Appendix F
Focused Traffic Assessment and VMT Screening Analysis

June 23, 2022

Nicole Sauviat Criste
Terra Nova Planning & Research, Inc.
42635 Melanie Place, Ste 101
Palm Desert, CA. 92211

AVE 43 / CALHOUN ST RESIDENTIAL FOCUSED ASSESSMENT

Dear Nicole Sauviat Criste:

The firm of Urban Crossroads, Inc. is pleased to submit this Focused Assessment to Terra Nova Planning & Research, Inc. for the proposed Ave 43 / Calhoun St Residential development ("Project"), which is located south of Avenue 43 and adjacent to Calhoun Street in the City of Indio. It is our understanding that the Project is to consist of two phases: Phase 1 with 340 multi-family units, and Phase 2 with 860 multi-family units.

For this focused traffic level of service (LOS) assessment, the consistency of the proposed Project land uses with the City's General Plan is discussed, and information regarding Project traffic flows on adjacent roadways is provided. A VMT screening assessment has been prepared in a separate document.

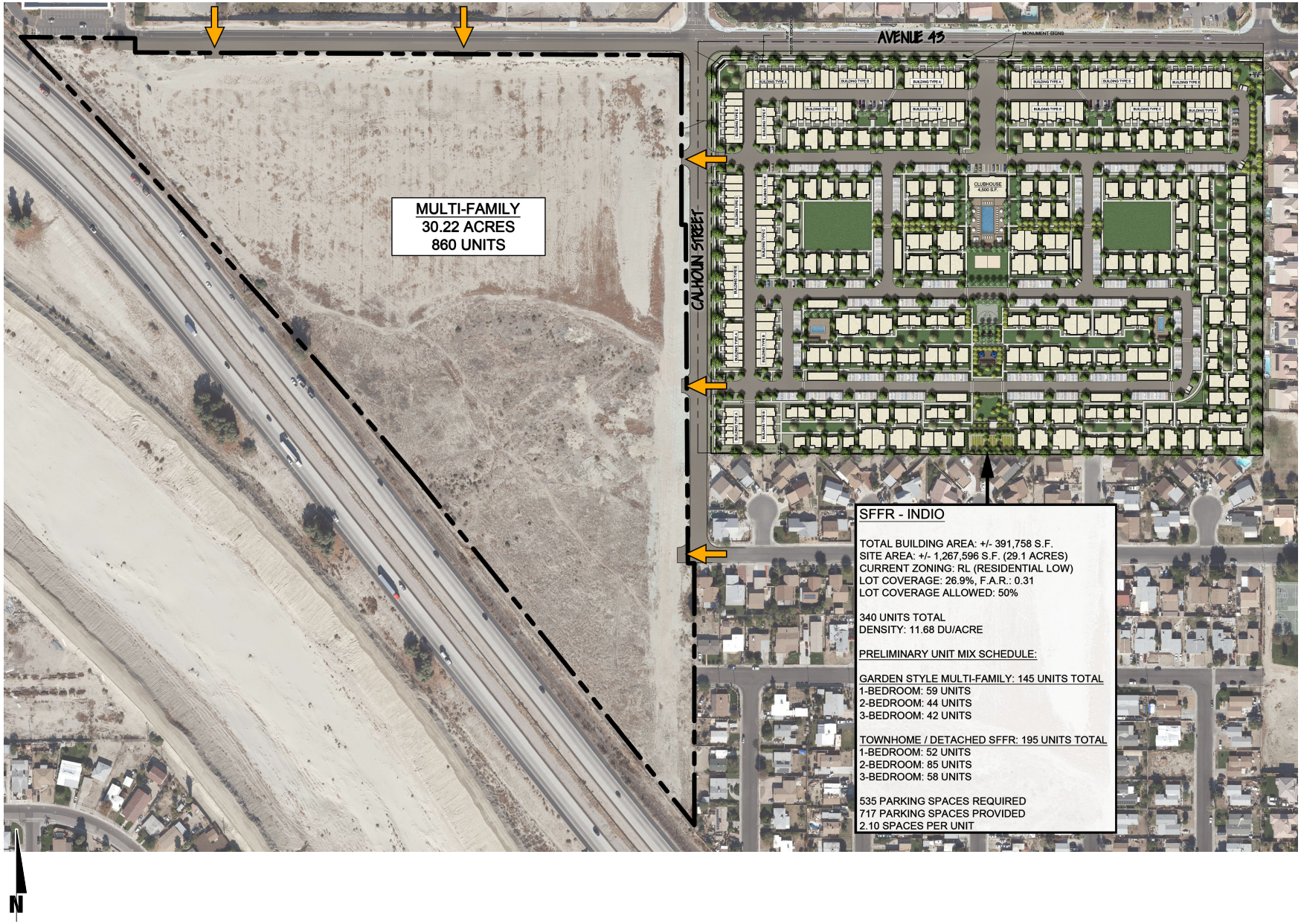
To ensure that this focused assessment satisfies the City of Indio's requirements, Urban Crossroads, Inc. prepared a focused study scoping package for review by City staff prior to the preparation of this report. The scoping agreement provides an outline of the Project study area, trip generation, trip distribution, and analysis methodology. The scoping agreement approved by the City of Indio is included in Attachment 1.

GENERAL PLAN CONSISTENCY

A preliminary site plan the proposed Project is shown on Exhibit 1. Exhibit 2 depicts the location of the proposed project in relation to the existing roadway network. Project will have full access to Avenue 43, east and west of Calhoun Street as well as Calhoun Street, south of Avenue 43.

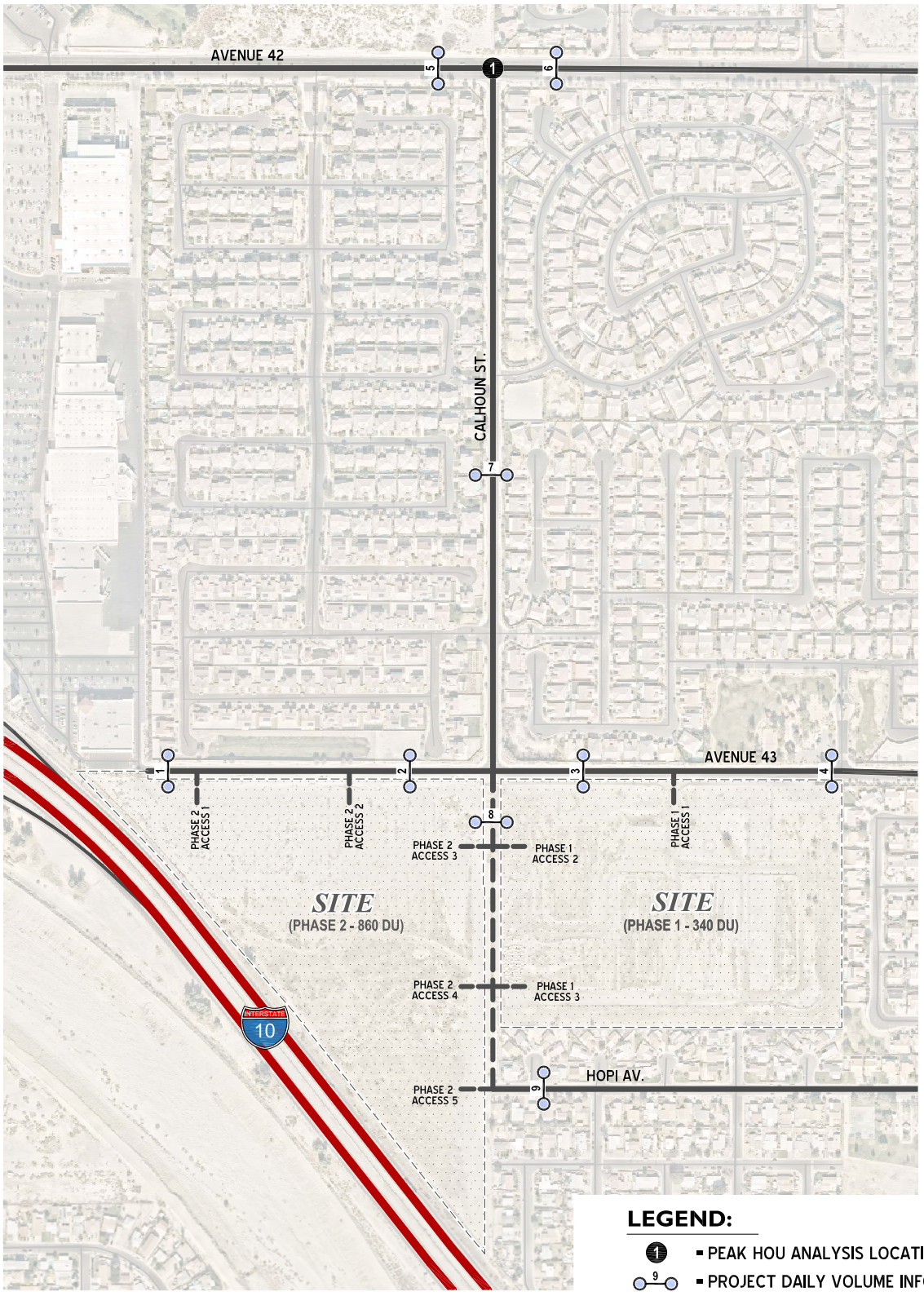
The proposed project will include a Specific Plan to provide development standards and guidelines for a master planned residential community on 60± acres. The land is currently designated in the General Plan as a Connected Neighborhood. This designation allows up to 20 units per acre. The Specific Plan will allow up to 1,200 single- and multi-family units on the 60± acres, which is consistent with the Connected Neighborhood designation.

EXHIBIT 1: PRELIMINARY SITE PLAN



14744 - 01.dwg

EXHIBIT 2: GENERAL PLAN CONSISTENCY ASSESSMENT STUDY AREA



The City of Indio General Plan circulation network is depicted on Exhibit 3, while the accompanying street attributes are presented on Exhibit 4. Avenue 42 is an east/west facility classified as a 4- Lane Boulevard with Median or Center Left-Turn Lane within the study area.

Adjacent to the Project, Avenue 43 and Calhoun Street are recommended to be constructed as Collectors, which accommodate striped center lanes and bike lanes while providing one lane of vehicle travel in each direction.

The planned bicycle network in the City of Indio General Plan is shown on Exhibit 5. As shown on Exhibit 5, bike lanes are included on Avenue 43 east of Calhoun Street.

TRIP GENERATION

In order to develop the traffic characteristics of the proposed project, trip-generation statistics published in the Institute of Transportation Engineers (ITE) *Trip Generation* (11th Edition, 2021) manual for the proposed land use (220 – Multi-Family Residential) is utilized. Table 1 presents the trip generation rates and the resulting trip generation summary for the proposed Project. As shown in Table 1, the Project is anticipated to generate a total of 8,088 trip-ends per day with 480 AM peak hour trips and 612 PM peak hour trips.

TABLE 1: PROJECT TRIP GENERATION SUMMARY

Trip Generation Rates[1]

Land Use	ITE LU Code	Quantity[2]		AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Multifamily Housing (Low-Rise)	220	1200	DU	0.10	0.30	0.40	0.32	0.19	0.51	6.74

Trip Generation Results

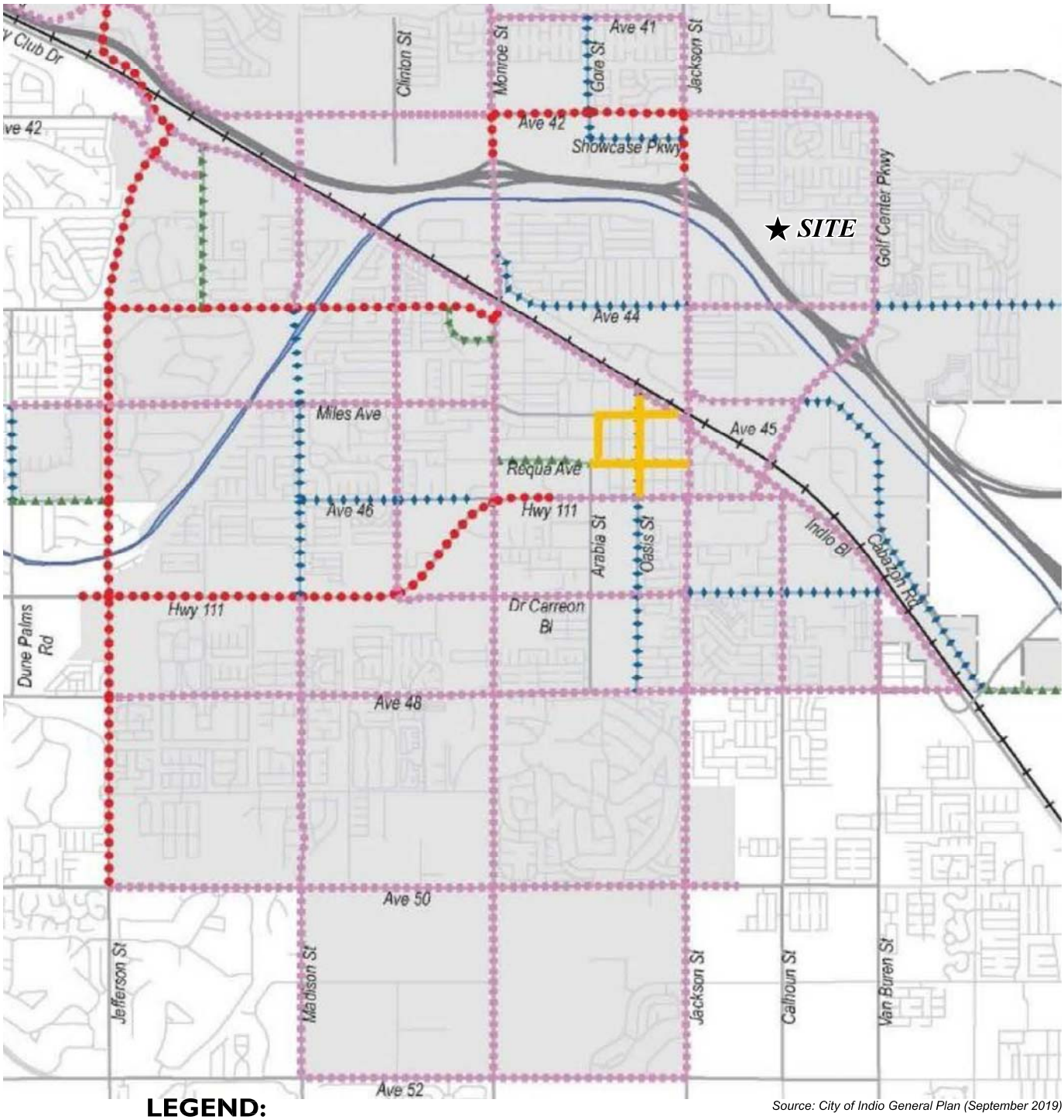
Phase	Land Use	ITE LU Code	Quantity[2]		AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
1	Multifamily Housing (Low-Rise)	220	340	DU	34	102	136	109	65	174	2,292
2	Multifamily Housing (Low-Rise)	220	860	DU	86	258	344	275	163	438	5,796
TOTAL					120	360	480	384	228	612	8,088

[1] Trip Generation Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, 11th Edition (2021).
[2] DU = Dwelling Units

TRIP DISTRIBUTION AND TRIP ASSIGNMENT

This focused assessment includes the evaluation of peak hour traffic conditions at the Calhoun Street / Avenue 42 intersection for existing, existing plus project, and long range future conditions. The purpose of this intersection evaluation is to determine Project fair share responsibilities for future improvements.

EXHIBIT 3: CITY OF INDIO GENERAL PLAN ROADWAY DESIGNATIONS



Source: City of Indio General Plan (September 2019)

EXHIBIT 4 (1 OF 3): CITY OF INDIO STREET ATTRIBUTES

Street Typology and Priority Modes	Street Attributes
Freeways	• High-speed facilities designed to accommodate vehicles moving through the City. • Bicycles and pedestrians are prohibited.
Arterial	• Arterials should provide four to six travel lanes. • Vehicular efficiency shall be prioritized. • Traffic signals shall be coordinated to prioritize vehicle movements. • Bicycle lanes can be provided and can be further enhanced or complemented by other facilities or off-street pathways. • Pedestrian facilities should be provided consistent with ADA requirements. • Mid-block crossings should not be provided. • Parking should be prohibited along these corridors. • Traffic calming techniques should not be considered.
Secondary Highway	• Secondary Highways should have two to four travel lanes and a median, as shown on Figures 4-4 – 4-6. • Bicycle lanes should be provided. • Off-street bicycle parking should be provided in retail areas. • Bike racks may be provided within the public right-of-way and encouraged on private property. • Traffic calming devices, such as curb extensions (bulbouts) or enhanced pedestrian crossing may be implemented. • Street furniture shall be oriented toward the businesses. • Mid-block pedestrian crossings could be provided at appropriate locations (e.g. where sight distance is adequate and speeds are appropriate). • On-street vehicle parking should be provided. In areas with high parking demand, innovative parking management techniques should be implemented / considered. • Pedestrians should be "buffered" from vehicle traffic using landscaping or parked vehicles.

Source: City of Indio General Plan (September 2019)

EXHIBIT 4 (2 OF 3): CITY OF INDIO STREET ATTRIBUTES

Street Typology and Priority Modes	Street Attributes
Collector	• Collector should provide either two lanes without a median or two lanes with a median or center left-turn lane, as shown on Figures 4-7 and 4-8. • The primary function of the street is to connect people and different areas and land uses of the City to each-other directly or by connecting to/from arterial streets. • Collectors should provide for space vehicles, bicycles, and pedestrians. • Bicycle lanes should be provided. Bicycle Boulevards may be considered. • Pedestrians should be accommodated on sidewalks adjacent to the travel way (minimum 5' wide sidewalk). • Mid-block pedestrian crossings and traffic calming devices may be provided, but it should only be considered at locations in areas with high-activity levels or destination attractions. • Parking may be provided on-street.

Downtown Street	• Streets should provide two travel lanes with left turn lanes but can be four travel lanes (although not preferred).
	• Pedestrians shall not cross more than five travel lanes.
	• Enhanced bicycle and pedestrian crossings should be provided, including:
	  ○ Enhanced pedestrian notifications (e.g. responsive push-button devices) and treatments to enhance pedestrian visibility; and
	  ○ Enhanced bicycle detection.
	• Bicycle lanes shall be provided and can be further enhanced or complimented by other facilities or off-street pathways.
	• Pedestrian sidewalks should be a minimum of five feet and shall strive for six to eight feet in width and shall conform to ADA requirements.
	• Wider sidewalks may be provided in high pedestrian activity areas or where on-street dining is provided.
	• Opportunities for mid-block pedestrian crossings should be investigated.
	• Traffic calming devices that improve service levels for prioritized modes should be considered.
	• On-Street parking is typically provided in a variety of forms, including parallel, angled, and back-in angled parking configurations.

Source: City of Indio General Plan (September 2019)

EXHIBIT 4 (3 OF 3): CITY OF INDIO STREET ATTRIBUTES

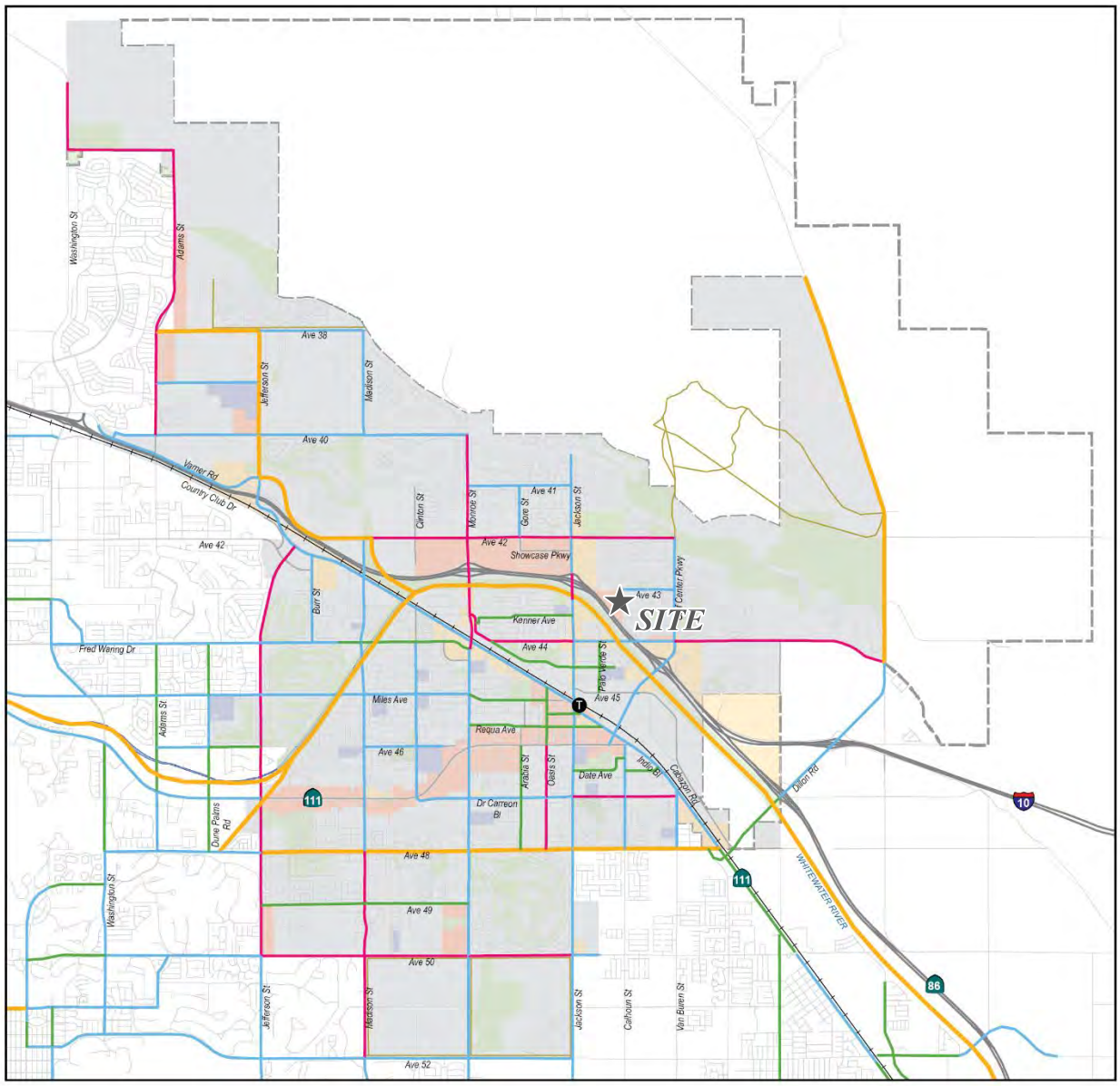
Street Typology and Priority Modes	Street Attributes

Other Pedestrian Priority Areas	• No more than four vehicle travel lanes are typically provided.
	• Enhanced bicycle and pedestrian crossings should be provided, including:
	  ○ Enhanced pedestrian notifications (e.g. responsive push-button devices) and treatments to enhance pedestrian visibility; and
	  ○ Enhanced bicycle detection.
	• Bicycle lanes shall be provided and can be further enhanced or complimented by other facilities or off-street pathways.
	• Pedestrian facilities should be a minimum of five feet and shall strive for six to eight feet in width and shall conform to ADA requirements.
	• Wider sidewalks may be provided in high pedestrian-activity areas or where on-street dining is provided.
	• Opportunities for mid-block pedestrian crossings should be investigated.
	• Traffic calming devices that improve service levels for prioritized modes should be considered.
	• Parallel parking is typically provided.

Local / Neighborhood Street	• Local or neighborhood streets provides access to residential use as shown on Figures 4-9 and 4-10. • Pedestrians should be accommodated on a sidewalk. • Bicycles may be accommodated with a bicycle route (Class III) if vehicle volumes and/or speeds necessitate; otherwise, bicycles can share the roadway. • Bicycle boulevards may be considered. • Traffic calming measures should be supported. • On-street parking should be provided. • Pedestrian facilities should be provided consistent with ADA requirements.

Source: City of Indio General Plan (September 2019)

EXHIBIT 5: CITY OF INDIO PLANNED BICYCLE NETWORK



Planned Bicycle Network

0 0.5 1 2
Miles

- Railroads
- City Boundary
- Sphere of Influence
- Class 1 - Bike Path
- Class 2 - Bike Lane
- Class 3 - Bike Route
- Class 4 - Cycle Track
- Trails
- Existing School
- Mixed Use
- Commercial
- Recreation, Parks and Open Space
- Planned Transit Center

Source: Riverside County/LAFCO (City Boundary,2012; SOI,2012) Riverside County/TLMA (Roads,Railroads;Highways) Riverside County (River)

The information on this map was derived from various digital databases, sourced above. Care was taken in the creation of this map but it is provided "as is". PDC cannot accept any responsibility for any errors, omissions, or positional accuracy, and therefore, there are no warranties which accompany this product. Users are cautioned to field verify information on this product before making any decisions.

Source: City of Indio Interim Final General Plan (April 2019)

At the Calhoun Street / Avenue 42 intersection, both existing (stop sign controlled) and future (traffic signal control) conditions are presented for information purposes. Intersection LOS operations are based on an intersection's average control delay. At two-way or side-street stop-controlled intersections, LOS is calculated for each controlled movement and for the left turn movement from the major street, as well as for the intersection as a whole. For approaches composed of a single lane, the delay is computed as the average of all movements in that lane.

Exhibit 6 presents the Project traffic distribution pattern. Based on the identified Project traffic generation and trip distribution patterns, Project ADT and peak hour intersection turning movement volumes are shown on Exhibit 7.

EXISTING (2022) CONDITIONS

Morning and evening peak hour (7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM) intersection counts were conducted at the Calhoun Street / Avenue 42 intersection on June 2nd. In addition, daily traffic counts were collected on the Avenue 43 roadway segments east and west of Calhoun Street.

Existing peak hour traffic operations have been evaluated for the intersection of Calhoun Street / Avenue 42. The intersection operations analysis results are summarized on Table 2, which indicates that the intersection currently operates at acceptable LOS (LOS "D" or better) during the peak hours. The intersection operations analysis worksheets are included in Attachment 3 of this TA.

TABLE 2: INTERSECTION ANALYSIS FOR EXISTING (2022) CONDITIONS

			Intersection Approach Lanes[2]												Delay[3] (secs.)		Level of Service	
			Northbound			Southbound			Eastbound			Westbound						
#	Intersection	Traffic Control[1]	L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
1	Calhoun St. / Avenue 42	CSS	1	0	1	0	0	0	1	2	d	1	2	0	16.0	14.5	C	B

1 CSS = Cross-street Stop

2 When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.
L = Left; T = Through; R = Right; d = Defacto Right Turn Lane

3 Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

Exhibit 8 illustrates existing weekday peak hour volumes at the Calhoun Street / Avenue 42 intersection, as well as existing lanes and traffic control.

EXHIBIT 6: PROJECT TRIP DISTRIBUTION

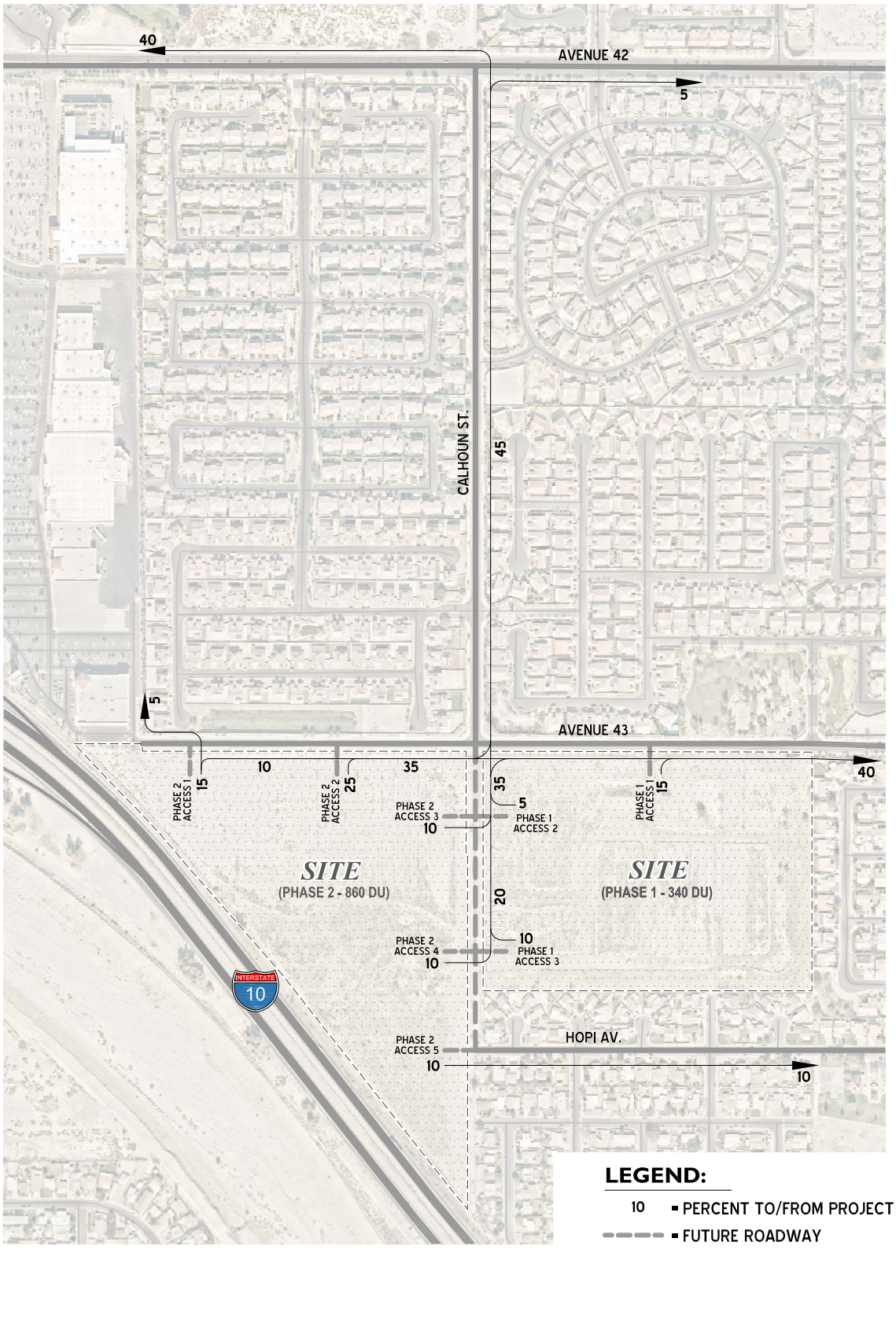


EXHIBIT 7: PROJECT ONLY TRAFFIC VOLUMES

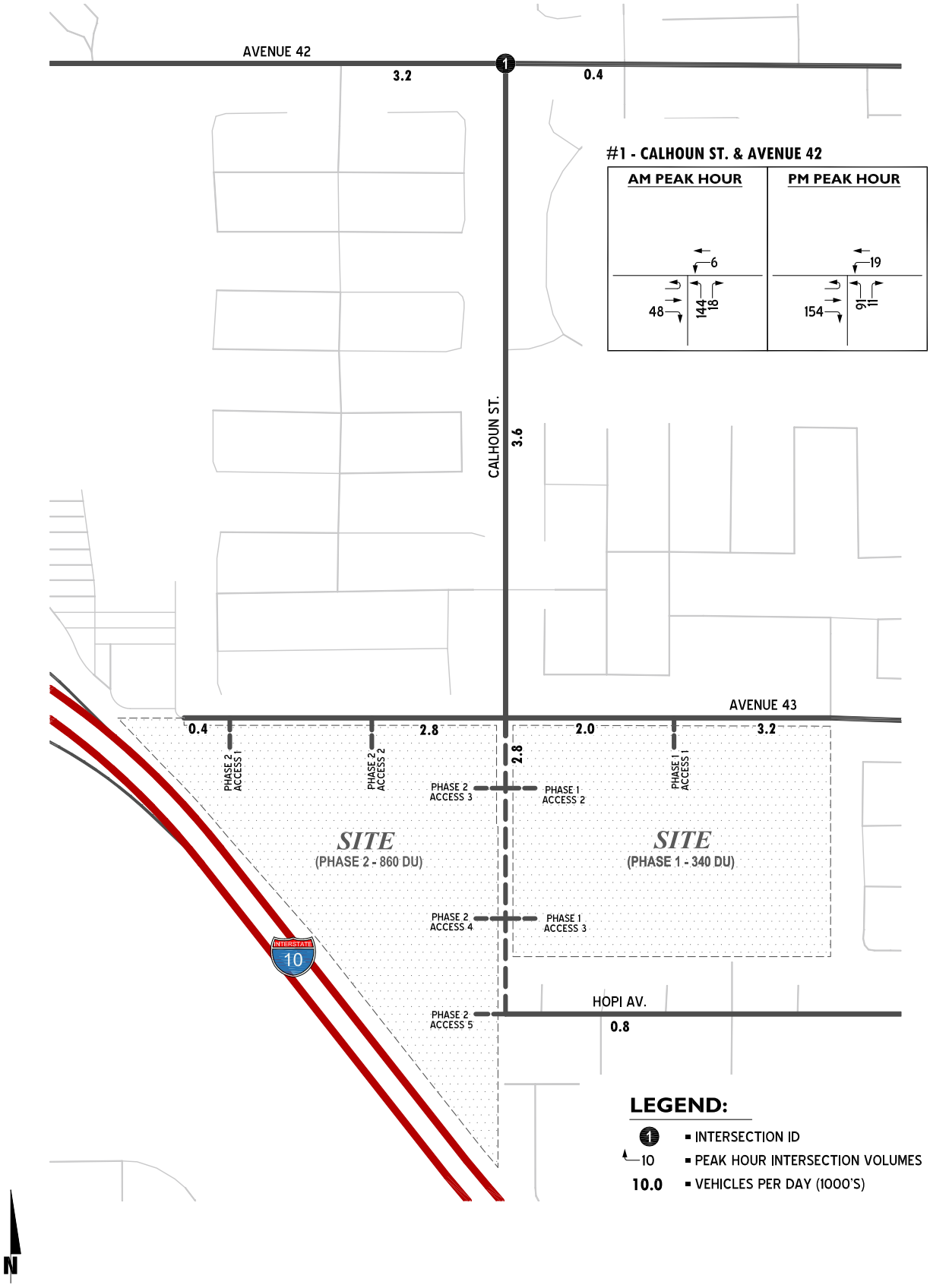
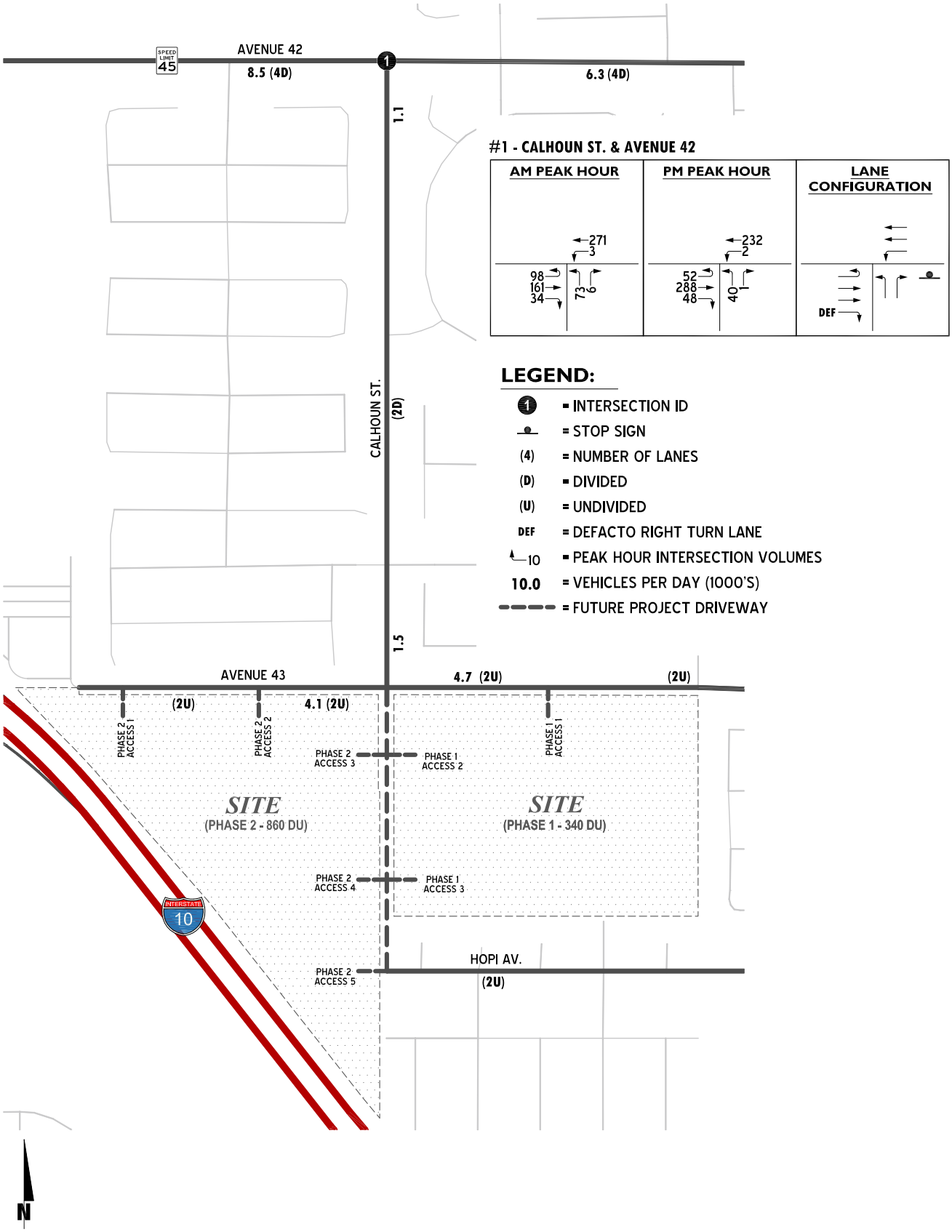


EXHIBIT 8: EXISTING NUMBER OF THROUGH LANES, INTERSECTION CONTROLS, AND TRAFFIC VOLUMES



EXISTING PLUS PROJECT TRAFFIC FORECASTS

The Project is added to Existing conditions to evaluate Existing Plus Project (E+P) conditions. E+P weekday ADT and peak hour intersection turning movement volumes are shown on Exhibit 9. E+P peak hour traffic operations are summarized in Table 3, which indicate that the Calhoun Street / Avenue 42 intersection operates at an acceptable LOS for E+P conditions. E+P volume warrants for a traffic signal are met at this location. The intersection operations analysis worksheets for E+P traffic conditions are included in Attachment 4.

TABLE 3: INTERSECTION ANALYSIS FOR EXISTING PLUS PROJECT CONDITIONS

			Intersection Approach Lanes[2]												Delay[3] (secs.)		Level of Service	
			Northbound			Southbound			Eastbound			Westbound						
#	Intersection	Traffic Control[1]	L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
1	Calhoun St. / Avenue 42	CSS	1	0	1	0	0	0	1	2	d	1	2	0	26.7	19.5	C	B

[1] CSS = Cross-street Stop

[2] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.
L = Left; T = Through; R = Right; d = Defacto Right Turn Lane

[3] Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

LONG RANGE FUTURE TRAFFIC FORECASTS

The Project is consistent with the City of Indio General Plan. For long range future conditions, weekday ADT and peak hour intersection turning movement volumes are shown on Exhibit 10. Long range future peak hour traffic operations are summarized in Table 4, which indicate that the Calhoun Street / Avenue 42 intersection operates at an acceptable LOS for long range future traffic conditions with traffic signal improvement. The intersection operations analysis worksheets for long range future traffic conditions are included in Attachment 5. Traffic signal worksheets are also included in Attachment 5.

TABLE 4: INTERSECTION ANALYSIS FOR LONG RANGE FUTURE CONDITIONS

			Intersection Approach Lanes[2]												Delay[3] (secs.)		Level of Service	
			Northbound			Southbound			Eastbound			Westbound						
#	Intersection	Traffic Control[1]	L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
1	Calhoun St. / Avenue 42																	
	- Without Improvements	CSS	1	0	1	0	0	0	1	2	d	1	2	0	52.6	26.3	F	D
	- With Improvements	**TS**	1	0	1	0	0	0	1	2	d	1	2	0	21.7	21.2	C	C

[1] TS = Traffic Signal; CSS = Cross-street Stop

[2] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.
L = Left; T = Through; R = Right; d = Defacto Right Turn Lane; **1** = Improvement

[3] Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

EXHIBIT 9: EXISTING PLUS PROJECT TRAFFIC VOLUMES

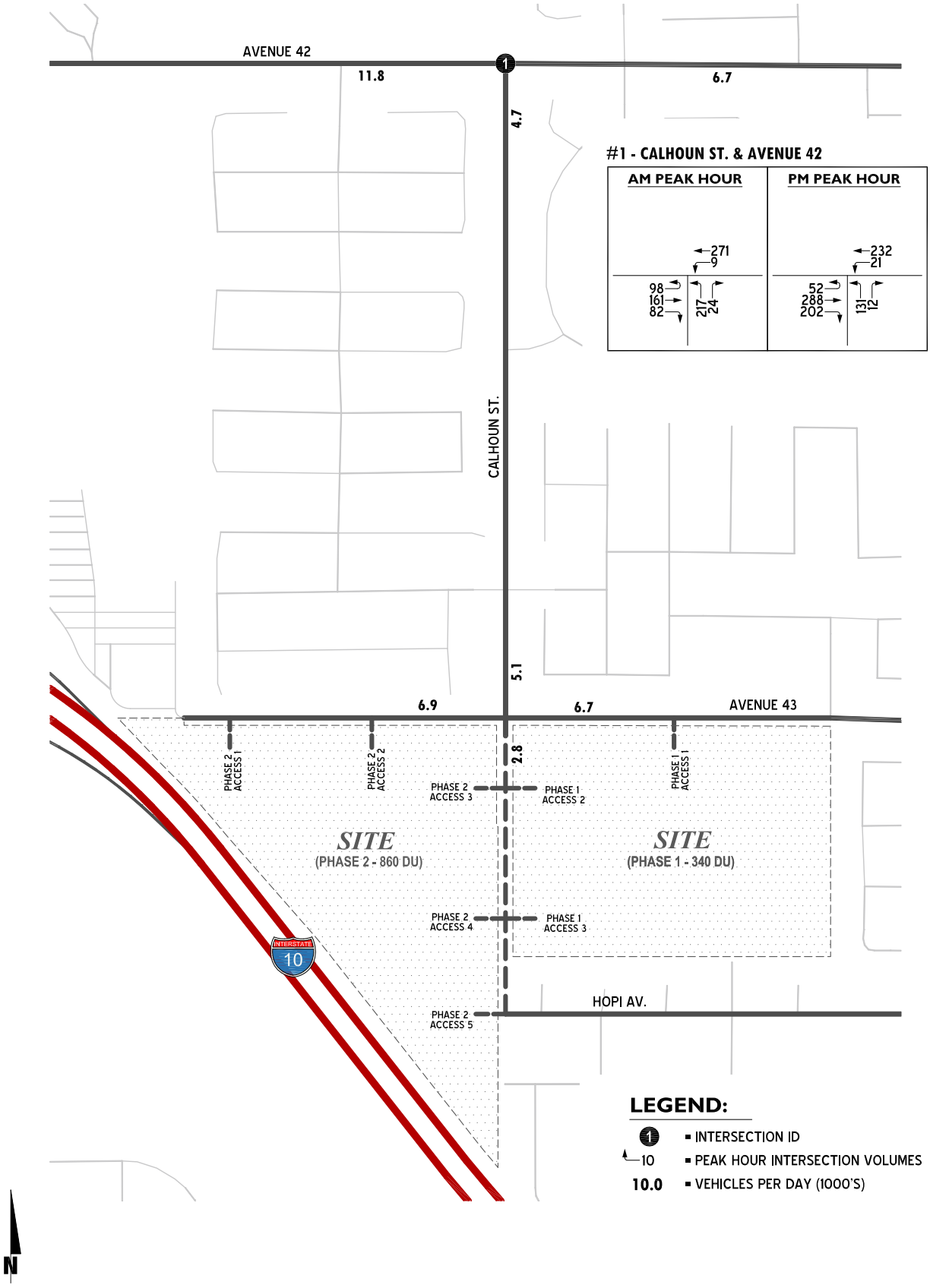
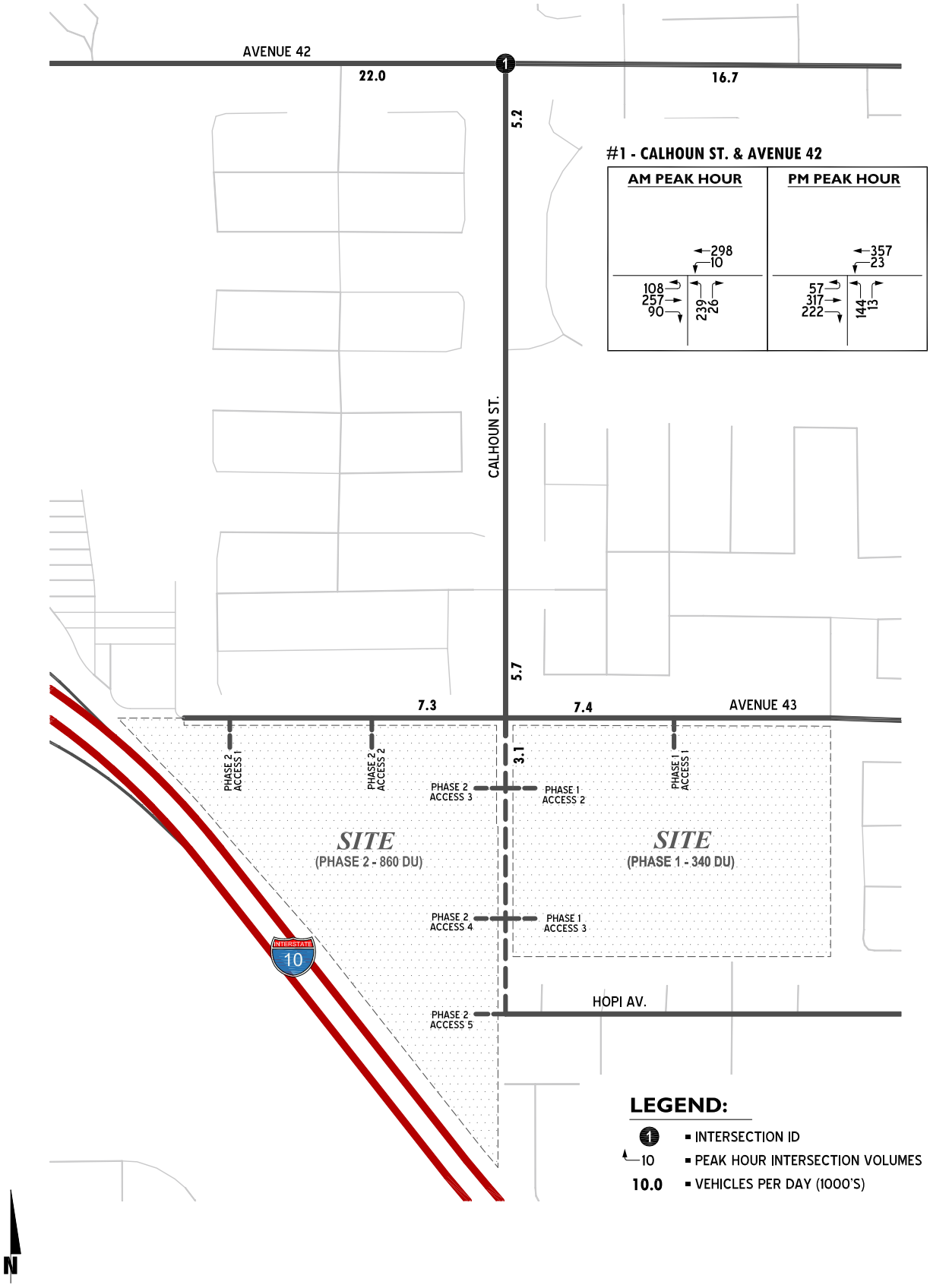


EXHIBIT 10: LONG RANGE FUTURE TRAFFIC VOLUMES



SITE ACCESS AND OFF-SITE ROADWAY IMPROVEMENTS

The Project is proposed to be served by north/south Calhoun Street and east/west roadway Avenue 43. Calhoun Street will be extended south from its current terminus at Avenue 43 to Hopi Avenue through the Project. Currently, Calhoun Street connects from Avenue 43 north to Avenue 42. Avenue 43 currently exists along the Project frontage as a partially improved Collector roadway.

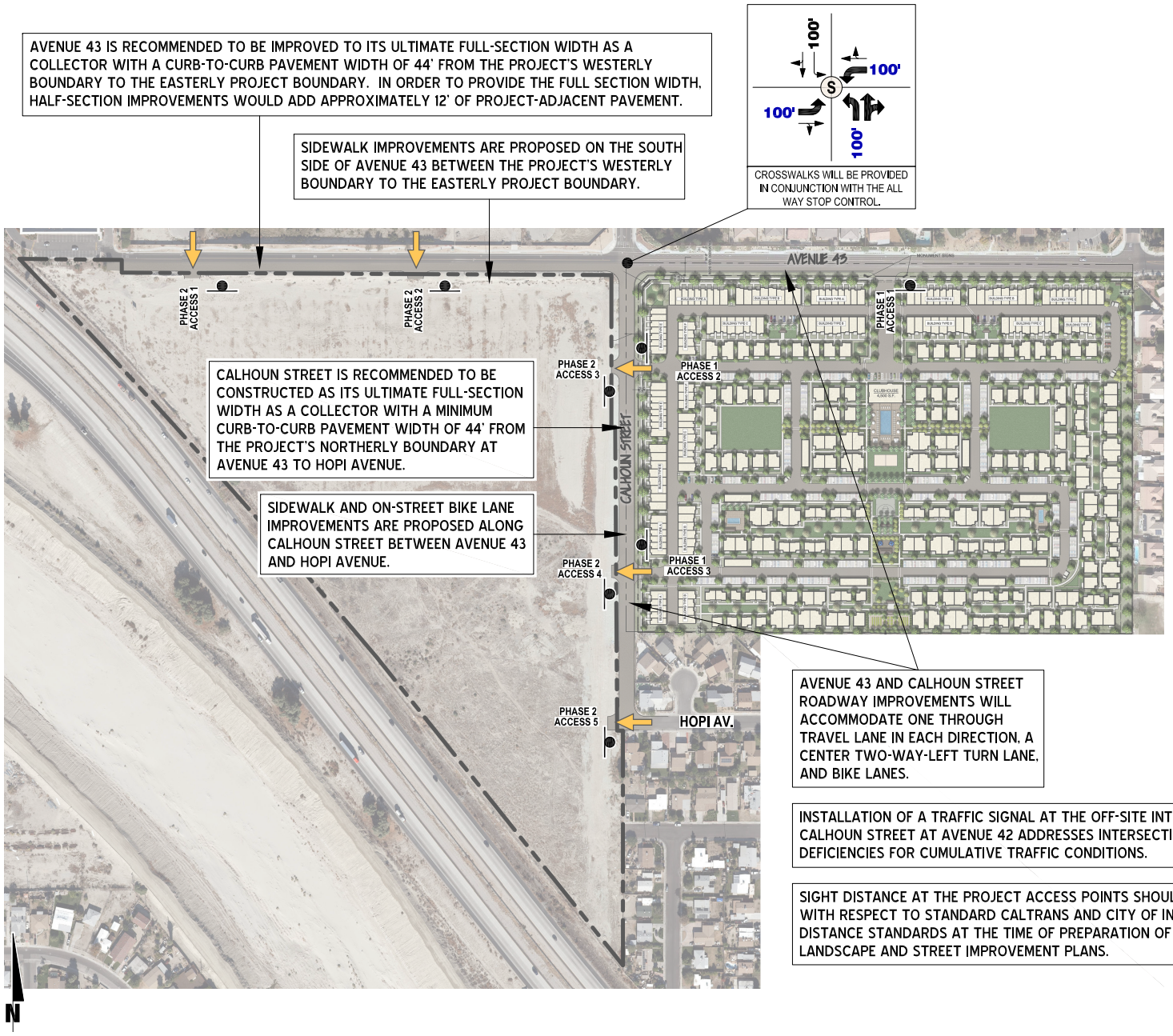
The Project is proposed to have two full access driveways to Avenue 43 west of Calhoun Street, one full access driveway to Avenue 43 east of Calhoun Street, three full access driveways to Calhoun Street south of Avenue 43 from the west, and two full access driveways to Calhoun Street south of Avenue 43 from the east as indicated on Exhibit 11. Roadway improvements necessary to provide site access and on-site circulation are assumed to be constructed in conjunction with site development. These improvements should be in place prior to occupancy.

Calhoun Street –Calhoun Street is recommended to be constructed as its ultimate full-section width as a 2-lane Collector from the Project's northerly boundary at Avenue 43 to Hopi Avenue in compliance with the applicable City of Indio standards. Consistent with the existing Calhoun Street configuration north of Avenue 43, provide 44' curb-to-curb pavement width including two 11' vehicle lanes (1 northbound / 1 southbound), two 5' bicycle lanes (1 northbound / 1 southbound), and a 12' two-way-left-turn-lane (TWLTL). In addition, 20' parkways with sidewalks should be accommodated.

Avenue 43 –Avenue 43 currently exists along the Project frontage with curb-to-curb width of 32'. Avenue 43 is recommended to be improved to its ultimate full-section width as a 2-lane Collector with a minimum 44' curb-to-curb pavement width including two 11' vehicle lanes (1 eastbound / 1 westbound), two 5' bicycle lanes (1 eastbound / 1 westbound), and a 12' two-way-left-turn-lane (TWLTL) from the Project's westerly boundary to the easterly Project boundary. In addition, 20' parkways with sidewalks should be accommodated. In order to provide the full section width, half-section improvements would add approximately 12' of Project-adjacent pavement.

Calhoun Street / Avenue 42 (#1) – The existing intersection configuration that includes 1 northbound left turn lane, 1 northbound right turn lane, 2 east/west through lanes, 1 eastbound left turn lane (for U-turns), and 1 westbound left turn lane provides acceptable level of service for existing and existing plus project conditions. Cross-street stop control on the northbound approach provides acceptable peak hour service levels for Existing Plus Project conditions. For both existing plus project and long range future traffic conditions, the volume warrants for a traffic signal are met at this location.

EXHIBIT 11: CIRCULATION RECOMMENDATIONS



Installation of a traffic signal at the off-site intersection of Calhoun Street at Avenue 42 addresses intersection operational deficiencies for long range traffic conditions. Detailed fair share calculations for each peak hour are provided in Table 5 for this intersection. A Project fair share financial contribution of 58.5% is based on the Project's estimated peak hour volumes at this location, and may be imposed at the discretion of the City of Indio.

TABLE 5: FAIR SHARE CALCULATIONS

#	Intersection	Existing (2022) Traffic	Long Range Future Traffic	Project Only Traffic	Total New Traffic[1]	Project Fair Share (%)[2]
1	Calhoun St. / Avenue 42					
	• AM Peak Hour	646	1,028	216	382	56.5%
	• PM Peak Hour	663	1,133	275	470	**58.5%**

[1] Total New Traffic = (Long Range Future Traffic - Existing Traffic)
[2] Project Fair Share % = (Project Only Traffic / Total New Traffic)

Calhoun Street / Avenue 43 – The Calhoun Street / Avenue 43 intersection should be improved to provide 1 northbound left turn lane (100' turn bay), 1 northbound through-right lane, 1 southbound left turn lane, 1 southbound through-right lane, 1 eastbound left turn lane (100' turn bay with 90' transition), 1 eastbound through-right lane, 1 westbound left turn lane (100' turn bay with 90' transition), 1 westbound through-right lane. All way stop control is anticipated to provide acceptable operations. Crosswalks on all legs of the intersection should also be constructed.

Individual Project driveways should be constructed to include one inbound lane and one outbound lane, with cross-street stop control on the driveway outbound movement.

Sight distance at the project access points should be reviewed with respect to standard Caltrans and City of Indio sight distance standards at the time of preparation of final grading, landscape and street improvement plans.

If you have any questions, please contact John Kain at (949) 375-2435 or Marlie Whiteman (714) 585-0574.

Respectfully submitted,

URBAN CROSSROADS, INC.

John Kain, AICP
Principal

Marlie Whiteman, PE
Senior Associate

This Page Intentionally Left Blank

ATTACHMENT 1: APPROVED TRAFFIC STUDY SCOPING AGREEMENT SCOPE

This Page Intentionally Left Blank

URBAN CROSSROADS

urbanxroads.com

June 10, 2022

Mr. Mark Greenwood
City of Indio
100 Civic Center Mall
Indio, CA 92201

SUBJECT: AVE 43 / CALHOUN ST RESIDENTIAL FOCUSED ASSESSMENT SCOPING AGREEMENT

Dear Mr. Mark Greenwood:

Urban Crossroads, Inc. is pleased to submit this scoping letter to City of Indio regarding the Focused Assessment for the proposed Ave 43 / Calhoun St Residential development ("Project"), which is located south of Avenue 43 and adjacent to Calhoun Street in the City of Indio. It is our understanding that the Project is to consist of two phases: Phase 1 with 340 multi-family units, and Phase 2 with 860 multi-family units.

For this focused traffic assessment and vehicle miles traveled (VMT) screening, the consistency of the proposed Project land uses with the City's General Plan is to be discussed, and information regarding Project traffic flows on adjacent roadways will be provided.

A preliminary site plan the proposed Project is shown on Exhibit 1. Exhibit 2 depicts the location of the proposed project in relation to the existing roadway network. Project will have full access to Avenue 43, east and west of Calhoun Street as well as Calhoun Street, south of Avenue 43.

TRIP GENERATION

In order to develop the traffic characteristics of the proposed project, trip-generation statistics published in the Institute of Transportation Engineers (ITE) *Trip Generation* (11th Edition, 2021) manual for the proposed land use (ITE Land Use Code: 220 – Multi-Family Residential) is utilized. Table 1 presents the trip generation rates and the resulting trip generation summary for the proposed Project. As shown in Table 1, the Project is anticipated to generate a total of 8,088 trip-ends per day with 480 AM peak hour trips and 612 PM peak hour trips.

TRIP DISTRIBUTION AND TRIP ASSIGNMENT

The trip distribution pattern is heavily influenced by the geographical location of the site, the location of surrounding uses, and the proximity to the regional freeway system. Exhibit 3 presents the Project distribution pattern. Based on the identified Project traffic generation and trip distribution patterns, Project ADT and peak hour intersection turning movement volumes are shown on Exhibit 4.

TABLE 1: PROJECT TRIP GENERATION SUMMARY

Trip Generation Rates[1]

Land Use	ITE LU Code	Quantity[2]		AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Multifamily Housing (Low-Rise)	220	1200	DU	0.10	0.30	0.40	0.32	0.19	0.51	6.74

Trip Generation Results

Phase	Land Use	ITE LU Code	Quantity[2]		AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
1	Multifamily Housing (Low-Rise)	220	340	DU	34	102	136	109	65	174	2,292
2	Multifamily Housing (Low-Rise)	220	860	DU	86	258	344	275	163	438	5,796
TOTAL					120	360	480	384	228	612	8,088

[1] Trip Generation Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, 11th Edition (2021).
[2] DU = Dwelling Units

FOCUSED ASSESSMENT STUDY AREA

As shown on Exhibit 2, the focused assessment includes the evaluation of peak hour traffic conditions at the Calhoun Street / Avenue 42 intersection for existing, existing plus project, and long range future conditions. The purpose of this intersection evaluation is to determine Project fair share responsibilities for future improvements.

For segments of Avenue 43 and Calhoun Street adjacent to the Project, Per the City of Indio's General Plan, LOS D is the threshold for acceptable traffic conditions on the circulation network.

At the Calhoun Street / Avenue 42 intersection, both existing (stop sign controlled) and future (traffic signal control) conditions will be presented for information purposes. Intersection LOS operations are based on an intersection's average control delay. At two-way or side-street stop-controlled intersections, LOS is calculated for each controlled movement and for the left turn movement from the major street, as well as for the intersection as a whole. For approaches composed of a single lane, the delay is computed as the average of all movements in that lane.

2022 VOLUMES AND CIRCULATION CONTEXT

Based upon preliminary discussions with City of Indio traffic engineering consultant, morning and evening peak hour (7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM) intersection counts were conducted at the Calhoun Street / Avenue 42 intersection on June 2nd. In addition, daily traffic counts were collected on the Avenue 43 roadway segments east and west of Calhoun Street.

The City of Indio General Plan Circulation Element is depicted on Exhibit 5.

VEHICLE MILES TRAVELED (VMT) SCREENING

The VMT screening assessment will be prepared under separate cover. The California Environmental Quality Act (CEQA) procedures for determination of transportation impacts have recently changed to an evaluation of Vehicle Miles Traveled (VMT) rather than vehicle delay or level of service, due to Senate Bill 743 (SB 743). County of Riverside VMT screening guidelines will be applied to the project.

Please review this scoping agreement let us know if it is acceptable, or if the City requests any changes to this proposed scope of work. If you have any questions, please contact John Kain at (949) 375-2435 or Marlie Whiteman (714) 585-0574.

Respectfully submitted,

URBAN CROSSROADS, INC.

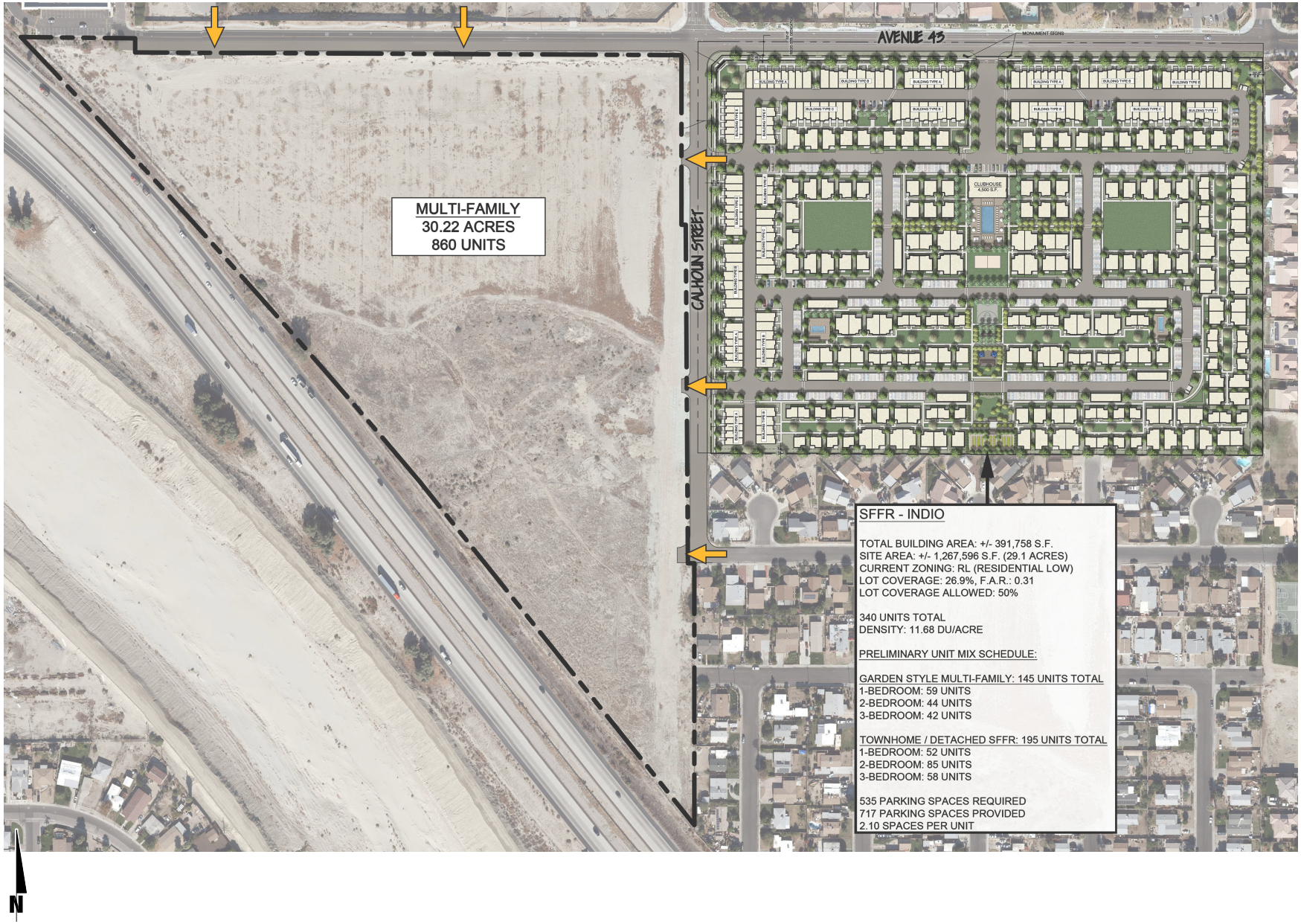
John Kain

John Kain, AICP
Principal

Marlie Whiteman

Marlie Whiteman, PE
Senior Associate

EXHIBIT 1: PRELIMINARY SITE PLAN



14744 - scope.dwg

EXHIBIT 2: GENERAL PLAN CONSISTENCY ASSESSMENT STUDY AREA

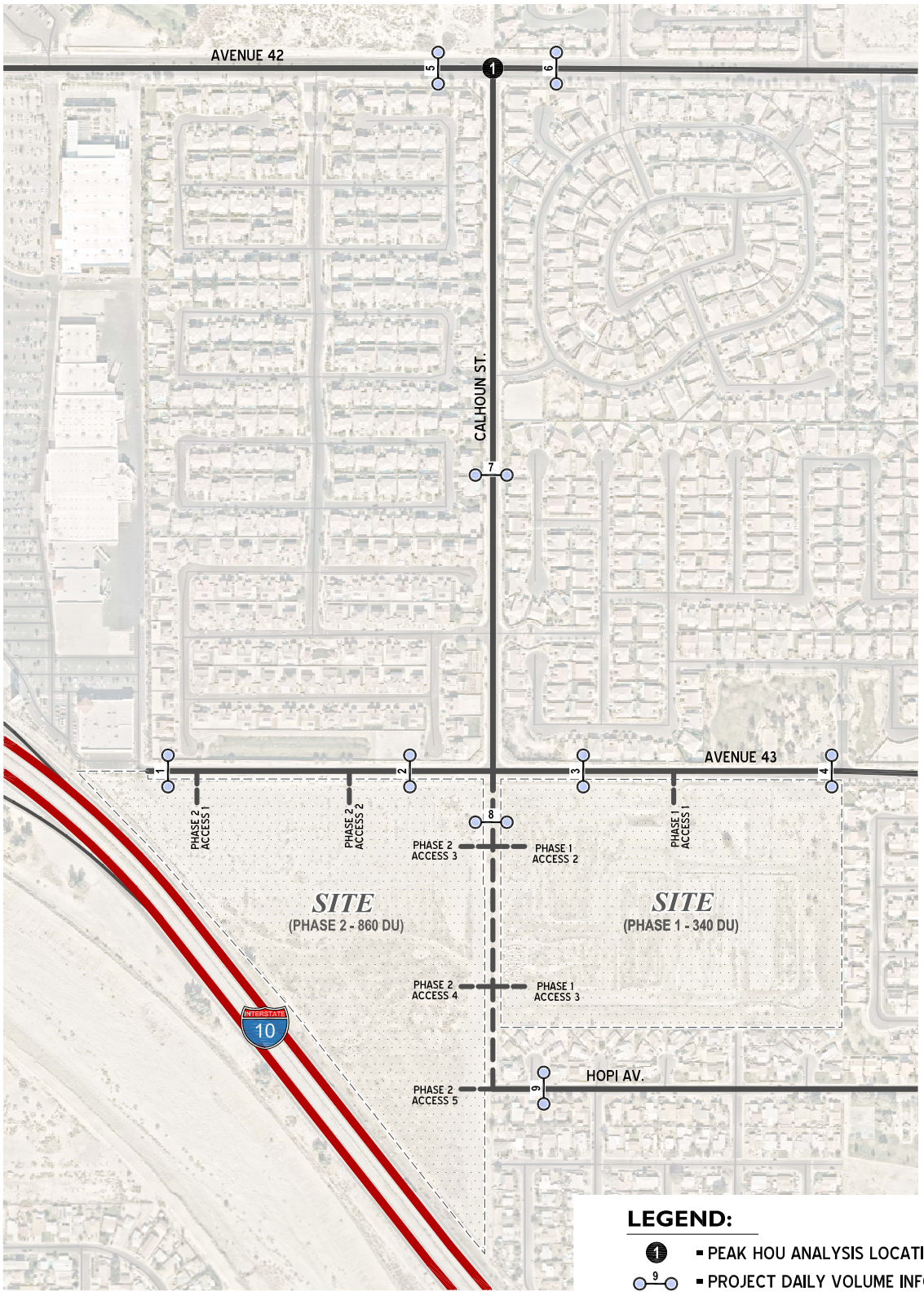


EXHIBIT 3: PROJECT TRIP DISTRIBUTION

EXHIBIT 4: PROJECT ONLY TRAFFIC VOLUMES

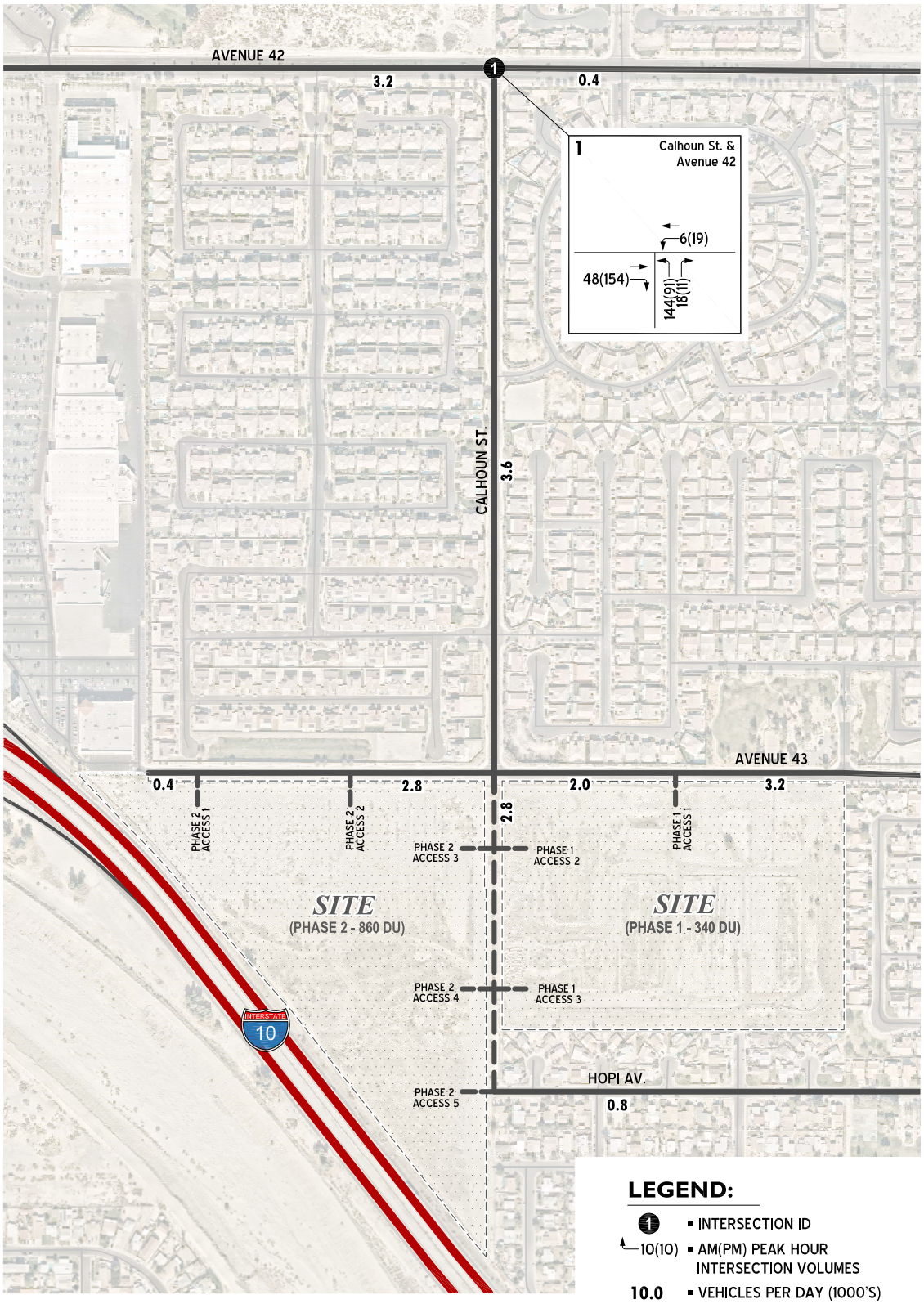
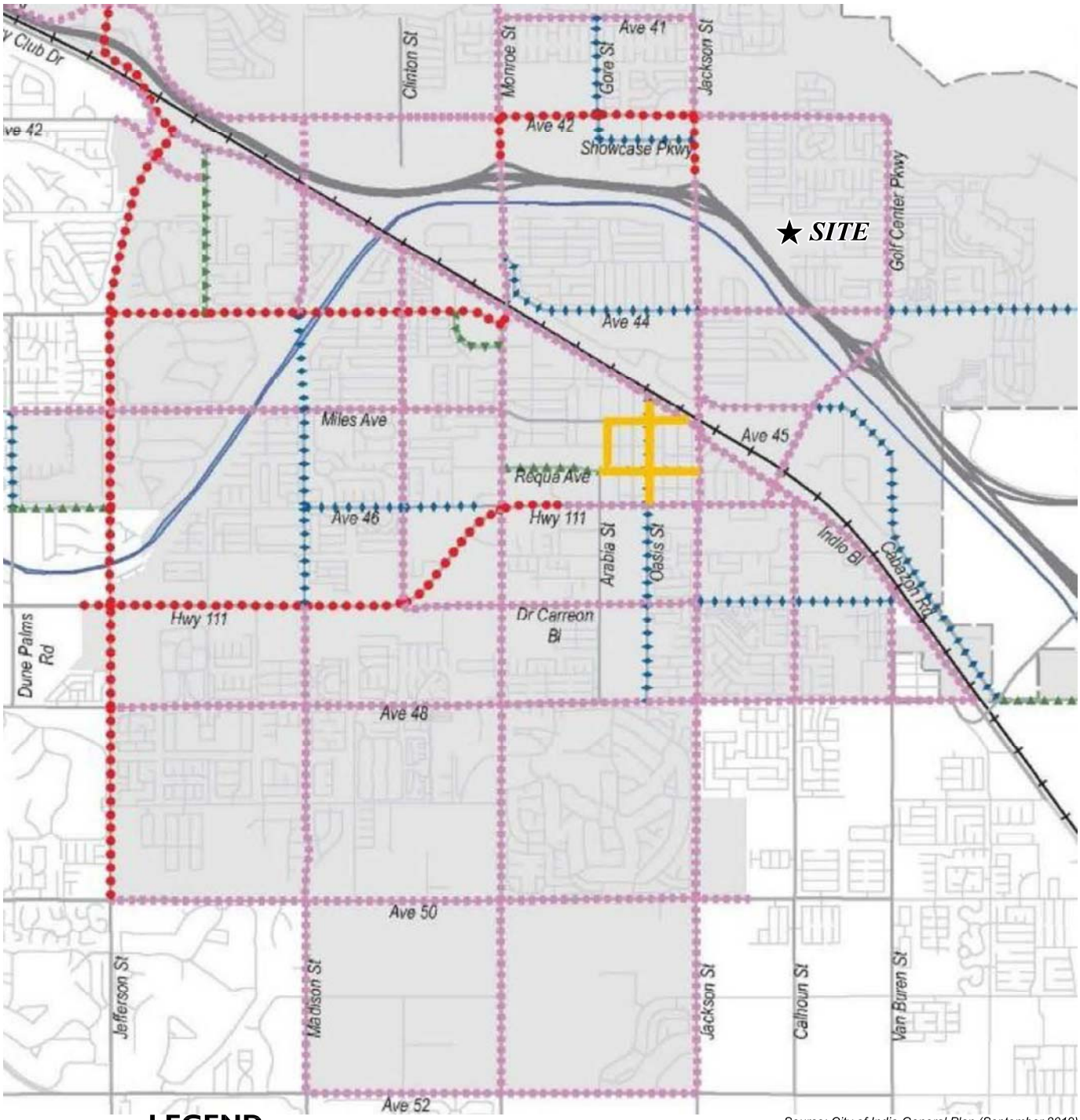


EXHIBIT 5: CITY OF INDIO GENERAL PLAN ROADWAY DESIGNATIONS



Source: City of Indio General Plan (September 2019)

ATTACHMENT 2: TRAFFIC COUNTS – JUNE 2022

This Page Intentionally Left Blank

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
(951) 268-6268
counts@countsunlimited.com

City of Indio
N/S: Calhoun Street
E/W: Avenue 42
Weather: Clear

File Name : INDCA42AM
Site Code : 05122573
Start Date : 6/2/2022
Page No : 1

Groups Printed- Total Volume

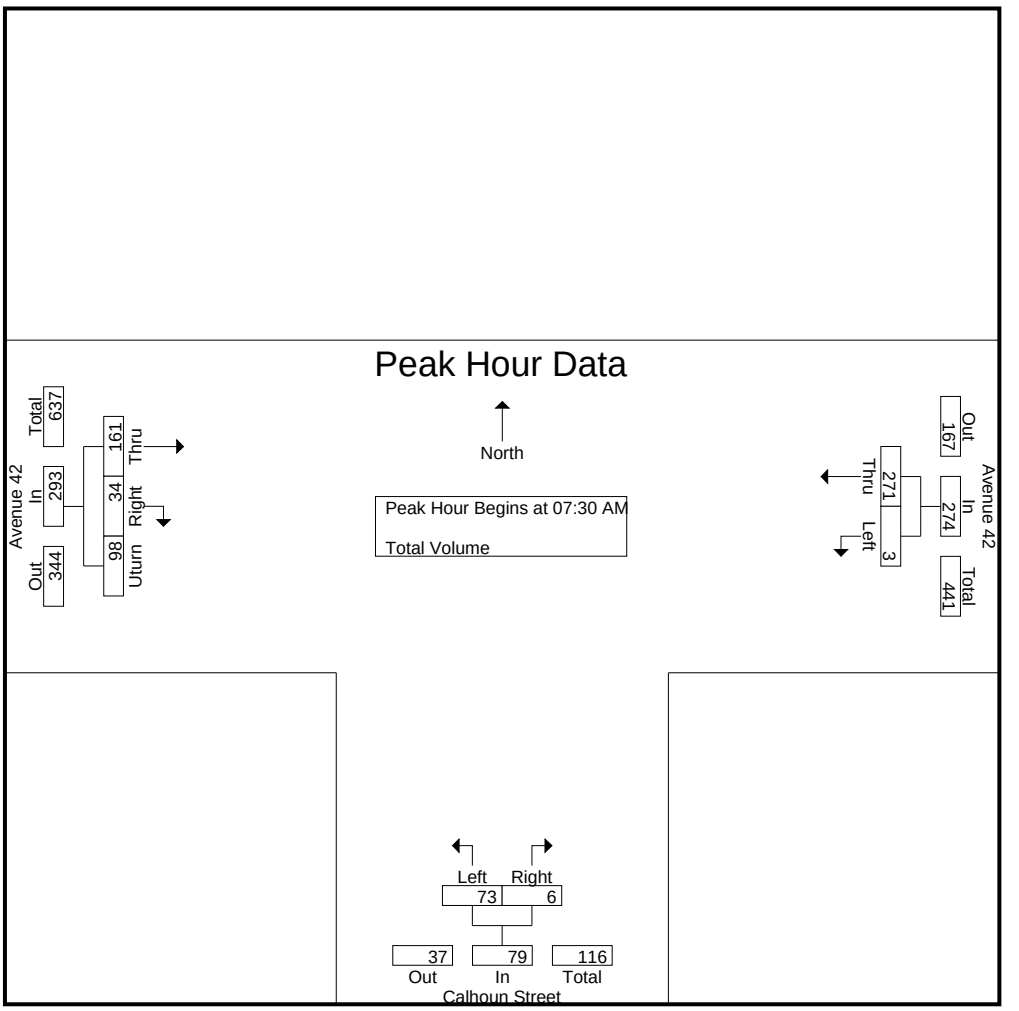
	Avenue 42 Westbound			Calhoun Street Northbound			Avenue 42 Eastbound				
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	Uturn	App. Total	Int. Total
07:00 AM	1	53	54	14	0	14	30	5	22	57	125
07:15 AM	0	51	51	14	0	14	24	2	18	44	109
07:30 AM	0	75	75	17	0	17	38	2	35	75	167
07:45 AM	2	71	73	24	3	27	43	5	28	76	176
Total	3	250	253	69	3	72	135	14	103	252	577
08:00 AM	0	63	63	24	2	26	44	15	17	76	165
08:15 AM	1	62	63	8	1	9	36	12	18	66	138
08:30 AM	1	62	63	9	0	9	48	10	17	75	147
08:45 AM	0	71	71	16	0	16	36	4	15	55	142
Total	2	258	260	57	3	60	164	41	67	272	592
Grand Total	5	508	513	126	6	132	299	55	170	524	1169
Apprch %	1	99		95.5	4.5		57.1	10.5	32.4		
Total %	0.4	43.5	43.9	10.8	0.5	11.3	25.6	4.7	14.5	44.8	

	Avenue 42 Westbound			Calhoun Street Northbound			Avenue 42 Eastbound				
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	Uturn	App. Total	Int. Total
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											
07:30 AM	0	**75**	**75**	17	0	17	38	2	**35**	75	167
07:45 AM	**2**	71	73	**24**	**3**	**27**	43	5	28	**76**	**176**
08:00 AM	0	63	63	24	2	26	**44**	**15**	17	76	165
08:15 AM	1	62	63	8	1	9	36	12	18	66	138
Total Volume	3	271	274	73	6	79	161	34	98	293	646
% App. Total	1.1	98.9		92.4	7.6		54.9	11.6	33.4		
PHF	.375	.903	.913	.760	.500	.731	.915	.567	.700	.964	.918

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
(951) 268-6268
counts@countsunlimited.com

City of Indio
N/S: Calhoun Street
E/W: Avenue 42
Weather: Clear

File Name : INDCA42AM
Site Code : 05122573
Start Date : 6/2/2022
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:

	07:30 AM			07:15 AM			07:30 AM			
+0 mins.	0	**75**	**75**	14	0	14	38	2	**35**	75
+15 mins.	**2**	71	73	17	0	17	43	5	28	**76**
+30 mins.	0	63	63	**24**	**3**	**27**	**44**	**15**	17	76
+45 mins.	1	62	63	24	2	26	36	12	18	66
Total Volume	3	271	274	79	5	84	161	34	98	293
% App. Total	1.1	98.9		94	6		54.9	11.6	33.4	
PHF	.375	.903	.913	.823	.417	.778	.915	.567	.700	.964

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
(951) 268-6268
counts@countsunlimited.com

City of Indio
N/S: Calhoun Street
E/W: Avenue 42
Weather: Clear

File Name : INDCA42PM
Site Code : 05122573
Start Date : 6/2/2022
Page No : 1

Groups Printed- Total Volume

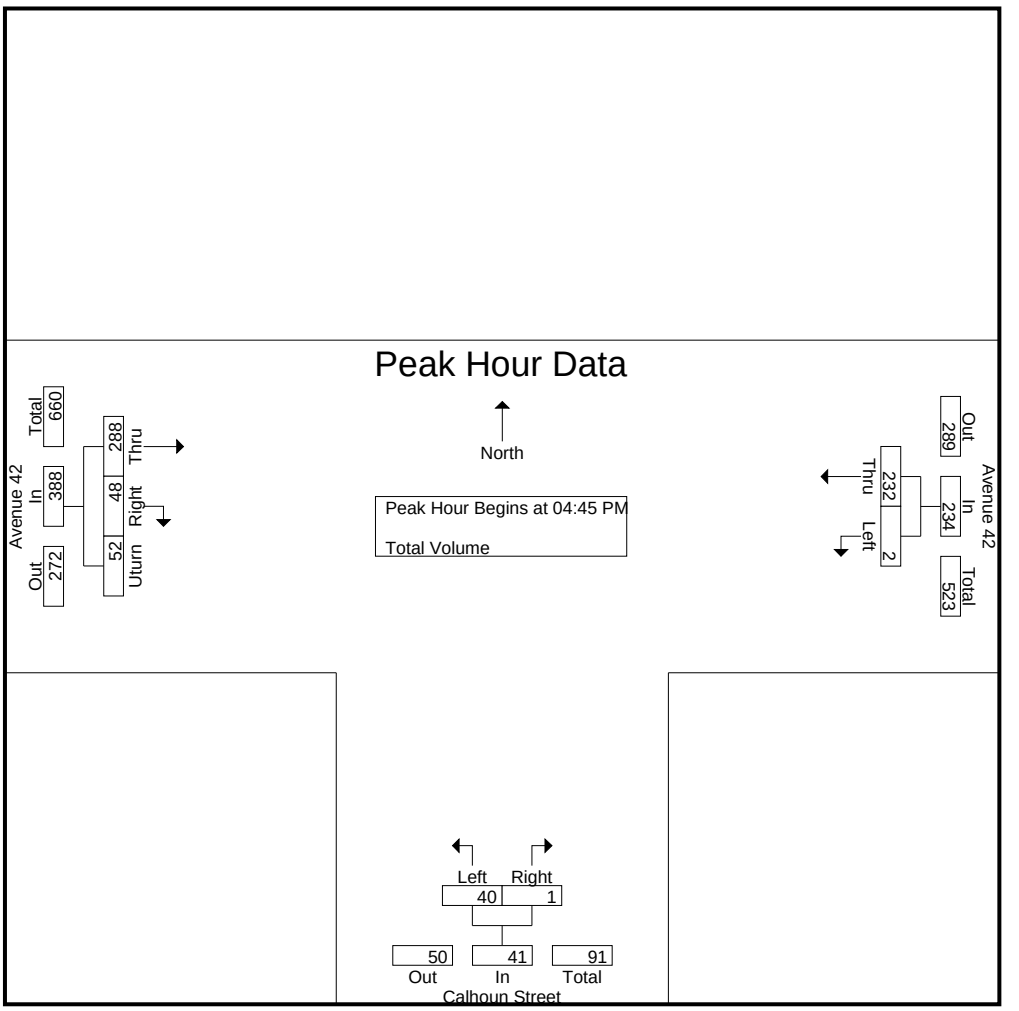
	Avenue 42 Westbound			Calhoun Street Northbound			Avenue 42 Eastbound				
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	Uturn	App. Total	Int. Total
04:00 PM	1	68	69	5	1	6	56	23	9	88	163
04:15 PM	0	48	48	8	2	10	68	7	14	89	147
04:30 PM	0	62	62	4	0	4	56	5	7	68	134
04:45 PM	0	64	64	11	0	11	75	13	16	104	179
Total	1	242	243	28	3	31	255	48	46	349	623
05:00 PM	1	58	59	11	0	11	66	13	8	87	157
05:15 PM	0	48	48	7	1	8	70	7	14	91	147
05:30 PM	1	62	63	11	0	11	77	15	14	106	180
05:45 PM	1	54	55	9	1	10	72	8	13	93	158
Total	3	222	225	38	2	40	285	43	49	377	642
Grand Total	4	464	468	66	5	71	540	91	95	726	1265
Apprch %	0.9	99.1		93	7		74.4	12.5	13.1		
Total %	0.3	36.7	37	5.2	0.4	5.6	42.7	7.2	7.5	57.4	

	Avenue 42 Westbound			Calhoun Street Northbound			Avenue 42 Eastbound				
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	Uturn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1											
Peak Hour for Entire Intersection Begins at 04:45 PM											
04:45 PM	0	**64**	**64**	**11**	0	**11**	75	13	**16**	104	179
05:00 PM	**1**	58	59	11	0	11	66	13	8	87	157
05:15 PM	0	48	48	7	**1**	8	70	7	14	91	147
05:30 PM	1	62	63	11	0	11	**77**	**15**	14	**106**	**180**
Total Volume	2	232	234	40	1	41	288	48	52	388	663
% App. Total	0.9	99.1		97.6	2.4		74.2	12.4	13.4		
PHF	.500	.906	.914	.909	.250	.932	.935	.800	.813	.915	.921

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
(951) 268-6268
counts@countsunlimited.com

City of Indio
N/S: Calhoun Street
E/W: Avenue 42
Weather: Clear

File Name : INDCA42PM
Site Code : 05122573
Start Date : 6/2/2022
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			04:45 PM			04:45 PM			
+0 mins.	**1**	**68**	**69**	**11**	0	**11**	75	13	**16**	104
+15 mins.	0	48	48	11	0	11	66	13	8	87
+30 mins.	0	62	62	7	**1**	8	70	7	14	91
+45 mins.	0	64	64	11	0	11	**77**	**15**	14	**106**
Total Volume	1	242	243	40	1	41	288	48	52	388
% App. Total	0.4	99.6		97.6	2.4		74.2	12.4	13.4	
PHF	.250	.890	.880	.909	.250	.932	.935	.800	.813	.915

Counts Unlimited, Inc.

PO Box 1178
Corona, CA 92878
Phone: (951) 268-6268
email: counts@countsunlimited.com

City of Indio
Avenue 43
E/ Calhoun Street
24 Hour Directional Volume Count

IND002
Site Code: 051-22573

Start Time	02-Jun-22 Thu	Eastbound Morning	Eastbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Westbound Morning	Westbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		9	38			7	32				
12:15		12	29			2	36				
12:30		6	33			3	22				
12:45		6	43	33	143	2	31	14	121	47	264
01:00		2	43			2	29				
01:15		4	55			2	30				
01:30		3	42			2	21				
01:45		3	41	12	181	3	27	9	107	21	288
02:00		2	50			2	35				
02:15		2	37			3	27				
02:30		0	40			1	25				
02:45		0	40	4	167	2	23	8	110	12	277
03:00		6	53			5	31				
03:15		4	56			4	32				
03:30		1	47			3	42				
03:45		1	30	12	186	4	45	16	150	28	336
04:00		0	54			2	31				
04:15		4	46			3	45				
04:30		6	54			7	37				
04:45		3	65	13	219	8	46	20	159	33	378
05:00		6	52			14	36				
05:15		3	52			9	**53**				
05:30		8	63			9	**45**				
05:45		7	50	24	217	11	**42**	43	176	67	393
06:00		11	**59**			9	**41**				
06:15		18	**59**			10	39				
06:30		29	**64**			12	39				
06:45		29	**53**	87	235	24	38	55	157	142	392
07:00		20	40			11	34				
07:15		22	42			20	33				
07:30		30	51			22	26				
07:45		27	50	99	183	28	32	81	125	180	308
08:00		32	42			27	31				
08:15		26	32			**21**	27				
08:30		32	55			**17**	31				
08:45		22	42	112	171	**38**	26	103	115	215	286
09:00		23	40			**31**	16				
09:15		26	17			19	13				
09:30		35	26			15	17				
09:45		41	36	125	119	21	6	86	52	211	171
10:00		34	22			20	10				
10:15		19	22			24	11				
10:30		33	11			26	5				
10:45		27	15	113	70	30	9	100	35	213	105
11:00		**41**	20			22	6				
11:15		**38**	9			21	4				
11:30		**34**	10			23	7				
11:45		**35**	10	148	49	24	4	90	21	238	70
Total		782	1940	782	1940	625	1328	625	1328	1407	3268
Combined Total		2722		2722		1953		1953		4675	
AM Peak	-	11:00	-	-	-	08:15	-	-	-	-	-
Vol.	-	148	-	-	-	107	-	-	-	-	-
P.H.F.		0.902				0.704					
PM Peak	-	-	06:00	-	-	-	05:15	-	-	-	-
Vol.	-	-	235	-	-	-	181	-	-	-	-
P.H.F.			0.918				0.854				
Percentage		28.7%	71.3%			32.0%	68.0%				
ADT/AADT		ADT 4,675		AADT 4,675							

Counts Unlimited, Inc.

PO Box 1178
Corona, CA 92878
Phone: (951) 268-6268
email: counts@countsunlimited.com

City of Indio
Avenue 43
W/ Calhoun Street
24 Hour Directional Volume Count

IND001
Site Code: 051-22573

Start Time	02-Jun-22 Thu	Eastbound Morning	Eastbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Westbound Morning	Westbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		6	41			7	25				
12:15		15	30			3	33				
12:30		6	31			2	15				
12:45		9	40	36	142	1	30	13	103	49	245
01:00		2	35			0	27				
01:15		4	42			2	22				
01:30		2	37			1	17				
01:45		1	37	9	151	0	24	3	90	12	241
02:00		1	44			2	28				
02:15		2	31			3	18				
02:30		0	36			0	21				
02:45		0	28	3	139	2	26	7	93	10	232
03:00		4	48			4	26				
03:15		4	41			1	29				
03:30		0	49			3	24				
03:45		0	27	8	165	3	42	11	121	19	286
04:00		0	51			2	27				
04:15		2	44			2	41				
04:30		3	50			7	24				
04:45		0	61	5	206	10	35	21	127	26	333
05:00		2	45			17	30				
05:15		2	53			10	**39**				
05:30		5	55			6	**39**				
05:45		7	**49**	16	202	9	**38**	42	146	58	348
06:00		11	**58**			10	**35**				
06:15		12	**52**			9	31				
06:30		13	**66**			9	35				
06:45		18	44	54	220	24	30	52	131	106	351
07:00		10	38			18	25				
07:15		10	38			16	30				
07:30		19	58			24	26				
07:45		20	48	59	182	23	29	81	110	140	292
08:00		25	47			18	29				
08:15		16	35			**23**	24				
08:30		23	54			**15**	25				
08:45		20	45	84	181	**33**	24	89	102	173	283
09:00		25	39			**25**	10				
09:15		21	17			18	8				
09:30		29	24			15	10				
09:45		33	32	108	112	21	4	79	32	187	144
10:00		30	21			18	6				
10:15		19	25			23	7				
10:30		33	14			25	4				
10:45		27	10	109	70	25	6	91	23	200	93
11:00		**35**	18			21	2				
11:15		**39**	10			18	3				
11:30		**32**	9			22	5				
11:45		**33**	6	139	43	19	4	80	14	219	57
Total		630	1813	630	1813	569	1092	569	1092	1199	2905
Combined Total		2443		2443		1661		1661		4104	
AM Peak	-	11:00	-	-	-	08:15	-	-	-	-	-
Vol.	-	139	-	-	-	96	-	-	-	-	-
P.H.F.		0.891				0.727					
PM Peak	-	-	05:45	-	-	-	05:15	-	-	-	-
Vol.	-	-	225	-	-	-	151	-	-	-	-
P.H.F.			0.852				0.968				
Percentage		25.8%	74.2%			34.3%	65.7%				
ADT/AADT		ADT 4,104		AADT 4,104							

ATTACHMENT 3: EXISTING (2022) CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

This Page Intentionally Left Blank

Lane Group	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	98	161	34	3	271	73	6
Future Volume (vph)	98	161	34	3	271	73	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	160		50	140		125	0
Storage Lanes	1		1	1		1	1
Taper Length (ft)	90			90		90	
Link Speed (mph)		45			45	30	
Link Distance (ft)		797			948	678	
Travel Time (s)		12.1			14.4	15.4	
Confl. Peds. (#/hr)	5		5	5		5	5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)							
Sign Control		Free			Free	Stop	

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

Intersection	
Int Delay, s/veh	3.3

Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Vol, veh/h	98	161	34	3	271	73	6
Future Vol, veh/h	98	161	34	3	271	73	6
Conflicting Peds, #/hr	5	0	5	5	0	5	5
Sign Control	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	-	None	-	None	-	None
Storage Length	160	-	50	140	-	125	0
Veh in Median Storage, #	-	0	-	-	0	0	-
Grade, %	-	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2
Mvmt Flow	107	175	37	3	295	79	7

Major/Minor	Major1			Major2		Minor1	
Conflicting Flow All	295	0	0	217	0	553	98
Stage 1	-	-	-	-	-	394	-
Stage 2	-	-	-	-	-	159	-
Critical Hdwy	6.44	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	-	5.84	-
Follow-up Hdwy	2.52	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	933	-	-	1350	-	463	939
Stage 1	-	-	-	-	-	650	-
Stage 2	-	-	-	-	-	853	-
Platoon blocked, %		-	-		-		
Mov Cap-1 Maneuver	933	-	-	1344	-	405	930
Mov Cap-2 Maneuver	-	-	-	-	-	405	-
Stage 1	-	-	-	-	-	573	-
Stage 2	-	-	-	-	-	847	-

Approach	EB	WB	NB
HCM Control Delay, s	3.1	0.1	15.5
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBU	EBT	EBR	WBL	WBT
Capacity (veh/h)	405	930	933	-	-	1344	-
HCM Lane V/C Ratio	0.196	0.007	0.114	-	-	0.002	-
HCM Control Delay (s)	16	8.9	9.4	-	-	7.7	-
HCM Lane LOS	C	A	A	-	-	A	-
HCM 95th %tile Q(veh)	0.7	0	0.4	-	-	0	-

Lane Group	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	52	288	48	2	232	40	1
Future Volume (vph)	52	288	48	2	232	40	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	160		50	140		125	0
Storage Lanes	1		1	1		1	1
Taper Length (ft)	90			90		90	
Link Speed (mph)		45			45	30	
Link Distance (ft)		797			948	678	
Travel Time (s)		12.1			14.4	15.4	
Confl. Peds. (#/hr)	5		5	5		5	5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)							
Sign Control		Free			Free	Stop	

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

Intersection	
Int Delay, s/veh	1.6

Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Vol, veh/h	52	288	48	2	232	40	1
Future Vol, veh/h	52	288	48	2	232	40	1
Conflicting Peds, #/hr	5	0	5	5	0	5	5
Sign Control	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	-	None	-	None	-	None
Storage Length	160	-	50	140	-	125	0
Veh in Median Storage, #	-	0	-	-	0	0	-
Grade, %	-	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2
Mvmt Flow	57	313	52	2	252	43	1

Major/Minor	Major1			Major2		Minor1	
Conflicting Flow All	252	0	0	370	0	567	167
Stage 1	-	-	-	-	-	432	-
Stage 2	-	-	-	-	-	135	-
Critical Hdwy	6.44	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	-	5.84	-
Follow-up Hdwy	2.52	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	993	-	-	1185	-	454	848
Stage 1	-	-	-	-	-	622	-
Stage 2	-	-	-	-	-	877	-
Platoon blocked, %		-	-		-		
Mov Cap-1 Maneuver	993	-	-	1179	-	423	840
Mov Cap-2 Maneuver	-	-	-	-	-	423	-
Stage 1	-	-	-	-	-	583	-
Stage 2	-	-	-	-	-	871	-

Approach	EB	WB	NB
HCM Control Delay, s	1.2	0.1	14.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBU	EBT	EBR	WBL	WBT
Capacity (veh/h)	423	840	993	-	-	1179	-
HCM Lane V/C Ratio	0.103	0.001	0.057	-	-	0.002	-
HCM Control Delay (s)	14.5	9.3	8.8	-	-	8.1	-
HCM Lane LOS	B	A	A	-	-	A	-
HCM 95th %tile Q(veh)	0.3	0	0.2	-	-	0	-

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

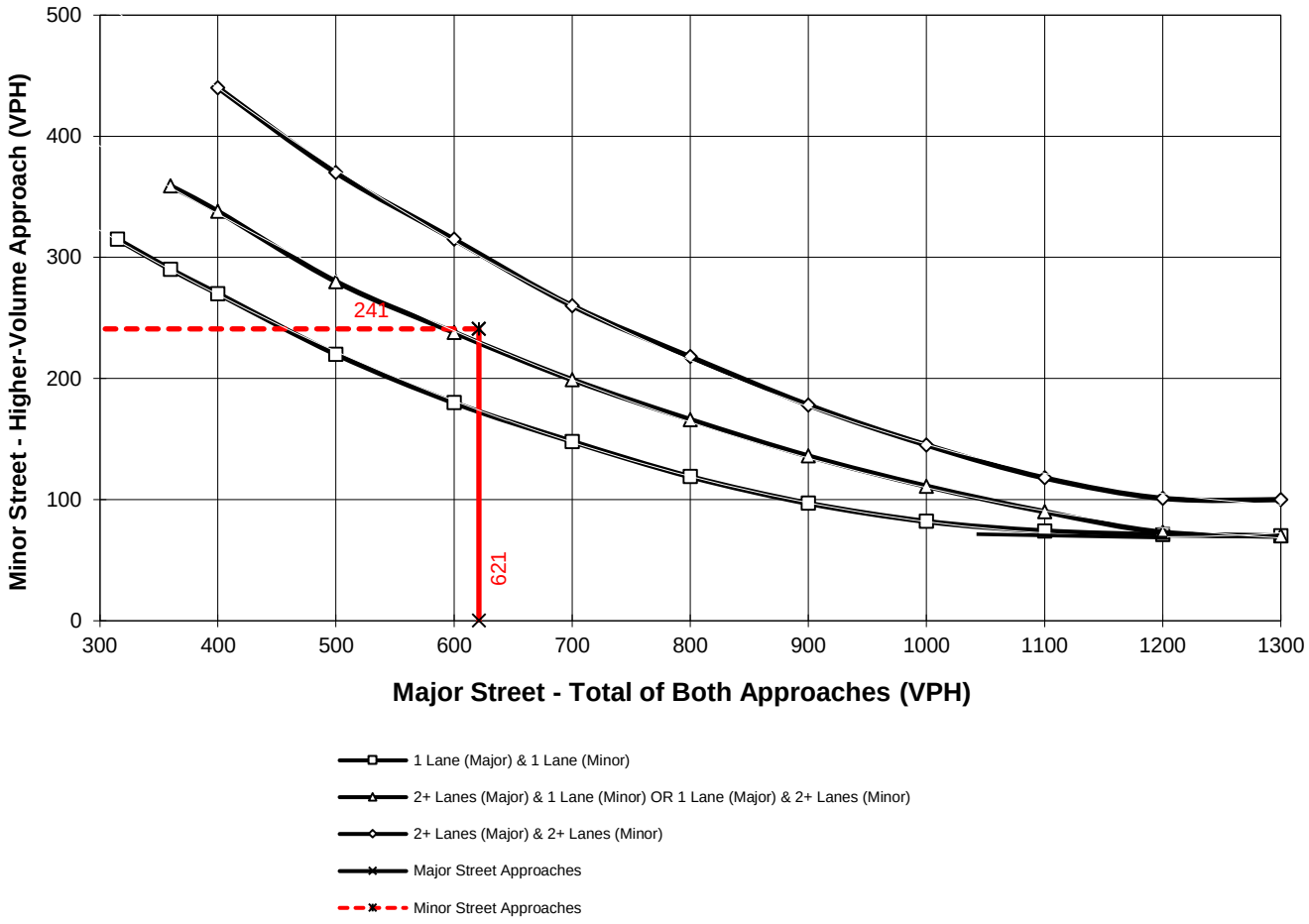
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 64 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Existing + Project AM PEAK HOUR WARRANTS**

Major Street Name = **Avenue 42**
Total of Both Approaches (VPH) = **621**
Number of Approach Lanes Major Street = **2**

Minor Street Name = **Calhoun St.**
High Volume Approach (VPH) = **241**
Number of Approach Lanes Minor Street = **1**

WARRANTED FOR A SIGNAL



*Note: 100 vph applies as the lower threshold for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold for a minor-street approach with one lane

Intersection ID: #1

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

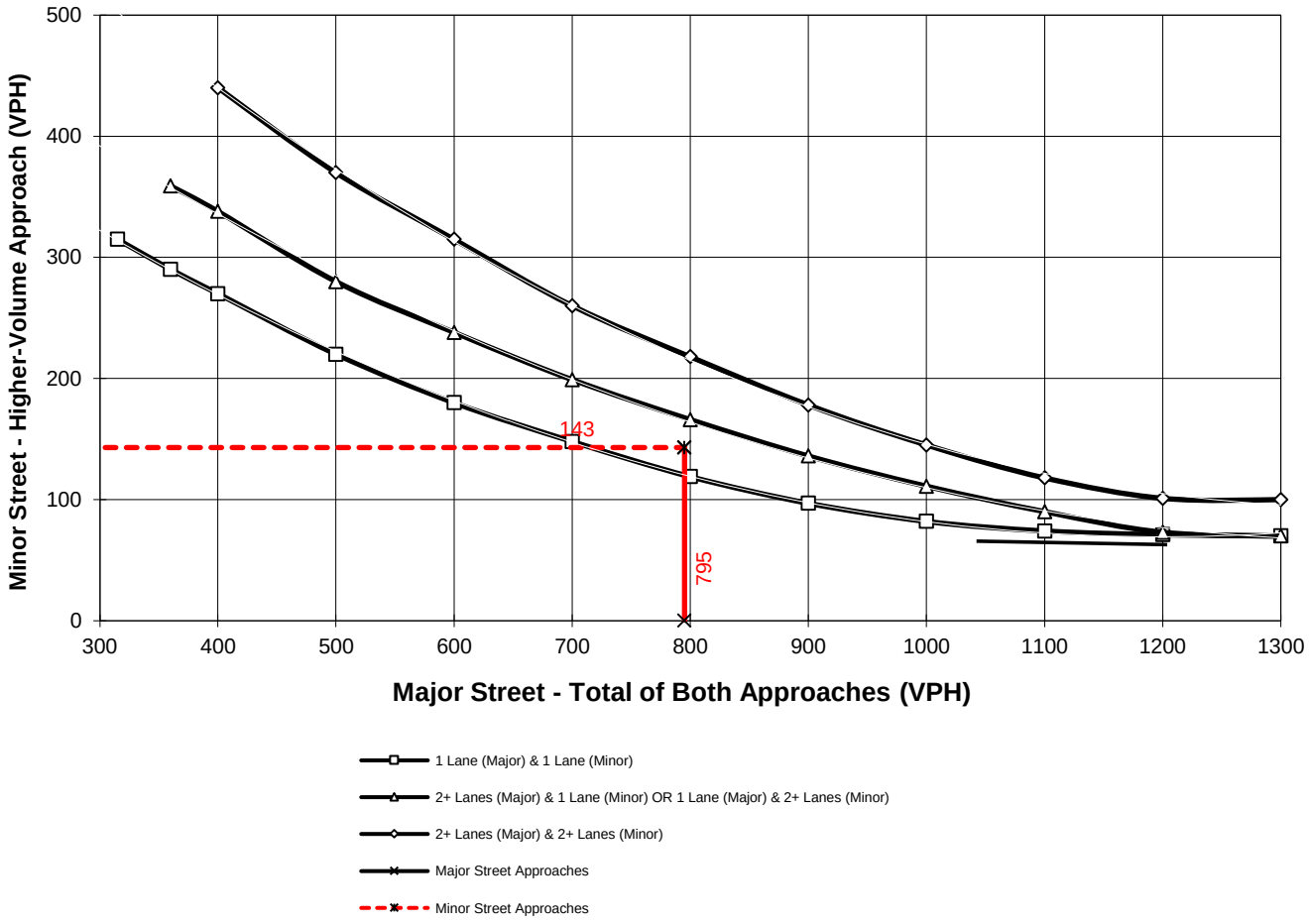
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 64 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Existing + Project PM PEAK HOUR WARRANTS**

Major Street Name = **Avenue 42**
Total of Both Approaches (VPH) = **795**
Number of Approach Lanes Major Street = **2**

Minor Street Name = **Calhoun St.**
High Volume Approach (VPH) = **143**
Number of Approach Lanes Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



*Note: 100 vph applies as the lower threshold for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold for a minor-street approach with one lane

Intersection ID: #1

ATTACHMENT 4: EXISTING PLUS PROJECT INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

This Page Intentionally Left Blank

Lane Group	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	98	161	82	9	271	217	24
Future Volume (vph)	98	161	82	9	271	217	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	160		50	140		125	0
Storage Lanes	1		1	1		1	1
Taper Length (ft)	90			90		90	
Link Speed (mph)		45			45	30	
Link Distance (ft)		797			948	678	
Travel Time (s)		12.1			14.4	15.4	
Confl. Peds. (#/hr)	5		5	5		5	5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)							
Sign Control		Free			Free	Stop	

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

Intersection	
Int Delay, s/veh	8.1

Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Vol, veh/h	98	161	82	9	271	217	24
Future Vol, veh/h	98	161	82	9	271	217	24
Conflicting Peds, #/hr	5	0	5	5	0	5	5
Sign Control	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	-	None	-	None	-	None
Storage Length	160	-	50	140	-	125	0
Veh in Median Storage, #	-	0	-	-	0	0	-
Grade, %	-	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2
Mvmt Flow	107	175	89	10	295	236	26

Major/Minor	Major1			Major2		Minor1	
Conflicting Flow All	295	0	0	269	0	567	98
Stage 1	-	-	-	-	-	394	-
Stage 2	-	-	-	-	-	173	-
Critical Hdwy	6.44	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	-	5.84	-
Follow-up Hdwy	2.52	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	933	-	-	1292	-	454	939
Stage 1	-	-	-	-	-	650	-
Stage 2	-	-	-	-	-	840	-
Platoon blocked, %		-	-		-		
Mov Cap-1 Maneuver	933	-	-	1286	-	395	930
Mov Cap-2 Maneuver	-	-	-	-	-	395	-
Stage 1	-	-	-	-	-	573	-
Stage 2	-	-	-	-	-	829	-

Approach	EB	WB	NB
HCM Control Delay, s	2.7	0.3	24.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBU	EBT	EBR	WBL	WBT
Capacity (veh/h)	395	930	933	-	-	1286	-
HCM Lane V/C Ratio	0.597	0.028	0.114	-	-	0.008	-
HCM Control Delay (s)	26.7	9	9.4	-	-	7.8	-
HCM Lane LOS	D	A	A	-	-	A	-
HCM 95th %tile Q(veh)	3.7	0.1	0.4	-	-	0	-

Lane Group	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	52	288	202	21	232	131	12
Future Volume (vph)	52	288	202	21	232	131	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	160		50	140		125	0
Storage Lanes	1		1	1		1	1
Taper Length (ft)	90			90		90	
Link Speed (mph)		45			45	30	
Link Distance (ft)		797			948	678	
Travel Time (s)		12.1			14.4	15.4	
Confl. Peds. (#/hr)	5		5	5		5	5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)							
Sign Control		Free			Free	Stop	

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

Intersection	
Int Delay, s/veh	3.5

Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Vol, veh/h	52	288	202	21	232	131	12
Future Vol, veh/h	52	288	202	21	232	131	12
Conflicting Peds, #/hr	5	0	5	5	0	5	5
Sign Control	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	-	None	-	None	-	None
Storage Length	160	-	50	140	-	125	0
Veh in Median Storage, #	-	0	-	-	0	0	-
Grade, %	-	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2
Mvmt Flow	57	313	220	23	252	142	13

Major/Minor	Major1			Major2		Minor1	
Conflicting Flow All	252	0	0	538	0	609	167
Stage 1	-	-	-	-	-	432	-
Stage 2	-	-	-	-	-	177	-
Critical Hdwy	6.44	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	-	5.84	-
Follow-up Hdwy	2.52	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	993	-	-	1026	-	427	848
Stage 1	-	-	-	-	-	622	-
Stage 2	-	-	-	-	-	836	-
Platoon blocked, %		-	-		-		
Mov Cap-1 Maneuver	993	-	-	1021	-	389	840
Mov Cap-2 Maneuver	-	-	-	-	-	389	-
Stage 1	-	-	-	-	-	583	-
Stage 2	-	-	-	-	-	813	-

Approach	EB	WB	NB
HCM Control Delay, s	0.8	0.7	18.7
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBU	EBT	EBR	WBL	WBT
Capacity (veh/h)	389	840	993	-	-	1021	-
HCM Lane V/C Ratio	0.366	0.016	0.057	-	-	0.022	-
HCM Control Delay (s)	19.5	9.4	8.8	-	-	8.6	-
HCM Lane LOS	C	A	A	-	-	A	-
HCM 95th %tile Q(veh)	1.6	0	0.2	-	-	0.1	-

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

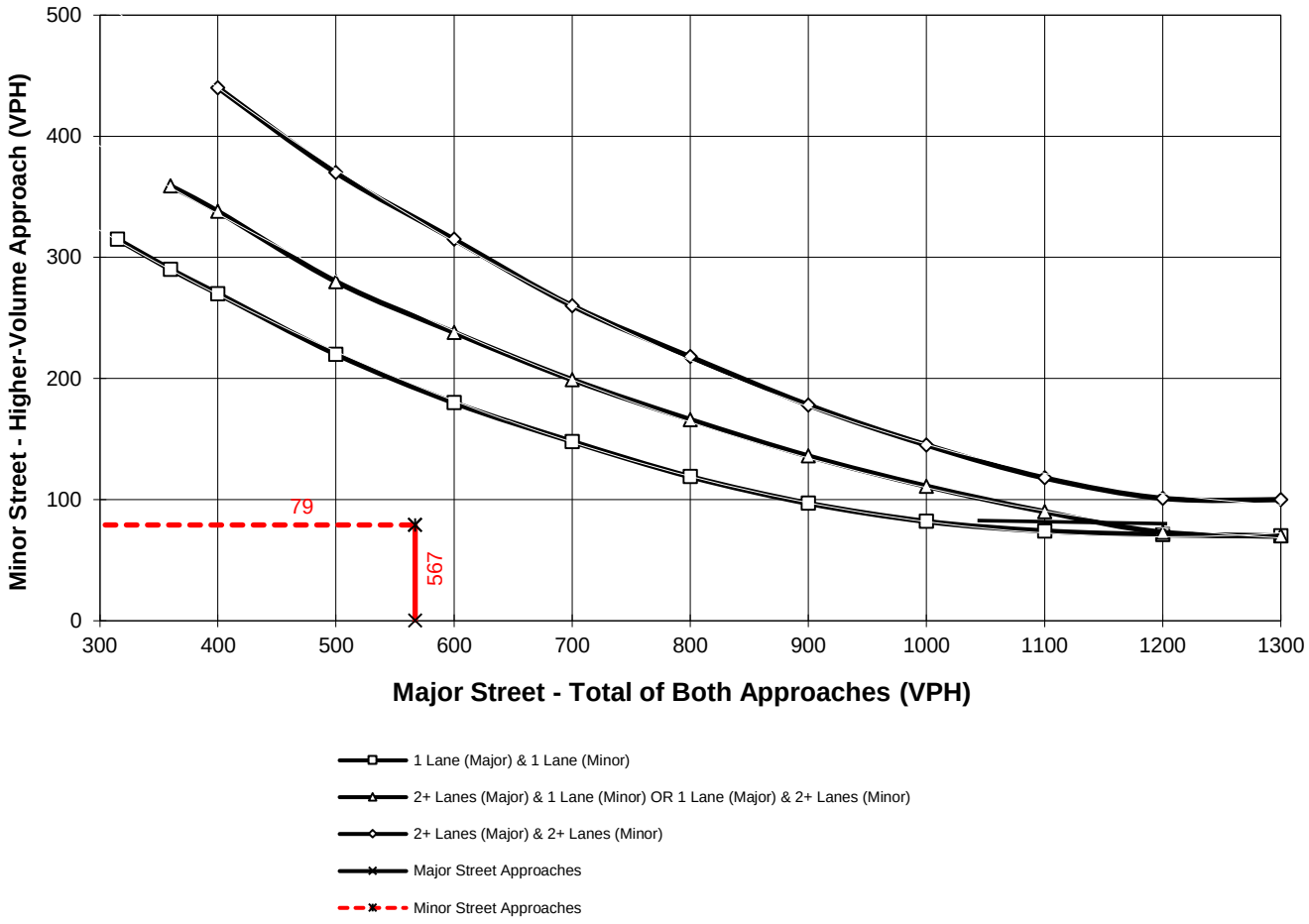
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 64 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **EXISTING (2022) AM PEAK HOUR WARRANTS**

Major Street Name = **Avenue 42**
Total of Both Approaches (VPH) = **567**
Number of Approach Lanes Major Street = **2**

Minor Street Name = **Calhoun St.**
High Volume Approach (VPH) = **79**
Number of Approach Lanes Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



*Note: 100 vph applies as the lower threshold for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold for a minor-street approach with one lane

Intersection ID: #1

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

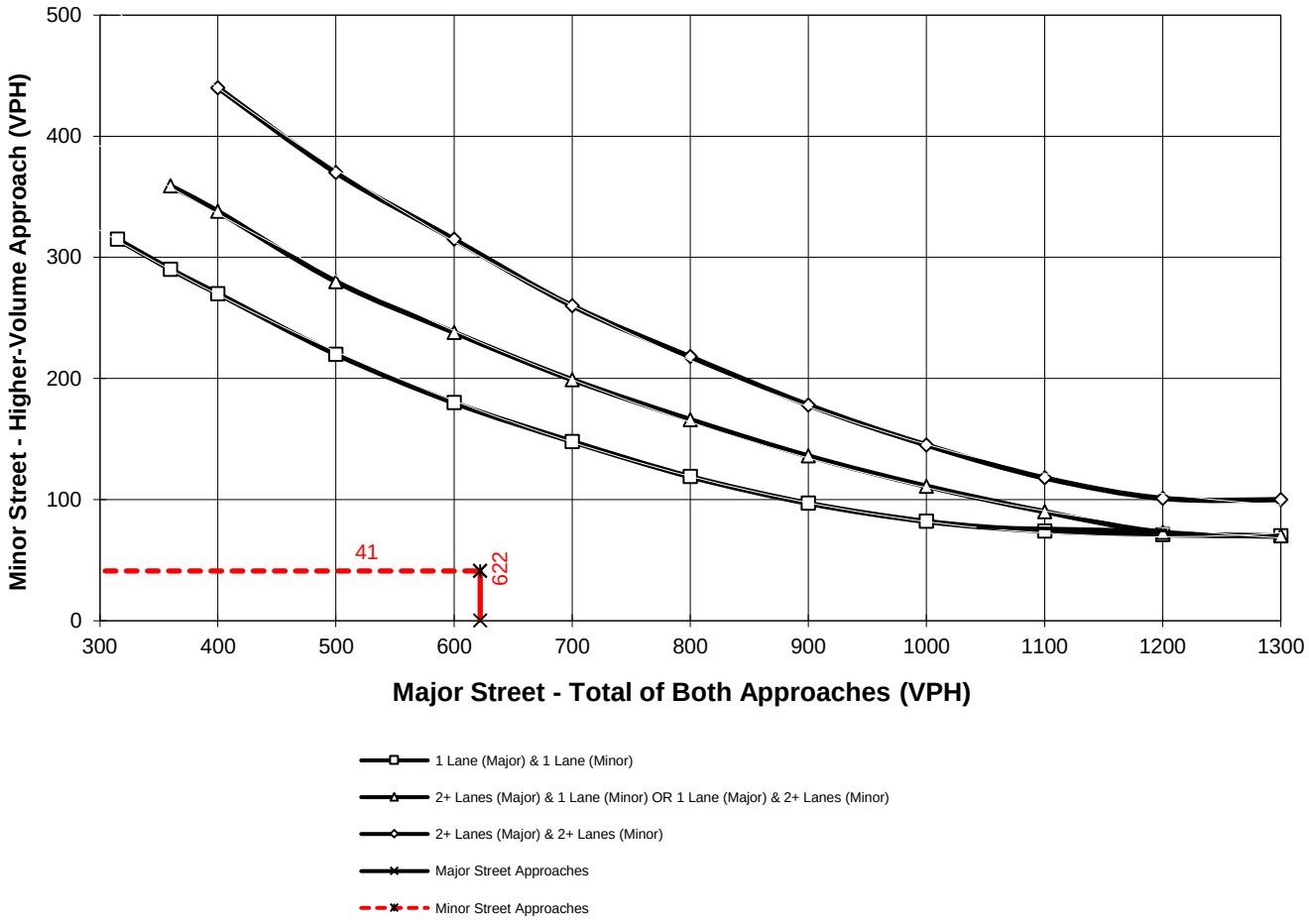
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 64 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **EXISTING (2022) PM PEAK HOUR WARRANTS**

Major Street Name = **Avenue 42**
Total of Both Approaches (VPH) = **622**
Number of Approach Lanes Major Street = **2**

Minor Street Name = **Calhoun St.**
High Volume Approach (VPH) = **41**
Number of Approach Lanes Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



*Note: 100 vph applies as the lower threshold for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold for a minor-street approach with one lane

Intersection ID: #1

ATTACHMENT 5: LONG RANGE FUTURE TRAFFIC INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

This Page Intentionally Left Blank

Lane Group	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	108	257	90	10	298	239	26
Future Volume (vph)	108	257	90	10	298	239	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	160		50	140		125	0
Storage Lanes	1		1	1		1	1
Taper Length (ft)	90			90		90	
Link Speed (mph)		45			45	30	
Link Distance (ft)		797			948	678	
Travel Time (s)		12.1			14.4	15.4	
Confl. Peds. (#/hr)	5		5	5		5	5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)							
Sign Control		Free			Free	Stop	

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

Intersection	
Int Delay, s/veh	13.6

Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Vol, veh/h	108	257	90	10	298	239	26
Future Vol, veh/h	108	257	90	10	298	239	26
Conflicting Peds, #/hr	5	0	5	5	0	5	5
Sign Control	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	-	None	-	None	-	None
Storage Length	160	-	50	140	-	125	0
Veh in Median Storage, #	-	0	-	-	0	0	-
Grade, %	-	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2
Mvmt Flow	117	279	98	11	324	260	28

Major/Minor	Major1			Major2		Minor1	
Conflicting Flow All	324	0	0	382	0	707	150
Stage 1	-	-	-	-	-	518	-
Stage 2	-	-	-	-	-	189	-
Critical Hdwy	6.44	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	-	5.84	-
Follow-up Hdwy	2.52	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	894	-	-	1173	-	370	870
Stage 1	-	-	-	-	-	563	-
Stage 2	-	-	-	-	-	824	-
Platoon blocked, %		-	-		-		
Mov Cap-1 Maneuver	894	-	-	1167	-	316	862
Mov Cap-2 Maneuver	-	-	-	-	-	316	-
Stage 1	-	-	-	-	-	487	-
Stage 2	-	-	-	-	-	812	-

Approach	EB	WB	NB
HCM Control Delay, s	2.3	0.3	48.4
HCM LOS			E

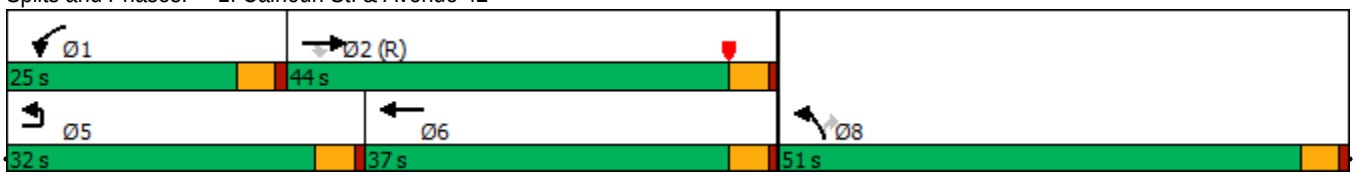
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBU	EBT	EBR	WBL	WBT
Capacity (veh/h)	316	862	894	-	-	1167	-
HCM Lane V/C Ratio	0.822	0.033	0.131	-	-	0.009	-
HCM Control Delay (s)	52.6	9.3	9.6	-	-	8.1	-
HCM Lane LOS	F	A	A	-	-	A	-
HCM 95th %tile Q(veh)	7	0.1	0.5	-	-	0	-

Lane Group	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	108	257	90	10	298	239	26
Future Volume (vph)	108	257	90	10	298	239	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	160		50	140		125	0
Storage Lanes	1		1	1		1	1
Taper Length (ft)	90			90		90	
Right Turn on Red			Yes				Yes
Link Speed (mph)		45			45	30	
Link Distance (ft)		797			948	678	
Travel Time (s)		12.1			14.4	15.4	
Confl. Peds. (#/hr)	5		5	5		5	5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)							
Turn Type	Prot	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	5	2		1	6	8	
Permitted Phases			2				8
Detector Phase	5	2	2	1	6	8	8
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	32.0	44.0	44.0	25.0	37.0	51.0	51.0
Total Split (%)	26.7%	36.7%	36.7%	20.8%	30.8%	42.5%	42.5%
Maximum Green (s)	27.5	39.5	39.5	20.5	32.5	46.5	46.5
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Total Lost Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag		
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	None	Max	Max
Walk Time (s)		7.0	7.0			7.0	7.0
Flash Dont Walk (s)		11.0	11.0			11.0	11.0
Pedestrian Calls (#/hr)		5	5			5	5

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:EBT, Start of Yellow
Natural Cycle: 70
Control Type: Actuated-Coordinated

Splits and Phases: 1: Calhoun St. & Avenue 42



Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Volume (veh/h)	108	257	90	10	298	239	26
Future Volume (veh/h)	108	257	90	10	298	239	26
Initial Q (Qb), veh		0	0	0	0	0	0
Ped-Bike Adj(A_pbT)			0.99	1.00		1.00	1.00
Parking Bus, Adj		1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No	No	
Adj Sat Flow, veh/h/ln		1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h		279	98	11	324	260	28
Peak Hour Factor		0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %		2	2	2	2	2	2
Cap, veh/h		1570	696	45	1851	661	588
Arrive On Green		0.44	0.44	0.02	0.52	0.37	0.37
Sat Flow, veh/h		3647	1576	1781	3647	1781	1585
Grp Volume(v), veh/h		279	98	11	324	260	28
Grp Sat Flow(s),veh/h/ln		1777	1576	1781	1777	1781	1585
Q Serve(g_s), s		5.7	4.4	0.7	5.8	12.9	1.4
Cycle Q Clear(g_c), s		5.7	4.4	0.7	5.8	12.9	1.4
Prop In Lane			1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h		1570	696	45	1851	661	588
V/C Ratio(X)		0.18	0.14	0.25	0.18	0.39	0.05
Avail Cap(c_a), veh/h		1570	696	275	1851	661	588
HCM Platoon Ratio		1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)		1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh		20.3	19.9	57.4	15.2	27.8	24.2
Incr Delay (d2), s/veh		0.2	0.4	2.8	0.0	1.8	0.2
Initial Q Delay(d3),s/veh		0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln		2.3	1.7	0.4	2.2	5.8	0.5
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh		20.5	20.4	60.2	15.2	29.6	24.3
LnGrp LOS		C	C	E	B	C	C
Approach Vol, veh/h		377			335	288	
Approach Delay, s/veh		20.5			16.7	29.1	
Approach LOS		C			B	C	

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	9.5	59.5				69.0	51.0
Change Period (Y+Rc), s	4.5	4.5				4.5	4.5
Max Green Setting (Gmax), s	20.5	39.5				32.5	46.5
Max Q Clear Time (g_c+I1), s	2.7	7.7				7.8	14.9
Green Ext Time (p_c), s	0.0	2.0				1.9	0.9

Intersection Summary	
HCM 6th Ctrl Delay	21.7
HCM 6th LOS	C

Notes

User approved ignoring U-Turning movement.

Lane Group	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	57	317	222	23	357	144	13
Future Volume (vph)	57	317	222	23	357	144	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	160		50	140		125	0
Storage Lanes	1		1	1		1	1
Taper Length (ft)	90			90		90	
Link Speed (mph)		45			45	30	
Link Distance (ft)		797			948	678	
Travel Time (s)		12.1			14.4	15.4	
Confl. Peds. (#/hr)	5		5	5		5	5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)							
Sign Control		Free			Free	Stop	

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

Intersection	
Int Delay, s/veh	4.1

Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Vol, veh/h	57	317	222	23	357	144	13
Future Vol, veh/h	57	317	222	23	357	144	13
Conflicting Peds, #/hr	5	0	5	5	0	5	5
Sign Control	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	-	None	-	None	-	None
Storage Length	160	-	50	140	-	125	0
Veh in Median Storage, #	-	0	-	-	0	0	-
Grade, %	-	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2
Mvmt Flow	62	345	241	25	388	157	14

Major/Minor	Major1			Major2		Minor1	
Conflicting Flow All	388	0	0	591	0	723	183
Stage 1	-	-	-	-	-	474	-
Stage 2	-	-	-	-	-	249	-
Critical Hdwy	6.44	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	-	5.84	-
Follow-up Hdwy	2.52	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	815	-	-	981	-	361	828
Stage 1	-	-	-	-	-	592	-
Stage 2	-	-	-	-	-	769	-
Platoon blocked, %		-	-		-		
Mov Cap-1 Maneuver	815	-	-	976	-	322	820
Mov Cap-2 Maneuver	-	-	-	-	-	322	-
Stage 1	-	-	-	-	-	544	-
Stage 2	-	-	-	-	-	745	-

Approach	EB	WB	NB
HCM Control Delay, s	0.9	0.5	24.9
HCM LOS			C

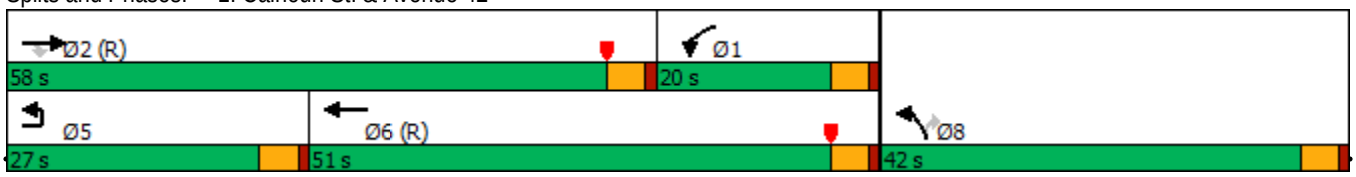
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBU	EBT	EBR	WBL	WBT
Capacity (veh/h)	322	820	815	-	-	976	-
HCM Lane V/C Ratio	0.486	0.017	0.076	-	-	0.026	-
HCM Control Delay (s)	26.3	9.5	9.8	-	-	8.8	-
HCM Lane LOS	D	A	A	-	-	A	-
HCM 95th %tile Q(veh)	2.5	0.1	0.2	-	-	0.1	-

Lane Group	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	57	317	222	23	357	144	13
Future Volume (vph)	57	317	222	23	357	144	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	160		50	140		125	0
Storage Lanes	1		1	1		1	1
Taper Length (ft)	90			90		90	
Right Turn on Red			Yes				Yes
Link Speed (mph)		45			45	30	
Link Distance (ft)		797			948	678	
Travel Time (s)		12.1			14.4	15.4	
Confl. Peds. (#/hr)	5		5	5		5	5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)							
Turn Type	Prot	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	5	2		1	6	8	
Permitted Phases			2				8
Detector Phase	5	2	2	1	6	8	8
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	9.5	22.5	22.5	22.5
Total Split (s)	27.0	58.0	58.0	20.0	51.0	42.0	42.0
Total Split (%)	22.5%	48.3%	48.3%	16.7%	42.5%	35.0%	35.0%
Maximum Green (s)	22.5	53.5	53.5	15.5	46.5	37.5	37.5
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Total Lost Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Lead/Lag	Lead	Lead	Lead	Lag	Lag		
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	Max	Max
Walk Time (s)		7.0	7.0			7.0	7.0
Flash Dont Walk (s)		11.0	11.0			11.0	11.0
Pedestrian Calls (#/hr)		5	5			5	5

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
Natural Cycle: 55
Control Type: Actuated-Coordinated

Splits and Phases: 1: Calhoun St. & Avenue 42



Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Volume (veh/h)	57	317	222	23	357	144	13
Future Volume (veh/h)	57	317	222	23	357	144	13
Initial Q (Qb), veh		0	0	0	0	0	0
Ped-Bike Adj(A_pbT)			0.99	1.00		1.00	1.00
Parking Bus, Adj		1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No	No	
Adj Sat Flow, veh/h/ln		1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h		345	241	25	388	157	14
Peak Hour Factor		0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %		2	2	2	2	2	2
Cap, veh/h		1525	676	200	2117	527	469
Arrive On Green		0.43	0.43	0.11	0.60	0.30	0.30
Sat Flow, veh/h		3647	1576	1781	3647	1781	1585
Grp Volume(v), veh/h		345	241	25	388	157	14
Grp Sat Flow(s),veh/h/ln		1777	1576	1781	1777	1781	1585
Q Serve(g_s), s		7.4	12.4	1.5	5.9	8.2	0.8
Cycle Q Clear(g_c), s		7.4	12.4	1.5	5.9	8.2	0.8
Prop In Lane			1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h		1525	676	200	2117	527	469
V/C Ratio(X)		0.23	0.36	0.12	0.18	0.30	0.03
Avail Cap(c_a), veh/h		1525	676	200	2117	527	469
HCM Platoon Ratio		1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)		1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh		21.7	23.1	47.9	11.0	32.6	30.0
Incr Delay (d2), s/veh		0.3	1.5	0.3	0.2	1.4	0.1
Initial Q Delay(d3),s/veh		0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln		3.0	4.7	0.7	2.2	3.8	0.3
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh		22.0	24.5	48.2	11.2	34.1	30.1
LnGrp LOS		C	C	D	B	C	C
Approach Vol, veh/h		586			413	171	
Approach Delay, s/veh		23.0			13.4	33.7	
Approach LOS		C			B	C	

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	20.0	58.0				78.0	42.0
Change Period (Y+Rc), s	4.5	4.5				4.5	4.5
Max Green Setting (Gmax), s	15.5	53.5				46.5	37.5
Max Q Clear Time (g_c+I1), s	3.5	14.4				7.9	10.2
Green Ext Time (p_c), s	0.0	3.0				2.5	0.5

Intersection Summary	
HCM 6th Ctrl Delay	21.2
HCM 6th LOS	C

Notes

User approved ignoring U-Turning movement.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

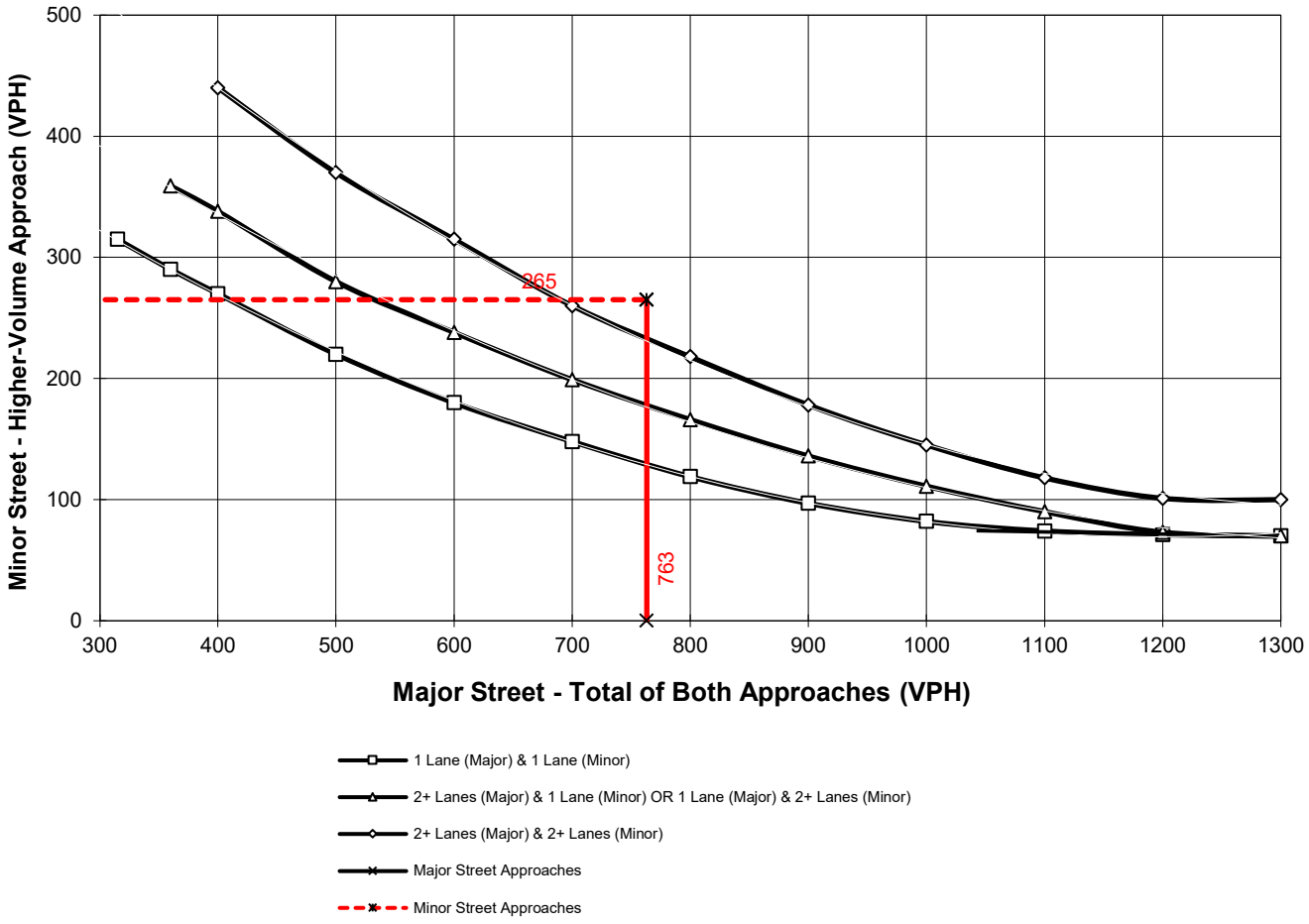
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 64 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **GPBO w/ PROJECT AM PEAK HOUR WARRANTS**

Major Street Name = **Avenue 42**
Total of Both Approaches (VPH) = **763**
Number of Approach Lanes Major Street = **2**

Minor Street Name = **Calhoun St.**
High Volume Approach (VPH) = **265**
Number of Approach Lanes Minor Street = **1**

WARRANTED FOR A SIGNAL



*Note: 100 vph applies as the lower threshold for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold for a minor-street approach with one lane

Intersection ID: #1

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

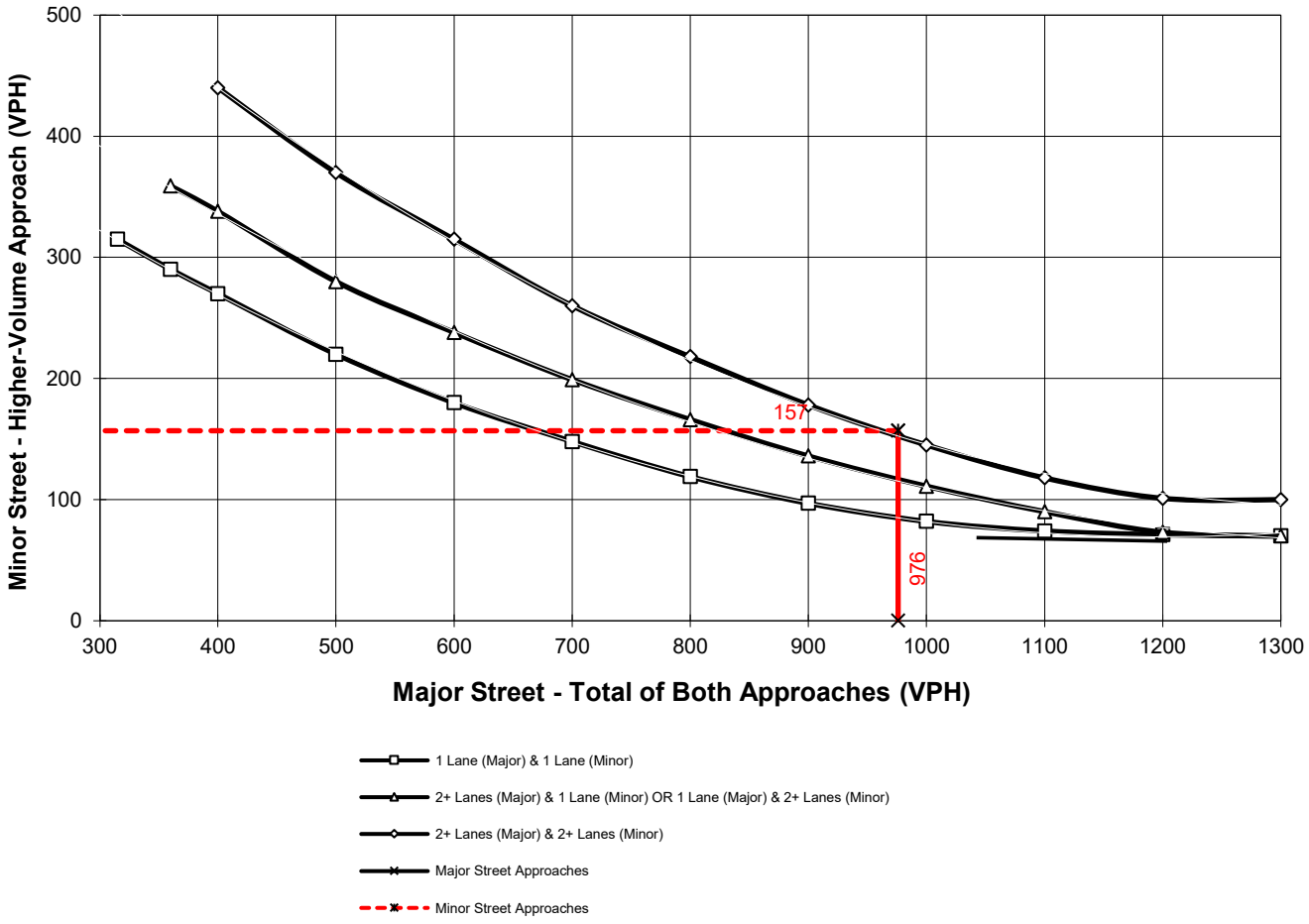
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 64 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **GPBO w/ PROJECT PM PEAK HOUR WARRANTS**

Major Street Name = **Avenue 42**
Total of Both Approaches (VPH) = **976**
Number of Approach Lanes Major Street = **2**

Minor Street Name = **Calhoun St.**
High Volume Approach (VPH) = **157**
Number of Approach Lanes Minor Street = **1**

WARRANTED FOR A SIGNAL



*Note: 100 vph applies as the lower threshold for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold for a minor-street approach with one lane

Intersection ID: #1

URBAN | CROSSROADS

June 23, 2022

Nicole Sauviat Criste
Terra Nova Planning & Research, Inc.
42635 Melanie Place, Suite 101
Palm Desert, CA 92211

AVE 43 / CALHOUN ST RESIDENTIAL VEHICLE MILES TRAVELED (VMT) SCREENING ANALYSIS

Nicole Sauviat Criste,

Urban Crossroads, Inc. is pleased to provide the following screening analysis of Vehicle Miles Traveled (VMT) for the Ave 43 / Calhoun St Residential development (**Project**), which is located south of Frank Sinatra Drive and west of Portola Avenue in the City of Indio.

It is our understanding that the project is to consist of two phases: Phase 1 with 340 multi-family units, and Phase 2 with 860 multi-family units.

BACKGROUND

Changes to California Environmental Quality Act (CEQA) Guidelines were adopted in December 2018, which requires all lead agencies to adopt VMT as a replacement for automobile delay-based level of service (LOS) as the new measure for identifying transportation impacts for land use projects. This statewide mandate went into effect July 1, 2020. To aid in this transition, the Governor's Office of Planning and Research (OPR) released a Technical Advisory on Evaluating Transportation Impacts in CEQA (December of 2018) (**Technical Advisory**) (1).

Based on OPR's Technical Advisory, the County of Riverside has prepared their Transportation Analysis Guidelines for Level of Service, Vehicle Miles Traveled (**County Guidelines**). (2) This analysis has been prepared based on the adopted County Guidelines as the City of Indio utilizes the County guidelines.

VEHICLE MILES TRAVELED (VMT) SCREENING

The County Guidelines set forth screening criteria under which Projects are not required to submit detailed VMT analysis. This guidance for determination of non-significant VMT impact is primarily intended to avoid unnecessary analysis and findings that would be inconsistent with the intent of SB 743. VMT screening criteria for development projects include the following:

- **Small Projects** with low trip generation per existing CEQA exemptions or resulting in a 3,000 metric tons of Carbon Dioxide Equivalent per year screening level threshold. Specific examples include Single Family Housing projects less than or equal to 110 Dwelling Units and Multi Family (low rise) Housing projects less than or equal to 147 Dwelling Units. **The small project screening threshold is not met.**

- **Projects Near High Quality Transit** within ½ mile of an existing major transit stop and maintains a service interval frequency of 15 minutes or less during the morning and afternoon peak commute periods. The study area is currently served by the SunLine Transit Agency, but bus service is outside the immediate Project vicinity. Based on the current transit in the study area, the Project site is not located within ½ mile of an existing major transit stop, nor along a high-quality transit corridor. **The high quality transit screening threshold is not met.**
- **Affordable Housing** with a high percentage of affordable units as determined by the Planning and Engineering departments. **The affordable housing screening threshold is not met**.
- **Map-Based Screening** eliminates the need for complex analyses by allowing existing VMT data to serve as a basis for screening smaller residential and office developments. Map-based screening is performed for residential and office developments, per the County Guidelines. A Project is presumed to have a less-than-significant impact if the area of development is under the threshold as shown on the screening map. This map-based screening eliminates the need for complex analyses by allowing existing VMT data to serve as a basis for the screening of smaller residential and office developments.

  Map-based screening is performed using the map titled: RIVTAM Model (2012) Daily Residential Home Based VMT per Capita Comparison to Riverside County Average, which indicates it is based upon the County average. The map utilizes the sub-regional Riverside Transportation Analysis Model (RIVTAM) to measure current VMT performance within individual TAZ's and compares them to the applicable impact threshold (e.g., VMT per employee for office or industrial land uses and VMT per capita for residential land uses). The County Guidelines define VMT per Capita as the sum of VMT for personal motorized trips made by all residents of a development project, divided by the total number of residents of the project.

  Exhibit 1 shows the Project area on the County's VMT map combined with an overlay of the RIVTAM Traffic Analysis Zones (TAZs). The Project is located within RIVTAM TAZ 4795, which experiences 12.9 VMT / Capita. The Project TAZ residential VMT / Capita is less than the County average VMT / Capita. For projects that are found to reside in a low VMT generating TAZ, the analyst is also required to verify that the underlying land use assumptions contained in the low VMT generating TAZ are consistent with the proposed development project. Urban Crossroads reviewed the land use assumptions contained within the Project TAZ (TAZ 4795), which were found to be consistent with the Project's residential land use. The Project is therefore eligible to be screened out based on map-based screening criteria. **The map-based screening threshold is met**.

EXHIBIT 1: RIVERSIDE COUNTY DAILY RESIDENTIAL HOME BASED VMT PER CAPITA SCREENING MAP

FINDINGS/CONCLUSIONS

The Project has been reviewed for VMT screening based upon the Project location on Riverside County's "Daily Residential Home Based VMT per Capita Comparison to Riverside County Average". No further VMT analysis is needed. Residential projects in areas that show less than the County average existing VMT per Capita may be presumed to have a less than significant impact absent substantial evidence to the contrary.

If you have any questions, please contact us at jkain@urbanxroads.com for John or mwhiteman@urbanxroads.com for Marlie.

Respectfully submitted,

URBAN CROSSROADS, INC.

John Kain, AICP
Principal

Marlie Whiteman, P.E.
Senior Associate

REFERENCES

1. **Office of Planning and Research.** *Technical Advisory on Evaluating Transportation Impacts in CEQA.* State of California : s.n., December 2018.
2. **Riverside County Transportation Department.** *Transportation Analysis Guidelines for Level of Service, Vehicle Miles Traveled.* December, 2020.
3. **Institute of Transportation Engineers.** *Trip Generation Manual.* 11th Edition. 2021.