RK engineering group, inc.

transportation planning • traffic engineering
acoustical engineering • parking studies

October 30, 2013

Mr. Wayne Rembold
POINTE LARSON, LLC.
1022 SW Salmon Street, Suite 450
Portland, OR 92705-2451

Subject: ECN 13006 The Signature at PGA West TTM 36537 SDP 2013-924 (Entitlement Review) - Amendment to the February 12, 2013 Traffic Impact Study

Dear Mr. Rembold:

Introduction

RK ENGINEERING GROUP, INC. (RK) has reviewed the traffic related comments from the City of La Quinta, dated August 27, 2013 and October 8, 2013 and has amended *The Pointe at PGA West Tentative Tract No. 33226 Traffic Impact Review* (February 12, 2013). This has been updated based upon the latest Tentative Tract Map 36537 (TTM 36537). The following is the update of the traffic study for the project.

Discussion

The project consists of 130 single family detached homes and 100 residential condos/townhomes. TTM 36537 will generate 1,819 trip ends per day with 141 vehicles per hour during the AM peak hour and 182 vehicles per hour during the PM peak hour. Trip generation rates and project trip generation are included in Tables 1 and 2, respectively. RK prepared a local traffic analysis based upon the latest site plan for TTM 36537. Based upon this site plan, the main gated entry adjacent to PGA West Boulevard will accommodate 1,780 ADT (Average Daily Traffic). The emergency-only and exit gate will accommodate approximately 40 ADT.

Based upon the City's General Plan Circulation Element, Street A will be classified as a local street, with a capacity of nearly 9,000 ADT (LOS E) and 5,490 ADT (LOS A). Copies of the level of service volume capacity ratios are included in Appendix A. Based upon the City's roadway capacities, at the proposed project's entrance (Street A) there is sufficient capacity to accommodate the projected 1,780 ADT at its intersection to PGA West Boulevard.

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RK prepared a local traffic analysis based upon the latest site plan (TTM 36537). The current tentative tract map anticipates an all-way stop at the proposed intersection of Street A and Street B. RK prepared an HCM (Highway Capacity Manual) all-way stop level of service analysis for this intersection. The results of this analysis indicate that this intersection will operate at a level of service A (average delay = 6.9 seconds per vehicle) during the AM peak hour and level of service A (average delay = 7.2 seconds per vehicle) during the PM peak hour. Level of service worksheets are included in Appendix A.

Based upon this analysis, the planned all-way stop intersection control is adequate and will operate at an excellent level of service, as currently planned. The intersection would also function adequately as a mini roundabout; however, the current tentative tract map plan includes all-way stop control is more than adequate to accommodate the proposed traffic. Recommended traffic controls are shown in Exhibit A.

RK prepared a local traffic analysis and queuing analysis for the intersection of PGA West Boulevard and Street A. The planned design includes a gated entrance lane for guests and a separate lane for residents. The distance to the guard house from the curb line of PGA West Boulevard is approximately 80 feet and can accommodate at lest three (3) vehicle stacking at this location. The distance to the resident gate is 145 feet and can accommodate over six (6) vehicles for queuing. It is anticipated that residents will have a transponder, which will automatically be read at the resident gate to allow the gate to open. It is anticipated that the resident gate will be an arm gate, which will operate quickly.

Based upon previous experience, it is anticipated that approximately 20% of the traffic at Street A at PGA West Boulevard will be guest traffic; whereas, 80% will be resident traffic. The guest service rate is estimated to be approximately one (1) minute per vehicle or a service rate of 60 vehicles per hour. The resident transponder gate entrance is anticipated to have a service rate between 240 and 360 vehicles per hour, depending on its operation.

As a result of the anticipated demand rate for guests and residents and the estimated service rates for each entrance, it is anticipated that a maximum of two (2) vehicles be queued in the guest lane and one (1) to two (2) vehicles would be queued in the resident lane. Based upon the previously mentioned distances, there is more than adequate queuing space available for both guests and residents at the main entrance at Street A and PGA West Boulevard. Queuing calculations are included in Appendix B.

The attached exhibits represent the latest General Plan Circulation Element cross sections for the recently adopted General Plan. Copies of these are also included in Appendix D.

A Traffic signing and striping plan should be provided with the design plans for the street system within the project, showing the location of the parking restrictions. A number of streets in the project are to have parking restrictions because they are too narrow to accommodate parking on both sides of these streets. These will be identified on the signing and striping plan.

Conclusions

The above comments amend the previous traffic study dated February 12, 2013. If you have any questions regarding our comments, please call me at (949) 474-0809. RK Engineering Group, Inc. appreciates this opportunity to work with POINTE LARSON, LLC. on this project.

Sincerely,
RK ENGINEERING GROUP, INC.

Robert Kahn, P.E.
Principal

Attachments

XC: Mr. Steven Ford, GHA Companies
Mr. Chris Bergh, MDS Consulting

RK:mn/RK10153.doc
JN:2336-2013-01

Exhibits

Exhibit A

Recommended Traffic Control

Legend:

Ⓢ = All Way Stop Control

= Install Stop Sign, Stop Bar, and Stop Lege

N

RK engineering group, inc.

Tables

TABLE 1

Trip Generation Rates[1]

Land Use	ITE Code	Units[2]	Peak Hour						Daily
			AM			PM			
			In	Out	Total	In	Out	Total	
Single Family Homes	210	DU	0.19	0.56	0.75	0.63	0.37	1.00	9.52
Residential Condo/Townhouse	230	DU	0.07	0.37	0.44	0.35	0.17	0.52	5.81

[1] Source: Institute of Transportation Engineers (ITE), *Trip Generation, 9th Edition* , 2012.

[2] DU = Dwelling Units

j:/rktables/RK10056TB.xls
JN:2336-2013-01

TABLE 2
Project Trip Generation[1]

Land Use	Quantity	Units[2]	Peak Hour						Daily
			AM			PM			
			In	Out	Total	In	Out	Total	
Single Family Homes	130	DU	24	73	97	82	48	130	1,238
Residential Condo/Townhouse	100	DU	7	37	44	35	17	52	581
TOTALS			31	110	141	117	65	182	1,819

[1] Source: Institute of Transportation Engineers (ITE), *Trip Generation, 9th Edition* , 2012.

[2] DU = Dwelling Units

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JN:2336-2013-01

Appendices

Appendix A

HCM LOS Analysis

PGA WEST-TTM 36537

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

****

Intersection #1 STREET B (NS) AT STREET A (EW)

****

Cycle (sec):	100	Critical Vol./Cap.(X):	0.056
Loss Time (sec):	0	Average Delay (sec/veh):	6.9
Optimal Cycle:	0	Level Of Service:	A

****

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0 0	0 0		0 0 0	0 1		0 0	1! 0	0	0 0	1 0	0
Volume Module:												
Base Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	0	0	0	0	0	0	0	0	0
Added Vol:	17	0	0	0	0	54	15	3	4	0	7	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	17	0	0	0	0	54	15	3	4	0	7	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
PHF Volume:	18	0	0	0	0	59	16	3	4	0	8	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	18	0	0	0	0	59	16	3	4	0	8	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	18	0	0	0	0	59	16	3	4	0	8	0
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.00	0.00	0.00	0.00	1.00	0.68	0.14	0.18	0.00	1.00	0.00
Final Sat.:	847	0	0	0	0	1054	592	118	158	0	869	0
Capacity Analysis Module:												
Vol/Sat:	0.02	xxxx	xxxx	xxxx	xxxx	0.06	0.03	0.03	0.03	xxxx	0.01	xxxx
Crit Moves:	****					****		****			****	
Delay/Veh:	7.3	0.0	0.0	0.0	0.0	6.6	7.2	7.2	7.2	0.0	7.1	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	7.3	0.0	0.0	0.0	0.0	6.6	7.2	7.2	7.2	0.0	7.1	0.0
LOS by Move:	A	*	*	*	*	A	A	A	A	*	A	*
ApproachDel:	7.3			6.6			7.2			7.1		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	7.3			6.6			7.2			7.1		
LOS by Appr:	A			A			A			A		
AllWayAvgQ:	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0

****

Note: Queue reported is the number of cars per lane.

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PGA WEST-TTM 36537

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #1 STREET B (NS) AT STREET A (EW)

Cycle (sec):	100	Critical Vol./Cap.(X):	0.106
Loss Time (sec):	0	Average Delay (sec/veh):	7.2
Optimal Cycle:	0	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0 0	0 0		0 0	0 0	1	0 0	1! 0	0	0 0	1 0	0
Volume Module:												
Base Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	0	0	0	0	0	0	0	0	0
Added Vol:	9	0	0	0	0	32	57	12	18	0	4	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	9	0	0	0	0	32	57	12	18	0	4	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
PHF Volume:	10	0	0	0	0	35	62	13	20	0	4	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	10	0	0	0	0	35	62	13	20	0	4	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	10	0	0	0	0	35	62	13	20	0	4	0
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.00	0.00	0.00	0.00	1.00	0.65	0.14	0.21	0.00	1.00	0.00
Final Sat.:	812	0	0	0	0	998	584	123	184	0	873	0
Capacity Analysis Module:												
Vol/Sat:	0.01	xxxx	xxxx	xxxx	xxxx	0.03	0.11	0.11	0.11	xxxx	0.00	xxxx
Crit Moves:	****					****		****			****	
Delay/Veh:	7.4	0.0	0.0	0.0	0.0	6.6	7.5	7.5	7.5	0.0	7.1	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	7.4	0.0	0.0	0.0	0.0	6.6	7.5	7.5	7.5	0.0	7.1	0.0
LOS by Move:	A	*	*	*	*	A	A	A	A	*	A	*
ApproachDel:		7.4			6.6			7.5			7.1	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		7.4			6.6			7.5			7.1	
LOS by Appr:		A			A			A			A	
AllWayAvgQ:	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0

Note: Queue reported is the number of cars per lane.

ADTs

PGA WEST-TTM 36537

Link Volume Report
PROJ DAILY

Volume	NB Link			SB Link			EB Link			WB Link			Total
Type	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	Volume
#1 STREET B (NS) AT STREET A (EW)													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	142	141	283	448	448	896	680	651	1331	61	91	152	2662
Total	142	141	283	448	448	896	680	651	1331	61	91	152	2662
#14 PGA WEST BLVD (NS) AT STREET A (EW)													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	37	0	37	908	909	1817	0	0	0	872	908	1780	3634
Total	37	0	37	908	909	1817	0	0	0	872	908	1780	3634
#17 PGA WEST (NS) AT BACK EXIT (EW)													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	37	37	0	0	0	37	0	37	0	0	0	74
Total	0	37	37	0	0	0	37	0	37	0	0	0	74

PGA WEST-TTM 36537

Trip Generation Report

Forecast for PROJ DAILY

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
1	ZONE A	38.00	SFR	4.76	4.76	181	181	362	19.9
1	ZONE A	35.00	CONDO/TOWNHOME	2.90	2.91	102	102	204	11.2
	Zone 1 Subtotal					283	283	566	31.2
2	ZONE B	32.00	SFR	4.76	4.76	152	152	304	16.7
2	ZONE B	29.00	CONDO/TOWNHOME	2.90	2.91	84	84	168	9.2
	Zone 2 Subtotal					236	236	472	26.0
3	ZONE C	32.00	SFR	4.76	4.76	152	152	304	16.7
	Zone 3 Subtotal					152	152	304	16.7
4	ZONE D	28.00	SFR	4.76	4.76	133	133	266	14.6
	Zone 4 Subtotal					133	133	266	14.6
5	ZONE E	36.00	CONDO/TOWNHOME	2.90	2.91	104	105	209	11.5
	Zone 5 Subtotal					104	105	209	11.5
TOTAL						908	909	1817	100.0

1819 ✓
rounding

Appendix B

Queuing Analysis

QUEUEING ANALYSIS TO DETERMINE STACKING REQUIREMENTS

PROJECT: PGA West - TTM 36537 - Guest Queuing DATE: 29-Aug-13
LOCATION: La Quinta JN: 2336-13-01

DEMAND RATE (q) =	24.00			
SERVICE RATE (Q) per channel =	60.00			
NO. OF SERVICE POSITIONS (N) =	1.00			
NO. OF STORAGE LANES (N1) =	1.00			
PROBABILITY OF NOT EXCEEDING (P) =	0.05			
UTILIZATION FACTOR (q/N*Q) =	0.40			
Q(M) VALUE =	0.40			
NO. OF VEHICLES BEING SERVED (N) =	1.00			
NO. OF VEHICLES IN QUEUE (M) =	1.27	SAY =	1	
TOTAL NUMBER OF VEHICLES (N+M) =	2.27	SAY =	2	
NO. OF VEHICLES IN EACH LANE = PER LANE ((N+M)/N1)	2.27	SAY =	2	
LENGTH OF QUEUE (L) FEET =	49.93	SAY =	44	

NO. OF VEHICLES IN THE QUEUE (NOT INCLUDING THOSE BEING SERVED) = M = ((LN(P) - LN(Q(M))/LN(p)) - 1

p = q/NQ

Q(M) = TABLED VALUES BASED UPON NUMBER OF SERVICE CHANNELS (N) AND UTILIZTION FACTOR (q/NQ) AS SHOWN ON TABLE 8-11, PG.231, TRANS-PORTATION AND LAND DEVELOPMENT, INSTITUTE OF TRANSPORTATION ENGINEERS (ITE), 1988.

QUEUEING ANALYSIS TO DETERMINE STACKING REQUIREMENTS

PROJECT: PGA West - TTM 36597 - Resident Queuing DATE: 29-Aug-13
LOCATION: La Quinta JN: 2336-13-01

DEMAND RATE (q) =	94.00			
SERVICE RATE (Q) per channel =	360.00			
NO. OF SERVICE POSITIONS (N) =	1.00			
NO. OF STORAGE LANES (N1) =	1.00			
PROBABILITY OF NOT EXCEEDING (P) =	0.05			
UTILIZATION FACTOR (q/N*Q) =	0.26			
Q(M) VALUE =	0.26			
NO. OF VEHICLES BEING SERVED (N) =	1.00			
NO. OF VEHICLES IN QUEUE (M) =	0.23	SAY =	0	
TOTAL NUMBER OF VEHICLES (N+M) =	1.23	SAY =	1	
NO. OF VEHICLES IN EACH LANE PER LANE ((N+M)/N1) =	1.23	SAY =	1	
LENGTH OF QUEUE (L) FEET =	27.08	SAY =	22	

NO. OF VEHICLES IN THE QUEUE (NOT INCLUDING THOSE BEING SERVED) = M = ((LN(P) - LN(Q(M))/LN(p)) - 1

p = q/NQ

Q(M) = TABLED VALUES BASED UPON NUMBER OF SERVICE CHANNELS (N) AND UTILIZTION FACTOR (q/NQ) AS SHOWN ON TABLE 8-11, PG.231, TRANSPORTATION AND LAND DEVELOPMENT, INSTITUTE OF TRANSPORTATION ENGINEERS (ITE), 1988.

QUEUEING ANALYSIS TO DETERMINE STACKING REQUIREMENTS

PROJECT: PGA West - TTM 36897 - Resident Queuing DATE: 29-Aug-13
LOCATION: La Quinta JN: 2336-13-01

DEMAND RATE (q) =	94.00			
SERVICE RATE (Q) per channel =	240.00			
NO. OF SERVICE POSITIONS (N) =	1.00			
NO. OF STORAGE LANES (N1) =	1.00			
PROBABILITY OF NOT EXCEEDING (P) =	0.05			
UTILIZATION FACTOR (q/N*Q) =	0.39			
Q(M) VALUE =	0.39			
NO. OF VEHICLES BEING SERVED (N) =	1.00			
NO. OF VEHICLES IN QUEUE (M) =	1.20	SAY =	1	
TOTAL NUMBER OF VEHICLES (N+M) =	2.20	SAY =	2	
NO. OF VEHICLES IN EACH LANE = PER LANE ((N+M)/N1)	2.20	SAY =	2	
LENGTH OF QUEUE (L) FEET =	48.31	SAY =	44	

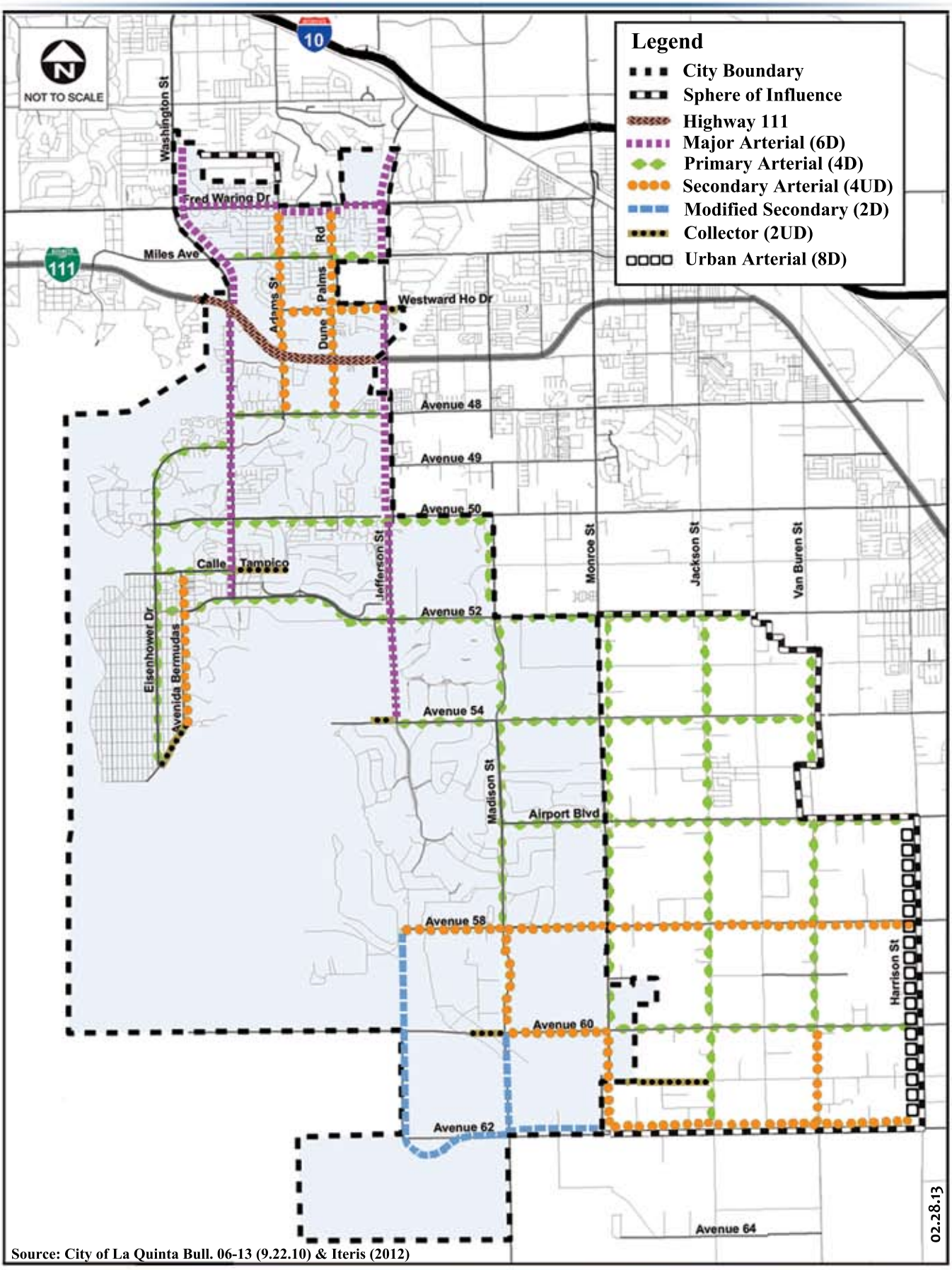
NO. OF VEHICLES IN THE QUEUE (NOT INCLUDING THOSE BEING SERVED) = M = ((LN(P) - LN(Q(M))/LN(p)) - 1

p = q/NQ

Q(M) = TABLED VALUES BASED UPON NUMBER OF SERVICE CHANNELS (N) AND UTILIZTION FACTOR (q/NQ) AS SHOWN ON TABLE 8-11, PG.231, TRANSPORTATION AND LAND DEVELOPMENT, INSTITUTE OF TRANSPORTATION ENGINEERS (ITE), 1988.

Appendix C

City of La Quinta
General Plan Circulation Element
Roadway Classifications and Capacities



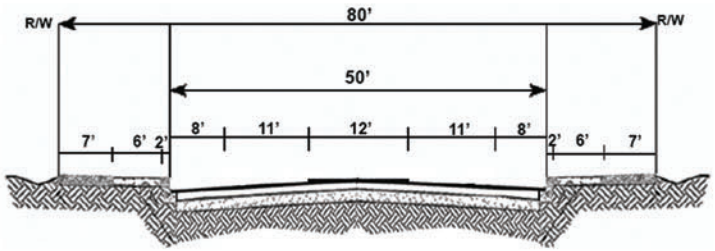
Source: City of La Quinta Bull. 06-13 (9.22.10) & Iteris (2012)

TERRA NOVA®
Planning & Research, Inc.

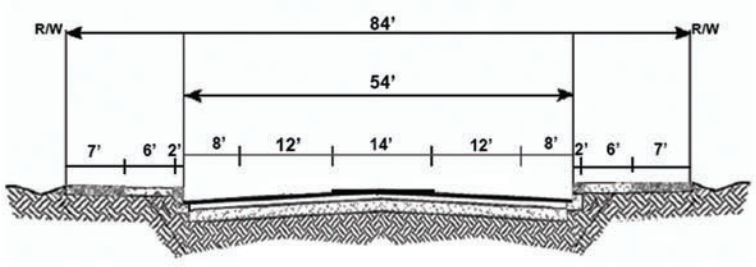
City of La Quinta General Plan
General Plan Roadway Classifications
La Quinta, California

La Quinta 2035 GENERAL PLAN

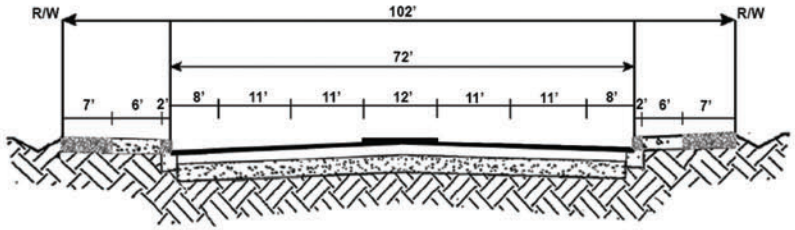
Exhibit
II-2



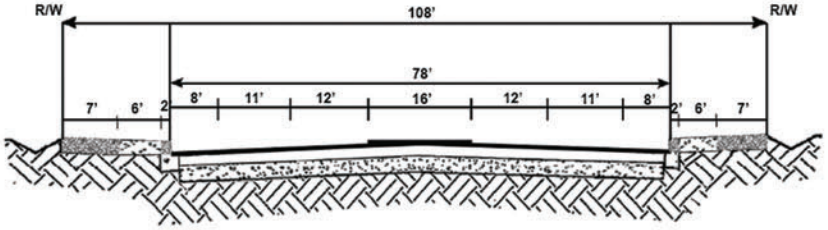
80' Collector



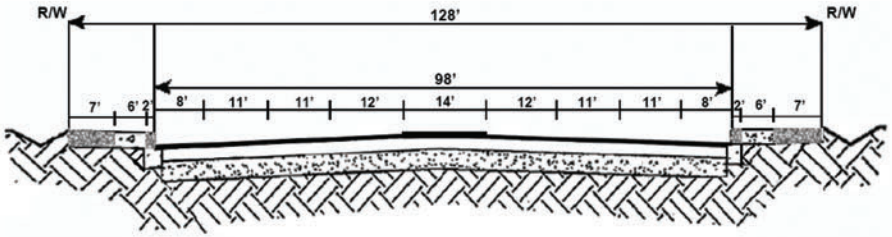
84' Modified Secondary Arterial



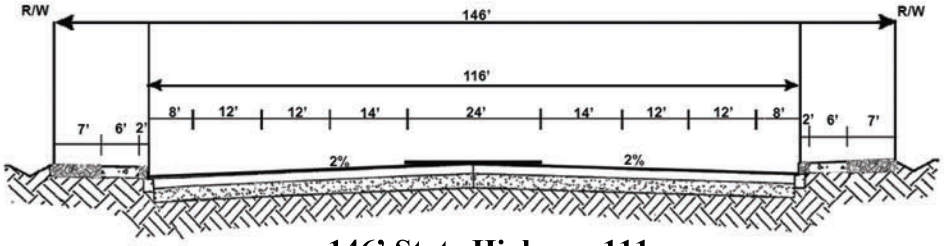
102' Secondary Arterial



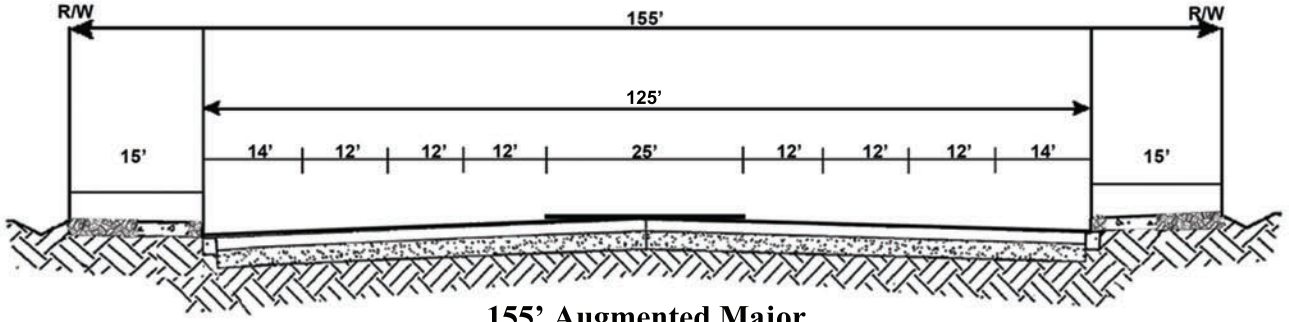
108' Primary Arterial



128' Major Arterial



146' State Highway 111



155' Augmented Major

N

03.11.13

TERRA NOVA®
Planning & Research, Inc.

City of La Quinta General Plan
General Plan Street Cross Sections
La Quinta, California

La Quinta 2035 GENERAL PLAN

Exhibit
II-3

Roadway Capacity

Capacity is generally defined as the number of vehicles that may pass over a section of roadway in a given time period under prevailing conditions. Capacities of roadways are most restricted by intersection design and operation, which are discussed further below. Typically, the PM peak hour is the heaviest traffic flow of the day. However, it should be noted that in the planning area the peak daily traffic volumes are spread across a greater time period, rather than the typical AM and PM peak periods. The following table describes the various capacity values assigned for differing roadway sizes and levels of service.

Table II-8
City Roadway Classifications
Level of Service Volumes/Capacity Values
(Average Daily Trips – ADT)

Facility Type	Lane Confi-guration	LOS A (60%)	LOS B (70%)	LOS C (80%)	LOS D (90%)	LOS E (100%)	LOS F
Local	2U	<5,490	5,490 - 6,390	6,390 - 7,290	7,290 - 8,190	8,190 - 9,000	>9,000
Collector	2U	<8,540	8,540 - 9,940	9,940 - 11,340	11,340 - 12,740	12,740 - 14,000	>14,000
Modified Secondary	2D	<11,590	11,590 - 13,490	13,490 - 15,390	15,390 - 17,290	17,290 - 19,000	>19,000
Secondary	4U	<17,080	17,080 - 19,880	19,880 - 22,680	22,680 - 25,480	25,480 - 28,000	>28,000
Primary	4D	<25,560	25,560 - 29,800	29,800 - 34,080	34,080 - 38,340	38,340 - 42,600	>42,600
Major	6D	<36,600	36,600 - 42,700	42,700 - 48,800	48,000 - 54,900	54,900 - 61,000	>61,000
Augmented Major	8D	<45,600	45,600 - 53,200	53,200 - 60,800	60,800 - 68,400	68,400 - 76,000	>76,000

Source: City of La Quinta Engineering Bulletin #06-13 (June 14, 2012). Will be applied to both tables.

Acceptable Levels-of-Service (LOS)

As directed by this General Plan, City of La Quinta Engineering Bulletin #06-13, mandates that the City strive to maintain the minimum level of service for its intersections at not worse than LOS D. At intersections along roadways contained in the Riverside County Congestion Management Program (CMP) System of Highways and Roadways, the minimum level of service required is to be not worse than LOS E. Within the City of La Quinta, Highway 111 is designated as a CMP facility.