



Traffic Engineering, Transportation Planning, & Forensic Services

July 18, 2018

Mr. Jon Ericson
 City of Sparks
 431 Prater Way
 Sparks, NV 89431

Traffic Analysis Summary for Los Altos Townhomes

Dear Mr. Ericson,

This letter summarizes a traffic analysis prepared for the Los Altos Townhome project located on the south side of Los Altos Parkway opposite Vista Heights Drive, as shown in **Figure 1**. The proposed MF-2 zoning would allow up to a maximum of 108 multi-family (townhome) units. However, the Development Agreement for the project limits the number of units to 75 townhomes. Note that all traffic analysis was performed based on the maximum number of units allowed based on zoning (108), therefore this is a conservative analysis.

PROJECT TRIP GENERATION AND DISTRIBUTION

Trip Generation

Trip generation rates for the proposed project were obtained from the *Trip Generation Manual, 9th Edition*, published by the Institute of Transportation Engineers (ITE). **Table 1** provides the Daily, AM peak hour, and PM peak hour trip generation calculations for the proposed project. As shown in the table, the maximum number of units per zoning (108) would generate a total of 627 Daily trips, 48 AM peak hour trips, and 56 PM peak hour trips.

Table 1: Project Trip Generation Estimates

Land Use (ITE Code)	Size	Trips				
		Daily	AM	AM In/Out	PM	PM In/Out
Townhomes (230)	108 du	627	48	9 / 39	56	38 / 19

Notes: du = dwelling units
 Source: Traffic Works, 2017

At 75 townhome units, the project would generate only 39 peak hour trips.

Trip Distribution

Project generated traffic volumes were distributed to the surrounding roadway network based on the same trip distribution percentages utilized in the *Miramonte Townhome Development Traffic Impact Study* and more recent *Miramonte-Andelin Traffic Impact Study*. The following trip distribution percentages were used for distributing the project traffic:

- 60% to/from the south via Vista Boulevard
- 10% to/from the north via Vista Boulevard
- 30% to/from the west via Los Altos Parkway



PROJECT ACCESS

Access to the project site would be provided directly from Los Altos Parkway via a new fourth leg at the existing roundabout at the Los Altos Parkway / Vista Heights Drive intersection as shown in **Figure 2**. As discussed above, the trip generation of the project is low and the project traffic is anticipated to be easily served at the existing roundabout. The direct access to a Los Altos Parkway, which is classified a Regional Roadway, will avoid traffic increases on other local residential roadways such as Goodwin Road.

The project will be responsible for construction of the south (fourth) leg of the roundabout and constructing that south leg to City of Sparks design standards and nationally accepted roundabout design guidance. The improvements must meet the applicable standards for intersection sight lines and sight distances, which will require modification of the slopes on the south side of Los Altos Parkway adjacent to the roundabout and new south leg.

No significant impacts are anticipated at the proposed project access/Vista Heights roundabout since acceptable traffic operations will be maintained and safety will be provided through proper intersection sight lines and design/construction in accordance with City standards.

The project site plan includes a secondary emergency only access on Los Altos Parkway east of the Vista Heights roundabout, opposite Dry Gulch Way. The emergency access point will be gated consistent with Fire Department standards and therefore not be used by the general public or project residents.

ROUNABOUT GEOMETRIC REVIEW

We performed a field review of the Los Altos Pkwy/Vista Heights roundabout intersection and made the following findings:

- The existing roundabout is adequately sized per national roundabout design guidance (*NCHRP Report 672, Roundabouts: An Information Guide, Second Edition*). Exhibit 6-9 from that report (below) illustrates that single lane roundabouts not needing to regularly accommodate WB-50 semi-truck movements often have diameters as small as 90 feet. The subject roundabout has a 97 foot diameter which is within the typical size range of 90 to 150 feet.

Exhibit 6-9
Typical Inscribed Circle
Diameter Ranges

Roundabout Configuration	Typical Design Vehicle	Common Inscribed Circle Diameter Range*	
Mini-Roundabout	SU-30 (SU-9)	45 to 90 ft	(14 to 27 m)
Single-Lane Roundabout	B-40 (B-12)	90 to 150 ft	(27 to 46 m)
	WB-50 (WB-15)	105 to 150 ft	(32 to 46 m)
	WB-67 (WB-20)	130 to 180 ft	(40 to 55 m)
Multilane Roundabout (2 lanes)	WB-50 (WB-15)	150 to 220 ft	(46 to 67 m)
	WB-67 (WB-20)	165 to 220 ft	(50 to 67 m)
Multilane Roundabout (3 lanes)	WB-50 (WB-15)	200 to 250 ft	(61 to 76 m)
	WB-67 (WB-20)	220 to 300 ft	(67 to 91 m)

* Assumes 90° angles between entries and no more than four legs. List of possible design vehicles is not all-inclusive.

- AutoTurn analysis was performed for the Los Altos Pkwy/Vista Heights Drive roundabout location to determine if large trucks can maneuver through the existing roundabout consistent with the roadway classification. The exhibit on the following page confirms that WB-50 semi-type trucks can easily maneuver east and west through the roundabout. WB-50 trucks are generally expected to be able to negotiate the eastbound to northbound movement as well. The new south leg would be designed to accommodate the same design vehicles as the current geometry.
- We observed a WB-40 semi-truck (smaller than a WB-50) perform the eastbound to northbound left turn movement without using the truck apron.
- We observed several large pickup trucks towing long RV trailers perform left-turn movements in the roundabout. The trailers used only one to two feet of the truck apron, which is the intended purpose of the truck apron and again confirms adequate size.
- The roundabout generally appears to have adequate entry deflection for speed control and appropriate signage and striping.



- Since all existing intersection legs enter the roundabout on 90 degree angles, a fourth leg can easily and appropriately be added to the current location.
- With construction of the south/fourth leg at the Vista Heights roundabout, the developer will have to ensure proper intersection sight lines for pedestrians and vehicular traffic. Slope adjustments will likely be necessary on the south side of Los Altos Parkway to construct the new roundabout leg.
- In the design/construction process, the applicant should improve the sight line to the crosswalk across Vista Heights (westbound to northbound right turn) to resolve concerns over pedestrian visibility. This is an existing condition but one that could be improved with the intersection modification project.

FULL BUILD-OUT INTERSECTION LEVEL OF SERVICE ANALYSIS

Level of service calculations were performed for the Los Altos Pkwy/Vista Heights Drive roundabout and Los Altos Pkwy/Belmar Dr roundabout intersections. The complete intersection analysis methodology and background information is detailed in the *Traffic Impact Study for Miramonte-Andelin, September 8, 2017, by Traffic Works*. The traffic volumes utilized in this intersection analysis represent full build-out of the local community served by Los Altos Pkwy. Specifically the traffic volumes were developed by adding:

- Existing Traffic Volumes
- All approved but unbuilt lots within The Vistas and Miramonte developments (totaling 174 single family homes yet to be built)
- Miramonte-Andelin, 91 single family homes (Miramonte Phase 5 and portion of Phase 6)
- Miramonte Phase 6 remainder and Miramonte Phase 7 (281 single family homes)
- Miramonte Phase 8 / Miramonte Townhomes (448 Townhomes)
- Sierra View Townhomes (45 Townhomes)
- Los Altos Townhomes (up to 108 units) – the subject project

Table 2 presents a level of service analysis summary for the “Build-out” conditions. Note that this analysis includes 108 townhomes in the Los Altos project which overestimates delay since only 75 units would be allowed per the Development Agreement.

Table 2: Build-out Conditions Intersection Level of Service Summary

Intersection	Control	AM Peak		PM Peak	
		Delay	LOS	Delay	LOS
Los Altos Pkwy/ Vista Heights Dr	Roundabout	9.7	A	9.3	A
Los Altos Pkwy/Belmar Dr	Roundabout	12.8	B	17.6	C

Both existing roundabout intersections are anticipated to operate at acceptable LOS conditions even with the addition of the project traffic and full build-out of the local community served by Los Altos Parkway.

The 2040 Regional Transportation Plan (2040 RTP) establishes level of service criteria for regional roadway facilities within Washoe County, the City of Reno, and the City of Sparks. The current Level of Service policy is:

- “All regional roadway facilities projected to carry less than 27,000 ADT at the latest RTP horizon – LOS D or better.”
- “All regional roadway facilities projected to carry 27,000 ADT or more at the latest RTP horizon – LOS E or better.”
- “All intersections shall be designed to provide a level of service consistent with maintaining the policy level of service of the intersecting roadways”.

Since Los Altos Parkway carries less than 27,000 ADT (average daily traffic), the policy LOS is “D”.

FULL BUILD-OUT ROADWAY SEGMENT ANALYSIS

Existing daily roadway volumes on Los Altos Parkway were collected using pneumatic tube counters on two typical mid-week days in August 2017 with school in regular session. The counters were placed on Los Altos Pkwy (south) between the Desert Highland Mini Storage and Silver Bear Swim School. The existing ADT on Los Altos Pkwy during the study period was 11,078 vehicles per day.

Traffic volumes in the broader study area are anticipated to increase in the future as approved development is completed in The Vistas and Miramonte developments. The full build-out scenario includes the following:

- Existing daily roadway volumes
- All approved but unbuilt lots within The Vistas and Miramonte developments (totaling 174 single family homes yet to be built)
- Miramonte-Andelin, 91 single family homes (Miramonte Phase 5 and portion of Phase 6)
- Miramonte Phase 6 remainder and Miramonte Phase 7 (281 single family homes)
- Miramonte Phase 8 / Miramonte Townhomes (448 Townhomes)
- Sierra View Townhomes (45 Townhomes)
- Los Altos Townhomes (up to 108 units) – the subject project. Note that the project would be limited to 75 townhomes per the Development Agreement, therefore this is a conservative analysis.

In total there are 546 single family homes and potentially 601 townhomes (including the subject project) that are planned to be constructed within the study area. Traffic from the future developments will follow the same distribution as previously described in this report; 60% of vehicle trips will travel on Los Altos Parkway (south). **Table 3** shows the added daily trip generation of the un-built units that will travel on Los Altos Pkwy (south) to/from Vista Boulevard.

Table 3: Future Additional Daily Trip Generation on Los Altos Parkway (south)

Development	# of units	ADT
Approved but Unbuilt Single Family Units	174	994
Miramonte Single Family Homes (Phases 5-7)	372	2,125
Miramonte Townhomes (Phase 8)	448	1,562
Los Altos Village Townhomes (subject project)	108	376
Sierra View Townhomes	45	158
Total	1,147	5,215

As shown in **Table 3**, the approved and anticipated units within the study area will create approximately 5,215 additional daily trips on Los Altos Parkway between Belmar Drive and Vista Boulevard. With the exception of what is noted above, very little other traffic volume growth is anticipated to occur on Los Altos Parkway. Hence, no additional growth rates were applied for the full build-out roadway segment analysis as discussed and agreed with City of Sparks staff.

The build-out roadway traffic volumes were obtained by adding the future traffic generated by units in The Vistas and Miramonte developments (5,215 daily trips) as shown in **Table 3** to the recently counted existing roadway volumes (11,078 daily trips).

Table 4 summarizes the full build-out roadway segment level of service analysis.

Table 4: Full Build-out Road Segment Level of Service Summary

Type	Segment	# Lanes	Daily Volume	LOS
Moderate Access Control Arterial	Los Altos Parkway (Belmar Dr to Vista Blvd)	2	16,293	D

As shown in **Table 4**, Los Altos Parkway between Belmar Drive and Vista Boulevard is anticipated to operate at acceptable LOS conditions (LOS “D”) in the full build-out analysis. The buildout volume is less than the threshold volume (17,500 ADT) that would require widening to a four-lane facility. Additionally, the full build-out roadway peak hour volume will be approximately 1,129 vehicles per hour and the capacity of the roadway is 1,705 vehicles per hour. Thus, the peak hour volume to capacity ratio will be approximately 0.66 (operating at 66% of capacity) under the full build-out scenario.

CONCLUSIONS

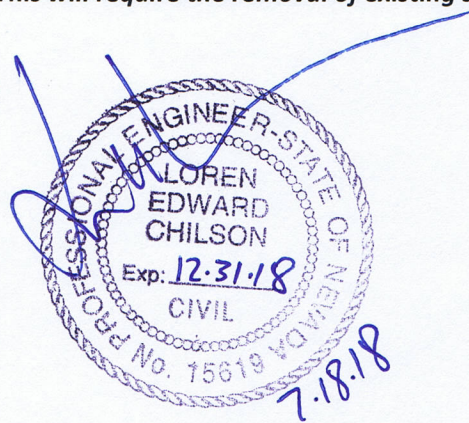
Following are our conclusions and recommendations:

- The proposed zoning would not generate more than 80 PM peak hour trips, and therefore would not typically require a formal traffic impact study based on City of Sparks guidelines. 75 townhome units as proposed in the development agreement would generate only 39 peak hour trips.
- Project generated traffic volumes are not expected to degrade operations at the roundabout intersections on Los Altos Parkway or Los Altos Pkwy roadway segments to unacceptable levels.
- The Los Altos Townhomes project is not anticipated to create any significant traffic impacts and any minor effects will be mitigated by the project’s payment of standard Regional Road Impact Fees (RRIF).
- The existing Los Altos Pkwy/Vista Heights Drive roundabout intersection is adequately sized for a residential arterial and has a geometry that is appropriate for the addition of a fourth leg. The roundabout is anticipated to operate at level of service “A” with the project and full local community build-out.
- The perceived congestion on Los Altos Parkway is actually related to Vista Boulevard traffic and slowed travel on Vista Boulevard during the AM school period related to the school zone. Los Altos Parkway itself operates at acceptable levels of service and the roadway is shown to continue operating at acceptable levels after build-out of the entire Vistas and Miramonte communities.

- Lengthening of the left-turn pocket from Los Altos to Vista Blvd (south intersection) has already been conditioned on prior projects to improve the Vista (south)/Los Altos intersection operations. This planned improvement is shown on **Figure 3**.
- *We recommend that the fourth leg at the Vista Heights roundabout be constructed in accordance with NCHRP Report 672, including assurance of proper intersection sight lines for both pedestrians and vehicular traffic.*
- *We recommend that the applicant improve the sight line to the crosswalk across Vista Heights (for the westbound to northbound right turn vehicle movement), to a reasonable extent and not requiring right-of-way acquisition or private property impact, to improve pedestrian visibility and safety. This will require the removal of existing shrubs.*

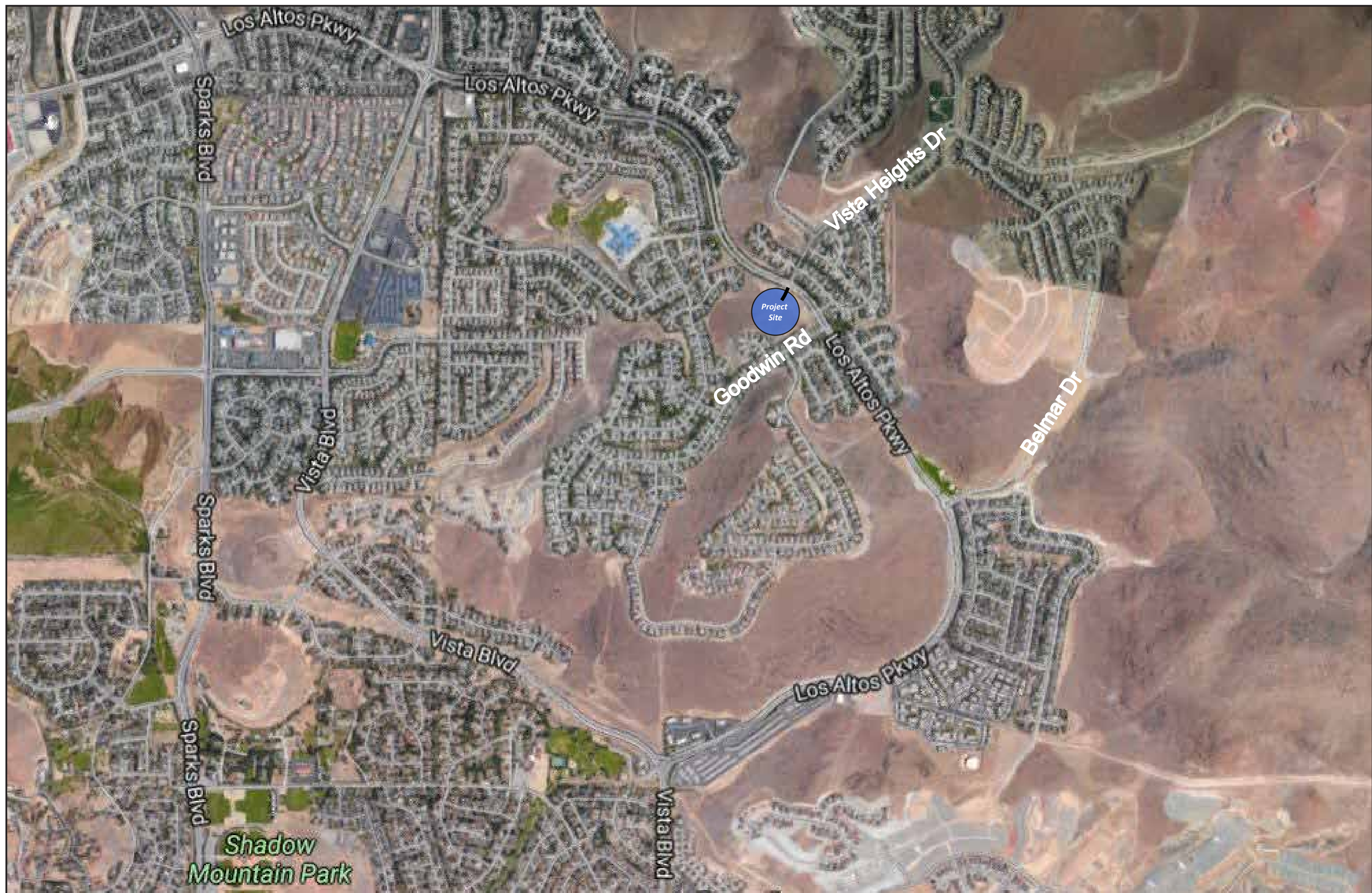
Sincerely,
TRAFFIC WORKS, LLC

Loren E. Chilson, PE
Principal



Attachments:

- Figure 1 – Project Location
- Figure 2 – Site Plan
- Figure 3 – Turn Pocket Lengthening at Los Altos (south)/Vista Boulevard
- Build-out Scenario Level of Service Calculations



Project Site

Shadow Mountain Park

Exhibit C - Project Plan

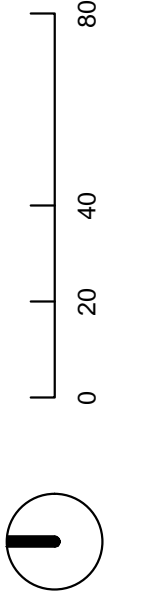


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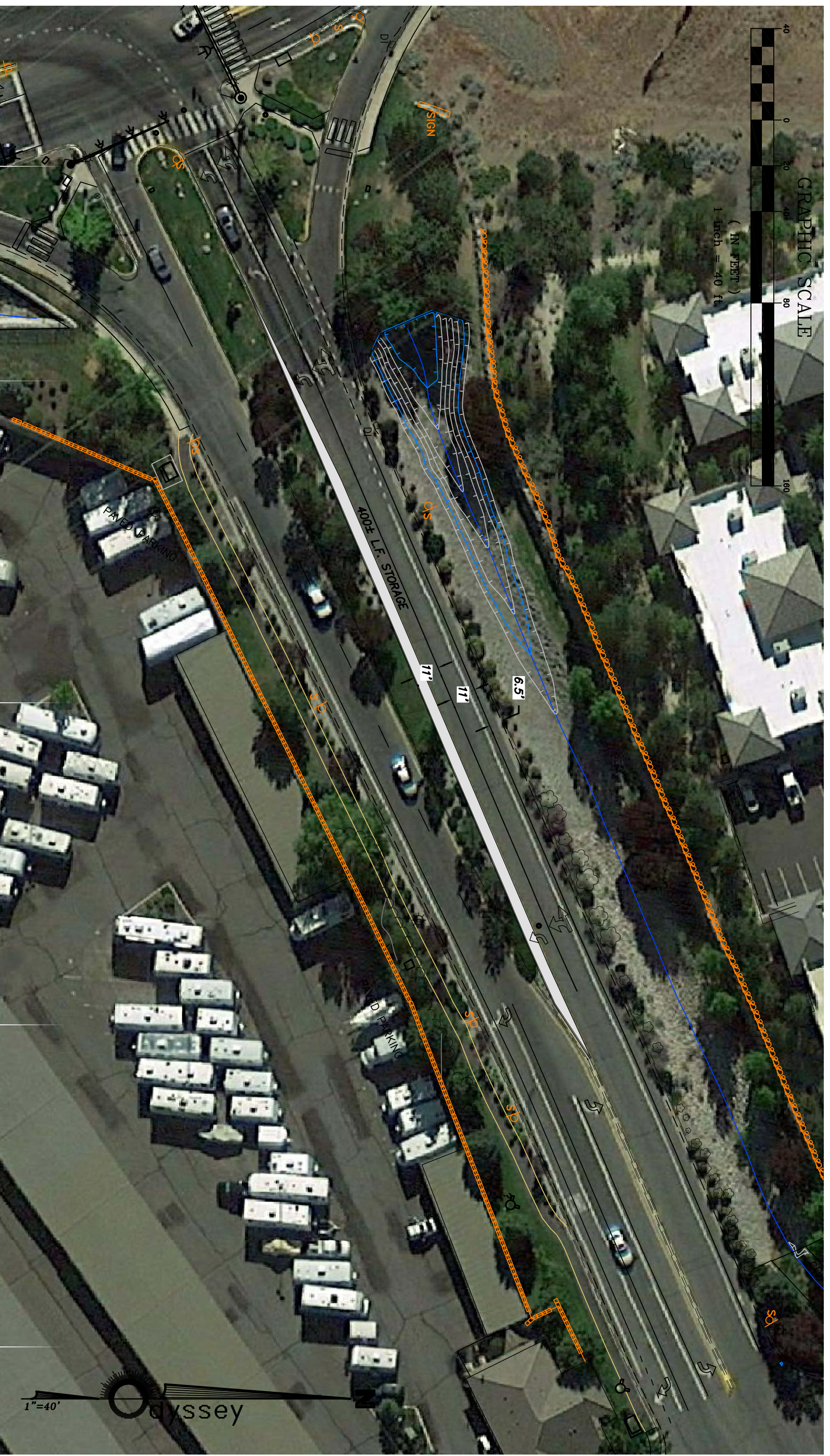
VISTA TOWNHOMES
SPARKS, NV # 2017-1002

CONCEPTUAL DESIGN
FEBRUARY 20, 2018



CONCEPTUAL SITE PLAN

FIGURE 2



DRAWN BY: ACAD 2017
 DESIGNED BY: K.W.A.
 CHECKED BY: K.W.A.

LOS ALTOS PARKWAY TURN POCKET WIDENING
 FOR
 MIRAMONTE
 SPARKS, WASHOE COUNTY, NEVADA

SCALE: 1"=40'
 DATE: 10/10/2017
 SHT. NO.: 1 of 1

FIGURE 3

Intersection				
Intersection Delay, s/veh	9.7			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	42	513	270	248
Demand Flow Rate, veh/h	42	518	272	251
Vehicles Circulating, veh/h	517	254	95	275
Vehicles Exiting, veh/h	9	113	464	497
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	6.0	12.9	6.1	7.4
Approach LOS	A	B	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	42	518	272	251
Cap Entry Lane, veh/h	674	876	1028	858
Entry HV Adj Factor	1.000	0.990	0.992	0.989
Flow Entry, veh/h	42	513	270	248
Cap Entry, veh/h	674	868	1019	849
V/C Ratio	0.062	0.591	0.265	0.292
Control Delay, s/veh	6.0	12.9	6.1	7.4
LOS	A	B	A	A
95th %tile Queue, veh	0	4	1	1

Intersection				
Intersection Delay, s/veh	9.3			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	21	215	438	483
Demand Flow Rate, veh/h	21	217	442	487
Vehicles Circulating, veh/h	551	252	257	105
Vehicles Exiting, veh/h	41	447	315	364
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	5.9	6.7	10.9	9.2
Approach LOS	A	A	B	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	21	217	442	487
Cap Entry Lane, veh/h	651	878	874	1017
Entry HV Adj Factor	1.000	0.991	0.991	0.991
Flow Entry, veh/h	21	215	438	483
Cap Entry, veh/h	651	870	866	1009
V/C Ratio	0.032	0.247	0.506	0.479
Control Delay, s/veh	5.9	6.7	10.9	9.2
LOS	A	A	B	A
95th %tile Queue, veh	0	1	3	3

Intersection			
Intersection Delay, s/veh	12.8		
Intersection LOS	B		
Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	532	204	519
Demand Flow Rate, veh/h	537	206	524
Vehicles Circulating, veh/h	66	32	422
Vehicles Exiting, veh/h	172	914	181
Follow-Up Headway, s	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	9.5	5.0	19.4
Approach LOS	A	A	C
Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
RT Channelized			
Lane Util	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193
Entry Flow, veh/h	537	206	524
Cap Entry Lane, veh/h	1058	1094	741
Entry HV Adj Factor	0.991	0.992	0.991
Flow Entry, veh/h	532	204	519
Cap Entry, veh/h	1048	1086	734
V/C Ratio	0.508	0.188	0.707
Control Delay, s/veh	9.5	5.0	19.4
LOS	A	A	C
95th %tile Queue, veh	3	1	6

Intersection			
Intersection Delay, s/veh	17.6		
Intersection LOS	C		
Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	278	853	349
Demand Flow Rate, veh/h	281	862	352
Vehicles Circulating, veh/h	483	102	222
Vehicles Exiting, veh/h	481	472	542
Follow-Up Headway, s	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	4	0	0
Ped Cap Adj	0.999	1.000	1.000
Approach Delay, s/veh	10.7	23.6	8.5
Approach LOS	B	C	A
Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
RT Channelized			
Lane Util	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193
Entry Flow, veh/h	281	862	352
Cap Entry Lane, veh/h	697	1020	905
Entry HV Adj Factor	0.989	0.990	0.990
Flow Entry, veh/h	278	853	349
Cap Entry, veh/h	689	1010	896
V/C Ratio	0.403	0.845	0.389
Control Delay, s/veh	10.7	23.6	8.5
LOS	B	C	A
95th %tile Queue, veh	2	11	2