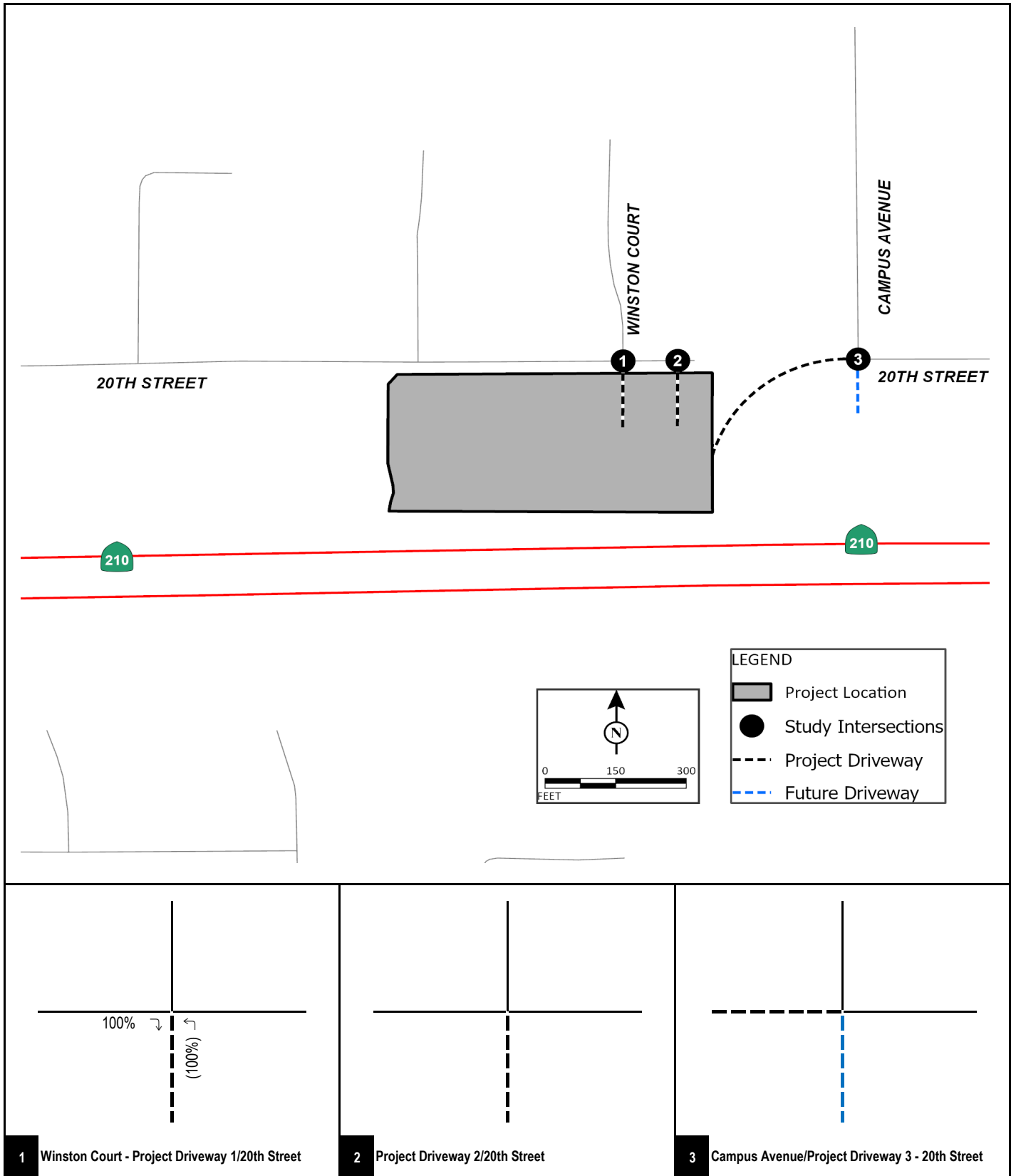


FIGURE 5-3



XXX% (YYY%)  
Inbound (Outbound) Distribution

--- Project Driveway  
--- Future Driveway

San Antonio Water Headquarters  
Traffic Impact Analysis

Project Trip Distribution – Customers

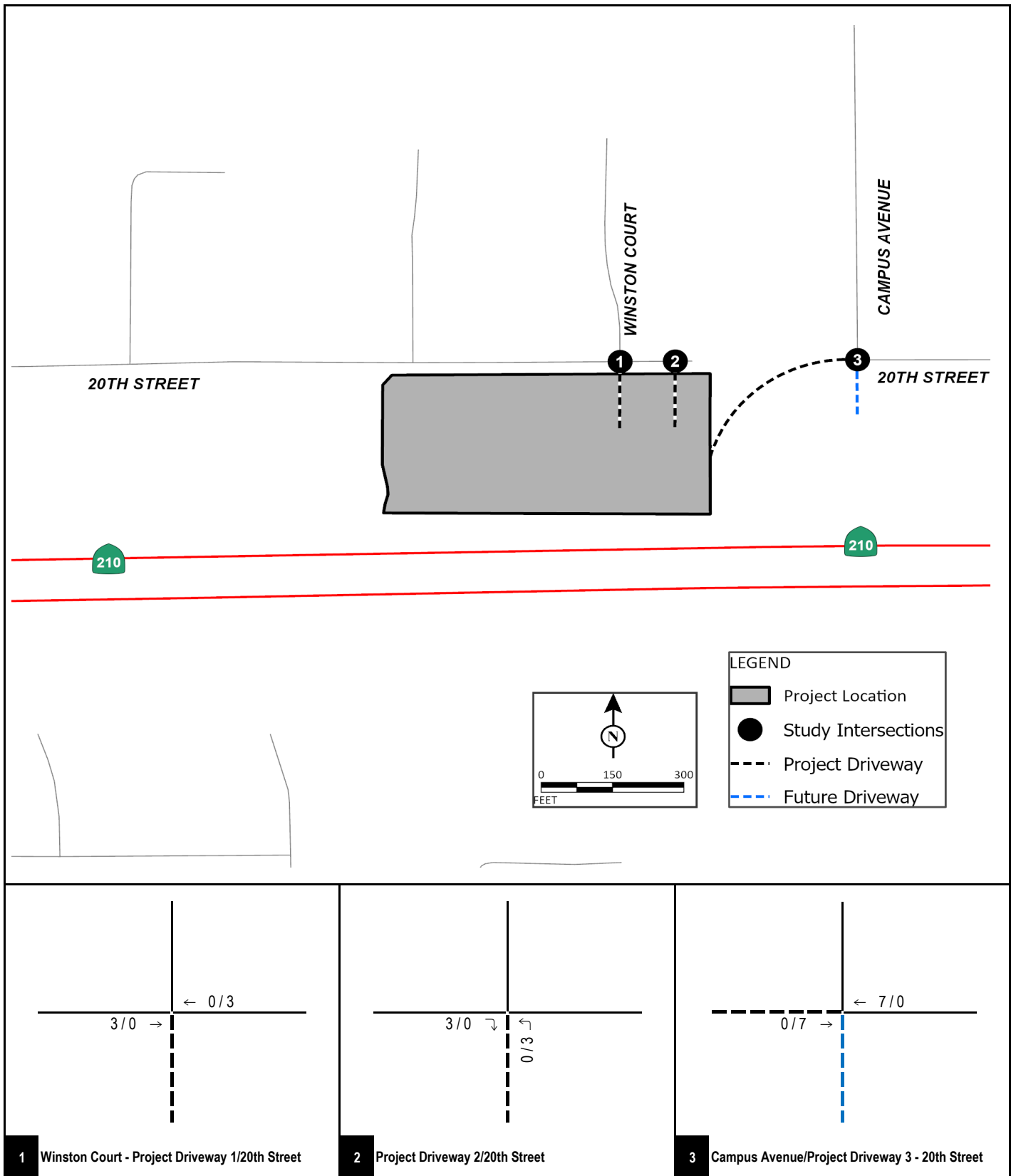


FIGURE 5-4

**LSA**

XX / YY  
AM / PM Peak Hour Trips

--- Project Driveway  
- - - Future Driveway

San Antonio Water Headquarters  
Traffic Impact Analysis

Project Trip Assignment – Employees

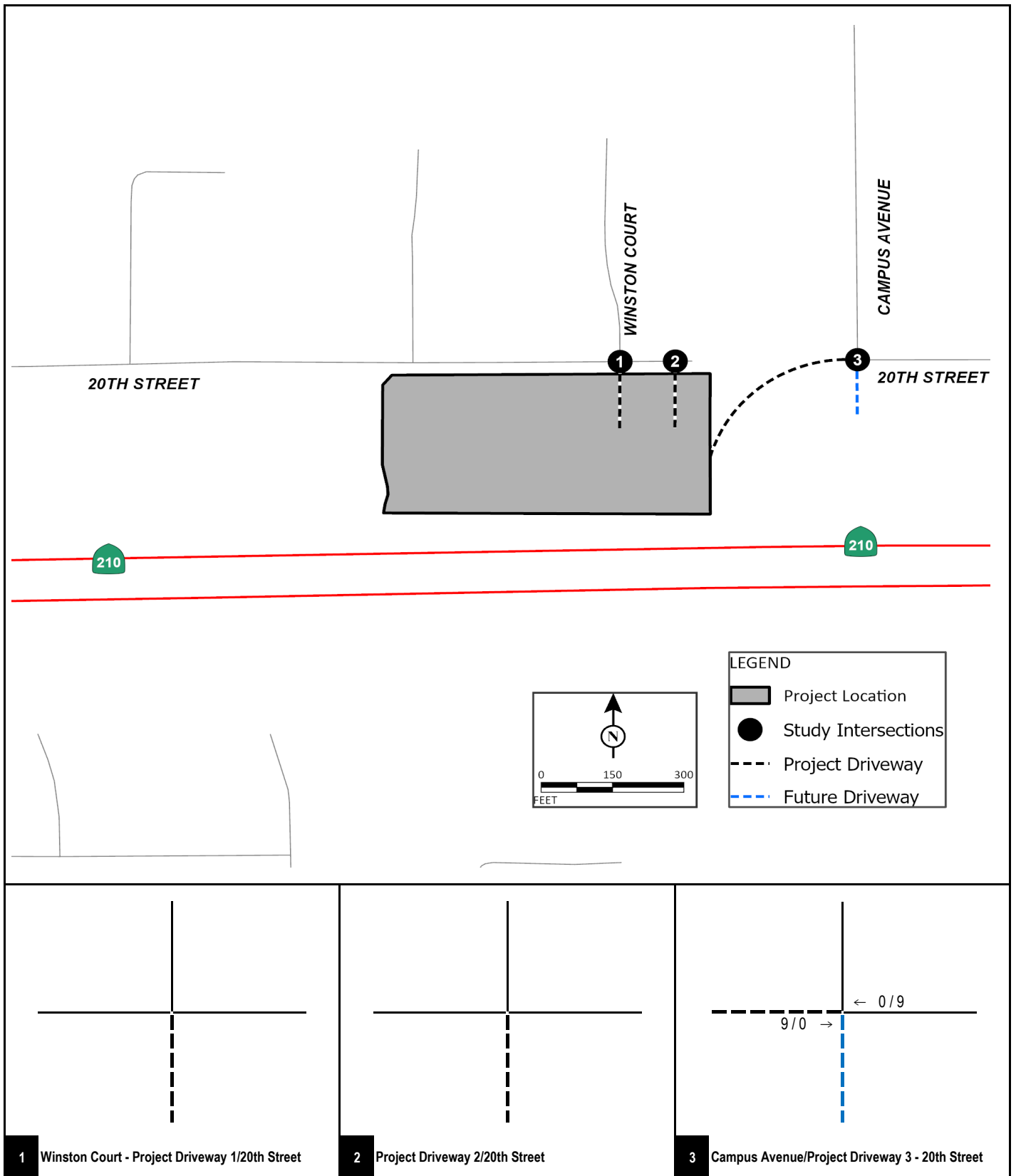


FIGURE 5-5

**LSA**

XX / YY  
AM / PM Peak Hour PCE Trips

--- Project Driveway  
- - - Future Driveway

San Antonio Water Headquarters  
Traffic Impact Analysis

Project Trip Assignment – Maintenance Trucks

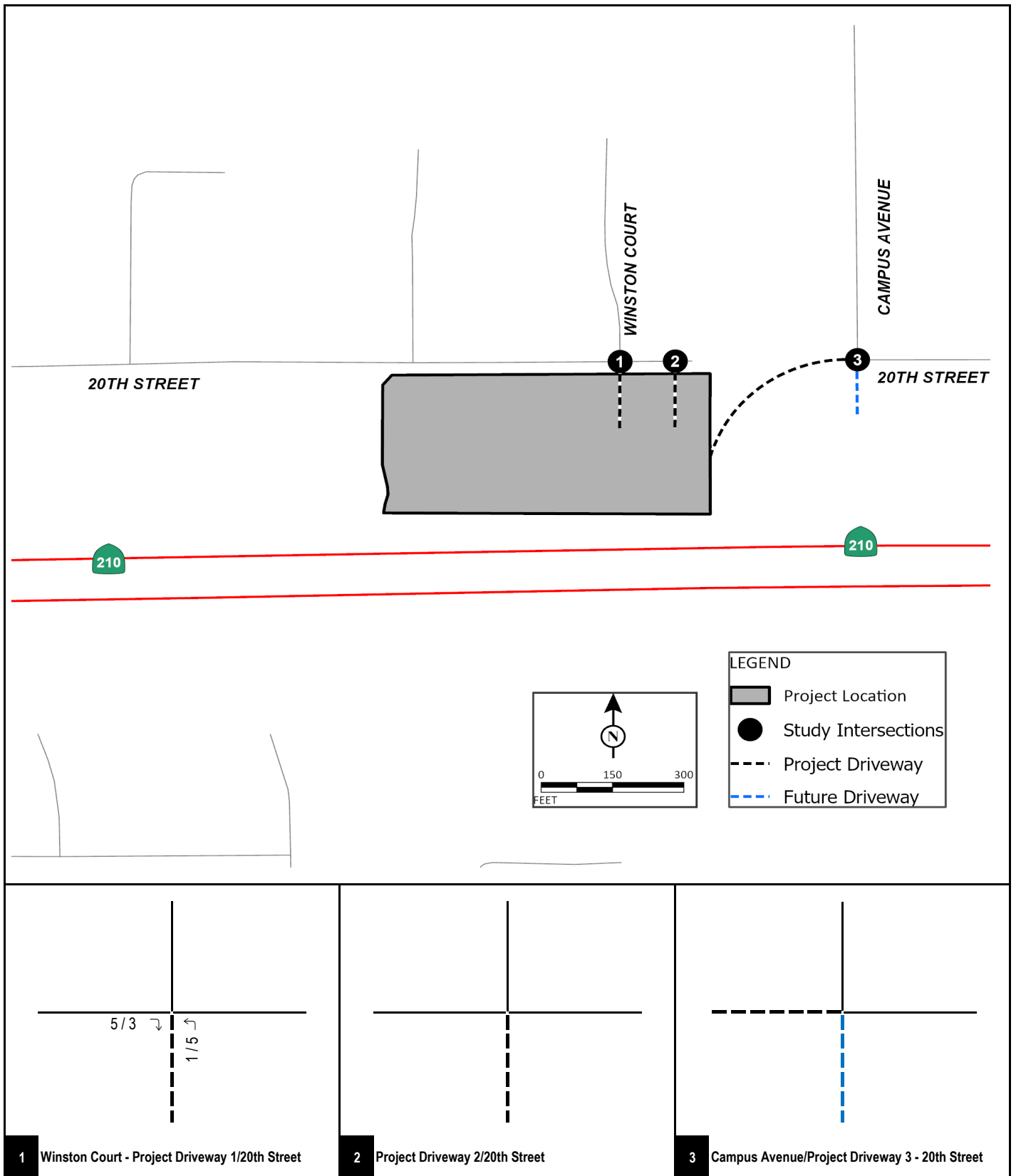


FIGURE 5-6

**LSA**

XX / YY  
AM / PM Peak Hour Trips

--- Project Driveway  
--- Future Driveway

San Antonio Water Headquarters  
Traffic Impact Analysis

Project Trip Assignment – Customers

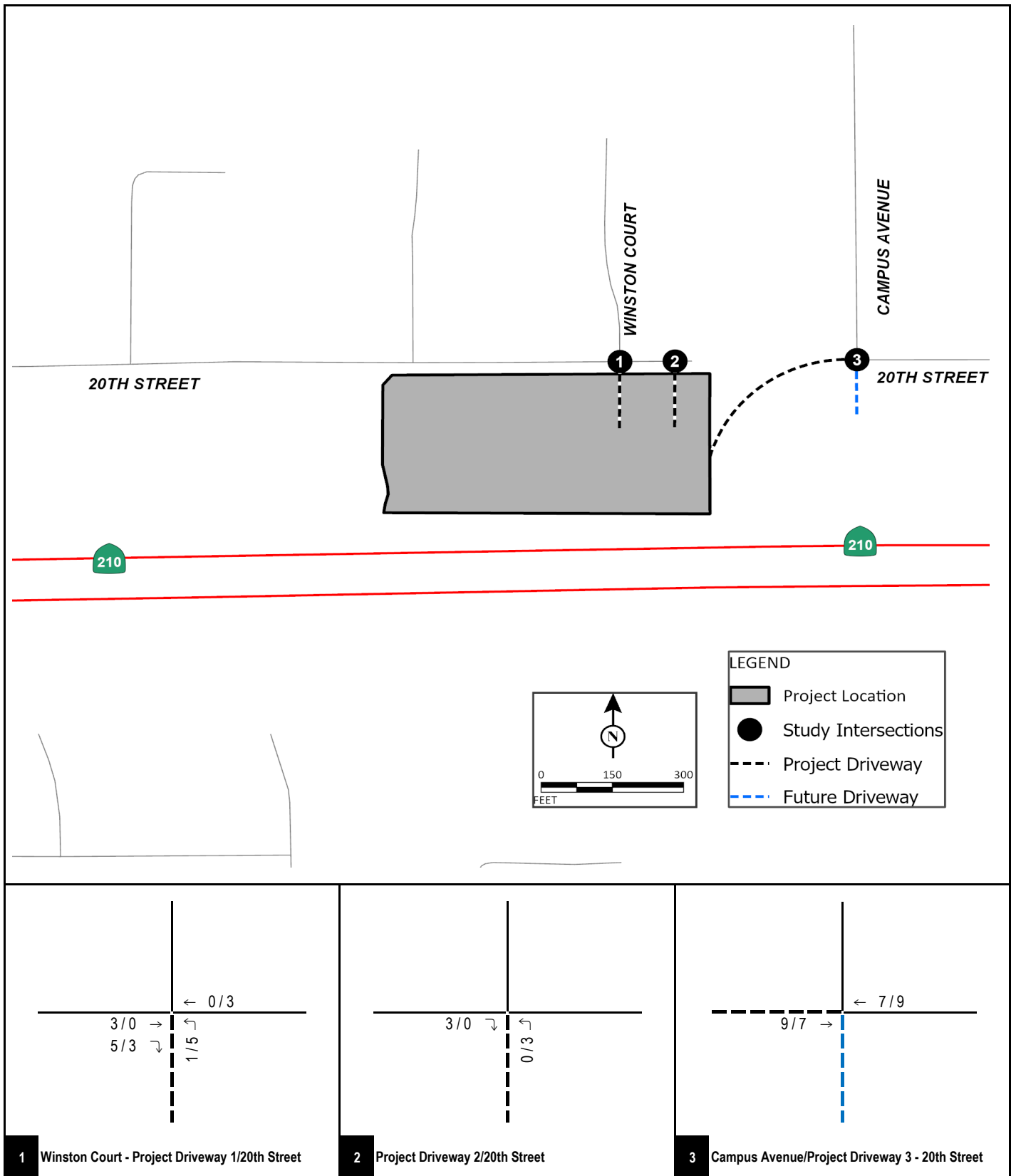


FIGURE 5-7

**LSA**

XX / YY  
AM / PM Peak Hour PCE Trips

--- Project Driveway  
- - - Future Driveway

San Antonio Water Headquarters  
Traffic Impact Analysis

Total Project Trip Assignment

Table 5.A: Project Trip Generation

Land Uses	Units	A.M. Peak Hour			P.M. Peak Hour			Daily
		In	Out	Total	In	Out	Total	
<b>San Antonio Water Headquarters &amp; Maintenance Buildings</b>								
Employee Trip Generation <sup>1</sup>		10	0	10	0	10	10	20
Employee Maintenance Truck Trip Generation <sup>2</sup>		0	6	6	6	0	6	12
Employee Maintenance Truck PCE Trip Generation <sup>3</sup>		0	9	9	9	0	9	18
<b>Headquarter Building</b>								
Headquarters Building Trip/Unit <sup>4</sup>	3.698 TSF	1.37	0.30	1.67	0.73	1.43	2.16	14.39
Headquarters Building Customer Trip Generation		5	1	6	3	5	8	53
<b>Total PCE Trip Generation</b>		<b>15</b>	<b>10</b>	<b>25</b>	<b>12</b>	<b>15</b>	<b>27</b>	<b>91</b>

Notes:

TSF = thousand square-feet

- <sup>1</sup> The employee trip generation was developed based on the project description and operational information.
- <sup>2</sup> The maintenance truck trip generation was developed based on the project's operational information. All trucks are 2-axle trucks.
- <sup>3</sup> All maintenance truck trips were converted to passenger PCEs using a 1.5 PCE factor for 2-axle trucks based on City of Upland's *Traffic Impact Analysis Guidelines*, dated July 2020.
- <sup>4</sup> Rates from Institute of Transportation Engineers (ITE) *Trip Generation Manual*, (11th Edition) for Land Use 712 - "Small Office Building", Setting/Location - 'General Urban/Suburban'.

## 6.0 OPENING YEAR ANALYSIS

### 6.1 OPENING YEAR (2027) WITHOUT PROJECT TRAFFIC VOLUMES

As approved during the City's scoping agreement process (Appendix A), traffic volumes for opening year without project conditions were developed by applying a growth of 2 percent per annum to existing traffic volumes and adding trips from approved and pending development projects in the area. This methodology was applied for study intersections. Information concerning approved and pending development projects in the vicinity of the proposed project was obtained from City staff and nearby jurisdictions. Figure 6-1 illustrates the approved and pending development projects' locations. Trip generation for approved and pending development projects was either obtained from the respective traffic studies prepared for the projects or developed using rates from the ITE *Trip Generation Manual* (11<sup>th</sup> Edition). Table 6.A lists the approved and pending development projects included in this analysis and shows the approved and pending development projects are estimated to generate 232 net trips in the a.m. peak hour, 363 net trips in the p.m. peak hour, and 3,938 net daily trips.

Approved and pending development project trips were assigned to the roadway network based on their locations in relation to surrounding land uses and regional arterials. Figure 6-2 illustrates the total peak-hour approved and pending development project trip assignment at study area intersections. Figure 6-3 illustrates the peak-hour traffic volumes at study intersections under opening year without project conditions.

### 6.2 OPENING YEAR (2027) PLUS PROJECT TRAFFIC VOLUMES

Opening year plus project traffic volumes were developed by adding proposed project traffic to the opening year without project traffic volumes. Figure 6-4 illustrates the opening year plus project peak-hour traffic volumes at study intersections.

Detailed volume development worksheets are included in Appendix C.

### 6.3 OPENING YEAR (2027) WITHOUT PROJECT LEVELS OF SERVICE

#### 6.3.1 Study Intersections

An intersection LOS analysis was conducted for opening year without project conditions using the methodologies previously discussed. Table 6.B summarizes the results of the analysis and shows that all intersections are forecast to operate at a satisfactory LOS under opening year without project conditions. Detailed LOS worksheets are included in Appendix D.

### 6.4 OPENING YEAR (2027) PLUS PROJECT LEVELS OF SERVICE

#### 6.4.1 Study Intersections

An intersection LOS analysis was conducted for opening year plus project conditions using the methodologies previously discussed. Table 6.B summarizes the results of the analysis and shows that all intersections are forecast to operate at a satisfactory LOS under opening year plus project conditions. Detailed LOS worksheets are included in Appendix D.

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## 6.5 LIST OF CHAPTER 6.0 FIGURES AND TABLES

- Figure 6-1: Approved and Pending Project Locations
- Figure 6-2: Approved and Pending Project Trip Assignment
- Figure 6-3: Opening Year (2027) without Project Peak Hour Traffic Volumes
- Figure 6-4: Opening Year (2027) plus Project Peak Hour Traffic Volumes
- Table 6.A: Approved and Pending Projects Trip Generation
- Table 6.B: Opening Year (2027) Intersection Levels of Service

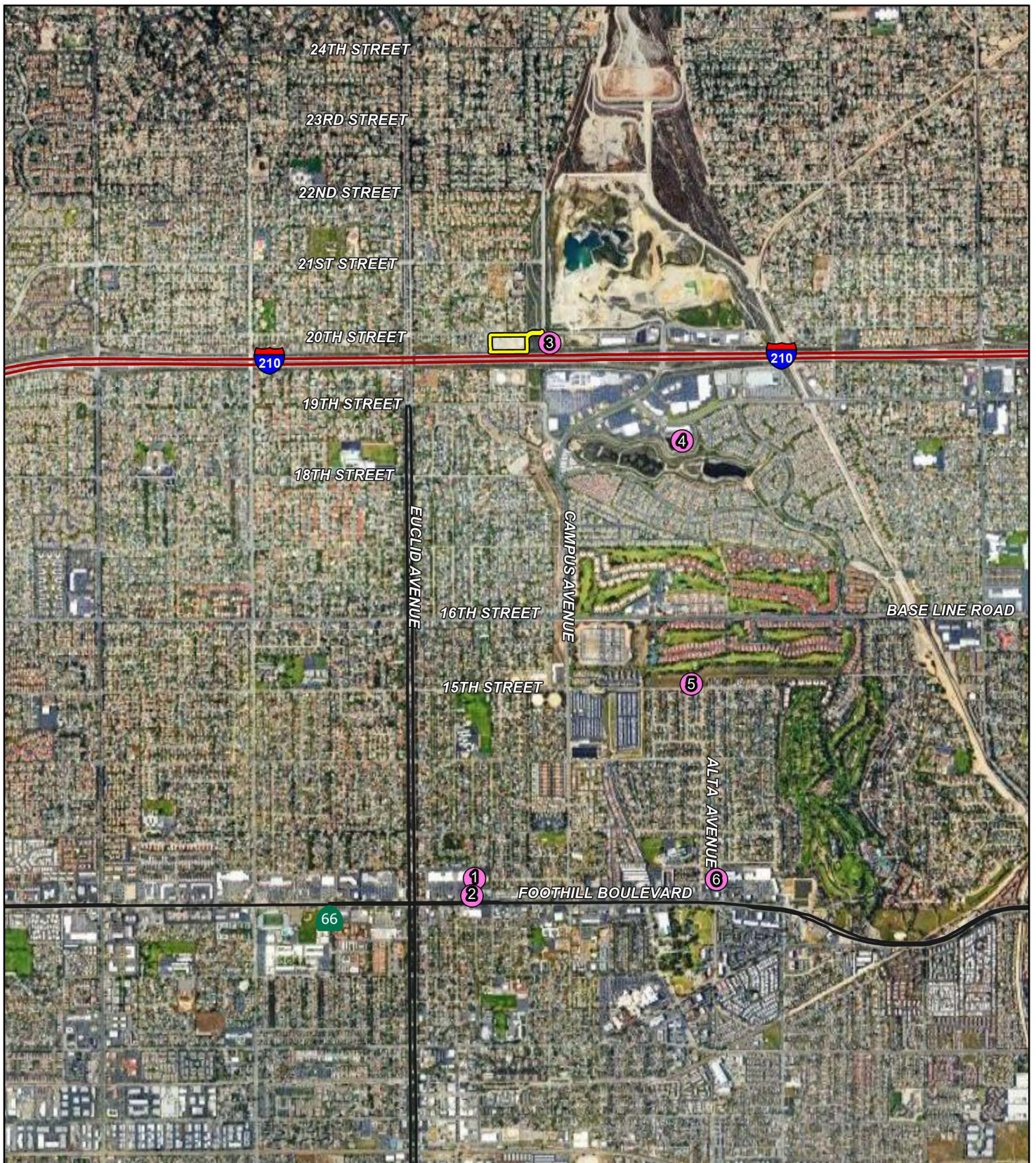




FIGURE 6-1

LSA

LEGEND

-  Project Location
-  Cumulative Projects



SOURCE: ESRI Streetmap, 2021; Google Earth, 2023

I:\2024\20241723\GIS\Pro\San Antonio Water Company Headquarters\San Antonio Water Company Headquarters.aprx (12/23/2024)

San Antonio Water Headquarters  
 Traffic Impact Analysis  
 Approved and Pending Project Locations

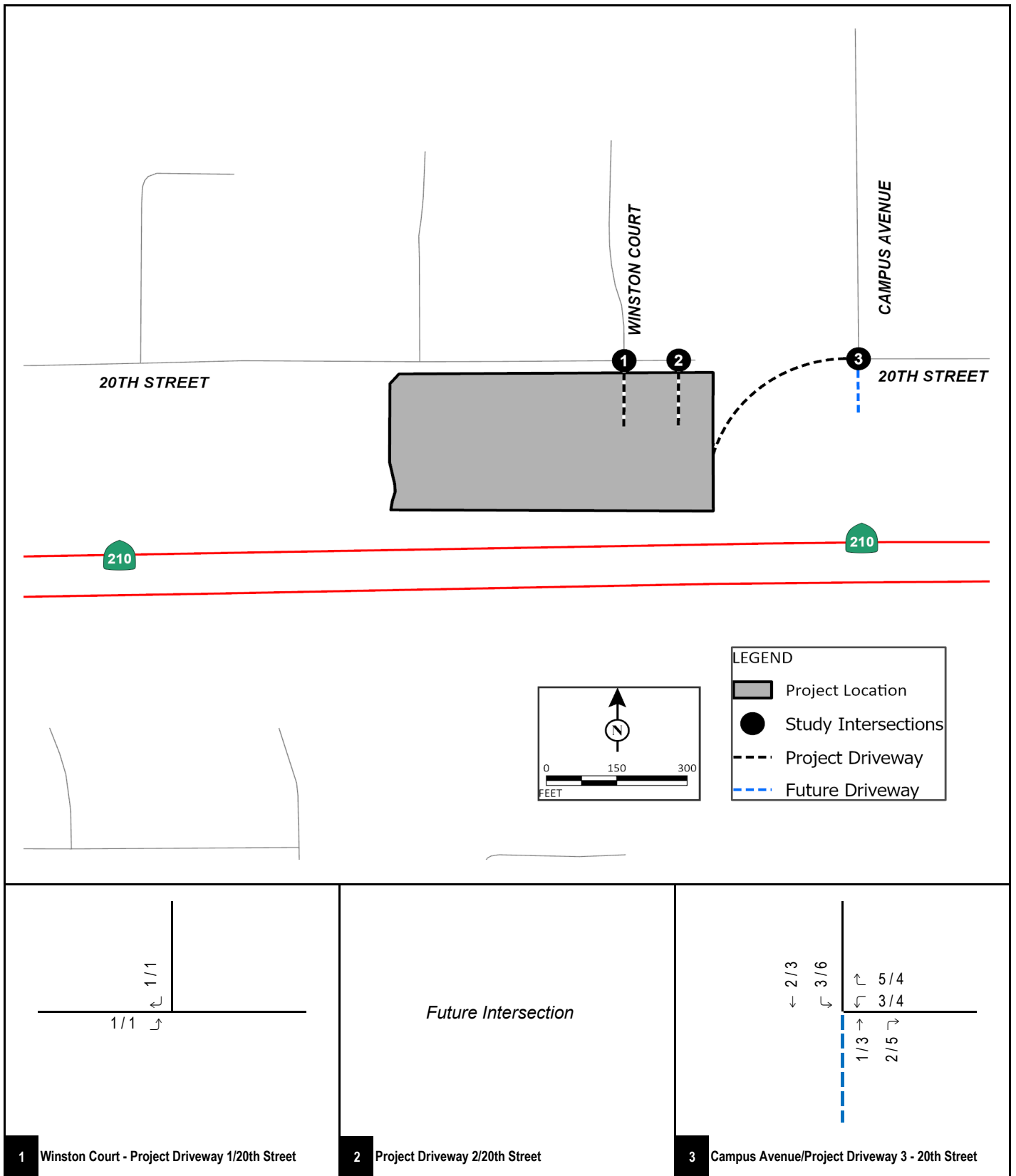


FIGURE 6-2

LSA

X / Y  
AM / PM PCE Peak Hour Trips

San Antonio Water Headquarters  
Traffic Impact Analysis

Approved and Pending Project Trip Assignment

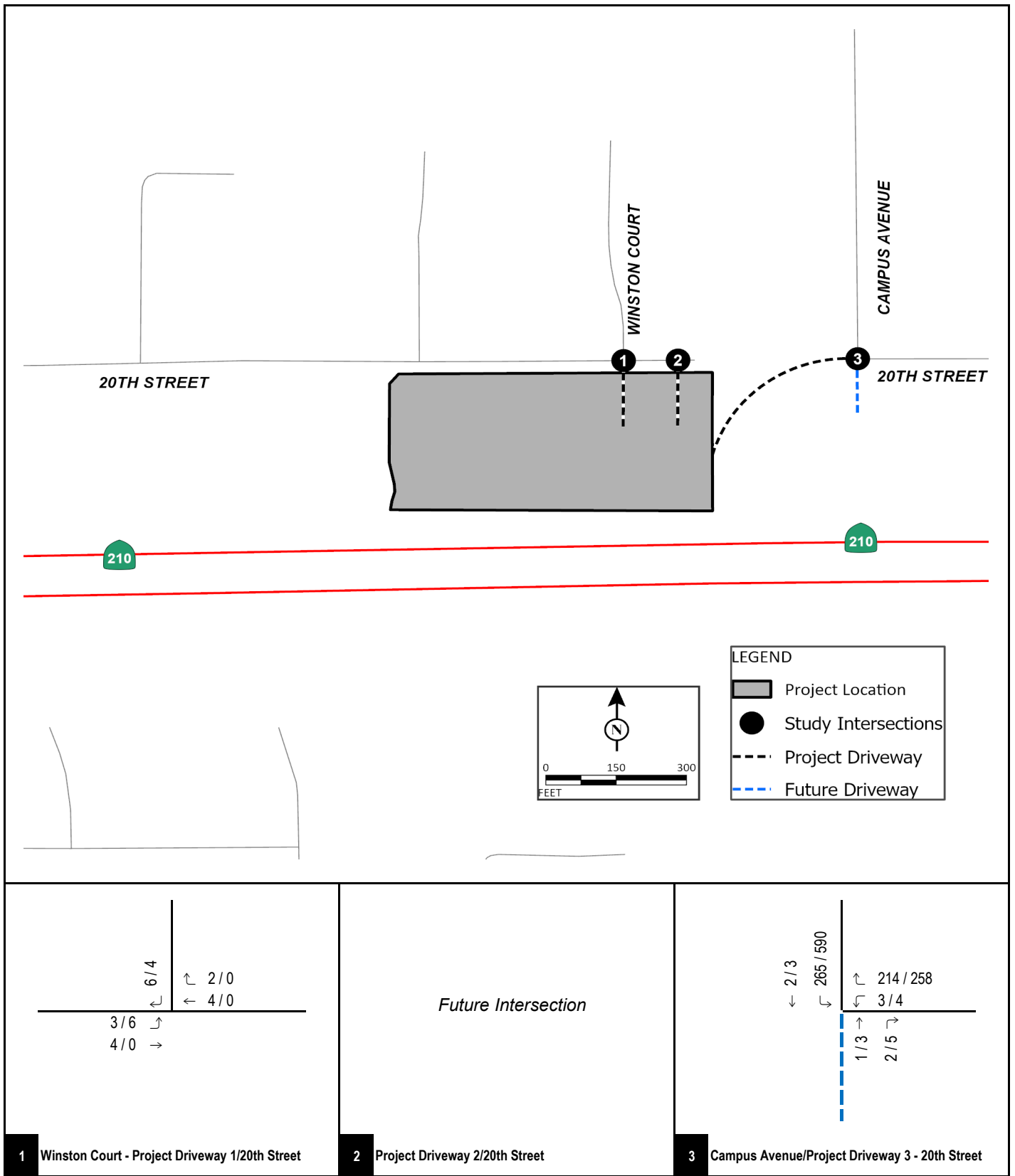


FIGURE 6-3



XXX / YYY  
 AM / PM PCE Peak Hour Trips

--- Project Driveway  
 - - - Future Driveway

San Antonio Water Headquarters  
 Traffic Impact Analysis

Opening Year (2027) without Project Peak Hour Traffic Volumes

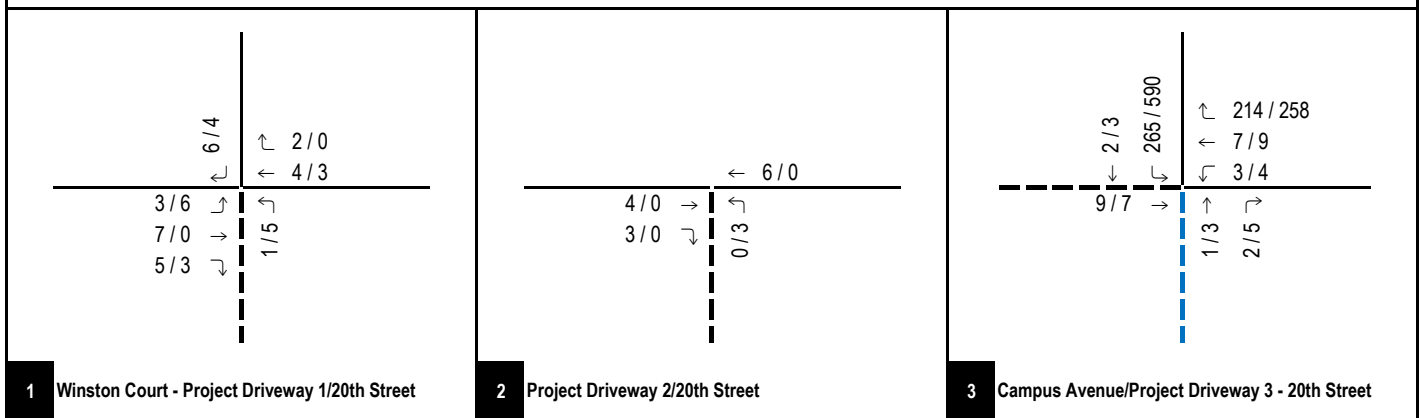
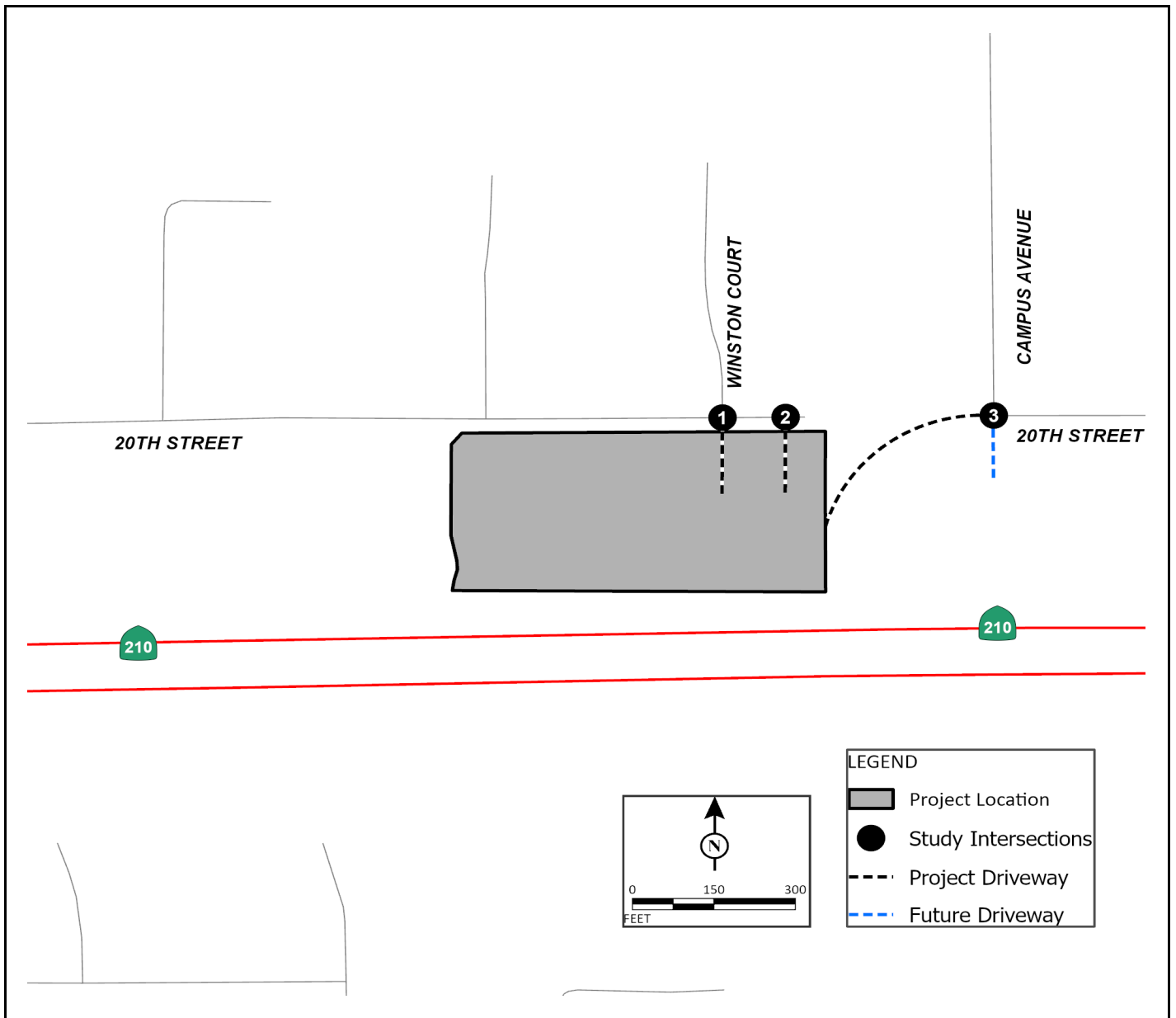


FIGURE 6-4

**LSA**

XXX / YYY  
AM / PM PCE Peak Hour Trips

--- Project Driveway  
- - - Future Driveway

San Antonio Water Headquarters  
Traffic Impact Analysis

Opening Year (2027) plus Project Peak Hour Traffic Volumes

Table 6.A: Approved and Pending Projects Trip Generation

Project No.	Land Use/Builder/Applicant/Project Name	Units	A.M. Peak Hour			P.M. Peak Hour			Daily
			In	Out	Total	In	Out	Total	
<b>1 . Amazon Fresh</b>	235 East Foothill Boulevard								
	Supermarket	35.000 TSF							
	Trips/Unit <sup>1</sup>		1.69	1.17	2.86	4.48	4.47	8.95	93.84
	Trip Generation		59	41	100	157	156	313	3,284
	Pass-by Trips <sup>2</sup>		0	0	0	(38)	(37)	(75)	(788)
	Net New Trips		59	41	100	119	119	238	2,496
<b>2 . Starbucks</b>	275 East Foothill Boulevard								
	Coffee/Donut Shop with Drive-Through Window	1.200 TSF							
	Trips/Unit <sup>3</sup>		43.80	42.08	85.88	19.50	19.49	38.99	533.57
	Trip Generation		53	50	103	23	23	46	640
	Pass-by Trips <sup>4</sup>		(27)	(25)	(52)	(13)	(12)	(25)	(336)
	Net New Trips		27	25	52	10	11	21	304
<b>3 . The Colonies Self Storage</b>	Southeast Corner of 20th Street and Campus Avenue								
	Mini Warehouse	164.570 TSF							
	Trip Generation <sup>5</sup>		10	6	16	13	15	28	249
<b>4 . Colony Condos</b>	1160 East 19th Street								
	Multifamily Housing (Low-Rise) Not Close to Rail Transit	60 DU							
	Trips/Unit <sup>6</sup>		0.10	0.30	0.40	0.32	0.19	0.51	6.74
	Trip Generation		6	18	24	19	11	30	404
<b>5 . Villa Serena</b>	15th Street, between Fernando Avenue and Monte Verde Avenue								
	Single-Family Detached Housing	65 DU							
	Trips/Unit <sup>7</sup>		0.18	0.52	0.70	0.59	0.35	0.94	9.43
	Trip Generation		12	34	46	38	23	61	613
<b>6 . Upland Oncology Center</b>	1113 North Alta Avenue								
	Medical-Dental Office Building - Stand-Alone	3.361 TSF							
	Trips/Unit <sup>8</sup>		2.45	0.65	3.10	1.18	2.75	3.93	36.00
	Trip Generation		8	2	10	4	9	13	121
<b>Gross Trip Generation</b>			<b>138</b>	<b>145</b>	<b>283</b>	<b>241</b>	<b>222</b>	<b>463</b>	<b>5,062</b>
<b>Pass-By Trips</b>			<b>(27)</b>	<b>(25)</b>	<b>(52)</b>	<b>(51)</b>	<b>(49)</b>	<b>(100)</b>	<b>(1,124)</b>
<b>Total Net Trip Generation</b>			<b>112</b>	<b>120</b>	<b>232</b>	<b>190</b>	<b>173</b>	<b>363</b>	<b>3,938</b>

Notes:

DU = Dwelling Units; TSF = Thousand Square Feet.

<sup>1</sup> Rates from Institute of Transportation Engineers (ITE) Trip Generation Manual, (11th Edition) Land Use 850 - "Supermarket", Setting/Location - 'General Urban/Suburban'.

<sup>2</sup> Pass-by rates from the ITE Trip Generation Manual (11th Edition) for Land Use 850 - 'Supermarket.' A pass-by rate of 24% was used for the p.m. peak hour. Since daily pass-by rates are not available for this land use in the ITE Trip Generation Manual, the p.m. pass-by rate was used as the daily pass-by rate.

<sup>3</sup> Rates from ITE Trip Generation Manual, (11th Edition), Land Use 937 - "Coffee/Donut Shop with Drive-Through Window", Setting/Location - 'General Urban/Suburban'.

<sup>4</sup> Pass-by rates from the ITE Trip Generation Manual (11th Edition) for Land Use 937 - 'Coffee/Donut Shop with Drive-Through Window.' A pass-by rate of 50% was used for the a.m. peak hour and a pass-by rate of 55% was used for the p.m. peak hour. Since daily pass-by rates are not available for this land use in the ITE Trip Generation Manual, the average of a.m and p.m. pass-by rate was used as the daily pass-by rate.

<sup>5</sup> Trip generation taken from "Proposed Self-Storage Facility" transportation impact assesment by Overland Traffic Consultants (May 2021).

<sup>6</sup> Rates from ITE Trip Generation Manual, (11th Edition), Land Use 220 - "Multifamily Housing (Low-Rise) Not Close to Rail Transit", Setting/Location - 'General Urban/Suburban'.

<sup>7</sup> Rates from ITE Trip Generation Manual, (11th Edition), Land Use 210 - "Single-Family Detached Housing", Setting/Location - 'General Urban/Suburban'.

<sup>8</sup> Rates from ITE Trip Generation Manual, (11th Edition), Land Use 720 - "Medical-Dental Office Building - Stand-Alone", Setting/Location - 'General Urban/Suburban'.

Table 6.B: Opening Year (2027) Intersection Levels of Service

Intersection	Jurisdiction	LOS Standard	Control	Without Project				Plus Project				
				A.M. Peak Hour		P.M. Peak Hour		A.M. Peak Hour		P.M. Peak Hour		
				Delay (sec.)	LOS	Delay (sec.)	LOS	Delay (sec.)	LOS	Delay (sec.)	LOS	
1 . Winston Court - Project Driveway 1/20th Street	Upland	D	OWSC	8.4	A	8.3	A	TWSC	8.7	A	8.7	A
2 . Project Driveway 2/20th Street	Upland	D	--	<i>Future Intersection</i>		<i>Future Intersection</i>		OWSC	0.0	A	8.5	A
3 . Campus Avenue/Project Driveway 3 - 20th Street <sup>1</sup>	Upland	D	OWSC	8.3	A	8.3	A	TWSC	4.9	A	7.2	A

Notes:

OWSC = One-Way Stop Control; TWSC = Two-Way Stop Control; LOS = Level of Service

Delay = Average control delay in seconds (For OWSC/TWSC intersections, reported delay is for worst-case movement).

\* Exceeds LOS Standard

<sup>1</sup> For the purpose of this analysis, intersection was analyzed as a OWSC under 'without project' and TWSC under 'plus project' scenarios. Delay reported from SimTraffic under 'plus project' scenarios.

## 7.0 HORIZON YEAR ANALYSIS

### 7.1 HORIZON YEAR (2050) WITHOUT PROJECT TRAFFIC VOLUMES

Traffic volumes for horizon year without project conditions were developed by using forecast traffic volumes obtained from the San Bernardino Transportation Analysis Model (SBTAM). The methodology to develop horizon year without project volumes at study area intersections is consistent with the SBCTA procedures for post-processing of modeled traffic volumes.

Figure 7-1 illustrates horizon year without project peak-hour traffic volumes at study intersections.

### 7.2 HORIZON YEAR (2050) PLUS PROJECT TRAFFIC VOLUMES

Horizon year plus project traffic volumes were developed by adding proposed project traffic to the horizon year without project traffic volumes.

Figure 7-2 illustrates horizon year plus project peak-hour traffic volumes at study intersections.

Detailed volume development worksheets are included in Appendix C.

### 7.3 HORIZON YEAR (2050) WITHOUT PROJECT LEVELS OF SERVICE

#### 7.3.1 Study Intersections

An intersection LOS analysis was conducted for horizon year without project conditions using the methodologies previously discussed. Table 7.A summarizes the results of the analysis and shows that all intersections are forecast to operate at a satisfactory LOS under horizon year without project conditions.

### 7.4 HORIZON YEAR (2050) PLUS PROJECT LEVELS OF SERVICE

#### 7.4.1 Study Intersections

An intersection LOS analysis was conducted for horizon year plus project conditions using the methodologies previously discussed. Previously referenced Table 7.A summarizes the results of the analysis and shows that all intersections are forecast to operate at a satisfactory LOS under horizon year plus project conditions. Detailed LOS worksheets are included in Appendix D.

### 7.5 LIST OF CHAPTER 7.0 FIGURES AND TABLES

- Figure 7-1: Horizon Year (2050) without Project Peak Hour Traffic Volumes
- Figure 7-2: Horizon Year (2050) plus Project Peak Hour Traffic Volumes
- Table 7.A: Horizon Year (2050) Intersection Levels of Service

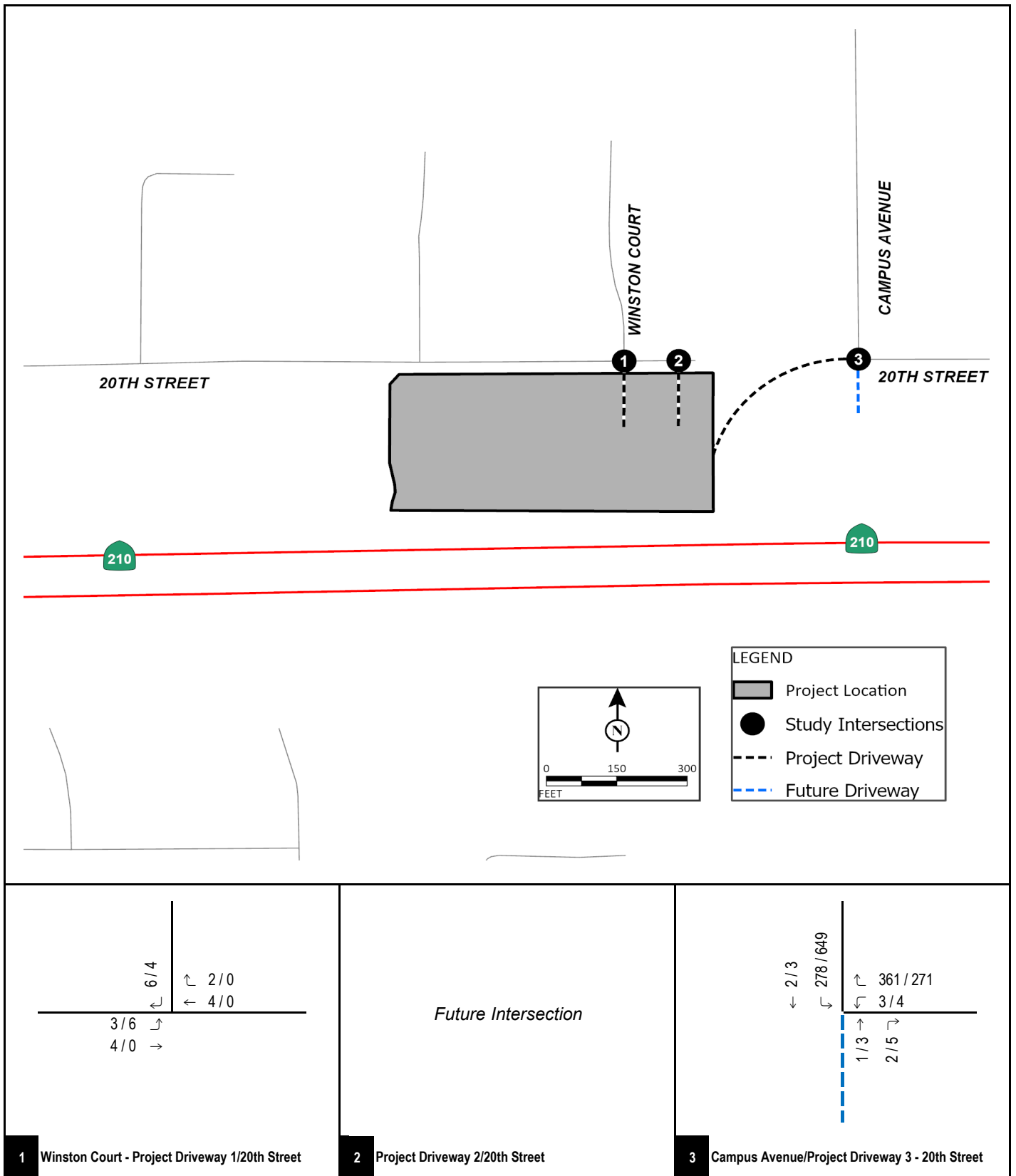


FIGURE 7-1

**LSA**

XXX / YYY

AM / PM PCE Peak Hour Trips

--- Project Driveway

--- Future Driveway

San Antonio Water Headquarters

Traffic Impact Analysis

Horizon Year (2050) without Project Peak Hour Traffic Volumes

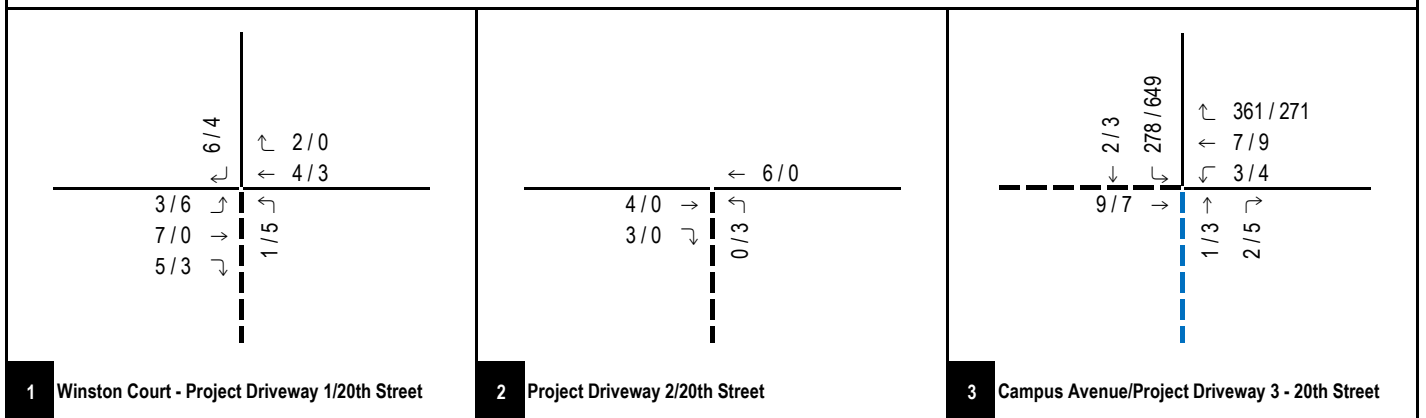
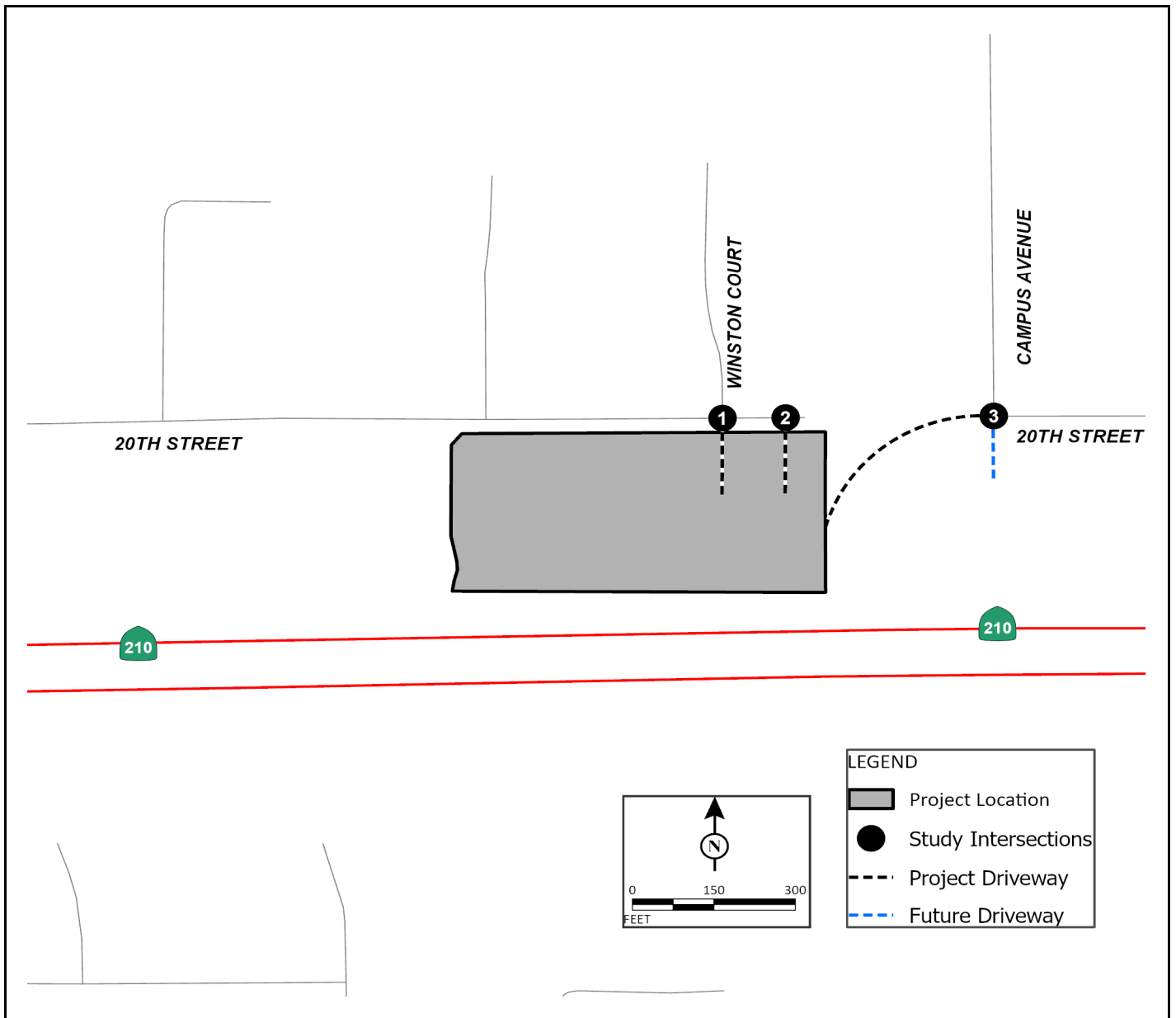


FIGURE 7-2

LSA

XXX / YYY  
AM / PM PCE Peak Hour Trips

--- Project Driveway  
--- Future Driveway

San Antonio Water Headquarters  
Traffic Impact Analysis

Horizon Year (2050) plus Project Peak Hour Traffic Volumes

Table 7.A: Horizon Year (2050) Intersection Levels of Service

Intersection	Jurisdiction	LOS Standard	Control	Without Project				Plus Project				
				A.M. Peak Hour		P.M. Peak Hour		A.M. Peak Hour		P.M. Peak Hour		
				Delay (sec.)	LOS	Delay (sec.)	LOS	Delay (sec.)	LOS	Delay (sec.)	LOS	
1 . Winston Court - Project Driveway 1/20th Street	Upland	D	OWSC	8.3	A	8.3	A	TWSC	8.6	A	8.6	A
2 . Project Driveway 2/20th Street	Upland	D	--	<i>Future Intersection</i>		<i>Future Intersection</i>		OWSC	0.0	A	8.5	A
3 . Campus Avenue/Project Driveway 3 - 20th Street <sup>1</sup>	Upland	D	OWSC	8.3	A	8.3	A	TWSC	5.1	A	8.5	A

Notes:

OWSC = One-Way Stop Control; TWSC = Two-Way Stop Control; LOS = Level of Service

Delay = Average control delay in seconds (For OWSC/TWSC intersections, reported delay is for worst-case movement).

\* Exceeds LOS Standard

<sup>1</sup> For the purpose of this analysis, intersection was analyzed as a OWSC under 'without project' and TWSC under 'plus project' scenarios. Delay reported from SimTraffic under 'plus project' scenarios.

## 8.0 SITE ACCESS ANALYSIS

### 8.1 SIGHT DISTANCE ANALYSIS

Per request by City staff, a sight distance analysis was conducted at the project driveways along 20<sup>th</sup> Street and Campus Avenue to evaluate safe access in and out of the project. Sight distance is the length of the visible roadway a driver can see approaching vehicles before their line of sight is blocked by any object. For purposes of this analysis, both the stopping sight distance and corner sight distance have been evaluated. That is because those are the two sight distance issues that would affect safe maneuver of ingress/egress traffic from the project driveway.

According to the Caltrans Highway Design Manual (HDM) (dated July 2020), the stopping sight distance is the minimum sight distance along a roadway required to allow a driver to decrease their speed from the design speed to a complete stop. The corner sight distance is the minimum sight distance in which a driver at a stop-controlled approach can see oncoming traffic on the major street to safely maneuver onto the roadway.

The stopping sight distance was evaluated on the street abutting the project (i.e., 20<sup>th</sup> Street). The posted speed limit on 20<sup>th</sup> Street is 35 mph. For purposes of this analysis, the posted speed limit has been considered as the design speed. As stated in Table 201.1 of the HDM, the minimum stopping distance is 250 feet for a design speed of 35 mph. Therefore, the minimum stopping sight distances for Project Driveway 1 and Project Driveway 2 have been considered as 250 feet. In addition, the posted speed limit on Campus Avenue is 40 mph. As stated in Table 201.1 of the HDM, the minimum stopping distance is 250 feet for a design speed of 35 mph. Therefore, the minimum stopping sight distance for the Project Driveway 3 was considered as 300 feet.

As for corner sight distance, Section 405.1 of the HDM states that corner sight distance requirements are not applicable for urban driveways unless signalized. However, as a conservative approach, corner sight distances were also evaluated for the project driveways. The minimum corner sight distance was based on design speed, time gap, and type of vehicles from the minor roads (project driveways) to enter the major roads (20<sup>th</sup> Street). Based on the requirements established in the HDM, it was determined that a minimum corner sight distance of 390 feet for left-turn maneuvers and 335 feet for right-turn maneuvers coming out of Project Driveway 1 and Project Driveway 2 would be required.

Furthermore, for Project Driveway 3, as previously mentioned minimum corner sight distance was based on design speed, time gap, and type of vehicles from the minor roads (project driveways) to enter the major roads (Campus Avenue). Given the location of this project driveway, it should be noted that vehicles can possibly be traveling less than allowed speed limit. However, as a conservative measure, corner sight distances were calculated using metrics for combination trucks and speed limit of 40 mph. Thus, based on the requirements established in the HDM, it was determined that a minimum corner sight distance of 680 feet for left-turn maneuvers and 620 feet for right-turn maneuvers coming out of Project Driveway 3 would be required.

Since the corner sight distance required at the project driveways would be greater than the stopping sight distance, sight triangle figures were created using corner sight distance as a conservative approach. Project Driveway 1 will provide adequate sight distance for left-turn maneuvers as shown by the sight distance triangles illustrated on Figure 8-1. Project Driveway 2 will provide adequate sight distance for left-turn maneuvers, as shown by the sight distance triangle illustrated on Figure 8-2. Project Driveway 3 will provide adequate sight distance for left-turn maneuvers as shown by the sight distance triangles illustrated on Figure 8-3.

## **8.2 BICYCLE, PEDESTRIAN, AND TRANSIT ACCESSIBILITY**

### **8.2.1 Bicycle Accessibility**

As part of the City's Bikeway Network, Class III bike routes exist on both directions of Campus Avenue north of SR-210 within the study area. Since there are no existing bike facilities along 20<sup>th</sup> Street, bicyclists currently will not be able to access the project site.

### **8.2.2 Pedestrian Accessibility**

According to the City's General Plan, the study area on Campus Avenue and 20<sup>th</sup> Street east of the SCE easement has been identified as the areas that needs sidewalks, as shown on Figure 4-7.

### **8.2.3 Transit Accessibility**

Omnitrans provides both local and regional services throughout the region, with 30 fixed routes and 5 OmniGo routes using 178 vehicles. There are no Omnitran bus routes that operate within the study area.

## **8.3 LIST OF CHAPTER 8.0 FIGURES**

- Figure 8-1: Corner Sight Distance at Project Driveway 1
- Figure 8-2: Corner Sight Distance at Project Driveway 2
- Figure 8-3: Corner Sight Distance at Project Driveway 3

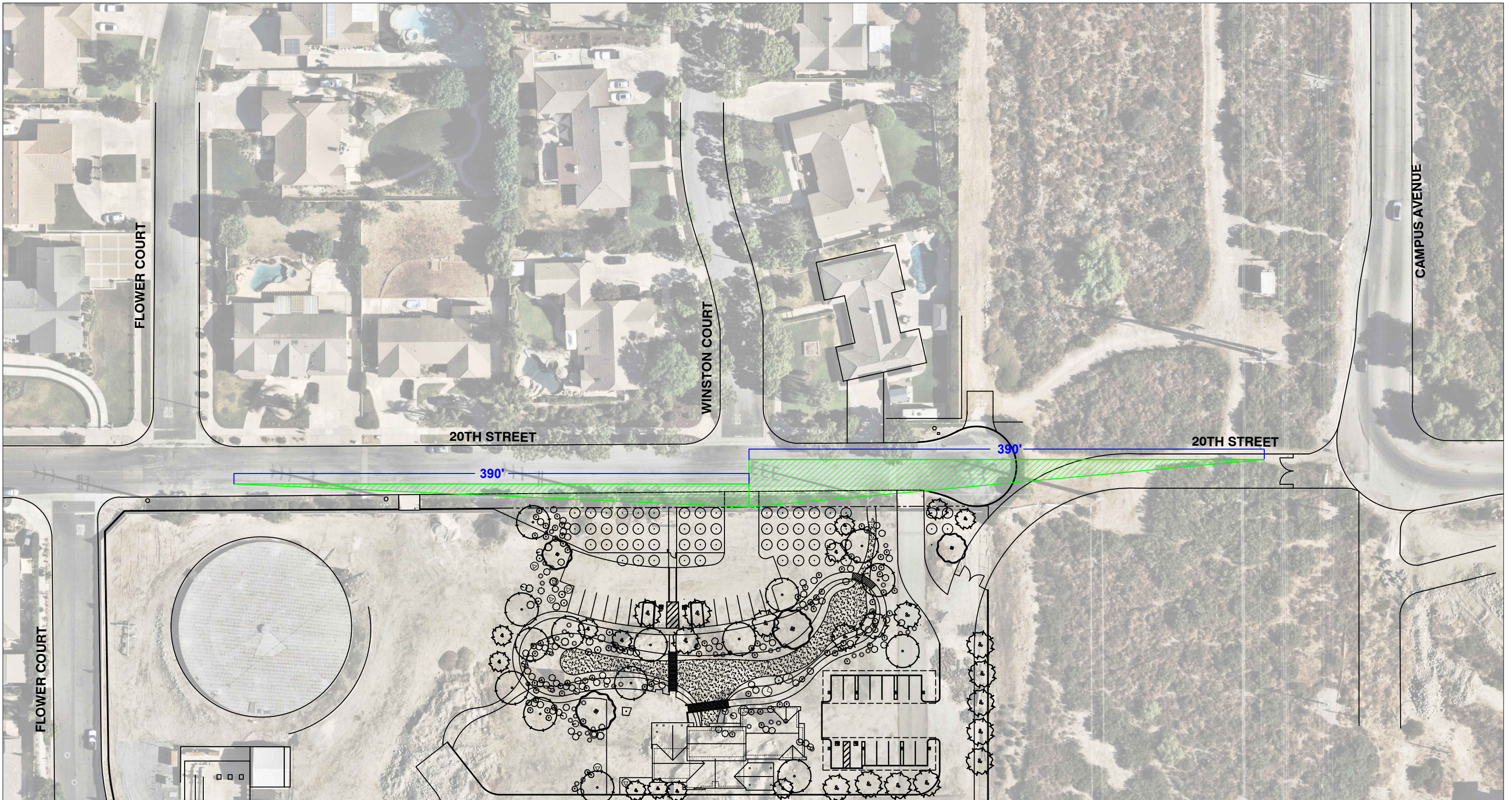
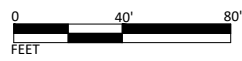


FIGURE 8-1

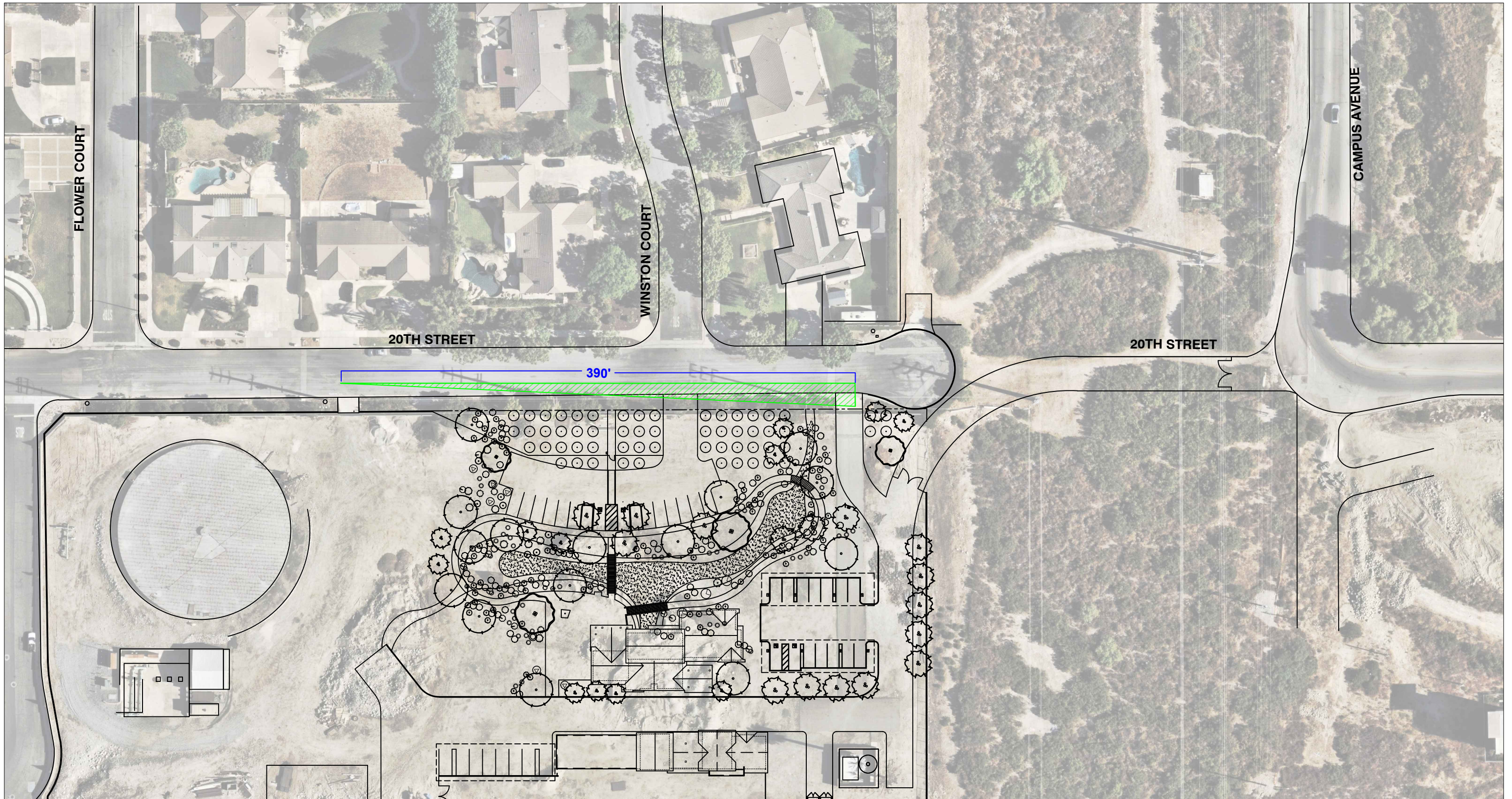
LSA



SOURCE: CEDG, Inc., August 2023  
 P:\2024\20241723\_San Antonio Driveway Expansion\PRODUCTS\Technical Studies\Traffic Analysis\Sight Distance\20240729\_LSA\_CAD BASE.dwg (10/29/2024)

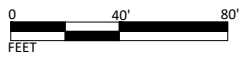
San Antonio Water Headquarters  
 Traffic Impact Analysis

Corner Sight Distance at Winston Court - Project Driveway 1/20th Street



LSA

FIGURE 8-2

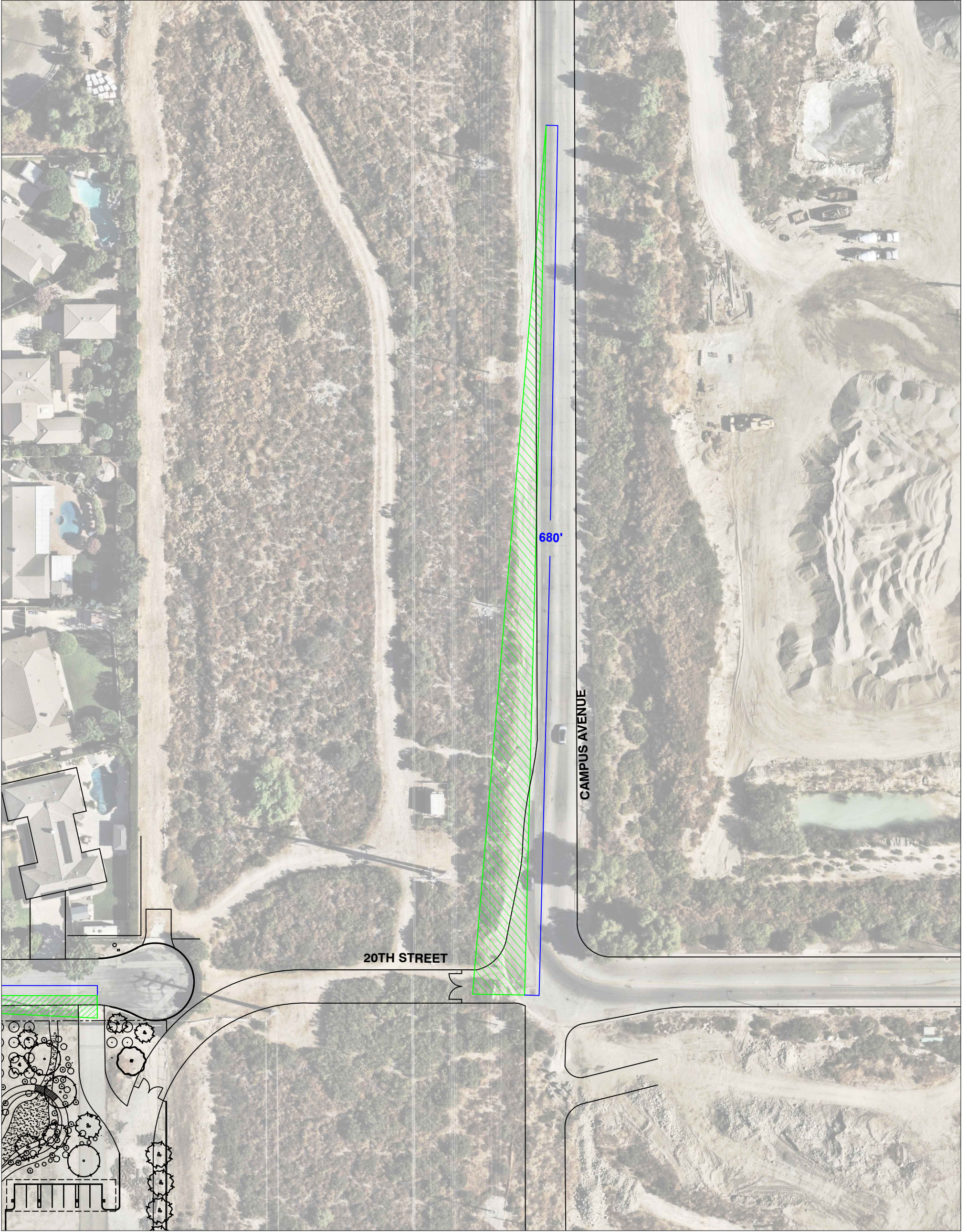


SOURCE: CEDG, Inc., August 2023

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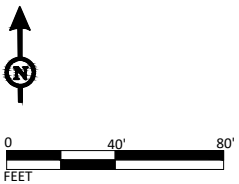
San Antonio Water Headquarters  
Traffic Impact Analysis

Corner Sight Distance at Project Driveway 2/20th Street



LSA

FIGURE 8-3



SOURCE: CEDG, Inc., August 2023  
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## 9.0 CEQA ASSESSMENT—VEHICLE MILES TRAVELED ANALYSIS AND ACTIVE TRANSPORTATION AND PUBLIC TRANSIT ANALYSIS

### 9.1 VEHICLE MILES TRAVELED ANALYSIS

On December 28, 2018, the California Office of Administrative Law cleared the revised California Environmental Quality Act (CEQA) Guidelines for use. Among the changes to the CEQA Guidelines was the removal of vehicle delay and LOS from consideration under CEQA. With the adopted CEQA Guidelines, transportation impacts are to be evaluated based on a project's effect on VMT.

LSA utilized the TIA Guidelines for the VMT analysis of the proposed project. The City's TIA Guidelines include screening criteria, VMT analysis methodology, VMT impact thresholds, and VMT mitigation measures.

The TIA Guidelines provide multiple screening criteria for land use projects. The VMT screening criteria in the "Analysis Methodology" section of the TIA Guidelines were reviewed to determine whether the proposed project could be screened out from a VMT analysis. Following is a brief description of the proposed project in relation to the VMT screening criteria:

- **Project Located in TPA:** The proposed project is not located within a TPA; therefore, this screening criterion does not apply.
- **Residential or Office Project Located in Low-VMT Area:** The project is not a residential or office project; therefore, this criterion does not apply.
- **Project Type (Land Use) Screening:** According to the TIA Guidelines, "Projects generating less than 250 daily vehicle trips" are presumed to have a less than significant impact. As shown in Table 5.A, the project generates 91 daily vehicle trips. Therefore, the project is not estimated to have any significant VMT impact and may be screened out from a detailed VMT analysis.

### 9.2 ACTIVE TRANSPORTATION AND PUBLIC TRANSIT ANALYSIS

According to the City's TIA Guidelines, a significant impact occurs when a project conflicts with adopted plans, policies, or programs regarding active transportation or public transit facilities, or otherwise decreases the performance or safety of such facilities.

Based on the City's Bikeway Network, Class III bike routes exist on both directions of Campus Avenue north of SR-210 within the study area. The project would not modify the existing bike routes along Campus Avenue. As such, the project would not decrease the performance or safety of any existing or proposed bicycle facility.

According to the City's General Plan, the study area on Campus Avenue has been identified as the area that needs sidewalks. The project would not modify any existing sidewalks. As such, the project would not decrease the performance or safety of any existing or proposed pedestrian facility.

---

Omnitrans provides both local and regional services throughout the region, with 30 fixed routes and 5 OmniGo routes using 178 vehicles. There are no Omnitrans bus routes that operate within the study area. The project would not modify or affect any public transit access within the study area.

The project does not conflict with any existing or proposed bicycle, pedestrian, or public transit facilities. Therefore, it can be considered to conform to all adopted policies, plans, or programs concerning these facilities and would not have a significant impact.

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## 10.0 CIRCULATION IMPROVEMENTS AND FUNDING SOURCES

### 10.1 RECOMMENDED IMPROVEMENTS

Based on the results of the LOS analysis, all study intersections are forecast to operate at a satisfactory LOS under all scenarios. Therefore, no circulation improvements are recommended at this time.

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# APPENDIX A

## SCOPING AGREEMENT



CARLSBAD  
CLOVIS  
IRVINE  
LOS ANGELES  
PALM SPRINGS  
POINT RICHMOND  
RIVERSIDE  
ROSEVILLE  
SAN LUIS OBISPO

August 28, 2024

Mr. Alan French  
Principal Engineer  
City of Upland  
460 N. Euclid Avenue  
Upland, California 91786

Subject: Scope of Work for the San Antonio Water Headquarters Traffic Impact Analysis (LSA Project No.20241723)

Dear Alan:

LSA is preparing a Traffic Impact Analysis (TIA) for the San Antonio Water Headquarters Project (project) located at 400 East 20<sup>th</sup> Street in the City of Upland (City). The project site is located in northwest Upland in an area primarily consisting of residential, commercial, and industrial uses. The Project site is bound by East 20<sup>th</sup> Street to the north, Southern California Edison (SCE) easement (open space) to the east, State Route 210 (SR-210) to the south, and Flower Court to the west. There are currently existing structures on the project site: a one-million-gallon water storage tank located at the northwestern corner of the parcel, a pump station located at the southwestern corner of the parcel, and a signal building and tower located at the southeastern corner of the parcel. Figure 1 (all figures, tables, and appendices attached) illustrates the regional and project location.

The proposed project proposes to develop a new 3,698 square-foot San Antonio Water Co. (SAWCO) headquarters and associated improvements including a 4,066 square-foot maintenance building, maintenance yard, driveway, parking, solar cover, landscaping, and utility improvements. The existing water storage tank, pump station, and signal buildings and tower would remain in place. Based on the project description and operational information provided, it is anticipated that approximately 10 people would be employed on the Project site. Access to the project site will be provided via two driveways on 20<sup>th</sup> Street and one driveway on Campus Avenue. The westerly driveway on E. 20<sup>th</sup> Street along the northern property boundary provides access for SAWCO patrons and customers. The middle driveway located on the northeastern corner of the project site provides access to the SAWCO employee parking area and maintenance facilities. The easterly driveway located on the northeastern corner of the project site would connect to the intersection of Campus Avenue and E. 20<sup>th</sup> Street. This easterly driveway would require acquisition of right-of-way from the existing SCE easement. For purposes of this analysis, all driveways have been considered as full-access driveways. Figure 2 illustrates the conceptual site plan for the project.

LSA anticipates that the following scope of work will be required to prepare the TIA for the proposed project.

## SCOPE OF WORK

The scope of work has been prepared as per the City of Upland *Traffic Impact Analysis Guidelines* (TIA Guidelines), dated July 2020. As per the City's TIA Guidelines, the TIA should include two components – 1) a Level of Service (LOS) Analysis for General Plan consistency purposes and 2) a Vehicle Miles Traveled (VMT) Analysis and an Active Transportation and Public Transit Analysis for California Environmental Quality Act (CEQA) requirements.

## LEVEL OF SERVICE ANALYSIS

### Study Area

As per the City's TIA guidelines, at a minimum, the study area must include intersections with 51 or more two-way peak-hour project trips. However, based on comments provided by City staff, a LOS analysis will need to be prepared to determine the potential operational issues concerning the project driveways, including the driveway connecting to the intersection of Campus Avenue/20th Street. As such, the following intersections were included in the TIA:

### Study Intersections:

1. Winston Court – Project Driveway 1/20<sup>th</sup> Street;
2. Project Driveway 2/20<sup>th</sup> Street; and
3. Campus Avenue/Project Driveway 3 - 20<sup>th</sup> Street.

Figure 3 illustrates the study area intersections.

Traffic operations at all study intersections will be analyzed during the weekday a.m. and p.m. peak hours. The a.m. peak hour is defined as the one hour period of the highest traffic volume occurring between 7:00 and 9:00 a.m. while the p.m. peak hour is defined as the one hour period of the highest traffic volume occurring between 4:00 and 6:00 p.m. Intersection LOS will be calculated using the *Highway Capacity Manual* 7<sup>th</sup> Edition (HCM 7) analysis methodologies and by using the Synchro 12 software.

## Project Trip Generation, Trip Distribution, and Trip Assignment

The trip generation for the proposed project was developed as follows:

### Employee Trip Generation

Based on the project description and operational information, the project is anticipated to have 10 full-time employees. For purposes of this analysis, all 10 employees are anticipated to arrive at the facility in the a.m. peak hour and leave the facility in the p.m. peak hour. Therefore, the project is estimated to generate 20 daily employee trips with 10 inbound a.m. peak hour trips and 10 outbound p.m. peak hour trips.

Additionally, based on the project description and operational information, the project is anticipated to have 6 trucks for the operations. Based on information from the applicant, the truck trips are described as followed:

- Truck #1 (2-axle light duty truck): Truck is considered as a standby vehicle and will average around 80-90 miles per day.
- Truck #2 (2-axle light duty truck): Truck is considered as a retired standby vehicle/ support vehicle for construction jobs and will average around 20-25 miles per day.
- Truck #3 (2-axle light duty truck): Truck is considered as a general maintenance/support vehicle for construction jobs and will average around 20-25 miles per day. It is likely only to be driven for around 75% of work week.
- Truck #4 (2-axle medium duty truck): Truck is considered as a dump truck. This vehicle will average 20-25 miles per day and is usually only driven about 4-5 days a month.
- Truck #5 (2-axle medium duty truck): Truck is considered as a service truck and planned to be used for larger construction jobs and heavy maintenance. This vehicle will average around 20-25 miles per day and likely only to be driven for around 75% of the work week.
- Truck #6 (2-axle light duty truck): This vehicle has an auxiliary fuel tank that will be used for refueling the project's tractors. Occasionally used for short runs for parts and supplies. It will average around 20-25 miles per day and likely only to be driven for around 5-6 days a month.

For purposes of this analysis, all trucks were considered to be 2-axle trucks and operating within the same day as a conservative estimate. Therefore, it could be estimated that the project will be generating 12 daily employee truck trips (inbound and outbound combined). Based on the operational hours, these trips could be estimated as peak hour trips, with 6 outbound truck trips occurring during a.m. peak hour, and 6 inbound truck trips occurring during the p.m. peak hour. All truck trips were converted to passenger car equivalent (PCE) trips using a 1.5 PCE factor for 2-axle trucks based on TIA Guidelines.

### Customer Trip Generation

- Headquarter Building – The trip generation for this component was developed using rates from the Institute of Transportation Engineers (ITE) *Trip Generation Manual* (11<sup>th</sup> Edition) for Land Use 712 – “Small Office Building.”

The project trip generation is summarized in Table A. As shown in Table A, the project is anticipated to generate 91 total net PCE daily trips, with 25 net PCE trips occurring during the a.m. peak hour and 27 net PCE trips occurring during the p.m. peak hour.

The distribution of project trips is based on the regional roadway network and the location of residential, employment and commercial center in relation to the proposed project. Figure 4

illustrates the project trip distribution for the employees. Figure 5 illustrates the project trip distribution for the maintenance trucks. Figure 6 illustrates the customer trip distribution. The project trip assignment at the study intersections is the product of the project trip generation and the corresponding trip distribution percentages. Figure 7 illustrates the trip assignment for employees. Figure 8 illustrates the trip assignment for maintenance trucks. Figure 9 illustrates the trip assignment for customers. Figure 10 illustrates the total project trip assignment.

### **Analysis Scenarios**

The TIA will be prepared based on consultation with City staff to meet the requirements of the City. The TIA will examine traffic operations at the study area intersections under the following scenarios:

- Existing Conditions;
- Project Opening Year without Project Conditions;
- Project Opening Year plus Project Conditions;
- Horizon Year without Project Conditions; and
- Horizon Year plus Project Conditions.

The Project Opening Year is estimated to be Year 2027. The Horizon Year is considered to be Year 2045.

### **Volume Development and Analysis Methodology**

Traffic volumes for existing conditions are typically developed using existing count data collected at study area intersections.

Traffic volumes for project opening year without project conditions will be developed by applying an ambient growth rate of 2 percent per annum to existing traffic volumes and adding traffic volumes from approved and pending projects in the vicinity of the proposed project. LSA contacted City staff and the adjacent jurisdiction of San Bernardino County for information regarding cumulative projects. Cumulative projects to be included in this study are summarized in Table B. Locations of cumulative projects are illustrated in Figure 11.

Traffic volumes for horizon year without project conditions will be developed by using forecast traffic volumes obtained from the San Bernardino Transportation Analysis Model (SBTAM). The methodology to develop horizon year without project traffic volumes at study area intersections will be consistent with the San Bernardino County Transportation Authority (SBCTA) procedures for post-processing of modeled traffic volumes.

Project opening year and horizon year plus project traffic volumes will be developed by adding project traffic to the traffic volumes for the corresponding without project scenarios.

### **Analysis of Traffic Operations and Recommended Circulation Improvements**

Levels of service without the project will be compared with levels of service plus the project for all analysis scenarios to determine operational deficiencies based on the LOS standards and operational

deficiency criteria as applicable for the City. Furthermore, necessary improvements will be recommended to offset any operational deficiencies. Improvements may include addition of intersection turn lanes, segment lane additions, signalization, etc. The LOS with the proposed improvements will be calculated and summarized, along with a comparison of the LOS without improvements.

### **Signal Warrant Analysis (if Required)**

A signal warrant analysis would be conducted at unsignalized intersections if a signal is recommended as an improvement. Peak hour approach volumes for study intersections will be examined to determine whether signalization may be warranted per the criteria defined in the California supplement of the *Manual on Uniform Traffic Control Devices* (CA-MUTCD).

### **Sight Distance Analysis**

A sight distance analysis will be conducted for the project driveways. This analysis will evaluate the sight distance and other potential safety issues pertaining to left-turn movements out of the project driveways.

### **Fair-Share Contributions (if Required)**

A fair share percentage will be calculated for intersection improvements recommended in the TIA that are not included in the City's Development Fee (DIF) program, the SBCTA Nexus Study Fee program, or any other funding program. The percentage of fair share for the project will be calculated at each location using the total trips generated by the project divided by the total "new" traffic, which is the net increase in traffic volumes from existing to horizon year conditions.

### **CEQA ASSESSMENT - VEHICLE MILES TRAVELED ANALYSIS**

The TIA will include a Vehicle Miles Traveled (VMT) analysis to meet CEQA requirements. The project VMT analysis will be prepared consistent with the City's TIA Guidelines. Per the City's TIA Guidelines, the project may be screened out because it is anticipated to generate fewer than 250 daily vehicle trips. Therefore, as per the City's TIA Guidelines, the project may be presumed to have a less than significant VMT impact and may be screened from a VMT analysis.

### **CEQA ASSESSMENT – ACTIVE TRANSPORTATION AND PUBLIC TRANSIT ANALYSIS**

The TIA will include an analysis of potential project impacts on public transit, bicycle, and pedestrian facilities. Significant impacts would be determined based on whether the project conflicts with adopted policies, plans, or programs for these facilities, or whether the project decreases the performance or safety of these facilities.

Should you have any questions, please do not hesitate to contact me at (951) 781-9310 or email me at [Ambarish.Mukherjee@lsa.net](mailto:Ambarish.Mukherjee@lsa.net).

Sincerely,

**LSA ASSOCIATES, INC.**



Ambarish Mukherjee, AICP, PE  
Principal

## **ATTACHMENTS**

### **Figures**

- Figure 1: Regional and Project Location
- Figure 2: Conceptual Site Plan
- Figure 3: Study Area Intersections
- Figure 4: Project Trip Distribution – Employees
- Figure 5: Project Trip Distribution – Maintenance Trucks
- Figure 6: Project Trip Distribution – Customers
- Figure 7: Project Trip Assignment – Employees
- Figure 8: Project Trip Assignment – Maintenance Trucks
- Figure 9: Project Trip Assignment – Customers
- Figure 10: Total Project Trip Assignment
- Figure 11: Cumulative Project Locations

### **Tables**

- Table A: Project Trip Generation
- Table B: Cumulative Projects

FIGURES

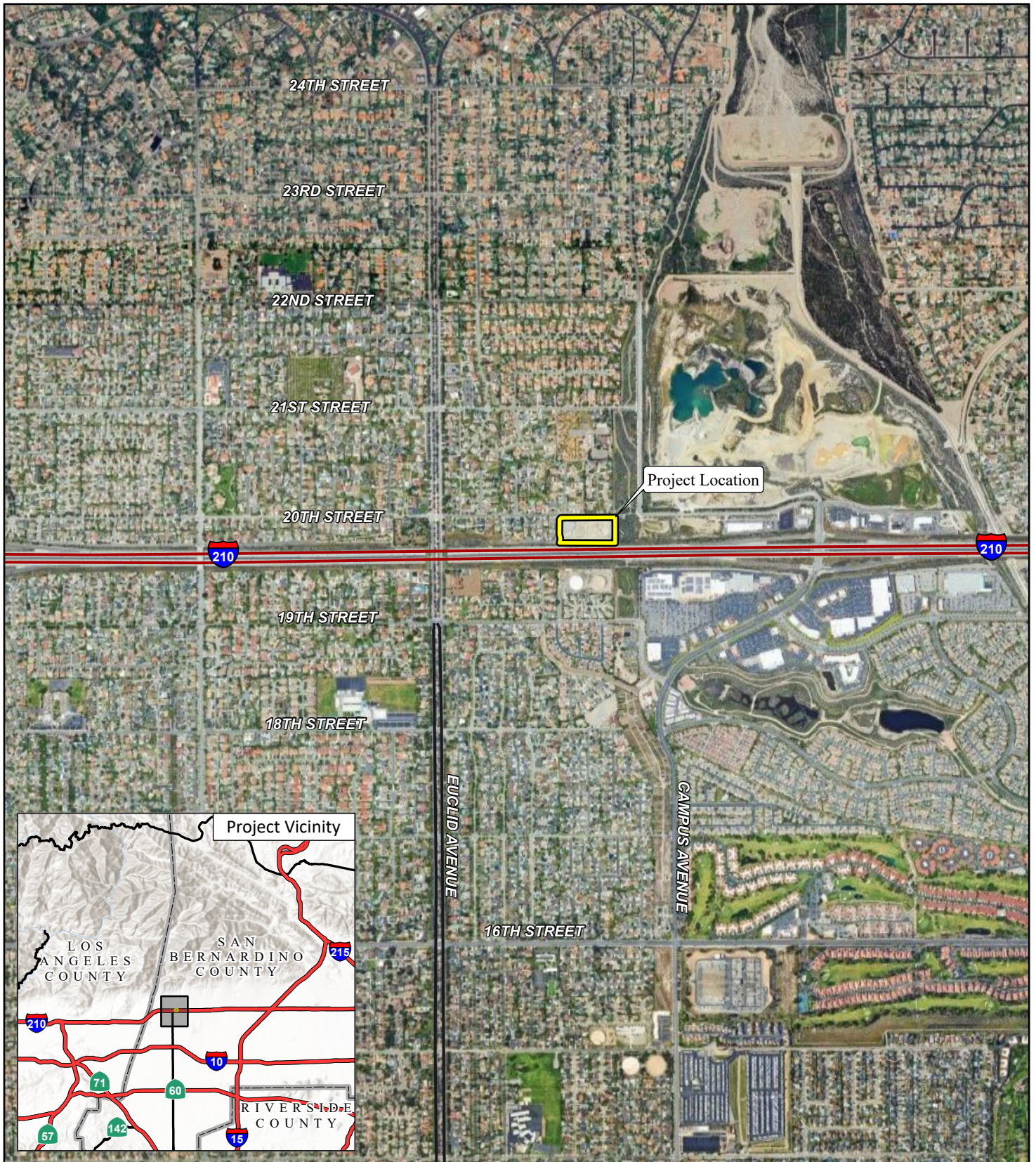


FIGURE 1

LSA

LEGEND

 Project Location



0 830 1660  
FEET

SOURCE: ESRI Streetmap, 2021; Google Earth, 2023

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San Antonio Water Headquarters  
Traffic Impact Analysis  
Regional and Project Location

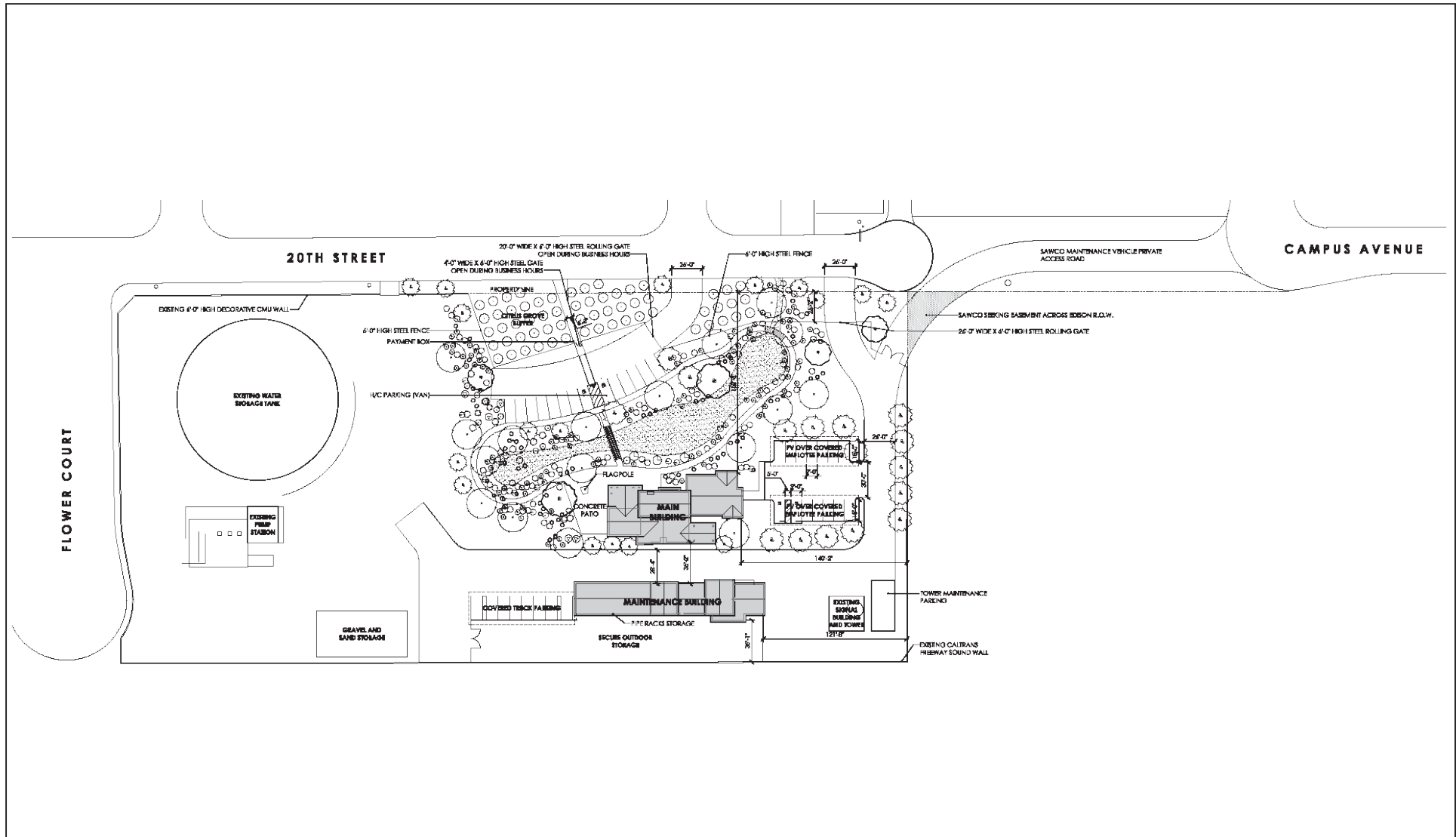
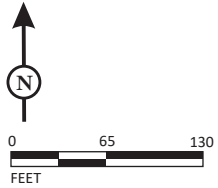


FIGURE 2

LSA



San Antonio Water Headquarters  
 Traffic Impact Analysis  
 Conceptual Site Plan

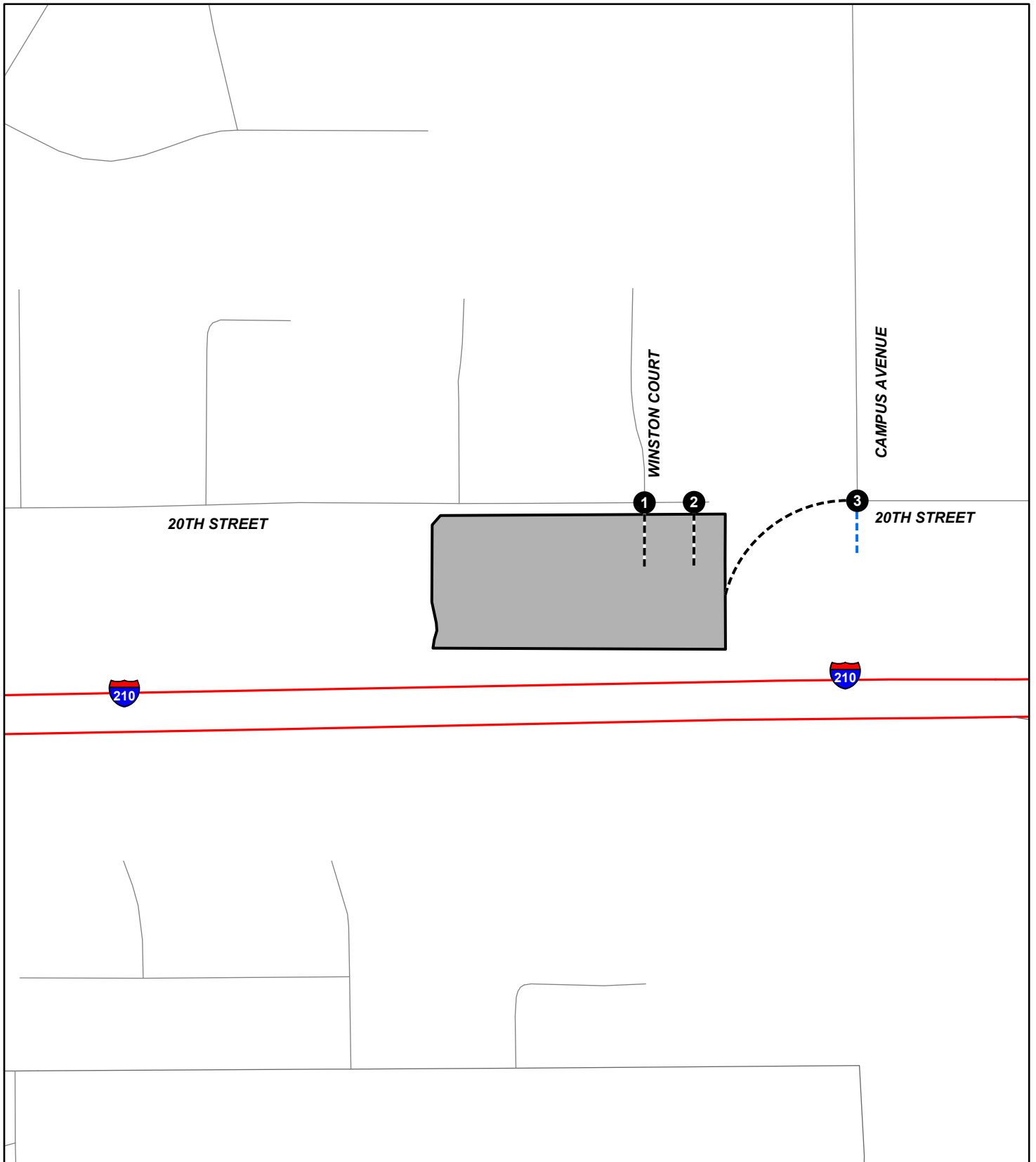
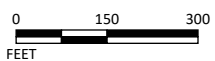


FIGURE 3

LSA

LEGEND

- Project Location
- Study Intersections
- Driveway
- Future Driveway



SOURCE:

San Antonio Water Headquarters  
 Traffic Impact Analysis  
 Study Area Intersections

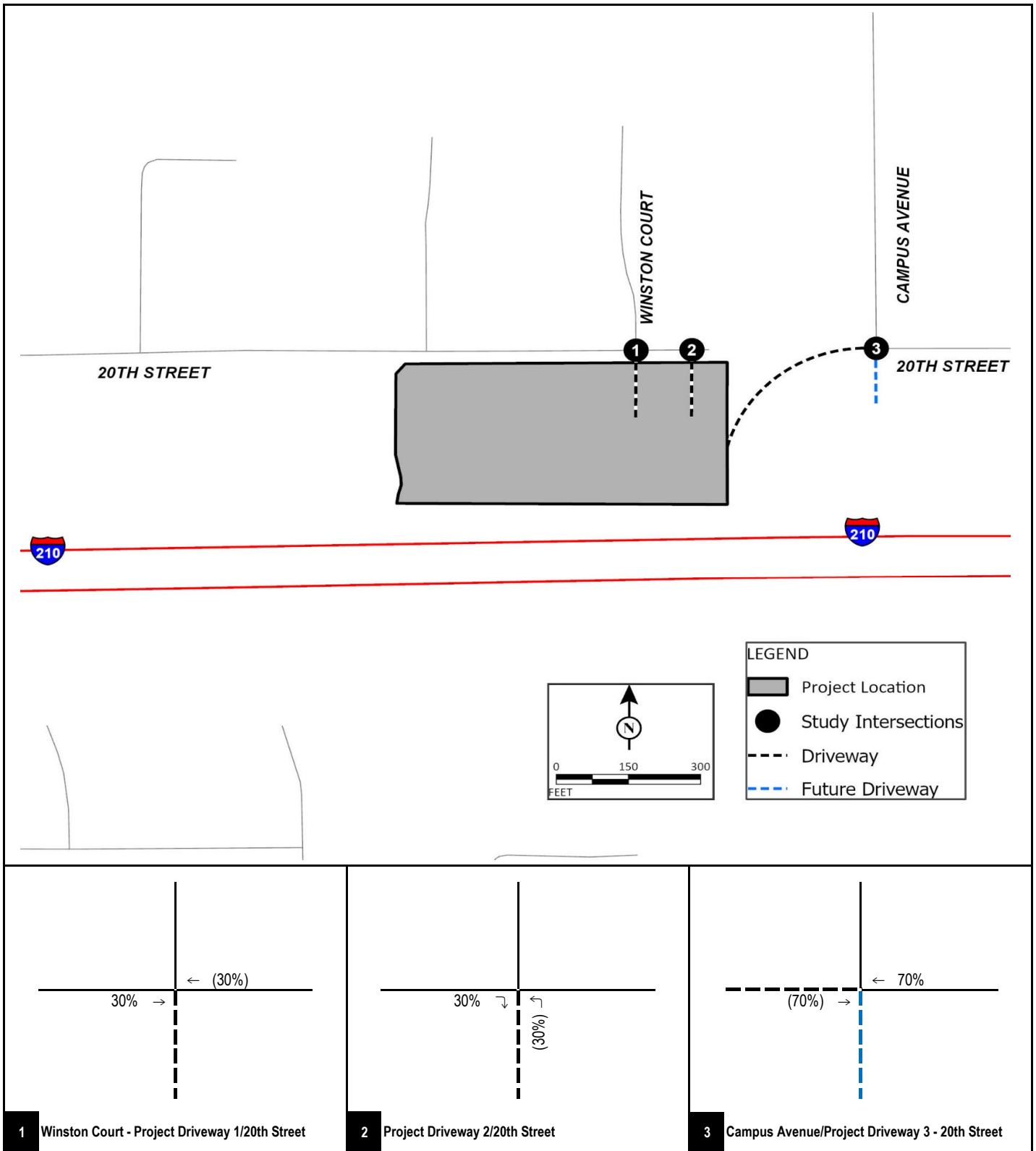


FIGURE 4

**LSA**

XX% (YY%)  
Inbound (Outbound) Distribution

--- Project Driveway  
- - - Future Driveway

San Antonio Water Headquarters  
Traffic Impact Analysis

Project Trip Distribution – Employees

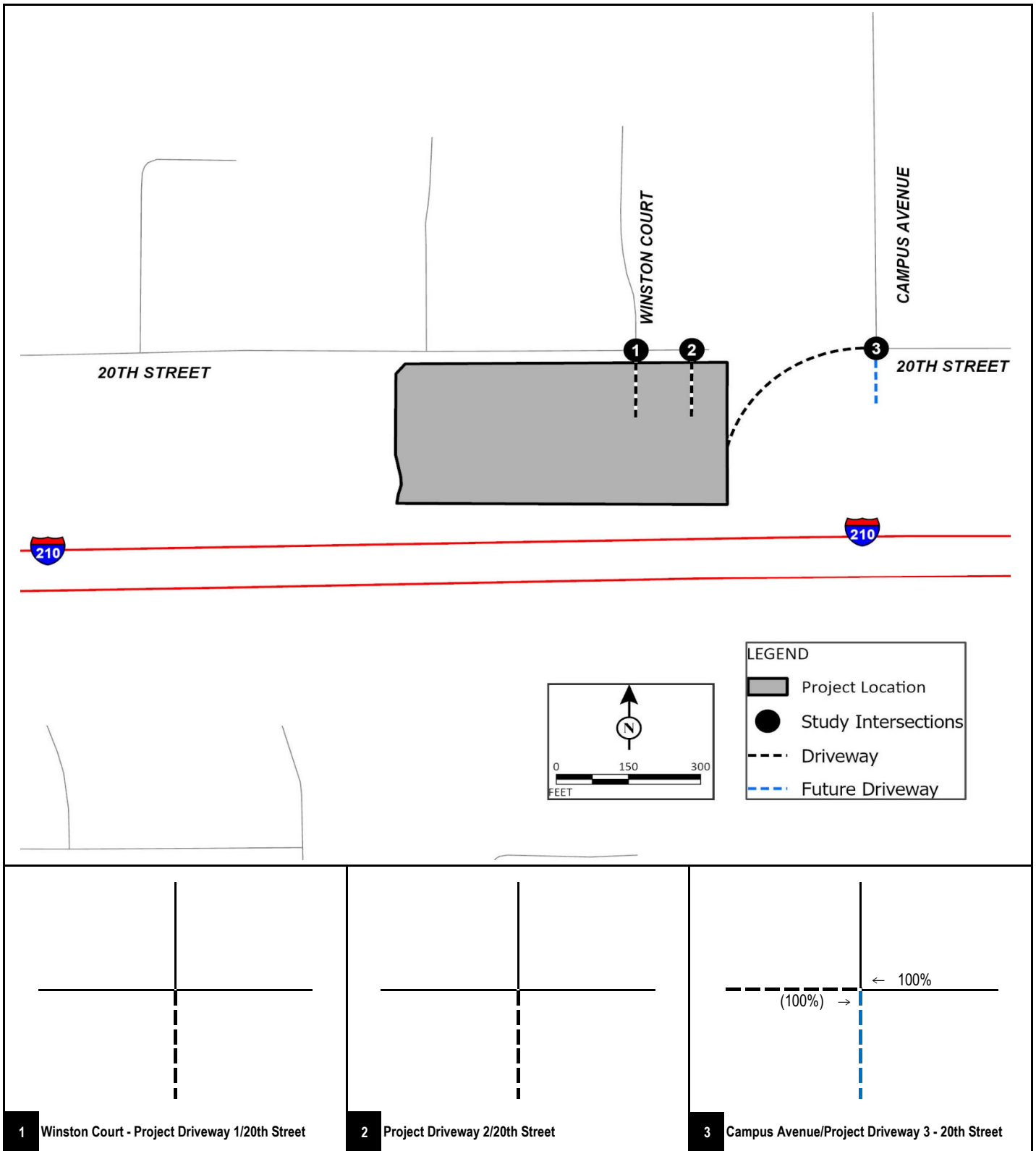


FIGURE 5

**LSA**

XXX% (YYY%)  
Inbound (Outbound) Distribution

--- Project Driveway  
--- Future Driveway

San Antonio Water Headquarters  
Traffic Impact Analysis

Project Trip Distribution – Maintenance Trucks

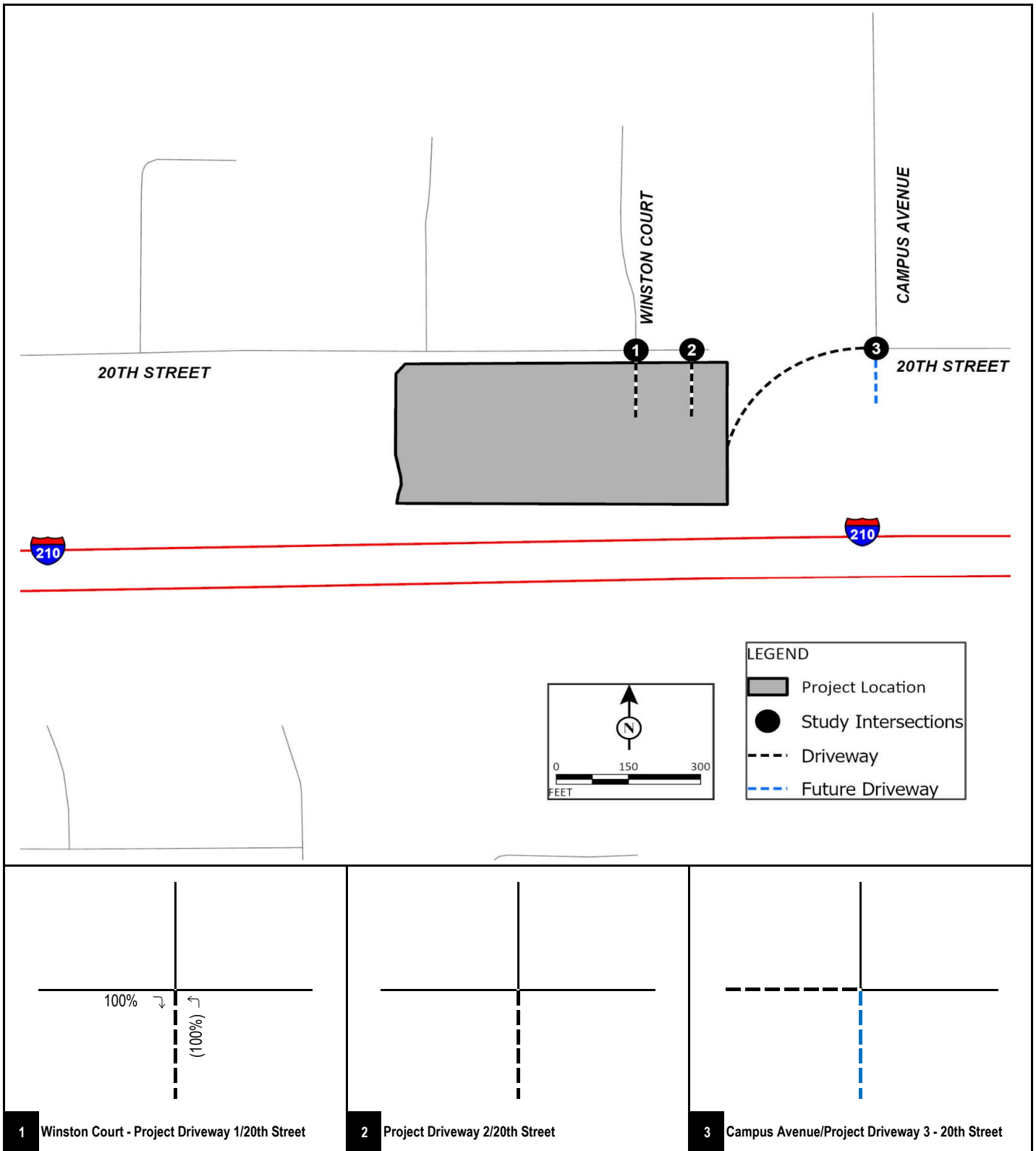


FIGURE 6

**LSA**

XXX% (YYY%)  
Inbound (Outbound) Distribution

--- Project Driveway  
- - - Future Driveway

San Antonio Water Headquarters  
Traffic Impact Analysis

Project Trip Distribution – Customers

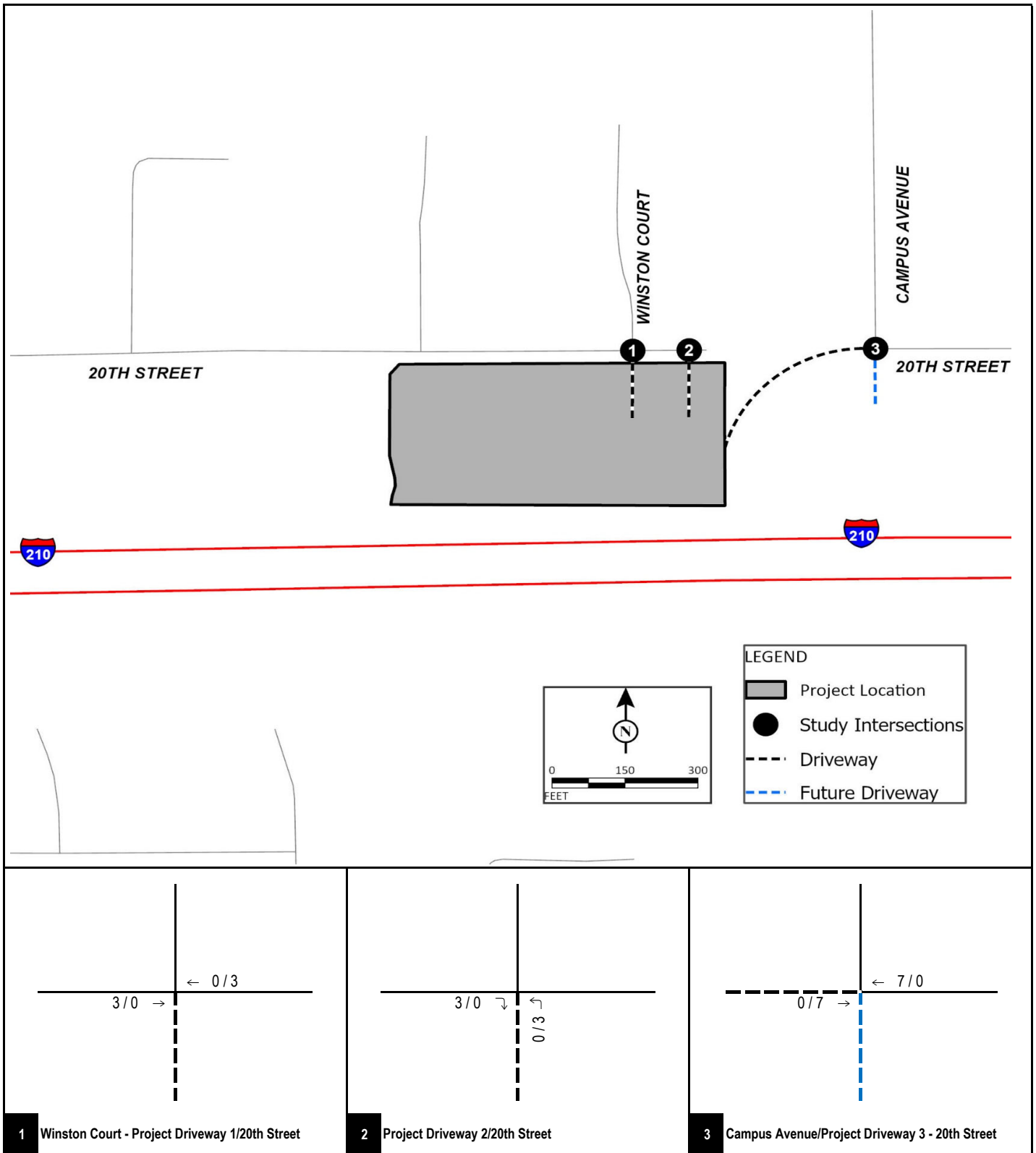


FIGURE 7

**LSA**

XX / YY

AM / PM Peak Hour Trips

--- Project Driveway

--- Future Driveway

San Antonio Water Headquarters  
Traffic Impact Analysis

Project Trip Assignment – Employees

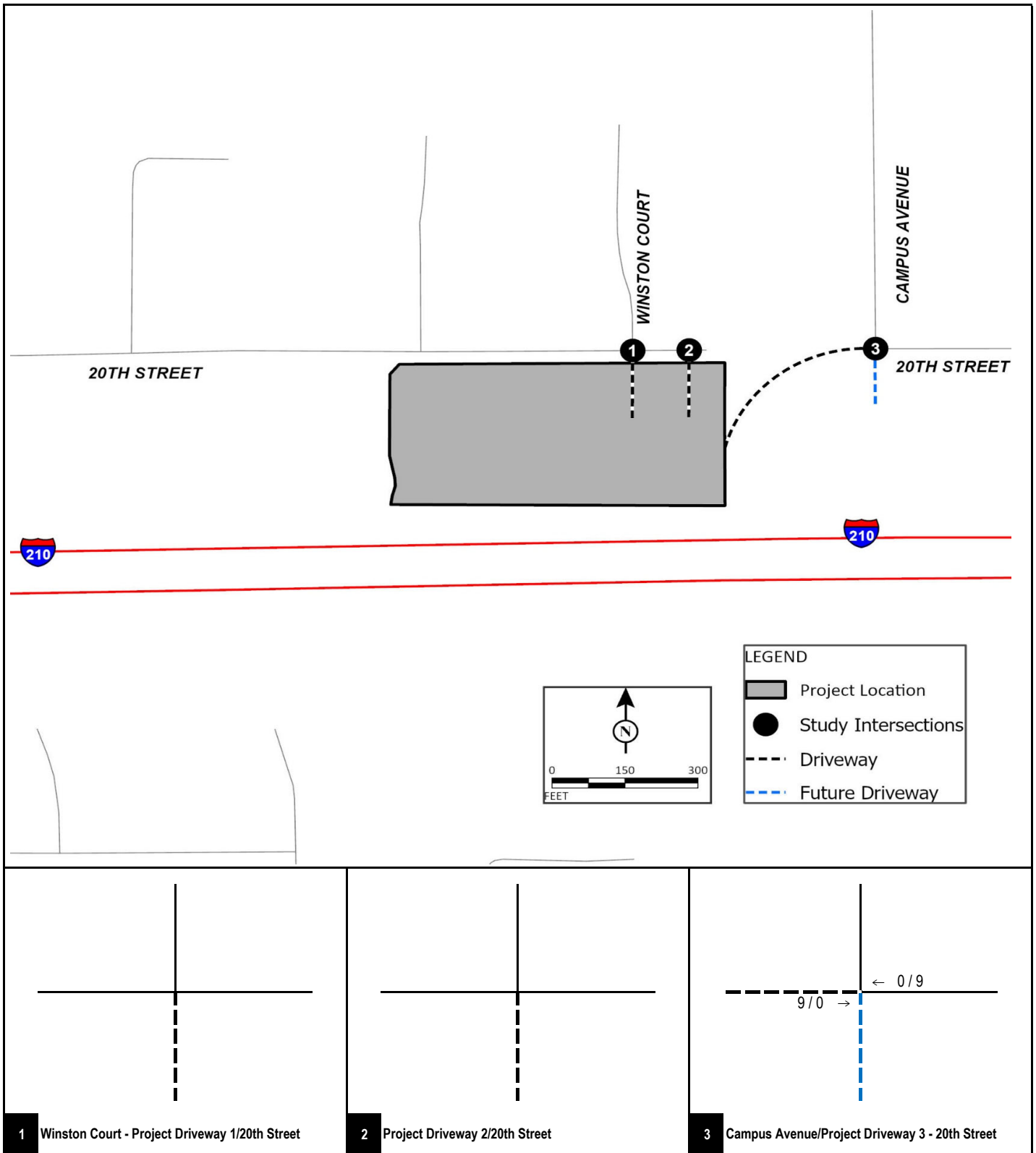


FIGURE 8

**LSA**

XX / YY  
AM / PM Peak Hour PCE Trips

--- Project Driveway  
--- Future Driveway

San Antonio Water Headquarters  
Traffic Impact Analysis

Project Trip Assignment – Maintenance Trucks

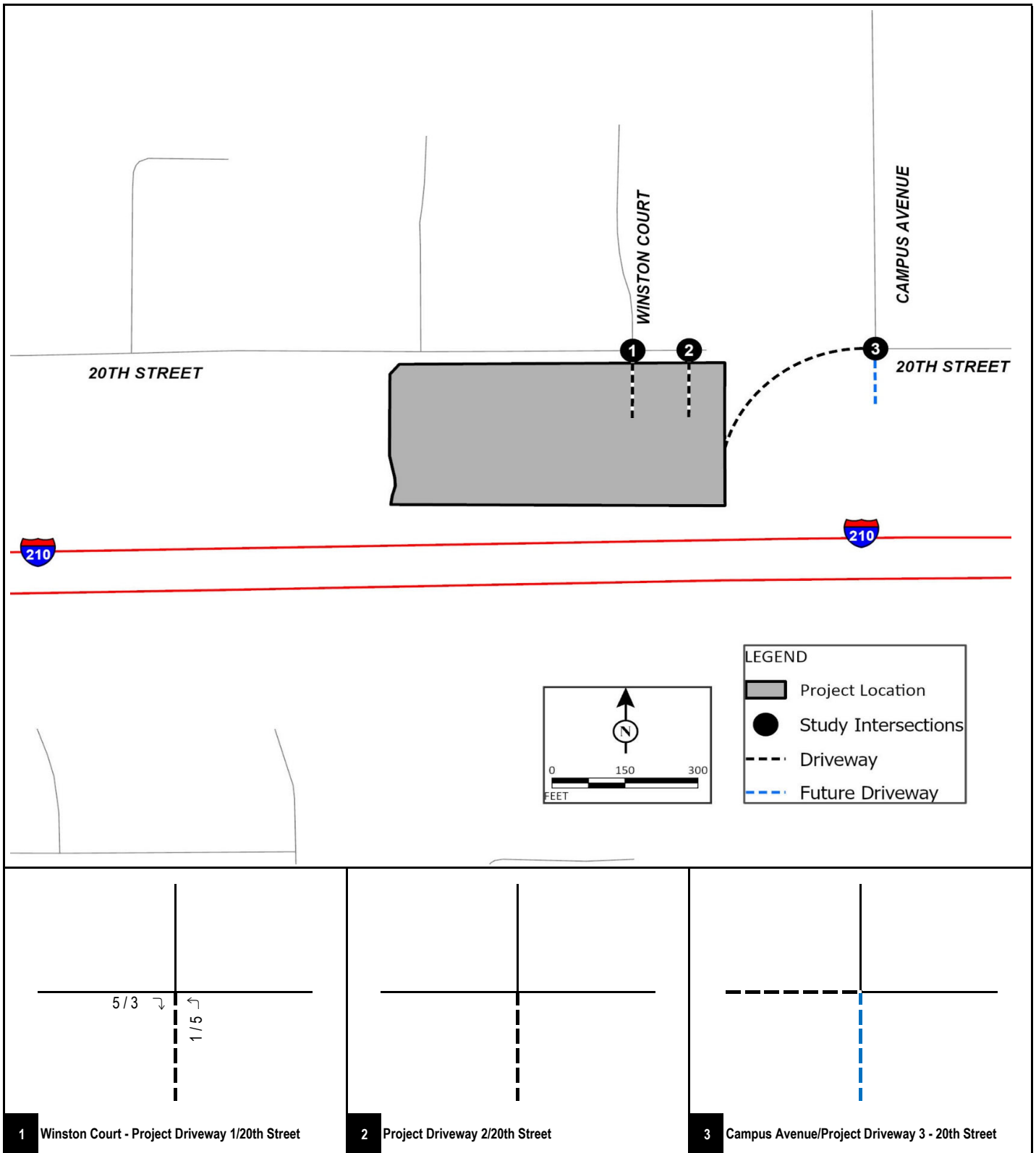


FIGURE 9



XX / YY  
AM / PM Peak Hour Trips

--- Project Driveway  
- - - Future Driveway

San Antonio Water Headquarters  
Traffic Impact Analysis

Project Trip Assignment – Customers

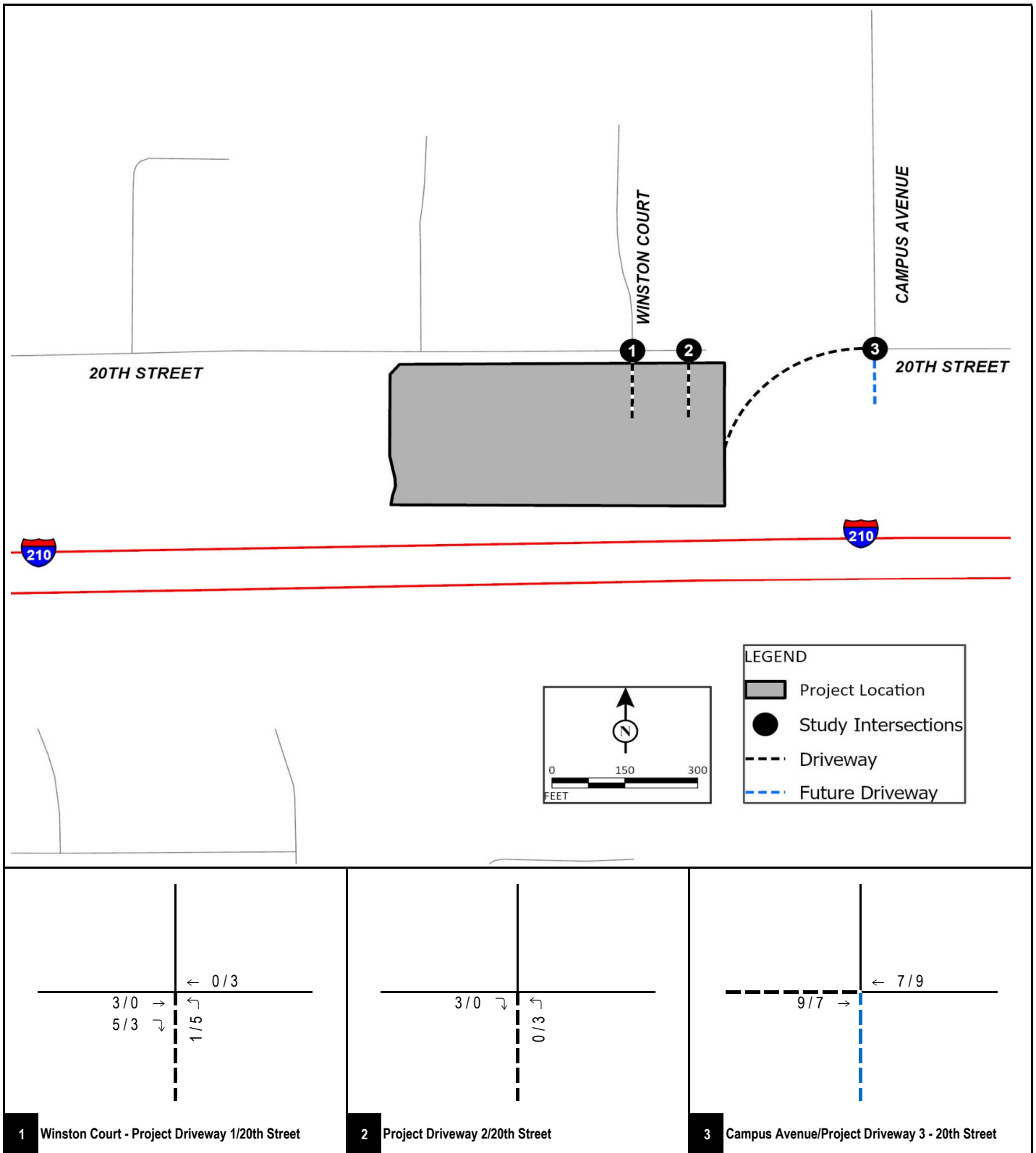


FIGURE 10

**LSA**

XX / YY  
AM / PM Peak Hour PCE Trips

--- Project Driveway  
--- Future Driveway

San Antonio Water Headquarters  
Traffic Impact Analysis  
Total Project Trip Assignment

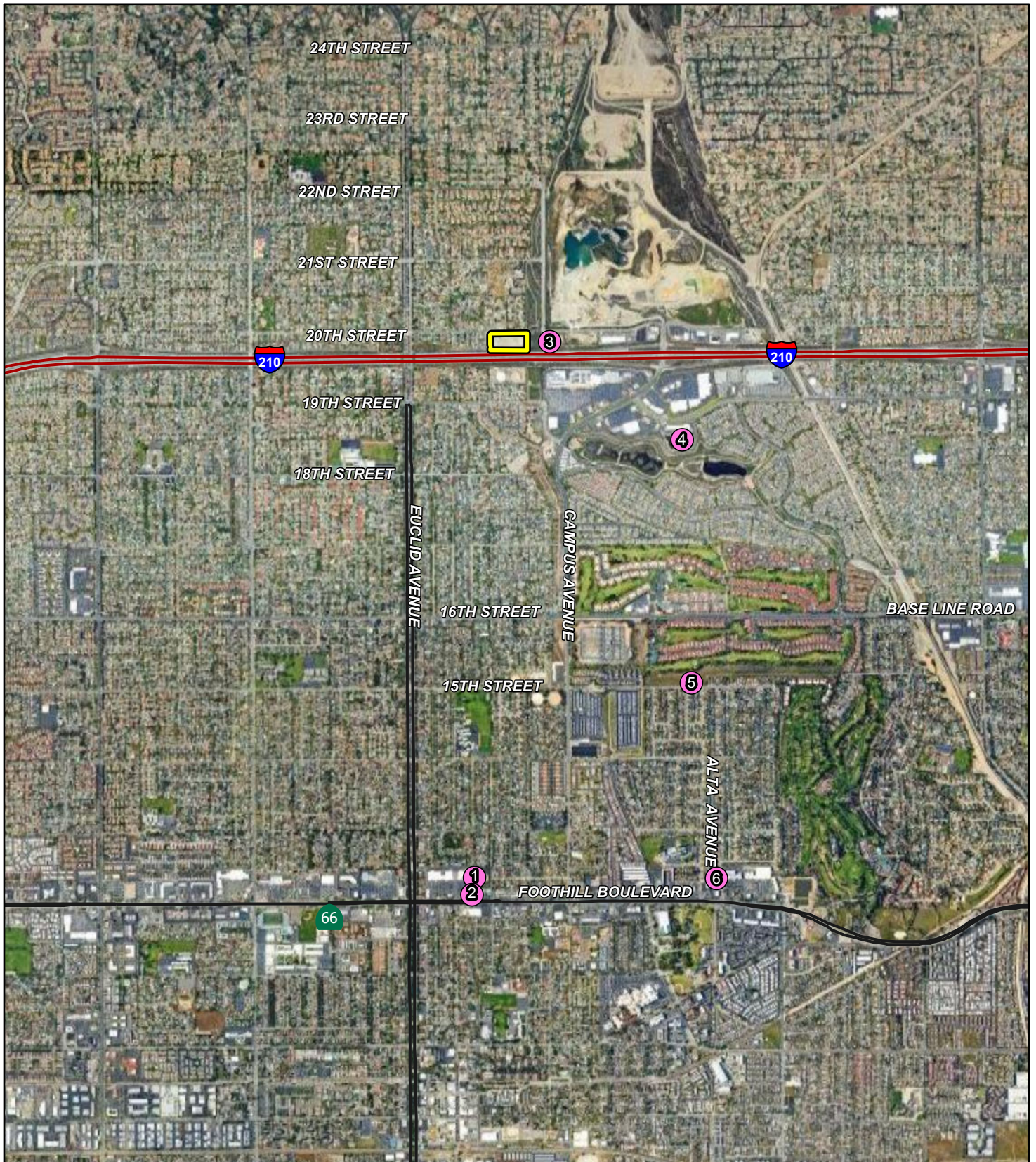


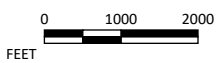


FIGURE 11

LSA

LEGEND

-  Project Location
-  Cumulative Projects



SOURCE: ESRI Streetmap, 2021; Google Earth, 2023

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San Antonio Water Headquarters  
 Traffic Impact Analysis  
 Cumulative Project Locations

TABLES

Table A - Project Trip Generation

Land Uses	Units	A.M. Peak Hour			P.M. Peak Hour			Daily
		In	Out	Total	In	Out	Total	
<b>San Antonio Water Headquarters &amp; Maintenance Buildings</b>								
Employee Trip Generation <sup>1</sup>		10	0	10	0	10	10	20
Employee Maintenance Truck Trip Generation <sup>2</sup>		0	6	6	6	0	6	12
Employee Maintenance Truck PCE Trip Generation <sup>3</sup>		0	9	9	9	0	9	18
<b>Headquarter Building</b>								
Headquarters Building Trip/Unit <sup>4</sup>	3.698 TSF	1.37	0.30	1.67	0.73	1.43	2.16	14.39
Headquarters Building Customer Trip Generation		5	1	6	3	5	8	53
<b>Total PCE Trip Generation</b>		<b>15</b>	<b>10</b>	<b>25</b>	<b>12</b>	<b>15</b>	<b>27</b>	<b>91</b>

Notes:

TSF = thousand square-feet

<sup>1</sup> The employee trip generation was developed based on the project description and operational information.

<sup>2</sup> The maintenance truck trip generation was developed based on the project's operational information. All trucks are 2-axle trucks.

<sup>3</sup> All maintenance truck trips were converted to passenger PCEs using a 1.5 PCE factor for 2-axle trucks based on City of Upland's *Traffic Impact Analysis Guidelines*, dated July 2020.

<sup>4</sup> Rates from Institute of Transportation Engineers (ITE) *Trip Generation Manual*, (11th Edition) for Land Use 712 - "Small Office Building", Setting/Location - 'General Urban/Suburban'.

**Table B - Cumulative Projects**

ID	Jurisdiction	Project Name/Reference	Address/Location	Project Description	Project Units/Area/Other
1	Upland	Amazon Fresh	235 East Foothill Boulevard	Grocery Store	35,000 TSF
2	Upland	Starbucks	275 East Foothill Boulevard	Drive-Through Coffee Shop	1,200 TSF
3	Upland	The Colonies Self Storage	Southeast Corner of 20th Street and Campus Avenue	Self Storage	164,570 TSF
4	Upland	Colony Condos	1160 East 19th Street	Multi-Family Residential	60 DU
5	Upland	Villa Serena	15th Street, between Fernando Avenue and Monte Verde Avenue	Single-Family Residential	65 DU
6	Upland	Upland Oncology Center	1113 North Alta Avenue	Medical Building	3,361 TSF

**Notes:**

DU = Dwelling Units; TSF = Thousand Square Feet.

---

## APPENDIX B

# TRAFFIC COUNT SHEETS

City of Upland  
 N/S: Winston Court  
 E/W: E 20th Street  
 Weather: Clear

File Name : 01\_UPL\_Win\_20th AM  
 Site Code : 00324879  
 Start Date : 10/10/2024  
 Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

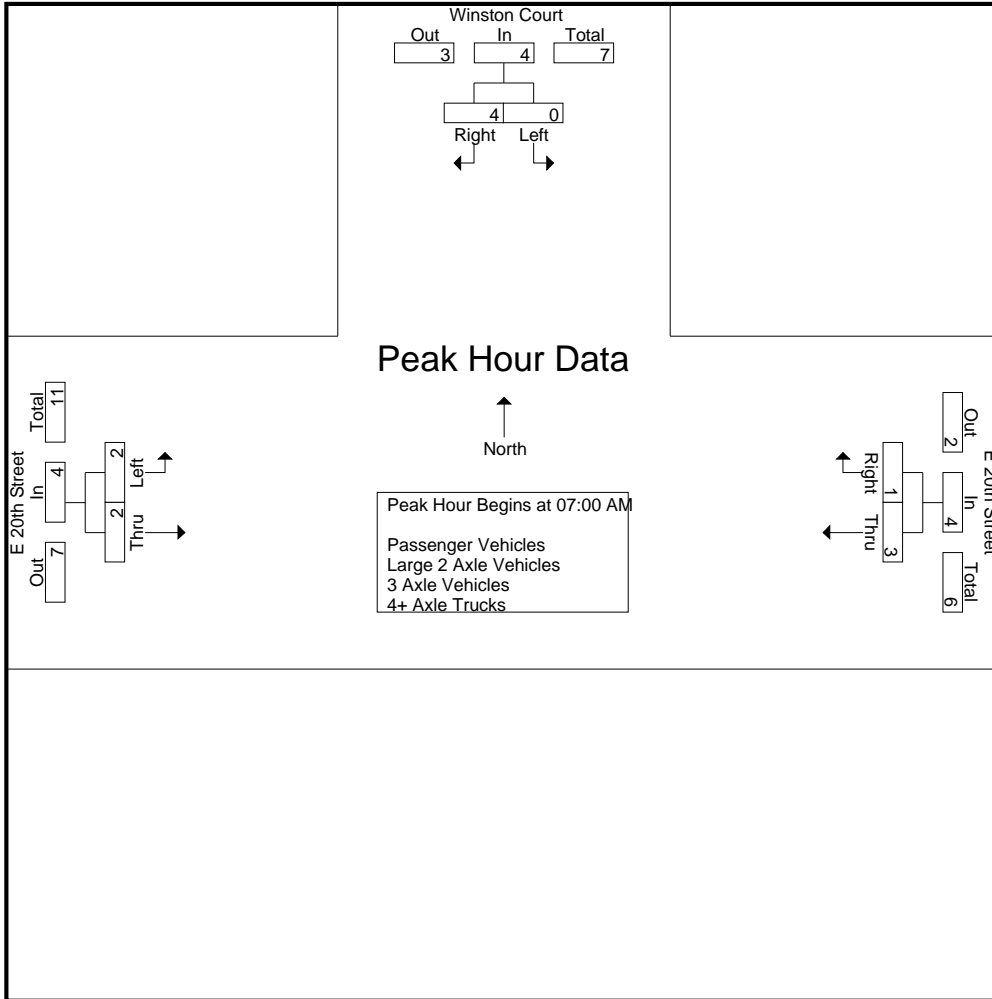
Start Time	Winston Court Southbound			E 20th Street Westbound			E 20th Street Eastbound			Int. Total
	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
07:00 AM	0	1	1	1	0	1	2	0	2	4
07:15 AM	0	0	0	1	0	1	0	1	1	2
07:30 AM	0	0	0	1	0	1	0	1	1	2
07:45 AM	0	3	3	0	1	1	0	0	0	4
Total	0	4	4	3	1	4	2	2	4	12
08:00 AM	0	0	0	0	0	0	1	0	1	1
08:15 AM	0	2	2	0	0	0	0	0	0	2
08:30 AM	0	0	0	0	0	0	1	0	1	1
08:45 AM	0	1	1	0	0	0	2	0	2	3
Total	0	3	3	0	0	0	4	0	4	7
Grand Total	0	7	7	3	1	4	6	2	8	19
Apprch %	0	100		75	25		75	25		
Total %	0	36.8	36.8	15.8	5.3	21.1	31.6	10.5	42.1	
Passenger Vehicles	0	6	6	1	0	1	6	0	6	13
% Passenger Vehicles	0	85.7	85.7	33.3	0	25	100	0	75	68.4
Large 2 Axle Vehicles	0	0	0	2	0	2	0	1	1	3
% Large 2 Axle Vehicles	0	0	0	66.7	0	50	0	50	12.5	15.8
3 Axle Vehicles	0	1	1	0	1	1	0	1	1	3
% 3 Axle Vehicles	0	14.3	14.3	0	100	25	0	50	12.5	15.8
4+ Axle Trucks	0	0	0	0	0	0	0	0	0	0
% 4+ Axle Trucks	0	0	0	0	0	0	0	0	0	0

Start Time	Winston Court Southbound			E 20th Street Westbound			E 20th Street Eastbound			Int. Total
	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
07:00 AM	0	1	1	1	0	1	2	0	2	4
07:15 AM	0	0	0	1	0	1	0	1	1	2
07:30 AM	0	0	0	1	0	1	0	1	1	2
07:45 AM	0	3	3	0	1	1	0	0	0	4
Total Volume	0	4	4	3	1	4	2	2	4	12
% App. Total	0	100		75	25		50	50		
PHF	.000	.333	.333	.750	.250	1.00	.250	.500	.500	.750

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1  
 Peak Hour for Entire Intersection Begins at 07:00 AM

City of Upland  
 N/S: Winston Court  
 E/W: E 20th Street  
 Weather: Clear

File Name : 01\_UPL\_Win\_20th AM  
 Site Code : 00324879  
 Start Date : 10/10/2024  
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Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1  
 Peak Hour for Each Approach Begins at:

	07:30 AM			07:00 AM			07:00 AM		
+0 mins.	0	0	0	1	0	1	2	0	2
+15 mins.	0	3	3	1	0	1	0	1	1
+30 mins.	0	0	0	1	0	1	0	1	1
+45 mins.	0	2	2	0	1	1	0	0	0
Total Volume	0	5	5	3	1	4	2	2	4
% App. Total	0	100		75	25		50	50	
PHF	.000	.417	.417	.750	.250	1.000	.250	.500	.500

City of Upland  
 N/S: Winston Court  
 E/W: E 20th Street  
 Weather: Clear

File Name : 01\_UPL\_Win\_20th AM  
 Site Code : 00324879  
 Start Date : 10/10/2024  
 Page No : 1

Groups Printed- Passenger Vehicles

Start Time	Winston Court Southbound			E 20th Street Westbound			E 20th Street Eastbound			Int. Total
	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
07:00 AM	0	1	1	1	0	1	2	0	2	4
07:15 AM	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	2	2	0	0	0	0	0	0	2
Total	0	3	3	1	0	1	2	0	2	6
08:00 AM	0	0	0	0	0	0	1	0	1	1
08:15 AM	0	2	2	0	0	0	0	0	0	2
08:30 AM	0	0	0	0	0	0	1	0	1	1
08:45 AM	0	1	1	0	0	0	2	0	2	3
Total	0	3	3	0	0	0	4	0	4	7
Grand Total	0	6	6	1	0	1	6	0	6	13
Apprch %	0	100		100	0		100	0		
Total %	0	46.2	46.2	7.7	0	7.7	46.2	0	46.2	

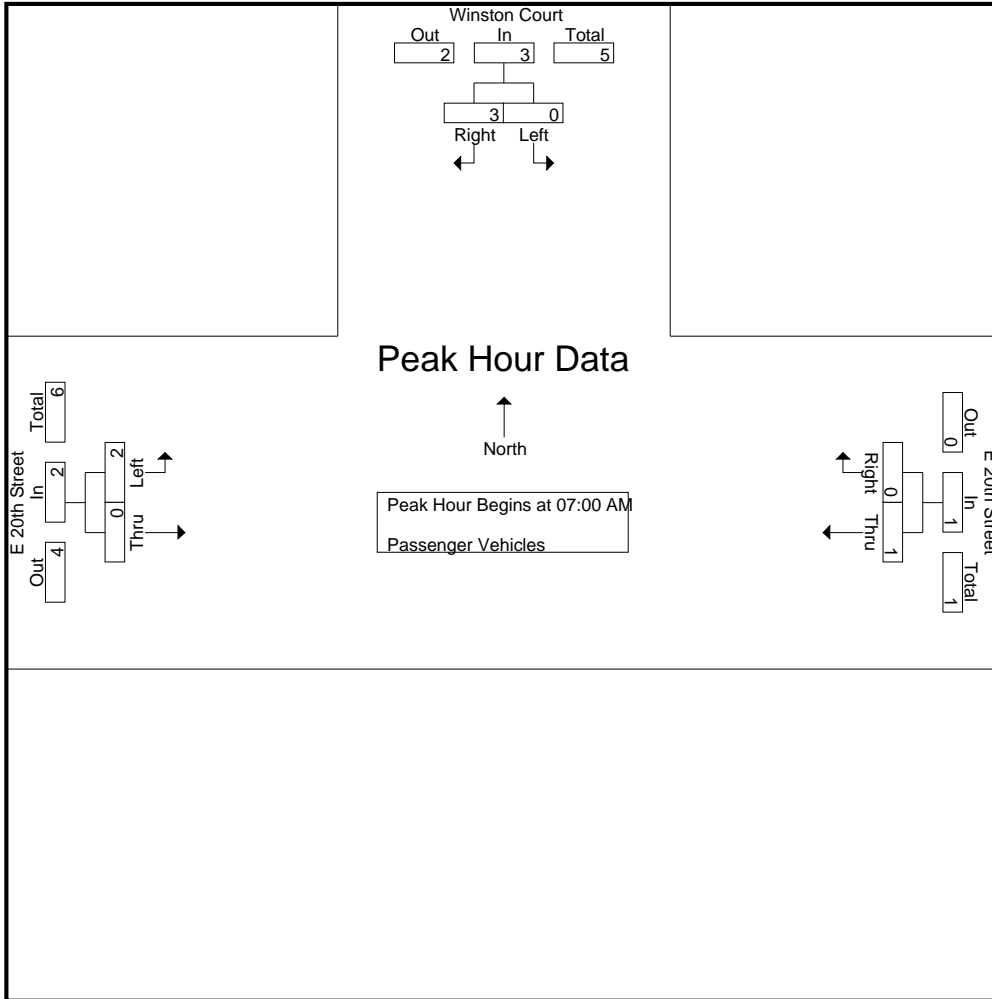
Start Time	Winston Court Southbound			E 20th Street Westbound			E 20th Street Eastbound			Int. Total
	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
07:00 AM	0	1	1	1	0	1	2	0	2	4
07:15 AM	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	2	2	0	0	0	0	0	0	2
Total Volume	0	3	3	1	0	1	2	0	2	6
% App. Total	0	100		100	0		100	0		
PHF	.000	.375	.375	.250	.000	.250	.250	.000	.250	.375

Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 07:00 AM

City of Upland  
 N/S: Winston Court  
 E/W: E 20th Street  
 Weather: Clear

File Name : 01\_UPL\_Win\_20th AM  
 Site Code : 00324879  
 Start Date : 10/10/2024  
 Page No : 2



Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1  
 Peak Hour for Each Approach Begins at:

	07:00 AM			07:00 AM			07:00 AM		
+0 mins.	0	1	1	1	0	1	2	0	2
+15 mins.	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0
+45 mins.	0	2	2	0	0	0	0	0	0
Total Volume	0	3	3	1	0	1	2	0	2
% App. Total	0	100		100	0		100	0	
PHF	.000	.375	.375	.250	.000	.250	.250	.000	.250

City of Upland  
 N/S: Winston Court  
 E/W: E 20th Street  
 Weather: Clear

File Name : 01\_UPL\_Win\_20th AM  
 Site Code : 00324879  
 Start Date : 10/10/2024  
 Page No : 1

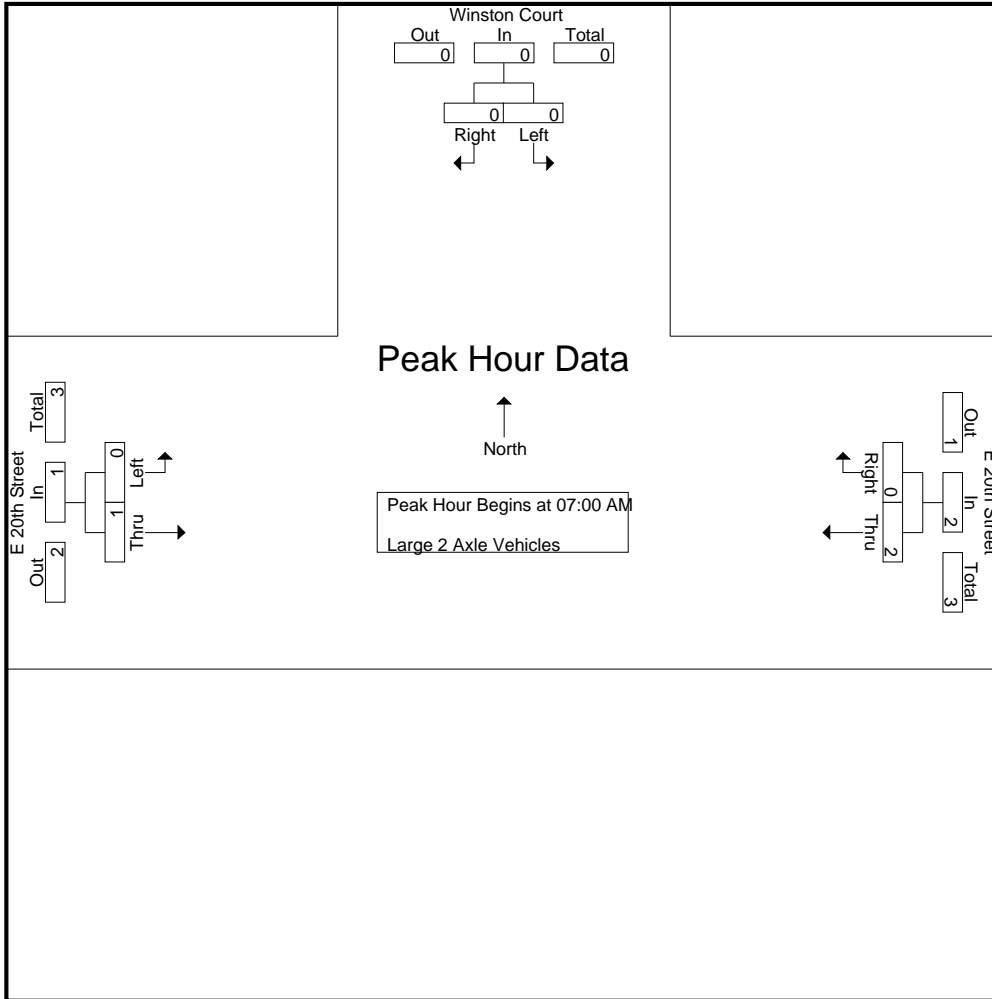
Groups Printed- Large 2 Axle Vehicles

Start Time	Winston Court Southbound			E 20th Street Westbound			E 20th Street Eastbound			Int. Total
	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
07:00 AM	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	1	0	1	0	1	1	2
07:30 AM	0	0	0	1	0	1	0	0	0	1
07:45 AM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	2	0	2	0	1	1	3
08:00 AM	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	2	0	2	0	1	1	3
Apprch %	0	0	0	100	0	0	0	100	0	0
Total %	0	0	0	66.7	0	66.7	0	33.3	33.3	0

Start Time	Winston Court Southbound			E 20th Street Westbound			E 20th Street Eastbound			Int. Total
	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	1	0	1	0	1	1	2
07:30 AM	0	0	0	1	0	1	0	0	0	1
07:45 AM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	2	0	2	0	1	1	3
% App. Total	0	0	0	100	0	0	0	100	0	0
PHF	.000	.000	.000	.500	.000	.500	.000	.250	.250	.375

City of Upland  
 N/S: Winston Court  
 E/W: E 20th Street  
 Weather: Clear

File Name : 01\_UPL\_Win\_20th AM  
 Site Code : 00324879  
 Start Date : 10/10/2024  
 Page No : 2



Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1  
 Peak Hour for Each Approach Begins at:

	07:00 AM			07:00 AM			07:00 AM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	1	0	1	0	1	1
+30 mins.	0	0	0	1	0	1	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	2	0	2	0	1	1
% App. Total	0	0	0	100	0	100	0	100	100
PHF	.000	.000	.000	.500	.000	.500	.000	.250	.250

City of Upland  
 N/S: Winston Court  
 E/W: E 20th Street  
 Weather: Clear

File Name : 01\_UPL\_Win\_20th AM  
 Site Code : 00324879  
 Start Date : 10/10/2024  
 Page No : 1

Groups Printed- 3 Axle Vehicles

Start Time	Winston Court Southbound			E 20th Street Westbound			E 20th Street Eastbound			Int. Total
	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
07:00 AM	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	1	1	1
07:45 AM	0	1	1	0	1	1	0	0	0	2
Total	0	1	1	0	1	1	0	1	1	3
08:00 AM	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
Grand Total	0	1	1	0	1	1	0	1	1	3
Apprch %	0	100		0	100		0	100		
Total %	0	33.3	33.3	0	33.3	33.3	0	33.3	33.3	

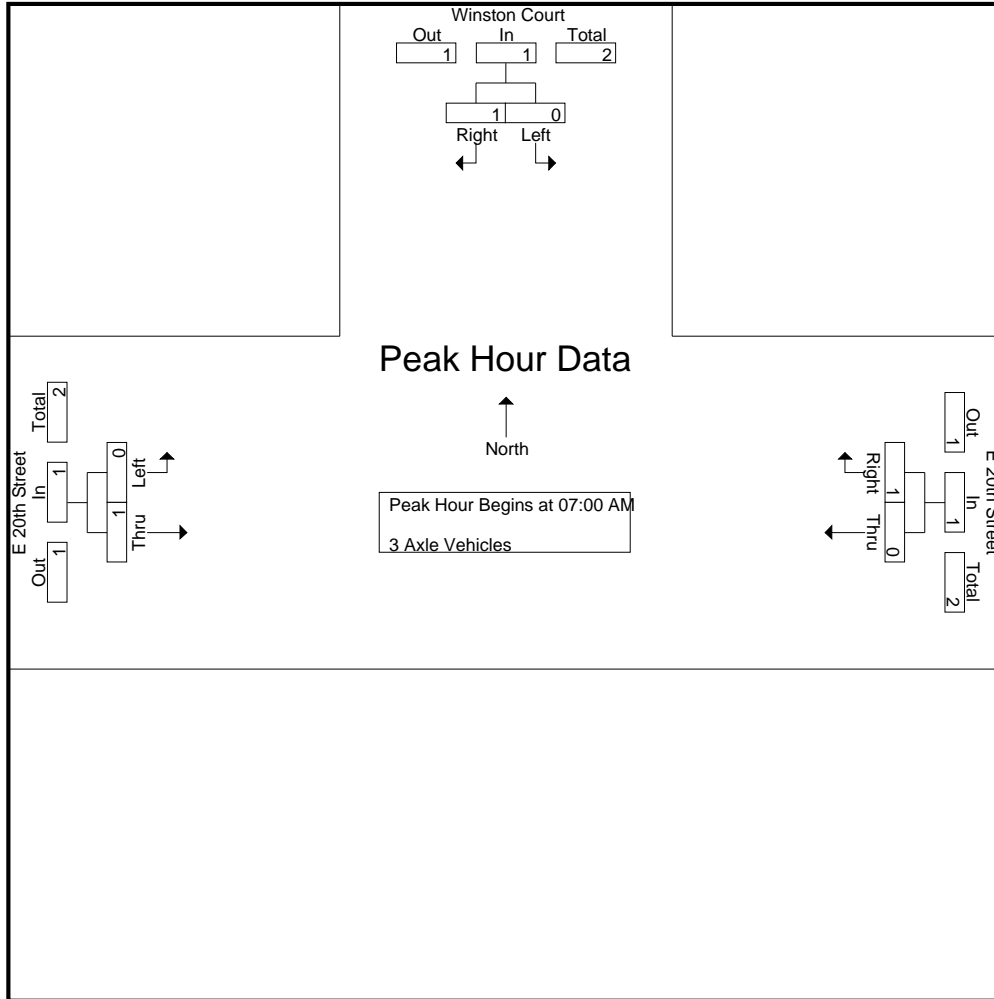
Start Time	Winston Court Southbound			E 20th Street Westbound			E 20th Street Eastbound			Int. Total
	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
07:00 AM	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	1	1	1
07:45 AM	0	1	1	0	1	1	0	0	0	2
Total Volume	0	1	1	0	1	1	0	1	1	3
% App. Total	0	100		0	100		0	100		
PHF	.000	.250	.250	.000	.250	.250	.000	.250	.250	.375

Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 07:00 AM

City of Upland  
 N/S: Winston Court  
 E/W: E 20th Street  
 Weather: Clear

File Name : 01\_UPL\_Win\_20th AM  
 Site Code : 00324879  
 Start Date : 10/10/2024  
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Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1  
 Peak Hour for Each Approach Begins at:

	07:00 AM			07:00 AM			07:00 AM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	1	1
+45 mins.	0	1	1	0	1	1	0	0	0
Total Volume	0	1	1	0	1	1	0	1	1
% App. Total	0	100		0	100		0	100	
PHF	.000	.250	.250	.000	.250	.250	.000	.250	.250





City of Upland  
 N/S: Winston Court  
 E/W: E 20th Street  
 Weather: Clear

File Name : 01\_UPL\_Win\_20th PM  
 Site Code : 00324879  
 Start Date : 10/10/2024  
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Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

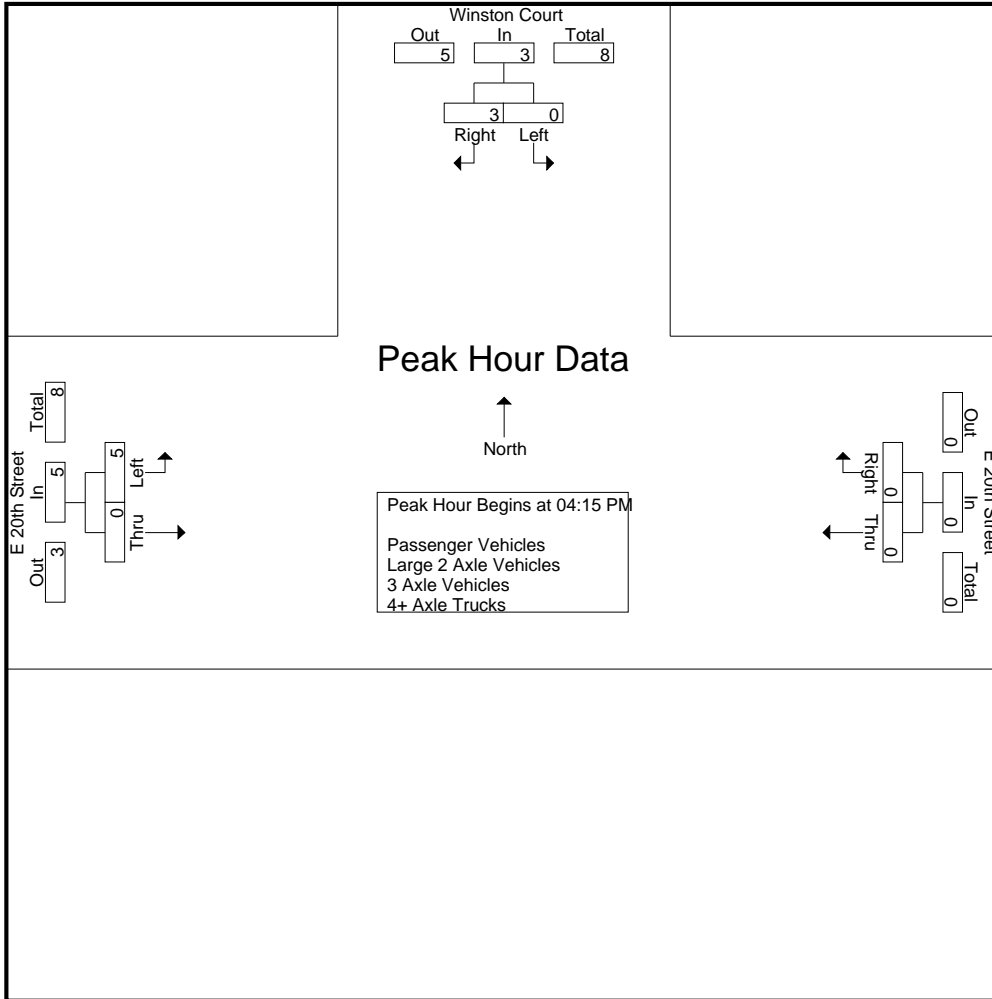
Start Time	Winston Court Southbound			E 20th Street Westbound			E 20th Street Eastbound			Int. Total
	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
04:00 PM	0	1	1	0	0	0	0	0	0	1
04:15 PM	0	0	0	0	0	0	1	0	1	1
04:30 PM	0	1	1	0	0	0	1	0	1	2
04:45 PM	0	2	2	0	0	0	1	0	1	3
Total	0	4	4	0	0	0	3	0	3	7
05:00 PM	0	0	0	0	0	0	2	0	2	2
05:15 PM	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	2	1	3	3
Total	0	0	0	0	0	0	4	1	5	5
Grand Total	0	4	4	0	0	0	7	1	8	12
Apprch %	0	100		0	0		87.5	12.5		
Total %	0	33.3	33.3	0	0	0	58.3	8.3	66.7	
Passenger Vehicles	0	4	4	0	0	0	7	1	8	12
% Passenger Vehicles	0	100	100	0	0	0	100	100	100	100
Large 2 Axle Vehicles	0	0	0	0	0	0	0	0	0	0
% Large 2 Axle Vehicles	0	0	0	0	0	0	0	0	0	0
3 Axle Vehicles	0	0	0	0	0	0	0	0	0	0
% 3 Axle Vehicles	0	0	0	0	0	0	0	0	0	0
4+ Axle Trucks	0	0	0	0	0	0	0	0	0	0
% 4+ Axle Trucks	0	0	0	0	0	0	0	0	0	0

Start Time	Winston Court Southbound			E 20th Street Westbound			E 20th Street Eastbound			Int. Total
	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
04:15 PM	0	0	0	0	0	0	1	0	1	1
04:30 PM	0	1	1	0	0	0	1	0	1	2
04:45 PM	0	2	2	0	0	0	1	0	1	3
05:00 PM	0	0	0	0	0	0	2	0	2	2
Total Volume	0	3	3	0	0	0	5	0	5	8
% App. Total	0	100		0	0		100	0		
PHF	.000	.375	.375	.000	.000	.000	.625	.000	.625	.667

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1  
 Peak Hour for Entire Intersection Begins at 04:15 PM

City of Upland  
 N/S: Winston Court  
 E/W: E 20th Street  
 Weather: Clear

File Name : 01\_UPL\_Win\_20th PM  
 Site Code : 00324879  
 Start Date : 10/10/2024  
 Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1  
 Peak Hour for Each Approach Begins at:

	04:00 PM			04:00 PM			04:15 PM		
+0 mins.	0	1	1	0	0	0	1	0	1
+15 mins.	0	0	0	0	0	0	1	0	1
+30 mins.	0	1	1	0	0	0	1	0	1
+45 mins.	0	2	2	0	0	0	2	0	2
Total Volume	0	4	4	0	0	0	5	0	5
% App. Total	0	100		0	0		100	0	
PHF	.000	.500	.500	.000	.000	.000	.625	.000	.625

City of Upland  
 N/S: Winston Court  
 E/W: E 20th Street  
 Weather: Clear

File Name : 01\_UPL\_Win\_20th PM  
 Site Code : 00324879  
 Start Date : 10/10/2024  
 Page No : 1

Groups Printed- Passenger Vehicles

Start Time	Winston Court Southbound			E 20th Street Westbound			E 20th Street Eastbound			Int. Total
	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
04:00 PM	0	1	1	0	0	0	0	0	0	1
04:15 PM	0	0	0	0	0	0	1	0	1	1
04:30 PM	0	1	1	0	0	0	1	0	1	2
04:45 PM	0	2	2	0	0	0	1	0	1	3
Total	0	4	4	0	0	0	3	0	3	7
05:00 PM	0	0	0	0	0	0	2	0	2	2
05:15 PM	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	2	1	3	3
Total	0	0	0	0	0	0	4	1	5	5
Grand Total	0	4	4	0	0	0	7	1	8	12
Apprch %	0	100		0	0		87.5	12.5		
Total %	0	33.3	33.3	0	0	0	58.3	8.3	66.7	

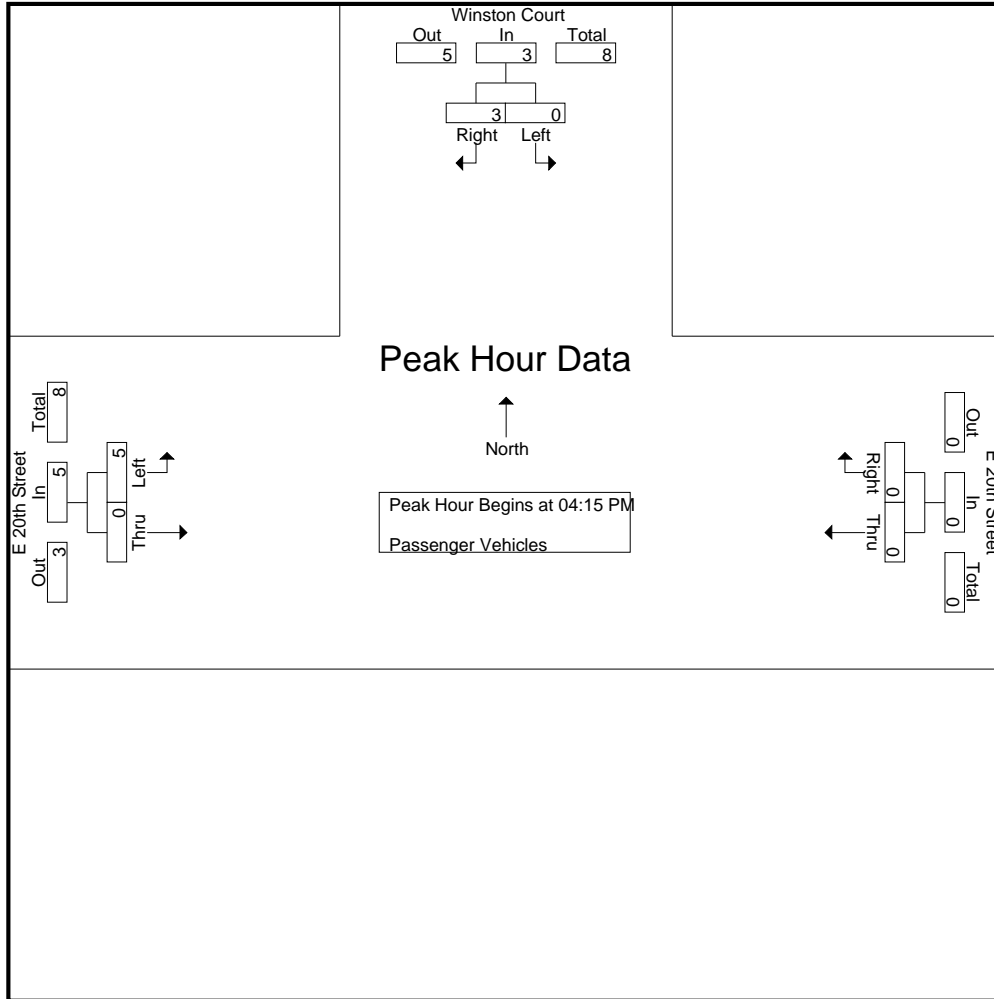
Start Time	Winston Court Southbound			E 20th Street Westbound			E 20th Street Eastbound			Int. Total
	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
04:15 PM	0	0	0	0	0	0	1	0	1	1
04:30 PM	0	1	1	0	0	0	1	0	1	2
04:45 PM	0	2	2	0	0	0	1	0	1	3
05:00 PM	0	0	0	0	0	0	2	0	2	2
Total Volume	0	3	3	0	0	0	5	0	5	8
% App. Total	0	100		0	0		100	0		
PHF	.000	.375	.375	.000	.000	.000	.625	.000	.625	.667

Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:15 PM

City of Upland  
 N/S: Winston Court  
 E/W: E 20th Street  
 Weather: Clear

File Name : 01\_UPL\_Win\_20th PM  
 Site Code : 00324879  
 Start Date : 10/10/2024  
 Page No : 2



Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1  
 Peak Hour for Each Approach Begins at:

	04:15 PM			04:15 PM			04:15 PM		
+0 mins.	0	0	0	0	0	0	1	0	1
+15 mins.	0	1	1	0	0	0	1	0	1
+30 mins.	0	2	2	0	0	0	1	0	1
+45 mins.	0	0	0	0	0	0	2	0	2
Total Volume	0	3	3	0	0	0	5	0	5
% App. Total	0	100		0	0		100	0	
PHF	.000	.375	.375	.000	.000	.000	.625	.000	.625

City of Upland  
 N/S: Winston Court  
 E/W: E 20th Street  
 Weather: Clear

File Name : 01\_UPL\_Win\_20th PM  
 Site Code : 00324879  
 Start Date : 10/10/2024  
 Page No : 1

Groups Printed- Large 2 Axle Vehicles

Start Time	Winston Court Southbound			E 20th Street Westbound			E 20th Street Eastbound			Int. Total
	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
04:00 PM	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0		0	0		0	0		
Total %										

Start Time	Winston Court Southbound			E 20th Street Westbound			E 20th Street Eastbound			Int. Total
	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
04:15 PM	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:15 PM







City of Upland  
 N/S: Winston Court  
 E/W: E 20th Street  
 Weather: Clear

File Name : 01\_UPL\_Win\_20th PM  
 Site Code : 00324879  
 Start Date : 10/10/2024  
 Page No : 1

Groups Printed- 4+ Axle Trucks

Start Time	Winston Court Southbound			E 20th Street Westbound			E 20th Street Eastbound			Int. Total
	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
04:00 PM	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0		0	0		0	0		
Total %										

Start Time	Winston Court Southbound			E 20th Street Westbound			E 20th Street Eastbound			Int. Total
	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
04:15 PM	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:15 PM



Location: Upland  
 N/S: Winston Court  
 E/W: E 20th Street



Date: 10/10/2024  
 Day: Thursday

**PEDESTRIANS**

	North Leg Winston Court	East Leg E 20th Street	South Leg Dead End	West Leg E 20th Street	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
7:00 AM	0	0	0	0	0
7:15 AM	0	0	0	0	0
7:30 AM	0	0	0	0	0
7:45 AM	0	0	0	0	0
8:00 AM	0	0	0	0	0
8:15 AM	0	0	0	0	0
8:30 AM	0	0	0	0	0
8:45 AM	2	0	0	0	2
<b>TOTAL VOLUMES:</b>	2	0	0	0	2

	North Leg Winston Court	East Leg E 20th Street	South Leg Dead End	West Leg E 20th Street	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
4:00 PM	0	0	0	0	0
4:15 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0
5:15 PM	2	0	0	0	2
5:30 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0
<b>TOTAL VOLUMES:</b>	2	0	0	0	2

Location: Upland  
 N/S: Winston Court  
 E/W: E 20th Street



Date: 10/10/2024  
 Day: Thursday

BICYCLES

	Southbound Winston Court			Westbound E 20th Street			Northbound Dead End			Eastbound E 20th Street			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	1	0	0	0	0	0	0	1	0	0	2
TOTAL VOLUMES:	0	0	1	0	0	0	0	0	0	1	0	0	2

	Southbound Winston Court			Westbound E 20th Street			Northbound Dead End			Eastbound E 20th Street			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0	0	0	0	0	0	0	0	0

City of Upland  
 N/S: N Campus Avenue  
 E/W: E 20th Street  
 Weather: Clear

File Name : 02\_UPL\_Cam\_20th AM  
 Site Code : 00324879  
 Start Date : 10/10/2024  
 Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

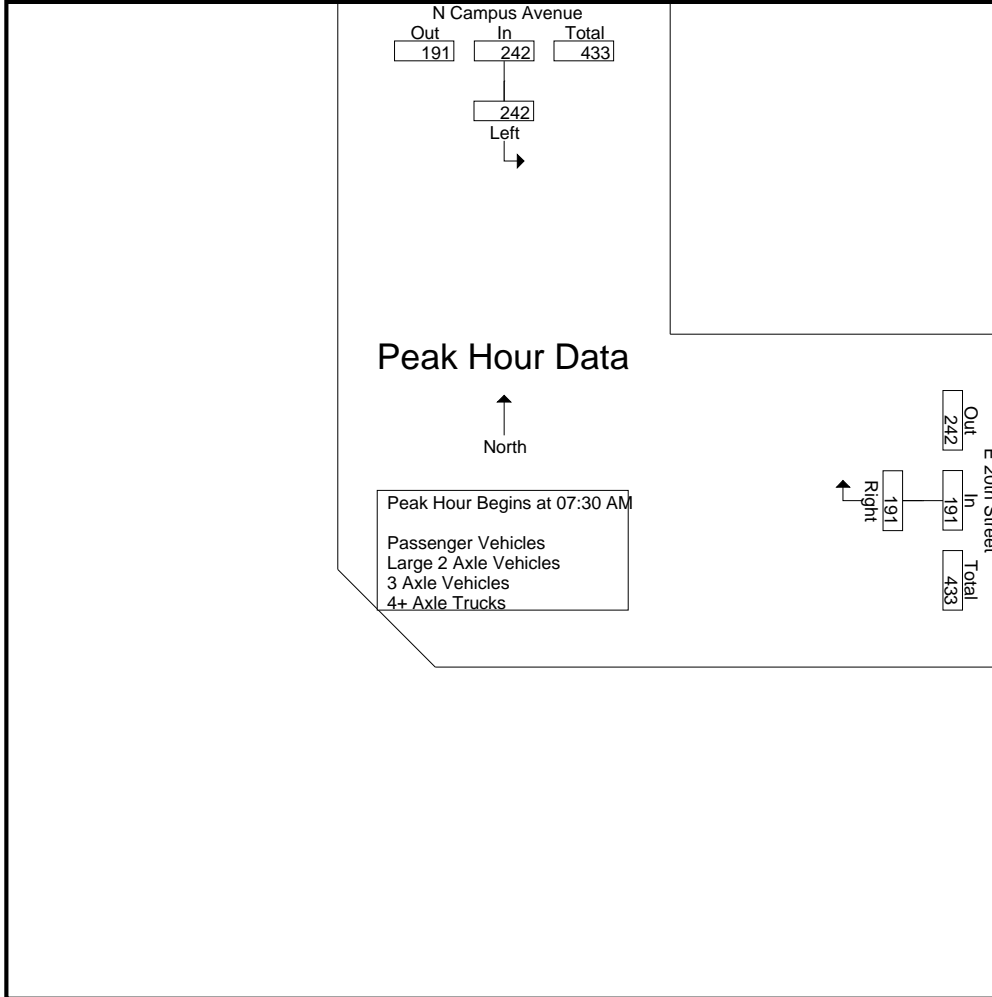
Start Time	N Campus Avenue Southbound		E 20th Street Westbound		Int. Total
	Left	App. Total	Right	App. Total	
07:00 AM	44	44	33	33	77
07:15 AM	49	49	31	31	80
07:30 AM	62	62	42	42	104
07:45 AM	72	72	37	37	109
Total	227	227	143	143	370
08:00 AM	60	60	61	61	121
08:15 AM	48	48	51	51	99
08:30 AM	58	58	38	38	96
08:45 AM	49	49	38	38	87
Total	215	215	188	188	403
Grand Total	442	442	331	331	773
Apprch %	100		100		
Total %	57.2	57.2	42.8	42.8	
Passenger Vehicles	429	429	312	312	741
% Passenger Vehicles	97.1	97.1	94.3	94.3	95.9
Large 2 Axle Vehicles	7	7	16	16	23
% Large 2 Axle Vehicles	1.6	1.6	4.8	4.8	3
3 Axle Vehicles	6	6	3	3	9
% 3 Axle Vehicles	1.4	1.4	0.9	0.9	1.2
4+ Axle Trucks	0	0	0	0	0
% 4+ Axle Trucks	0	0	0	0	0

Start Time	N Campus Avenue Southbound		E 20th Street Westbound		Int. Total
	Left	App. Total	Right	App. Total	
07:30 AM	62	62	42	42	104
07:45 AM	<b>72</b>	<b>72</b>	37	37	109
08:00 AM	60	60	<b>61</b>	<b>61</b>	<b>121</b>
08:15 AM	48	48	51	51	99
Total Volume	242	242	191	191	433
% App. Total	100		100		
PHF	.840	.840	.783	.783	.895

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1  
 Peak Hour for Entire Intersection Begins at 07:30 AM

City of Upland  
 N/S: N Campus Avenue  
 E/W: E 20th Street  
 Weather: Clear

File Name : 02\_UPL\_Cam\_20th AM  
 Site Code : 00324879  
 Start Date : 10/10/2024  
 Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1  
 Peak Hour for Each Approach Begins at:

	07:15 AM		07:30 AM	
+0 mins.	49	49	42	42
+15 mins.	62	62	37	37
+30 mins.	<b>72</b>	<b>72</b>	<b>61</b>	<b>61</b>
+45 mins.	60	60	51	51
Total Volume	243	243	191	191
% App. Total	100	100	100	100
PHF	.844	.844	.783	.783

City of Upland  
 N/S: N Campus Avenue  
 E/W: E 20th Street  
 Weather: Clear

File Name : 02\_UPL\_Cam\_20th AM  
 Site Code : 00324879  
 Start Date : 10/10/2024  
 Page No : 1

Groups Printed- Passenger Vehicles

Start Time	N Campus Avenue Southbound		E 20th Street Westbound		Int. Total
	Left	App. Total	Right	App. Total	
07:00 AM	40	40	31	31	71
07:15 AM	48	48	28	28	76
07:30 AM	62	62	39	39	101
07:45 AM	67	67	35	35	102
Total	217	217	133	133	350
08:00 AM	59	59	59	59	118
08:15 AM	46	46	48	48	94
08:30 AM	58	58	35	35	93
08:45 AM	49	49	37	37	86
Total	212	212	179	179	391
Grand Total	429	429	312	312	741
Apprch %	100		100		
Total %	57.9	57.9	42.1	42.1	

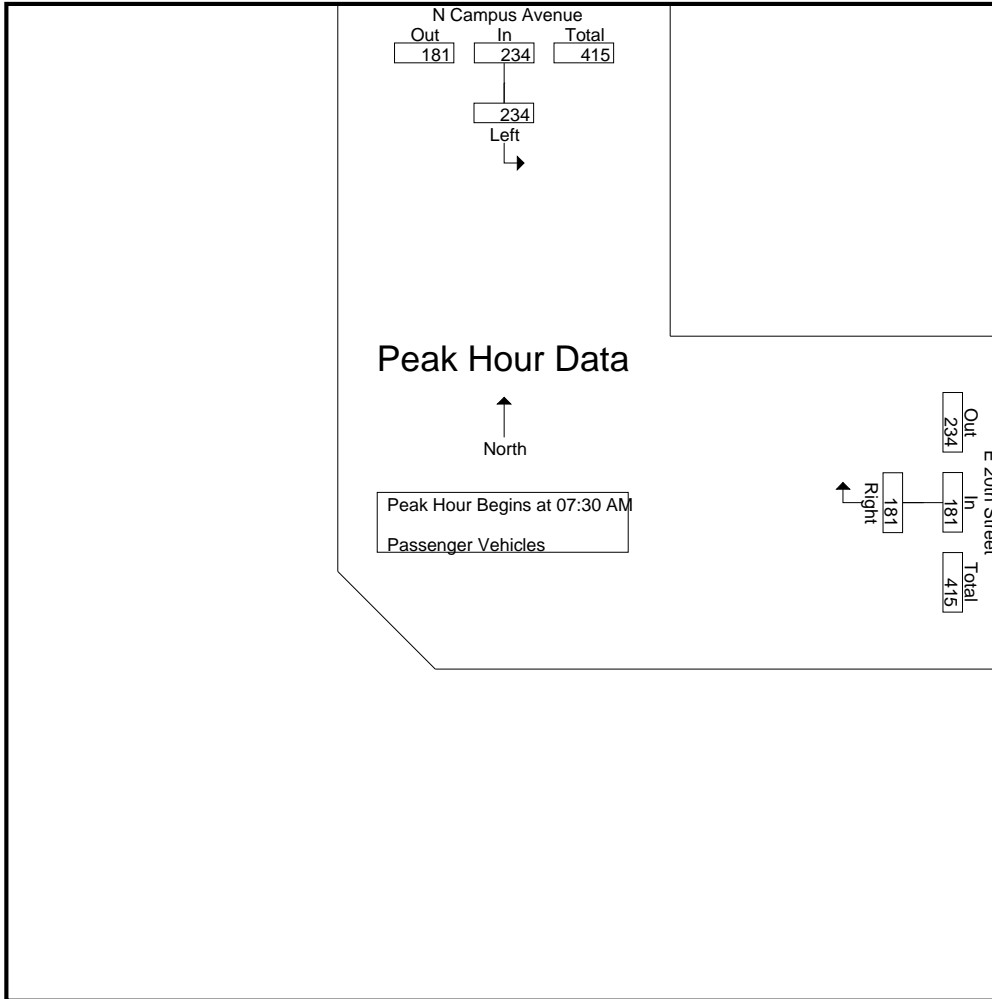
Start Time	N Campus Avenue Southbound		E 20th Street Westbound		Int. Total
	Left	App. Total	Right	App. Total	
07:30 AM	62	62	39	39	101
07:45 AM	<b>67</b>	<b>67</b>	35	35	102
08:00 AM	59	59	<b>59</b>	<b>59</b>	<b>118</b>
08:15 AM	46	46	48	48	94
Total Volume	234	234	181	181	415
% App. Total	100		100		
PHF	.873	.873	.767	.767	.879

Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 07:30 AM

City of Upland  
 N/S: N Campus Avenue  
 E/W: E 20th Street  
 Weather: Clear

File Name : 02\_UPL\_Cam\_20th AM  
 Site Code : 00324879  
 Start Date : 10/10/2024  
 Page No : 2



Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1  
 Peak Hour for Each Approach Begins at:

	07:30 AM		07:30 AM	
+0 mins.	62	62	39	39
+15 mins.	<b>67</b>	<b>67</b>	35	35
+30 mins.	59	59	<b>59</b>	<b>59</b>
+45 mins.	46	46	48	48
Total Volume	234	234	181	181
% App. Total	100	100	100	100
PHF	.873	.873	.767	.767

City of Upland  
 N/S: N Campus Avenue  
 E/W: E 20th Street  
 Weather: Clear

File Name : 02\_UPL\_Cam\_20th AM  
 Site Code : 00324879  
 Start Date : 10/10/2024  
 Page No : 1

Groups Printed- Large 2 Axle Vehicles

Start Time	N Campus Avenue Southbound		E 20th Street Westbound		Int. Total
	Left	App. Total	Right	App. Total	
07:00 AM	0	0	0	0	0
07:15 AM	1	1	3	3	4
07:30 AM	0	0	3	3	3
07:45 AM	3	3	2	2	5
Total	4	4	8	8	12
08:00 AM	1	1	1	1	2
08:15 AM	2	2	3	3	5
08:30 AM	0	0	3	3	3
08:45 AM	0	0	1	1	1
Total	3	3	8	8	11
Grand Total	7	7	16	16	23
Apprch %	100		100		
Total %	30.4	30.4	69.6	69.6	

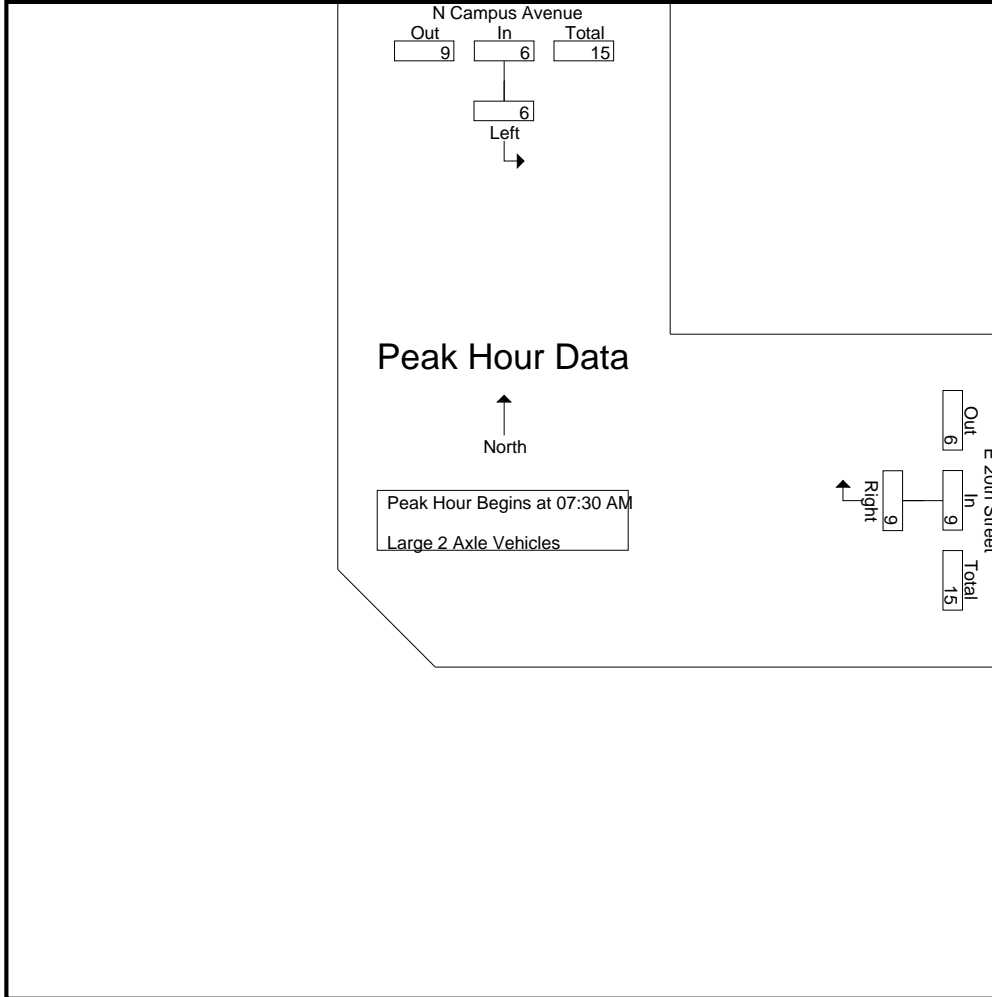
Start Time	N Campus Avenue Southbound		E 20th Street Westbound		Int. Total
	Left	App. Total	Right	App. Total	
07:30 AM	0	0	3	3	3
07:45 AM	3	3	2	2	5
08:00 AM	1	1	1	1	2
08:15 AM	2	2	3	3	5
Total Volume	6	6	9	9	15
% App. Total	100		100		
PHF	.500	.500	.750	.750	.750

Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 07:30 AM

City of Upland  
 N/S: N Campus Avenue  
 E/W: E 20th Street  
 Weather: Clear

File Name : 02\_UPL\_Cam\_20th AM  
 Site Code : 00324879  
 Start Date : 10/10/2024  
 Page No : 2



Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1  
 Peak Hour for Each Approach Begins at:

	07:30 AM		07:30 AM	
+0 mins.	0	0	3	3
+15 mins.	3	3	2	2
+30 mins.	1	1	1	1
+45 mins.	2	2	3	3
Total Volume	6	6	9	9
% App. Total	100		100	
PHF	.500	.500	.750	.750

City of Upland  
 N/S: N Campus Avenue  
 E/W: E 20th Street  
 Weather: Clear

File Name : 02\_UPL\_Cam\_20th AM  
 Site Code : 00324879  
 Start Date : 10/10/2024  
 Page No : 1

Groups Printed- 3 Axle Vehicles

Start Time	N Campus Avenue Southbound		E 20th Street Westbound		Int. Total
	Left	App. Total	Right	App. Total	
07:00 AM	4	4	2	2	6
07:15 AM	0	0	0	0	0
07:30 AM	0	0	0	0	0
07:45 AM	2	2	0	0	2
Total	6	6	2	2	8
08:00 AM	0	0	1	1	1
08:15 AM	0	0	0	0	0
08:30 AM	0	0	0	0	0
08:45 AM	0	0	0	0	0
Total	0	0	1	1	1
Grand Total	6	6	3	3	9
Apprch %	100		100		
Total %	66.7	66.7	33.3	33.3	

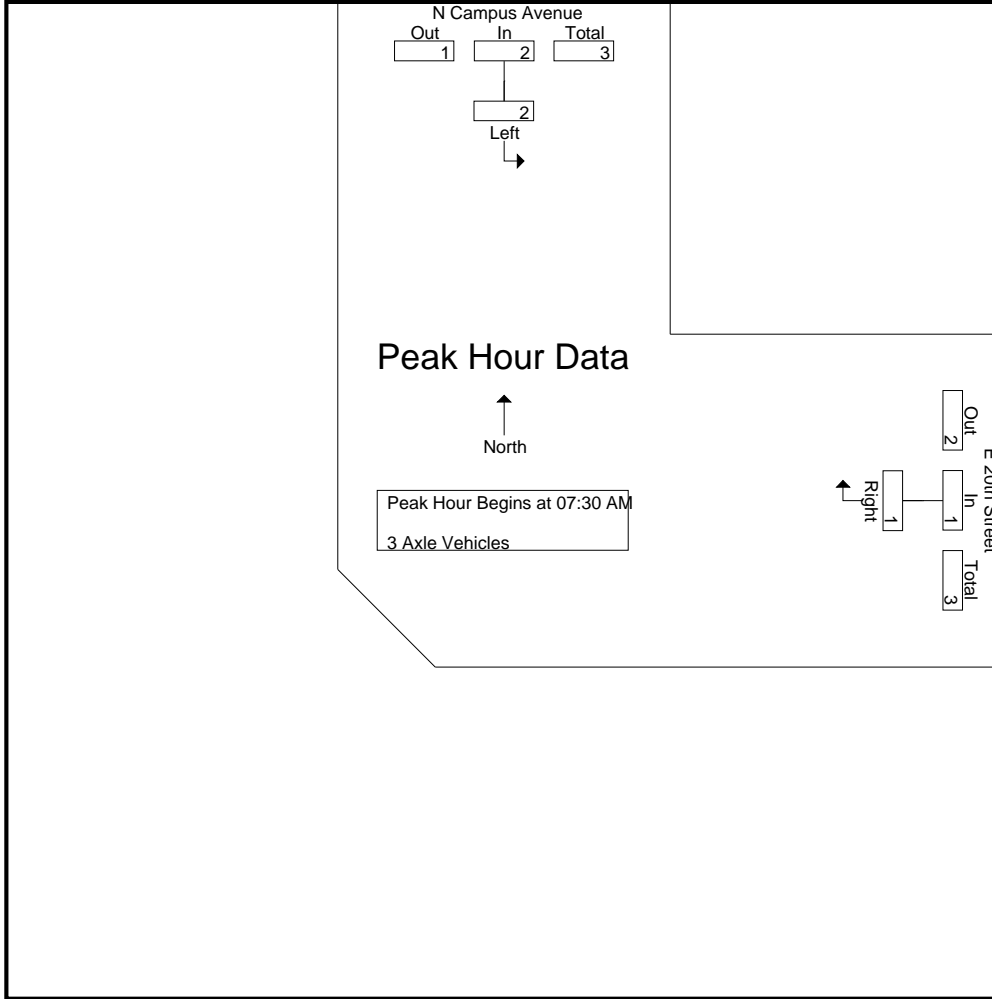
Start Time	N Campus Avenue Southbound		E 20th Street Westbound		Int. Total
	Left	App. Total	Right	App. Total	
07:30 AM	0	0	0	0	0
07:45 AM	2	2	0	0	2
08:00 AM	0	0	1	1	1
08:15 AM	0	0	0	0	0
Total Volume	2	2	1	1	3
% App. Total	100		100		
PHF	.250	.250	.250	.250	.375

Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 07:30 AM

City of Upland  
 N/S: N Campus Avenue  
 E/W: E 20th Street  
 Weather: Clear

File Name : 02\_UPL\_Cam\_20th AM  
 Site Code : 00324879  
 Start Date : 10/10/2024  
 Page No : 2



Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1  
 Peak Hour for Each Approach Begins at:

	07:30 AM		07:30 AM	
+0 mins.	0	0	0	0
+15 mins.	2	2	0	0
+30 mins.	0	0	1	1
+45 mins.	0	0	0	0
Total Volume	2	2	1	1
% App. Total	100	100	100	100
PHF	.250	.250	.250	.250

City of Upland  
 N/S: N Campus Avenue  
 E/W: E 20th Street  
 Weather: Clear

File Name : 02\_UPL\_Cam\_20th AM  
 Site Code : 00324879  
 Start Date : 10/10/2024  
 Page No : 1

Groups Printed- 4+ Axle Trucks

Start Time	N Campus Avenue Southbound		E 20th Street Westbound		Int. Total
	Left	App. Total	Right	App. Total	
07:00 AM	0	0	0	0	0
07:15 AM	0	0	0	0	0
07:30 AM	0	0	0	0	0
07:45 AM	0	0	0	0	0
Total	0	0	0	0	0
08:00 AM	0	0	0	0	0
08:15 AM	0	0	0	0	0
08:30 AM	0	0	0	0	0
08:45 AM	0	0	0	0	0
Total	0	0	0	0	0
Grand Total	0	0	0	0	0
Apprch %	0		0		
Total %					

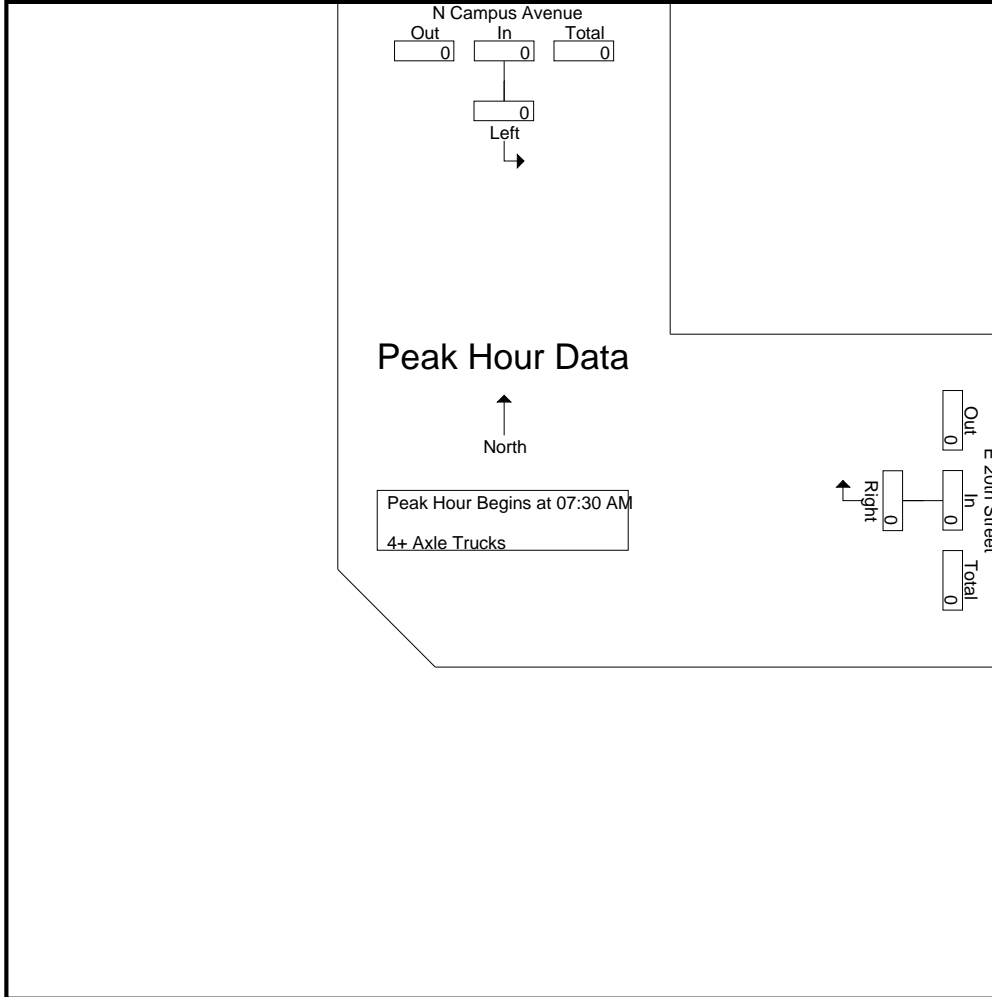
Start Time	N Campus Avenue Southbound		E 20th Street Westbound		Int. Total
	Left	App. Total	Right	App. Total	
07:30 AM	0	0	0	0	0
07:45 AM	0	0	0	0	0
08:00 AM	0	0	0	0	0
08:15 AM	0	0	0	0	0
Total Volume	0	0	0	0	0
% App. Total	0		0		
PHF	.000	.000	.000	.000	.000

Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 07:30 AM

City of Upland  
 N/S: N Campus Avenue  
 E/W: E 20th Street  
 Weather: Clear

File Name : 02\_UPL\_Cam\_20th AM  
 Site Code : 00324879  
 Start Date : 10/10/2024  
 Page No : 2



Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1  
 Peak Hour for Each Approach Begins at:

	07:30 AM		07:30 AM	
+0 mins.	0	0	0	0
+15 mins.	0	0	0	0
+30 mins.	0	0	0	0
+45 mins.	0	0	0	0
Total Volume	0	0	0	0
% App. Total	0		0	
PHF	.000	.000	.000	.000

City of Upland  
 N/S: N Campus Avenue  
 E/W: E 20th Street  
 Weather: Clear

File Name : 02\_UPL\_Cam\_20th PM  
 Site Code : 00324879  
 Start Date : 10/10/2024  
 Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

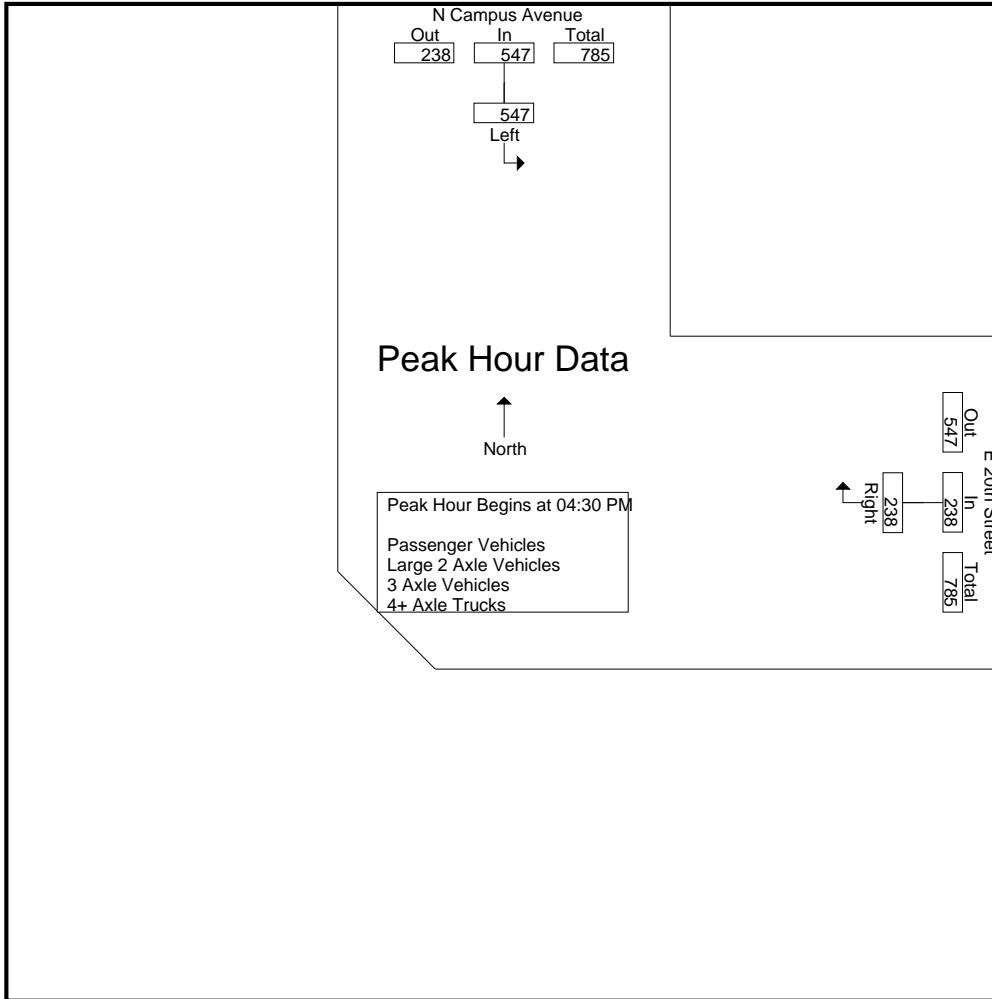
Start Time	N Campus Avenue Southbound		E 20th Street Westbound		Int. Total
	Left	App. Total	Right	App. Total	
04:00 PM	130	130	52	52	182
04:15 PM	128	128	67	67	195
04:30 PM	143	143	58	58	201
04:45 PM	134	134	69	69	203
Total	535	535	246	246	781
05:00 PM	143	143	41	41	184
05:15 PM	127	127	70	70	197
05:30 PM	120	120	53	53	173
05:45 PM	113	113	51	51	164
Total	503	503	215	215	718
Grand Total	1038	1038	461	461	1499
Apprch %	100		100		
Total %	69.2	69.2	30.8	30.8	
Passenger Vehicles	1025	1025	456	456	1481
% Passenger Vehicles	98.7	98.7	98.9	98.9	98.8
Large 2 Axle Vehicles	13	13	5	5	18
% Large 2 Axle Vehicles	1.3	1.3	1.1	1.1	1.2
3 Axle Vehicles	0	0	0	0	0
% 3 Axle Vehicles	0	0	0	0	0
4+ Axle Trucks	0	0	0	0	0
% 4+ Axle Trucks	0	0	0	0	0

Start Time	N Campus Avenue Southbound		E 20th Street Westbound		Int. Total
	Left	App. Total	Right	App. Total	
04:30 PM	<b>143</b>	<b>143</b>	58	58	201
04:45 PM	134	134	69	69	<b>203</b>
05:00 PM	143	143	41	41	184
05:15 PM	127	127	<b>70</b>	<b>70</b>	197
Total Volume	547	547	238	238	785
% App. Total	100		100		
PHF	.956	.956	.850	.850	.967

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1  
 Peak Hour for Entire Intersection Begins at 04:30 PM

City of Upland  
 N/S: N Campus Avenue  
 E/W: E 20th Street  
 Weather: Clear

File Name : 02\_UPL\_Cam\_20th PM  
 Site Code : 00324879  
 Start Date : 10/10/2024  
 Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1  
 Peak Hour for Each Approach Begins at:

	04:15 PM		04:00 PM	
+0 mins.	128	128	52	52
+15 mins.	<b>143</b>	<b>143</b>	67	67
+30 mins.	134	134	58	58
+45 mins.	143	143	<b>69</b>	<b>69</b>
Total Volume	548	548	246	246
% App. Total	100	100	100	100
PHF	.958	.958	.891	.891

City of Upland  
 N/S: N Campus Avenue  
 E/W: E 20th Street  
 Weather: Clear

File Name : 02\_UPL\_Cam\_20th PM  
 Site Code : 00324879  
 Start Date : 10/10/2024  
 Page No : 1

Groups Printed- Passenger Vehicles

Start Time	N Campus Avenue Southbound		E 20th Street Westbound		Int. Total
	Left	App. Total	Right	App. Total	
04:00 PM	128	128	51	51	179
04:15 PM	125	125	66	66	191
04:30 PM	140	140	58	58	198
04:45 PM	131	131	68	68	199
Total	524	524	243	243	767
05:00 PM	143	143	40	40	183
05:15 PM	126	126	69	69	195
05:30 PM	119	119	53	53	172
05:45 PM	113	113	51	51	164
Total	501	501	213	213	714
Grand Total	1025	1025	456	456	1481
Apprch %	100		100		
Total %	69.2	69.2	30.8	30.8	

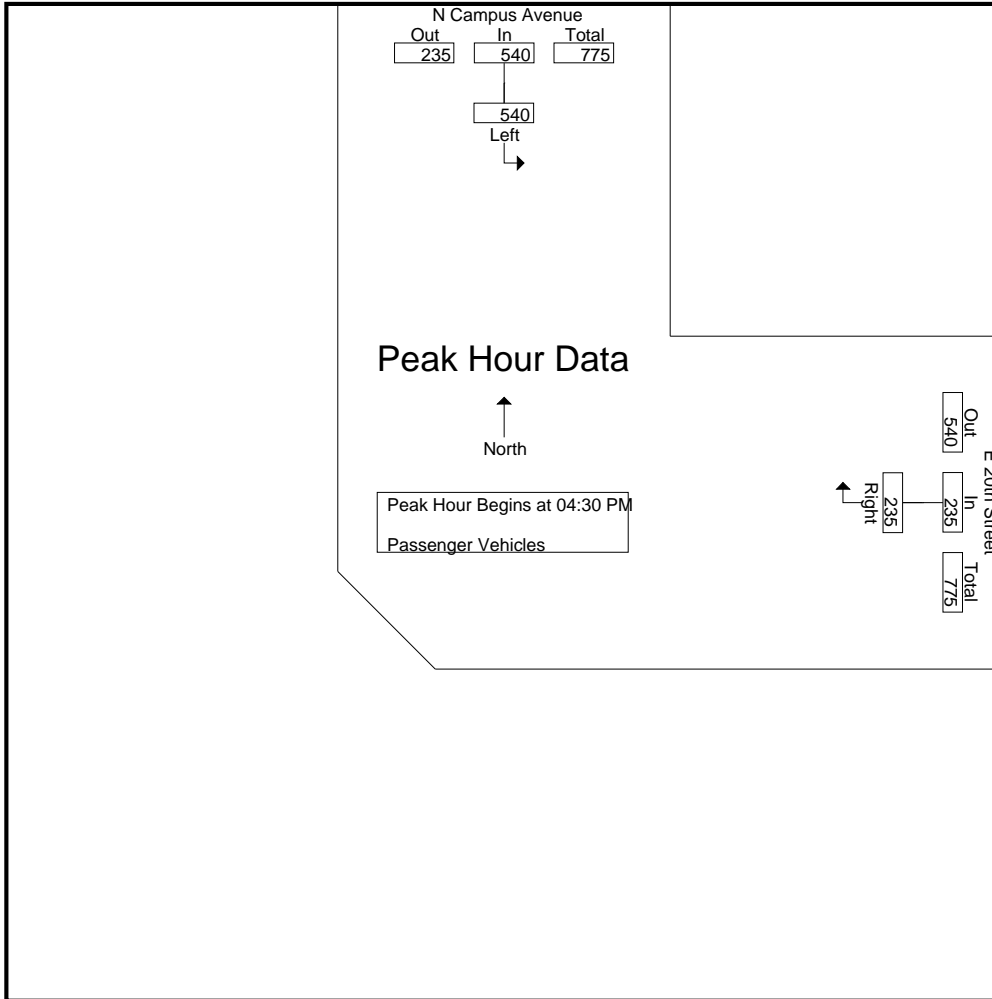
Start Time	N Campus Avenue Southbound		E 20th Street Westbound		Int. Total
	Left	App. Total	Right	App. Total	
04:30 PM	140	140	58	58	198
04:45 PM	131	131	68	68	199
05:00 PM	143	143	40	40	183
05:15 PM	126	126	69	69	195
Total Volume	540	540	235	235	775
% App. Total	100		100		
PHF	.944	.944	.851	.851	.974

Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:30 PM

City of Upland  
 N/S: N Campus Avenue  
 E/W: E 20th Street  
 Weather: Clear

File Name : 02\_UPL\_Cam\_20th PM  
 Site Code : 00324879  
 Start Date : 10/10/2024  
 Page No : 2



Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1  
 Peak Hour for Each Approach Begins at:

	04:30 PM		04:30 PM	
+0 mins.	140	140	58	58
+15 mins.	131	131	68	68
+30 mins.	<b>143</b>	<b>143</b>	40	40
+45 mins.	126	126	<b>69</b>	<b>69</b>
Total Volume	540	540	235	235
% App. Total	100	100	100	100
PHF	.944	.944	.851	.851

City of Upland  
 N/S: N Campus Avenue  
 E/W: E 20th Street  
 Weather: Clear

File Name : 02\_UPL\_Cam\_20th PM  
 Site Code : 00324879  
 Start Date : 10/10/2024  
 Page No : 1

Groups Printed- Large 2 Axle Vehicles

Start Time	N Campus Avenue Southbound		E 20th Street Westbound		Int. Total
	Left	App. Total	Right	App. Total	
04:00 PM	2	2	1	1	3
04:15 PM	3	3	1	1	4
04:30 PM	3	3	0	0	3
04:45 PM	3	3	1	1	4
Total	11	11	3	3	14
05:00 PM	0	0	1	1	1
05:15 PM	1	1	1	1	2
05:30 PM	1	1	0	0	1
05:45 PM	0	0	0	0	0
Total	2	2	2	2	4
Grand Total	13	13	5	5	18
Apprch %	100		100		
Total %	72.2	72.2	27.8	27.8	

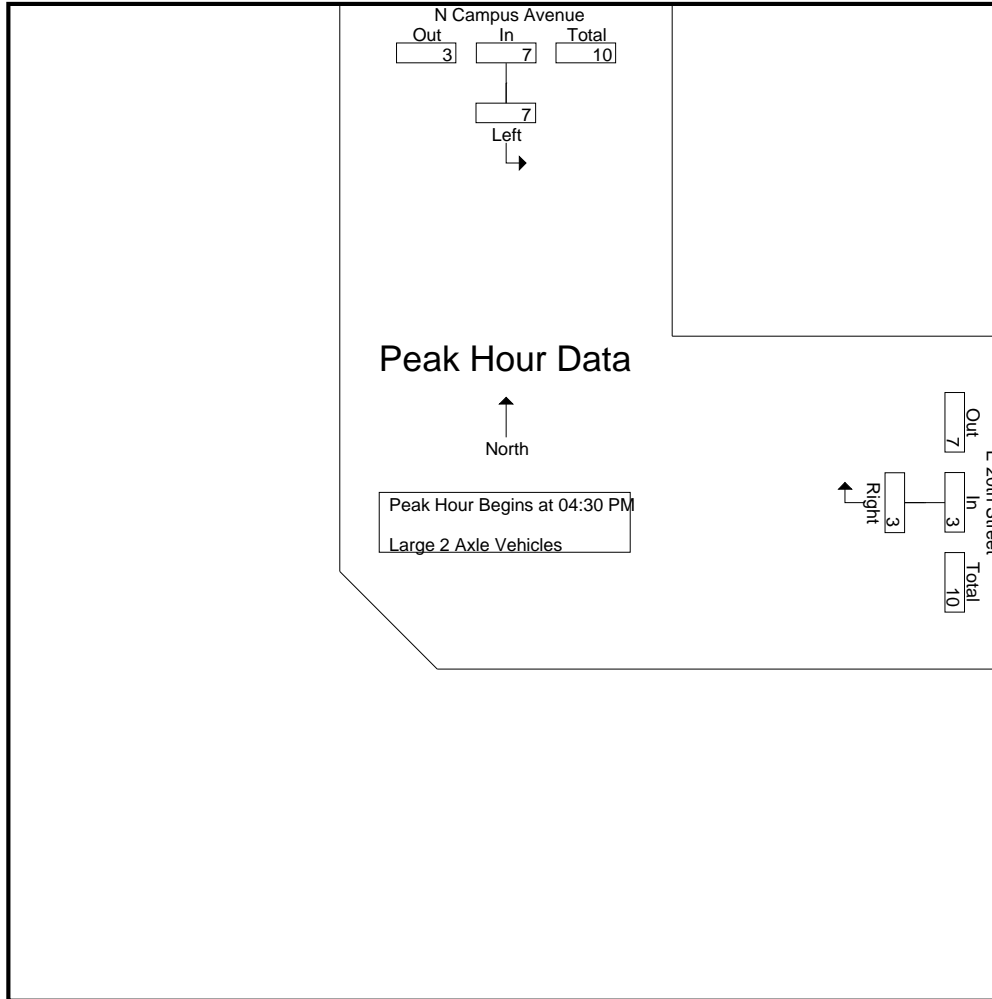
Start Time	N Campus Avenue Southbound		E 20th Street Westbound		Int. Total
	Left	App. Total	Right	App. Total	
04:30 PM	3	3	0	0	3
04:45 PM	3	3	1	1	4
05:00 PM	0	0	1	1	1
05:15 PM	1	1	1	1	2
Total Volume	7	7	3	3	10
% App. Total	100		100		
PHF	.583	.583	.750	.750	.625

Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:30 PM

City of Upland  
 N/S: N Campus Avenue  
 E/W: E 20th Street  
 Weather: Clear

File Name : 02\_UPL\_Cam\_20th PM  
 Site Code : 00324879  
 Start Date : 10/10/2024  
 Page No : 2



Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1  
 Peak Hour for Each Approach Begins at:

	04:30 PM		04:30 PM	
+0 mins.	3	3	0	0
+15 mins.	3	3	1	1
+30 mins.	0	0	1	1
+45 mins.	1	1	1	1
Total Volume	7	7	3	3
% App. Total	100		100	
PHF	.583	.583	.750	.750

City of Upland  
 N/S: N Campus Avenue  
 E/W: E 20th Street  
 Weather: Clear

File Name : 02\_UPL\_Cam\_20th PM  
 Site Code : 00324879  
 Start Date : 10/10/2024  
 Page No : 1

Groups Printed- 3 Axle Vehicles

Start Time	N Campus Avenue Southbound		E 20th Street Westbound		Int. Total
	Left	App. Total	Right	App. Total	
04:00 PM	0	0	0	0	0
04:15 PM	0	0	0	0	0
04:30 PM	0	0	0	0	0
04:45 PM	0	0	0	0	0
Total	0	0	0	0	0
05:00 PM	0	0	0	0	0
05:15 PM	0	0	0	0	0
05:30 PM	0	0	0	0	0
05:45 PM	0	0	0	0	0
Total	0	0	0	0	0
Grand Total	0	0	0	0	0
Apprch %	0		0		
Total %					

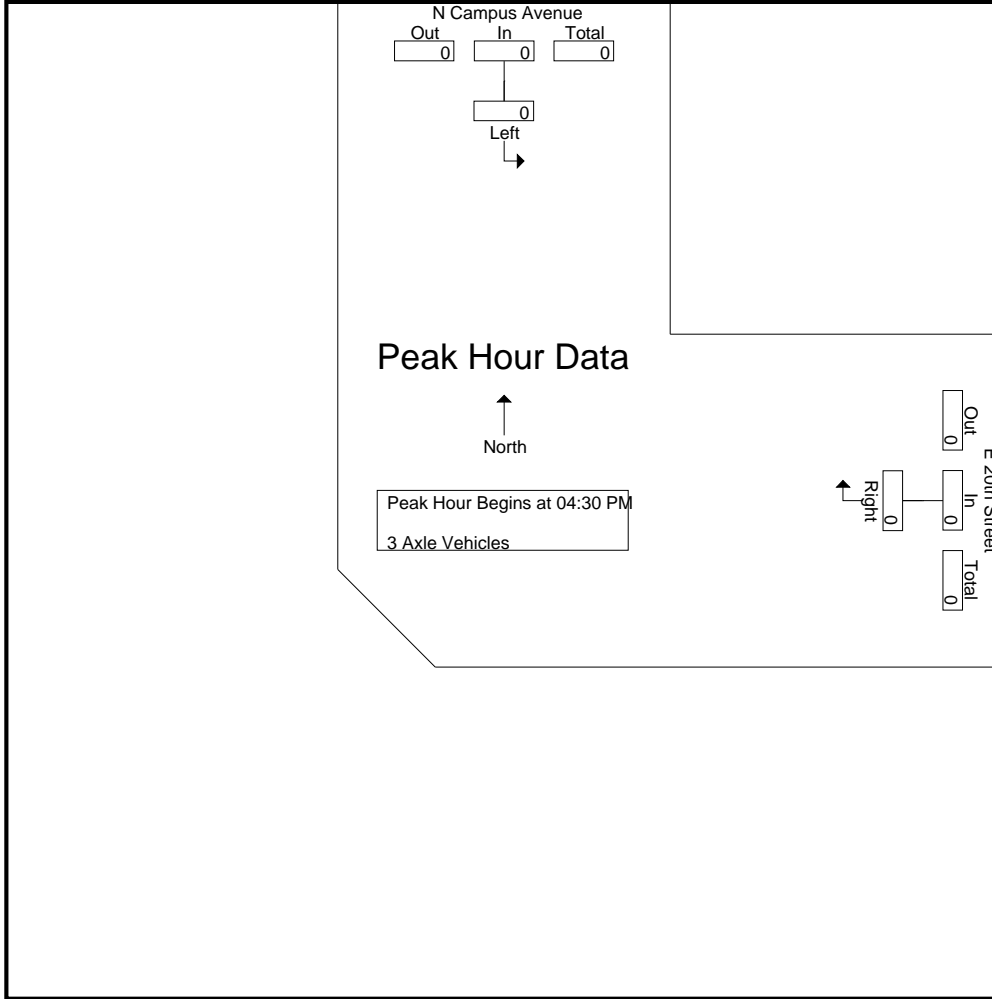
Start Time	N Campus Avenue Southbound		E 20th Street Westbound		Int. Total
	Left	App. Total	Right	App. Total	
04:30 PM	0	0	0	0	0
04:45 PM	0	0	0	0	0
05:00 PM	0	0	0	0	0
05:15 PM	0	0	0	0	0
Total Volume	0	0	0	0	0
% App. Total	0		0		
PHF	.000	.000	.000	.000	.000

Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:30 PM

City of Upland  
 N/S: N Campus Avenue  
 E/W: E 20th Street  
 Weather: Clear

File Name : 02\_UPL\_Cam\_20th PM  
 Site Code : 00324879  
 Start Date : 10/10/2024  
 Page No : 2



Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1  
 Peak Hour for Each Approach Begins at:

	04:30 PM		04:30 PM	
+0 mins.	0	0	0	0
+15 mins.	0	0	0	0
+30 mins.	0	0	0	0
+45 mins.	0	0	0	0
Total Volume	0	0	0	0
% App. Total	0	0	0	0
PHF	.000	.000	.000	.000

City of Upland  
 N/S: N Campus Avenue  
 E/W: E 20th Street  
 Weather: Clear

File Name : 02\_UPL\_Cam\_20th PM  
 Site Code : 00324879  
 Start Date : 10/10/2024  
 Page No : 1

Groups Printed- 4+ Axle Trucks

Start Time	N Campus Avenue Southbound		E 20th Street Westbound		Int. Total
	Left	App. Total	Right	App. Total	
04:00 PM	0	0	0	0	0
04:15 PM	0	0	0	0	0
04:30 PM	0	0	0	0	0
04:45 PM	0	0	0	0	0
Total	0	0	0	0	0
05:00 PM	0	0	0	0	0
05:15 PM	0	0	0	0	0
05:30 PM	0	0	0	0	0
05:45 PM	0	0	0	0	0
Total	0	0	0	0	0
Grand Total	0	0	0	0	0
Apprch %	0		0		
Total %					

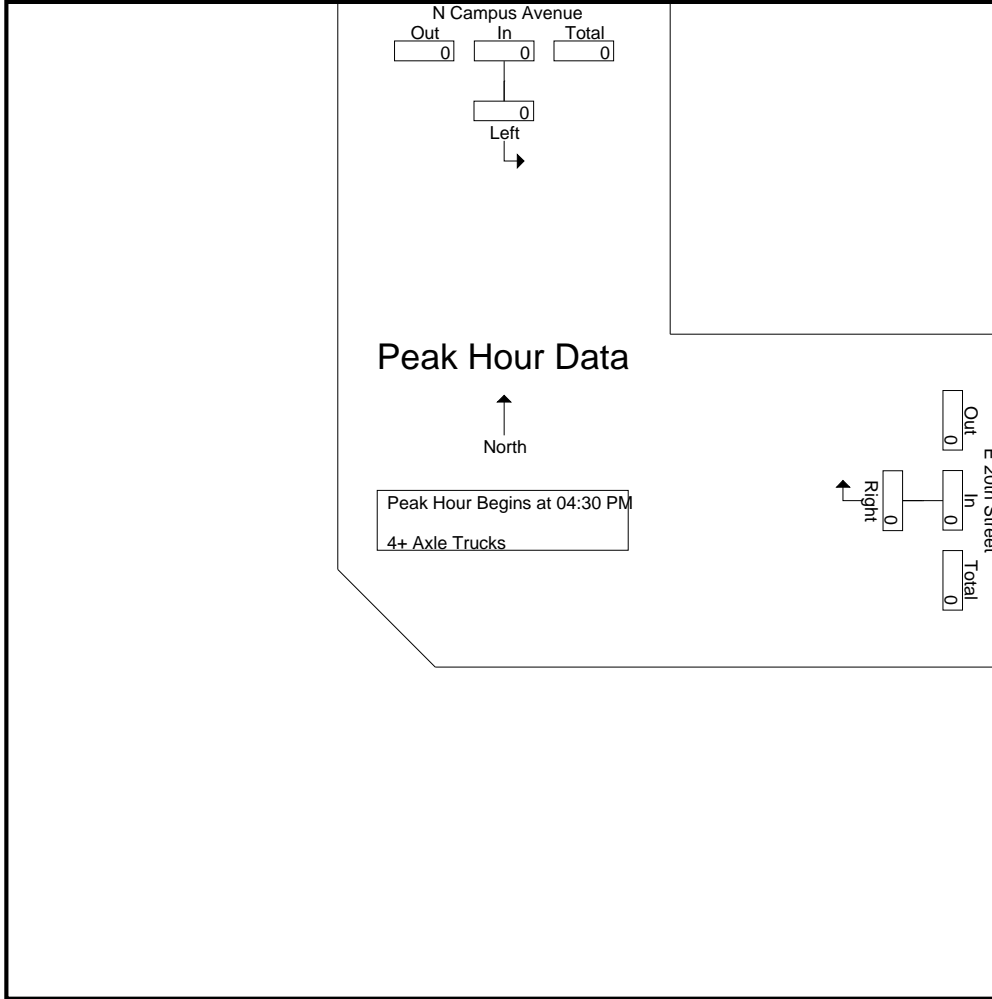
Start Time	N Campus Avenue Southbound		E 20th Street Westbound		Int. Total
	Left	App. Total	Right	App. Total	
04:30 PM	0	0	0	0	0
04:45 PM	0	0	0	0	0
05:00 PM	0	0	0	0	0
05:15 PM	0	0	0	0	0
Total Volume	0	0	0	0	0
% App. Total	0		0		
PHF	.000	.000	.000	.000	.000

Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:30 PM

City of Upland  
 N/S: N Campus Avenue  
 E/W: E 20th Street  
 Weather: Clear

File Name : 02\_UPL\_Cam\_20th PM  
 Site Code : 00324879  
 Start Date : 10/10/2024  
 Page No : 2



Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1  
 Peak Hour for Each Approach Begins at:

	04:30 PM		04:30 PM	
+0 mins.	0	0	0	0
+15 mins.	0	0	0	0
+30 mins.	0	0	0	0
+45 mins.	0	0	0	0
Total Volume	0	0	0	0
% App. Total	0	0	0	0
PHF	.000	.000	.000	.000

Location: Upland  
 N/S: N Campus Avenue  
 E/W: E 20th Street



Date: 10/10/2024  
 Day: Thursday

**PEDESTRIANS**

	North Leg N Campus Avenue	East Leg E 20th Street	South Leg Dead End	West Leg Dead End	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
7:00 AM	0	0	0	0	0
7:15 AM	0	0	0	2	2
7:30 AM	0	0	0	0	0
7:45 AM	0	0	0	0	0
8:00 AM	0	0	0	0	0
8:15 AM	0	0	0	0	0
8:30 AM	0	0	0	0	0
8:45 AM	0	0	0	0	0
<b>TOTAL VOLUMES:</b>	0	0	0	2	2

	North Leg N Campus Avenue	East Leg E 20th Street	South Leg Dead End	West Leg Dead End	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
4:00 PM	0	0	0	0	0
4:15 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0
<b>TOTAL VOLUMES:</b>	0	0	0	0	0

Location: Upland  
 N/S: N Campus Avenue  
 E/W: E 20th Street



Date: 10/10/2024  
 Day: Thursday

BICYCLES

	Southbound N Campus Avenue			Westbound E 20th Street			Northbound Dead End			Eastbound Dead End			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	1	0	0	0	0	0	0	1
7:45 AM	0	0	0	0	0	1	0	0	0	0	0	0	1
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	6	0	0	0	0	0	0	0	0	0	0	0	6
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	6	0	0	0	0	2	0	0	0	0	0	0	8

	Southbound N Campus Avenue			Westbound E 20th Street			Northbound Dead End			Eastbound Dead End			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	1	0	0	0	0	0	0	0	0	0	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	1	0	0	0	0	0	0	0	0	0	0	0	1
TOTAL VOLUMES:	2	0	0	0	0	0	0	0	0	0	0	0	2

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## APPENDIX C

# VOLUME DEVELOPMENT WORKSHEETS



**Table C-1 - Existing Peak Hour PCE Volume Summary**

	<u>A.M. Peak Hour</u>	<u>P.M. Peak Hour</u>
	<u>Existing w/o Project</u>	<u>Existing w/o Project</u>
<b>1 Winston Court - Project Driveway 1/20th Street</b>		
NBL	0	0
NBT	0	0
NBR	0	0
SBL	0	0
SBT	0	0
SBR	5	3
EBL	2	5
EBT	4	0
EBR	0	0
WBL	0	0
WBT	4	0
WBR	2	0
North Leg		
Approach	5	3
Departure	4	5
Total	9	8
South Leg		
Approach	0	0
Departure	0	0
Total	0	0
East Leg		
Approach	6	0
Departure	4	0
Total	10	0
West Leg		
Approach	6	5
Departure	9	3
Total	15	8
Total Approaches		
Approach	17	8
Departure	17	8
Total	34	16



**Table C-1 - Existing Peak Hour PCE Volume Summary**

	<u>A.M. Peak Hour</u>	<u>P.M. Peak Hour</u>
	<u>Existing w/o Project</u>	<u>Existing w/o Project</u>
<b>2 Project Driveway 2/20th Street</b>		
NBL	0	0
NBT	0	0
NBR	0	0
SBL	0	0
SBT	0	0
SBR	0	0
EBL	0	0
EBT	4	0
EBR	0	0
WBL	0	0
WBT	6	0
WBR	0	0
North Leg		
Approach	0	0
Departure	0	0
Total	0	0
South Leg		
Approach	0	0
Departure	0	0
Total	0	0
East Leg		
Approach	6	0
Departure	4	0
Total	10	0
West Leg		
Approach	4	0
Departure	6	0
Total	10	0
Total Approaches		
Approach	10	0
Departure	10	0
Total	20	0



**Table C-1 - Existing Peak Hour PCE Volume Summary**

	<u>A.M. Peak Hour</u>	<u>P.M. Peak Hour</u>
	<u>Existing w/o Project</u>	<u>Existing w/o Project</u>
<b>3 Campus Avenue/Project Driveway 3 - 20th Street</b>		
NBL	0	0
NBT	0	0
NBR	0	0
SBL	247	551
SBT	0	0
SBR	0	0
EBL	0	0
EBT	0	0
EBR	0	0
WBL	0	0
WBT	0	0
WBR	197	240
North Leg		
Approach	247	551
Departure	197	240
Total	444	791
South Leg		
Approach	0	0
Departure	0	0
Total	0	0
East Leg		
Approach	197	240
Departure	247	551
Total	444	791
West Leg		
Approach	0	0
Departure	0	0
Total	0	0
Total Approaches		
Approach	444	791
Departure	444	791
Total	888	1,582



Table C-2 - Opening Year (2027) Peak Hour PCE Volume Summary

	AM Peak Hour						PM Peak Hour					
	Existing	2024	Approved	OY (2027)	OY (2027)		Existing	2024	Approved	OY (2027)	OY (2027)	
	w/o Project	to 2027	and Pending	w/o Project	Project	w/ Project	w/o Project	to 2027	and Pending	w/o Project	Project	w/ Project
	Volumes	Growth	Project Trips	Volumes	Trips	Volumes	Volumes	Growth	Project Trips	Volumes	Trips	Volumes
<b>1 Winston Court - Project Driveway 1/20th Street</b>												
NBL	0	0	0	0	1	1	0	0	0	0	5	5
NBT	0	0	0	0	0	0	0	0	0	0	0	0
NBR	0	0	0	0	0	0	0	0	0	0	0	0
SBL	0	0	0	0	0	0	0	0	0	0	0	0
SBT	0	0	0	0	0	0	0	0	0	0	0	0
SBR	5	0	1	6	0	6	3	0	1	4	0	4
EBL	2	0	1	3	0	3	5	0	1	6	0	6
EBT	4	0	0	4	3	7	0	0	0	0	0	0
EBR	0	0	0	0	5	5	0	0	0	0	3	3
WBL	0	0	0	0	0	0	0	0	0	0	0	0
WBT	4	0	0	4	0	4	0	0	0	0	3	3
WBR	2	0	0	2	0	2	0	0	0	0	0	0
<b>North Leg</b>												
Approach	5	0	1	6	0	6	3	0	1	4	0	4
Departure	4	0	1	5	0	5	5	0	1	6	0	6
Total	9	0	2	11	0	11	8	0	2	10	0	10
<b>South Leg</b>												
Approach	0	0	0	0	1	1	0	0	0	0	5	5
Departure	0	0	0	0	5	5	0	0	0	0	3	3
Total	0	0	0	0	6	6	0	0	0	0	8	8
<b>East Leg</b>												
Approach	6	0	0	6	0	6	0	0	0	0	3	3
Departure	4	0	0	4	3	7	0	0	0	0	0	0
Total	10	0	0	10	3	13	0	0	0	0	3	3
<b>West Leg</b>												
Approach	6	0	1	7	8	15	5	0	1	6	3	9
Departure	9	0	1	10	1	11	3	0	1	4	8	12
Total	15	0	2	17	9	26	8	0	2	10	11	21
<b>Total Approaches</b>												
Approach	17	0	2	19	9	28	8	0	2	10	11	21
Departure	17	0	2	19	9	28	8	0	2	10	11	21
Total	34	0	4	38	18	56	16	0	4	20	22	42

Table C-2 - Opening Year (2027) Peak Hour PCE Volume Summary

	AM Peak Hour						PM Peak Hour					
	Existing	2024	Approved	OY (2027)	OY (2027)		Existing	2024	Approved	OY (2027)	OY (2027)	
	w/o Project	to 2027	and Pending	w/o Project	Project	w/ Project	w/o Project	to 2027	and Pending	w/o Project	Project	w/ Project
	Volumes	Growth	Project Trips	Volumes	Trips	Volumes	Volumes	Growth	Project Trips	Volumes	Trips	Volumes
<b>2 Project Driveway 2/20th Street</b>												
NBL	0	0	0	0	0	0	0	0	0	0	3	3
NBT	0	0	0	0	0	0	0	0	0	0	0	0
NBR	0	0	0	0	0	0	0	0	0	0	0	0
SBL	0	0	0	0	0	0	0	0	0	0	0	0
SBT	0	0	0	0	0	0	0	0	0	0	0	0
SBR	0	0	0	0	0	0	0	0	0	0	0	0
EBL	0	0	0	0	0	0	0	0	0	0	0	0
EBT	4	0	0	4	0	4	0	0	0	0	0	0
EBR	0	0	0	0	3	3	0	0	0	0	0	0
WBL	0	0	0	0	0	0	0	0	0	0	0	0
WBT	6	0	0	6	0	6	0	0	0	0	0	0
WBR	0	0	0	0	0	0	0	0	0	0	0	0
<b>North Leg</b>												
Approach	0	0	0	0	0	0	0	0	0	0	0	0
Departure	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
<b>South Leg</b>												
Approach	0	0	0	0	0	0	0	0	0	0	3	3
Departure	0	0	0	0	3	3	0	0	0	0	0	0
Total	0	0	0	0	3	3	0	0	0	0	3	3
<b>East Leg</b>												
Approach	6	0	0	6	0	6	0	0	0	0	0	0
Departure	4	0	0	4	0	4	0	0	0	0	0	0
Total	10	0	0	10	0	10	0	0	0	0	0	0
<b>West Leg</b>												
Approach	4	0	0	4	3	7	0	0	0	0	0	0
Departure	6	0	0	6	0	6	0	0	0	0	3	3
Total	10	0	0	10	3	13	0	0	0	0	3	3
<b>Total Approaches</b>												
Approach	10	0	0	10	3	13	0	0	0	0	3	3
Departure	10	0	0	10	3	13	0	0	0	0	3	3
Total	20	0	0	20	6	26	0	0	0	0	6	6



**Table C-2 - Opening Year (2027) Peak Hour PCE Volume Summary**

	AM Peak Hour						PM Peak Hour					
	Existing w/o Project Volumes	2024 to 2027 Growth	Approved and Pending Project Trips	OY (2027) w/o Project Volumes	Project Trips	OY (2027) w/ Project Volumes	Existing w/o Project Volumes	2024 to 2027 Growth	Approved and Pending Project Trips	OY (2027) w/o Project Volumes	Project Trips	OY (2027) w/ Project Volumes
<b>3 Campus Avenue/Project Driveway 3 - 20th Street</b>												
NBL	0	0	0	0	0	0	0	0	0	0	0	0
NBT	0	0	1	1	0	1	0	0	3	3	0	3
NBR	0	0	2	2	0	2	0	0	5	5	0	5
SBL	247	15	3	265	0	265	551	33	6	590	0	590
SBT	0	0	2	2	0	2	0	0	3	3	0	3
SBR	0	0	0	0	0	0	0	0	0	0	0	0
EBL	0	0	0	0	0	0	0	0	0	0	0	0
EBT	0	0	0	0	9	9	0	0	0	0	7	7
EBR	0	0	0	0	0	0	0	0	0	0	0	0
WBL	0	0	3	3	0	3	0	0	4	4	0	4
WBT	0	0	0	0	7	7	0	0	0	0	9	9
WBR	197	12	5	214	0	214	240	14	4	258	0	258
<b>North Leg</b>												
Approach	247	15	5	267	0	267	551	33	9	593	0	593
Departure	197	12	6	215	0	215	240	14	7	261	0	261
Total	444	27	11	482	0	482	791	47	16	854	0	854
<b>South Leg</b>												
Approach	0	0	3	3	0	3	0	0	8	8	0	8
Departure	0	0	5	5	0	5	0	0	7	7	0	7
Total	0	0	8	8	0	8	0	0	15	15	0	15
<b>East Leg</b>												
Approach	197	12	8	217	7	224	240	14	8	262	9	271
Departure	247	15	5	267	9	276	551	33	11	595	7	602
Total	444	27	13	484	16	500	791	47	19	857	16	873
<b>West Leg</b>												
Approach	0	0	0	0	9	9	0	0	0	0	7	7
Departure	0	0	0	0	7	7	0	0	0	0	9	9
Total	0	0	0	0	16	16	0	0	0	0	16	16
<b>Total Approaches</b>												
Approach	444	27	16	487	16	503	791	47	25	863	16	879
Departure	444	27	16	487	16	503	791	47	25	863	16	879
Total	888	54	32	974	32	1,006	1,582	94	50	1,726	32	1,758

Table C-3- Horizon Year (2050) Peak Hour PCE Volume Summary

	AM Peak Hour			PM Peak Hour		
	HY (2050) w/o Project Volumes	Project Trips	HY (2050) w/ Project Volumes	HY (2050) w/o Project Volumes	Project Trips	HY (2050) w/ Project Volumes
<b>1 Winston Court - Project Driveway 1/20th Street</b>						
NBL	0	1	1	0	5	5
NBT	0	0	0	0	0	0
NBR	0	0	0	0	0	0
SBL	0	0	0	0	0	0
SBT	0	0	0	0	0	0
SBR	6	0	6	4	0	4
EBL	3	0	3	6	0	6
EBT	4	3	7	0	0	0
EBR	0	5	5	0	3	3
WBL	0	0	0	0	0	0
WBT	4	0	4	0	3	3
WBR	2	0	2	0	0	0
North Leg						
Approach	6	0	6	4	0	4
Departure	5	0	5	6	0	6
Total	11	0	11	10	0	10
South Leg						
Approach	0	1	1	0	5	5
Departure	0	5	5	0	3	3
Total	0	6	6	0	8	8
East Leg						
Approach	6	0	6	0	3	3
Departure	4	3	7	0	0	0
Total	10	3	13	0	3	3
West Leg						
Approach	7	8	15	6	3	9
Departure	10	1	11	4	8	12
Total	17	9	26	10	11	21
Total Approaches						
Approach	19	9	28	10	11	21
Departure	19	9	28	10	11	21
Total	38	18	56	20	22	42

Table C-3- Horizon Year (2050) Peak Hour PCE Volume Summary

	AM Peak Hour			PM Peak Hour		
	HY (2050) w/o Project Volumes	Project Trips	HY (2050) w/ Project Volumes	HY (2050) w/o Project Volumes	Project Trips	HY (2050) w/ Project Volumes
<b>2 Project Driveway 2/20th Street</b>						
NBL	0	0	0	0	3	3
NBT	0	0	0	0	0	0
NBR	0	0	0	0	0	0
SBL	0	0	0	0	0	0
SBT	0	0	0	0	0	0
SBR	0	0	0	0	0	0
EBL	0	0	0	0	0	0
EBT	4	0	4	0	0	0
EBR	0	3	3	0	0	0
WBL	0	0	0	0	0	0
WBT	6	0	6	0	0	0
WBR	0	0	0	0	0	0
North Leg						
Approach	0	0	0	0	0	0
Departure	0	0	0	0	0	0
Total	0	0	0	0	0	0
South Leg						
Approach	0	0	0	0	3	3
Departure	0	3	3	0	0	0
Total	0	3	3	0	3	3
East Leg						
Approach	6	0	6	0	0	0
Departure	4	0	4	0	0	0
Total	10	0	10	0	0	0
West Leg						
Approach	4	3	7	0	0	0
Departure	6	0	6	0	3	3
Total	10	3	13	0	3	3
Total Approaches						
Approach	10	3	13	0	3	3
Departure	10	3	13	0	3	3
Total	20	6	26	0	6	6

Table C-3- Horizon Year (2050) Peak Hour PCE Volume Summary

	AM Peak Hour			PM Peak Hour		
	HY (2050) w/o Project Volumes	Project Trips	HY (2050) w/ Project Volumes	HY (2050) w/o Project Volumes	Project Trips	HY (2050) w/ Project Volumes
<b>3 Campus Avenue/Project Driveway 3 - 20th Street</b>						
NBL	0	0	0	0	0	0
NBT	1	0	1	3	0	3
NBR	2	0	2	5	0	5
SBL	278	0	278	649	0	649
SBT	2	0	2	3	0	3
SBR	0	0	0	0	0	0
EBL	0	0	0	0	0	0
EBT	0	9	9	0	7	7
EBR	0	0	0	0	0	0
WBL	3	0	3	4	0	4
WBT	0	7	7	0	9	9
WBR	361	0	361	271	0	271
North Leg						
Approach	280	0	280	652	0	652
Departure	362	0	362	274	0	274
Total	642	0	642	926	0	926
South Leg						
Approach	3	0	3	8	0	8
Departure	5	0	5	7	0	7
Total	8	0	8	15	0	15
East Leg						
Approach	364	7	371	275	9	284
Departure	280	9	289	654	7	661
Total	644	16	660	929	16	945
West Leg						
Approach	0	9	9	0	7	7
Departure	0	7	7	0	9	9
Total	0	16	16	0	16	16
Total Approaches						
Approach	647	16	663	935	16	951
Departure	647	16	663	935	16	951
Total	1,294	32	1,326	1,870	32	1,902

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## APPENDIX D

### INTERSECTION LEVEL OF SERVICE WORKSHEETS

Intersection						
Int Delay, s/veh	3.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	2	4	4	2	0	5
Future Vol, veh/h	2	4	4	2	0	5
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	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	3	5	5	3	0	7

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	8	0	-	0	17
Stage 1	-	-	-	-	7
Stage 2	-	-	-	-	11
Critical Hdwy	4.1	-	-	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	2.2	-	-	-	3.5
Pot Cap-1 Maneuver	1625	-	-	-	1006
Stage 1	-	-	-	-	1022
Stage 2	-	-	-	-	1018
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1625	-	-	-	1004
Mov Cap-2 Maneuver	-	-	-	-	1004
Stage 1	-	-	-	-	1020
Stage 2	-	-	-	-	1018

Approach	EB	WB	SB
HCM Control Delay, s/v	2.41	0	8.35
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	600	-	-	-	1082
HCM Lane V/C Ratio	0.002	-	-	-	0.006
HCM Control Delay (s/veh)	7.2	0	-	-	8.3
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection						
Int Delay, s/veh	6.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	5	0	0	0	0	3
Future Vol, veh/h	5	0	0	0	0	3
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	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	67	67	67	67	67	67
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	7	0	0	0	0	4

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	1	0	-	0	16
Stage 1	-	-	-	-	1
Stage 2	-	-	-	-	15
Critical Hdwy	4.1	-	-	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	2.2	-	-	-	3.5
Pot Cap-1 Maneuver	1634	-	-	-	1007
Stage 1	-	-	-	-	1027
Stage 2	-	-	-	-	1013
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1634	-	-	-	1002
Mov Cap-2 Maneuver	-	-	-	-	1002
Stage 1	-	-	-	-	1022
Stage 2	-	-	-	-	1013

Approach	EB	WB	SB
HCM Control Delay, s/v	7.21	0	8.32
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1634	-	-	-	1089
HCM Lane V/C Ratio	0.005	-	-	-	0.004
HCM Control Delay (s/veh)	7.2	0	-	-	8.3
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection						
Int Delay, s/veh	3.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	3	4	4	2	0	6
Future Vol, veh/h	3	4	4	2	0	6
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	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	4	5	5	3	0	8

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	8	0	-	0	20
Stage 1	-	-	-	-	7
Stage 2	-	-	-	-	13
Critical Hdwy	4.1	-	-	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	2.2	-	-	-	3.5
Pot Cap-1 Maneuver	1625	-	-	-	1002
Stage 1	-	-	-	-	1022
Stage 2	-	-	-	-	1015
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1625	-	-	-	1000
Mov Cap-2 Maneuver	-	-	-	-	1000
Stage 1	-	-	-	-	1019
Stage 2	-	-	-	-	1015

Approach	EB	WB	SB
HCM Control Delay, s/v	3.09	0	8.35
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	771	-	-	-	1082
HCM Lane V/C Ratio	0.002	-	-	-	0.007
HCM Control Delay (s/veh)	7.2	0	-	-	8.4
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection						
Int Delay, s/veh	0.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	TT		TT			TT
Traffic Vol, veh/h	3	214	1	2	265	2
Future Vol, veh/h	3	214	1	2	265	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	3	225	1	2	279	2

Major/Minor	Minor2	Major2		
Conflicting Flow All	560	2	0	0
Stage 1	560	-	-	-
Stage 2	0	-	-	-
Critical Hdwy	6.5	6.2	4.1	-
Critical Hdwy Stg 1	5.5	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	4	3.3	2.2	-
Pot Cap-1 Maneuver	440	1088	-	-
Stage 1	514	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	0	1088	-	-
Mov Cap-2 Maneuver	0	-	-	-
Stage 1	0	-	-	-
Stage 2	0	-	-	-

Approach	NB	SB
HCM Control Delay, s/v	8.32	
HCM LOS	A	

Minor Lane/Major Mvmt	NBLn1	SBL	SBT
Capacity (veh/h)	1088	-	-
HCM Lane V/C Ratio	0.003	-	-
HCM Control Delay (s/veh)	8.3	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0	-	-

Intersection						
Int Delay, s/veh	7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↶	
Traffic Vol, veh/h	6	0	0	0	0	4
Future Vol, veh/h	6	0	0	0	0	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	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	67	67	67	67	67	67
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	9	0	0	0	0	6

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	1	0	-	0	19
Stage 1	-	-	-	-	1
Stage 2	-	-	-	-	18
Critical Hdwy	4.1	-	-	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	2.2	-	-	-	3.5
Pot Cap-1 Maneuver	1634	-	-	-	1003
Stage 1	-	-	-	-	1027
Stage 2	-	-	-	-	1010
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1634	-	-	-	998
Mov Cap-2 Maneuver	-	-	-	-	998
Stage 1	-	-	-	-	1021
Stage 2	-	-	-	-	1010

Approach	EB	WB	SB
HCM Control Delay, s/v	7.21	0	8.32
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1634	-	-	-	1089
HCM Lane V/C Ratio	0.005	-	-	-	0.005
HCM Control Delay (s/veh)	7.2	0	-	-	8.3
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection						
Int Delay, s/veh	0.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		T			T
Traffic Vol, veh/h	4	258	3	5	590	3
Future Vol, veh/h	4	258	3	5	590	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	4	272	3	5	621	3

Major/Minor	Minor2	Major2		
Conflicting Flow All	1245	3	0	0
Stage 1	1245	-	-	-
Stage 2	0	-	-	-
Critical Hdwy	6.5	6.2	4.1	-
Critical Hdwy Stg 1	5.5	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	4	3.3	2.2	-
Pot Cap-1 Maneuver	175	1087	-	-
Stage 1	248	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	0	1087	-	-
Mov Cap-2 Maneuver	0	-	-	-
Stage 1	0	-	-	-
Stage 2	0	-	-	-

Approach	NB	SB
HCM Control Delay, s/v	8.34	
HCM LOS	A	

Minor Lane/Major Mvmt	NBLn1	SBL	SBT
Capacity (veh/h)	1087	-	-
HCM Lane V/C Ratio	0.008	-	-
HCM Control Delay (s/veh)	8.3	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0	-	-

Intersection												
Int Delay, s/veh	2.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	7	5	0	4	2	1	0	0	0	0	6
Future Vol, veh/h	3	7	5	0	4	2	1	0	0	0	0	6
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	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	4	9	7	0	5	3	1	0	0	0	0	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	8	0	0	16	0	0	26	29	13	24	31	7
Stage 1	-	-	-	-	-	-	21	21	-	7	7	-
Stage 2	-	-	-	-	-	-	5	8	-	17	24	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1625	-	-	1615	-	-	990	868	1074	993	866	1082
Stage 1	-	-	-	-	-	-	1003	882	-	1020	894	-
Stage 2	-	-	-	-	-	-	1022	893	-	1007	879	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1625	-	-	1615	-	-	980	866	1074	990	864	1082
Mov Cap-2 Maneuver	-	-	-	-	-	-	980	866	-	990	864	-
Stage 1	-	-	-	-	-	-	1001	880	-	1020	894	-
Stage 2	-	-	-	-	-	-	1014	893	-	1005	877	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	1.44	0	8.68	8.35
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	980	332	-	-	1615	-	-	1082
HCM Lane V/C Ratio	0.001	0.002	-	-	-	-	-	0.007
HCM Control Delay (s/veh)	8.7	7.2	0	-	0	-	-	8.4
HCM Lane LOS	A	A	A	-	A	-	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	
Traffic Vol, veh/h	4	3	0	6	0	0
Future Vol, veh/h	4	3	0	6	0	0
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	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	4	3	0	6	0	0

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	7	0	12
Stage 1	-	-	-	-	6
Stage 2	-	-	-	-	6
Critical Hdwy	-	-	4.1	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	2.2	-	3.5
Pot Cap-1 Maneuver	-	-	1626	-	1013
Stage 1	-	-	-	-	1023
Stage 2	-	-	-	-	1022
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1626	-	1013
Mov Cap-2 Maneuver	-	-	-	-	1013
Stage 1	-	-	-	-	1023
Stage 2	-	-	-	-	1022

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1626	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s/veh)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

# SimTraffic Performance Report

San Antonio Water Headquarters  
Opening Year (2027) plus Project\_AM Peak Hour

## 3: Private Driveway /Campus Avenue & Project Driveway 3/20th Street Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.2	0.1	0.2	0.2
Total Delay (hr)	0.0	0.1	0.0	0.1	0.1
Total Del/Veh (s)	4.9	1.0	3.1	0.9	1.0
Stop Delay (hr)	0.0	0.0	0.0	0.0	0.0
Stop Del/Veh (s)	2.4	0.0	2.5	0.0	0.1

Intersection												
Int Delay, s/veh	5.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	0	3	0	3	0	5	0	0	0	0	4
Future Vol, veh/h	6	0	3	0	3	0	5	0	0	0	0	4
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	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	67	67	67	67	67	67	67	67	67	67	67	67
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	9	0	4	0	4	0	7	0	0	0	0	6

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	4	0	0	4	0	0	25	25	2	22	27	4
Stage 1	-	-	-	-	-	-	20	20	-	4	4	-
Stage 2	-	-	-	-	-	-	4	4	-	18	22	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1630	-	-	1630	-	-	992	873	1088	995	870	1085
Stage 1	-	-	-	-	-	-	1004	883	-	1023	896	-
Stage 2	-	-	-	-	-	-	1023	896	-	1007	881	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1630	-	-	1630	-	-	981	868	1088	989	865	1085
Mov Cap-2 Maneuver	-	-	-	-	-	-	981	868	-	989	865	-
Stage 1	-	-	-	-	-	-	998	878	-	1023	896	-
Stage 2	-	-	-	-	-	-	1017	896	-	1001	876	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	4.81	0	8.7	8.34
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	981	1000	-	-	1630	-	-	1085
HCM Lane V/C Ratio	0.008	0.005	-	-	-	-	-	0.006
HCM Control Delay (s/veh)	8.7	7.2	0	-	0	-	-	8.3
HCM Lane LOS	A	A	A	-	A	-	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

Intersection						
Int Delay, s/veh	5.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	
Traffic Vol, veh/h	0	0	0	0	3	0
Future Vol, veh/h	0	0	0	0	3	0
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	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	0	0	0	3	0

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	1	0	2
Stage 1	-	-	-	-	1
Stage 2	-	-	-	-	1
Critical Hdwy	-	-	4.1	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	2.2	-	3.5
Pot Cap-1 Maneuver	-	-	1635	-	1026
Stage 1	-	-	-	-	1027
Stage 2	-	-	-	-	1027
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1635	-	1026
Mov Cap-2 Maneuver	-	-	-	-	1026
Stage 1	-	-	-	-	1027
Stage 2	-	-	-	-	1027

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0	8.52
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1026	-	-	1635	-
HCM Lane V/C Ratio	0.003	-	-	-	-
HCM Control Delay (s/veh)	8.5	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

# SimTraffic Performance Report

San Antonio Water Headquarters  
Opening Year (2027) plus Project\_PM Peak Hour

## 3: Private Driveway /Campus Avenue & Project Driveway 3/20th Street Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	0.1	0.1
Denied Del/Veh (s)	0.1	0.3	0.1	0.6	0.5
Total Delay (hr)	0.0	0.1	0.0	0.4	0.5
Total Del/Veh (s)	7.2	1.0	3.9	2.2	1.9
Stop Delay (hr)	0.0	0.0	0.0	0.0	0.0
Stop Del/Veh (s)	4.9	0.0	3.6	0.1	0.1

Intersection						
Int Delay, s/veh	3.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	3	4	4	2	0	6
Future Vol, veh/h	3	4	4	2	0	6
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	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	3	4	4	2	0	6

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	6	0	-	0	16
Stage 1	-	-	-	-	5
Stage 2	-	-	-	-	11
Critical Hdwy	4.1	-	-	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	2.2	-	-	-	3.5
Pot Cap-1 Maneuver	1628	-	-	-	1008
Stage 1	-	-	-	-	1023
Stage 2	-	-	-	-	1018
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1628	-	-	-	1006
Mov Cap-2 Maneuver	-	-	-	-	1006
Stage 1	-	-	-	-	1021
Stage 2	-	-	-	-	1018

Approach	EB	WB	SB
HCM Control Delay, s/v	3.09	0	8.34
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	771	-	-	-	1084
HCM Lane V/C Ratio	0.002	-	-	-	0.006
HCM Control Delay (s/veh)	7.2	0	-	-	8.3
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection						
Int Delay, s/veh	0.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		T			T
Traffic Vol, veh/h	3	361	1	2	278	2
Future Vol, veh/h	3	361	1	2	278	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	3	380	1	2	293	2

Major/Minor	Minor2	Major2		
Conflicting Flow All	587	2	0	0
Stage 1	587	-	-	-
Stage 2	0	-	-	-
Critical Hdwy	6.5	6.2	4.1	-
Critical Hdwy Stg 1	5.5	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	4	3.3	2.2	-
Pot Cap-1 Maneuver	424	1088	-	-
Stage 1	500	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	0	1088	-	-
Mov Cap-2 Maneuver	0	-	-	-
Stage 1	0	-	-	-
Stage 2	0	-	-	-

Approach	NB	SB
HCM Control Delay, s/v	8.32	
HCM LOS	A	

Minor Lane/Major Mvmt	NBLn1	SBL	SBT
Capacity (veh/h)	1088	-	-
HCM Lane V/C Ratio	0.003	-	-
HCM Control Delay (s/veh)	8.3	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0	-	-

Intersection						
Int Delay, s/veh	7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↶	↷
Traffic Vol, veh/h	6	0	0	0	0	4
Future Vol, veh/h	6	0	0	0	0	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	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	6	0	0	0	0	4

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	1	0	-	0	14
Stage 1	-	-	-	-	1
Stage 2	-	-	-	-	13
Critical Hdwy	4.1	-	-	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	2.2	-	-	-	3.5
Pot Cap-1 Maneuver	1635	-	-	-	1011
Stage 1	-	-	-	-	1027
Stage 2	-	-	-	-	1015
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1635	-	-	-	1007
Mov Cap-2 Maneuver	-	-	-	-	1007
Stage 1	-	-	-	-	1024
Stage 2	-	-	-	-	1015

Approach	EB	WB	SB
HCM Control Delay, s/v	7.21	0	8.32
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1635	-	-	-	1089
HCM Lane V/C Ratio	0.004	-	-	-	0.004
HCM Control Delay (s/veh)	7.2	0	-	-	8.3
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection						
Int Delay, s/veh	0.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		T			T
Traffic Vol, veh/h	4	271	3	5	649	3
Future Vol, veh/h	4	271	3	5	649	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	4	285	3	5	683	3

Major/Minor	Minor2	Major2		
Conflicting Flow All	1369	3	0	0
Stage 1	1369	-	-	-
Stage 2	0	-	-	-
Critical Hdwy	6.5	6.2	4.1	-
Critical Hdwy Stg 1	5.5	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	4	3.3	2.2	-
Pot Cap-1 Maneuver	148	1087	-	-
Stage 1	216	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	0	1087	-	-
Mov Cap-2 Maneuver	0	-	-	-
Stage 1	0	-	-	-
Stage 2	0	-	-	-

Approach	NB	SB
HCM Control Delay, s/v	8.34	
HCM LOS	A	

Minor Lane/Major Mvmt	NBLn1	SBL	SBT
Capacity (veh/h)	1087	-	-
HCM Lane V/C Ratio	0.008	-	-
HCM Control Delay (s/veh)	8.3	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0	-	-

Intersection												
Int Delay, s/veh	2.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	7	5	0	4	2	1	0	0	0	0	6
Future Vol, veh/h	3	7	5	0	4	2	1	0	0	0	0	6
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	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	3	7	5	0	4	2	1	0	0	0	0	6

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	6	0	0	13	0	0	21	23	10	19	24	5
Stage 1	-	-	-	-	-	-	16	16	-	5	5	-
Stage 2	-	-	-	-	-	-	4	6	-	14	19	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1628	-	-	1619	-	-	998	875	1077	1000	873	1084
Stage 1	-	-	-	-	-	-	1008	886	-	1022	895	-
Stage 2	-	-	-	-	-	-	1023	894	-	1012	884	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1628	-	-	1619	-	-	990	873	1077	998	871	1084
Mov Cap-2 Maneuver	-	-	-	-	-	-	990	873	-	998	871	-
Stage 1	-	-	-	-	-	-	1007	884	-	1022	895	-
Stage 2	-	-	-	-	-	-	1017	894	-	1010	882	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s/v	1.44			0			8.64			8.34		
HCM LOS							A			A		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	990	332	-	-	1619	-	-	1084
HCM Lane V/C Ratio	0.001	0.002	-	-	-	-	-	0.006
HCM Control Delay (s/veh)	8.6	7.2	0	-	0	-	-	8.3
HCM Lane LOS	A	A	A	-	A	-	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	4	3	0	6	0	0
Future Vol, veh/h	4	3	0	6	0	0
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	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	4	3	0	6	0	0

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	7	0	12
Stage 1	-	-	-	-	6
Stage 2	-	-	-	-	6
Critical Hdwy	-	-	4.1	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	2.2	-	3.5
Pot Cap-1 Maneuver	-	-	1626	-	1013
Stage 1	-	-	-	-	1023
Stage 2	-	-	-	-	1022
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1626	-	1013
Mov Cap-2 Maneuver	-	-	-	-	1013
Stage 1	-	-	-	-	1023
Stage 2	-	-	-	-	1022

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1626	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s/veh)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

SimTraffic Performance Report

3: Private Driveway /Campus Avenue & Project Driveway 3/20th Street Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.1	0.3	0.1	0.3	0.3
Total Delay (hr)	0.0	0.2	0.0	0.1	0.3
Total Del/Veh (s)	5.1	1.6	2.8	1.0	1.4
Stop Delay (hr)	0.0	0.0	0.0	0.0	0.0
Stop Del/Veh (s)	2.7	0.0	2.6	0.0	0.0

Intersection												
Int Delay, s/veh	5.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	0	3	0	3	0	5	0	0	0	0	4
Future Vol, veh/h	6	0	3	0	3	0	5	0	0	0	0	4
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	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	6	0	3	0	3	0	5	0	0	0	0	4

Major/Minor	Major1		Major2			Minor1		Minor2				
Conflicting Flow All	3	0	0	3	0	0	17	17	2	16	19	3
Stage 1	-	-	-	-	-	-	14	14	-	3	3	-
Stage 2	-	-	-	-	-	-	3	3	-	13	16	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1632	-	-	1632	-	-	1002	881	1089	1005	879	1087
Stage 1	-	-	-	-	-	-	1011	888	-	1025	897	-
Stage 2	-	-	-	-	-	-	1025	897	-	1013	886	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1632	-	-	1632	-	-	995	877	1089	1001	876	1087
Mov Cap-2 Maneuver	-	-	-	-	-	-	995	877	-	1001	876	-
Stage 1	-	-	-	-	-	-	1007	884	-	1025	897	-
Stage 2	-	-	-	-	-	-	1021	897	-	1009	883	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	4.81	0	8.64	8.33
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	995	1000	-	-	1632	-	-	1087
HCM Lane V/C Ratio	0.005	0.004	-	-	-	-	-	0.004
HCM Control Delay (s/veh)	8.6	7.2	0	-	0	-	-	8.3
HCM Lane LOS	A	A	A	-	A	-	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

Intersection						
Int Delay, s/veh	5.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	
Traffic Vol, veh/h	0	0	0	0	3	0
Future Vol, veh/h	0	0	0	0	3	0
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	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	0	0	0	3	0

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	1	0	2
Stage 1	-	-	-	-	1
Stage 2	-	-	-	-	1
Critical Hdwy	-	-	4.1	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	2.2	-	3.5
Pot Cap-1 Maneuver	-	-	1635	-	1026
Stage 1	-	-	-	-	1027
Stage 2	-	-	-	-	1027
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1635	-	1026
Mov Cap-2 Maneuver	-	-	-	-	1026
Stage 1	-	-	-	-	1027
Stage 2	-	-	-	-	1027

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0	8.52
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1026	-	-	1635	-
HCM Lane V/C Ratio	0.003	-	-	-	-
HCM Control Delay (s/veh)	8.5	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

3: Private Driveway /Campus Avenue & Project Driveway 3/20th Street Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	0.1	0.1
Denied Del/Veh (s)	0.1	0.2	0.1	0.6	0.4
Total Delay (hr)	0.0	0.1	0.0	0.4	0.5
Total Del/Veh (s)	8.5	1.1	9.5	2.2	2.0
Stop Delay (hr)	0.0	0.0	0.0	0.0	0.1
Stop Del/Veh (s)	6.2	0.0	8.7	0.1	0.2