

**Correspondence Between  
Staff and Applicant**

# Kimley»Horn

January 12, 2015

Jesus Murillo  
City of Scottsdale  
Planning, Neighborhood and Transportation Division  
7447 E. Indian School Rd., Ste. 105  
Scottsdale, AZ 85251

Re: I5-AZ-2005#3 Silverstone

Dear Mr. Murillo:

Regarding the development application submitted on 11-20-2014 and the 1<sup>st</sup> Review Comments dated January 7, 2015 for the project referenced above, please see our responses listed below.

Circulation:

2. The Project Narrative and provided TIMA discusses that growth on Scottsdale Road has been significantly less than the five percent annual growth assumed in the original traffic study. Please update the Project Narrative and TIMA to address the growth rate that has occurred since the original study and the projected ADT along Scottsdale Road in the original study, and what is the present ADT.

***Response: The growth rate between 2006 and 2012 is effectively 0% per year. The 2012 ADT on Scottsdale Road north of Deer Valley Road is reported to be 37,800 on the City's Average Daily Traffic Volumes segment map. The 2006 ADT on Scottsdale Road north of Deer Valley Road is reported to be 37,700 on the City's Average Daily Traffic Volumes segment map. The 2010 ADT on Scottsdale Road projected in the original study was 44,200.***

3. The Project Narrative the total project volumes (attached Figure 8) from both phases of the project were added to traffic volumes collected in November 2014 in order to perform the analysis. This would count the traffic generated by the existing portions of the development twice. Update the Project Narrative and provided TIMA to address why these volumes were included twice.

***Response: The existing portion of the development was estimated to account for less than 15% of the daily trip generation of the total project and could not be easily separated from the total project volumes at the Scottsdale Road and Williams Drive intersection. The slight increase in traffic, due to the inclusion of a portion of the existing development traffic in the traffic volumes at Scottsdale Road and Williams Drive collected in November 2014, makes the level of service calculations slightly more conservative.***

15-ZN-2005#3  
1/14/15

# Kimley»Horn

January 6, 2015

Ms. Karlie Johnson  
Van Tuyl Group, Inc.  
1550 E. Missouri Ave., Suite 300  
Phoenix, AZ 85014

Re: NEC Williams Road and Scottsdale Road – Silverstone Parcel D Office Development –  
Improvement Phasing Review

Dear Ms. Johnson:

This letter outlines our findings regarding the traffic generation evaluation of the proposed plan for Parcel D of the Silverstone at Pinnacle Peak project consisting of the 165,000 square foot office building, identified as parcel D in the original plan, located at the northeast corner of the intersection of Williams Road and Scottsdale Road in Scottsdale, Arizona. A copy of the site map depicting the parcel layout is attached. The plan for parcel D is expected to be consistent with the access point assumptions in the original TIMA report. This includes right-in, right-out and left-in 1/8 mile north of Williams Drive on Scottsdale Road (Driveway #7) and full access from Williams Drive 1/8 mile east of Scottsdale Road (Driveway #6). A full access is also anticipated to parcel D from 74<sup>th</sup> Street approximately 400 feet north of Williams Drive. Driveway #7 is anticipated to provide access to Parcel D from Scottsdale Road.

This letter is intended to review the applicability of modifying the Master Phasing Plan to allow development of Parcel D prior to the completion of Scottsdale Road to the ultimate 6-lane cross-section. This analysis utilizes the traffic information presented in the final Traffic Impact and Mitigation Analysis prepared for Silverstone at Pinnacle Peak by Parsons Brinkerhoff, dated December 5, 2005. The evaluation focuses on the intersection of Williams Road and Scottsdale Road which is immediately adjacent to the development and would be most significantly impacted by the proposed change in Phasing.

In order to evaluate the intersection of Williams Road and Scottsdale Road, peak period intersection turning movement counts were collected on Thursday November 13, 2014. The counts were collected between the hours of 7:00 AM and 9:00 AM, and 4:00 PM and 6:00 PM. A copy of the count data is attached. Additionally, city of Scottsdale staff provided signal timing information for the traffic signal at the intersection of Williams Road and Scottsdale Road. A copy of the signal timing data is also attached. Currently, Scottsdale Road consists of only two through lanes in each direction at Williams Road, but the traffic control has been improved to provide signal control at the intersection.

The level of service for the signalized intersection of Williams Road and Scottsdale Road was calculated based on the peak hour volumes collected for this review. The LOS for the intersection was evaluated using the 2010 Highway Capacity Manual methodology for signalized intersections using Synchro 8 analysis software. LOS analysis worksheets are attached. The results indicate that the existing intersection currently operates at an overall level of service of A in the AM peak hour and B in the PM peak hour.

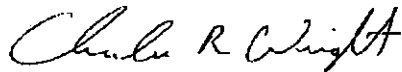
The Traffic Impact and Mitigation Analysis report assumed that Parcel D would be developed in the second phase of the project, which was anticipated to occur after the construction of two additional through lanes on Scottsdale Road. Background traffic volume projections included in the original analysis anticipated an annual growth rate of 5%. Actual increases in traffic volumes appear to be significantly lower which suggests that the second phase of the proposed development may be able to be accommodated without the need for additional lanes on Scottsdale Road. The growth rate between 2006 and 2012 is effectively 0% per year. The 2012 ADT on Scottsdale Road north of Deer Valley Road is reported to be 37,800 on the City's Average Daily Traffic Volumes segment map. The 2006 ADT on Scottsdale Road north of Deer Valley Road is reported to be 37,700 on the City's Average Daily Traffic Volumes segment map. The 2010 ADT on Scottsdale Road projected in the original study was 44,200.

An updated level of service calculation was prepared to evaluate the development of both phases of the overall project utilizing the current roadway improvements, traffic control and current traffic volumes. The total site traffic for the AM and PM peak hours, identified in Figure 8 of the Traffic Impact and Mitigation Analysis, were added to the current AM and PM peak hour intersection counts to determine the projected traffic volumes at build out of both phases of the project. The existing portion of the development was estimated to account for less than 15% of the daily trip generation of the total project and could not be easily separated from the total project volumes at the Scottsdale Road and Williams Drive intersection. The slight increase in traffic, due to the inclusion of a portion of the existing development traffic in the traffic volumes at Scottsdale Road and Williams Drive collected in November 2014, makes the level of service calculations slightly more conservative. The level of service for the signalized intersection of Williams Road and Scottsdale Road was re-calculated based on the projected build-out peak hour volumes. The LOS for the intersection was re-evaluated using the Highway Capacity Manual methodology. The LOS analysis worksheets for existing plus site generated traffic are also attached. The results indicate that the intersection of Scottsdale Road and Williams Road is expected to continue to operate at an overall level of service of A in the AM peak hour and B in the PM peak hour with the addition of traffic generated by both phase of the project.

This traffic review has determined that due to the lower than anticipated growth in background traffic in the area, the development of both phases of the Silverstone at Pinnacle Peak project can be accommodated, at acceptable levels of service at the intersection of Williams Road and Scottsdale Road, without the need for any additional lanes on Scottsdale Road. If you have any further questions please feel free to contact me at (602) 944-5500.

Very truly yours,

KIMLEY-HORN AND ASSOCIATES, INC.

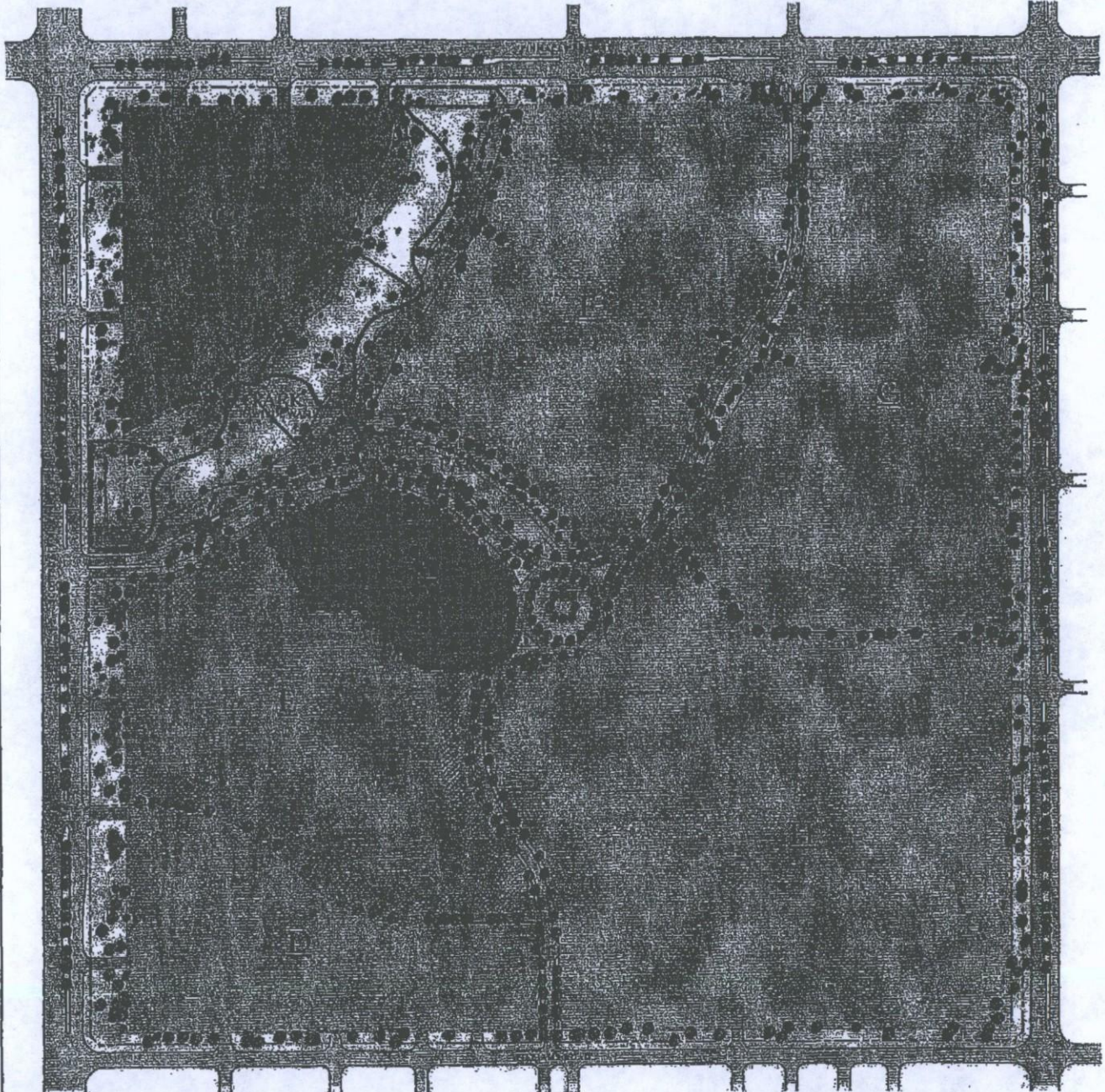


Charles R. Wright, P.E.

Attachment

K:\PHX\_Traffic\008092\CRW\Scottsdale & Williams review.doc





**Site Map**

FIGURE 2



N



### Intersection Turning Movement

Prepared by:



**FIELD DATA SERVICES OF ARIZONA, INC.**  
520.316.6745



**veracitytraffic group**

N-S STREET: Scottsdale Rd.      DATE: 11/13/14      LOCATION: Scottsdale  
 E-W STREET: Williams Dr.      DAY: THURSDAY      PROJECT# 14-1340-001

LANES:	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
	0	2	1	1	2	0	0	0	0	1	0	1	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	0	145	12	19	356	0	0	0	0	7	0	0	539
7:15 AM	0	131	18	17	437	0	0	0	0	7	0	1	611
7:30 AM	0	176	18	16	397	0	0	0	0	14	0	6	627
7:45 AM	0	131	29	23	472	0	0	0	0	26	0	6	687
8:00 AM	0	144	27	25	383	0	0	0	0	41	0	9	629
8:15 AM	0	194	17	11	392	0	0	0	0	25	0	6	645
8:30 AM	0	204	19	7	393	0	0	0	0	18	0	8	649
8:45 AM	0	187	16	23	321	0	0	0	0	34	0	7	588
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	0	1312	156	141	3151	0	0	0	0	172	0	43	4975
Approach %	0.00	89.37	10.63	4.28	95.72	0.00	####	####	####	80.00	0.00	20.00	
App/Depart	1468	/	1355	3292	/	3323	0	/	297	215	/	0	

AM Peak Hr Begins at: 745 AM

**PEAK**

Volumes	0	673	92	66	1640	0	0	0	0	110	0	29	2610
Approach %	0.00	87.97	12.03	3.87	96.13	0.00	####	####	####	79.14	0.00	20.86	

**PEAK HR.**

FACTOR:	0.858	0.862	0.000	0.695	0.950
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CONTROL: Signal

COMMENT 1:

GPS: 33.691459, -111.925348

# Intersection Turning Movement



**FIELD DATA SERVICES OF ARIZONA, INC.**  
520.316.6745



N-S STREET: Scottsdale Rd.      DATE: 11/13/14      LOCATION: Scottsdale  
 E-W STREET: Williams Dr.      DAY: THURSDAY      PROJECT# 14-1340-001

LANES:	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
	0	2	1	1	2	0	0	0	0	1	0	1	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	0	364	24	19	232	0	0	0	0	16	0	29	684
4:15 PM	0	362	21	12	198	0	0	0	0	26	0	27	646
4:30 PM	0	380	31	7	202	0	0	0	0	14	0	28	662
4:45 PM	0	401	22	10	216	0	0	0	0	17	0	15	681
5:00 PM	0	424	10	4	239	0	0	0	0	23	0	11	711
5:15 PM	0	379	15	3	220	0	0	0	0	15	0	11	643
5:30 PM	0	402	10	5	225	0	0	0	0	15	0	14	671
5:45 PM	0	318	14	6	205	0	0	0	0	7	0	21	571
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	0	3030	147	66	1737	0	0	0	0	133	0	156	5269
Approach %	0.00	95.37	4.63	3.66	96.34	0.00	####	####	####	46.02	0.00	53.98	
App/Depart	3177	/	3186	1803	/	1870	0	/	213	289	/	0	

PM Peak Hr Begins at: 445 PM

**PEAK**

Volumes	0	1606	57	22	900	0	0	0	0	70	0	51	2706
Approach %	0.00	96.57	3.43	2.39	97.61	0.00	####	####	####	57.85	0.00	42.15	

**PEAK HR.**

FACTOR:	0.958		0.949		0.000		0.890		0.951
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CONTROL: Signal

COMMENT 1: 0

GPS: 33.691459, -111.925348





# SCOTTSDALE & WILLIAMS

# BASIC TIMING PLANS

RECOMMENDED CLEARANCES

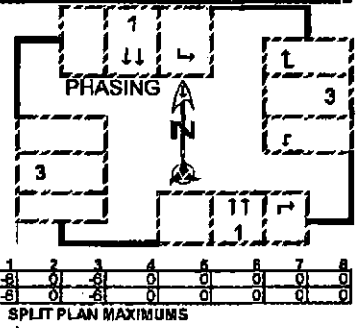
N/S	E/W	LEFT TURN STANDARD	DATE DESIGNED
4.0	4.0	4.0	10/1/2010
SYSTEM #			SECTION #
269			101

COMMUNICATIONS I.P. ADDRESS  
MM-1-5-1 172.17.12.69

TIMING #1	TIMING #2	TIMING #3	TIMING #4
CLEARANCE	SEQUENCE	PATTERNS	HISTORY

MM-2-1  
TIMING PLAN #1

PHASE	MOVEMENT	1	3	9	10	11	12	13	14	15	16
NOTES		N/S	E/W								
MIN GRN		10									
BK MGRN											
CS MGRN											
DLY GRN											
WALK		30	30								
WALK2											
WLK MAX											
PED CLR/FDV		10	16								
PD CLR2											
PC MAX											
PEL CO											
VEH EXT			2								
VEH EXT2											
MAX 1		50	30								
MAX 2		30	40								
MAX 3											
DYM MAX											
DYM STP											
YELLOW		3.9	3.9								
RED CLR		1.1	1.1								
RED MAX											
RED RVT		2	2								
ACT B4											
SECACT											
MAX INT											
TIME B4											
CARS WT											
STPIDUC											
TREDUC											
MIN B4											
LOOK DET											
VEH RECALL											
PEL RECALL											
MAX RECALL											
SOFT RECALL											
NO REST											
ADD INIT CAL											



1	2	3	4	5	6	7	8
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0

SPLIT PLAN MAXIMUMS

NOTES

ONLY WALK  
CARS STOPPED

GREENS

REDS

MM-2-1  
RECALLS

Timings  
3: Scottsdale Road & Williams Drive

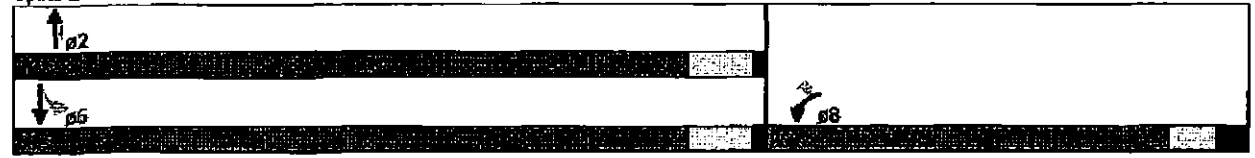
Existing AM  
11/15/2014



	←	↔	↑↑	↔	↔	↑↑
Lane Configurations						
Volume (vph)	110	29	673	92	66	1640
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	6.0	6.0	10.0	10.0	10.0	10.0
Minimum Split (s)	12.0	12.0	16.0	16.0	16.0	16.0
Total Split (s)	36.0	36.0	56.0	56.0	56.0	56.0
Total Split (%)	39.1%	39.1%	60.9%	60.9%	60.9%	60.9%
Yellow Time (s)	3.6	3.6	4.9	4.9	4.9	4.9
All-Red Time (s)	2.4	2.4	1.1	1.1	1.1	1.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Ped	Ped	Ped	Ped

Cycle Length: 92  
 Actuated Cycle Length: 64  
 Natural Cycle: 50  
 Control Type: Semi Act-Uncoord

Splits and Phases: 3: Scottsdale Road & Williams Drive



HCM 2010 Signalized Intersection Summary  
 3: Scottsdale Road & Williams Drive

Existing AM  
 11/15/2014

	←	↖	↑	↗	→	↓
Lane Configurations	↖	↖	↑↑	↗	↗	↑↑
Volume (veh/h)	110	29	673	92	66	1640
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus. Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	116	31	708	97	69	1726
Adj No. of Lanes	1	1	2	1	1	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	181	162	2356	1054	532	2356
Arrive On Green	0.10	0.10	0.67	0.67	0.67	0.67
Sat Flow, veh/h	1774	1583	3632	1583	674	3632
Grp Volume(v), veh/h	116	31	708	97	69	1726
Grp Sat Flow(s), veh/h/ln	1774	1583	1770	1583	674	1770
Q Serve(g_s), s	3.2	0.9	4.3	1.1	2.5	16.4
Cycle Q Clear(g_c), s	3.2	0.9	4.3	1.1	6.8	16.4
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	181	162	2356	1054	532	2356
V/C Ratio(X)	0.64	0.19	0.30	0.09	0.13	0.73
Avail Cap(c_a), veh/h	1030	920	3426	1533	735	3426
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	22.3	21.2	3.6	3.1	5.0	5.6
Incr Delay (d2), s/veh	1.4	0.2	0.0	0.0	0.0	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	1.6	0.4	2.1	0.5	0.4	7.7
LnGrp Delay(d), s/veh	23.7	21.4	3.6	3.1	5.1	5.8
LnGrp LOS	C	C	A	A	A	A
Approach Vol, veh/h	147		805			1795
Approach Delay, s/veh	23.2		3.6			5.8
Approach LOS	C		A			A
Assigned Phs		2			6	8
Phs Duration (G+Y+Rc), s		40.4			40.4	11.3
Change Period (Y+Rc), s		* 6			* 6	6.0
Max Green Setting (Gmax), s		* 60			* 50	30.0
Max Q Clear Time (g_c+I1), s		6.3			18.4	5.2
Green Ext Time (p_o), s		18.2			15.9	0.2
HCM 2010 Ctrl Delay			6.1			
HCM 2010 LOS			A			

\* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Timings  
3: Scottsdale Road & Williams Drive

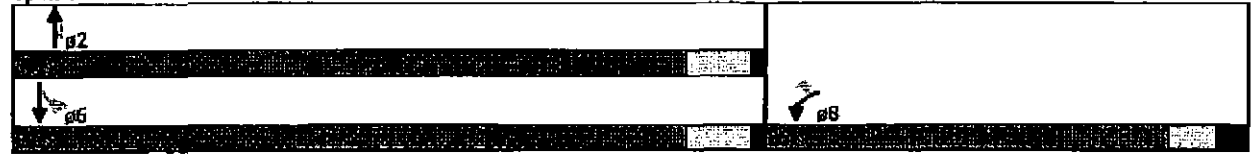
Existing PM  
11/15/2014



Phase	WBL	WBS	NB	SB	WBL	WBS
Lane Configurations	↖	↗	↕	↖	↗	↕
Volume (vph)	70	51	1606	57	22	900
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	6.0	6.0	10.0	10.0	10.0	10.0
Minimum Split (s)	12.0	12.0	16.0	16.0	16.0	16.0
Total Split (s)	36.0	36.0	56.0	56.0	56.0	56.0
Total Split (%)	39.1%	39.1%	60.9%	60.9%	60.9%	60.9%
Yellow Time (s)	3.6	3.6	4.9	4.9	4.9	4.9
All-Red Time (s)	2.4	2.4	1.1	1.1	1.1	1.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Ped	Ped	Ped	Ped

Cycle Length: 92  
 Actuated Cycle Length: 61.4  
 Natural Cycle: 45  
 Control Type: Semi-Act-Uncoord

Splits and Phases: 3: Scottsdale Road & Williams Drive



HCM 2010 Signalized Intersection Summary  
 3: Scottsdale Road & Williams Drive

Existing PM  
 11/15/2014



	↙	↖	↑↑	↗	↘	↙↘
Lane Configurations						
Volume (veh/h)	70	51	1606	57	22	800
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus. Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	74	54	1691	60	23	947
Adj No. of Lanes	1	1	2	1	1	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	167	149	2427	1086	241	2427
Arrive On Green	0.09	0.09	0.69	0.69	0.69	0.69
Sat Flow, veh/h	1774	1583	3632	1583	273	3632
Grp Volume(v), veh/h	74	54	1691	60	23	947
Grp Sat Flow(s), veh/h/ln	1774	1583	1770	1583	273	1770
Q Serve(g_s), s	2.1	1.7	15.7	0.7	3.0	6.3
Cycle Q Clear(g_c), s	2.1	1.7	15.7	0.7	18.7	6.3
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	167	149	2427	1086	241	2427
V/C Ratio(X)	0.44	0.36	0.70	0.06	0.10	0.39
Avail Cap(c_a), veh/h	976	871	3245	1462	304	3245
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(f)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.3	23.2	5.2	2.8	10.8	3.7
Incr Delay (d2), s/veh	0.7	0.5	0.2	0.0	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back(Q(50%)) veh/ln	1.1	0.8	7.6	0.3	0.2	3.0
LnGrp Delay(d),s/veh	24.0	23.7	5.4	2.8	10.8	3.7
LnGrp LOS	C	C	A	A	B	A
Approach Vol, veh/h	128		1751			970
Approach Delay, s/veh	23.9		5.3			3.9
Approach LOS	C		A			A

Assigned Phs	2	6	8
Phs Duration (G+Y+Rc), s	43.4	43.4	41.1
Change Period (Y+Rc), s	* 6	* 6	6.0
Max Green Setting (Gmax), s	* 50	* 50	30.0
Max Q Clear Time (g_c+H), s	17.7		20.7
Green Ext Time (p_c), s	17.6		16.7

HCM 2010 Ctrl Delay	5.6
HCM 2010 LOS	A

\* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

**Scottsdale & Pinnacle Peak TIMA**

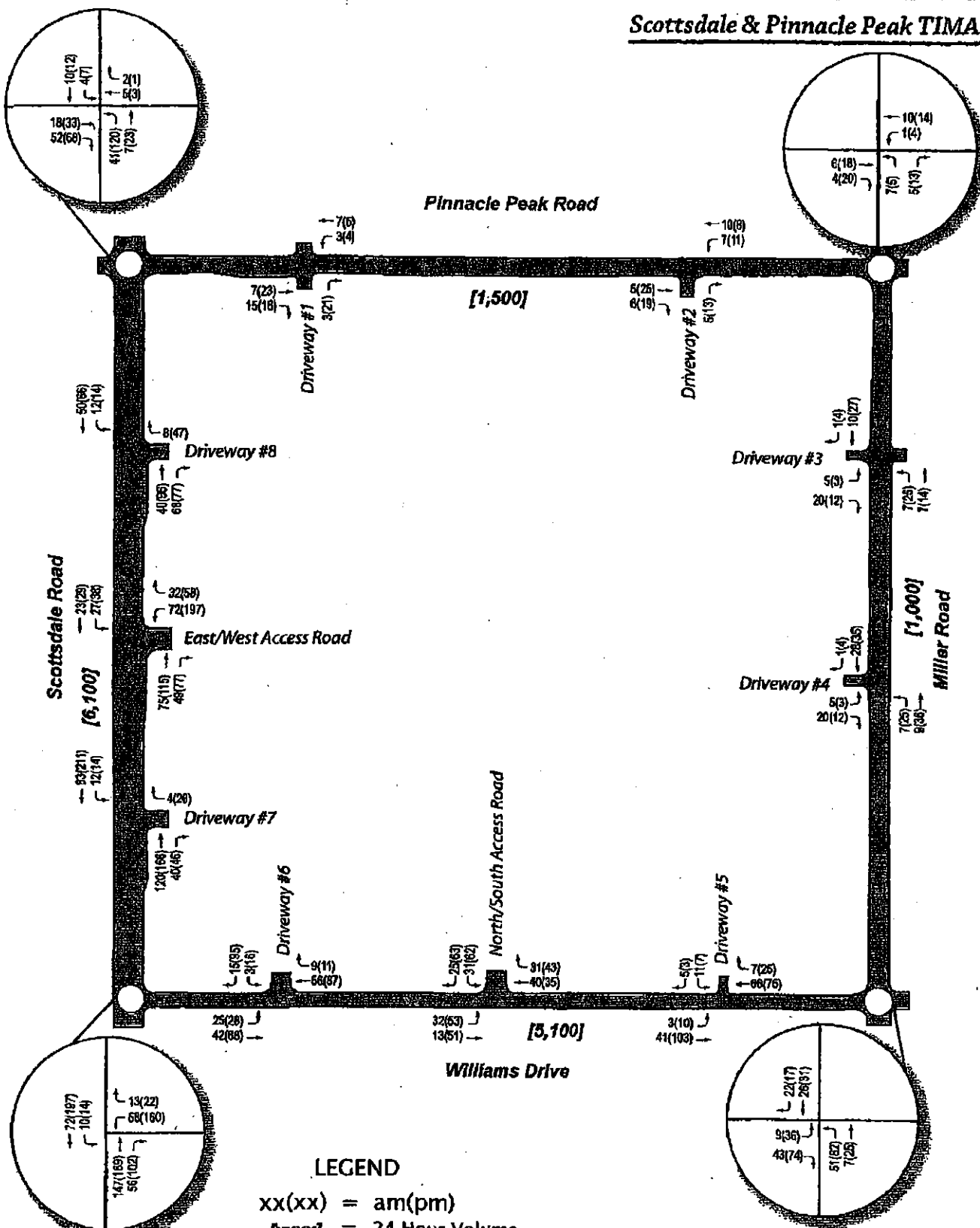


FIGURE 8

Timings  
**3: Scottsdale Road & Williams Drive**

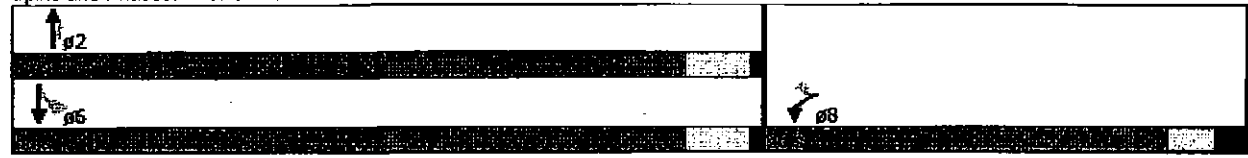
Existing AM + Site Traffic  
 11/15/2014



	↙	↗	↑↑	↖	↘	↑↑
Lane Configurations	↙	↗	↑↑	↖	↘	↑↑
Volume (vph)	168	42	820	148	76	1712
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	6.0	6.0	10.0	10.0	10.0	10.0
Minimum Split (s)	12.0	12.0	16.0	16.0	16.0	16.0
Total Split (s)	36.0	36.0	56.0	56.0	56.0	56.0
Total Split (%)	38.1%	39.1%	60.9%	60.9%	60.9%	60.9%
Yellow Time (s)	3.6	3.6	4.9	4.9	4.9	4.9
All-Red Time (s)	2.4	2.4	1.1	1.1	1.1	1.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Ped	Ped	Ped	Ped

Cycle Length: 92  
 Actuated Cycle Length: 68  
 Natural Cycle: 60  
 Control Type: Semi Act-Uncoord

Splits and Phases: 3: Scottsdale Road & Williams Drive



HCM 2010 Signalized Intersection Summary  
 3: Scottsdale Road & Williams Drive

Existing AM + Site Traffic  
 11/15/2014



MOV	W	E	N	S	ALL
Lane Configurations	↖	↗	↕	↖	↕
Volume (veh/h)	168	42	820	148	1712
Number	3	18	2	12	1
Initial Q (Qb), veh	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00	1.00	1.00
Parking Bus. Adj	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	177	44	863	156	1802
Adj No. of Lanes	1	1	2	1	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2
Cap, veh/h	233	208	2359	1055	429
Arrive On Green	0.13	0.13	0.67	0.67	0.67
Sat Flow, veh/h	1774	1583	3632	1583	551
Grp Volume(v), veh/h	177	44	863	156	80
Grp Sat Flow(s), veh/h/ln	1774	1583	1770	1583	551
Q Serve(g_s), s	5.7	1.5	6.4	2.2	4.4
Cycle Q Clear(g_c), s	5.7	1.5	6.4	2.2	10.8
Prop In Lane	1.00	1.00	1.00	1.00	1.00
Lane Grp Cap(c), veh/h	233	208	2359	1055	429
V/C Ratio(X)	0.76	0.21	0.37	0.15	0.19
Avail Cap(c_a), veh/h	896	800	2980	1333	526
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00
Upstream Filter(f)	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.9	23.0	4.4	3.7	6.8
Incr Delay (d2), s/veh	1.9	0.2	0.0	0.0	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	2.9	0.7	3.0	0.9	0.7
LnGrp Delay(d), s/veh	26.8	23.2	4.4	3.7	6.8
LnGrp LOS	C	C	A	A	A
Approach Vol, veh/h	221		1019		1882
Approach Delay, s/veh	26.1		4.3		7.4
Approach LOS	C		A		A
Assigned Phs		2		6	8
Phs Duration (G+Y+Rc), s		45.6		45.6	13.8
Change Period (Y+Rc), s		* 6		* 6	6.0
Max Green Setting (Gmax), s		* 50		* 50	30.0
Max Q Clear Time (g_c+H1), s		8.4		22.5	7.7
Green Ext Time (p_c), s		21.4		17.0	0.3
HCM 2010 Ctrl Delay			7.7		
HCM 2010 LOS			A		

\* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Timings  
**3: Scottsdale Road & Williams Drive**

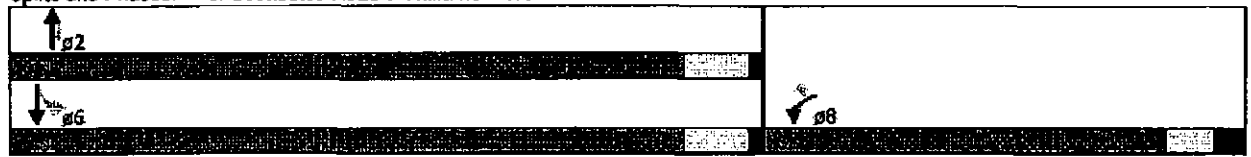
Existing PM + Site Traffic  
 11/15/2014



	W	W	N	E	S	S
Lane Configurations	↖	↗	↕	↖	↗	↕
Volume (vph)	230	73	1795	159	36	1097
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	6.0	6.0	10.0	10.0	10.0	10.0
Minimum Spill (s)	12.0	12.0	16.0	16.0	16.0	16.0
Total Split (s)	36.0	36.0	56.0	56.0	56.0	56.0
Total Spill (%)	39.1%	39.1%	60.9%	60.9%	60.9%	60.9%
Yellow Time (s)	3.6	3.6	4.9	4.9	4.9	4.9
All-Red Time (s)	2.4	2.4	1.1	1.1	1.1	1.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Ped	Ped	Ped	Ped

Cycle Length: 92  
 Actuated Cycle Length: 74.2  
 Natural Cycle: 60  
 Control Type: Semi Act-Uncoord

Splits and Phases: 3: Scottsdale Road & Williams Drive



HCM 2010 Signalized Intersection Summary  
 3: Scottsdale Road & Williams Drive

Existing PM + Site Traffic  
 11/15/2014

	↙	↖	↑	↗	↘	↓
Lane Configurations	↙	↖	↑↑	↗	↘	↑↑
Volume (veh/h)	230	73	1795	169	36	1097
Number	3	18	2	12	1	6
Initial Q (Q <sub>0</sub> ), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	242	77	1889	167	38	1155
Adj No. of Lanes	1	1	2	1	1	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	293	261	2373	1062	158	2373
Arrive On Green	0.17	0.17	0.67	0.67	0.67	0.67
Sat Flow, veh/h	1774	1583	3632	1583	203	3632
Grp Volume(v), veh/h	242	77	1889	167	38	1155
Grp Sat Flow(s), veh/h/ln	1774	1583	1770	1583	203	1770
Q Serve(g_s), s	9.6	3.1	27.5	2.8	11.9	11.7
Cycle Q Clear(g_c), s	9.6	3.1	27.5	2.8	39.4	11.7
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	293	261	2373	1062	158	2373
V/C Ratio(X)	0.83	0.29	0.80	0.16	0.24	0.49
Avail Cap(c_a), veh/h	729	650	2423	1084	161	2423
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(f)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.5	26.8	8.5	4.4	22.4	5.9
Incr Delay (d2), s/veh	2.3	0.2	1.7	0.0	0.3	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	4.9	1.4	13.7	1.2	0.7	5.6
LnGrp Delay(d), s/veh	31.7	27.0	10.2	4.5	22.7	5.9
LnGrp LOS	C	C	B	A	C	A
Approach Vol, veh/h	319		2056			1193
Approach Delay, s/veh	30.6		9.8			6.5
Approach LOS	C		A			A
Assigned Phs		2			6	8
Phs Duration (G+Y+Rc), s		55.0			55.0	18.1
Change Period (Y+Rc), s		* 6			* 6	6.0
Max Green Setting (Gmax), s		* 50			* 50	30.0
Max Q Clear Time (g_c+H1), s		29.5			41.4	11.6
Green Ext Time (p_c), s		15.9			7.5	0.4
HCM 2010 Ctrl Delay			10.5			
HCM 2010 LOS			B			

\* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

# Kimley»Horn

January 6, 2015

Ms. Karlie Johnson  
Van Tuyl Group, Inc.  
1550 E. Missouri Ave., Suite 300  
Phoenix, AZ 85014

Re: NEC Williams Road and Scottsdale Road – Silverstone Parcel D Office Development –  
Improvement Phasing Review

Dear Ms. Johnson:

This letter outlines our findings regarding the traffic generation evaluation of the proposed plan for Parcel D of the Silverstone at Pinnacle Peak project consisting of the 165,000 square foot office building, identified as parcel D in the original plan, located at the northeast corner of the intersection of Williams Road and Scottsdale Road in Scottsdale, Arizona. A copy of the site map depicting the parcel layout is attached. The plan for parcel D is expected to be consistent with the access point assumptions in the original TIMA report. This includes right-in, right-out and left-in 1/8 mile north of Williams Drive on Scottsdale Road (Driveway #7) and full access from Williams Drive 1/8 mile east of Scottsdale Road (Driveway #6). A full access is also anticipated to parcel D from 74<sup>th</sup> Street approximately 400 feet north of Williams Drive. Driveway #7 is anticipated to provide access to Parcel D from Scottsdale Road.

This letter is intended to review the applicability of modifying of modifying the Master Phasing Plan to allow development of Parcel D prior to the completion of Scottsdale Road to the ultimate 6-lane cross-section. This analysis utilizes the traffic information presented in the final Traffic Impact and Mitigation Analysis prepared for Silverstone at Pinnacle Peak by Parsons Brinkerhoff, dated December 5, 2005. The evaluation focuses on the intersection of Williams Road and Scottsdale Road which is immediately adjacent to the development and would be most significantly impacted by the proposed change in Phasing.

In order to evaluate the intersection of Williams Road and Scottsdale Road, peak period intersection turning movement counts were collected on Thursday November 13, 2014. The counts were collected between the hours of 7:00 AM and 9:00 AM, and 4:00 PM and 6:00 PM. A copy of the count data is attached. Additionally, city of Scottsdale staff provided signal timing information for the traffic signal at the intersection of Williams Road and Scottsdale Road. A copy of the signal timing data is also attached. Currently, Scottsdale Road consists of only two through lanes in each direction at Williams Road, but the traffic control has been improved to provide signal control at the intersection.

The level of service for the signalized intersection of Williams Road and Scottsdale Road was calculated based on the peak hour volumes collected for this review. The LOS for the intersection was evaluated using the 2010 Highway Capacity Manual methodology for signalized intersections using Synchro 8 analysis software. LOS analysis worksheets are attached. The results indicate that the existing intersection currently operates at an overall level of service of A in the AM peak hour and B in the PM peak hour.

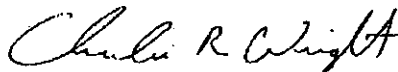
The Traffic Impact and Mitigation Analysis report assumed that Parcel D would be developed in the second phase of the project, which was anticipated to occur after the construction of two additional through lanes on Scottsdale Road. Background traffic volume projections included in the original analysis anticipated an annual growth rate of 5%. Actual increases in traffic volumes appear to be significantly lower which suggests that the second phase of the proposed development may be able to be accommodated without the need for additional lanes on Scottsdale Road. The growth rate between 2006 and 2012 is effectively 0% per year. The 2012 ADT on Scottsdale Road north of Deer Valley Road is reported to be 37,800 on the City's Average Daily Traffic Volumes segment map. The 2006 ADT on Scottsdale Road north of Deer Valley Road is reported to be 37,700 on the City's Average Daily Traffic Volumes segment map. The 2010 ADT on Scottsdale Road projected in the original study was 44,200.

An updated level of service calculation was prepared to evaluate the development of both phases of the overall project utilizing the current roadway improvements, traffic control and current traffic volumes. The total site traffic for the AM and PM peak hours, identified in Figure 8 of the Traffic Impact and Mitigation Analysis, were added to the current AM and PM peak hour intersection counts to determine the projected traffic volumes at build out of both phases of the project. The existing portion of the development was estimated to account for less than 15% of the daily trip generation of the total project and could not be easily separated from the total project volumes at the Scottsdale Road and Williams Drive intersection. The slight increase in traffic, due to the inclusion of a portion of the existing development traffic in the traffic volumes at Scottsdale Road and Williams Drive collected in November 2014, makes the level of service calculations slightly more conservative. The level of service for the signalized intersection of Williams Road and Scottsdale Road was re-calculated based on the projected build-out peak hour volumes. The LOS for the intersection was re-evaluated using the Highway Capacity Manual methodology. The LOS analysis worksheets for existing plus site generated traffic are also attached. The results indicate that the intersection of Scottsdale Road and Williams Road is expected to continue to operate at an overall level of service of A in the AM peak hour and B in the PM peak hour with the addition of traffic generated by both phase of the project.

This traffic review has determined that due to the lower than anticipated growth in background traffic in the area, the development of both phases of the Silverstone at Pinnacle Peak project can be accommodated, at acceptable levels of service at the intersection of Williams Road and Scottsdale Road, without the need for any additional lanes on Scottsdale Road. If you have any further questions please feel free to contact me at (602) 944-5500.

Very truly yours,

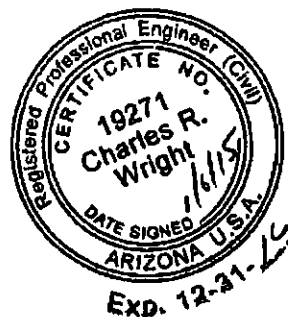
KIMLEY-HORN AND ASSOCIATES, INC.

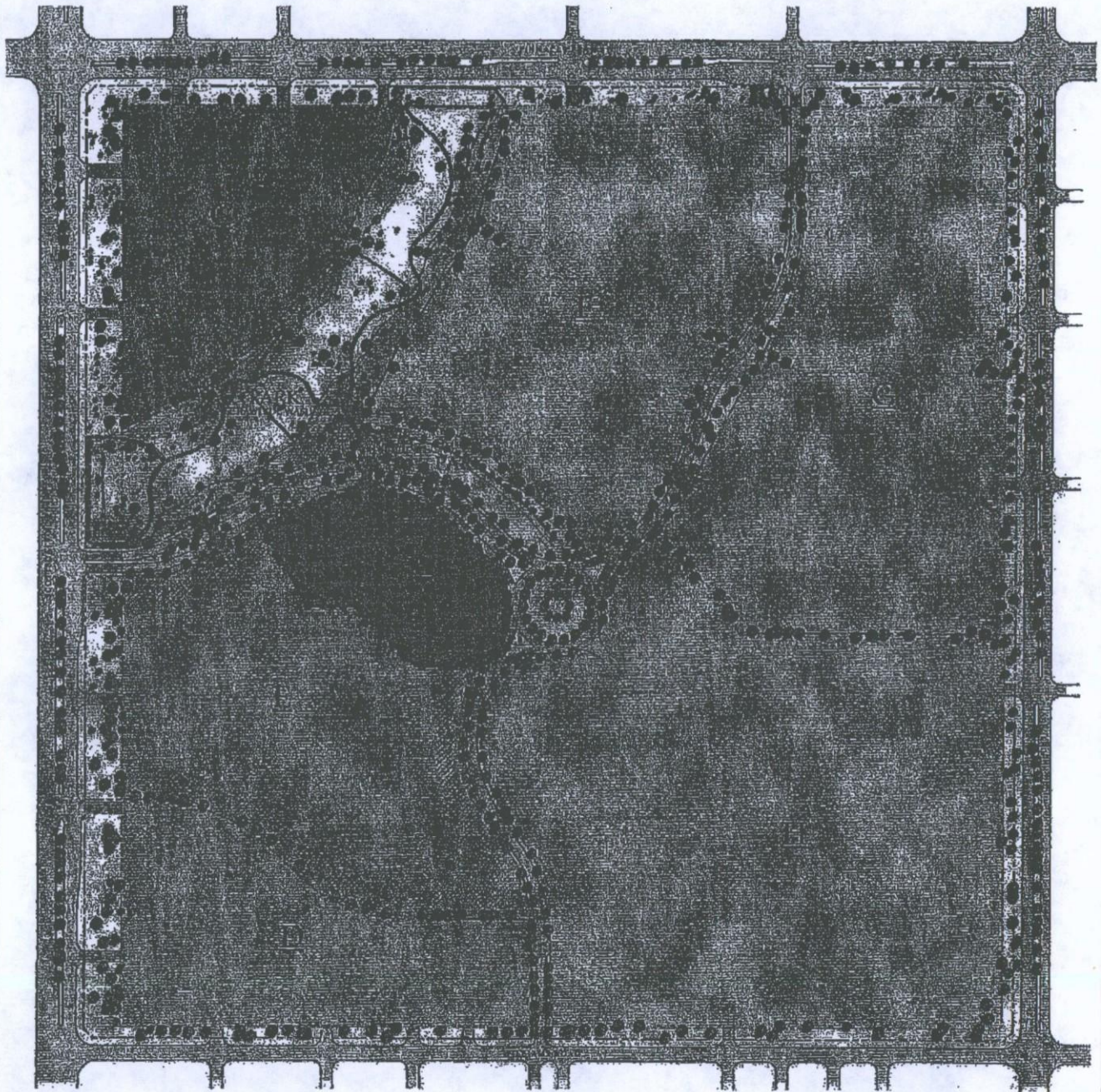


Charles R. Wright, P.E.

Attachment

K:\PHX\_Traffic\0008092\CRWAScottsdale & Williams review.doc





**Site Map**



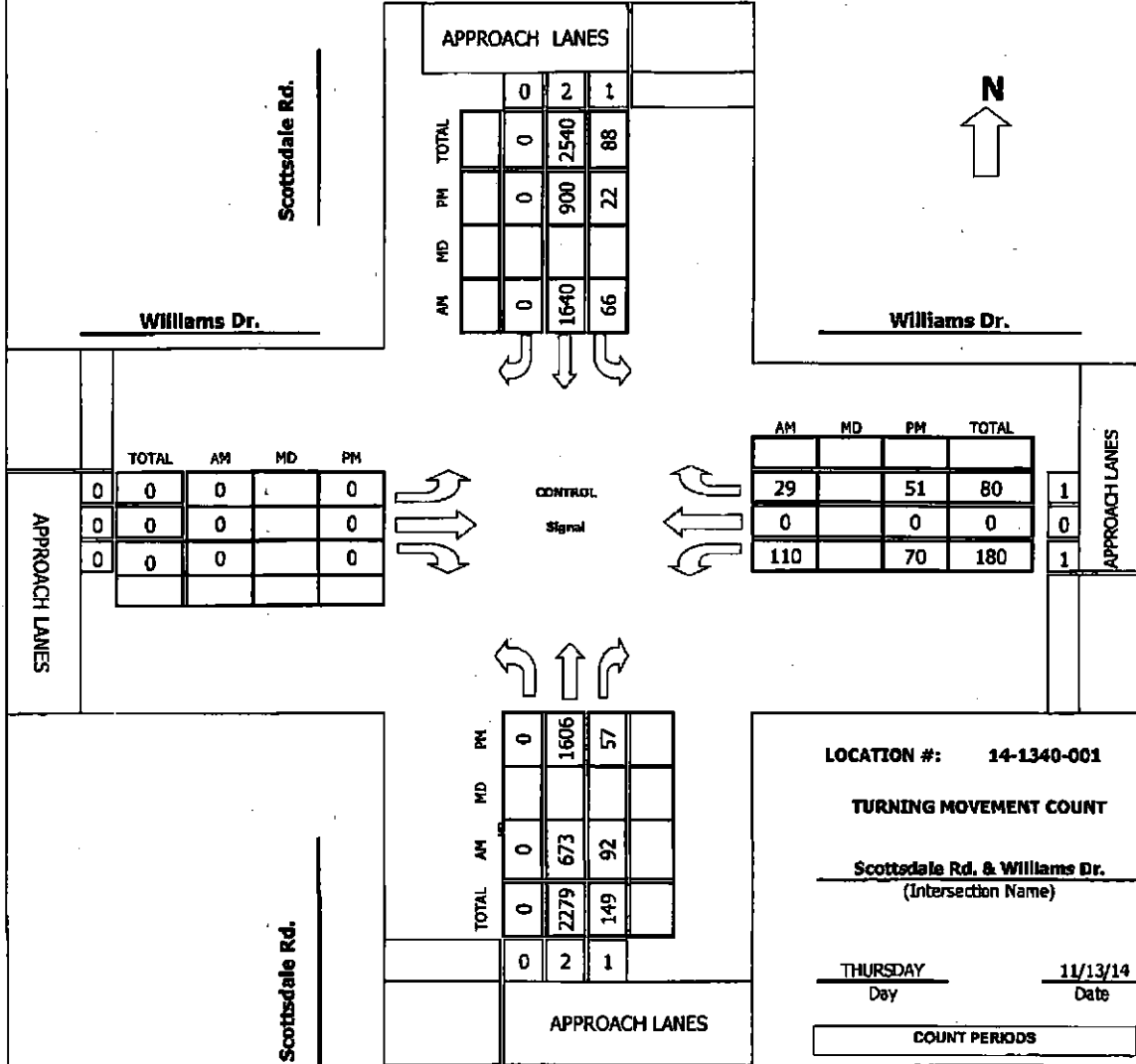
FIGURE 2

**Intersection Turning Movement  
Prepared by:**



**Project #:** 14-1340-001

***TMC SUMMARY OF Scottsdale Rd. & Williams Dr.***



**LOCATION #:** 14-1340-001

**TURNING MOVEMENT COUNT**

Scottsdale Rd. & Williams Dr.  
(Intersection Name)

THURSDAY                      11/13/14  
Day                                      Date

**COUNT PERIODS**

AM	700AM	-	900AM
NOON		-	
PM	400PM	-	600PM

AM PEAK HOUR                      745 AM

NOON PEAK HOUR                      \_\_\_\_\_

PM PEAK HOUR                      445 PM

**Intersection Turning Movement  
Prepared by:**



**FIELD DATA SERVICES OF ARIZONA, INC.**  
520.316.6745

**veracitytraffic group**

N-S STREET: Scottsdale Rd. DATE: 11/13/14 LOCATION: Scottsdale  
E-W STREET: Williams Dr. DAY: THURSDAY PROJECT# 14-1340-001

LANES:	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
	0	2	1	1	2	0	0	0	0	1	0	1	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	0	145	12	19	356	0	0	0	0	7	0	0	539
7:15 AM	0	131	18	17	437	0	0	0	0	7	0	1	611
7:30 AM	0	176	18	16	397	0	0	0	0	14	0	6	627
7:45 AM	0	131	29	23	472	0	0	0	0	26	0	6	687
8:00 AM	0	144	27	25	383	0	0	0	0	41	0	9	629
8:15 AM	0	194	17	11	392	0	0	0	0	25	0	6	645
8:30 AM	0	204	19	7	393	0	0	0	0	18	0	8	649
8:45 AM	0	187	16	23	321	0	0	0	0	34	0	7	588
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	0	1312	156	141	3151	0	0	0	0	172	0	43	4975
Approach %	0.00	89.37	10.63	4.28	95.72	0.00	####	####	####	80.00	0.00	20.00	
App/Depart	1468	/	1355	3292	/	3323	0	/	297	215	/	0	

AM Peak Hr Begins at: 745 AM

**PEAK**

Volumes	0	673	92	66	1640	0	0	0	0	110	0	29	2610
Approach %	0.00	87.97	12.03	3.87	96.13	0.00	####	####	####	79.14	0.00	20.86	

**PEAK HR.**

FACTOR:	0.858			0.862			0.000			0.695			0.950
---------	-------	--	--	-------	--	--	-------	--	--	-------	--	--	-------

CONTROL: Signal

COMMENT 1:

GPS: 33.691459, -111.925348

# Intersection Turning Movement



**FIELD DATA SERVICES OF ARIZONA, INC.**  
520.316.6745



N-S STREET: Scottsdale Rd      DATE: 11/13/14      LOCATION: Scottsdale  
 E-W STREET: Williams Dr      DAY: THURSDAY      PROJECT# 14-1340-001

LANES:	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
	0	2	1	1	2	0	0	0	0	1	0	1	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	0	364	24	19	232	0	0	0	0	16	0	29	684
4:15 PM	0	362	21	12	198	0	0	0	0	26	0	27	646
4:30 PM	0	380	31	7	202	0	0	0	0	14	0	28	662
4:45 PM	0	401	22	10	216	0	0	0	0	17	0	15	681
5:00 PM	0	424	10	4	239	0	0	0	0	23	0	11	711
5:15 PM	0	379	15	3	220	0	0	0	0	15	0	11	643
5:30 PM	0	402	10	5	225	0	0	0	0	15	0	14	671
5:45 PM	0	318	14	6	205	0	0	0	0	7	0	21	571
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	0	3030	147	66	1737	0	0	0	0	133	0	156	5269
Approach %	0.00	95.37	4.63	3.66	96.34	0.00	####	####	####	46.02	0.00	53.98	
App/Depart	3177	/	3186	1803	/	1870	0	/	213	289	/	0	

PM Peak Hr Begins at: 445 PM

**PEAK**

Volumes	0	1606	57	22	900	0	0	0	0	70	0	51	2706
Approach %	0.00	96.57	3.43	2.39	97.61	0.00	####	####	####	57.85	0.00	42.15	

**PEAK HR.**

FACTOR:	0.958		0.949		0.000		0.890		0.951
---------	-------	--	-------	--	-------	--	-------	--	-------

CONTROL: Signal  
 COMMENT 1: 0  
 GPS: 33-691459, -111-925948





# SCOTTSDALE & WILLIAMS

# BASIC TIMING PLANS

RECOMMENDED CLEARANCES

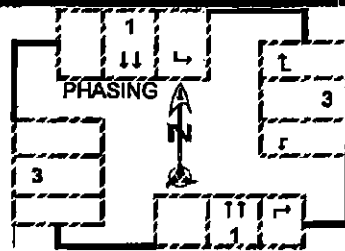
N/S	EW	LEFT TURN	DATE DESIGNED
STANDARD	STANDARD	STANDARD	10/1/2010
SYSTEM #	SECTION #		
269	101		

COMMUNICATIONS L.P. ADDRESS  
 MM-1-5-1 172.17.12.69

TIMING #1	TIMING #2	TIMING #3	TIMING #4
CLEARANCE	SEQUENCE	PATTERNS	HISTORY

MM-2-1 TIMING PLAN #1

PHASE	1	3	9	10	11	12	13	14	15	16
MOVEMENT	NS	EW								
MIN GRN	10	6								
BK MGRN										
CS MGRN										
DLY GRN										
WALK	30	9								
WALK2										
WLR MAX										
PED CLR/EDV	10	18								
PD CLR2										
PD MAX										
PD CQ										
VEH EXT										
VEH EXT2										
MAX 1	50	40								
MAX 2	50	40								
MAX 3										
DYN MAX										
DYN STP										
YELLOW	19	18								
RED CLR	11	11								
RED MAX										
RED RYT	2	2								
ACT B4										
SEC/ACT										
MAX RT										
TIME B4										
CARS WT										
STPDUC										
TTRDUC										
W/GAP										
LOCK DET										
VEH RECALL										
PEL RECALL										
MAX RECALL										
SOFT RECALL										
NO REST										
ADD INIT CAL										

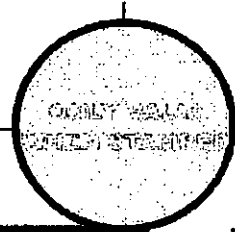


1	2	3	4	5	6	7	8
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0

SPLIT PLAN MAXIMUMS

NOTES

Empty rectangular box for notes.



- GREENS
- PEDESTRIANS
- RFDS
- RECALLS

Timings  
3: Scottsdale Road & Williams Drive

Existing AM  
11/15/2014



	W	E	NB	SB	W	E
Lane Configurations	↙	↗	↑↑	↗	↙	↑↑
Volume (vph)	110	29	673	92	66	1640
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	6.0	6.0	10.0	10.0	10.0	10.0
Minimum Split (s)	12.0	12.0	16.0	16.0	16.0	16.0
Total Split (s)	36.0	36.0	56.0	56.0	56.0	56.0
Total Split (%)	39.1%	39.1%	60.9%	60.9%	60.9%	60.9%
Yellow Time (s)	3.6	3.6	4.9	4.9	4.9	4.9
All-Red Time (s)	2.4	2.4	1.1	1.1	1.1	1.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag						
Lead/Lag Optimize?						
Recall Mode	None	None	Ped	Ped	Ped	Ped

Cycle Length: 92  
 Actuated Cycle Length: 64  
 Natural Cycle: 50  
 Control Type: Semi Act-Uncoord

Splits and Phases: 3: Scottsdale Road & Williams Drive



HCM 2010 Signalized Intersection Summary  
 3: Scottsdale Road & Williams Drive

Existing AM  
 11/15/2014

Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations	←	→	↑↑	→	←	↑↑		
Volume (veh/h)	110	29	673	92	66	1640		
Number	3	18	2	12	1	6		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	116	31	708	97	69	1726		
Adj No. of Lanes	1	1	2	1	1	2		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	181	162	2356	1054	532	2356		
Arrive On Green	0.10	0.10	0.67	0.67	0.67	0.67		
Sat Flow, veh/h	1774	1583	3632	1583	674	3632		
Grp Volume(v), veh/h	116	31	708	97	69	1726		
Grp Sat Flow(s), veh/h/ln	1774	1583	1770	1583	674	1770		
Q Serve(g_s), s	3.2	0.9	4.3	1.1	2.5	16.4		
Cycle Q Clear(g_c), s	3.2	0.9	4.3	1.1	6.8	16.4		
Prop In Lane	1.00	1.00		1.00	1.00			
Lane Grp Cap(c), veh/h	181	162	2356	1054	532	2356		
V/C Ratio(X)	0.64	0.19	0.30	0.09	0.13	0.73		
Avail Cap(c_a), veh/h	1030	920	3426	1533	735	3426		
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	22.3	21.2	3.6	3.1	5.0	5.6		
Incr Delay (d2), s/veh	1.4	0.2	0.0	0.0	0.0	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	1.6	0.4	2.1	0.5	0.4	7.7		
LnGrp Delay(d),s/veh	23.7	21.4	3.6	3.1	5.1	5.8		
LnGrp LOS	C	C	A	A	A	A		
Approach Vol, veh/h	147		805			1795		
Approach Delay, s/veh	23.2		3.6			5.8		
Approach LOS	C		A			A		
Phase	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		40.4				40.4		11.3
Change Period (Y+Rc), s		* 6				* 6		6.0
Max Green Setting (Gmax), s		* 50				* 50		30.0
Max Q Clear Time (g_c+I1), s		6.3				18.4		5.2
Green Ext Time (p_c), s		18.2				15.9		0.2
Intersection Summary								
HCM 2010 Ctrl Delay			6.1					
HCM 2010 LOS			A					
Notes								

\* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Timings  
3: Scottsdale Road & Williams Drive

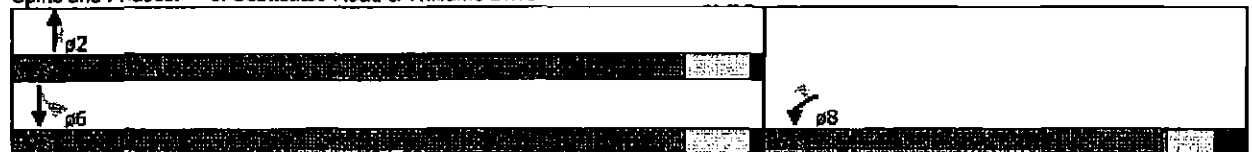
Existing PM  
11/15/2014



	↶	↷	↕	↶	↷	↕
Lane Configurations						
Volume (vph)	70	61	1606	57	22	900
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mkt-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	6.0	6.0	10.0	10.0	10.0	10.0
Minimum Split (s)	12.0	12.0	16.0	16.0	16.0	16.0
Total Split (s)	36.0	36.0	56.0	56.0	56.0	56.0
Total Split (%)	39.1%	39.1%	60.9%	60.9%	60.9%	60.9%
Yellow Time (s)	3.6	3.6	4.9	4.9	4.9	4.9
All-Red Time (s)	2.4	2.4	1.1	1.1	1.1	1.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Ped	Ped	Ped	Ped

Cycle Length: 92  
 Actuated Cycle Length: 61.4  
 Natural Cycle: 45  
 Control Type: Semi-Act-Uncoord

Splits and Phases: 3: Scottsdale Road & Williams Drive



HCM 2010 Signalized Intersection Summary  
 3: Scottsdale Road & Williams Drive

Existing PM  
 11/15/2014



Williams Drive	Williams Drive	Williams Drive	Williams Drive	Williams Drive	Williams Drive
Lane Configurations	↵	↶	↕	↷	↘
Volume (veh/h)	70	51	1606	57	22
Number	3	18	2	12	1
Initial Q (Qb), veh	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	74	54	1691	60	23
Adj No. of Lanes	1	1	2	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2
Cap, veh/h	167	149	2427	1086	241
Arrive On Green	0.09	0.09	0.69	0.69	0.69
Sat Flow, veh/h	1774	1583	3632	1583	273
Grp Volume(v), veh/h	74	54	1691	60	23
Grp Sat Flow(s), veh/h/ln	1774	1583	1770	1583	273
Q Serve(g_s), s	2.1	1.7	15.7	0.7	3.0
Cycle Q Clear(g_c), s	2.1	1.7	15.7	0.7	18.7
Prop In Lane	1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	167	149	2427	1086	241
V/C Ratio(X)	0.44	0.36	0.70	0.06	0.10
Avail Cap(c_a), veh/h	976	871	3245	1452	304
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.3	23.2	5.2	2.8	10.8
Incr Delay (d2), s/veh	0.7	0.5	0.2	0.0	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0
%ile Back Of Q(50%), veh/ln	1.1	0.8	7.6	0.3	0.2
LnGrp Delay(d), s/veh	24.0	23.7	5.4	2.8	10.8
LnGrp LOS	C	C	A	A	B
Approach Vol, veh/h	128		1751		970
Approach Delay, s/veh	23.9		5.3		3.9
Approach LOS	C		A		A
Assigned Phs		2		6	8
Phs Duration (G+Y+Rc), s		43.4		43.4	11.1
Change Period (Y+Rc), s		* 6		* 6	6.0
Max Green Setting (Gmax), s		* 50		* 50	30.0
Max Q Clear Time (g_c+H1), s		17.7		20.7	4.1
Green Ext Time (p_c), s		17.6		16.7	0.2
HCM 2010 Ctrl Delay			5.6		
HCM 2010 LOS			A		

\* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

**Scottsdale & Pinnacle Peak TIMA**

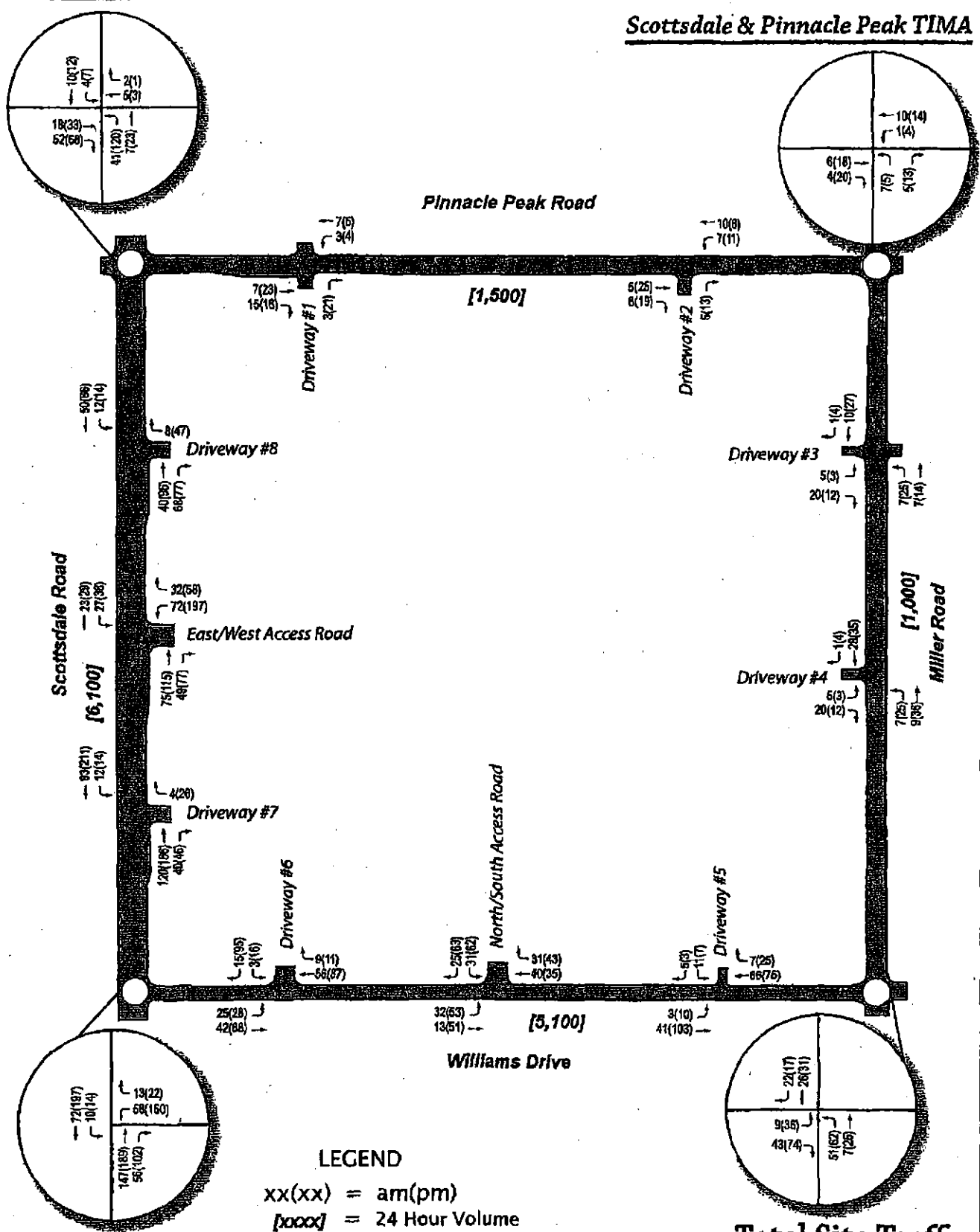


FIGURE 8

Timings  
3: Scottsdale Road & Williams Drive

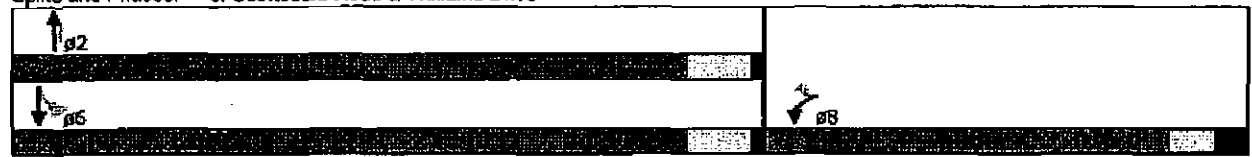
Existing AM + Site Traffic  
11/15/2014



	←	↙	↑	↘	→	↓
Lane Configurations	↙	↙	↑↑	↘	↘	↑↑
Volume (vph)	188	42	820	148	76	1712
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	6.0	6.0	10.0	10.0	10.0	10.0
Minimum Split (s)	12.0	12.0	16.0	16.0	16.0	16.0
Total Split (s)	36.0	36.0	56.0	56.0	56.0	56.0
Total Split (%)	39.1%	39.1%	60.9%	60.9%	60.9%	60.9%
Yellow Time (s)	3.6	3.6	4.9	4.9	4.9	4.9
All-Red Time (s)	2.4	2.4	1.1	1.1	1.1	1.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Ped	Ped	Ped	Ped

Cycle Length: 92  
 Actuated Cycle Length: 68  
 Natural Cycle: 60  
 Control Type: Semi Act-Uncoord

Splits and Phases: 3: Scottsdale Road & Williams Drive



HCM 2010 Signalized Intersection Summary  
 3: Scottsdale Road & Williams Drive

Existing AM + Site Traffic  
 11/15/2014



	W	E	N	S		
Lane Configurations	↵	↗	↕	↖	↵	↕
Volume (veh/h)	168	42	820	148	76	1712
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus. Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	177	44	863	156	80	1802
Adj No. of Lanes	1	1	2	1	1	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	233	208	2359	1055	429	2359
Arrive On Green	0.13	0.13	0.67	0.67	0.67	0.67
Sat Flow, veh/h	1774	1583	3632	1583	551	3632
Grp Volume(v), veh/h	177	44	863	156	80	1802
Grp Sat Flow(s), veh/h/ln	1774	1583	1770	1583	551	1770
Q Serve(g_s), s	5.7	1.5	6.4	2.2	4.4	20.5
Cycle Q Clear(g_c), s	5.7	1.5	6.4	2.2	10.8	20.5
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	233	208	2359	1055	429	2359
V/C Ratio(X)	0.76	0.21	0.37	0.15	0.19	0.76
Avail Cap(c_a), veh/h	896	800	2980	1333	526	2980
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(f)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.9	23.0	4.4	3.7	6.8	6.7
Incr Delay (d2), s/veh	1.9	0.2	0.0	0.0	0.1	0.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
Queue Back of Q(50%), veh/ln	2.9	0.7	3.0	0.9	0.7	10.0
LnGrp Delay(d), s/veh	26.8	23.2	4.4	3.7	6.8	7.4
LnGrp LOS	C	C	A	A	A	A
Approach Vol, veh/h	221		1019			1882
Approach Delay, s/veh	26.1		4.3			7.4
Approach LOS	C		A			A

Assigned Phs	2	6	8
Phs Duration (G+Y+Rc), s	46.6	45.6	13.8
Change Period (Y+Rc), s	* 6	* 6	6.0
Max Green Setting (Gmax), s	* 50	* 50	30.0
Max Q Clear Time (g_c+1), s	8.4	22.5	7.7
Green Ext Time (p_c), s	21.4	17.0	0.3

HCM 2010 Ctrl Delay	7.7
HCM 2010 LOS	A

\* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Timings  
3: Scottsdale Road & Williams Drive

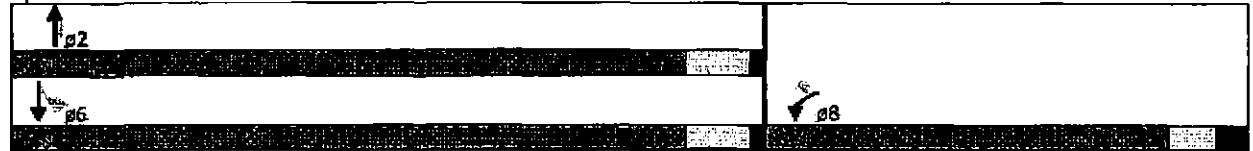
Existing PM + Site Traffic  
11/15/2014



	WBR	WBR	NI	WBR	WBR	NI
Lane Configurations	↵	↑	↑↑	↑	↵	↑↑
Volume (vph)	230	73	1795	159	36	1097
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	6.0	6.0	10.0	10.0	10.0	10.0
Minimum Spill (s)	12.0	12.0	16.0	16.0	16.0	16.0
Total Split (s)	36.0	36.0	56.0	56.0	56.0	56.0
Total Spill (%)	39.1%	39.1%	60.9%	60.9%	60.9%	60.9%
Yellow Time (s)	3.6	3.6	4.9	4.9	4.9	4.9
All-Red Time (s)	2.4	2.4	1.1	1.1	1.1	1.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Ped	Ped	Ped	Ped

Cycle Length: 92  
 Actuated Cycle Length: 74.2  
 Natural Cycle: 60  
 Control Type: Semi Act-Uncoord

Splits and Phases: 3: Scottsdale Road & Williams Drive



HCM 2010 Signalized Intersection Summary  
 3: Scottsdale Road & Williams Drive

Existing PM + Site Traffic  
 11/15/2014



	↙	↗	↑↑	↖	↘	↑↑
Lane Configurations						
Volume (veh/h)	230	73	1795	169	36	1097
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/in	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	242	77	1889	167	38	1155
Adj No. of Lanes	1	1	2	1	1	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	293	261	2373	1062	158	2373
Arrive On Green	0.17	0.17	0.67	0.67	0.67	0.67
Sat Flow, veh/h	1774	1583	3632	1583	203	3632
Grp Volume(v), veh/h	242	77	1889	167	38	1155
Grp Sat Flow(s), veh/h/in	1774	1583	1770	1583	203	1770
Q Serve(g_s), s	9.6	3.1	27.5	2.8	11.9	11.7
Cycle Q Clear(g_c), s	9.6	3.1	27.5	2.8	39.4	11.7
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	293	261	2373	1062	158	2373
V/C Ratio(X)	0.83	0.29	0.80	0.16	0.24	0.49
Avail Cap(c_a), veh/h	729	650	2423	1084	161	2423
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(f)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.5	26.8	8.5	4.4	22.4	5.9
Incr Delay (d2), s/veh	2.3	0.2	1.7	0.0	0.3	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/in	4.9	1.4	13.7	1.2	0.7	5.6
LnGrp Delay(d), s/veh	31.7	27.0	10.2	4.5	22.7	5.9
LnGrp LOS	C	C	B	A	C	A
Approach Vol, veh/h	319		2056			1193
Approach Delay, s/veh	30.6		9.8			6.5
Approach LOS	C		A			A

Assigned Phs	2	6	8
Phs Duration (G+Y+Rc), s	55.0	55.0	18.1
Change Period (Y+Rc), s	* 6	* 6	6.0
Max Green Setting (Gmax), s	* 50	* 50	30.0
Max Q Clear Time (g_c+H1), s	29.5	41.4	11.6
Green Ext Time (p_c), s	15.9	7.5	0.4

HCM 2010 Ctrl Delay	10.5
HCM 2010 LOS	B

\* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



# Affidavit of Posting

Required: Signed, Notarized originals.  
Recommended: E-mail copy to your project coordinator.

Project Under Consideration Sign (White)       Public Hearing Notice Sign (Red)

Case Number: 15-ZN-2005#3

Project Name: \_\_\_\_\_

Location: SEC Scottsdale Rd. & Williams Dr.

Site Posting Date: 11/10/14

Applicant Name: Berry Riddell & Rosensteel, LLC.

Sign Company Name: Dynamite Signs, Inc.

Phone Number: 480-585-3031

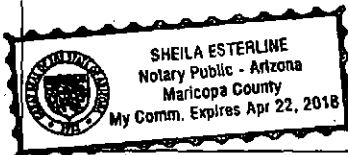
I confirm that the site has been posted as indicated by the Project Manager for the case as listed above.

*[Signature]*  
Applicant Signature

11.10.14  
Date

Return completed original notarized affidavit AND pictures to the Current Planning Office no later than 14 days after your application submittal.

Acknowledged before me this the 11 day of Nov 2014



*Sheila Esterline*  
Notary Public

My commission expires: Apr 22, 2018

**City of Scottsdale -- Current Planning Division**

7447 E Indian School Road, Suite 105, Scottsdale, AZ 85251 • Phone: 480-312-7000 • Fax: 480-312-7088