December 22, 2023

Mr. Bob Prasse, Director of Environmental Services
MIG, INC.
1650 Spruce Street, Suite 106
Riverside, California 92507

RE: Citrus Avenue Warehouse Project Site Access Memorandum
Project No.: 19530

Dear Mr. Prasse:

Ganddini Group, Inc. is pleased to provide this Site Access Memorandum for the proposed Citrus Avenue Warehouse Project. We trust the findings of this analysis will aid you and the City of Fontana in assessing the project.

PROJECT DESCRIPTION

The net 15.84-acre project site is located north of Slover Avenue, south of Boyle Avenue, east of Citrus Avenue, and west of Oleander Avenue (APNs: 0251-151-03, -04, 07, -09, -10, -14, -15, -16, -19, -21, -22, -39, -40, -42, -43, and -44) in the City of Fontana, California. The project site is currently occupied by fifteen single-family detached residential dwelling units. Figure 1 shows the project location map.

The proposed project involves construction of a 355,995 square foot high-cube transload and short-term storage warehouse within the Light Industrial (M-1) and Community Commercial (C-1) Zoning Districts. Vehicular access is proposed at Slover Avenue via three project driveways and at Boyle Avenue via two project driveways. Figure 2 illustrates the project site plan for Option 1 – South Facing Truck Docks.

PROJECT TRIP GENERATION

Table 1 shows the existing land uses trip generation for residential land uses and Table 2 shows the project trip generation for the proposed warehousing use based upon trip generation rates obtained from the Institute of Transportation Engineers (ITE) *Trip Generation Manual* (11th Edition, 2021). Based on review of the ITE land use descriptions, trip generation rates for Single-Family Detached Residential (ITE Land Use Code 210) and High-Cube Transload and Short-Term Storage Warehouse (ITE Land Use Code 154) were determined to adequately represent the existing/proposed uses and were selected for this analysis. The existing and project trip generation forecasts were determined by multiplying the trip generation rates by the land use quantities.

A few of the existing residential land uses currently appear to operate commercial businesses (automobile repair, storage yard, nursery). All residential lots were analyzed as single-family detached residential to provide for a conservative assessment of the net project trip generation and to correspond with the intended and constructed land uses.

Existing

As shown in Table 1, the existing land uses are forecast to generate approximately 142 daily vehicle trips, including 11 vehicle trips during the AM peak hour and 14 vehicle trips during the PM peak hour.

Proposed Project

As shown in Table 2, the proposed project is forecast to generate approximately 498 daily vehicle trips, including 29 vehicle trips during the AM peak hour and 34 vehicle trips during the PM peak hour.

Truck Trips

In accordance with industry practice and City requirements for truck-oriented uses, the project trip generation was also calculated in terms of Passenger Car Equivalent (PCE) trips. The percentage of truck trips was obtained from the ITE *Trip Generation Manual* (11th Edition, 2021). The breakdown of truck mix by axle type was obtained from the City of Fontana *Truck Trip Generation Study* (August 2003). Finally, truck trips were converted to PCE trips based on the following factors recommended by the City of Fontana *Traffic Impact Analysis Guidelines for Vehicle Miles Traveled and Level of Service Assessment* (October 2020): 2.0 for 2-axle trucks, 2.5 for 3-axle trucks, and 3.0 for trucks with four or more axles.

As also shown in Table 1, the proposed project is forecast to generate approximately 633 daily PCE trips, including 43 PCE trips during the AM peak hour and 38 PCE trips during the PM peak hour.

Trip Generation Comparison

Table 3 shows a trip generation comparison between the existing and proposed uses. As shown in Table 3, the proposed project is forecast to result in a net increase of approximately 356 additional daily vehicle trips, including 18 additional vehicle trips during the AM peak hour and 20 additional vehicle trips during the PM peak hour comparative to the existing land uses.

PROJECT TRIP DISTRIBUTION AND ASSIGNMENT

The project west driveway on Boyle Avenue is proposed to be full access for trucks and automobiles and the project east driveway on Boyle Avenue is proposed to be full access automobile only. The project west driveway on Slover Avenue is proposed to provide right in/right out only access for trucks only. The project central driveway on Slover Avenue is proposed to provide right turn in/out and left turn in only access for trucks only. The project east driveway on Slover Avenue is proposed to provide right in/out only access for cars, with trucks only using this access if absolutely necessary.

Figures 3 to 6 show the forecast directional distribution patterns for the project generated trips for both automobiles and trucks. The project trip distribution patterns are based on review of existing volume data, surrounding land uses, City of Fontana truck routes, and the local and regional roadway facilities in the project vicinity.

Figure 7 and Figure 8 show the project-generated AM and PM peak hour intersection turning movement volumes at the proposed project driveways based on the trip generation shown in Table 2 and trip distribution patterns shown on Figures 3 to 6. The former use of the property consisted of 15 residences and the traffic generated by this former use was not used in developing the project-generated AM and PM peak hour intersection turning movement volumes.

GATE ACCESS STACKING ANALYSIS

Gate stacking at the proposed loading dock access gates was evaluated to ensure adequate storage lengths are provided and vehicle queues do not overflow into the public right-of-way or obstruct on-site circulation.

The gate queueing analysis was performed based on procedures outlined in *Transportation and Land Development* (Institute of Transportation Engineers, 1988). The methodology estimates the number of queued vehicles at a service point based on a Poisson distribution for estimating the effect of surges and random arrivals. Additional inputs include the demand rate, number of service lanes, service rate, and the desired confidence interval. Service rate capacities were based on review of the *Entrance-Exit Design and Control for Major Parking Facilities* (Crommelin, 1972) methodology; however, the lowest entering maximum hourly capacity is 175 vehicles/hour for a coin operated gate. To provide for a conservative analysis, an entering maximum hourly capacity of 60 vehicles/hour was used; this assumes a truck arrival would take up to one minute for security check-in. A 95 percent confidence interval was used to determine the queue that is not exceeded five times out of 100 intervals.

Table 4 summarizes the loading dock access gate queuing analysis for each driveway for a "worst-case" scenario assuming 100% of trucks enter from each driveway on Slover Avenue; detailed worksheets are provided in Attachment A. As shown in Table 4, the central loading dock gate entrances provide approximately 75 feet of storage length, which is sufficient to accommodate the forecast queue length of 75 feet (approximately one truck) during the peak hours. The gate exits provide approximately a minimum of 75 feet of storage length between the gate and internal drive aisles, which is sufficient to accommodate the forecast queue length of 75 feet (approximately one truck) during the peak hours. The same is true for the westerly and easterly loading dock access gates to/from Slover Avenue.

It should be noted that all three of these driveways on Slover Avenue will allow for inbound truck access, but the project east driveway will only be used if absolutely necessary. The queuing analysis is performed in vehicle trips assuming 75 feet of queue per vehicle to accommodate a 73.5-foot long WB-67 truck. Therefore, an inbound truck will occupy all 75 feet of available storage length for the project driveways.

It is projected that the proposed development will have 4 inbound trucks during the AM peak hour and one inbound truck during the PM peak hour. Thus, an inbound truck is expected every 15 minutes during the AM peak hour. It is unlikely that there would be a truck attempting to enter the same driveway that a truck is queuing at while the gate is opening, but in this unlikely event the second truck will need to queue either in the eastbound left turn lane or in the westbound travel lane. A passenger car traveling behind an inbound truck at the same project driveway would need to do the same. To prevent project trips from queuing along Slover Avenue, though unlikely, it is recommended that the entrance gates at the project driveways remain open during operating hours.

Figure 9 shows a stacking diagram for the loading dock access gates at the three project driveways on Slover Avenue. As shown on Figure 9, one truck can queue at the west and central driveways perpendicular to Slover Avenue prior to the entrance gate. The project east driveway allows for an additional truck to queue parallel to Slover Avenue while a truck waits behind them. As shown on Figure 9, the drive aisles provide for sufficient storage to accommodate exiting vehicle queues without obstructing entering vehicles or adversely impacting on-site circulation.

LEFT TURN STORAGE LENGTH ANALYSIS

A left turn pocket queuing analysis has been conducted at the project central driveway on Slover Avenue.

Table 5 summarizes results of the queuing analyses for left-turn movements conducted at the project central driveway on Slover Avenue. The recommended storage length represents the storage length necessary to accommodate the expected queue length based on a 95th-percentile design value. The queuing analysis reports are based on the number of vehicles using the left turn lanes during the peak hours converted to PCE trips.

Table 5 shows the AM and PM peak hour volumes for the proposed left turn lane at the Project Central Driveway and the recommended storage length based on general traffic engineering/transportation planning guidance of one foot of stacking length per peak hour volume.

Although the AM and PM peak hour volumes are relatively minimal (less than 25 vehicles per hour would equate to less than 25 feet of queue length), the California Department of Transportation (Caltrans) Highway Design Manual (HDM) recommends a minimum storage length for two (2) passenger cars at 25 feet per vehicle (i.e., 50 feet total) at unsignalized left turn lanes. Since this driveway will be used exclusively by trucks, a minimum storage length of 75 feet per vehicle is recommended to accommodate a 73.5-foot WB-67 truck.

Therefore, the recommended storage length necessary to accommodate a minimum of two trucks within the proposed left turn lane at the Project Central Driveway is 150 feet. The proposed site plan (see Figure 2) shows a raised median with an eastbound left turn lane that is approximately 300 feet and would provide adequate storage capacity for the projected inbound left turn volume.

ACCESS MANAGEMENT REQUIREMENTS

The City of Fontana Access Management Standards (Standard Plan 1018) provides requirements related to driveway spacing and median breaks. Slover Avenue adjacent to the project site is classified on the City of Fontana Circulation Master Plan as a Primary Arterial. According to Standard Plan 1018, a Primary Arterial requires driveway spacing of 330 feet and median breaks of 1,320 feet.

The distance between Citrus Avenue and the project west driveway is 531 feet and between the project east driveway and Oleander Avenue is 252 feet. The distance between the project east boundary and Oleander Avenue is less than the 330 feet requirement. However, the project east driveway is restricted to right turns in/out only with a proposed raised median. With no median break, left turns in and out are prohibited. Thus, the median break for left turn in at the project central driveway provides a more sensible metric to evaluate driveway spacing. The distance between Citrus Avenue and the project central driveway is 936 feet and between the project central driveway and Oleander Avenue is 599 feet. These are both more than the 330 feet requirement and meet the intent of the driveway spacing requirements.

However, the required distance between median breaks is 1,320 feet and the proposed median break from the project central driveway west to Citrus Avenue and east to Oleander Avenue are both less than 1,320 feet. While this median break requirement is not met, the eastbound left turn lane at the project central driveway will improve local circulation as trucks will make an eastbound left turn at the central project driveway instead of proceeding eastbound through the intersection to Oleander Avenue, making an eastbound left turn on Oleander Avenue heading northbound to Boyle Avenue, making a northbound left turn onto Boyle Avenue and then a westbound left turn at the west project driveway on Boyle Avenue.

As described, trucks will have quicker and more direct route to the project site with this median break at the project central driveway on Slover Avenue allowing for right turns in/out and left turn in only access. Additionally, Oleander Avenue and Boyle Avenue are bounded by residential land uses. The median break at the project central driveway on Slover Avenue will minimize the number of inbound trucks that would otherwise travel on Oleander Avenue and Boyle Avenue adjacent to these residential land uses. For these reasons, it is recommended that the project central driveway on Slover Avenue is right turns in/out and left turn in only access even though it does not meet the median break standard for Slover Avenue as stated in Standard Plan 1018.

CONCLUSIONS

The loading dock gate entrances provide approximately 75 feet of storage length, which is sufficient to accommodate the forecast queue length of 75 feet (approximately one truck) during the peak hours. To prevent project trips from queuing along Slover Avenue, though unlikely, it is recommended that the entrance gates at the project driveways remain open during operating hours.

The recommended storage length necessary to accommodate a minimum of two trucks within the proposed left turn lane at the Project Central Driveway is 150 feet. The proposed site plan (see Figure 2) shows a raised median with an eastbound left turn lane that is approximately 300 feet and would provide adequate storage capacity for the projected inbound left turn volume.

It is recommended that the Project Central Driveway on Slover Avenue provide right turns in/out and left turn in only access. Although the proposed restricted driveway would require a deviation from Standard Plan 1018, adequate left turn lane storage length can be provided to prevent queue overflow into adjacent through lanes based on the results of the gate stacking and left turn lane queuing analysis. Additionally, the proposed site access configuration would improve circulation in the project vicinity compared to right in/out only access by providing direct access to the arterial roadway system and minimizing the need for truck circulation on residential streets.

We appreciate the opportunity to assist you on this project. Should you have any questions or if we can be of further assistance, please do not hesitate to call at (714) 795-3100 x 103.

Sincerely,

GANDDINI GROUP, INC.
Bryan Crawford | Senior Associate
Giancarlo Ganddini, PE, PTP | Principal

Table 1
Existing Trip Generation

Trip Generation Rates									
			AM Peak Hour			PM Peak Hour			Daily
Land Use	Source[1]	Units[2]	% In	% Out	Rate	% In	% Out	Rate	Rate
Single-Family Detached Housing	ITE 210	DU	26%	74%	0.70	63%	37%	0.94	9.43

Trips Generated									
			AM Peak Hour			PM Peak Hour			
Land Use	Quantity	Units[2]	In	Out	Total	In	Out	Total	Daily
Single-Family Detached Housing	15	DU	3	8	11	9	5	14	142

Notes:

1) Source: ITE = Institute of Transportation Engineers *Trip Generation Manual* (11th Edition, 2021); ### = Land Use Code

2) DU = Dwelling Units

Table 2
Project Trip Generation

Land Use: High-Cube Transload & Short-Term Storage Warehouse
Size: 355.995 TSF

TRIP GENERATION RATES PER TSF[1]								
		AM Peak Hour			PM Peak Hour			
Vehicle Type	Source[2]	In	Out	Rate	In	Out	Rate	Daily Rate
All Vehicles	ITE 154	77%	23%	0.080	28%	72%	0.100	1.400
Trucks Only	ITE 154	49%	51%	0.020	47%	53%	0.010	0.220
Passenger Car (75.0% AM, 90.0% PM, 84.3% Daily)		0.046	0.014	0.060	0.025	0.065	0.090	1.180
Truck (25.0% AM, 10.0% PM, 15.7% Daily)		0.010	0.010	0.020	0.005	0.005	0.010	0.220
Truck Mix:	SCAQMD							
2-Axle Trucks (16.7%)		0.002	0.002	0.004	0.001	0.001	0.002	0.037
3-Axle Trucks (20.7%)		0.002	0.002	0.004	0.001	0.001	0.002	0.046
4+ Axle Trucks (62.6%)		0.006	0.006	0.012	0.003	0.003	0.006	0.138

VEHICLE TRIPS GENERATED							
	AM Peak Hour			PM Peak Hour			
Vehicle Type	In	Out	Total	In	Out	Total	Daily
Passenger Car	16	5	21	9	23	32	420
Trucks							
2-Axle Trucks	1	1	2	0	0	0	13
3-Axle Trucks	1	1	2	0	0	0	16
4+ Axle Trucks	2	2	4	1	1	2	49
Subtotal	4	4	8	1	1	2	78
Total Vehicle Trips Generated	**20**	**9**	**29**	**10**	**24**	**34**	**498**

PCE[3] TRIPS GENERATED								
		AM Peak Hour			PM Peak Hour			
Vehicle Type	PCE Factor[4]	In	Out	Total	In	Out	Total	Daily
Passenger Car	1.0	16	5	21	9	23	32	420
Trucks								
2-Axle Trucks	2.0	2	2	4	0	0	0	26
3-Axle Trucks	2.5	3	3	6	0	0	0	40
4+ Axle Trucks	3.0	6	6	12	3	3	6	147
Subtotal		11	11	22	3	3	6	213
Total PCE Trips Generated		**27**	**16**	**43**	**12**	**26**	**38**	**633**

Notes:
(1) TSF = Thousand Square Feet

(2) ITE = Institute of Transportation Engineers *Trip Generation Manual* (11th Edition, 2021); ### = ITE Land Use Code.
SCAQMD = South Coast Air Quality Management District recommendations for non-cold storage high-cube warehouse.

(3) PCE = Passenger Car Equivalent

(4) Source: City of Fontana *Traffic Impact Analysis Guidelines for Vehicle Miles Traveled and Level of Service Assessment* (October 2020).

Table 3
Project Trip Generation Comparison

Land Use	Trips Generated						
	AM Peak Hour			PM Peak Hour			
	In	Out	Total	In	Out	Total	Daily
Project[1]	20	9	29	10	24	34	498
Existing Land Uses[2]	-3	-8	-11	-9	-5	-14	-142
Difference	**+17**	**+1**	**+18**	**+1**	**+19**	**+20**	**+356**

Notes:
(1) See Table 2.

(2) See Table 1.

Table 4

Parking Gate Access Stacking Analysis

Gate / Peak Hour	Demand Flow (veh/hr)	Service Lanes	Service Rate Capacity (veh/hr/ln)	Utilization Factor	Queue Length (feet)	Storage Length (feet)	Adequate Storage Provided
Entering							
Project West Driveway							
AM Peak Hour	1	1	60	0.02	25	75	YES
PM Peak Hour	1	1	60	0.02	25	75	YES
Project Central Driveway							
AM Peak Hour	4	1	60	0.07	25	75	YES
PM Peak Hour	1	1	60	0.02	25	75	YES
Project East Driveway							
AM Peak Hour	6	1	60	0.10	25	75	YES
PM Peak Hour	4	1	60	0.07	25	75	YES

Notes:

(1) Based on Transportation and Land Development (Institute of Transportation Engineers, 1988) "Applications of Queuing Analysis" methodology with service rate capacities from *Entrance-Exit Design and Control for Major Parking Facilities* (Crommelin, 1972); see Attachment A.

Table 5
Left Turn Storage Length Analysis

Driveway	Turning Movement	Peak Hour Volume (in Passenger Car Equivalents)[1]		Minimum Storage Length[2,3]	Recommended Storage Length[4]
		AM	PM		
Project Central Driveway at Slover Avenue	Eastbound Left Turn Lane	11 Vehicles	3 Vehicles	**50 Feet**	**150 Feet**

Notes:

(1) Assumes 100% truck ingress.

(2) General traffic engineering / planning guidance recommends one (1) foot of stacking length for every vehicle per hour.

(3) Queue lengths rounded to nearest 25 feet; minimum queue length is 50 feet.

(4) Recommended storage length is increased to 150 feet to accommodate queuing for two trucks.

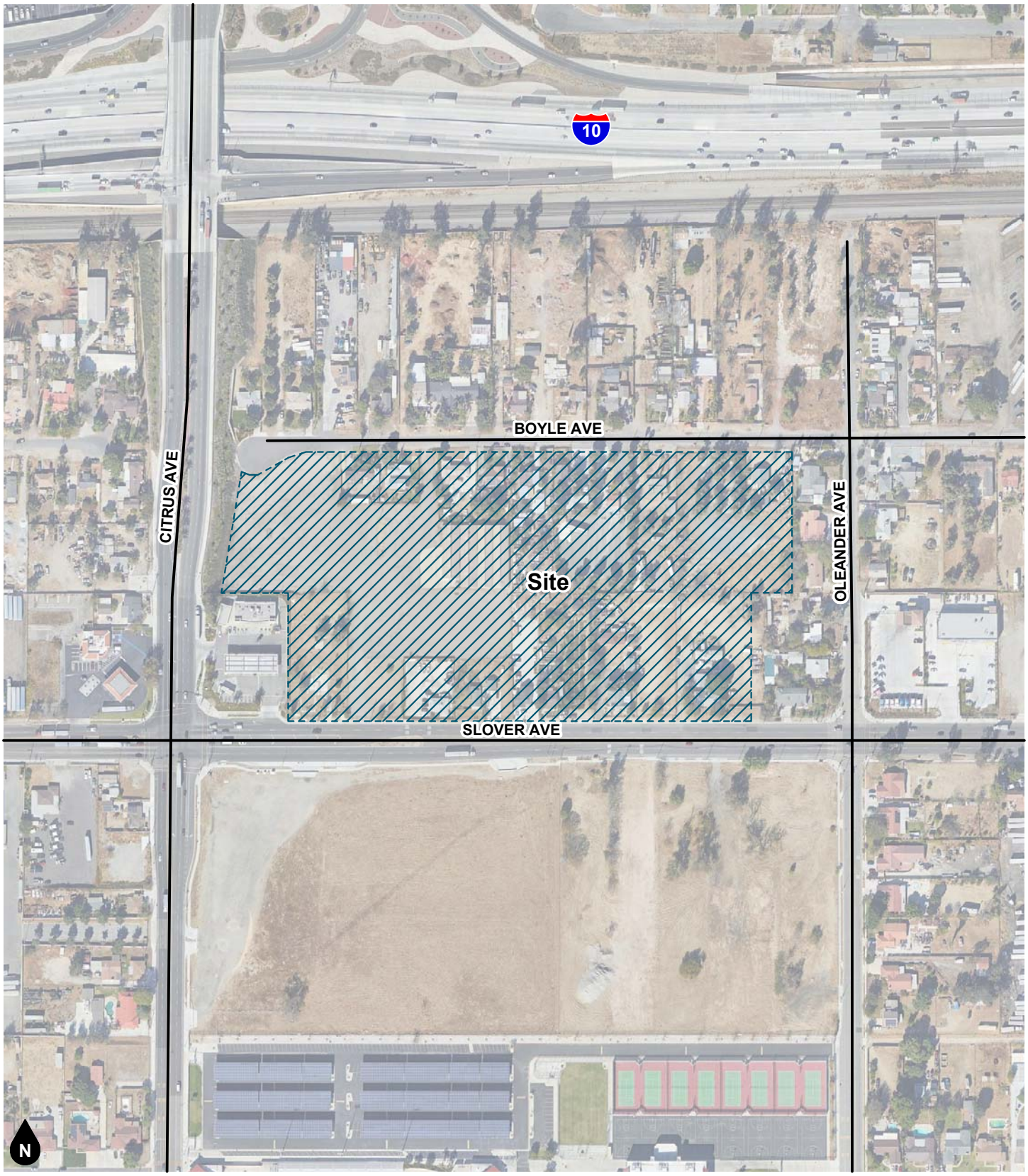


Figure 1
Project Location Map

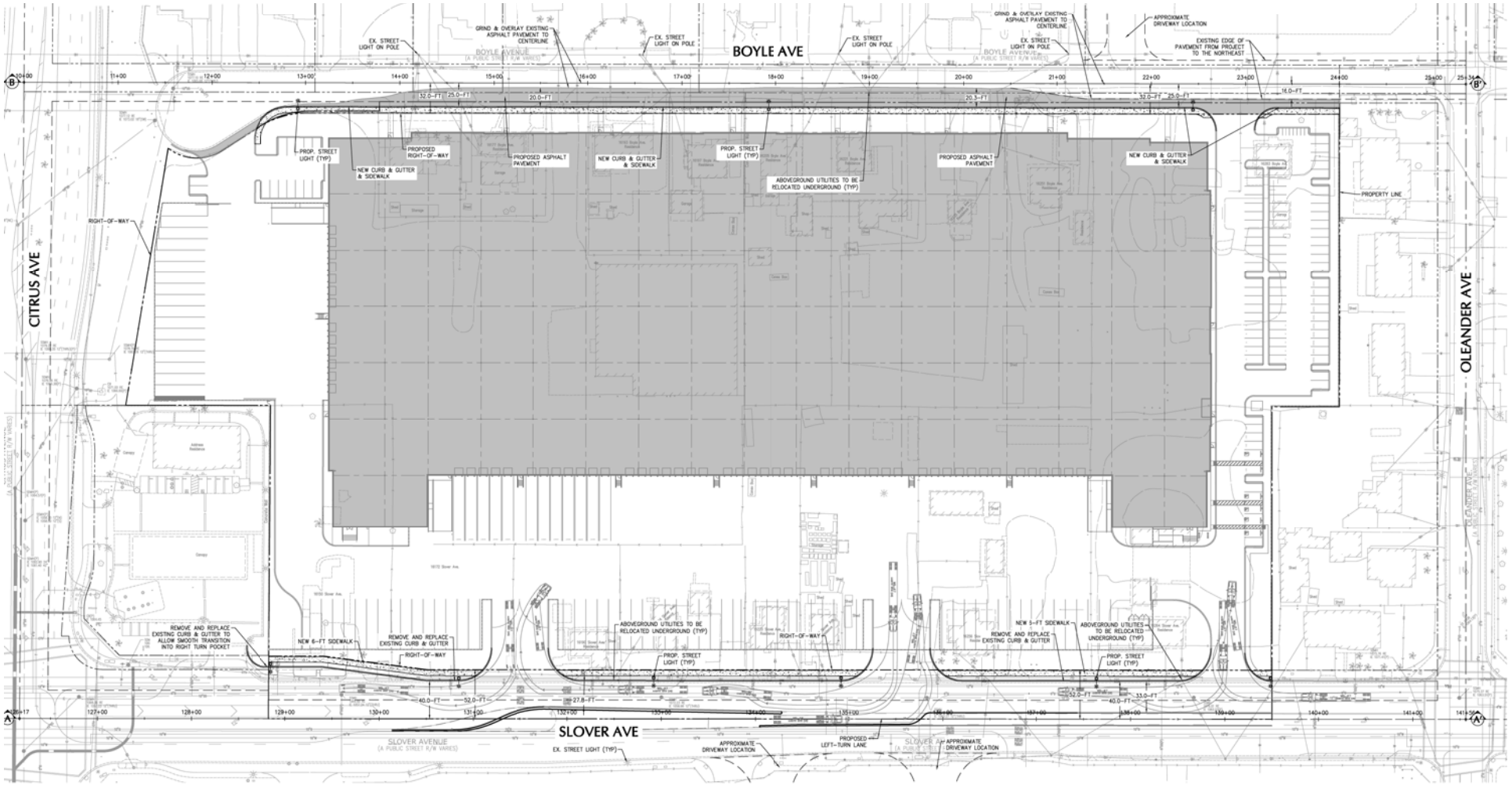


Figure 2
Site Plan

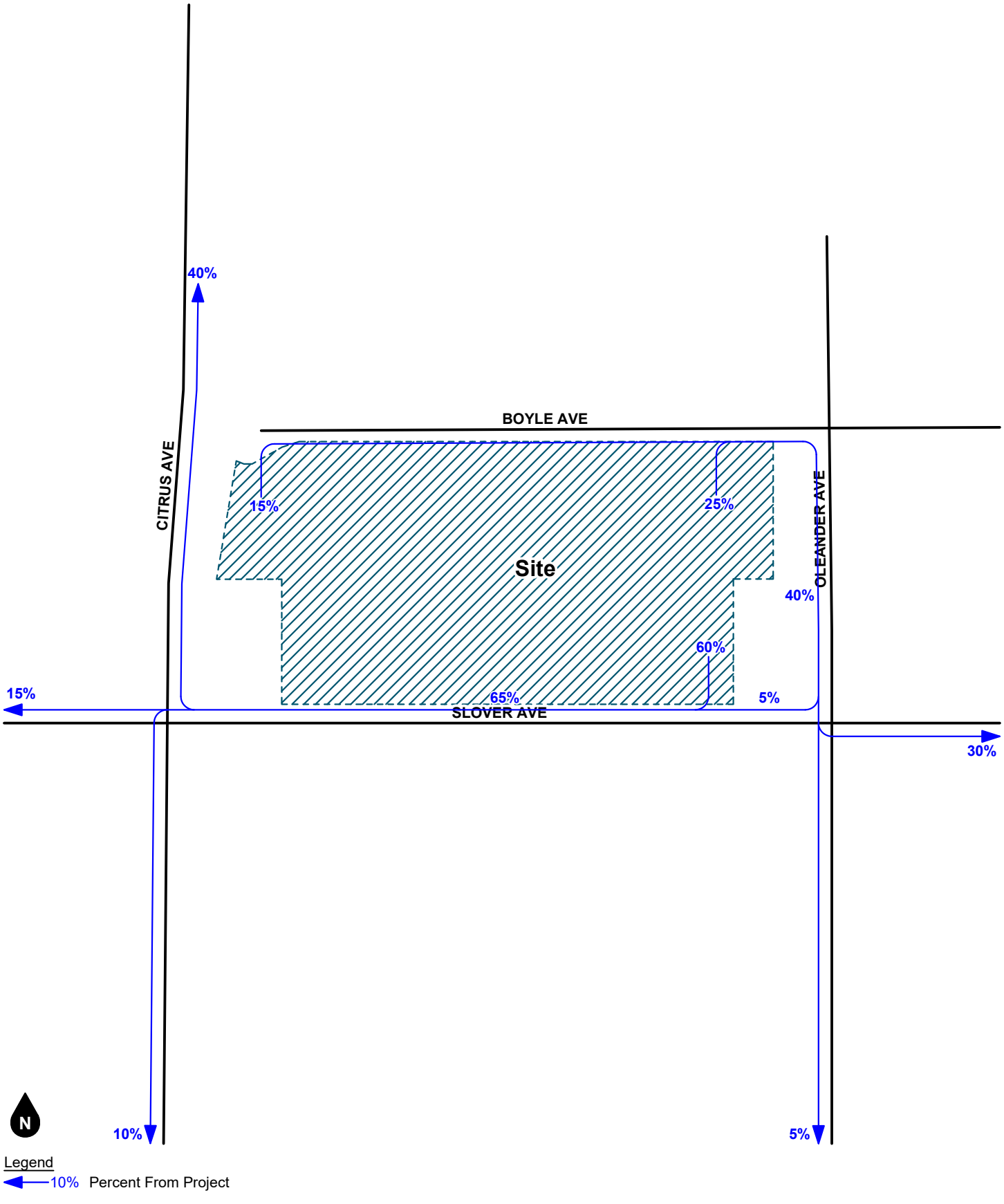


Figure 3
Project Outbound Trip Distribution - Passenger Cars

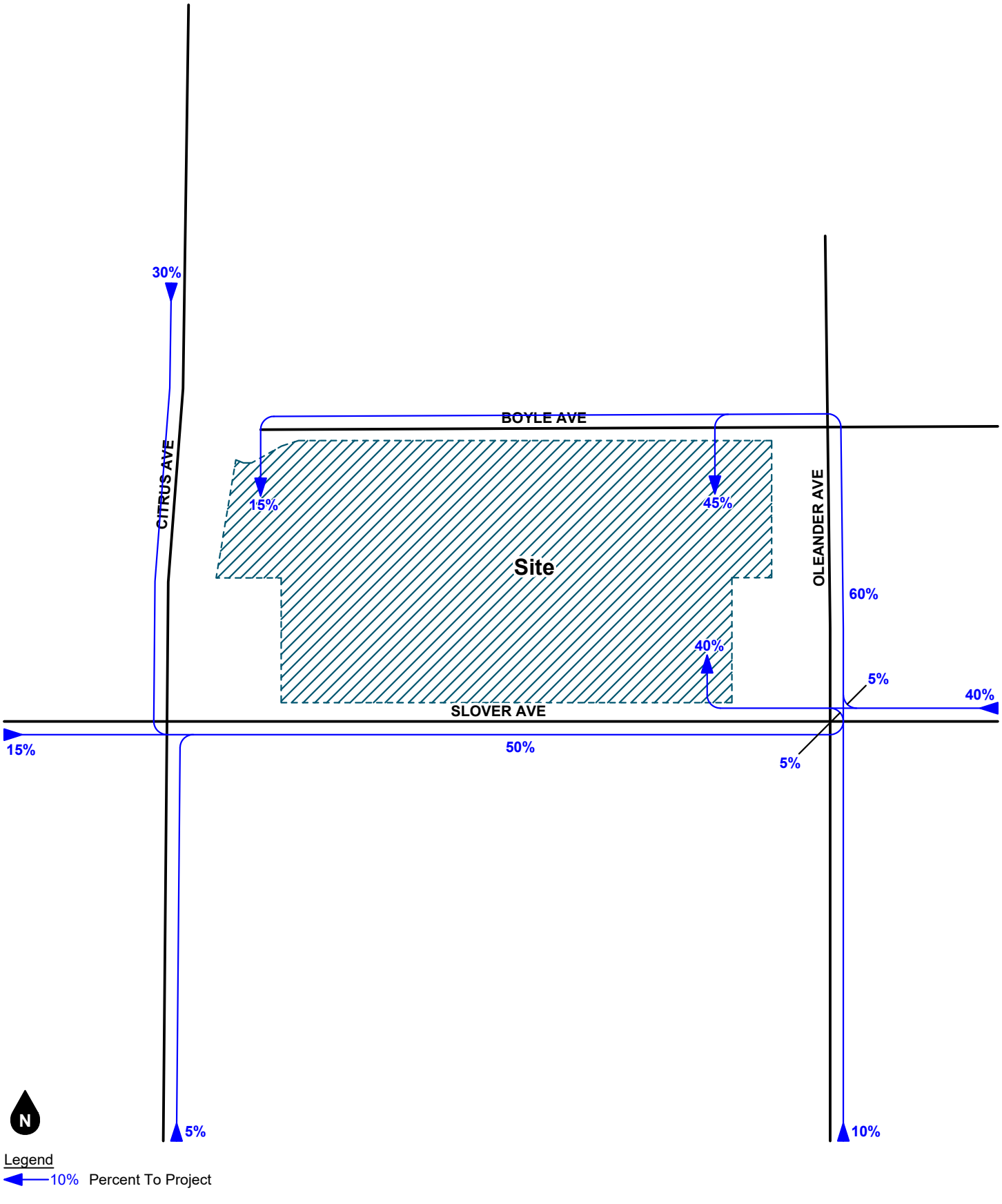


Figure 4
Project Inbound Trip Distribution - Passenger Cars

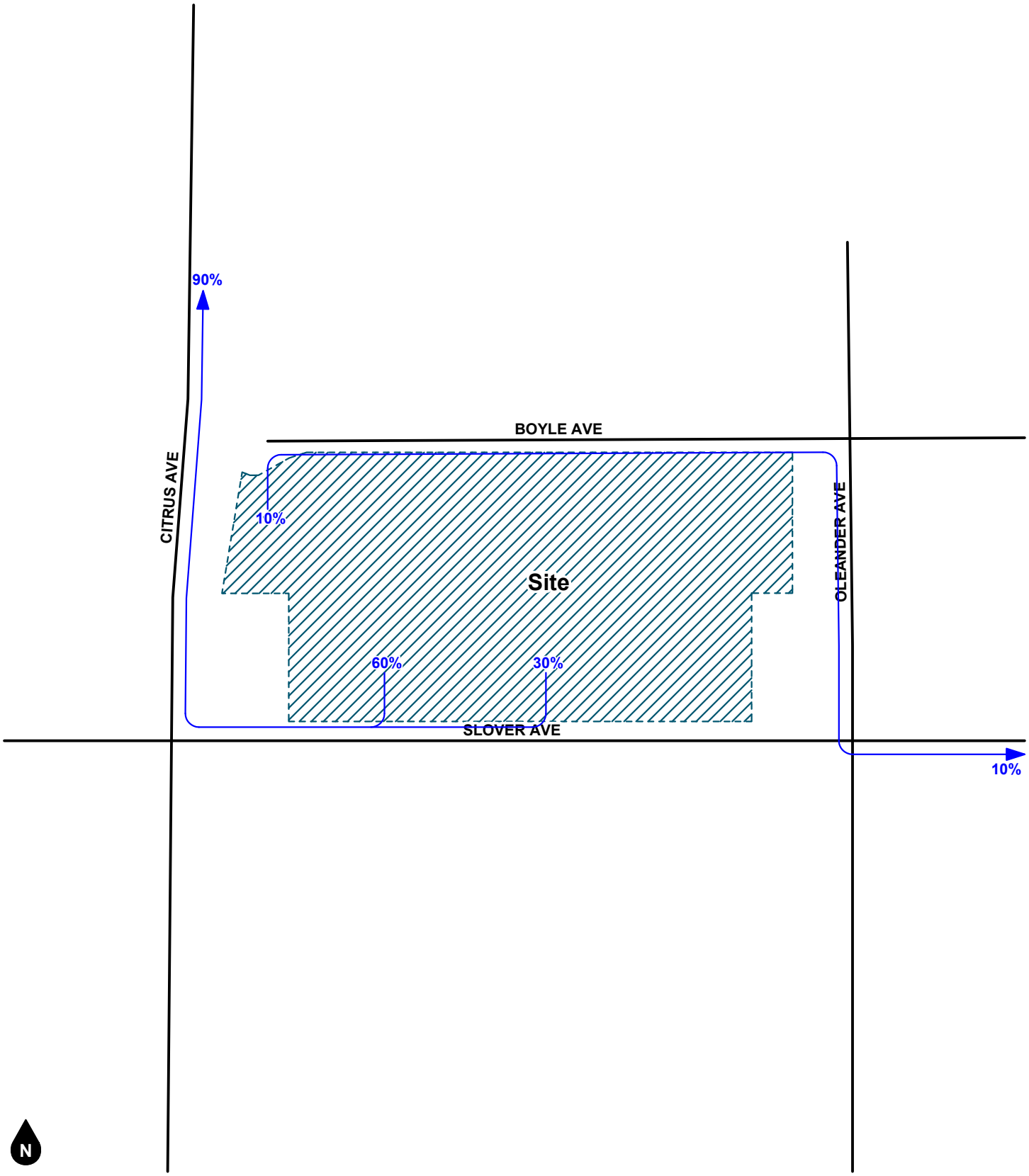


Figure 5
Project Outbound Trip Distribution - Trucks

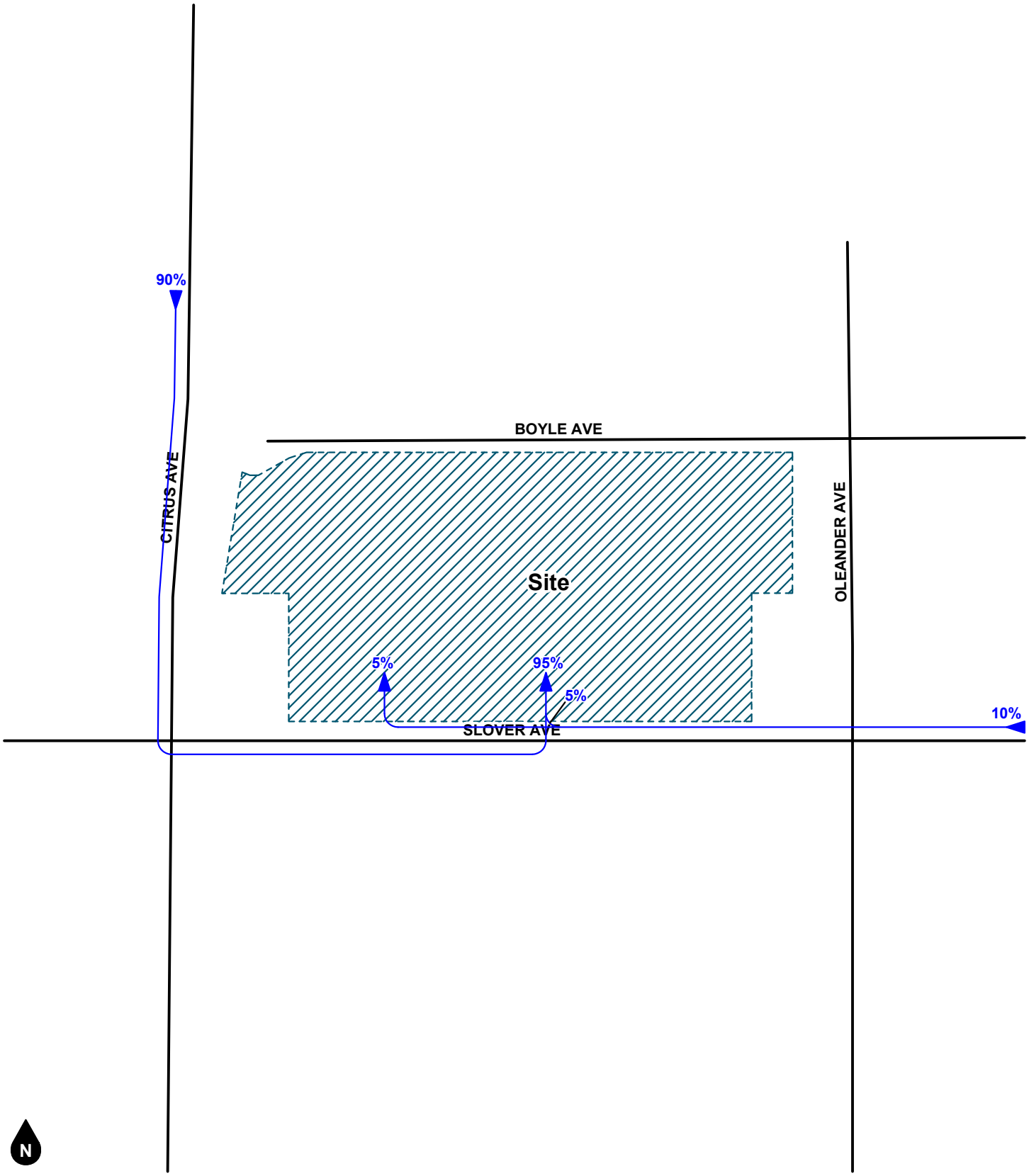
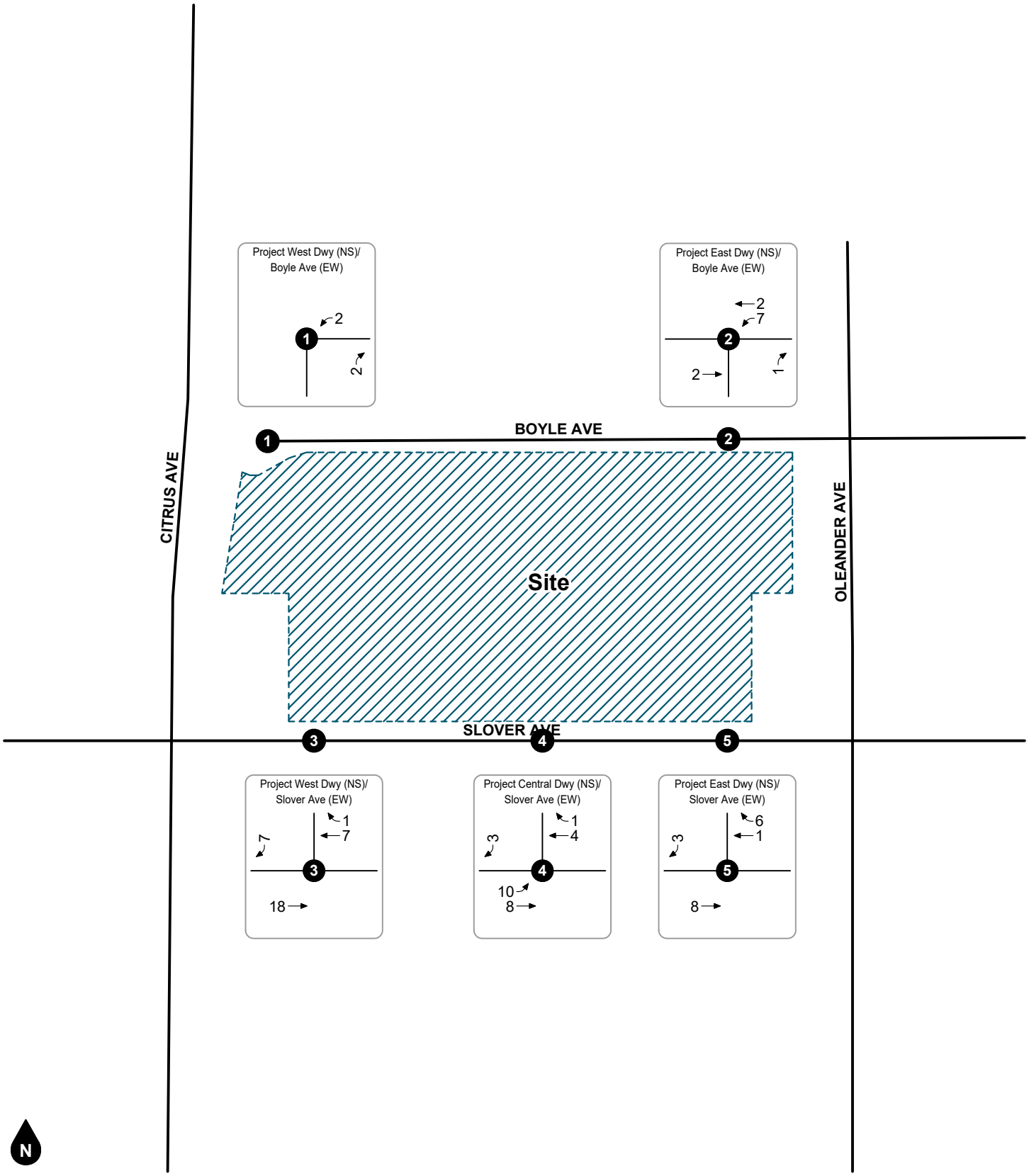


Figure 6
Project Inbound Trip Distribution - Trucks



Legend
Study Intersection

Figure 7
Project AM Peak Hour Intersection Turning Movement Volumes

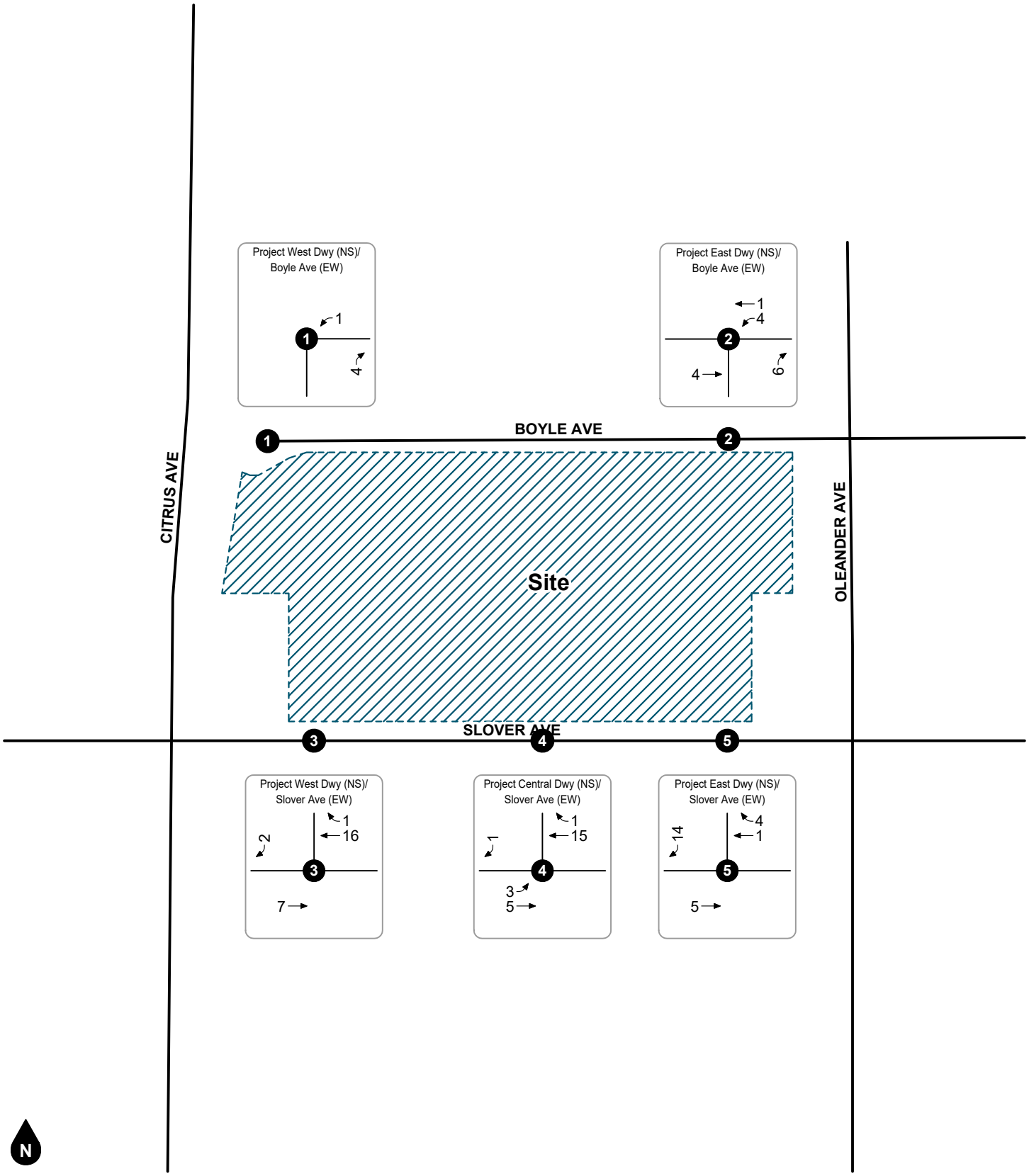
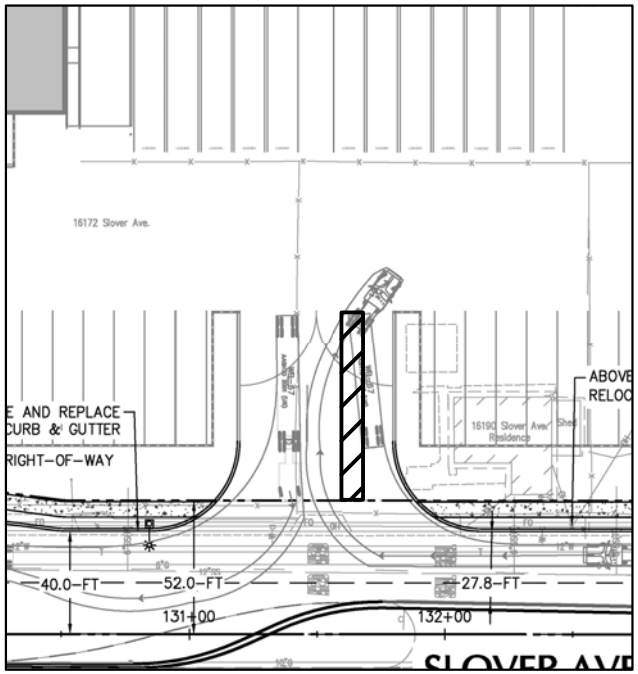
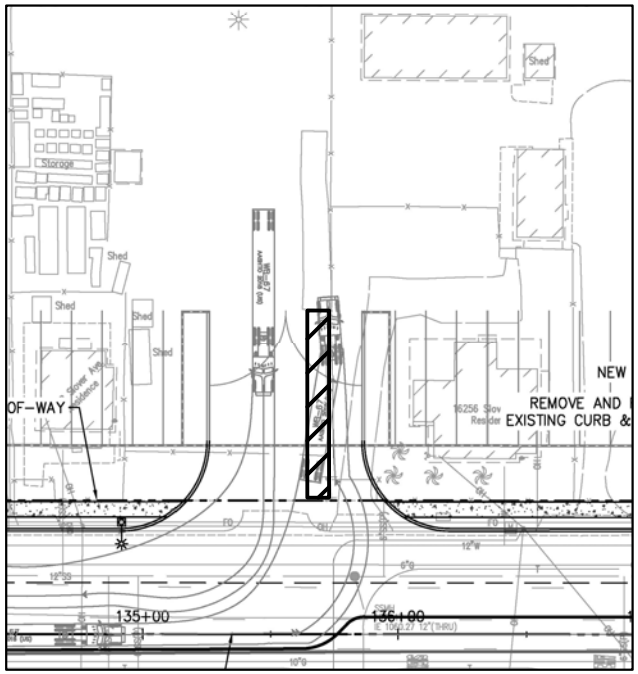


Figure 8
Project PM Peak Hour Intersection Turning Movement Volumes

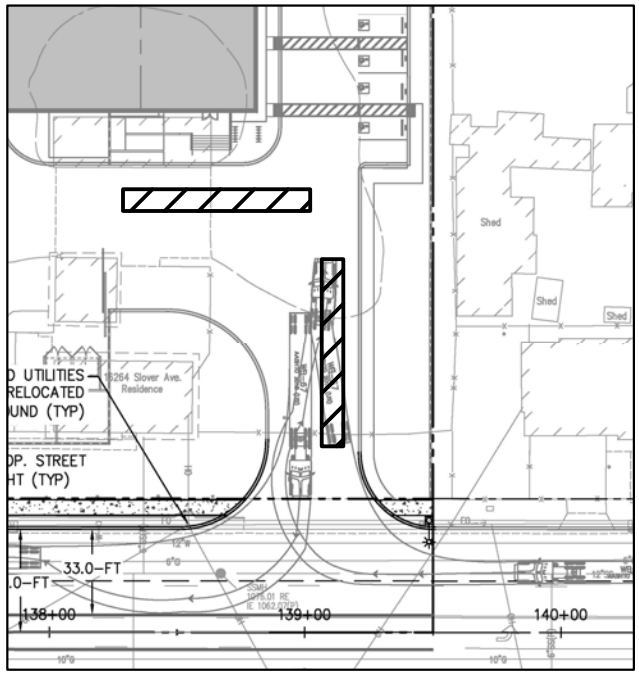
Project West Driveway



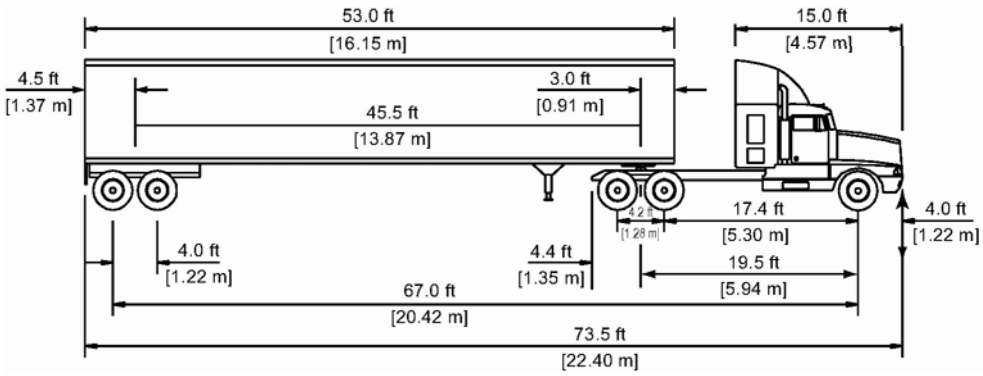
Project Central Driveway



Project East Driveway



WB-67 Model Truck



N

Legend

Queued Semi-Truck Stacking

Figure 9
Gate Access Stacking Diagram

ATTACHMENT A

GATE STACKING ANALYSIS WORKSHEETS

Table A-1
Gate Stacking Analysis[1]

PROJECT:	Citrus Avenue Warehouse Project	DATE:	2023-1221
LOCATION:	Project West Driveway at Slover Avenue	JN:	19530

Gate Distribution: 100%	AM		PM	
	INBOUND	OUTBOUND	INBOUND	OUTBOUND
	4	4	1	1
DEMAND RATE (q) (veh/hr)	4	4	1	1
SERVICE RATE (Q) (veh/hr/channel)[2]	60	60	60	60
NO. OF SERVICE POSITIONS (N)	1	1	1	1
NO. OF STORAGE LANES (N1)	1	1	1	1
PROBABILITY OF NOT EXCEEDING (P) [3]	0.05	0.05	0.05	0.05
	P'=95%	P'=95%	P'=95%	P'=95%
UTILIZATION FACTOR (q/(N*Q))	0.07	0.07	0.02	0.02
LENGTH OF QUEUED VEHICLE (L) FEET	75	75	75	75
LENGTH OF SERVICE VEHICLE (L) FEET	75	75	75	75
Q(M) VALUE [4]	0.07	0.07	0.02	0.02
NO. OF VEHICLES BEING SERVED (N)	1.00	1.00	1.00	1.00
NO. OF VEHICLES IN QUEUE (M)	-0.89	-0.89	-1.26	-1.26
M = ((LN(P) - LN(Q(M))/LN(p)) - 1	~0	~0	~0	~0
TOTAL NUMBER OF VEHICLES (N+M)	1.00	1.00	1.00	1.00
	~1	~1	~1	~1
NO. OF VEHICLES IN EACH LANE	1.00	1.00	1.00	1.00
PER LANE ((N+M)/N1)[5]	1	1	1	1
LENGTH OF QUEUE (L) FEET	75	75	75	75

Notes:

(1) Source: *Transportation and Land Development* (Institute of Transportation Engineers, 1988).

(2) Service rates obtained from *Entrance-Exit Design and Control for Major Parking Facilities* (Crommelin, 1972). However, the lowest entering maximum hourly capacity is 175 vehicles/hour for a coin operated gate. To provide for a conservative analysis, an entering maximum hourly capacity of 60 vehicles/hour .

(3) P' = confidence interval; probability that queue will not exceed the calculated value.

(4) Q(M) = interpolated table values based on number of service channels (N) and utilization factor (q/NQ) per Table 8-11 (p.231) of *Transportation And Land Development*.

(5) Fractional vehicles are rounded up.

Table A-2
Gate Stacking Analysis[1]

PROJECT:	Citrus Avenue Warehouse Project	DATE:	2023-1221
LOCATION:	Project Central Driveway at Slover Avenue	JN:	19530

Gate Distribution: 100%	AM		PM	
	INBOUND	OUTBOUND	INBOUND	OUTBOUND
	4	4	1	1
DEMAND RATE (q) (veh/hr)	4	4	1	1
SERVICE RATE (Q) (veh/hr/channel)[2]	60	60	60	60
NO. OF SERVICE POSITIONS (N)	1	1	1	1
NO. OF STORAGE LANES (N1)	1	1	1	1
PROBABILITY OF NOT EXCEEDING (P) [3]	0.05	0.05	0.05	0.05
	P'=95%	P'=95%	P'=95%	P'=95%
UTILIZATION FACTOR (q/(N*Q))	0.07	0.07	0.02	0.02
LENGTH OF QUEUED VEHICLE (L) FEET	75	75	75	75
LENGTH OF SERVICE VEHICLE (L) FEET	75	75	75	75
Q(M) VALUE [4]	0.07	0.07	0.02	0.02
NO. OF VEHICLES BEING SERVED (N)	1.00	1.00	1.00	1.00
NO. OF VEHICLES IN QUEUE (M)	-0.89	-0.89	-1.26	-1.26
M = ((LN(P) - LN(Q(M))/LN(p)) - 1	~0	~0	~0	~0
TOTAL NUMBER OF VEHICLES (N+M)	1.00	1.00	1.00	1.00
	~1	~1	~1	~1
NO. OF VEHICLES IN EACH LANE	1.00	1.00	1.00	1.00
PER LANE ((N+M)/N1)[5]	1	1	1	1
LENGTH OF QUEUE (L) FEET	75	75	75	75

Notes:

(1) Source: *Transportation and Land Development* (Institute of Transportation Engineers, 1988).

(2) Service rates obtained from *Entrance-Exit Design and Control for Major Parking Facilities* (Crommelin, 1972). However, the lowest entering maximum hourly capacity is 175 vehicles/hour for a coin operated gate. To provide for a conservative analysis, an entering maximum hourly capacity of 60 vehicles/hour

(3) P' = confidence interval; probability that queue will not exceed the calculated value.

(4) Q(M) = interpolated table values based on number of service channels (N) and utilization factor (q/NQ) per Table 8-11 (p.231) of *Transportation And Land Development*.

(5) Fractional vehicles are rounded up.

Table A-3
Gate Stacking Analysis[1]

PROJECT:	Citrus Avenue Warehouse Project		DATE:	2023-1221
LOCATION:	Project East Driveway at Slover Avenue		JN:	19530

Gate Distribution: 100%	AM		PM	
	INBOUND	OUTBOUND	INBOUND	OUTBOUND
	4	4	1	1
DEMAND RATE (q) (veh/hr)	4	4	1	1
SERVICE RATE (Q) (veh/hr/channel)[2]	60	60	60	60
NO. OF SERVICE POSITIONS (N)	1	1	1	1
NO. OF STORAGE LANES (N1)	1	1	1	1
PROBABILITY OF NOT EXCEEDING (P) [3]	0.05	0.05	0.05	0.05
	P'=95%	P'=95%	P'=95%	P'=95%
UTILIZATION FACTOR (q/(N*Q))	0.07	0.07	0.02	0.02
LENGTH OF QUEUED VEHICLE (L) FEET	75	75	75	75
LENGTH OF SERVICE VEHICLE (L) FEET	75	75	75	75
Q(M) VALUE [4]	0.07	0.07	0.02	0.02
NO. OF VEHICLES BEING SERVED (N)	1.00	1.00	1.00	1.00
NO. OF VEHICLES IN QUEUE (M)	-0.89	-0.89	-1.26	-1.26
M = ((LN(P) - LN(Q(M))/LN(p)) - 1	~0	~0	~0	~0
TOTAL NUMBER OF VEHICLES (N+M)	1.00	1.00	1.00	1.00
	~1	~1	~1	~1
NO. OF VEHICLES IN EACH LANE	1.00	1.00	1.00	1.00
PER LANE ((N+M)/N1)[5]	1	1	1	1
LENGTH OF QUEUE (L) FEET	75	75	75	75

Notes:

(1) Source: *Transportation and Land Development* (Institute of Transportation Engineers, 1988).

(2) Service rates obtained from *Entrance-Exit Design and Control for Major Parking Facilities* (Crommelin, 1972). However, the lowest entering maximum hourly capacity is 175 vehicles/hour for a coin operated gate. To provide for a conservative analysis, an entering maximum hourly capacity of 60 vehicles/hour .

(3) P' = confidence interval; probability that queue will not exceed the calculated value.

(4) Q(M) = interpolated table values based on number of service channels (N) and utilization factor (q/NQ) per Table 8-11 (p.231) of *Transportation And Land Development*.

(5) Fractional vehicles are rounded up.