AZER Post EA
Appendix E
Updated Traffic Analysis

ENGINEERS
PLANNERS
ECONOMISTS
Wilbur Smith Associates

LOS ANGELES OFFICE

MEMO

Date: July 8, 2008

Project Number: 100756

To: John Cook, AICP**,** CirclePoint

From: Sam Morrissey, P.E.

Subject: Arizona Eastern Rail – Updated Traffic Analysis

Wilbur Smith Associates is pleased to present this memorandum; an updated traffic and transportation analysis of a proposed Arizona Eastern Rail (AZE) line in Safford, Arizona. The update reflects comments and additional data received from the Arizona Department of Transportation (ADOT) in April 2008. In a prior report, WSA analyzed projected traffic using 2005 traffic data for the U.S. 70 corridor. This revised report utilized new data provided by ADOT in April 2008, reflecting traffic data spanning from 2003 to 2007.

The analysis documents the existing and future conditions along two study roadway segments where the proposed rail line will cross; Highway U.S. 70 and Airport Road. The primary focus of this analysis was the transportation related effects of the proposed project at these two crossing locations.

1.0 EXISTING CONDITIONS

As a basis for comparison with proposed future conditions, existing conditions were analyzed for both study roadway segments along U.S. 70 and Airport Road. Available 2005 traffic volume data was collected for Airport Road. Year 2007 traffic data for U.S. 70 was provided by ADOT.

U.S. 70

The study area along U.S. 70 spanned from milepost 343 to milepost 344. A conceptual rail alignment plan including crossing locations was completed in June 2007. The selected study area includes the conceptual crossing locations. Within the bounds of the study area, U.S. 70 is a two-lane highway with a posted speed limit of 55 mph. No signalized intersections exist within the study area. Both residential and commercial driveways directly access the highway. U.S. 70 crosses the San Simon River within the study area. An upgrade in roadway elevation leading to the crossing was observed for a length of approximately 650 feet on either side of the bridge.

In April 2008, ADOT provided the following update on planned improvements to U.S. 70 in the study area:

> There is also an active ADOT project for shoulder widening, re-striping for turn lanes and pavement preservation of US Highway 70 from Milepost 341.37 to 343.40 . This project, (ADOT Project Number 70 GH 341.4 **H7094** 01C Lone Star Road to San Simon River Bridge) is going to advertise for bid in June 2008 and will end just before the proposed crossing. The project to widen a portion of US 70 has been actively discussed and planned since June 2006 to help accommodate the growth in traffic and population east of Safford, Arizona. Finally, ADOT is in the process of planning to widen the US 70 to 5 lanes (ADOT Project Number 70 GH 340 **H5109** 01C Safford to Solomon). This project will be directly impacted by the proposed AZER crossing.

The center turn lane to be added will provide improved access for driveways and sites adjacent to U.S. 70. No data on the number of vehicles turning into or out of adjacent sites within the project area is available; it is assumed that the volume of vehicles turning into or out of adjacent sites will be minimal and will not impact through capacity.

Airport Road

The study area along Airport Road extended westward approximately one half mile from the intersection with Solomon Pass Road. Within the study segment, Airport Road consists of two lanes with no intersections. Airport Road is predominantly surrounded by vacant land, with the exception of Safford Regional Airport to the east of the study area. No speed limit was posted within this roadway segment, however based on the closest available posting the speed limit was assumed to be 55 mph.

1.1 EXISTING TRAFFIC VOLUMES

Year 2003 to 2007 average annual daily traffic (AADT) volumes for U.S. 70 from milepost 341.85 to milepost 344.37 were supplied by the Arizona Department of Transportation (ADOT)[1], while Year 2005 AADT volumes for Airport Road were calculated based on raw traffic count data provided by the Graham County Office of Engineering. Seasonal and daily adjustment factors, as well as peak hour (K) and peak directional (D) factors were provided by ADOT to arrive at a one-way PM peak hour volume used in analysis. Table 1.1 summarizes the AADT calculations for each study segment. Figures 1.1 and 1.2 graphically summarize the existing available traffic volumes along each of the study roadway segments. The tabulated data from which the information in Table 1.1, Figures 1.1, and Figure 1.2 was derived can be found in Appendix A. Note that the data presented in Figures 1.1 and 1.2 does not include updated Year 2007 traffic volume data on U.S. 70. At the time of report preparation, no updated hourly traffic volume data for U.S. 70 was available. As Figures 1.1 and 1.2 show, historical traffic patterns remain consistent throughout a typical weekday; we therefore assume that Year 2007 hourly traffic volumes on U.S. 70 exhibit a similar pattern.

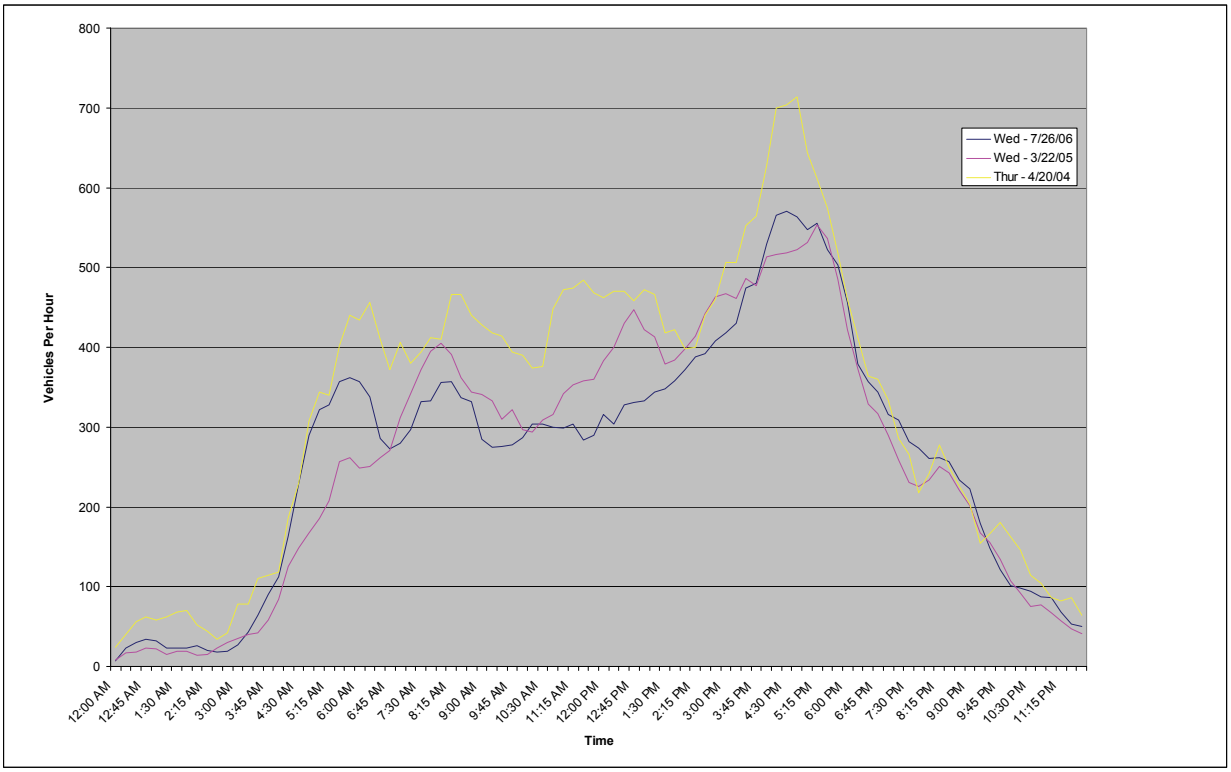
Table 1.1 – Existing AADT and Calculations

	2007 US 70	2005 Airport Rd
Raw Count Data[1]	N/A	464
Annual Growth Factor[2]	0	0
Seasonal Adjustment[2]	N/A	0.917
AADT[2]	6,900	425
% Trucks[3]	8.0%	N/A
K Factor[2]	10.10%	10.10%
PM Peak hour	697	43
D Factor[1]	51.50%	51.50%
One Way PM Peak	**359**	**22**

Source: *1) Graham County Engineering Department*
2) Arizona Department of Transportation (ADOT)
3) Arizona Department of Transportation (ADOT)

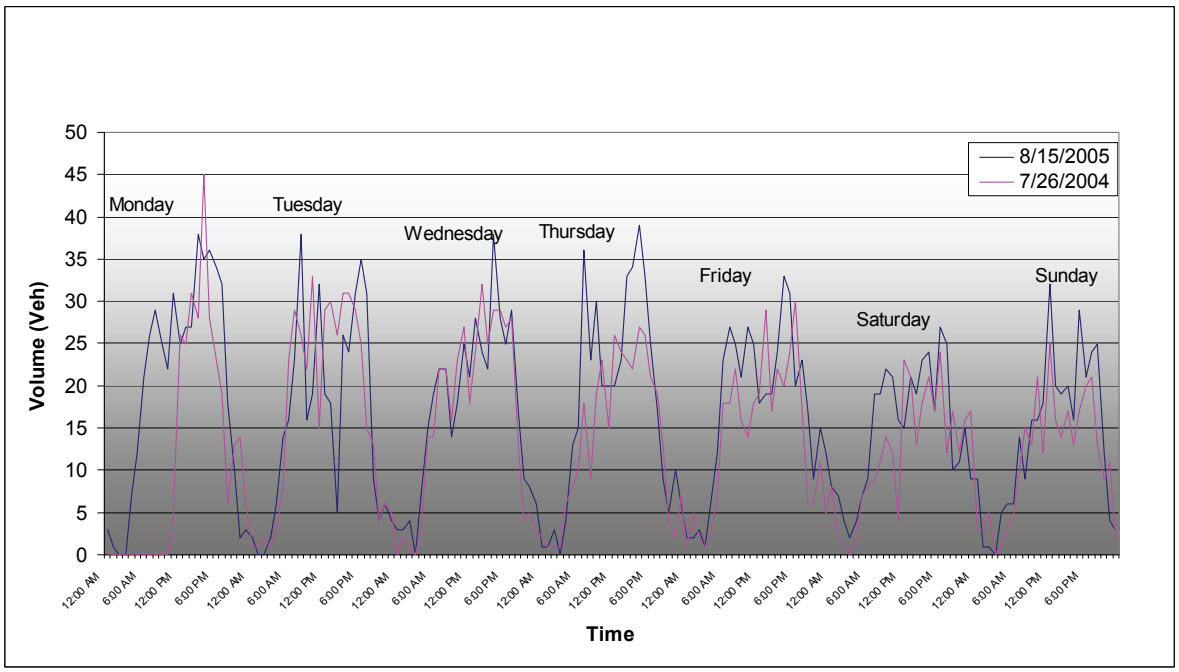
[1] Data provided by ADOT staff via email dated Thursday, April 24, 2008 11:05 AM.

Figure 1.1 – Existing Hourly Traffic Volumes – U.S. 70 MP 341.85 to MP 344.37



Data Source: Arizona Department of Transportation, September 2006.

Figure 1.2 – Existing Weekly Traffic Volumes – Airport Road 500' E/O Mesa De La Paz



Data Source: Graham County Engineering Department, September 2006.

1.2 EXISTING LEVEL OF SERVICE (LOS)

Currently, along both study roadway segments there are no at-grade rail crossings to restrict traffic flow. From the standpoint of delay based LOS analysis, both study roadway segments along Airport Road and U.S. 70 are operating at free-flow and vehicles traveling on these roadway segments do not experience any delay (with the exception of minor intermittent delays to turning vehicles into and out of adjacent sites). An analysis of operating conditions on U.S. 70 (consistent with HCM 2000 methodologies for a two-lane class II rural highway) identifies current PM Peak Hour operating conditions at LOS B. The summary analysis worksheets for this analysis are included in Appendix A.

2.0 FUTURE CONDITIONS

Future conditions were projected into Year 2030, including both two-lane and four-lane configurations possible along the study segment of U.S. 70, as well as an unchanged two-lane scenario for Airport Road.

As noted in section 1.0, a center turn lane is planned for U.S. 70 within the study area, bringing the cross-section to three lanes. By the Year 2030, ADOT states that U.S. 70 will have a five-lane cross section with two-lanes in each direction and a center turn lane. Each of the future conditions described in this section will include an assumed center turn lane. As this lane serves as access for vehicles turning into or out of adjacent sites along U.S. 70, this center turn lane is not assumed to add through capacity to U.S. 70 in excess of the two- or four-lane cross sections. Therefore, the future conditions will refer to two- and four-lane cross sections.

2.1 FUTURE PLANNED DEVELOPMENT AND 2030 AADT

In order to predict 2030 volumes, an annual growth rate of 1.85% was applied to Year 2005 AADT traffic volumes on Airport Road. This rate was provided by ADOT for traffic volumes along the study roadway segment and was derived from the linear interpolation of previous growth in traffic volumes along U.S. 70. Therefore, any previous development trends along U.S. 70 are expected to be captured by this growth rate. By using this growth rate to project volumes, a similar pattern of development previously to the west of the study area is assumed to continue east along U.S. 70 through the Year 2030.

As a part of this update, the growth rate between Year 2005 and Year 2007 AADT volumes was examined. Between 2005 and 2007, AADT volumes along U.S. 70 grew at an average annual rate of 8.36% per year. This growth rate is substantially higher than previous documented growth rates, and was therefore used to develop Year 2030 AADT estimates on U.S. 70 in the study area

Table 2.1 summarizes how the AADT data for each location was incorporated into each analyzed scenario. Note that Table 2.1 also includes an estimate of the number of trucks during the PM Peak Hour. This was determined based on existing data provided by ADOT showing the percentage of trucks on U.S. 70 in the study area to be 8.0% in 2007. The resulting one-way PM peak hour volume was then incorporated into the subsequent intersection operational analyses to be outlined in Section 3.2.

Table 2.1 – 2030 AADT Calculations

	2007	2005	2030	
	U.S. 70	Airport Rd	U.S. 70	Airport Rd
Raw Count Data[1]	N/A	464	N/A	N/A
Annual Growth Factor[2]	0	0	8.36%	1.85%
Seasonal Adjustment[2]	N/A	0.917	N/A	N/A
AADT[2]	6,900	425	43,758	673
% Trucks[3]	8.0%	N/A	8.0%	N/A
K Factor[2]	10.10%	10.10%	10.10%	10.10%
PM Peak hour	697	43	4,420	68
D Factor[1]	51.50%	52.00%	51.50%	52.00%
One Way PM Peak	**359**	**22**	**2,276**	**35**
Trucks	*29*	*N/A*	*182*	*N/A*

Source: 1) Graham County Engineering Department
2) Arizona Department of Transportation (ADOT)
3) Arizona Department of Transportation (ADOT)

3.0 TRAFFIC IMPACT ASSESSMENT

As a direct result of the construction of an at-grade crossing, vehicles along each study segment which were previously freely flowing will be subject to delay based on the proposed at-grade rail crossings. In order to calculate the average vehicle delay at each segment it was necessary to predict the potential maximum direct delay imposed by each train crossing. In addition to average vehicle delay, it was also of interest to compute maximum vehicle queues possible, for safety and sight distance considerations.

For the purposes of this analysis, it is assumed that a maximum of one train crossing would occur during the PM Peak Hour. AZE has noted that train operations would primarily occur during off-peak periods, and that a train crossing during the PM Peak Hour would be an extremely rare occurrence.

3.1 CROSSING DELAY CALCULATION

In order to estimate the crossing time of the train, assumptions were made regarding train length and speed. The maximum train length as well as the minimum speed provided by Arizona Eastern Rail was incorporated in the calculations, in order to be conservative.

Assumptions:

- Train speed: 10 MPH minimum
- Train Length: 30 cars + 3 locomotives = 1,920 ft maximum
- One crossing per PM peak hour

In addition to the train crossing, it was necessary to incorporate any standards in preemptive signal timing to accurately reflect the total delay imposed by the train as it crosses the roadway.

The guidelines used in these calculations are in accordance with the Arizona Corporation Commission (ACC) Rail Road Safety department's guidelines.

Railroad Crossing Phases:

- 20 seconds signal preemption (as per Federal Rail Administration requirements)
- 131 seconds for train to cross the roadway (as calculated, based on above assumptions)
- 12 seconds maximum before gates are fully raised (guideline provided by the Manual for Uniform Traffic Control Devices)
- The train will impose a maximum of 163 seconds delay per crossing.

3.2 QUEUE LENGTH AND VEHICLE DELAY ANALYSIS

The data calculated above was combined with the available Average AADT volumes for the two following roadway segments:

- U.S. 70 MP 341.85 to MP 344.37
- Airport Road east of Mesa De La Paz

Synchro 6 and 7 software (consistent with Highway Capacity Manual methodologies) was utilized for PM peak hour operational analysis of an at-grade crossing at each study roadway segment. In compliance with ADOT traffic engineering policies, the analysis conformed to the following guidelines:

Peak Hour Factor (PHF):

- PHF = 0.8 for < 75 vph per lane
- PHF = 0.85 for 75 – 300 vph per lane
- PHF = 0.9 for >300 vph per lane

Source: ADOT Traffic Engineering Policies, Guidelines, and Procedures; Section 200 – Traffic Studies

The results of the PM peak hour intersection operational analysis for potential at-grade crossings at U.S. 70 and Airport Road is summarized on Table 3.1. Note that Table 3.1 shows two possible configurations for U.S. 70; the existing two-lane configuration as well as the proposed four-lane configuration. All conditions include a center turn lane on U.S. 70.

Table 3.1 – Results of PM Peak Hour Intersection Operational Analysis (One Crossing Per PM Peak Hour)

	2007		2005	2030		
	U.S. 70 2 Lanes[a]	U.S. 70 4 Lanes[a]	Airport Rd	U.S. 70 2 Lanes[a]	U.S. 70 4 Lanes[a]	Airport Rd
Volume (vph)	697	697	43	4,420	4,420	68
PHF	0.9	0.85	0.8	0.9	0.9	0.8
Adj. Flow (vph)	774	820	54	4,911	4,911	85
Average Delay Per Vehicle (sec)	**19.2**	**20.5**	**32.1**	**334.8**	**19.8**	**30.5**
Intersection LOS	**B**	**C**	**C**	**F**	**B**	**C**
Max Queue (ft)	**1,017**	**426**	**61**	**6,335**	**3,232**	**87**
Max Queue (Veh)[a]	**58**	**24**	**3**	**359**	**183**	**5**

Source: Wilbur Smith Associates, 2006 and 2008.
Notes: a) Includes center turn lane.
b) Based on AASHTO standard length of 17 feet 8 inches for cars and light trucks

Based on the analysis, an at-grade crossing of a four-lane U.S. 70 (with center turn lane) in 2030 would yield the following:

- Maximum Queue Length: *3,232 ft (for each direction*)
- Maximum Queue: *183 vehicles (for each direction)*
- Average Delay per Vehicle: *19.8 seconds (Intersection LOS B)*
- Vehicles Affected per PM Peak Hour Crossing: *366 vehicles*

Additionally, an at-grade crossing at Airport Road in 2030 would yield the following:

- Maximum Queue Length: *87 ft (for each direction*)
- Maximum Queue: *5 (for each direction)*
- Average Delay per Vehicle: *30.5 seconds (Intersection LOS C)*
- Vehicles Affected per PM Peak Hour Crossing: *10 vehicles*

The analysis shows that even with the substantial increase in traffic along U.S. 70 under Year 2030 conditions, the expansion of U.S. 70 to four-lanes (with a center turn lane) combined with the relatively minor delays associated with one train crossing, result in a minor change to PM Peak Hour operating conditions. Therefore, the proposed at-grade crossing would not significantly impact PM Peak Hour operations on U.S. 70.

3.3 POTENTIAL CONSTRUCTION TRAFFIC IMPACTS

Construction activities were assumed to consist of clearing and grubbing, laying down the roadbed, laying track, and constructing a bridge over the Gila River. The assumption for construction time is eight hours a day, five days a week, for approximately 9 to 12 months.

A typical track construction vehicle list was assumed to be the following:

- Trucks (5 pickups and 1 flat bed truck)
- Skid Steer Loaders (4)
- Front-end Loaders (4)
- Air Compressors (2)
- Spiker (1)
- Ballast Regulator (1)
- Tamper (2)

Based on the number of vehicles required for this construction operation a negligible amount of construction related traffic would be imposed on local roadways. Additionally any possible delays due to the specific at-grade crossing construction can be minimized by ensuring that any lane closures correspond with the minimum off-peak traffic volumes previously shown in Figures 1.1 and 1.2.

4.0 SAFETY CONSIDERATIONS

As a direct result of the proposed at-grade crossing vehicles traveling along each of the study roadway segments will be required to come to a complete stop during each train crossing. As a result, it was necessary to evaluate where any stopping sight distance (SSD) limitations exist along the study roadway segments.

Other safety considerations include vehicles that are required to stop at all at-grade railroad crossings. Certain vehicles, such as school busses and trucks carrying hazardous materials are required by law, policy, or regulation to stop at railroad crossings. As shown in section 2.1, this means that a percentage of the approximately 29 trucks per day in 2007 and 183 trucks per day in 2030 may stop at the proposed railroad crossing.

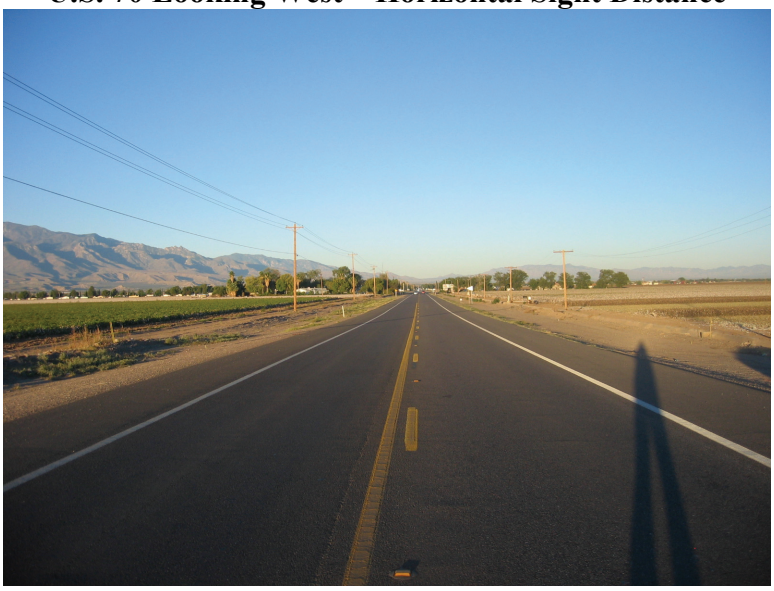
Last, the proposed at-grade crossing could also potentially impact first responders, such as ambulance, fire, and law enforcement vehicles. It is assumed that these first responders would be able to reach the front of any vehicle queues that develop due to railroad crossing delays. Therefore, the maximum delay to a first responder vehicle would be 163 seconds, or the total estimated duration for grade crossing delay as noted in section 3.1.

4.1 SSD EVALUATION

Horizontal Sight Distance:

Field observations along U.S. 70 and Airport Road revealed no horizontal sight distance concerns. Both roads are essentially straight between intersections, as shown in the images below.

U.S. 70 Looking West – Horizontal Sight Distance



Airport Road Looking East – Horizontal Sight Distance

Vertical Sight Distance:

Field observations along U.S. 70 within the vicinity of the San Simon River crossing showed up-grades in roadway slope leading to the bridge at a length of approximately 650 feet on either side. An at-grade rail crossing west of the San Simon River would thus be at a lower elevation than the bridge itself, creating a potential obstruction to the visibility of the crossing as well as the cars queued at the crossing. Conversely, if the rail crossing were placed within 650 feet of the San Simon River and raised to an equal elevation, it would be at a relative high-point in elevation, and visibility would not be a concern. A view from the San Simon River bridge looking west along Highway 70 is shown below.

U.S. 70 Looking West – Vertical Sight Distance

Along Airport road, there are no substantial vertical sight distance issues. The photo below shows airport road looking east. As shown in the photo, Airport Road does go through an elevation change; however, this elevation change would not impact vertical sight distance due to the installation of an at-grade crossing.

Airport Road Looking East – Vertical Sight Distance

SSD Calculation:

Given that the railroad is proposed to cross U.S. 70 to the west of the San Simon River, only vehicles traveling westbound over the river crossing could possibly be affected by limited sight distance of an at-grade crossing. Under this scenario, the most current AASHTO highway design

standards were utilized in order to determine SSD. The assumptions leading to the calculated SSD are highlighted in Table 4.1.

Table 4.1 – SSD Variables

Symbol	Description	Value
V	Design Speed (mph)[a]	60
b	Brake Reaction Distance (ft)[b]	220.5
a	Deceleration Rate (ft/sec²)	11.2
G	Grade	-2%

Source: 1) Wilbur Smith Associates, 2006
2) A Policy on Geometric Design of Highways and Streets 2001, American Association of State Highway and Transportation Officials (AASHTO)
Notes: a) Speed based on 85th percentile speed, approximated to be 5 mph over 55 mph speed limit, according to ADOT Traffic Engineering Policies, Guidelines, and Procedures; Section 200 – Traffic Studies.
b) Brake-reaction distance predicated on a reaction time of 2.5 sec.

Stopping Distance Equation:

$$d = \frac{V^2}{30\left(\left(\frac{a}{32.2}\right) \pm \frac{G}{100}\right)} = 365 \text{ feet}$$

SSD = d+b = 365+220.5 =585.5 ≈ **590 feet**

Source: A Policy on Geometric Design of Highways and Streets 2001, American Association of State Highway and Transportation Officials (AASHTO)

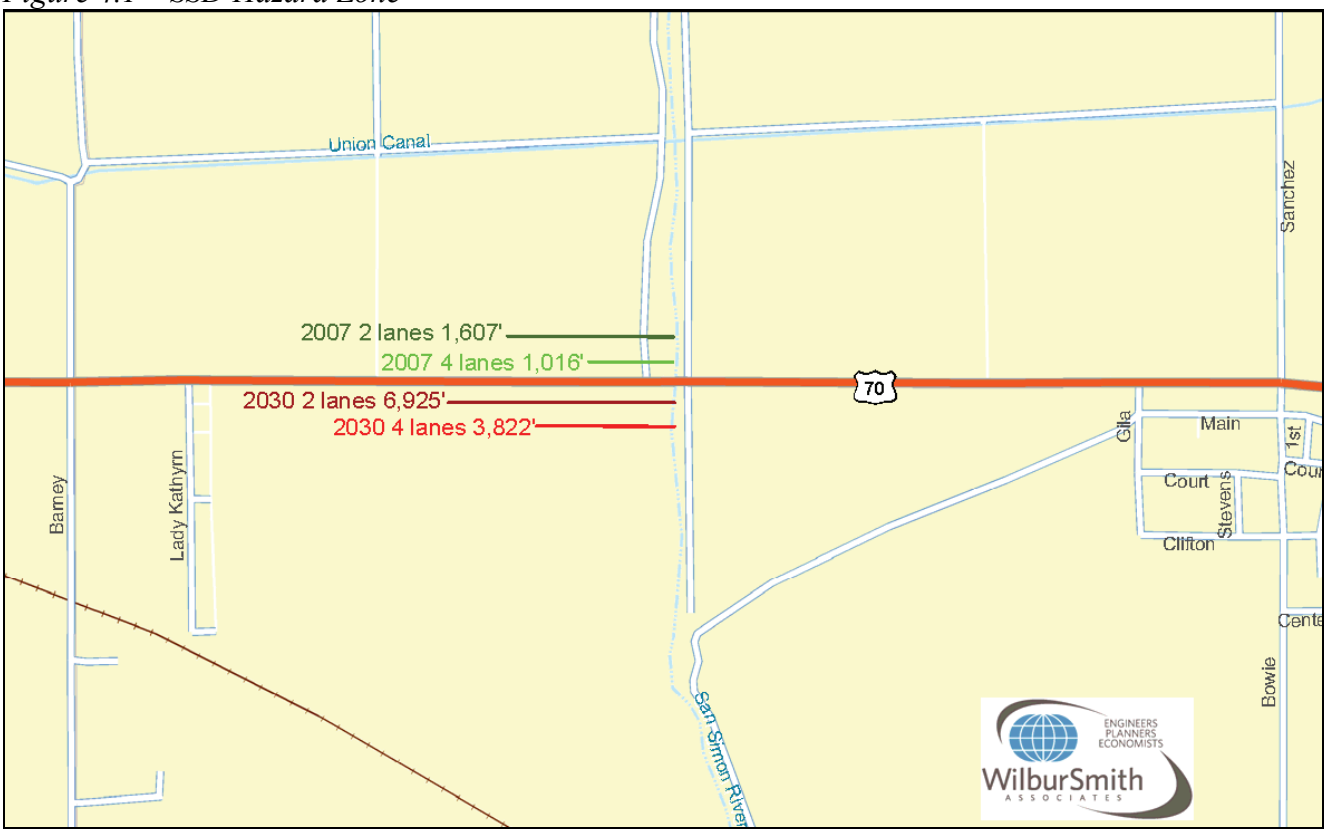
***SSD Calculation Results**:*
Table 4.2 shows the zone to the west of the San Simon River in which the placement of an at-grade crossing would necessitate either additional warning signals, or the elevation of the crossing to be level with the San Simon River Bridge. At the distances shown in Table 4.2, vehicle queues related to a train crossing during the PM peak hour in 2030 would remain outside the allotted SSD, thus allowing an approaching vehicle the necessary distance to stop before reaching the queue. Figure 4.1 depicts these zones for each of the scenarios.

Table 4.2 – SSD Hazard Zone

	2007		2030	
	U.S. 70 - 2 Lanes	U.S. 70 - 4 Lanes	U.S. 70 - 2 Lanes	U.S. 70 - 4 Lanes
Max Queue (ft)	1,017	426	1,371	608
SSD (ft)	590	590	590	590
Hazard Zone (feet West of San Simon River Bridge)	1,607	1,016	6,925	3,822

Source: Wilbur Smith Associates, 2008.

Figure 4.1 – SSD Hazard Zone



Source: Wilbur Smith Associates, 2008.

5.0 Possible Mitigation Measures

5.1 VEHICLE DELAY

Although an at-grade crossing will inevitably impose a previously non-existent vehicular delay, when averaged over the existing PM peak hour the resulting delay ranges from LOS B to LOS C. In the Year 2030, a two-lane cross section of U.S. 70, with the center turn lane, would result in LOS F operations during a railroad crossing; however, it is assumed that the project to widen U.S. 70 will be completed prior to the Year 2030. With a four-lane cross section (with a center turn lane), the railroad crossing would operate at LOS B during worst-case PM peak hour conditions. As stated in Section 3.0, this analysis assumes a maximum of one train crossing occurring during the PM Peak Hour. AZE has noted that train operations would primarily occur during off-peak periods, and that a train crossing during the PM Peak Hour would be an extremely rare occurrence

In addition the analyzed PM peak hour represents the worst-case scenario when the train crossing coincides with the PM peak hour, which is also the absolute daily peak hour. Under these considerations, and given the acceptable LOS B during even a worst-case scenario, no mitigation measures are required for vehicle delay.

When no train crossings occur, U.S. 70 would operate as a highway facility. An analysis of operating conditions on U.S. 70 (consistent with HCM 2000 methodologies) under Year 2030

conditions is summarized below. The summary analysis worksheets for this analysis are included in Appendix A.

- U.S. 70, Year 2030, 2-Lanes (with center turn lane), PM Peak Hour - LOS F
- U.S. 70, Year 2030, 4-Lanes (with center turn lane), PM Peak Hour - LOS C

5.2 STOPPING SIGHT DISTANCE

The proposed at-grade crossing shall include active warning devices and gate systems to prohibit entry during a train approach and crossing. Because the sight distance concerns surrounding the San Simon River Bridge are due to the difference in elevation between the bridge and the proposed at-grade crossing, one possibility would be to elevate the track to the same level as the bridge. This mitigation measure is particularly applicable to an at-grade crossing less than 650 feet west of the river; on the down-slope moving away from the bridge. If the track is not to be elevated, an advanced visual warning would be necessary on both sides of the proposed crossing. Remote flashing signals to the east of the river would effectively mitigate inadequate SSD, while advanced warning to the west of the crossing would notify oncoming vehicles of potential stopped traffic and vehicle queues. Alternatively, by simply ensuring that warning signals located at the crossing are visible to westbound vehicles east of the river, the same mitigation purpose would be fulfilled.

Due to concerns regarding heavy vehicles stopping at the at-grade crossing, additional warning signs and devices should be placed on the eastbound and westbound approaches along U.S. 70. All warning signs and devices shall conform to applicable ACC Rail Road Safety department guidelines, as well as other appropriate regulations.

An alternative solution to the concerns regarding heavy vehicles stopping at the at-grade crossing would be the construction of separate truck and heavy vehicle lanes in both the eastbound and westbound directions. These lanes would serve as deceleration/acceleration lanes for trucks and other heavy vehicles that are required to stop at the at-grade crossing. This solution would result in a seven-lane cross section at the railroad crossing; therefore, railroad crossing gate systems would be substantial, and gate arms could be in excess of 50 feet in length. Given the cross-section of U.S. 70, it may be appropriate to construct raised medians in the center turn lane (conforming to all applicable roadway design and safety standards) and installing a four-quadrant gate system at the proposed railroad crossing (if this alternative solution was to be carried forward).

APPENDIX A:
TRAFFIC COUNT DATA
&
ANALYSIS WORKSHEETS

Station Name:US-70 MP 343
Description:20th St to Bowie Ave/Sanchez Rd
City: Safford, AZ
County:Graham

Interval	Wed - 7/26/06				Wed - 3/23/05				Thursday - 4/20/04			
Begin	W	E	Hourly Total	AADT Adj	W	E	Hourly Total	AADT Adj	W	E	Hourly Total	AADT Adj
12:00 AM	2	5	***7***	***7***	4	4	***8***	***8***	12	12	***24***	***21***
12:15 AM	15	1	***23***	***21***	4	5	***17***	***15***	8	8	***40***	***35***
12:30 AM	3	4	***30***	***28***	1	0	***18***	***16***	8	8	***56***	***49***
12:45 AM	4	0	***34***	***31***	1	4	***23***	***21***	3	3	***62***	***54***
1:00 AM	2	3	***32***	***30***	5	2	***22***	***20***	10	10	***58***	***51***
1:15 AM	3	4	***23***	***21***	0	2	***15***	***14***	10	10	***62***	***54***
1:30 AM	3	4	***23***	***21***	5	0	***19***	***17***	11	11	***68***	***59***
1:45 AM	1	3	***23***	***21***	1	4	***19***	***17***	4	4	***70***	***61***
2:00 AM	4	4	***26***	***24***	1	1	***14***	***13***	1	1	***52***	***46***
2:15 AM	1	0	***20***	***19***	3	0	***15***	***14***	6	6	***44***	***39***
2:30 AM	2	3	***18***	***17***	6	7	***23***	***21***	6	6	***34***	***30***
2:45 AM	5	0	***19***	***18***	3	9	***30***	***27***	8	8	***42***	***37***
3:00 AM	9	7	***27***	***25***	5	2	***35***	***31***	19	19	***78***	***68***
3:15 AM	12	5	***43***	***40***	4	4	***40***	***36***	6	6	***78***	***68***
3:30 AM	24	2	***64***	***59***	14	1	***42***	***37***	22	22	***110***	***96***
3:45 AM	29	2	***90***	***82***	22	6	***58***	***52***	10	10	***114***	***99***
4:00 AM	35	3	***112***	***102***	29	4	***84***	***74***	21	21	***118***	***103***
4:15 AM	58	10	***163***	***149***	42	7	***125***	***111***	40	40	***186***	***162***
4:30 AM	79	13	***229***	***208***	36	2	***148***	***131***	44	44	***230***	***200***
4:45 AM	81	11	***290***	***264***	41	6	***167***	***148***	49	49	***308***	***267***
5:00 AM	58	12	***322***	***293***	39	12	***185***	***163***	39	39	***344***	***299***
5:15 AM	54	20	***328***	***298***	64	8	***208***	***184***	38	38	***340***	***295***
5:30 AM	95	26	***357***	***325***	67	20	***257***	***227***	75	75	***402***	***349***
5:45 AM	72	25	***362***	***329***	34	18	***262***	***231***	68	68	***440***	***382***
6:00 AM	36	29	***357***	***325***	29	9	***249***	***220***	36	36	***434***	***377***
6:15 AM	37	18	***338***	***307***	36	38	***251***	***222***	49	49	***456***	***396***
6:30 AM	41	28	***286***	***260***	50	48	***262***	***231***	52	52	***410***	***356***
6:45 AM	52	32	***273***	***248***	38	23	***271***	***239***	49	49	***372***	***323***
7:00 AM	41	31	***280***	***255***	41	38	***312***	***275***	53	53	***406***	***352***
7:15 AM	34	38	***297***	***270***	44	60	***342***	***302***	36	36	***380***	***330***
7:30 AM	44	60	***332***	***302***	46	82	***372***	***328***	59	59	***394***	***342***
7:45 AM	39	46	***333***	***303***	33	51	***395***	***348***	58	58	***412***	***358***
8:00 AM	40	55	***356***	***324***	31	58	***405***	***357***	52	52	***410***	***356***
8:15 AM	26	47	***357***	***325***	38	52	***391***	***345***	64	64	***466***	***404***
8:30 AM	30	54	***337***	***307***	33	66	***362***	***319***	59	59	***466***	***404***
8:45 AM	38	42	***332***	***302***	26	40	***344***	***303***	45	45	***440***	***382***
9:00 AM	22	26	***285***	***259***	47	39	***341***	***301***	46	46	***428***	***371***
9:15 AM	30	33	***275***	***250***	36	46	***333***	***294***	59	59	***418***	***363***
9:30 AM	40	45	***276***	***251***	31	45	***310***	***274***	57	57	***414***	***359***
9:45 AM	37	45	***278***	***253***	40	38	***322***	***284***	35	35	***394***	***342***
10:00 AM	28	29	***287***	***261***	33	28	***297***	***262***	44	44	***390***	***338***
10:15 AM	34	46	***304***	***277***	37	42	***294***	***259***	51	51	***374***	***325***
10:30 AM	33	52	***304***	***277***	40	51	***309***	***273***	58	58	***376***	***326***
10:45 AM	32	46	***300***	***273***	40	45	***316***	***279***	71	71	***448***	***389***
11:00 AM	23	33	***299***	***272***	33	54	***342***	***302***	56	56	***472***	***410***
11:15 AM	44	41	***304***	***277***	41	49	***353***	***311***	52	52	***474***	***411***
11:30 AM	33	32	***284***	***258***	54	42	***358***	***316***	63	63	***484***	***420***
11:45 AM	40	44	***290***	***264***	41	46	***360***	***318***	63	63	***468***	***406***
12:00 PM	45	37	***316***	***287***	59	51	***383***	***338***	53	53	***462***	***401***
12:15 PM	40	33	***304***	***277***	51	56	***400***	***353***	56	56	***470***	***408***
12:30 PM	45	44	***328***	***298***	63	63	***430***	***379***	63	63	***470***	***408***
12:45 PM	44	43	***331***	***301***	62	42	***447***	***394***	57	57	***458***	***397***
1:00 PM	44	40	***333***	***303***	43	42	***422***	***372***	60	60	***472***	***410***
1:15 PM	51	33	***344***	***313***	45	53	***413***	***364***	53	53	***466***	***404***
1:30 PM	43	50	***348***	***317***	52	40	***379***	***334***	39	39	***418***	***363***
1:45 PM	61	36	***358***	***326***	46	63	***384***	***339***	59	59	***422***	***366***
2:00 PM	52	46	***372***	***338***	45	54	***398***	***351***	48	48	***398***	***345***
2:15 PM	55	45	***388***	***353***	65	49	***414***	***365***	54	54	***400***	***347***
2:30 PM	38	59	***392***	***357***	61	59	***442***	***390***	59	59	***440***	***382***
2:45 PM	46	67	***408***	***371***	57	73	***463***	***408***	69	69	***460***	***399***
3:00 PM	46	62	***418***	***380***	50	53	***467***	***412***	71	71	***506***	***439***
3:15 PM	49	63	***430***	***391***	49	59	***461***	***407***	54	54	***506***	***439***
3:30 PM	47	94	***474***	***431***	67	78	***486***	***429***	82	82	***552***	***479***
3:45 PM	44	75	***480***	***436***	59	62	***477***	***421***	75	75	***564***	***489***
4:00 PM	51	106	***529***	***481***	59	80	***513***	***452***	103	103	***628***	***545***
4:15 PM	51	97	***565***	***514***	56	55	***516***	***455***	90	90	***700***	***607***

4:30 PM	53	93	***570***	***518***	59	88	***518***	***457***	84	84	***704***	***611***
4:45 PM	45	67	***563***	***512***	56	69	***522***	***460***	80	80	***714***	***619***
5:00 PM	58	83	***547***	***497***	81	67	***531***	***468***	68	68	***644***	***559***
5:15 PM	61	95	***555***	***505***	65	68	***553***	***488***	74	74	***612***	***531***
5:30 PM	64	49	***522***	***475***	61	69	***536***	***473***	65	65	***574***	***498***
5:45 PM	35	58	***503***	***457***	34	40	***485***	***428***	52	52	***518***	***449***
6:00 PM	39	55	***456***	***415***	44	41	***422***	***372***	39	39	***460***	***399***
6:15 PM	35	44	***379***	***345***	50	34	***373***	***329***	50	50	***412***	***358***
6:30 PM	42	49	***357***	***325***	47	39	***329***	***290***	41	41	***364***	***316***
6:45 PM	35	45	***344***	***313***	33	29	***317***	***280***	50	50	***360***	***312***
7:00 PM	39	27	***316***	***287***	31	27	***290***	***256***	26	26	***334***	***290***
7:15 PM	28	44	***309***	***281***	31	22	***259***	***229***	26	26	***286***	***248***
7:30 PM	34	30	***282***	***257***	29	29	***231***	***204***	31	31	***266***	***231***
7:45 PM	36	36	***274***	***249***	34	23	***226***	***200***	26	26	***218***	***189***
8:00 PM	23	30	***261***	***238***	33	33	***234***	***207***	38	38	***242***	***210***
8:15 PM	32	41	***262***	***238***	33	37	***251***	***222***	44	44	***278***	***241***
8:30 PM	24	35	***257***	***234***	24	26	***243***	***215***	17	17	***250***	***217***
8:45 PM	24	25	***234***	***213***	17	18	***221***	***195***	14	14	***226***	***196***
9:00 PM	24	18	***223***	***203***	23	24	***202***	***178***	27	27	***204***	***177***
9:15 PM	15	14	***179***	***163***	14	21	***167***	***148***	19	19	***154***	***134***
9:30 PM	12	16	***148***	***135***	22	16	***155***	***137***	23	23	***166***	***144***
9:45 PM	14	8	***121***	***110***	10	4	***134***	***119***	21	21	***180***	***156***
10:00 PM	10	12	***101***	***92***	13	7	***107***	***95***	18	18	***162***	***141***
10:15 PM	14	12	***98***	***90***	12	8	***92***	***82***	11	11	***146***	***127***
10:30 PM	9	15	***94***	***86***	15	6	***75***	***67***	7	7	***114***	***99***
10:45 PM	8	7	***87***	***80***	7	9	***77***	***68***	16	16	***104***	***91***
11:00 PM	11	10	***86***	***79***	6	4	***67***	***60***	9	9	***86***	***75***
11:15 PM	6	2	***68***	***62***	6	4	***57***	***51***	9	9	***82***	***72***
11:30 PM	6	3	***53***	***49***	6	5	***47***	***42***	9	9	***86***	***75***
11:45 PM	6	6	***50***	***46***	5	5	***41***	***37***	5	5	***64***	***56***
Totals	3199	3178			3239	3122			3929	3929		
Combined	6377				6361				7858			
Split %	50.2%	49.8%			50.9%	49.1%			50.0%	50.0%		
	W	E			W	E			W	E		
AM Peak H	5:15 AM - 6:15 AM				7:15 AM - 8:15 AM				7:45 AM - 8:45 AM			
Volume	257	100			154	251			233	233		
Combined	**357**				**405**				**466**			
PM Peak H	3:45 PM - 4:45 PM				4:30 PM - 5:30 PM				4:00 PM - 5:00 PM			
Volume	199	371			261	292			357	357		
Combined	**570**				**553**				**714**			

Airport Rd
500 Ft E/O Mesa De La Paz
7/26/2004

Interval	Mon - 7/26			Tues 7-27			Wed - 7/28			Thur - 7/29			Fri - 7/30			Sat - 7/31			Sun - 8/1			Weekday Avg	
Begin	W	E	Total	W	E	Total	W	E	Total	W	E	Total	W	E	Total	W	E	Total	W	E	Total	W	E
12:00 AM	-	-	**0**	0	1	**1**	0	0	**0**	1	1	**2**	1	0	**1**	4	4	**8**	0	3	**3**	0	0
1:00 AM	-	-	**0**	1	0	**1**	2	0	**2**	0	1	**1**	3	2	**5**	0	2	**2**	3	0	**3**	1	0
2:00 AM	-	-	**0**	2	0	**2**	0	1	**1**	0	1	**1**	1	1	**2**	1	0	**1**	4	1	**5**	0	0
3:00 AM	-	-	**0**	0	1	**1**	0	0	**0**	0	1	**1**	1	0	**1**	0	0	**0**	0	0	**0**	0	0
4:00 AM	-	-	**0**	0	3	**3**	0	3	**3**	2	4	**6**	0	3	**3**	0	2	**2**	0	1	**1**	0	3
5:00 AM	-	-	**0**	3	5	**8**	5	9	**14**	3	5	**8**	3	4	**7**	3	4	**7**	0	3	**3**	3	5
6:00 AM	-	-	**0**	6	17	**23**	3	11	**14**	2	8	**10**	4	14	**18**	5	3	**8**	2	3	**5**	3	12
7:00 AM	-	-	**0**	6	23	**29**	6	16	**22**	4	14	**18**	5	13	**18**	3	6	**9**	6	4	**10**	5	16
8:00 AM	-	-	**0**	16	10	**26**	8	14	**22**	5	4	**9**	6	16	**22**	7	4	**11**	4	11	**15**	8	11
9:00 AM	-	-	**0**	12	10	**22**	8	8	**16**	8	11	**19**	8	8	**16**	7	7	**14**	4	9	**13**	9	9
10:00 AM	-	-	**0**	17	16	**33**	10	13	**23**	11	12	**23**	7	7	**14**	4	8	**12**	12	9	**21**	11	12
11:00 AM	4	1	**5**	6	9	**15**	14	13	**27**	7	8	**15**	8	10	**18**	2	2	**4**	9	3	**12**	7	8
12:00 PM	16	10	**26**	13	16	**29**	10	8	**18**	18	8	**26**	13	6	**19**	14	9	**23**	10	15	**25**	14	9
1:00 PM	14	11	**25**	18	12	**30**	10	14	**24**	10	14	**24**	15	14	**29**	10	11	**21**	14	2	**16**	13	13
2:00 PM	17	14	**31**	15	11	**26**	17	15	**32**	13	10	**23**	11	6	**17**	4	9	**13**	10	4	**14**	14	11
3:00 PM	17	11	**28**	18	13	**31**	15	10	**25**	12	10	**22**	12	10	**22**	9	9	**18**	12	5	**17**	14	10
4:00 PM	30	15	**45**	21	10	**31**	14	15	**29**	17	10	**27**	10	10	**20**	14	7	**21**	6	7	**13**	18	12
5:00 PM	18	10	**28**	15	14	**29**	20	9	**29**	16	10	**26**	15	9	**24**	9	8	**17**	7	10	**17**	16	10
6:00 PM	15	8	**23**	17	8	**25**	19	8	**27**	13	8	**21**	15	15	**30**	14	10	**24**	9	11	**20**	15	9
7:00 PM	7	12	**19**	8	7	**15**	13	15	**28**	9	10	**19**	11	6	**17**	5	7	**12**	10	11	**21**	9	10
8:00 PM	2	4	**6**	8	5	**13**	7	6	**13**	9	4	**13**	5	1	**6**	12	5	**17**	6	7	**13**	6	4
9:00 PM	6	7	**13**	3	1	**4**	0	4	**4**	2	2	**4**	2	4	**6**	8	4	**12**	5	4	**9**	2	3
10:00 PM	6	8	**14**	3	3	**6**	1	4	**5**	1	1	**2**	5	6	**11**	9	7	**16**	7	4	**11**	3	4
11:00 PM	2	4	**6**	1	4	**5**	1	2	**3**	6	1	**7**	2	3	**5**	9	8	**17**	1	1	**2**	2	2
Totals	154	115		209	199		183	198		169	158		163	168		153	136		141	128		173	173
Combined	269			408			381			327			331			289			269			346	
Split %	57.2%	42.8%		51.2%	48.8%		48.0%	52.0%		51.7%	48.3%		49.2%	50.8%		52.9%	47.1%		52.4%	47.6%		50.0%	50.0%
AM Peak Hr	-	-		10:00 AM	7:00 AM		11:00 AM	7:00 AM		10:00 AM	7:00 AM		9:00 AM	8:00 AM		8:00 AM	10:00 AM		10:00 AM	8:00 AM		10:00 AM	7:00 AM
Volume	-	-		17	23		14	16		11	14		8	16		7	8		12	11		11	16
Combined	N/A			40			30			25			24			15			23			27	
PM Peak Hr	4:00 PM	4:00 PM		4:00 PM	12:00 PM		5:00 PM	2:00 PM		12:00 PM	1:00 PM		1:00 PM	6:00 PM		12:00 PM	1:00 PM		1:00 PM	12:00 PM		4:00 PM	1:00 PM
Volume	30	15		21	16		20	15		18	14		15	15		14	11		14	15		18	13
Combined	45			37			35			32			30			25			29			31	

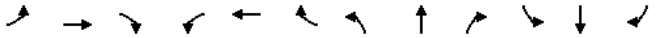
Airport Rd
500 Ft E/O Mesa De La Paz
8/15/2005

Interval Begin	Tues 7-27 E+W	Wed - 7/28 E+W	Thur - 7/29 E+W	Fri - 7/30 E+W	Sat - 7/31 E+W	Sun - 8/1 E+W	Mon - 8/2 E+W	Tues - 8/3 E+W	Tues - Total E+W	Weekday Avg E+W
12:00 AM	-	3	1	2	8	9	3	2	*2*	2
1:00 AM	-	3	1	2	7	1	1	0	*0*	1
2:00 AM	-	4	3	3	4	1	0	0	*0*	2
3:00 AM	-	0	0	1	2	0	0	2	*2*	0
4:00 AM	-	7	4	7	4	5	7	6	*6*	6
5:00 AM	-	15	13	12	7	6	12	14	*14*	13
6:00 AM	-	19	15	23	9	6	21	16	*16*	18
7:00 AM	-	22	36	27	19	14	26	23	*23*	26
8:00 AM	-	22	23	25	19	9	29	38	*38*	27
9:00 AM	-	14	30	21	22	16	25	16	*16*	21
10:00 AM	-	18	20	27	21	16	22	19	*19*	21
11:00 AM	-	25	20	25	16	18	31	32	*32*	26
12:00 PM	-	21	20	18	15	32	25	19	*19*	20
1:00 PM	-	28	23	19	21	20	27	18	*18*	23
2:00 PM	5	24	33	19	19	19	27	-	*5*	21
3:00 PM	26	22	34	24	23	20	38	-	*26*	28
4:00 PM	24	38	39	33	24	16	35	-	*24*	33
5:00 PM	31	28	33	31	17	29	36	-	*31*	31
6:00 PM	35	25	25	20	27	21	34	-	*35*	27
7:00 PM	31	29	17	23	25	24	32	-	*31*	26
8:00 PM	9	17	9	17	10	25	18	-	*9*	14
9:00 PM	4	9	5	9	11	12	10	-	*4*	7
10:00 PM	6	8	10	15	15	4	2	-	*6*	8
11:00 PM	4	6	6	12	9	3	3	-	*4*	6
Totals	incomplete	407	420	415	354	326	464	incomplete	*380*	417
Split W/E ('04 Data)	-	48/52	52/48	49/51	53/47	52/48	57/43	-	*51/49*	-
Estimated Split - W	-	0	0	0	0	0	0	-	*0*	0
Estimated Split - E	-	0	0	0	0	0	0	-	*0*	0
AM Peak Hr	-	11:00 AM	7:00 AM	7:00 AM	9:00 AM	11:00 AM	11:00 AM	-	*8:00 AM*	9:20 AM
Volume	-	25	36	27	22	18	31	-	*38*	31
Estimated Split - W	-	0	0	0	0	0	0	-	*0*	0
Estimated Split - E	-	0	0	0	0	0	0	-	*0*	0
PM Peak Hr	-	4:00 PM	4:00 PM	4:00 PM	6:00 PM	12:00 PM	3:00 AM	-	*12:00 PM*	1:30 PM
Volume	-	38	39	33	27	32	38	-	*19*	33
Estimated Split - W	-	0	0	0	0	0	0	-	*0*	0
Estimated Split - E	-	0	0	0	0	0	0	-	*0*	0

AADT's

						2003	2004	2005	2006	
1489	US 70	331.8	Alder St	335.5	Main St - Thatcher	9400	8600	8700	7600	AADT07
443	US 70	335.5	Main St - Thatcher	336.63	1st Ave	10600	14200	14500	12600	
1490	US 70	336.63	1st Ave	337.96	20th Ave	17000	17500	15100	15900	
1491	US 70	337.96	20th Ave	338.96	8th Ave - Safford	21000	19700	20100	18700	
446	US 70	338.96	8th Ave - Safford	339.46	US 191 South	9000	9500	9700	15600	
447	US 70	339.46	US 191 South	340.05	Hollywood Dr	7000	8000	9700	10900	
1492	US 70	340.05	Hollywood Dr	341.71	20th St	4700	3900	9600	10000	6900
1493	US 70	341.85	20th St	344.37	Bowie Ave / Sanchez Rd	2000	3900	5900	6800	
449	US 70	344.37	Bowie Ave / Sanchez Rd	349.48	US 191 North	1200	1200	4000	5000	
450	US 70	349.48	US 191 North	378.48	Wilson St	1100	1100	1000	960	
451	US 70	378.48	Wilson St	378.91	SR 75 - Duncan	1200	1300	1100	1400	
452	US 70	378.91	SR 75 - Duncan	379.79	7th St	1500	1600	1200	2300	
453	US 70	379.79	7th St	385.25	New Mexico State Line	1400	1400	1700	1200	
454	SR 71	85.81	US 60 - East of Auguila	102.91	US 93	840	650	740	700	
455	SR 71	102.91	US 93	109.68	SR 89 - Congress	740	670	660	750	
855	SR 72	13.11	SR 95	27.04	Main St - Bouse	2700	2900	2500	2800	
456	SR 72	27.04	Main St (Palamosa Rd) - Bouse	49.91	US 60	2400	2200	2300	2300	
457	SR 73	310.38	US 60 - North of Carrizo	319.77	Cedar Creek	1000	730	540	820	
458	SR 73	319.77	Cedar Creek	335.04	BIA Rte 46 (Road to Fort Apache Casino)	1500	1000	800	1300	
459	SR 73	335.04	BIA Rte 46 (Road to Fort Apache Casino)	338.25	White River High School entrance	6700	5400	3100	4400	
1206	SR 73	338.25	White River High School entrance	338.86	BIA Rte 55	9000	11200	9100	11300	
1207	SR 73	338.86	BIA Rte 55	341.95	White River Hospital entrance	7600	7500	6700	8600	
775	SR 73	341.95	White River Hospital entrance	357.72	SR 260 - Hondah	4900	3600	3200	4000	
996	SR 74	0.02	US 60 - Morristown	20.88	Wadell Dam Lookout Rd	4100	4500	4100	5500	
1208	SR 74	20.89	Waddell Dam Lookout Rd	22.29	New River Rd / Lake Pleasant Rd	6700	4900	4300	5800	
1209	SR 74	22.29	New River Rd / Lake Pleasant Rd	30.84	I-17 (Exit 225) / Carefree Hwy	7600	9800	7400	11200	
462	SR 75	378.91	US 70 - Duncan	379.46	Virden Rd	3000	2000	2700	2700	
463	SR 75	379.46	Virden Rd	391.85	Apache Grove Rd	1200	1300	1200	1300	
856	SR 75	391.85	Apache Grove Rd	398.43	US 191 / SR 78	2200	2500	1900	2000	
610	SR 77	68.1	I-10 (Exit 255)	69.54	Oracle Rd / Miracle Mile	38600	33900	25300	30900	
1210	SR 77	69.54	Oracle Rd / Miracle Mile	70.3	Prince Rd	49000	52200	53300	48600	
1211	SR 77	70.3	Prince Rd	70.8	Roger Rd	47600	57300	51400	54800	
1212	SR 77	70.8	Roger Rd	71.3	Wetmore Rd	46000	52600	53600	55200	
1213	SR 77	71.3	Wetmore Rd	72.06	River Rd	45400	47700	49900	52100	
1214	SR 77	72.09	River Rd	73.85	Orange Grove Rd	49100	54700	41100	50200	
1215	SR 77	73.85	Orange Grove Rd	74.84	Ina Rd	51500	53100	55300	51400	
1216	SR 77	74.85	Ina Rd	75.87	Magee Rd	70000	61300	57100	58900	
1217	SR 77	75.87	Magee Rd	76.93	Hardy Rd	49800	51400	44300	55100	
1218	SR 77	76.93	Hardy Rd	78.97	1st Ave	43700	57600	39700	50100	
1219	SR 77	78.97	1st Ave	81.88	Tangerine Rd	49800	31900	28700	30100	
1220	SR 77	81.88	Tangerine Rd	82.75	Rancho Vistoso Rd	29100	36800	30200	38100	
1221	SR 77	82.75	Rancho Vistoso Blvd	85.73	Golder Ranch Rd	27400	32300	30300	34300	
1222	SR 77	85.73	Golder Ranch Rd	91.14	SR 79 - Oracle Jct	12900	26200	25300	30000	
857	SR 77	91.14	SR 79 - Oracle Junction	100.26	S Oracle Rd / Old Hwy 77 - Oracle	8800	9900	8200	8300	

Roadway	Begin Mile Post	Start	End Mile Post	End	AADT 2006	Truck ADT	Percentage of Trucks
US 70	344.37	Bowie Ave / Sanchez Rd	349.48	US 191 North	4994	97	8.00%



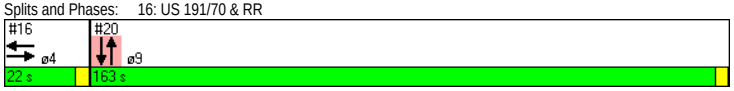
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	359	0	0	338	0	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt												
Flt Protected												
Satd. Flow (prot)	0	1759	0	0	1759	0	0	0	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	1759	0	0	1759	0	0	0	0	0	0	0
Right Turn on Red			Yes			No			No			Yes
Satd. Flow (RTOR)												
Link Speed (mph)		65			65			30			30	
Link Distance (ft)		4525			3881			3088			542	
Travel Time (s)		47.5			40.7			70.2			12.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	8%	8%	8%	8%	8%	8%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	0	399	0	0	376	0	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	399	0	0	376	0	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		1			1							
Detector Template												
Leading Detector (ft)		50			50							
Trailing Detector (ft)		0			0							
Detector 1 Position(ft)		0			0							
Detector 1 Size(ft)		50			50							
Detector 1 Type		Cl+Ex			Cl+Ex							
Detector 1 Channel												
Detector 1 Extend (s)		0.0			0.0							
Detector 1 Queue (s)		0.0			0.0							
Detector 1 Delay (s)		0.0			0.0							
Turn Type												
Protected Phases		4			4							
Permitted Phases												
Detector Phase		4			4							
Switch Phase												
Minimum Initial (s)		4.0			4.0							
Minimum Split (s)		20.0			20.0							
Total Split (s)	0.0	22.0	0.0	0.0	22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Split (%)	0.0%	11.9%	0.0%	0.0%	11.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Maximum Green (s)		18.0			18.0							
Yellow Time (s)		3.5			3.5							

Lane Group	ø9
Lane Configurations	
Volume (vph)	
Ideal Flow (vphpl)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	159.0
Minimum Split (s)	163.0
Total Split (s)	163.0
Total Split (%)	88%
Maximum Green (s)	159.0
Yellow Time (s)	3.5

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)		0.5			0.5							
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)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0			3.0							
Recall Mode		Max			Max							
Act Effct Green (s)		54.6			54.6							
Actuated g/C Ratio		0.82			0.82							
v/c Ratio		0.28			0.26							
Control Delay		19.1			19.4							
Queue Delay		0.0			0.0							
Total Delay		19.1			19.4							
LOS		B			B							
Approach Delay		19.1			19.4							
Approach LOS		B			B							
Queue Length 50th (ft)		0			0							
Queue Length 95th (ft)		#1017			#954							
Internal Link Dist (ft)		4445			3801			3008			462	
Turn Bay Length (ft)												
Base Capacity (vph)		1441			1441							
Starvation Cap Reductn		0			0							
Spillback Cap Reductn		0			0							
Storage Cap Reductn		0			0							
Reduced v/c Ratio		0.28			0.26							

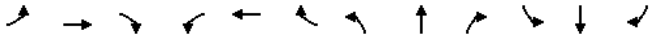
Intersection Summary			
Area Type:	Other		
Cycle Length: 185			
Actuated Cycle Length: 66.6			
Natural Cycle: 185			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.28			
Intersection Signal Delay: 19.2		Intersection LOS: B	
Intersection Capacity Utilization 22.2%		ICU Level of Service A	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 16: US 191/70 & RR



Lane Group	ø9
All-Red Time (s)	0.5
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary



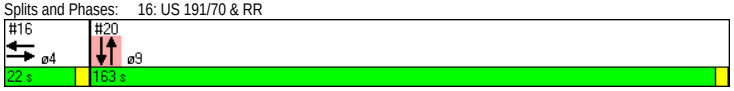
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	359	0	0	338	0	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt												
Flt Protected												
Satd. Flow (prot)	0	3343	0	0	3343	0	0	0	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	3343	0	0	3343	0	0	0	0	0	0	0
Right Turn on Red			Yes			No			No			Yes
Satd. Flow (RTOR)												
Link Speed (mph)		65			65			30			30	
Link Distance (ft)		4525			3881			3088			542	
Travel Time (s)		47.5			40.7			70.2			12.3	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	8%	8%	8%	8%	8%	8%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	0	422	0	0	398	0	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	422	0	0	398	0	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		1			1							
Detector Template												
Leading Detector (ft)		50			50							
Trailing Detector (ft)		0			0							
Detector 1 Position(ft)		0			0							
Detector 1 Size(ft)		50			50							
Detector 1 Type		Cl+Ex			Cl+Ex							
Detector 1 Channel												
Detector 1 Extend (s)		0.0			0.0							
Detector 1 Queue (s)		0.0			0.0							
Detector 1 Delay (s)		0.0			0.0							
Turn Type												
Protected Phases		4			4							
Permitted Phases												
Detector Phase		4			4							
Switch Phase												
Minimum Initial (s)		4.0			4.0							
Minimum Split (s)		20.0			20.0							
Total Split (s)	0.0	22.0	0.0	0.0	22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Split (%)	0.0%	11.9%	0.0%	0.0%	11.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Maximum Green (s)		18.0			18.0							
Yellow Time (s)		3.5			3.5							

Lane Group	ø9
Lane Configurations	
Volume (vph)	
Ideal Flow (vphpl)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	159.0
Minimum Split (s)	163.0
Total Split (s)	163.0
Total Split (%)	88%
Maximum Green (s)	159.0
Yellow Time (s)	3.5

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)		0.5			0.5							
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)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0			3.0							
Recall Mode		Max			Max							
Act Effct Green (s)		54.6			54.6							
Actuated g/C Ratio		0.82			0.82							
v/c Ratio		0.15			0.15							
Control Delay		20.3			20.7							
Queue Delay		0.0			0.0							
Total Delay		20.3			20.7							
LOS		C			C							
Approach Delay		20.3			20.7							
Approach LOS		C			C							
Queue Length 50th (ft)		0			0							
Queue Length 95th (ft)		#426			#396							
Internal Link Dist (ft)		4445			3801			3008			462	
Turn Bay Length (ft)												
Base Capacity (vph)		2739			2739							
Starvation Cap Reductn		0			0							
Spillback Cap Reductn		0			0							
Storage Cap Reductn		0			0							
Reduced v/c Ratio		0.15			0.15							

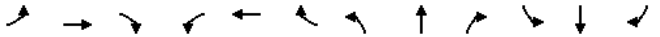
Intersection Summary			
Area Type:	Other		
Cycle Length: 185			
Actuated Cycle Length: 66.6			
Natural Cycle: 185			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.15			
Intersection Signal Delay: 20.5		Intersection LOS: C	
Intersection Capacity Utilization 13.3%		ICU Level of Service A	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 16: US 191/70 & RR



Lane Group	ø9
All-Red Time (s)	0.5
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary



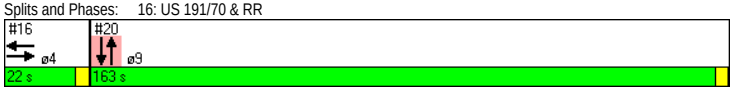
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	2276	0	0	2143	0	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt												
Flt Protected												
Satd. Flow (prot)	0	1759	0	0	1759	0	0	0	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	1759	0	0	1759	0	0	0	0	0	0	0
Right Turn on Red			Yes			No			No			Yes
Satd. Flow (RTOR)												
Link Speed (mph)		65			65			30			30	
Link Distance (ft)		4525			3881			3088			542	
Travel Time (s)		47.5			40.7			70.2			12.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	8%	8%	8%	8%	8%	8%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	0	2529	0	0	2381	0	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	2529	0	0	2381	0	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		1			1							
Detector Template												
Leading Detector (ft)		50			50							
Trailing Detector (ft)		0			0							
Detector 1 Position(ft)		0			0							
Detector 1 Size(ft)		50			50							
Detector 1 Type		Cl+Ex			Cl+Ex							
Detector 1 Channel												
Detector 1 Extend (s)		0.0			0.0							
Detector 1 Queue (s)		0.0			0.0							
Detector 1 Delay (s)		0.0			0.0							
Turn Type												
Protected Phases		4			4							
Permitted Phases												
Detector Phase		4			4							
Switch Phase												
Minimum Initial (s)		4.0			4.0							
Minimum Split (s)		20.0			20.0							
Total Split (s)	0.0	22.0	0.0	0.0	22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Split (%)	0.0%	11.9%	0.0%	0.0%	11.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Maximum Green (s)		18.0			18.0							
Yellow Time (s)		3.5			3.5							

Lane Group	ø9
Lane Configurations	
Volume (vph)	
Ideal Flow (vphpl)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	159.0
Minimum Split (s)	163.0
Total Split (s)	163.0
Total Split (%)	88%
Maximum Green (s)	159.0
Yellow Time (s)	3.5

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)		0.5			0.5							
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)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0			3.0							
Recall Mode		Max			Max							
Act Effct Green (s)		54.6			54.6							
Actuated g/C Ratio		0.82			0.82							
v/c Ratio		1.76			1.65							
Control Delay		357.3			310.9							
Queue Delay		0.0			0.0							
Total Delay		357.3			310.9							
LOS		F			F							
Approach Delay		357.3			310.9							
Approach LOS		F			F							
Queue Length 50th (ft)		~353			~286							
Queue Length 95th (ft)		#6335			#5976							
Internal Link Dist (ft)		4445			3801			3008			462	
Turn Bay Length (ft)												
Base Capacity (vph)		1441			1441							
Starvation Cap Reductn		0			0							
Spillback Cap Reductn		0			0							
Storage Cap Reductn		0			0							
Reduced v/c Ratio		1.76			1.65							

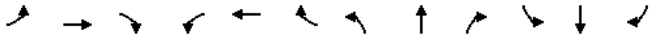
Intersection Summary			
Area Type:	Other		
Cycle Length: 185			
Actuated Cycle Length: 66.6			
Natural Cycle: 185			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.76			
Intersection Signal Delay: 334.8		Intersection LOS: F	
Intersection Capacity Utilization 123.1%		ICU Level of Service H	
Analysis Period (min) 15			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 16: US 191/70 & RR



Lane Group	ø9
All-Red Time (s)	0.5
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary



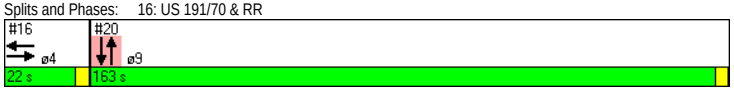
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	2276	0	0	2143	0	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt												
Flt Protected												
Satd. Flow (prot)	0	3343	0	0	3343	0	0	0	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	3343	0	0	3343	0	0	0	0	0	0	0
Right Turn on Red			Yes			No			No			Yes
Satd. Flow (RTOR)												
Link Speed (mph)		65			65			30			30	
Link Distance (ft)		4525			3881			3088			542	
Travel Time (s)		47.5			40.7			70.2			12.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	8%	8%	8%	8%	8%	8%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	0	2529	0	0	2381	0	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	2529	0	0	2381	0	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		1			1							
Detector Template												
Leading Detector (ft)		50			50							
Trailing Detector (ft)		0			0							
Detector 1 Position(ft)		0			0							
Detector 1 Size(ft)		50			50							
Detector 1 Type		Cl+Ex			Cl+Ex							
Detector 1 Channel												
Detector 1 Extend (s)		0.0			0.0							
Detector 1 Queue (s)		0.0			0.0							
Detector 1 Delay (s)		0.0			0.0							
Turn Type												
Protected Phases		4			4							
Permitted Phases												
Detector Phase		4			4							
Switch Phase												
Minimum Initial (s)		4.0			4.0							
Minimum Split (s)		20.0			20.0							
Total Split (s)	0.0	22.0	0.0	0.0	22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Split (%)	0.0%	11.9%	0.0%	0.0%	11.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Maximum Green (s)		18.0			18.0							
Yellow Time (s)		3.5			3.5							

Lane Group	ø9
Lane Configurations	
Volume (vph)	
Ideal Flow (vphpl)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	159.0
Minimum Split (s)	163.0
Total Split (s)	163.0
Total Split (%)	88%
Maximum Green (s)	159.0
Yellow Time (s)	3.5

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)		0.5			0.5							
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)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0			3.0							
Recall Mode		Max			Max							
Act Effct Green (s)		54.6			54.6							
Actuated g/C Ratio		0.82			0.82							
v/c Ratio		0.92			0.87							
Control Delay		20.9			18.5							
Queue Delay		0.0			0.0							
Total Delay		20.9			18.5							
LOS		C			B							
Approach Delay		20.9			18.5							
Approach LOS		C			B							
Queue Length 50th (ft)		0			0							
Queue Length 95th (ft)		#3232			#3043							
Internal Link Dist (ft)		4445			3801			3008			462	
Turn Bay Length (ft)												
Base Capacity (vph)		2739			2739							
Starvation Cap Reductn		0			0							
Spillback Cap Reductn		0			0							
Storage Cap Reductn		0			0							
Reduced v/c Ratio		0.92			0.87							

Intersection Summary			
Area Type:	Other		
Cycle Length: 185			
Actuated Cycle Length: 66.6			
Natural Cycle: 185			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 19.8		Intersection LOS: B	
Intersection Capacity Utilization 66.2%		ICU Level of Service C	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 16: US 191/70 & RR



Lane Group	ø9
All-Red Time (s)	0.5
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

HCS+: Two-Lane Highways Release 5.2

Phone: Fax:
E-Mail:

Two-Way Two-Lane Highway Segment Analysis

Analyst	SGM
Agency/Co.	Wilbur Smith Associates
Date Performed	7/7/08
Analysis Time Period	PM Peak Hour
Highway	U.S. 70
From/To	MP 341.85 to MP 344.37
Jurisdiction	Graham County, ADOT
Analysis Year	2007
Description	Year 2007

Input Data

Highway class	Class 2				
Shoulder width	4.0	ft	Peak-hour factor, PHF	0.90	
Lane width	12.0	ft	% Trucks and buses	8	%
Segment length	2.5	mi	% Recreational vehicles	0	%
Terrain type	Level		% No-passing zones	5	%
Grade: Length		mi	Access points/mi	3	/mi
Up/down		%			
Two-way hourly volume, V	697	veh/h			
Directional split	52 / 48	%			

Average Travel Speed

Grade adjustment factor, fG	1.00	
PCE for trucks, ET	1.2	
PCE for RVs, ER	1.0	
Heavy-vehicle adjustment factor,	0.984	
Two-way flow rate,(note-1) vp	787	pc/h
Highest directional split proportion (note-2)	409	pc/h
Free-Flow Speed from Field Measurement:		
Field measured speed, SFM	-	mi/h
Observed volume, Vf	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed, BFFS	55.0	mi/h
Adj. for lane and shoulder width, fLS	1.3	mi/h
Adj. for access points, fA	0.8	mi/h
Free-flow speed, FFS	53.0	mi/h
Adjustment for no-passing zones, fnp	3.4*	mi/h
Average travel speed, ATS	43.4	mi/h

Percent Time-Spent-Following

Grade adjustment factor, fG	1.00	
PCE for trucks, ET	1.5*	
PCE for RVs, ER	1.1*	
Heavy-vehicle adjustment factor, fHV	0.962	
Two-way flow rate,(note-1) vp	805	pc/h
Highest directional split proportion (note-2)	419	
Base percent time-spent-following, BPTSF	50.7	%
Adj.for directional distribution and no-passing zones, fd/np	2.2	
Percent time-spent-following, PTSF	52.9	%

Level of Service and Other Performance Measures

Level of service, LOS	B	
Volume to capacity ratio, v/c	0.25	
Peak 15-min vehicle-miles of travel, VMT15	484	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1743	veh-mi
Peak 15-min total travel time, TT15	11.1	veh-h

Notes:
1. If vp >= 3200 pc/h, terminate analysis-the LOS is F.
2. If highest directional split vp >= 1700 pc/h, terminate analysis-the LOS is F.

* These items have been entered or edited to override calculated value

HCS+: Two-Lane Highways Release 5.2

Phone: Fax:
E-Mail:

Two-Way Two-Lane Highway Segment Analysis

Analyst	SGM
Agency/Co.	Wilbur Smith Associates
Date Performed	7/7/08
Analysis Time Period	PM Peak Hour
Highway	U.S. 70
From/To	MP 341.85 to MP 344.37
Jurisdiction	Graham County, ADOT
Analysis Year	2007
Description	Year 2030

Input Data

Highway class	Class 2				
Shoulder width	4.0	ft	Peak-hour factor, PHF	0.90	
Lane width	12.0	ft	% Trucks and buses	8	%
Segment length	2.5	mi	% Recreational vehicles	0	%
Terrain type	Level		% No-passing zones	5	%
Grade: Length		mi	Access points/mi	3	/mi
Up/down		%			

Two-way hourly volume, V 4420 veh/h
Directional split 52 / 48 %

Average Travel Speed

Grade adjustment factor, fG	1.00	
PCE for trucks, ET	1.1	
PCE for RVs, ER	1.0	
Heavy-vehicle adjustment factor,	0.992	
Two-way flow rate,(note-1) vp	4950	pc/h
Highest directional split proportion (note-2)	2574	pc/h
Free-Flow Speed from Field Measurement:		
Field measured speed, SFM	-	mi/h
Observed volume, Vf	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed, BFFS	55.0	mi/h
Adj. for lane and shoulder width, fLS	1.3	mi/h
Adj. for access points, fA	0.8	mi/h
Free-flow speed, FFS	53.0	mi/h
Adjustment for no-passing zones, fnp	3.4*	mi/h
Average travel speed, ATS	11.1	mi/h

Percent Time-Spent-Following

Grade adjustment factor, fG	1.00	
PCE for trucks, ET	1.5*	
PCE for RVs, ER	1.1*	
Heavy-vehicle adjustment factor, fHV	0.962	
Two-way flow rate,(note-1) vp	5108	pc/h
Highest directional split proportion (note-2)	2656	
Base percent time-spent-following, BPTSF	98.9	%
Adj.for directional distribution and no-passing zones, fd/np	0.2	
Percent time-spent-following, PTSF	99.1	%

Level of Service and Other Performance Measures

Level of service, LOS	F	
Volume to capacity ratio, v/c	1.55	
Peak 15-min vehicle-miles of travel, VMT15	3069	veh-mi
Peak-hour vehicle-miles of travel, VMT60	11050	veh-mi
Peak 15-min total travel time, TT15	275.5	veh-h

Notes:
1. If vp >= 3200 pc/h, terminate analysis-the LOS is F.
2. If highest directional split vp >= 1700 pc/h, terminate analysis-the LOS is F.

* These items have been entered or edited to override calculated value

HCS+: Multilane Highways Release 5.2

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: SGM
Agency/Co: Wilbur Smith Associates
Date: 7/4/2008
Analysis Period: PM Peak
Highway: U.S. 70
From/To: MP 341.85 to MP 344.37
Jurisdiction: ADOT
Analysis Year: 2030
Project ID: 2030 4-Lane U.S. 70

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	4		4	
Median type	Undivided		Undivided	
Free-flow speed:	Base		Base	
FFS or BFFS	60.0	mph	60.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	1.6	mph	1.6	mph
Access points adjustment, FA	1.0	mph	1.0	mph
Free-flow speed	57.4	mph	57.4	mph

VOLUME

Direction	1		2	
Volume, V	2276	vph	2143	vph
Peak-hour factor, PHF	0.90		0.90	
Peak 15-minute volume, v15	632		595	
Trucks and buses	8	%	8	%
Recreational vehicles	0	%	0	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.962		0.962	
Flow rate, vp	1315	pcphpl	1238	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	1315	pcphpl	1238	pcphpl
Free-flow speed, FFS	57.4	mph	57.4	mph
Avg. passenger-car travel speed, S	57.4	mph	57.4	mph
Level of service, LOS	C		C	
Density, D	22.9	pc/mi/ln	21.6	pc/mi/ln

Overall results are not computed when free-flow speed is less than 45 mph.