Terry O. Brown P.E.

Admiral Beverage Development

(Rio Bravo Blvd / Prince St)

Traffic Impact Study

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F I N A L

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Prepared for:

Ronald R. Bohannan
Tierra West, LLC
5571 Midway Park Place NE
Albuquerque, NM 87109

TERRY O. BROWN
NEW MEXICO
6407
LICENSED PROFESSIONAL ENGINEER

Terry O. Brown P.E.
P.O. Box 92051
Albuquerque, NM 87199
505 · 883 · 8807

Rio Bravo / Broadway Commercial Development
(NW Corner of Rio Bravo / Broadway)
Traffic Impact Analysis

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Admiral Beverage Development
(Rio Bravo Blvd / Prince St)
Traffic Impact Analysis

Introduction

The purpose of this study is to evaluate the transportation conditions before and after implementation of the proposed Admiral Beverage Development and determine the impact of the development on the adjacent transportation system. The recommendations of this study will provide measures to mitigate the impact of the development of the site plan on critical intersections and street segments. This study is prepared to meet the requirements of the New Mexico Department of Transportation (District #3) and Bernalillo County associated with its review of the Admiral Beverage Development as shown on the plan on Pages A-3 and A-4 in the Appendix of this report.

Study Procedures

A scoping meeting was held with Bernalillo County Transportation staff on March 26, 2012 to discuss scope and methodology to be utilized within the proposed Admiral Beverage Dev. Traffic Impact Study. Specific items included format, intersections to be studied, intersection analysis procedures, existing traffic counts, trip distribution methodology, and implementation year definition. Additionally, the District 3 Traffic Engineer for the New Mexico Department of Transportation was contacted by e-mail and responded with the Department of Transportation's requirements.

Intersection capacity analyses were performed in accordance with the procedures for signalized and unsignalized intersections utilized in the Synchro (Version 7, Build 773, Rev 8) Transportation System analysis software program as required by the New Mexico Department of Transportation and other local governments. Synchro software deviates from the 2000 Highway Capacity Manual methods in several areas. The results obtained using Synchro software are generally deemed by the reviewing agencies to be relatively close to those based on the 2000 Highway Capacity Manual in most cases.

Intersections targeted for analysis in this study include Rio Bravo Blvd / Broadway Blvd, Rio Bravo Blvd / Prince St, and Rio Bravo Blvd / Second St. In addition, the proposed driveways for the site will be analyzed.

Study Area Characteristics

The subject area of land discussed in this report is bound on the west by Prince St and on the north by Rio Bravo Blvd. See the Admiral Beverage Development site map on Page A-3 in the Appendix of this report. The total area encompassed by this project is approximately 10 acres. The project consists of mixed commercial uses. A vicinity map showing the location of the project is included on Page A-2 in the Appendix of this report.

Generally, the adjacent land uses in the area of this project are M-2. The property on which this project is proposed is also zoned M-2. There are other proposed developments in the vicinity of this project including a commercial development at the northeast corner and the southwest corner of Rio Bravo / Broadway Blvd. There are two proposed developments along the south side of Rio Bravo Blvd. east of Broadway Blvd. The proposed development on the hard southeast corner of Rio Bravo / Broadway is called the "Rio Bravo Commerce Center" and is a relatively small office / warehouse development. The larger development to the east and to the south of the Rio Bravo Commerce Center is known as Neilsen Industrial Park.

The expected year of implementation of the Admiral Beverage Warehouse portion of the project is 2014. A horizon year of 2024 will also be analyzed in this study, which includes an Industrial Park in addition to the Admiral Beverage Warehouse.

Two access points for this new site will be off of Prince St as a full access driveway and the fourth leg of the intersection of King Rd / Prince St.

Rio Bravo Blvd and Broadway Blvd are classified as a Principal Arterial Roadways on the Long Range Roadway Plan for the Albuquerque Urban Area. Rio Bravo Blvd is generally a four lane urban facility with raised medians. It will ultimately be a six lane roadway facility. The posted speed limit along Rio Bravo Blvd in the vicinity of the project is 45 MPH. Broadway Blvd is generally a four lane urban facility with raised medians. The posted speed limit along Broadway Blvd in the vicinity of this project is 55 MPH.

Second St is classified as a Minor Arterial Roadway on the Long Range Roadway Plan for the Albuquerque Urban Area. It is generally a two lane urban facility with raised medians. The posted speed limit along Second St in the vicinity of this project is 30 MPH.

The Long Range Roadway Plan for the Albuquerque Urban Area Map is included in the report on Page A-5 of the Appendix.

Description of Proposed Development

The Admiral Beverage Development is a proposed mixed use commercial project. The proposed development is expected to consist of a 238,000 S.F. Warehouse facility for the 2014 build year and a 17,100 S.F. Industrial Park for the 2024 build year. Proposed uses are speculative and, hence, are subject to change. The proposed land use scenario, though, should provide a representative traffic generation rate for most development scenarios associated with development of this property. If the property were to develop in a manner significantly different than the proposed plan considered in this report such that the number of generated trips are significantly greater, then an update to this study may be required.

Access to the property is proposed via a full access drive off of Prince St for the 2014 condition and an extension of the east leg of King St for the 2024 condition.

Trip Generation Rates

Trip generation rates for this proposed development were projected based on data contained in the Institute of Transportation Engineers (ITE) Trip Generation Manual, 8th Edition published in 2008. The following table lists the proposed assumed land uses in the project plan along with the calculated daily, AM, and PM Peak Hour trip generation rates resulting from application of the trip generation rate equations contained in the ITE Trip Generation Manual:

Admiral Beverage Distribution Center Project (Rio Bravo Blvd. / Prince St.)

Trip Generation Data (ITE Trip Generation Manual - 8th Edition)

COMMENT	USE (ITE CODE) DESCRIPTION		Units	24 HR VOL GROSS	A. M. PEAK HR. ENTER	A. M. PEAK HR. EXIT	P. M. PEAK HR. ENTER	P. M. PEAK HR. EXIT
	Summary Sheet							
Admiral Tract	Warehousing (150)		238.00	1,039	105	28	36	67
Future Tracts	Industrial Park (130)		17.10	1,415	137	28	37	141
		Subtotal		**2,454**	**242**	**56**	**73**	**208**

The preceding table demonstrates the calculated trip generation rate based on the proposed plan and the projected uses for each building on the site. No adjustment was made to account for pass-by trips or mixed use (internal capture) traffic reductions. Trip Generation Rate Summary Table and Individual Trip Generation Rate Worksheets for individual land uses are contained on Pages A-7 thru A-9 in the Appendix.

Trip Distribution / Trip Assignments

Primary and Diverted Linked Trips:

Office / Laboratory Land Uses

Primary and diverted linked trips for the land use developments were distributed proportionally to the 2015, 2020 & 2035 projected population / employment of Subareas citywide inversely proportional to the distance from the project to the subarea. Population data for the years 2015 and 2025 were taken from the 2035 Socioeconomic Forecasts for Data Analysis Subzones provided by the Mid Region Council of Governments (MRCOG). Population / employment data from the years 2015 and 2025 was interpolated linearly to obtain 2014 population data to utilize for this analysis. Population Subzones were grouped based on the most likely major street(s) or route(s) to the subject development. The trip distribution worksheets and associated map of subareas and data analysis subzones is shown on Appendix Pages A-10 thru A-15.

Trip assignments are first made on a percentage basis derived from data established in the trip distribution determination process and logical routing. Those percentages are then applied to the projected trips to determine individual traffic movements. Percentage trip assignments are shown on Appendix Pages A-16 thru A-17b.

Analysis of Existing Conditions

2010 Average Weekday Traffic Volumes (AWDT) for major streets in the site plan area are shown on Page A-6 of the Appendix.

An analysis of the existing conditions of the transportation system was not provided in this report for two primary reasons:

1) The implementation year analysis (2014) is only about two years into the future and significantly represents existing conditions considering approved nearby developments that have not been implemented.
2) The existing volumes do not reflect new volumes that will be present shortly resulting from land development projects that have been approved by the County and / or the State within the last two years, but have not yet been implemented. Therefore, an existing condition analysis would under-report the delays present at the intersections.

Background Traffic Growth

Implementation year (2014) background annual traffic growth rates for the project were replicated from a recently submitted Traffic Impact Study for a development at the NW corner of Rio Bravo Blvd / Broadway. Horizon year (2024) background annual traffic growth rates for the project were obtained from the MRCOG Forecast Model (2035 Data Set). This model accounts for the trips generated by the future development of the vacant property located along the west side of Prince St. between King Rd. and Gore Ave.

Projected Peak Hour Turning Movements for 2014 Buildout and 2024 Horizon Year

The annual growth rates were applied to the most recent peak hour traffic count volumes and trips were added for Neilsen Industrial Park, KAN Industrial Park, Neilsen Commercial Development, and Rio Bravo Commerce Center to account for trips generated by projects that are planned to be constructed in the near future. The sum of the existing volumes plus growth plus other proposed projects constitute the 2014 NO BUILD volumes utilized in this report. To these volumes, the generated trips based on implementation of the proposed Admiral Beverage Development were added to obtain the 2014 BUILD volumes utilized for the 2014 BUILD Condition analyses. The same procedure was used to obtain the 2024 NO BUILD and BUILD volumes. See Appendix Pages A-18 thru A-29 for further information regarding the 2014 turning movement volumes and A-29a thru A-34 regarding the 2024 turning movement volumes.

Implementation Year and Horizon Year Traffic Analysis

Classification of levels-of-service and delay for signalized and unsignalized intersections will be made based on criteria established by Synchro, Version 7 (Build 763) computer modeling software which approximates the 2000 Highway Capacity Manual methodology. The average control delay is calculated for each intersection and for each lane group of each leg of the intersection. The control delay then determines the level-of-service based on the following tables:

LEVEL-OF-SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS

Average Delay (secs)	Level-of-Service
≤ 10	A
> 10 and ≤ 20	B
> 20 and ≤ 35	C
> 35 and ≤ 55	D
> 55 and ≤ 80	E
> 80	F

LEVEL-OF-SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS

Average Delay (secs)	Level-of-Service
≤ 10	A
> 10 and ≤ 15	B
> 15 and ≤ 25	C
> 25 and ≤ 35	D
> 35 and ≤ 50	E
> 50	F

Generally speaking, a Level-of-Service D or better is an acceptable parameter for design purposes.

Following is a summary of the results of the Synchro Analysis for each of the intersections targeted for evaluation in this report:

Intersection #1 – Rio Bravo Blvd. / Prince St. - Pages A-35 thru A-38a

The following table provides a summary of the Levels-of-Service / delays associated with each case analyzed in this study:

Intersection: **1 - Rio Bravo Blvd / Prince St**

		2014 AM Peak Hour BUILD							2014 PM Peak Hour BUILD						
		(EXIST. GEOM.)				CASE 2				(EXIST. GEOM.)					
		NO BUILD		BUILD		BUILD				NO BUILD		BUILD			
		Lanes	LOS-Delay	Lanes	LOS-Delay	Lanes	LOS-Delay			Lanes	LOS-Delay	Lanes	LOS-Delay		
EB	L	1	A - 3.0	1	A - 2.5	1	A - 0.0		L	1	E - 63.9	1	D - 54.7		
	T	2	A - 8.3	2	B - 10.2	2	A - 0.0		T	2	B - 10.1	2	B - 11.0		
	R	1	A - 0.9	1	A - 0.5	1	A - 0.0		R	1	B - 10.5	1	B - 11.3		
WB	L	1	B - 12.6	1	D - 49.8	1	A - 0.0		L	1	A - 4.1	1	A - 5.2		
	T	2	B - 11.7	2	A - 3.7	2	A - 0.0		T	2	B - 15.1	2	B - 15.6		
	R	1	C - 22.6	1	A - 4.5	1	A - 0.0		R	1	A - 1.2	1	A - 1.2		
NB	L	1	E - 60.7	1	E - 70.5	1	A - 0.0		L	1	**F** - 101	1	**F** - 133		
	T	1	E - 57.7	1	E - 64.7	1	A - 0.0		T	1	E - 61.0	1	E - 61.2		
	R	>	E - 57.7	>	E - 64.7	>	A - 0.0		R	>	E - 61.0	>	E - 61.2		
SB	L	1	D - 52.8	1	D - 53.5	1	A - 0.0		L	1	E - 57.8	1	E - 57.3		
	T	1	E - 56.6	1	E - 57.2	1	A - 0.0		T	1	E - 60.1	1	E - 59.3		
	R	>	E - 56.6	>	E - 57.2	>	A - 0.0		R	>	E - 60.1	>	E - 59.3		
Intersection:			***B - 12.9***		***B - 14.0***		***A - 0.0***				***B - 18.4***		***C - 20.9***		

Note: ">" designates a shared right or left turn lane next to a thru lane.

The implementation year analysis of the intersection of Rio Bravo Blvd. / Prince St. in this report demonstrates that the projected levels-of-service and delays are acceptable for the AM Peak Hour and PM Peak Hour NO BUILD and BUILD conditions. The proposed development increases the delay at the intersection from 1.1 to 2.5 seconds. Therefore, this study concludes that the development presents no significant impact to the calculated delays at the intersection of Rio Bravo Blvd. / Prince St.

(See additional analysis for Rio Bravo / Prince on Appendix Pages A-65 thru A-70 to address New Mexico Department of Transportation's concerning regarding effect of implementing dual westbound left turn lanes on Rio Bravo.)

Intersection: **1 - RIO BRAVO BLVD / PRINCE ST**

		2024 AM Peak Hour BUILD					2024 PM Peak Hour BUILD			
		(EXIST. GEOM.)					(EXIST. GEOM.)			
		NO BUILD		BUILD			NO BUILD		BUILD	
		Lanes	LOS-Delay	Lanes	LOS-Delay		Lanes	LOS-Delay	Lanes	LOS-Delay
EB	L	1	A - 5.6	1	A - 3.6	L	1	**F** - 91.5	1	E - 60.3
	T	2	D - 48.2	2	**F** - 110	T	2	A - 5.9	2	B - 16.4
	R	1	A - 0.6	1	A - 0.4	R	1	A - 0.6	1	B - 11.4
WB	L	1	E - 56.7	1	E - 79.9	L	1	A - 8.9	1	B - 19.1
	T	2	A - 7.0	2	A - 4.6	T	2	E - 68.6	2	**F** - 92.1
	R	1	A - 6.4	1	A - 0.8	R	1	A - 3.0	1	A - 2.8
NB	L	1	**F** - 84.3	1	E - 69.3	L	1	**F** - 193	1	**F** - 177
	T	1	E - 69.7	1	E - 75.6	T	1	E - 61.3	1	**F** - 87.1
	R	>	E - 69.7	>	E - 75.6	R	>	E - 61.3	>	**F** - 87.1
SB	L	1	D - 53.5	1	D - 50.7	L	1	E - 62.9	1	E - 57.9
	T	1	E - 56.9	1	D - 53.6	T	1	E - 60.3	1	D - 54.6
	R	>	E - 56.9	>	D - 53.6	R	>	E - 60.3	>	D - 54.6
Intersection:		***D - 37.5***		***E - 73.4***			***D - 50.6***		***E - 68.3***	

Note: ">" designates a shared right or left turn lane next to a thru lane.

The horizon year analysis of the intersection of Rio Bravo Blvd. / Prince St. in this report demonstrates that the projected levels-of-service and delays are acceptable for the AM Peak Hour and PM Peak Hour NO BUILD and BUILD conditions. The proposed development increases the delay at the intersection from 17.7 to 35.9 seconds. Therefore, this study concludes that the development presents no significant impact to the calculated delays at the intersection of Rio Bravo Blvd. / Prince St.

The following table summarizes the results of the 95th percentile queuing analysis based on Poisson's arrival equations for the auxiliary lanes at the intersection:

Queueing Analysis Summary Sheet

Project: Admiral Beverage Facility (Rio Bravo / Prince)

Intersection: **Rio Bravo Blvd / Prince St**

2014

Approach	Left Turns			Thru Movements				Right Turns		
Eastbound	# Lanes	Vol.	Length	# Lanes	Vol.	Length		# Lanes	Vol.	Length
Existing Lane Length	*1*	*41*	*430*	*2*	*1,537*	*Cont*		*1*	*37*	*150*
AM NO BUILD Queue	1	53	100	2	1,923	>1,000	*	1	39	75
AM BUILD Queue	**1**	**53**	**100**	**2**	**1,923**	**>1,000**	*	**1**	**65**	**125**
Existing Lane Length	*1*	*19*	*430*	*2*	*774*	*Cont*		*1*	*94*	*150*
PM NO BUILD Queue	1	33	75	2	1,113	750		1	98	175
PM BUILD Queue	**1**	**33**	**75**	**2**	**1,113**	**750**		**1**	**107**	**175**
Westbound	# Lanes	Vol.	Length	# Lanes	Vol.	Length		# Lanes	Vol.	Length
Existing Lane Length	*1*	*35*	*100*	*2*	*576*	*Cont*		*1*	*43*	*290*
AM NO BUILD Queue	1	39	75	2	756	475		1	47	100
AM BUILD Queue	**1**	**113**	**175**	**2**	**756**	**475**		**1**	**47**	**100**
Existing Lane Length	*1*	*106*	*100*	*2*	*1,443*	*Cont*		*1*	*28*	*290*
PM NO BUILD Queue	1	120	**200**	2	1,981	>1,000	*	1	31	75
PM BUILD Queue	**1**	**145**	**225**	**2**	**1,981**	**>1,000**	*	**1**	**31**	**75**
Northbound	# Lanes	Vol.	Length	# Lanes	Vol.	Length		# Lanes	Vol.	Length
Existing Lane Length	*1*	*75*	*255*	*1*	*2*	*Cont*		*0*	*78*	*0*
AM NO BUILD Queue	1	83	125	1	2	0		0	88	150
AM BUILD Queue	**1**	**90**	**150**	**1**	**2**	**0**		**0**	**108**	**175**
Existing Lane Length	*1*	*87*	*255*	*1*	*4*	*Cont*		*0*	*63*	*0*
PM NO BUILD Queue	1	95	**175**	1	4	25		0	69	**125**
PM BUILD Queue	**1**	**112**	**200**	**1**	**4**	**25**		**0**	**116**	**200**
Southbound	# Lanes	Vol.	Length	# Lanes	Vol.	Length		# Lanes	Vol.	Length
Existing Lane Length	*1*	*13*	*460*	*1*	*0*	*Cont*		*0*	*10*	*0*
AM NO BUILD Queue	1	15	50	1	0	0		0	11	25
AM BUILD Queue	**1**	**15**	**50**	**1**	**0**	**0**		**0**	**11**	**25**
Existing Lane Length	*1*	*44*	*460*	*1*	*3*	*Cont*		*0*	*48*	*0*
PM NO BUILD Queue	1	48	100	1	3	25		0	51	100
PM BUILD Queue	**1**	**48**	**100**	**1**	**3**	**25**		**0**	**51**	**100**

	AM	PM
Cycle Length:	110	130

NOTE: Queue lengths are in feet.

The recommendations based on the queueing analysis for the auxiliary lanes at the intersection are summarized in the following table:

Lane Description	Existing Length (Ft)	NO BUILD Length (Ft)	BUILD Length (Ft)	Lengthen Existing Auxiliary Lane to:
Eastbound Left Turn:	430	100	100	No Recommendation
Eastbound Right Turn:*	150	90	90	No Recommendation
Westbound Left Turn:	100	200	225	**225' plus transition.**
Westbound Right Turn:*	290	50	50	No Recommendation
Northbound Left Turn:	255	175	200	No Recommendation
Northbound Right Turn:*	0	80	100	No Recommendation
Southbound Left Turn:	460	100	100	No Recommendation
Southbound Right Turn:*	0	50	50	No Recommendation

* - Calculated right turn queue lengths have been reduced by 50% to account for right-turns-on red and overlap phases.

The queueing analysis recommends that the westbound left turn lane be lengthened to 225 feet plus transition. According to aerial photographs, it appears that this lengthening can be done by eliminating the median landscaping and constructing back-to-back curb and gutter beginning at the taper and ending at the east end of the median. This will actually create a westbound left turn lane of approximately 300 feet with no transition.

It is important to note that this queueing analysis demonstrates that the eastbound thru traffic is the controlling queue and will block the eastbound right turn lane as an existing condition.

Intersection #2 – Rio Bravo Blvd. / Broadway Blvd. - Pages A-39 thru A-42a

The following table provides a summary of the Levels-of-Service / delays associated with each case analyzed in this study:

Intersection: **2 - Rio Bravo Blvd / Broadway Blvd**

		2014 AM Peak Hour BUILD					2014 PM Peak Hour BUILD			
		(EXIST. GEOM.)					(EXIST. GEOM.)			
		NO BUILD		BUILD			NO BUILD		BUILD	
		Lanes	LOS-Delay	Lanes	LOS-Delay		Lanes	LOS-Delay	Lanes	LOS-Delay
EB	L	1	A - 3.9	1	A - 5.5	L	1	**F** - 113	1	**F** - 118
	T	2	C - 24.7	2	C - 25.1	T	2	E - 76.6	2	**F** - 84.5
	R	1	A - 7.1	1	A - 5.6	R	1	D - 36.5	1	C - 34.6
WB	L	2	E - 68.4	2	E - 72.0	L	2	E - 76.0	2	**F** - 83.7
	T	2	B - 14.9	2	B - 16.2	T	2	**F** - 172	2	**F** - 181
	R	1	A - 9.1	1	A - 9.3	R	1	C - 26.2	1	C - 26.2
NB	L	1	**F** - 122	1	**F** - 117	L	1	**F** - 230	1	**F** - 231
	T	2	E - 63.8	2	E - 64.5	T	2	C - 23.7	2	C - 23.7
	R	1	D - 47.5	1	D - 48.9	R	1	C - 25.8	1	C - 26.4
SB	L	1	D - 51.0	1	D - 50.1	L	1	D - 44.9	1	D - 44.1
	T	2	E - 61.5	2	E - 62.2	T	2	E - 76.1	2	E - 76.1
	R	1	D - 44.3	1	D - 44.0	R	1	**F** - 91.9	1	**F** - 93.6
Intersection:			***D - 36.9***		***D - 37.2***			***F - 110***		***F - 115***

Note: ">" designates a shared right or left turn lane next to a thru lane.

The implementation year analysis of the intersection of Rio Bravo Blvd. / Broadway Blvd. in this report demonstrates that the projected levels-of-service and delays are acceptable for the AM Peak Hour NO BUILD and BUILD conditions and the delays are excessive for the PM Peak Hour NO BUILD and BUILD conditions. It is important to note that the BUILD condition only increases the delay by 5 seconds in the PM Peak Hour. The initial analysis in this report is based on existing geometry. It should be noted, though, that previous land development projects have committed to construct dual eastbound left turn lanes on Rio Bravo Blvd. and dual northbound left turn lanes on Broadway Blvd. Construction of these two improvements, when implemented, will provide operational benefit to the PM Peak Hour traffic. Apart from construction of the aforementioned dual eastbound and dual northbound left turn lanes, there is not much else that can be constructed at the intersection to increase its capacity. Therefore, no recommendations are made for the intersection of Rio Bravo Blvd / Broadway Blvd.

Intersection: 2 - RIO BRAVO BLVD / BROADWAY BLVD

		2024 AM Peak Hour BUILD					2024 PM Peak Hour BUILD			
		(EXIST. GEOM.)					(EXIST. GEOM.)			
		NO BUILD		BUILD			NO BUILD		BUILD	
		Lanes	LOS-Delay	Lanes	LOS-Delay		Lanes	LOS-Delay	Lanes	LOS-Delay
EB	L	1	C - 26.9	1	D - 48.6	L	1	D - 37.1	1	D - 52.9
	T	2	**F** - 159	2	**F** - 165	T	2	E - 63.6	2	**F** - 119
	R	1	B - 12.1	1	A - 7.5	R	1	B - 18.7	1	B - 18.3
WB	L	2	**F** - 89.0	2	**F** - 103	L	2	**F** - 214	2	**F** - 277
	T	2	C - 25.2	2	C - 30.0	T	2	**F** - 349	2	**F** - 351
	R	1	B - 13.8	1	B - 14.4	R	1	C - 29.2	1	C - 29.5
NB	L	1	**F** - 212	1	**F** - 222	L	1	**F** - 507	1	**F** - 513
	T	2	**F** - 101	2	**F** - 88.2	T	2	C - 27.1	2	D - 52.3
	R	1	**F** - 194	1	**F** - 194	R	1	**F** - 117	1	**F** - 106
SB	L	1	E - 64.9	1	E - 64.0	L	1	D - 37.6	1	D - 38.2
	T	2	E - 57.3	2	E - 55.6	T	2	**F** - 232	2	**F** - 210
	R	1	D - 40.6	1	D - 40.1	R	1	**F** - 317	1	**F** - 336
Intersection:			**F - *108***		**F - *110***			**F - *230***		**F - *238***

Note: ">" designates a shared right or left turn lane next to a thru lane.

The horizon year analysis of the intersection of Rio Bravo Blvd. / Broadway Blvd. in this report demonstrates that the intersection will experience excessive delays in the AM Peak Hour and PM Peak Hour NO BUILD and BUILD conditions. The BUILD condition only increases the delay at the intersection from 2 to 8 seconds. Therefore, building the proposed development does not significantly adversely impact the intersection and no recommendations are made for the intersection of Rio Bravo Blvd. / Broadway Blvd.

The following table summarizes the results of the 95th percentile queueing analysis based on Poisson's arrival equations for the auxiliary lanes at the intersection:

Queueing Analysis Summary Sheet

Project: Admiral Beverage Facility (Rio Bravo / Prince)

Intersection: **Rio Bravo Blvd / Broadway Blvd**

2014

Approach	Left Turns			Thru Movements				Right Turns		
Eastbound	# Lanes	Vol.	Length	# Lanes	Vol.	Length		# Lanes	Vol.	Length
Existing Lane Length	*1*	*151*	*270*	*2*	*1,400*	*Cont*		*1*	*104*	*250*
AM NO BUILD Queue	1	163	250	2	1,538	>1,000	*	1	382	500
AM BUILD Queue	**1**	**164**	**250**	**2**	**1,555**	**>1,000**	*	**1**	**384**	**500**
Existing Lane Length	*1*	*105*	*270*	*2*	*766*	*Cont*		*1*	*114*	*250*
PM NO BUILD Queue	1	116	200	2	815	**575**		1	399	525
PM BUILD Queue	**1**	**118**	**200**	**2**	**856**	**600**		**1**	**403**	**525**
Westbound	# Lanes	Vol.	Length	# Lanes	Vol.	Length		# Lanes	Vol.	Length
Existing Lane Length	*2*	*155*	*360*	*2*	*562*	*Cont*		*1*	*26*	*240*
AM NO BUILD Queue	2	397	325	2	659	475		1	34	75
AM BUILD Queue	**2**	**397**	**325**	**2**	**723**	**525**		**1**	**34**	**75**
Existing Lane Length	*2*	*214*	*360*	*2*	*1,223*	*Cont*		*1*	*24*	*240*
PM NO BUILD Queue	2	283	250	2	1,295	**850**		1	30	75
PM BUILD Queue	**2**	**283**	**250**	**2**	**1,317**	**875**		**1**	**30**	**75**
Northbound	# Lanes	Vol.	Length	# Lanes	Vol.	Length		# Lanes	Vol.	Length
Existing Lane Length	*1*	*60*	*560*	*2*	*176*	*Cont*		*1*	*220*	*560*
AM NO BUILD Queue	1	215	325	2	311	275		1	340	450
AM BUILD Queue	**1**	**222**	**325**	**2**	**311**	**275**		**1**	**340**	**450**
Existing Lane Length	*1*	*174*	*560*	*2*	*163*	*Cont*		*1*	*260*	*560*
PM NO BUILD Queue	1	714	850	2	307	250		1	530	675
PM BUILD Queue	**1**	**716**	**850**	**2**	**307**	**250**		**1**	**530**	**675**
Southbound	# Lanes	Vol.	Length	# Lanes	Vol.	Length		# Lanes	Vol.	Length
Existing Lane Length	*1*	*15*	*120*	*2*	*87*	*Cont*		*1*	*65*	*280*
AM NO BUILD Queue	1	54	100	2	149	150		1	78	150
AM BUILD Queue	**1**	**54**	**100**	**2**	**149**	**150**		**1**	**81**	**150**
Existing Lane Length	*1*	*15*	*120*	*2*	*246*	*Cont*		*1*	*219*	*280*
PM NO BUILD Queue	1	64	125	2	387	300		1	304	425
PM BUILD Queue	**1**	**64**	**125**	**2**	**387**	**300**		**1**	**305**	**425**

	AM	PM
Cycle Length:	130	130

NOTE: Queue lengths are in feet.

The recommendations based on the queueing analysis for the auxiliary lanes at the intersection are summarized in the following table:

Lane Description	Existing Length (Ft)	NO BUILD Length (Ft)	BUILD Length (Ft)	Lengthen Existing Auxiliary Lane to:
Eastbound Left Turn:	270	250	250	No Recommendation
Eastbound Right Turn:*	250	260	260	No Recommendation
Westbound Left Turn:	360	325	325	No Recommendation
Westbound Right Turn:*	240	40	40	No Recommendation
Northbound Left Turn:	560	850	850	**850' plus transition.**
Northbound Right Turn:*	560	340	340	No Recommendation
Southbound Left Turn:	120	125	125	No Recommendation
Southbound Right Turn:*	280	210	210	No Recommendation

* - Calculated right turn queue lengths have been reduced by 50% to account for right-turns-on red and overlap phases.

The queueing analysis recommends that the northbound left turn lane be lengthened to 850 feet plus transition. According to aerial photographs, it appears that this lengthening can be done. Therefore, this analysis recommends lengthening the northbound left turn lane to 850 feet plus transition at the intersection of Rio Bravo Blvd. / Broadway Blvd.

Intersection #3 – Rio Bravo Blvd. /2nd St. - Pages A-43 thru A-46a

The following table provides a summary of the Levels-of-Service / delays associated with each case analyzed in this study:

Intersection: 3 - Rio Bravo Blvd / Second St

		2014 AM Peak Hour BUILD					2014 PM Peak Hour BUILD			
		(EXIST. GEOM.)					(EXIST. GEOM.)			
		NO BUILD		BUILD			NO BUILD		BUILD	
		Lanes	LOS-Delay	Lanes	LOS-Delay		Lanes	LOS-Delay	Lanes	LOS-Delay
EB	L	1	C - 23.5	1	C - 23.8	L	1	**F** - 189	1	**F** - 189
	T	2	D - 43.3	2	D - 46.8	T	2	D - 37.6	2	D - 37.9
	R	1	A - 9.2	1	A - 9.2	R	1	B - 17.0	1	B - 17.0
WB	L	1	D - 43.1	1	D - 39.2	L	1	B - 16.9	1	B - 18.1
	T	2	C - 23.2	2	C - 28.7	T	2	**F** - 181	2	**F** - 187
	R	1	C - 21.5	1	C - 25.8	R	1	B - 11.6	1	B - 11.7
NB	L	1	D - 49.3	1	D - 49.3	L	1	**F** - 243	1	**F** - 243
	T	1	**F** - 91.2	1	**F** - 91.2	T	1	D - 41.0	1	D - 41.0
	R	>	**F** - 91.2	>	**F** - 91.2	R	>	D - 41.0	>	D - 41.0
SB	L	1	**F** - 82.9	1	**F** - 84.0	L	1	C - 30.2	1	C - 30.2
	T	1	D - 54.8	1	D - 54.8	T	1	**F** - 217	1	**F** - 217
	R	>	D - 54.8	>	D - 54.8	R	>	**F** - 217	>	**F** - 217
Intersection:		***D - 41.5***			***D - 44.2***			***F - 134***		***F - 136***

Note: ">" designates a shared right or left turn lane next to a thru lane.

The implementation year analysis of the intersection of Rio Bravo Blvd. / Second St. in this report demonstrates that the projected levels-of-service and delays are acceptable for the AM Peak Hour NO BUILD and BUILD conditions and the delays are excessive for the PM Peak Hour NO BUILD and BUILD conditions. It is important to note that the BUILD condition only increases the delay by 2 seconds in the PM Peak Hour. A new southbound right turn lane was recommended for this intersection in a previous development TIS. This improvement will reduce the delay considerably at the intersection for both the PM Peak Hour NO BUILD and BUILD conditions. Therefore, no recommendation is made for the intersection of Rio Bravo Blvd. / Second St.

Intersection: 3 - RIO BRAVO BLVD / SECOND ST

		2024 AM Peak Hour BUILD					2024 PM Peak Hour BUILD			
		(EXIST. GEOM.)					(EXIST. GEOM.)			
		NO BUILD		BUILD			NO BUILD		BUILD	
		Lanes	LOS-Delay	Lanes	LOS-Delay		Lanes	LOS-Delay	Lanes	LOS-Delay
EB	L	1	**F** - 310	1	**F** - 278	L	1	**F** - 414	1	**F** - 414
	T	2	**F** - 319	2	**F** - 336	T	2	**F** - 229	2	**F** - 222
	R	1	B - 11.2	1	B - 11.2	R	1	B - 19.9	1	B - 19.3
WB	L	1	E - 72.9	1	E - 75.6	L	1	E - 58.4	1	E - 59.8
	T	2	D - 36.0	2	E - 55.4	T	2	**F** - 571	2	**F** - 564
	R	1	B - 19.6	1	C - 28.9	R	1	C - 24.8	1	B - 17.0
NB	L	1	**F** - 283	1	**F** - 283	L	1	**F** - 760	1	**F** - 759
	T	1	**F** - 263	1	**F** - 264	T	1	E - 64.9	1	E - 69.8
	R	>	**F** - 263	>	**F** - 265	R	>	E - 64.9	>	E - 69.8
SB	L	1	**F** - 281	1	**F** - 287	L	1	**F** - 102	1	**F** - 115
	T	1	E - 61.5	1	E - 61.5	T	1	**F** - 588	1	**F** - 614
	R	>	E - 61.5	>	E - 61.5	R	>	**F** - 588	>	**F** - 614
Intersection:			**F - *232***		**F - *240***			**F - *420***		**F - *422***

Note: ">" designates a shared right or left turn lane next to a thru lane.

The horizon year analysis of the intersection of Rio Bravo Blvd. / Second St in this report demonstrates that the intersection will experience excessive delays in the AM Peak Hour and PM Peak Hour NO BUILD and BUILD conditions. The BUILD condition only increases the delay at the intersection from 2 to 8 seconds. Therefore, building the proposed development does not significantly adversely impact the intersection and no recommendations are made for the intersection of Rio Bravo Blvd. / Second St.

The following table summarizes the results of the 95th percentile queueing analysis based on Poisson's arrival equations for the auxiliary lanes at the intersection:

Queueing Analysis Summary Sheet

Project: Admiral Beverage Facility (Rio Bravo / Prince)

Intersection: **Rio Bravo Blvd / Second St**

2014

Approach	Left Turns			Thru Movements				Right Turns		
Eastbound	# Lanes	Vol.	Length	# Lanes	Vol.	Length		# Lanes	Vol.	Length
Existing Lane Length	*1*	*329*	*180*	*2*	*1,333*	*Cont*		*1*	*162*	*280*
AM NO BUILD Queue	1	366	475	2	1,712	>1,000	*	1	180	275
AM BUILD Queue	**1**	**366**	**475**	**2**	**1,737**	**>1,000**	*	**1**	**180**	**275**
Existing Lane Length	*1*	*116*	*180*	*2*	*569*	*Cont*		*1*	*131*	*280*
PM NO BUILD Queue	1	137	225	2	908	625		1	155	250
PM BUILD Queue	**1**	**137**	**225**	**2**	**917**	**625**		**1**	**155**	**250**
Westbound	# Lanes	Vol.	Length	# Lanes	Vol.	Length		# Lanes	Vol.	Length
Existing Lane Length	*1*	*45*	*190*	*2*	*529*	*Cont*		*1*	*69*	*175*
AM NO BUILD Queue	1	73	150	2	665	475		1	100	175
AM BUILD Queue	**1**	**73**	**150**	**2**	**672**	**500**		**1**	**100**	**175**
Existing Lane Length	*1*	*30*	*190*	*2*	*1,296*	*Cont*		*1*	*57*	*175*
PM NO BUILD Queue	1	105	175	2	1,710	>1,000	*	1	137	225
PM BUILD Queue	**1**	**105**	**175**	**2**	**1,726**	**>1,000**	*	**1**	**137**	**225**
Northbound	# Lanes	Vol.	Length	# Lanes	Vol.	Length		# Lanes	Vol.	Length
Existing Lane Length	*1*	*128*	*120*	*1*	*110*	*Cont*		*0*	*52*	*0*
AM NO BUILD Queue	1	182	275	1	157	250		0	114	200
AM BUILD Queue	**1**	**182**	**275**	**1**	**157**	**250**		**0**	**114**	**200**
Existing Lane Length	*1*	*213*	*120*	*1*	*74*	*Cont*		*0*	*58*	*0*
PM NO BUILD Queue	1	281	400	1	97	175		0	130	200
PM BUILD Queue	**1**	**281**	**400**	**1**	**97**	**175**		**0**	**130**	**200**
Southbound	# Lanes	Vol.	Length	# Lanes	Vol.	Length		# Lanes	Vol.	Length
Existing Lane Length	*1*	*79*	*150*	*1*	*65*	*Cont*		*0*	*63*	*0*
AM NO BUILD Queue	1	142	225	1	74	150		0	71	125
AM BUILD Queue	**1**	**143**	**225**	**1**	**74**	**150**		**0**	**71**	**125**
Existing Lane Length	*1*	*112*	*150*	*1*	*98*	*Cont*		*0*	*399*	*0*
PM NO BUILD Queue	1	163	250	1	118	200		0	481	600
PM BUILD Queue	**1**	**163**	**250**	**1**	**118**	**200**		**0**	**481**	**600**

	AM	PM
Cycle Length:	130	130

NOTE: Queue lengths are in feet.

The recommendations based on the queueing analysis for the auxiliary lanes at the intersection are summarized in the following table:

Lane Description	Existing Length (Ft)	NO BUILD Length (Ft)	BUILD Length (Ft)	Lengthen Existing Auxiliary Lane to:
Eastbound Left Turn:	180	475	475	**475' plus transition.**
Eastbound Right Turn:*	280	140	140	No Recommendation
Westbound Left Turn:	190	175	175	No Recommendation
Westbound Right Turn:*	175	110	110	No Recommendation
Northbound Left Turn:	120	400	400	**400' plus transition.**
Northbound Right Turn:*	0	100	100	No Recommendation
Southbound Left Turn:	150	250	250	**250' plus transition.**
Southbound Right Turn:*	0	300	300	No Recommendation

* - Calculated right turn queue lengths have been reduced by 50% to account for right-turns-on red and overlap phases.

The queueing analysis recommends that the eastbound left turn lane be lengthened to 475 feet plus transition, the northbound left turn lane be lengthened to 400 feet plus transition, and the southbound left turn lane be lengthened to 250 feet plus transition. According to aerial photographs, the eastbound left turn lane cannot be lengthened without adversely affecting the driveway to the west of the intersection and the northbound and southbound left turn lanes probably cannot be lengthened without encroaching on railroad right-of-way. Therefore, this analysis makes no recommendations for the auxiliary lanes at the intersection of Rio Bravo Blvd. / Broadway Blvd.

Intersection #4 –Driveway 'A' / Prince St. - Pages A-47 thru A-54

The following table provides a summary of the Levels-of-Service / delays associated with each case analyzed for the implementation year (2014) in this study:

Intersection: **4 - Driveway 'A' / Prince St**

		2014 AM Peak Hour BUILD					2014 PM Peak Hour BUILD				
		(EXIST. GEOM.)					(EXIST. GEOM.)				
		NO BUILD		BUILD			NO BUILD		BUILD		
		Lanes	LOS-Delay	Lanes	LOS-Delay		Lanes	LOS-Delay	Lanes	LOS-Delay	
EB	L	>	A - 10.0	>	B - 11.5	L	>	B - 11.6	>	B - 14.4	
EB	T	1	A - 10.0	1	B - 11.5	T	1	B - 11.6	1	B - 14.4	
EB	R	>	A - 10.0	>	B - 11.5	R	>	B - 11.6	>	B - 14.4	
WB	L	>	A - 9.7	>	B - 10.6	L	>	B - 10.9	>	B - 12.7	
WB	T	1	A - 9.7	1	B - 10.6	T	1	B - 10.9	1	B - 12.7	
NB	L	1	A - 7.4	1	A - 7.6	L	1	A - 7.8	1	A - 7.9	
SB	L	1	A - 7.6	1	A - 7.7	L	1	A - 7.7	1	A - 8.0	
Intersection:			*u - N/A*		*u - N/A*			*u - N/A*		*u - N/A*	

Note: ">" designates a shared right or left turn lane next to a thru lane.

Driveway 'A' is proposed as a full access unsignalized intersection. The analysis demonstrates that the Levels-of-Service and delays are acceptable for all conditions analyzed. Therefore, no recommendations are made for the intersection of Driveway 'A' / Prince St.

The following table provides a summary of the Levels-of-Service / delays associated with each case analyzed for the horizon year (2024) in this study:

Intersection: **4 - Driveway 'A' / Prince St**

		2024 AM Peak Hour BUILD					2024 PM Peak Hour BUILD				
		(EXIST. GEOM.)					(EXIST. GEOM.)				
		NO BUILD		BUILD			NO BUILD		BUILD		
		Lanes	LOS-Delay	Lanes	LOS-Delay		Lanes	LOS-Delay	Lanes	LOS-Delay	
EB	L	>	B - 10.6	>	C - 22.1	L	>	B - 13.2	>	C - 23.4	
	T	1	B - 10.6	1	C - 22.1	T	1	B - 13.2	1	C - 23.4	
	R	>	B - 10.6	>	C - 22.1	R	>	B - 13.2	>	C - 23.4	
WB	L	>	A - 10.0	>	B - 10.2	L	>	B - 11.8	>	B - 11.6	
	T	1	A - 10.0	1	B - 10.2	T	1	B - 11.8	1	B - 11.6	
NB	L	1	A - 7.4	1	A - 7.7	L	1	A - 8.0	1	A - 8.1	
SB	L	1	A - 7.7	1	A - 8.2	L	1	A - 7.8	1	A - 8.1	
Intersection:			***u - N/A***		***u - N/A***			***u - N/A***		***u - N/A***	

Note: ">" designates a shared right or left turn lane next to a thru lane.

The analysis of the horizon year (2024) demonstrates that the Levels-of-Service and delays are acceptable for all conditions analyzed. Therefore, no recommendations are made for the intersection of Driveway 'A' / Prince St.

Intersection #5 - Driveway 'B' / Prince St. - Pages A-55 thru A-58

The following table provides a summary of the Levels-of-Service / delays associated with each case analyzed for the implementation year (2014) in this study:

Intersection: 5 - Driveway 'B' / Prince St

2014 Peak Hour BUILD

		(EXIST. GEOM.)			
		AM BUILD		PM BUILD	
		Lanes	LOS-Delay	Lanes	LOS-Delay
WB	L	1	B - 11.4	1	B - 11.8
WB	R	1	A - 9.1	1	A - 9.5
SB	L	1	A - 7.7	1	A - 7.6
Intersection:			*u - N/A*		*u - N/A*

Note: ">" designates a shared right or left turn lane next to a thru lane.

Driveway 'B' is proposed as a full access unsignalized intersection. The analysis demonstrates that the Levels-of-Service and delays are acceptable for all conditions analyzed. Therefore, no recommendations are made for the intersection of Driveway 'B' / Prince St.

The following table provides a summary of the Levels-of-Service / delays associated with each case analyzed for the horizon year (2024) in this study:

Intersection: 5 - Driveway 'B' / Prince St

2024 Peak Hour BUILD

		(EXIST. GEOM.)			
		AM BUILD		PM BUILD	
		Lanes	LOS-Delay	Lanes	LOS-Delay
WB	L	1	B - 12.3	1	B - 12.7
WB	R	1	A - 9.5	1	A - 9.7
SB	L	1	A - 7.9	1	A - 7.7
Intersection:			*u - N/A*		*u - N/A*

Note: ">" designates a shared right or left turn lane next to a thru lane.

The analysis of the horizon year (2024) demonstrates that the Levels-of-Service and delays are acceptable for all conditions analyzed. Therefore, no recommendations are made for the intersection of Driveway 'B' / Prince St.

Findings and Conclusions

The proposed Admiral Beverage Development (implementation year 2014) and the proposed industrial park (horizon year 2024) are found to have no significant adverse impact on the adjacent transportation system. What slight impact does occur to the transportation system can be mitigated by the following recommended measures.

Recommendations

All constructed improvements to proposed driveways and existing intersections shall be designed and built to maintain adequate safe sight distances to the degree possible.

Recommendations for improvements to the adjacent transportation system include:

Rio Bravo Blvd. / **Prince St.** – lengthen westbound left turn lane to approximately 300 feet (See conceptual design on following page).

Rio Bravo Blvd. – extend the existing third eastbound thru lane approximately 550 feet to the west edge of the existing guardrail at the South Diversion Channel on the south side of Rio Bravo Blvd. To avoid constructing an improvement that will not be utilized, this report recommends that the construction of the third eastbound thru lane extension be deferred until the earlier of the two following dates: 1) development of the north parcels fronting on Rio Bravo Blvd. or 2) widening of the bridge across the South Diversion Channel to provide continuation of the third eastbound thru lane to Broadway Blvd. by others.

Improvements on Bernalillo County streets and intersections should comply with requirements of the Bernalillo County Public Works Department. Improvements on State Roads should comply with the requirements of the New Mexico Department of Transportation's State *Access Management Manual*.

Conceptual Drawing of Extension of Westbound Left Turn Lane on Rio Bravo Blvd. at Prince St.

Appendix

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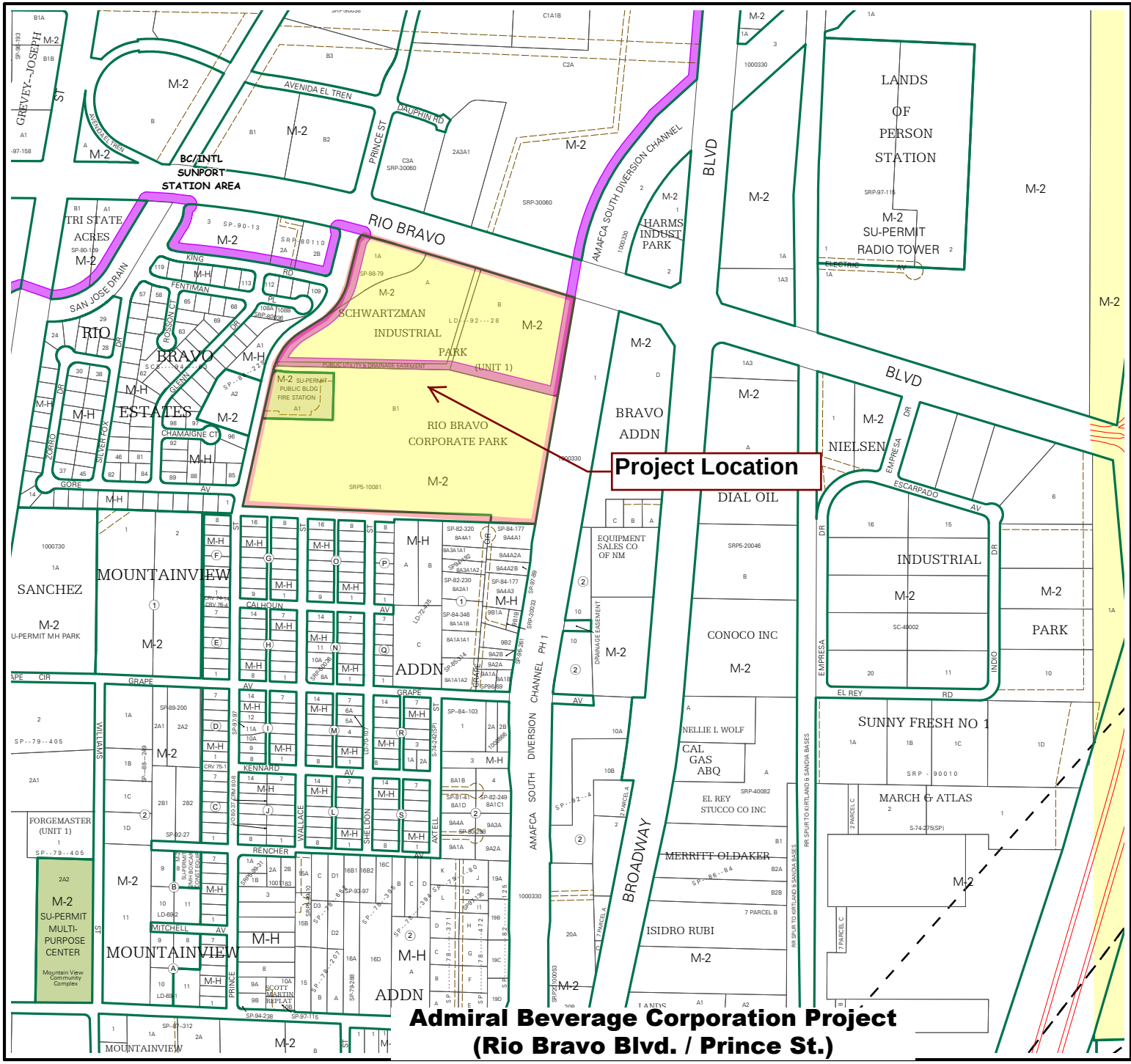
APPENDIX

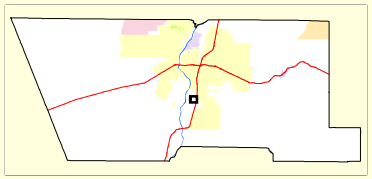
Admiral Beverage Development

(Rio Bravo Blvd / Prince St)

Aerial Photo



Admiral Beverage Corporation Project
(Rio Bravo Blvd. / Prince St.)



LEGAL DESCRIPTION

T9N

R3E

SEC 8

UNIFORM PROPERTY CODE

1-014-053

250 0 250 500 750 1,000

Feet

Map amended through January 2012

PUBLIC WORKS DIVISION
GIS PROGRAM

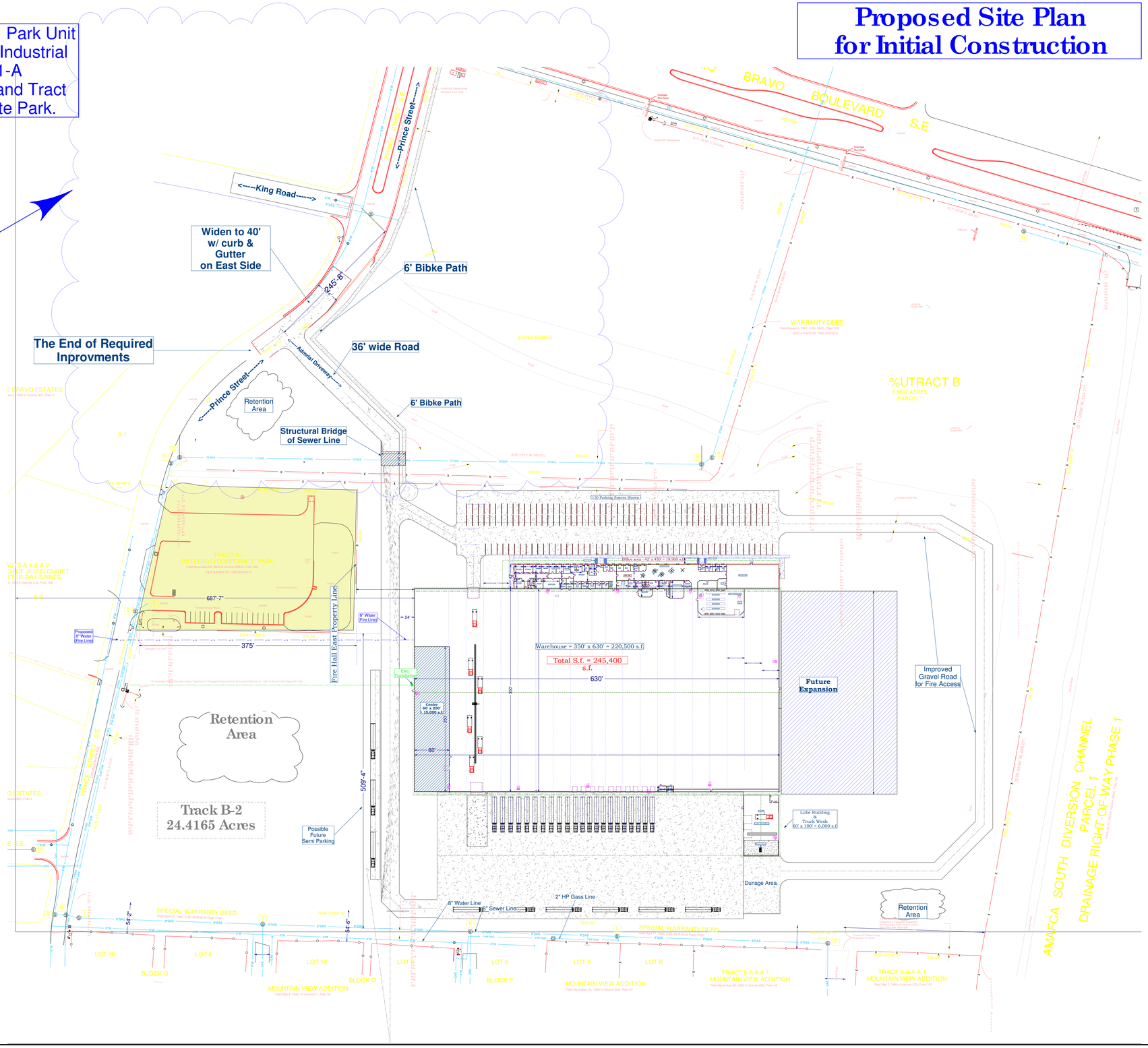
This information is for reference only. Bernalillo County assumes no liability for errors associated with the use of these data. Users are solely responsible for confirming data accuracy when necessary. Source data are from Bernalillo County and the City of Albuquerque. For current information visit www.bernco.gov.

P-14-Z

Proposed Site Plan for Initial Construction

Tract B Schwartzman Ind. Park Unit 1, Tract A Schwartzman Industrial Park Unit 1, Tract 1-A Schwartzman Ind. Park and Tract B-1 Rio Bravo Corporate Park.

See Blow Up on Page 3



Friday, April 06, 2012
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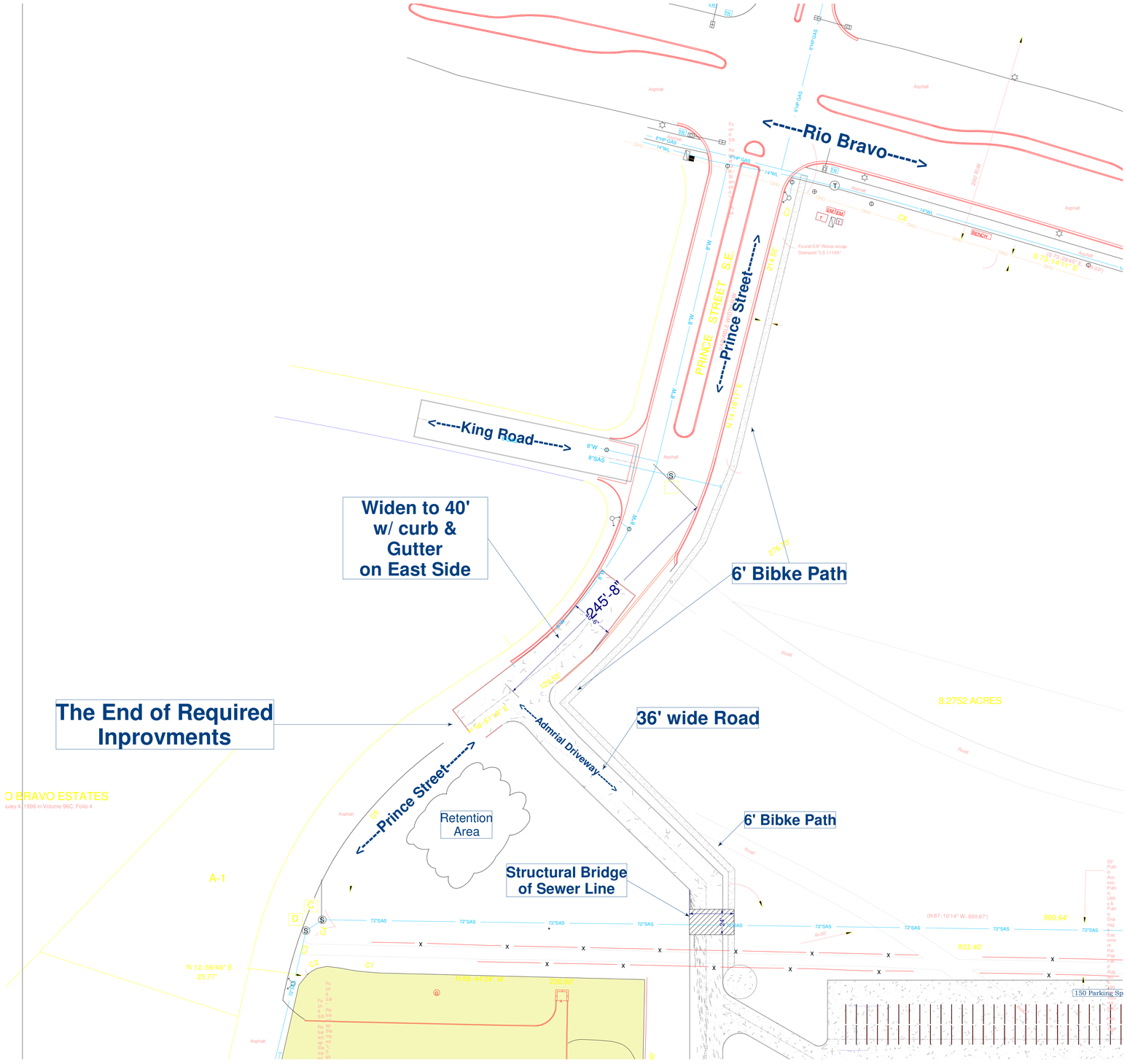
Proposed Admiral Beverage Facility
Rio Bravo Rd & Prince Street
3980 Prince - Albuquerque, NM 87105

G & M Designs
510 N. Railway Ave.
Worland, Wy. 82401
307-347-2789 - Cel 307-431-2789

Scale



Friday, April 06, 2012
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Proposed Admiral Beverage Facility
Rio Bravo Rd & Prince Street
3980 Prince - Albuquerque, NM 87105

G & M Designs
510 N. Railway Ave.
Worland, Wy. 82401
307-347-2789 - Cel 307-431-2789

Scale

Page:
3

Existing Proposed

- Facility with HOV Potential
- Limited Access Roadway (see Addendum for additional information)
- Principal Arterial
- Minor Arterial
- Collector

Dashed lines indicate proposed alignments.

- Grade Separation
- Interchange

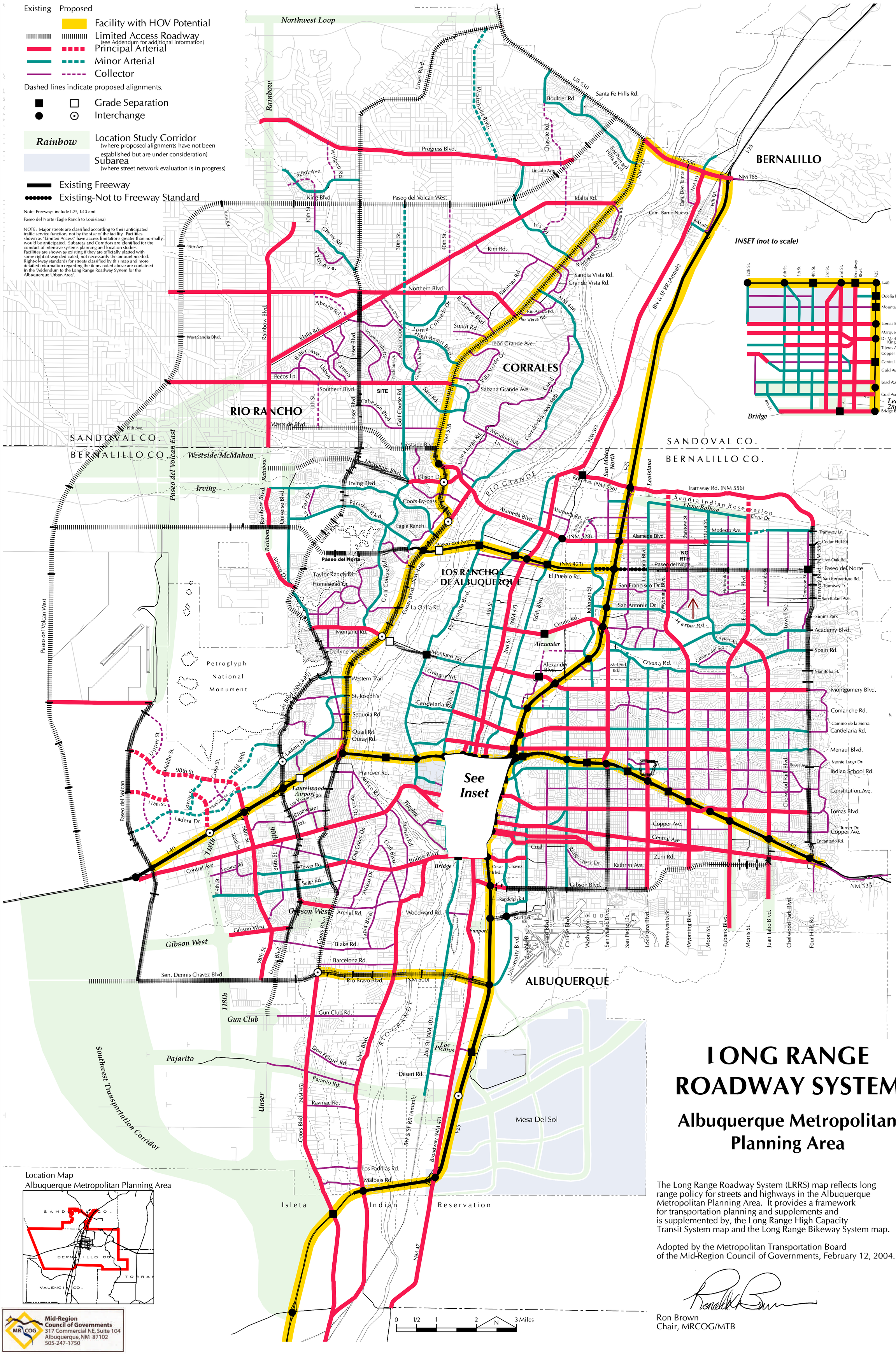
Rainbow Location Study Corridor (where proposed alignments have not been established but are under consideration)

Subarea (where street network evaluation is in progress)

- Existing Freeway
- Existing-Not to Freeway Standard

Note: Freeways include I-25, I-40 and Paseo del Norte (Eagle Ranch to Louisiana)

NOTE: Major streets are classified according to their anticipated traffic service function, not by the size of the facility. Facilities shown as "Limited Access" have access limitations greater than normally would be anticipated. Subareas and Corridors are identified for the conduct of intensive systems planning and location studies. Facilities are shown as existing if they are officially platted with some right-of-way dedicated, not necessarily the amount needed. Right-of-way standards for streets classified by this map and more detailed information regarding the items noted above are contained in the "Addendum to the Long Range Roadway System for the Albuquerque Urban Area".



LONG RANGE ROADWAY SYSTEM

Albuquerque Metropolitan Planning Area

Location Map
Albuquerque Metropolitan Planning Area

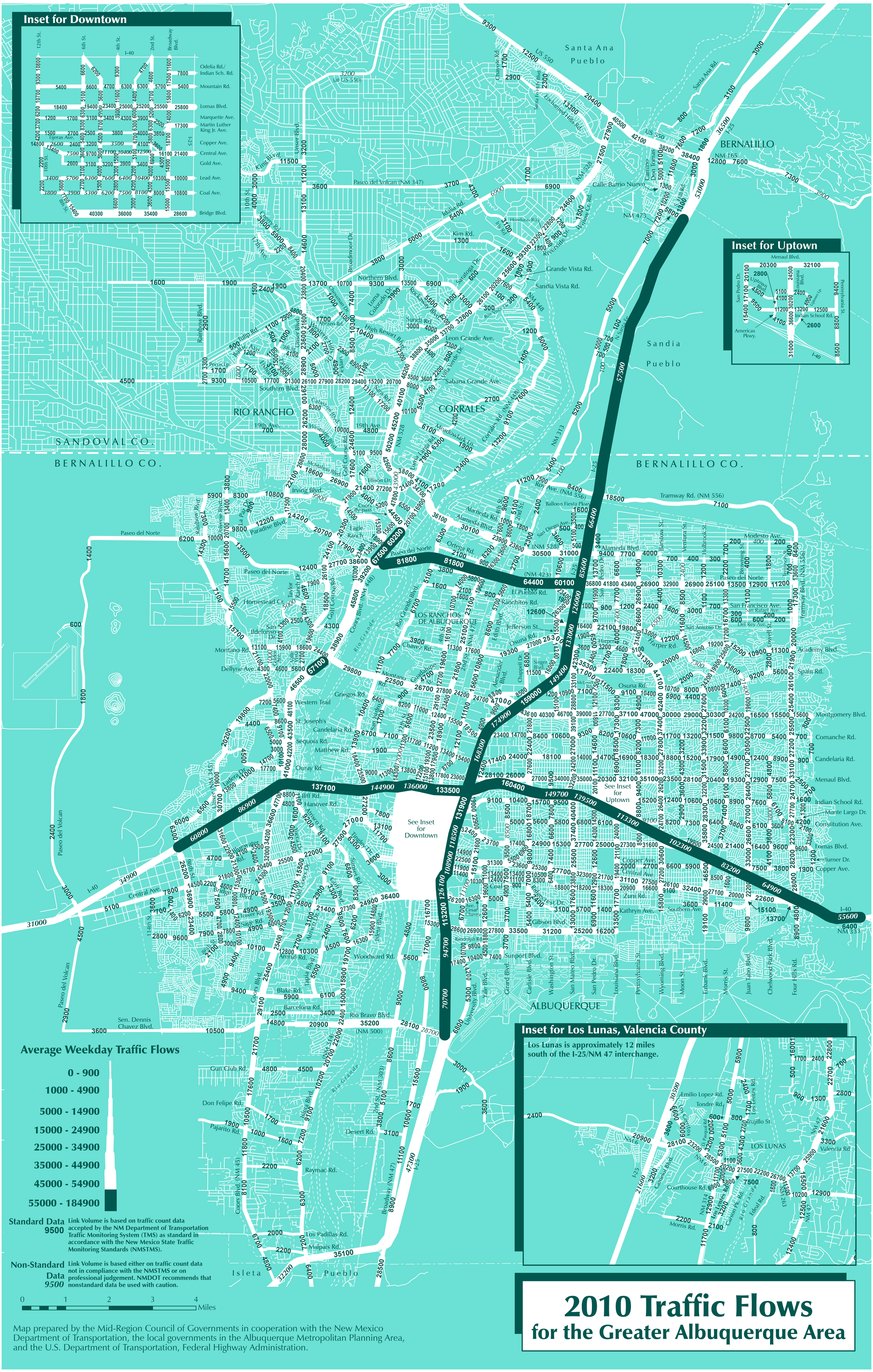
The Long Range Roadway System (LRRS) map reflects long range policy for streets and highways in the Albuquerque Metropolitan Planning Area. It provides a framework for transportation planning and supplements and is supplemented by, the Long Range High Capacity Transit System map and the Long Range Bikeway System map.

Adopted by the Metropolitan Transportation Board of the Mid-Region Council of Governments, February 12, 2004.

Ron Brown
Chair, MRCOG/MTB

Mid-Region Council of Governments
317 Commercial NE, Suite 104
Albuquerque, NM 87102
505-247-1750

02/13/04


Inset for Downtown
Inset for Uptown
Inset for Los Lunas, Valencia County
Santa Ana Pueblo
Sandia Pueblo
Isleta Pueblo
BERNALILLO
RIO RANCHO
CORRALES
SANDOVAL CO.
BERNALILLO CO.
ALBUQUERQUE
LOS RANCHOS DE ALBUQUERQUE
LOS LUNAS
See Inset for Downtown
See Inset for Uptown
Average Weekday Traffic Flows
0 - 900
1000 - 4900
5000 - 14900
15000 - 24900
25000 - 34900
35000 - 44900
45000 - 54900
55000 - 184900
Standard Data 9500
Link Volume is based on traffic count data accepted by the NM Department of Transportation Traffic Monitoring System (TMS) as standard in accordance with the New Mexico State Traffic Monitoring Standards (NMSTMS).
Non-Standard Data 9500
Link Volume is based either on traffic count data not in compliance with the NMSTMS or on professional judgement. NMDOT recommends that nonstandard data be used with caution.
0 1 2 3 4 Miles
Map prepared by the Mid-Region Council of Governments in cooperation with the New Mexico Department of Transportation, the local governments in the Albuquerque Metropolitan Planning Area, and the U.S. Department of Transportation, Federal Highway Administration.
2010 Traffic Flows
for the Greater Albuquerque Area

Admiral Beverage Distribution Center Project (Rio Bravo Blvd. / Prince St.)

Trip Generation Data (ITE Trip Generation Manual - 8th Edition)

COMMENT	USE (ITE CODE) DESCRIPTION	Units	24 HR VOL GROSS	A. M. PEAK HR. ENTER	A. M. PEAK HR. EXIT	P. M. PEAK HR. ENTER	P. M. PEAK HR. EXIT
	Summary Sheet						
Admiral Tract	Warehousing (150)	238.00	1,039	105	28	36	67
Future Tracts	Industrial Park (130)	17.10	1,415	137	28	37	141
	Subtotal		**2,454**	**242**	**56**	**73**	**208**

Admiral Beverage Distribution Center Project (Rio Bravo Blvd. / Prince St.)
Trip Generation Data (ITE Trip Generation Manual - 8th Edition)

USE (ITE CODE)		24 HOUR TWO-WAY VOLUME	A. M. PEAK HOUR		P. M. PEAK HOUR	
		GROSS	ENTER	EXIT	ENTER	EXIT
	Units					
Warehousing (150)	*238.00*	1,039	105	28	36	67
	1,000 S.F.					

ITE Trip Generation Equations:

Average Vehicle Trip Ends on a Weekday (24 HOUR TWO-WAY VOLUME)

Ln(T) = ***0.86*** **Ln(X) +** ***2.24***
50% Enter, ***50%*** Exit

Average Vehicle Trip Ends on a Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 7am and 9am (A.M. PEAK HOUR)

Ln(T) = ***0.55*** **Ln(X) +** ***1.88***
79% Enter, ***21%*** Exit

Average Vehicle Trip Ends on a Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 4pm and 6pm (P.M. PEAK HOUR)

Ln(T) = ***0.64*** **Ln(X) +** ***1.14***
35% Enter, ***65%*** Exit

Comments:
Admiral Tract

Based on ITE Trip Generation Manual - 8th Edition

Admiral Beverage Distribution Center Project (Rio Bravo Blvd. / Prince St.)
Trip Generation Data (ITE Trip Generation Manual - 8th Edition)

USE (ITE CODE)	Units	24 HOUR TWO-WAY VOLUME	A. M. PEAK HOUR		P. M. PEAK HOUR	
		GROSS	ENTER	EXIT	ENTER	EXIT
Industrial Park (130)	*17.10* Acres	1,415	137	28	37	141

ITE Trip Generation Equations:

Average Vehicle Trip Ends on a Weekday (24 HOUR TWO-WAY VOLUME)

T = ***47.94*** **(X) +** ***595.34***
50% Enter, ***50%*** Exit

Average Vehicle Trip Ends on a Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 7am and 9am (A.M. PEAK HOUR)

Ln(T) = ***0.78*** **Ln(X) +** ***2.89***
83% Enter, ***17%*** Exit

Average Vehicle Trip Ends on a Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 4pm and 6pm (P.M. PEAK HOUR)

Ln(T) = ***0.72*** **Ln(X) +** ***3.14***
21% Enter, ***79%*** Exit

Comments:
Future Tracts

Based on ITE Trip Generation Manual - 8th Edition

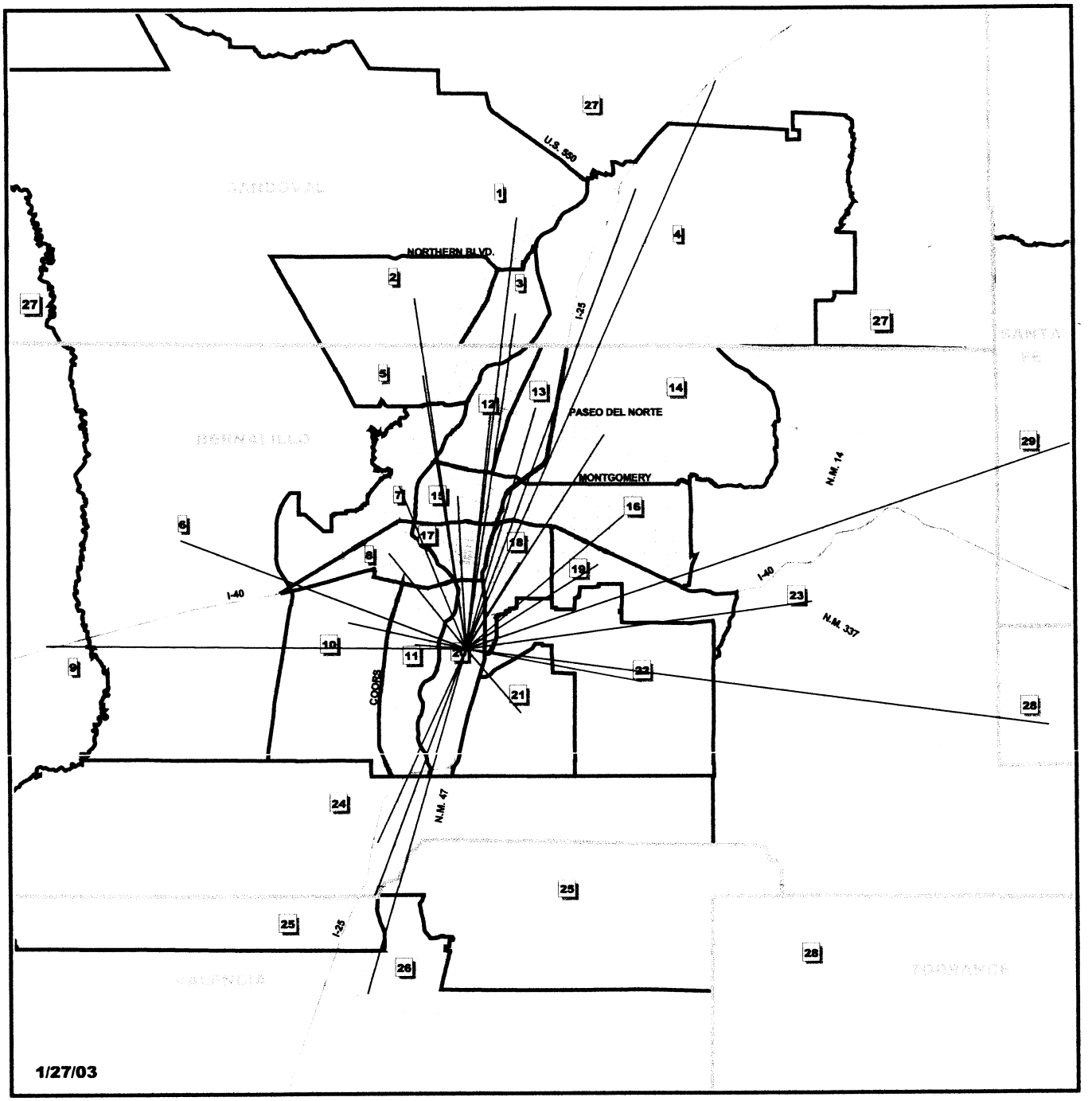


Figure 6

22 Subarea Identification Number

Subareas of the MRCOG Region

Mid-Region Council of Governments
317 Commercial NE, Suite 104
Albuquerque, NM 87102
505-247-1750

Subarea boundaries extend to county boundary where full extent of subarea not shown except for Subarea 29 which only includes southern Santa Fe County.

Admiral Beverage Development (Rio Bravo Blvd / Prince St) Trip Distribution Subarea Map

Trip Distribution Table

Admiral Beverage Development

Sub Area Population Data:

For determination of Trip Distribution for Proposed **Office Development Trips**

2015 and 2025 Data Taken from Mid-Region Council of Governments' 2035
Socioeconomic Forecasts by Data Analysis Subzones for the Mid-Region of New Mexico

									(2N) Second St North			(PN) Prince St North			(BN) Broadway Bld North		
Sub Area I.D.#	**% Sub Area in Study**	**2015 Population**	**2025 Population**	**Interpolated Population for the Year**	Population in Study	Dist. (Mi.)	**Population / Distance**	**% Population / Distance**	% Utilizing	% Population / Dist. Utilizing	Population	% Utilizing	% Population / Dist. Utilizing	Population	% Utilizing	% Population / Dist. Utilizing	Population
		2015	**2025**	2015													
1	100%	58,191	127,178	58,191	58,191	18.8	**3,095**	**2.39%**	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
2	100%	51,766	65,774	51,766	51,766	15.3	**3,383**	**2.61%**	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
3	100%	8,277	10,139	8,277	8,277	14.7	**563**	**0.43%**	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
4	100%	14,557	16,645	14,557	14,557	21.2	**687**	**0.53%**	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
5	100%	62,713	67,834	62,713	62,713	12.0	**5,226**	**4.03%**	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
6	100%	14,282	52,588	14,282	14,282	13.2	**1,082**	**0.84%**	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
7	100%	60,860	79,163	60,860	60,860	7.6	**8,008**	**6.18%**	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
8	100%	30,322	30,045	30,322	30,322	5.3	**5,721**	**4.42%**	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
9	100%	1,878	2,156	1,878	1,878	18.1	**104**	**0.08%**	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
10	100%	65,364	67,358	65,364	65,364	5.2	**12,570**	**9.71%**	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
11	100%	33,469	34,155	33,469	33,469	2.2	**15,213**	**11.75%**	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
12	100%	17,724	17,964	17,724	17,724	10.2	**1,738**	**1.34%**	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
13	100%	10,624	9,340	10,624	10,624	10.9	**975**	**0.75%**	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
14	100%	103,826	102,925	103,826	103,826	11.1	**9,354**	**7.22%**	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
15	100%	26,850	27,053	26,850	26,850	6.6	**4,068**	**3.14%**	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
16	100%	107,409	104,793	107,409	107,409	8.9	**12,068**	**9.32%**	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
17	100%	23,810	25,804	23,810	23,810	4.5	**5,291**	**4.09%**	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
18	100%	43,626	48,198	43,626	43,626	4.4	**9,915**	**7.66%**	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
19	100%	65,561	65,783	65,561	65,561	6.8	**9,641**	**7.44%**	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
20*	100%	9,536	12,198	9,536	9,536	1.0	**9,536**	**7.36%**	8%	0.59%	763	1%	0.07%	95	45%	3.31%	4,291
21	100%	4,225	72,808	4,225	4,225	3.7	**1,142**	**0.88%**	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
22	100%	3,874	4,214	3,874	3,874	7.7	**503**	**0.39%**	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
23	100%	24,135	32,739	24,135	24,135	15.1	**1,598**	**1.23%**	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
24	100%	2,815	3,209	2,815	2,815	9.2	**306**	**0.24%**	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
25	100%	995	1,136	995	995	11.3	**88**	**0.07%**	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
26	100%	86,303	132,754	86,303	86,303	15.5	**5,568**	**4.30%**	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
27	100%	23,414	26,278	23,414	23,414	26.9	**870**	**0.67%**	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
28	100%	20,001	24,230	20,001	20,001	25.4	**787**	**0.61%**	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
29	100%	11,554	14,407	11,554	11,554	27.6	**419**	**0.32%**	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
		987,961	1,278,868	987,961	987,961		**129,520**	**100.00%**		0.59%	**763**		0.07%	**95**		3.31%	**4,291**
											0.59%			0.07%			3.31%

Trip Distribution Table

Admiral Beverage Development

Sub Area Population Data:

For determination of Trip Distribution for Proposed **Office Development Trips**

2015 and 2025 Data Taken from Mid-Region Council of Governments' 2035
Socioeconomic Forecasts by Data Analysis Subzones for the Mid-Region of New Mexico

								(BS) Broadway Blvd South			(RE) Rio Bravo Blvd East			(PS) Prince St South		
Sub Area I.D.#	**% Sub Area In Study**	**2015 Population**	**2025 Population**	**Interpolated Population for the Year**	Population in Study	Dist. (Mi.)	**Population / Distance**	% Utilizing	% Population / Dist. Utilizing	Population	% Utilizing	% Population / Dist. Utilizing	Population	% Utilizing	% Population / Dist. Utilizing	Population
		2015	**2025**	2015												
1	100%	58,191	127,178	58,191	58,191	18.8	**3,095**	0%	0.00%	0	100%	2.39%	3,095	0%	0.00%	0
2	100%	51,766	65,774	51,766	51,766	15.3	**3,383**	0%	0.00%	0	100%	2.61%	3,383	0%	0.00%	0
3	100%	8,277	10,139	8,277	8,277	14.7	**563**	0%	0.00%	0	100%	0.43%	563	0%	0.00%	0
4	100%	14,557	16,645	14,557	14,557	21.2	**687**	0%	0.00%	0	100%	0.53%	687	0%	0.00%	0
5	100%	62,713	67,834	62,713	62,713	12.0	**5,226**	0%	0.00%	0	100%	4.03%	5,226	0%	0.00%	0
6	100%	14,282	52,588	14,282	14,282	13.2	**1,082**	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
7	100%	60,860	79,163	60,860	60,860	7.6	**8,008**	0%	0.00%	0	100%	6.18%	8,008	0%	0.00%	0
8	100%	30,322	30,045	30,322	30,322	5.3	**5,721**	0%	0.00%	0	50%	2.21%	2,861	0%	0.00%	0
9	100%	1,878	2,156	1,878	1,878	18.1	**104**	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
10	100%	65,364	67,358	65,364	65,364	5.2	**12,570**	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
11	100%	33,469	34,155	33,469	33,469	2.2	**15,213**	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
12	100%	17,724	17,964	17,724	17,724	10.2	**1,738**	0%	0.00%	0	100%	1.34%	1,738	0%	0.00%	0
13	100%	10,624	9,340	10,624	10,624	10.9	**975**	0%	0.00%	0	100%	0.75%	975	0%	0.00%	0
14	100%	103,826	102,925	103,826	103,826	11.1	**9,354**	0%	0.00%	0	100%	7.22%	9,354	0%	0.00%	0
15	100%	26,850	27,053	26,850	26,850	6.6	**4,068**	0%	0.00%	0	100%	3.14%	4,068	0%	0.00%	0
16	100%	107,409	104,793	107,409	107,409	8.9	**12,068**	0%	0.00%	0	100%	9.32%	12,068	0%	0.00%	0
17	100%	23,810	25,804	23,810	23,810	4.5	**5,291**	0%	0.00%	0	100%	4.09%	5,291	0%	0.00%	0
18	100%	43,626	48,198	43,626	43,626	4.4	**9,915**	0%	0.00%	0	100%	7.66%	9,915	0%	0.00%	0
19	100%	65,561	65,783	65,561	65,561	6.8	**9,641**	0%	0.00%	0	100%	7.44%	9,641	0%	0.00%	0
20*	100%	9,536	12,198	9,536	9,536	1.0	**9,536**	2%	0.15%	191	1%	0.07%	95	35%	2.58%	3,338
21	100%	4,225	72,808	4,225	4,225	3.7	**1,142**	100%	0.88%	1,142	0%	0.00%	0	0%	0.00%	0
22	100%	3,874	4,214	3,874	3,874	7.7	**503**	0%	0.00%	0	100%	0.39%	503	0%	0.00%	0
23	100%	24,135	32,739	24,135	24,135	15.1	**1,598**	0%	0.00%	0	100%	1.23%	1,598	0%	0.00%	0
24	100%	2,815	3,209	2,815	2,815	9.2	**306**	100%	0.24%	306	0%	0.00%	0	0%	0.00%	0
25	100%	995	1,136	995	995	11.3	**88**	100%	0.07%	88	0%	0.00%	0	0%	0.00%	0
26	100%	86,303	132,754	86,303	86,303	15.5	**5,568**	100%	4.30%	5,568	0%	0.00%	0	0%	0.00%	0
27	100%	23,414	26,278	23,414	23,414	26.9	**870**	0%	0.00%	0	100%	0.67%	870	0%	0.00%	0
28	100%	20,001	24,230	20,001	20,001	25.4	**787**	100%	0.61%	787	0%	0.00%	0	0%	0.00%	0
29	100%	11,554	14,407	11,554	11,554	27.6	**419**	0%	0.00%	0	100%	0.32%	419	0%	0.00%	0
		987,961	1,278,868	987,961	987,961		**129,520**		6.24%	**8,082**		62.04%	**80,359**		2.58%	**3,338**
										6.24%			62.04%			2.58%

Trip Distribution Table

Admiral Beverage Development

Sub Area Population Data:

For determination of Trip Distribution for Proposed **Office Development Trips**

2015 and 2025 Data Taken from Mid-Region Council of Governments' 2035

Socioeconomic Forecasts by Data Analysis Subzones for the Mid-Region of New Mexico

								(GW) Gore Ave West			(KW) King Rd West		
Sub Area I.D.#	**% Sub Area In Study**	**2015 Population**	**2025 Population**	**Interpolated Population for the Year**	Population in Study	Dist. (Mi.)	**Population / Distance**	% Utilizing	% Population / Dist. Utilizing	Population	% Utilizing	% Population / Dist. Utilizing	Population
		2015	**2025**	2015									
1	100%	58,191	127,178	58,191	58,191	18.8	**3,095**	0%	0.00%	0	0%	0.00%	0
2	100%	51,766	65,774	51,766	51,766	15.3	**3,383**	0%	0.00%	0	0%	0.00%	0
3	100%	8,277	10,139	8,277	8,277	14.7	**563**	0%	0.00%	0	0%	0.00%	0
4	100%	14,557	16,645	14,557	14,557	21.2	**687**	0%	0.00%	0	0%	0.00%	0
5	100%	62,713	67,834	62,713	62,713	12.0	**5,226**	0%	0.00%	0	0%	0.00%	0
6	100%	14,282	52,588	14,282	14,282	13.2	**1,082**	0%	0.00%	0	0%	0.00%	0
7	100%	60,860	79,163	60,860	60,860	7.6	**8,008**	0%	0.00%	0	0%	0.00%	0
8	100%	30,322	30,045	30,322	30,322	5.3	**5,721**	0%	0.00%	0	0%	0.00%	0
9	100%	1,878	2,156	1,878	1,878	18.1	**104**	0%	0.00%	0	0%	0.00%	0
10	100%	65,364	67,358	65,364	65,364	5.2	**12,570**	0%	0.00%	0	0%	0.00%	0
11	100%	33,469	34,155	33,469	33,469	2.2	**15,213**	0%	0.00%	0	0%	0.00%	0
12	100%	17,724	17,964	17,724	17,724	10.2	**1,738**	0%	0.00%	0	0%	0.00%	0
13	100%	10,624	9,340	10,624	10,624	10.9	**975**	0%	0.00%	0	0%	0.00%	0
14	100%	103,826	102,925	103,826	103,826	11.1	**9,354**	0%	0.00%	0	0%	0.00%	0
15	100%	26,850	27,053	26,850	26,850	6.6	**4,068**	0%	0.00%	0	0%	0.00%	0
16	100%	107,409	104,793	107,409	107,409	8.9	**12,068**	0%	0.00%	0	0%	0.00%	0
17	100%	23,810	25,804	23,810	23,810	4.5	**5,291**	0%	0.00%	0	0%	0.00%	0
18	100%	43,626	48,198	43,626	43,626	4.4	**9,915**	0%	0.00%	0	0%	0.00%	0
19	100%	65,561	65,783	65,561	65,561	6.8	**9,641**	0%	0.00%	0	0%	0.00%	0
20*	100%	9,536	12,198	9,536	9,536	1.0	**9,536**	1%	0.07%	95	1%	0.07%	95
21	100%	4,225	72,808	4,225	4,225	3.7	**1,142**	0%	0.00%	0	0%	0.00%	0
22	100%	3,874	4,214	3,874	3,874	7.7	**503**	0%	0.00%	0	0%	0.00%	0
23	100%	24,135	32,739	24,135	24,135	15.1	**1,598**	0%	0.00%	0	0%	0.00%	0
24	100%	2,815	3,209	2,815	2,815	9.2	**306**	0%	0.00%	0	0%	0.00%	0
25	100%	995	1,136	995	995	11.3	**88**	0%	0.00%	0	0%	0.00%	0
26	100%	86,303	132,754	86,303	86,303	15.5	**5,568**	0%	0.00%	0	0%	0.00%	0
27	100%	23,414	26,278	23,414	23,414	26.9	**870**	0%	0.00%	0	0%	0.00%	0
28	100%	20,001	24,230	20,001	20,001	25.4	**787**	0%	0.00%	0	0%	0.00%	0
29	100%	11,554	14,407	11,554	11,554	27.6	**419**	0%	0.00%	0	0%	0.00%	0
		987,961	1,278,868	987,961	987,961		**129,520**		0.07%	**95**		0.07%	**95**
										0.07%			0.07%

Trip Distribution Table

Admiral Beverage Development

Sub Area Population Data:
For determination of Trip Distribution for Proposed **Office Development Trips**

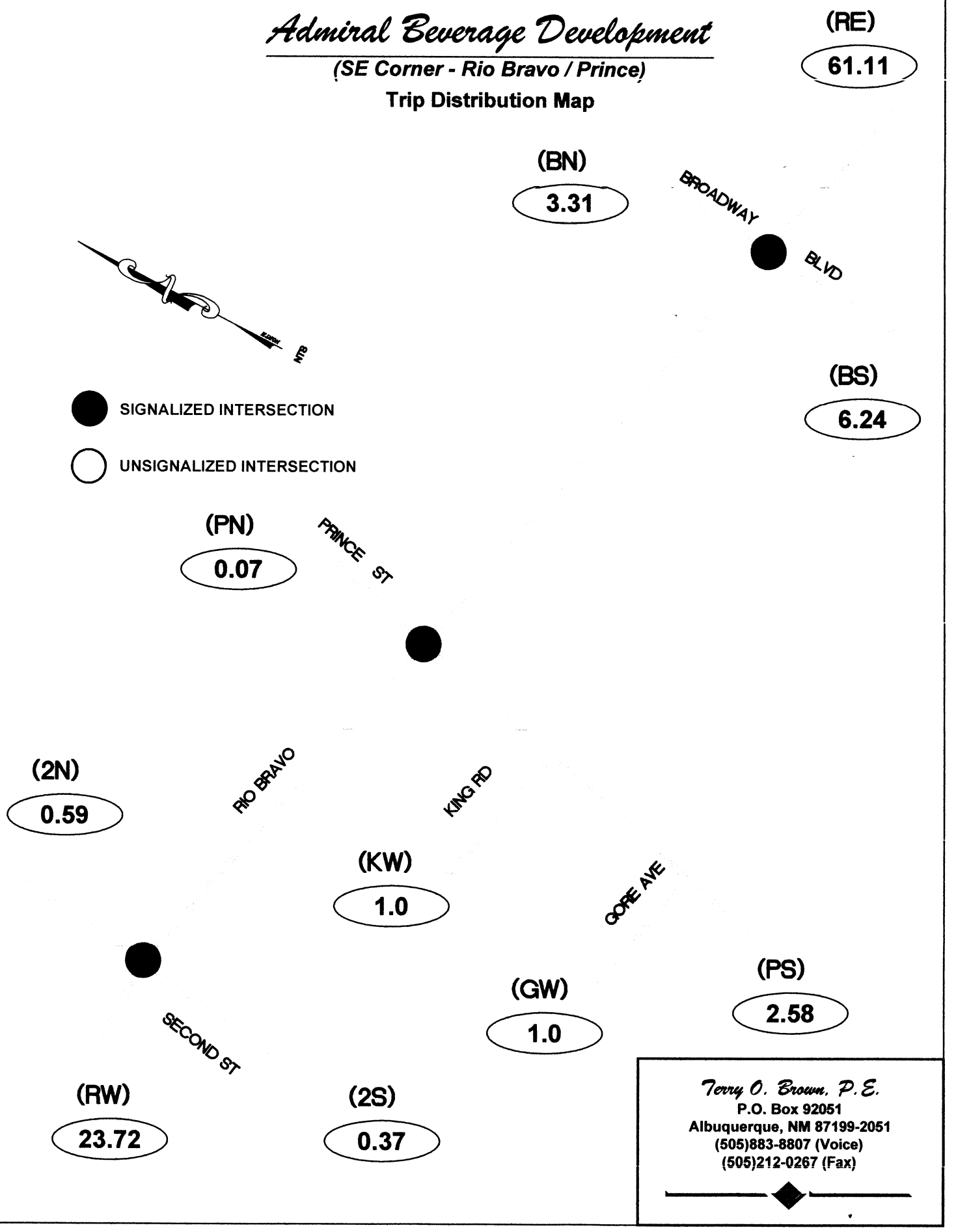
2015 and 2025 Data Taken from Mid-Region Council of Governments' 2035
Socioeconomic Forecasts by Data Analysis Subzones for the Mid-Region of New Mexico

								(2S) Second St South			(RW) Rio Bravo Blvd West		
Sub Area I.D.#	**% Sub Area in Study**	**2015 Population**	**2025 Population**	**Interpolated Population for the Year**	Population in Study	Dist. (Mi.)	**Population / Distance**	% Utilizing	% Population / Dist. Utilizing	Population	% Utilizing	% Population / Dist. Utilizing	Population
		2015	**2025**	2015									
1	100%	58,191	127,178	58,191	58,191	18.8	**3,095**	0%	0.00%	0	0%	0.00%	0
2	100%	51,766	65,774	51,766	51,766	15.3	**3,383**	0%	0.00%	0	0%	0.00%	0
3	100%	8,277	10,139	8,277	8,277	14.7	**563**	0%	0.00%	0	0%	0.00%	0
4	100%	14,557	16,645	14,557	14,557	21.2	**687**	0%	0.00%	0	0%	0.00%	0
5	100%	62,713	67,834	62,713	62,713	12.0	**5,226**	0%	0.00%	0	0%	0.00%	0
6	100%	14,282	52,588	14,282	14,282	13.2	**1,082**	0%	0.00%	0	100%	0.84%	1,082
7	100%	60,860	79,163	60,860	60,860	7.6	**8,008**	0%	0.00%	0	0%	0.00%	0
8	100%	30,322	30,045	30,322	30,322	5.3	**5,721**	0%	0.00%	0	50%	2.21%	2,861
9	100%	1,878	2,156	1,878	1,878	18.1	**104**	0%	0.00%	0	100%	0.08%	104
10	100%	65,364	67,358	65,364	65,364	5.2	**12,570**	0%	0.00%	0	100%	9.71%	12,570
11	100%	33,469	34,155	33,469	33,469	2.2	**15,213**	0%	0.00%	0	100%	11.75%	15,213
12	100%	17,724	17,964	17,724	17,724	10.2	**1,738**	0%	0.00%	0	0%	0.00%	0
13	100%	10,624	9,340	10,624	10,624	10.9	**975**	0%	0.00%	0	0%	0.00%	0
14	100%	103,826	102,925	103,826	103,826	11.1	**9,354**	0%	0.00%	0	0%	0.00%	0
15	100%	26,850	27,053	26,850	26,850	6.6	**4,068**	0%	0.00%	0	0%	0.00%	0
16	100%	107,409	104,793	107,409	107,409	8.9	**12,068**	0%	0.00%	0	0%	0.00%	0
17	100%	23,810	25,804	23,810	23,810	4.5	**5,291**	0%	0.00%	0	0%	0.00%	0
18	100%	43,626	48,198	43,626	43,626	4.4	**9,915**	0%	0.00%	0	0%	0.00%	0
19	100%	65,561	65,783	65,561	65,561	6.8	**9,641**	0%	0.00%	0	0%	0.00%	0
20*	100%	9,536	12,198	9,536	9,536	1.0	**9,536**	5%	0.37%	477	1%	0.07%	95
21	100%	4,225	72,808	4,225	4,225	3.7	**1,142**	0%	0.00%	0	0%	0.00%	0
22	100%	3,874	4,214	3,874	3,874	7.7	**503**	0%	0.00%	0	0%	0.00%	0
23	100%	24,135	32,739	24,135	24,135	15.1	**1,598**	0%	0.00%	0	0%	0.00%	0
24	100%	2,815	3,209	2,815	2,815	9.2	**306**	0%	0.00%	0	0%	0.00%	0
25	100%	995	1,136	995	995	11.3	**88**	0%	0.00%	0	0%	0.00%	0
26	100%	86,303	132,754	86,303	86,303	15.5	**5,568**	0%	0.00%	0	0%	0.00%	0
27	100%	23,414	26,278	23,414	23,414	26.9	**870**	0%	0.00%	0	0%	0.00%	0
28	100%	20,001	24,230	20,001	20,001	25.4	**787**	0%	0.00%	0	0%	0.00%	0
29	100%	11,554	14,407	11,554	11,554	27.6	**419**	0%	0.00%	0	0%	0.00%	0
		987,961	1,278,868	987,961	987,961		**129,520**		0.37%	**477**		24.65%	**31,925**
										0.37%			24.65%

Admiral Beverage Development

(SE Corner - Rio Bravo / Prince)

Trip Distribution Map



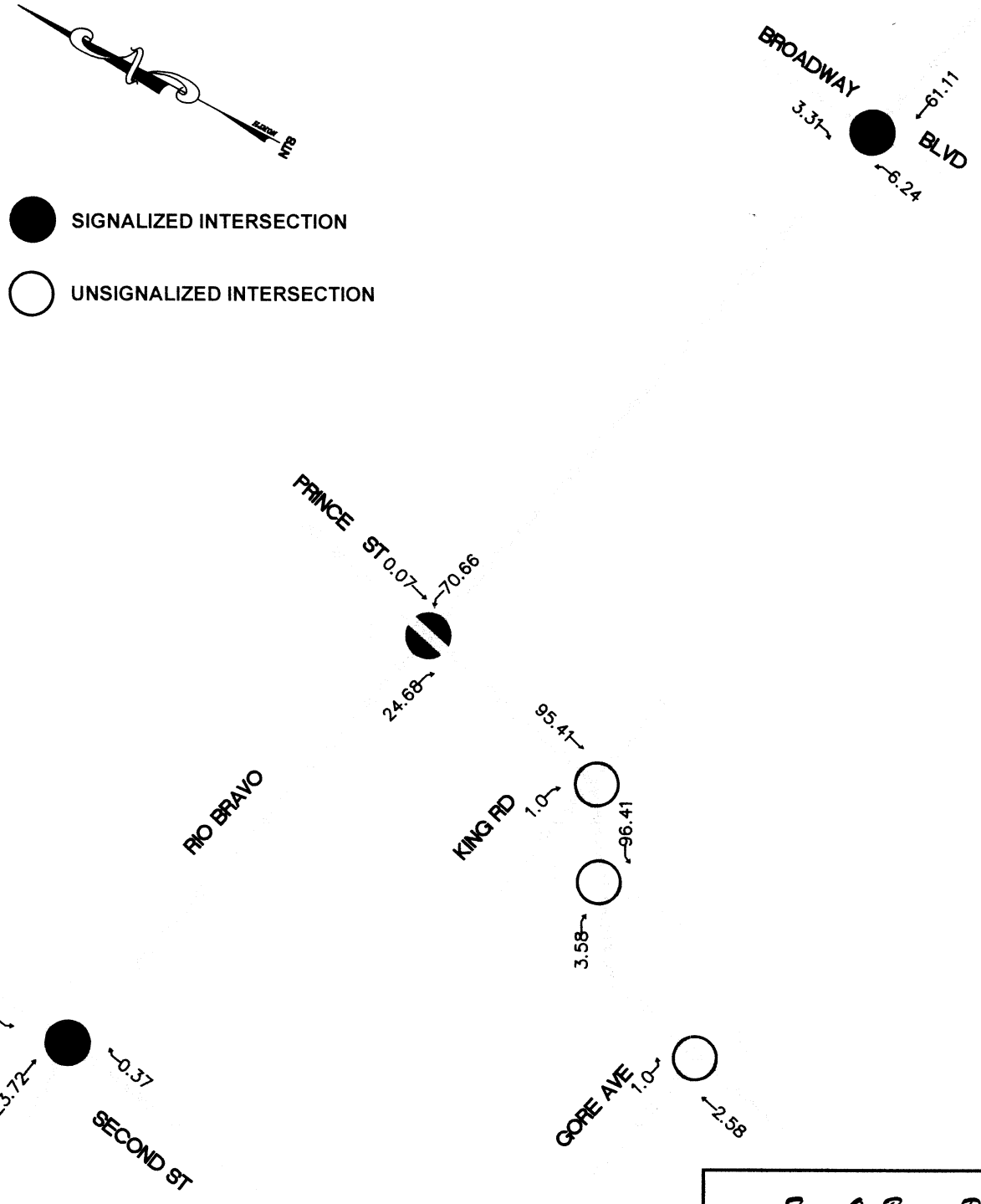
Terry O. Brown, P.E.
P.O. Box 92051
Albuquerque, NM 87199-2051
(505)883-8807 (Voice)
(505)212-0267 (Fax)

Admiral Beverage Development

(SE Corner - Rio Bravo / Prince)

Trip Assignments (% Entering)

Admiral Site Only



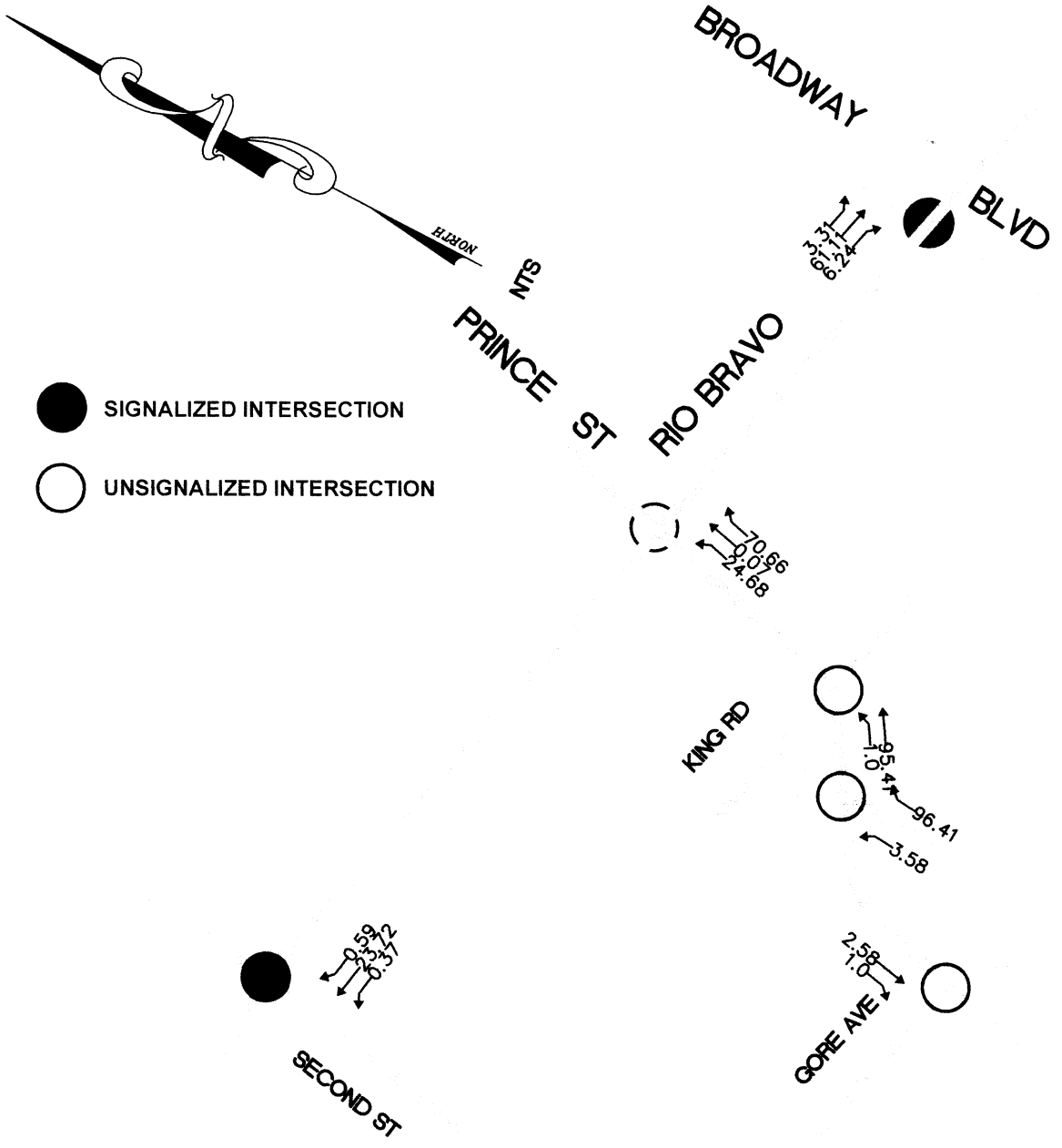
Terry O. Brown, P.E.
P.O. Box 92051
Albuquerque, NM 87199-2051
(505)883-8807 (Voice)
(505)212-0267 (Fax)

Rio Bravo / Broadway Comm. Dev.

(NW Corner)

Trip Assignments (% Exiting)

Admiral Site Only



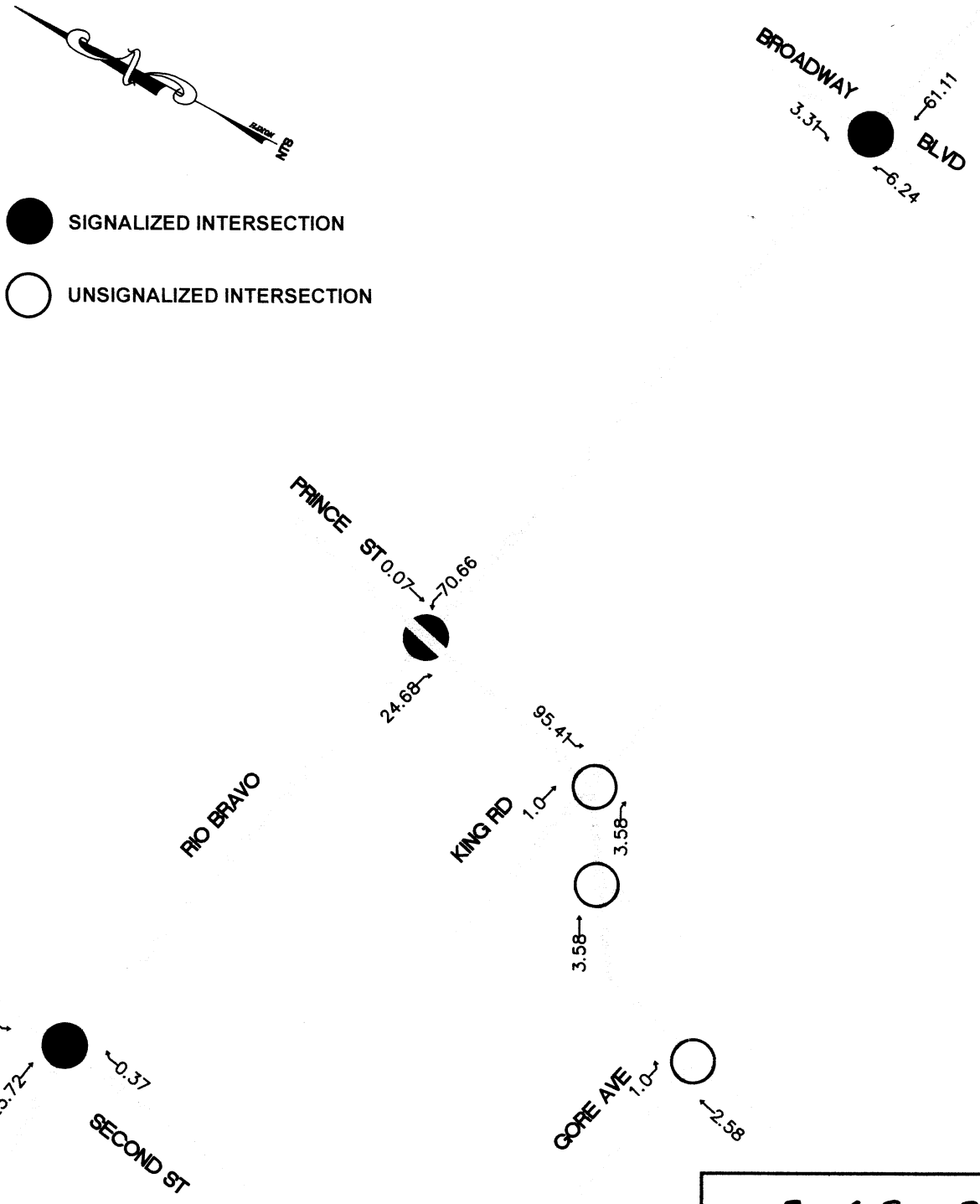
Terry O. Brown, P.E.
P.O. Box 92051
Albuquerque, NM 87199-2051
(505)883-8807 (Voice)
(505)212-0267 (Fax)

Admiral Beverage Development

(SE Corner - Rio Bravo / Prince)

Trip Assignments (% Entering)

Industrial Park Only



Terry O. Brown, P.E.
P.O. Box 92051
Albuquerque, NM 87199-2051
(505)883-8807 (Voice)
(505)212-0267 (Fax)

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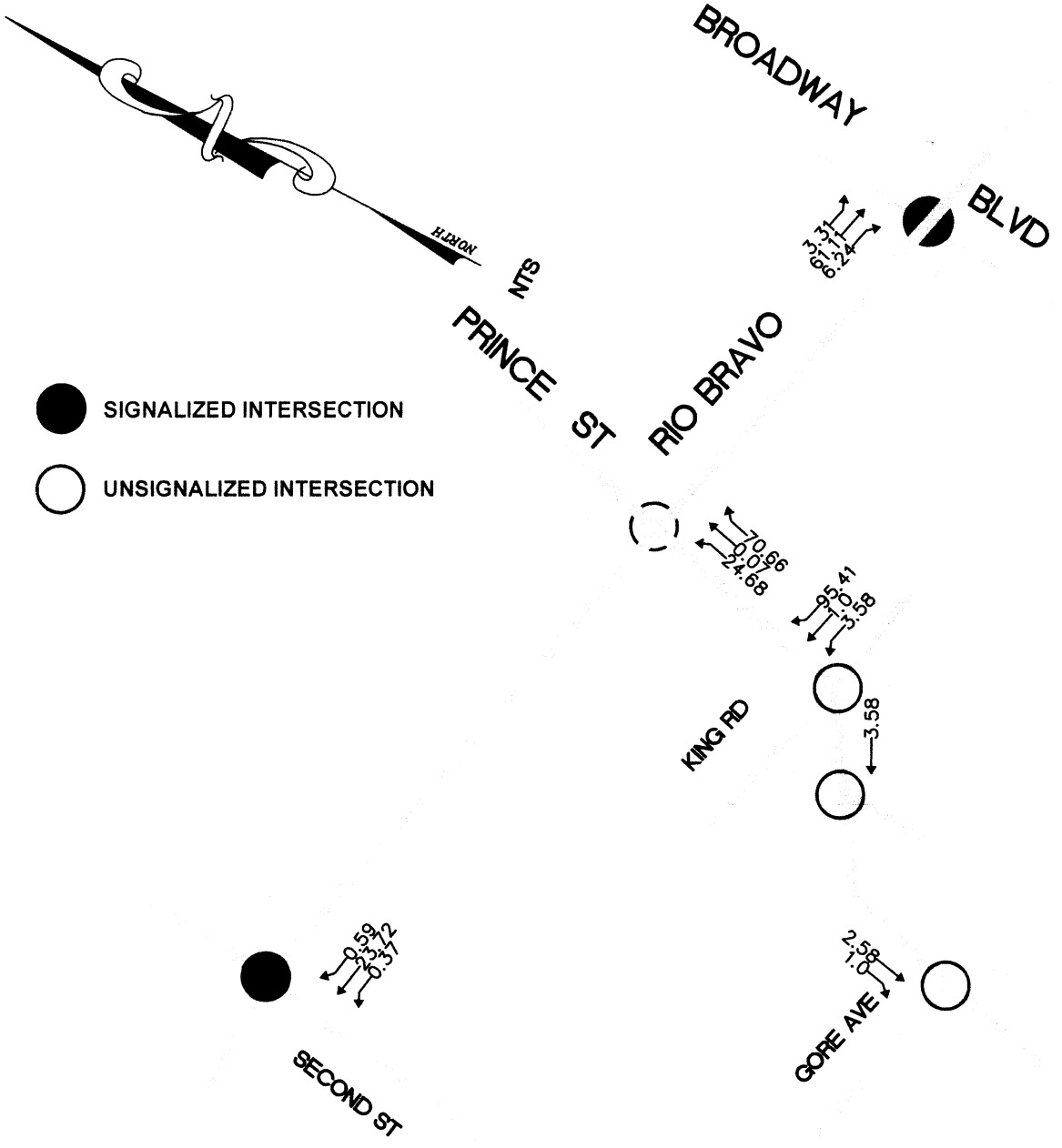
Rio Bravo / Broadway Comm. Dev.

(NW Corner)

Trip Assignments (% Exiting)

Industrial Park Only



Terry O. Brown, P.E.
P.O. Box 92051
Albuquerque, NM 87199-2051
(505)883-8807 (Voice)
(505)212-0267 (Fax)

Admiral Beverage Facility (Rio Bravo / Prince)

Projected Turning Movements SUMMARY

PROPOSED DEVELOPMENT (2014) - 100% Development

Option 1 (Driveway "A" and Driveway "B")

INTERSECTION: Summary

Rio Bravo Blvd / Prince St

(1)

5.0% Truck

	Eastbound (Rio Bravo Blvd)			Westbound (Rio Bravo Blvd)			Northbound (Prince St)			Southbound (Prince St)		
PHF	0.89			0.89			0.81			0.75		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing (2012)	41	1,537	37	35	576	43	75	2	78	13	0	10
2014 (NO BUILD - A.M.)	*53*	*1,923*	*39*	*39*	*756*	*47*	*83*	*2*	*88*	*15*	*0*	*11*
2014 (BUILD - A.M.)	***53***	***1,923***	***65***	***113***	***756***	***47***	***90***	***2***	***108***	***15***	***0***	***11***
PHF	0.95			0.87			0.77			0.85		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing (2012)	19	774	94	106	1,443	28	87	4	63	44	3	48
2014 (NO BUILD - P.M.)	*33*	*1,113*	*98*	*120*	*1,981*	*31*	*95*	*4*	*69*	*48*	*3*	*51*
2014 (BUILD - P.M.)	***33***	***1,113***	***107***	***145***	***1,981***	***31***	***112***	***4***	***116***	***48***	***3***	***51***

Rio Bravo Blvd / Broadway Blvd

(2)

9.9% Truck

	Eastbound (Rio Bravo Blvd)			Westbound (Rio Bravo Blvd)			Northbound (Broadway Blvd)			Southbound (Broadway Blvd)		
PHF	0.93			0.82			0.86			0.75		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing (2012)	151	1,400	104	155	562	26	60	176	220	15	87	65
2014 (NO BUILD - A.M.)	*163*	*1,538*	*382*	*397*	*659*	*34*	*215*	*311*	*340*	*54*	*149*	*78*
2014 (BUILD - A.M.)	***164***	***1,555***	***384***	***397***	***723***	***34***	***222***	***311***	***340***	***54***	***149***	***81***
PHF	0.91			0.92			0.85			0.87		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing (2012)	105	766	114	214	1,223	24	174	163	260	15	246	219
2014 (NO BUILD - P.M.)	*116*	*815*	*399*	*283*	*1,295*	*30*	*714*	*307*	*530*	*64*	*387*	*304*
2014 (BUILD - P.M.)	***118***	***856***	***403***	***283***	***1,317***	***30***	***716***	***307***	***530***	***64***	***387***	***305***

Rio Bravo Blvd / Second St

(3)

5.0% Truck

	Eastbound (Rio Bravo Blvd)			Westbound (Rio Bravo Blvd)			Northbound (Second St)			Southbound (Second St)		
PHF	0.92			0.92			0.87			0.91		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing (2012)	329	1,333	162	45	529	69	128	110	52	79	65	63
2014 (NO BUILD - A.M.)	*366*	*1,712*	*180*	*73*	*665*	*100*	*182*	*157*	*114*	*142*	*74*	*71*
2014 (BUILD - A.M.)	***366***	***1,737***	***180***	***73***	***672***	***100***	***182***	***157***	***114***	***143***	***74***	***71***
PHF	0.92			0.91			0.75			0.91		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing (2012)	116	569	131	30	1,296	57	213	74	58	112	98	399
2014 (NO BUILD - P.M.)	*137*	*908*	*155*	*105*	*1,710*	*137*	*281*	*97*	*130*	*163*	*118*	*481*
2014 (BUILD - P.M.)	***137***	***917***	***155***	***105***	***1,726***	***137***	***281***	***97***	***130***	***163***	***118***	***481***

Admiral Beverage Facility (Rio Bravo / Prince)

Projected Turning Movements SUMMARY

PROPOSED DEVELOPMENT (2014) - 100% Development

Option 1 (Driveway "A" and Driveway "B")

INTERSECTION: **Summary**

King/Drive "A" / Prince St.

(4)

5.0% Truck

	Eastbound (King/Drive "A")			Westbound (King/Drive "A")			Northbound (Prince St.)			Southbound (Prince St.)		
	0.87			*0.85*			*0.92*			*0.75*		*PHF*
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing (2012)	44	0	1	0	0	0	2	119	0	0	28	17
2014 (NO BUILD - A.M.)	*47*	*0*	*1*	*0*	*0*	*0*	*2*	*126*	*0*	*0*	*30*	*18*
2014 (BUILD - A.M.)	***47***	***0***	***2***	***0***	***0***	***0***	***2***	***153***	***0***	***0***	***130***	***18***
	0.89			*0.85*			*0.81*			*0.85*		*PHF*
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing (2012)	35	0	4	0	0	0	2	124	0	0	169	43
2014 (NO BUILD - P.M.)	*37*	*0*	*4*	*0*	*0*	*0*	*2*	*131*	*0*	*0*	*179*	*46*
2014 (BUILD - P.M.)	***37***	***0***	***4***	***0***	***0***	***0***	***3***	***195***	***0***	***0***	***213***	***46***

Drive "B" / Prince St.

(5)

5.0% Truck

	Eastbound (Drive "B")			Westbound (Drive "B")			Northbound (Prince St.)			Southbound (Prince St.)		
	0.85			*0.85*			*0.92*			*0.92*		*PHF*
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing (2012)	0	0	0	0	0	0	0	0	0	0	0	0
2014 (NO BUILD - A.M.)	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*128*	*0*	*0*	*31*	*0*
2014 (BUILD - A.M.)	***0***	***0***	***0***	***1***	***0***	***27***	***0***	***128***	***4***	***101***	***31***	***0***
	0.85			*0.85*			*0.81*			*0.81*		*PHF*
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing (2012)	0	0	0	0	0	0	0	0	0	0	0	0
2014 (NO BUILD - P.M.)	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*133*	*0*	*0*	*183*	*0*
2014 (BUILD - P.M.)	***0***	***0***	***0***	***2***	***0***	***65***	***0***	***133***	***1***	***35***	***183***	***0***

Admiral Beverage Facility (Rio Bravo / Prince)

Projected Turning Movements Worksheet

Rio Bravo Blvd / Prince St

Option 1 (Driveway "A" and Driveway "B")

INTERSECTION: E-W Street: **Rio Bravo Blvd** (1)

N-S Street: **Prince St**

Year of Existing Counts 2012

Implementation Year **2014**

	Eastbound (Rio Bravo Blvd)			Westbound (Rio Bravo Blvd)			Northbound (Prince St)			Southbound (Prince St)		
Growth Rates	2.06%			3.68%			3.00%			3.00%		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	41	1,537	37	35	576	43	75	2	78	13	0	10
Background Traffic Growth	2	63	2	3	42	3	5	0	5	1	0	1
Subtotal	43	1,600	39	38	618	46	80	2	83	14	0	11
Neilsen Industrial Park	0	166	0	1	42	1	0	0	3	1	0	0
Rio Bravo Commerce Center	0	51	0	0	5	0	0	0	2	0	0	0
Other Projects (below)	10	106	0	0	91	0	3	0	0	0	0	0
Subtotal (NO BUILD - A.M.)	***53***	***1,923***	***39***	***39***	***756***	***47***	***83***	***2***	***88***	***15***	***0***	***11***
Percent Admiral Trips Generated(Entering)	*0.00%*	*0.00%*	***24.68%***	***70.66%***	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	***0.07%***	*0.00%*
Percent Admiral Trips Generated(Exiting)	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	***24.68%***	***0.07%***	***70.66%***	*0.00%*	*0.00%*	*0.00%*
Total Trips Generated	0	0	26	74	0	0	7	0	20	0	0	0
Total AM Peak Hour BUILD Volumes	**53**	**1,923**	**65**	**113**	**756**	**47**	**90**	**2**	**108**	**15**	**0**	**11**

	Eastbound (Rio Bravo Blvd)			Westbound (Rio Bravo Blvd)			Northbound (Prince St)			Southbound (Prince St)		
	1.93%			2.15%			3.00%			3.00%		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	19	774	94	106	1,443	28	87	4	63	44	3	48
Background Traffic Growth	1	30	4	5	62	1	5	0	4	3	0	3
Subtotal	20	804	98	111	1,505	29	92	4	67	47	3	51
Neilsen Industrial Park	0	56	0	3	160	1	0	0	1	1	0	0
Rio Bravo Commerce Center	0	8	0	6	46	1	0	0	1	0	0	0
Other Projects (below)	13	245	0	0	270	0	3	0	0	0	0	0
Subtotal (NO BUILD - P.M.)	***33***	***1,113***	***98***	***120***	***1,981***	***31***	***95***	***4***	***69***	***48***	***3***	***51***
Percent Admiral Trips Generated(Entering)	*0.00%*	*0.00%*	***24.68%***	***70.66%***	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	***0.07%***	*0.00%*
Percent Admiral Trips Generated(Exiting)	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	***24.68%***	***0.07%***	***70.66%***	*0.00%*	*0.00%*	*0.00%*
Total Trips Generated	0	0	9	25	0	0	17	0	47	0	0	0
Total PM Peak Hour BUILD Volumes	**33**	**1,113**	**107**	**145**	**1,981**	**31**	**112**	**4**	**116**	**48**	**3**	**51**

	Entering	Exiting		
Number of Admiral Trips Generated	**105**	**28**	A.M.	100% Admiral Development
	36	**67**	P.M.	

Trips from Other Developments AM Peak	Eastbound (Rio Bravo Blvd)			Westbound (Rio Bravo Blvd)			Northbound (Prince St)			Southbound (Prince St)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Valero (Rio Bravo / Broadway)	10	9	0	0	15	0	3	0	0	0	0	0
Neilsen Broadway Development	0	97	0	0	76	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal Other Trips	10	106	0	0	91	0	3	0	0	0	0	0

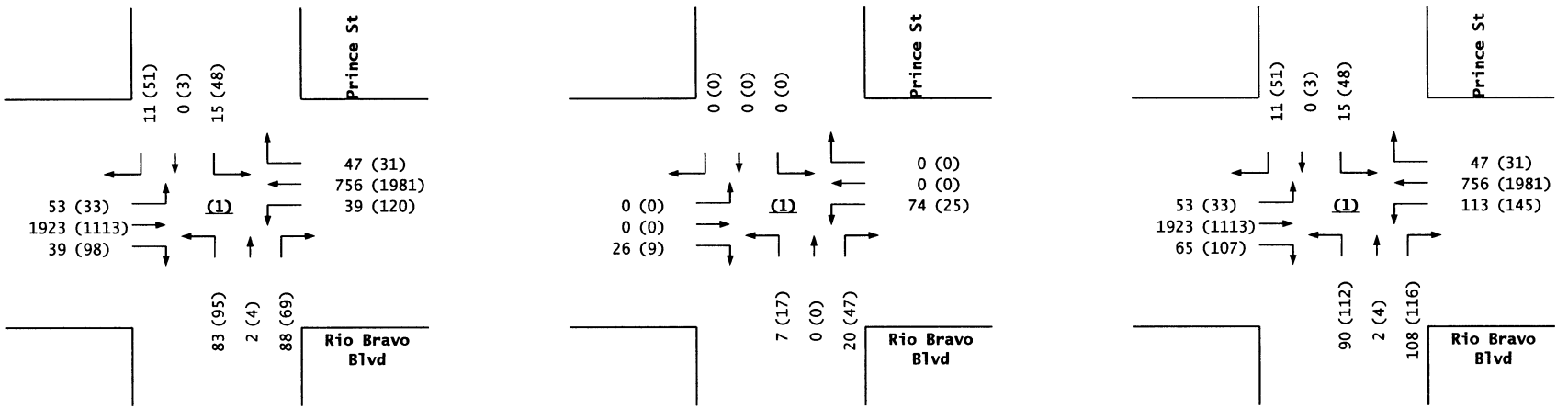
Trips from Other Developments PM Peak	Eastbound (Rio Bravo Blvd)			Westbound (Rio Bravo Blvd)			Northbound (Prince St)			Southbound (Prince St)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Valero (Rio Bravo / Broadway)	13	11	0	0	20	0	3	0	0	0	0	0
Neilsen Broadway Development	0	234	0	0	250	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal Other Trips	13	245	0	0	270	0	3	0	0	0	0	0

Option 1 (Driveway "A" and Driveway "B")

2014
NO BUILD

Trips

2014
BUILD



Rio Bravo Blvd / Prince St

Admiral Beverage Facility (Rio Bravo / Prince)

Projected Turning Movements Worksheet

Rio Bravo Blvd / Broadway Blvd

Option 1 (Driveway "A" and Driveway "B")

INTERSECTION: E-W Street: **Rio Bravo Blvd** (2)

N-S Street: **Broadway Blvd**

Year of Existing Counts 2012

Implementation Year **2014**

	Eastbound (Rio Bravo Blvd)			Westbound (Rio Bravo Blvd)			Northbound (Broadway Blvd)			Southbound (Broadway Blvd)		
Growth Rates	1.90%			5.42%			15.94%			5.02%		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	151	1,400	104	155	562	26	60	176	220	15	87	65
Background Traffic Growth	6	53	4	17	61	3	19	56	70	2	9	7
Subtotal	157	1,453	108	172	623	29	79	232	290	17	96	72
Kan Industrial Park	0	0	39	181	0	0	8	4	37	0	21	0
Rio Bravo Commerce Center	0	0	53	28	0	0	5	5	7	0	8	0
Other Projects (below)	6	85	182	16	36	5	123	70	6	37	24	6
Subtotal (NO BUILD - A.M.)	***163***	***1,538***	***382***	***397***	***659***	***34***	***215***	***311***	***340***	***54***	***149***	***78***
Percent Admiral Trips Generated(Entering)	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*61.11%*	*0.00%*	*6.24%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*3.31%*
Percent Admiral Trips Generated(Exiting)	*3.31%*	*61.11%*	*6.24%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*
Total Trips Generated	1	17	2	0	64	0	7	0	0	0	0	3
Total AM Peak Hour BUILD Volumes	**164**	**1,555**	**384**	**397**	**723**	**34**	**222**	**311**	**340**	**54**	**149**	**81**

	Eastbound (Rio Bravo Blvd)			Westbound (Rio Bravo Blvd)			Northbound (Broadway Blvd)			Southbound (Broadway Blvd)		
	1.30%			0.97%			9.26%			17.55%		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	105	766	114	214	1,223	24	174	163	260	15	246	219
Background Traffic Growth	3	20	3	4	24	0	32	30	48	5	86	77
Subtotal	108	786	117	218	1,247	24	206	193	308	20	332	296
Kan Industrial Park	0	0	10	46	0	0	38	20	175	0	5	0
Rio Bravo Commerce Center	0	0	9	10	0	0	53	12	34	0	6	0
Other Projects (below)	8	29	263	9	48	6	417	82	13	44	44	8
Subtotal (NO BUILD - P.M.)	***116***	***815***	***399***	***283***	***1,295***	***30***	***714***	***307***	***530***	***64***	***387***	***304***
Percent Admiral Trips Generated(Entering)	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*61.11%*	*0.00%*	*6.24%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*3.31%*
Percent Admiral Trips Generated(Exiting)	*3.31%*	*61.11%*	*6.24%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*
Total Trips Generated	2	41	4	0	22	0	2	0	0	0	0	1
Total PM Peak Hour BUILD Volumes	**118**	**856**	**403**	**283**	**1,317**	**30**	**716**	**307**	**530**	**64**	**387**	**305**

	Entering	Exiting		
Number of Admiral Trips Generated	**105**	**28**	A.M.	100% Admiral Development
	36	**67**	P.M.	

Previous Developments - AM Peak Hour Volumes

	Eastbound (Rio Bravo Blvd)			Westbound (Rio Bravo Blvd)			Northbound (Broadway Blvd)			Southbound (Broadway Blvd)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Valero Station	6	0	0	0	36	5	3	1	0	23	4	6
Neilsen Industrial Park	0	85	85	16	0	0	44	59	6	14	7	0
Louis Herrara Comm. Dev.	0	0	0	0	0	0	0	0	0	0	0	0
Neilsen Broadway Dev.	0	0	97	0	0	0	76	10	0	0	13	0
Subtotal	6	85	182	16	36	5	123	70	6	37	24	6

Previous Developments - PM Peak Hour Volumes

	Eastbound (Rio Bravo Blvd)			Westbound (Rio Bravo Blvd)			Northbound (Broadway Blvd)			Southbound (Broadway Blvd)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Valero Station	8	0	0	0	48	6	4	1	0	31	6	8
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Neilsen Industrial Park	0	29	29	9	0	0	163	48	13	13	7	0
Louis Herrara Comm. Dev.	0	0	0	0	0	0	0	0	0	0	0	0
Neilsen Broadway Dev.	0	0	234	0	0	0	250	33	0	0	31	0
Subtotal	8	29	263	9	48	6	417	82	13	44	44	8

MRCOG Forecast Volumes Worksheet

Based on 2012 Traffic Count				
2012 AM Link Volume	**1,655**	**743**	**456**	**167**
2012 PM Link Volume	**985**	**1,461**	**597**	**480**
Based on MRCOG Model (2035 Data Set)				
2004 AM Link Volume	**1565**	**952**	**619**	**43**
2004 PM Link Volume	**922**	**1360**	**428**	**820**
2035 AM Link Volume	**2380**	**1669**	**2128**	**360**
2035 PM Link Volume	**1280**	**1787**	**1868**	**2417**

Growth Rate to Apply to Existing Counts to Match 2035 Forecasts

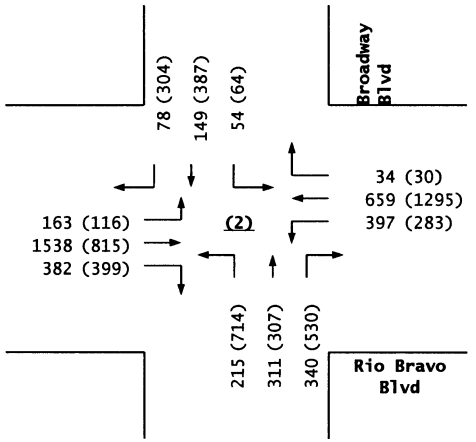
2012-2035 AM Growth Rates	**1.90%**	**5.42%**	**15.94%**	**5.02%**
2012-2035 PM Growth Rates	**1.30%**	**0.97%**	**9.26%**	**17.55%**

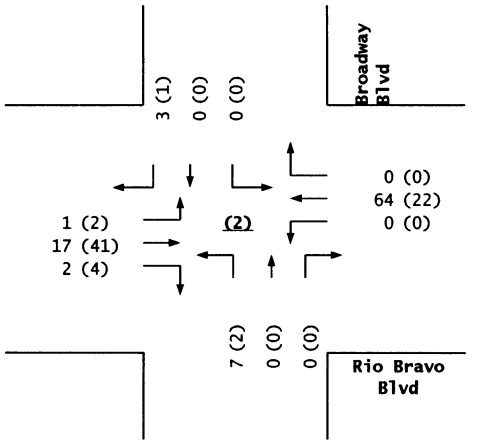
Option 1 (Driveway "A" and Driveway "B")

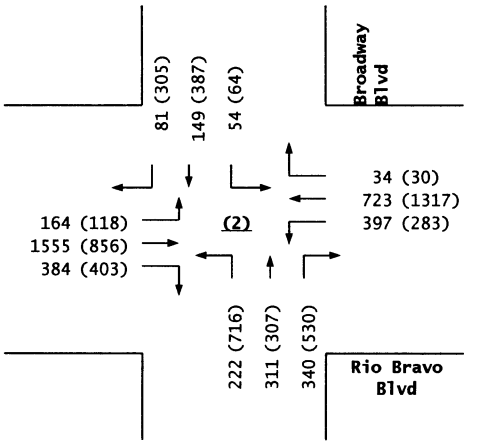
2014
NO BUILD

Trips

2014
BUILD







Rio Bravo Blvd / Broadway Blvd

Admiral Beverage Facility (Rio Bravo / Prince)

Projected Turning Movements Worksheet

Rio Bravo Blvd / Second St

Option 1 (Driveway "A" and Driveway "B")

INTERSECTION: E-W Street: **Rio Bravo Blvd** (3)

N-S Street: **Second St**

Year of Existing Counts 2012

Implementation Year **2014**

	Eastbound (Rio Bravo Blvd)			Westbound (Rio Bravo Blvd)			Northbound (Second St)			Southbound (Second St)		
Growth Rates		5.58%			3.82%			21.21%			6.74%	
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	329	1,333	162	45	529	69	128	110	52	79	65	63
Background Traffic Growth	37	149	18	3	40	5	54	47	22	11	9	8
Subtotal	366	1,482	180	48	569	74	182	157	74	90	74	71
Neilsen Industrial Park	0	107	0	5	19	19	0	0	18	42	0	0
Rio Bravo Commerce Center	0	44	0	0	4	1	0	0	2	5	0	0
Other Projects (below)	0	79	0	20	73	6	0	0	20	5	0	0
Subtotal (NO BUILD - A.M.)	***366***	***1,712***	***180***	***73***	***665***	***100***	***182***	***157***	***114***	***142***	***74***	***71***
Percent Admiral Trips Generated(Entering)	*0.00%*	*23.72%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.37%*	*0.59%*	*0.00%*	*0.00%*
Percent Admiral Trips Generated(Exiting)	*0.00%*	*0.00%*	*0.00%*	*0.37%*	*23.72%*	*0.59%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*
Total Trips Generated	0	25	0	0	7	0	0	0	0	1	0	0
Total AM Peak Hour BUILD Volumes	**366**	**1,737**	**180**	**73**	**672**	**100**	**182**	**157**	**114**	**143**	**74**	**71**

	Eastbound (Rio Bravo Blvd)			Westbound (Rio Bravo Blvd)			Northbound (Second St)			Southbound (Second St)		
		9.16%			3.06%			15.85%			10.23%	
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	116	569	131	30	1,296	57	213	74	58	112	98	399
Background Traffic Growth	21	104	24	2	79	3	68	23	18	23	20	82
Subtotal	137	673	155	32	1,375	60	281	97	76	135	118	481
Neilsen Industrial Park	0	44	0	17	80	63	0	0	6	17	0	0
Rio Bravo Commerce Center	0	6	0	1	44	1	0	0	1	1	0	0
Other Projects (below)	0	185	0	55	211	13	0	0	47	10	0	0
Subtotal (NO BUILD - P.M.)	***137***	***908***	***155***	***105***	***1,710***	***137***	***281***	***97***	***130***	***163***	***118***	***481***
Percent Admiral Trips Generated(Entering)	*0.00%*	*23.72%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.37%*	*0.59%*	*0.00%*	*0.00%*
Percent Admiral Trips Generated(Exiting)	*0.00%*	*0.00%*	*0.00%*	*0.37%*	*23.72%*	*0.59%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*
Total Trips Generated	0	9	0	0	16	0	0	0	0	0	0	0
Total PM Peak Hour BUILD Volumes	**137**	**917**	**155**	**105**	**1,726**	**137**	**281**	**97**	**130**	**163**	**118**	**481**

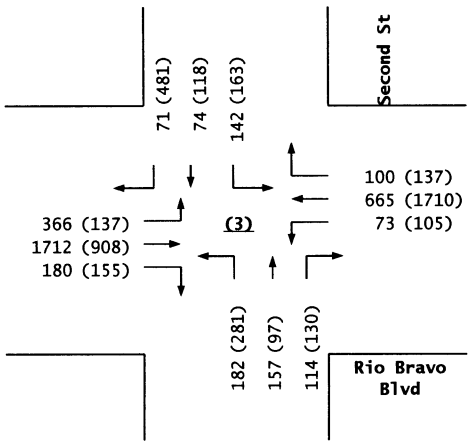
	Entering	Exiting		
Number of Admiral Trips Generated	**105**	**28**	A.M.	100% Admiral Development
	36	**67**	P.M.	

Trips from Other Developments AM Peak	Eastbound (Rio Bravo Blvd)			Westbound (Rio Bravo Blvd)			Northbound (Second St)			Southbound (Second St)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Valero (Rio Bravo / Broadway)	0	4	0	5	15	3	0	0	1	1	0	0
Neilsen Broadway Development	0	75	0	15	58	3	0	0	19	4	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal Other Trips	0	79	0	20	73	6	0	0	20	5	0	0

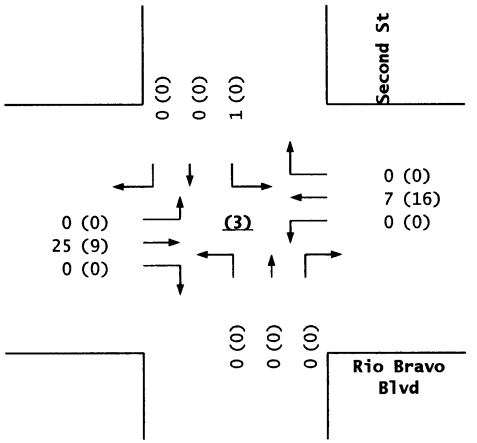
Trips from Other Developments PM Peak	Eastbound (Rio Bravo Blvd)			Westbound (Rio Bravo Blvd)			Northbound (Second St)			Southbound (Second St)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Valero (Rio Bravo / Broadway)	0	5	0	7	19	4	0	0	2	1	0	0
Neilsen Broadway Development	0	180	0	48	192	9	0	0	45	9	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal Other Trips	0	185	0	55	211	13	0	0	47	10	0	0

Option 1 (Driveway "A" and Driveway "B")

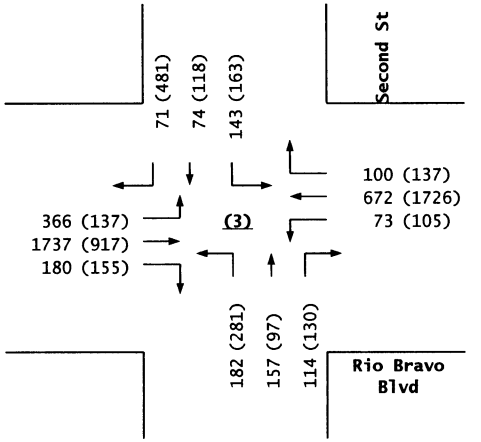
2014
NO BUILD



Trips



2014
BUILD



Rio Bravo Blvd / Second St

Admiral Beverage Facility (Rio Bravo / Prince)

Projected Turning Movements Worksheet

King/Drive "A" / Prince St.

Option 1 (Driveway "A" and Driveway "B")

INTERSECTION: E-W Street: **King/Drive "A"** (4)

N-S Street: **Prince St.**

Year of Existing Counts 2012

Implementation Year **2014**

	Growth Rates	3.00%			3.00%			3.00%			3.00%		
		Eastbound (King/Drive "A")			Westbound (King/Drive "A")			Northbound (Prince St.)			Southbound (Prince St.)		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes		44	0	1	0	0	0	2	119	0	0	28	17
Background Traffic Growth		3	0	0	0	0	0	0	7	0	0	2	1
Subtotal (NO BUILD - A.M.)		***47***	***0***	***1***	***0***	***0***	***0***	***2***	***126***	***0***	***0***	***30***	***18***
Percent Admiral Trips Generated(Entering)		*0.00%*	*0.00%*	***1.00%***	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	***95.41%***	*0.00%*
Percent Admiral Trips Generated(Exiting)		*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	***1.00%***	***95.41%***	*0.00%*	*0.00%*	*0.00%*	*0.00%*
Total Trips Generated		0	0	1	0	0	0	0	27	0	0	100	0
Total AM Peak Hour BUILD Volumes		**47**	**0**	**2**	**0**	**0**	**0**	**2**	**153**	**0**	**0**	**130**	**18**

	3.00%			3.00%			3.00%			3.00%		
	Eastbound (King/Drive "A")			Westbound (King/Drive "A")			Northbound (Prince St.)			Southbound (Prince St.)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	35	0	4	0	0	0	2	124	0	0	169	43
Background Traffic Growth	2	0	0	0	0	0	0	7	0	0	10	3
Subtotal (NO BUILD - P.M.)	***37***	***0***	***4***	***0***	***0***	***0***	***2***	***131***	***0***	***0***	***179***	***46***
Percent Admiral Trips Generated(Entering)	*0.00%*	*0.00%*	***1.00%***	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	***95.41%***	*0.00%*
Percent Admiral Trips Generated(Exiting)	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	***1.00%***	***95.41%***	*0.00%*	*0.00%*	*0.00%*	*0.00%*
Total Trips Generated	0	0	0	0	0	0	1	64	0	0	34	0
Total PM Peak Hour BUILD Volumes	**37**	**0**	**4**	**0**	**0**	**0**	**3**	**195**	**0**	**0**	**213**	**46**

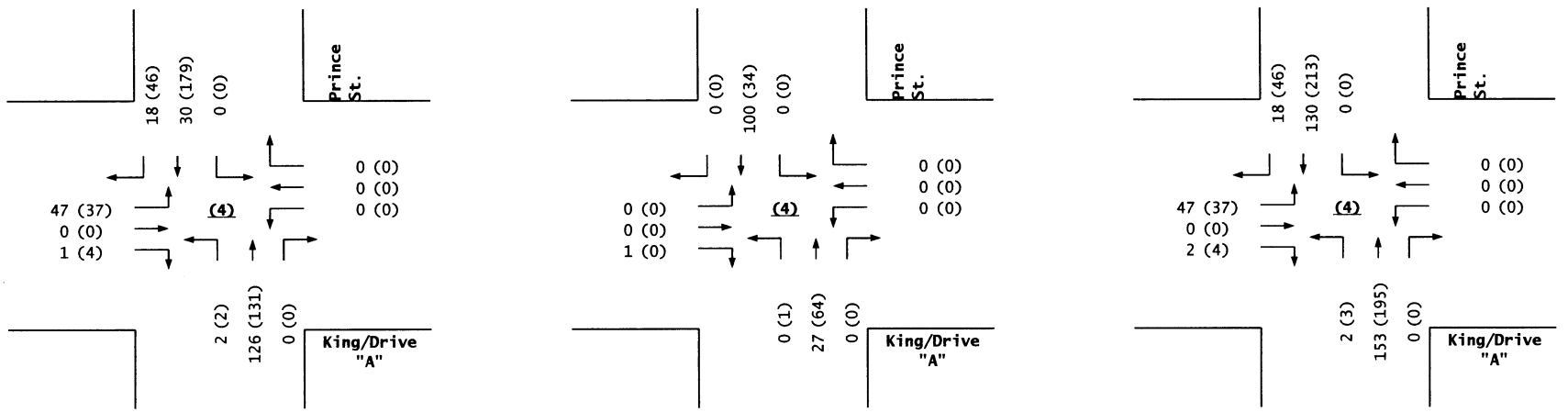
	Entering	Exiting		
Number of Admiral Trips Generated	**105**	**28**	A.M.	100% Admiral Development
	36	**67**	P.M.	

Option 1 (Driveway "A" and Driveway "B")

2014
NO BUILD

Trips

2014
BUILD



King/Drive "A" / Prince St.

Admiral Beverage Facility (Rio Bravo / Prince)

Projected Turning Movements Worksheet

Drive "B" / Prince St.

Option 1 (Driveway "A" and Driveway "B")

INTERSECTION: E-W Street: **Drive "B"** (5)

N-S Street: **Prince St.**

Year of Existing Counts 2012

Implementation Year **2014**

	Eastbound (Drive "B")			Westbound (Drive "B")			Northbound (Prince St.)			Southbound (Prince St.)		
Growth Rates	3.00%			3.00%			3.00%			3.00%		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	0	0	0	0	0	0	0	0	0	0	0	0
Background Traffic Growth	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal (NO BUILD - A.M.)	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***128***	***0***	***0***	***31***	***0***
Percent Admiral Trips Generated(Entering)	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	***3.58%***	***96.41%***	*0.00%*	*0.00%*
Percent Admiral Trips Generated(Exiting)	*0.00%*	*0.00%*	*0.00%*	***3.58%***	*0.00%*	***96.41%***	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*
Total Trips Generated	0	0	0	1	0	27	0	0	4	101	0	0
Total AM Peak Hour BUILD Volumes	**0**	**0**	**0**	**1**	**0**	**27**	**0**	**128**	**4**	**101**	**31**	**0**

	Eastbound (Drive "B")			Westbound (Drive "B")			Northbound (Prince St.)			Southbound (Prince St.)		
	3.00%			3.00%			3.00%			3.00%		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	0	0	0	0	0	0	0	0	0	0	0	0
Background Traffic Growth	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal (NO BUILD - P.M.)	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***133***	***0***	***0***	***183***	***0***
Percent Admiral Trips Generated(Entering)	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	***3.58%***	***96.41%***	*0.00%*	*0.00%*
Percent Admiral Trips Generated(Exiting)	*0.00%*	*0.00%*	*0.00%*	***3.58%***	*0.00%*	***96.41%***	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*
Total Trips Generated	0	0	0	2	0	65	0	0	1	35	0	0
Total PM Peak Hour BUILD Volumes	**0**	**0**	**0**	**2**	**0**	**65**	**0**	**133**	**1**	**35**	**183**	**0**

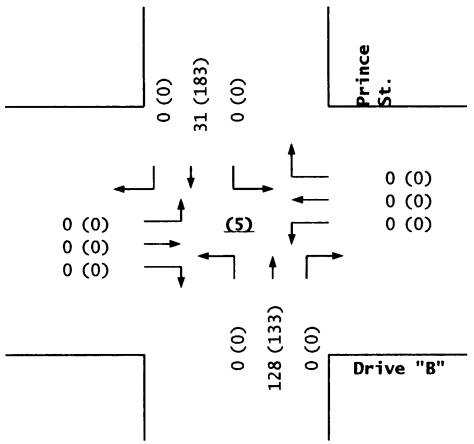
	Entering	Exiting		
Number of Admiral Trips Generated	**105**	**28**	A.M.	100% Admiral Development
	36	**67**	P.M.	

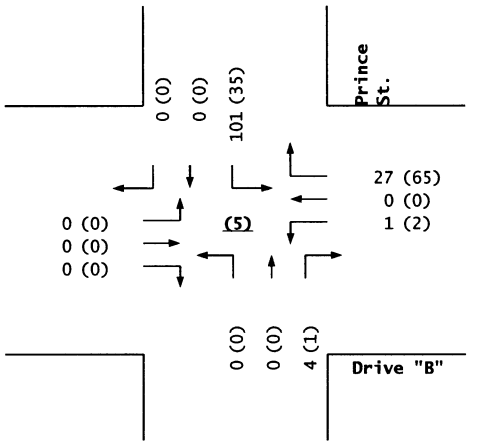
Option 1 (Driveway "A" and Driveway "B")

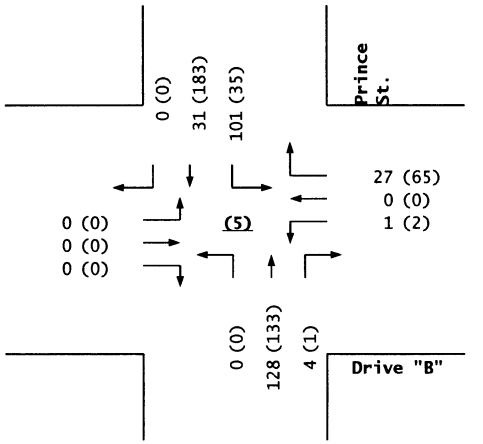
2014
NO BUILD

Trips

2014
BUILD







Drive "B" / Prince St.

Admiral Beverage Facility (Rio Bravo / Prince)

Projected Turning Movements SUMMARY

PROPOSED DEVELOPMENT (2024) - 100% Development

Horizon Year

INTERSECTION: **Summary**

Rio Bravo Blvd / Prince St

(1)

5.0% Truck

	0.89			0.89			0.81			0.75		PHF
	Eastbound (Rio Bravo Blvd)			Westbound (Rio Bravo Blvd)			Northbound (Prince St)			Southbound (Prince St)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing (2012)	41	1,537	37	35	576	43	75	2	78	13	0	10
2024 (NO BUILD - A.M.)	*61*	*2,240*	*46*	*51*	*969*	*63*	*105*	*3*	*111*	*19*	*0*	*14*
2024 (BUILD - A.M.)	***61***	***2,240***	***106***	***222***	***969***	***63***	***119***	***3***	***151***	***19***	***0***	***14***

	0.95			0.87			0.77			0.85		PHF
	Eastbound (Rio Bravo Blvd)			Westbound (Rio Bravo Blvd)			Northbound (Prince St)			Southbound (Prince St)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing (2012)	19	774	94	106	1,443	28	87	4	63	44	3	48
2024 (NO BUILD - P.M.)	*36*	*1,262*	*116*	*142*	*2,291*	*37*	*121*	*5*	*88*	*61*	*4*	*65*
2024 (BUILD - P.M.)	***36***	***1,262***	***134***	***193***	***2,291***	***37***	***173***	***5***	***235***	***61***	***4***	***65***

Rio Bravo Blvd / Broadway Blvd

(2)

9.9% Truck

	0.93			0.82			0.86			0.75		PHF
	Eastbound (Rio Bravo Blvd)			Westbound (Rio Bravo Blvd)			Northbound (Broadway Blvd)			Southbound (Broadway Blvd)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing (2012)	151	1,400	104	155	562	26	60	176	220	15	87	65
2024 (NO BUILD - A.M.)	*192*	*1,805*	*402*	*481*	*963*	*48*	*311*	*592*	*691*	*61*	*192*	*110*
2024 (BUILD - A.M.)	***194***	***1,839***	***406***	***481***	***1,111***	***48***	***327***	***592***	***691***	***61***	***192***	***118***

	0.91			0.92			0.85			0.87		PHF
	Eastbound (Rio Bravo Blvd)			Westbound (Rio Bravo Blvd)			Northbound (Broadway Blvd)			Southbound (Broadway Blvd)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing (2012)	105	766	114	214	1,223	24	174	163	260	15	246	219
2024 (NO BUILD - P.M.)	*129*	*915*	*414*	*304*	*1,413*	*33*	*875*	*458*	*771*	*91*	*819*	*688*
2024 (BUILD - P.M.)	***136***	***1,042***	***427***	***304***	***1,458***	***33***	***879***	***458***	***771***	***91***	***819***	***690***

Rio Bravo Blvd / Second St

(3)

5.0% Truck

	0.92			0.92			0.87			0.91		PHF
	Eastbound (Rio Bravo Blvd)			Westbound (Rio Bravo Blvd)			Northbound (Second St)			Southbound (Second St)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing (2012)	329	1,333	162	45	529	69	128	110	52	79	65	63
2024 (NO BUILD - A.M.)	*549*	*2,456*	*271*	*91*	*868*	*127*	*454*	*390*	*224*	*195*	*118*	*114*
2024 (BUILD - A.M.)	***549***	***2,513***	***271***	***91***	***882***	***127***	***454***	***390***	***225***	***197***	***118***	***114***

	0.92			0.91			0.75			0.91		PHF
	Eastbound (Rio Bravo Blvd)			Westbound (Rio Bravo Blvd)			Northbound (Second St)			Southbound (Second St)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing (2012)	116	569	131	30	1,296	57	213	74	58	112	98	399
2024 (NO BUILD - P.M.)	*243*	*1,429*	*275*	*114*	*2,107*	*155*	*618*	*215*	*222*	*277*	*218*	*889*
2024 (BUILD - P.M.)	***243***	***1,447***	***275***	***115***	***2,156***	***156***	***618***	***215***	***222***	***277***	***218***	***889***

Admiral Beverage Facility (Rio Bravo / Prince)

Projected Turning Movements SUMMARY

PROPOSED DEVELOPMENT (2024) - 100% Development

Option 1 (Driveway "A" and Driveway "B")

INTERSECTION: **Summary**

King/Drive "A" / Prince St.

(4)

5.0% Truck

	0.87			0.85			0.92			0.75		PHF
	Eastbound (King/Drive "A")			Westbound (King/Drive "A")			Northbound (Prince St.)			Southbound (Prince St.)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing (2012)	44	0	1	0	0	0	2	119	0	0	28	17
2024 (NO BUILD - A.M.)	*60*	*0*	*1*	*0*	*0*	*0*	*3*	*162*	*0*	*0*	*38*	*23*
2024 (BUILD - A.M.)	***60***	***1***	***2***	***1***	***0***	***27***	***3***	***189***	***5***	***131***	***138***	***23***

	0.89			0.85			0.81			0.85		PHF
	Eastbound (King/Drive "A")			Westbound (King/Drive "A")			Northbound (Prince St.)			Southbound (Prince St.)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing (2012)	35	0	4	0	0	0	2	124	0	0	169	43
2024 (NO BUILD - P.M.)	*48*	*0*	*5*	*0*	*0*	*0*	*3*	*169*	*0*	*0*	*230*	*58*
2024 (BUILD - P.M.)	***48***	***0***	***5***	***5***	***1***	***135***	***4***	***233***	***1***	***35***	***264***	***58***

Drive "B" / Prince St.

(5)

5.0% Truck

	0.85			0.85			0.92			0.92		PHF
	Eastbound (Drive "B")			Westbound (Drive "B")			Northbound (Prince St.)			Southbound (Prince St.)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing (2012)	0	0	0	0	0	0	0	0	0	0	0	0
2024 (NO BUILD - A.M.)	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*165*	*0*	*0*	*39*	*0*
2024 (BUILD - A.M.)	***0***	***0***	***0***	***1***	***0***	***27***	***0***	***170***	***4***	***101***	***40***	***0***

	0.85			0.85			0.81			0.81		PHF
	Eastbound (Drive "B")			Westbound (Drive "B")			Northbound (Prince St.)			Southbound (Prince St.)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing (2012)	0	0	0	0	0	0	0	0	0	0	0	0
2024 (NO BUILD - P.M.)	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*172*	*0*	*0*	*235*	*0*
2024 (BUILD - P.M.)	***0***	***0***	***0***	***2***	***0***	***65***	***0***	***173***	***1***	***35***	***240***	***0***

Admiral Beverage Facility (Rio Bravo / Prince)

Projected Turning Movements Worksheet

Rio Bravo Blvd / Prince St

Horizon Year

INTERSECTION: E-W Street: **Rio Bravo Blvd** (1)

N-S Street: **Prince St**

Year of Existing Counts 2012

Horizon Year **2024**

	Eastbound (Rio Bravo Blvd)			Westbound (Rio Bravo Blvd)			Northbound (Prince St)			Southbound (Prince St)		
Growth Rates	2.06%			3.68%			3.00%			3.00%		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	41	1,537	37	35	576	43	75	2	78	13	0	10
Background Traffic Growth	10	380	9	15	255	19	27	1	28	5	0	4
Subtotal	51	1,917	46	50	831	62	102	3	106	18	0	14
Neilsen Industrial Park	0	166	0	1	42	1	0	0	3	1	0	0
Rio Bravo Commerce Center	0	51	0	0	5	0	0	0	2	0	0	0
Other Projects (below)	10	106	0	0	91	0	3	0	0	0	0	0
Subtotal (NO BUILD - A.M.)	***61***	***2,240***	***46***	***51***	***969***	***63***	***105***	***3***	***111***	***19***	***0***	***14***
Percent Admiral Trips Generated(Entering)	*0.00%*	*0.00%*	*24.68%*	*70.66%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.07%*	*0.00%*
Percent Admiral Trips Generated(Exiting)	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*24.68%*	*0.07%*	*70.66%*	*0.00%*	*0.00%*	*0.00%*
Percent IP Trips Generated(Entering)	*0.00%*	*0.00%*	*24.68%*	*70.66%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.07%*	*0.00%*
Percent IP Trips Generated(Exiting)	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*24.68%*	*0.07%*	*70.66%*	*0.00%*	*0.00%*	*0.00%*
Total Trips Generated	0	0	60	171	0	0	14	0	40	0	0	0
Total AM Peak Hour BUILD Volumes	**61**	**2,240**	**106**	**222**	**969**	**63**	**119**	**3**	**151**	**19**	**0**	**14**

	Eastbound (Rio Bravo Blvd)			Westbound (Rio Bravo Blvd)			Northbound (Prince St)			Southbound (Prince St)		
	1.93%			2.15%			3.00%			3.00%		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	19	774	94	106	1,443	28	87	4	63	44	3	48
Background Traffic Growth	4	179	22	27	372	7	31	1	23	16	1	17
Subtotal	23	953	116	133	1,815	35	118	5	86	60	4	65
Neilsen Industrial Park	0	56	0	3	160	1	0	0	1	1	0	0
Rio Bravo Commerce Center	0	8	0	6	46	1	0	0	1	0	0	0
Other Projects (below)	13	245	0	0	270	0	3	0	0	0	0	0
Subtotal (NO BUILD - P.M.)	***36***	***1,262***	***116***	***142***	***2,291***	***37***	***121***	***5***	***88***	***61***	***4***	***65***
Percent Admiral Trips Generated(Entering)	*0.00%*	*0.00%*	*24.68%*	*70.66%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.07%*	*0.00%*
Percent Admiral Trips Generated(Exiting)	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*24.68%*	*0.07%*	*70.66%*	*0.00%*	*0.00%*	*0.00%*
Percent IP Trips Generated(Entering)	*0.00%*	*0.00%*	*24.68%*	*70.66%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.07%*	*0.00%*
Percent IP Trips Generated(Exiting)	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*24.68%*	*0.07%*	*70.66%*	*0.00%*	*0.00%*	*0.00%*
Total Trips Generated	0	0	18	51	0	0	52	0	147	0	0	0
Total PM Peak Hour BUILD Volumes	**36**	**1,262**	**134**	**193**	**2,291**	**37**	**173**	**5**	**235**	**61**	**4**	**65**

	Entering	Exiting		
Number of Admiral Trips Generated	**105**	**28**	A.M.	100% Admiral Development
	36	**67**	P.M.	
Number of IP Trips Generated	**137**	**28**	A.M.	100% IP Development
	37	**141**	P.M.	

MRCOG Forecast Volumes Worksheet

Based on 2012 Traffic Count				
2012 AM Link Volume	**1,615**	**654**	**155**	**23**
2012 PM Link Volume	**887**	**1,577**	**154**	**95**
Based on MRCOG Model (2035 Data Set)				
2004 AM Link Volume	**1565**	**650**		
2004 PM Link Volume	**922**	**1534**		
2035 AM Link Volume	**2380**	**1208**		
2035 PM Link Volume	**1280**	**2357**		
Growth Rate to Apply to Existing Counts to Match 2035 Forecasts				
2012-2035 AM Growth Rates	**2.06%**	**3.68%**	**-4.35%**	**-4.35%**
2012-2035 PM Growth Rates	**1.93%**	**2.15%**	**-4.35%**	**-4.35%**
Growth Rate to Apply to 2004 Model Volumes to Match 2035 Forecasts				
2004-2035 AM Growth Rates	1.68%	2.77%	#DIV/0!	#DIV/0!
2004-2035 PM Growth Rates	1.25%	1.73%	#DIV/0!	#DIV/0!

Trips from Other Developments AM Peak	Eastbound (Rio Bravo Blvd)			Westbound (Rio Bravo Blvd)			Northbound (Prince St)			Southbound (Prince St)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Valero (Rio Bravo / Broadway)	10	9	0	0	15	0	3	0	0	0	0	0
Neilsen Broadway Development	0	97	0	0	76	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal Other Trips	10	106	0	0	91	0	3	0	0	0	0	0

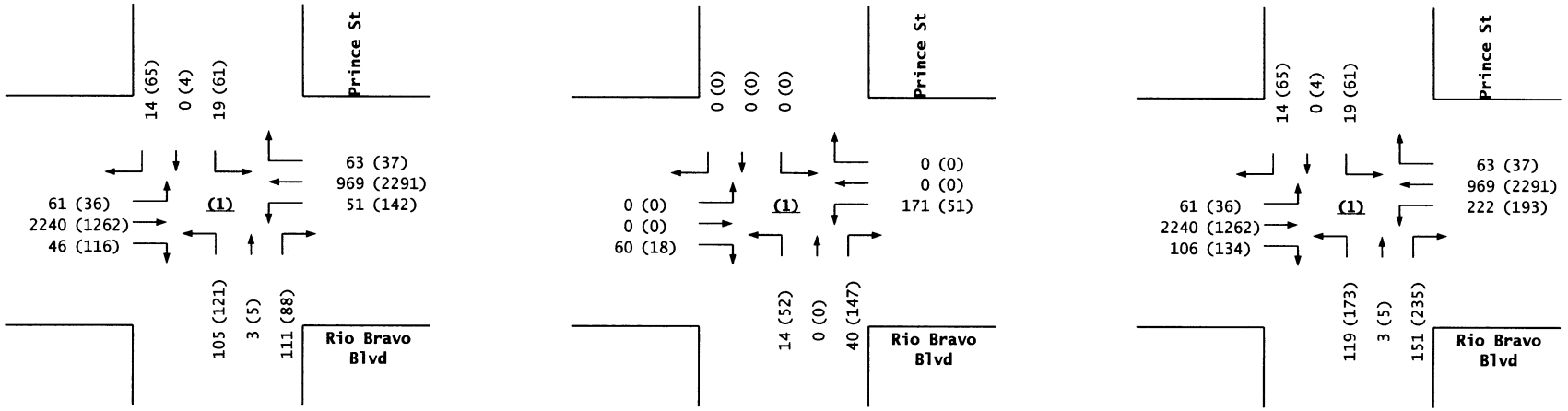
Trips from Other Developments PM Peak	Eastbound (Rio Bravo Blvd)			Westbound (Rio Bravo Blvd)			Northbound (Prince St)			Southbound (Prince St)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Valero (Rio Bravo / Broadway)	13	11	0	0	20	0	3	0	0	0	0	0
Neilsen Broadway Development	0	234	0	0	250	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal Other Trips	13	245	0	0	270	0	3	0	0	0	0	0

A-30a

2024
NO BUILD

Trips

2024
BUILD



Rio Bravo Blvd / Prince St

A-36b

Admiral Beverage Facility (Rio Bravo / Prince)

Projected Turning Movements Worksheet

Rio Bravo Blvd / Broadway Blvd

Horizon Year

INTERSECTION: E-W Street: **Rio Bravo Blvd** (2)

N-S Street: **Broadway Blvd**

Year of Existing Counts 2012

Horizon Year **2024**

	Eastbound (Rio Bravo Blvd)			Westbound (Rio Bravo Blvd)			Northbound (Broadway Blvd)			Southbound (Broadway Blvd)		
Growth Rates	1.90%			5.42%			15.94%			5.02%		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	151	1,400	104	155	562	26	60	176	220	15	87	65
Background Traffic Growth	35	320	24	101	365	17	115	337	421	9	52	39
Subtotal	186	1,720	128	256	927	43	175	513	641	24	139	104
Kan Industrial Park	0	0	39	181	0	0	8	4	37	0	21	0
Rio Bravo Commerce Center	0	0	53	28	0	0	5	5	7	0	8	0
Other Projects (below)	6	85	182	16	36	5	123	70	6	37	24	6
Subtotal (NO BUILD - A.M.)	***192***	***1,805***	***402***	***481***	***963***	***48***	***311***	***592***	***691***	***61***	***192***	***110***
Percent Admiral Trips Generated(Entering)	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*61.11%*	*0.00%*	*6.24%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*3.31%*
Percent Admiral Trips Generated(Exiting)	*3.31%*	*61.11%*	*6.24%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*
Percent IP Trips Generated(Entering)	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*61.11%*	*0.00%*	*6.24%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*3.31%*
Percent IP Trips Generated(Exiting)	*3.31%*	*61.11%*	*6.24%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*
Total Trips Generated	2	34	4	0	148	0	16	0	0	0	0	8
Total AM Peak Hour BUILD Volumes	**194**	**1,839**	**406**	**481**	**1,111**	**48**	**327**	**592**	**691**	**61**	**192**	**118**

	Eastbound (Rio Bravo Blvd)			Westbound (Rio Bravo Blvd)			Northbound (Broadway Blvd)			Southbound (Broadway Blvd)		
	1.30%			0.97%			9.26%			17.55%		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	105	766	114	214	1,223	24	174	163	260	15	246	219
Background Traffic Growth	16	120	18	25	142	3	193	181	289	32	518	461
Subtotal	121	886	132	239	1,365	27	367	344	549	47	764	680
Kan Industrial Park	0	0	10	46	0	0	38	20	175	0	5	0
Rio Bravo Commerce Center	0	0	9	10	0	0	53	12	34	0	6	0
Other Projects (below)	8	29	263	9	48	6	417	82	13	44	44	8
Subtotal (NO BUILD - P.M.)	***129***	***915***	***414***	***304***	***1,413***	***33***	***875***	***458***	***771***	***91***	***819***	***688***
Percent Admiral Trips Generated(Entering)	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*61.11%*	*0.00%*	*6.24%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*3.31%*
Percent Admiral Trips Generated(Exiting)	*3.31%*	*61.11%*	*6.24%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*
Percent IP Trips Generated(Entering)	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*61.11%*	*0.00%*	*6.24%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*3.31%*
Percent IP Trips Generated(Exiting)	*3.31%*	*61.11%*	*6.24%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*
Total Trips Generated	7	127	13	0	45	0	4	0	0	0	0	2
Total PM Peak Hour BUILD Volumes	**136**	**1,042**	**427**	**304**	**1,458**	**33**	**879**	**458**	**771**	**91**	**819**	**690**

	Entering	Exiting		
Number of Admiral Trips Generated	**105**	**28**	A.M.	100% Admiral Development
	36	**67**	P.M.	
Number of IP Trips Generated	**137**	**28**	A.M.	100% IP Development
	37	**141**	P.M.	

Previous Developments - AM Peak Hour Volumes

	Eastbound (Rio Bravo Blvd)			Westbound (Rio Bravo Blvd)			Northbound (Broadway Blvd)			Southbound (Broadway Blvd)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Valero Station	6	0	0	0	36	5	3	1	0	23	4	6
Neilsen Industrial Park	0	85	85	16	0	0	44	59	6	14	7	0
Louis Herrara Comm. Dev.	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Neilsen Broadway Dev.	0	0	97	0	0	0	76	10	0	0	13	0
Subtotal	6	85	182	16	36	5	123	70	6	37	24	6

Previous Developments - PM Peak Hour Volumes

	Eastbound (Rio Bravo Blvd)			Westbound (Rio Bravo Blvd)			Northbound (Broadway Blvd)			Southbound (Broadway Blvd)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Valero Station	8	0	0	0	48	6	4	1	0	31	6	8
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Neilsen Industrial Park	0	29	29	9	0	0	163	48	13	13	7	0
Louis Herrara Comm. Dev.	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
Neilsen Broadway Dev.	0	0	234	0	0	0	250	33	0	0	31	0
Subtotal	8	29	263	9	48	6	417	82	13	44	44	8

MRCOG Forecast Volumes Worksheet

Based on 2012 Traffic Count				
2012 AM Link Volume	**1,655**	**743**	**456**	**167**
2012 PM Link Volume	**985**	**1,461**	**597**	**480**
Based on MRCOG Model (2035 Data Set)				
2004 AM Link Volume	**1565**	**952**	**619**	**43**
2004 PM Link Volume	**922**	**1360**	**428**	**820**
2035 AM Link Volume	**2380**	**1669**	**2128**	**360**
2035 PM Link Volume	**1280**	**1787**	**1868**	**2417**

Growth Rate to Apply to Existing Counts to Match 2035 Forecasts

2012-2035 AM Growth Rates	**1.90%**	**5.42%**	**15.94%**	**5.02%**
2012-2035 PM Growth Rates	**1.30%**	**0.97%**	**9.26%**	**17.55%**

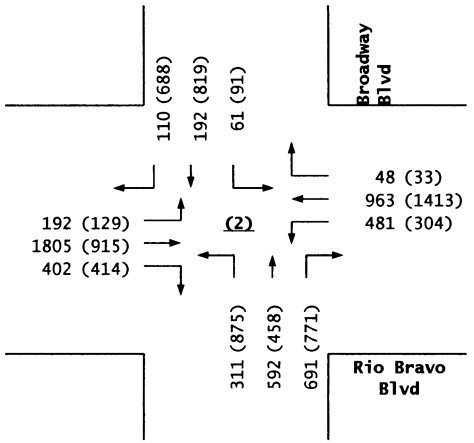
A-30c

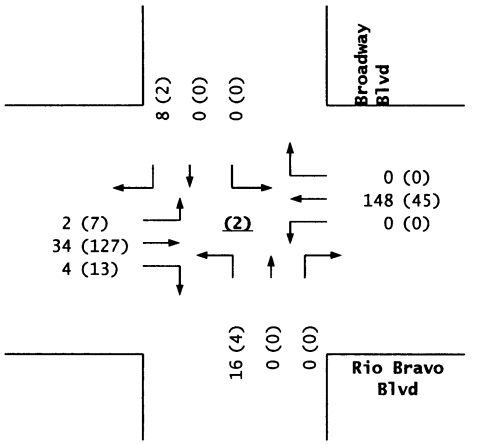
0

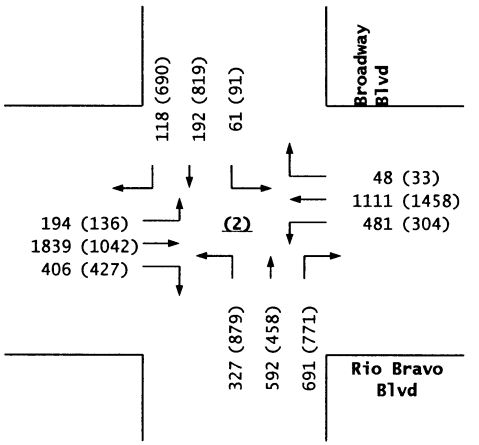
2024
NO BUILD

Trips

2024
BUILD







Rio Bravo Blvd / Broadway Blvd

A-30d

Admiral Beverage Facility (Rio Bravo / Prince)

Projected Turning Movements Worksheet

Rio Bravo Blvd / Second St

Horizon Year

INTERSECTION: E-W Street: **Rio Bravo Blvd** (3)

N-S Street: **Second St**

Year of Existing Counts 2012

Horizon Year **2024**

	Eastbound (Rio Bravo Blvd)			Westbound (Rio Bravo Blvd)			Northbound (Second St)			Southbound (Second St)		
Growth Rates	5.58%			3.82%			21.21%			6.74%		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	329	1,333	162	45	529	69	128	110	52	79	65	63
Background Traffic Growth	220	893	109	21	243	32	326	280	132	64	53	51
Subtotal	549	2,226	271	66	772	101	454	390	184	143	118	114
Neilsen Industrial Park	0	107	0	5	19	19	0	0	18	42	0	0
Rio Bravo Commerce Center	0	44	0	0	4	1	0	0	2	5	0	0
Other Projects (below)	0	79	0	20	73	6	0	0	20	5	0	0
Subtotal (NO BUILD - A.M.)	***549***	***2,456***	***271***	***91***	***868***	***127***	***454***	***390***	***224***	***195***	***118***	***114***
Percent Admiral Trips Generated(Entering)	*0.00%*	*23.72%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.37%*	*0.59%*	*0.00%*	*0.00%*
Percent Admiral Trips Generated(Exiting)	*0.00%*	*0.00%*	*0.00%*	*0.37%*	*23.72%*	*0.59%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*
Percent IP Trips Generated(Entering)	*0.00%*	*23.72%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.37%*	*0.59%*	*0.00%*	*0.00%*
Percent IP Trips Generated(Exiting)	*0.00%*	*0.00%*	*0.00%*	*0.37%*	*23.72%*	*0.59%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*
Total Trips Generated	0	57	0	0	14	0	0	0	1	2	0	0
Total AM Peak Hour BUILD Volumes	**549**	**2,513**	**271**	**91**	**882**	**127**	**454**	**390**	**225**	**197**	**118**	**114**

	Eastbound (Rio Bravo Blvd)			Westbound (Rio Bravo Blvd)			Northbound (Second St)			Southbound (Second St)		
	9.16%			3.06%			15.85%			10.23%		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	116	569	131	30	1,296	57	213	74	58	112	98	399
Background Traffic Growth	127	625	144	11	476	21	405	141	110	137	120	490
Subtotal	243	1,194	275	41	1,772	78	618	215	168	249	218	889
Neilsen Industrial Park	0	44	0	17	80	63	0	0	6	17	0	0
Rio Bravo Commerce Center	0	6	0	1	44	1	0	0	1	1	0	0
Other Projects (below)	0	185	0	55	211	13	0	0	47	10	0	0
Subtotal (NO BUILD - P.M.)	***243***	***1,429***	***275***	***114***	***2,107***	***155***	***618***	***215***	***222***	***277***	***218***	***889***
Percent Admiral Trips Generated(Entering)	*0.00%*	*23.72%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.37%*	*0.59%*	*0.00%*	*0.00%*
Percent Admiral Trips Generated(Exiting)	*0.00%*	*0.00%*	*0.00%*	*0.37%*	*23.72%*	*0.59%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*
Percent IP Trips Generated(Entering)	*0.00%*	*23.72%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.37%*	*0.59%*	*0.00%*	*0.00%*
Percent IP Trips Generated(Exiting)	*0.00%*	*0.00%*	*0.00%*	*0.37%*	*23.72%*	*0.59%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*
Total Trips Generated	0	18	0	1	49	1	0	0	0	0	0	0
Total PM Peak Hour BUILD Volumes	**243**	**1,447**	**275**	**115**	**2,156**	**156**	**618**	**215**	**222**	**277**	**218**	**889**

	Entering	Exiting		
Number of Admiral Trips Generated	**105**	**28**	A.M.	100% Admiral Development
	36	**67**	P.M.	
Number of IP Trips Generated	**137**	**28**	A.M.	100% IP Development
	37	**141**	P.M.	

MRCOG Forecast Volumes Worksheet

Based on 2012 Traffic Count				
2012 AM Link Volume	**1,824**	**643**	**290**	**207**
2012 PM Link Volume	**816**	**1,383**	**345**	**609**
Based on MRCOG Model (2035 Data Set)				
2004 AM Link Volume	**2092**	**650**	**316**	**82**
2004 PM Link Volume	**1211**	**1534**	**362**	**547**
2035 AM Link Volume	**4167**	**1208**	**1705**	**528**
2035 PM Link Volume	**2535**	**2357**	**1603**	**2042**
Growth Rate to Apply to Existing Counts to Match 2035 Forecasts				
2012-2035 AM Growth Rates	**5.58%**	**3.82%**	**21.21%**	**6.74%**
2012-2035 PM Growth Rates	**9.16%**	**3.06%**	**15.85%**	**10.23%**
Growth Rate to Apply to 2004 Model Volumes to Match 2035 Forecasts				
2004-2035 AM Growth Rates	3.20%	2.77%	14.18%	17.55%
2004-2035 PM Growth Rates	3.53%	1.73%	11.06%	8.82%

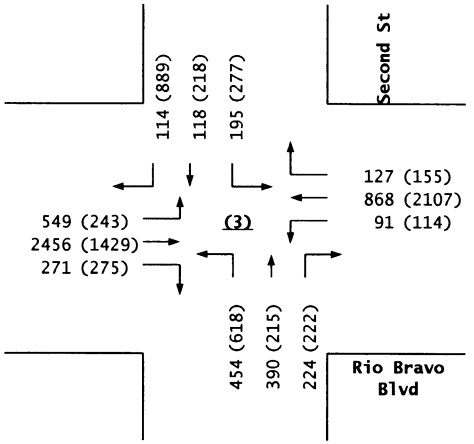
Trips from Other Developments AM Peak	Eastbound (Rio Bravo Blvd)			Westbound (Rio Bravo Blvd)			Northbound (Second St)			Southbound (Second St)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Valero (Rio Bravo / Broadway)	0	4	0	5	15	3	0	0	1	1	0	0
Neilsen Broadway Development	0	75	0	15	58	3	0	0	19	4	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal Other Trips	0	79	0	20	73	6	0	0	20	5	0	0

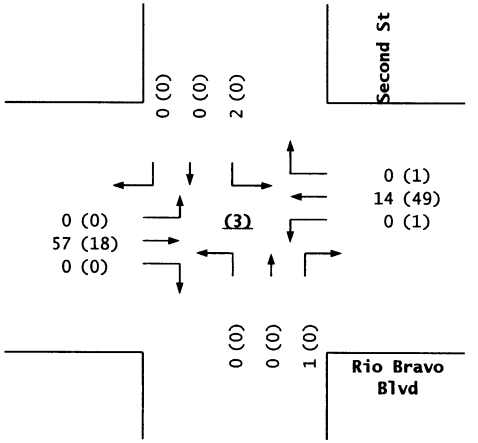
Trips from Other Developments PM Peak	Eastbound (Rio Bravo Blvd)			Westbound (Rio Bravo Blvd)			Northbound (Second St)			Southbound (Second St)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Valero (Rio Bravo / Broadway)	0	5	0	7	19	4	0	0	2	1	0	0
Neilsen Broadway Development	0	180	0	48	192	9	0	0	45	9	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal Other Trips	0	185	0	55	211	13	0	0	47	10	0	0

0

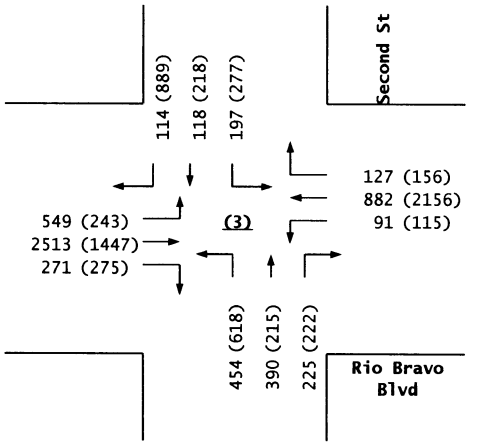
Trips

2024
NO BUILD





2024
BUILD



Rio Bravo Blvd / Second St

A-30f

Admiral Beverage Facility (Rio Bravo / Prince)

Projected Turning Movements Worksheet

King/Drive "A" / Prince St.

Option 1 (Driveway "A" and Driveway "B")

INTERSECTION: E-W Street: **King/Drive "A"** (4)

N-S Street: **Prince St.**

Year of Existing Counts 2012

Horizon Year **2024**

	Eastbound (King/Drive "A")			Westbound (King/Drive "A")			Northbound (Prince St.)			Southbound (Prince St.)		
Growth Rates	3.00%			3.00%			3.00%			3.00%		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	44	0	1	0	0	0	2	119	0	0	28	17
Background Traffic Growth	16	0	0	0	0	0	1	43	0	0	10	6
Subtotal (NO BUILD - A.M.)	***60***	***0***	***1***	***0***	***0***	***0***	***3***	***162***	***0***	***0***	***38***	***23***
Percent Admiral Trips Generated(Entering)	*0.00%*	*0.00%*	***1.00%***	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	***95.41%***	*0.00%*
Percent Admiral Trips Generated(Exiting)	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	***1.00%***	***95.41%***	*0.00%*	*0.00%*	*0.00%*	*0.00%*
Percent IP Trips Generated(Entering)	*0.00%*	***1.00%***	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	***3.58%***	***95.41%***	*0.00%*	*0.00%*
Percent IP Trips Generated(Exiting)	*0.00%*	*0.00%*	*0.00%*	***3.58%***	***1.00%***	***95.41%***	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*
Total Trips Generated	0	1	1	1	0	27	0	27	5	131	100	0
Total AM Peak Hour BUILD Volumes	**60**	**1**	**2**	**1**	**0**	**27**	**3**	**189**	**5**	**131**	**138**	**23**

	Eastbound (King/Drive "A")			Westbound (King/Drive "A")			Northbound (Prince St.)			Southbound (Prince St.)		
	3.00%			3.00%			3.00%			3.00%		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	35	0	4	0	0	0	2	124	0	0	169	43
Background Traffic Growth	13	0	1	0	0	0	1	45	0	0	61	15
Subtotal (NO BUILD - P.M.)	***48***	***0***	***5***	***0***	***0***	***0***	***3***	***169***	***0***	***0***	***230***	***58***
Percent Admiral Trips Generated(Entering)	*0.00%*	*0.00%*	***1.00%***	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	***95.41%***	*0.00%*
Percent Admiral Trips Generated(Exiting)	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	***1.00%***	***95.41%***	*0.00%*	*0.00%*	*0.00%*	*0.00%*
Percent IP Trips Generated(Entering)	*0.00%*	***1.00%***	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	***3.58%***	***95.41%***	*0.00%*	*0.00%*
Percent IP Trips Generated(Exiting)	*0.00%*	*0.00%*	*0.00%*	***3.58%***	***1.00%***	***95.41%***	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*
Total Trips Generated	0	0	0	5	1	135	1	64	1	35	34	0
Total PM Peak Hour BUILD Volumes	**48**	**0**	**5**	**5**	**1**	**135**	**4**	**233**	**1**	**35**	**264**	**58**

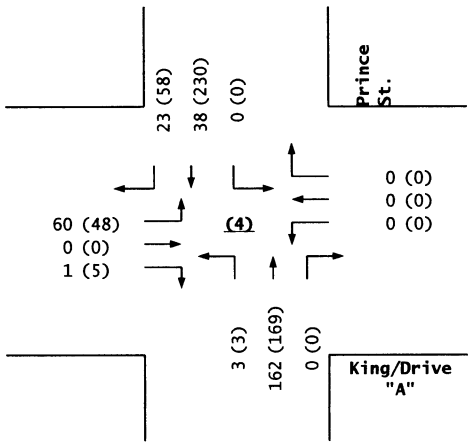
	Entering	Exiting		
Number of Admiral Trips Generated	**105**	**28**	A.M.	100% Admiral Development
	36	**67**	P.M.	
Number of IP Trips Generated	**137**	**28**	A.M.	100% IP Development
	37	**141**	P.M.	

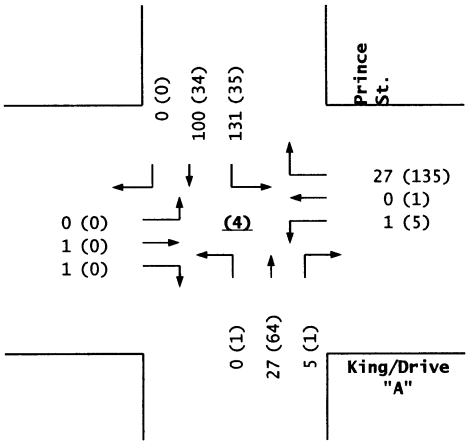
Option 1 (Driveway "A" and Driveway "B")

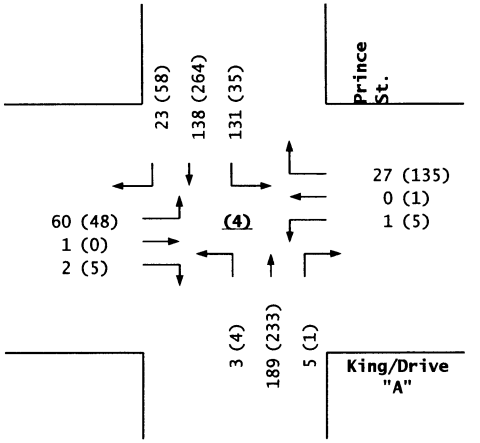
2024
NO BUILD

Trips

2024
BUILD







King/Drive "A" / Prince St.

Admiral Beverage Facility (Rio Bravo / Prince)

Projected Turning Movements Worksheet

Drive "B" / Prince St.

Option 1 (Driveway "A" and Driveway "B")

INTERSECTION: E-W Street: **Drive "B"** (5)

N-S Street: **Prince St.**

Year of Existing Counts 2012

Horizon Year **2024**

	Growth Rates	3.00%			3.00%			3.00%			3.00%		
		Eastbound (Drive "B")			Westbound (Drive "B")			Northbound (Prince St.)			Southbound (Prince St.)		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes		0	0	0	0	0	0	0	0	0	0	0	0
Background Traffic Growth		0	0	0	0	0	0	0	0	0	0	0	0
Subtotal (NO BUILD - A.M.)		***0***	***0***	***0***	***0***	***0***	***0***	***0***	***165***	***0***	***0***	***39***	***0***
Percent Admiral Trips Generated(Entering)		*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	***3.58%***	***96.41%***	*0.00%*	*0.00%*
Percent Admiral Trips Generated(Exiting)		*0.00%*	*0.00%*	*0.00%*	***3.58%***	*0.00%*	***96.41%***	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*
Percent IP Trips Generated(Entering)		*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	***3.58%***	*0.00%*	*0.00%*	*0.00%*	*0.00%*
Percent IP Trips Generated(Exiting)		*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	***3.58%***	*0.00%*
Total Trips Generated		0	0	0	1	0	27	0	5	4	101	1	0
Total AM Peak Hour BUILD Volumes		**0**	**0**	**0**	**1**	**0**	**27**	**0**	**170**	**4**	**101**	**40**	**0**

	3.00%			3.00%			3.00%			3.00%		
	Eastbound (Drive "B")			Westbound (Drive "B")			Northbound (Prince St.)			Southbound (Prince St.)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	0	0	0	0	0	0	0	0	0	0	0	0
Background Traffic Growth	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal (NO BUILD - P.M.)	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***172***	***0***	***0***	***235***	***0***
Percent Admiral Trips Generated(Entering)	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	***3.58%***	***96.41%***	*0.00%*	*0.00%*
Percent Admiral Trips Generated(Exiting)	*0.00%*	*0.00%*	*0.00%*	***3.58%***	*0.00%*	***96.41%***	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*
Percent IP Trips Generated(Entering)	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	***3.58%***	*0.00%*	*0.00%*	*0.00%*	*0.00%*
Percent IP Trips Generated(Exiting)	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	***3.58%***	*0.00%*
Total Trips Generated	0	0	0	2	0	65	0	1	1	35	5	0
Total PM Peak Hour BUILD Volumes	**0**	**0**	**0**	**2**	**0**	**65**	**0**	**173**	**1**	**35**	**240**	**0**

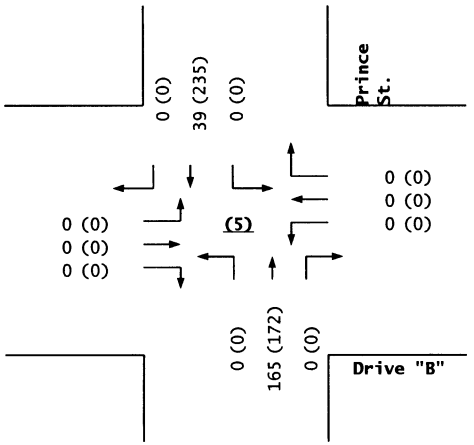
	Entering	Exiting		
Number of Admiral Trips Generated	**105**	**28**	A.M.	100% Admiral Development
	36	**67**	P.M.	
Number of IP Trips Generated	**137**	**28**	A.M.	100% IP Development
	37	**141**	P.M.	

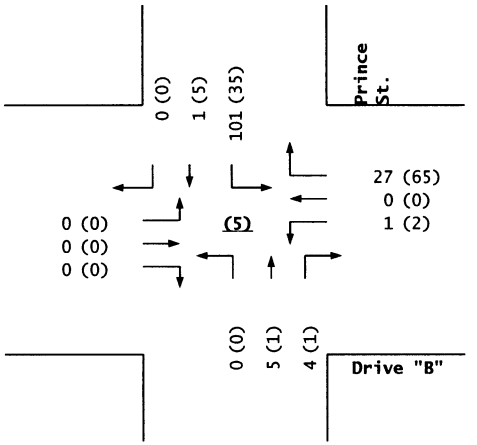
Option 1 (Driveway "A" and Driveway "B")

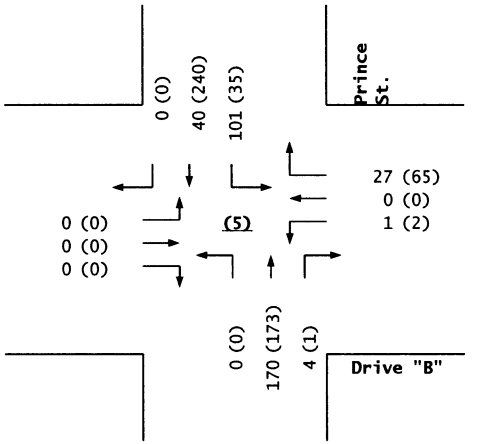
2024
NO BUILD

Trips

2024
BUILD







Drive "B" / Prince St.

Timings
1: Rio Bravo Blvd & Prince St

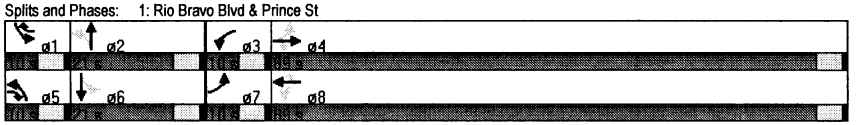
Terry O. Brown, P.E.
4/9/2012 - Synchro 7

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Volume (vph)	53	1923	39	39	756	47	83	2	15	1
Turn Type	pm+pt		pm+ov	pm+pt		pm+ov	pm+pt		pm+pt	
Protected Phases	7	4	5	3	8	1	5	2	1	6
Permitted Phases	4		4	8		8	2		6	
Detector Phase	7	4	5	3	8	1	5	2	1	6
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.0	10.0	10.0	21.0	10.0	10.0	21.0	10.0	21.0
Total Split (s)	10.0	89.0	10.0	10.0	89.0	10.0	10.0	21.0	10.0	21.0
Total Split (%)	7.7%	68.5%	7.7%	7.7%	68.5%	7.7%	7.7%	16.2%	7.7%	16.2%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize?										
Recall Mode	Min	Min	Min	Min	Min	Min	Min	C-Min	Min	C-Min
Act Effct Green (s)	95.6	89.1	99.6	95.2	88.9	99.0	15.0	9.5	14.2	9.1
Actuated g/C Ratio	0.74	0.69	0.77	0.73	0.68	0.76	0.12	0.07	0.11	0.07
v/c Ratio	0.13	0.92	0.04	0.32	0.36	0.04	0.61	0.52	0.15	0.13
Control Delay	2.3	9.8	0.4	8.6	12.2	5.1	68.6	19.6	50.8	27.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	2.3	9.8	0.4	8.6	12.2	5.1	68.6	19.6	50.8	27.2
LOS	A	A	A	A	B	A	E	B	D	C
Approach Delay		9.4			11.7			43.1		40.3
Approach LOS		A			B			D		D

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 34 (26%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.92
Intersection Signal Delay: 12.4 — Intersection LOS: B
Intersection Capacity Utilization 72.8% — ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 1: Rio Bravo Blvd & Prince St



HCM Signalized Intersection Capacity Analysis
1: Rio Bravo Blvd & Prince St

Terry O. Brown, P.E.
4/9/2012 - Synchro 7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	53	1923	39	39	756	47	83	2	88	15	1	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.85		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1719	3438	1538	1719	3438	1538	1719	1543		1719	1555	
Flt Permitted	0.30	1.00	1.00	0.04	1.00	1.00	0.72	1.00		0.50	1.00	
Satd. Flow (perm)	543	3438	1538	81	3438	1538	1295	1543		897	1555	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.81	0.81	0.81	0.75	0.75	0.75
Adj. Flow (vph)	60	2161	44	44	849	53	102	2	109	20	1	15
RTOR Reduction (vph)	0	0	7	0	0	15	0	101	0	0	14	0
Lane Group Flow (vph)	60	2161	37	44	849	38	102	10	0	20	2	0
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Turn Type	pm+pt		pm+ov	pm+pt		pm+ov	pm+pt			pm+pt		
Protected Phases	7	4	5	3	8	1	5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	95.6	89.1	94.6	95.2	88.9	94.0	15.0	9.5		14.2	9.1	
Effective Green, g (s)	95.6	89.1	94.6	95.2	88.9	94.0	15.0	9.5		14.2	9.1	
Actuated g/C Ratio	0.74	0.69	0.73	0.73	0.68	0.72	0.12	0.07		0.11	0.07	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	458	2356	1178	139	2351	1171	167	113		130	109	
v/s Ratio Prot	0.01	c0.63	0.00	c0.02	0.25	0.00	c0.03	0.01		0.01	0.00	
v/s Ratio Perm	0.09		0.02	0.22		0.02	c0.04			0.01		
v/c Ratio	0.13	0.92	0.03	0.32	0.36	0.03	0.61	0.09		0.15	0.02	
Uniform Delay, d1	5.0	17.3	4.9	23.8	8.6	5.1	54.2	56.2		52.2	56.3	
Progression Factor	0.58	0.33	0.18	0.48	1.35	4.42	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	2.6	0.0	1.1	0.1	0.0	6.5	1.5		0.6	0.3	
Delay (s)	3.0	8.3	0.9	12.6	11.7	22.6	60.7	57.7		52.8	56.6	
Level of Service	A	A	A	B	B	C	E	E		D	E	
Approach Delay (s)		8.1			12.4			59.2			54.5	
Approach LOS		A			B			E			D	

Intersection Summary

HCM Average Control Delay	12.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	72.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Timings
1: Rio Bravo Blvd & Prince St

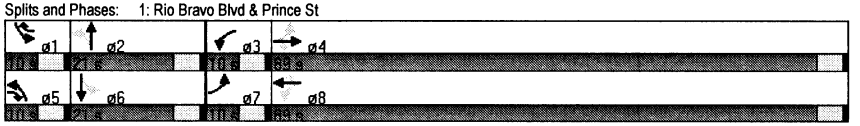
Terry O. Brown, P.E.
4/21/2012 - Synchro 7

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Volume (vph)	61	2240	46	51	969	63	105	3	19	1
Turn Type	pm+pt		pm+ov	pm+pt		pm+ov	pm+pt		pm+pt	
Protected Phases	7	4	5	3	8	1	5	2	1	6
Permitted Phases	4		4	8		8	2		6	
Detector Phase	7	4	5	3	8	1	5	2	1	6
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.0	10.0	10.0	21.0	10.0	10.0	21.0	10.0	21.0
Total Split (s)	10.0	89.0	10.0	10.0	89.0	10.0	10.0	21.0	10.0	21.0
Total Split (%)	7.7%	68.5%	7.7%	7.7%	68.5%	7.7%	7.7%	16.2%	7.7%	16.2%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize?										
Recall Mode	Min	Min	Min	Min	Min	Min	Min	C-Min	Min	C-Min
Act Effct Green (s)	96.2	89.9	99.9	95.9	89.7	99.7	14.0	9.0	14.0	9.0
Actuated g/C Ratio	0.74	0.69	0.77	0.74	0.69	0.77	0.11	0.07	0.11	0.07
v/c Ratio	0.19	1.06	0.04	0.42	0.46	0.06	0.82	0.69	0.20	0.16
Control Delay	4.2	49.5	0.3	24.5	7.7	1.5	89.2	36.0	50.2	24.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.2	49.5	0.3	24.5	7.7	1.5	89.2	36.0	50.2	24.4
LOS	A	D	A	C	A	A	F	D	D	C
Approach Delay		47.3			8.1			61.5		38.7
Approach LOS		D			A			E		D

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 52 (40%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 140
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.06
Intersection Signal Delay: 36.7 — Intersection LOS: D
Intersection Capacity Utilization 82.7% — ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 1: Rio Bravo Blvd & Prince St



HCM Signalized Intersection Capacity Analysis
1: Rio Bravo Blvd & Prince St

Terry O. Brown, P.E.
4/21/2012 - Synchro 7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	61	2240	46	51	969	63	105	3	111	19	1	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.85		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1719	3438	1538	1719	3438	1538	1719	1546		1719	1552	
Flt Permitted	0.22	1.00	1.00	0.04	1.00	1.00	0.74	1.00		0.45	1.00	
Satd. Flow (perm)	401	3438	1538	81	3438	1538	1347	1546		813	1552	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.81	0.81	0.81	0.75	0.75	0.75
Adj. Flow (vph)	69	2517	52	57	1089	71	130	4	137	25	1	19
RTOR Reduction (vph)	0	0	7	0	0	19	0	97	0	0	18	0
Lane Group Flow (vph)	69	2517	45	57	1089	52	130	44	0	25	2	0
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Turn Type	pm+pt		pm+ov	pm+pt		pm+ov	pm+pt			pm+pt		
Protected Phases	7	4	5	3	8	1	5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	96.2	89.9	94.9	96.0	89.8	94.8	13.9	8.9		13.9	8.9	
Effective Green, g (s)	96.2	89.9	94.9	96.0	89.8	94.8	13.9	8.9		13.9	8.9	
Actuated g/C Ratio	0.74	0.69	0.73	0.74	0.69	0.73	0.11	0.07		0.11	0.07	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	361	2378	1182	138	2375	1181	158	106		122	106	
v/s Ratio Prot	0.01	c0.73	0.00	c0.02	0.32	0.00	c0.03	0.03		0.01	0.00	
v/s Ratio Perm	0.13		0.03	0.29		0.03	c0.06			0.01		
v/c Ratio	0.19	1.06	0.04	0.41	0.46	0.04	0.82	0.42		0.20	0.02	
Uniform Delay, d1	5.4	20.0	4.9	33.8	9.1	4.9	56.4	58.1		52.7	56.5	
Progression Factor	1.02	1.03	0.12	1.64	0.76	1.31	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	27.5	0.0	1.2	0.1	0.0	27.9	11.6		0.8	0.4	
Delay (s)	5.6	48.2	0.6	56.7	7.0	6.4	84.3	69.7		53.5	56.9	
Level of Service	A	D	A	E	A	A	F	E		D	E	
Approach Delay (s)		46.2			9.3			76.7			55.0	
Approach LOS		D			A			E			E	

Intersection Summary

HCM Average Control Delay	37.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	82.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

A-35a

Timings
1: Rio Bravo Blvd & Prince St

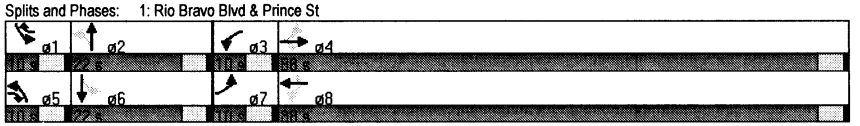
Terry O. Brown, P.E.
4/7/2012 - Synchro 7

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Volume (vph)	53	1923	65	113	756	47	90	2	15	1
Turn Type	pm+pt		pm+ov	pm+pt		pm+ov	pm+pt		pm+pt	
Protected Phases	7	4	5	3	8	1	5	2	1	6
Permitted Phases	4		4	8		8	2		6	
Detector Phase	7	4	5	3	8	1	5	2	1	6
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.0	10.0	10.0	21.0	10.0	10.0	21.0	10.0	21.0
Total Split (s)	10.0	88.0	10.0	10.0	88.0	10.0	10.0	22.0	10.0	22.0
Total Split (%)	7.7%	67.7%	7.7%	7.7%	67.7%	7.7%	7.7%	16.9%	7.7%	16.9%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize?										
Recall Mode	Min	Min	Min	Min	Min	Min	Min	C-Min	Min	C-Min
Act Effct Green (s)	91.3	84.7	94.7	100.6	90.0	100.0	13.4	8.4	13.4	8.4
Actuated g/C Ratio	0.70	0.65	0.73	0.77	0.69	0.77	0.10	0.06	0.10	0.06
v/c Ratio	0.13	0.96	0.06	0.60	0.36	0.04	0.72	0.65	0.16	0.14
Control Delay	1.8	12.2	0.2	33.1	3.9	1.2	78.2	29.5	49.7	26.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	1.8	12.2	0.2	33.1	3.9	1.2	78.2	29.5	49.7	26.8
LOS	A	B	A	C	A	A	E	C	D	C
Approach Delay		11.5			7.4			51.5		39.5
Approach LOS		B			A			D		D

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 31 (24%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.96
Intersection Signal Delay: 13.4 — Intersection LOS: B
Intersection Capacity Utilization 83.6% — ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 1: Rio Bravo Blvd & Prince St



HCM Signalized Intersection Capacity Analysis
1: Rio Bravo Blvd & Prince St

Terry O. Brown, P.E.
4/7/2012 - Synchro 7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	53	1923	65	113	756	47	90	2	108	15	1	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.85		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1719	3438	1538	1719	3438	1538	1719	1542		1719	1555	
Flt Permitted	0.32	1.00	1.00	0.04	1.00	1.00	0.75	1.00		0.47	1.00	
Satd. Flow (perm)	582	3438	1538	81	3438	1538	1352	1542		852	1555	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.81	0.81	0.81	0.75	0.75	0.75
Adj. Flow (vph)	60	2161	73	127	849	53	111	2	133	20	1	15
RTOR Reduction (vph)	0	0	14	0	0	14	0	107	0	0	14	0
Lane Group Flow (vph)	60	2161	59	127	849	39	111	28	0	20	2	0
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Turn Type	pm+pt		pm+ov	pm+pt		pm+ov	pm+pt			pm+pt		
Protected Phases	7	4	5	3	8	1	5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	91.2	84.7	89.7	101.5	90.0	95.0	13.5	8.5		13.5	8.5	
Effective Green, g (s)	91.2	84.7	89.7	101.5	90.0	95.0	13.5	8.5		13.5	8.5	
Actuated g/C Ratio	0.70	0.65	0.69	0.78	0.69	0.73	0.10	0.07		0.10	0.07	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	465	2240	1120	212	2380	1183	155	101		122	102	
v/s Ratio Prot	0.01	c0.63	0.00	c0.05	0.25	0.00	c0.03	0.02		0.01	0.00	
v/s Ratio Perm	0.08		0.04	0.42		0.02	c0.05			0.01		
v/c Ratio	0.13	0.96	0.05	0.60	0.36	0.03	0.72	0.28		0.16	0.02	
Uniform Delay, d1	6.0	21.2	6.5	39.8	8.2	4.8	56.0	57.8		52.9	56.9	
Progression Factor	0.40	0.22	0.08	1.24	0.45	0.92	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	5.5	0.0	0.4	0.0	0.0	14.6	6.8		0.6	0.3	
Delay (s)	2.5	10.2	0.5	49.8	3.7	4.5	70.5	64.7		53.5	57.2	
Level of Service	A	B	A	D	A	A	E	E		D	E	
Approach Delay (s)		9.7			9.4			67.3			55.2	
Approach LOS		A			A			E			E	

Intersection Summary

HCM Average Control Delay	14.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	83.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Timings
1: Rio Bravo Blvd & Prince St

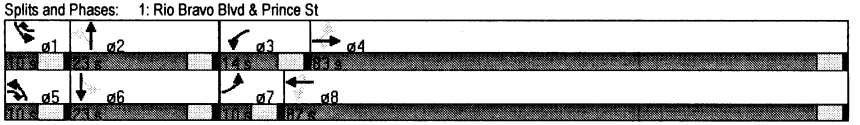
Terry O. Brown, P.E.
4/21/2012 - Synchro 7

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Volume (vph)	61	2240	106	222	969	63	119	3	19	1
Turn Type	pm+pt		pm+ov	pm+pt		pm+ov	pm+pt		pm+pt	
Protected Phases	7	4	5	3	8	1	5	2	1	6
Permitted Phases	4		4	8		8	2		6	
Detector Phase	7	4	5	3	8	1	5	2	1	6
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.0	10.0	10.0	21.0	10.0	10.0	21.0	10.0	21.0
Total Split (s)	10.0	83.0	10.0	14.0	87.0	10.0	10.0	23.0	10.0	23.0
Total Split (%)	7.7%	63.8%	7.7%	10.8%	66.9%	7.7%	7.7%	17.7%	7.7%	17.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize?										
Recall Mode	Min	Min	Min	Min	Min	Min	Min	C-Min	Min	C-Min
Act Effct Green (s)	84.1	78.0	88.0	97.3	86.5	96.5	17.3	12.3	17.3	12.3
Actuated g/C Ratio	0.65	0.60	0.68	0.75	0.67	0.74	0.13	0.09	0.13	0.09
v/c Ratio	0.20	1.22	0.11	1.00	0.48	0.06	0.76	0.78	0.20	0.12
Control Delay	2.4	115.7	0.2	64.9	4.9	0.2	74.8	45.7	46.7	21.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	2.4	115.7	0.2	64.9	4.9	0.2	74.8	45.7	46.7	21.8
LOS	A	F	A	E	A	A	E	D	D	C
Approach Delay		107.7			15.3			58.4		35.7
Approach LOS		F			B			E		D

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 32 (25%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 140
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.22
Intersection Signal Delay: 74.3 — Intersection LOS: E
Intersection Capacity Utilization 102.5% — ICU Level of Service G
Analysis Period (min) 15

Splits and Phases: 1: Rio Bravo Blvd & Prince St



HCM Signalized Intersection Capacity Analysis
1: Rio Bravo Blvd & Prince St

Terry O. Brown, P.E.
4/21/2012 - Synchro 7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	61	2240	106	222	969	63	119	3	151	19	1	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.85		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1719	3438	1538	1719	3438	1538	1719	1544		1719	1552	
Flt Permitted	0.24	1.00	1.00	0.05	1.00	1.00	0.74	1.00		0.33	1.00	
Satd. Flow (perm)	434	3438	1538	87	3438	1538	1347	1544		588	1552	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.81	0.81	0.81	0.75	0.75	0.75
Adj. Flow (vph)	69	2517	119	249	1089	71	147	4	186	25	1	19
RTOR Reduction (vph)	0	0	20	0	0	21	0	98	0	0	17	0
Lane Group Flow (vph)	69	2517	99	249	1089	50	147	92	0	25	3	0
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Turn Type	pm+pt		pm+ov	pm+pt		pm+ov	pm+pt			pm+pt		
Protected Phases	7	4	5	3	8	1	5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	84.1	78.0	83.0	97.7	86.6	91.6	17.3	12.3		17.3	12.3	
Effective Green, g (s)	84.1	78.0	83.0	97.7	86.6	91.6	17.3	12.3		17.3	12.3	
Actuated g/C Ratio	0.65	0.60	0.64	0.75	0.67	0.70	0.13	0.09		0.13	0.09	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	341	2063	1041	250	2290	1143	194	146		122	147	
v/s Ratio Prot	0.01	c0.73	0.00	c0.11	0.32	0.00	c0.03	0.06		0.01	0.00	
v/s Ratio Perm	0.12		0.06	0.63		0.03	c0.07			0.02		
v/c Ratio	0.20	1.22	0.10	1.00	0.48	0.04	0.76	0.63		0.20	0.02	
Uniform Delay, d1	8.6	26.0	9.0	48.3	10.6	5.9	53.8	56.7		49.8	53.4	
Progression Factor	0.41	0.42	0.05	1.32	0.43	0.14	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	99.5	0.0	16.0	0.0	0.0	15.5	19.0		0.8	0.2	
Delay (s)	3.6	110.4	0.4	79.9	4.6	0.8	69.3	75.6		50.7	53.6	
Level of Service	A	F	A	E	A	A	E	E		D	D	
Approach Delay (s)		102.9			17.7			72.9			52.0	
Approach LOS		F			B			E			D	

Intersection Summary

HCM Average Control Delay	73.4	HCM Level of Service	E
HCM Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	102.5%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

A-36a

Timings
1: Rio Bravo Blvd & Prince St

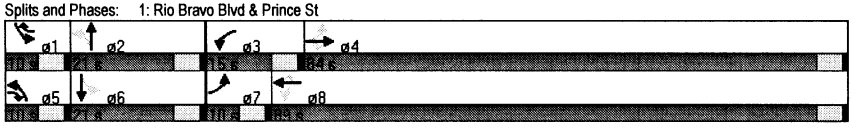
Terry O. Brown, P.E.
4/9/2012 - Synchro 7

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Volume (vph)	33	1113	98	120	1981	31	95	4	48	3
Turn Type	pm+pt		pm+ov	pm+pt		pm+ov	pm+pt		pm+pt	
Protected Phases	7	4	5	3	8	1	5	2	1	6
Permitted Phases	4		4	8		8	2		6	
Detector Phase	7	4	5	3	8	1	5	2	1	6
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.0	10.0	10.0	21.0	10.0	10.0	21.0	10.0	21.0
Total Split (s)	10.0	84.0	10.0	15.0	89.0	10.0	10.0	21.0	10.0	21.0
Total Split (%)	7.7%	64.6%	7.7%	11.5%	68.5%	7.7%	7.7%	16.2%	7.7%	16.2%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize?										
Recall Mode	Min	Min	Min	Min	Min	Min	Min	C-Min	Min	C-Min
Act Effct Green (s)	96.8	89.7	99.7	98.5	90.6	100.6	12.3	7.3	12.3	7.3
Actuated g/C Ratio	0.74	0.69	0.77	0.76	0.70	0.77	0.09	0.06	0.09	0.06
v/c Ratio	0.23	0.49	0.09	0.39	0.95	0.03	0.88	0.55	0.46	0.44
Control Delay	13.2	11.2	2.0	2.8	16.5	0.4	105.0	25.1	62.6	25.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.2	11.2	2.0	2.8	16.5	0.4	105.0	25.1	62.6	25.2
LOS	B	B	A	A	B	A	F	C	E	C
Approach Delay		10.5			15.5			70.2		42.6
Approach LOS		B			B			E		D

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 72 (55%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.95
Intersection Signal Delay: 17.6 — Intersection LOS: B
Intersection Capacity Utilization 82.5% — ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 1: Rio Bravo Blvd & Prince St



HCM Signalized Intersection Capacity Analysis
1: Rio Bravo Blvd & Prince St

Terry O. Brown, P.E.
4/9/2012 - Synchro 7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	33	1113	98	120	1981	31	95	4	69	48	3	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.86		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1719	3438	1538	1719	3438	1538	1719	1552		1719	1555	
Flt Permitted	0.04	1.00	1.00	0.20	1.00	1.00	0.72	1.00		0.55	1.00	
Satd. Flow (perm)	81	3438	1538	356	3438	1538	1294	1552		992	1555	
Peak-hour factor, PHF	0.95	0.95	0.95	0.87	0.87	0.87	0.77	0.77	0.77	0.85	0.85	0.85
Adj. Flow (vph)	35	1172	103	138	2277	36	123	5	90	56	4	60
RTOR Reduction (vph)	0	0	28	0	0	10	0	85	0	0	57	0
Lane Group Flow (vph)	35	1172	75	138	2277	26	123	10	0	56	7	0
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Turn Type	pm+pt		pm+ov	pm+pt		pm+ov	pm+pt			pm+pt		
Protected Phases	7	4	5	3	8	1	5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	96.9	89.8	94.8	98.5	90.6	95.6	12.3	7.3		12.3	7.3	
Effective Green, g (s)	96.9	89.8	94.8	98.5	90.6	95.6	12.3	7.3		12.3	7.3	
Actuated g/C Ratio	0.75	0.69	0.73	0.76	0.70	0.74	0.09	0.06		0.09	0.06	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	150	2375	1181	353	2396	1190	139	87		122	87	
v/s Ratio Prot	0.01	0.34	0.00	c0.02	c0.66	0.00	c0.03	0.01		0.02	0.00	
v/s Ratio Perm	0.16		0.05	0.27		0.02	c0.05			0.03		
v/c Ratio	0.23	0.49	0.06	0.39	0.95	0.02	0.88	0.12		0.46	0.08	
Uniform Delay, d1	26.5	9.4	5.0	5.7	17.7	4.6	57.7	58.3		55.1	58.2	
Progression Factor	2.39	1.06	2.10	0.70	0.79	0.25	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	0.1	0.0	0.1	1.1	0.0	43.7	2.7		2.7	1.9	
Delay (s)	63.9	10.1	10.5	4.1	15.1	1.2	101.3	61.0		57.8	60.1	
Level of Service	E	B	B	A	B	A	F	E		E	E	
Approach Delay (s)		11.6			14.3			83.7			59.0	
Approach LOS		B			B			F			E	

Intersection Summary

HCM Average Control Delay	18.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	82.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Timings
1: Rio Bravo Blvd & Prince St

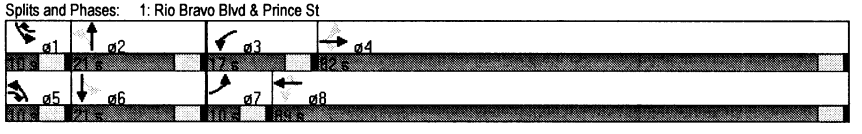
Terry O. Brown, P.E.
4/21/2012 - Synchro 7

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Volume (vph)	36	1262	116	142	2291	37	121	5	61	4
Turn Type	pm+pt		pm+ov	pm+pt		pm+ov	pm+pt		pm+pt	
Protected Phases	7	4	5	3	8	1	5	2	1	6
Permitted Phases	4		4	8		8	2		6	
Detector Phase	7	4	5	3	8	1	5	2	1	6
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.0	10.0	10.0	21.0	10.0	10.0	21.0	10.0	21.0
Total Split (s)	10.0	82.0	10.0	17.0	89.0	10.0	10.0	21.0	10.0	21.0
Total Split (%)	7.7%	63.1%	7.7%	13.1%	68.5%	7.7%	7.7%	16.2%	7.7%	16.2%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize?										
Recall Mode	Min	Min	Min	Min	Min	Min	Min	C-Min	Min	C-Min
Act Effct Green (s)	95.5	88.5	98.5	99.3	90.4	100.4	12.6	7.6	12.6	7.6
Actuated g/C Ratio	0.73	0.68	0.76	0.76	0.70	0.77	0.10	0.06	0.10	0.06
v/c Ratio	0.26	0.57	0.10	0.53	1.10	0.04	1.18	0.61	0.59	0.50
Control Delay	20.4	6.4	0.2	4.7	69.5	1.0	180.8	24.6	70.9	24.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.4	6.4	0.2	4.7	69.5	1.0	180.8	24.6	70.9	24.5
LOS	C	A	A	A	E	A	F	C	E	C
Approach Delay		6.3			64.8			113.1		46.3
Approach LOS		A			E			F		D

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 34 (26%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 140
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.18
Intersection Signal Delay: 48.7 — Intersection LOS: D
Intersection Capacity Utilization 92.5% — ICU Level of Service F
Analysis Period (min) 15

Splits and Phases: 1: Rio Bravo Blvd & Prince St



HCM Signalized Intersection Capacity Analysis
1: Rio Bravo Blvd & Prince St

Terry O. Brown, P.E.
4/21/2012 - Synchro 7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	36	1262	116	142	2291	37	121	5	88	61	4	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.86		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1719	3438	1538	1719	3438	1538	1719	1552		1719	1555	
Flt Permitted	0.05	1.00	1.00	0.15	1.00	1.00	0.63	1.00		0.53	1.00	
Satd. Flow (perm)	82	3438	1538	277	3438	1538	1146	1552		952	1555	
Peak-hour factor, PHF	0.95	0.95	0.95	0.87	0.87	0.87	0.77	0.77	0.77	0.85	0.85	0.85
Adj. Flow (vph)	38	1328	122	163	2633	43	157	6	114	72	5	76
RTOR Reduction (vph)	0	0	29	0	0	10	0	107	0	0	72	0
Lane Group Flow (vph)	38	1328	93	163	2633	33	157	13	0	72	9	0
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Turn Type	pm+pt		pm+ov	pm+pt		pm+ov	pm+pt			pm+pt		
Protected Phases	7	4	5	3	8	1	5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	95.5	88.5	93.5	99.3	90.4	95.4	12.6	7.6		12.6	7.6	
Effective Green, g (s)	95.5	88.5	93.5	99.3	90.4	95.4	12.6	7.6		12.6	7.6	
Actuated g/C Ratio	0.73	0.68	0.72	0.76	0.70	0.73	0.10	0.06		0.10	0.06	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	148	2340	1165	310	2391	1188	133	91		122	91	
v/s Ratio Prot	0.01	0.39	0.00	c0.04	c0.77	0.00	c0.05	0.01		0.02	0.01	
v/s Ratio Perm	0.17		0.06	0.36		0.02	c0.07			0.03		
v/c Ratio	0.26	0.57	0.08	0.53	1.10	0.03	1.18	0.14		0.59	0.10	
Uniform Delay, d1	32.7	10.8	5.4	7.7	19.8	4.7	58.3	58.1		55.5	58.0	
Progression Factor	2.79	0.54	0.12	1.13	1.13	0.63	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.0	0.0	0.1	46.3	0.0	134.6	3.2		7.4	2.3	
Delay (s)	91.5	5.9	0.6	8.9	68.6	3.0	192.9	61.3		62.9	60.3	
Level of Service	F	A	A	A	E	A	F	E		E	E	
Approach Delay (s)		7.7			64.1			135.9			61.5	
Approach LOS		A			E			F			E	

Intersection Summary

HCM Average Control Delay	50.6	HCM Level of Service	D
HCM Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	92.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

A-37a

Timings
1: Rio Bravo Blvd & Prince St

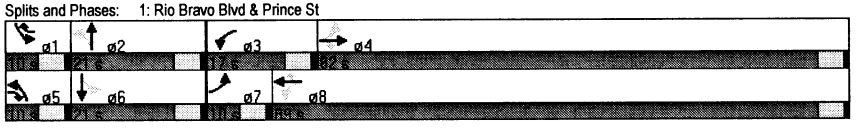
Terry O. Brown, P.E.
4/7/2012 - Synchro 7

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Volume (vph)	33	1113	107	145	1981	31	112	4	48	3
Turn Type	pm+pt		pm+ov	pm+pt		pm+ov	pm+pt		pm+pt	
Protected Phases	7	4	5	3	8	1	5	2	1	6
Permitted Phases	4		4	8		8	2		6	
Detector Phase	7	4	5	3	8	1	5	2	1	6
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.0	10.0	10.0	21.0	10.0	10.0	21.0	10.0	21.0
Total Split (s)	10.0	82.0	10.0	17.0	89.0	10.0	10.0	21.0	10.0	21.0
Total Split (%)	7.7%	63.1%	7.7%	13.1%	68.5%	7.7%	7.7%	16.2%	7.7%	16.2%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize?										
Recall Mode	Min	Min	Min	Min	Min	Min	Min	C-Min	Min	C-Min
Act Effct Green (s)	95.3	88.5	98.5	98.8	90.2	100.2	12.9	7.9	12.9	7.9
Actuated g/C Ratio	0.73	0.68	0.76	0.76	0.69	0.77	0.10	0.06	0.10	0.06
v/c Ratio	0.24	0.50	0.09	0.47	0.95	0.03	1.00	0.66	0.46	0.42
Control Delay	14.2	12.2	2.6	3.5	17.0	0.4	130.1	23.4	61.7	23.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.2	12.2	2.6	3.5	17.0	0.4	130.1	23.4	61.7	23.7
LOS	B	B	A	A	B	A	F	C	E	C
Approach Delay		11.5			15.9			74.8		41.4
Approach LOS		B			B			E		D

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 72 (55%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.00
Intersection Signal Delay: 19.4 Intersection LOS: B
Intersection Capacity Utilization 83.5% ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 1: Rio Bravo Blvd & Prince St



HCM Signalized Intersection Capacity Analysis
1: Rio Bravo Blvd & Prince St

Terry O. Brown, P.E.
4/7/2012 - Synchro 7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	33	1113	107	145	1981	31	112	4	116	48	3	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.85		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1719	3438	1538	1719	3438	1538	1719	1547		1719	1555	
Flt Permitted	0.05	1.00	1.00	0.19	1.00	1.00	0.72	1.00		0.51	1.00	
Satd. Flow (perm)	82	3438	1538	348	3438	1538	1294	1547		916	1555	
Peak-hour factor, PHF	0.95	0.95	0.95	0.87	0.87	0.87	0.77	0.77	0.77	0.85	0.85	0.85
Adj. Flow (vph)	35	1172	113	167	2277	36	145	5	151	56	4	60
RTOR Reduction (vph)	0	0	30	0	0	10	0	142	0	0	56	0
Lane Group Flow (vph)	35	1172	83	167	2277	26	145	14	0	56	8	0
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Turn Type	pm+pt		pm+ov	pm+pt		pm+ov	pm+pt			pm+pt		
Protected Phases	7	4	5	3	8	1	5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	95.4	88.5	93.5	98.8	90.2	95.2	12.9	7.9		12.9	7.9	
Effective Green, g (s)	95.4	88.5	93.5	98.8	90.2	95.2	12.9	7.9		12.9	7.9	
Actuated g/C Ratio	0.73	0.68	0.72	0.76	0.69	0.73	0.10	0.06		0.10	0.06	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	147	2340	1165	355	2385	1185	145	94		122	94	
v/s Ratio Prot	0.01	0.34	0.00	c0.03	c0.66	0.00	c0.04	0.01		0.02	0.00	
v/s Ratio Perm	0.16		0.05	0.33		0.02	c0.06			0.03		
v/c Ratio	0.24	0.50	0.07	0.47	0.95	0.02	1.00	0.15		0.46	0.08	
Uniform Delay, d1	26.7	10.1	5.4	6.2	18.0	4.7	58.1	57.9		54.6	57.6	
Progression Factor	2.03	1.08	2.09	0.82	0.80	0.26	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	0.1	0.0	0.1	1.2	0.0	74.7	3.4		2.7	1.7	
Delay (s)	54.7	11.0	11.3	5.2	15.6	1.2	132.9	61.2		57.3	59.3	
Level of Service	D	B	B	A	B	A	F	E		E	E	
Approach Delay (s)		12.2			14.7			95.7			58.4	
Approach LOS		B			B			F			E	

Intersection Summary

HCM Average Control Delay	20.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	83.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Timings
1: Rio Bravo Blvd & Prince St

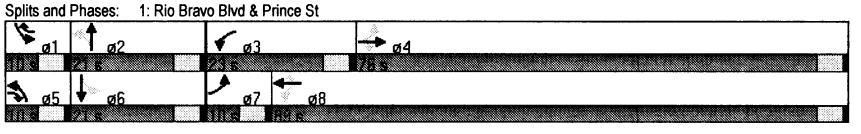
Terry O. Brown, P.E.
4/21/2012 - Synchro 7

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Volume (vph)	36	1262	134	193	2291	37	173	5	61	4
Turn Type	pm+pt		pm+ov	pm+pt		pm+ov	pm+pt		pm+pt	
Protected Phases	7	4	5	3	8	1	5	2	1	6
Permitted Phases	4		4	8		8	2		6	
Detector Phase	7	4	5	3	8	1	5	2	1	6
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.0	10.0	10.0	21.0	10.0	10.0	21.0	10.0	21.0
Total Split (s)	10.0	76.0	10.0	23.0	89.0	10.0	10.0	21.0	10.0	21.0
Total Split (%)	7.7%	58.5%	7.7%	17.7%	68.5%	7.7%	7.7%	16.2%	7.7%	16.2%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize?										
Recall Mode	Min	Min	Min	Min	Min	Min	Min	C-Min	Min	C-Min
Act Effct Green (s)	84.5	79.1	89.1	95.7	86.4	96.4	18.2	13.2	18.2	13.2
Actuated g/C Ratio	0.65	0.61	0.69	0.74	0.66	0.74	0.14	0.10	0.14	0.10
v/c Ratio	0.30	0.63	0.13	0.71	1.15	0.04	1.18	0.90	0.59	0.37
Control Delay	20.8	18.0	3.9	15.0	93.4	0.8	167.7	46.9	65.7	19.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.8	18.0	3.9	15.0	93.4	0.8	167.7	46.9	65.7	19.9
LOS	C	B	A	B	F	A	F	D	E	B
Approach Delay		16.8			86.1			97.6		41.4
Approach LOS		B			F			F		D

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 72 (55%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 140
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.18
Intersection Signal Delay: 65.4 — Intersection LOS: E
Intersection Capacity Utilization 101.5% — ICU Level of Service G
Analysis Period (min) 15

Splits and Phases: 1: Rio Bravo Blvd & Prince St



HCM Signalized Intersection Capacity Analysis
1: Rio Bravo Blvd & Prince St

Terry O. Brown, P.E.
4/21/2012 - Synchro 7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	36	1262	134	193	2291	37	173	5	235	61	4	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.85		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1719	3438	1538	1719	3438	1538	1719	1543		1719	1555	
Flt Permitted	0.05	1.00	1.00	0.13	1.00	1.00	0.68	1.00		0.30	1.00	
Satd. Flow (perm)	92	3438	1538	230	3438	1538	1226	1543		548	1555	
Peak-hour factor, PHF	0.95	0.95	0.95	0.87	0.87	0.87	0.77	0.77	0.77	0.85	0.85	0.85
Adj. Flow (vph)	38	1328	141	222	2633	43	225	6	305	72	5	76
RTOR Reduction (vph)	0	0	37	0	0	12	0	190	0	0	63	0
Lane Group Flow (vph)	38	1328	104	222	2633	31	225	121	0	72	18	0
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Turn Type	pm+pt		pm+ov	pm+pt		pm+ov	pm+pt			pm+pt		
Protected Phases	7	4	5	3	8	1	5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	84.5	79.1	84.1	96.8	86.4	91.4	18.2	13.2		18.2	13.2	
Effective Green, g (s)	84.5	79.1	84.1	96.8	86.4	91.4	18.2	13.2		18.2	13.2	
Actuated g/C Ratio	0.65	0.61	0.65	0.74	0.66	0.70	0.14	0.10		0.14	0.10	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	127	2092	1054	317	2285	1140	191	157		122	158	
v/s Ratio Prot	0.01	0.39	0.00	c0.07	c0.77	0.00	c0.05	0.08		0.02	0.01	
v/s Ratio Perm	0.18		0.06	0.45		0.02	c0.12			0.06		
v/c Ratio	0.30	0.63	0.10	0.70	1.15	0.03	1.18	0.77		0.59	0.11	
Uniform Delay, d1	30.3	16.2	8.7	14.8	21.8	5.8	55.4	56.9		50.5	53.1	
Progression Factor	1.98	1.01	1.31	1.25	1.06	0.48	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.1	0.0	0.6	69.1	0.0	121.3	30.2		7.4	1.5	
Delay (s)	60.3	16.4	11.4	19.1	92.1	2.8	176.7	87.1		57.9	54.6	
Level of Service	E	B	B	B	F	A	F	F		E	D	
Approach Delay (s)		17.0			85.2			124.7			56.2	
Approach LOS		B			F			F			E	

Intersection Summary

HCM Average Control Delay	68.3	HCM Level of Service	E
HCM Volume to Capacity ratio	1.15		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	101.5%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

A-38a

Timings
2: Rio Bravo Blvd & Broadway Blvd

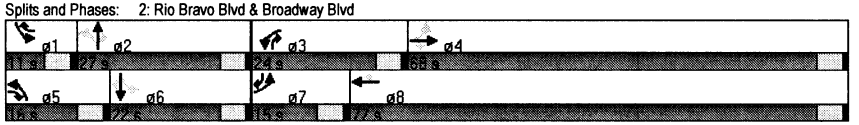
Terry O. Brown, P.E.
4/9/2012 - Synchro 7

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	163	1538	382	397	659	34	215	311	340	54	149	78
Turn Type	pm+pt		pm+ov	Prot		pm+ov	pm+pt		pm+ov	pm+pt		pm+ov
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases	4		4			8	2		2	6		6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.0	10.0	10.0	21.0	10.0	10.0	21.0	10.0	10.0	21.0	10.0
Total Split (s)	15.0	68.0	16.0	24.0	77.0	11.0	16.0	27.0	24.0	11.0	22.0	15.0
Total Split (%)	11.5%	52.3%	12.3%	18.5%	59.2%	8.5%	12.3%	20.8%	18.5%	8.5%	16.9%	11.5%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?												
Recall Mode	Min	Min	Min	Min	Min	Min	Min	C-Min	Min	Min	C-Min	Min
Act Effct Green (s)	72.9	63.6	79.6	21.4	75.7	86.7	30.0	19.0	45.4	20.0	14.0	28.3
Actuated g/C Ratio	0.56	0.49	0.61	0.16	0.58	0.67	0.23	0.15	0.35	0.15	0.11	0.22
v/c Ratio	0.41	0.98	0.42	0.88	0.40	0.04	1.05	0.75	0.77	0.47	0.56	0.26
Control Delay	3.6	26.6	5.4	71.5	16.1	2.6	118.1	63.6	49.1	51.1	61.0	8.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.6	26.6	5.4	71.5	16.1	2.6	118.1	63.6	49.1	51.1	61.0	8.8
LOS	A	C	A	E	B	A	F	E	D	D	E	A
Approach Delay		20.9			35.8			71.5			44.6	
Approach LOS		C			D			E			D	

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 84 (65%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.05
Intersection Signal Delay: 37.0 — Intersection LOS: D
Intersection Capacity Utilization 86.5% — ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 2: Rio Bravo Blvd & Broadway Blvd



HCM Signalized Intersection Capacity Analysis
2: Rio Bravo Blvd & Broadway Blvd

Terry O. Brown, P.E.
4/9/2012 - Synchro 7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	163	1538	382	397	659	34	215	311	340	54	149	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1719	3438	1538	3335	3438	1538	1641	3282	1468	1641	3282	1468
Flt Permitted	0.35	1.00	1.00	0.95	1.00	1.00	0.39	1.00	1.00	0.42	1.00	1.00
Satd. Flow (perm)	630	3438	1538	3335	3438	1538	674	3282	1468	718	3282	1468
Peak-hour factor, PHF	0.93	0.93	0.93	0.82	0.82	0.82	0.86	0.86	0.86	0.75	0.75	0.75
Adj. Flow (vph)	175	1654	411	484	804	41	250	362	395	72	199	104
RTOR Reduction (vph)	0	0	37	0	0	15	0	0	0	0	0	85
Lane Group Flow (vph)	175	1654	374	484	804	26	250	362	395	72	199	19
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	10%	10%	10%	10%	10%	10%
Turn Type	pm+pt		pm+ov	Prot		pm+ov	pm+pt		pm+ov	pm+pt		pm+ov
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases	4		4			8	2		2	6		6
Actuated Green, G (s)	72.9	63.6	74.6	21.4	75.7	81.7	30.0	19.0	40.4	20.0	14.0	23.3
Effective Green, g (s)	72.9	63.6	74.6	21.4	75.7	81.7	30.0	19.0	40.4	20.0	14.0	23.3
Actuated g/C Ratio	0.56	0.49	0.57	0.16	0.58	0.63	0.23	0.15	0.31	0.15	0.11	0.18
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	431	1682	942	549	2002	1026	237	480	513	153	353	320
v/s Ratio Prot	0.03	c0.48	0.03	c0.15	0.23	0.00	c0.09	0.11	c0.13	0.02	0.06	0.00
v/s Ratio Perm	0.20		0.21			0.02	c0.15		0.14	0.05		0.01
v/c Ratio	0.41	0.98	0.40	0.88	0.40	0.03	1.05	0.75	0.77	0.47	0.56	0.06
Uniform Delay, d1	14.0	32.7	15.3	53.1	14.8	9.1	48.2	53.3	40.6	48.7	55.1	44.3
Progression Factor	0.26	0.42	0.46	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3	11.0	0.1	15.3	0.1	0.0	73.6	10.5	6.9	2.3	6.4	0.1
Delay (s)	3.9	24.7	7.1	68.4	14.9	9.1	121.8	63.8	47.5	51.0	61.5	44.3
Level of Service	A	C	A	E	B	A	F	E	D	D	E	D
Approach Delay (s)		19.8			34.2			71.8			54.7	
Approach LOS		B			C			E			D	

Intersection Summary

HCM Average Control Delay	36.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	86.5%	ICU Level of Service	E
Analysis Period (min)	15		

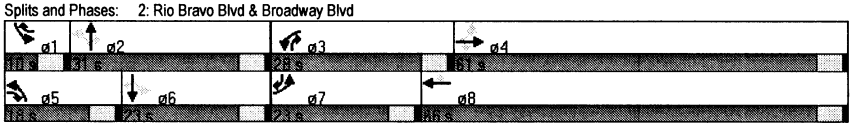
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	192	1805	402	481	963	48	311	592	691	61	192	110
Turn Type	pm+pt		pm+ov	Prot		pm+ov	pm+pt		pm+ov	pm+pt		pm+ov
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases	4		4			8	2		2	6		6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.0	10.0	10.0	21.0	10.0	10.0	21.0	10.0	10.0	21.0	10.0
Total Split (s)	23.0	61.0	18.0	28.0	66.0	10.0	18.0	31.0	28.0	10.0	23.0	23.0
Total Split (%)	17.7%	46.9%	13.8%	21.5%	50.8%	7.7%	13.8%	23.8%	21.5%	7.7%	17.7%	17.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?												
Recall Mode	Min	Min	Min	Min	Min	Min	Min	C-Min	Min	Min	C-Min	Min
Act Effct Green (s)	69.3	56.0	74.0	23.0	65.7	75.7	36.0	26.0	54.0	23.0	18.0	36.3
Actuated g/C Ratio	0.53	0.43	0.57	0.18	0.51	0.58	0.28	0.20	0.42	0.18	0.14	0.28
v/c Ratio	0.69	1.31	0.48	0.99	0.68	0.06	1.32	1.05	1.32	0.70	0.56	0.34
Control Delay	22.0	161.8	9.5	89.1	27.2	3.5	203.3	98.4	186.6	70.2	57.7	28.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.0	161.8	9.5	89.1	27.2	3.5	203.3	98.4	186.6	70.2	57.7	28.2
LOS	C	F	A	F	C	A	F	F	F	E	E	C
Approach Delay		125.1			46.4			157.1			50.8	
Approach LOS		F			D			F			D	

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 104 (80%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 140
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.32
Intersection Signal Delay: 107.3 — Intersection LOS: F
Intersection Capacity Utilization 108.6% — ICU Level of Service G
Analysis Period (min) 15

Splits and Phases: 2: Rio Bravo Blvd & Broadway Blvd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	192	1805	402	481	963	48	311	592	691	61	192	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1719	3438	1538	3335	3438	1538	1641	3282	1468	1641	3282	1468
Flt Permitted	0.16	1.00	1.00	0.95	1.00	1.00	0.36	1.00	1.00	0.22	1.00	1.00
Satd. Flow (perm)	289	3438	1538	3335	3438	1538	621	3282	1468	384	3282	1468
Peak-hour factor, PHF	0.93	0.93	0.93	0.82	0.82	0.82	0.86	0.86	0.86	0.75	0.75	0.75
Adj. Flow (vph)	206	1941	432	587	1174	59	362	688	803	81	256	147
RTOR Reduction (vph)	0	0	25	0	0	27	0	0	0	0	0	30
Lane Group Flow (vph)	206	1941	407	587	1174	32	362	688	803	81	256	117
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	10%	10%	10%	10%	10%	10%
Turn Type	pm+pt		pm+ov	Prot		pm+ov	pm+pt		pm+ov	pm+pt		pm+ov
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases	4		4			8	2		2	6		6
Actuated Green, G (s)	69.3	56.0	69.0	23.0	65.7	70.7	36.0	26.0	49.0	23.0	18.0	31.3
Effective Green, g (s)	69.3	56.0	69.0	23.0	65.7	70.7	36.0	26.0	49.0	23.0	18.0	31.3
Actuated g/C Ratio	0.53	0.43	0.53	0.18	0.51	0.54	0.28	0.20	0.38	0.18	0.14	0.24
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	300	1481	875	590	1738	896	274	656	610	116	454	410
v/s Ratio Prot	0.07	c0.56	0.05	0.18	0.34	0.00	c0.13	0.21	c0.23	0.03	0.08	0.03
v/s Ratio Perm	0.30		0.22			0.02	0.23		0.31	0.10		0.05
v/c Ratio	0.69	1.31	0.47	0.99	0.68	0.04	1.32	1.05	1.32	0.70	0.56	0.28
Uniform Delay, d1	18.7	37.0	19.0	53.4	24.1	13.8	44.5	52.0	40.5	48.2	52.3	40.2
Progression Factor	1.40	0.50	0.64	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.6	140.2	0.0	35.5	1.1	0.0	167.8	48.6	153.7	16.8	5.0	0.4
Delay (s)	26.9	158.6	12.1	89.0	25.2	13.8	212.3	100.6	194.2	64.9	57.3	40.6
Level of Service	C	F	B	F	C	B	F	F	F	E	E	D
Approach Delay (s)		123.5			45.4			163.0			53.5	
Approach LOS		F			D			F			D	

Intersection Summary

HCM Average Control Delay	108.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.30		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	108.6%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

A-39a

Timings
2: Rio Bravo Blvd & Broadway Blvd

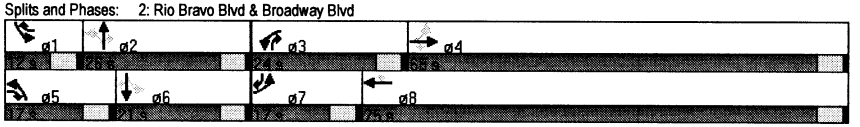
Terry O. Brown, P.E.
4/9/2012 - Synchro 7

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	164	1555	384	397	723	34	222	311	340	54	149	81
Turn Type	pm+pt		pm+ov	Prot		pm+ov	pm+pt		pm+ov	pm+pt		pm+ov
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases	4		4			8	2		2	6		6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.0	10.0	10.0	21.0	10.0	10.0	21.0	10.0	10.0	21.0	10.0
Total Split (s)	17.0	68.0	17.0	24.0	75.0	12.0	17.0	26.0	24.0	12.0	21.0	17.0
Total Split (%)	13.1%	52.3%	13.1%	18.5%	57.7%	9.2%	13.1%	20.0%	18.5%	9.2%	16.2%	13.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?												
Recall Mode	Min	Min	Min	Min	Min	Min	Min	C-Min	Min	Min	C-Min	Min
Act Effct Green (s)	73.4	63.4	80.4	20.9	74.3	86.2	30.7	18.8	44.7	20.6	13.7	28.7
Actuated g/C Ratio	0.56	0.49	0.62	0.16	0.57	0.66	0.24	0.14	0.34	0.16	0.11	0.22
v/c Ratio	0.44	1.00	0.42	0.90	0.45	0.04	1.04	0.76	0.78	0.44	0.58	0.26
Control Delay	4.6	27.1	4.3	74.8	17.5	2.7	113.9	64.3	50.6	48.7	61.8	8.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.6	27.1	4.3	74.8	17.5	2.7	113.9	64.3	50.6	48.7	61.8	8.5
LOS	A	C	A	E	B	A	F	E	D	D	E	A
Approach Delay		21.2			36.8			71.6			44.1	
Approach LOS		C			D			E			D	

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 82 (63%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.04
Intersection Signal Delay: 37.4 — Intersection LOS: D
Intersection Capacity Utilization 87.4% — ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 2: Rio Bravo Blvd & Broadway Blvd



HCM Signalized Intersection Capacity Analysis
2: Rio Bravo Blvd & Broadway Blvd

Terry O. Brown, P.E.
4/9/2012 - Synchro 7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	164	1555	384	397	723	34	222	311	340	54	149	81
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1719	3438	1538	3335	3438	1538	1641	3282	1468	1641	3282	1468
Flt Permitted	0.30	1.00	1.00	0.95	1.00	1.00	0.39	1.00	1.00	0.42	1.00	1.00
Satd. Flow (perm)	551	3438	1538	3335	3438	1538	667	3282	1468	718	3282	1468
Peak-hour factor, PHF	0.93	0.93	0.93	0.82	0.82	0.82	0.86	0.86	0.86	0.75	0.75	0.75
Adj. Flow (vph)	176	1672	413	484	882	41	258	362	395	72	199	108
RTOR Reduction (vph)	0	0	31	0	0	15	0	0	0	0	0	88
Lane Group Flow (vph)	176	1672	382	484	882	26	258	362	395	72	199	20
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	10%	10%	10%	10%	10%	10%
Turn Type	pm+pt		pm+ov	Prot		pm+ov	pm+pt		pm+ov	pm+pt		pm+ov
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases	4		4			8	2		2	6		6
Actuated Green, G (s)	73.4	63.4	75.4	20.9	74.3	81.2	30.7	18.8	39.7	20.6	13.7	23.7
Effective Green, g (s)	73.4	63.4	75.4	20.9	74.3	81.2	30.7	18.8	39.7	20.6	13.7	23.7
Actuated g/C Ratio	0.56	0.49	0.58	0.16	0.57	0.62	0.24	0.14	0.31	0.16	0.11	0.18
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	401	1677	951	536	1965	1020	247	475	505	163	346	324
v/s Ratio Prot	0.03	c0.49	0.04	c0.15	0.26	0.00	c0.10	0.11	c0.13	0.02	0.06	0.00
v/s Ratio Perm	0.21		0.21			0.02	c0.15		0.14	0.05		0.01
v/c Ratio	0.44	1.00	0.40	0.90	0.45	0.03	1.04	0.76	0.78	0.44	0.58	0.06
Uniform Delay, d1	13.8	33.2	14.9	53.6	16.1	9.3	47.6	53.5	41.2	48.2	55.4	43.9
Progression Factor	0.38	0.38	0.36	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3	12.5	0.1	18.5	0.2	0.0	69.4	11.0	7.7	1.9	6.8	0.1
Delay (s)	5.5	25.1	5.6	72.0	16.2	9.3	117.0	64.5	48.9	50.1	62.2	44.0
Level of Service	A	C	A	E	B	A	F	E	D	D	E	D
Approach Delay (s)		20.0			35.2			71.8			54.7	
Approach LOS		C			D			E			D	

Intersection Summary

HCM Average Control Delay	37.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	87.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Timings
2: Rio Bravo Blvd & Broadway Blvd

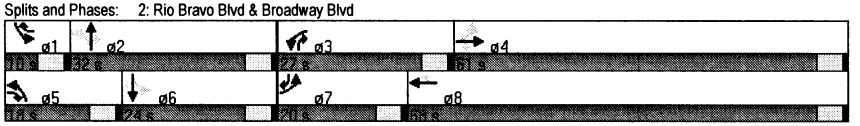
Terry O. Brown, P.E.
4/21/2012 - Synchro 7

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	194	1839	406	481	1111	48	327	592	691	61	192	118
Turn Type	pm+pt		pm+ov	Prot		pm+ov	pm+pt		pm+ov	pm+pt		pm+ov
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases	4		4			8	2		2	6		6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.0	10.0	10.0	21.0	10.0	10.0	21.0	10.0	10.0	21.0	10.0
Total Split (s)	20.0	61.0	18.0	27.0	68.0	10.0	18.0	32.0	27.0	10.0	24.0	20.0
Total Split (%)	15.4%	46.9%	13.8%	20.8%	52.3%	7.7%	13.8%	24.6%	20.8%	7.7%	18.5%	15.4%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?												-
Recall Mode	Min	Min	Min	Min	Min	Min	Min	C-Min	Min	Min	C-Min	Min
Act Effct Green (s)	69.6	56.0	74.0	22.0	64.4	74.4	37.0	27.0	54.0	24.0	19.0	37.6
Actuated g/C Ratio	0.54	0.43	0.57	0.17	0.50	0.57	0.28	0.21	0.42	0.18	0.15	0.29
v/c Ratio	0.82	1.33	0.48	1.04	0.80	0.07	1.35	1.01	1.32	0.70	0.53	0.35
Control Delay	48.2	170.3	5.8	100.8	32.1	3.9	212.9	87.7	186.6	69.5	56.0	31.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.2	170.3	5.8	100.8	32.1	3.9	212.9	87.7	186.6	69.5	56.0	31.9
LOS	D	F	A	F	C	A	F	F	F	E	E	C
Approach Delay		133.2			51.4			155.6			50.5	
Approach LOS		F			D			F			D	

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 84 (65%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 140
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.35
Intersection Signal Delay: 109.9 — Intersection LOS: F
Intersection Capacity Utilization 109.5% — ICU Level of Service H
Analysis Period (min) 15

Splits and Phases: 2: Rio Bravo Blvd & Broadway Blvd



A-40a

HCM Signalized Intersection Capacity Analysis
2: Rio Bravo Blvd & Broadway Blvd

Terry O. Brown, P.E.
4/21/2012 - Synchro 7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	194	1839	406	481	1111	48	327	592	691	61	192	118
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1719	3438	1538	3335	3438	1538	1641	3282	1468	1641	3282	1468
Flt Permitted	0.09	1.00	1.00	0.95	1.00	1.00	0.37	1.00	1.00	0.21	1.00	1.00
Satd. Flow (perm)	171	3438	1538	3335	3438	1538	641	3282	1468	364	3282	1468
Peak-hour factor, PHF	0.93	0.93	0.93	0.82	0.82	0.82	0.86	0.86	0.86	0.75	0.75	0.75
Adj. Flow (vph)	209	1977	437	587	1355	59	380	688	803	81	256	157
RTOR Reduction (vph)	0	0	29	0	0	26	0	0	0	0	0	21
Lane Group Flow (vph)	209	1977	408	587	1355	33	380	688	803	81	256	136
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	10%	10%	10%	10%	10%	10%
Turn Type	pm+pt		pm+ov	Prot		pm+ov	pm+pt		pm+ov	pm+pt		pm+ov
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases	4		4			8	2		2	6		6
Actuated Green, G (s)	69.6	56.0	69.0	22.0	64.4	69.4	37.0	27.0	49.0	24.0	19.0	32.6
Effective Green, g (s)	69.6	56.0	69.0	22.0	64.4	69.4	37.0	27.0	49.0	24.0	19.0	32.6
Actuated g/C Ratio	0.54	0.43	0.53	0.17	0.50	0.53	0.28	0.21	0.38	0.18	0.15	0.25
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	253	1481	875	564	1703	880	282	682	610	116	480	425
v/s Ratio Prot	0.09	c0.58	0.05	0.18	0.39	0.00	c0.13	0.21	c0.22	0.03	0.08	0.03
v/s Ratio Perm	0.36		0.22			0.02	0.25		0.32	0.10		0.06
v/c Ratio	0.83	1.33	0.47	1.04	0.80	0.04	1.35	1.01	1.32	0.70	0.53	0.32
Uniform Delay, d1	28.8	37.0	19.0	54.0	27.3	14.4	44.1	51.5	40.5	47.2	51.4	39.7
Progression Factor	1.61	0.38	0.39	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.1	151.1	0.0	48.9	2.7	0.0	178.1	36.7	153.7	16.8	4.2	0.4
Delay (s)	48.6	165.2	7.5	102.9	30.0	14.4	222.2	88.2	194.2	64.0	55.6	40.1
Level of Service	D	F	A	F	C	B	F	F	F	E	E	D
Approach Delay (s)		129.7			50.9			160.9			52.0	
Approach LOS		F			D			F			D	

Intersection Summary

HCM Average Control Delay	110.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.31		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	109.5%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Timings
2: Rio Bravo Blvd & Broadway Blvd

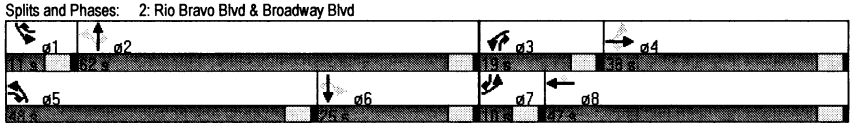
Terry O. Brown, P.E.
4/9/2012 - Synchro 7

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	116	815	399	283	1295	30	714	307	530	64	387	304
Turn Type	pm+pt		pm+ov	Prot		pm+ov	pm+pt		pm+ov	pm+pt		pm+ov
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases	4		4			8	2		2	6		6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.0	10.0	10.0	21.0	10.0	10.0	21.0	10.0	10.0	21.0	10.0
Total Split (s)	10.0	38.0	48.0	19.0	47.0	11.0	48.0	62.0	19.0	11.0	25.0	10.0
Total Split (%)	7.7%	29.2%	36.9%	14.6%	36.2%	8.5%	36.9%	47.7%	14.6%	8.5%	19.2%	7.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?												
Recall Mode	Min	Min	Min	Min	Min	Min	Min	C-Min	Min	Min	C-Min	Min
Act Effct Green (s)	38.8	33.5	81.5	13.9	42.0	53.0	67.6	56.6	75.5	25.6	19.6	30.0
Actuated g/C Ratio	0.30	0.26	0.63	0.11	0.32	0.41	0.52	0.44	0.58	0.20	0.15	0.23
v/c Ratio	1.01	1.01	0.45	0.87	1.27	0.05	1.41	0.25	0.73	0.34	0.90	0.97
Control Delay	109.0	76.8	31.2	80.5	164.9	12.2	223.8	23.8	26.1	27.6	75.9	87.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	109.0	76.8	31.2	80.5	164.9	12.2	223.8	23.8	26.1	27.6	75.9	87.1
LOS	F	E	C	F	F	B	F	C	C	C	E	F
Approach Delay		65.9			147.2			116.6			76.3	
Approach LOS		E			F			F			E	

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 18 (14%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 140
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.41
Intersection Signal Delay: 107.2 — Intersection LOS: F
Intersection Capacity Utilization 109.1% — ICU Level of Service H
Analysis Period (min) 15

Splits and Phases: 2: Rio Bravo Blvd & Broadway Blvd



HCM Signalized Intersection Capacity Analysis
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Terry O. Brown, P.E.
4/9/2012 - Synchro 7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	116	815	399	283	1295	30	714	307	530	64	387	304
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1719	3438	1538	3335	3438	1538	1641	3282	1468	1641	3282	1468
Flt Permitted	0.12	1.00	1.00	0.95	1.00	1.00	0.16	1.00	1.00	0.54	1.00	1.00
Satd. Flow (perm)	216	3438	1538	3335	3438	1538	281	3282	1468	926	3282	1468
Peak-hour factor, PHF	0.91	0.91	0.91	0.92	0.92	0.92	0.85	0.85	0.85	0.87	0.87	0.87
Adj. Flow (vph)	127	896	438	308	1408	33	840	361	624	74	445	349
RTOR Reduction (vph)	0	0	9	0	0	14	0	0	0	0	0	21
Lane Group Flow (vph)	127	896	429	308	1408	19	840	361	624	74	445	328
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	10%	10%	10%	10%	10%	10%
Turn Type	pm+pt		pm+ov	Prot		pm+ov	pm+pt		pm+ov	pm+pt		pm+ov
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases	4		4			8	2		2	6		6
Actuated Green, G (s)	38.9	33.5	76.5	13.9	42.0	48.0	67.6	56.6	70.5	25.6	19.6	25.0
Effective Green, g (s)	38.9	33.5	76.5	13.9	42.0	48.0	67.6	56.6	70.5	25.6	19.6	25.0
Actuated g/C Ratio	0.30	0.26	0.59	0.11	0.32	0.37	0.52	0.44	0.54	0.20	0.15	0.19
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	127	886	964	357	1111	627	596	1429	853	215	495	339
v/s Ratio Prot	0.04	0.26	0.15	0.09	c0.41	0.00	c0.47	0.11	0.08	0.02	0.14	c0.04
v/s Ratio Perm	0.26		0.13			0.01	c0.27		0.35	0.05		0.18
v/c Ratio	1.00	1.01	0.44	0.86	1.27	0.03	1.41	0.25	0.73	0.34	0.90	0.97
Uniform Delay, d1	43.8	48.2	14.9	57.1	44.0	26.2	35.7	23.3	22.6	43.9	54.2	52.1
Progression Factor	0.84	0.93	2.43	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	76.4	31.8	0.3	18.8	127.5	0.0	194.1	0.4	3.3	1.0	21.9	39.8
Delay (s)	113.2	76.6	36.5	76.0	171.5	26.2	229.8	23.7	25.8	44.9	76.1	91.9
Level of Service	F	E	D	E	F	C	F	C	C	D	E	F
Approach Delay (s)		67.8			152.0			119.3			79.8	
Approach LOS		E			F			F			E	

Intersection Summary

HCM Average Control Delay	110.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.28		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	109.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Timings
2: Rio Bravo Blvd & Broadway Blvd

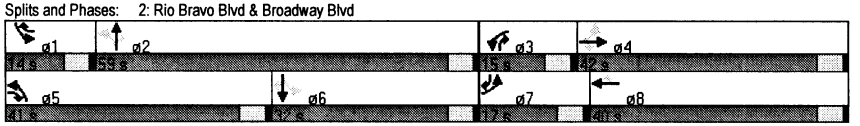
Terry O. Brown, P.E.
4/21/2012 - Synchro 7

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	129	915	414	304	1413	33	875	458	771	91	819	688
Turn Type	pm+pt		pm+ov	Prot		pm+ov	pm+pt		pm+ov	pm+pt		pm+ov
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases	4		4			8	2		2	6		6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.0	10.0	10.0	21.0	10.0	10.0	21.0	10.0	10.0	21.0	10.0
Total Split (s)	17.0	42.0	41.0	15.0	40.0	14.0	41.0	59.0	15.0	14.0	32.0	17.0
Total Split (%)	13.1%	32.3%	31.5%	11.5%	30.8%	10.8%	31.5%	45.4%	11.5%	10.8%	24.6%	13.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?												
Recall Mode	Min	Min	Min	Min	Min	Min	Min	C-Min	Min	Min	C-Min	Min
Act Effct Green (s)	49.0	37.0	78.0	10.0	35.0	48.5	68.0	54.5	69.5	35.5	27.0	44.0
Actuated g/C Ratio	0.38	0.28	0.60	0.08	0.27	0.37	0.52	0.42	0.53	0.27	0.21	0.34
v/c Ratio	0.66	1.03	0.49	1.28	1.66	0.06	2.03	0.39	1.16	0.39	1.38	1.58
Control Delay	39.9	64.6	17.6	200.7	332.9	14.6	492.4	27.4	113.7	25.0	219.0	300.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.9	64.6	17.6	200.7	332.9	14.6	492.4	27.4	113.7	25.0	219.0	300.9
LOS	D	E	B	F	F	B	F	C	F	C	F	F
Approach Delay		49.0			303.9			252.3			243.2	
Approach LOS		D			F			F			F	

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 85 (65%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 140
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 2.03
Intersection Signal Delay: 221.1 — Intersection LOS: F
Intersection Capacity Utilization 142.6% — ICU Level of Service H
Analysis Period (min) 15

Splits and Phases: 2: Rio Bravo Blvd & Broadway Blvd



HCM Signalized Intersection Capacity Analysis
2: Rio Bravo Blvd & Broadway Blvd

Terry O. Brown, P.E.
4/21/2012 - Synchro 7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	129	915	414	304	1413	33	875	458	771	91	819	688
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1719	3438	1538	3335	3438	1538	1641	3282	1468	1641	3282	1468
Flt Permitted	0.11	1.00	1.00	0.95	1.00	1.00	0.12	1.00	1.00	0.45	1.00	1.00
Satd. Flow (perm)	196	3438	1538	3335	3438	1538	216	3282	1468	779	3282	1468
Peak-hour factor, PHF	0.91	0.91	0.91	0.92	0.92	0.92	0.85	0.85	0.85	0.87	0.87	0.87
Adj. Flow (vph)	142	1005	455	330	1536	36	1029	539	907	105	941	791
RTOR Reduction (vph)	0	0	1	0	0	14	0	0	0	0	0	4
Lane Group Flow (vph)	142	1005	454	330	1536	22	1029	539	907	105	941	787
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	10%	10%	10%	10%	10%	10%
Turn Type	pm+pt		pm+ov	Prot		pm+ov	pm+pt		pm+ov	pm+pt		pm+ov
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases	4		4			8	2		2	6		6
Actuated Green, G (s)	49.0	37.0	73.0	10.0	35.0	43.5	68.0	54.5	64.5	35.5	27.0	39.0
Effective Green, g (s)	49.0	37.0	73.0	10.0	35.0	43.5	68.0	54.5	64.5	35.5	27.0	39.0
Actuated g/C Ratio	0.38	0.28	0.56	0.08	0.27	0.33	0.52	0.42	0.50	0.27	0.21	0.30
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	214	979	923	257	926	574	508	1376	785	269	682	497
v/s Ratio Prot	0.06	0.29	0.14	0.10	c0.45	0.00	c0.56	0.16	0.09	0.03	0.29	c0.15
v/s Ratio Perm	0.19		0.16			0.01	c0.50		0.53	0.08		0.39
v/c Ratio	0.66	1.03	0.49	1.28	1.66	0.04	2.03	0.39	1.16	0.39	1.38	1.58
Uniform Delay, d1	32.1	46.5	17.3	60.0	47.5	29.2	38.4	26.2	32.8	36.7	51.5	45.5
Progression Factor	0.96	0.64	1.06	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.5	33.7	0.4	154.1	301.3	0.0	468.4	0.8	84.1	0.9	180.0	271.9
Delay (s)	37.1	63.6	18.7	214.1	348.8	29.2	506.8	27.1	116.9	37.6	231.5	317.4
Level of Service	D	E	B	F	F	C	F	C	F	D	F	F
Approach Delay (s)		48.5			319.3			259.4			257.4	
Approach LOS		D			F			F			F	

Intersection Summary

HCM Average Control Delay	230.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.79		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	142.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

A-4/12

Timings
2: Rio Bravo Blvd & Broadway Blvd

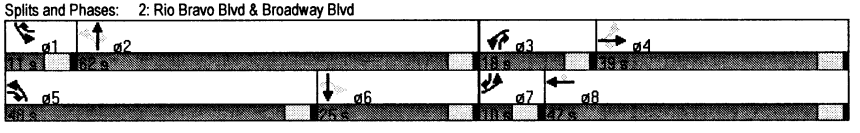
Terry O. Brown, P.E.
4/7/2012 - Synchro 7

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	118	856	403	283	1317	30	716	307	530	64	387	305
Turn Type	pm+pt		pm+ov	Prot		pm+ov	pm+pt		pm+ov	pm+pt		pm+ov
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases	4		4			8	2		2	6		6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.0	10.0	10.0	21.0	10.0	10.0	21.0	10.0	10.0	21.0	10.0
Total Split (s)	10.0	39.0	48.0	18.0	47.0	11.0	48.0	62.0	18.0	11.0	25.0	10.0
Total Split (%)	7.7%	30.0%	36.9%	13.8%	36.2%	8.5%	36.9%	47.7%	13.8%	8.5%	19.2%	7.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?												
Recall Mode	Min	Min	Min	Min	Min	Min	Min	C-Min	Min	Min	C-Min	Min
Act Effct Green (s)	39.4	34.1	82.1	13.3	42.0	53.0	67.6	56.6	74.9	25.6	19.6	30.0
Actuated g/C Ratio	0.30	0.26	0.63	0.10	0.32	0.41	0.52	0.44	0.58	0.20	0.15	0.23
v/c Ratio	1.02	1.04	0.45	0.90	1.29	0.05	1.41	0.25	0.74	0.34	0.90	0.98
Control Delay	113.3	83.8	29.6	87.2	173.8	12.2	225.2	23.8	26.9	27.6	75.9	88.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	113.3	83.8	29.6	87.2	173.8	12.2	225.2	23.8	26.9	27.6	75.9	88.4
LOS	F	F	C	F	F	B	F	C	C	C	E	F
Approach Delay		70.4			155.7			117.7			76.8	
Approach LOS		E			F			F			E	

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 18 (14%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 140
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.41
Intersection Signal Delay: 111.1 — Intersection LOS: F
Intersection Capacity Utilization 110.0% — ICU Level of Service H
Analysis Period (min) 15

Splits and Phases: 2: Rio Bravo Blvd & Broadway Blvd



HCM Signalized Intersection Capacity Analysis
2: Rio Bravo Blvd & Broadway Blvd

Terry O. Brown, P.E.
4/7/2012 - Synchro 7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	118	856	403	283	1317	30	716	307	530	64	387	305
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1719	3438	1538	3335	3438	1538	1641	3282	1468	1641	3282	1468
Flt Permitted	0.12	1.00	1.00	0.95	1.00	1.00	0.16	1.00	1.00	0.54	1.00	1.00
Satd. Flow (perm)	212	3438	1538	3335	3438	1538	281	3282	1468	926	3282	1468
Peak-hour factor, PHF	0.91	0.91	0.91	0.92	0.92	0.92	0.85	0.85	0.85	0.87	0.87	0.87
Adj. Flow (vph)	130	941	443	308	1432	33	842	361	624	74	445	351
RTOR Reduction (vph)	0	0	8	0	0	14	0	0	0	0	0	21
Lane Group Flow (vph)	130	941	435	308	1432	19	842	361	624	74	445	330
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	10%	10%	10%	10%	10%	10%
Turn Type	pm+pt		pm+ov	Prot		pm+ov	pm+pt		pm+ov	pm+pt		pm+ov
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases	4		4			8	2		2	6		6
Actuated Green, G (s)	39.5	34.1	77.1	13.3	42.0	48.0	67.6	56.6	69.9	25.6	19.6	25.0
Effective Green, g (s)	39.5	34.1	77.1	13.3	42.0	48.0	67.6	56.6	69.9	25.6	19.6	25.0
Actuated g/C Ratio	0.30	0.26	0.59	0.10	0.32	0.37	0.52	0.44	0.54	0.20	0.15	0.19
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	127	902	971	341	1111	627	596	1429	846	215	495	339
v/s Ratio Prot	0.04	0.27	0.15	0.09	c0.42	0.00	c0.47	0.11	0.08	0.02	0.14	c0.04
v/s Ratio Perm	0.27		0.13			0.01	c0.27		0.35	0.05		0.18
v/c Ratio	1.02	1.04	0.45	0.90	1.29	0.03	1.41	0.25	0.74	0.34	0.90	0.97
Uniform Delay, d1	43.4	48.0	14.7	57.7	44.0	26.2	35.7	23.3	23.0	43.9	54.2	52.2
Progression Factor	0.82	0.92	2.34	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	82.4	40.5	0.3	25.9	136.9	0.0	195.6	0.4	3.4	1.0	21.9	41.5
Delay (s)	118.0	84.5	34.6	83.7	180.9	26.2	231.2	23.7	26.4	44.9	76.1	93.6
Level of Service	F	F	C	F	F	C	F	C	C	D	E	F
Approach Delay (s)		72.8			161.1			120.3			80.5	
Approach LOS		E			F			F			F	

Intersection Summary

HCM Average Control Delay	114.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.29		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	110.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Timings
2: Rio Bravo Blvd & Broadway Blvd

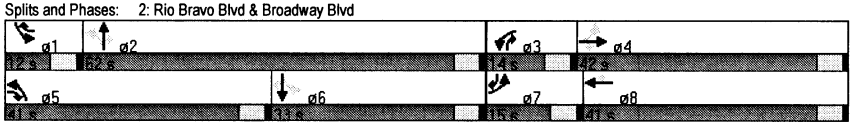
Terry O. Brown, P.E.
4/21/2012 - Synchro 7

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	136	1042	427	304	1458	33	879	458	771	91	819	690
Turn Type	pm+pt		pm+ov	Prot		pm+ov	pm+pt		pm+ov	pm+pt		pm+ov
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases	4		4			8	2		2	6		6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.0	10.0	10.0	21.0	10.0	10.0	21.0	10.0	10.0	21.0	10.0
Total Split (s)	15.0	42.0	41.0	14.0	41.0	12.0	41.0	62.0	14.0	12.0	33.0	15.0
Total Split (%)	11.5%	32.3%	31.5%	10.8%	31.5%	9.2%	31.5%	47.7%	10.8%	9.2%	25.4%	11.5%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?												
Recall Mode	Min	Min	Min	Min	Min	Min	Min	C-Min	Min	Min	C-Min	Min
Act Effct Green (s)	47.0	37.0	78.0	9.0	36.0	48.0	69.0	57.0	71.0	35.0	28.0	43.0
Actuated g/C Ratio	0.36	0.28	0.60	0.07	0.28	0.37	0.53	0.44	0.55	0.27	0.22	0.33
v/c Ratio	0.79	1.17	0.51	1.43	1.66	0.06	2.04	0.37	1.13	0.41	1.33	1.62
Control Delay	54.8	117.1	17.3	258.2	335.2	15.4	498.5	25.5	103.3	25.9	198.6	319.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.8	117.1	17.3	258.2	335.2	15.4	498.5	25.5	103.3	25.9	198.6	319.6
LOS	D	F	B	F	F	B	F	C	F	C	F	F
Approach Delay		85.3			316.3			251.2			240.9	
Approach LOS		F			F			F			F	

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 2 (2%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 2.04
Intersection Signal Delay: 228.2 — Intersection LOS: F
Intersection Capacity Utilization 144.2% — ICU Level of Service H
Analysis Period (min) 15

Splits and Phases: 2: Rio Bravo Blvd & Broadway Blvd



HCM Signalized Intersection Capacity Analysis
2: Rio Bravo Blvd & Broadway Blvd

Terry O. Brown, P.E.
4/21/2012 - Synchro 7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	136	1042	427	304	1458	33	879	458	771	91	819	690
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1719	3438	1538	3335	3438	1538	1641	3282	1468	1641	3282	1468
Flt Permitted	0.11	1.00	1.00	0.95	1.00	1.00	0.12	1.00	1.00	0.45	1.00	1.00
Satd. Flow (perm)	196	3438	1538	3335	3438	1538	209	3282	1468	779	3282	1468
Peak-hour factor, PHF	0.91	0.91	0.91	0.92	0.92	0.92	0.85	0.85	0.85	0.87	0.87	0.87
Adj. Flow (vph)	149	1145	469	330	1585	36	1034	539	907	105	941	793
RTOR Reduction (vph)	0	0	1	0	0	13	0	0	0	0	0	4
Lane Group Flow (vph)	149	1145	468	330	1585	23	1034	539	907	105	941	789
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	10%	10%	10%	10%	10%	10%
Turn Type	pm+pt		pm+ov	Prot		pm+ov	pm+pt		pm+ov	pm+pt		pm+ov
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases	4		4			8	2		2	6		6
Actuated Green, G (s)	47.0	37.0	73.0	9.0	36.0	43.0	69.0	57.0	66.0	35.0	28.0	38.0
Effective Green, g (s)	47.0	37.0	73.0	9.0	36.0	43.0	69.0	57.0	66.0	35.0	28.0	38.0
Actuated g/C Ratio	0.36	0.28	0.56	0.07	0.28	0.33	0.53	0.44	0.51	0.27	0.22	0.29
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	188	979	923	231	952	568	507	1439	802	256	707	486
v/s Ratio Prot	0.06	0.33	0.14	0.10	c0.46	0.00	c0.56	0.16	0.08	0.02	0.29	c0.13
v/s Ratio Perm	0.23		0.16			0.01	c0.52		0.54	0.09		0.41
v/c Ratio	0.79	1.17	0.51	1.43	1.66	0.04	2.04	0.37	1.13	0.41	1.33	1.62
Uniform Delay, d1	33.6	46.5	17.5	60.5	47.0	29.5	38.5	24.5	32.0	37.1	51.0	46.0
Progression Factor	1.11	0.72	1.03	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	15.8	84.9	0.3	216.0	303.9	0.0	474.6	0.7	74.3	1.1	158.6	290.3
Delay (s)	52.9	118.5	18.3	276.5	350.9	29.5	513.1	25.3	106.3	38.2	209.6	336.3
Level of Service	D	F	B	F	F	C	F	C	F	D	F	F
Approach Delay (s)		86.3			332.4			258.3			254.4	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	237.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.80		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	144.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

A-42a

Timings
3: Rio Bravo Blvd & Second St

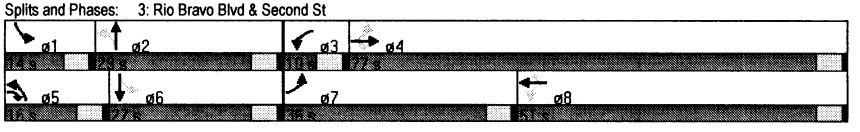
Terry O. Brown, P.E.
4/9/2012 - Synchro 7

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Volume (vph)	366	1712	180	73	665	100	182	157	142	74
Turn Type	pm+pt		pm+ov	pm+pt		Perm	pm+pt		pm+pt	
Protected Phases	7	4	5	3	8		5	2	1	6
Permitted Phases	4		4	8		8	2		6	
Detector Phase	7	4	5	3	8	8	5	2	1	6
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.0	10.0	10.0	21.0	21.0	10.0	21.0	10.0	21.0
Total Split (s)	36.0	77.0	16.0	10.0	51.0	51.0	16.0	29.0	14.0	27.0
Total Split (%)	27.7%	59.2%	12.3%	7.7%	39.2%	39.2%	12.3%	22.3%	10.8%	20.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?										
Recall Mode	Min	Min	Min	Min	Min	Min	Min	C-Min	Min	C-Min
Act Effct Green (s)	82.4	72.1	88.1	60.8	55.6	55.6	34.6	23.6	30.6	21.6
Actuated g/C Ratio	0.63	0.55	0.68	0.47	0.43	0.43	0.27	0.18	0.24	0.17
v/c Ratio	0.79	0.98	0.18	0.63	0.49	0.17	0.71	0.95	0.89	0.52
Control Delay	25.2	44.1	1.3	49.1	25.3	24.2	53.4	86.3	83.9	45.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.2	44.1	1.3	49.1	25.3	24.2	53.4	86.3	83.9	45.9
LOS	C	D	A	D	C	C	D	F	F	D
Approach Delay		37.6			27.3			73.1		64.7
Approach LOS		D			C			E		E

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 6 (5%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.98
Intersection Signal Delay: 41.8 — Intersection LOS: D
Intersection Capacity Utilization 91.1% — ICU Level of Service F
Analysis Period (min) 15

Splits and Phases: 3: Rio Bravo Blvd & Second St



HCM Signalized Intersection Capacity Analysis
3: Rio Bravo Blvd & Second St

Terry O. Brown, P.E.
4/9/2012 - Synchro 7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	366	1712	180	73	665	100	182	157	114	142	74	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94		1.00	0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1719	3438	1538	1719	3438	1538	1719	1695		1719	1676	
Flt Permitted	0.25	1.00	1.00	0.07	1.00	1.00	0.45	1.00		0.19	1.00	
Satd. Flow (perm)	457	3438	1538	130	3438	1538	810	1695		335	1676	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.87	0.87	0.87	0.91	0.91	0.91
Adj. Flow (vph)	398	1861	196	79	723	109	209	180	131	156	81	78
RTOR Reduction (vph)	0	0	71	0	0	0	0	20	0	0	27	0
Lane Group Flow (vph)	398	1861	125	79	723	109	209	291	0	156	132	0
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Turn Type	pm+pt		pm+ov	pm+pt		Perm	pm+pt			pm+pt		
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	82.4	72.1	83.1	60.9	55.6	55.6	34.6	23.6		30.6	21.6	
Effective Green, g (s)	82.4	72.1	83.1	60.9	55.6	55.6	34.6	23.6		30.6	21.6	
Actuated g/C Ratio	0.63	0.55	0.64	0.47	0.43	0.43	0.27	0.18		0.24	0.17	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	501	1907	1042	126	1470	658	293	308		175	278	
v/s Ratio Prot	c0.13	c0.54	0.01	0.03	0.21		0.06	c0.17		c0.06	0.08	
v/s Ratio Perm	0.37		0.07	0.27		0.07	0.13			0.15		
v/c Ratio	0.79	0.98	0.12	0.63	0.49	0.17	0.71	0.94		0.89	0.48	
Uniform Delay, d1	15.0	28.1	9.2	28.8	27.0	22.9	41.3	52.5		44.1	49.1	
Progression Factor	1.00	1.00	1.00	1.19	0.85	0.93	1.00	1.00		1.00	1.00	
Incremental Delay, d2	8.5	15.2	0.1	8.8	0.2	0.1	8.0	38.7		38.8	5.7	
Delay (s)	23.5	43.3	9.2	43.1	23.2	21.5	49.3	91.2		82.9	54.8	
Level of Service	C	D	A	D	C	C	D	F		F	D	
Approach Delay (s)		37.3			24.7			74.3			68.7	
Approach LOS		D			C			E			E	

Intersection Summary

HCM Average Control Delay	41.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	91.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Timings
3: Rio Bravo Blvd & Second St

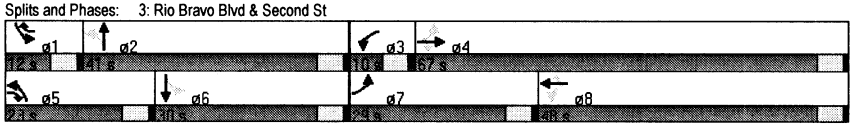
Terry O. Brown, P.E.
4/21/2012 - Synchro 7

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Volume (vph)	549	2456	271	91	868	127	454	390	195	118
Turn Type	pm+pt		pm+ov	pm+pt		pm+ov	pm+pt		pm+pt	
Protected Phases	7	4	5	3	8	1	5	2	1	6
Permitted Phases	4		4	8		8	2		6	
Detector Phase	7	4	5	3	8	1	5	2	1	6
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.0	10.0	10.0	21.0	10.0	10.0	21.0	10.0	21.0
Total Split (s)	29.0	67.0	23.0	10.0	48.0	12.0	23.0	41.0	12.0	30.0
Total Split (%)	22.3%	51.5%	17.7%	7.7%	36.9%	9.2%	17.7%	31.5%	9.2%	23.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize?										
Recall Mode	Min	Min	Min	Min	Min	Min	Min	C-Min	Min	C-Min
Act Effct Green (s)	72.0	62.0	85.0	48.0	43.0	55.0	48.0	36.0	32.0	25.0
Actuated g/C Ratio	0.55	0.48	0.65	0.37	0.33	0.42	0.37	0.28	0.25	0.19
v/c Ratio	1.57	1.63	0.27	0.81	0.83	0.21	1.52	1.44	1.45	0.73
Control Delay	298.5	312.5	3.5	70.1	38.1	18.2	275.3	244.5	263.1	56.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	298.5	312.5	3.5	70.1	38.1	18.2	275.3	244.5	263.1	56.1
LOS	F	F	A	E	D	B	F	F	F	E
Approach Delay		284.5			38.4			257.6		150.6
Approach LOS		F			D			F		F

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 37 (28%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 140
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.63
Intersection Signal Delay: 224.5 — Intersection LOS: F
Intersection Capacity Utilization 134.6% — ICU Level of Service H
Analysis Period (min) 15

Splits and Phases: 3: Rio Bravo Blvd & Second St



HCM Signalized Intersection Capacity Analysis
3: Rio Bravo Blvd & Second St

Terry O. Brown, P.E.
4/21/2012 - Synchro 7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	549	2456	271	91	868	127	454	390	224	195	118	114
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95		1.00	0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1719	3438	1538	1719	3438	1538	1719	1711		1719	1676	
Flt Permitted	0.09	1.00	1.00	0.09	1.00	1.00	0.25	1.00		0.16	1.00	
Satd. Flow (perm)	170	3438	1538	168	3438	1538	459	1711		290	1676	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.87	0.87	0.87	0.91	0.91	0.91
Adj. Flow (vph)	597	2670	295	99	943	138	522	448	257	214	130	125
RTOR Reduction (vph)	0	0	79	0	0	0	0	16	0	0	27	0
Lane Group Flow (vph)	597	2670	216	99	943	138	522	689	0	214	228	0
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Turn Type	pm+pt		pm+ov	pm+pt		pm+ov	pm+pt			pm+pt		
Protected Phases	7	4	5	3	8	1	5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	72.0	62.0	80.0	48.0	43.0	50.0	48.0	36.0		32.0	25.0	
Effective Green, g (s)	72.0	62.0	80.0	48.0	43.0	50.0	48.0	36.0		32.0	25.0	
Actuated g/C Ratio	0.55	0.48	0.62	0.37	0.33	0.38	0.37	0.28		0.25	0.19	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	380	1640	1006	122	1137	651	344	474		148	322	
v/s Ratio Prot	c0.29	c0.78	0.03	0.03	0.27	0.01	c0.21	0.40		0.08	0.14	
v/s Ratio Perm	0.58		0.11	0.27		0.08	c0.35			0.28		
v/c Ratio	1.57	1.63	0.21	0.81	0.83	0.21	1.52	1.45		1.45	0.71	
Uniform Delay, d1	40.2	34.0	11.1	33.7	40.1	26.8	36.1	47.0		46.4	49.1	
Progression Factor	1.00	1.00	1.00	1.30	0.78	0.73	1.00	1.00		1.00	1.00	
Incremental Delay, d2	269.4	285.4	0.1	29.1	4.6	0.1	247.3	215.7		234.4	12.4	
Delay (s)	309.6	319.4	11.2	72.9	36.0	19.6	283.4	262.7		280.9	61.5	
Level of Service	F	F	B	E	D	B	F	F		F	E	
Approach Delay (s)		292.3			37.2			271.5			161.6	
Approach LOS		F			D			F			F	

Intersection Summary

HCM Average Control Delay	232.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.59		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	134.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

A-43a

Timings
3: Rio Bravo Blvd & Second St

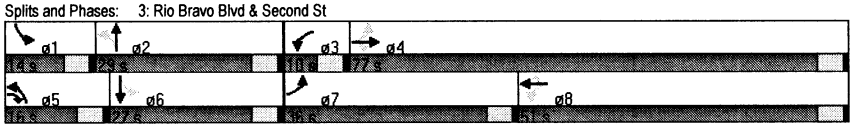
Terry O. Brown, P.E.
4/7/2012 - Synchro 7

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Volume (vph)	366	1737	180	73	672	100	182	157	143	74
Turn Type	pm+pt		pm+ov	pm+pt		Perm	pm+pt		pm+pt	
Protected Phases	7	4	5	3	8		5	2	1	6
Permitted Phases	4		4	8		8	2		6	
Detector Phase	7	4	5	3	8	8	5	2	1	6
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.0	10.0	10.0	21.0	21.0	10.0	21.0	10.0	21.0
Total Split (s)	36.0	77.0	16.0	10.0	51.0	51.0	16.0	29.0	14.0	27.0
Total Split (%)	27.7%	59.2%	12.3%	7.7%	39.2%	39.2%	12.3%	22.3%	10.8%	20.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?										
Recall Mode	Min	Min	Min	Min	Min	Min	Min	C-Min	Min	C-Min
Act Effct Green (s)	82.4	72.1	88.1	60.8	55.5	55.5	34.6	23.6	30.6	21.6
Actuated g/C Ratio	0.63	0.55	0.68	0.47	0.43	0.43	0.27	0.18	0.24	0.17
v/c Ratio	0.80	0.99	0.18	0.63	0.50	0.17	0.71	0.95	0.90	0.52
Control Delay	25.7	47.2	1.3	45.8	31.2	28.9	53.4	86.3	85.0	45.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.7	47.2	1.3	45.8	31.2	28.9	53.4	86.3	85.0	45.9
LOS	C	D	A	D	C	C	D	F	F	D
Approach Delay		40.1			32.2			73.1		65.3
Approach LOS		D			C			E		E

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.99
Intersection Signal Delay: 44.3 — Intersection LOS: D
Intersection Capacity Utilization 91.9% — ICU Level of Service F
Analysis Period (min) 15

Splits and Phases: 3: Rio Bravo Blvd & Second St



HCM Signalized Intersection Capacity Analysis
3: Rio Bravo Blvd & Second St

Terry O. Brown, P.E.
4/7/2012 - Synchro 7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	366	1737	180	73	672	100	182	157	114	143	74	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94		1.00	0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1719	3438	1538	1719	3438	1538	1719	1695		1719	1676	
Flt Permitted	0.25	1.00	1.00	0.07	1.00	1.00	0.45	1.00		0.19	1.00	
Satd. Flow (perm)	451	3438	1538	130	3438	1538	810	1695		335	1676	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.87	0.87	0.87	0.91	0.91	0.91
Adj. Flow (vph)	398	1888	196	79	730	109	209	180	131	157	81	78
RTOR Reduction (vph)	0	0	71	0	0	0	0	20	0	0	27	0
Lane Group Flow (vph)	398	1888	125	79	730	109	209	291	0	157	132	0
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Turn Type	pm+pt		pm+ov	pm+pt		Perm	pm+pt			pm+pt		
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	82.4	72.1	83.1	60.8	55.5	55.5	34.6	23.6		30.6	21.6	
Effective Green, g (s)	82.4	72.1	83.1	60.8	55.5	55.5	34.6	23.6		30.6	21.6	
Actuated g/C Ratio	0.63	0.55	0.64	0.47	0.43	0.43	0.27	0.18		0.24	0.17	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	499	1907	1042	126	1468	657	293	308		175	278	
v/s Ratio Prot	c0.13	c0.55	0.01	0.03	0.21		0.06	c0.17		c0.06	0.08	
v/s Ratio Perm	0.37		0.07	0.27		0.07	0.13			0.15		
v/c Ratio	0.80	0.99	0.12	0.63	0.50	0.17	0.71	0.94		0.90	0.48	
Uniform Delay, d1	15.2	28.6	9.2	29.5	27.1	23.0	41.3	52.5		44.2	49.1	
Progression Factor	1.00	1.00	1.00	1.03	1.05	1.12	1.00	1.00		1.00	1.00	
Incremental Delay, d2	8.6	18.2	0.1	8.8	0.2	0.1	8.0	38.7		39.8	5.7	
Delay (s)	23.8	46.8	9.2	39.2	28.7	25.8	49.3	91.2		84.0	54.8	
Level of Service	C	D	A	D	C	C	D	F		F	D	
Approach Delay (s)		40.2			29.3			74.3			69.3	
Approach LOS		D			C			E			E	

Intersection Summary

HCM Average Control Delay	44.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	91.9%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Timings
3: Rio Bravo Blvd & Second St

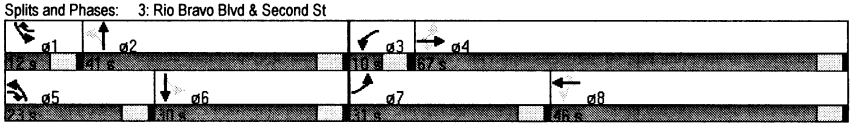
Terry O. Brown, P.E.
4/21/2012 - Synchro 7

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Volume (vph)	549	2513	271	91	882	127	454	390	197	118
Turn Type	pm+pt		pm+ov	pm+pt		pm+ov	pm+pt		pm+pt	
Protected Phases	7	4	5	3	8	1	5	2	1	6
Permitted Phases	4		4	8		8	2		6	
Detector Phase	7	4	5	3	8	1	5	2	1	6
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.0	10.0	10.0	21.0	10.0	10.0	21.0	10.0	21.0
Total Split (s)	31.0	67.0	23.0	10.0	46.0	12.0	23.0	41.0	12.0	30.0
Total Split (%)	23.8%	51.5%	17.7%	7.7%	35.4%	9.2%	17.7%	31.5%	9.2%	23.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize?										
Recall Mode	Min	Min	Min	Min	Min	Min	Min	C-Min	Min	C-Min
Act Effct Green (s)	72.0	62.0	85.0	46.0	41.0	53.0	48.0	36.0	32.0	25.0
Actuated g/C Ratio	0.55	0.48	0.65	0.35	0.32	0.41	0.37	0.28	0.25	0.19
v/c Ratio	1.50	1.67	0.27	0.81	0.88	0.22	1.52	1.45	1.46	0.73
Control Delay	266.8	329.0	3.6	71.0	57.2	26.7	275.3	246.2	268.5	56.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	266.8	329.0	3.6	71.0	57.2	26.7	275.3	246.2	268.5	56.1
LOS	F	F	A	E	E	C	F	F	F	E
Approach Delay		292.3			54.8			258.5		153.5
Approach LOS		F			D			F		F

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 9 (7%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 140
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.67
Intersection Signal Delay: 232.3 — Intersection LOS: F
Intersection Capacity Utilization 136.3% — ICU Level of Service H
Analysis Period (min) 15

Splits and Phases: 3: Rio Bravo Blvd & Second St



HCM Signalized Intersection Capacity Analysis
3: Rio Bravo Blvd & Second St

Terry O. Brown, P.E.
4/21/2012 - Synchro 7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	549	2513	271	91	882	127	454	390	225	197	118	114
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95		1.00	0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1719	3438	1538	1719	3438	1538	1719	1710		1719	1676	
Flt Permitted	0.09	1.00	1.00	0.10	1.00	1.00	0.25	1.00		0.16	1.00	
Satd. Flow (perm)	157	3438	1538	177	3438	1538	459	1710		290	1676	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.87	0.87	0.87	0.91	0.91	0.91
Adj. Flow (vph)	597	2732	295	99	959	138	522	448	259	216	130	125
RTOR Reduction (vph)	0	0	77	0	0	0	0	16	0	0	27	0
Lane Group Flow (vph)	597	2732	218	99	959	138	522	691	0	216	228	0
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Turn Type	pm+pt		pm+ov	pm+pt		pm+ov	pm+pt			pm+pt		
Protected Phases	7	4	5	3	8	1	5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	72.0	62.0	80.0	46.0	41.0	48.0	48.0	36.0		32.0	25.0	
Effective Green, g (s)	72.0	62.0	80.0	46.0	41.0	48.0	48.0	36.0		32.0	25.0	
Actuated g/C Ratio	0.55	0.48	0.62	0.35	0.32	0.37	0.37	0.28		0.25	0.19	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	399	1640	1006	122	1084	627	344	474		148	322	
v/s Ratio Prot	c0.30	c0.79	0.03	0.03	0.28	0.01	c0.21	0.40		0.08	0.14	
v/s Ratio Perm	0.53		0.11	0.26		0.08	c0.35			0.28		
v/c Ratio	1.50	1.67	0.22	0.81	0.88	0.22	1.52	1.46		1.46	0.71	
Uniform Delay, d1	41.3	34.0	11.1	35.0	42.3	28.1	36.1	47.0		46.4	49.1	
Progression Factor	1.00	1.00	1.00	1.33	1.12	1.02	1.00	1.00		1.00	1.00	
Incremental Delay, d2	236.2	302.4	0.1	28.9	7.8	0.2	247.3	217.6		240.0	12.4	
Delay (s)	277.5	336.4	11.2	75.6	55.4	28.9	283.4	264.6		286.5	61.5	
Level of Service	F	F	B	E	E	C	F	F		F	E	
Approach Delay (s)		300.2			54.0			272.5			164.7	
Approach LOS		F			D			F			F	

Intersection Summary

HCM Average Control Delay	240.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.61		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	136.3%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

A-44c

Timings
3: Rio Bravo Blvd & Second St

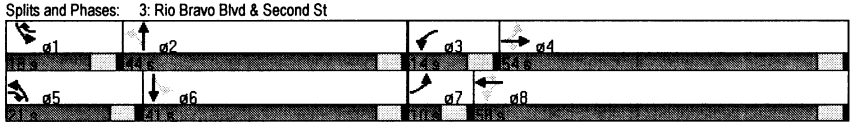
Terry O. Brown, P.E.
4/9/2012 - Synchro 7

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Volume (vph)	137	908	155	105	1710	137	281	97	163	118
Turn Type	pm+pt		pm+ov	pm+pt		pm+ov	pm+pt		pm+pt	
Protected Phases	7	4	5	3	8	1	5	2	1	6
Permitted Phases	4		4	8		8	2		6	
Detector Phase	7	4	5	3	8	1	5	2	1	6
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.0	10.0	10.0	21.0	10.0	10.0	21.0	10.0	21.0
Total Split (s)	10.0	54.0	21.0	14.0	58.0	18.0	21.0	44.0	18.0	41.0
Total Split (%)	7.7%	41.5%	16.2%	10.8%	44.6%	13.8%	16.2%	33.8%	13.8%	31.5%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize?										
Recall Mode	Min	Min	Min	Min	Min	Min	Min	C-Min	Min	C-Min
Act Effct Green (s)	54.4	49.4	70.4	61.6	53.0	70.1	55.6	39.9	48.1	36.0
Actuated g/C Ratio	0.42	0.38	0.54	0.47	0.41	0.54	0.43	0.31	0.37	0.28
v/c Ratio	1.22	0.76	0.18	0.57	1.34	0.18	1.40	0.55	0.48	1.30
Control Delay	176.5	39.7	2.6	16.2	180.6	10.1	234.1	35.5	28.0	182.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	176.5	39.7	2.6	16.2	180.6	10.1	234.1	35.5	28.0	182.3
LOS	F	D	A	B	F	B	F	D	C	F
Approach Delay		50.5			159.8			145.5		149.4
Approach LOS		D			F			F		F

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 120 (92%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.40
Intersection Signal Delay: 127.4 — Intersection LOS: F
Intersection Capacity Utilization 122.9% — ICU Level of Service H
Analysis Period (min) 15

Splits and Phases: 3: Rio Bravo Blvd & Second St



HCM Signalized Intersection Capacity Analysis
3: Rio Bravo Blvd & Second St

Terry O. Brown, P.E.
4/9/2012 - Synchro 7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	137	908	155	105	1710	137	281	97	130	163	118	481
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.91		1.00	0.88	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1719	3438	1538	1719	3438	1538	1719	1654		1719	1592	
Flt Permitted	0.08	1.00	1.00	0.12	1.00	1.00	0.10	1.00		0.43	1.00	
Satd. Flow (perm)	147	3438	1538	215	3438	1538	181	1654		774	1592	
Peak-hour factor, PHF	0.92	0.92	0.92	0.91	0.91	0.91	0.75	0.75	0.75	0.91	0.91	0.91
Adj. Flow (vph)	149	987	168	115	1879	151	375	129	173	179	130	529
RTOR Reduction (vph)	0	0	83	0	0	0	0	37	0	0	66	0
Lane Group Flow (vph)	149	987	85	115	1879	151	375	265	0	179	593	0
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Turn Type	pm+pt		pm+ov	pm+pt		pm+ov	pm+pt			pm+pt		
Protected Phases	7	4	5	3	8	1	5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	54.4	49.4	65.4	61.6	53.0	65.1	55.9	39.9		48.1	36.0	
Effective Green, g (s)	54.4	49.4	65.4	61.6	53.0	65.1	55.9	39.9		48.1	36.0	
Actuated g/C Ratio	0.42	0.38	0.50	0.47	0.41	0.50	0.43	0.31		0.37	0.28	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	122	1306	833	201	1402	829	267	508		374	441	
v/s Ratio Prot	c0.05	0.29	0.01	0.04	c0.55	0.02	c0.17	0.16		0.04	0.37	
v/s Ratio Perm	0.47		0.04	0.23		0.08	c0.43			0.13		
v/c Ratio	1.22	0.76	0.10	0.57	1.34	0.18	1.40	0.52		0.48	1.35	
Uniform Delay, d1	36.0	35.1	16.9	24.1	38.5	17.8	39.5	37.2		29.2	47.0	
Progression Factor	1.00	1.00	1.00	0.64	0.67	0.65	1.00	1.00		1.00	1.00	
Incremental Delay, d2	152.7	2.5	0.1	1.4	154.9	0.0	203.0	3.8		1.0	169.9	
Delay (s)	188.7	37.6	17.0	16.9	180.7	11.6	242.5	41.0		30.2	216.9	
Level of Service	F	D	B	B	F	B	F	D		C	F	
Approach Delay (s)		52.2			160.0			152.6			177.0	
Approach LOS		D			F			F			F	

Intersection Summary

HCM Average Control Delay	133.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.40		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	122.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Timings
3: Rio Bravo Blvd & Second St

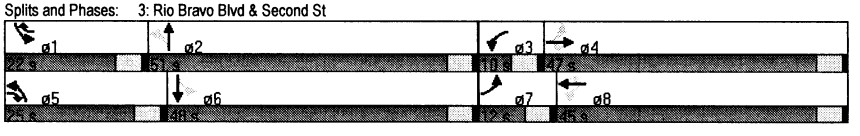
Terry O. Brown, P.E.
4/21/2012 - Synchro 7

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Volume (vph)	243	1429	275	114	2107	155	618	215	277	218
Turn Type	pm+pt		pm+ov	pm+pt		pm+ov	pm+pt		pm+pt	
Protected Phases	7	4	5	3	8	1	5	2	1	6
Permitted Phases	4		4	8		8	2		6	
Detector Phase	7	4	5	3	8	1	5	2	1	6
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.0	10.0	10.0	21.0	10.0	10.0	21.0	10.0	21.0
Total Split (s)	12.0	47.0	25.0	10.0	45.0	22.0	25.0	51.0	22.0	48.0
Total Split (%)	9.2%	36.2%	19.2%	7.7%	34.6%	16.9%	19.2%	39.2%	16.9%	36.9%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize?										
Recall Mode	Min	Min	Min	Min	Min	Min	Min	C-Min	Min	C-Min
Act Effct Green (s)	49.0	42.0	67.0	45.0	40.0	62.0	66.0	46.0	60.0	43.0
Actuated g/C Ratio	0.38	0.32	0.52	0.35	0.31	0.48	0.51	0.35	0.46	0.33
v/c Ratio	1.78	1.40	0.33	1.02	2.19	0.23	2.58	0.94	1.04	2.08
Control Delay	401.7	219.3	4.3	56.5	557.4	22.2	737.9	62.1	99.7	513.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	401.7	219.3	4.3	56.5	557.4	22.2	737.9	62.1	99.7	513.9
LOS	F	F	A	E	F	C	F	E	F	F
Approach Delay		211.7			498.5			457.9		431.2
Approach LOS		F			F			F		F

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 96 (74%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 140
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 2.58
Intersection Signal Delay: 398.4 — Intersection LOS: F
Intersection Capacity Utilization 188.9% — ICU Level of Service H
Analysis Period (min) 15

Splits and Phases: 3: Rio Bravo Blvd & Second St



HCM Signalized Intersection Capacity Analysis
3: Rio Bravo Blvd & Second St

Terry O. Brown, P.E.
4/21/2012 - Synchro 7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	243	1429	275	114	2107	155	618	215	222	277	218	889
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.92		1.00	0.88	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1719	3438	1538	1719	3438	1538	1719	1672		1719	1592	
Flt Permitted	0.10	1.00	1.00	0.10	1.00	1.00	0.09	1.00		0.11	1.00	
Satd. Flow (perm)	172	3438	1538	181	3438	1538	157	1672		201	1592	
Peak-hour factor, PHF	0.92	0.92	0.92	0.91	0.91	0.91	0.75	0.75	0.75	0.91	0.91	0.91
Adj. Flow (vph)	264	1553	299	125	2315	170	824	287	296	304	240	977
RTOR Reduction (vph)	0	0	133	0	0	0	0	28	0	0	60	0
Lane Group Flow (vph)	264	1553	166	125	2315	170	824	555	0	304	1157	0
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Turn Type	pm+pt		pm+ov	pm+pt		pm+ov	pm+pt			pm+pt		
Protected Phases	7	4	5	3	8	1	5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	49.0	42.0	62.0	45.0	40.0	57.0	66.0	46.0		60.0	43.0	
Effective Green, g (s)	49.0	42.0	62.0	45.0	40.0	57.0	66.0	46.0		60.0	43.0	
Actuated g/C Ratio	0.38	0.32	0.48	0.35	0.31	0.44	0.51	0.35		0.46	0.33	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	148	1111	793	122	1058	734	320	592		291	527	
v/s Ratio Prot	c0.10	0.45	0.03	0.04	c0.67	0.03	c0.40	0.33		0.14	0.73	
v/s Ratio Perm	0.57		0.08	0.32		0.08	c0.91			0.34		
v/c Ratio	1.78	1.40	0.21	1.02	2.19	0.23	2.58	0.94		1.04	2.20	
Uniform Delay, d1	35.8	44.0	19.8	41.1	45.0	22.8	41.8	40.6		37.3	43.5	
Progression Factor	1.00	1.00	1.00	0.67	0.80	1.09	1.00	1.00		1.00	1.00	
Incremental Delay, d2	378.5	184.6	0.1	30.9	534.9	0.0	717.8	24.3		64.9	544.5	
Delay (s)	414.3	228.6	19.9	58.4	571.0	24.8	759.6	64.9		102.2	588.0	
Level of Service	F	F	B	E	F	C	F	E		F	F	
Approach Delay (s)		222.2			510.9			471.7			490.9	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	419.9	HCM Level of Service	F
HCM Volume to Capacity ratio	2.44		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	188.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

A-45a

Timings
3: Rio Bravo Blvd & Second St

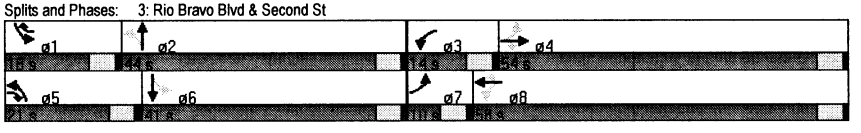
Terry O. Brown, P.E.
4/7/2012 - Synchro 7

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Volume (vph)	137	917	155	105	1726	137	281	97	163	118
Turn Type	pm+pt		pm+ov	pm+pt		pm+ov	pm+pt		pm+pt	
Protected Phases	7	4	5	3	8	1	5	2	1	6
Permitted Phases	4		4	8		8	2		6	
Detector Phase	7	4	5	3	8	1	5	2	1	6
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.0	10.0	10.0	21.0	10.0	10.0	21.0	10.0	21.0
Total Split (s)	10.0	54.0	21.0	14.0	58.0	18.0	21.0	44.0	18.0	41.0
Total Split (%)	7.7%	41.5%	16.2%	10.8%	44.6%	13.8%	16.2%	33.8%	13.8%	31.5%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize?										
Recall Mode	Min	Min	Min	Min	Min	Min	Min	C-Min	Min	C-Min
Act Effct Green (s)	54.4	49.4	70.4	61.6	53.0	70.1	55.6	39.9	48.1	36.0
Actuated g/C Ratio	0.42	0.38	0.54	0.47	0.41	0.54	0.43	0.31	0.37	0.28
v/c Ratio	1.22	0.76	0.18	0.58	1.35	0.18	1.40	0.55	0.48	1.30
Control Delay	176.5	40.0	2.6	17.1	186.4	10.2	234.1	35.5	28.0	182.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	176.5	40.0	2.6	17.1	186.4	10.2	234.1	35.5	28.0	182.3
LOS	F	D	A	B	F	B	F	D	C	F
Approach Delay		50.7			165.1			145.5		149.4
Approach LOS		D			F			F		F

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 120 (92%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.40
Intersection Signal Delay: 129.7 — Intersection LOS: F
Intersection Capacity Utilization 123.4% — ICU Level of Service H
Analysis Period (min) 15

Splits and Phases: 3: Rio Bravo Blvd & Second St



HCM Signalized Intersection Capacity Analysis
3: Rio Bravo Blvd & Second St

Terry O. Brown, P.E.
4/7/2012 - Synchro 7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	137	917	155	105	1726	137	281	97	130	163	118	481
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.91		1.00	0.88	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1719	3438	1538	1719	3438	1538	1719	1654		1719	1592	
Flt Permitted	0.08	1.00	1.00	0.12	1.00	1.00	0.10	1.00		0.43	1.00	
Satd. Flow (perm)	147	3438	1538	208	3438	1538	181	1654		774	1592	
Peak-hour factor, PHF	0.92	0.92	0.92	0.91	0.91	0.91	0.75	0.75	0.75	0.91	0.91	0.91
Adj. Flow (vph)	149	997	168	115	1897	151	375	129	173	179	130	529
RTOR Reduction (vph)	0	0	83	0	0	0	0	37	0	0	66	0
Lane Group Flow (vph)	149	997	85	115	1897	151	375	265	0	179	593	0
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Turn Type	pm+pt		pm+ov	pm+pt		pm+ov	pm+pt			pm+pt		
Protected Phases	7	4	5	3	8	1	5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	54.4	49.4	65.4	61.6	53.0	65.1	55.9	39.9		48.1	36.0	
Effective Green, g (s)	54.4	49.4	65.4	61.6	53.0	65.1	55.9	39.9		48.1	36.0	
Actuated g/C Ratio	0.42	0.38	0.50	0.47	0.41	0.50	0.43	0.31		0.37	0.28	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	122	1306	833	199	1402	829	267	508		374	441	
v/s Ratio Prot	c0.05	0.29	0.01	0.04	c0.55	0.02	c0.17	0.16		0.04	0.37	
v/s Ratio Perm	0.47		0.04	0.24		0.08	c0.43			0.13		
v/c Ratio	1.22	0.76	0.10	0.58	1.35	0.18	1.40	0.52		0.48	1.35	
Uniform Delay, d1	36.0	35.2	16.9	24.3	38.5	17.8	39.5	37.2		29.2	47.0	
Progression Factor	1.00	1.00	1.00	0.69	0.68	0.65	1.00	1.00		1.00	1.00	
Incremental Delay, d2	152.7	2.7	0.1	1.4	160.5	0.0	203.0	3.8		1.0	169.9	
Delay (s)	188.7	37.9	17.0	18.1	186.7	11.7	242.5	41.0		30.2	216.9	
Level of Service	F	D	B	B	F	B	F	D		C	F	
Approach Delay (s)		52.3			165.6			152.6			177.0	
Approach LOS		D			F			F			F	

Intersection Summary

HCM Average Control Delay	135.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.41		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	123.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Timings
3: Rio Bravo Blvd & Second St

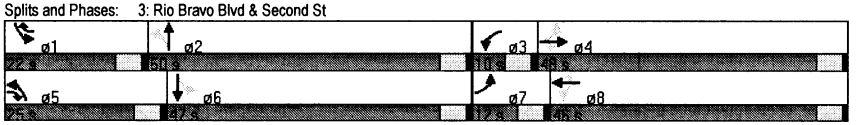
Terry O. Brown, P.E.
4/21/2012 - Synchro 7

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Volume (vph)	243	1447	275	115	2156	156	618	215	277	218
Turn Type	pm+pt		pm+ov	pm+pt		pm+ov	pm+pt		pm+pt	
Protected Phases	7	4	5	3	8	1	5	2	1	6
Permitted Phases	4		4	8		8	2		6	
Detector Phase	7	4	5	3	8	1	5	2	1	6
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.0	10.0	10.0	21.0	10.0	10.0	21.0	10.0	21.0
Total Split (s)	12.0	48.0	25.0	10.0	46.0	22.0	25.0	50.0	22.0	47.0
Total Split (%)	9.2%	36.9%	19.2%	7.7%	35.4%	16.9%	19.2%	38.5%	16.9%	36.2%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize?										
Recall Mode	Min	Min	Min	Min	Min	Min	Min	C-Min	Min	C-Min
Act Effct Green (s)	50.0	43.0	68.0	46.0	41.0	63.0	65.0	45.0	59.0	42.0
Actuated g/C Ratio	0.38	0.33	0.52	0.35	0.32	0.48	0.50	0.35	0.45	0.32
v/c Ratio	1.78	1.38	0.32	1.03	2.19	0.23	2.58	0.96	1.08	2.12
Control Delay	401.4	212.8	4.1	58.3	554.9	15.2	737.9	66.5	112.3	534.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	401.4	212.8	4.1	58.3	554.9	15.2	737.9	66.5	112.3	534.8
LOS	F	F	A	E	F	B	F	E	F	F
Approach Delay		206.9			496.8			459.7		450.4
Approach LOS		F			F			F		F

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 125 (96%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 140
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 2.58
Intersection Signal Delay: 400.8 — Intersection LOS: F
Intersection Capacity Utilization 190.2% — ICU Level of Service H
Analysis Period (min) 15

Splits and Phases: 3: Rio Bravo Blvd & Second St



HCM Signalized Intersection Capacity Analysis
3: Rio Bravo Blvd & Second St

Terry O. Brown, P.E.
4/21/2012 - Synchro 7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	243	1447	275	115	2156	156	618	215	222	277	218	889
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.92		1.00	0.88	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1719	3438	1538	1719	3438	1538	1719	1672		1719	1592	
Flt Permitted	0.09	1.00	1.00	0.10	1.00	1.00	0.09	1.00		0.10	1.00	
Satd. Flow (perm)	168	3438	1538	177	3438	1538	161	1672		178	1592	
Peak-hour factor, PHF	0.92	0.92	0.92	0.91	0.91	0.91	0.75	0.75	0.75	0.91	0.91	0.91
Adj. Flow (vph)	264	1573	299	126	2369	171	824	287	296	304	240	977
RTOR Reduction (vph)	0	0	132	0	0	0	0	29	0	0	59	0
Lane Group Flow (vph)	264	1573	167	126	2369	171	824	554	0	304	1158	0
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Turn Type	pm+pt		pm+ov	pm+pt		pm+ov	pm+pt			pm+pt		
Protected Phases	7	4	5	3	8	1	5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	50.0	43.0	63.0	46.0	41.0	58.0	65.0	45.0		59.0	42.0	
Effective Green, g (s)	50.0	43.0	63.0	46.0	41.0	58.0	65.0	45.0		59.0	42.0	
Actuated g/C Ratio	0.38	0.33	0.48	0.35	0.32	0.45	0.50	0.35		0.45	0.32	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	148	1137	804	122	1084	745	320	579		282	514	
v/s Ratio Prot	c0.10	0.46	0.03	0.04	c0.69	0.03	c0.40	0.33		0.14	0.73	
v/s Ratio Perm	0.59		0.08	0.33		0.08	c0.89			0.35		
v/c Ratio	1.78	1.38	0.21	1.03	2.19	0.23	2.58	0.96		1.08	2.25	
Uniform Delay, d1	35.2	43.5	19.2	40.5	44.5	22.2	41.6	41.6		39.4	44.0	
Progression Factor	1.00	1.00	1.00	0.66	0.67	0.76	1.00	1.00		1.00	1.00	
Incremental Delay, d2	378.5	178.1	0.1	33.3	533.7	0.0	717.8	28.2		75.9	570.1	
Delay (s)	413.7	221.6	19.3	59.8	563.7	17.0	759.4	69.8		115.3	614.1	
Level of Service	F	F	B	E	F	B	F	E		F	F	
Approach Delay (s)		217.0			504.8			473.7			514.4	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	421.5	HCM Level of Service	F
HCM Volume to Capacity ratio	2.44		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	190.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

A-46a

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	47	1	1	1	1	1	2	126	1	1	30	18
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.85	0.85	0.85	0.92	0.92	0.92	0.75	0.75	0.75
Hourly flow rate (vph)	54	1	1	1	1	1	2	137	1	1	40	24
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)						6						
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											391	
pX, platoon unblocked												
vC, conflicting volume	185	185	40	186	209	138	64			138		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	185	185	40	186	209	138	64			138		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.4	4.1			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.4	2.2			2.3		
p0 queue free %	93	100	100	100	100	100	100			100		
cM capacity (veh/h)	770	706	1028	769	685	877	1532			1369		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	56	4	2	138	1	40	24
Volume Left	54	1	2	0	1	0	0
Volume Right	1	1	0	1	0	0	24
cSH	773	1090	1532	1700	1369	1700	1700
Volume to Capacity	0.07	0.00	0.00	0.08	0.00	0.02	0.01
Queue Length 95th (ft)	6	0	0	0	0	0	0
Control Delay (s)	10.0	9.7	7.4	0.0	7.6	0.0	0.0
Lane LOS	B	A	A		A		
Approach Delay (s)	10.0	9.7	0.1		0.2		
Approach LOS	B	A					

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	23.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	47	1	2	1	1	1	2	153	1	1	130	18
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.85	0.85	0.85	0.92	0.92	0.92	0.75	0.75	0.75
Hourly flow rate (vph)	54	1	2	1	1	1	2	166	1	1	173	24
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)						6						
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											391	
pX, platoon unblocked												
vC, conflicting volume	348	348	173	350	371	167	197			167		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	348	348	173	350	371	167	197			167		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.4	4.1			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.4	2.2			2.3		
p0 queue free %	91	100	100	100	100	100	100			100		
cM capacity (veh/h)	602	573	868	599	556	845	1369			1335		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	57	4	2	167	1	173	24
Volume Left	54	1	2	0	1	0	0
Volume Right	2	1	0	1	0	0	24
cSH	609	866	1369	1700	1335	1700	1700
Volume to Capacity	0.09	0.00	0.00	0.10	0.00	0.10	0.01
Queue Length 95th (ft)	8	0	0	0	0	0	0
Control Delay (s)	11.5	10.6	7.6	0.0	7.7	0.0	0.0
Lane LOS	B	B	A		A		
Approach Delay (s)	11.5	10.6	0.1		0.1		
Approach LOS	B	B					

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	24.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	60	1	1	1	1	1	3	162	1	1	38	23
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.85	0.85	0.85	0.92	0.92	0.92	0.75	0.75	0.75
Hourly flow rate (vph)	69	1	1	1	1	1	3	176	1	1	51	31
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)						6						
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											391	
pX, platoon unblocked												
vC, conflicting volume	237	237	51	238	267	177	81			177		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	237	237	51	238	267	177	81			177		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.4	4.1			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.4	2.2			2.3		
p0 queue free %	90	100	100	100	100	100	100			100		
cM capacity (veh/h)	711	660	1015	711	635	834	1510			1324		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	71	4	3	177	1	51	31
Volume Left	69	1	3	0	1	0	0
Volume Right	1	1	0	1	0	0	31
cSH	714	1009	1510	1700	1324	1700	1700
Volume to Capacity	0.10	0.00	0.00	0.10	0.00	0.03	0.02
Queue Length 95th (ft)	8	0	0	0	0	0	0
Control Delay (s)	10.6	10.0	7.4	0.0	7.7	0.0	0.0
Lane LOS	B	B	A		A		
Approach Delay (s)	10.6	10.0	0.1		0.1		
Approach LOS	B	B					

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	25.4%	ICU Level of Service	A
Analysis Period (min)	15		

Terry O. Brown, P.E.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	60	1	2	1	1	27	3	189	5	130	138	23
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.85	0.85	0.85	0.92	0.92	0.92	0.75	0.75	0.75
Hourly flow rate (vph)	69	1	2	1	1	32	3	205	5	173	184	31
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)						6						
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											391	
pX, platoon unblocked												
vC, conflicting volume	759	748	184	748	776	208	215			211		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	759	748	184	748	776	208	215			211		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.4	4.1			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.4	2.2			2.3		
p0 queue free %	75	100	100	100	100	96	100			87		
cM capacity (veh/h)	276	293	856	291	283	800	1349			1286		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	72	34	3	211	173	184	31
Volume Left	69	1	3	0	173	0	0
Volume Right	2	32	0	5	0	0	31
cSH	282	860	1349	1700	1286	1700	1700
Volume to Capacity	0.26	0.04	0.00	0.12	0.13	0.11	0.02
Queue Length 95th (ft)	25	3	0	0	12	0	0
Control Delay (s)	22.1	10.2	7.7	0.0	8.2	0.0	0.0
Lane LOS	C	B	A		A		
Approach Delay (s)	22.1	10.2	0.1		3.7		
Approach LOS	C	B					

Intersection Summary			
Average Delay	4.8		
Intersection Capacity Utilization	37.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	37	1	4	1	1	1	2	131	1	1	179	46
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.85	0.85	0.85	0.81	0.81	0.81	0.85	0.85	0.85
Hourly flow rate (vph)	42	1	4	1	1	1	2	162	1	1	211	54
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)						6						
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											391	
pX, platoon unblocked												
vC, conflicting volume	381	381	211	385	434	162	265			163		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	381	381	211	385	434	162	265			163		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.4	4.1			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.4	2.2			2.3		
p0 queue free %	93	100	99	100	100	100	100			100		
cM capacity (veh/h)	572	549	827	566	512	850	1294			1340		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	47	4	2	163	1	211	54
Volume Left	42	1	2	0	1	0	0
Volume Right	4	1	0	1	0	0	54
cSH	589	809	1294	1700	1340	1700	1700
Volume to Capacity	0.08	0.00	0.00	0.10	0.00	0.12	0.03
Queue Length 95th (ft)	7	0	0	0	0	0	0
Control Delay (s)	11.6	10.9	7.8	0.0	7.7	0.0	0.0
Lane LOS	B	B	A		A		
Approach Delay (s)	11.6	10.9	0.1		0.0		
Approach LOS	B	B					

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	25.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	37	1	4	1	1	1	3	195	1	35	213	46
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.85	0.85	0.85	0.81	0.81	0.81	0.85	0.85	0.85
Hourly flow rate (vph)	42	1	4	1	1	1	4	241	1	41	251	54
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)						6						
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											391	
pX, platoon unblocked												
vC, conflicting volume	582	582	251	587	636	241	305			242		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	582	582	251	587	636	241	305			242		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.4	4.1			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.4	2.2			2.3		
p0 queue free %	90	100	99	100	100	100	100			97		
cM capacity (veh/h)	410	408	786	405	380	767	1250			1252		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	47	4	4	242	41	251	54
Volume Left	42	1	4	0	41	0	0
Volume Right	4	1	0	1	0	0	54
cSH	429	589	1250	1700	1252	1700	1700
Volume to Capacity	0.11	0.01	0.00	0.14	0.03	0.15	0.03
Queue Length 95th (ft)	9	0	0	0	3	0	0
Control Delay (s)	14.4	12.7	7.9	0.0	8.0	0.0	0.0
Lane LOS	B	B	A		A		
Approach Delay (s)	14.4	12.7	0.1		0.9		
Approach LOS	B	B					

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	33.6%	ICU Level of Service	A
Analysis Period (min)	15		

Terry O. Brown, P.E.
4/9/2012 - Synchro 7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	48	1	5	1	1	1	3	169	1	1	230	58
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.85	0.85	0.85	0.81	0.81	0.81	0.85	0.85	0.85
Hourly flow rate (vph)	54	1	6	1	1	1	4	209	1	1	271	68
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)						6						
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											391	
pX, platoon unblocked												
vC, conflicting volume	490	490	271	496	558	209	339			210		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	490	490	271	496	558	209	339			210		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.4	4.1			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.4	2.2			2.3		
p0 queue free %	89	100	99	100	100	100	100			100		
cM capacity (veh/h)	484	475	766	477	435	799	1215			1287		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	61	4	4	210	1	271	68
Volume Left	54	1	4	0	1	0	0
Volume Right	6	1	0	1	0	0	68
cSH	501	684	1215	1700	1287	1700	1700
Volume to Capacity	0.12	0.01	0.00	0.12	0.00	0.16	0.04
Queue Length 95th (ft)	10	0	0	0	0	0	0
Control Delay (s)	13.2	11.8	8.0	0.0	7.8	0.0	0.0
Lane LOS	B	B	A		A		
Approach Delay (s)	13.2	11.8	0.1		0.0		
Approach LOS	B	B					

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	28.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	48	1	5	5	1	135	4	233	1	35	264	58
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.85	0.85	0.85	0.81	0.81	0.81	0.85	0.85	0.85
Hourly flow rate (vph)	54	1	6	6	1	159	5	288	1	41	311	68
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)						6						
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											391	
pX, platoon unblocked												
vC, conflicting volume	770	692	311	697	759	288	379			289		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	770	692	311	697	759	288	379			289		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.4	4.1			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.4	2.2			2.3		
p0 queue free %	77	100	99	98	100	78	100			97		
cM capacity (veh/h)	239	352	727	340	322	721	1174			1202		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	61	166	5	289	41	311	68
Volume Left	54	6	5	0	41	0	0
Volume Right	6	159	0	1	0	0	68
cSH	256	753	1174	1700	1202	1700	1700
Volume to Capacity	0.24	0.22	0.00	0.17	0.03	0.18	0.04
Queue Length 95th (ft)	22	21	0	0	3	0	0
Control Delay (s)	23.4	11.6	8.1	0.0	8.1	0.0	0.0
Lane LOS	C	B	A		A		
Approach Delay (s)	23.4	11.6	0.1		0.8		
Approach LOS	C	B					

Intersection Summary			
Average Delay	3.9		
Intersection Capacity Utilization	36.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	1	27	128	4	101	31
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.85	0.85	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	32	139	4	110	34
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						638
pX, platoon unblocked						
vC, conflicting volume	392	139			143	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	392	139			143	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	96			92	
cM capacity (veh/h)	563	906			1433	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	1	32	139	4	110	34
Volume Left	1	0	0	0	110	0
Volume Right	0	32	0	4	0	0
cSH	563	906	1700	1700	1433	1700
Volume to Capacity	0.00	0.04	0.08	0.00	0.08	0.02
Queue Length 95th (ft)	0	3	0	0	6	0
Control Delay (s)	11.4	9.1	0.0	0.0	7.7	0.0
Lane LOS	B	A			A	
Approach Delay (s)	9.2		0.0		5.9	
Approach LOS	A					

Intersection Summary			
Average Delay	3.6		
Intersection Capacity Utilization	25.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	1	27	170	4	101	40
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	1	32	200	5	119	47
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						638
pX, platoon unblocked						
vC, conflicting volume	485	200			205	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	485	200			205	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	96			91	
cM capacity (veh/h)	492	838			1361	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	1	32	200	5	119	47
Volume Left	1	0	0	0	119	0
Volume Right	0	32	0	5	0	0
cSH	492	838	1700	1700	1361	1700
Volume to Capacity	0.00	0.04	0.12	0.00	0.09	0.03
Queue Length 95th (ft)	0	3	0	0	7	0
Control Delay (s)	12.3	9.5	0.0	0.0	7.9	0.0
Lane LOS	B	A			A	
Approach Delay (s)	9.6		0.0		5.7	
Approach LOS	A					

Intersection Summary			
Average Delay	3.1		
Intersection Capacity Utilization	27.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	2	65	133	1	35	183
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.85	0.85	0.81	0.81	0.81	0.81
Hourly flow rate (vph)	2	76	164	1	43	226
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						638
pX, platoon unblocked						
vC, conflicting volume	477	164			165	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	477	164			165	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	91			97	
cM capacity (veh/h)	529	878			1407	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	2	76	164	1	43	226
Volume Left	2	0	0	0	43	0
Volume Right	0	76	0	1	0	0
cSH	529	878	1700	1700	1407	1700
Volume to Capacity	0.00	0.09	0.10	0.00	0.03	0.13
Queue Length 95th (ft)	0	7	0	0	2	0
Control Delay (s)	11.8	9.5	0.0	0.0	7.6	0.0
Lane LOS	B	A			A	
Approach Delay (s)	9.6		0.0		1.2	
Approach LOS	A					

Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	23.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	2	65	173	1	35	240
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	2	76	204	1	41	282
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						638
pX, platoon unblocked						
vC, conflicting volume	568	204			205	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	568	204			205	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	91			97	
cM capacity (veh/h)	468	835			1361	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	2	76	204	1	41	282
Volume Left	2	0	0	0	41	0
Volume Right	0	76	0	1	0	0
cSH	468	835	1700	1700	1361	1700
Volume to Capacity	0.01	0.09	0.12	0.00	0.03	0.17
Queue Length 95th (ft)	0	8	0	0	2	0
Control Delay (s)	12.7	9.7	0.0	0.0	7.7	0.0
Lane LOS	B	A			A	
Approach Delay (s)	9.8		0.0		1.0	
Approach LOS	A					

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	25.8%	ICU Level of Service	A
Analysis Period (min)	15		

Traffic Count Data Sheet

Year Counts Taken: **2012**

E-W Street **Rio Bravo Blvd**
N-S Street: **Prince St**

Speed Limit (Rio Bravo Blvd)= **25** MPH
Speed Limit (Prince St)= **25** MPH
Date of Count: 2/21/12

Begin Time	End Time	Eastbound (Rio Bravo Blvd)			Westbound (Rio Bravo Blvd)			Northbound (Prince St)			Southbound (Prince St)		
		L	T	R	L	T	R	L	T	R	L	T	R
7:00 AM	7:15 AM	~~10~~	~~290~~	~~9~~	~~13~~	~~113~~	~~8~~	~~7~~	~~0~~	~~33~~	~~3~~	~~0~~	~~1~~
7:15 AM	7:30 AM	**5**	**376**	**4**	**7**	**112**	**5**	**19**	**0**	**21**	**3**	**0**	**2**
7:30 AM	7:45 AM	**7**	**362**	**8**	**13**	**157**	**13**	**17**	**0**	**31**	**1**	**0**	**2**
7:45 AM	8:00 AM	**16**	**432**	**8**	**9**	**157**	**15**	**26**	**1**	**18**	**4**	**0**	**2**
8:00 AM	8:15 AM	**13**	**367**	**17**	**6**	**150**	**10**	**13**	**1**	**8**	**5**	**0**	**4**
8:15 AM	8:30 AM	~~8~~	~~274~~	~~12~~	~~9~~	~~135~~	~~11~~	~~19~~	~~1~~	~~17~~	~~3~~	~~0~~	~~1~~
8:30 AM	8:45 AM	~~7~~	~~275~~	~~14~~	~~7~~	~~160~~	~~12~~	~~16~~	~~1~~	~~22~~	~~13~~	~~2~~	~~4~~
8:45 AM	9:00 AM	~~4~~	~~250~~	~~7~~	~~7~~	~~177~~	~~11~~	~~23~~	~~1~~	~~9~~	~~11~~	~~1~~	~~7~~
AM Peak Hour Volumes		**41**	**1537**	**37**	**35**	**576**	**43**	**75**	**2**	**78**	**13**	**0**	**10**
% of Total Traffic		1.7%	62.8%	1.5%	1.4%	23.5%	1.8%	3.1%	0.1%	3.2%	0.5%	0.0%	0.4%
% Directional			66.0%			26.7%			6.3%			0.9%	
AM Peak Hour Factor			*0.89*			*0.89*			*0.81*			*0.64*	

Begin Time	End Time	Eastbound (Rio Bravo Blvd)			Westbound (Rio Bravo Blvd)			Northbound (Prince St)			Southbound (Prince St)		
		L	T	R	L	T	R	L	T	R	L	T	R
4:00 PM	4:15 PM	~~6~~	~~211~~	~~25~~	~~19~~	~~311~~	~~12~~	~~21~~	~~2~~	~~12~~	~~5~~	~~1~~	~~12~~
4:15 PM	4:30 PM	~~5~~	~~176~~	~~35~~	~~34~~	~~399~~	~~4~~	~~34~~	~~0~~	~~18~~	~~9~~	~~1~~	~~4~~
4:30 PM	4:45 PM	**6**	**204**	**24**	**29**	**331**	**10**	**27**	**1**	**22**	**9**	**0**	**12**
4:45 PM	5:00 PM	**4**	**194**	**31**	**30**	**342**	**7**	**25**	**1**	**17**	**8**	**3**	**8**
5:00 PM	5:15 PM	**5**	**181**	**21**	**25**	**348**	**4**	**18**	**2**	**14**	**15**	**0**	**13**
5:15 PM	5:30 PM	**4**	**195**	**18**	**22**	**422**	**7**	**17**	**0**	**10**	**12**	**0**	**15**
5:30 PM	5:45 PM	~~4~~	~~170~~	~~17~~	~~9~~	~~315~~	~~10~~	~~19~~	~~1~~	~~13~~	~~17~~	~~1~~	~~13~~
5:45 PM	6:00 PM	~~2~~	~~150~~	~~20~~	~~15~~	~~295~~	~~2~~	~~16~~	~~0~~	~~7~~	~~10~~	~~0~~	~~14~~
PM Peak Hour Volumes		**19**	**774**	**94**	**106**	**1443**	**28**	**87**	**4**	**63**	**44**	**3**	**48**
% of Total Traffic		0.7%	28.5%	3.5%	3.9%	53.2%	1.0%	3.2%	0.1%	2.3%	1.6%	0.1%	1.8%
% Directional			32.7%			58.1%			5.7%			3.5%	
PM Peak Hour Factor			*0.95*			*0.87*			*0.77*			*0.85*	

Traffic Count Data Sheet

Year Counts Taken: **2012**

E-W Street **Rio Bravo Blvd**
N-S Street: **Broadway Blvd**

Speed Limit (Rio Bravo Blvd)= **25** MPH
Speed Limit (Broadway Blvd)= **25** MPH
Date of Count: 2/14/12

Begin Time	End Time	Eastbound (Rio Bravo Blvd)			Westbound (Rio Bravo Blvd)			Northbound (Broadway Blvd)			Southbound (Broadway Blvd)		
		L	T	R	L	T	R	L	T	R	L	T	R
7:00 AM	7:15 AM	~~31~~	~~286~~	~~18~~	~~36~~	~~92~~	~~3~~	~~15~~	~~45~~	~~46~~	~~2~~	~~14~~	~~11~~
7:15 AM	7:30 AM	**33**	**353**	**25**	**31**	**131**	**2**	**11**	**52**	**50**	**4**	**17**	**13**
7:30 AM	7:45 AM	**43**	**376**	**26**	**36**	**135**	**6**	**17**	**40**	**75**	**2**	**19**	**12**
7:45 AM	8:00 AM	**33**	**306**	**20**	**49**	**170**	**8**	**17**	**47**	**54**	**4**	**17**	**18**
8:00 AM	8:15 AM	**42**	**365**	**33**	**39**	**126**	**10**	**15**	**37**	**41**	**5**	**34**	**22**
8:15 AM	8:30 AM	~~31~~	~~253~~	~~21~~	~~51~~	~~132~~	~~11~~	~~20~~	~~39~~	~~41~~	~~3~~	~~27~~	~~12~~
8:30 AM	8:45 AM	~~25~~	~~228~~	~~21~~	~~52~~	~~151~~	~~5~~	~~19~~	~~41~~	~~46~~	~~5~~	~~23~~	~~16~~
8:45 AM	9:00 AM	~~25~~	~~282~~	~~19~~	~~36~~	~~104~~	~~6~~	~~17~~	~~30~~	~~58~~	~~3~~	~~20~~	~~9~~
AM Peak Hour Volumes		**151**	**1400**	**104**	**155**	**562**	**26**	**60**	**176**	**220**	**15**	**87**	**65**
% of Total Traffic		5.0%	46.3%	3.4%	5.1%	18.6%	0.9%	2.0%	5.8%	7.3%	0.5%	2.9%	2.2%
% Directional			54.8%			24.6%			15.1%			5.5%	
AM Peak Hour Factor			*0.93*			*0.82*			*0.86*			*0.68*	

Begin Time	End Time	Eastbound (Rio Bravo Blvd)			Westbound (Rio Bravo Blvd)			Northbound (Broadway Blvd)			Southbound (Broadway Blvd)		
		L	T	R	L	T	R	L	T	R	L	T	R
4:00 PM	4:15 PM	~~23~~	~~148~~	~~30~~	~~58~~	~~285~~	~~5~~	~~42~~	~~53~~	~~56~~	~~3~~	~~79~~	~~47~~
4:15 PM	4:30 PM	~~25~~	~~209~~	~~21~~	~~60~~	~~277~~	~~5~~	~~55~~	~~44~~	~~57~~	~~4~~	~~55~~	~~48~~
4:30 PM	4:45 PM	**38**	**192**	**33**	**44**	**276**	**10**	**42**	**36**	**91**	**4**	**52**	**44**
4:45 PM	5:00 PM	**15**	**158**	**25**	**58**	**299**	**5**	**39**	**47**	**50**	**4**	**64**	**70**
5:00 PM	5:15 PM	**23**	**200**	**29**	**52**	**340**	**5**	**50**	**56**	**70**	**4**	**73**	**41**
5:15 PM	5:30 PM	**29**	**216**	**27**	**60**	**308**	**4**	**43**	**24**	**50**	**3**	**57**	**64**
5:30 PM	5:45 PM	~~23~~	~~215~~	~~16~~	~~38~~	~~303~~	~~3~~	~~21~~	~~25~~	~~42~~	~~2~~	~~58~~	~~31~~
5:45 PM	6:00 PM	~~16~~	~~146~~	~~13~~	~~35~~	~~225~~	~~0~~	~~20~~	~~17~~	~~24~~	~~4~~	~~37~~	~~53~~
PM Peak Hour Volumes		**105**	**766**	**114**	**214**	**1223**	**24**	**174**	**163**	**261**	**15**	**246**	**219**
% of Total Traffic		3.0%	21.7%	3.2%	6.1%	34.7%	0.7%	4.9%	4.6%	7.4%	0.4%	7.0%	6.2%
% Directional			28.0%			41.5%			17.0%			13.6%	
PM Peak Hour Factor			*0.91*			*0.92*			*0.85*			*0.87*	

Traffic Count Data Sheet

Year Counts Taken: **2012**

E-W Street **Rio Bravo Blvd**
N-S Street: **Second St**

Speed Limit (Rio Bravo Blvd)= **25** MPH
Speed Limit (Second St)= **25** MPH
Date of Count: 2/16/12

Begin Time	End Time	Eastbound (Rio Bravo Blvd)			Westbound (Rio Bravo Blvd)			Northbound (Second St)			Southbound (Second St)		
		L	T	R	L	T	R	L	T	R	L	T	R
7:00 AM	7:15 AM	~~39~~	~~264~~	~~32~~	~~10~~	~~76~~	~~9~~	~~44~~	~~14~~	~~15~~	~~20~~	~~11~~	~~19~~
7:15 AM	7:30 AM	**87**	**377**	**30**	**11**	**127**	**20**	**26**	**22**	**6**	**17**	**13**	**16**
7:30 AM	7:45 AM	**75**	**291**	**28**	**7**	**132**	**11**	**22**	**32**	**20**	**19**	**17**	**21**
7:45 AM	8:00 AM	**76**	**318**	**44**	**12**	**141**	**21**	**38**	**37**	**8**	**22**	**20**	**12**
8:00 AM	8:15 AM	**91**	**347**	**60**	**15**	**129**	**17**	**42**	**19**	**18**	**21**	**15**	**14**
8:15 AM	8:30 AM	~~56~~	~~259~~	~~31~~	~~13~~	~~154~~	~~12~~	~~32~~	~~20~~	~~17~~	~~22~~	~~16~~	~~25~~
8:30 AM	8:45 AM	~~54~~	~~214~~	~~30~~	~~11~~	~~134~~	~~19~~	~~40~~	~~19~~	~~19~~	~~17~~	~~26~~	~~25~~
8:45 AM	9:00 AM	~~42~~	~~247~~	~~31~~	~~8~~	~~117~~	~~13~~	~~45~~	~~26~~	~~11~~	~~33~~	~~31~~	~~28~~
AM Peak Hour Volumes		**329**	**1333**	**162**	**45**	**529**	**69**	**128**	**110**	**52**	**79**	**65**	**63**
% of Total Traffic		11.1%	45.0%	5.5%	1.5%	17.8%	2.3%	4.3%	3.7%	1.8%	2.7%	2.2%	2.1%
% Directional			61.5%			21.7%			9.8%			7.0%	
AM Peak Hour Factor			*0.92*			*0.92*			*0.87*			*0.91*	

Begin Time	End Time	Eastbound (Rio Bravo Blvd)			Westbound (Rio Bravo Blvd)			Northbound (Second St)			Southbound (Second St)		
		L	T	R	L	T	R	L	T	R	L	T	R
4:00 PM	4:15 PM	~~27~~	~~155~~	~~33~~	~~9~~	~~309~~	~~22~~	~~56~~	~~24~~	~~16~~	~~19~~	~~19~~	~~67~~
4:15 PM	4:30 PM	~~24~~	~~144~~	~~18~~	~~14~~	~~275~~	~~13~~	~~45~~	~~30~~	~~11~~	~~30~~	~~37~~	~~84~~
4:30 PM	4:45 PM	~~25~~	~~154~~	~~30~~	~~11~~	~~285~~	~~19~~	~~46~~	~~17~~	~~14~~	~~23~~	~~17~~	~~75~~
4:45 PM	5:00 PM	**32**	**135**	**31**	**8**	**311**	**20**	**70**	**27**	**20**	**33**	**34**	**93**
5:00 PM	5:15 PM	**37**	**161**	**23**	**4**	**287**	**9**	**39**	**25**	**14**	**33**	**14**	**94**
5:15 PM	5:30 PM	**23**	**128**	**36**	**8**	**344**	**13**	**60**	**8**	**12**	**28**	**25**	**115**
5:30 PM	5:45 PM	**24**	**145**	**41**	**10**	**354**	**15**	**44**	**14**	**12**	**18**	**25**	**97**
5:45 PM	6:00 PM	~~30~~	~~131~~	~~23~~	~~5~~	~~316~~	~~13~~	~~62~~	~~15~~	~~6~~	~~24~~	~~18~~	~~77~~
PM Peak Hour Volumes		**116**	**569**	**131**	**30**	**1296**	**57**	**213**	**74**	**58**	**112**	**98**	**399**
% of Total Traffic		3.7%	18.0%	4.2%	1.0%	41.1%	1.8%	6.8%	2.3%	1.8%	3.6%	3.1%	12.7%
% Directional			25.9%			43.9%			10.9%			19.3%	
PM Peak Hour Factor			*0.92*			*0.91*			*0.74*			*0.91*	

Traffic Count Data Sheet

Admiral Beverage Company

Year Counts Taken: **2012**

E-W Street **King Rd.**

N-S Street: **Prince St.**

UNSIGNALIZED

Speed Limit (King Rd.)= **25** MPH

Speed Limit (Prince St.)= **30** MPH

Date of Count: 3/27/12

Begin Time	End Time	Eastbound (King Rd.)			Westbound (King Rd.)			Northbound (Prince St.)			Southbound (Prince St.)		
		L	T	R	L	T	R	L	T	R	L	T	R
7:00 AM	7:15 AM	~~10~~	~~0~~	~~0~~	~~0~~	~~0~~	~~0~~	~~0~~	~~31~~	~~0~~	~~0~~	~~6~~	~~3~~
7:15 AM	7:30 AM	**13**	**0**	**0**	**0**	**0**	**0**	**1**	**32**	**0**	**0**	**5**	**4**
7:30 AM	7:45 AM	**11**	**0**	**1**	**0**	**0**	**0**	**1**	**24**	**0**	**0**	**8**	**10**
7:45 AM	8:00 AM	**9**	**0**	**0**	**0**	**0**	**0**	**0**	**30**	**0**	**0**	**7**	**2**
8:00 AM	8:15 AM	**11**	**0**	**0**	**0**	**0**	**0**	**0**	**33**	**0**	**0**	**8**	**1**
8:15 AM	8:30 AM	~~7~~	~~0~~	~~1~~	~~0~~	~~0~~	~~0~~	~~1~~	~~24~~	~~0~~	~~0~~	~~4~~	~~0~~
8:30 AM	8:45 AM	~~9~~	~~0~~	~~0~~	~~0~~	~~0~~	~~0~~	~~0~~	~~22~~	~~0~~	~~0~~	~~7~~	~~1~~
8:45 AM	9:00 AM	~~6~~	~~0~~	~~0~~	~~0~~	~~0~~	~~0~~	~~0~~	~~24~~	~~0~~	~~0~~	~~6~~	~~2~~
AM Peak Hour Volumes		**44**	**0**	**1**	**0**	**0**	**0**	**2**	**119**	**0**	**0**	**28**	**17**
% of Total Traffic		20.9%	0.0%	0.5%	0.0%	0.0%	0.0%	0.9%	56.4%	0.0%	0.0%	13.3%	8.1%
% Directional			21.3%			0.0%			57.3%			21.3%	
AM Peak Hour Factor			***0.87***			***#DIV/0!***			***0.92***			***0.63***	

Begin Time	End Time	Eastbound (King Rd.)			Westbound (King Rd.)			Northbound (Prince St.)			Southbound (Prince St.)		
		L	T	R	L	T	R	L	T	R	L	T	R
4:00 PM	4:15 PM	~~8~~	~~1~~	~~2~~	~~0~~	~~0~~	~~0~~	~~1~~	~~26~~	~~0~~	~~0~~	~~42~~	~~8~~
4:15 PM	4:30 PM	**9**	**0**	**2**	**0**	**0**	**0**	**1**	**28**	**0**	**0**	**52**	**10**
4:30 PM	4:45 PM	**8**	**0**	**1**	**0**	**0**	**0**	**0**	**39**	**0**	**0**	**30**	**16**
4:45 PM	5:00 PM	**10**	**0**	**1**	**0**	**0**	**0**	**0**	**29**	**0**	**0**	**46**	**5**
5:00 PM	5:15 PM	**8**	**0**	**0**	**0**	**0**	**0**	**1**	**28**	**0**	**0**	**41**	**12**
5:15 PM	5:30 PM	~~5~~	~~0~~	~~1~~	~~0~~	~~0~~	~~0~~	~~2~~	~~25~~	~~0~~	~~0~~	~~30~~	~~9~~
5:30 PM	5:45 PM	~~6~~	~~0~~	~~0~~	~~0~~	~~0~~	~~0~~	~~1~~	~~25~~	~~0~~	~~0~~	~~33~~	~~10~~
5:45 PM	6:00 PM	~~4~~	~~0~~	~~0~~	~~0~~	~~0~~	~~0~~	~~0~~	~~19~~	~~0~~	~~0~~	~~35~~	~~12~~
PM Peak Hour Volumes		**35**	**0**	**4**	**0**	**0**	**0**	**2**	**124**	**0**	**0**	**169**	**43**
% of Total Traffic		9.3%	0.0%	1.1%	0.0%	0.0%	0.0%	0.5%	32.9%	0.0%	0.0%	44.8%	11.4%
% Directional			10.3%			0.0%			33.4%			56.2%	
PM Peak Hour Factor			***0.89***			***#DIV/0!***			***0.81***			***0.85***	

Traffic Count Data Sheet

Admiral Beverage Project

Year Counts Taken: **2012**

E-W Street **Gore Rd.**

N-S Street: **Prince St.**

UNSIGNALIZED

Speed Limit (Gore Rd.)= **25** MPH

Speed Limit (Prince St.)= **25** MPH

Date of Count: 3/27/12

Begin Time	End Time	Eastbound (Gore Rd.)			Westbound (Gore Rd.)			Northbound (Prince St.)			Southbound (Prince St.)		
		L	T	R	L	T	R	L	T	R	L	T	R
7:00 AM	7:15 AM	~~3~~	~~0~~	~~1~~	~~0~~	~~0~~	~~0~~	~~0~~	~~22~~	~~0~~	~~0~~	~~5~~	~~0~~
7:15 AM	7:30 AM	**4**	**0**	**0**	**0**	**0**	**0**	**1**	**30**	**0**	**0**	**4**	**1**
7:30 AM	7:45 AM	**5**	**0**	**3**	**0**	**0**	**0**	**1**	**18**	**0**	**0**	**8**	**1**
7:45 AM	8:00 AM	**4**	**0**	**1**	**0**	**0**	**0**	**1**	**30**	**0**	**0**	**9**	**1**
8:00 AM	8:15 AM	**4**	**0**	**1**	**0**	**0**	**0**	**0**	**22**	**0**	**0**	**10**	**1**
8:15 AM	8:30 AM	~~3~~	~~0~~	~~0~~	~~0~~	~~0~~	~~0~~	~~0~~	~~23~~	~~0~~	~~0~~	~~8~~	~~0~~
8:30 AM	8:45 AM	~~4~~	~~0~~	~~1~~	~~0~~	~~0~~	~~0~~	~~1~~	~~20~~	~~0~~	~~0~~	~~9~~	~~1~~
8:45 AM	9:00 AM	~~3~~	~~0~~	~~0~~	~~0~~	~~0~~	~~0~~	~~0~~	~~21~~	~~0~~	~~0~~	~~11~~	~~1~~
AM Peak Hour Volumes		**17**	**0**	**5**	**0**	**0**	**0**	**3**	**100**	**0**	**0**	**31**	**4**
% of Total Traffic		10.6%	0.0%	3.1%	0.0%	0.0%	0.0%	1.9%	62.5%	0.0%	0.0%	19.4%	2.5%
% Directional			13.8%			0.0%			64.4%			21.9%	
AM Peak Hour Factor			*0.69*			*#DIV/0!*			*0.83*			*0.80*	

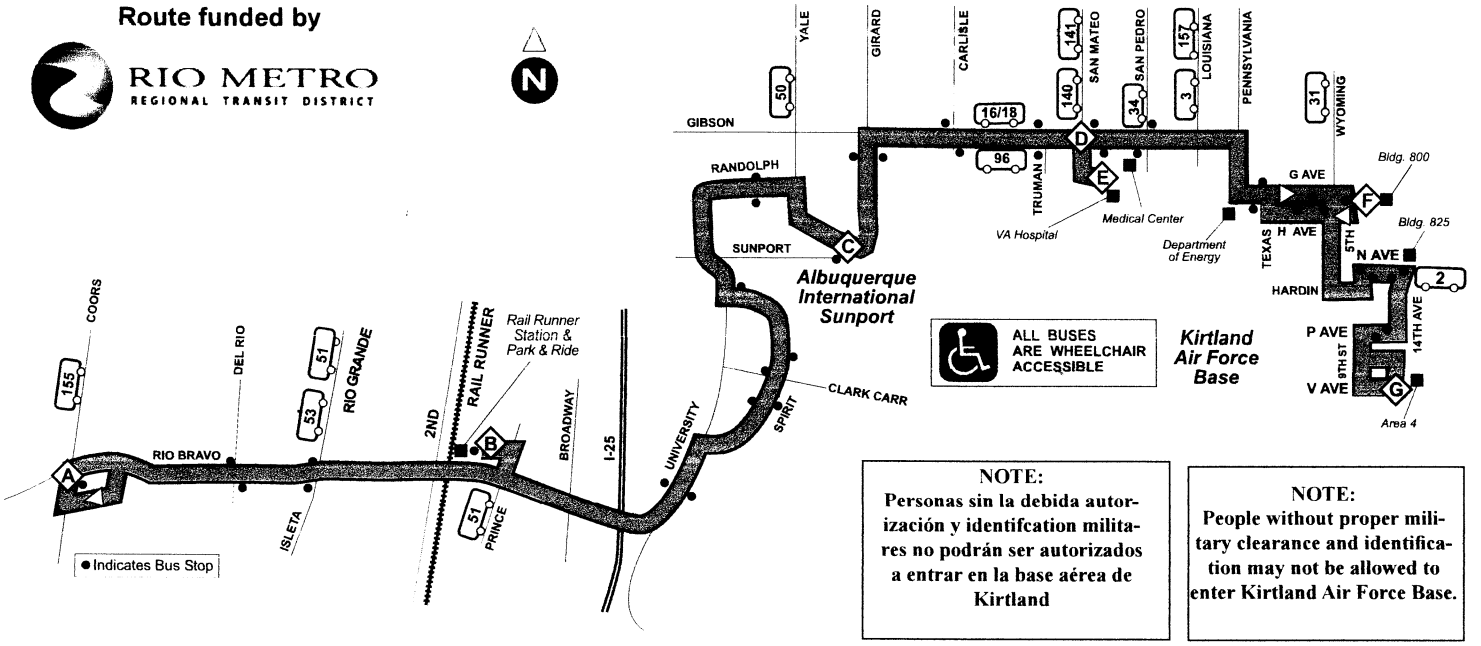
Begin Time	End Time	Eastbound (Gore Rd.)			Westbound (Gore Rd.)			Northbound (Prince St.)			Southbound (Prince St.)		
		L	T	R	L	T	R	L	T	R	L	T	R
4:00 PM	4:15 PM	~~2~~	~~0~~	~~1~~	~~0~~	~~0~~	~~0~~	~~1~~	~~23~~	~~0~~	~~0~~	~~29~~	~~1~~
4:15 PM	4:30 PM	~~1~~	~~0~~	~~2~~	~~0~~	~~0~~	~~0~~	~~0~~	~~25~~	~~0~~	~~0~~	~~33~~	~~2~~
4:30 PM	4:45 PM	**1**	**0**	**3**	**0**	**0**	**0**	**2**	**26**	**0**	**0**	**53**	**3**
4:45 PM	5:00 PM	**3**	**0**	**3**	**0**	**0**	**0**	**1**	**33**	**0**	**0**	**27**	**1**
5:00 PM	5:15 PM	**4**	**0**	**2**	**0**	**0**	**0**	**6**	**29**	**0**	**0**	**44**	**7**
5:15 PM	5:30 PM	**2**	**0**	**1**	**0**	**0**	**0**	**2**	**29**	**0**	**0**	**29**	**8**
5:30 PM	5:45 PM	~~2~~	~~0~~	~~2~~	~~0~~	~~0~~	~~0~~	~~2~~	~~25~~	~~0~~	~~0~~	~~27~~	~~3~~
5:45 PM	6:00 PM	~~3~~	~~0~~	~~1~~	~~0~~	~~0~~	~~0~~	~~1~~	~~28~~	~~0~~	~~0~~	~~31~~	~~2~~
PM Peak Hour Volumes		**10**	**0**	**9**	**0**	**0**	**0**	**11**	**117**	**0**	**0**	**153**	**19**
% of Total Traffic		3.1%	0.0%	2.8%	0.0%	0.0%	0.0%	3.4%	36.7%	0.0%	0.0%	48.0%	6.0%
% Directional			6.0%			0.0%			40.1%			53.9%	
PM Peak Hour Factor			*0.79*			*#DIV/0!*			*0.91*			*0.77*	

Route 222 / Ruta 222
Rio Bravo - Sunport - Kirtland

Effective 8/27/2011

Route funded by

RIO METRO
REGIONAL TRANSIT DISTRICT



NOTE:
Personas sin la debida autorización y identifcation militares no podrán ser autorizados a entrar en la base aérea de Kirtland

NOTE:
People without proper military clearance and identification may not be allowed to enter Kirtland Air Force Base.

Route 222 - Weekday Eastbound

COORS & RIO BRAVO (A)	RAIL RUNNER STATION ARRIVE (B)	RAIL RUNNER STATION DEPART (B)	AIRPORT (C)	GIBSON & SAN MATEO (D)	V.A. HOSPITAL (E)	BUILDING 800 (F)	AREA 4 (G)	
5:35a	5:47a	5:53a	....	....	....	6:17a	....	KAFB
....	....	5:53a	6:05a	....	6:12a	....	....	VA
....	....	5:53a	....	....	....	6:17a	6:25a	KAFB
....	....	7:15a	....	....	....	7:39a	7:47a	KAFB
6:57a	7:09a	7:15a	7:27a	....	7:34a	....	....	VA
2:28p	2:40p	2:46p	3:03p	....	3:10p	....	....	
5:35p	5:47p	5:53p	6:08p	6:15p	....	6:24p	....	

Be sure to board the bus which will stop where you need to get off!

VA: These buses serve the stops on:
- University
- Spirit Dr
- Airport
- Girard
- Gibson & Carlisle
- Gibson & Truman
- San Mateo & Gibson and
- ends at the VA Medical Center (San Mateo side).

They do not stop on Randolph Rd. or Kirtland Air Force Base.

KAFB: These buses serve only the stops on:
- Randolph Rd.
- Gibson & Valencia and
- Kirtland Air Force Base.

As shown in the schedule, only one continues to Area 4 at 625a.

Route 222 - Weekday Westbound

	AREA 4 (G)	BUILDING 800 (F)	GIBSON & SAN MATEO (D)	V.A. HOSPITAL (E)	AIRPORT (C)	RAIL RUNNER STATION ARRIVE (B)	RAIL RUNNER STATION DEPART (B)	COORS & RIO BRAVO (A)
	....	6:35a	6:44a	....	6:53a	7:09a	7:15a	7:27a
	....	....	....	2:10p	2:21p	2:40p	2:46p	2:58p
VA	....	....	....	4:05p	4:16p	4:32p	....	....
KAFB	3:56p	4:04p	....	....	....	4:32p	4:39p	4:51p
VA	....	....	....	5:17p	5:28p	5:46p	....	....
KAFB	5:03p	5:16p	....	....	....	5:46p	5:53p	6:06p

As in the AM peak, two buses meet the PM peak trains:

VA: These buses serve stops at:
- VA Medical Center (San Mateo side)
- For service from Gibson & San Mateo, use stop at VA or Truman
- Gibson & Truman
- Gibson & Carlisle
- Girard
- Airport
- Spirit Dr. and
- University.

They do not stop on Randolph Rd.

KAFB: These buses serve only the stops on:
- Kirtland Air Force Base
- Gibson & San Pedro and
- Randolph Rd.

Terry O. Brown, P.E.

From: Terry O. Brown, P.E. <tobe@swcp.com>
Sent: Thursday, May 03, 2012 9:23 PM
To: 'Jaramillo, Antonio, NMDOT'
Cc: 'Ronald R. Bohannan'; 'Jonathan Niski'; Gerald (geraldm@rtconnect.net)
Subject: Admiral Beverage
Attachments: LOS_Sig_Unsig_Summary_2014_DualWBLT.pdf; 2014ABX_Option_1_dualWBLT_Prince.pdf; 2014PBX_Option_1_dualWBLT_Prince.pdf

Tracking:

Recipient	Read
'Jaramillo, Antonio, NMDOT'	Read: 5/3/2012 9:51 PM
'Ronald R. Bohannan'	
'Jonathan Niski'	
Gerald (geraldm@rtconnect.net)	Read: 5/3/2012 9:34 PM

Antonio,

The left turn lane is analyzed as permitted / protected for a single left turn lane and protected when analyzed as a dual left turn lane. Allowing left turns on a protected mode only reduces the efficiency of the turning movement and the intersection since it does not allow the dual left turns to move on the green ball. They are only able to turn on a green left turn arrow. In the case of the permitted / protected left turn movement, the left turns can turn either on the green ball or the left turn arrow. With the low eastbound volume on Rio Bravo Blvd. during the PM Peak Hour, there are ample opportunities for the westbound left turn movement to turn on the green ball when a single left. The westbound left turn movement, therefore, operates much more efficiently.

Attached is a table of a summary of results for the signalized intersection of Rio Bravo / Prince for both the single and the dual left. Also attached are the Synchro reports. Note that the westbound left turn movement deteriorates much more during the PM Peak than the AM Peak due to the fact that the calculations for the PM Peak take into consideration the relatively low eastbound volumes on Rio Bravo during that time. The change in delay for the AM Peak is less since the eastbound volumes on Rio Bravo during the AM Peak are much more, and the calculations take into consideration that a lower volume of westbound left turns will be able to move during the green ball phase.

I have seen a similar condition in numerous other cases, and it is clear to me that the rule of thumb (dual left turn lane warrant when left turn volume approaches 400 vph) works almost every time. The only time I have recommended dual left turn lanes for volumes in the 100 – 150 range is when dual left turns are already warranted for the opposing left turn movement. Otherwise, implementing dual left turns at intersections where the left turn volume is significantly less than 400 is, in almost every case, detrimental to the intersection's operation.

Besides the fact that the rule of thumb warrant is not met for the left turn volume, the April 21, 2012 Traffic Impact Study reported that the intersection LOS for Rio Bravo / Prince is B in the AM and C in the PM for the BUILD condition. Additionally, the westbound left turn movement (with the existing single left turn lane) is D during the AM Peak and A during the PM Peak. Those should be acceptable conditions, and I do not understand why this is an issue.

Also, there is a very critical time deadline on this project that, if it cannot be resolved tomorrow (Friday) morning, is very problematic for the project.

Please call me in the morning if you need to discuss this further. The matter needs to be resolved quickly.

Best Regards,

Terry O. Brown, P.E.
P. O. Box 92051
Albuquerque, NM 87199-2051
(505) 883-8807 – Office
(505) 270-6981 – Cell
e-mail: tobe@swcp.com

From: Jaramillo, Antonio, NMDOT [mailto:Antonio.Jaramillo@state.nm.us]
Sent: Thursday, May 03, 2012 4:32 PM
To: Terry O. Brown, P.E.
Cc: Ronald R. Bohannan; Jonathan Niski
Subject: RE: Admiral Beverage

My question about this analysis is if the left turn lane is considered protected permissive or just protected when it is a single lane extended. It doesn't make sense in my mind that this movement would go from a C to and A.

Antonio E. Jaramillo, PE
District 3 Traffic Engineer
NMDOT
(505) 798.6632

From: Terry O. Brown, P.E. [mailto:tobe@swcp.com]
Sent: Thursday, May 03, 2012 3:55 PM
To: Jaramillo, Antonio, NMDOT
Cc: Ronald R. Bohannan; Jonathan Niski
Subject: Admiral Beverage

Antonio,

While you and I have been focusing on discussion related to the construction of the eastbound third lane on Rio Bravo, the developer call me this afternoon and expressed concern that he might have to construct dual eastbound left turn lanes on Rio Bravo Blvd. at Prince St. They are schedule to close on the property tomorrow, but need to know what you will require before they do. Construction of dual WB Left Turn lanes on Rio Bravo at Prince would be very expensive and may jeopardize the deal.

I have run the analysis of the intersection with and without dual left turn lanes for the 2014 PM Peak Hour period. The results are as I expected:

With dual westbound left turn lanes:
Intersection: C – 24.2
WB Left Turn Movement: E – 70.1

With single westbound left turn lane:
Intersection: C – 20.9
WB Left Turn Movement: A – 5.2

As you can see, the implementation of dual westbound left turn lanes is significantly detrimental to the operation of the intersection.

Also, I performed a traffic count at the intersection of Rio Bravo / Driveway East of Prince St. earlier this week. The results of the count are attached to this e-mail for your review. As you

can see, the eastbound left turn volume is very low, and eastbound queuing should not be problematic. I performed the traffic count myself, and never did I see an eastbound queue of more than one vehicle.

If possible, I need to acquire a statement from you informing the developer of your requirement for the westbound left turn lane on Rio Bravo at Prince. The TIS will recommend that the westbound left turn lane at Prince be lengthened so that it can accommodate a 300 feet long queue.

Please call me if you have questions.

Best Regards,

Terry O. Brown, P.E.
P. O. Box 92051
Albuquerque, NM 87199-2051
(505) 883-8807 – Office
(505) 270-6981 – Cell
e-mail: tobe@swcp.com

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2012.0.1913 / Virus Database: 2425/4975 - Release Date: 05/03/12

Timings
1: Rio Bravo Blvd & Prince St

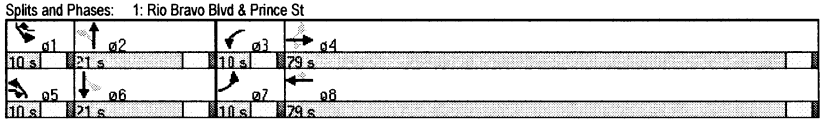
Terry O. Brown, P.E.
5/3/2012 - Synchro 7

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Volume (vph)	53	1923	65	113	756	47	90	2	15	1
Turn Type	pm+pt		pm+ov	Prot		pm+ov	pm+pt		pm+pt	
Protected Phases	7	4	5	3	8	1	5	2	1	6
Permitted Phases	4		4			8	2		6	
Detector Phase	7	4	5	3	8	1	5	2	1	6
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.0	10.0	10.0	21.0	10.0	10.0	21.0	10.0	21.0
Total Split (s)	10.0	79.0	10.0	10.0	79.0	10.0	10.0	21.0	10.0	21.0
Total Split (%)	8.3%	65.8%	8.3%	8.3%	65.8%	8.3%	8.3%	17.5%	8.3%	17.5%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize?										
Recall Mode	Min	Min	Min	Min	Min	Min	Min	C-Min	Min	C-Min
Act Effct Green (s)	83.8	77.3	87.3	9.8	80.6	90.6	12.9	7.9	12.9	7.9
Actuated g/C Ratio	0.70	0.64	0.73	0.08	0.67	0.76	0.11	0.07	0.11	0.07
v/c Ratio	0.13	0.98	0.06	0.47	0.37	0.05	0.69	0.62	0.15	0.14
Control Delay	4.8	35.7	2.7	58.6	9.6	1.5	69.6	23.9	44.9	25.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.8	35.7	2.7	58.6	9.6	1.5	69.6	23.9	44.9	25.6
LOS	A	D	A	E	A	A	E	C	D	C
Approach Delay		33.8			15.2			44.5		36.3
Approach LOS		C			B			D		D

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.98
Intersection Signal Delay: 29.3 — Intersection LOS: C
Intersection Capacity Utilization 73.1% — ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 1: Rio Bravo Blvd & Prince St



HCM Signalized Intersection Capacity Analysis
1: Rio Bravo Blvd & Prince St

Terry O. Brown, P.E.
5/3/2012 - Synchro 7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	53	1923	65	113	756	47	90	2	108	15	1	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.85		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1719	3438	1538	3335	3438	1538	1719	1542		1719	1555	
Flt Permitted	0.31	1.00	1.00	0.95	1.00	1.00	0.75	1.00		0.51	1.00	
Satd. Flow (perm)	566	3438	1538	3335	3438	1538	1352	1542		916	1555	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.81	0.81	0.81	0.75	0.75	0.75
Adj. Flow (vph)	60	2161	73	127	849	53	111	2	133	20	1	15
RTOR Reduction (vph)	0	0	14	0	0	15	0	116	0	0	14	0
Lane Group Flow (vph)	60	2161	59	127	849	38	111	19	0	20	2	0
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Turn Type	pm+pt		pm+ov	Prot		pm+ov	pm+pt			pm+pt		
Protected Phases	7	4	5	3	8	1	5	2		1	6	
Permitted Phases	4		4			8	2			6		
Actuated Green, G (s)	83.8	77.3	82.3	9.8	80.6	85.6	12.9	7.9		12.9	7.9	
Effective Green, g (s)	83.8	77.3	82.3	9.8	80.6	85.6	12.9	7.9		12.9	7.9	
Actuated g/C Ratio	0.70	0.64	0.69	0.08	0.67	0.71	0.11	0.07		0.11	0.07	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	458	2215	1119	272	2309	1161	161	102		132	102	
v/s Ratio Prot	0.01	c0.63	0.00	c0.04	c0.25	0.00	c0.03	0.01		0.01	0.00	
v/s Ratio Perm	0.08		0.04			0.02	c0.05			0.01		
v/c Ratio	0.13	0.98	0.05	0.47	0.37	0.03	0.69	0.19		0.15	0.02	
Uniform Delay, d1	5.8	20.4	6.1	52.6	8.6	5.0	51.2	53.0		48.4	52.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	13.7	0.0	1.3	0.1	0.0	11.6	4.0		0.5	0.4	
Delay (s)	5.9	34.2	6.2	53.9	8.7	5.1	62.8	57.1		49.0	52.8	
Level of Service	A	C	A	D	A	A	E	E		D	D	
Approach Delay (s)		32.6			14.1			59.7			50.7	
Approach LOS		C			B			E			D	

Intersection Summary

HCM Average Control Delay	29.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	25.0
Intersection Capacity Utilization	73.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Timings
1: Rio Bravo Blvd & Prince St

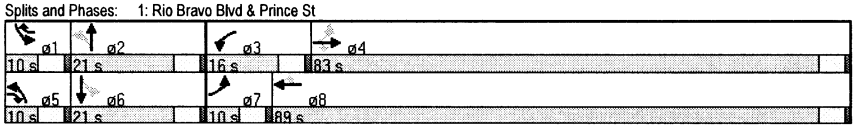
Terry O. Brown, P.E.
4/21/2012 - Synchro 7

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Volume (vph)	33	1113	107	145	1981	31	112	4	48	3
Turn Type	pm+pt		pm+ov	Prot		pm+ov	pm+pt		pm+pt	
Protected Phases	7	4	5	3	8	1	5	2	1	6
Permitted Phases	4		4			8	2		6	
Detector Phase	7	4	5	3	8	1	5	2	1	6
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	21.0	10.0	10.0	21.0	10.0	10.0	21.0	10.0	21.0
Total Split (s)	10.0	83.0	10.0	16.0	89.0	10.0	10.0	21.0	10.0	21.0
Total Split (%)	7.7%	63.8%	7.7%	12.3%	68.5%	7.7%	7.7%	16.2%	7.7%	16.2%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize?										
Recall Mode	Min	Min	Min	Min	Min	Min	Min	C-Min	Min	C-Min
Act Effct Green (s)	92.4	85.6	95.6	11.5	90.3	100.3	12.9	7.9	12.9	7.9
Actuated g/C Ratio	0.71	0.66	0.74	0.09	0.69	0.77	0.10	0.06	0.10	0.06
v/c Ratio	0.24	0.52	0.10	0.57	0.95	0.03	1.00	0.66	0.46	0.42
Control Delay	15.1	14.5	3.4	70.3	17.0	0.4	130.1	23.4	61.7	23.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.1	14.5	3.4	70.3	17.0	0.4	130.1	23.4	61.7	23.7
LOS	B	B	A	E	B	A	F	C	E	C
Approach Delay		13.6			20.3			74.8		41.4
Approach LOS		B			C			E		D

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 72 (55%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.00
Intersection Signal Delay: 22.7 — Intersection LOS: C
Intersection Capacity Utilization 83.3% — ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 1: Rio Bravo Blvd & Prince St



HCM Signalized Intersection Capacity Analysis
1: Rio Bravo Blvd & Prince St

Terry O. Brown, P.E.
4/21/2012 - Synchro 7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	33	1113	107	145	1981	31	112	4	116	48	3	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.85		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1719	3438	1538	3335	3438	1538	1719	1547		1719	1555	
Flt Permitted	0.05	1.00	1.00	0.95	1.00	1.00	0.72	1.00		0.51	1.00	
Satd. Flow (perm)	85	3438	1538	3335	3438	1538	1294	1547		916	1555	
Peak-hour factor, PHF	0.95	0.95	0.95	0.87	0.87	0.87	0.77	0.77	0.77	0.85	0.85	0.85
Adj. Flow (vph)	35	1172	113	167	2277	36	145	5	151	56	4	60
RTOR Reduction (vph)	0	0	33	0	0	10	0	142	0	0	56	0
Lane Group Flow (vph)	35	1172	80	167	2277	26	145	14	0	56	8	0
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Turn Type	pm+pt		pm+ov	Prot		pm+ov	pm+pt			pm+pt		
Protected Phases	7	4	5	3	8	1	5	2		1	6	
Permitted Phases	4		4			8	2			6		
Actuated Green, G (s)	92.4	85.6	90.6	11.5	90.3	95.3	12.9	7.9		12.9	7.9	
Effective Green, g (s)	92.4	85.6	90.6	11.5	90.3	95.3	12.9	7.9		12.9	7.9	
Actuated g/C Ratio	0.71	0.66	0.70	0.09	0.69	0.73	0.10	0.06		0.10	0.06	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	146	2264	1131	295	2388	1187	145	94		122	94	
v/s Ratio Prot	0.01	0.34	0.00	c0.05	c0.66	0.00	c0.04	0.01		0.02	0.00	
v/s Ratio Perm	0.16		0.05			0.02	c0.06			0.03		
v/c Ratio	0.24	0.52	0.07	0.57	0.95	0.02	1.00	0.15		0.46	0.08	
Uniform Delay, d1	25.6	11.5	6.3	56.9	18.0	4.7	58.1	57.9		54.6	57.6	
Progression Factor	2.14	1.13	2.54	1.23	0.80	0.26	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	0.1	0.0	0.2	1.2	0.0	74.7	3.4		2.7	1.7	
Delay (s)	55.4	13.2	16.0	70.1	15.5	1.2	132.9	61.2		57.3	59.3	
Level of Service	E	B	B	E	B	A	F	E		E	E	
Approach Delay (s)		14.5			19.0			95.7			58.4	
Approach LOS		B			B			F			E	

Intersection Summary

HCM Average Control Delay	24.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	83.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Intersection: **1 - Rio Bravo Blvd / Prince St**

2014 AM Peak Hour BUILD

		(EXIST. GEOM.) NO BUILD Lanes	LOS-Delay	(EXIST. GEOM.) BUILD Lanes	LOS-Delay	(DUAL WBLT) BUILD Lanes	LOS-Delay
EB	L	1	A - 3.0	1	A - 2.5	1	A - 5.9
	T	2	A - 8.3	2	B - 10.2	2	C - 34.2
	R	1	A - 0.9	1	A - 0.5	1	A - 6.2
WB	L	1	B - 12.6	1	D - 49.8	2	D - 53.9
	T	2	B - 11.7	2	A - 3.7	2	A - 8.7
	R	1	C - 22.6	1	A - 4.5	1	A - 5.1
NB	L	1	E - 60.7	1	E - 70.5	1	E - 62.8
	T	1	E - 57.7	1	E - 64.7	1	E - 57.1
	R	>	E - 57.7	>	E - 64.7	>	E - 57.1
SB	L	1	D - 52.8	1	D - 53.5	1	D - 49.0
	T	1	E - 56.6	1	E - 57.2	1	D - 52.8
	R	>	E - 56.6	>	E - 57.2	>	D - 52.8
Intersection:			***B - 12.9***		***B - 14.0***		***C - 29.3***

2014 PM Peak Hour BUILD

		(EXIST. GEOM.) NO BUILD Lanes	LOS-Delay	(EXIST. GEOM.) BUILD Lanes	LOS-Delay	(DUAL WBLT) BUILD Lanes	LOS-Delay
EB	L	1	E - 63.9	1	D - 54.7	1	E - 55.4
	T	2	B - 10.1	2	B - 11.0	2	B - 13.2
	R	1	B - 10.5	1	B - 11.3	1	B - 16.0
WB	L	1	A - 4.1	1	A - 5.2	2	E - 70.1
	T	2	B - 15.1	2	B - 15.6	2	B - 15.5
	R	1	A - 1.2	1	A - 1.2	1	A - 1.2
NB	L	1	**F** - 101	1	**F** - 133	1	**F** - 133
	T	1	E - 61.0	1	E - 61.2	1	E - 61.2
	R	>	E - 61.0	>	E - 61.2	>	E - 61.2
SB	L	1	E - 57.8	1	E - 57.3	1	E - 57.3
	T	1	E - 60.1	1	E - 59.3	1	E - 59.3
	R	>	E - 60.1	>	E - 59.3	>	E - 59.3
Intersection:			***B - 18.4***		***C - 20.9***		***C - 24.2***

Note: ">" designates a shared right or left turn lane next to a thru lane.