Arapahoe Road Corridor Study
I-25 to Parker Road

Final
Corridor Study Report
Technical Appendix

Submitted to

Arapahoe County
10730 E. Briarwood Avenue, Ste. 100
Centennial, CO 80120

Submitted by

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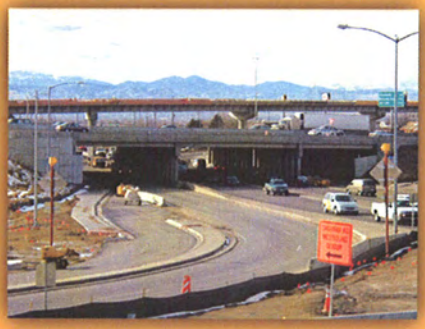
November 2007



ArapahoeRoad corridor study

Corridor Study Report Technical Documentation and Analysis

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APPENDIX A

Probable Construction and Right of Way Costs

Table 1. Summary of Cost for Recommended Improvements

Improvement Element	Opinion of Probable Cost (1)
I-25/Arapahoe Interchange	
• Partial Cloverleaf with Yosemite/Costilla connection	$85 M to $105 M
Arapahoe/Parker Interchange	
• Completion of ramps and grade separation	$52 M
Arapahoe Road Corridor	
• Boston/Clinton to Cherry Creek bridge – Six Lanes with Combination of At-Grade and Grade Separated Intersections	$51 M to $117 M
Parallel and Intersecting Roadways	
• Peakview and Briarwood Intersections, and widening from Dayton to Havana	$4 M
• Briarwood extension across Golf Course	$2.5 M
• Six Lanes Broncos Parkway/Easter (including bike lanes and intersection realignments)	$34 M to $43 M
• Circulator Roads, I-25 to Dayton Street (2)	$15.5 M to $22.5 M (excluding ROW)
Transit Services	
• New call-n-Rides/Flex Routes	$60 K capital cost/ $200 K annual operating cost (per call-n-Ride)
• Limited Route 66 Overlay on Arapahoe Road	$2.2 M capital cost/ $800 K annual operating cost
• Fixed Route Local Service (off of Arapahoe Road)	$3.1 M capital cost/ $800 K annual operating cost
Pedestrian/Bicycle Facilities	
• Sidewalk Improvements	$3.5 M to $5.5 M
• 2 Grade Separated Crossings of Arapahoe Road	$3 M to $5 M
• Cherry Creek Bridge, including Ped/Bike Underpass	$5 M to $10 M (included in Corridor cost)
• Pedestrian Bridge across Cherry Creek	$ 1 M
• Bike Route Signing/Striping	$0.75 M to $1 M
Other Improvement Elements	
• ITS (Signal timing/coordination and communications infrastructure)	$0.4 to $0.6 M

(1) The Opinion of Probable Cost is based on 2007 dollars.

(2) Much of this cost could be borne by adjacent developers in conjunction with redevelopment, with circulator roads in easements.

PROJECT
Arapahoe Road (SH 88) / I-25 Interchange (DR-651)

PROJECT DATA
I-25 Mile Post = 197.189
Arapahoe Road Mile Post = 17

PROJECT DESCRIPTION

- Complete Reconstruction and Replacement of Existing Interchange
- Costs for Two Alternatives have been Estimated:
  - Partial Cloverleaf Interchange with Costilla/Yosemite Connection
  - Single Point Urban Interchange (SPUI) with Costilla/Yosemite Connection

ASSUMPTIONS

- It **will be** necessary to obtain additional ROW
  - Cost for new ROW = $25.00 per Square Foot
- Extensive subsurface utilities issues
- Replacement of existing structures
  - Cost for Partial Cloverleaf = $90.00 per Square Foot
  - Cost for Single Point Urban Interchange = $125.00 per Square Foot
- HMA Pavement at $80.00 per Ton
  - Based on information from the 9/12/2006 Asphalt Newsletter from EEMA

NOTES

- Estimates prepared by Steve Long from David Evans and Associates (DEA).
- Alternatives have been developed as part of the on-going Arapahoe Road Corridor Study (STU C100-021 / 14423).

TOTAL COSTS

Alternative 1: Partial Cloverleaf Interchange with Costilla/Yosemite Connection

COMPONENT	COST
Costilla/Yosemite Connection	$31,242,794.47
Partial Cloverleaf Interchange	$52,694,926.78
Total Cost Alternative 1	**$83,937,721.25**

Alternative 2: Single Point Urban Interchange with Costilla Yosemite Connection

COMPONENT	COST
Costilla/Yosemite Connection	$31,242,794.47
Single Point Urban Interchange	$75,641,610.05
Total Cost Alternative 2	**$106,884,404.52**

	2035 Plan Cost Estimate				
		in 2006 year $$			
Project No:	**DR-651**	**I-25 / Arapahoe Road Interchange**			
Target Construction Begin Yr: All Costs Assume 2006 Prices					
Description: (Arapahoe Road / I-25 Interchange) Costilla / Yosemite Connection					
	% Range		**% Used**	**Cost**	
Project Construction Bid Items	Project Dependent		N/A	$6,067,000.00	(A)
Contingencies	(15% - 30%) of (A)		30.00%	$1,820,100.00	(B)
ITS	(6-10%) of (A+B) Default = 6%		10.00%	$788,710.00	(C)
Drainage/Utilities	(3-10%)of (A+B) Default = 6%		10.00%	$788,710.00	(D)
Signing and Striping	(1-5%) of (A+B+C+D) Default = 5%		5.00%	$473,226.00	(E)
Construction Signing & Traffic Control	5 to 25% of (A+B+C+D+E) Default = 20%		25.00%	$2,484,436.50	(F)
Mobilization	(4 to 10%) of (A+B+C+D+E+F) Default = 7%		10.00%	$1,242,218.25	(G)
Total of Construction Bid Items	(A+B+C+D+E+F+G)			$13,664,400.75	(H)
Force Account - Utilities	(1 to 2%) of (H) Default = 2%		2.00%	$273,288.02	(I)
Force Account - Misc.	(10 to 15%) of (H) Default = 12%		15.00%	$2,049,660.11	(J)
Subtotal of Construction Cost	(H+I+J)			$15,987,348.88	(K)
Total Construction Engineering	21% of (K)		21.00%	$3,357,343.26	(L)
Total Preliminary Engineering	15% of (K)		15.00%	$2,398,102.33	(M)
Right of Way	Project Dependent		N/A	$9,000,000.00	
Utilities	Project Dependent		N/A	$500,000.00	(N)
Total Project Cost				$31,242,794.47	(P)
Date Prepared:	September 21, 2006				
Prepared By:	Steve Long (DEA) / JK Allen				

2035 Plan Cost Estimate

	in 2006 year $$						
Project No:	DR-651	I-25 / Arapahoe Road Interchange					
Target Construction Begin Yr: All Costs Assume 2006 Prices							
Description: (Arapahoe Road / I-25 Interchange) Costilla / Yosemite Connection							
Estimate Worksheet							
	% Range			% Used			
Project Construction Items							
Item Description							
	Quantity	Item Unit	Per Unit Cost			Cost	
Removals / Demolition of Existing Structures	1	Lump Sum	$500,000.00			$500,000.00	
Pavement - HMA	18,500	Tons	$80.00			$1,480,000.00	
Unclassified Excavation (CIP)	93,000	Cubic Yard	$20.00			$1,860,000.00	
Curb and Gutter Type 2 (Section I-B)	3,000	Linear Feet	$15.00			$45,000.00	
Curb and Gutter Type 2 (Section II-B)	8,000	Linear Feet	$20.00			$160,000.00	
Median Cover Material	13,500	Square Feet	$10.00			$135,000.00	
Concrete Sidewalk	7,800	Square Yard	$40.00			$312,000.00	
Structures	17,500	Square Feet	$90.00			$1,575,000.00	
Total accounted construciton items						$6,067,000.00	(a)
Contingencies	(15% - 30%) of (A)			30.00%	Carried to Sheet One		
Established as a percentage							
ITS	(6-10%) of (a+b)			10.00%	Carried to Sheet One		
	Default = 6%						
Drainage/Water/Sewer	(3-10%)of (a+b)			10.00%	Carried to Sheet One		
	Default = 6%						
Signing and Striping	(1-5%) of (a+b+c+d)			5.00%	Carried to Sheet One		
	Default = 5%						
Construction Signing & Traffic Control	5 to 25% of (a+b+c+d+e)			25.00%	Carried to Sheet One		
	Default = 20%						
Mobilization	(4 to 10%) of (a+b+c+d+e+f)			10.00%	Carried to Sheet One		
	Default = 7%						
Total of Construction Items	(a+b+c+d+e+f+g)						
Force Account - Utilities	(1 to 2%) of (h)			5.00%	Carried to Sheet One		
	Default = 2%						
Force Account - Misc.	(10 to 15%) of (h)			15.00%	Carried to Sheet One		
	Default = 12%						
Subtotal of Construction Cost	(h+i+j)						
Total Construction Engineering	21% of (k)			21.00%	Carried to Sheet One		
Total Preliminary Engineering	15% of (k)			15.00%	Carried to Sheet One		
Right of Way	360,000	Square Feet	$25.00	N/A		$9,000,000.00	
Be certain to check that proper values have been carried to Sheet One							
Date Prepared:							
Prepared By:							

	2035 Plan Cost Estimate				
		in 2006 year $$			
Project No:	**DR-651**	**I-25 / Arapahoe Road Interchange**			
Target Construction Begin Yr: All Costs Assume 2006 Prices					
Description: (Arapahoe Road / I-25 Interchange) Partial Cloverleaf Interchange					
	% Range		**% Used**	**Cost**	
Project Construction Bid Items	Project Dependent		N/A	$12,890,000.00	(A)
Contingencies	(15% - 30%) of (A)		30.00%	$3,867,000.00	(B)
ITS	(6-10%) of (A+B) Default = 6%		10.00%	$1,675,700.00	(C)
Drainage/Utilities	(3-10%)of (A+B) Default = 6%		10.00%	$1,675,700.00	(D)
Signing and Striping	(1-5%) of (A+B+C+D) Default = 5%		5.00%	$1,005,420.00	(E)
Construction Signing & Traffic Control	5 to 25% of (A+B+C+D+E) Default = 20%		25.00%	$5,278,455.00	(F)
Mobilization	(4 to 10%) of (A+B+C+D+E+F) Default = 7%		10.00%	$2,639,227.50	(G)
Total of Construction Bid Items	(A+B+C+D+E+F+G)			$29,031,502.50	(H)
Force Account - Utilities	(1 to 2%) of (H) Default = 2%		2.00%	$580,630.05	(I)
Force Account - Misc.	(10 to 15%) of (H) Default = 12%		15.00%	$4,354,725.38	(J)
Subtotal of Construction Cost	(H+I+J)			$33,966,857.93	(K)
Total Construction Engineering	21% of (K)		21.00%	$7,133,040.16	(L)
Total Preliminary Engineering	15% of (K)		15.00%	$5,095,028.69	(M)
Right of Way	Project Dependent		N/A	$5,500,000.00	
Utilities	Project Dependent		N/A	$1,000,000.00	(N)
Total Project Cost				$52,694,926.78	(P)
Date Prepared:	September 21, 2006				
Prepared By:	Steve Long (DEA) / JK Allen				

2035 Plan Cost Estimate

	in 2006 year $$						
Project No:	**DR-651**	**I-25 / Arapahoe Road Interchange**					
Target Construction Begin Yr: All Costs Assume 2006 Prices							
Description: (Arapahoe Road / I-25 Interchange) Partial Cloverleaf Interchange							
Estimate Worksheet							
	% Range			% Used			
Project Construction Items							
Item Description							
	Quantity	Item Unit	Per Unit Cost			Cost	
Removals / Demolition of Existing Structures	1	Lump Sum	$1,000,000.00			$1,000,000.00	
Pavement -HMA	48,000	Tons	$80.00			$3,840,000.00	
Unclassified Excavation (CIP)	200,000	Cubic Yard	$20.00			$4,000,000.00	
Curb and Gutter Type 2 (Section I-B)	8,000	Linear Feet	$15.00			$120,000.00	
Curb and Gutter Type 2 (Section II-B)	12,000	Linear Feet	$20.00			$240,000.00	
Median Cover Material	35,000	Square Feet	$10.00			$350,000.00	
Concrete Sidewalk	7,000	Square Yard	$40.00			$280,000.00	
Structures	34,000	Square Feet	$90.00			$3,060,000.00	
Total accounted construciton items						$12,890,000.00	(a)
Contingencies	(15% - 30%) of (A)			30.00%	Carried to Sheet One		
Established as a percentage							
ITS	(6-10%) of (a+b)			10.00%	Carried to Sheet One		
	Default = 6%						
Drainage/Water/Sewer	(3-10%)of (a+b)			10.00%	Carried to Sheet One		
	Default = 6%						
Signing and Striping	(1-5%) of (a+b+c+d)			5.00%	Carried to Sheet One		
	Default = 5%						
Construction Signing & Traffic Control	5 to 25% of (a+b+c+d+e)			25.00%	Carried to Sheet One		
	Default = 20%						
Mobilization	(4 to 10%) of (a+b+c+d+e+f)			10.00%	Carried to Sheet One		
	Default = 7%						
Total of Construction Items	(a+b+c+d+e+f+g)						
Force Account - Utilities	(1 to 2%) of (h)			2.00%	Carried to Sheet One		
	Default = 2%						
Force Account - Misc.	(10 to 15%) of (h)			15.00%	Carried to Sheet One		
	Default = 12%						
Subtotal of Construction Cost	(h+i+j)						
Total Construction Engineering	21% of (k)			21.00%	Carried to Sheet One		
Total Preliminary Engineering	15% of (k)			15.00%	Carried to Sheet One		
Right of Way	220,000	Square Feet	$25.00			$5,500,000.00	
Be certain to check that proper values have been carried to Sheet One							
Date Prepared:							
Prepared By:							

2035 Plan Cost Estimate

in 2006 year $$

Project No: DR-651 I-25 / Arapahoe Road Interchange

Target Construction Begin Yr: All Costs Assume 2006 Prices

Description: (Arapahoe Road / I-25 Interchange) Single Point Urban Interchange

	% Range	% Used	Cost	
Project Construction Bid Items	Project Dependent	N/A	$20,573,000.00	(A)
Contingencies	(15% - 30%) of (A)	30.00%	$6,171,900.00	(B)
ITS	(6-10%) of (A+B) Default = 6%	10.00%	$2,674,490.00	(C)
Drainage/Utilities	(3-10%)of (A+B) Default = 6%	10.00%	$2,674,490.00	(D)
Signing and Striping	(1-5%) of (A+B+C+D) Default = 5%	5.00%	$1,604,694.00	(E)
Construction Signing & Traffic Control	5 to 25% of (A+B+C+D+E) Default = 25%	25.00%	$8,424,643.50	(F)
Mobilization	(4 to 10%) of (A+B+C+D+E+F) Default = 7%	10.00%	$4,212,321.75	(G)
Total of Construction Bid Items	(A+B+C+D+E+F+G)		$46,335,539.25	(H)
Force Account - Utilities	(1 to 2%) of (H) Default = 2%	2.00%	$926,710.79	(I)
Force Account - Misc.	(10 to 15%) of (H) Default = 12%	15.00%	$6,950,330.89	(J)
Subtotal of Construction Cost	(H+I+J)		$54,212,580.92	(K)
Total Construction Engineering	21% of (K)	21.00%	$11,384,641.99	(L)
Total Preliminary Engineering	15% of (K)	15.00%	$8,131,887.14	(M)
Right of Way	Project Dependent	N/A	$912,500.00	
Utilities	Project Dependent	N/A	$1,000,000.00	(N)
Total Project Cost			$75,641,610.05	(P)

Date Prepared: September 21, 2006

Prepared By: Steve Long (DEA) / JK Allen

2035 Plan Cost Estimate

	In 2006 year $$						
Project No:	DR-651	I-25 / Arapahoe Road Interchange					
Target Construction Begin Yr: All Costs Assume 2006 Prices							
Description: (Arapahoe Road / I-25 Interchange) Single Point Urban Interchange							
Estimate Worksheet							
	% Range			% Used			
Project Construction Items							
Item Description							
	Quantity	Item Unit	Per Unit Cost			Cost	
Removals / Demolition of Existing Structures	1	Lump Sum	$1,000,000.00			$1,000,000.00	
Pavement - HMA	44,000	Tons	$80.00			$3,520,000.00	
Unclassified Excavation (CIP)	170,000	Cubic Yard	$20.00			$3,400,000.00	
Curb and Gutter Type 2 (Section I-B)	8,200	Linear Feet	$15.00			$123,000.00	
Curb and Gutter Type 2 (Section II-B)	9,000	Linear Feet	$20.00			$180,000.00	
Median Cover Material	57,000	Square Feet	$10.00			$570,000.00	
Concrete Sidewalk	7,000	Square Yard	$40.00			$280,000.00	
Structures	92,000	Square Feet	$125.00			$11,500,000.00	
Total accounted construciton items						$20,573,000.00	(a)
Contingencies	(15% - 30%) of (A)			30.00%	Carried to Sheet One		
Established as a percentage							
ITS	(6-10%) of (a+b)			10.00%	Carried to Sheet One		
	Default = 6%						
Drainage/Water/Sewer	(3-10%)of (a+b)			10.00%	Carried to Sheet One		
	Default = 6%						
Signing and Striping	(1-5%) of (a+b+c+d)			5.00%	Carried to Sheet One		
	Default = 5%						
Construction Signing & Traffic Control	5 to 25% of (a+b+c+d+e)			25.00%	Carried to Sheet One		
	Default = 20%						
Mobilization	(4 to 10%) of (a+b+c+d+e+f)			10.00%	Carried to Sheet One		
	Default = 7%						
Total of Construction Items	(a+b+c+d+e+f+g)						
Force Account - Utilities	(1 to 2%) of (h)			2.00%	Carried to Sheet One		
	Default = 2%						
Force Account - Misc.	(10 to 15%) of (h)			15.00%	Carried to Sheet One		
	Default = 12%						
Subtotal of Construction Cost	(h+i+j)						
Total Construction Engineering	21% of (k)			21.00%	Carried to Sheet One		
Total Preliminary Engineering	15% of (k)			15.00%	Carried to Sheet One		
Right of Way	36,500	Square Feet	$25.00			$912,500.00	
Be certain to check that proper values have been carried to Sheet One							
Date Prepared:							
Prepared By:							

PROJECT
Arapahoe Road (SH 88): I-25 to South Potomac Street (DR-564)

PROJECT DATA
Beginning Mile Post = 17
Ending Mile Post = 20
Project Length = 3 miles
Total Project Width = 141 ft

PROJECT DESCRIPTION
- Addition of two (2) through lanes, one (1) in each direction
- Ultimate section will consist of a total of eight (8) lanes

ASSUMPTIONS
- 2-inch overlay on existing asphalt surface
- It will be necessary to obtain additional ROW between I-25 and Lima
  - Existing ROW = 130 ft from I-25 to Lima
  - Existing ROW = 140 ft from Lima to Potomac
  - Cost for new ROW = $25.00 per Square Foot
- Traffic Signals will be replaced at the following intersections:
  - Boston/Clinton
  - Havana
  - Lima
  - Peoria
  - Revere Parkway
  - Potomac
- Retaining walls will be required between I-25 and Havana
- Extensive subsurface utilities issues along Arapahoe Road
- Full-depth (10-inch) HMA at $80.00 per Ton
  - Based on information from the 9/12/2006 Asphalt Newsletter from EEMA

CALCULATIONS
- 2 additional 12 ft lanes = 24 ft
  - Project length = 3 miles x 5,280 ft = 15,840 ft
  - 24 ft x 15,840 ft = 380,160 SF = 42,240 SY
  - 110x10x42,240/2000 = 23,232 Tons HMA for widening
- Existing surface = 6 – 12 ft lanes = 72 ft
  - 72 ft + 32 ft for median with turn lanes = 104 ft
  - 104 ft x 15,840 ft = 1,647,360 SF = 183,040 SY
  - 110x2x183,040/2000 = 20,134 Tons HMA for overlay
- SW and C&G Removal / New
  - SW = 5 ft x 15,840 x 2 = 158,400 SF = 17,600 SY
  - C&G = 15,840 x 2 = 31,680 ft
- New ROW acquisition
  - Additional 12ft required between I-25 and Lima = 1.5 miles = 7,920 ft
  - 7,920 ft x 12 ft x $25/sf = $2,376,000
- Retaining Walls
  - I-25 to Havana = 1 mile = 5,280 ft
  - Walls on both sides = 5,280 x 2 = 10,560 ft
  - Assume 1-tier wall @ 6ft tall = 6 x 10,560 = 63,360 sf wall facing
  - Excavation/Backfill/Soil Reinforcement = 63,360/9= 7,040 sy x 1yard = 7,040 CY

2035 Plan Cost Estimate

in 2006 year $$

Project No: DR-564 **Arapahoe Road (SH 88): I-25 to Potomac Street**

Target Construction Begin Yr:

DESCRIPTION: Add two (2) additional thru lanes for a total of eight (8) lanes; 2-inch overlay of existing asphalt; upgrade traffic signals; ROW acquisition.

	% Range	% Used	Cost	
Project Construction Bid Items	Project Dependent	N/A	$10,484,960.00	(A)
Contingencies	(15% - 30%) of (A)	30.00%	$3,145,488.00	(B)
ITS	(6-10%) of (A+B) Default = 6%	10.00%	$1,363,044.80	(C)
Drainage/Utilities	(3-10%)of (A+B) Default = 6%	10.00%	$1,363,044.80	(D)
Signing and Striping	(1-5%) of (A+B+C+D) Default = 5%	5.00%	$817,826.88	(E)
Construction Signing & Traffic Control	5 to 25% of (A+B+C+D+E) Default = 20%	25.00%	$4,293,591.12	(F)
Mobilization	(4 to 10%) of (A+B+C+D+E+F) Default = 7%	10.00%	$2,146,795.56	(G)
Total of Construction Bid Items	(A+B+C+D+E+F+G)		$23,614,751.16	(H)
Force Account - Utilities	(1 to 2%) of (H) Default = 2%	2.00%	$472,295.02	(I)
Force Account - Misc.	(10 to 15%) of (H) Default = 12%	15.00%	$3,542,212.67	(J)
Subtotal of Construction Cost	(H+I+J)		$27,629,258.86	(K)
Total Construction Engineering	21% of (K)	21.00%	$5,802,144.36	(L)
Total Preliminary Engineering	15% of (K)	15.00%	$4,144,388.83	(M)
Right of Way	Project Dependent	N/A	$2,376,000.00	(N)
Utilities	Project Dependent	N/A	$1,000,000.00	(O)
Total Project Cost			$40,951,792.05	(P)

Date Prepared: September 19, 2006

Prepared By: JK Allen

2035 Plan Cost Estimate

	in 2006 year $$					
Project No:	**DR-564**	**Arapahoe Road (SH 88): I-25 to Potomac Street**				
Target Construction Begin Yr:						
Description: Add two (2) additional thru lanes for a total of eight (8) lanes; 2-inch overlay of existing asphalt; upgrade traffic signals; ROW acquisition.						
Estimate Worksheet						
	% Range		% Used			
Project Construction Items						
	Quantity	Per Unit Cost			Cost	
REMOVALS						
Asphalt Mat Planing (SY)	168,960	$2.00			$337,920.00	
C&G (LF)	31,680	$10.00			$316,800.00	
SW (SY)	17,600	$18.00			$316,800.00	
NEW CONSTRUCTION						
New Full Depth HMA (Ton)	23,232	$80.00			$1,858,560.00	
2-inch Overlay HMA (Ton)	18,586	$80.00			$1,486,880.00	
New SW (SY)	17,600	$50.00			$880,000.00	
New C&G (LF)	31,680	$20.00			$633,600.00	
Retaining Wall Block Face (SF)	63,360	$20.00			$1,267,200.00	
Retaining Wall Excavation (CY)	7,040	$20.00			$140,800.00	
Retaining Wall Backfill (CY)	7,040	$15.00			$105,600.00	
Retaining Wall Mechanical Soil Reinforcement (CY)	7,040	$20.00			$140,800.00	
New Traffic Signals (each)	6	$500,000.00			$3,000,000.00	
Total accounted construciton items					$10,484,960.00	(a)
Contingencies	(15% - 30%) of (A)		20.00%	Carried to Sheet One		
Established as a percentage						
ITS	(6-10%) of (a+b)		6.00%	Carried to Sheet One		
	Default = 6%					
Drainage/Water/Sewer	(3-10%)of (a+b)		6.00%	Carried to Sheet One		
	Default = 6%					
Signing and Striping	(1-5%) of (a+b+c+d)		5.00%	Carried to Sheet One		
	Default = 5%					
Construction Signing & Traffic Control	5 to 25% of (a+b+c+d+e)		20.00%	Carried to Sheet One		
	Default = 20%					
Mobilization	(4 to 10%) of (a+b+c+d+e+f)		7.00%	Carried to Sheet One		
	Default = 7%					
Total of Construction Items	(a+b+c+d+e+f+g)					
Force Account - Utilities	(1 to 2%) of (h)		2.00%	Carried to Sheet One		
	Default = 2%					
Force Account - Misc.	(10 to 15%) of (h)		12.00%	Carried to Sheet One		
	Default = 12%					
Subtotal of Construction Cost	(h+i+j)					
Total Construction Engineering	21% of (k)		21.00%	Carried to Sheet One		
Total Preliminary Engineering	15% of (k)		Budgeted	Carried to Sheet One		
Right of Way	Project Dependent		N/A			
Utilities	Project Dependent		N/A			
Be certain to check that proper values have been carried to Sheet One						
Date Prepared:						
Prepared By:						

Arapahoe Road Corridor Study
Preliminary Engineering Analysis

Draft 07/26/06
by: SNL

* Consistent with CDOT 2035 Plan cost estimate

Add Break-Down and Shoulders

Typical section

	East Bound						West Bound					
	Sidewalk & Landscape	C&G	Shoulder	Aux. Lane	Trvl. Lane	Median	Trvl. Lane	Aux. Lane	Shoulder	C&G	Sidewalk & Landscape	Totals
				0	3		3	0				
High Range	12	2.5	6	0	36	12	36	0	6	2.5	12	125
Low Range	20	2.5	10	0	36	32	36	0	10	2.5	20	169

Proposed Roadway	Min. = 101	Max. 129	
Proposed Roadway minus C&G	Min. = 96	Max. 124	
Total Proposed Envelope	Min. = 125	Max. 169	

Extisting

	East Bound						West Bound					
	Sidewalk & Landscape	C&G	Shoulder	Aux. Lane	Trvl. Lane	Median	Trvl. Lane	Aux. Lane	Shoulder	C&G	Sidewalk & Landscape	Totals
				0	3		3	0				
High Range	0	2.5	0	0	36	12	36	0	0	2.5	0	89
Low Range	0	2.5	0	0	36	32	36	0	0	2.5	0	109

Existing Roadway	Min. = 89	Max. 109	
Existing Roadway minus C&G	Min. = 84	Max. 104	

	Existing ROW Area				Proposed ROW Area						Additonal ROW Required		Proposed Sidewal/Landscape Easment							
	ROW Width (ft)		Area		Proposed Road Env. width		Proposed Road Env.Area (s.f)		Delta Proposed vs existing (S.F.)	Delta Proposed vs existing (S.F.)	Delta Proposed vs existing (Acres)	Delta Proposed vs existing (Acres)	Proposed Easment Env. width		Proposed easment Env.Area (s.f)		Addditona area for Easment (S.F.)	Addditona area for Easment (S.F.)	Addditona area for Easment (Acres)	Addditona area for Easment (Acres)
Cross Street		Length	S.F.	Acres	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max
Boston/Clinton	130	1250	162500	3.7	101	129	126250	161250	0	0	0	0.00	24	40	30000	50000	0	48750	0.00	1.12
Dayton	130	500	65000	1.5	101	129	50500	64500	0	0	0	0.00	24	40	12000	20000	0	19500	0.00	0.45
Emporia	130	2125	276250	6.3	101	129	214625	274125	0	0	0	0.00	24	40	51000	85000	0	82875	0.00	1.90
Havana	130	1000	130000	3.0	101	129	101000	129000	0	0	0	0.00	24	40	24000	40000	0	39000	0.00	0.90
Kenton	130	750	97500	2.2	101	129	75750	96750	0	0	0	0.00	24	40	18000	30000	0	29250	0.00	0.67
Lima	130	2500	325000	7.5	101	129	252500	322500	0	0	0	0.00	24	40	60000	100000	0	97500	0.00	2.24
Peoria	140	2200	308000	7.1	101	129	222200	283800	0	0	0	0.00	24	40	52800	88000	0	63800	0.00	1.46
Revere Parkway	140	2500	350000	8.0	101	129	252500	322500	0	0	0	0.00	24	40	60000	100000	0	72500	0.00	1.66
Potomac	145	750	108750	2.5	101	129	75750	96750	0	0	0	0.00	24	40	18000	30000	0	18000	0.00	0.41
Abilene	145	1500	217500	5.0	101	129	151500	193500	0	0	0	0.00	24	40	36000	60000	0	36000	0.00	0.83
Jordan	150	3900	585000	13.4	101	129	393900	503100	0	0	0	0.00	24	40	93600	156000	0	74100	0.00	1.70
Helena	150	1300	195000	4.5	101	129	131300	167700	0	0	0	0.00	24	40	31200	52000	0	24700	0.00	0.57
Parker Road																				
Total		20275		64.7					0	0	0	0.00							0.00	13.91
		3.8 miles																		

Costs	Existing Min.	Existing Max	Proposed Min.	Proposed Max.	Proposed Addition w Min.	Proposed Addition width Min.	Equiv. Lanes Min.	Equiv. Lanes Max.	Length of Improvement (miles)	Lane Miles Min.	Lane Miles Max.	Assumed cost per lane mile	Cost Min.	Cost Max.
Roadway	84	104	101	129	17	45	1.42	3.75	3.8	5	14	$2,200,000	$11,967,882	$31,679,688
												Cost/sy		
Sidewalk/Landscape Buffer	0	0	24	40	24	40			3.8	54,067	90,111	$50 /sy	$2,703,333	$4,505,556
									Right of Way S.F. (low)	Right of Way S.F. (high)		Cost per S.F.		
									0	0		$25	$0	$0
											Total		$14,671,215	$36,185,243

Arapahoe Road Corridor Study
Preliminary Engineering Analysis

Draft 07/26/06
by: SNL

* Consistent with CDOT 2035 Plan cost estimate

Widen Arap Road from 6 to 8 Lanes

Typical section

	East Bound						West Bound					
	Sidewalk & Landscape	C&G	Shoulder	Aux. Lane	Trvl. Lanes	Median	Trvl. Lanes	Aux. Lane	Shoulder	C&G	Sidewalk & Landscape	Totals
				0	4		4	0				
High Range	12	2.5	0	0	48	12	48	0	0	2.5	12	137
Low Range	20	2.5	0	0	48	32	48	0	0	2.5	20	173

	Proposed Roadway	Min. = 113	Max. 133
	Proposed Roadway minus C&G	Min. = 108	Max. 128
Extisting	Total Proposed Envelope	Min. = 137	Max. 173

	East Bound						West Bound					
	Sidewalk & Landscape	C&G	Shoulder	Aux. Lane	Trvl. Lanes	Median	Trvl. Lanes	Aux. Lane	Shoulder	C&G	Sidewalk & Landscape	Totals
				0	3		3	0				
High Range	0	2.5	0	0	36	12	36	0	0	2.5	0	89
Low Range	0	2.5	0	0	36	32	36	0	0	2.5	0	109

	Existing Roadway	Min. = 89	Max. 109
	Existing Roadway minus C&G	Min. = 84	Max. 104

	Existing ROW Area				Proposed ROW Area				Additonal ROW Required				Proposed Sidewal/Landscape Easment							
	ROW Width (ft)		Area		Proposed Road Env. width		Proposed Road Env.Area (s.f)		Delta Proposed vs existing (S.F.)	Delta Proposed vs existing (S.F.)	Delta Proposed vs existing (Acres)	Delta Proposed vs existing (Acres)	Proposed Easment Env. width		Proposed easment Env.Area (s.f)		Addditona area for Easment (S.F.)	Addditona area for Easment (S.F.)	Addditona area for Easment (Acres)	Addditona area for Easment (Acres)
Cross Street		Length	S.F.	Acres	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max
Boston/Clinton	130	1250	162500	3.7	113	133	141250	166250	0	3750	0	0.09	24	40	30000	50000	8750	53750	0.20	1.23
Dayton	130	500	65000	1.5	113	133	56500	66500	0	1500	0	0.03	24	40	12000	20000	3500	21500	0.08	0.49
Emporia	130	2125	276250	6.3	113	133	240125	282625	0	6375	0	0.15	24	40	51000	85000	14875	91375	0.34	2.10
Havana	130	1000	130000	3.0	113	133	113000	133000	0	3000	0	0.07	24	40	24000	40000	7000	43000	0.16	0.99
Kenton	130	750	97500	2.2	113	133	84750	99750	0	2250	0	0.05	24	40	18000	30000	5250	32250	0.12	0.74
Lima	130	2500	325000	7.5	113	133	282500	332500	0	7500	0	0.17	24	40	60000	100000	17500	107500	0.40	2.47
Peoria	140	2200	308000	7.1	113	133	248600	292600	0	0	0	0.00	24	40	52800	88000	0	72600	0.00	1.67
Revere Parkway	140	2500	350000	8.0	113	133	282500	332500	0	0	0	0.00	24	40	60000	100000	0	82500	0.00	1.89
Potomac	145	750	108750	2.5	113	133	84750	99750	0	0	0	0.00	24	40	18000	30000	0	21000	0.00	0.48
Abilene	145	1500	217500	5.0	113	133	169500	199500	0	0	0	0.00	24	40	36000	60000	0	42000	0.00	0.96
Jordan	150	3900	585000	13.4	113	133	440700	518700	0	0	0	0.00	24	40	93600	156000	0	89700	0.00	2.06
Helena	150	1300	195000	4.5	113	133	146900	172900	0	0	0	0.00	24	40	31200	52000	0	29900	0.00	0.69
Parker Road																				
Total		20275		64.7					0	24375	0	0.56							1.31	15.77
		3.8 miles																		

Costs	Existing Min.	Existing Max	Proposed Min.	Proposed Max.	Proposed Addition w Min.	Proposed Addition width Min.	Equiv. Lanes Min.	Equiv. Lanes Max.	Length of Improvement (miles)	Lane Miles Min.	Lane Miles Max.	Assumed cost per lane mile	Cost Min.	Cost Max.
Roadway	84	104	113	133	29	49	2.42	4.08	3.8	9	16	$2,200,000	$20,415,799	$34,495,860
												Cost/sy		
Sidewalk/Landscape Buffer	0	0	24	40	24	40			3.8	54,067	90,111	$50 /sy	$2,703,333	$4,505,556
									Right of Way S.F. (low)	Right of Way S.F. (high)		Cost per S.F.		
									0	24375		$25	$0	$609,375
												Total	$23,119,132	$39,610,590

Arapahoe Road Corridor Study
Preliminary Engineering Analysis

Draft 07/26/06
by: SNL

* Consistent with CDOT 2035 Plan cost estimate

Add Aux. Lane

Typical section

	East Bound						West Bound					
	Sidewalk & Landscape	C&G	Shoulder	Aux. Lane	Trvl. Lanes	Median	Trvl. Lanes	Aux. Lane	Shoulder	C&G	Sidewalk & Landscape	Totals
				1	3		3	1				
High Range	12	2.5	0	12	36	12	36	12	0	2.5	12	137
Low Range	20	2.5	0	12	36	32	36	12	0	2.5	20	173

Proposed Roadway	Min. = 113	Max. 133	
Proposed Roadway minus C&G	Min. = 108	Max. 128	
Total Proposed Envelope	Min. = 137	Max. 173	

Extisting

	East Bound						West Bound					
	Sidewalk & Landscape	C&G	Shoulder	Aux. Lane	Trvl. Lanes	Median	Trvl. Lanes	Aux. Lane	Shoulder	C&G	Sidewalk & Landscape	Totals
				0	3		3	0				
High Range	0	2.5	0	0	36	12	36	0	0	2.5	0	89
Low Range	0	2.5	0	0	36	32	36	0	0	2.5	0	109

Existing Roadway	Min. = 89	Max. 109	
Existing Roadway minus C&G	Min. = 84	Max. 104	

	Existing ROW Area				Proposed ROW Area						Additonal ROW Required		Proposed Sidewal/Landscape Easment							
	ROW Width (ft)		Area		Proposed Road Env. width		Proposed Road Env.Area (s.f)		Delta Proposed vs existing (S.F.)	Delta Proposed vs existing (S.F.)	Delta Proposed vs existing (Acres)	Delta Proposed vs existing (Acres)	Proposed Easment Env. width		Proposed easment Env.Area (s.f)		Addditona area for Easment (S.F.)	Addditona area for Easment (S.F.)	Addditona area for Easment (Acres)	Addditona area for Easment (Acres)
Cross Street		Length	S.F.	Acres	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max
Boston/Clinton	130	500	65000	1.5	113	133	56500	66500	0	1500	0	0.03	24	40	12000	20000	3500	21500	0.08	0.49
Dayton	130	500	65000	1.5	113	133	56500	66500	0	1500	0	0.03	24	40	12000	20000	3500	21500	0.08	0.49
Emporia	130	500	65000	1.5	113	133	56500	66500	0	1500	0	0.03	24	40	12000	20000	3500	21500	0.08	0.49
Havana	130	500	65000	1.5	113	133	56500	66500	0	1500	0	0.03	24	40	12000	20000	3500	21500	0.08	0.49
Kenton	130	500	65000	1.5	113	133	56500	66500	0	1500	0	0.03	24	40	12000	20000	3500	21500	0.08	0.49
Lima	130	500	65000	1.5	113	133	56500	66500	0	1500	0	0.03	24	40	12000	20000	3500	21500	0.08	0.49
Peoria	140	500	70000	1.6	113	133	56500	66500	0	0	0	0.00	24	40	12000	20000	0	16500	0.00	0.38
Revere Parkway	140	1000	140000	3.2	113	133	113000	133000	0	0	0	0.00	24	40	24000	40000	0	33000	0.00	0.76
Potomac	145	0	0	0.0	113	133	0	0	0	0	0	0.00	24	40	0	0	0	0	0.00	0.00
Abilene	145	500	72500	1.7	113	133	56500	66500	0	0	0	0.00	24	40	12000	20000	0	14000	0.00	0.32
Jordan	150	500	75000	1.7	113	133	56500	66500	0	0	0	0.00	24	40	12000	20000	0	11500	0.00	0.26
Helena	150	0	0	0.0	113	133	0	0	0	0	0	0.00	24	40	0	0	0	0	0.00	0.00
Parker Road																				
Total		5500		17.2					0	9000	0	0.21							0.48	4.68
		1.0 miles																		

Costs	Existing Min.	Existing Max	Proposed Min.	Proposed Max.	Proposed Addition w Min.	Proposed Addition width Min.	Equiv. Lanes Min.	Equiv. Lanes Max.	Length of Improvement (miles)	Lane Miles Min.	Lane Miles Max.	Assumed cost per lane mile		Cost Min.	Cost Max.
Roadway	84	104	113	133	29	49	2.42	4.08	1.0	3	4	$2,200,000		$5,538,194	$9,357,639
												Cost/sy			
Sidewalk/Landscape Buffer	0	0	24	40	24	40			1.0	14,667	24,444	$50	/sy	$733,333	$1,222 222
									Right of Way S.F. (low)	Right of Way S.F. (high)		Cost per S.F.			
									0	9000		$25		$0	$225,000
													Total	$6,271,528	$10,804,861

Arapahoe Road Corridor Study
Preliminary Engineering Analysis

Draft 05/21/07
by: SNL & JAHA

* Consistent with CDOT 2035 Plan cost estimate

Frontage Roads

Typical section

	East Bound					West Bound					
	Sidewalk & Landscape	C&G	Shoulder	Aux. Lane	Trvl. Lanes	Median	Trvl. Lanes	Aux. Lane	Shoulder	C&G	Sidewalk & Landscape	Totals
				0	1		1	0				
High Range	12	2.5	0	0	12	4	12	0	0	2.5	12	57
Low Range	20	2.5	0	0	12	16	12	0	0	2.5	20	85

Proposed Roadway	Min. = 33	Max. 45	
Proposed Roadway minus C&G	Min. = 28	Max. 40	
Total Proposed Envelope	Min. = 57	Max. 85	

Extisting

	East Bound					West Bound					
	Sidewalk & Landscape	C&G	Shoulder	Aux. Lane	Trvl. Lanes	Median	Trvl. Lanes	Aux. Lane	Shoulder	C&G	Sidewalk & Landscape	Totals
				0	0		0	0				
High Range	0	0	0	0	0	0	0	0	0	0	0	0
Low Range	0	0	0	0	0	0	0	0	0	0	0	0

Existing Roadway	Min. = 0	Max. 0	
Existing Roadway minus C&G	Min. = 0	Max. 0	

Cross Street	Proposed ROW Width (ft)	Length	Area S.F.	Area Acres	Proposed Sidewal/Landscape Easment: Proposed Easment Env. width min	max	Proposed easment Env.Area (s.f) min	max
South Frontage Road	60	1500	90000	2.1	24	40	36000	60000
North Frontage Rd	60	4500	270000	6.2	24	40	108000	180000
Yosemite St	60	5000	300000	6.9	24	40	120000	200000
Yosemite Cir	60	800	48000	1.1	24	40	19200	32000
Boston St	0	2200	0	0.0	24	40	52800	88000
Most ROW exists								
Total		14000	708000	16.3			336000	560000
		2.7 miles						

Costs	Existing Min.	Existing Max	Proposed Min.	Proposed Max.	Proposed Addition wi Min.	Proposed Addition width Min.	Equiv. Lanes Min.	Equiv. Lanes Max.	Length of Improvement (miles)	Lane Miles Min.	Lane Miles Max.	Assumed cost per lane mile	Cost Min.	Cost Max.
Roadway	0	0	30	40	30	40	2.50	3.33	2.7	7	9	$2,200,000	$14,583,333	$19,444,444
Sidewalk/Landscape Buffer	0	0	24	40	24	40			2.7	37,333	62,222	Cost/sy $50 /sy	$1,866,667	$3,111,111
									Right of Way S.F. (low) 708000	Right of Way S.F. (high) 1268000		Cost per S.F. $25	$17,700,000	$31,700,000
												Total	$34,150,000	$54,255,556

Arapahoe Road Corridor Study
Preliminary Engineering Analysis

Draft 07/26/06
by: SNL

* Consistent with CDOT 2035 Plan cost estimate

Boulevard

Typical section

	East Bound						West Bound					
	Sidewalk & Landscape	C&G	C&G	Separator	Trvl. Lanes	Median	Trvl. Lanes	Separator	C&G	C&G	Sidewalk & Landscape	Totals
			Frontage Rd		5		5		Frontage Rd			
High Range	12	2.5	5	16	60	12	60	16	5	2.5	12	203
Low Range	20	2.5	5	16	60	32	60	16	5	2.5	20	239

Proposed Roadway	Min. = 179	Max. 199	
Proposed Roadway minus C&G	Min. = 174	Max. 194	
Total Proposed Envelope	Min. = 203	Max. 239	

Extisting

	East Bound						West Bound					
	Sidewalk & Landscape	C&G	Shoulder	Aux. Lane	Trvl. Lanes	Median	Trvl. Lanes	Aux. Lane	Shoulder	C&G	Sidewalk & Landscape	Totals
				0	3		3	0				
High Range	0	2.5	0	0	36	12	36	0	0	2.5	0	89
Low Range	0	2.5	0	0	36	32	36	0	0	2.5	0	109

Existing Roadway	Min. = 89	Max. 109	
Existing Roadway minus C&G	Min. = 84	Max. 104	

Cross Street	Existing ROW Area: ROW Width (ft)	Length	Area S.F.	Area Acres	Proposed ROW Area: Proposed Road Env. width min	Proposed Road Env. width max	Proposed Road Env.Area (s.f) min	Proposed Road Env.Area (s.f) max	Delta Proposed vs existing (S.F.) min	Delta Proposed vs existing (S.F.) max	Additonal ROW Required: Delta Proposed vs existing (Acres) min	Delta Proposed vs existing (Acres) max
Boston/Clinton	n/a	n/a	0	0.0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Dayton	130	500	65000	1.5	179	199	89500	99500	24500	34500	0.5624426	0.79
Emporia	130	2125	276250	6.3	179	199	380375	422875	104125	146625	2.3903811	3.37
Havana Only on north side	130	1000	65000	1.5	179	199	89500	99500	24500	34500	0.5624426	0.79
Kenton Only on north side	130	750	48750	1.1	179	199	67125	74625	18375	25875	0.421832	0.59
Lima Only on north side	130	2500	162500	3.7	179	199	223750	248750	61250	86250	1.4061065	1.98
Peoria Only on north side	140	2200	154000	3.5	179	199	196900	218900	42900	64900	0.9848485	1.49
Revere Parkway Only on north side	140	2500	175000	4.0	179	199	223750	248750	48750	73750	1.119146	1.69
Potomac Only on north side	145	750	54375	1.2	179	199	67125	74625	12750	20250	0.2926997	0.46
Abilene Only on north side	145	1500	108750	2.5	179	199	134250	149250	25500	40500	0.5853994	0.93
Jordan Only on south side part way	150	1300	97500	2.2	179	199	116350	129350	18850	31850	0.4327365	0.73
Helena	n/a	n/a	0	0.0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Parker Road												
Total		15125		27.7					381500	559000	8.7580349	12.83
		2.86 Miles										

Proposed Sidewal/Landscape Easment: Proposed Easment Env. width min	Proposed Easment Env. width max	Proposed easment Env.Area (s.f) min	Proposed easment Env.Area (s.f) max	Addditona area for Easment (S.F.) min	Addditona area for Easment (S.F.) max	Addditona area for Easment (Acres) min	Addditona area for Easment (Acres) max
12	20	18000	216000	360000	4.96	8.26	

Total Length (ft)

Costs	Existing Min.	Existing Max	Proposed Min.	Proposed Max.	Proposed Addition w Min.	Proposed Addition width Min.	Equiv. Lanes Min.	Equiv. Lanes Max.	Length of Improvement (miles)	Lane Miles Min.	Lane Miles Max.	Assumed cost per lane mile	Cost Min.	Cost Max.
Roadway	84	104	179	199	95	115	7.92	9.58	2.9	23	27	$2,200,000	$49,891,493	$60,394,965
Sidewalk/Landscape Buffer	0	0	24	40	24	40			2.9	40,333	67,222	Cost/sy $50 /sy	$2,016,667	$3,361,111

Right of Way S.F. (low)	Right of Way S.F. (high)	Cost per S.F.		
381500	559000	$25	$9,537,500	$13,975,000
		Total	$51,908,160	$63,756,076

Arapahoe Road Corridor Study
Preliminary Engineering Analysis

Draft 07/26/06
by: SNL

* Consistent with CDOT 2035 Plan cost estimate

Bus/HOV

Typical section

	East Bound						West Bound					
	Sidewalk & Landscape	C&G	Shoulder	Aux. Lane	Trvl. Lanes	Median	Trvl. Lanes	Aux. Lane	Shoulder	C&G	Sidewalk & Landscape	Totals
				1	3		3	1				
High Range	12	2.5	0	12	36	12	36	12	0	2.5	12	137
Low Range	20	2.5	0	12	36	32	36	12	0	2.5	20	173

	Proposed Roadway	Min. = 113	Max. 133
	Proposed Roadway minus C&G	Min. = 108	Max. 128
Extisting	Total Proposed Envelope	Min. = 137	Max. 173

	East Bound						West Bound					
	Sidewalk & Landscape	C&G	Shoulder	Aux. Lane	Trvl. Lanes	Median	Trvl. Lanes	Aux. Lane	Shoulder	C&G	Sidewalk & Landscape	Totals
				0	3		3	0				
High Range	0	2.5	0	0	36	12	36	0	0	2.5	0	89
Low Range	0	2.5	0	0	36	32	36	0	0	2.5	0	109

	Existing Roadway	Min. = 89	Max. 109
	Existing Roadway minus C&G	Min. = 84	Max. 104

	Existing ROW Area				Proposed ROW Area						Additonal ROW Required				Proposed Sidewal/Landscape Easment							
	ROW Width (ft)		Area		Proposed Road Env. width		Proposed Road Env.Area (s.f)		Delta Proposed vs existing (S.F.)	Delta Proposed vs existing (S.F.)	Delta Proposed vs existing (Acres)	Delta Proposed vs existing (Acres)	Proposed Easment Env. width		Proposed easment Env.Area (s.f)		Addditona area for Easment (S.F.)	Addditona area for Easment (S.F.)	Addditona area for Easment (Acres)	Addditona area for Easment (Acres)
Cross Street		Length	S.F.	Acres	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max
Boston/Clinton	130	1250	162500	3.7	113	133	141250	166250	0	3750	0	0.09	24	40	30000	50000	8750	53750	0.20	1.23
Dayton	130	500	65000	1.5	113	133	56500	66500	0	1500	0	0.03	24	40	12000	20000	3500	21500	0.08	0.49
Emporia	130	2125	276250	6.3	113	133	240125	282625	0	6375	0	0.15	24	40	51000	85000	14875	91375	0.34	2.10
Havana	130	1000	130000	3.0	113	133	113000	133000	0	3000	0	0.07	24	40	24000	40000	7000	43000	0.16	0.99
Kenton	130	750	97500	2.2	113	133	84750	99750	0	2250	0	0.05	24	40	18000	30000	5250	32250	0.12	0.74
Lima	130	2500	325000	7.5	113	133	282500	332500	0	7500	0	0.17	24	40	60000	100000	17500	107500	0.40	2.47
Peoria	140	2200	308000	7.1	113	133	248600	292600	0	0	0	0.00	24	40	52800	88000	0	72600	0.00	1.67
Revere Parkway	140	2500	350000	8.0	113	133	282500	332500	0	0	0	0.00	24	40	60000	100000	0	82500	0.00	1.89
Potomac	145	750	108750	2.5	113	133	84750	99750	0	0	0	0.00	24	40	18000	30000	0	21000	0.00	0.48
Abilene	145	1500	217500	5.0	113	133	169500	199500	0	0	0	0.00	24	40	36000	60000	0	42000	0.00	0.96
Jordan	150	3900	585000	13.4	113	133	440700	518700	0	0	0	0.00	24	40	93600	156000	0	89700	0.00	2.06
Helena	150	1300	195000	4.5	113	133	146900	172900	0	0	0	0.00	24	40	31200	52000	0	29900	0.00	0.69
Parker Road																				
Total		20275		64.7					0	24375	0	0.56							1.31	15.77
		3.8 miles																		

Costs	Existing Min.	Existing Max	Proposed Min.	Proposed Max.	Proposed Addition w Min.	Proposed Addition width Min.	Equiv. Lanes Min.	Equiv. Lanes Max.	Length of Improvement (miles)	Lane Miles Min.	Lane Miles Max.	Assumed cost per lane mile	Cost Min.	Cost Max.
Roadway	84	104	113	133	29	49	2.42	4.08	3.8	9	16	$2,200,000	$20,415,799	$34,495.660
Sidewalk/Landscape Buffer	0	0	24	40	24	40			3.8	54,067	90,111	Cost/sy $50 /sy	$2,703,333	$4,505,556
									Right of Way S.F. (low) 0	Right of Way S.F. (high) 24375		Cost per S.F. $25	$0	$609,375
												Total	$23,119,132	$39,001,215

Arapahoe Road Corridor Study
Estimate of Probable Costs
At Grade Options

1/8/2007

Note: The Costs quantities below represents per quadrant costs. The total costs summarized at the bottom of this spreadsheet estimates costs by toal

ITEM NO.	ITEM	UNIT	UNIT COST	APPROX. QUANTITY	ESTIMATED COST	COMMENTS
1.0	**REMOVALS**					
	PAVED SURFACES	S.Y.	$3.00	6,222.22	$18,667	Including Curb, Gutter & Sidewalk
	MISCELLANEOUS	L.S.	$0.00	0.00	$0	Removes Major Structural Removal
						Plus Any Other Major Removals
2.0	**EARTHWORK**					
	EARTHWORK	C.Y.	$5.00	2,222.22	$11,111	Includes Fill and Excavation
3.0	**STREET RECONSTRUCTION**					
	PAVEMENT	S.Y.	$30.00	6,222.22	$186,667	
	CURB, GUTTER & SIDEWALK	S.F.	$5.00	8,000.00	$40,000	Includes One Side of Roadway
	CONCRETE BIKEWAY / TRAIL	S.Y.	$18.00	0.00	$0	One Bikepath/Trail
4.0	**BRIDGES/STRUCTURES**					
	MAINLINE HIGHWAY	S.F.	$65.00	0.00	$0	
	ARTERIAL	S.F.	$60.00	0.00	$0	
	RAMP FLYOVER	S.F.	$70.00	0.00	$0	
	DRAINAGE BRIDGE	S.F.	$60.00	0.00	$0	
	PEDESTRIAN BRIDGE	S.F.	$80.00	0.00	$0	
	BRIDGE, LIGHT REHAB	L.F.	$500.00	0.00	$0	
	BRIDGE MEDIUM REHAB	L.F.	$800.00	0.00	$0	
	BRIDGE HEAVY REHAB	L.F.	$1,000.00	0.00	$0	
5.0	**RETAINING WALLS**					
	0 TO 10'	S.F.	$45.00	0.00	$0	
	10 TO 20'	S.F.	$55.00	0.00	$0	
	> 20'	S.F.	$65.00	0.00	$0	
6.0	**BOX CULVERT**					
	CBC (8' X 4')	L.F.	$275.00	0.00	$0	
	CBC (8' X 6')	L.F.	$350.00	0.00	$0	
	CBC (10' X 4')	L.F.	$370.00	0.00	$0	
	CBC (10' X 6')	L.F.	$410.00	0.00	$0	
	CBC (12' X 8')	L.F.	$580.00	0.00	$0	
7.0	**LIGHTING**					
	HIGHWAY	MILE	$55,000.00	0.00	$0	
	ARTERIAL	MILE	$100,000.00	0.15	$15,152	
8.0	**TRAFFIC SIGNALS**					
	UPGRADE EXISTING	EACH	$50,000.00	1.00	$50,000	
	COMPLETE	EACH	$200,000.00	0.00	$0	
	SUBTOTAL (A)				**$321,596**	
8.0	**DRAINAGE**	5 % OF (A)		0.05	$16,080	
9.0	**UTILITY RELOCATION**	4 % OF (A)		0.04	$12,864	
10.0	**NOISE / ENVIRONMENTAL ABATEMENT / MITIGATION**					
	RESIDENTIAL	3 % OF (A)		0.03		Use Only One Of These
	COMMERCIAL	2 % OF (A)		0.02	$6,432	Use Only One Of These
	INDUSTRIAL	1 % OF (A)		0.01		Use Only One Of These
11.0	**SIGNING AND STRIPING**					
	INTERSTATE	5 % OF (A)		0.05		Use Only One Of These
	STATE HIGHWAY	4 % OF (A)		0.04		Use Only One Of These
	ARTERIAL	2 % OF (A)		0.02	$6,432	Use Only One Of These
	RAIL CORRIDOR	1 % OF (A)		0.01		Use Only One Of These

12.0	CONSTRUCTION TRAFFIC CONTROL					
	INTERSTATE	5 % OF (A)		0.05		Use Only One Of These
	STATE HIGHWAY	5 % OF (A)		0.05		Use Only One Of These
	ARTERIAL	7.5 % OF (A)		0.075	$24,120	Use Only One Of These
	RAIL CORRIDOR	3 % OF (A)		0.03		Use Only One Of These
13.0	URBAN DESIGN / LANDSCAPING					
	RESIDENTIAL	4 % OF (A)		0.04		Use Only One Of These
	COMMERCIAL	2 % OF (A)		0.02	$6,432	Use Only One Of These
	INDUSTRIAL	1 % OF (A)		0.01		Use Only One Of These
	TOTAL COST OF CONSTRUCTION BID ITEMS (CBI)				$393,955	
14.0	MOBILIZATION	10 % OF (CBI)		0.10	$39,396	
15.0	CONTINGENCIES & OTHER COSTS					
	CONTINGENCIES	40 % OF (CBI)		0.40	$157,582	
	ENGINEERING (DESIGN)	12 % OF (CBI)		0.12	$47,275	
	CONSTRUCTION MANAGEMENT	10 % OF (CBI)		0.10	$39,396	
	OTHER	2 % OF (CBI)		0.02	$7,879	
	TOTAL	49% OF (CBI)				
	TOTAL COST OF CONSTRUCTION BID ITEMS PLUS MOBILIZATION AND CONTINGENCI				$685,482	
16.0	RIGHT-OF-WAY					
	LOW RANGE	S.F.	$4.00	12,000.00	$48,000	Low Range Estimate For ROW
	HIGH RANGE	S.F.	$8.00	16,000.00	$128,000	High Range Estimate For ROW
	GRAND TOTAL WITH LOW RANGE RIGHT OF WAY				$733,482	
	GRAND TOTAL WITH HIGH RANGE RIGHT OF WAY				$813,482	
	GRAND TOTAL LOW RANGE	One Quadrant			$660,134	One Quadrant
	GRAND TOTAL HIGH RANGE	One Quadrant			$1,016,852	One Quadrant

Total Effected Quadrants	Low Range	High Range
1	$660,134	$1,016,852
2	$1,320,267	$2,033,704
3	$1,980,401	$3,050,557
4	$2,640,534	$4,067,409

Arapahoe Road Corridor Study
Estimate of Probable Costs
Revere Pkwy - Jr.

1/8/2007

ITEM NO.	ITEM	UNIT	UNIT COST	APPROX. QUANTITY	ESTIMATED COST	COMMENTS
1.0	**REMOVALS**					
	PAVED SURFACES	S.Y.	$3.00	33,333.33	$100,000	Including Curb, Gutter & Sidewalk
	MISCELLANEOUS	L.S.	$0.00	0.00	$0	Removes Major Structural Removal
						Plus Any Other Major Removals
2.0	**EARTHWORK**					
	EARTHWORK	C.Y.	$5.00	111,111.11	$555,556	Includes Fill and Excavation
3.0	**STREET RECONSTRUCTION**					
	PAVEMENT ARTERIAL	S.Y.	$35.00	33,333.33	$1,166,667	
	PAVEMENT SIDESTREET	S.Y.	$30.00	6,666.67	$200,000	
	CURB, GUTTER & SIDEWALK	S.F.	$5.00	78,000.00	$390,000	Includes One Side of Roadway
	CONCRETE BIKEWAY / TRAIL	S.Y.	$18.00	0.00	$0	One Bikepath/Trail
4.0	**BRIDGES/STRUCTURES**					
	MAINLINE HIGHWAY	S.F.	$65.00	22,100.00	$1,436,500	
	ARTERIAL	S.F.	$60.00	0.00	$0	
	RAMP FLYOVER	S.F.	$70.00	0.00	$0	
	DRAINAGE BRIDGE	S.F.	$60.00	0.00	$0	
	PEDESTRIAN BRIDGE	S.F.	$80.00	0.00	$0	
	BRIDGE, LIGHT REHAB	L.F.	$500.00	0.00	$0	
	BRIDGE MEDIUM REHAB	L.F.	$800.00	0.00	$0	
	BRIDGE HEAVY REHAB	L.F.	$1,000.00	0.00	$0	
5.0	**RETAINING WALLS**					
	0 TO 10'	S.F.	$45.00	3,500.00	$157,500	
	10 TO 20'	S.F.	$55.00	10,500.00	$577,500	
	> 20'	S.F.	$65.00	20,000.00	$1,300,000	
6.0	**BOX CULVERT**					
	CBC (8' X 4')	L.F.	$275.00	0.00	$0	
	CBC (8' X 6')	L.F.	$350.00	0.00	$0	
	CBC (10' X 4')	L.F.	$370.00	0.00	$0	
	CBC (10' X 6')	L.F.	$410.00	0.00	$0	
	CBC (12' X 8')	L.F.	$580.00	0.00	$0	
7.0	**LIGHTING**					
	HIGHWAY	MILE	$55,000.00	0.00	$0	
	ARTERIAL	MILE	$100,000.00	0.47	$47,348	
8.0	**TRAFFIC SIGNALS**					
	UPGRADE EXISTING	EACH	$50,000.00	0.00	$0	
	COMPLETE	EACH	$200,000.00	2.00	$400,000	
	SUBTOTAL (A)				**$6,331,071**	
8.0	**DRAINAGE**	5 % OF (A)		0.05	$316,554	
9.0	**UTILITY RELOCATION**	4 % OF (A)		0.04	$253,243	
10.0	**NOISE / ENVIRONMENTAL ABATEMENT / MITIGATION**					
	RESIDENTIAL	3 % OF (A)		0.03		Use Only One Of These
	COMMERCIAL	2 % OF (A)		0.02	$126,621	Use Only One Of These
	INDUSTRIAL	1 % OF (A)		0.01		Use Only One Of These
11.0	**SIGNING AND STRIPING**					
	INTERSTATE	5 % OF (A)		0.05		Use Only One Of These
	STATE HIGHWAY	4 % OF (A)		0.04		Use Only One Of These
	ARTERIAL	2 % OF (A)		0.02	$126,621	Use Only One Of These
	RAIL CORRIDOR	1 % OF (A)		0.01		Use Only One Of These

12.0	CONSTRUCTION TRAFFIC CONTROL					
	INTERSTATE	5 % OF (A)		0.05		Use Only One Of These
	STATE HIGHWAY	5 % OF (A)		0.05		Use Only One Of These
	ARTERIAL	7.5 % OF (A)		0.075	$474,830	Use Only One Of These
	RAIL CORRIDOR	3 % OF (A)		0.03		Use Only One Of These
13.0	URBAN DESIGN / LANDSCAPING					
	RESIDENTIAL	4 % OF (A)		0.04		Use Only One Of These
	COMMERCIAL	2 % OF (A)		0.02	$126,621	Use Only One Of These
	INDUSTRIAL	1 % OF (A)		0.01		Use Only One Of These
	TOTAL COST OF CONSTRUCTION BID ITEMS (CBI)			$7,755,562		
14.0	MOBILIZATION	10 % OF (CBI)		0.10	$775,556	
15.0	CONTINGENCIES & OTHER COSTS					
	CONTINGENCIES	40 % OF (CBI)		0.40	$3,102,225	
	ENGINEERING (DESIGN)	12 % OF (CBI)		0.12	$930,667	
	CONSTRUCTION MANAGEMENT	10 % OF (CBI)		0.10	$775,556	
	OTHER	2 % OF (CBI)		0.02	$155,111	
	TOTAL	49% OF (CBI)				
	TOTAL COST OF CONSTRUCTION BID ITEMS PLUS MOBILIZATION AND CONTINGENCI			$13,494,677		
16.0	RIGHT-OF-WAY					
	LOW RANGE	S.F.	$4.00	150,000.00	$600,000	Low Range Estimate For ROW
	HIGH RANGE	S.F.	$8.00	150,000.00	$1,200,000	High Range Estimate For ROW
	GRAND TOTAL WITH LOW RANGE RIGHT OF WAY			$14,094,677		
	GRAND TOTAL WITH HIGH RANGE RIGHT OF WAY			$14,694,677		
	GRAND TOTAL LOW RANGE			$12,685,209		
	GRAND TOTAL HIGH RANGE			$18,368,347		

	Arapahoe Road Corridor Study			**1/8/2007**		
	Estimate of Probable Costs					
	Jordan Road - Flyover					
ITEM NO.	**ITEM**	**UNIT**	**UNIT COST**	**APPROX. QUANTITY**	**ESTIMATED COST**	**COMMENTS**
1.0	**REMOVALS**					
	PAVED SURFACES	S.Y.	$3.00	26,666.67	$80,000	Including Curb, Gutter & Sidewalk
	MISCELLANEOUS	L.S.	$0.00	0.00	$0	Removes Major Structural Removal
						Plus Any Other Major Removals
2.0	**EARTHWORK**					
	EARTHWORK	C.Y.	$5.00	45,370.37	$226,852	Includes Fill and Excavation
3.0	**STREET RECONSTRUCTION**					
	PAVEMENT ARTERIAL	S.Y.	$35.00	46,666.67	$1,633,333	
	PAVEMENT SIDESTREET	S.Y.	$30.00	9,000.00	$270,000	
	CURB, GUTTER & SIDEWALK	S.F.	$5.00	54,000.00	$270,000	Includes One Side of Roadway
	CONCRETE BIKEWAY / TRAIL	S.Y.	$18.00	0.00	$0	One Bikepath/Trail
4.0	**BRIDGES/STRUCTURES**					
	MAINLINE HIGHWAY	S.F.	$65.00	0.00	$0	
	ARTERIAL	S.F.	$60.00	0.00	$0	
	RAMP FLYOVER	S.F.	$70.00	22,000.00	$1,540,000	
	DRAINAGE BRIDGE	S.F.	$60.00	0.00	$0	
	PEDESTRIAN BRIDGE	S.F.	$80.00	0.00	$0	
	BRIDGE, LIGHT REHAB	L.F.	$500.00	0.00	$0	
	BRIDGE MEDIUM REHAB	L.F.	$800.00	0.00	$0	
	BRIDGE HEAVY REHAB	L.F.	$1,000.00	0.00	$0	
5.0	**RETAINING WALLS**					
	0 TO 10'	S.F.	$45.00	6,000.00	$270,000	
	10 TO 20'	S.F.	$55.00	18,000.00	$990,000	
	> 20'	S.F.	$65.00	30,000.00	$1,950,000	
6.0	**BOX CULVERT**					
	CBC (8' X 4')	L.F.	$275.00	0.00	$0	
	CBC (8' X 6')	L.F.	$350.00	0.00	$0	
	CBC (10' X 4')	L.F.	$370.00	200.00	$74,000	
	CBC (10' X 6')	L.F.	$410.00	0.00	$0	
	CBC (12' X 8')	L.F.	$580.00	0.00	$0	
7.0	**LIGHTING**					
	HIGHWAY	MILE	$55,000.00	0.00	$0	
	ARTERIAL	MILE	$100,000.00	0.66	$66,288	
8.0	**TRAFFIC SIGNALS**					
	UPGRADE EXISTING	EACH	$50,000.00	0.00	$0	
	COMPLETE	EACH	$200,000.00	2.00	$400,000	
	SUBTOTAL (A)				**$7,770,473**	
8.0	**DRAINAGE**	5 % OF (A)		0.05	$388,524	
9.0	**UTILITY RELOCATION**	4 % OF (A)		0.04	$310,819	
10.0	**NOISE / ENVIRONMENTAL ABATEMENT / MITIGATION**					
	RESIDENTIAL	3 % OF (A)		0.03		Use Only One Of These
	COMMERCIAL	2 % OF (A)		0.02	$155,409	Use Only One Of These
	INDUSTRIAL	1 % OF (A)		0.01		Use Only One Of These
11.0	**SIGNING AND STRIPING**					
	INTERSTATE	5 % OF (A)		0.05		Use Only One Of These
	STATE HIGHWAY	4 % OF (A)		0.04		Use Only One Of These
	ARTERIAL	2 % OF (A)		0.02	$155,409	Use Only One Of These
	RAIL CORRIDOR	1 % OF (A)		0.01		Use Only One Of These

12.0	CONSTRUCTION TRAFFIC CONTROL					
	INTERSTATE	5 % OF (A)		0.05		Use Only One Of These
	STATE HIGHWAY	5 % OF (A)		0.05		Use Only One Of These
	ARTERIAL	7.5 % OF (A)		0.075	$582,785	Use Only One Of These
	RAIL CORRIDOR	3 % OF (A)		0.03		Use Only One Of These
13.0	URBAN DESIGN / LANDSCAPING					
	RESIDENTIAL	4 % OF (A)		0.04		Use Only One Of These
	COMMERCIAL	2 % OF (A)		0.02	$155,409	Use Only One Of These
	INDUSTRIAL	1 % OF (A)		0.01		Use Only One Of These
	TOTAL COST OF CONSTRUCTION BID ITEMS (CBI)				$9,518,830	
14.0	MOBILIZATION	10 % OF (CBI)		0.10	$951,883	
15.0	CONTINGENCIES & OTHER COSTS					
	CONTINGENCIES	40 % OF (CBI)		0.40	$3,807,532	
	ENGINEERING (DESIGN)	12 % OF (CBI)		0.12	$1,142,260	
	CONSTRUCTION MANAGEMENT	10 % OF (CBI)		0.10	$951,883	
	OTHER	2 % OF (CBI)		0.02	$190,377	
	TOTAL	49% OF (CBI)				
	TOTAL COST OF CONSTRUCTION BID ITEMS PLUS MOBILIZATION AND CONTINGENCI				$16,562,763	
16.0	RIGHT-OF-WAY					
	LOW RANGE	S.F.	$4.00	160,000.00	$640,000	Low Range Estimate For ROW
	HIGH RANGE	S.F.	$8.00	208,000.00	$1,664,000	High Range Estimate For ROW
	GRAND TOTAL WITH LOW RANGE RIGHT OF WAY				$17,202,763	
	GRAND TOTAL WITH HIGH RANGE RIGHT OF WAY				$18,226,763	
	GRAND TOTAL LOW RANGE				$15,482,487	
	GRAND TOTAL HIGH RANGE				$22,783,454	

	Arapahoe Road Corridor Study			**1/8/2007**		
	Estimate of Probable Costs					
	Potomac - Center Turn Interchange					
ITEM NO.	**ITEM**	**UNIT**	**UNIT COST**	**APPROX. QUANTITY**	**ESTIMATED COST**	**COMMENTS**
1.0	**REMOVALS**					
	PAVED SURFACES	S.Y.	$3.00	26,000.00	$78,000	Including Curb, Gutter & Sidewalk
	MISCELLANEOUS	L.S.	$0.00	0.00	$0	Removes Major Structural Removal
						Plus Any Other Major Removals
2.0	**EARTHWORK**					
	EARTHWORK	C.Y.	$5.00	33,333.33	$166,667	Includes Fill and Excavation
3.0	**STREET RECONSTRUCTION**					
	PAVEMENT ARTERIAL	S.Y.	$35.00	40,000.00	$1,400,000	
	PAVEMENT SIDESTREET	S.Y.	$30.00	18,333.33	$550,000	
	CURB, GUTTER & SIDEWALK	S.F.	$5.00	67,200.00	$336,000	Includes One Side of Roadway
	CONCRETE BIKEWAY / TRAIL	S.Y.	$18.00	0.00	$0	One Bikepath/Trail
4.0	**BRIDGES/STRUCTURES**					
	MAINLINE HIGHWAY	S.F.	$65.00	24,000.00	$1,560,000	
	ARTERIAL	S.F.	$60.00	0.00	$0	
	RAMP FLYOVER	S.F.	$70.00	0.00	$0	
	DRAINAGE BRIDGE	S.F.	$60.00	0.00	$0	
	PEDESTRIAN BRIDGE	S.F.	$80.00	0.00	$0	
	BRIDGE, LIGHT REHAB	L.F.	$500.00	0.00	$0	
	BRIDGE MEDIUM REHAB	L.F.	$800.00	0.00	$0	
	BRIDGE HEAVY REHAB	L.F.	$1,000.00	0.00	$0	
5.0	**RETAINING WALLS**					
	0 TO 10'	S.F.	$45.00	10,000.00	$450,000	
	10 TO 20'	S.F.	$55.00	30,000.00	$1,650,000	
	> 20'	S.F.	$65.00	50,000.00	$3,250,000	
6.0	**BOX CULVERT**					
	CBC (8' X 4')	L.F.	$275.00	0.00	$0	
	CBC (8' X 6')	L.F.	$350.00	0.00	$0	
	CBC (10' X 4')	L.F.	$370.00	0.00	$0	
	CBC (10' X 6')	L.F.	$410.00	0.00	$0	
	CBC (12' X 8')	L.F.	$580.00	0.00	$0	
7.0	**LIGHTING**					
	HIGHWAY	MILE	$55,000.00	0.00	$0	
	ARTERIAL	MILE	$100,000.00	0.76	$75,758	
8.0	**TRAFFIC SIGNALS**					
	UPGRADE EXISTING	EACH	$50,000.00	0.00	$0	
	COMPLETE	EACH	$200,000.00	1.00	$200,000	
	SUBTOTAL (A)				**$9,716,424**	
8.0	**DRAINAGE**	5 % OF (A)		0.05	$485,821	
9.0	**UTILITY RELOCATION**	4 % OF (A)		0.04	$388,657	
10.0	**NOISE / ENVIRONMENTAL ABATEMENT / MITIGATION**					
	RESIDENTIAL	3 % OF (A)		0.03		Use Only One Of These
	COMMERCIAL	2 % OF (A)		0.02	$194,328	Use Only One Of These
	INDUSTRIAL	1 % OF (A)		0.01		Use Only One Of These
11.0	**SIGNING AND STRIPING**					
	INTERSTATE	5 % OF (A)		0.05		Use Only One Of These
	STATE HIGHWAY	4 % OF (A)		0.04		Use Only One Of These
	ARTERIAL	2 % OF (A)		0.02	$194,328	Use Only One Of These
	RAIL CORRIDOR	1 % OF (A)		0.01		Use Only One Of These

12.0	CONSTRUCTION TRAFFIC CONTROL					
	INTERSTATE	5 % OF (A)		0.05		Use Only One Of These
	STATE HIGHWAY	5 % OF (A)		0.05		Use Only One Of These
	ARTERIAL	7.5 % OF (A)		0.075	$728,732	Use Only One Of These
	RAIL CORRIDOR	3 % OF (A)		0.03		Use Only One Of These
13.0	URBAN DESIGN / LANDSCAPING					
	RESIDENTIAL	4 % OF (A)		0.04		Use Only One Of These
	COMMERCIAL	2 % OF (A)		0.02	$194,328	Use Only One Of These
	INDUSTRIAL	1 % OF (A)		0.01		Use Only One Of These
	TOTAL COST OF CONSTRUCTION BID ITEMS (CBI)				$11,902,620	
14.0	MOBILIZATION	10 % OF (CBI)		0.10	$1,190,262	
15.0	CONTINGENCIES & OTHER COSTS					
	CONTINGENCIES	40 % OF (CBI)		0.40	$4,761,048	
	ENGINEERING (DESIGN)	12 % OF (CBI)		0.12	$1,428,314	
	CONSTRUCTION MANAGEMENT	10 % OF (CBI)		0.10	$1,190,262	
	OTHER	2 % OF (CBI)		0.02	$238,052	
	TOTAL	49% OF (CBI)				
	TOTAL COST OF CONSTRUCTION BID ITEMS PLUS MOBILIZATION AND CONTINGENCI				$20,710,558	
16.0	RIGHT-OF-WAY					
	LOW RANGE	S.F.	$4.00	200,000.00	$800,000	Low Range Estimate For ROW
	HIGH RANGE	S.F.	$8.00	200,000.00	$1,600,000	High Range Estimate For ROW
	GRAND TOTAL WITH LOW RANGE RIGHT OF WAY				$21,510,558	
	GRAND TOTAL WITH HIGH RANGE RIGHT OF WAY				$22,310,558	
	GRAND TOTAL LOW RANGE				$19,359,502	
	GRAND TOTAL HIGH RANGE				$27,888,198	

Arapahoe Road Corridor Study
Estimate of Probable Costs
Havana Tight Diamond

1/8/2007

ITEM NO.	ITEM	UNIT	UNIT COST	APPROX. QUANTITY	ESTIMATED COST	COMMENTS
1.0	**REMOVALS**					
	PAVED SURFACES	S.Y.	$3.00	42,222.22	$126,667	Including Curb, Gutter & Sidewalk
	MISCELLANEOUS	L.S.	$0.00	0.00	$0	Removes Major Structural Removal
						Plus Any Other Major Removals
2.0	**EARTHWORK**					
	EARTHWORK	C.Y.	$5.00	200,000.00	$1,000,000	Includes Fill and Excavation
3.0	**STREET RECONSTRUCTION**					
	PAVEMENT ARTERIAL	S.Y.	$35.00	41,666.67	$1,458,333	
	PAVEMENT SIDESTREET	S.Y.	$30.00	17,333.33	$520,000	
	CURB, GUTTER & SIDEWALK	S.F.	$5.00	84,000.00	$420,000	Includes One Side of Roadway
	CONCRETE BIKEWAY / TRAIL	S.Y.	$18.00	0.00	$0	One Bikepath/Trail
4.0	**BRIDGES/STRUCTURES**					
	MAINLINE HIGHWAY	S.F.	$65.00	21,000.00	$1,365,000	
	ARTERIAL	S.F.	$60.00	0.00	$0	
	RAMP FLYOVER	S.F.	$70.00	0.00	$0	
	DRAINAGE BRIDGE	S.F.	$60.00	0.00	$0	
	PEDESTRIAN BRIDGE	S.F.	$80.00	0.00	$0	
	BRIDGE, LIGHT REHAB	L.F.	$500.00	0.00	$0	
	BRIDGE MEDIUM REHAB	L.F.	$800.00	0.00	$0	
	BRIDGE HEAVY REHAB	L.F.	$1,000.00	0.00	$0	
5.0	**RETAINING WALLS**					
	0 TO 10'	S.F.	$45.00	6,000.00	$270,000	
	10 TO 20'	S.F.	$55.00	27,000.00	$1,485,000	
	> 20'	S.F.	$65.00	30,000.00	$1,950,000	
6.0	**BOX CULVERT**					
	CBC (8' X 4')	L.F.	$275.00	0.00	$0	
	CBC (8' X 6')	L.F.	$350.00	0.00	$0	
	CBC (10' X 4')	L.F.	$370.00	0.00	$0	
	CBC (10' X 6')	L.F.	$410.00	0.00	$0	
	CBC (12' X 8')	L.F.	$580.00	0.00	$0	
7.0	**LIGHTING**					
	HIGHWAY	MILE	$55,000.00	0.00	$0	
	ARTERIAL	MILE	$100,000.00	0.76	$75,758	
8.0	**TRAFFIC SIGNALS**					
	UPGRADE EXISTING	EACH	$50,000.00	2.00	$100,000	
	COMPLETE	EACH	$200,000.00	1.00	$200,000	
	SUBTOTAL (A)				$8,970,758	
8.0	**DRAINAGE**	5 % OF (A)		0.05	$448,538	
9.0	**UTILITY RELOCATION**	4 % OF (A)		0.04	$358,830	
10.0	**NOISE / ENVIRONMENTAL ABATEMENT / MITIGATION**					
	RESIDENTIAL	3 % OF (A)		0.03		Use Only One Of These
	COMMERCIAL	2 % OF (A)		0.02	$179,415	Use Only One Of These
	INDUSTRIAL	1 % OF (A)		0.01		Use Only One Of These
11.0	**SIGNING AND STRIPING**					
	INTERSTATE	5 % OF (A)		0.05		Use Only One Of These
	STATE HIGHWAY	4 % OF (A)		0.04		Use Only One Of These
	ARTERIAL	2 % OF (A)		0.02	$179,415	Use Only One Of These
	RAIL CORRIDOR	1 % OF (A)		0.01		Use Only One Of These

12.0	**CONSTRUCTION TRAFFIC CONTROL**					
	INTERSTATE	5 % OF (A)		0.05		Use Only One Of These
	STATE HIGHWAY	5 % OF (A)		0.05		Use Only One Of These
	ARTERIAL	7.5 % OF (A)		0.075	$672,807	Use Only One Of These
	RAIL CORRIDOR	3 % OF (A)		0.03		Use Only One Of These
13.0	**URBAN DESIGN / LANDSCAPING**					
	RESIDENTIAL	4 % OF (A)		0.04		Use Only One Of These
	COMMERCIAL	2 % OF (A)		0.02	$179,415	Use Only One Of These
	INDUSTRIAL	1 % OF (A)		0.01		Use Only One Of These
	TOTAL COST OF CONSTRUCTION BID ITEMS (CBI)				**$10,989,178**	
14.0	**MOBILIZATION**	10 % OF (CBI)		0.10	$1,098,918	
15.0	**CONTINGENCIES & OTHER COSTS**					
	CONTINGENCIES	40 % OF (CBI)		0.40	$4,395,671	
	ENGINEERING (DESIGN)	12 % OF (CBI)		0.12	$1,318,701	
	CONSTRUCTION MANAGEMENT	10 % OF (CBI)		0.10	$1,098,918	
	OTHER	2 % OF (CBI)		0.02	$219,784	
	TOTAL	49% OF (CBI)				
	TOTAL COST OF CONSTRUCTION BID ITEMS PLUS MOBILIZATION AND CONTINGENCI				**$19,121,170**	
16.0	**RIGHT-OF-WAY**					
	LOW RANGE	S.F.	$4.00	500,000.00	$2,000,000	**Low Range Estimate For ROW**
	HIGH RANGE	S.F.	$8.00	750,000.00	$6,000,000	**High Range Estimate For ROW**
	GRAND TOTAL WITH LOW RANGE RIGHT OF WAY				**$21,121,170**	
	GRAND TOTAL WITH HIGH RANGE RIGHT OF WAY				**$25,121,170**	
	GRAND TOTAL LOW RANGE				**$19,009,053**	
	GRAND TOTAL HIGH RANGE				**$31,401,462**	

Arapahoe Road Corridor Study
Estimate of Probable Costs
Lima - Flyover

1/8/2007

ITEM NO.	ITEM	UNIT	UNIT COST	APPROX. QUANTITY	ESTIMATED COST	COMMENTS
1.0	**REMOVALS**					
	PAVED SURFACES	S.Y.	$3.00	38,888.89	$116,667	Including Curb, Gutter & Sidewalk
	MISCELLANEOUS	L.S.	$0.00	0.00	$0	Removes Major Structural Removal
						Plus Any Other Major Removals
2.0	**EARTHWORK**					
	EARTHWORK	C.Y.	$5.00	9,722.22	$48,611	Includes Fill and Excavation
3.0	**STREET RECONSTRUCTION**					
	PAVEMENT ARTERIAL	S.Y.	$35.00	28,888.89	$1,011,111	
	PAVEMENT SIDESTREET	S.Y.	$30.00	10,000.00	$300,000	
	CURB, GUTTER & SIDEWALK	S.F.	$5.00	72,000.00	$360,000	Includes One Side of Roadway
	CONCRETE BIKEWAY / TRAIL	S.Y.	$18.00	0.00	$0	One Bikepath/Trail
4.0	**BRIDGES/STRUCTURES**					
	MAINLINE HIGHWAY	S.F.	$65.00	0.00	$0	
	ARTERIAL	S.F.	$60.00	0.00	$0	
	RAMP FLYOVER	S.F.	$70.00	15,750.00	$1,102,500	
	DRAINAGE BRIDGE	S.F.	$60.00	0.00	$0	
	PEDESTRIAN BRIDGE	S.F.	$80.00	0.00	$0	
	BRIDGE, LIGHT REHAB	L.F.	$500.00	0.00	$0	
	BRIDGE MEDIUM REHAB	L.F.	$800.00	0.00	$0	
	BRIDGE HEAVY REHAB	L.F.	$1,000.00	0.00	$0	
5.0	**RETAINING WALLS**					
	0 TO 10'	S.F.	$45.00	1,500.00	$67,500	
	10 TO 20'	S.F.	$55.00	4,500.00	$247,500	
	> 20'	S.F.	$65.00	7,500.00	$487,500	
6.0	**BOX CULVERT**					
	CBC (8' X 4')	L.F.	$275.00	0.00	$0	
	CBC (8' X 6')	L.F.	$350.00	0.00	$0	
	CBC (10' X 4')	L.F.	$370.00	200.00	$74,000	
	CBC (10' X 6')	L.F.	$410.00	0.00	$0	
	CBC (12' X 8')	L.F.	$580.00	0.00	$0	
7.0	**LIGHTING**					
	HIGHWAY	MILE	$55,000.00	0.00	$0	
	ARTERIAL	MILE	$100,000.00	0.47	$47,348	
8.0	**TRAFFIC SIGNALS**					
	UPGRADE EXISTING	EACH	$50,000.00	1.00	$50,000	
	COMPLETE	EACH	$200,000.00	1.00	$200,000	
	SUBTOTAL (A)				**$4,112,737**	
8.0	**DRAINAGE**	5 % OF (A)		0.05	$205,637	
9.0	**UTILITY RELOCATION**	4 % OF (A)		0.04	$164,509	
10.0	**NOISE / ENVIRONMENTAL ABATEMENT / MITIGATION**					
	RESIDENTIAL	3 % OF (A)		0.03		Use Only One Of These
	COMMERCIAL	2 % OF (A)		0.02	$82,255	Use Only One Of These
	INDUSTRIAL	1 % OF (A)		0.01		Use Only One Of These
11.0	**SIGNING AND STRIPING**					
	INTERSTATE	5 % OF (A)		0.05		Use Only One Of These
	STATE HIGHWAY	4 % OF (A)		0.04		Use Only One Of These
	ARTERIAL	2 % OF (A)		0.02	$82,255	Use Only One Of These
	RAIL CORRIDOR	1 % OF (A)		0.01		Use Only One Of These

12.0	CONSTRUCTION TRAFFIC CONTROL					
	INTERSTATE	5 % OF (A)		0.05		Use Only One Of These
	STATE HIGHWAY	5 % OF (A)		0.05		Use Only One Of These
	ARTERIAL	7.5 % OF (A)		0.075	$308,455	Use Only One Of These
	RAIL CORRIDOR	3 % OF (A)		0.03		Use Only One Of These
13.0	URBAN DESIGN / LANDSCAPING					
	RESIDENTIAL	4 % OF (A)		0.04		Use Only One Of These
	COMMERCIAL	2 % OF (A)		0.02	$82,255	Use Only One Of These
	INDUSTRIAL	1 % OF (A)		0.01		Use Only One Of These
	TOTAL COST OF CONSTRUCTION BID ITEMS (CBI)				$5,038,103	
14.0	MOBILIZATION	10 % OF (CBI)		0.10	$503,810	
15.0	CONTINGENCIES & OTHER COSTS					
	CONTINGENCIES	40 % OF (CBI)		0.40	$2,015,241	
	ENGINEERING (DESIGN)	12 % OF (CBI)		0.12	$604,572	
	CONSTRUCTION MANAGEMENT	10 % OF (CBI)		0.10	$503,810	
	OTHER	2 % OF (CBI)		0.02	$100,762	
	TOTAL	49% OF (CBI)				
	TOTAL COST OF CONSTRUCTION BID ITEMS PLUS MOBILIZATION AND CONTINGENCI				$8,766,300	
16.0	RIGHT-OF-WAY					
	LOW RANGE	S.F.	$4.00	60,000.00	$240,000	Low Range Estimate For ROW
	HIGH RANGE	S.F.	$8.00	480,000.00	$3,840,000	High Range Estimate For ROW
	GRAND TOTAL WITH LOW RANGE RIGHT OF WAY				$9,006,300	
	GRAND TOTAL WITH HIGH RANGE RIGHT OF WAY				$12,606,300	
	GRAND TOTAL LOW RANGE				$8,105,670	
	GRAND TOTAL HIGH RANGE				$15,757,875	

Arapahoe Road Corridor Study
Estimate of Probable Costs
Peoria Flyover Interchange

1/8/2007

ITEM NO.	ITEM	UNIT	UNIT COST	APPROX. QUANTITY	ESTIMATED COST	COMMENTS
1.0	**REMOVALS**					
	PAVED SURFACES	S.Y.	$3.00	26,666.67	$80,000	Including Curb, Gutter & Sidewalk
	MISCELLANEOUS	L.S.	$0.00	0.00	$0	Removes Major Structural Removal
						Plus Any Other Major Removals
2.0	**EARTHWORK**					
	EARTHWORK	C.Y.	$5.00	111,111.11	$555,556	Includes Fill and Excavation
3.0	**STREET RECONSTRUCTION**					
	PAVEMENT ARTERIAL	S.Y.	$35.00	36,666.67	$1,283,333	
	PAVEMENT SIDESTREET	S.Y.	$30.00	11,111.11	$333,333	
	CURB, GUTTER & SIDEWALK	S.F.	$5.00	90,000.00	$450,000	Includes One Side of Roadway
	CONCRETE BIKEWAY / TRAIL	S.Y.	$18.00	0.00	$0	One Bikepath/Trail
4.0	**BRIDGES/STRUCTURES**					
	MAINLINE HIGHWAY	S.F.	$65.00	0.00	$0	
	ARTERIAL	S.F.	$60.00	0.00	$0	
	RAMP FLYOVER	S.F.	$70.00	24,500.00	$1,715,000	
	DRAINAGE BRIDGE	S.F.	$60.00	0.00	$0	
	PEDESTRIAN BRIDGE	S.F.	$80.00	0.00	$0	
	BRIDGE, LIGHT REHAB	L.F.	$500.00	0.00	$0	
	BRIDGE MEDIUM REHAB	L.F.	$800.00	0.00	$0	
	BRIDGE HEAVY REHAB	L.F.	$1,000.00	0.00	$0	
5.0	**RETAINING WALLS**					
	0 TO 10'	S.F.	$45.00	10,000.00	$450,000	
	10 TO 20'	S.F.	$55.00	30,000.00	$1,650,000	
	> 20'	S.F.	$65.00	50,000.00	$3,250,000	
6.0	**BOX CULVERT**					
	CBC (8' X 4')	L.F.	$275.00	0.00	$0	
	CBC (8' X 6')	L.F.	$350.00	0.00	$0	
	CBC (10' X 4')	L.F.	$370.00	0.00	$0	
	CBC (10' X 6')	L.F.	$410.00	0.00	$0	
	CBC (12' X 8')	L.F.	$580.00	0.00	$0	
7.0	**LIGHTING**					
	HIGHWAY	MILE	$55,000.00	0.00	$0	
	ARTERIAL	MILE	$100,000.00	0.95	$94,697	
8.0	**TRAFFIC SIGNALS**					
	UPGRADE EXISTING	EACH	$50,000.00	1.00	$50,000	
	COMPLETE	EACH	$200,000.00	1.00	$200,000	
	SUBTOTAL (A)				**$10,111,919**	
8.0	**DRAINAGE**	5 % OF (A)		0.05	$505,596	
9.0	**UTILITY RELOCATION**	4 % OF (A)		0.04	$404,477	
10.0	**NOISE / ENVIRONMENTAL ABATEMENT / MITIGATION**					
	RESIDENTIAL	3 % OF (A)		0.03		Use Only One Of These
	COMMERCIAL	2 % OF (A)		0.02	$202,238	Use Only One Of These
	INDUSTRIAL	1 % OF (A)		0.01		Use Only One Of These
11.0	**SIGNING AND STRIPING**					
	INTERSTATE	5 % OF (A)		0.05		Use Only One Of These
	STATE HIGHWAY	4 % OF (A)		0.04		Use Only One Of These
	ARTERIAL	2 % OF (A)		0.02	$202,238	Use Only One Of These
	RAIL CORRIDOR	1 % OF (A)		0.01		Use Only One Of These

12.0	**CONSTRUCTION TRAFFIC CONTROL**					
	INTERSTATE	5 % OF (A)		0.05		Use Only One Of These
	STATE HIGHWAY	5 % OF (A)		0.05		Use Only One Of These
	ARTERIAL	7.5 % OF (A)		0.075	$758,394	Use Only One Of These
	RAIL CORRIDOR	3 % OF (A)		0.03		Use Only One Of These
13.0	**URBAN DESIGN / LANDSCAPING**					
	RESIDENTIAL	4 % OF (A)		0.04		Use Only One Of These
	COMMERCIAL	2 % OF (A)		0.02	$202,238	Use Only One Of These
	INDUSTRIAL	1 % OF (A)		0.01		Use Only One Of These
	TOTAL COST OF CONSTRUCTION BID ITEMS (CBI)				**$12,387,101**	
14.0	**MOBILIZATION**	10 % OF (CBI)		0.10	$1,238,710	
15.0	**CONTINGENCIES & OTHER COSTS**					
	CONTINGENCIES	40 % OF (CBI)		0.40	$4,954,840	
	ENGINEERING (DESIGN)	12 % OF (CBI)		0.12	$1,486,452	
	CONSTRUCTION MANAGEMENT	10 % OF (CBI)		0.10	$1,238,710	
	OTHER	2 % OF (CBI)		0.02	$247,742	
	TOTAL	49% OF (CBI)				
	TOTAL COST OF CONSTRUCTION BID ITEMS PLUS MOBILIZATION AND CONTINGENCI				**$21,553,556**	
16.0	**RIGHT-OF-WAY**					
	LOW RANGE	S.F.	$4.00	156,000.00	$624,000	**Low Range Estimate For ROW**
	HIGH RANGE	S.F.	$8.00	156,000.00	$1,248,000	**High Range Estimate For ROW**
	GRAND TOTAL WITH LOW RANGE RIGHT OF WAY				**$22,177,556**	
	GRAND TOTAL WITH HIGH RANGE RIGHT OF WAY				**$22,801,556**	
	GRAND TOTAL LOW RANGE				**$19,959,800**	
	GRAND TOTAL HIGH RANGE				**$28,501,945**	

Arapahoe Road Corridor Study
Estimate of Probable Costs
Peoria Jr. Interchange

1/8/2007

ITEM NO.	ITEM	UNIT	UNIT COST	APPROX. QUANTITY	ESTIMATED COST	COMMENTS
1.0	**REMOVALS**					
	PAVED SURFACES	S.Y.	$3.00	26,666.67	$80,000	Including Curb, Gutter & Sidewalk
	MISCELLANEOUS	L.S.	$0.00	0.00	$0	Removes Major Structural Removal
						Plus Any Other Major Removals
2.0	**EARTHWORK**					
	EARTHWORK	C.Y.	$5.00	183,333.33	$916,667	Includes Fill and Excavation
3.0	**STREET RECONSTRUCTION**					
	PAVEMENT ARTERIAL	S.Y.	$35.00	41,666.67	$1,458,333	
	PAVEMENT SIDESTREET	S.Y.	$30.00	10,000.00	$300,000	
	CURB, GUTTER & SIDEWALK	S.F.	$5.00	0.00	$0	Includes One Side of Roadway
	CONCRETE BIKEWAY / TRAIL	S.Y.	$18.00	0.00	$0	One Bikepath/Trail
4.0	**BRIDGES/STRUCTURES**					
	MAINLINE HIGHWAY	S.F.	$65.00	0.00	$0	
	ARTERIAL	S.F.	$60.00	22,100.00	$1,326,000	
	RAMP FLYOVER	S.F.	$70.00	0.00	$0	
	DRAINAGE BRIDGE	S.F.	$60.00	0.00	$0	
	PEDESTRIAN BRIDGE	S.F.	$80.00	0.00	$0	
	BRIDGE, LIGHT REHAB	L.F.	$500.00	0.00	$0	
	BRIDGE MEDIUM REHAB	L.F.	$800.00	0.00	$0	
	BRIDGE HEAVY REHAB	L.F.	$1,000.00	0.00	$0	
5.0	**RETAINING WALLS**					
	0 TO 10'	S.F.	$45.00	2,500.00	$112,500	
	10 TO 20'	S.F.	$55.00	15,000.00	$825,000	
	> 20'	S.F.	$65.00	12,500.00	$812,500	
6.0	**BOX CULVERT**					
	CBC (8' X 4')	L.F.	$275.00	0.00	$0	
	CBC (8' X 6')	L.F.	$350.00	0.00	$0	
	CBC (10' X 4')	L.F.	$370.00	0.00	$0	
	CBC (10' X 6')	L.F.	$410.00	0.00	$0	
	CBC (12' X 8')	L.F.	$580.00	0.00	$0	
7.0	**LIGHTING**					
	HIGHWAY	MILE	$55,000.00	0.95	$52,083	
	ARTERIAL	MILE	$100,000.00	0.00	$0	
8.0	**TRAFFIC SIGNALS**					
	UPGRADE EXISTING	EACH	$50,000.00	0.00	$0	
	COMPLETE	EACH	$200,000.00	3.00	$600,000	
	SUBTOTAL (A)				**$6,483,083**	
8.0	**DRAINAGE**	5 % OF (A)		0.05	$324,154	
9.0	**UTILITY RELOCATION**	4 % OF (A)		0.04	$259,323	
10.0	**NOISE / ENVIRONMENTAL ABATEMENT / MITIGATION**					
	RESIDENTIAL	3 % OF (A)		0.03		Use Only One Of These
	COMMERCIAL	2 % OF (A)		0.02	$129,662	Use Only One Of These
	INDUSTRIAL	1 % OF (A)		0.01		Use Only One Of These
11.0	**SIGNING AND STRIPING**					
	INTERSTATE	5 % OF (A)		0.05		Use Only One Of These
	STATE HIGHWAY	4 % OF (A)		0.04		Use Only One Of These
	ARTERIAL	2 % OF (A)		0.02	$129,662	Use Only One Of These
	RAIL CORRIDOR	1 % OF (A)		0.01		Use Only One Of These

12.0	**CONSTRUCTION TRAFFIC CONTROL**					
	INTERSTATE	5 % OF (A)		0.05		Use Only One Of These
	STATE HIGHWAY	5 % OF (A)		0.05		Use Only One Of These
	ARTERIAL	7.5 % OF (A)		0.075	$486,231	Use Only One Of These
	RAIL CORRIDOR	3 % OF (A)		0.03		Use Only One Of These
13.0	**URBAN DESIGN / LANDSCAPING**					
	RESIDENTIAL	4 % OF (A)		0.04		Use Only One Of These
	COMMERCIAL	2 % OF (A)		0.02	$129,662	Use Only One Of These
	INDUSTRIAL	1 % OF (A)		0.01		Use Only One Of These
	TOTAL COST OF CONSTRUCTION BID ITEMS (CBI)				**$7,941,777**	
14.0	**MOBILIZATION**	10 % OF (CBI)		0.10	$794,178	
15.0	**CONTINGENCIES & OTHER COSTS**					
	CONTINGENCIES	40 % OF (CBI)		0.40	$3,176,711	
	ENGINEERING (DESIGN)	12 % OF (CBI)		0.12	$953,013	
	CONSTRUCTION MANAGEMENT	10 % OF (CBI)		0.10	$794,178	
	OTHER	2 % OF (CBI)		0.02	$158,836	
	TOTAL	49% OF (CBI)				
	TOTAL COST OF CONSTRUCTION BID ITEMS PLUS MOBILIZATION AND CONTINGENCI				**$13,818,692**	
16.0	**RIGHT-OF-WAY**					
	LOW RANGE	S.F.	$4.00	156,000.00	$624,000	**Low Range Estimate For ROW**
	HIGH RANGE	S.F.	$8.00	156,000.00	$1,248,000	**High Range Estimate For ROW**
	GRAND TOTAL WITH LOW RANGE RIGHT OF WAY				**$14,442,692**	
	GRAND TOTAL WITH HIGH RANGE RIGHT OF WAY				**$15,066,692**	
	GRAND TOTAL LOW RANGE				**$12,998,423**	
	GRAND TOTAL HIGH RANGE				**$18,833,365**	

Arapahoe Road Corridor Alternatives
Summary of Intersection ROW Requirements

Intersections	Alt 1 At-grade (s.f.)	Alt 2 Jr. Interchanges (s.f.)	Alt 3 Combination (s.f.)	
			Intersection	Interchange
Dayton	65,000	150,000	65,000	
Havana	65,000	150,000		150,000
Lima	65,000	150,000	65,000	
Peoria	65,000	225,000		225,000
Revere	65,000	150,000		150,000
Potomac	65,000	150,000	65,000	
Jordan	65,000	150,000		150,000
Total	455,000 (10.5)	1,125,000 (25.8)	195,000	675,000 (20.0)
Unit Cost	$20.00	$8.00	$20.00	$8.00
ROW Cost	$9.1 M	$9.0 M	$3.9 M	$5.4 M
			$9.3 M	

Arapahoe Road Corridor Alternatives
Summary of Intersection Improvement Construction Cost

	Alternative 1 At-Grade Signalized	Alternative 2 Junior Interchanges	Alternative 3 Combination
Dayton	$3 M to $5 M	$15 M to $30 M	$3 M to $5 M
Havana	$3 M to $5 M	$10 M to $20 M	$10 M to $20 M
Lima	$1 M to $3 M	$10 M to $20 M	$1 M to $3 M
Peoria	$3 M to $5 M	$10 M to $20 M	$10 M to $20 M
Revere	$2 M to $4 M	$10 M to $20 M	$10 M to $20 M
Potomac	$2 M to $4 M	$10 M to $20 M	$2 M to $4 M
Jordan	$2 M to $4 M	$10 M to $20 M	$10 M to $20 M
Total	$16 M to $30 M	$75 M to $150 M	$46 M to $92 M

Peakview Avenue

Roadway Improvements at Revere Parkway & Raceline Circle

Prepared By:	Kolleth
Reviewed By:	
Date Prepared:	1/6/07

	Item		Unit Cost	Quantity	Extended Cost	*Shaded Fields are for INPUT*
1	Removal of Asphalt Material	SY	$4.00	20,500	$82,000.00	Peakview @ Raceline & Revere Pkwy
2	Unclassified Excavation	CY	$11.00	3,000	$33,000.00	Excavation for Pavment Structure
3	HBP (Overlay)	Ton	$41.00	1,695	$69,501.00	(Grading SX) (100) (PG 76-28)
4	HBP (Full Depth)	Ton	$42.00	5,085	$213,589.00	(Grading S) (100) (PG 76-28)
5	Embankment (Special)(R-50)	CY	$20.00	10,274	$205,473.00	Pavement Structure
6	Curb and Gutter	LF	$12.00	4,474	$53,688.00	
7	Concrete Sidewalk	SY	$44.00	3,977	$174,983.00	
8	Traffic Signals	Each	$150,000.00	2	$300,000.00	Raceline Circle & Revere Parkway
					$1,132,234.00	

	% Range	% Used	Cost	
Project Construction Bid Items	Project Dependent	N / A	$1,132,234.00	(A)
Contingencies	(15 - 30%) of A	20.0%	$226,447.00	(B)
ITS (Intelligent Transportation System)	(6 - 10%) of (A+B) Default = 6%	0.0%	$0.00	(C)
Utilities	(5 - 25%) of (A+B) Default = 20%	5.0%	$67,934.00	(D)
Drainage	(4 - 8%) of (A+B) Default = 4%	8.0%	$108,694.00	(D1)
Signing and Striping	(1 - 5%) of (A+B+C+D) Default = 5%	5.0%	$71,331.00	(E)
Construction Signing & Traffic Control	(5 - 30%) of (A+B+C+D+D1+E) Default = 20%	5.0%	$80,332.00	(F)
Lighting	(5%) of (A+B)	5.0%	$67,934.00	(F1)
Mobilization	(4-7%) of(A+B+C+D+D1+E+F+F1) Default = 7%	4.0%	$70,196.00	(G)
ROW	(%) of(A+B+C+D+D1+E+F+F1) Default = 0%	0.0%	$0.00	(G1)
Total of Construction Bid Items	(A+B+C+D+D1+E+F+F1+G+G1)		**$1,825,000.00**	(H)

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Master Quantity Reference	Link	Unit
Bridge Structure Length	0	Ft
Bridge Structure Width	0	Ft
*Conversion for HBP=	110	lbs per sq yd per inch depth
Pavement Width	62	Ft
HBP Overlay	2	Inches
HBP Full Depth	6	Inches
Depth of Embankment (Special) (R-50)=	2	Ft

Peakview Roadway Extension Quantities		
Length of Project (LF)	=	2,237
Bridge Structure (SF)	=	0
Proposed Pavement Limits (SF)	=	139,864
Proposed Pavement Limits (SY)	=	15,410
Embankment (Special) (R-50) (CY)	=	10,274
Curb & Gutter (LF)	=	4,474
Concrete Sidewalk (SY)	=	3,977
Traffic Signals (EA)	=	2

Briarwood Avenue

Roadway Improvements at Tucson Way

Prepared By:	Kolleth
Reviewed By:	
Date Prepared:	1/6/07

	Item		Unit Cost	Quantity	Extended Cost	*Shaded Fields are for INPUT*
1	Removal of Asphalt Material	SY	$4.00	5,138	$20,552.00	Peakview @ Raceline & Revere Pkwy
2	Unclassified Excavation	CY	$11.00	1,000	$11,000.00	Excavation for Pavment Structure
3	HBP (Overlay)	Ton	$41.00	481	$19,729.00	(Grading SX) (100) (PG 76-28)
4	HBP (Full Depth)	Ton	$42.00	1,444	$60,630.00	(Grading S) (100) (PG 76-28)
5	Embankment (Special)(R-50)	CY	$20.00	2,916	$58,326.00	Pavement Structure
6	Curb and Gutter	LF	$12.00	1,270	$15,240.00	
7	Concrete Sidewalk	SY	$44.00	1,129	$49,671.00	
8	Traffic Signals	Each	$150,000.00	1	$150,000.00	Raceline Circle & Revere Parkway
					$385,148.00	

	% Range	% Used	Cost	
Project Construction Bid Items	Project Dependent	N / A	$385,148.00	(A)
Contingencies	(15 - 30%) of A	20.0%	$77,030.00	(B)
ITS (Intelligent Transportation System)	(6 - 10%) of (A+B) Default = 6%	0.0%	$0.00	(C)
Utilities	(5 - 25%) of (A+B) Default = 20%	5.0%	$23,109.00	(D)
Drainage	(4 - 8%) of (A+B) Default = 4%	8.0%	$36,974.00	(D1)
Signing and Striping	(1 - 5%) of (A+B+C+D) Default = 5%	5.0%	$24,264.00	(E)
Construction Signing & Traffic Control	(5 - 30%) of (A+B+C+D+D1+E) Default = 20%	5.0%	$27,326.00	(F)
Lighting	(5%) of (A+B)	5.0%	$23,109.00	(F1)
Mobilization	(4-7%) of(A+B+C+D+D1+E+F+F1) Default = 7%	4.0%	$23,878.00	(G)
ROW	(%) of(A+B+C+D+D1+E+F+F1) Default = 0%	0.0%	$0.00	(G1)
Total of Construction Bid Items	(A+B+C+D+D1+E+F+F1+G+G1)		**$621,000.00**	(H)

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Master Quantity Reference	Link	Unit
Bridge Structure Length	0	Ft
Bridge Structure Width	0	Ft
*Conversion for HBP=	110	bs per sq yd per inch depth
Pavement Width	62	Ft
HBP Overlay	2	Inches
HBP Full Depth	6	Inches
Depth of Embankment (Special) (R-50)=	2	Ft

Briarwood Roadway Extension Quantities		
Length of Project (LF)	=	625
Bridge Structure (SF)	=	0
Proposed Pavement Limits (SF)	=	38,370
Proposed Pavement Limits (SY)	=	4,374
Embankment (Special) R-50 (CY)	=	2,916
Curb & Gutter (LF)	=	1,270
Concrete Sidewalk (SY)	=	1,129
Traffic Signals (EA)	=	1

Arapahoe Road Parallel Road Option
Broncos Entire Length - Havana to Parker Road
Opinion of Probable Cost

ITEM	UNIT	UNIT COST	QUANTITY	COST
REMOVALS / RELOCATIONS				
REMOVAL OF ASPHALT MAT	S.Y.	$ 3	4,447	$ 14,000
REMOVAL OF ASPHALT MAT (PLANING)	S.Y.	$ 2	66,208	$ 133,000
REMOVAL OF CURB AND GUTTER	L.F.	$ 6	14,153	$ 85,000
ROADWAY/CONSTRUCTION				
PAVEMENT - (10" HMA)	TON	$ 45	26,245	$ 1,182,000
CONCRETE SIDEWALK	S.Y.	$ 35	30,574	$ 1,071,000
MODIFY MEDIAN COVER	S.F.	$ 5	131,013	$ 656,000
CURB AND GUTTER	L.F.	$ 17	34,342	$ 584,000
EARTHWORK				
% OF PAVEMENT, SIDEWALK, AND CURB COSTS	%	40%	$ 2,837,000	$ 1,135,000
BRIDGES/STRUCTURES				
STANDARD	SF	$ 100	34,560	$ 3,456,000
BOX CULVERT - MODIFY HEADWALL & WINGWALLS	EACH	$ 20,000	2	$ 40,000
RETAINING WALLS				
MSE WALL HEIGHT (0-10')	L.F.	$ 280	1,176	$ 330,000
TRAFFIC SIGNALS	EACH	$ 200,000	3	$ 600,000
			SUBTOTAL (A) =	**$ 9,286,000**
LIGHTING	5%	OF (A)	N.A.	$ 465,000
DRAINAGE	10%	OF (A)	N.A.	$ 929,000
SIGNING AND STRIPING	2%	OF (A)	N.A.	$ 186,000
SIGNAL INTERCONNECT	5%	OF (A)	N.A.	$ 465,000
CONSTRUCTION TRAFFIC CONTROL	5%	OF (A)	N.A.	$ 465,000
URBAN DESIGN / LANDSCAPING	3%	OF (A)	N.A.	$ 279,000
TOTAL CONSTRUCTION BID ITEMS (CBI)				**$ 12,075,000**
MOBILIZATION	5%	OF CBI	N.A.	$ 604,000
CONTINGENCIES & OTHER COST				
CONTINGENCIES (Per Arapahoe Spec. 12.5.3)	15%	OF CBI	N.A.	$ 1,812,000
TOTAL CONSTRUCTION ITEMS (CI)				**$ 14,491,000**
UTILITIES (SANITARY/WATER/ELECTRIC)	10%	OF (CI)	N.A.	$ 1,449,000
ENGINEERING				
DESIGN	10%	OF (CI)	N.A.	$ 1,449,000
CONSTRUCTION MANAGEMENT	5%	OF (CI)	N.A.	$ 725,000
ROW				
COMMERCIAL	S.F.	$ 3.09	1,043,953	$ 3,226,000
INDUSTRIAL	S.F.	$ 1.73		$ -
Parallel Road Option - TOTAL				***$ 21,340,000***

Broncos Parkway - Easter to Potomac Segment

ITEM	UNIT	UNIT COST	QUANTITY	COST
REMOVALS / RELOCATIONS				
REMOVAL OF ASPHALT MAT	S.Y.	$ 3	4,447	$ 14,000
REMOVAL OF ASPHALT MAT (PLANING)	S.Y.	$ 2	66,208	$ 133,000
REMOVAL OF CURB AND GUTTER	L.F.	$ 6	14,153	$ 85,000
ROADWAY/CONSTRUCTION				
PAVEMENT - (10" HMA)	TON	$ 45	14,509	$ 653,000
CONCRETE SIDEWALK	S.Y.	$ 35	12,792	$ 448,000
FENCING	L.F.	$ 35	1,644	$ 58,000
MODIFY MEDIAN COVER	S.F.	$ 5	131,013	$ 656,000
CURB AND GUTTER	L.F.	$ 17	18,338	$ 312,000
EARTHWORK				
% OF PAVEMENT, SIDEWALK, AND CURB COSTS	%	40%	$ 1,413,000	$ 566,000
BRIDGES/STRUCTURES				
BOX CULVERT - MODIFY HEADWALL & WINGWALLS	EACH	$ 20,000	2	$ 40,000
RETAINING WALLS				
MSE WALL HEIGHT (0-10')	L.F.	$ 280	1,176	$ 330,000
TRAFFIC SIGNALS	EACH	$ 200,000	3	$ 600,000
			SUBTOTAL (A) =	**$ 3,895,000**
LIGHTING	5%	OF (A)	N.A.	$ 195,000
DRAINAGE	10%	OF (A)	N.A.	$ 390,000
SIGNING AND STRIPING	2%	OF (A)	N.A.	$ 78,000
SIGNAL INTERCONNECT	0%	OF (A)	N.A.	$ -
CONSTRUCTION TRAFFIC CONTROL	5%	OF (A)	N.A.	$ 195,000
URBAN DESIGN / LANDSCAPING	3%	OF (A)	N.A.	$ 117,000
TOTAL CONSTRUCTION BID ITEMS (CBI)				**$ 4,870,000**
MOBILIZATION	5%	OF CBI	N.A.	$ 244,000
CONTINGENCIES & OTHER COST				
CONTINGENCIES (Per Arapahoe Spec. 12.5.3)	15%	OF CBI	N.A.	$ 731,000
TOTAL CONSTRUCTION ITEMS (CI)				**$ 5,845,000**
UTILITIES (SANITARY/WATER/ELECTRIC)	10%	OF (CI)	N.A.	$ 585,000
ENGINEERING				
DESIGN	10%	OF (CI)	N.A.	$ 585,000
CONSTRUCTION MANAGEMENT	5%	OF (CI)	N.A.	$ 292,000
ROW				
COMMERCIAL	S.F.	$ 3.09	0	$ -
INDUSTRIAL	S.F.	$ 1.73	535	$ 1,000
Broncos Parkway - TOTAL				***$ 7,308,000***

Design Speed 45mph
Geddes to Easter

	Item	Unit		Quantity	Unit price	Price
1	ROW acquisition	LS			$ 1,363,078.00	$ 1,363,078
2	Remove asphalt	SY		14,125.0	$ 3.00	$ 42,375
3	remove curb /gutter	LF		7,553.0	$ 6.00	$ 45,318
4	remove curb/ gutter /sidewalk	LF		1,874.0	$ 17.00	$ 31,858
5	Install new traffic signal	EA		2.0	$ 200,000.00	$ 400,000
6	Relocate exisintg traffic signal	EA		2.0	$ 100,000.00	$ 200,000
7	Install sidewalk	SY		12,260.0	$ 35.00	$ 429,100
8	Install curb/ gutter	LF		22,974.0	$ 17.00	$ 390,558
9	Median cover	SF		130,119.0	$ 5.00	$ 650,595
10	Paving 11" depth	Ton		11,304.0	$ 45.00	$ 508,680
11	Grading (40% paving/ sidewalk/curb)		40%		$ 1,328,338.00	$ 531,335
	Havana/ Easter fill	CY		95,534.0	$ 3.00	$ 286,602
12	Box culvert modification	EA		1.0	$ 20,000.00	$ 20,000
13	Retaining walls	LF		200.0	$ 280.00	$ 56,000
14	Moisture conditioning (3')	CY		15,980.0	$ 3.00	$ 47,940
15	Lime stabilization	Ton		550.0	$ 130.00	$ 71,500
16	striping	SF		14,751.0	$ 2.00	$ 29,502
17	Legal descriptions	EA		14.0	$ 1,000.00	$ 14,000
	Subtotal (A)					**$ 5,118,441**
18	Drainage (10%)					$ 511,844
19	Traffic control (5%)					$ 255,922
20	Landscaping (3%)					$ 153,553
21	Utility relocation 10%					$ 511,844
	Total construction bid items (B)					**$ 6,551,605**
22	mobilization (5%)					$ 327,580
23	Contingency (15%)					$ 982,741
	Total construciton items					**$ 7,861,926**
24	Construction managerment (5%)					393,096.28
25	Design (10%)					786,192.57
	Total					**$ 9,041,215**

	ROW (square feet)	Total value	total land (sf)	ROW value
1	na			
2	2,796	$ 2,600,000	95,396	$ 76,204
3	3,000	$ 626,479	168,054	$ 11,184
4	8,285	$ 7,700,000	499,110	$ 127,817
5	6,346	$ 1,418,399	350,222	$ 25,701
6	418	$ 600,000	36,808	$ 6,814
7	921	$ 4,000,000	137,649	$ 26,764
8	259,367	$ 3,244,552	1,527,649	$ 550,866
9	na			
10	na			
11	42,872	$ 2,783,484	1,113,393	$ 107,180
12	na			
13	na			

14		42,328	$ 722,180	198,198	$	154,232
15		15,759	$ 3,590	781,902	$	72
16		7,279	$ 2,004,093	806,731	$	18,083
17		12,735	$ 2,911,603	527,076	$	70,349
18		11,498	$ 1,215,754	219,978	$	63,546
19	na					
20	na					
21		76,503	$ 19,164	4,174,006	$	351
	Total ROW				$	1,239,162
	Easements 10%					123,916
	Total ROW/Easements				**$**	**1,363,078**

Easter to Jordan

	Item	Unit		Quantity	Unit price	Price
1	ROW acquisition	LS				$ 416,332
2	Remove asphalt	SY		6,309.0	$ 3.00	$ 18,927
3	remove curb /gutter	LF		14,153.0	$ 6.00	
4	remove curb/ gutter /sidewalk	LF		625.0	$ 17.00	$ 10,625
5	Install new traffic signal	EA		8.0	$ 200,000.00	$ 1,600,000
6	Relocate exisintg traffic signal	EA		2.0	$ 100,000.00	$ 200,000
7	Install sidewalk	SY		12,346.0	$ 35.00	$ 432,110
8	Install curb/ gutter	LF		13,750.0	$ 17.00	$ 233,750
	Median cover	SF		131,013.0	$ 5.00	$ 655,065
9	Paving 11" depth	Ton		14,623.0	$ 45.00	$ 658,035
10	Grading (40% paving/ sidewalk/curb)		40%		$ 1,323,895.00	$ 529,558
	Box culvert modification	EA		2.0	$ 20,000.00	
	Retaining walls	LF		1,176.0	$ 280.00	
11	Moisture conditioning (3')	CY		21,005.0	$ 3.00	$ 63,015
12	Lime stabilization	Ton		720.0	$ 130.00	$ 93,600
13	striping	SF		25,309.0	$ 2.00	$ 50,618
14	Legal descriptions	EA		26.0	$ 1,000.00	$ 26,000
	Subtotal (A)					**$ 4,987,635**
15	Drainage (10%)					$ 498,764
16	Traffic control (5%)					$ 249,382
17	Landscaping (3%)					$ 149,629
18	Utility relocation 10%					$ 498,764
	Total construction bid items (B)					**$ 6,384,173**
20	mobilization (5%)					$ 319,209
21	Contingency (15%)					$ 957,626
	Total construciton items					**$ 7,661,007**
22	Construction managerment (5%)					383,050.37
23	Design (10%)					766,100.74
	Total					**$ 8,810,158**

	ROW (square feet)		Total value	total land (sf)	ROW value
21		19,586	$ 19,164	4,174,006	$ 90
22	full condemnation N. of Easter	33,731	$ 4,888	1,064,780	$ 155
23		1975	$ 5,200,000	249,163	$ 41,218

24	na					
25		3,548	$ 573,359	217,800	$	9,340
26	na					
27	na					
28	Condemn 2 buildings 118,187		$ 17,330	3,774,474	$	543
59		29,923	$ 1,262,853	514,095	$	73,505
60		8,877	$ 184,257	61,855	$	26,443
61	Na					
63		7,733	$ 800,268	266,587	$	23,214
64		66,853	$ 2,173,930	727,887	$	199,665
65		3,142	$ 2,200,000	163,959	$	42,159
66		2,925	$ 1,380,000	281,397	$	14,345
67		-				
68		1,227	$ 300	63,162	$	6
69		885	$ 360,640	242,193	$	1,318
70		7,368	$ 780	169,884	$	34
71		6,613	$ 16,000,000	372,438	$	284,096
72		1,360	$ 4,105,373	156,816	$	35,604
73		5,668	$ 366,013	146,361	$	14,174
74		13,552	$ 1,074,493	429,501	$	33,903
75		4,963	$ 205,238	81,021	$	12,572
76		2,008	$ 3,800,000	130,050	$	58,673
77		11,643	$ 381,139	245,896	$	18,047
78		11,977	$ 527,588	335,150	$	18,854
79		12,125	$ 2,000,000	600,169	$	40,405
80		7,037	$ 200,866	94,525	$	14,954
81		4,370	$ 184,204	86,684	$	9,286
82		8,040	$ 2,336	508,780	$	37
	Total ROW				$	416,332
	Total ROW/Easements				**$**	**416,332**

Jordan to Parker

	Item	Unit		Quantity	Unit price	Price	
1	ROW acquisition	LS				$	276,840
2	Remove asphalt	SF		-	$ -		
3	remove curb /gutter	LF		5,186.0	$ 6.00	$	31,116
4	remove curb/ gutter /sidewalk	LF		1,103.0	$ 17.00	$	18,751
5	Install new traffic signal	EA		1.0	$ 200,000.00	$	200,000
6	Relocate exisintg traffic signal	EA		2.0	$ 100,000.00	$	200,000
7	Install sidewalk	SF		66,220.0	$ 3.90	$	258,258
8	Install curb/ gutter	LF		5,495.0	$ 17.00	$	93,415
9	Paving 11" depth	Ton		4,462.0	$ 45.00	$	200,790
10	Grading (40% paving/ sidewalk/curb)		40%		$ 552,463.00	$	220,985
11	Moisture conditioning (3')	CY		7,164.0	$ 3.00	$	21,492
12	Lime stabilization	Ton		557.0	$ 130.00	$	72,410
13	striping	SF		14,869.0	$ 2.00	$	29,738
14	Legal descriptions	EA		10.0	$ 1,000.00	$	10,000
	Subtotal (A)					**$**	**1,633,795**
15	Drainage (10%)					$	163,380
16	Traffic control (5%)					$	81,690

17	Landscaping (3%)				$ 49,014
18	Utility relocation 10%				$ 163,380
19	Bridge expansion	LS	1	$ 1,700,000.00	$ 1,700,000
	Total construction bid items (B)				**$ 3,791,258**
20	mobilization (5%)				$ 189,563
21	Contingency (15%)				$ 568,689
	Total construciton items				**$ 4,549,509**
22	Construction managerment (5%)				227,475.47
23	Design (10%)				454,950.94
	Total				**$ 5,231,936**

	ROW (square feet)		Total value	total land (sf)	ROW value
1		2,750	$ 140,233	54,972	$ 7,015
2		7,015	$ 308,289	120,922	$ 17,885
3		1,594	$ 119,087	46,957	$ 4,043
4a		3,377	$ 300	40,946	$ 25
4b		16,372	$ 300	38,332	$ 128
4c		8,174	$ 300	44,431	$ 55
5		4,311	$ 30,438,000	745,398	$ 176,038
6	County drainage				
7		6,000	$ 1,092	237,837	$ 28
8		8,070	$ 300	39,639	$ 61
9	na				
10		10,189	$ 138	30,056	$ 47
11		8,967	$ 207,600	73,358	$ 25,376
12		71	$ 470	108,900	$ 0
	Total ROW				$ 230,700
	Easements (20%)				46,140
	Total ROW/Easements				**$ 276,840**

GEDDES TO EASTER	**$ 9,041,215**
EASTER TO JORDAN	**$ 8,810,158**
JORDAN TO PARKER	**$ 5,231,936**
GRAND TOTAL	**$ 23,083,309**

Havana, Easter, Peoria, Broncos
Arapahoe County Project No. C06-031

	transition	1150	1000	800		600			
	exist align	1192	2793	1156	2652	3069	4450	6584	21896
14373	**new align**	1214	1846	1140	2620	3517	4036	6525	20898
2.72217	**Opinion of Probable Cost**								

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Segment 1	Inverness Dr. E to Geddes	New alignment - removal of existing and full construcion. New signal.
Segment 2	Geddes to Joliet	New alignment - removal of existing and full construcion. Realignment of Havana. New and relocated signals
Segment 3	Joliet to Lima	1/2 new alignment and 1/2 existing with widening. New and relocated signals
Segment 4	Lima to Peoria	Existing alignment with widening. Relocated signals.
Segment 5	Peoria to Tie-in	New alignment - removal of existing and full construcion. New and relocated signals.
Segment 6	Tie-in to Potomac	existing alignment with widening. New and relocated signals.
Segment 7	Potomac to Jordan	Signals only
Segment 8	Jordan to Parker	existing alignment with widening including bridge. New and relocated signals

ITEM NO	ITEM DESCRIPTION	UNIT	Segment 1	Segment 2	Segment 3	Segment 4	Segment 5	Segment 6	Segment 7		PROJECT TOTALS	UNIT COST	COST
201-00000	**Clearing and Grubbing**	L S	1	1	1	1	1	1			6	$20,000.00	**$120,000**
202-00010	**Removal of Tree**	EA	24				15				39	$300.00	**$11,700**
202-00200	**Removal of sidewalk**	SY	662	972	724	4,715	31,778	2,947			41,799	$7.00	**$292,591**
202-00203	**Removal of curb & Gutter**	LF	2,384	6,486	2,312	5,304	6,500	8,900			31,886	$4.00	**$127,544**
202-00220	**Removal of Asphalt Mat**	SY	12,818	13,667			31,778				58,262	$5.00	**$291,311**
202-00240	**Removal of Asphalt Mat (Planing)**	SY			5,742	18,859		37,578			62,179	$2.00	**$124,357**
203-00010	**Unclassified Excavation (Complete In Place)**	CY	7,919	19,543	10,240	41,920	50,272	64,574			194,469	$10.00	**$1,944,689**
203-	**Moisture Stabilization**	CY	5,279	13,029	6,827	27,947	33,515	43,049			129,646	$5.00	**$648,230**
203-01597	**Potholing**	HR	10	10	10	10	10	10			60	$160.00	**$9,600**
207-00205	**Topsoil**	CY	2,640	6,514	3,413	13,973	16,757	21,525			64,823	$10.00	**$648,230**
208-00020	**Silt Fence**	LF	4,727	5,693	3,880	5,240	8,234	8,072			35,846	$2.50	**$89,615**
208-00070	**Stabilized Construction Entrance**	EA	2	2			2				6	$1,700.00	**$10,200**
208-00200	**Erosion Control Supervisor**	L S	0.5	0.5	0.5	0.5	0.5	0.5			3	$10,000.00	**$30,000**
212-00006	**Seeding (Native)**	AC	1.6	2.0	1.3	1.8	2.8	2.8			12	$600.00	**$7,406**
213-00002	**Mulching (Weed Free Hay)**	AC	1.6	2.0	1.3	1.8	2.8	2.8			12	$450.00	**$5,555**
307-00000	**Hydrated Lime**	TON	641	1,583	829	3,396	4,072	5,230			15,752	$110.00	**$1,732,718**
307-00212	**Processing Lime Treated Subgrade (12 Inch)**	SY	23,757	58,630	30,720	125,760	150,817	193,722			583,407	$5.50	**$3,208,737**
403-33851	**Hot Bituminous Pavement (Grading S)(Asphalt) (100) (PG 64-28) 9"**	TON	8,020	10,066	3,933	3,537	14,244	5,448			45,249	$50.00	**$2,262,426**
403-34851	**Hot Bituminous Pavement (Grading SX)(Asphalt) (100) (PG 64-28) 2" overlay**	TON			646	2,122		4,228			6,995	$52.00	**$363,745**
603-01180	**18 Inch Reinforced Concrete Pipe**	LF			30		60	105			195	$47.00	**$9,165**
603-01240	**24 Inch Reinforced Concrete Pipe**	LF						45			45	$75.00	**$3,375**
603-01360	**36 Inch Reinforced Concrete Pipe**	LF					30				30	$104.00	**$3,120**
603-01480	**48 Inch Reinforced Concrete Pipe**	LF				45					45	$125.00	**$5,625**
604-19110	**Inlet Type R, L 5, 10'**	EA			2	2	6	10			20	$3,500.00	**$70,000**
	RCBC	EA			3			2	3		8	$25,000.00	**$200,000**
608-00006	**Concrete Sidewalk**	SY	2,697	4,103	2,533	5,822	7,816	8,969			31,940	$33.00	**$1,054,024**
609-21010	**Curb & Gutter Type 2 (Section I B)**	LF	2,427	3,693	2,280	5,240	7,034				20,674	$11.00	**$227,418**
609-21020	**Curb & Gutter Type 2 (Section II B)**	LF	2,427	3,693	2,280	5,240	7,034	8,072			28,746	$20.00	**$574,922**
610-00020	**Median Cover Material (Patterned Concrete)**	SF	30,342	46,162	28,500	65,500	87,926				258,430	$8.00	**$2,067,437**
614-	**Signage**	LS									1	$35,000.00	**$35,000**
614-	**Traffic Signal**	EA	1		1				3		5	$200,000.00	**$1,000,000**
614-	**Traffic Signal Relocate**	EA		1		1	1	1	1		5	$100,000.00	**$500,000**
620-00002	**Field Office (Class 2)**	EA									1	$15,000.00	**$15,000**

620-00020	**Sanitary Facility**	EA									**5**	$1,000.00	**$5,000**
625-00000	**Construction Surveying**	L S									**1**	$80,000.00	**$80,000**
626-00000	**Mobilization**	L S									**1**	$1,066,724.51	**$1,066,725**
	QC Materials Testing	LS									**1**	$40,000.00	**$40,000**
627-00002	**Thermoplastic Pavement Marking**	SF	**1,821**	**2,770**	**1,710**	**3,930**	**5,276**	**6,054**			**21,560**	$2.00	**$43,119**
630-80341	**Construction Traffic Control**	LS									**1**	$946,429.27	**$946,429**
TOTAL OF CONSTRUCTION BID ITEMS (CBI)													**$19,875,015**
	Minor Contract Revisions	F A	0.15										$2,981,252
TOTAL OF CONSTRUCTION ITEMS (CI)													**$22,856,267**
	Utilities (Sanitary, Water, Electric)	0.1											$2,285,627
	Design Engineering PE	0.1											$2,285,627
	Construction Engineering (CE)	0.5										5%	$1,142,813
	ROW and Easements												$4,172,149
POTOMAC TO JORDAN SIGNALS													**$800,000**
TOTAL FOR JORDAN TO PARKER (from spread sheet)													**$5,232,000**
TOTAL													**$38,774,482**

New pavment is 9" thick HBP

Existing pavement resurfacing consists of 2" milling and overlay

Uncl Excavation is assumed to equal 3' of depth and will entail 2' of moisture conditioning.

ITS Element	Assumptions	Conceptual Level Cost Estimate
Enhanced traffic signal detection	Assumed video detection with fixed cameras for a four-approach intersection. Does not include poles or communication.	$25,000 per intersection
Video monitoring	Assumed color cameras with pan/tilt/zoom (PTZ) capabilities. Does not include poles or communication.	$45,000 to $50,000 per PTZ camera
Traveler information display devices (*NextBus*) at bus stops	Assumed already existing automatic vehicle location (AVL) already available on RTD buses. If routes on Arapahoe Road need to be set up for *NextBus*, cost is $5000 per route. In addition to sign installation costs, there are also annual cost for communications as well as operations and licensing.	Installation & Set-up Costs: $5000 set-up per route $5000 per sign Communication = $1000 per year per sign Operations & Licensing = $ 800 per bus per year
Dynamic Message Signs (DMS) for information on congestion and optional routes	Assumed arterial application with sign about 5 feet by 10 feet and mounted at 18 feet high. Does not include communication.	$150,000 per DMS
Link to ITS implemented with TREX	Assumed that these links are communications upgrades. See costs for communications.	See communications below
Signal timing and coordination improvements	Assumed signal controller upgrades and improvements to central control capabilities.	$300,000 to $400,000
Emergency vehicles operation coordination	Assumed emergency vehicles equipped with AVL equipment and installation of a dynamic routing system.	$600,000 to $1,000,000
Install or upgrade communications infrastructure	Assumed fiber optic cable installation.	$25,000 to $30,000 per mile
Red Light Running camera system	Implementation to be contracted to private vendor	Self-sustaining system based on fines

APPENDIX B

Arapahoe Road Corridor No Action
2030 Intersection and Arterial Level of Service

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.91		0.97	*0.50	1.00	0.97	0.95		1.00	0.95	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.95		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	4942		3433	2794	1583	3433	3368		1770	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.64	1.00	1.00
Satd. Flow (perm)	3433	4942		3433	2794	1583	3433	3368		1192	3539	1583
Volume (vph)	320	2315	535	45	2155	90	360	95	45	80	125	255
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	348	2516	582	49	2342	98	391	103	49	87	136	277
RTOR Reduction (vph)	0	29	0	0	0	38	0	44	0	0	0	94
Lane Group Flow (vph)	348	3069	0	49	2342	60	391	108	0	87	136	183
Turn Type	Prot			Prot		Perm	Prot			pm+pt		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6				4		4
Actuated Green, G (s)	8.0	75.2		4.8	72.0	72.0	8.0	11.7		18.3	11.0	11.0
Effective Green, g (s)	9.0	77.2		5.8	74.0	74.0	9.0	12.7		20.3	12.0	12.0
Actuated g/C Ratio	0.08	0.64		0.05	0.62	0.62	0.08	0.11		0.17	0.10	0.10
Clearance Time (s)	5.0	6.0		5.0	6.0	6.0	5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	1.5	5.0		1.5	5.0	5.0	1.5	1.5		1.5	1.5	1.5
Lane Grp Cap (vph)	257	3179		166	1723	976	257	356		242	354	158
v/s Ratio Prot	c0.10	c0.63		0.01	c0.84		c0.11	0.05		0.02	0.04	
v/s Ratio Perm						0.06				0.04		0.17
v/c Ratio	1.35	0.97		0.30	1.36	0.06	1.52	0.30		0.36	0.38	1.16
Uniform Delay, d1	55.5	20.1		55.1	23.0	9.2	55.5	49.6		43.6	50.5	54.0
Progression Factor	1.00	1.00		0.84	1.29	2.56	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	182.7	9.7		0.0	162.0	0.0	253.5	0.2		0.3	0.3	121.4
Delay (s)	238.2	29.9		46.5	191.6	23.5	309.0	49.7		43.9	50.8	175.4
Level of Service	F	C		D	F	C	F	D		D	D	F
Approach Delay (s)		50.9			182.1			236.5			118.6	
Approach LOS		D			F			F			F	

Intersection Summary			
HCM Average Control Delay	117.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.46		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	87.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.91		1.00	*0.50		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	0.99		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	5068		1770	2760		1770	1818		1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.29	1.00		0.43	1.00	1.00
Satd. Flow (perm)	3433	5068		1770	2760		532	1818		793	1863	1583
Volume (vph)	160	2330	55	70	1950	170	80	105	20	255	310	385
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	174	2533	60	76	2120	185	87	114	22	277	337	418
RTOR Reduction (vph)	0	2	0	0	4	0	0	6	0	0	0	102
Lane Group Flow (vph)	174	2591	0	76	2301	0	87	130	0	277	337	316
Turn Type	Prot			Prot			pm+pt			pm+pt		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases							8			4		4
Actuated Green, G (s)	6.0	72.1		5.9	72.0		20.3	13.0		21.7	13.7	13.7
Effective Green, g (s)	7.0	74.1		6.9	74.0		22.3	14.0		23.7	14.7	14.7
Actuated g/C Ratio	0.06	0.62		0.06	0.62		0.19	0.12		0.20	0.12	0.12
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	1.5	5.0		1.5	5.0		1.5	1.5		1.5	1.5	1.5
Lane Grp Cap (vph)	200	3129		102	1702		184	212		230	228	194
v/s Ratio Prot	0.05	c0.51		0.04	c0.83		0.03	0.07		c0.09	0.18	
v/s Ratio Perm							0.05			0.15		0.26
v/c Ratio	0.87	0.83		0.75	1.35		0.47	0.61		1.20	1.48	1.63
Uniform Delay, d1	56.0	18.0		55.7	23.0		54.7	50.4		46.9	52.6	52.6
Progression Factor	0.81	0.42		1.37	0.42		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	16.4	1.2		15.7	161.0		0.7	3.7		125.7	237.3	305.7
Delay (s)	61.7	8.8		92.1	170.7		55.4	54.1		172.6	289.9	358.4
Level of Service	E	A		F	F		E	D		F	F	F
Approach Delay (s)		12.1			168.2			54.6			286.2	
Approach LOS		B			F			D			F	

Intersection Summary			
HCM Average Control Delay	115.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.34		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	84.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.91		0.97	0.91	1.00	0.97	1.00	0.88	0.91	0.91	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	4998		3433	5085	1583	3433	1863	2787	1610	3353	
Flt Permitted	0.09	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	172	4998		3433	5085	1583	3433	1863	2787	1610	3353	
Volume (vph)	175	2215	285	625	1880	500	230	405	555	225	575	45
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	190	2408	310	679	2043	543	250	440	603	245	625	49
RTOR Reduction (vph)	0	13	0	0	0	265	0	0	452	0	4	0
Lane Group Flow (vph)	190	2705	0	679	2043	278	250	440	151	245	670	0
Turn Type	pm+pt			Prot		Perm	Split		Perm	Split		
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases	2					6			8			
Actuated Green, G (s)	49.3	41.3		24.7	58.0	58.0	14.0	14.0	14.0	19.0	19.0	
Effective Green, g (s)	52.3	43.3		25.7	60.0	60.0	15.0	15.0	15.0	20.0	20.0	
Actuated g/C Ratio	0.44	0.36		0.21	0.50	0.50	0.12	0.12	0.12	0.17	0.17	
Clearance Time (s)	5.0	6.0		5.0	6.0	6.0	5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	1.5	5.0		1.5	5.0	5.0	2.5	2.5	2.5	2.5	2.5	
Lane Grp Cap (vph)	195	1803		735	2543	792	429	233	348	268	559	
v/s Ratio Prot	0.07	c0.54		c0.20	0.40		0.07	c0.24		0.15	c0.20	
v/s Ratio Perm	0.35					0.34			0.22			
v/c Ratio	0.97	1.50		0.92	0.80	0.35	0.58	1.89	0.43	0.91	1.20	
Uniform Delay, d1	28.3	38.4		46.2	25.1	18.2	49.5	52.5	48.6	49.2	50.0	
Progression Factor	1.22	0.86		0.94	0.67	1.87	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	42.0	226.8		2.2	0.3	0.1	1.7	415.6	0.6	33.0	105.7	
Delay (s)	76.4	259.7		45.6	17.0	34.1	51.2	468.1	49.2	82.2	155.7	
Level of Service	E	F		D	B	C	D	F	D	F	F	
Approach Delay (s)		247.7			25.8			192.1			136.1	
Approach LOS		F			C			F			F	

Intersection Summary			
HCM Average Control Delay	140.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.36		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	117.7%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91		1.00	0.95	0.95	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.98	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	5085	1583	3433	5079		1770	1741	1504	1770	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	5085	1583	3433	5079		1770	1741	1504	1770	1863	1583
Volume (vph)	125	2670	180	670	2875	25	110	170	285	5	150	40
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	136	2902	196	728	3125	27	120	185	310	5	163	43
RTOR Reduction (vph)	0	0	100	0	1	0	0	3	166	0	0	37
Lane Group Flow (vph)	136	2902	96	728	3151	0	120	204	122	5	163	6
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2						8			4
Actuated Green, G (s)	5.0	53.0	53.0	17.0	65.0		13.6	28.2	28.2	0.8	15.4	15.4
Effective Green, g (s)	6.0	55.0	55.0	18.0	67.0		14.6	29.2	29.2	1.8	16.4	16.4
Actuated g/C Ratio	0.05	0.46	0.46	0.15	0.56		0.12	0.24	0.24	0.02	0.14	0.14
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0		5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	89	2331	726	515	2836		215	424	366	27	255	216
v/s Ratio Prot	0.08	c0.57		c0.21	0.62		0.07	0.12		0.00	c0.09	
v/s Ratio Perm			0.12						0.19			0.03
v/c Ratio	1.53	1.24	0.13	1.41	1.11		0.56	0.48	0.33	0.19	0.64	0.03
Uniform Delay, d1	57.0	32.5	18.7	51.0	26.5		49.7	38.9	37.4	58.4	49.0	44.9
Progression Factor	1.16	0.77	0.59	1.04	0.74		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	242.8	110.6	0.0	187.2	50.6		3.1	0.9	0.5	3.3	5.2	0.1
Delay (s)	308.8	135.5	11.2	240.2	70.2		52.8	39.8	37.9	61.7	54.2	44.9
Level of Service	F	F	B	F	E		D	D	D	E	D	D
Approach Delay (s)		135.2			102.1			41.4			52.5	
Approach LOS		F			F			D			D	

Intersection Summary			
HCM Average Control Delay	109.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.14		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	102.1%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		0.97	0.95		0.97	0.95	
Frt	1.00	0.96		1.00	0.98		1.00	0.99		1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	4893		1770	4999		3433	3494		3433	3330	
Flt Permitted	0.07	1.00		0.07	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	128	4893		138	4999		3433	3494		3433	3330	
Volume (vph)	340	1810	610	135	3250	415	570	325	30	440	370	240
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	370	1967	663	147	3533	451	620	353	33	478	402	261
RTOR Reduction (vph)	0	51	0	0	13	0	0	5	0	0	89	0
Lane Group Flow (vph)	370	2579	0	147	3971	0	620	381	0	478	574	0
Turn Type	pm+pt			pm+pt			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6								
Actuated Green, G (s)	72.0	59.0		59.0	52.0		13.0	11.0		22.0	20.0	
Effective Green, g (s)	73.0	61.0		62.0	54.0		14.0	12.0		23.0	21.0	
Actuated g/C Ratio	0.61	0.51		0.52	0.45		0.12	0.10		0.19	0.18	
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	2.5	5.0		2.5	5.0		2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	283	2487		180	2250		401	349		658	583	
v/s Ratio Prot	c0.16	0.54		0.05	c0.80		c0.18	0.11		0.14	c0.20	
v/s Ratio Perm	0.63			0.37								
v/c Ratio	1.31	1.04		0.82	1.76		1.55	1.09		0.73	0.98	
Uniform Delay, d1	49.1	29.5		57.0	33.0		53.0	54.0		45.5	49.3	
Progression Factor	1.39	1.90		1.33	1.01		1.00	1.00		1.00	1.00	
Incremental Delay, d2	140.7	18.4		2.6	344.3		257.9	74.7		3.8	33.0	
Delay (s)	209.0	74.5		78.4	377.6		310.9	128.7		49.3	82.4	
Level of Service	F	E		E	F		F	F		D	F	
Approach Delay (s)		91.1			366.9			241.0			68.5	
Approach LOS		F			F			F			E	

Intersection Summary			
HCM Average Control Delay	227.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.49		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	138.4%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91		1.00	0.91		0.95	0.95	1.00	0.95	0.95	1.00
Frt	1.00	0.95		1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.97	1.00	0.95	0.99	1.00
Satd. Flow (prot)	1770	4843		1770	5030		1681	1717	1583	1681	1756	1583
Flt Permitted	0.07	1.00		0.06	1.00		0.95	0.97	1.00	0.95	0.99	1.00
Satd. Flow (perm)	121	4843		114	5030		1681	1717	1583	1681	1756	1583
Volume (vph)	280	1365	635	405	3480	270	80	20	45	40	30	40
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	304	1484	690	440	3783	293	87	22	49	43	33	43
RTOR Reduction (vph)	0	66	0	0	7	0	0	0	46	0	0	41
Lane Group Flow (vph)	304	2108	0	440	4069	0	53	56	3	37	39	2
Turn Type	pm+pt			pm+pt			Split		Perm	Split		Perm
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases	2			6					8			4
Actuated Green, G (s)	66.4	59.4		93.8	80.8		7.2	7.2	7.2	4.0	4.0	4.0
Effective Green, g (s)	69.4	61.4		94.8	82.8		8.2	8.2	8.2	5.0	5.0	5.0
Actuated g/C Ratio	0.58	0.51		0.79	0.69		0.07	0.07	0.07	0.04	0.04	0.04
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	1.5	5.0		1.5	5.0		2.5	2.5	2.5	2.5	2.5	2.5
Lane Grp Cap (vph)	180	2478		496	3471		115	117	108	70	73	66
v/s Ratio Prot	c0.11	0.45		0.22	c0.81		0.03	c0.03		0.02	0.02	
v/s Ratio Perm	c0.86			0.48					0.03			0.03
v/c Ratio	1.69	0.85		0.89	1.17		0.46	0.48	0.03	0.53	0.53	0.03
Uniform Delay, d1	37.2	25.3		33.1	18.6		53.8	53.8	52.2	56.3	56.4	55.2
Progression Factor	1.23	0.65		1.23	0.92		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	316.5	1.1		1.9	77.9		2.1	2.2	0.1	5.4	5.7	0.1
Delay (s)	362.3	17.5		42.8	95.0		55.9	56.1	52.3	61.7	62.1	55.3
Level of Service	F	B		D	F		E	E	D	E	E	E
Approach Delay (s)		59.8			89.9			54.8			59.5	
Approach LOS		E			F			D			E	

Intersection Summary			
HCM Average Control Delay	78.4	HCM Level of Service	E
HCM Volume to Capacity ratio	1.42		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	108.2%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00	0.97	0.95	1.00	0.97	1.00	1.00
Frt	1.00	0.95		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	4854		1770	5085	1583	3433	3539	1583	3433	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	4854		1770	5085	1583	3433	3539	1583	3433	1863	1583
Volume (vph)	65	965	420	350	4000	450	220	170	125	245	30	5
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	71	1049	457	380	4348	489	239	185	136	266	33	5
RTOR Reduction (vph)	0	85	0	0	0	147	0	0	124	0	0	5
Lane Group Flow (vph)	71	1421	0	380	4348	342	239	185	12	266	33	0
Turn Type	Prot			Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6			8			4
Actuated Green, G (s)	4.8	39.3		38.7	73.2	73.2	16.9	9.3	9.3	11.7	4.1	4.1
Effective Green, g (s)	5.8	41.3		39.7	75.2	75.2	17.9	10.3	10.3	12.7	5.1	5.1
Actuated g/C Ratio	0.05	0.34		0.33	0.63	0.63	0.15	0.09	0.09	0.11	0.04	0.04
Clearance Time (s)	5.0	6.0		5.0	6.0	6.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	1.5	5.0		1.5	5.0	5.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	166	1671		586	3187	992	512	304	136	363	79	67
v/s Ratio Prot	0.02	0.31		c0.21	c0.86		0.07	0.05		c0.08	0.02	
v/s Ratio Perm						0.31			0.09			0.00
v/c Ratio	0.43	0.85		0.65	1.36	0.34	0.47	0.61	0.09	0.73	0.42	0.00
Uniform Delay, d1	55.5	36.5		34.2	22.4	10.7	46.7	52.9	50.5	52.0	56.0	55.0
Progression Factor	1.38	0.66		1.18	1.08	0.74	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	3.8		0.2	164.1	0.1	0.2	2.4	0.1	6.5	1.3	0.0
Delay (s)	76.9	27.9		40.5	188.4	7.9	46.9	55.3	50.6	58.5	57.3	55.0
Level of Service	E	C		D	F	A	D	E	D	E	E	E
Approach Delay (s)		30.1			160.7			50.6			58.3	
Approach LOS		C			F			D			E	

Intersection Summary			
HCM Average Control Delay	121.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.18		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	107.6%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	0.97	0.95	0.95	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.88	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)	1770	5085	1583	1770	5085	1583	3433	1564	1504	1770	1863	1583
Flt Permitted	0.10	1.00	1.00	0.09	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	191	5085	1583	173	5085	1583	3433	1564	1504	1770	1863	1583
Volume (vph)	65	1180	270	720	4555	35	425	25	190	70	25	190
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	71	1283	293	783	4951	38	462	27	207	76	27	207
RTOR Reduction (vph)	0	0	198	0	0	14	0	81	100	0	0	71
Lane Group Flow (vph)	71	1283	95	783	4951	24	462	39	14	76	27	136
Turn Type	pm+pt		Perm	pm+pt		Perm	Split		Perm	Split		Perm
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases	2		2	6		6			8			4
Actuated Green, G (s)	41.8	37.0	37.0	86.0	75.2	75.2	14.0	14.0	14.0	5.0	5.0	5.0
Effective Green, g (s)	44.8	39.0	39.0	87.0	77.2	77.2	15.0	15.0	15.0	6.0	6.0	6.0
Actuated g/C Ratio	0.37	0.32	0.32	0.72	0.64	0.64	0.12	0.12	0.12	0.05	0.05	0.05
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0	6.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	1.5	5.0	5.0	2.5	5.0	5.0	1.5	1.5	1.5	1.5	1.5	1.5
Lane Grp Cap (vph)	148	1653	514	711	3271	1018	429	196	188	89	93	79
v/s Ratio Prot	0.02	0.25		c0.40	c0.97		c0.13	0.08		0.04	0.01	
v/s Ratio Perm	0.16		0.19	0.39		0.02			0.08			0.13
v/c Ratio	0.48	0.78	0.19	1.10	1.51	0.02	1.08	0.20	0.08	0.85	0.29	1.72
Uniform Delay, d1	24.5	36.6	29.1	30.3	21.4	7.8	52.5	47.1	46.4	56.6	54.9	57.0
Progression Factor	1.55	0.70	1.10	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.8	3.3	0.7	64.9	232.7	0.0	65.6	0.2	0.1	49.3	0.6	370.8
Delay (s)	39.0	28.7	32.6	95.2	254.1	7.8	118.1	47.3	46.4	105.9	55.6	427.8
Level of Service	D	C	C	F	F	A	F	D	D	F	E	F
Approach Delay (s)		29.9			231.0			94.2			316.4	
Approach LOS		C			F			F			F	

Intersection Summary			
HCM Average Control Delay	183.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.46		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	121.9%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.91		0.97	*0.50	1.00	0.97	0.95		1.00	0.95	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	4952		3433	2794	1583	3433	3316		1770	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.33	1.00	1.00
Satd. Flow (perm)	3433	4952		3433	2794	1583	3433	3316		621	3539	1583
Volume (vph)	330	1965	415	170	2510	180	695	200	145	120	165	265
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	359	2136	451	185	2728	196	755	217	158	130	179	288
RTOR Reduction (vph)	0	27	0	0	0	75	0	110	0	0	0	91
Lane Group Flow (vph)	359	2560	0	185	2728	121	755	265	0	130	179	197
Turn Type	Prot			Prot		Perm	Prot			pm+pt		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6				4		4
Actuated Green, G (s)	8.0	72.2		7.8	72.0	72.0	8.0	11.2		18.8	11.0	11.0
Effective Green, g (s)	9.0	74.2		8.8	74.0	74.0	9.0	12.2		20.8	12.0	12.0
Actuated g/C Ratio	0.08	0.62		0.07	0.62	0.62	0.08	0.10		0.17	0.10	0.10
Clearance Time (s)	5.0	6.0		5.0	6.0	6.0	5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	1.5	5.0		1.5	5.0	5.0	1.5	1.5		1.5	1.5	1.5
Lane Grp Cap (vph)	257	3062		252	1723	976	257	337		192	354	158
v/s Ratio Prot	c0.10	0.52		0.05	c0.98		c0.22	0.11		0.05	0.05	
v/s Ratio Perm						0.12				0.07		0.18
v/c Ratio	1.40	0.84		0.73	1.58	0.12	2.94	0.79		0.68	0.51	1.25
Uniform Delay, d1	55.5	18.1		54.5	23.0	9.5	55.5	52.6		44.6	51.2	54.0
Progression Factor	1.00	1.00		1.07	0.39	0.21	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	200.6	2.9		0.9	262.7	0.0	882.5	10.7		7.2	0.4	153.1
Delay (s)	256.1	21.0		59.1	271.8	2.1	938.0	63.3		51.8	51.6	207.1
Level of Service	F	C		E	F	A	F	E		D	D	F
Approach Delay (s)		49.6			242.1			647.7			126.7	
Approach LOS		D			F			F			F	

Intersection Summary			
HCM Average Control Delay	219.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.71		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	95.6%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.91		1.00	*0.50		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.99		1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	5053		1770	2772		1770	1808		1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.36	1.00		0.36	1.00	1.00
Satd. Flow (perm)	3433	5053		1770	2772		677	1808		677	1863	1583
Volume (vph)	305	1805	80	120	2325	130	145	350	85	305	345	390
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	332	1962	87	130	2527	141	158	380	92	332	375	424
RTOR Reduction (vph)	0	4	0	0	3	0	0	7	0	0	0	146
Lane Group Flow (vph)	332	2045	0	130	2665	0	158	465	0	332	375	278
Turn Type	Prot			Prot			pm+pt			pm+pt		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases							8			4		4
Actuated Green, G (s)	10.0	59.0		6.0	55.0		22.0	22.0		23.0	23.0	23.0
Effective Green, g (s)	11.0	61.0		7.0	57.0		23.0	23.0		24.0	24.0	24.0
Actuated g/C Ratio	0.09	0.51		0.06	0.48		0.19	0.19		0.20	0.20	0.20
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	1.5	5.0		1.5	5.0		1.5	1.5		1.5	1.5	1.5
Lane Grp Cap (vph)	315	2569		103	1317		239	347		254	373	317
v/s Ratio Prot	c0.10	0.41		0.07	c0.96		0.07	c0.26		0.14	0.20	
v/s Ratio Perm							0.06			0.12		0.27
v/c Ratio	1.05	0.80		1.26	2.02		0.66	1.34		1.31	1.01	0.88
Uniform Delay, d1	54.5	24.4		56.5	31.5		53.4	48.5		50.1	48.0	46.6
Progression Factor	0.94	0.94		1.17	0.48		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	56.7	1.8		149.8	462.0		5.2	171.0		163.7	47.9	22.0
Delay (s)	107.9	24.8		216.1	477.3		58.6	219.5		213.8	95.9	68.5
Level of Service	F	C		F	F		E	F		F	F	E
Approach Delay (s)		36.4			465.1			179.1			120.3	
Approach LOS		D			F			F			F	

Intersection Summary			
HCM Average Control Delay	235.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.66		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	110.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.91		0.97	0.91	1.00	0.97	1.00	0.88	0.91	0.91	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	4988		3433	5085	1583	3433	1863	2787	1610	3284	
Flt Permitted	0.08	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	143	4988		3433	5085	1583	3433	1863	2787	1610	3284	
Volume (vph)	145	1950	285	555	2135	270	380	980	550	325	425	105
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	158	2120	310	603	2321	293	413	1065	598	353	462	114
RTOR Reduction (vph)	0	16	0	0	0	142	0	0	186	0	14	0
Lane Group Flow (vph)	158	2414	0	603	2321	151	413	1065	412	297	618	0
Turn Type	pm+pt			Prot		Perm	Split		Perm	Split		
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases	2					6			8			
Actuated Green, G (s)	57.0	50.0		17.0	60.0	60.0	20.0	20.0	20.0	12.0	12.0	
Effective Green, g (s)	60.0	52.0		18.0	62.0	62.0	21.0	21.0	21.0	13.0	13.0	
Actuated g/C Ratio	0.50	0.43		0.15	0.52	0.52	0.18	0.18	0.18	0.11	0.11	
Clearance Time (s)	5.0	6.0		5.0	6.0	6.0	5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	1.5	5.0		1.5	5.0	5.0	2.5	2.5	2.5	2.5	2.5	
Lane Grp Cap (vph)	180	2161		515	2627	818	601	326	488	174	356	
v/s Ratio Prot	0.06	c0.49		c0.18	0.46		0.12	c0.57		0.18	c0.19	
v/s Ratio Perm	0.38					0.19			0.21			
v/c Ratio	0.88	1.12		1.17	0.88	0.19	0.69	3.27	0.85	1.71	1.74	
Uniform Delay, d1	52.1	34.0		51.0	25.8	15.5	46.4	49.5	47.9	53.5	53.5	
Progression Factor	1.00	0.58		1.09	0.75	1.42	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	24.0	57.3		79.0	0.5	0.0	3.0	1028.0	12.5	341.4	342.4	
Delay (s)	76.3	77.2		134.6	19.7	22.1	49.4	1077.5	60.4	394.9	395.9	
Level of Service	E	E		F	B	C	D	F	E	F	F	
Approach Delay (s)		77.1			41.5			580.0			395.6	
Approach LOS		E			D			F			F	

Intersection Summary			
HCM Average Control Delay	216.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.65		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	141.1%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91		1.00	0.95	0.95	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.89	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	5085	1583	3433	5084		1770	1581	1504	1770	1863	1583
Flt Permitted	0.10	1.00	1.00	0.10	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	191	5085	1583	371	5084		1770	1581	1504	1770	1863	1583
Volume (vph)	105	2590	110	385	2630	5	495	125	985	25	245	175
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	114	2815	120	418	2859	5	538	136	1071	27	266	190
RTOR Reduction (vph)	0	0	61	0	0	0	0	69	331	0	0	61
Lane Group Flow (vph)	114	2815	59	418	2864	0	538	403	404	27	266	129
Turn Type	pm+pt		Perm	pm+pt			Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6					8			4
Actuated Green, G (s)	43.0	43.0	43.0	62.0	61.0		10.0	28.0	28.0	5.0	23.0	23.0
Effective Green, g (s)	45.0	45.0	45.0	63.0	63.0		11.0	29.0	29.0	6.0	24.0	24.0
Actuated g/C Ratio	0.38	0.38	0.38	0.52	0.52		0.09	0.24	0.24	0.05	0.20	0.20
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0		5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	151	1907	594	807	2669		162	382	363	89	373	317
v/s Ratio Prot	0.04	c0.55		0.10	c0.56		c0.30	0.30		0.02	0.14	
v/s Ratio Perm	0.25		0.08	0.17					0.49			0.12
v/c Ratio	0.75	1.48	0.10	0.52	1.07		3.32	1.05	1.11	0.30	0.71	0.41
Uniform Delay, d1	57.9	37.5	24.3	39.0	28.5		54.5	45.5	45.5	55.0	44.8	41.8
Progression Factor	0.72	0.83	0.58	1.29	1.41		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.0	214.5	0.0	0.1	33.7		1060.1	61.2	81.0	1.9	6.3	0.9
Delay (s)	43.4	245.7	14.2	50.5	73.9		1114.6	106.7	126.5	56.9	51.1	42.7
Level of Service	D	F	B	D	E		F	F	F	E	D	D
Approach Delay (s)		229.0			70.9			425.8			48.1	
Approach LOS		F			E			F			D	

Intersection Summary			
HCM Average Control Delay	198.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.65		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	114.7%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		0.97	0.95		0.97	0.95	
Frt	1.00	0.98		1.00	0.97		1.00	0.97		1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	4985		1770	4955		3433	3416		3433	3312	
Flt Permitted	0.08	1.00		0.08	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	152	4985		152	4955		3433	3416		3433	3312	
Volume (vph)	275	2790	420	120	2215	455	590	215	65	520	515	385
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	299	3033	457	130	2408	495	641	234	71	565	560	418
RTOR Reduction (vph)	0	17	0	0	26	0	0	24	0	0	100	0
Lane Group Flow (vph)	299	3473	0	130	2877	0	641	281	0	565	878	0
Turn Type	pm+pt			pm+pt			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6								
Actuated Green, G (s)	56.0	56.0		56.0	55.0		14.0	10.0		26.0	22.0	
Effective Green, g (s)	58.0	58.0		57.0	57.0		15.0	11.0		27.0	23.0	
Actuated g/C Ratio	0.48	0.48		0.48	0.48		0.12	0.09		0.22	0.19	
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	2.5	5.0		2.5	5.0		2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	195	2409		180	2354		429	313		772	635	
v/s Ratio Prot	0.12	c0.70		0.05	c0.59		c0.19	0.09		0.16	c0.30	
v/s Ratio Perm	c0.63			0.29								
v/c Ratio	1.53	1.44		0.72	1.22		1.49	0.90		0.73	1.38	
Uniform Delay, d1	57.7	31.0		51.4	31.5		52.5	54.0		43.1	48.5	
Progression Factor	1.35	0.58		1.03	1.07		1.00	1.00		1.00	1.00	
Incremental Delay, d2	242.4	199.1		1.2	100.3		234.4	26.6		3.4	181.7	
Delay (s)	320.4	216.9		54.4	133.9		286.9	80.5		46.5	230.2	
Level of Service	F	F		D	F		F	F		D	F	
Approach Delay (s)		225.1			130.5			220.4			163.0	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	183.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.47		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	126.7%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91		1.00	0.91		0.95	0.95	1.00	0.95	0.95	1.00
Frt	1.00	1.00		1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.95	1.00	0.95	0.96	1.00
Satd. Flow (prot)	1770	5065		1770	5070		1681	1688	1583	1681	1705	1583
Flt Permitted	0.10	1.00		0.10	1.00		0.95	0.95	1.00	0.95	0.96	1.00
Satd. Flow (perm)	190	5065		190	5070		1681	1688	1583	1681	1705	1583
Volume (vph)	55	3320	90	70	1950	40	650	10	260	170	25	300
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	60	3609	98	76	2120	43	707	11	283	185	27	326
RTOR Reduction (vph)	0	2	0	0	1	0	0	0	209	0	0	73
Lane Group Flow (vph)	60	3705	0	76	2162	0	354	364	74	103	109	253
Turn Type	pm+pt			pm+pt			Split		Perm	Split		Perm
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases	2			6					8			4
Actuated Green, G (s)	42.5	42.5		42.5	41.5		30.4	30.4	30.4	22.9	22.9	22.9
Effective Green, g (s)	44.5	44.5		43.5	43.5		31.4	31.4	31.4	23.9	23.9	23.9
Actuated g/C Ratio	0.37	0.37		0.36	0.36		0.26	0.26	0.26	0.20	0.20	0.20
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	1.5	5.0		1.5	5.0		2.5	2.5	2.5	2.5	2.5	2.5
Lane Grp Cap (vph)	139	1878		124	1838		440	442	414	335	340	315
v/s Ratio Prot	0.02	c0.73		0.02	c0.43		0.21	c0.22		0.06	0.06	
v/s Ratio Perm	0.14			0.20					0.18			0.21
v/c Ratio	0.43	1.97		0.61	1.18		0.80	0.82	0.18	0.31	0.32	0.80
Uniform Delay, d1	56.8	37.8		54.0	38.2		41.4	41.7	34.3	41.0	41.1	45.8
Progression Factor	0.82	0.97		1.05	1.09		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	438.0		3.8	83.1		10.0	11.5	0.2	0.4	0.4	13.4
Delay (s)	46.9	474.5		60.5	124.9		51.4	53.2	34.5	41.4	41.5	59.2
Level of Service	D	F		E	F		D	D	C	D	D	E
Approach Delay (s)		467.7			122.8			47.3			52.2	
Approach LOS		F			F			D			D	

Intersection Summary			
HCM Average Control Delay	279.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.35		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	97.7%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00	0.97	0.95	1.00	0.97	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5057		1770	5085	1583	3433	3539	1583	3433	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5057		1770	5085	1583	3433	3539	1583	3433	1863	1583
Volume (vph)	280	3340	130	150	1465	170	540	100	590	515	180	5
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	304	3630	141	163	1592	185	587	109	641	560	196	5
RTOR Reduction (vph)	0	4	0	0	0	105	0	0	69	0	0	4
Lane Group Flow (vph)	304	3767	0	163	1592	80	587	109	572	560	196	1
Turn Type	Prot			Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6			8			4
Actuated Green, G (s)	21.4	65.0		6.0	49.6	49.6	13.3	21.0	21.0	7.0	14.7	14.7
Effective Green, g (s)	22.4	67.0		7.0	51.6	51.6	14.3	22.0	22.0	8.0	15.7	15.7
Actuated g/C Ratio	0.19	0.56		0.06	0.43	0.43	0.12	0.18	0.18	0.07	0.13	0.13
Clearance Time (s)	5.0	6.0		5.0	6.0	6.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	1.5	5.0		1.5	5.0	5.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	641	2823		103	2187	681	409	649	290	229	244	207
v/s Ratio Prot	0.09	c0.75		c0.09	0.31		0.17	0.03		c0.16	0.11	
v/s Ratio Perm						0.12			0.40			0.00
v/c Ratio	0.47	1.33		1.58	0.73	0.12	1.44	0.17	1.97	2.45	0.80	0.00
Uniform Delay, d1	43.5	26.5		56.5	28.4	20.5	52.8	41.3	49.0	56.0	50.7	45.3
Progression Factor	1.25	1.08		1.35	0.81	2.57	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.0	150.8		297.2	1.8	0.3	209.4	0.0	450.4	663.5	16.3	0.0
Delay (s)	54.2	179.5		373.5	24.7	53.1	262.3	41.3	499.4	719.5	66.9	45.3
Level of Service	D	F		F	C	D	F	D	F	F	E	D
Approach Delay (s)		170.2			56.7			358.0			547.0	
Approach LOS		F			E			F			F	

Intersection Summary			
HCM Average Control Delay	209.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.62		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	128.6%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	0.97	0.95	0.95	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.86	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)	1770	5085	1583	1770	5085	1583	3433	1523	1504	1770	1863	1583
Flt Permitted	0.09	1.00	1.00	0.07	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	173	5085	1583	132	5085	1583	3433	1523	1504	1770	1863	1583
Volume (vph)	105	3535	300	210	1405	90	300	30	790	85	55	70
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	114	3842	326	228	1527	98	326	33	859	92	60	76
RTOR Reduction (vph)	0	0	76	0	0	52	0	93	93	0	0	71
Lane Group Flow (vph)	114	3842	250	228	1527	46	326	369	337	92	60	5
Turn Type	pm+pt		Perm	pm+pt		Perm	Split		Perm	Split		Perm
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases	2		2	6		6			8			4
Actuated Green, G (s)	88.0	72.0	72.0	64.3	54.3	54.3	10.1	10.1	10.1	6.9	6.9	6.9
Effective Green, g (s)	89.0	74.0	74.0	67.3	56.3	56.3	11.1	11.1	11.1	7.9	7.9	7.9
Actuated g/C Ratio	0.74	0.62	0.62	0.56	0.47	0.47	0.09	0.09	0.09	0.07	0.07	0.07
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0	6.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	1.5	5.0	5.0	2.5	5.0	5.0	1.5	1.5	1.5	1.5	1.5	1.5
Lane Grp Cap (vph)	510	3136	976	224	2386	743	318	141	139	117	123	104
v/s Ratio Prot	0.05	c0.76		c0.09	0.30		0.09	c0.30		c0.05	0.03	
v/s Ratio Perm	0.11		0.21	0.48		0.06			0.29			0.05
v/c Ratio	0.22	1.23	0.26	1.02	0.64	0.06	1.03	2.61	2.42	0.79	0.49	0.05
Uniform Delay, d1	21.2	23.0	10.5	56.7	24.2	17.4	54.4	54.4	54.4	55.2	54.1	52.5
Progression Factor	1.48	1.11	0.69	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.0	101.6	0.1	64.8	1.3	0.2	57.1	746.3	660.8	26.6	1.1	0.1
Delay (s)	31.2	127.1	7.3	121.5	25.5	17.6	111.5	800.7	715.3	81.8	55.2	52.6
Level of Service	C	F	A	F	C	B	F	F	F	F	E	D
Approach Delay (s)		115.4			36.9			586.1			65.1	
Approach LOS		F			D			F			E	

Intersection Summary			
HCM Average Control Delay	170.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.39		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	115.8%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Arterial Level of Service: EB E Arapahoe Rd

Cross Street	Delay	Travel Time (s)	Dist (mi)	Arterial Speed
S Boston St	29.5	51.6	0.2	15
S Clinton Ct	11.3	26.0	0.1	17
	54.8	71.0	0.1	7
S Emporia St	5.3	16.8	0.1	20
S Galena St	21.7	41.3	0.2	14
S Havana St	90.0	107.3	0.1	5
S Ironton St	4.6	14.2	0.1	25
S Kenton St	3.2	17.0	0.2	36
S Lima St	21.3	29.8	0.1	14
S Nome St	7.3	19.9	0.2	27
S Peoria St	37.7	55.9	0.2	15
S Revere Pkwy	11.5	43.7	0.4	34
S Vaughn St	4.6	27.5	0.3	38
S Potomac St	22.3	37.7	0.2	19
S Atchinson St	4.2	19.4	0.3	49
S Jordan Rd	15.0	35.6	0.3	29
Total	344.1	614.7	3.1	18

Arterial Level of Service: WB E Arapahoe Rd

Cross Street	Delay	Travel Time (s)	Dist (mi)	Arterial Speed
S Jordan Rd	251.1	281.0	0.4	22
S Atchinson St	9.8	32.4	0.3	32
S Potomac St	14.1	34.9	0.3	27
S Vaughn St	6.3	22.3	0.2	32
S Revere Pkwy	9.2	31.6	0.3	33
S Peoria St	64.4	97.1	0.4	15
S Nome St	7.3	25.7	0.2	33
S Lima St	6.8	18.2	0.2	30
S Kenton St	2.6	11.9	0.1	34
S Ironton St	2.4	16.0	0.2	38
S Havana St	9.7	17.1	0.1	20
S Galena St	2.5	21.4	0.1	25
S Emporia St	2.0	21.3	0.2	27
S Dayton St	40.2	51.4	0.1	10
S Clinton Ct	1.8	18.5	0.1	26
S Boston St	20.5	34.4	0.1	13
Total	450.8	735.1	3.2	24

Intersection: 11: E Arapahoe Rd & S Boston St

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	WB	NB
Directions Served	L	L	T	T	TR	L	L	T	T	T	R	L
Maximum Queue (ft)	164	332	513	496	512	12	4	168	209	183	75	173
Average Queue (ft)	123	177	380	430	474	2	1	85	107	113	31	156
95th Queue (ft)	160	312	573	548	538	10	3	204	244	237	79	190
Link Distance (ft)			935	935	935			512	512	512		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	300	300				500	500				600	150
Storage Blk Time (%)			0.07									0.45
Queuing Penalty (veh)			23									21

Intersection: 11: E Arapahoe Rd & S Boston St

Movement	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	T	TR	L	T	T	R
Maximum Queue (ft)	186	524	90	117	75	93	116
Average Queue (ft)	175	270	52	78	61	48	69
95th Queue (ft)	207	626	93	121	80	89	125
Link Distance (ft)		538	538		633	633	
Upstream Blk Time (%)		0.00					
Queuing Penalty (veh)		0					
Storage Bay Dist (ft)	150			150			150
Storage Blk Time (%)	0.58						
Queuing Penalty (veh)	27						

Intersection: 14: E Arapahoe Rd & S Clinton Ct

Movement	EB	EB	EB	WB	NB	SB
Directions Served	T	T	TR	L	R	R
Maximum Queue (ft)	301	343	225	32	116	29
Average Queue (ft)	122	179	115	6	69	11
95th Queue (ft)	309	373	245	28	123	35
Link Distance (ft)	512	512	512		400	432
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)				100		
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 15: E Arapahoe Rd & S Dayton St

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB
Directions Served	L	L	T	T	TR	L	T	T	TR	L	TR	L
Maximum Queue (ft)	110	385	638	664	647	90	199	211	222	90	92	175
Average Queue (ft)	68	262	560	639	636	54	72	86	128	55	70	106
95th Queue (ft)	122	507	685	663	651	85	178	192	222	92	100	203
Link Distance (ft)			626	626	626		414	414	414		571	
Upstream Blk Time (%)			0.03	0.14	0.12							
Queuing Penalty (veh)			25	122	98							
Storage Bay Dist (ft)	350	350				250				150		150
Storage Blk Time (%)			0.14									0.00
Queuing Penalty (veh)			23									0

Intersection: 15: E Arapahoe Rd & S Dayton St

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	1151	176
Average Queue (ft)	1018	149
95th Queue (ft)	1288	227
Link Distance (ft)	1136	
Upstream Blk Time (%)	0.31	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		150
Storage Blk Time (%)	0.76	
Queuing Penalty (veh)	488	

Intersection: 19: E Arapahoe Rd & S Emporia St

Movement	EB	EB	WB	NB	SB
Directions Served	L	T	L	R	R
Maximum Queue (ft)	458	506	54	156	32
Average Queue (ft)	103	101	36	89	13
95th Queue (ft)	397	435	51	163	39
Link Distance (ft)	414	414		363	436
Upstream Blk Time (%)	0.01	0.01			
Queuing Penalty (veh)	4	6			
Storage Bay Dist (ft)			150		
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 21: E Arapahoe Rd & S Galena St

Movement	EB	EB	EB	NB
Directions Served	T	T	TR	R
Maximum Queue (ft)	500	498	475	182
Average Queue (ft)	222	208	193	88
95th Queue (ft)	558	543	507	179
Link Distance (ft)	777	777	777	370
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 23: E Arapahoe Rd & S Havana St

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	TR	L	L	T	T	T	R	L	L
Maximum Queue (ft)	111	750	740	734	136	155	137	112	154	111	145	431
Average Queue (ft)	66	626	590	603	121	123	94	75	88	72	58	227
95th Queue (ft)	118	979	927	942	147	168	162	121	155	114	131	500
Link Distance (ft)		703	703	703			420	420	420			535
Upstream Blk Time (%)		0.29	0.26	0.27								
Queuing Penalty (veh)		258	230	237								
Storage Bay Dist (ft)	300				300	300				400	150	
Storage Blk Time (%)		0.41									0.00	0.03
Queuing Penalty (veh)		72									0	3

Intersection: 23: E Arapahoe Rd & S Havana St

Movement	NB	NB	NB	SB	SB	SB
Directions Served	T	R	R	L	LT	TR
Maximum Queue (ft)	550	182	165	125	850	850
Average Queue (ft)	464	116	96	100	794	716
95th Queue (ft)	639	177	158	182	955	863
Link Distance (ft)	535	535			835	835
Upstream Blk Time (%)	0.32				0.27	0.11
Queuing Penalty (veh)	0				0	0
Storage Bay Dist (ft)			300	100		
Storage Blk Time (%)					0.83	
Queuing Penalty (veh)					93	

Intersection: 26: E Arapahoe Rd & S Kenton St

Movement	
Directions Served	
Maximum Queue (ft)	
Average Queue (ft)	
95th Queue (ft)	
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 28: E Arapahoe Rd & S Lima St

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	T	R	L	L	T	T	TR	L	TR
Maximum Queue (ft)	136	440	435	432	31	155	171	107	87	123	148	167
Average Queue (ft)	69	276	238	217	28	116	125	57	52	82	96	143
95th Queue (ft)	129	414	401	398	34	168	193	103	94	130	156	176
Link Distance (ft)		526	526	526				726	726	726		524
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	250				400	500	500				150	
Storage Blk Time (%)		0.07		0.02							0.01	0.11
Queuing Penalty (veh)		9		3							3	12

Intersection: 28: E Arapahoe Rd & S Lima St

Movement	NB	SB	SB
Directions Served	R	T	R
Maximum Queue (ft)	126	179	29
Average Queue (ft)	42	162	17
95th Queue (ft)	111	178	40
Link Distance (ft)	524	644	644
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)		0.09	
Queuing Penalty (veh)		0	

Intersection: 31: E Arapahoe Rd & S Nome St

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 33: E Arapahoe Rd & S Peoria St

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	T	T	TR	L	T	T	TR	L	L	T	TR
Maximum Queue (ft)	287	465	487	546	528	846	801	802	225	235	557	436
Average Queue (ft)	169	367	383	470	172	614	585	579	217	232	471	296
95th Queue (ft)	274	472	506	606	474	919	898	940	227	239	662	507
Link Distance (ft)		1145	1145	1145		2077	2077	2077			542	542
Upstream Blk Time (%)											0.21	
Queuing Penalty (veh)											0	
Storage Bay Dist (ft)	400				900				200	200		
Storage Blk Time (%)		0.03							0.38	0.47	0.05	
Queuing Penalty (veh)		9							62	77	31	

Intersection: 33: E Arapahoe Rd & S Peoria St

Movement	SB	SB	SB	SB
Directions Served	L	L	T	TR
Maximum Queue (ft)	217	254	380	459
Average Queue (ft)	188	201	246	315
95th Queue (ft)	220	265	365	450
Link Distance (ft)			492	492
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	200	200		
Storage Blk Time (%)	0.01	0.02	0.13	
Queuing Penalty (veh)	2	5	55	

Intersection: 36: E Arapahoe Rd & S Revere Pkwy

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	TR	L	T	T	TR	L	LT	R	L
Maximum Queue (ft)	352	85	136	214	283	111	85	148	72	93	31	32
Average Queue (ft)	204	51	88	122	139	51	59	84	53	47	24	25
95th Queue (ft)	346	109	168	257	310	112	98	149	75	88	44	46
Link Distance (ft)		2077	2077	2077		1462	1462	1462	642	642		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	750				750						400	200
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 36: E Arapahoe Rd & S Revere Pkwy

Movement	SB	SB
Directions Served	LT	R
Maximum Queue (ft)	75	72
Average Queue (ft)	61	27
95th Queue (ft)	83	70
Link Distance (ft)	492	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		200
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 39: E Arapahoe Rd & S Vaughn St

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 41: E Arapahoe Rd & S Potomac St

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	L	T	T	TR	L	T	T	T	L	L	T
Maximum Queue (ft)	72	94	182	314	352	282	275	273	243	118	136	192
Average Queue (ft)	22	41	151	195	231	210	182	193	206	76	87	97
95th Queue (ft)	65	94	220	301	367	275	270	261	263	158	163	179
Link Distance (ft)			982	982	982		1295	1295	1295			786
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	750	750				500				100	100	
Storage Blk Time (%)										0.38	0.10	0.01
Queuing Penalty (veh)										32	9	2

Intersection: 41: E Arapahoe Rd & S Potomac St

Movement	NB	SB	SB	SB
Directions Served	T	L	L	T
Maximum Queue (ft)	74	184	242	73
Average Queue (ft)	46	134	152	40
95th Queue (ft)	79	187	237	80
Link Distance (ft)	786		823	823
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		250		
Storage Blk Time (%)			0.00	
Queuing Penalty (veh)			0	

Intersection: 44: E Arapahoe Rd & S Atchinson St

Movement	WB	NB
Directions Served	T	R
Maximum Queue (ft)	1458	32
Average Queue (ft)	1451	25
95th Queue (ft)	1463	45
Link Distance (ft)	1407	383
Upstream Blk Time (%)	0.49	
Queuing Penalty (veh)	837	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 46: E Arapahoe Rd & S Jordan Rd

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	T	R	L	T	T	T	L	L	TR
Maximum Queue (ft)	63	207	191	80	21	428	530	622	571	345	351	16
Average Queue (ft)	30	128	95	47	4	293	393	407	397	261	254	3
95th Queue (ft)	71	222	195	96	18	450	524	603	580	361	374	14
Link Distance (ft)		1407	1407	1407			1910	1910	1910		887	887
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	800				250	750				400		
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 46: E Arapahoe Rd & S Jordan Rd

Movement	SB	SB	SB
Directions Served	L	T	R
Maximum Queue (ft)	69	58	125
Average Queue (ft)	42	23	48
95th Queue (ft)	83	68	145
Link Distance (ft)		1274	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	50		100
Storage Blk Time (%)	0.15	0.07	0.05
Queuing Penalty (veh)	32	17	5

Intersection: 85: E Arapahoe Rd & S Ironton St

Movement	NB
Directions Served	R
Maximum Queue (ft)	32
Average Queue (ft)	30
95th Queue (ft)	34
Link Distance (ft)	336
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Nework Summary

Network wide Queuing Penalty: 2932

Arterial Level of Service: EB E Arapahoe Rd

Cross Street	Delay	Travel Time (s)	Dist (mi)	Arterial Speed
S Boston St	25.5	47.5	0.2	16
S Clinton Ct	3.7	17.5	0.1	25
	25.4	40.1	0.1	12
S Emporia St	3.3	14.8	0.1	23
S Galena St	2.3	20.7	0.2	28
S Havana St	25.3	41.7	0.1	13
S Ironton St	3.9	13.3	0.1	26
S Kenton St	5.1	18.6	0.2	33
S Lima St	49.7	58.5	0.1	7
S Nome St	6.9	19.2	0.2	28
S Peoria St	24.5	40.7	0.2	21
S Revere Pkwy	90.6	122.6	0.4	12
S Vaughn St	8.0	31.2	0.3	33
S Potomac St	20.5	36.2	0.2	20
S Atchinson St	8.7	29.0	0.3	32
S Jordan Rd	19.1	39.4	0.3	26
Total	322.3	591.2	3.1	19

Arterial Level of Service: WB E Arapahoe Rd

Cross Street	Delay	Travel Time (s)	Dist (mi)	Arterial Speed
S Jordan Rd	12.7	42.2	0.4	33
S Atchinson St	5.1	28.8	0.3	36
S Potomac St	26.1	46.8	0.3	20
S Vaughn St	5.9	22.1	0.2	32
S Revere Pkwy	53.8	76.6	0.3	15
S Peoria St	30.7	60.8	0.4	24
S Nome St	6.9	25.7	0.2	32
S Lima St	36.6	48.7	0.2	11
S Kenton St	5.5	14.7	0.1	28
S Ironton St	3.2	16.2	0.2	38
S Havana St	16.1	23.0	0.1	15
S Galena St	3.3	22.0	0.1	24
S Emporia St	2.6	21.7	0.2	27
S Dayton St	15.0	25.9	0.1	13
S Clinton Ct	2.7	17.6	0.1	27
S Boston St	220.9	234.4	0.1	19
Total	447.1	727.1	3.2	23

Intersection: 11: E Arapahoe Rd & S Boston St

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	WB	NB
Directions Served	L	L	T	T	TR	L	L	T	T	T	R	L
Maximum Queue (ft)	293	270	459	432	447	35	29	85	99	92	71	173
Average Queue (ft)	197	213	320	306	338	18	13	35	36	44	17	172
95th Queue (ft)	281	267	500	470	483	40	34	93	96	107	62	175
Link Distance (ft)			935	935	935			512	512	512		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	300	300				500	500				600	150
Storage Blk Time (%)	0.00		0.02									0.69
Queuing Penalty (veh)	2		8									69

Intersection: 11: E Arapahoe Rd & S Boston St

Movement	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	T	TR	L	T	T	R
Maximum Queue (ft)	186	553	422	97	141	96	135
Average Queue (ft)	185	529	240	74	85	68	65
95th Queue (ft)	186	606	484	106	139	119	124
Link Distance (ft)		538	538		633	633	
Upstream Blk Time (%)		0.42					
Queuing Penalty (veh)		0					
Storage Bay Dist (ft)	150			150			150
Storage Blk Time (%)	0.80				0.00		0.00
Queuing Penalty (veh)	80				0		0

Intersection: 14: E Arapahoe Rd & S Clinton Ct

Movement	WB	NB	SB
Directions Served	L	R	R
Maximum Queue (ft)	32	73	30
Average Queue (ft)	16	45	6
95th Queue (ft)	39	72	26
Link Distance (ft)		400	432
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	100		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 15: E Arapahoe Rd & S Dayton St

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB
Directions Served	L	L	T	T	TR	L	T	T	TR	L	TR	L
Maximum Queue (ft)	176	193	304	312	314	156	330	311	288	175	586	175
Average Queue (ft)	107	126	227	273	294	87	127	128	172	145	561	153
95th Queue (ft)	195	209	370	313	331	163	298	289	295	180	641	218
Link Distance (ft)			626	626	626		424	424	424		571	
Upstream Blk Time (%)											0.22	
Queuing Penalty (veh)											0	
Storage Bay Dist (ft)	350	350				250				150		150
Storage Blk Time (%)							0.02			0.00	0.72	0.45
Queuing Penalty (veh)							3			1	105	328

Intersection: 15: E Arapahoe Rd & S Dayton St

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	1151	176
Average Queue (ft)	1149	156
95th Queue (ft)	1153	209
Link Distance (ft)	1136	
Upstream Blk Time (%)	0.45	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		150
Storage Blk Time (%)	0.34	0.12
Queuing Penalty (veh)	238	75

Intersection: 19: E Arapahoe Rd & S Emporia St

Movement	WB	NB
Directions Served	L	R
Maximum Queue (ft)	32	74
Average Queue (ft)	22	39
95th Queue (ft)	43	79
Link Distance (ft)		363
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	150	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 21: E Arapahoe Rd & S Galena St

Movement	WB	NB
Directions Served	L	R
Maximum Queue (ft)	53	54
Average Queue (ft)	17	34
95th Queue (ft)	53	66
Link Distance (ft)		370
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	300	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 23: E Arapahoe Rd & S Havana St

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	TR	L	L	T	T	T	R	L	L
Maximum Queue (ft)	114	380	363	442	203	179	265	304	324	52	96	513
Average Queue (ft)	90	254	244	293	151	149	182	218	206	35	73	176
95th Queue (ft)	144	406	379	472	205	186	277	310	306	69	104	455
Link Distance (ft)		700	700	700			407	407	407			535
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	300				300	300				400	150	
Storage Blk Time (%)		0.05										
Queuing Penalty (veh)		7										

Intersection: 23: E Arapahoe Rd & S Havana St

Movement	NB	NB	NB	SB	SB	SB
Directions Served	T	R	R	L	LT	TR
Maximum Queue (ft)	550	158	125	125	850	744
Average Queue (ft)	549	106	80	117	653	550
95th Queue (ft)	554	165	139	142	945	779
Link Distance (ft)	535	535			835	835
Upstream Blk Time (%)	0.68				0.15	
Queuing Penalty (veh)	0				0	
Storage Bay Dist (ft)			300	100		
Storage Blk Time (%)				0.27	0.87	
Queuing Penalty (veh)				100	141	

Intersection: 26: E Arapahoe Rd & S Kenton St

Movement	EB	EB	SB
Directions Served	T	T	R
Maximum Queue (ft)	76	94	31
Average Queue (ft)	30	30	19
95th Queue (ft)	90	93	44
Link Distance (ft)	834	834	962
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 28: E Arapahoe Rd & S Lima St

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	T	R	L	L	T	T	TR	L	TR
Maximum Queue (ft)	275	598	598	544	418	113	131	491	505	496	175	539
Average Queue (ft)	102	554	485	420	89	85	100	437	436	443	174	536
95th Queue (ft)	247	640	650	523	361	115	138	580	570	556	176	544
Link Distance (ft)		526	526	526				726	726	726		524
Upstream Blk Time (%)		0.07	0.03	0.01								0.62
Queuing Penalty (veh)		63	32	10								0
Storage Bay Dist (ft)	250				400	500	500				150	
Storage Blk Time (%)		0.33		0.05	0.00			0.00			0.78	0.30
Queuing Penalty (veh)		35		6	2			2			484	147

Intersection: 28: E Arapahoe Rd & S Lima St

Movement	NB	SB	SB	SB
Directions Served	R	L	T	R
Maximum Queue (ft)	431	31	334	137
Average Queue (ft)	319	16	220	74
95th Queue (ft)	537	39	337	132
Link Distance (ft)	524		644	644
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		150		
Storage Blk Time (%)			0.33	
Queuing Penalty (veh)			8	

Intersection: 31: E Arapahoe Rd & S Nome St

Movement	SB
Directions Served	R
Maximum Queue (ft)	29
Average Queue (ft)	16
95th Queue (ft)	38
Link Distance (ft)	288
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 33: E Arapahoe Rd & S Peoria St

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	T	T	TR	L	T	T	TR	L	L	T	TR
Maximum Queue (ft)	401	397	444	478	204	492	524	589	226	235	557	177
Average Queue (ft)	221	269	301	325	137	380	371	412	218	234	481	135
95th Queue (ft)	407	406	450	475	217	524	547	600	230	236	598	174
Link Distance (ft)		1145	1145	1145		2077	2077	2077			542	542
Upstream Blk Time (%)											0.14	
Queuing Penalty (veh)											0	
Storage Bay Dist (ft)	400				900				200	200		
Storage Blk Time (%)	0.01	0.00							0.57	0.65		
Queuing Penalty (veh)	9	0							61	69		

Intersection: 33: E Arapahoe Rd & S Peoria St

Movement	SB	SB	SB	SB
Directions Served	L	L	T	TR
Maximum Queue (ft)	139	255	507	507
Average Queue (ft)	88	210	483	483
95th Queue (ft)	145	306	536	555
Link Distance (ft)			492	492
Upstream Blk Time (%)			0.10	0.19
Queuing Penalty (veh)			0	0
Storage Bay Dist (ft)	200	200		
Storage Blk Time (%)			0.50	
Queuing Penalty (veh)			262	

Intersection: 36: E Arapahoe Rd & S Revere Pkwy

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	TR	L	T	T	TR	L	LT	R	L
Maximum Queue (ft)	665	1163	1094	1092	68	584	531	1504	226	220	120	115
Average Queue (ft)	286	771	750	741	52	458	436	637	191	154	105	88
95th Queue (ft)	796	1240	1176	1207	84	581	556	1365	231	226	134	122
Link Distance (ft)		2077	2077	2077		1462	1462	1462	642	642		
Upstream Blk Time (%)								0.02				
Queuing Penalty (veh)								12				
Storage Bay Dist (ft)	750				750						400	200
Storage Blk Time (%)		0.15										
Queuing Penalty (veh)		8										

Intersection: 36: E Arapahoe Rd & S Revere Pkwy

Movement	SB	SB
Directions Served	LT	R
Maximum Queue (ft)	94	224
Average Queue (ft)	85	117
95th Queue (ft)	96	215
Link Distance (ft)	492	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		200
Storage Blk Time (%)		0.01
Queuing Penalty (veh)		2

Intersection: 39: E Arapahoe Rd & S Vaughn St

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 41: E Arapahoe Rd & S Potomac St

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	L	T	T	TR	L	T	T	T	L	L	T
Maximum Queue (ft)	88	73	352	371	458	178	436	411	370	126	154	375
Average Queue (ft)	53	64	158	218	201	119	282	256	253	123	136	256
95th Queue (ft)	94	80	334	362	421	186	440	428	400	129	152	455
Link Distance (ft)			982	982	982		1295	1295	1295			786
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	750	750				500				100	100	
Storage Blk Time (%)									0.02	0.68	0.44	
Queuing Penalty (veh)									4	34	22	

Intersection: 41: E Arapahoe Rd & S Potomac St

Movement	NB	NB	SB	SB	SB
Directions Served	T	R	L	L	T
Maximum Queue (ft)	362	226	275	434	223
Average Queue (ft)	209	143	207	253	145
95th Queue (ft)	453	223	348	459	217
Link Distance (ft)	786			823	823
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		200	250		
Storage Blk Time (%)	0.00	0.05	0.05	0.11	
Queuing Penalty (veh)	2	3	14	29	

Intersection: 44: E Arapahoe Rd & S Atchinson St

Movement	EB	WB	NB
Directions Served	TR	T	R
Maximum Queue (ft)	1372	1409	52
Average Queue (ft)	1359	282	20
95th Queue (ft)	1372	1212	53
Link Distance (ft)	1295	1407	383
Upstream Blk Time (%)	0.20	0.02	
Queuing Penalty (veh)	289	12	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 46: E Arapahoe Rd & S Jordan Rd

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	T	R	L	T	T	T	R	L	L
Maximum Queue (ft)	34	307	353	452	19	123	201	196	156	2	137	148
Average Queue (ft)	18	185	216	246	6	109	133	111	76	0	100	96
95th Queue (ft)	40	288	364	450	20	121	202	183	149	2	150	151
Link Distance (ft)		1407	1407	1407			1910	1910	1910			887
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	800				250	750				750	400	
Storage Blk Time (%)				0.07								
Queuing Penalty (veh)				21								

Intersection: 46: E Arapahoe Rd & S Jordan Rd

Movement	NB	NB	SB	SB
Directions Served	TR	R	L	T
Maximum Queue (ft)	189	174	76	174
Average Queue (ft)	97	35	72	114
95th Queue (ft)	215	150	77	191
Link Distance (ft)	887			1274
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		150	50	
Storage Blk Time (%)	0.03	0.02	0.41	0.13
Queuing Penalty (veh)	11	9	51	20

Intersection: 85: E Arapahoe Rd & S Ironton St

Movement	NB
Directions Served	R
Maximum Queue (ft)	92
Average Queue (ft)	56
95th Queue (ft)	99
Link Distance (ft)	336
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Nework Summary

Network wide Queuing Penalty: 2888

APPENDIX C

I-25 Interchange No Action 2030 Level of Service

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91		1.00	0.95	1.00	0.97	0.95	
Frt	1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3433	5085	1583	3433	4865		1770	3539	1583	3433	3451	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3433	5085	1583	3433	4865		1770	3539	1583	3433	3451	
Volume (vph)	265	1720	130	550	1755	715	165	800	245	330	555	110
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	288	1870	141	598	1908	777	179	870	266	359	603	120
RTOR Reduction (vph)	0	0	31	0	61	0	0	0	164	0	14	0
Lane Group Flow (vph)	288	1870	110	598	2624	0	179	870	102	359	709	0
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2						8			
Actuated Green, G (s)	8.0	43.0	43.0	18.0	53.0		14.5	27.0	27.0	11.0	23.5	
Effective Green, g (s)	9.0	45.0	45.0	19.0	55.0		15.5	28.0	28.0	12.0	24.5	
Actuated g/C Ratio	0.08	0.38	0.38	0.16	0.46		0.13	0.23	0.23	0.10	0.20	
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	2.0	3.0	3.0	2.0	3.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	257	1907	594	544	2230		229	826	369	343	705	
v/s Ratio Prot	0.08	0.37		c0.17	c0.54		0.10	c0.25		c0.10	0.21	
v/s Ratio Perm			0.07						0.06			
v/c Ratio	1.12	0.98	0.19	1.10	1.18		0.78	1.05	0.28	1.05	1.01	
Uniform Delay, d1	55.5	37.1	25.2	50.5	32.5		50.6	46.0	37.7	54.0	47.8	
Progression Factor	1.00	1.00	1.00	1.16	0.64		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	92.5	16.5	0.7	47.8	79.9		14.7	46.3	0.1	61.3	35.5	
Delay (s)	148.0	53.6	25.9	106.4	100.7		65.3	92.3	37.8	115.3	83.2	
Level of Service	F	D	C	F	F		E	F	D	F	F	
Approach Delay (s)		63.7			101.7			77.6			93.9	
Approach LOS		E			F			E			F	

Intersection Summary			
HCM Average Control Delay	85.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	102.3%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91		1.00	0.95	1.00	0.97	0.95	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3433	5085	1583	3433	5013		1770	3539	1583	3433	3472	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3433	5085	1583	3433	5013		1770	3539	1583	3433	3472	
Volume (vph)	200	1555	185	595	2155	225	345	970	495	665	865	125
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	217	1690	201	647	2342	245	375	1054	538	723	940	136
RTOR Reduction (vph)	0	0	49	0	10	0	0	0	180	0	10	0
Lane Group Flow (vph)	217	1690	152	647	2577	0	375	1054	358	723	1066	0
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2						8			
Actuated Green, G (s)	6.0	31.0	31.0	19.0	44.0		20.0	33.0	33.0	16.0	29.0	
Effective Green, g (s)	7.0	33.0	33.0	20.0	46.0		21.0	34.0	34.0	17.0	30.0	
Actuated g/C Ratio	0.06	0.28	0.28	0.17	0.38		0.18	0.28	0.28	0.14	0.25	
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	2.0	3.0	3.0	2.0	3.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	200	1398	435	572	1922		310	1003	449	486	868	
v/s Ratio Prot	0.06	0.33		c0.19	c0.51		0.21	c0.30		c0.21	c0.31	
v/s Ratio Perm			0.10						0.23			
v/c Ratio	1.08	1.21	0.35	1.13	1.34		1.21	1.05	0.80	1.49	1.23	
Uniform Delay, d1	56.5	43.5	34.9	50.0	37.0		49.5	43.0	39.8	51.5	45.0	
Progression Factor	1.00	1.00	1.00	0.88	1.02		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	88.1	100.9	2.2	61.4	153.6		120.6	42.7	8.9	230.2	112.9	
Delay (s)	144.6	144.4	37.1	105.5	191.3		170.1	85.7	48.7	281.7	157.9	
Level of Service	F	F	D	F	F		F	F	D	F	F	
Approach Delay (s)		134.2			174.1			91.7			207.7	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	153.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.35		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	112.7%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0
Lane Util. Factor		0.95	0.95		0.97	0.88
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3539	3539		3433	2787
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		3539	3539		3433	2787
Volume (vph)	0	585	2215	0	1625	730
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	636	2408	0	1766	793
RTOR Reduction (vph)	0	0	0	0	0	2
Lane Group Flow (vph)	0	636	2408	0	1766	791
Turn Type						custom
Protected Phases		2	6		4	4
Permitted Phases						4
Actuated Green, G (s)		62.0	62.0		47.0	47.0
Effective Green, g (s)		64.0	64.0		48.0	48.0
Actuated g/C Ratio		0.53	0.53		0.40	0.40
Clearance Time (s)		6.0	6.0		5.0	5.0
Vehicle Extension (s)		5.0	1.5		5.0	5.0
Lane Grp Cap (vph)		1887	1887		1373	1115
v/s Ratio Prot		0.18	c0.68		c0.51	0.28
v/s Ratio Perm						
v/c Ratio		0.34	1.28		1.29	0.71
Uniform Delay, d1		15.9	28.0		36.0	30.2
Progression Factor		1.66	0.99		1.00	1.00
Incremental Delay, d2		0.2	126.0		134.4	2.6
Delay (s)		26.6	153.7		170.4	32.8
Level of Service		C	F		F	C
Approach Delay (s)		26.6	153.7		127.8	
Approach LOS		C	F		F	

Intersection Summary			
HCM Average Control Delay	127.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.28		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	114.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0
Lane Util. Factor		0.95	0.95		0.97	0.88
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3539	3539		3433	2787
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		3539	3539		3433	2787
Volume (vph)	0	1180	2400	0	890	575
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1283	2609	0	967	625
RTOR Reduction (vph)	0	0	0	0	0	7
Lane Group Flow (vph)	0	1283	2609	0	967	618
Turn Type						custom
Protected Phases		2	6		4	4
Permitted Phases						4
Actuated Green, G (s)		79.0	79.0		30.0	30.0
Effective Green, g (s)		81.0	81.0		31.0	31.0
Actuated g/C Ratio		0.68	0.68		0.26	0.26
Clearance Time (s)		6.0	6.0		5.0	5.0
Vehicle Extension (s)		5.0	1.5		5.0	5.0
Lane Grp Cap (vph)		2389	2389		887	720
v/s Ratio Prot		0.36	c0.74		c0.28	0.22
v/s Ratio Perm						
v/c Ratio		0.54	1.09		1.09	0.86
Uniform Delay, d1		9.9	19.5		44.5	42.4
Progression Factor		1.12	0.61		1.00	1.00
Incremental Delay, d2		0.1	44.9		57.8	10.9
Delay (s)		11.2	56.8		102.3	53.3
Level of Service		B	E		F	D
Approach Delay (s)		11.2	56.8		83.1	
Approach LOS		B	E		F	

Intersection Summary			
HCM Average Control Delay	53.8	HCM Level of Service	D
HCM Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	98.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	WBT	WBR	WBR2	NBL2	NBL	NBT	NBR	SBR	SBR2
Lane Configurations										
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	0.95	*0.95	*0.88		0.95	0.95	0.95	0.95	0.88	
Frt	1.00	1.00	0.85		1.00	1.00	0.87	0.85	0.85	
Flt Protected	1.00	1.00	1.00		0.95	0.95	1.00	1.00	1.00	
Satd. Flow (prot)	3539	3539	2787		1681	1681	1540	1504	1393	
Flt Permitted	1.00	1.00	1.00		0.95	0.95	1.00	1.00	1.00	
Satd. Flow (perm)	3539	3539	2787		1681	1681	1540	1504	1393	
Volume (vph)	2210	945	1815	25	1190	0	75	960	80	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2402	1027	1973	27	1293	0	82	1043	87	0
RTOR Reduction (vph)	0	0	1	0	0	0	0	0	0	0
Lane Group Flow (vph)	2402	1027	1999	0	647	646	603	522	87	0
Turn Type			Perm		Split	Split		Perm	custom	custom
Protected Phases	2	6			8	8	8			
Permitted Phases			6					8	4	4
Actuated Green, G (s)	60.0	60.0	60.0		39.0	39.0	39.0	39.0	5.0	
Effective Green, g (s)	62.0	62.0	62.0		40.0	40.0	40.0	40.0	6.0	
Actuated g/C Ratio	0.52	0.52	0.52		0.33	0.33	0.33	0.33	0.05	
Clearance Time (s)	6.0	6.0	6.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	5.0	5.0	5.0		1.5	1.5	1.5	1.5	1.5	
Lane Grp Cap (vph)	1828	1828	1440		560	560	513	501	70	
v/s Ratio Prot	0.68	0.29			0.38	0.38	c0.39			
v/s Ratio Perm			c0.72					0.35	c0.06	
v/c Ratio	1.31	0.56	1.39		1.16	1.15	1.18	1.04	1.24	
Uniform Delay, d1	29.0	19.7	29.0		40.0	40.0	40.0	40.0	57.0	
Progression Factor	0.39	0.54	0.54		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	141.7	0.5	176.4		88.7	88.1	97.9	51.5	186.4	
Delay (s)	153.1	11.1	192.0		128.7	128.1	137.9	91.5	243.4	
Level of Service	F	B	F		F	F	F	F	F	
Approach Delay (s)	153.1	130.7					122.8			
Approach LOS	F	F					F			

Intersection Summary			
HCM Average Control Delay	136.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.30		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	112.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	WBT	WBR	WBR2	NBL2	NBL	NBT	NBR	SBR	SBR2
Lane Configurations										
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	0.95	*0.95	*0.88		0.95	0.95	0.95	0.95	0.88	
Frt	1.00	1.00	0.85		1.00	1.00	0.86	0.85	0.85	
Flt Protected	1.00	1.00	1.00		0.95	0.95	1.00	1.00	1.00	
Satd. Flow (prot)	3539	3539	2787		1681	1681	1530	1504	1393	
Flt Permitted	1.00	1.00	1.00		0.95	0.95	1.00	1.00	1.00	
Satd. Flow (perm)	3539	3539	2787		1681	1681	1530	1504	1393	
Volume (vph)	2070	1595	1825	10	655	0	35	640	150	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2250	1734	1984	11	712	0	38	696	163	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	2250	1734	1995	0	356	356	386	348	163	0
Turn Type			Perm		Split	Split		Perm	custom	custom
Protected Phases	2	6			8	8	8			
Permitted Phases			6					8	4	4
Actuated Green, G (s)	62.6	62.6	62.6		31.4	31.4	31.4	31.4	10.0	
Effective Green, g (s)	64.6	64.6	64.6		32.4	32.4	32.4	32.4	11.0	
Actuated g/C Ratio	0.54	0.54	0.54		0.27	0.27	0.27	0.27	0.09	
Clearance Time (s)	6.0	6.0	6.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	5.0	5.0	5.0		1.5	1.5	1.5	1.5	1.5	
Lane Grp Cap (vph)	1905	1905	1500		454	454	413	406	128	
v/s Ratio Prot	0.64	0.49			0.21	0.21	c0.25			
v/s Ratio Perm			c0.72					0.23	c0.12	
v/c Ratio	1.18	0.91	1.33		0.78	0.78	0.93	0.86	1.27	
Uniform Delay, d1	27.7	25.1	27.7		40.6	40.6	42.8	41.6	54.5	
Progression Factor	0.68	0.55	0.62		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	85.1	0.8	148.8		8.0	8.0	27.9	15.6	170.4	
Delay (s)	103.9	14.8	166.1		48.5	48.5	70.7	57.2	224.9	
Level of Service	F	B	F		D	D	E	E	F	
Approach Delay (s)	103.9	95.7					56.5			
Approach LOS	F	F					E			

Intersection Summary			
HCM Average Control Delay	93.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.21		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	101.6%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Lane Util. Factor	0.97	0.91	1.00	0.97	*0.80	1.00	0.97	0.95		0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	5961	1583	3433	3368		3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.66	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	5961	1583	3433	3368		2369	3539	1583
Volume (vph)	320	2315	535	45	2155	90	360	95	45	80	125	255
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	348	2516	582	49	2342	98	391	103	49	87	136	277
RTOR Reduction (vph)	0	0	157	0	0	55	0	39	0	0	0	85
Lane Group Flow (vph)	348	2516	425	49	2342	43	391	113	0	87	136	192
Turn Type	Prot		Perm	Prot		Perm	Prot			pm+pt		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6				4		4
Actuated Green, G (s)	19.8	65.8	65.8	4.9	50.9	50.9	11.0	24.3		21.3	17.3	17.3
Effective Green, g (s)	20.8	67.8	67.8	5.9	52.9	52.9	12.0	25.3		23.3	18.3	18.3
Actuated g/C Ratio	0.17	0.56	0.56	0.05	0.44	0.44	0.10	0.21		0.19	0.15	0.15
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0	6.0	5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	1.5	5.0	5.0	1.5	5.0	5.0	1.5	1.5		1.5	1.5	1.5
Lane Grp Cap (vph)	595	2873	894	169	2628	698	343	710		504	540	241
v/s Ratio Prot	c0.10	c0.49		0.01	0.39		c0.11	0.03		0.01	0.04	
v/s Ratio Perm			0.27			0.03				0.03		c0.12
v/c Ratio	0.58	0.88	0.47	0.29	0.89	0.06	1.14	0.16		0.17	0.25	0.80
Uniform Delay, d1	45.6	22.5	15.5	55.0	30.9	19.3	54.0	38.7		40.0	44.8	49.1
Progression Factor	1.08	0.81	0.70	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.1	0.4	0.2	0.3	5.1	0.2	92.2	0.0		0.1	0.1	15.6
Delay (s)	49.4	18.6	11.0	55.4	36.0	19.5	146.2	38.7		40.0	44.9	64.7
Level of Service	D	B	B	E	D	B	F	D		D	D	E
Approach Delay (s)		20.4			35.7			116.1			55.0	
Approach LOS		C			D			F			D	

Intersection Summary			
HCM Average Control Delay	35.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	76.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Lane Util. Factor	0.97	0.91	1.00	0.97	*0.80	1.00	0.97	0.95		0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	5961	1583	3433	3316		3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.53	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	5961	1583	3433	3316		1912	3539	1583
Volume (vph)	330	1965	415	170	2510	180	695	200	145	120	165	265
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	359	2136	451	185	2728	196	755	217	158	130	179	288
RTOR Reduction (vph)	0	0	169	0	0	124	0	109	0	0	0	80
Lane Group Flow (vph)	359	2136	282	185	2728	72	755	266	0	130	179	208
Turn Type	Prot		Perm	Prot		Perm	Prot			pm+pt		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6				4		4
Actuated Green, G (s)	22.5	52.2	52.2	12.3	42.0	42.0	16.0	30.5		22.5	18.5	18.5
Effective Green, g (s)	23.5	54.2	54.2	13.3	44.0	44.0	17.0	31.5		24.5	19.5	19.5
Actuated g/C Ratio	0.20	0.45	0.45	0.11	0.37	0.37	0.14	0.26		0.20	0.16	0.16
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0	6.0	5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	1.5	5.0	5.0	1.5	5.0	5.0	1.5	1.5		1.5	1.5	1.5
Lane Grp Cap (vph)	672	2297	715	380	2186	580	486	870		454	575	257
v/s Ratio Prot	c0.10	c0.42		0.05	c0.46		c0.22	0.08		0.01	0.05	
v/s Ratio Perm			0.18			0.05				0.05		c0.13
v/c Ratio	0.53	0.93	0.39	0.49	1.25	0.12	1.55	0.31		0.29	0.31	0.81
Uniform Delay, d1	43.3	31.1	21.9	50.1	38.0	25.2	51.5	35.5		39.5	44.3	48.4
Progression Factor	1.17	0.81	0.73	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.0	0.9	0.1	0.4	115.6	0.4	259.1	0.1		0.1	0.1	15.9
Delay (s)	50.6	26.2	16.2	50.5	153.6	25.7	310.6	35.6		39.6	44.4	64.4
Level of Service	D	C	B	D	F	C	F	D		D	D	E
Approach Delay (s)		27.7			139.4			219.3			53.0	
Approach LOS		C			F			F			D	

Intersection Summary			
HCM Average Control Delay	102.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	83.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

APPENDIX D

Arapahoe Road Corridor Recommended Improvements
2030 Intersection and Arterial Level of Service

Arapahoe Road Corridor Study
Recommended Alternative - Study Area Signalized Intersection Level of Service (LOS) and Delay

Intersection	AM Peak		PM Peak	
	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)
I-25 Interchange				
Arapahoe Rd/ Yosemite St	D	50.4	F	97.0
Arapahoe Rd/ I-25 SB	D	41.7	C	22.9
Arapahoe Rd/ I-25 NB	C	29.5	B	17.2
Arapahoe Rd/ Boston St	C	24.0	D	46.1
Yosemite St/ Costilla Ave	D	52.2	E	65.8
Costilla Ave/ Boston St	B	17.7	C	33.5
Peakview Ave/ Dayton St	D	41.3	D	38.4
Arapahoe Rd/ Dayton St	C	26.6	D	43.7
Havana Intersection Options				
Havana At-Grade Intersection Option	E	74.4	F	91.8
Havana Diamond Interchange Option				
WB Havana Ramps/ Havana St	C	22.9	B	17.2
EB Havana Ramps/ Havana St	C	27.5	C	23.4
Havana Junior Interchange Option				
WB Havana Ramps/ Peakview Ave	D	44.1	C	32.6
EB Havana Ramps/ Briarwood Ave	C	34.2	C	27.3
Costilla Ave/ Havana St	D	54.4	D	42.4
Peakview Ave/ Havana St	D	38.9	D	39.9
Costilla Ave/ Havana St	C	28.2	C	34.1
Peakview Ave/ Lima St	B	15.9	C	26.1
Arapahoe Rd/ Lima St	E	69.5	F	100.5
Briarwood Ave/ Lima St	B	18.2	C	33.1
Easter Ave/ Lima St	D	38.4	D	43.1
Peakview Ave/ Peoria St	C	33.4	C	20.6
Arapahoe Rd/ Peoria St	F	91.8	E	77.9
Briarwood Ave/ Peoria St	C	21.4	C	24.5
Easter Ave Intersection Options				
Easter Ave/ Havana St (4-way)	C	34.7	F	94.9
Easter Ave/ Havana St (Realigned to Havana)	D	41.5	E	64.6
Easter Ave/ Havana St (Realigned to Dry Creek)	D	54.4	F	102.0
Easter Ave/ Peoria St (4-way)	E	64.8	F	89.0
Easter Ave/ Peoria St (Realigned)	D	37.2	C	24.2
Revere Junior Interchange				
Peakview Ave/ Revere Pkwy	B	13.5	B	15.5
Briarwood Ave/ Revere Pkwy	C	32.6	C	25.1
WB Revere Ramps/ Peakview Ave	C	21.0	A	6.6
EB Revere Ramps/ Briarwood Ave	A	9.3	C	29.8
Peakview Ave/ Potomac St	A	2.9	A	7.6
Arapahoe Rd/ Potomac St	F	143.1	F	105.1
Briarwood Ave/ Potomac St	B	16.7	D	38.3
Broncos Pkwy/ Potomac St	F	114.1	F	128.1
Jordan Junior Interchange				
WB Jordan Ramps/ Jordan Rd	C	29.0	B	18.7
EB Jordan Ramps/ Briarwood Ave	D	44.1	C	26.5
Briarwood Ave/ Jordan Rd	C	25.2	C	31.3
Broncos Pkwy/ Jordan Rd	F	274.1	F	176.9
Broncos Pkwy/ Parker Rd	F	242.5	F	288.3
I-25 Interchange				
Arapahoe Rd/ Cornerstar	F	114.2	F	214.9
Arapahoe Rd/ NW Parker Ramp	F	126.3	D	45.9
Arapahoe Rd/ Lewiston Way	F	186.3	C	26.8

I-25 Interchange

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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	
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.95	1.00	0.97	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	3433	3539	1583	3433	3451	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	3433	3539	1583	3433	3451	
Volume (vph)	265	1555	165	535	1530	700	260	810	190	255	555	110
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	288	1690	179	582	1663	761	283	880	207	277	603	120
RTOR Reduction (vph)	0	0	43	0	0	131	0	0	148	0	13	0
Lane Group Flow (vph)	288	1690	136	582	1663	630	283	880	59	277	710	0
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			
Actuated Green, G (s)	10.4	39.0	39.0	20.4	49.0	49.0	13.6	30.6	30.6	9.0	26.0	
Effective Green, g (s)	11.4	41.0	41.0	21.4	51.0	51.0	14.6	31.6	31.6	10.0	27.0	
Actuated g/C Ratio	0.10	0.34	0.34	0.18	0.42	0.42	0.12	0.26	0.26	0.08	0.22	
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0	6.0	5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	2.0	3.0	3.0	2.0	3.0	3.0	2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	326	1737	541	612	2161	673	418	932	417	286	776	
v/s Ratio Prot	0.08	0.33		c0.17	0.33		c0.08	c0.25		c0.08	0.21	
v/s Ratio Perm			0.11			0.48			0.13			
v/c Ratio	0.88	0.97	0.25	0.95	0.77	0.94	0.68	0.94	0.14	0.97	0.91	
Uniform Delay, d1	53.6	39.0	28.4	48.8	29.5	32.9	50.4	43.3	33.8	54.8	45.4	
Progression Factor	1.00	1.00	1.00	1.12	1.05	1.05	0.51	0.98	2.86	1.00	1.00	
Incremental Delay, d2	22.9	16.1	1.1	4.0	0.2	3.2	1.6	9.8	0.0	43.9	15.0	
Delay (s)	76.5	55.0	29.5	58.6	31.3	37.7	27.4	52.1	96.9	98.7	60.4	
Level of Service	E	E	C	E	C	D	C	D	F	F	E	
Approach Delay (s)		55.8			38.2			53.8			71.0	
Approach LOS		E			D			D			E	

Intersection Summary			
HCM Average Control Delay	50.4	HCM Level of Service	D
HCM Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	88.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0
Lane Util. Factor		0.81	0.91		0.94	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		7544	5085		4990	1583
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		7544	5085		4990	1583
Volume (vph)	0	2000	1890	0	1485	875
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	2174	2054	0	1614	951
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	2174	2054	0	1614	951
Turn Type						Perm
Protected Phases		2	6		4	
Permitted Phases						4
Actuated Green, G (s)		45.0	45.0		65.0	65.0
Effective Green, g (s)		46.0	46.0		66.0	66.0
Actuated g/C Ratio		0.38	0.38		0.55	0.55
Clearance Time (s)		5.0	5.0		5.0	5.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		2892	1949		2745	871
v/s Ratio Prot		0.29	c0.40		0.32	
v/s Ratio Perm						0.60
v/c Ratio		0.75	1.05		0.59	1.09
Uniform Delay, d1		32.1	37.0		18.0	27.0
Progression Factor		0.43	0.97		1.00	1.00
Incremental Delay, d2		0.7	33.0		0.3	58.5
Delay (s)		14.4	68.8		18.3	85.5
Level of Service		B	E		B	F
Approach Delay (s)		14.4	68.8		43.2	
Approach LOS		B	E		D	

Intersection Summary			
HCM Average Control Delay	41.7	HCM Level of Service	D
HCM Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	97.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0	4.0			4.0
Lane Util. Factor		0.91			0.81		0.91	0.86	0.95			1.00
Frt		1.00			1.00		1.00	0.90	0.85			0.86
Flt Protected		1.00			1.00		0.95	0.99	1.00			1.00
Satd. Flow (prot)		5085			7530		3221	1436	1504			1611
Flt Permitted		1.00			1.00		0.95	0.99	1.00			1.00
Satd. Flow (perm)		5085			7530		3221	1436	1504			1611
Volume (vph)	0	1920	0	0	2390	30	1170	125	910	0	0	75
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	2087	0	0	2598	33	1272	136	989	0	0	82
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	2087	0	0	2629	0	1191	622	584	0	0	82
Turn Type							Perm		Perm			custom
Protected Phases		2			6			8				
Permitted Phases							8		8			4
Actuated Green, G (s)		55.8			55.8		54.2	54.2	54.2			54.2
Effective Green, g (s)		56.8			56.8		55.2	55.2	55.2			55.2
Actuated g/C Ratio		0.47			0.47		0.46	0.46	0.46			0.46
Clearance Time (s)		5.0			5.0		5.0	5.0	5.0			5.0
Vehicle Extension (s)		3.0			3.0		1.5	1.5	1.5			3.0
Lane Grp Cap (vph)		2407			3564		1482	661	692			741
v/s Ratio Prot		c0.41			0.35							
v/s Ratio Perm							0.37	0.43	0.39			0.05
v/c Ratio		0.87			0.74		0.80	0.94	0.84			0.11
Uniform Delay, d1		28.2			25.6		27.8	30.8	28.6			18.4
Progression Factor		0.78			0.95		1.00	1.00	1.00			1.00
Incremental Delay, d2		3.3			1.0		3.1	21.4	8.9			0.1
Delay (s)		25.3			25.3		30.8	52.3	37.5			18.5
Level of Service		C			C		C	D	D			B
Approach Delay (s)		25.3			25.3			38.0			18.5	
Approach LOS		C			C			D			B	

Intersection Summary			
HCM Average Control Delay	29.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	81.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Lane Util. Factor	0.97	0.91	1.00	0.97	0.86	1.00	0.97	0.95		0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	6408	1583	3433	3368		3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.63	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	6408	1583	3433	3368		2261	3539	1583
Volume (vph)	500	1910	420	60	1940	90	250	125	60	70	150	230
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	543	2076	457	65	2109	98	272	136	65	76	163	250
RTOR Reduction (vph)	0	0	129	0	0	36	0	56	0	0	0	227
Lane Group Flow (vph)	543	2076	328	65	2109	62	272	145	0	76	163	23
Turn Type	Prot		Perm	Prot		Perm	Prot			pm+pt		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6				4		4
Actuated Green, G (s)	27.7	75.5	75.5	5.4	52.2	52.2	9.0	15.9		13.3	10.1	10.1
Effective Green, g (s)	28.7	76.5	76.5	6.4	54.2	54.2	10.0	16.9		15.3	11.1	11.1
Actuated g/C Ratio	0.24	0.64	0.64	0.05	0.45	0.45	0.08	0.14		0.13	0.09	0.09
Clearance Time (s)	5.0	5.0	5.0	5.0	6.0	6.0	5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	1.5	5.0	5.0	3.0	1.5		1.5	1.5	1.5
Lane Grp Cap (vph)	821	3242	1009	183	2894	715	286	474		329	327	146
v/s Ratio Prot	c0.16	0.41		0.02	c0.33		c0.08	0.06		0.01	0.05	
v/s Ratio Perm			0.29			0.06				0.02		0.16
v/c Ratio	0.66	0.64	0.33	0.36	0.73	0.09	0.95	0.31		0.23	0.50	0.16
Uniform Delay, d1	41.3	13.3	9.9	54.8	26.9	18.8	54.8	46.3		46.7	51.8	50.1
Progression Factor	1.29	0.52	0.09	0.95	0.69	0.69	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.0	0.5	0.4	0.3	1.0	0.1	40.0	0.1		0.1	0.4	0.2
Delay (s)	54.3	7.5	1.3	52.4	19.6	13.1	94.7	46.4		46.8	52.2	50.3
Level of Service	D	A	A	D	B	B	F	D		D	D	D
Approach Delay (s)		14.8			20.2			74.2			50.4	
Approach LOS		B			C			E			D	

Intersection Summary			
HCM Average Control Delay	24.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	67.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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	
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.95	1.00	0.97	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	3433	3539	1583	3433	3472	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	3433	3539	1583	3433	3472	
Volume (vph)	200	1445	210	555	2005	200	460	980	420	570	865	125
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	217	1571	228	603	2179	217	500	1065	457	620	940	136
RTOR Reduction (vph)	0	0	60	0	0	90	0	0	172	0	9	0
Lane Group Flow (vph)	217	1571	169	603	2179	127	500	1065	285	620	1067	0
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			
Actuated Green, G (s)	5.0	33.0	33.0	18.0	46.0	46.0	15.0	31.0	31.0	17.0	33.0	
Effective Green, g (s)	6.0	35.0	35.0	19.0	48.0	48.0	16.0	32.0	32.0	18.0	34.0	
Actuated g/C Ratio	0.05	0.29	0.29	0.16	0.40	0.40	0.13	0.27	0.27	0.15	0.28	
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0	6.0	5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	2.0	3.0	3.0	2.0	3.0	3.0	2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	172	1483	462	544	2034	633	458	944	422	515	984	
v/s Ratio Prot	0.06	0.31		c0.18	c0.43		0.15	0.30		c0.18	c0.31	
v/s Ratio Perm			0.14			0.14			0.29			
v/c Ratio	1.26	1.06	0.36	1.11	1.07	0.20	1.09	1.13	0.68	1.20	1.08	
Uniform Delay, d1	57.0	42.5	33.7	50.5	36.0	23.5	52.0	44.0	39.4	51.0	43.0	
Progression Factor	1.00	1.00	1.00	1.03	1.32	2.26	0.76	1.04	1.08	1.00	1.00	
Incremental Delay, d2	155.9	40.9	2.2	57.9	35.9	0.2	68.0	70.6	3.2	109.1	54.3	
Delay (s)	212.9	83.4	35.9	109.9	83.4	53.2	107.4	116.2	45.7	160.1	97.3	
Level of Service	F	F	D	F	F	D	F	F	D	F	F	
Approach Delay (s)		91.9			86.5			98.1			120.2	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	97.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	101.1%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0
Lane Util. Factor		0.81	0.91		0.94	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		7544	5085		4990	1583
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		7544	5085		4990	1583
Volume (vph)	0	2435	2115	0	820	645
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	2647	2299	0	891	701
RTOR Reduction (vph)	0	0	0	0	0	1
Lane Group Flow (vph)	0	2647	2299	0	891	700
Turn Type						Perm
Protected Phases		2	6		4	
Permitted Phases						4
Actuated Green, G (s)		56.2	56.2		53.8	53.8
Effective Green, g (s)		57.2	57.2		54.8	54.8
Actuated g/C Ratio		0.48	0.48		0.46	0.46
Clearance Time (s)		5.0	5.0		5.0	5.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		3596	2424		2279	723
v/s Ratio Prot		0.35	c0.45		0.18	
v/s Ratio Perm						0.44
v/c Ratio		0.74	0.95		0.39	0.97
Uniform Delay, d1		25.3	30.0		21.6	31.8
Progression Factor		0.29	0.77		1.00	1.00
Incremental Delay, d2		0.1	7.7		0.1	25.6
Delay (s)		7.5	30.7		21.7	57.4
Level of Service		A	C		C	E
Approach Delay (s)		7.5	30.7		37.4	
Approach LOS		A	C		D	

Intersection Summary			
HCM Average Control Delay	22.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	87.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0	4.0			4.0
Lane Util. Factor		0.91			0.81		0.91	0.86	0.95			1.00
Frt		1.00			1.00		1.00	0.89	0.85			0.86
Flt Protected		1.00			1.00		0.95	1.00	1.00			1.00
Satd. Flow (prot)		5085			7540		3221	1420	1504			1611
Flt Permitted		1.00			1.00		0.95	1.00	1.00			1.00
Satd. Flow (perm)		5085			7540		3221	1420	1504			1611
Volume (vph)	0	1785	0	0	3040	10	660	85	590	0	0	150
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1940	0	0	3304	11	717	92	641	0	0	163
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1940	0	0	3315	0	717	378	355	0	0	163
Turn Type							Perm		Perm			custom
Protected Phases		2			6			8				
Permitted Phases							8		8			4
Actuated Green, G (s)		74.5			74.5		35.5	35.5	35.5			35.5
Effective Green, g (s)		75.5			75.5		36.5	36.5	36.5			36.5
Actuated g/C Ratio		0.63			0.63		0.30	0.30	0.30			0.30
Clearance Time (s)		5.0			5.0		5.0	5.0	5.0			5.0
Vehicle Extension (s)		3.0			3.0		1.5	1.5	1.5			3.0
Lane Grp Cap (vph)		3199			4744		980	432	457			490
v/s Ratio Prot		0.38			c0.44			c0.27				
v/s Ratio Perm							0.22		0.24			0.10
v/c Ratio		0.61			0.70		0.73	0.88	0.78			0.33
Uniform Delay, d1		13.3			14.7		37.4	39.6	38.0			32.3
Progression Factor		1.29			0.23		1.00	1.00	1.00			1.00
Incremental Delay, d2		0.7			0.3		2.5	17.1	7.4			0.4
Delay (s)		17.9			3.6		39.8	56.7	45.4			32.7
Level of Service		B			A		D	E	D			C
Approach Delay (s)		17.9			3.6			45.6			32.7	
Approach LOS		B			A			D			C	

Intersection Summary			
HCM Average Control Delay	17.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	72.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Lane Util. Factor	0.97	0.91	1.00	0.97	0.86	1.00	0.97	0.95		0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.92		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	6408	1583	3433	3266		3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.53	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	6408	1583	3433	3266		1923	3539	1583
Volume (vph)	280	1730	365	200	2270	180	540	165	175	105	190	240
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	304	1880	397	217	2467	196	587	179	190	114	207	261
RTOR Reduction (vph)	0	0	164	0	0	68	0	132	0	0	0	99
Lane Group Flow (vph)	304	1880	234	217	2467	128	587	237	0	114	207	162
Turn Type	Prot		Perm	Prot		Perm	Prot			pm+pt		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6				4		4
Actuated Green, G (s)	20.4	53.6	53.6	14.2	46.4	46.4	17.0	28.2		19.2	15.2	15.2
Effective Green, g (s)	21.4	54.6	54.6	15.2	48.4	48.4	18.0	29.2		21.2	16.2	16.2
Actuated g/C Ratio	0.18	0.46	0.46	0.13	0.40	0.40	0.15	0.24		0.18	0.13	0.13
Clearance Time (s)	5.0	5.0	5.0	5.0	6.0	6.0	5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	1.5	5.0	5.0	3.0	1.5		1.5	1.5	1.5
Lane Grp Cap (vph)	612	2314	720	435	2585	638	515	795		403	478	214
v/s Ratio Prot	c0.09	c0.37		0.06	c0.38		c0.17	0.11		0.01	0.06	
v/s Ratio Perm			0.25			0.12				0.04		0.16
v/c Ratio	0.50	0.81	0.32	0.50	0.95	0.20	1.14	0.30		0.28	0.43	0.76
Uniform Delay, d1	44.4	28.3	20.9	48.8	34.7	23.2	51.0	37.0		42.1	47.7	50.0
Progression Factor	1.01	0.80	1.26	0.91	1.19	1.70	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.5	2.6	1.0	0.1	2.9	0.2	84.2	0.1		0.1	0.2	12.8
Delay (s)	45.4	25.2	27.4	44.5	44.2	39.6	135.2	37.1		42.2	47.9	62.8
Level of Service	D	C	C	D	D	D	F	D		D	D	E
Approach Delay (s)		27.9			44.0			97.3			53.5	
Approach LOS		C			D			F			D	

Intersection Summary			
HCM Average Control Delay	46.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	74.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Dayton Street

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	1.00	0.95		0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	1770	3415		3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.44	1.00		0.50	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	821	3415		1811	3539	1583
Volume (vph)	110	2675	45	110	2170	235	75	115	35	385	320	305
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	120	2908	49	120	2359	255	82	125	38	418	348	332
RTOR Reduction (vph)	0	0	19	0	0	78	0	24	0	0	0	68
Lane Group Flow (vph)	120	2908	30	120	2359	177	82	139	0	418	348	264
Turn Type	Prot		Perm	Prot		Perm	pm+pt			pm+pt		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6	8			4		4
Actuated Green, G (s)	7.0	71.5	71.5	4.7	69.2	69.2	20.0	16.8		27.6	20.6	20.6
Effective Green, g (s)	8.0	72.5	72.5	5.7	70.2	70.2	22.0	17.8		29.6	21.6	21.6
Actuated g/C Ratio	0.07	0.60	0.60	0.05	0.59	0.59	0.18	0.15		0.25	0.18	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
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
Lane Grp Cap (vph)	229	3072	956	163	2975	926	184	507		555	637	285
v/s Ratio Prot	0.03	c0.57		c0.03	0.46		0.02	0.05		c0.05	0.10	
v/s Ratio Perm			0.03			0.16	0.07			0.14		0.21
v/c Ratio	0.52	0.95	0.03	0.74	0.79	0.19	0.45	0.27		0.75	0.55	0.93
Uniform Delay, d1	54.2	22.0	9.6	56.4	19.3	11.6	42.4	45.4		40.9	44.7	48.4
Progression Factor	1.13	0.58	0.79	0.89	1.00	1.39	1.00	1.00		0.86	0.87	0.84
Incremental Delay, d2	2.0	7.3	0.1	7.8	1.1	0.2	1.7	0.3		4.6	0.8	29.4
Delay (s)	63.1	20.1	7.6	58.2	20.3	16.4	44.1	45.7		39.7	39.9	70.1
Level of Service	E	C	A	E	C	B	D	D		D	D	E
Approach Delay (s)		21.6			21.6			45.1			48.9	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM Average Control Delay	26.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	77.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	1.00	0.95		0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	1770	3408		3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.46	1.00		0.19	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	858	3408		688	3539	1583
Volume (vph)	270	2080	70	175	2630	185	135	380	125	420	350	330
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	293	2261	76	190	2859	201	147	413	136	457	380	359
RTOR Reduction (vph)	0	0	34	0	0	52	0	27	0	0	0	100
Lane Group Flow (vph)	293	2261	42	190	2859	149	147	522	0	457	380	259
Turn Type	Prot		Perm	Prot		Perm	pm+pt			pm+pt		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6	8			4		4
Actuated Green, G (s)	9.0	66.0	66.0	8.0	65.0	65.0	20.0	16.0		31.0	22.0	22.0
Effective Green, g (s)	10.0	67.0	67.0	9.0	66.0	66.0	22.0	17.0		32.0	23.0	23.0
Actuated g/C Ratio	0.08	0.56	0.56	0.08	0.55	0.55	0.18	0.14		0.27	0.19	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
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
Lane Grp Cap (vph)	286	2839	884	257	2797	871	195	483		435	678	303
v/s Ratio Prot	c0.09	0.44		0.06	c0.56		0.03	0.16		c0.10	0.11	
v/s Ratio Perm			0.05			0.13	0.11			0.18		0.23
v/c Ratio	1.02	0.80	0.05	0.74	1.02	0.17	0.75	1.08		1.05	0.56	0.85
Uniform Delay, d1	55.0	21.1	12.0	54.4	27.0	13.4	45.2	51.5		40.6	43.9	46.9
Progression Factor	1.26	0.37	0.02	1.02	0.83	0.68	1.00	1.00		1.00	1.00	1.02
Incremental Delay, d2	53.7	1.9	0.1	4.2	16.7	0.2	15.2	64.7		53.6	0.9	17.6
Delay (s)	123.0	9.7	0.4	59.7	39.2	9.3	60.4	116.2		94.1	44.6	65.4
Level of Service	F	A	A	E	D	A	E	F		F	D	E
Approach Delay (s)		22.1			38.5			104.4			69.8	
Approach LOS		C			D			F			E	

Intersection Summary			
HCM Average Control Delay	43.7	HCM Level of Service	D
HCM Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	98.3%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Havana Street

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94	0.86	0.86	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96	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)	3433	5085	1583	3433	5085	1583	4990	4609	1362	3433	5085	1583
Flt Permitted	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 (perm)	3433	5085	1583	3433	5085	1583	4990	4609	1362	3433	5085	1583
Volume (vph)	250	2430	530	585	2000	480	420	475	495	215	570	60
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	272	2641	576	636	2174	522	457	516	538	234	620	65
RTOR Reduction (vph)	0	0	1	0	0	6	0	57	164	0	0	4
Lane Group Flow (vph)	272	2641	575	636	2174	516	457	653	180	234	620	61
Turn Type	Prot		pm+ov	Prot		pm+ov	Split		Perm	Split		pm+ov
Protected Phases	5	2	8	1	6	4	8	8		4	4	5
Permitted Phases			2			6			8			4
Actuated Green, G (s)	11.0	51.0	67.0	17.0	57.0	73.0	16.0	16.0	16.0	16.0	16.0	27.0
Effective Green, g (s)	12.0	52.0	69.0	18.0	58.0	75.0	17.0	17.0	17.0	17.0	17.0	29.0
Actuated g/C Ratio	0.10	0.43	0.57	0.15	0.48	0.62	0.14	0.14	0.14	0.14	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)	343	2204	910	515	2458	1042	707	653	193	486	720	383
v/s Ratio Prot	0.08	c0.52	0.09	c0.19	0.43	0.07	0.09	0.15		0.07	c0.12	0.02
v/s Ratio Perm			0.27			0.26			0.25			0.02
v/c Ratio	0.79	1.20	0.63	1.23	0.88	0.50	0.65	1.00	0.93	0.48	0.86	0.16
Uniform Delay, d1	52.8	34.0	17.0	51.0	28.0	12.2	48.7	51.5	50.9	47.4	50.3	35.9
Progression Factor	1.23	0.64	0.80	1.09	0.54	1.02	1.34	1.40	2.30	1.06	1.06	1.02
Incremental Delay, d2	5.8	91.4	0.7	111.1	1.7	0.1	1.7	32.1	40.6	0.7	9.8	0.2
Delay (s)	70.8	113.4	14.2	166.7	16.7	12.6	67.0	104.1	157.9	51.2	63.1	36.9
Level of Service	E	F	B	F	B	B	E	F	F	D	E	D
Approach Delay (s)		93.7			44.7			105.1			58.2	
Approach LOS		F			D			F			E	

Intersection Summary			
HCM Average Control Delay	74.4	HCM Level of Service	E
HCM Volume to Capacity ratio	1.25		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	96.0%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94	0.86	0.86	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	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)	3433	5085	1583	3433	5085	1583	4990	4761	1362	3433	5085	1583
Flt Permitted	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 (perm)	3433	5085	1583	3433	5085	1583	4990	4761	1362	3433	5085	1583
Volume (vph)	185	2165	505	505	2255	260	685	1045	510	315	395	145
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	201	2353	549	549	2451	283	745	1136	554	342	429	158
RTOR Reduction (vph)	0	0	5	0	0	1	0	5	117	0	0	3
Lane Group Flow (vph)	201	2353	544	549	2451	282	745	1207	361	342	429	155
Turn Type	Prot		pm+ov	Prot		pm+ov	Split		Perm	Split		pm+ov
Protected Phases	5	2	8	1	6	4	8	8		4	4	5
Permitted Phases			2			6			8			4
Actuated Green, G (s)	6.0	45.0	70.7	14.0	53.0	68.3	25.7	25.7	25.7	15.3	15.3	21.3
Effective Green, g (s)	7.0	46.0	72.7	15.0	54.0	70.3	26.7	26.7	26.7	16.3	16.3	23.3
Actuated g/C Ratio	0.06	0.38	0.61	0.12	0.45	0.59	0.22	0.22	0.22	0.14	0.14	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)	200	1949	959	429	2288	980	1110	1059	303	466	691	307
v/s Ratio Prot	0.06	c0.46	0.13	c0.16	0.48	0.04	0.15	0.25		c0.10	0.08	0.03
v/s Ratio Perm			0.22			0.14			0.35			0.07
v/c Ratio	1.00	1.21	0.57	1.28	1.07	0.29	0.67	1.14	1.19	0.73	0.62	0.50
Uniform Delay, d1	56.5	37.0	14.2	52.5	33.0	12.4	42.6	46.6	46.6	49.8	48.9	43.2
Progression Factor	0.87	1.19	1.48	0.96	1.00	0.91	0.79	0.81	0.72	1.07	1.07	0.96
Incremental Delay, d2	50.5	96.4	0.5	127.6	33.1	0.0	0.8	69.1	102.4	5.6	1.6	1.2
Delay (s)	99.7	140.3	21.5	178.0	66.0	11.3	34.6	106.9	136.1	58.9	54.0	42.7
Level of Service	F	F	C	F	E	B	C	F	F	E	D	D
Approach Delay (s)		116.7			80.0			90.5			53.9	
Approach LOS		F			F			F			D	

Intersection Summary			
HCM Average Control Delay	91.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.24		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	102.5%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0		4.0	4.0	
Lane Util. Factor	0.97	1.00						0.81		0.97	0.95	
Frt	1.00	0.85						0.95		1.00	1.00	
Flt Protected	0.95	1.00						1.00		0.95	1.00	
Satd. Flow (prot)	3433	1583						7141		3433	3539	
Flt Permitted	0.95	1.00						1.00		0.95	1.00	
Satd. Flow (perm)	3433	1583						7141		3433	3539	
Volume (vph)	250	0	530	0	0	0	0	895	495	215	1155	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	272	0	576	0	0	0	0	973	538	234	1255	0
RTOR Reduction (vph)	0	15	0	0	0	0	0	73	0	0	0	0
Lane Group Flow (vph)	272	561	0	0	0	0	0	1438	0	234	1255	0
Turn Type	Perm									Prot		
Protected Phases		4						2		1	6	
Permitted Phases	4											
Actuated Green, G (s)	47.4	47.4						45.9		11.7	62.6	
Effective Green, g (s)	48.4	48.4						46.9		12.7	63.6	
Actuated g/C Ratio	0.40	0.40						0.39		0.11	0.53	
Clearance Time (s)	5.0	5.0						5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0						3.0		3.0	3.0	
Lane Grp Cap (vph)	1385	638						2791		363	1876	
v/s Ratio Prot		c0.36						0.21		0.07	c0.35	
v/s Ratio Perm	0.08											
v/c Ratio	0.20	0.88						0.52		0.64	0.67	
Uniform Delay, d1	23.2	33.1						27.9		51.5	20.5	
Progression Factor	1.39	1.41						0.37		0.75	1.49	
Incremental Delay, d2	0.0	6.0						0.6		3.7	1.8	
Delay (s)	32.3	52.6						10.8		42.1	32.5	
Level of Service	C	D						B		D	C	
Approach Delay (s)		46.1			0.0			10.8			34.0	
Approach LOS		D			A			B			C	

Intersection Summary			
HCM Average Control Delay	27.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	98.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor				0.97	1.00		0.97	0.91			0.86	
Frt				1.00	0.85		1.00	1.00			0.99	
Flt Protected				0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)				3433	1583		3433	5085			6340	
Flt Permitted				0.95	1.00		0.95	1.00			1.00	
Satd. Flow (perm)				3433	1583		3433	5085			6340	
Volume (vph)	0	0	0	585	0	480	420	725	0	0	785	60
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	636	0	522	457	788	0	0	853	65
RTOR Reduction (vph)	0	0	0	0	80	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	0	0	636	442	0	457	788	0	0	911	0
Turn Type				Perm			Prot					
Protected Phases					8		5	2			6	
Permitted Phases				8								
Actuated Green, G (s)				40.4	40.4		20.5	69.6			44.1	
Effective Green, g (s)				41.4	41.4		21.5	70.6			45.1	
Actuated g/C Ratio				0.34	0.34		0.18	0.59			0.38	
Clearance Time (s)				5.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)				3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)				1184	546		615	2992			2383	
v/s Ratio Prot					c0.33		c0.13	0.15			c0.14	
v/s Ratio Perm				0.19								
v/c Ratio				0.54	0.81		0.74	0.26			0.38	
Uniform Delay, d1				31.6	35.7		46.6	12.0			27.3	
Progression Factor				0.64	0.75		0.65	0.68			0.99	
Incremental Delay, d2				0.1	2.8		4.4	0.2			0.4	
Delay (s)				20.5	29.5		34.9	8.4			27.3	
Level of Service				C	C		C	A			C	
Approach Delay (s)		0.0			24.5			18.1			27.3	
Approach LOS		A			C			B			C	

Intersection Summary			
HCM Average Control Delay	22.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	98.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0		4.0	4.0	
Lane Util. Factor	0.97	1.00						0.81		0.97	0.95	
Frt	1.00	0.85						0.97		1.00	1.00	
Flt Protected	0.95	1.00						1.00		0.95	1.00	
Satd. Flow (prot)	3433	1583						7287		3433	3539	
Flt Permitted	0.95	1.00						1.00		0.95	1.00	
Satd. Flow (perm)	3433	1583						7287		3433	3539	
Volume (vph)	185	0	505	0	0	0	0	1730	510	315	900	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	201	0	549	0	0	0	0	1880	554	342	978	0
RTOR Reduction (vph)	0	66	0	0	0	0	0	41	0	0	0	0
Lane Group Flow (vph)	201	483	0	0	0	0	0	2393	0	342	978	0
Turn Type	Perm									Prot		
Protected Phases		4						2		1	6	
Permitted Phases	4											
Actuated Green, G (s)	39.8	39.8						49.5		15.7	70.2	
Effective Green, g (s)	40.8	40.8						50.5		16.7	71.2	
Actuated g/C Ratio	0.34	0.34						0.42		0.14	0.59	
Clearance Time (s)	5.0	5.0						5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0						3.0		3.0	3.0	
Lane Grp Cap (vph)	1167	538						3067		478	2100	
v/s Ratio Prot		c0.35						c0.33		c0.10	0.28	
v/s Ratio Perm	0.06											
v/c Ratio	0.17	0.90						0.78		0.72	0.47	
Uniform Delay, d1	27.8	37.6						30.0		49.4	13.7	
Progression Factor	0.86	0.94						0.53		0.63	1.62	
Incremental Delay, d2	0.0	10.7						1.0		4.6	0.7	
Delay (s)	23.9	45.9						16.8		35.6	23.0	
Level of Service	C	D						B		D	C	
Approach Delay (s)		40.0			0.0			16.8			26.2	
Approach LOS		D			A			B			C	

Intersection Summary			
HCM Average Control Delay	23.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	93.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor				0.97	1.00		0.97	0.91			0.86	
Frt				1.00	0.85		1.00	1.00			0.97	
Flt Protected				0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)				3433	1583		3433	5085			6245	
Flt Permitted				0.95	1.00		0.95	1.00			1.00	
Satd. Flow (perm)				3433	1583		3433	5085			6245	
Volume (vph)	0	0	0	505	0	260	685	1230	0	0	710	145
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	549	0	283	745	1337	0	0	772	158
RTOR Reduction (vph)	0	0	0	0	48	0	0	0	0	0	25	0
Lane Group Flow (vph)	0	0	0	549	235	0	745	1337	0	0	905	0
Turn Type				Perm			Prot					
Protected Phases					8		5	2			6	
Permitted Phases				8								
Actuated Green, G (s)				23.9	23.9		35.8	86.1			45.3	
Effective Green, g (s)				24.9	24.9		36.8	87.1			46.3	
Actuated g/C Ratio				0.21	0.21		0.31	0.73			0.39	
Clearance Time (s)				5.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)				3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)				712	328		1053	3691			2410	
v/s Ratio Prot					c0.18		c0.22	0.26			c0.15	
v/s Ratio Perm				0.16								
v/c Ratio				0.77	0.72		0.71	0.36			0.38	
Uniform Delay, d1				44.9	44.3		36.8	6.1			26.5	
Progression Factor				0.74	0.67		0.54	0.12			0.86	
Incremental Delay, d2				0.5	0.7		1.5	0.2			0.4	
Delay (s)				33.9	30.5		21.5	0.9			23.3	
Level of Service				C	C		C	A			C	
Approach Delay (s)		0.0			32.7			8.3			23.3	
Approach LOS		A			C			A			C	

Intersection Summary			
HCM Average Control Delay	17.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	93.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.92	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3495		1770	3539	1583	1770	1627	1504	1770	1863	1583
Flt Permitted	0.53	1.00		0.19	1.00	1.00	0.74	1.00	1.00	0.26	1.00	1.00
Satd. Flow (perm)	981	3495		358	3539	1583	1370	1627	1504	489	1863	1583
Volume (vph)	280	330	30	420	350	120	360	120	585	420	30	290
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	304	359	33	457	380	130	391	130	636	457	33	315
RTOR Reduction (vph)	0	6	0	0	0	102	0	33	369	0	0	219
Lane Group Flow (vph)	304	386	0	457	380	28	391	248	116	457	33	96
Turn Type	pm+pt			pm+pt		Perm	pm+pt		Perm	pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		6
Actuated Green, G (s)	36.5	15.8		50.3	24.6	24.6	47.0	27.8	27.8	59.7	35.5	35.5
Effective Green, g (s)	38.5	16.8		51.3	25.6	25.6	49.0	28.8	28.8	60.7	36.5	36.5
Actuated g/C Ratio	0.32	0.14		0.43	0.21	0.21	0.41	0.24	0.24	0.51	0.30	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
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
Lane Grp Cap (vph)	457	489		512	755	338	627	390	361	545	567	481
v/s Ratio Prot	0.12	0.11		c0.23	0.11		0.11	0.17		c0.19	0.02	
v/s Ratio Perm	0.09			c0.15		0.08	0.15		0.32	0.23		0.20
v/c Ratio	0.67	0.79		0.89	0.50	0.08	0.62	0.63	0.32	0.84	0.06	0.20
Uniform Delay, d1	33.4	49.9		31.3	41.6	37.8	27.0	40.9	37.6	22.1	29.6	30.9
Progression Factor	0.67	0.89		1.00	1.12	2.02	1.22	1.04	1.67	1.00	1.00	1.00
Incremental Delay, d2	2.6	6.0		16.9	0.5	0.1	0.6	2.4	0.7	10.9	0.2	0.9
Delay (s)	25.0	50.3		48.4	47.0	76.3	33.4	45.0	63.5	32.9	29.8	31.9
Level of Service	C	D		D	D	E	C	D	E	C	C	C
Approach Delay (s)		39.3			51.6			48.8			32.4	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM Average Control Delay	44.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	88.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	0.97	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	3433	3539	3472		1770	1583
Flt Permitted	0.44	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1581	3539	3472		1770	1583
Volume (vph)	650	770	415	60	145	635
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	707	837	451	65	158	690
RTOR Reduction (vph)	0	0	8	0	0	259
Lane Group Flow (vph)	707	837	508	0	158	431
Turn Type	Perm					Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)	74.4	74.4	74.4		35.6	35.6
Effective Green, g (s)	75.4	75.4	75.4		36.6	36.6
Actuated g/C Ratio	0.63	0.63	0.63		0.30	0.30
Clearance Time (s)	5.0	5.0	5.0		5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	993	2224	2182		540	483
v/s Ratio Prot		0.24	0.15		0.09	
v/s Ratio Perm	c0.45					0.44
v/c Ratio	0.71	0.38	0.23		0.29	0.89
Uniform Delay, d1	15.0	10.9	9.7		31.8	39.8
Progression Factor	1.36	1.39	1.27		1.40	1.83
Incremental Delay, d2	2.9	0.3	0.2		0.1	8.9
Delay (s)	23.3	15.4	12.6		44.8	81.8
Level of Service	C	B	B		D	F
Approach Delay (s)		19.0	12.6		74.9	
Approach LOS		B	B		E	

Intersection Summary			
HCM Average Control Delay	34.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	59.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	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)	3433	3539	1583	3433	3539	1583	3433	5085	1583	3433	5085	1583
Flt Permitted	0.68	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.30	1.00	1.00
Satd. Flow (perm)	2443	3539	1583	3433	3539	1583	3433	5085	1583	1073	5085	1583
Volume (vph)	100	220	170	570	110	370	40	850	610	590	920	80
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	109	239	185	620	120	402	43	924	663	641	1000	87
RTOR Reduction (vph)	0	0	91	0	0	80	0	0	216	0	0	40
Lane Group Flow (vph)	109	239	94	620	120	322	43	924	447	641	1000	47
Turn Type	Perm		Perm	Prot		Perm	Prot		Perm	Perm		Perm
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4		4			8			2	6		6
Actuated Green, G (s)	12.8	12.8	12.8	16.0	33.8	33.8	5.9	75.2	75.2	64.3	64.3	64.3
Effective Green, g (s)	14.8	14.8	14.8	17.0	35.8	35.8	6.9	76.2	76.2	65.3	65.3	65.3
Actuated g/C Ratio	0.12	0.12	0.12	0.14	0.30	0.30	0.06	0.64	0.64	0.54	0.54	0.54
Clearance Time (s)	6.0	6.0	6.0	5.0	6.0	6.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	3.0	2.0	2.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	301	436	195	486	1056	472	197	3229	1005	584	2767	861
v/s Ratio Prot		0.07		c0.18	0.03		0.01	0.18			0.20	
v/s Ratio Perm	0.04		0.12			0.25			0.42	c0.60		0.05
v/c Ratio	0.36	0.55	0.48	1.28	0.11	0.68	0.22	0.29	0.44	1.10	0.36	0.05
Uniform Delay, d1	48.3	49.5	49.0	51.5	30.6	37.1	54.0	9.8	11.1	27.4	15.5	12.9
Progression Factor	1.00	1.00	1.00	0.88	0.90	0.95	0.76	0.91	2.69	1.24	1.33	1.95
Incremental Delay, d2	0.3	0.8	0.7	136.7	0.0	2.6	0.1	0.0	0.1	64.3	0.3	0.1
Delay (s)	48.5	50.2	49.7	181.8	27.6	38.0	41.2	8.9	30.1	98.1	21.0	25.2
Level of Service	D	D	D	F	C	D	D	A	C	F	C	C
Approach Delay (s)		49.7			115.0			18.4			49.8	
Approach LOS		D			F			B			D	

Intersection Summary			
HCM Average Control Delay	54.4	HCM Level of Service	D
HCM Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	70.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.93	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3421		1770	3539	1583	1770	1640	1504	1770	1863	1583
Flt Permitted	0.38	1.00		0.21	1.00	1.00	0.71	1.00	1.00	0.18	1.00	1.00
Satd. Flow (perm)	706	3421		390	3539	1583	1318	1640	1504	343	1863	1583
Volume (vph)	290	280	80	680	660	400	100	105	500	250	70	220
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	315	304	87	739	717	435	109	114	543	272	76	239
RTOR Reduction (vph)	0	22	0	0	0	258	0	29	369	0	0	181
Lane Group Flow (vph)	315	369	0	739	717	177	109	194	65	272	76	58
Turn Type	pm+pt			pm+pt		Perm	pm+pt		Perm	pm+pt		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6		6	8		8	4		4
Actuated Green, G (s)	36.2	17.0		72.1	47.9	47.9	21.9	16.9	16.9	37.9	27.9	27.9
Effective Green, g (s)	38.2	18.0		73.1	48.9	48.9	23.9	17.9	17.9	38.9	28.9	28.9
Actuated g/C Ratio	0.32	0.15		0.61	0.41	0.41	0.20	0.15	0.15	0.32	0.24	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
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
Lane Grp Cap (vph)	404	513		825	1442	645	285	245	224	313	449	381
v/s Ratio Prot	0.13	0.11		c0.38	0.20		0.02	0.14		c0.12	0.04	
v/s Ratio Perm	0.12			c0.16		0.27	0.06		0.29	0.16		0.15
v/c Ratio	0.78	0.72		0.90	0.50	0.27	0.38	0.79	0.29	0.87	0.17	0.15
Uniform Delay, d1	33.9	48.6		24.6	26.4	23.7	41.0	49.3	45.4	33.7	36.0	35.9
Progression Factor	0.73	1.11		0.61	0.65	0.37	0.84	0.83	1.14	1.00	1.00	1.00
Incremental Delay, d2	6.8	6.2		7.9	0.2	0.1	0.1	1.6	0.1	21.7	0.2	0.2
Delay (s)	31.6	60.0		23.0	17.4	8.8	34.6	42.8	51.7	55.3	36.2	36.1
Level of Service	C	E		C	B	A	C	D	D	E	D	D
Approach Delay (s)		47.3			17.6			46.7			45.0	
Approach LOS		D			B			D			D	

Intersection Summary			
HCM Average Control Delay	32.6	HCM Level of Service	C
HCM Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	90.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	0.97	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	3433	3539	3483		1770	1583
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	3433	3539	3483		1770	1583
Volume (vph)	690	800	1140	135	120	570
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	750	870	1239	147	130	620
RTOR Reduction (vph)	0	0	8	0	0	14
Lane Group Flow (vph)	750	870	1378	0	130	606
Turn Type	Prot					pt+ov
Protected Phases	5	2	6		4	4 5
Permitted Phases						
Actuated Green, G (s)	28.2	87.0	53.8		23.0	56.2
Effective Green, g (s)	29.2	88.0	54.8		24.0	57.2
Actuated g/C Ratio	0.24	0.73	0.46		0.20	0.48
Clearance Time (s)	5.0	5.0	5.0		5.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	835	2595	1591		354	755
v/s Ratio Prot	c0.22	0.25	c0.40		0.07	c0.39
v/s Ratio Perm						
v/c Ratio	0.90	0.34	0.87		0.37	0.80
Uniform Delay, d1	44.0	5.7	29.3		41.4	26.6
Progression Factor	0.73	0.81	0.94		0.76	0.91
Incremental Delay, d2	6.9	0.2	6.5		0.4	4.3
Delay (s)	38.8	4.7	34.2		32.1	28.5
Level of Service	D	A	C		C	C
Approach Delay (s)		20.5	34.2		29.1	
Approach LOS		C	C		C	

Intersection Summary			
HCM Average Control Delay	27.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	77.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	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)	3433	3539	1583	3433	3539	1583	3433	5085	1583	3433	5085	1583
Flt Permitted	0.54	1.00	1.00	0.41	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1942	3539	1583	1497	3539	1583	3433	5085	1583	3433	5085	1583
Volume (vph)	170	250	90	750	330	630	190	1170	630	610	870	80
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	185	272	98	815	359	685	207	1272	685	663	946	87
RTOR Reduction (vph)	0	0	78	0	0	248	0	0	210	0	0	49
Lane Group Flow (vph)	185	272	20	815	359	437	207	1272	475	663	946	38
Turn Type	pm+pt		Perm	pm+pt		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8			2			6
Actuated Green, G (s)	26.4	22.4	22.4	42.4	33.4	33.4	10.6	38.1	38.1	23.5	51.0	51.0
Effective Green, g (s)	29.4	24.4	24.4	44.4	35.4	35.4	11.6	39.1	39.1	24.5	52.0	52.0
Actuated g/C Ratio	0.24	0.20	0.20	0.37	0.30	0.30	0.10	0.33	0.33	0.20	0.43	0.43
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0	6.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	2.0	2.0	3.0	2.0	2.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	538	720	322	812	1044	467	332	1657	516	701	2204	686
v/s Ratio Prot	0.01	0.08		c0.13	0.10		0.06	0.25		c0.19	0.19	
v/s Ratio Perm	0.07		0.06	0.24		0.43			0.43			0.05
v/c Ratio	0.34	0.38	0.06	1.00	0.34	0.94	0.62	0.77	0.92	0.95	0.43	0.05
Uniform Delay, d1	36.2	41.2	38.6	35.1	33.2	41.2	52.1	36.4	39.0	47.1	23.7	19.7
Progression Factor	1.00	1.00	1.00	0.87	0.84	0.77	1.02	1.05	1.09	1.13	0.74	0.49
Incremental Delay, d2	0.4	0.1	0.0	23.4	0.0	16.0	0.3	0.3	3.4	19.7	0.5	0.1
Delay (s)	36.5	41.4	38.6	53.8	27.8	47.8	53.2	38.6	45.8	73.1	18.0	9.8
Level of Service	D	D	D	D	C	D	D	D	D	E	B	A
Approach Delay (s)		39.3			46.6			42.3			39.1	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM Average Control Delay	42.4	HCM Level of Service	D
HCM Volume to Capacity ratio	1.28		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	81.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Peoria Street

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94	0.95		0.94	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	4990	3482		4990	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	4990	3482		4990	3539	1583
Volume (vph)	280	2000	590	180	3245	475	555	330	40	490	360	190
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	304	2174	641	196	3527	516	603	359	43	533	391	207
RTOR Reduction (vph)	0	0	228	0	0	223	0	8	0	0	0	80
Lane Group Flow (vph)	304	2174	413	196	3527	293	603	394	0	533	391	127
Turn Type	Prot		Perm	Prot		Perm	Split			Split		Perm
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases			2			6						4
Actuated Green, G (s)	7.1	60.1	60.1	8.1	61.1	61.1	16.0	16.0		15.8	15.8	15.8
Effective Green, g (s)	8.1	61.1	61.1	9.1	62.1	62.1	17.0	17.0		16.8	16.8	16.8
Actuated g/C Ratio	0.07	0.51	0.51	0.08	0.52	0.52	0.14	0.14		0.14	0.14	0.14
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
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
Lane Grp Cap (vph)	232	2589	806	260	2631	819	707	493		699	495	222
v/s Ratio Prot	c0.09	0.43		0.06	c0.69		c0.12	0.12		0.11	0.11	
v/s Ratio Perm			0.40			0.33						0.13
v/c Ratio	1.31	0.84	0.51	0.75	1.34	0.36	0.85	0.80		0.76	0.79	0.57
Uniform Delay, d1	56.0	25.3	19.6	54.4	29.0	17.1	50.3	49.9		49.7	49.9	48.2
Progression Factor	0.85	1.53	3.82	1.23	0.42	0.33	0.68	0.67		0.61	0.61	0.40
Incremental Delay, d2	142.5	0.3	0.2	1.2	153.5	0.1	8.5	7.6		4.0	6.7	2.8
Delay (s)	190.1	38.9	75.0	68.0	165.8	5.8	42.9	41.1		34.5	37.3	22.2
Level of Service	F	D	E	E	F	A	D	D		C	D	C
Approach Delay (s)		61.1			141.8			42.2			33.2	
Approach LOS		E			F			D			C	

Intersection Summary			
HCM Average Control Delay	91.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.15		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	104.5%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.94	0.95		0.94	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	4990	3387		4990	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	4990	3387		4990	3539	1583
Volume (vph)	220	3015	390	155	2415	505	575	210	85	590	505	315
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	239	3277	424	168	2625	549	625	228	92	641	549	342
RTOR Reduction (vph)	0	0	201	0	0	275	0	36	0	0	0	47
Lane Group Flow (vph)	239	3277	223	168	2625	275	625	284	0	641	549	295
Turn Type	Prot		Perm	Prot		Perm	Split			Split		Perm
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases			2			6						4
Actuated Green, G (s)	7.0	62.0	62.0	4.0	59.0	59.0	16.0	16.0		18.0	18.0	18.0
Effective Green, g (s)	8.0	63.0	63.0	5.0	60.0	60.0	17.0	17.0		19.0	19.0	19.0
Actuated g/C Ratio	0.07	0.52	0.52	0.04	0.50	0.50	0.14	0.14		0.16	0.16	0.16
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
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
Lane Grp Cap (vph)	229	2670	831	143	2543	792	707	480		790	560	251
v/s Ratio Prot	c0.07	c0.64		0.05	0.52		c0.13	0.09		0.13	0.16	
v/s Ratio Perm			0.27			0.35						0.22
v/c Ratio	1.04	1.23	0.27	1.17	1.03	0.35	0.88	0.59		0.81	0.98	1.17
Uniform Delay, d1	56.0	28.5	15.8	57.5	30.0	18.1	50.5	48.2		48.8	50.3	50.5
Progression Factor	1.21	0.47	0.10	1.00	1.00	1.00	0.80	0.74		0.84	0.84	0.80
Incremental Delay, d2	30.5	102.6	0.1	129.9	26.8	0.3	11.8	1.8		5.4	29.9	108.2
Delay (s)	98.4	116.0	1.7	187.4	56.8	18.4	52.2	37.5		46.4	72.2	148.7
Level of Service	F	F	A	F	E	B	D	D		D	E	F
Approach Delay (s)		102.6			57.0			47.2			78.5	
Approach LOS		F			E			D			E	

Intersection Summary			
HCM Average Control Delay	77.9	HCM Level of Service	E
HCM Volume to Capacity ratio	1.20		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	100.9%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Revere Parkway

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	0.95		0.97	0.95
Frt	1.00	0.85	0.90		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1583	3185		3433	3539
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1770	1583	3185		3433	3539
Volume (vph)	300	265	45	90	50	60
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	326	288	49	98	54	65
RTOR Reduction (vph)	0	220	39	0	0	0
Lane Group Flow (vph)	326	68	108	0	54	65
Turn Type		Perm			Prot	
Protected Phases	8		2		1	6
Permitted Phases		8				
Actuated Green, G (s)	27.5	27.5	71.4		6.1	82.5
Effective Green, g (s)	28.5	28.5	72.4		7.1	83.5
Actuated g/C Ratio	0.24	0.24	0.60		0.06	0.70
Clearance Time (s)	5.0	5.0	5.0		5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	420	376	1922		203	2463
v/s Ratio Prot	c0.18		c0.05		c0.02	0.02
v/s Ratio Perm		0.18				
v/c Ratio	0.78	0.18	0.06		0.27	0.03
Uniform Delay, d1	42.8	36.5	9.8		54.0	5.7
Progression Factor	0.24	0.11	0.90		1.00	1.00
Incremental Delay, d2	8.6	0.2	0.1		0.7	0.0
Delay (s)	18.7	4.1	8.8		54.7	5.7
Level of Service	B	A	A		D	A
Approach Delay (s)	11.8		8.8			27.9
Approach LOS	B		A			C

Intersection Summary			
HCM Average Control Delay	13.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	34.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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	
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	3433	1863	1583	1770	3539	1583	1770	3480	
Flt Permitted	0.69	1.00	1.00	0.95	1.00	1.00	0.57	1.00	1.00	0.64	1.00	
Satd. Flow (perm)	1292	1863	1583	3433	1863	1583	1066	3539	1583	1185	3480	
Volume (vph)	10	150	20	710	90	400	5	95	45	60	240	30
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	163	22	772	98	435	5	103	49	65	261	33
RTOR Reduction (vph)	0	0	19	0	0	244	0	0	29	0	6	0
Lane Group Flow (vph)	11	163	3	772	98	191	5	103	20	65	288	0
Turn Type	Perm		Perm	Prot		Perm	pm+pt		Perm	pm+pt		
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4			8	2		2	6		
Actuated Green, G (s)	15.1	15.1	15.1	31.7	51.8	51.8	49.3	48.0	48.0	57.1	51.9	
Effective Green, g (s)	16.1	16.1	16.1	32.7	52.8	52.8	51.3	49.0	49.0	59.1	52.9	
Actuated g/C Ratio	0.13	0.13	0.13	0.27	0.44	0.44	0.43	0.41	0.41	0.49	0.44	
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	
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	
Lane Grp Cap (vph)	173	250	212	935	820	697	469	1445	646	614	1534	
v/s Ratio Prot		0.09		c0.22	0.05		0.00	0.03		c0.01	c0.08	
v/s Ratio Perm	0.01		0.01			0.27	0.00		0.03	0.05		
v/c Ratio	0.06	0.65	0.01	0.83	0.12	0.27	0.01	0.07	0.03	0.11	0.19	
Uniform Delay, d1	45.4	49.3	45.1	41.0	19.9	21.4	19.7	21.6	21.3	16.1	20.5	
Progression Factor	1.23	1.21	1.79	1.00	1.00	1.00	1.00	1.00	1.00	0.18	0.25	
Incremental Delay, d2	0.1	5.2	0.0	6.0	0.1	0.2	0.0	0.1	0.1	0.1	0.3	
Delay (s)	56.1	65.0	80.5	47.0	19.9	21.6	19.7	21.7	21.4	3.0	5.3	
Level of Service	E	E	F	D	B	C	B	C	C	A	A	
Approach Delay (s)		66.2			36.5			21.6			4.9	
Approach LOS		E			D			C			A	

Intersection Summary			
HCM Average Control Delay	32.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	48.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	0.97	0.95	0.95		1.00	0.88
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	3433	3539	3508		1770	2787
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	3433	3539	3508		1770	2787
Volume (vph)	50	200	160	10	70	1040
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	217	174	11	76	1130
RTOR Reduction (vph)	0	0	4	0	0	733
Lane Group Flow (vph)	54	217	181	0	76	397
Turn Type	Prot					Perm
Protected Phases	5	2	6		4	
Permitted Phases						4
Actuated Green, G (s)	1.9	14.8	7.9		11.9	11.9
Effective Green, g (s)	2.9	15.8	8.9		12.9	12.9
Actuated g/C Ratio	0.08	0.43	0.24		0.35	0.35
Clearance Time (s)	5.0	5.0	5.0		5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	271	1524	851		622	980
v/s Ratio Prot	0.02	c0.06	c0.05		0.04	
v/s Ratio Perm						0.41
v/c Ratio	0.20	0.14	0.21		0.12	0.41
Uniform Delay, d1	15.8	6.3	11.1		8.1	9.0
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.4	0.0	0.1		0.1	0.3
Delay (s)	16.2	6.4	11.2		8.2	9.3
Level of Service	B	A	B		A	A
Approach Delay (s)		8.3	11.2		9.2	
Approach LOS		A	B		A	

Intersection Summary			
HCM Average Control Delay	9.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	36.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	47.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.95		1.00	0.95	0.97	1.00
Frt	0.88		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3116		1770	3539	3433	1583
Flt Permitted	1.00		0.65	1.00	0.95	1.00
Satd. Flow (perm)	3116		1208	3539	3433	1583
Volume (vph)	30	120	30	100	465	20
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	130	33	109	505	22
RTOR Reduction (vph)	33	0	0	0	0	18
Lane Group Flow (vph)	130	0	33	109	505	4
Turn Type			Perm			Perm
Protected Phases	2			6	8	
Permitted Phases			6			8
Actuated Green, G (s)	88.3		88.3	88.3	21.7	21.7
Effective Green, g (s)	89.3		89.3	89.3	22.7	22.7
Actuated g/C Ratio	0.74		0.74	0.74	0.19	0.19
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2319		899	2634	649	299
v/s Ratio Prot	c0.05			0.03	c0.15	
v/s Ratio Perm			0.03			0.01
v/c Ratio	0.06		0.04	0.04	0.78	0.01
Uniform Delay, d1	4.1		4.0	4.1	46.3	39.6
Progression Factor	0.06		0.95	0.94	0.68	0.81
Incremental Delay, d2	0.0		0.1	0.0	0.6	0.0
Delay (s)	0.3		3.9	3.8	32.1	32.0
Level of Service	A		A	A	C	C
Approach Delay (s)	0.3			3.9	32.1	
Approach LOS	A			A	C	

Intersection Summary			
HCM Average Control Delay	21.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.21		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	31.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	0.95		0.97	0.95
Frt	1.00	0.85	0.86		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1583	3061		3433	3539
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1770	1583	3061		3433	3539
Volume (vph)	15	40	90	815	250	65
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	16	43	98	886	272	71
RTOR Reduction (vph)	0	41	189	0	0	0
Lane Group Flow (vph)	16	2	795	0	272	71
Turn Type		Perm			Prot	
Protected Phases	8		2		1	6
Permitted Phases		8				
Actuated Green, G (s)	5.1	5.1	85.6		14.3	104.9
Effective Green, g (s)	6.1	6.1	86.6		15.3	105.9
Actuated g/C Ratio	0.05	0.05	0.72		0.13	0.88
Clearance Time (s)	5.0	5.0	5.0		5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	90	80	2209		438	3123
v/s Ratio Prot	0.01		c0.32		c0.08	0.02
v/s Ratio Perm		0.03				
v/c Ratio	0.18	0.03	0.36		0.62	0.02
Uniform Delay, d1	54.5	54.1	6.3		49.6	0.8
Progression Factor	0.90	1.05	0.58		1.00	1.00
Incremental Delay, d2	0.9	0.1	0.4		2.7	0.0
Delay (s)	49.9	57.1	4.1		52.3	0.9
Level of Service	D	E	A		D	A
Approach Delay (s)	55.1		4.1			41.7
Approach LOS	E		A			D

Intersection Summary			
HCM Average Control Delay	15.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	49.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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	
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	3433	1863	1583	1770	3539	1583	1770	3431	
Flt Permitted	0.57	1.00	1.00	0.95	1.00	1.00	0.72	1.00	1.00	0.31	1.00	
Satd. Flow (perm)	1071	1863	1583	3433	1863	1583	1341	3539	1583	581	3431	
Volume (vph)	95	120	100	210	280	320	20	620	250	110	40	10
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	103	130	109	228	304	348	22	674	272	120	43	11
RTOR Reduction (vph)	0	0	93	0	0	221	0	0	130	0	5	0
Lane Group Flow (vph)	103	130	16	228	304	127	22	674	142	120	49	0
Turn Type	Perm		Perm	Prot		Perm	pm+pt		Perm	pm+pt		
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4		4			8	2		2	6		
Actuated Green, G (s)	16.2	16.2	16.2	13.5	34.7	34.7	64.3	61.6	61.6	75.3	67.6	
Effective Green, g (s)	17.2	17.2	17.2	14.5	35.7	35.7	66.3	62.6	62.6	76.3	68.6	
Actuated g/C Ratio	0.14	0.14	0.14	0.12	0.30	0.30	0.55	0.52	0.52	0.64	0.57	
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	
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	
Lane Grp Cap (vph)	154	267	227	415	554	471	754	1846	826	466	1961	
v/s Ratio Prot		0.07		0.07	0.16		0.00	c0.19		c0.02	0.02	
v/s Ratio Perm	0.10		0.07			0.22	0.02		0.17	0.14		
v/c Ratio	0.67	0.49	0.07	0.55	0.55	0.27	0.03	0.37	0.17	0.26	0.03	
Uniform Delay, d1	48.7	47.3	44.5	49.7	35.4	32.2	12.2	17.0	15.1	9.5	11.2	
Progression Factor	0.85	0.85	1.04	0.93	0.80	0.52	1.00	1.00	1.00	0.92	0.89	
Incremental Delay, d2	10.0	1.3	0.1	1.5	1.1	0.3	0.0	0.6	0.5	0.3	0.0	
Delay (s)	51.4	41.4	46.5	47.8	29.4	16.9	12.2	17.5	15.5	9.1	10.0	
Level of Service	D	D	D	D	C	B	B	B	B	A	A	
Approach Delay (s)		46.0			29.2			16.8			9.4	
Approach LOS		D			C			B			A	

Intersection Summary			
HCM Average Control Delay	25.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	56.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	0.97	0.95	0.95		1.00	0.88
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	3433	3539	3511		1770	2787
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	3433	3539	3511		1770	2787
Volume (vph)	210	365	625	35	10	195
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	228	397	679	38	11	212
RTOR Reduction (vph)	0	0	2	0	0	199
Lane Group Flow (vph)	228	397	715	0	11	13
Turn Type	Prot					Perm
Protected Phases	5	2	6		4	
Permitted Phases						4
Actuated Green, G (s)	12.5	103.8	86.3		6.2	6.2
Effective Green, g (s)	13.5	104.8	87.3		7.2	7.2
Actuated g/C Ratio	0.11	0.87	0.73		0.06	0.06
Clearance Time (s)	5.0	5.0	5.0		5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	386	3091	2554		106	167
v/s Ratio Prot	c0.07	0.11	c0.20		0.01	
v/s Ratio Perm						0.08
v/c Ratio	0.59	0.13	0.28		0.10	0.08
Uniform Delay, d1	50.6	1.1	5.6		53.3	53.3
Progression Factor	0.96	0.98	1.65		1.23	2.39
Incremental Delay, d2	2.4	0.1	0.3		0.0	0.0
Delay (s)	51.1	1.1	9.5		65.9	127.2
Level of Service	D	A	A		E	F
Approach Delay (s)		19.4	9.5		124.2	
Approach LOS		B	A		F	

Intersection Summary			
HCM Average Control Delay	29.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	37.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.95		1.00	0.95	0.97	1.00
Frt	0.86		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3058		1770	3539	3433	1583
Flt Permitted	1.00		0.24	1.00	0.95	1.00
Satd. Flow (perm)	3058		439	3539	3433	1583
Volume (vph)	100	965	200	130	60	10
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	109	1049	217	141	65	11
RTOR Reduction (vph)	135	0	0	0	0	10
Lane Group Flow (vph)	1023	0	217	141	65	1
Turn Type			Perm			Perm
Protected Phases	2			6	8	
Permitted Phases			6			8
Actuated Green, G (s)	103.5		103.5	103.5	6.5	6.5
Effective Green, g (s)	104.5		104.5	104.5	7.5	7.5
Actuated g/C Ratio	0.87		0.87	0.87	0.06	0.06
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2663		382	3082	215	99
v/s Ratio Prot	0.38			0.04	c0.02	
v/s Ratio Perm			c0.49			0.01
v/c Ratio	0.38		0.57	0.05	0.30	0.01
Uniform Delay, d1	1.5		2.0	1.0	53.8	52.8
Progression Factor	2.30		1.00	0.98	1.00	1.00
Incremental Delay, d2	0.4		6.0	0.0	0.8	0.0
Delay (s)	3.9		8.0	1.0	54.5	52.8
Level of Service	A		A	A	D	D
Approach Delay (s)	3.9			5.3	54.3	
Approach LOS	A			A	D	

Intersection Summary			
HCM Average Control Delay	6.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	58.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Potomac Street

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.95	0.88	0.97	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)	3433	5085	1583	3433	5085	1583	3433	3539	2787	3433	3539	1583
Flt Permitted	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 (perm)	3433	5085	1583	3433	5085	1583	3433	3539	2787	3433	3539	1583
Volume (vph)	70	1040	370	305	4350	495	185	145	105	250	25	5
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	76	1130	402	332	4728	538	201	158	114	272	27	5
RTOR Reduction (vph)	0	0	122	0	0	29	0	0	77	0	0	5
Lane Group Flow (vph)	76	1130	280	332	4728	509	201	158	37	272	27	0
Turn Type	Prot		pm+ov	Prot		pm+ov	Prot		pm+ov	Prot		pm+ov
Protected Phases	5	2	3	1	6	7	3	8	1	7	4	5
Permitted Phases			2			6			8			4
Actuated Green, G (s)	3.3	63.0	78.5	15.5	75.2	85.2	15.5	11.5	27.0	10.0	6.0	9.3
Effective Green, g (s)	4.3	64.0	80.5	16.5	76.2	87.2	16.5	12.5	29.0	11.0	7.0	11.3
Actuated g/C Ratio	0.04	0.53	0.67	0.14	0.64	0.73	0.14	0.10	0.24	0.09	0.06	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	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)	123	2712	1115	472	3229	1203	472	369	766	315	206	202
v/s Ratio Prot	0.02	0.22	0.05	c0.10	c0.93	0.04	c0.06	c0.04	0.02	c0.08	0.01	0.00
v/s Ratio Perm			0.20			0.30			0.02			0.00
v/c Ratio	0.62	0.42	0.25	0.70	1.46	0.42	0.43	0.43	0.05	0.86	0.13	0.00
Uniform Delay, d1	57.0	16.8	7.8	49.4	21.9	6.5	47.4	50.4	34.9	53.8	53.6	49.2
Progression Factor	0.77	1.05	1.30	1.09	0.58	0.71	0.92	0.93	1.68	1.02	1.03	1.10
Incremental Delay, d2	5.3	0.3	0.1	0.4	209.1	0.0	0.6	0.8	0.0	20.9	0.3	0.0
Delay (s)	49.0	18.0	10.2	54.1	221.8	4.6	44.2	47.7	58.6	75.6	55.8	54.0
Level of Service	D	B	B	D	F	A	D	D	E	E	E	D
Approach Delay (s)		17.5			191.0			48.8			73.5	
Approach LOS		B			F			D			E	

Intersection Summary			
HCM Average Control Delay	143.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.21		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	111.9%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.95	0.88	0.97	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)	3433	5085	1583	3433	5085	1583	3433	3539	2787	3433	3539	1583
Flt Permitted	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 (perm)	3433	5085	1583	3433	5085	1583	3433	3539	2787	3433	3539	1583
Volume (vph)	285	3340	105	125	1540	175	460	85	500	545	150	5
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	310	3630	114	136	1674	190	500	92	543	592	163	5
RTOR Reduction (vph)	0	0	22	0	0	69	0	0	5	0	0	4
Lane Group Flow (vph)	310	3630	92	136	1674	121	500	92	538	592	163	1
Turn Type	Prot		pm+ov	Prot		pm+ov	Prot		pm+ov	Prot		pm+ov
Protected Phases	5	2	3	1	6	7	3	8	1	7	4	5
Permitted Phases			2			6			8			4
Actuated Green, G (s)	14.8	62.0	83.7	6.3	53.5	74.5	21.7	10.7	17.0	21.0	10.0	24.8
Effective Green, g (s)	15.8	63.0	85.7	7.3	54.5	76.5	22.7	11.7	19.0	22.0	11.0	26.8
Actuated g/C Ratio	0.13	0.52	0.71	0.06	0.45	0.64	0.19	0.10	0.16	0.18	0.09	0.22
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)	452	2670	1183	209	2309	1062	649	345	534	629	324	406
v/s Ratio Prot	0.09	c0.71	0.02	0.04	0.33	0.03	0.15	0.03	c0.06	c0.17	0.05	0.00
v/s Ratio Perm			0.05			0.09			0.13			0.00
v/c Ratio	0.69	1.36	0.08	0.65	0.72	0.11	0.77	0.27	1.01	0.94	0.50	0.00
Uniform Delay, d1	49.7	28.5	5.2	55.1	26.7	8.5	46.2	50.2	50.5	48.4	51.9	36.2
Progression Factor	1.31	0.51	0.00	1.01	0.97	0.68	1.02	0.76	0.70	0.96	0.97	0.96
Incremental Delay, d2	0.4	162.0	0.0	7.1	2.0	0.0	4.9	0.4	37.9	22.3	1.2	0.0
Delay (s)	65.7	176.5	0.0	62.6	27.8	5.9	52.0	38.4	73.1	68.9	51.7	34.7
Level of Service	E	F	A	E	C	A	D	D	E	E	D	C
Approach Delay (s)		163.0			28.1			61.0			65.0	
Approach LOS		F			C			E			E	

Intersection Summary			
HCM Average Control Delay	105.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	107.6%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Jordan Road

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.95		1.00	0.99		1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	1863	1583	1770	1770		1770	3496		1770	3335	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.26	1.00		0.51	1.00	
Satd. Flow (perm)	3433	1863	1583	1770	1770		485	3496		959	3335	
Volume (vph)	150	190	20	30	20	10	330	340	30	40	430	270
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	163	207	22	33	22	11	359	370	33	43	467	293
RTOR Reduction (vph)	0	0	19	0	10	0	0	4	0	0	60	0
Lane Group Flow (vph)	163	207	3	33	23	0	359	399	0	43	700	0
Turn Type	Prot		Perm	Prot			pm+pt			pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4				2			6		
Actuated Green, G (s)	12.7	17.5	17.5	4.9	9.7		82.6	72.3		62.5	57.2	
Effective Green, g (s)	13.7	18.5	18.5	5.9	10.7		83.6	73.3		64.5	58.2	
Actuated g/C Ratio	0.11	0.15	0.15	0.05	0.09		0.70	0.61		0.54	0.49	
Clearance Time (s)	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	
Lane Grp Cap (vph)	392	287	244	87	158		567	2135		558	1617	
v/s Ratio Prot	c0.05	c0.11		0.02	0.02		c0.11	0.12		0.00	0.23	
v/s Ratio Perm			0.01				c0.33			0.04		
v/c Ratio	0.42	0.72	0.01	0.38	0.15		0.63	0.19		0.08	0.43	
Uniform Delay, d1	49.4	48.3	43.0	55.3	50.4		9.7	10.3		13.2	20.1	
Progression Factor	1.21	1.16	1.62	1.00	1.00		0.59	1.07		1.05	0.93	
Incremental Delay, d2	0.7	8.6	0.0	2.8	0.4		2.1	0.2		0.0	0.7	
Delay (s)	60.3	64.5	69.8	58.0	50.9		7.8	11.2		13.8	19.4	
Level of Service	E	E	E	E	D		A	B		B	B	
Approach Delay (s)		63.1			54.4			9.6			19.1	
Approach LOS		E			D			A			B	

Intersection Summary			
HCM Average Control Delay	25.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	65.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.95	1.00	0.66	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	1221	1863	1863	1583
Volume (vph)	35	650	370	90	95	185
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	38	707	402	98	103	201
RTOR Reduction (vph)	0	600	0	0	0	76
Lane Group Flow (vph)	38	107	402	98	103	125
Turn Type		Perm	pm+pt			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Actuated Green, G (s)	17.2	17.2	92.8	92.8	73.6	73.6
Effective Green, g (s)	18.2	18.2	93.8	93.8	74.6	74.6
Actuated g/C Ratio	0.15	0.15	0.78	0.78	0.62	0.62
Clearance Time (s)	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
Lane Grp Cap (vph)	268	240	1024	1456	1158	984
v/s Ratio Prot	0.02		c0.05	0.05	0.06	
v/s Ratio Perm		0.45	c0.26			0.13
v/c Ratio	0.14	0.45	0.39	0.07	0.09	0.13
Uniform Delay, d1	44.1	46.3	3.8	3.0	9.1	9.3
Progression Factor	0.92	1.17	1.31	0.40	1.00	1.00
Incremental Delay, d2	0.0	0.1	0.2	0.1	0.2	0.3
Delay (s)	40.6	54.2	5.2	1.3	9.2	9.6
Level of Service	D	D	A	A	A	A
Approach Delay (s)	53.5			4.4	9.5	
Approach LOS	D			A	A	

Intersection Summary			
HCM Average Control Delay	29.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.95		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	3539	3351		1770	1583
Flt Permitted	0.15	1.00	1.00		0.95	1.00
Satd. Flow (perm)	274	3539	3351		1770	1583
Volume (vph)	30	120	400	220	240	70
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	130	435	239	261	76
RTOR Reduction (vph)	0	0	94	0	0	22
Lane Group Flow (vph)	33	130	580	0	261	54
Turn Type	Perm					Perm
Protected Phases		4	8		6	
Permitted Phases	4					6
Actuated Green, G (s)	26.2	26.2	26.2		83.8	83.8
Effective Green, g (s)	27.2	27.2	27.2		84.8	84.8
Actuated g/C Ratio	0.23	0.23	0.23		0.71	0.71
Clearance Time (s)	5.0	5.0	5.0		5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	62	802	760		1251	1119
v/s Ratio Prot		0.04	c0.20		c0.15	
v/s Ratio Perm	0.12					0.05
v/c Ratio	0.53	0.16	0.76		0.21	0.05
Uniform Delay, d1	40.8	37.3	43.4		6.1	5.3
Progression Factor	0.61	0.63	1.46		0.98	1.53
Incremental Delay, d2	8.5	0.1	4.0		0.3	0.1
Delay (s)	33.5	23.6	67.3		6.3	8.3
Level of Service	C	C	E		A	A
Approach Delay (s)		25.6	67.3		6.7	
Approach LOS		C	E		A	

Intersection Summary			
HCM Average Control Delay	44.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	44.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.98		1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	1863	1583	1770	1826		1770	3477		1770	3350	
Flt Permitted	0.73	1.00	1.00	0.95	1.00		0.40	1.00		0.58	1.00	
Satd. Flow (perm)	2646	1863	1583	1770	1826		740	3477		1077	3350	
Volume (vph)	420	90	230	50	30	5	510	230	30	30	200	110
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	457	98	250	54	33	5	554	250	33	33	217	120
RTOR Reduction (vph)	0	0	196	0	3	0	0	7	0	0	56	0
Lane Group Flow (vph)	457	98	54	54	35	0	554	276	0	33	281	0
Turn Type	Perm		Perm	Prot			pm+pt			Perm		
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4		4				2			6		
Actuated Green, G (s)	24.7	24.7	24.7	7.4	37.1		72.9	72.9		30.2	30.2	
Effective Green, g (s)	25.7	25.7	25.7	8.4	38.1		73.9	73.9		31.2	31.2	
Actuated g/C Ratio	0.21	0.21	0.21	0.07	0.32		0.62	0.62		0.26	0.26	
Clearance Time (s)	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	
Lane Grp Cap (vph)	567	399	339	124	580		788	2141		280	871	
v/s Ratio Prot		0.05		c0.03	0.02		c0.23	0.08			0.10	
v/s Ratio Perm	c0.17		0.16				c0.21			0.03		
v/c Ratio	0.81	0.25	0.16	0.44	0.06		0.70	0.13		0.12	0.32	
Uniform Delay, d1	44.8	39.1	38.3	53.5	28.5		13.7	9.6		33.9	35.9	
Progression Factor	0.92	0.92	1.54	1.00	1.00		0.89	0.15		0.97	0.98	
Incremental Delay, d2	7.8	0.3	0.2	2.4	0.0		1.3	0.1		0.8	1.0	
Delay (s)	48.9	36.4	59.1	56.0	28.5		13.5	1.5		33.8	36.0	
Level of Service	D	D	E	E	C		B	A		C	D	
Approach Delay (s)		50.5			44.6			9.4			35.8	
Approach LOS		D			D			A			D	

Intersection Summary			
HCM Average Control Delay	31.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	66.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.95	1.00	0.63	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	1177	1863	1863	1583
Volume (vph)	90	190	270	330	140	70
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	98	207	293	359	152	76
RTOR Reduction (vph)	0	186	0	0	0	20
Lane Group Flow (vph)	98	21	293	359	152	56
Turn Type		Perm	pm+pt			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Actuated Green, G (s)	11.4	11.4	98.6	98.6	88.1	88.1
Effective Green, g (s)	12.4	12.4	99.6	99.6	89.1	89.1
Actuated g/C Ratio	0.10	0.10	0.83	0.83	0.74	0.74
Clearance Time (s)	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
Lane Grp Cap (vph)	183	164	1009	1546	1383	1175
v/s Ratio Prot	0.06		c0.02	0.19	0.08	
v/s Ratio Perm		0.13	c0.23			0.05
v/c Ratio	0.54	0.13	0.29	0.23	0.11	0.05
Uniform Delay, d1	51.1	48.9	2.2	2.1	4.3	4.1
Progression Factor	0.92	1.58	0.57	0.01	1.00	1.00
Incremental Delay, d2	0.3	0.0	0.1	0.3	0.2	0.1
Delay (s)	47.4	77.4	1.4	0.3	4.5	4.2
Level of Service	D	E	A	A	A	A
Approach Delay (s)	67.8			0.8	4.4	
Approach LOS	E			A	A	

Intersection Summary			
HCM Average Control Delay	18.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	37.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.86		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	3539	3057		1770	1583
Flt Permitted	0.36	1.00	1.00		0.95	1.00
Satd. Flow (perm)	663	3539	3057		1770	1583
Volume (vph)	210	390	60	590	340	30
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	228	424	65	641	370	33
RTOR Reduction (vph)	0	0	203	0	0	25
Lane Group Flow (vph)	228	424	503	0	370	8
Turn Type	Perm					Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)	81.0	81.0	81.0		29.0	29.0
Effective Green, g (s)	82.0	82.0	82.0		30.0	30.0
Actuated g/C Ratio	0.68	0.68	0.68		0.25	0.25
Clearance Time (s)	5.0	5.0	5.0		5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	453	2418	2089		443	396
v/s Ratio Prot		0.12	0.23		c0.21	
v/s Ratio Perm	c0.34					0.02
v/c Ratio	0.50	0.18	0.24		0.84	0.02
Uniform Delay, d1	9.2	6.8	7.2		42.7	33.9
Progression Factor	0.84	0.74	4.09		1.16	1.85
Incremental Delay, d2	3.7	0.1	0.2		1.3	0.0
Delay (s)	11.4	5.2	29.7		51.0	62.8
Level of Service	B	A	C		D	E
Approach Delay (s)		7.4	29.7		52.0	
Approach LOS		A	C		D	

Intersection Summary			
HCM Average Control Delay	26.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	61.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Arapahoe/Parker Interchange

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Lane Util. Factor	0.97	0.91	1.00	1.00	0.91	1.00	0.97	1.00	1.00	0.97	1.00	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)	3433	5085	1583	1770	5085	1583	3433	1863	1583	3433	1863	1583
Flt Permitted	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 (perm)	3433	5085	1583	1770	5085	1583	3433	1863	1583	3433	1863	1583
Volume (vph)	50	775	45	75	4395	180	210	5	345	30	5	20
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	842	49	82	4777	196	228	5	375	33	5	22
RTOR Reduction (vph)	0	0	19	0	0	30	0	0	269	0	0	21
Lane Group Flow (vph)	54	842	30	82	4777	166	228	5	106	33	5	1
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Actuated Green, G (s)	6.1	72.1	72.1	7.6	73.6	73.6	12.7	15.0	15.0	4.3	6.6	6.6
Effective Green, g (s)	7.1	74.1	74.1	8.6	75.6	75.6	13.7	16.0	16.0	5.3	7.6	7.6
Actuated g/C Ratio	0.06	0.62	0.62	0.07	0.63	0.63	0.11	0.13	0.13	0.04	0.06	0.06
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0	6.0	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)	203	3140	978	127	3204	997	392	248	211	152	118	100
v/s Ratio Prot	0.02	0.17		c0.05	c0.94		c0.07	0.00		0.01	0.00	
v/s Ratio Perm			0.03			0.12			0.24			0.01
v/c Ratio	0.27	0.27	0.03	0.65	1.49	0.17	0.58	0.02	0.50	0.22	0.04	0.01
Uniform Delay, d1	54.0	10.5	8.9	54.2	22.2	9.2	50.4	45.2	48.3	55.3	52.8	52.7
Progression Factor	0.77	1.64	3.30	1.00	1.00	1.00	0.84	0.83	1.82	1.00	1.00	1.00
Incremental Delay, d2	0.7	0.2	0.1	10.7	222.6	0.4	1.7	0.0	1.5	0.7	0.1	0.1
Delay (s)	42.4	17.4	29.6	65.0	244.8	9.5	43.9	37.4	89.3	56.1	52.9	52.7
Level of Service	D	B	C	E	F	A	D	D	F	E	D	D
Approach Delay (s)		19.5			232.8			71.8			54.6	
Approach LOS		B			F			E			D	

Intersection Summary			
HCM Average Control Delay	186.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.40		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	104.2%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0					4.0	4.0	4.0
Lane Util. Factor		0.81		0.97	0.91					0.91	0.91	0.76
Frt		1.00		1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		7544		3433	5085					3221	1610	3610
Flt Permitted		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		7544		3433	5085					3221	1610	3610
Volume (vph)	0	1220	0	820	3530	0	0	0	0	290	0	1695
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	1271	0	854	3677	0	0	0	0	302	0	1766
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1271	0	854	3677	0	0	0	0	201	101	1766
Turn Type				Prot						Split		custom
Protected Phases		2		1 4	6					7	7	4 7
Permitted Phases												4 7
Actuated Green, G (s)		49.0		44.0	61.0					11.0	11.0	48.0
Effective Green, g (s)		51.0		45.0	63.0					12.0	12.0	49.0
Actuated g/C Ratio		0.42		0.38	0.52					0.10	0.10	0.41
Clearance Time (s)		6.0			6.0					5.0	5.0	
Vehicle Extension (s)		3.0			3.0					3.0	3.0	
Lane Grp Cap (vph)		3206		1287	2670					322	161	1474
v/s Ratio Prot		0.17		0.25	c0.72					0.06	0.06	c0.49
v/s Ratio Perm												
v/c Ratio		0.40		0.66	1.38					0.62	0.63	1.20
Uniform Delay, d1		23.9		31.2	28.5					51.8	51.9	35.5
Progression Factor		0.70		1.13	0.70					1.00	0.00	1.00
Incremental Delay, d2		0.3		0.1	169.9					3.7	7.4	96.0
Delay (s)		17.1		35.4	189.8					55.6	7.4	131.5
Level of Service		B		D	F					E	A	F
Approach Delay (s)		17.1			160.7			0.0			118.1	
Approach LOS		B			F			A			F	

Intersection Summary			
HCM Average Control Delay	126.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.30		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	114.4%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.91	1.00	0.97	0.91	0.97	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	5085	1583	3433	5085	3433	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	5085	1583	3433	5085	3433	1583
Volume (vph)	1345	150	50	5115	165	30
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1462	163	54	5560	179	33
RTOR Reduction (vph)	0	43	0	0	0	0
Lane Group Flow (vph)	1462	120	54	5560	179	33
Turn Type		Perm	Prot			Free
Protected Phases	2		1	6	8	
Permitted Phases		2				Free
Actuated Green, G (s)	87.4	87.4	6.2	98.6	11.4	120.0
Effective Green, g (s)	88.4	88.4	7.2	99.6	12.4	120.0
Actuated g/C Ratio	0.74	0.74	0.06	0.83	0.10	1.00
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	3746	1166	206	4221	355	1583
v/s Ratio Prot	0.29		0.02	c1.09	c0.05	
v/s Ratio Perm		0.10				0.02
v/c Ratio	0.39	0.10	0.26	1.32	0.50	0.02
Uniform Delay, d1	5.8	4.5	53.9	10.2	50.9	0.0
Progression Factor	1.20	1.71	1.02	0.56	1.00	1.00
Incremental Delay, d2	0.3	0.2	0.1	142.9	1.1	0.0
Delay (s)	7.3	7.9	55.2	148.6	52.0	0.0
Level of Service	A	A	E	F	D	A
Approach Delay (s)	7.3			147.7	43.9	
Approach LOS	A			F	D	

Intersection Summary			
HCM Average Control Delay	114.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.23		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	110.2%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Lane Util. Factor	0.97	0.91	1.00	1.00	0.91	1.00	0.97	1.00	1.00	0.97	1.00	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)	3433	5085	1583	1770	5085	1583	3433	1863	1583	3433	1863	1583
Flt Permitted	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 (perm)	3433	5085	1583	1770	5085	1583	3433	1863	1583	3433	1863	1583
Volume (vph)	10	2475	170	20	1650	80	80	5	565	85	5	10
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	10	2578	177	21	1719	83	83	5	589	89	5	10
RTOR Reduction (vph)	0	0	56	0	0	38	0	0	176	0	0	9
Lane Group Flow (vph)	10	2578	121	21	1719	45	83	5	413	89	5	1
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Actuated Green, G (s)	1.4	61.7	61.7	3.3	63.6	63.6	18.4	26.9	26.9	7.1	15.6	15.6
Effective Green, g (s)	2.4	63.7	63.7	4.3	65.6	65.6	19.4	27.9	27.9	8.1	16.6	16.6
Actuated g/C Ratio	0.02	0.53	0.53	0.04	0.55	0.55	0.16	0.23	0.23	0.07	0.14	0.14
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0	6.0	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)	69	2699	840	63	2780	865	555	433	368	232	258	219
v/s Ratio Prot	0.00	c0.51		c0.01	0.34		0.02	0.00		c0.03	0.00	
v/s Ratio Perm			0.11			0.05			0.37			0.01
v/c Ratio	0.14	0.96	0.14	0.33	0.62	0.05	0.15	0.01	1.12	0.38	0.02	0.01
Uniform Delay, d1	57.8	26.8	14.3	56.5	18.6	12.7	43.2	35.4	46.1	53.6	44.7	44.6
Progression Factor	1.38	0.37	0.13	1.00	1.00	1.00	1.03	0.99	0.83	1.00	1.00	1.00
Incremental Delay, d2	0.1	1.2	0.0	3.1	1.0	0.1	0.1	0.0	78.4	1.1	0.0	0.0
Delay (s)	80.1	11.1	1.8	59.6	19.7	12.8	44.7	35.0	116.4	54.6	44.7	44.6
Level of Service	F	B	A	E	B	B	D	C	F	D	D	D
Approach Delay (s)		10.7			19.8			107.0			53.2	
Approach LOS		B			B			F			D	

Intersection Summary			
HCM Average Control Delay	26.8	HCM Level of Service	C
HCM Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	96.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0					4.0	4.0	4.0
Lane Util. Factor		0.81		0.97	0.91					0.91	0.91	0.76
Frt		1.00		1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		7544		3433	5085					3221	1610	3610
Flt Permitted		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		7544		3433	5085					3221	1610	3610
Volume (vph)	0	3935	0	660	790	0	0	0	0	555	0	670
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	4099	0	688	823	0	0	0	0	578	0	698
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	4099	0	688	823	0	0	0	0	385	193	698
Turn Type				Prot						Split		custom
Protected Phases		2		1 4	6					7	7	4 7
Permitted Phases												4 7
Actuated Green, G (s)		61.0		26.0	79.0					17.0	17.0	30.0
Effective Green, g (s)		63.0		27.0	81.0					18.0	18.0	31.0
Actuated g/C Ratio		0.52		0.22	0.68					0.15	0.15	0.26
Clearance Time (s)		6.0			6.0					5.0	5.0	
Vehicle Extension (s)		3.0			3.0					3.0	3.0	
Lane Grp Cap (vph)		3961		772	3432					483	242	933
v/s Ratio Prot		c0.54		c0.20	0.16					0.12	0.12	c0.19
v/s Ratio Perm												
v/c Ratio		1.03		0.89	0.24					0.80	0.80	0.75
Uniform Delay, d1		28.5		45.1	7.6					49.2	49.2	40.9
Progression Factor		1.00		0.73	2.00					1.00	0.00	1.00
Incremental Delay, d2		24.4		11.0	0.1					8.9	16.5	3.3
Delay (s)		52.9		44.0	15.3					58.1	16.5	44.2
Level of Service		D		D	B					E	B	D
Approach Delay (s)		52.9			28.4			0.0			44.2	
Approach LOS		D			C			A			D	

Intersection Summary			
HCM Average Control Delay	45.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.91	1.00	0.97	0.91	0.97	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	5085	1583	3433	5085	3433	1583
Flt Permitted	1.00	1.00	0.19	1.00	0.95	1.00
Satd. Flow (perm)	5085	1583	682	5085	3433	1583
Volume (vph)	4095	400	200	1325	460	150
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	4451	435	217	1440	500	163
RTOR Reduction (vph)	0	209	0	0	0	0
Lane Group Flow (vph)	4451	226	217	1440	500	163
Turn Type		Perm	Perm			Perm
Protected Phases	4			8	2	
Permitted Phases		4	8			2
Actuated Green, G (s)	20.2	20.2	20.2	20.2	11.8	11.8
Effective Green, g (s)	21.2	21.2	21.2	21.2	12.8	12.8
Actuated g/C Ratio	0.50	0.50	0.50	0.50	0.30	0.30
Clearance Time (s)	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
Lane Grp Cap (vph)	2567	799	344	2567	1046	482
v/s Ratio Prot	c0.88			0.28	c0.15	
v/s Ratio Perm		0.27	0.32			0.10
v/c Ratio	1.73	0.28	0.63	0.56	0.48	0.34
Uniform Delay, d1	10.4	6.0	7.6	7.2	11.9	11.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	331.9	0.2	3.7	0.3	1.6	1.9
Delay (s)	342.3	6.2	11.3	7.5	13.4	13.2
Level of Service	F	A	B	A	B	B
Approach Delay (s)	312.4			8.0	13.4	
Approach LOS	F			A	B	

Intersection Summary			
HCM Average Control Delay	214.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.26		
Actuated Cycle Length (s)	42.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	105.4%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Off Arapahoe Road

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.99		1.00	0.98		1.00	0.96		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3488		1770	3482		1770	3387		1770	3372	
Flt Permitted	0.36	1.00		0.24	1.00		0.21	1.00		0.40	1.00	
Satd. Flow (perm)	663	3488		440	3482		392	3387		745	3372	
Volume (vph)	270	840	90	140	575	70	60	275	110	150	415	190
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	293	913	98	152	625	76	65	299	120	163	451	207
RTOR Reduction (vph)	0	5	0	0	5	0	0	48	0	0	60	0
Lane Group Flow (vph)	293	1006	0	152	696	0	65	371	0	163	598	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	55.4	55.4		55.4	55.4		22.3	22.3		22.3	22.3	
Effective Green, g (s)	57.4	57.4		57.4	57.4		24.3	24.3		24.3	24.3	
Actuated g/C Ratio	0.64	0.64		0.64	0.64		0.27	0.27		0.27	0.27	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	424	2232		282	2228		106	918		202	913	
v/s Ratio Prot		0.29			0.20			0.12			0.20	
v/s Ratio Perm	c0.44			0.35			0.17			c0.22		
v/c Ratio	0.69	0.45		0.54	0.31		0.61	0.40		0.81	0.66	
Uniform Delay, d1	10.4	8.2		8.9	7.3		28.6	26.8		30.5	29.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.8	0.1		2.0	0.1		7.2	0.1		19.5	1.3	
Delay (s)	15.2	8.3		10.9	7.3		35.8	26.9		50.0	30.3	
Level of Service	B	A		B	A		D	C		D	C	
Approach Delay (s)		9.9			8.0			28.1			34.2	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	17.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	89.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	68.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3436		1770	3539	1583	1770	1863	1583	1770	1813	
Flt Permitted	0.17	1.00		0.57	1.00	1.00	0.31	1.00	1.00	0.11	1.00	
Satd. Flow (perm)	325	3436		1056	3539	1583	571	1863	1583	198	1813	
Volume (vph)	155	165	40	115	470	455	20	460	155	520	700	150
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	168	179	43	125	511	495	22	500	168	565	761	163
RTOR Reduction (vph)	0	17	0	0	0	277	0	0	111	0	6	0
Lane Group Flow (vph)	168	205	0	125	511	218	22	500	57	565	918	0
Turn Type	pm+pt			pm+pt		Perm	Perm		Perm	pm+pt		
Protected Phases	7	4		3	8			2		1	6	
Permitted Phases	4			8		8	2		2	6		
Actuated Green, G (s)	31.4	22.9		29.2	21.8	21.8	35.0	35.0	35.0	74.7	74.7	
Effective Green, g (s)	32.4	22.9		30.2	21.8	21.8	37.0	37.0	37.0	76.7	76.7	
Actuated g/C Ratio	0.27	0.19		0.25	0.18	0.18	0.31	0.31	0.31	0.64	0.64	
Clearance Time (s)	5.0	4.0		5.0	4.0	4.0	6.0	6.0	6.0	5.0	6.0	
Vehicle Extension (s)	3.0	2.0		3.0	2.0	2.0	2.0	2.0	2.0	3.0	2.0	
Lane Grp Cap (vph)	202	656		316	643	288	176	574	488	594	1159	
v/s Ratio Prot	c0.07	0.06		0.03	0.14			0.27		c0.28	0.51	
v/s Ratio Perm	0.16			0.07		0.31	0.04		0.11	c0.32		
v/c Ratio	0.83	0.31		0.40	0.79	0.76	0.12	0.87	0.12	0.95	0.79	
Uniform Delay, d1	36.4	41.8		36.2	47.0	46.6	29.9	39.2	29.8	33.4	15.8	
Progression Factor	1.00	1.00		0.62	0.73	0.72	0.97	1.02	1.36	1.00	1.00	
Incremental Delay, d2	24.3	0.1		0.8	6.0	9.2	1.4	16.3	0.5	25.3	5.6	
Delay (s)	60.7	41.9		23.3	40.1	42.6	30.5	56.4	41.0	58.7	21.4	
Level of Service	E	D		C	D	D	C	E	D	E	C	
Approach Delay (s)		50.0			39.3			51.8			35.5	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM Average Control Delay	41.3	HCM Level of Service	D
HCM Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	97.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frt	1.00	0.85	1.00	1.00	0.99	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	1583	1770	3539	3512	
Flt Permitted	0.95	1.00	0.69	1.00	1.00	
Satd. Flow (perm)	1770	1583	1287	3539	3512	
Volume (vph)	5	30	50	880	85	5
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	33	54	957	92	5
RTOR Reduction (vph)	0	32	0	0	1	0
Lane Group Flow (vph)	5	1	54	957	96	0
Turn Type		Perm	Perm			
Protected Phases	4			2	6	
Permitted Phases		4	2			
Actuated Green, G (s)	3.9	3.9	106.1	106.1	106.1	
Effective Green, g (s)	4.9	4.9	107.1	107.1	107.1	
Actuated g/C Ratio	0.04	0.04	0.89	0.89	0.89	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	72	65	1149	3159	3134	
v/s Ratio Prot	0.00			c0.27	0.03	
v/s Ratio Perm		0.02	0.04			
v/c Ratio	0.07	0.02	0.05	0.30	0.03	
Uniform Delay, d1	55.4	55.2	0.7	1.0	0.7	
Progression Factor	1.02	1.12	0.77	0.75	1.00	
Incremental Delay, d2	0.4	0.1	0.1	0.2	0.0	
Delay (s)	56.8	61.9	0.6	0.9	0.7	
Level of Service	E	E	A	A	A	
Approach Delay (s)	61.3			0.9	0.7	
Approach LOS	E			A	A	

Intersection Summary			
HCM Average Control Delay	2.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	34.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.25	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	462	3539	3539	1583	1770	1583
Volume (vph)	145	375	710	240	450	290
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	158	408	772	261	489	315
RTOR Reduction (vph)	0	0	0	149	0	78
Lane Group Flow (vph)	158	408	772	112	489	237
Turn Type	Perm			Perm		Perm
Protected Phases		4	8		6	
Permitted Phases	4			8		6
Actuated Green, G (s)	50.5	50.5	50.5	50.5	59.5	59.5
Effective Green, g (s)	51.5	51.5	51.5	51.5	60.5	60.5
Actuated g/C Ratio	0.43	0.43	0.43	0.43	0.50	0.50
Clearance Time (s)	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
Lane Grp Cap (vph)	198	1519	1519	679	892	798
v/s Ratio Prot		0.12	0.22		c0.28	
v/s Ratio Perm	c0.34			0.16		0.20
v/c Ratio	0.80	0.27	0.51	0.16	0.55	0.30
Uniform Delay, d1	29.7	22.1	25.0	21.0	20.4	17.3
Progression Factor	0.70	0.85	1.46	6.38	1.00	1.00
Incremental Delay, d2	14.7	0.1	0.2	0.1	2.4	0.9
Delay (s)	35.5	18.9	36.7	134.3	22.8	18.3
Level of Service	D	B	D	F	C	B
Approach Delay (s)		23.5	61.3		21.0	
Approach LOS		C	E		C	

Intersection Summary			
HCM Average Control Delay	38.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.91		0.97	0.91	1.00	1.00	0.95	1.00	0.97	0.95	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5063		3433	5085	1583	1770	3539	1583	3433	3396	
Flt Permitted	0.05	1.00		0.17	1.00	1.00	0.12	1.00	1.00	0.67	1.00	
Satd. Flow (perm)	100	5063		631	5085	1583	226	3539	1583	2420	3396	
Volume (vph)	75	1155	35	335	1960	240	5	120	170	375	745	275
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	1255	38	364	2130	261	5	130	185	408	810	299
RTOR Reduction (vph)	0	3	0	0	0	89	0	0	63	0	9	0
Lane Group Flow (vph)	82	1290	0	364	2130	172	5	130	122	408	1100	0
Turn Type	Perm			Perm		Perm	Perm		Perm	Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2		2	6		
Actuated Green, G (s)	78.0	78.0		78.0	78.0	78.0	32.0	32.0	32.0	32.0	32.0	
Effective Green, g (s)	79.0	79.0		79.0	79.0	79.0	33.0	33.0	33.0	33.0	33.0	
Actuated g/C Ratio	0.66	0.66		0.66	0.66	0.66	0.28	0.28	0.28	0.28	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)	66	3333		415	3348	1042	62	973	435	666	934	
v/s Ratio Prot		0.26			0.42			0.04			c0.33	
v/s Ratio Perm	c0.82			0.58		0.16	0.02		0.12	0.17		
v/c Ratio	1.24	0.39		0.88	0.64	0.16	0.08	0.13	0.28	0.61	1.18	
Uniform Delay, d1	20.5	9.4		16.6	12.1	7.9	32.3	32.7	34.2	37.9	43.5	
Progression Factor	0.85	0.61		1.37	1.29	1.17	1.00	1.00	1.00	0.72	0.71	
Incremental Delay, d2	162.0	0.0		14.1	0.3	0.1	2.5	0.3	1.6	3.6	89.5	
Delay (s)	179.5	5.8		36.9	15.9	9.2	34.8	33.0	35.8	31.0	120.6	
Level of Service	F	A		D	B	A	C	C	D	C	F	
Approach Delay (s)		16.1			18.0			34.6			96.5	
Approach LOS		B			B			C			F	

Intersection Summary			
HCM Average Control Delay	38.4	HCM Level of Service	D
HCM Volume to Capacity ratio	1.23		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	81.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	3403		1770	3539	1583	1770	3491	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.36	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	3403		1770	3539	1583	666	3491	
Volume (vph)	65	90	110	75	245	85	520	715	185	45	700	70
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	71	98	120	82	266	92	565	777	201	49	761	76
RTOR Reduction (vph)	0	0	105	0	29	0	0	0	75	0	6	0
Lane Group Flow (vph)	71	98	16	82	329	0	565	777	126	49	831	0
Turn Type	Prot		Perm	Prot			Prot		Perm	pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2	6		
Actuated Green, G (s)	5.1	14.5	14.5	7.4	16.8		42.5	74.4	74.4	39.3	35.6	
Effective Green, g (s)	6.1	15.5	15.5	8.4	17.8		43.5	75.4	75.4	41.3	36.6	
Actuated g/C Ratio	0.05	0.13	0.13	0.07	0.15		0.36	0.63	0.63	0.34	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	
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)	90	457	204	124	505		642	2224	995	272	1065	
v/s Ratio Prot	0.04	0.03		c0.05	c0.11		c0.32	0.22		0.01	c0.24	
v/s Ratio Perm			0.08						0.13	0.05		
v/c Ratio	0.79	0.21	0.08	0.66	0.65		0.88	0.35	0.13	0.18	0.78	
Uniform Delay, d1	56.3	46.8	46.0	54.4	48.2		35.8	10.6	9.0	27.9	38.0	
Progression Factor	0.91	0.57	0.99	1.00	1.00		0.72	0.76	1.15	1.00	1.00	
Incremental Delay, d2	35.4	0.2	0.2	12.5	3.0		11.0	0.3	0.2	0.3	5.7	
Delay (s)	86.6	26.7	45.8	66.9	51.2		36.8	8.5	10.6	28.2	43.7	
Level of Service	F	C	D	E	D		D	A	B	C	D	
Approach Delay (s)		49.3			54.1			19.1			42.8	
Approach LOS		D			D			B			D	

Intersection Summary			
HCM Average Control Delay	33.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	76.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00
Frt	1.00	0.91		1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3206		1770	3539	1583	1770	3504		1770	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.34	1.00		0.16	1.00	1.00
Satd. Flow (perm)	1770	3206		1770	3539	1583	641	3504		300	3539	1583
Volume (vph)	45	95	160	15	150	60	95	850	60	300	750	90
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	49	103	174	16	163	65	103	924	65	326	815	98
RTOR Reduction (vph)	0	148	0	0	0	58	0	4	0	0	0	37
Lane Group Flow (vph)	49	129	0	16	163	7	103	985	0	326	815	61
Turn Type	Prot			Prot		Perm	pm+pt			pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8	2			6		6
Actuated Green, G (s)	7.3	16.8		3.1	12.6	12.6	60.8	54.3		85.1	73.6	73.6
Effective Green, g (s)	8.3	17.8		4.1	13.6	13.6	62.8	55.3		86.1	74.6	74.6
Actuated g/C Ratio	0.07	0.15		0.03	0.11	0.11	0.52	0.46		0.72	0.62	0.62
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	476		60	401	179	406	1615		544	2200	984
v/s Ratio Prot	c0.03	c0.09		0.01	0.05		0.02	0.28		c0.13	0.23	
v/s Ratio Perm						0.04	0.12			c0.30		0.06
v/c Ratio	0.40	0.27		0.27	0.41	0.04	0.25	0.61		0.60	0.37	0.06
Uniform Delay, d1	53.5	45.3		56.5	49.4	47.4	14.5	24.3		14.7	11.2	8.9
Progression Factor	1.11	0.86		1.03	1.03	1.46	0.86	0.59		1.58	0.93	1.31
Incremental Delay, d2	2.1	0.3		2.4	0.7	0.1	0.2	1.2		1.3	0.3	0.1
Delay (s)	61.4	39.3		60.4	51.6	69.5	12.6	15.3		24.4	10.7	11.8
Level of Service	E	D		E	D	E	B	B		C	B	B
Approach Delay (s)		42.6			57.0			15.1			14.4	
Approach LOS		D			E			B			B	

Intersection Summary			
HCM Average Control Delay	21.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	66.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.94		1.00	0.99		1.00	0.86		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3345		1770	3510		1770	3060		1770	3477	
Flt Permitted	0.51	1.00		0.72	1.00		0.73	1.00		0.58	1.00	
Satd. Flow (perm)	952	3345		1333	3510		1355	3060		1083	3477	
Volume (vph)	10	35	20	190	175	10	100	25	230	10	35	5
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	38	22	207	190	11	109	27	250	11	38	5
RTOR Reduction (vph)	0	16	0	0	5	0	0	88	0	0	2	0
Lane Group Flow (vph)	11	44	0	207	196	0	109	190	0	11	41	0
Turn Type	pm+pt			Perm			Perm			Perm		
Protected Phases	7	4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	33.0	33.0		26.5	26.5		77.0	77.0		77.0	77.0	
Effective Green, g (s)	34.0	34.0		27.5	27.5		78.0	78.0		78.0	78.0	
Actuated g/C Ratio	0.28	0.28		0.23	0.23		0.65	0.65		0.65	0.65	
Clearance Time (s)	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	
Lane Grp Cap (vph)	287	948		305	804		881	1989		704	2260	
v/s Ratio Prot	0.00	c0.02			0.06			c0.09			0.01	
v/s Ratio Perm	0.01			c0.16			0.08			0.01		
v/c Ratio	0.04	0.05		0.68	0.24		0.12	0.10		0.02	0.02	
Uniform Delay, d1	31.1	31.2		42.2	37.8		8.0	7.8		7.4	7.4	
Progression Factor	1.00	1.00		0.68	0.67		0.15	0.02		1.00	1.00	
Incremental Delay, d2	0.1	0.0		3.6	0.1		0.3	0.1		0.0	0.0	
Delay (s)	31.2	31.2		32.5	25.3		1.4	0.3		7.5	7.5	
Level of Service	C	C		C	C		A	A		A	A	
Approach Delay (s)		31.2			28.9			0.6			7.5	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	15.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	36.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	1.00
Frt	1.00	0.97		1.00	0.94		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3434		1770	3334		1770	3484		1770	3539	1583
Flt Permitted	0.56	1.00		0.95	1.00		0.95	1.00		0.59	1.00	1.00
Satd. Flow (perm)	1049	3434		1770	3334		1770	3484		1100	3539	1583
Volume (vph)	40	100	25	25	175	110	95	215	25	45	405	210
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	43	109	27	27	190	120	103	234	27	49	440	228
RTOR Reduction (vph)	0	22	0	0	99	0	0	4	0	0	0	88
Lane Group Flow (vph)	43	114	0	27	211	0	103	257	0	49	440	140
Turn Type	Perm			Prot			Prot			Perm		Perm
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4									6		6
Actuated Green, G (s)	10.5	10.5		4.9	20.4		11.8	89.6		72.8	72.8	72.8
Effective Green, g (s)	11.5	11.5		5.9	21.4		12.8	90.6		73.8	73.8	73.8
Actuated g/C Ratio	0.10	0.10		0.05	0.18		0.11	0.76		0.62	0.62	0.62
Clearance Time (s)	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
Lane Grp Cap (vph)	101	329		87	595		189	2630		677	2176	974
v/s Ratio Prot		0.04		0.02	c0.09		c0.06	0.07			0.12	
v/s Ratio Perm	0.04									0.04		0.14
v/c Ratio	0.43	0.35		0.31	0.36		0.54	0.10		0.07	0.20	0.14
Uniform Delay, d1	51.1	50.7		55.1	43.2		50.8	3.9		9.3	10.2	9.8
Progression Factor	1.00	1.00		0.81	0.61		1.03	0.33		0.30	0.27	0.17
Incremental Delay, d2	2.9	0.6		1.9	0.3		2.9	0.1		0.2	0.2	0.3
Delay (s)	54.0	51.4		46.6	26.6		55.1	1.4		2.9	2.9	1.9
Level of Service	D	D		D	C		E	A		A	A	A
Approach Delay (s)		52.0			28.2			16.6			2.6	
Approach LOS		D			C			B			A	

Intersection Summary			
HCM Average Control Delay	16.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	41.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1583	3539	1583	1770	3539
Flt Permitted	0.95	1.00	1.00	1.00	0.08	1.00
Satd. Flow (perm)	1770	1583	3539	1583	143	3539
Volume (vph)	420	405	1360	725	475	975
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	457	440	1478	788	516	1060
RTOR Reduction (vph)	0	0	0	357	0	0
Lane Group Flow (vph)	457	440	1478	431	516	1060
Turn Type		Free		Perm	pm+pt	
Protected Phases	8		2		1	6
Permitted Phases		Free		2	6	
Actuated Green, G (s)	29.0	120.0	47.0	47.0	81.0	81.0
Effective Green, g (s)	30.0	120.0	48.0	48.0	82.0	82.0
Actuated g/C Ratio	0.25	1.00	0.40	0.40	0.68	0.68
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	443	1583	1416	633	504	2418
v/s Ratio Prot	c0.26		0.42		c0.26	0.30
v/s Ratio Perm		0.28		0.50	0.44	
v/c Ratio	1.03	0.28	1.04	0.68	1.02	0.44
Uniform Delay, d1	45.0	0.0	36.0	29.7	47.2	8.6
Progression Factor	1.00	1.00	1.00	1.00	1.39	1.54
Incremental Delay, d2	51.1	0.4	36.2	5.8	38.7	0.4
Delay (s)	96.1	0.4	72.2	35.5	104.5	13.6
Level of Service	F	A	E	D	F	B
Approach Delay (s)	49.2		59.4			43.4
Approach LOS	D		E			D

Intersection Summary			
HCM Average Control Delay	52.2	HCM Level of Service	D
HCM Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	97.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91	1.00	0.97	0.95	1.00	0.97	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)	1770	5085	1583	3433	5085	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	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 (perm)	1770	5085	1583	3433	5085	1583	3433	3539	1583	3433	3539	1583
Volume (vph)	35	1545	305	815	3050	465	825	395	315	225	160	25
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	38	1679	332	886	3315	505	897	429	342	245	174	27
RTOR Reduction (vph)	0	0	0	0	0	207	0	0	0	0	0	23
Lane Group Flow (vph)	38	1679	332	886	3315	298	897	429	342	245	174	4
Turn Type	Prot		Free	Prot		Perm	Prot		Free	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			Free			6			Free			4
Actuated Green, G (s)	5.7	39.9	120.0	28.2	62.4	62.4	16.5	19.8	120.0	12.1	15.4	15.4
Effective Green, g (s)	6.2	41.4	120.0	28.7	63.9	63.9	17.0	21.3	120.0	12.6	16.9	16.9
Actuated g/C Ratio	0.05	0.34	1.00	0.24	0.53	0.53	0.14	0.18	1.00	0.10	0.14	0.14
Clearance Time (s)	4.5	5.5		4.5	5.5	5.5	4.5	5.5		4.5	5.5	5.5
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)	91	1754	1583	821	2708	843	486	628	1583	360	498	223
v/s Ratio Prot	0.02	0.33		c0.26	c0.65		c0.26	c0.12		0.07	0.05	
v/s Ratio Perm			0.21			0.32			0.22			0.02
v/c Ratio	0.42	0.96	0.21	1.08	1.22	0.35	1.85	0.68	0.22	0.68	0.35	0.02
Uniform Delay, d1	55.2	38.4	0.0	45.6	28.0	16.2	51.5	46.2	0.0	51.8	46.6	44.4
Progression Factor	1.19	0.75	1.00	1.34	0.78	0.99	1.00	1.00	1.00	1.01	0.65	0.84
Incremental Delay, d2	2.6	11.9	0.3	38.1	101.2	0.1	388.5	3.1	0.3	5.2	0.4	0.0
Delay (s)	68.4	40.6	0.3	99.4	123.1	16.1	440.0	49.3	0.3	57.4	30.5	37.3
Level of Service	E	D	A	F	F	B	F	D	A	E	C	D
Approach Delay (s)		34.6			107.2			249.3			45.7	
Approach LOS		C			F			F			D	

Intersection Summary			
HCM Average Control Delay	114.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.21		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	108.3%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91	1.00	0.97	0.95	1.00	0.97	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)	1770	5085	1583	3433	5085	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	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 (perm)	1770	5085	1583	3433	5085	1583	3433	3539	1583	3433	3539	1583
Volume (vph)	25	1350	885	455	3120	200	30	315	25	1695	650	360
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	27	1467	962	495	3391	217	33	342	27	1842	707	391
RTOR Reduction (vph)	0	0	0	0	0	57	0	0	21	0	0	184
Lane Group Flow (vph)	27	1467	962	495	3391	160	33	342	6	1842	707	207
Turn Type	Prot		Free	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			Free			6			4			8
Actuated Green, G (s)	3.6	32.4	120.0	17.0	45.8	45.8	3.5	26.6	26.6	26.0	49.1	49.1
Effective Green, g (s)	3.6	32.4	120.0	17.0	45.8	45.8	3.5	28.6	28.6	26.0	51.1	51.1
Actuated g/C Ratio	0.03	0.27	1.00	0.14	0.38	0.38	0.03	0.24	0.24	0.22	0.43	0.43
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	6.0	6.0	4.0	6.0	6.0
Vehicle Extension (s)	2.0	5.0		2.0	5.0	5.0	2.0	5.0	5.0	2.0	5.0	5.0
Lane Grp Cap (vph)	53	1373	1583	486	1941	604	100	843	377	744	1507	674
v/s Ratio Prot	0.02	0.29		c0.14	c0.67		0.01	0.10		c0.54	0.20	
v/s Ratio Perm			0.61			0.14			0.02			0.25
v/c Ratio	0.51	1.07	0.61	1.02	1.75	0.27	0.33	0.41	0.02	2.48	0.47	0.31
Uniform Delay, d1	57.3	43.8	0.0	51.5	37.1	25.5	57.1	38.5	35.0	47.0	24.7	22.8
Progression Factor	1.28	0.56	1.00	1.26	0.59	0.26	1.16	0.66	0.82	1.00	1.00	1.00
Incremental Delay, d2	1.8	40.8	1.1	17.2	336.4	0.1	0.7	1.3	0.1	668.1	1.1	1.2
Delay (s)	74.9	65.4	1.1	82.1	358.3	6.8	66.7	26.9	28.8	715.1	25.8	23.9
Level of Service	E	E	A	F	F	A	E	C	C	F	C	C
Approach Delay (s)		40.4			306.4			30.3			457.4	
Approach LOS		D			F			C			F	

Intersection Summary			
HCM Average Control Delay	274.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.57		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	142.8%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	0.97	0.91		1.00	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	1863	1583	1770	1863	1583	3433	5081		1770	5085	1583
Flt Permitted	0.95	1.00	1.00	0.50	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	1863	1583	930	1863	1583	3433	5081		1770	5085	1583
Volume (vph)	940	290	465	90	290	30	1490	2575	15	50	2650	1750
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1022	315	505	98	315	33	1620	2799	16	54	2880	1902
RTOR Reduction (vph)	0	0	0	0	0	15	0	0	0	0	0	0
Lane Group Flow (vph)	1022	315	505	98	315	18	1620	2815	0	54	2880	1902
Turn Type	Prot		Free	pm+pt		Perm	Prot			Prot		Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free	8		8						Free
Actuated Green, G (s)	17.0	29.0	120.0	20.0	16.0	16.0	27.0	63.8		3.2	40.0	120.0
Effective Green, g (s)	18.0	30.0	120.0	22.0	17.0	17.0	28.0	64.8		4.2	41.0	120.0
Actuated g/C Ratio	0.15	0.25	1.00	0.18	0.14	0.14	0.23	0.54		0.04	0.34	1.00
Clearance Time (s)	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	
Lane Grp Cap (vph)	515	466	1583	206	264	224	801	2744		62	1737	1583
v/s Ratio Prot	c0.30	0.17		0.02	0.17		c0.47	0.55		0.03	c0.57	
v/s Ratio Perm			0.32	0.07		0.02						1.20
v/c Ratio	1.98	0.68	0.32	0.48	1.19	0.08	2.02	1.03		0.87	1.66	1.20
Uniform Delay, d1	51.0	40.6	0.0	42.7	51.5	44.7	46.0	27.6		57.6	39.5	60.0
Progression Factor	0.54	0.50	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	446.1	1.7	0.2	1.7	118.0	0.2	464.5	24.1		70.2	298.7	97.0
Delay (s)	473.6	22.0	0.2	44.4	169.5	44.9	510.5	51.7		127.9	338.2	157.0
Level of Service	F	C	A	D	F	D	F	D		F	F	F
Approach Delay (s)		266.6			132.8			219.3			264.6	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	242.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.72		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	149.1%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	0.95	1.00	1.00		0.97	0.95		1.00	0.95	1.00
Frt	1.00	0.99	0.85	1.00	0.99		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	1753	1504	1770	1849		3433	3522		1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.60	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	1753	1504	1112	1849		3433	3522		1770	3539	1583
Volume (vph)	420	215	570	5	90	5	1530	760	25	45	780	125
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	457	234	620	5	98	5	1663	826	27	49	848	136
RTOR Reduction (vph)	0	2	0	0	2	0	0	2	0	0	0	82
Lane Group Flow (vph)	457	248	604	5	101	0	1663	851	0	49	848	54
Turn Type	Prot		Free	Perm			Prot			Prot		Perm
Protected Phases	3	8			4		5	2		1	6	
Permitted Phases			Free	4								6
Actuated Green, G (s)	12.0	27.7	120.0	11.7	11.7		53.3	72.7		7.6	27.0	27.0
Effective Green, g (s)	12.0	27.7	120.0	11.7	11.7		53.3	72.7		7.6	27.0	27.0
Actuated g/C Ratio	0.10	0.23	1.00	0.10	0.10		0.44	0.61		0.06	0.22	0.22
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	343	405	1504	108	180		1525	2134		112	796	356
v/s Ratio Prot	c0.13	c0.14			0.06		c0.48	0.24		0.03	c0.24	
v/s Ratio Perm			0.40	0.00								0.09
v/c Ratio	1.33	0.61	0.40	0.05	0.56		1.09	0.40		0.44	1.07	0.15
Uniform Delay, d1	54.0	41.3	0.0	49.1	51.7		33.4	12.3		54.1	46.5	37.3
Progression Factor	1.16	1.08	1.00	1.00	1.00		0.57	1.37		0.93	0.85	0.89
Incremental Delay, d2	166.8	2.5	0.7	0.2	4.0		42.0	0.1		2.6	50.1	0.9
Delay (s)	229.3	47.0	0.7	49.3	55.7		61.0	16.9		53.2	89.6	34.2
Level of Service	F	D	A	D	E		E	B		D	F	C
Approach Delay (s)		89.2			55.4			46.1			80.6	
Approach LOS		F			E			D			F	

Intersection Summary			
HCM Average Control Delay	64.8	HCM Level of Service	E
HCM Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	98.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91	0.91	1.00	0.97	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	5085	5085	1583	3433	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	5085	5085	1583	3433	1583
Volume (vph)	635	570	1530	785	785	210
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	690	620	1663	853	853	228
RTOR Reduction (vph)	0	0	0	5	0	2
Lane Group Flow (vph)	690	620	1663	848	853	226
Turn Type	Prot			pm+ov		pm+ov
Protected Phases	5	2	6	4	4	5
Permitted Phases				6		4
Actuated Green, G (s)	26.4	81.0	50.6	81.6	31.0	57.4
Effective Green, g (s)	26.4	81.0	50.6	81.6	31.0	57.4
Actuated g/C Ratio	0.22	0.68	0.42	0.68	0.26	0.48
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	755	3432	2144	1129	887	810
v/s Ratio Prot	c0.20	0.12	0.33	c0.20	c0.25	0.06
v/s Ratio Perm				0.34		0.08
v/c Ratio	0.91	0.18	0.78	0.75	0.96	0.28
Uniform Delay, d1	45.7	7.2	29.8	12.6	43.9	18.8
Progression Factor	1.16	0.71	0.97	2.12	1.08	0.76
Incremental Delay, d2	14.5	0.1	0.3	0.3	20.8	0.2
Delay (s)	67.3	5.2	29.2	26.9	68.2	14.5
Level of Service	E	A	C	C	E	B
Approach Delay (s)		37.9	28.4		56.9	
Approach LOS		D	C		E	

Intersection Summary			
HCM Average Control Delay	37.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	80.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor		1.00		0.97	1.00	1.00	1.00	0.91	1.00	0.97	0.91	
Frt		0.98		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.99		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1809		3433	1863	1583	1770	5085	1583	3433	5065	
Flt Permitted		0.94		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1720		3433	1863	1583	1770	5085	1583	3433	5065	
Volume (vph)	5	20	5	430	30	970	10	945	860	730	1110	30
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	22	5	467	33	1054	11	1027	935	793	1207	33
RTOR Reduction (vph)	0	5	0	0	0	0	0	0	445	0	1	0
Lane Group Flow (vph)	0	27	0	467	33	1054	11	1027	490	793	1239	0
Turn Type	Perm			Prot		Free	Prot		Perm	Prot		
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4					Free			2			
Actuated Green, G (s)		6.1		15.0	25.1	120.0	1.6	38.0	38.0	41.9	78.3	
Effective Green, g (s)		7.1		15.0	26.1	120.0	1.6	40.0	40.0	41.9	80.3	
Actuated g/C Ratio		0.06		0.12	0.22	1.00	0.01	0.33	0.33	0.35	0.67	
Clearance Time (s)		5.0		4.0	5.0		4.0	6.0	6.0	4.0	6.0	
Vehicle Extension (s)		5.0		3.0	5.0		3.0	5.0	5.0	3.0	5.0	
Lane Grp Cap (vph)		102		429	405	1583	24	1695	528	1199	3389	
v/s Ratio Prot				c0.14	0.02		0.01	0.20		0.23	0.24	
v/s Ratio Perm		0.02				0.67			0.59			
v/c Ratio		0.27		1.09	0.08	0.67	0.46	0.61	0.93	0.66	0.37	
Uniform Delay, d1		54.0		52.5	37.4	0.0	58.8	33.4	38.6	33.0	8.7	
Progression Factor		1.00		1.29	1.53	1.00	1.00	1.00	1.00	0.79	0.86	
Incremental Delay, d2		2.9		62.8	0.1	1.6	13.2	1.6	25.0	1.3	0.3	
Delay (s)		56.9		130.6	57.4	1.6	72.0	35.0	63.6	27.3	7.7	
Level of Service		E		F	E	A	E	D	E	C	A	
Approach Delay (s)		56.9			41.5			48.8			15.3	
Approach LOS		E			D			D			B	

Intersection Summary			
HCM Average Control Delay	34.7	HCM Level of Service	C
HCM Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	89.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00	0.97	0.91	0.91	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583	3433	5085	5085	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583	3433	5085	5085	1583
Volume (vph)	950	880	460	970	730	1140
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1033	957	500	1054	793	1239
RTOR Reduction (vph)	0	26	0	0	0	9
Lane Group Flow (vph)	1033	931	500	1054	793	1230
Turn Type		pm+ov	Prot			pm+ov
Protected Phases	4	5	5	2	6	4
Permitted Phases		4				6
Actuated Green, G (s)	40.0	63.0	23.0	68.0	41.0	81.0
Effective Green, g (s)	42.0	65.0	23.0	70.0	43.0	85.0
Actuated g/C Ratio	0.35	0.54	0.19	0.58	0.36	0.71
Clearance Time (s)	6.0	4.0	4.0	6.0	6.0	6.0
Vehicle Extension (s)	5.0	3.0	3.0	5.0	5.0	5.0
Lane Grp Cap (vph)	1202	910	658	2966	1822	1174
v/s Ratio Prot	0.30	c0.20	0.15	0.21	0.16	c0.37
v/s Ratio Perm		0.40				0.41
v/c Ratio	0.86	1.02	0.76	0.36	0.44	1.05
Uniform Delay, d1	36.3	27.5	45.9	13.1	29.3	17.5
Progression Factor	1.00	1.00	1.09	0.29	0.84	1.37
Incremental Delay, d2	6.9	35.9	3.6	0.2	0.6	37.0
Delay (s)	43.2	63.4	53.5	4.1	25.1	60.9
Level of Service	D	E	D	A	C	E
Approach Delay (s)	52.9			20.0	46.9	
Approach LOS	D			B	D	

Intersection Summary			
HCM Average Control Delay	41.5	HCM Level of Service	D
HCM Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	90.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91	0.91	1.00	0.97	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	5085	5085	1583	3433	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	5085	5085	1583	3433	1583
Volume (vph)	955	860	430	1000	750	1115
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1038	935	467	1087	815	1212
RTOR Reduction (vph)	0	0	0	6	0	22
Lane Group Flow (vph)	1038	935	467	1081	815	1190
Turn Type	Prot			pm+ov		pm+ov
Protected Phases	5	2	6	4	4	5
Permitted Phases				6		4
Actuated Green, G (s)	39.0	68.0	25.0	65.0	40.0	79.0
Effective Green, g (s)	39.0	70.0	27.0	69.0	42.0	81.0
Actuated g/C Ratio	0.32	0.58	0.22	0.57	0.35	0.68
Clearance Time (s)	4.0	6.0	6.0	6.0	6.0	4.0
Vehicle Extension (s)	3.0	5.0	5.0	5.0	5.0	3.0
Lane Grp Cap (vph)	1116	2966	1144	963	1202	1121
v/s Ratio Prot	0.30	0.18	0.09	c0.39	0.24	c0.35
v/s Ratio Perm				0.29		0.41
v/c Ratio	0.93	0.32	0.41	1.12	0.68	1.06
Uniform Delay, d1	39.2	12.8	39.7	25.5	33.2	19.5
Progression Factor	1.00	1.00	0.58	1.45	1.17	1.23
Incremental Delay, d2	13.4	0.3	0.8	65.3	1.6	42.2
Delay (s)	52.6	13.0	23.6	102.3	40.7	66.2
Level of Service	D	B	C	F	D	E
Approach Delay (s)		33.8	78.7		55.9	
Approach LOS		C	E		E	

Intersection Summary			
HCM Average Control Delay	54.4	HCM Level of Service	D
HCM Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	95.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	0.98	
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)	1770	3539	1583	1770	3539	1583	1770	3449		1770	3471	
Flt Permitted	0.65	1.00	1.00	0.68	1.00	1.00	0.13	1.00		0.44	1.00	
Satd. Flow (perm)	1211	3539	1583	1266	3539	1583	251	3449		811	3471	
Volume (vph)	170	105	125	175	135	80	30	440	90	120	1090	160
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	185	114	136	190	147	87	33	478	98	130	1185	174
RTOR Reduction (vph)	0	0	109	0	0	70	0	11	0	0	7	0
Lane Group Flow (vph)	185	114	27	190	147	17	33	565	0	130	1352	0
Turn Type	Perm		Perm	Perm		Perm	pm+pt			Perm		
Protected Phases		4			8		5	2			6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	23.0	23.0	23.0	23.0	23.0	23.0	87.0	87.0		77.9	77.9	
Effective Green, g (s)	24.0	24.0	24.0	24.0	24.0	24.0	88.0	88.0		78.9	78.9	
Actuated g/C Ratio	0.20	0.20	0.20	0.20	0.20	0.20	0.73	0.73		0.66	0.66	
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)	242	708	317	253	708	317	249	2529		533	2282	
v/s Ratio Prot		0.03			0.04		0.01	c0.17			c0.39	
v/s Ratio Perm	c0.15		0.09	0.15		0.05	0.09			0.16		
v/c Ratio	0.76	0.16	0.09	0.75	0.21	0.05	0.13	0.22		0.24	0.59	
Uniform Delay, d1	45.3	39.7	39.1	45.2	40.1	38.8	7.7	5.1		8.4	11.5	
Progression Factor	0.92	0.86	2.80	0.77	0.73	0.46	0.63	0.61		0.41	0.41	
Incremental Delay, d2	11.7	0.1	0.1	11.8	0.1	0.1	0.2	0.2		0.9	1.0	
Delay (s)	53.2	34.4	109.4	46.5	29.3	18.0	5.1	3.3		4.3	5.7	
Level of Service	D	C	F	D	C	B	A	A		A	A	
Approach Delay (s)		65.8			34.7			3.4			5.6	
Approach LOS		E			C			A			A	

Intersection Summary			
HCM Average Control Delay	18.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	65.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	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)	3433	3539	1583	3433	3539	1583	3433	5085	1583	3433	5085	1583
Flt Permitted	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 (perm)	3433	3539	1583	3433	3539	1583	3433	5085	1583	3433	5085	1583
Volume (vph)	140	180	165	215	80	180	40	1240	220	520	1275	110
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	152	196	179	234	87	196	43	1348	239	565	1386	120
RTOR Reduction (vph)	0	0	82	0	0	170	0	0	109	0	0	29
Lane Group Flow (vph)	152	196	97	234	87	26	43	1348	130	565	1386	91
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	8.8	12.0	12.0	11.0	14.2	14.2	5.1	51.1	51.1	23.9	69.9	69.9
Effective Green, g (s)	9.8	14.0	14.0	12.0	16.2	16.2	6.1	53.1	53.1	24.9	71.9	71.9
Actuated g/C Ratio	0.08	0.12	0.12	0.10	0.13	0.13	0.05	0.44	0.44	0.21	0.60	0.60
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	2.0	2.0	3.0	2.0	2.0	2.0	3.0	3.0	2.0	3.0	3.0
Lane Grp Cap (vph)	280	413	185	343	478	214	175	2250	700	712	3047	948
v/s Ratio Prot	0.04	0.06		c0.07	0.02		0.01	c0.27		c0.16	0.27	
v/s Ratio Perm			0.11			0.12			0.15			0.08
v/c Ratio	0.54	0.47	0.52	0.68	0.18	0.12	0.25	0.60	0.19	0.79	0.45	0.10
Uniform Delay, d1	52.9	49.6	49.9	52.2	46.0	45.7	54.7	25.4	20.3	45.1	13.3	10.2
Progression Factor	1.00	1.00	1.00	1.07	1.16	2.08	1.23	0.49	0.06	1.15	0.76	0.83
Incremental Delay, d2	2.1	0.3	1.2	5.4	0.1	0.1	0.2	0.9	0.5	4.5	0.4	0.2
Delay (s)	55.1	49.9	51.1	61.0	53.3	94.9	67.5	13.4	1.6	56.5	10.5	8.7
Level of Service	E	D	D	E	D	F	E	B	A	E	B	A
Approach Delay (s)		51.8			72.6			13.1			23.0	
Approach LOS		D			E			B			C	

Intersection Summary			
HCM Average Control Delay	28.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	63.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.99		1.00	0.96		1.00	0.97		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3488		1770	3396		1770	3418		1770	3349	
Flt Permitted	0.10	1.00		0.17	1.00		0.17	1.00		0.20	1.00	
Satd. Flow (perm)	194	3488		321	3396		321	3418		363	3349	
Volume (vph)	220	700	75	290	840	310	90	540	160	105	475	265
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	239	761	82	315	913	337	98	587	174	114	516	288
RTOR Reduction (vph)	0	6	0	0	31	0	0	24	0	0	68	0
Lane Group Flow (vph)	239	837	0	315	1219	0	98	737	0	114	736	0
Turn Type	pm+pt			pm+pt			Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	51.1	37.5		57.1	40.0		31.8	31.8		31.8	31.8	
Effective Green, g (s)	53.1	38.5		60.1	42.0		33.8	33.8		33.8	33.8	
Actuated g/C Ratio	0.52	0.38		0.59	0.41		0.33	0.33		0.33	0.33	
Clearance Time (s)	5.0	5.0		5.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	325	1311		445	1393		106	1128		120	1105	
v/s Ratio Prot	0.10	0.24		c0.13	c0.37			0.22			0.24	
v/s Ratio Perm	0.28			0.29			0.31			c0.31		
v/c Ratio	0.74	0.64		0.71	0.88		0.92	0.65		0.95	0.67	
Uniform Delay, d1	23.4	26.2		14.7	27.8		33.1	29.3		33.5	29.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	8.4	1.0		5.1	6.4		62.6	1.0		66.0	1.2	
Delay (s)	31.7	27.3		19.8	34.2		95.7	30.3		99.4	30.6	
Level of Service	C	C		B	C		F	C		F	C	
Approach Delay (s)		28.3			31.3			37.8			39.2	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM Average Control Delay	33.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	102.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3436		1770	3539	1583	1770	1863	1583	1770	1813	
Flt Permitted	0.18	1.00		0.57	1.00	1.00	0.30	1.00	1.00	0.10	1.00	
Satd. Flow (perm)	332	3436		1070	3539	1583	567	1863	1583	188	1813	
Volume (vph)	155	165	40	115	470	455	20	460	155	520	700	150
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	168	179	43	125	511	495	22	500	168	565	761	163
RTOR Reduction (vph)	0	17	0	0	0	275	0	0	111	0	7	0
Lane Group Flow (vph)	168	205	0	125	511	220	22	500	57	565	917	0
Turn Type	pm+pt			pm+pt		Perm	Perm		Perm	pm+pt		
Protected Phases	7	4		3	8			2		1	6	
Permitted Phases	4	4		8		8	2		2	6		
Actuated Green, G (s)	31.9	23.5		29.3	22.2	22.2	34.6	34.6	34.6	74.4	74.4	
Effective Green, g (s)	32.9	23.5		30.3	22.2	22.2	36.6	36.6	36.6	76.4	76.4	
Actuated g/C Ratio	0.27	0.20		0.25	0.18	0.18	0.30	0.30	0.30	0.64	0.64	
Clearance Time (s)	5.0	4.0		5.0	4.0	4.0	6.0	6.0	6.0	5.0	6.0	
Vehicle Extension (s)	3.0	2.0		3.0	2.0	2.0	2.0	2.0	2.0	3.0	2.0	
Lane Grp Cap (vph)	204	673		317	655	293	173	568	483	592	1154	
v/s Ratio Prot	c0.06	0.06		0.03	0.14			0.27		c0.28	0.51	
v/s Ratio Perm	0.16			0.07		0.31	0.04		0.11	c0.32		
v/c Ratio	0.82	0.30		0.39	0.78	0.75	0.13	0.88	0.12	0.95	0.80	
Uniform Delay, d1	36.0	41.3		36.1	46.6	46.3	30.2	39.6	30.1	33.9	16.0	
Progression Factor	1.00	1.00		0.86	0.93	1.00	0.31	0.40	0.14	1.00	1.00	
Incremental Delay, d2	22.8	0.1		0.8	5.2	8.4	0.7	9.2	0.2	25.9	5.7	
Delay (s)	58.8	41.4		31.8	48.8	54.5	10.0	24.9	4.3	59.8	21.7	
Level of Service	E	D		C	D	D	B	C	A	E	C	
Approach Delay (s)		48.9			49.4			19.4			36.2	
Approach LOS		D			D			B			D	

Intersection Summary			
HCM Average Control Delay	38.4	HCM Level of Service	D
HCM Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	97.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frt	1.00	0.85	1.00	1.00	1.00	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	1583	1770	3539	3530	
Flt Permitted	0.95	1.00	0.40	1.00	1.00	
Satd. Flow (perm)	1770	1583	753	3539	3530	
Volume (vph)	5	80	50	120	590	10
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	87	54	130	641	11
RTOR Reduction (vph)	0	83	0	0	0	0
Lane Group Flow (vph)	5	4	54	130	652	0
Turn Type		Perm	Perm			
Protected Phases	4			2	6	
Permitted Phases		4	2			
Actuated Green, G (s)	5.2	5.2	104.8	104.8	104.8	
Effective Green, g (s)	6.2	6.2	105.8	105.8	105.8	
Actuated g/C Ratio	0.05	0.05	0.88	0.88	0.88	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	91	82	664	3120	3112	
v/s Ratio Prot	0.00			0.04	c0.18	
v/s Ratio Perm		0.05	0.07			
v/c Ratio	0.05	0.05	0.08	0.04	0.21	
Uniform Delay, d1	54.1	54.1	0.9	0.9	1.0	
Progression Factor	1.03	1.25	0.40	0.42	1.00	
Incremental Delay, d2	0.2	0.3	0.2	0.0	0.2	
Delay (s)	56.2	68.1	0.6	0.4	1.2	
Level of Service	E	E	A	A	A	
Approach Delay (s)	67.4			0.4	1.2	
Approach LOS	E			A	A	

Intersection Summary			
HCM Average Control Delay	7.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.26		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	33.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.28	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	521	3539	3539	1583	1770	1583
Volume (vph)	285	360	825	495	320	225
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	310	391	897	538	348	245
RTOR Reduction (vph)	0	0	0	173	0	152
Lane Group Flow (vph)	310	391	897	365	348	93
Turn Type	Perm			Perm		Perm
Protected Phases		4	8		6	
Permitted Phases	4			8		6
Actuated Green, G (s)	80.4	80.4	80.4	80.4	29.6	29.6
Effective Green, g (s)	81.4	81.4	81.4	81.4	30.6	30.6
Actuated g/C Ratio	0.68	0.68	0.68	0.68	0.26	0.26
Clearance Time (s)	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
Lane Grp Cap (vph)	353	2401	2401	1074	451	404
v/s Ratio Prot		0.11	0.25		c0.20	
v/s Ratio Perm	c0.60			0.34		0.15
v/c Ratio	0.88	0.16	0.37	0.34	0.77	0.23
Uniform Delay, d1	15.4	7.0	8.3	8.1	41.5	35.4
Progression Factor	0.46	0.43	1.88	13.50	1.00	1.00
Incremental Delay, d2	16.1	0.0	0.1	0.2	12.1	1.3
Delay (s)	23.2	3.0	15.7	109.1	53.5	36.7
Level of Service	C	A	B	F	D	D
Approach Delay (s)		12.0	50.7		46.6	
Approach LOS		B	D		D	

Intersection Summary			
HCM Average Control Delay	39.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	66.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.91		0.97	0.91	1.00	1.00	0.95	1.00	0.97	0.95	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5083		3433	5085	1583	1770	3539	1583	3433	3359	
Flt Permitted	0.10	1.00		0.11	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	184	5083		396	5085	1583	1770	3539	1583	3433	3359	
Volume (vph)	275	1380	5	130	1345	125	35	625	260	440	175	90
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	299	1500	5	141	1462	136	38	679	283	478	190	98
RTOR Reduction (vph)	0	0	0	0	0	70	0	0	80	0	52	0
Lane Group Flow (vph)	299	1505	0	141	1462	66	38	679	203	478	236	0
Turn Type	pm+pt			pm+pt		Perm	Prot		Perm	Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6		6			8			
Actuated Green, G (s)	59.4	49.4		42.5	36.5	36.5	3.6	27.6	27.6	19.0	43.0	
Effective Green, g (s)	59.4	49.4		42.5	36.5	36.5	3.6	29.6	29.6	19.0	45.0	
Actuated g/C Ratio	0.50	0.41		0.35	0.30	0.30	0.03	0.25	0.25	0.16	0.38	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	6.0	6.0	4.0	6.0	
Vehicle Extension (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	341	2093		292	1547	481	53	873	390	544	1260	
v/s Ratio Prot	c0.14	0.30		0.02	c0.29		0.02	c0.19		c0.14	0.09	
v/s Ratio Perm	0.30			0.15		0.09			0.18			
v/c Ratio	0.88	0.72		0.48	0.95	0.14	0.72	0.78	0.52	0.88	0.19	
Uniform Delay, d1	34.4	29.5		27.2	40.8	30.3	57.7	42.1	39.1	49.4	25.2	
Progression Factor	1.16	1.65		0.94	0.54	0.23	1.00	1.00	1.00	0.85	1.06	
Incremental Delay, d2	14.3	1.2		2.1	11.1	0.5	44.1	6.8	4.9	14.2	0.3	
Delay (s)	54.0	50.0		27.8	33.1	7.4	101.8	48.9	44.0	56.0	26.9	
Level of Service	D	D		C	C	A	F	D	D	E	C	
Approach Delay (s)		50.6			30.7			49.5			45.1	
Approach LOS		D			C			D			D	

Intersection Summary			
HCM Average Control Delay	43.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	84.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.91		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	3229		1770	3539	1583	1770	3515	
Flt Permitted	0.67	1.00	1.00	0.67	1.00		0.23	1.00	1.00	0.31	1.00	
Satd. Flow (perm)	1247	3539	1583	1253	3229		437	3539	1583	583	3515	
Volume (vph)	80	115	365	160	50	70	240	775	65	30	950	45
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	87	125	397	174	54	76	261	842	71	33	1033	49
RTOR Reduction (vph)	0	0	137	0	62	0	0	0	18	0	3	0
Lane Group Flow (vph)	87	125	260	174	68	0	261	842	53	33	1079	0
Turn Type	Perm		Perm	Perm			Perm		Perm	Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2		2	6		
Actuated Green, G (s)	21.3	21.3	21.3	21.3	21.3		88.7	88.7	88.7	88.7	88.7	
Effective Green, g (s)	22.3	22.3	22.3	22.3	22.3		89.7	89.7	89.7	89.7	89.7	
Actuated g/C Ratio	0.19	0.19	0.19	0.19	0.19		0.75	0.75	0.75	0.75	0.75	
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)	232	658	294	233	600		327	2645	1183	436	2627	
v/s Ratio Prot		0.04			0.04			0.24			0.31	
v/s Ratio Perm	0.07		0.25	0.14			c0.60		0.04	0.06		
v/c Ratio	0.38	0.19	0.89	0.75	0.11		0.80	0.32	0.04	0.08	0.41	
Uniform Delay, d1	42.8	41.2	47.6	46.2	40.6		9.5	5.0	4.0	4.1	5.5	
Progression Factor	0.91	0.90	0.88	1.00	1.00		0.95	0.58	0.15	1.00	1.00	
Incremental Delay, d2	1.0	0.1	25.5	12.3	0.1		15.4	0.3	0.1	0.3	0.5	
Delay (s)	39.8	37.1	67.4	58.4	40.7		24.4	3.1	0.6	4.4	6.0	
Level of Service	D	D	E	E	D		C	A	A	A	A	
Approach Delay (s)		57.2			50.9			7.7			6.0	
Approach LOS		E			D			A			A	

Intersection Summary			
HCM Average Control Delay	20.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	69.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00
Frt	1.00	0.91		1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3238		1770	3539	1583	1770	3493		1770	3539	1583
Flt Permitted	0.65	1.00		0.95	1.00	1.00	0.23	1.00		0.30	1.00	1.00
Satd. Flow (perm)	1203	3238		1770	3539	1583	426	3493		559	3539	1583
Volume (vph)	135	125	165	175	155	280	105	580	55	115	1005	45
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	147	136	179	190	168	304	114	630	60	125	1092	49
RTOR Reduction (vph)	0	93	0	0	0	174	0	6	0	0	0	20
Lane Group Flow (vph)	147	222	0	190	168	130	114	684	0	125	1092	29
Turn Type	Perm			Prot		Perm	Perm			pm+pt		Perm
Protected Phases		4		3	8			2		1	6	
Permitted Phases	4					8	2			6		6
Actuated Green, G (s)	18.0	18.0		16.1	39.1	39.1	60.0	60.0		70.9	70.9	70.9
Effective Green, g (s)	19.0	19.0		17.1	40.1	40.1	61.0	61.0		71.9	71.9	71.9
Actuated g/C Ratio	0.16	0.16		0.14	0.33	0.33	0.51	0.51		0.60	0.60	0.60
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)	190	513		252	1183	529	217	1776		405	2120	948
v/s Ratio Prot		0.10		c0.11	0.05			0.20		0.02	c0.31	
v/s Ratio Perm	c0.12					0.19	0.27			0.17		0.03
v/c Ratio	0.77	0.43		0.75	0.14	0.25	0.53	0.39		0.31	0.52	0.03
Uniform Delay, d1	48.4	45.6		49.4	27.9	29.0	19.8	18.0		11.5	13.9	9.8
Progression Factor	0.96	0.93		1.37	0.91	0.77	1.30	1.16		0.62	0.58	0.17
Incremental Delay, d2	16.2	0.5		12.0	0.1	0.2	7.5	0.5		0.3	0.6	0.0
Delay (s)	62.6	42.8		79.7	25.3	22.6	33.3	21.4		7.5	8.7	1.7
Level of Service	E	D		E	C	C	C	C		A	A	A
Approach Delay (s)		49.1			39.7			23.1			8.3	
Approach LOS		D			D			C			A	

Intersection Summary			
HCM Average Control Delay	24.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	65.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	0.98		1.00	0.87		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3407		1770	3472		1770	3069		1770	3491	
Flt Permitted	0.70	1.00		0.45	1.00		0.68	1.00		0.66	1.00	
Satd. Flow (perm)	1300	3407		838	3472		1259	3069		1234	3491	
Volume (vph)	5	120	40	355	70	10	50	15	115	5	100	10
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	130	43	386	76	11	54	16	125	5	109	11
RTOR Reduction (vph)	0	32	0	0	7	0	0	61	0	0	4	0
Lane Group Flow (vph)	5	141	0	386	80	0	54	80	0	5	116	0
Turn Type	pm+pt			pm+pt			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	14.9	13.7		49.6	43.4		60.4	60.4		60.4	60.4	
Effective Green, g (s)	16.9	14.7		50.6	44.4		61.4	61.4		61.4	61.4	
Actuated g/C Ratio	0.14	0.12		0.42	0.37		0.51	0.51		0.51	0.51	
Clearance Time (s)	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	
Lane Grp Cap (vph)	192	417		601	1285		644	1570		631	1786	
v/s Ratio Prot	0.00	0.05		c0.17	0.03			c0.05			0.03	
v/s Ratio Perm	0.00			c0.10			0.04			0.00		
v/c Ratio	0.03	0.34		0.64	0.06		0.08	0.05		0.01	0.06	
Uniform Delay, d1	44.4	48.2		25.9	24.4		14.9	14.7		14.4	14.8	
Progression Factor	1.00	1.00		0.99	0.96		0.34	0.92		1.00	1.00	
Incremental Delay, d2	0.1	0.5		2.1	0.0		0.2	0.1		0.0	0.1	
Delay (s)	44.5	48.7		27.6	23.4		5.2	13.6		14.4	14.9	
Level of Service	D	D		C	C		A	B		B	B	
Approach Delay (s)		48.6			26.8			11.3			14.8	
Approach LOS		D			C			B			B	

Intersection Summary			
HCM Average Control Delay	26.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	43.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	1.00
Frt	1.00	0.93		1.00	0.96		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3284		1770	3404		1770	3474		1770	3539	1583
Flt Permitted	0.57	1.00		0.95	1.00		0.95	1.00		0.28	1.00	1.00
Satd. Flow (perm)	1060	3284		1770	3404		1770	3474		525	3539	1583
Volume (vph)	165	275	255	170	205	70	315	820	115	55	285	55
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	179	299	277	185	223	76	342	891	125	60	310	60
RTOR Reduction (vph)	0	147	0	0	30	0	0	9	0	0	0	42
Lane Group Flow (vph)	179	429	0	185	269	0	342	1007	0	60	310	18
Turn Type	Perm			Prot			Prot			Perm		Perm
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4									6		6
Actuated Green, G (s)	24.1	24.1		15.7	44.8		26.1	65.2		34.1	34.1	34.1
Effective Green, g (s)	25.1	25.1		16.7	45.8		27.1	66.2		35.1	35.1	35.1
Actuated g/C Ratio	0.21	0.21		0.14	0.38		0.23	0.55		0.29	0.29	0.29
Clearance Time (s)	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
Lane Grp Cap (vph)	222	687		246	1299		400	1916		154	1035	463
v/s Ratio Prot		c0.18		c0.10	0.09		c0.19	c0.29			0.09	
v/s Ratio Perm	0.17									0.11		0.04
v/c Ratio	0.81	0.62		0.75	0.21		0.86	0.53		0.39	0.30	0.04
Uniform Delay, d1	45.1	43.2		49.7	24.9		44.6	17.0		33.9	32.9	30.4
Progression Factor	0.93	0.90		1.03	1.02		0.96	1.20		1.23	1.34	1.95
Incremental Delay, d2	18.9	1.8		12.2	0.1		16.1	1.0		6.7	0.7	0.1
Delay (s)	60.9	40.8		63.3	25.5		58.7	21.4		48.3	44.8	59.3
Level of Service	E	D		E	C		E	C		D	D	E
Approach Delay (s)		45.6			40.0			30.8			47.3	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM Average Control Delay	38.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	68.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1583	3539	1583	1770	3539
Flt Permitted	0.95	1.00	1.00	1.00	0.16	1.00
Satd. Flow (perm)	1770	1583	3539	1583	293	3539
Volume (vph)	710	485	890	690	305	1315
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	772	527	967	750	332	1429
RTOR Reduction (vph)	0	0	0	383	0	0
Lane Group Flow (vph)	772	527	967	367	332	1429
Turn Type		Free		Perm	pm+pt	
Protected Phases	8		2		1	6
Permitted Phases		Free		2	6	
Actuated Green, G (s)	32.4	120.0	51.6	51.6	77.6	77.6
Effective Green, g (s)	33.4	120.0	52.6	52.6	78.6	78.6
Actuated g/C Ratio	0.28	1.00	0.44	0.44	0.65	0.65
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	493	1583	1551	694	463	2318
v/s Ratio Prot	c0.44		0.27		c0.13	0.40
v/s Ratio Perm		0.33		0.47	0.34	
v/c Ratio	1.57	0.33	0.62	0.53	0.72	0.62
Uniform Delay, d1	43.3	0.0	26.0	24.6	18.8	12.0
Progression Factor	1.00	1.00	1.00	1.00	2.25	0.86
Incremental Delay, d2	264.4	0.6	1.9	2.9	0.5	0.1
Delay (s)	307.7	0.6	27.9	27.5	42.7	10.4
Level of Service	F	A	C	C	D	B
Approach Delay (s)	183.1		27.8			16.5
Approach LOS	F		C			B

Intersection Summary			
HCM Average Control Delay	65.8	HCM Level of Service	E
HCM Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	90.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91	1.00	0.97	0.95	1.00	0.97	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)	1770	5085	1583	3433	5085	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	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 (perm)	1770	5085	1583	3433	5085	1583	3433	3539	1583	3433	3539	1583
Volume (vph)	70	3110	745	400	1480	210	265	150	625	475	375	30
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	76	3380	810	435	1609	228	288	163	679	516	408	33
RTOR Reduction (vph)	0	0	0	0	0	108	0	0	0	0	0	27
Lane Group Flow (vph)	76	3380	810	435	1609	120	288	163	679	516	408	6
Turn Type	Prot		Free	Prot		Perm	Prot		Free	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			Free			6			Free			4
Actuated Green, G (s)	8.7	53.0	120.0	17.2	61.5	61.5	10.5	19.3	120.0	10.5	19.3	19.3
Effective Green, g (s)	9.2	54.5	120.0	17.7	63.0	63.0	11.0	20.8	120.0	11.0	20.8	20.8
Actuated g/C Ratio	0.08	0.45	1.00	0.15	0.52	0.52	0.09	0.17	1.00	0.09	0.17	0.17
Clearance Time (s)	4.5	5.5		4.5	5.5	5.5	4.5	5.5		4.5	5.5	5.5
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)	136	2309	1583	506	2670	831	315	613	1583	315	613	274
v/s Ratio Prot	0.04	c0.66		c0.13	0.32		0.08	0.05		c0.15	c0.12	
v/s Ratio Perm			0.51			0.14			0.43			0.02
v/c Ratio	0.56	1.46	0.51	0.86	0.60	0.14	0.91	0.27	0.43	1.64	0.67	0.02
Uniform Delay, d1	53.4	32.8	0.0	49.9	19.8	14.6	54.0	43.0	0.0	54.5	46.3	41.2
Progression Factor	1.05	0.96	1.00	1.05	0.67	0.94	1.00	1.00	1.00	0.88	0.87	0.93
Incremental Delay, d2	2.9	210.1	0.7	9.1	0.6	0.2	29.5	0.2	0.9	300.2	2.5	0.0
Delay (s)	58.8	241.7	0.7	61.3	14.0	14.0	83.6	43.2	0.9	348.4	43.1	38.1
Level of Service	E	F	A	E	B	B	F	D	A	F	D	D
Approach Delay (s)		192.7			23.0			28.0			207.6	
Approach LOS		F			C			C			F	

Intersection Summary			
HCM Average Control Delay	128.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.22		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	106.7%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91	1.00	0.97	0.95	1.00	0.97	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)	1770	5085	1583	3433	5085	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	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 (perm)	1770	5085	1583	3433	5085	1583	3433	3539	1583	3433	3539	1583
Volume (vph)	65	2650	1995	555	1600	40	760	310	405	210	690	25
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	71	2880	2168	603	1739	43	826	337	440	228	750	27
RTOR Reduction (vph)	0	0	0	0	0	22	0	0	88	0	0	21
Lane Group Flow (vph)	71	2880	2168	603	1739	21	826	337	352	228	750	6
Turn Type	Prot		Free	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			Free			6			4			8
Actuated Green, G (s)	5.6	47.0	120.0	13.0	54.4	54.4	17.0	32.2	32.2	9.8	25.0	25.0
Effective Green, g (s)	5.6	47.0	120.0	13.0	54.4	54.4	17.0	34.2	34.2	9.8	27.0	27.0
Actuated g/C Ratio	0.05	0.39	1.00	0.11	0.45	0.45	0.14	0.29	0.29	0.08	0.22	0.22
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	6.0	6.0	4.0	6.0	6.0
Vehicle Extension (s)	2.0	5.0		2.0	5.0	5.0	2.0	5.0	5.0	2.0	5.0	5.0
Lane Grp Cap (vph)	83	1992	1583	372	2305	718	486	1009	451	280	796	356
v/s Ratio Prot	0.04	0.57		0.18	0.34		c0.24	0.10		0.07	0.21	
v/s Ratio Perm			1.37			0.03			0.28			0.02
v/c Ratio	0.86	1.45	1.37	1.62	0.75	0.03	1.70	0.33	0.78	0.81	0.94	0.02
Uniform Delay, d1	56.8	36.5	60.0	53.5	27.3	18.2	51.5	33.9	39.5	54.2	45.7	36.2
Progression Factor	1.35	0.55	1.00	1.15	0.66	0.21	0.95	1.05	1.07	1.00	1.00	1.00
Incremental Delay, d2	7.6	200.9	166.7	287.5	1.6	0.1	323.5	0.9	12.6	15.6	20.6	0.1
Delay (s)	83.9	221.0	226.7	349.1	19.5	3.9	372.7	36.3	54.7	69.8	66.3	36.3
Level of Service	F	F	F	F	B	A	F	D	D	E	E	D
Approach Delay (s)		221.5			102.6			214.7			66.3	
Approach LOS		F			F			F			E	

Intersection Summary			
HCM Average Control Delay	176.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.42		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	121.1%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	0.97	0.91		1.00	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	1863	1583	1770	1863	1583	3433	5050		1770	5085	1583
Flt Permitted	0.95	1.00	1.00	0.51	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	1863	1583	950	1863	1583	3433	5050		1770	5085	1583
Volume (vph)	2040	400	1315	90	60	20	745	2365	115	30	3015	915
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2217	435	1429	98	65	22	810	2571	125	33	3277	995
RTOR Reduction (vph)	0	0	0	0	0	20	0	4	0	0	0	0
Lane Group Flow (vph)	2217	435	1429	98	65	2	810	2692	0	33	3277	995
Turn Type	Prot		Free	pm+pt		Perm	Prot			Prot		Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free	8		8						Free
Actuated Green, G (s)	36.0	37.4	120.0	15.4	8.4	8.4	19.6	51.0		4.6	36.0	120.0
Effective Green, g (s)	37.0	38.4	120.0	17.4	9.4	9.4	20.6	52.0		5.6	37.0	120.0
Actuated g/C Ratio	0.31	0.32	1.00	0.14	0.08	0.08	0.17	0.43		0.05	0.31	1.00
Clearance Time (s)	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	
Lane Grp Cap (vph)	1059	596	1583	192	146	124	589	2188		83	1568	1583
v/s Ratio Prot	c0.65	0.23		0.03	0.03		c0.24	0.53		0.02	c0.64	
v/s Ratio Perm			0.90	0.04		0.01						0.63
v/c Ratio	2.09	0.73	0.90	0.51	0.45	0.01	1.38	1.23		0.40	2.09	0.63
Uniform Delay, d1	41.5	36.2	0.0	46.4	52.8	51.0	49.7	34.0		55.6	41.5	0.0
Progression Factor	0.49	0.75	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	492.4	0.4	0.9	2.3	2.2	0.0	179.4	107.9		3.1	492.7	1.9
Delay (s)	512.7	27.4	0.9	48.7	55.0	51.1	229.1	141.9		58.7	534.2	1.9
Level of Service	F	C	A	D	D	D	F	F		E	F	A
Approach Delay (s)		281.8			51.2			162.0			407.5	
Approach LOS		F			D			F			F	

Intersection Summary			
HCM Average Control Delay	288.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.81		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	154.4%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	0.95	1.00	1.00		0.97	0.95		1.00	0.95	1.00
Frt	1.00	0.88	0.85	1.00	0.98		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	1552	1504	1770	1818		3433	3534		1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.10	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	1552	1504	189	1818		3433	3534		1770	3539	1583
Volume (vph)	340	175	2250	40	205	40	630	460	5	15	705	230
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	370	190	2446	43	223	43	685	500	5	16	766	250
RTOR Reduction (vph)	0	137	0	0	6	0	0	1	0	0	0	168
Lane Group Flow (vph)	370	920	1579	43	260	0	685	504	0	16	766	82
Turn Type	Prot		Free	Perm			Prot			Prot		Perm
Protected Phases	3	8			4		5	2		1	6	
Permitted Phases			Free	4								6
Actuated Green, G (s)	15.6	59.0	120.0	39.4	39.4		20.0	45.9		3.1	29.0	29.0
Effective Green, g (s)	15.6	59.0	120.0	39.4	39.4		20.0	45.9		3.1	29.0	29.0
Actuated g/C Ratio	0.13	0.49	1.00	0.33	0.33		0.17	0.38		0.03	0.24	0.24
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	446	763	1504	62	597		572	1352		46	855	383
v/s Ratio Prot	0.11	c0.68			0.15		c0.20	0.14		0.01	0.22	
v/s Ratio Perm			1.05	0.23								0.16
v/c Ratio	0.83	1.21	1.05	0.69	0.44		1.20	0.37		0.35	0.90	0.22
Uniform Delay, d1	50.9	30.5	60.0	35.0	31.6		50.0	26.7		57.5	44.0	36.4
Progression Factor	1.18	0.84	1.00	1.00	1.00		0.78	0.85		1.07	1.06	1.44
Incremental Delay, d2	10.4	103.2	35.8	28.5	0.5		101.8	0.6		3.9	12.3	1.1
Delay (s)	70.6	128.9	95.8	63.6	32.1		140.5	23.3		65.6	59.0	53.4
Level of Service	E	F	F	E	C		F	C		E	E	D
Approach Delay (s)		104.3			36.5			90.8			57.7	
Approach LOS		F			D			F			E	

Intersection Summary			
HCM Average Control Delay	89.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.23		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	114.2%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91	0.91	1.00	0.97	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	5085	5085	1583	3433	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	5085	5085	1583	3433	1583
Volume (vph)	515	2250	630	465	745	435
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	560	2446	685	505	810	473
RTOR Reduction (vph)	0	0	0	17	0	29
Lane Group Flow (vph)	560	2446	685	488	810	444
Turn Type	Prot			pm+ov		pm+ov
Protected Phases	5	2	6	4	4	5
Permitted Phases				6		4
Actuated Green, G (s)	26.5	76.9	46.4	81.5	35.1	61.6
Effective Green, g (s)	26.5	76.9	46.4	81.5	35.1	61.6
Actuated g/C Ratio	0.22	0.64	0.39	0.68	0.29	0.51
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	758	3259	1966	1128	1004	865
v/s Ratio Prot	0.16	c0.48	0.13	0.13	c0.24	0.12
v/s Ratio Perm				0.19		0.18
v/c Ratio	0.74	0.75	0.35	0.43	0.81	0.51
Uniform Delay, d1	43.5	14.9	26.1	8.7	39.3	19.3
Progression Factor	0.85	0.64	1.62	0.85	0.98	1.69
Incremental Delay, d2	3.2	1.4	0.4	0.2	4.2	0.4
Delay (s)	40.4	11.0	42.7	7.6	42.8	33.0
Level of Service	D	B	D	A	D	C
Approach Delay (s)		16.5	27.8		39.2	
Approach LOS		B	C		D	

Intersection Summary			
HCM Average Control Delay	24.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	71.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor		1.00		0.97	1.00	1.00	1.00	0.91	1.00	0.97	0.91	
Frt		0.98		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.98		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1776		3433	1863	1583	1770	5085	1583	3433	5077	
Flt Permitted		0.83		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1512		3433	1863	1583	1770	5085	1583	3433	5077	
Volume (vph)	30	20	10	1000	20	1150	5	1340	570	975	945	10
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	22	11	1087	22	1250	5	1457	620	1060	1027	11
RTOR Reduction (vph)	0	7	0	0	0	0	0	0	388	0	0	0
Lane Group Flow (vph)	0	59	0	1087	22	1250	5	1457	232	1060	1038	0
Turn Type	Perm			Prot		Free	Prot		Perm	Prot		
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4					Free			2			
Actuated Green, G (s)		9.9		23.0	36.9	120.0	1.4	28.0	28.0	40.1	66.7	
Effective Green, g (s)		10.9		23.0	37.9	120.0	1.4	30.0	30.0	40.1	68.7	
Actuated g/C Ratio		0.09		0.19	0.32	1.00	0.01	0.25	0.25	0.33	0.57	
Clearance Time (s)		5.0		4.0	5.0		4.0	6.0	6.0	4.0	6.0	
Vehicle Extension (s)		5.0		3.0	5.0		3.0	5.0	5.0	3.0	5.0	
Lane Grp Cap (vph)		137		658	588	1583	21	1271	396	1147	2907	
v/s Ratio Prot				c0.32	0.01		0.00	0.29		c0.31	0.20	
v/s Ratio Perm		0.04				0.79			0.39			
v/c Ratio		0.43		1.65	0.04	0.79	0.24	1.15	0.59	0.92	0.36	
Uniform Delay, d1		51.6		48.5	28.4	0.0	58.8	45.0	39.5	38.5	13.8	
Progression Factor		1.00		0.86	0.44	1.00	1.00	1.00	1.00	0.65	0.39	
Incremental Delay, d2		4.5		299.0	0.0	3.4	5.8	75.5	6.2	11.0	0.3	
Delay (s)		56.1		340.5	12.5	3.4	64.6	120.5	45.8	35.9	5.7	
Level of Service		E		F	B	A	E	F	D	D	A	
Approach Delay (s)		56.1			158.8			98.1			21.0	
Approach LOS		E			F			F			C	

Intersection Summary			
HCM Average Control Delay	94.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.21		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	98.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00	0.97	0.91	0.91	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583	3433	5085	5085	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583	3433	5085	5085	1583
Volume (vph)	1370	590	1020	1150	975	955
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1489	641	1109	1250	1060	1038
RTOR Reduction (vph)	0	1	0	0	0	2
Lane Group Flow (vph)	1489	640	1109	1250	1060	1036
Turn Type		pm+ov	Prot			pm+ov
Protected Phases	4	5	5	2	6	4
Permitted Phases		4				6
Actuated Green, G (s)	45.0	79.0	34.0	64.0	26.0	71.0
Effective Green, g (s)	46.0	80.0	34.0	66.0	28.0	74.0
Actuated g/C Ratio	0.38	0.67	0.28	0.55	0.23	0.62
Clearance Time (s)	5.0	4.0	4.0	6.0	6.0	5.0
Vehicle Extension (s)	5.0	3.0	3.0	5.0	5.0	5.0
Lane Grp Cap (vph)	1316	1108	973	2797	1187	1029
v/s Ratio Prot	c0.43	0.16	c0.32	0.25	0.21	c0.39
v/s Ratio Perm		0.24				0.27
v/c Ratio	1.13	0.58	1.14	0.45	0.89	1.01
Uniform Delay, d1	37.0	10.8	43.0	16.1	44.5	23.0
Progression Factor	1.00	1.00	1.45	0.43	0.98	0.68
Incremental Delay, d2	69.2	0.7	73.5	0.4	8.7	27.0
Delay (s)	106.2	11.6	136.1	7.4	52.6	42.7
Level of Service	F	B	F	A	D	D
Approach Delay (s)	77.7			67.9	47.7	
Approach LOS	E			E	D	

Intersection Summary			
HCM Average Control Delay	64.6	HCM Level of Service	E
HCM Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	97.0%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91	0.91	1.00	0.97	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	5085	5085	1583	3433	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	5085	5085	1583	3433	1583
Volume (vph)	1345	570	1000	1170	995	955
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1462	620	1087	1272	1082	1038
RTOR Reduction (vph)	0	0	0	0	0	1
Lane Group Flow (vph)	1462	620	1087	1272	1082	1037
Turn Type	Prot			pm+ov		pm+ov
Protected Phases	5	2	6	4	4	5
Permitted Phases				6		4
Actuated Green, G (s)	36.0	67.0	27.0	69.0	42.0	78.0
Effective Green, g (s)	36.0	69.0	29.0	72.0	43.0	79.0
Actuated g/C Ratio	0.30	0.57	0.24	0.60	0.36	0.66
Clearance Time (s)	4.0	6.0	6.0	5.0	5.0	4.0
Vehicle Extension (s)	3.0	5.0	5.0	5.0	5.0	3.0
Lane Grp Cap (vph)	1030	2924	1229	1003	1230	1095
v/s Ratio Prot	c0.43	0.12	0.21	c0.45	0.32	0.28
v/s Ratio Perm				0.35		0.37
v/c Ratio	1.42	0.21	0.88	1.27	0.88	0.95
Uniform Delay, d1	42.0	12.3	43.9	24.0	36.1	18.6
Progression Factor	1.00	1.00	0.53	1.27	0.81	1.45
Incremental Delay, d2	194.5	0.2	8.0	127.1	6.7	13.8
Delay (s)	236.5	12.5	31.3	157.5	36.1	40.7
Level of Service	F	B	C	F	D	D
Approach Delay (s)		169.8	99.3		38.4	
Approach LOS		F	F		D	

Intersection Summary			
HCM Average Control Delay	102.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.32		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	117.5%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		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)	1770	3539	1583	1770	3539	1583	1770	3506		1770	3306	
Flt Permitted	0.49	1.00	1.00	0.66	1.00	1.00	0.20	1.00		0.06	1.00	
Satd. Flow (perm)	917	3539	1583	1234	3539	1583	379	3506		106	3306	
Volume (vph)	315	130	75	165	65	100	145	1570	105	115	550	430
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	342	141	82	179	71	109	158	1707	114	125	598	467
RTOR Reduction (vph)	0	0	73	0	0	95	0	4	0	0	107	0
Lane Group Flow (vph)	342	141	9	179	71	14	158	1817	0	125	958	0
Turn Type	pm+pt		Perm	pm+pt		Perm	pm+pt			pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	27.2	12.2	12.2	19.0	8.1	8.1	74.9	67.2		78.9	69.2	
Effective Green, g (s)	29.1	13.2	13.2	21.0	9.1	9.1	76.9	68.2		80.9	70.2	
Actuated g/C Ratio	0.24	0.11	0.11	0.18	0.08	0.08	0.64	0.57		0.67	0.59	
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)	336	389	174	269	268	120	344	1993		220	1934	
v/s Ratio Prot	c0.14	0.04		0.07	0.02		0.03	c0.52		c0.05	0.32	
v/s Ratio Perm	c0.11		0.05	0.05		0.07	0.26			0.33		
v/c Ratio	1.02	0.36	0.05	0.67	0.26	0.12	0.46	0.91		0.57	0.50	
Uniform Delay, d1	43.8	49.5	47.8	45.4	52.3	51.7	10.2	23.2		27.9	14.6	
Progression Factor	1.16	1.10	1.96	1.16	1.12	1.72	0.82	0.59		1.45	1.01	
Incremental Delay, d2	48.8	0.5	0.1	6.0	0.5	0.4	0.9	7.3		2.8	0.8	
Delay (s)	99.7	55.0	93.6	58.6	59.0	89.1	9.2	21.0		43.2	15.4	
Level of Service	F	D	F	E	E	F	A	C		D	B	
Approach Delay (s)		87.6			67.9			20.1			18.3	
Approach LOS		F			E			C			B	

Intersection Summary			
HCM Average Control Delay	33.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	87.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	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)	3433	3539	1583	3433	3539	1583	3433	5085	1583	3433	5085	1583
Flt Permitted	0.52	1.00	1.00	0.54	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1885	3539	1583	1942	3539	1583	3433	5085	1583	3433	5085	1583
Volume (vph)	220	200	85	400	305	580	190	1500	300	425	1225	105
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	239	217	92	435	332	630	207	1630	326	462	1332	114
RTOR Reduction (vph)	0	0	66	0	0	174	0	0	144	0	0	34
Lane Group Flow (vph)	239	217	26	435	332	456	207	1630	182	462	1332	80
Turn Type	pm+pt		Perm	pm+pt		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8			2			6
Actuated Green, G (s)	36.5	32.5	32.5	42.5	35.5	35.5	10.7	41.8	41.8	17.7	48.8	48.8
Effective Green, g (s)	39.5	34.5	34.5	45.5	37.5	37.5	11.7	42.8	42.8	18.7	49.8	49.8
Actuated g/C Ratio	0.33	0.29	0.29	0.38	0.31	0.31	0.10	0.36	0.36	0.16	0.42	0.42
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0	6.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	2.0	2.0	3.0	2.0	2.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	685	1017	455	836	1106	495	335	1814	565	535	2110	657
v/s Ratio Prot	0.01	0.06		c0.03	0.09		0.06	c0.32		c0.13	0.26	
v/s Ratio Perm	0.10		0.06	0.16		0.40			0.21			0.07
v/c Ratio	0.35	0.21	0.06	0.52	0.30	0.92	0.62	0.90	0.32	0.86	0.63	0.12
Uniform Delay, d1	29.3	32.5	31.0	27.7	31.3	39.8	52.0	36.5	28.1	49.4	27.8	21.6
Progression Factor	1.00	1.00	1.00	1.06	1.05	1.00	1.37	0.72	0.15	1.17	0.70	0.41
Incremental Delay, d2	0.3	0.0	0.0	0.6	0.1	22.1	1.1	2.7	0.5	12.3	1.3	0.3
Delay (s)	29.6	32.5	31.0	29.9	32.8	61.8	72.3	29.1	4.8	70.0	20.9	9.2
Level of Service	C	C	C	C	C	E	E	C	A	E	C	A
Approach Delay (s)		31.0			45.0			29.6			32.1	
Approach LOS		C			D			C			C	

Intersection Summary			
HCM Average Control Delay	34.1	HCM Level of Service	C
HCM Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	81.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

APPENDIX E

I-25 Interchange Recommended Improvement
2030 Level of Service

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.95	0.88	0.94	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)	3433	5085	1583	3433	5085	1583	3433	3539	2787	4990	3539	1583
Flt Permitted	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 (perm)	3433	5085	1583	3433	5085	1583	3433	3539	2787	4990	3539	1583
Volume (vph)	265	1685	165	395	1545	700	260	810	210	285	555	110
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	288	1832	179	429	1679	761	283	880	228	310	603	120
RTOR Reduction (vph)	0	0	40	0	0	105	0	0	168	0	0	95
Lane Group Flow (vph)	288	1832	139	429	1679	656	283	880	60	310	603	25
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Actuated Green, G (s)	10.4	45.8	45.8	15.8	51.2	51.2	13.6	30.4	30.4	7.0	23.8	23.8
Effective Green, g (s)	11.4	47.8	47.8	16.8	53.2	53.2	14.6	31.4	31.4	8.0	24.8	24.8
Actuated g/C Ratio	0.10	0.40	0.40	0.14	0.44	0.44	0.12	0.26	0.26	0.07	0.21	0.21
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0	6.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	2.0	3.0	3.0	2.0	3.0	3.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	326	2026	631	481	2254	702	418	926	729	333	731	327
v/s Ratio Prot	0.08	0.36		c0.12	0.33		0.08	c0.25		c0.06	0.17	
v/s Ratio Perm			0.09			c0.41			0.02			0.02
v/c Ratio	0.88	0.90	0.22	0.89	0.74	0.93	0.68	0.95	0.08	0.93	0.82	0.08
Uniform Delay, d1	53.6	33.9	23.8	50.7	27.8	31.8	50.4	43.5	33.4	55.7	45.5	38.4
Progression Factor	1.00	1.00	1.00	1.44	0.31	0.13	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	22.9	7.2	0.8	12.4	1.4	15.2	3.4	18.5	0.0	31.6	7.2	0.0
Delay (s)	76.5	41.1	24.6	85.4	10.2	19.3	53.8	62.0	33.4	87.3	52.7	38.4
Level of Service	E	D	C	F	B	B	D	E	C	F	D	D
Approach Delay (s)		44.3			23.8			55.7			61.4	
Approach LOS		D			C			E			E	

Intersection Summary			
HCM Average Control Delay	41.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.95	0.88	0.94	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)	3433	5085	1583	3433	5085	1583	3433	3539	2787	4990	3539	1583
Flt Permitted	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 (perm)	3433	5085	1583	3433	5085	1583	3433	3539	2787	4990	3539	1583
Volume (vph)	200	1535	210	445	1935	200	460	980	420	570	865	125
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	217	1668	228	484	2103	217	500	1065	457	620	940	136
RTOR Reduction (vph)	0	0	56	0	0	93	0	0	249	0	0	82
Lane Group Flow (vph)	217	1668	172	484	2103	124	500	1065	208	620	940	54
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Actuated Green, G (s)	6.0	37.0	37.0	16.0	47.0	47.0	16.0	33.0	33.0	13.0	30.0	30.0
Effective Green, g (s)	7.0	39.0	39.0	17.0	49.0	49.0	17.0	34.0	34.0	14.0	31.0	31.0
Actuated g/C Ratio	0.06	0.32	0.32	0.14	0.41	0.41	0.14	0.28	0.28	0.12	0.26	0.26
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0	6.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	2.0	3.0	3.0	2.0	3.0	3.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	200	1653	514	486	2076	646	486	1003	790	582	914	409
v/s Ratio Prot	0.06	0.33		c0.14	c0.41		c0.15	c0.30		0.12	0.27	
v/s Ratio Perm			0.11			0.08			0.07			0.03
v/c Ratio	1.08	1.01	0.33	1.00	1.01	0.19	1.03	1.06	0.26	1.07	1.03	0.13
Uniform Delay, d1	56.5	40.5	30.7	51.5	35.5	22.8	51.5	43.0	33.3	53.0	44.5	34.2
Progression Factor	1.00	1.00	1.00	1.16	0.47	0.15	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	88.1	24.4	1.8	30.4	18.6	0.4	48.4	46.3	0.1	55.9	37.3	0.1
Delay (s)	144.6	64.9	32.4	90.2	35.5	3.9	99.9	89.3	33.4	108.9	81.8	34.2
Level of Service	F	E	C	F	D	A	F	F	C	F	F	C
Approach Delay (s)		69.6			42.5			79.3			87.9	
Approach LOS		E			D			E			F	

Intersection Summary			
HCM Average Control Delay	66.6	HCM Level of Service	E
HCM Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	94.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0				4.0	4.0	4.0	4.0
Lane Util. Factor		0.91			0.91				0.88	0.97	1.00	0.88
Frt		1.00			1.00				0.85	1.00	1.00	0.85
Flt Protected		1.00			1.00				1.00	0.95	1.00	1.00
Satd. Flow (prot)		5085			5085				2787	3433	1863	2787
Flt Permitted		1.00			1.00				1.00	0.95	1.00	1.00
Satd. Flow (perm)		5085			5085				2787	3433	1863	2787
Volume (vph)	0	435	0	0	1890	0	0	0	70	1485	280	595
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	473	0	0	2054	0	0	0	76	1614	304	647
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	323
Lane Group Flow (vph)	0	473	0	0	2054	0	0	0	76	1614	304	324
Turn Type									custom	Split		custom
Protected Phases		2			6				8	4	4	4
Permitted Phases												4
Actuated Green, G (s)		49.7			49.7				7.3	47.0	47.0	47.0
Effective Green, g (s)		51.7			51.7				8.3	48.0	48.0	48.0
Actuated g/C Ratio		0.43			0.43				0.07	0.40	0.40	0.40
Clearance Time (s)		6.0			6.0				5.0	5.0	5.0	5.0
Vehicle Extension (s)		5.0			1.5				3.0	5.0	5.0	5.0
Lane Grp Cap (vph)		2191			2191				193	1373	745	1115
v/s Ratio Prot		0.09			c0.40				c0.03	c0.47	0.16	0.12
v/s Ratio Perm												
v/c Ratio		0.22			0.94				0.39	1.18	0.41	0.29
Uniform Delay, d1		21.4			32.6				53.4	36.0	25.8	24.4
Progression Factor		1.11			1.20				1.00	1.00	1.00	1.00
Incremental Delay, d2		0.1			5.4				1.3	87.0	0.8	0.3
Delay (s)		23.9			44.5				54.8	123.0	26.6	24.7
Level of Service		C			D				D	F	C	C
Approach Delay (s)		23.9			44.5			54.8			86.8	
Approach LOS		C			D			D			F	

Intersection Summary			
HCM Average Control Delay	63.7	HCM Level of Service	E
HCM Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0				4.0	4.0	4.0	4.0
Lane Util. Factor		0.91			0.91				0.88	0.97	1.00	0.88
Frt		1.00			1.00				0.85	1.00	1.00	0.85
Flt Protected		1.00			1.00				1.00	0.95	1.00	1.00
Satd. Flow (prot)		5085			5085				2787	3433	1863	2787
Flt Permitted		1.00			1.00				1.00	0.95	1.00	1.00
Satd. Flow (perm)		5085			5085				2787	3433	1863	2787
Volume (vph)	0	965	0	0	2115	0	0	0	90	820	180	465
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1049	0	0	2299	0	0	0	98	891	196	505
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	308
Lane Group Flow (vph)	0	1049	0	0	2299	0	0	0	98	891	196	197
Turn Type									custom	Split		custom
Protected Phases		2			6				8	4	4	4
Permitted Phases												4
Actuated Green, G (s)		61.8			61.8				9.5	32.7	32.7	32.7
Effective Green, g (s)		63.8			63.8				10.5	33.7	33.7	33.7
Actuated g/C Ratio		0.53			0.53				0.09	0.28	0.28	0.28
Clearance Time (s)		6.0			6.0				5.0	5.0	5.0	5.0
Vehicle Extension (s)		5.0			1.5				3.0	5.0	5.0	5.0
Lane Grp Cap (vph)		2704			2704				244	964	523	783
v/s Ratio Prot		0.21			c0.45				c0.04	c0.26	0.11	0.07
v/s Ratio Perm												
v/c Ratio		0.39			0.85				0.40	0.92	0.37	0.25
Uniform Delay, d1		16.6			24.0				51.8	41.9	34.7	33.4
Progression Factor		1.45			0.85				1.00	1.00	1.00	1.00
Incremental Delay, d2		0.2			2.8				1.1	14.7	0.9	0.4
Delay (s)		24.2			23.2				52.9	56.6	35.6	33.7
Level of Service		C			C				D	E	D	C
Approach Delay (s)		24.2			23.2			52.9			46.8	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM Average Control Delay	31.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	70.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	WBT	WBR	WBR2	NBL2	NBL	NBT	NBR	SBR	SBR2
Lane Configurations										
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	0.91	*0.95	*0.88		0.95	0.95	0.95	0.95	0.88	
Frt	1.00	1.00	0.85		1.00	1.00	0.88	0.85	0.85	
Flt Protected	1.00	1.00	1.00		0.95	0.95	1.00	1.00	1.00	
Satd. Flow (prot)	5085	5309	2787		1681	1681	1564	1504	1393	
Flt Permitted	1.00	1.00	1.00		0.95	0.95	1.00	1.00	1.00	
Satd. Flow (perm)	5085	5309	2787		1681	1681	1564	1504	1393	
Volume (vph)	1920	645	1745	25	1170	0	125	910	75	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2087	701	1897	27	1272	0	136	989	82	0
RTOR Reduction (vph)	0	0	1	0	0	0	0	0	0	0
Lane Group Flow (vph)	2087	701	1923	0	636	636	608	517	82	0
Turn Type			Perm		Split	Split		Perm	custom	custom
Protected Phases	2	6			8	8	8			
Permitted Phases			6					8	4	4
Actuated Green, G (s)	60.0	60.0	60.0		39.0	39.0	39.0	39.0	5.0	
Effective Green, g (s)	62.0	62.0	62.0		40.0	40.0	40.0	40.0	6.0	
Actuated g/C Ratio	0.52	0.52	0.52		0.33	0.33	0.33	0.33	0.05	
Clearance Time (s)	6.0	6.0	6.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	5.0	5.0	5.0		1.5	1.5	1.5	1.5	1.5	
Lane Grp Cap (vph)	2627	2743	1440		560	560	521	501	70	
v/s Ratio Prot	0.41	0.13			0.38	0.38	c0.39			
v/s Ratio Perm			c0.69					0.34	c0.06	
v/c Ratio	0.79	0.26	1.34		1.14	1.14	1.17	1.03	1.17	
Uniform Delay, d1	23.8	16.1	29.0		40.0	40.0	40.0	40.0	57.0	
Progression Factor	0.33	0.86	0.75		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.9	0.2	154.5		81.3	81.3	94.4	48.7	161.2	
Delay (s)	8.7	14.0	176.1		121.3	121.3	134.4	88.7	218.2	
Level of Service	A	B	F		F	F	F	F	F	
Approach Delay (s)	8.7	132.8					117.6			
Approach LOS	A	F					F			

Intersection Summary			
HCM Average Control Delay	92.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.26		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	109.0%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	WBT	WBR	WBR2	NBL2	NBL	NBT	NBR	SBR	SBR2
Lane Configurations										
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	0.91	*0.95	*0.88		0.95	0.95	0.95	0.95	0.88	
Frt	1.00	1.00	0.85		1.00	1.00	0.88	0.85	0.85	
Flt Protected	1.00	1.00	1.00		0.95	0.95	1.00	1.00	1.00	
Satd. Flow (prot)	5085	5309	2787		1681	1681	1566	1504	1393	
Flt Permitted	1.00	1.00	1.00		0.95	0.95	1.00	1.00	1.00	
Satd. Flow (perm)	5085	5309	2787		1681	1681	1566	1504	1393	
Volume (vph)	1785	1305	1735	10	660	0	85	590	150	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1940	1418	1886	11	717	0	92	641	163	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	1940	1418	1897	0	359	358	397	336	163	0
Turn Type			Perm		Split	Split		Perm	custom	custom
Protected Phases	2	6			8	8	8			
Permitted Phases			6					8	4	4
Actuated Green, G (s)	62.5	62.5	62.5		31.5	31.5	31.5	31.5	10.0	
Effective Green, g (s)	64.5	64.5	64.5		32.5	32.5	32.5	32.5	11.0	
Actuated g/C Ratio	0.54	0.54	0.54		0.27	0.27	0.27	0.27	0.09	
Clearance Time (s)	6.0	6.0	6.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	5.0	5.0	5.0		1.5	1.5	1.5	1.5	1.5	
Lane Grp Cap (vph)	2733	2854	1498		455	455	424	407	128	
v/s Ratio Prot	0.38	0.27			0.21	0.21	c0.25			
v/s Ratio Perm			c0.68					0.22	c0.12	
v/c Ratio	0.71	0.50	1.27		0.79	0.79	0.94	0.83	1.27	
Uniform Delay, d1	20.8	17.5	27.8		40.6	40.5	42.7	41.1	54.5	
Progression Factor	0.88	0.72	0.65		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.2	0.2	121.9		8.2	8.1	27.7	12.2	170.4	
Delay (s)	19.5	12.9	140.1		48.7	48.6	70.5	53.3	224.9	
Level of Service	B	B	F		D	D	E	D	F	
Approach Delay (s)	19.5	85.7					55.7			
Approach LOS	B	F					E			

Intersection Summary			
HCM Average Control Delay	64.0	HCM Level of Service	E
HCM Volume to Capacity ratio	1.17		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	98.6%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Lane Util. Factor	0.97	0.91	1.00	0.97	*0.80	1.00	0.94	0.95		0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	5961	1583	4990	3368		3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.63	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	5961	1583	4990	3368		2261	3539	1583
Volume (vph)	300	2110	420	60	1940	90	250	125	60	70	150	230
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	326	2293	457	65	2109	98	272	136	65	76	163	250
RTOR Reduction (vph)	0	0	122	0	0	44	0	56	0	0	0	133
Lane Group Flow (vph)	326	2293	335	65	2109	54	272	145	0	76	163	117
Turn Type	Prot		Perm	Prot		Perm	Prot			pm+pt		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6				4		4
Actuated Green, G (s)	15.8	74.4	74.4	5.4	64.0	64.0	6.0	16.0		16.4	13.2	13.2
Effective Green, g (s)	16.8	76.4	76.4	6.4	66.0	66.0	7.0	17.0		18.4	14.2	14.2
Actuated g/C Ratio	0.14	0.64	0.64	0.05	0.55	0.55	0.06	0.14		0.15	0.12	0.12
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0	6.0	5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	1.5	5.0	5.0	1.5	5.0	5.0	1.5	1.5		1.5	1.5	1.5
Lane Grp Cap (vph)	481	3237	1008	183	3279	871	291	477		388	419	187
v/s Ratio Prot	c0.09	c0.45		0.02	0.35		c0.05	c0.04		0.01	0.05	
v/s Ratio Perm			0.21			0.03				0.02		c0.07
v/c Ratio	0.68	0.71	0.33	0.36	0.64	0.06	0.93	0.30		0.20	0.39	0.62
Uniform Delay, d1	49.0	14.4	10.0	54.8	18.8	12.6	56.3	46.2		44.0	48.9	50.4
Progression Factor	1.09	0.49	0.46	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.3	0.6	0.4	0.4	1.0	0.1	35.2	0.1		0.1	0.2	4.6
Delay (s)	54.7	7.6	5.0	55.2	19.8	12.7	91.5	46.3		44.1	49.1	55.0
Level of Service	D	A	A	E	B	B	F	D		D	D	D
Approach Delay (s)		12.2			20.5			72.3			51.3	
Approach LOS		B			C			E			D	

Intersection Summary			
HCM Average Control Delay	22.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	67.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Lane Util. Factor	0.97	0.91	1.00	0.97	*0.80	1.00	0.94	0.95		0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	5961	1583	4990	3313		3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.41	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	5961	1583	4990	3313		1495	3539	1583
Volume (vph)	280	1730	365	200	2270	180	540	235	175	105	190	240
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	304	1880	397	217	2467	196	587	255	190	114	207	261
RTOR Reduction (vph)	0	0	154	0	0	104	0	140	0	0	0	115
Lane Group Flow (vph)	304	1880	243	217	2467	92	587	305	0	114	207	146
Turn Type	Prot		Perm	Prot		Perm	Prot			pm+pt		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6				4		4
Actuated Green, G (s)	18.2	59.7	59.7	13.1	54.6	54.6	12.0	22.2		18.2	14.2	14.2
Effective Green, g (s)	19.2	61.7	61.7	14.1	56.6	56.6	13.0	23.2		20.2	15.2	15.2
Actuated g/C Ratio	0.16	0.51	0.51	0.12	0.47	0.47	0.11	0.19		0.17	0.13	0.13
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0	6.0	5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	1.5	5.0	5.0	1.5	5.0	5.0	1.5	1.5		1.5	1.5	1.5
Lane Grp Cap (vph)	549	2615	814	403	2812	747	541	641		332	448	201
v/s Ratio Prot	c0.09	0.37		0.06	c0.41		c0.12	0.09		0.01	0.06	
v/s Ratio Perm			0.15			0.06				0.04		c0.09
v/c Ratio	0.55	0.72	0.30	0.54	0.88	0.12	1.09	0.48		0.34	0.46	0.72
Uniform Delay, d1	46.5	22.5	16.7	49.9	28.6	17.8	53.5	43.0		43.0	48.6	50.4
Progression Factor	1.22	0.31	0.21	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.4	1.1	0.6	0.7	4.3	0.3	63.7	0.2		0.2	0.3	10.4
Delay (s)	57.0	8.0	4.1	50.6	32.8	18.1	117.2	43.2		43.2	48.9	60.8
Level of Service	E	A	A	D	C	B	F	D		D	D	E
Approach Delay (s)		13.2			33.2			85.3			53.1	
Approach LOS		B			C			F			D	

Intersection Summary			
HCM Average Control Delay	35.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	69.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.95	0.88	0.94	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)	3433	5085	1583	3433	5085	1583	3433	3539	2787	4990	3539	1583
Flt Permitted	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 (perm)	3433	5085	1583	3433	5085	1583	3433	3539	2787	4990	3539	1583
Volume (vph)	265	1685	165	535	1545	700	260	810	210	285	555	110
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	288	1832	179	582	1679	761	283	880	228	310	603	120
RTOR Reduction (vph)	0	0	40	0	0	105	0	0	168	0	0	95
Lane Group Flow (vph)	288	1832	139	582	1679	656	283	880	60	310	603	25
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Actuated Green, G (s)	10.4	42.0	42.0	19.6	51.2	51.2	13.6	30.4	30.4	7.0	23.8	23.8
Effective Green, g (s)	11.4	44.0	44.0	20.6	53.2	53.2	14.6	31.4	31.4	8.0	24.8	24.8
Actuated g/C Ratio	0.10	0.37	0.37	0.17	0.44	0.44	0.12	0.26	0.26	0.07	0.21	0.21
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0	6.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	2.0	3.0	3.0	2.0	3.0	3.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	326	1865	580	589	2254	702	418	926	729	333	731	327
v/s Ratio Prot	0.08	0.36		c0.17	0.33		0.08	c0.25		c0.06	0.17	
v/s Ratio Perm			0.09			c0.41			0.02			0.02
v/c Ratio	0.88	0.98	0.24	0.99	0.74	0.93	0.68	0.95	0.08	0.93	0.82	0.08
Uniform Delay, d1	53.6	37.6	26.4	49.6	27.8	31.8	50.4	43.5	33.4	55.7	45.5	38.4
Progression Factor	1.00	1.00	1.00	1.39	0.54	0.43	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	22.9	17.1	1.0	24.7	1.3	14.1	3.4	18.5	0.0	31.6	7.2	0.0
Delay (s)	76.5	54.7	27.4	93.7	16.2	27.7	53.8	62.0	33.4	87.3	52.7	38.4
Level of Service	E	D	C	F	B	C	D	E	C	F	D	D
Approach Delay (s)		55.3			34.0			55.7			61.4	
Approach LOS		E			C			E			E	

Intersection Summary			
HCM Average Control Delay	47.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	89.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.95	0.88	0.94	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)	3433	5085	1583	3433	5085	1583	3433	3539	2787	4990	3539	1583
Flt Permitted	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 (perm)	3433	5085	1583	3433	5085	1583	3433	3539	2787	4990	3539	1583
Volume (vph)	200	1535	210	555	1935	200	460	980	420	570	865	125
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	217	1668	228	603	2103	217	500	1065	457	620	940	136
RTOR Reduction (vph)	0	0	56	0	0	93	0	0	315	0	0	91
Lane Group Flow (vph)	217	1668	172	603	2103	124	500	1065	142	620	940	45
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Actuated Green, G (s)	7.0	35.0	35.0	19.0	47.0	47.0	16.0	32.0	32.0	13.0	29.0	29.0
Effective Green, g (s)	8.0	37.0	37.0	20.0	49.0	49.0	17.0	33.0	33.0	14.0	30.0	30.0
Actuated g/C Ratio	0.07	0.31	0.31	0.17	0.41	0.41	0.14	0.28	0.28	0.12	0.25	0.25
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0	6.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	2.0	3.0	3.0	2.0	3.0	3.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	229	1568	488	572	2076	646	486	973	766	582	885	396
v/s Ratio Prot	0.06	0.33		c0.18	c0.41		c0.15	c0.30		0.12	0.27	
v/s Ratio Perm			0.11			0.08			0.05			0.03
v/c Ratio	0.95	1.06	0.35	1.05	1.01	0.19	1.03	1.09	0.19	1.07	1.06	0.11
Uniform Delay, d1	55.8	41.5	32.2	50.0	35.5	22.8	51.5	43.5	33.2	53.0	45.0	34.7
Progression Factor	1.00	1.00	1.00	1.16	0.66	0.31	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	44.1	41.8	2.0	44.6	18.6	0.4	48.4	58.2	0.0	55.9	48.2	0.0
Delay (s)	99.9	83.3	34.2	102.3	42.0	7.4	99.9	101.7	33.3	108.9	93.2	34.8
Level of Service	F	F	C	F	D	A	F	F	C	F	F	C
Approach Delay (s)		79.7			51.9			85.8			94.2	
Approach LOS		E			D			F			F	

Intersection Summary			
HCM Average Control Delay	74.6	HCM Level of Service	E
HCM Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	96.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0
Lane Util. Factor		0.91	0.91		0.97	0.88
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5085	5085		3433	2787
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5085	5085		3433	2787
Volume (vph)	0	435	1890	0	1625	735
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	473	2054	0	1766	799
RTOR Reduction (vph)	0	0	0	0	0	1
Lane Group Flow (vph)	0	473	2054	0	1766	798
Turn Type						custom
Protected Phases		2	6		4	4
Permitted Phases						4
Actuated Green, G (s)		48.0	48.0		61.0	61.0
Effective Green, g (s)		50.0	50.0		62.0	62.0
Actuated g/C Ratio		0.42	0.42		0.52	0.52
Clearance Time (s)		6.0	6.0		5.0	5.0
Vehicle Extension (s)		5.0	1.5		5.0	5.0
Lane Grp Cap (vph)		2119	2119		1774	1440
v/s Ratio Prot		0.09	c0.40		c0.51	0.29
v/s Ratio Perm						
v/c Ratio		0.22	0.97		1.00	0.55
Uniform Delay, d1		22.5	34.2		28.9	19.6
Progression Factor		1.22	1.36		1.00	1.00
Incremental Delay, d2		0.1	8.6		20.2	0.8
Delay (s)		27.7	55.2		49.1	20.4
Level of Service		C	E		D	C
Approach Delay (s)		27.7	55.2		40.2	
Approach LOS		C	E		D	

Intersection Summary			
HCM Average Control Delay	45.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	89.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0
Lane Util. Factor		0.91	0.91		0.97	0.88
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5085	5085		3433	2787
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5085	5085		3433	2787
Volume (vph)	0	965	2115	0	890	575
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1049	2299	0	967	625
RTOR Reduction (vph)	0	0	0	0	0	4
Lane Group Flow (vph)	0	1049	2299	0	967	621
Turn Type						custom
Protected Phases		2	6		4	4
Permitted Phases						4
Actuated Green, G (s)		62.8	62.8		46.2	46.2
Effective Green, g (s)		64.8	64.8		47.2	47.2
Actuated g/C Ratio		0.54	0.54		0.39	0.39
Clearance Time (s)		6.0	6.0		5.0	5.0
Vehicle Extension (s)		5.0	1.5		5.0	5.0
Lane Grp Cap (vph)		2746	2746		1350	1096
v/s Ratio Prot		0.21	c0.45		c0.28	0.22
v/s Ratio Perm						
v/c Ratio		0.38	0.84		0.72	0.57
Uniform Delay, d1		16.0	23.2		30.7	28.4
Progression Factor		1.29	1.08		1.00	1.00
Incremental Delay, d2		0.1	2.5		2.3	1.1
Delay (s)		20.7	27.5		33.0	29.5
Level of Service		C	C		C	C
Approach Delay (s)		20.7	27.5		31.7	
Approach LOS		C	C		C	

Intersection Summary			
HCM Average Control Delay	27.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	72.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	WBT	WBR	WBR2	NBL2	NBL	NBT	NBR	SBR	SBR2
Lane Configurations										
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	0.91	*0.95	*0.88		0.95	0.95	0.95	0.95	0.88	
Frt	1.00	1.00	0.85		1.00	1.00	0.87	0.85	0.85	
Flt Protected	1.00	1.00	1.00		0.95	0.95	1.00	1.00	1.00	
Satd. Flow (prot)	5085	5309	2787		1681	1681	1540	1504	1393	
Flt Permitted	1.00	1.00	1.00		0.95	0.95	1.00	1.00	1.00	
Satd. Flow (perm)	5085	5309	2787		1681	1681	1540	1504	1393	
Volume (vph)	2060	645	1815	25	1170	0	75	960	75	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2239	701	1973	27	1272	0	82	1043	82	0
RTOR Reduction (vph)	0	0	1	0	0	0	0	0	0	0
Lane Group Flow (vph)	2239	701	1999	0	636	636	603	522	82	0
Turn Type			Perm		Split	Split		Perm	custom	custom
Protected Phases	2	6			8	8	8			
Permitted Phases			6					8	4	4
Actuated Green, G (s)	60.0	60.0	60.0		39.0	39.0	39.0	39.0	5.0	
Effective Green, g (s)	62.0	62.0	62.0		40.0	40.0	40.0	40.0	6.0	
Actuated g/C Ratio	0.52	0.52	0.52		0.33	0.33	0.33	0.33	0.05	
Clearance Time (s)	6.0	6.0	6.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	5.0	5.0	5.0		1.5	1.5	1.5	1.5	1.5	
Lane Grp Cap (vph)	2627	2743	1440		560	560	513	501	70	
v/s Ratio Prot	0.44	0.13			0.38	0.38	c0.39			
v/s Ratio Perm			c0.72					0.35	c0.06	
v/c Ratio	0.85	0.26	1.39		1.14	1.14	1.18	1.04	1.17	
Uniform Delay, d1	25.0	16.1	29.0		40.0	40.0	40.0	40.0	57.0	
Progression Factor	0.52	0.69	0.67		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.0	0.2	177.6		81.3	81.3	97.9	51.5	161.2	
Delay (s)	14.9	11.2	197.2		121.3	121.3	137.9	91.5	218.2	
Level of Service	B	B	F		F	F	F	F	F	
Approach Delay (s)	14.9	148.9					119.0			
Approach LOS	B	F					F			

Intersection Summary			
HCM Average Control Delay	99.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.30		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	111.4%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	WBT	WBR	WBR2	NBL2	NBL	NBT	NBR	SBR	SBR2
Lane Configurations										
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	0.91	*0.95	*0.88		0.95	0.95	0.95	0.95	0.88	
Frt	1.00	1.00	0.85		1.00	1.00	0.86	0.85	0.85	
Flt Protected	1.00	1.00	1.00		0.95	0.95	1.00	1.00	1.00	
Satd. Flow (prot)	5085	5309	2787		1681	1681	1530	1504	1393	
Flt Permitted	1.00	1.00	1.00		0.95	0.95	1.00	1.00	1.00	
Satd. Flow (perm)	5085	5309	2787		1681	1681	1530	1504	1393	
Volume (vph)	1855	1305	1825	10	660	0	35	640	150	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2016	1418	1984	11	717	0	38	696	163	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	2016	1418	1995	0	359	358	386	348	163	0
Turn Type			Perm		Split	Split		Perm	custom	custom
Protected Phases	2	6			8	8	8			
Permitted Phases			6					8	4	4
Actuated Green, G (s)	62.6	62.6	62.6		31.4	31.4	31.4	31.4	10.0	
Effective Green, g (s)	64.6	64.6	64.6		32.4	32.4	32.4	32.4	11.0	
Actuated g/C Ratio	0.54	0.54	0.54		0.27	0.27	0.27	0.27	0.09	
Clearance Time (s)	6.0	6.0	6.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	5.0	5.0	5.0		1.5	1.5	1.5	1.5	1.5	
Lane Grp Cap (vph)	2737	2858	1500		454	454	413	406	128	
v/s Ratio Prot	0.40	0.27			0.21	0.21	c0.25			
v/s Ratio Perm			c0.72					0.23	c0.12	
v/c Ratio	0.74	0.50	1.33		0.79	0.79	0.93	0.86	1.27	
Uniform Delay, d1	21.2	17.4	27.7		40.7	40.6	42.8	41.6	54.5	
Progression Factor	0.57	0.67	0.61		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.5	0.2	149.6		8.5	8.2	27.9	15.6	170.4	
Delay (s)	13.6	11.8	166.5		49.2	48.8	70.7	57.2	224.9	
Level of Service	B	B	F		D	D	E	E	F	
Approach Delay (s)	13.6	102.2					56.7			
Approach LOS	B	F					E			

Intersection Summary			
HCM Average Control Delay	70.3	HCM Level of Service	E
HCM Volume to Capacity ratio	1.21		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	101.8%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Lane Util. Factor	0.97	0.91	1.00	0.97	*0.80	1.00	0.94	0.95		0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	5961	1583	4990	3368		3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.63	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	5961	1583	4990	3368		2261	3539	1583
Volume (vph)	350	2110	560	60	1940	90	320	125	60	70	150	230
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	380	2293	609	65	2109	98	348	136	65	76	163	250
RTOR Reduction (vph)	0	0	164	0	0	48	0	55	0	0	0	138
Lane Group Flow (vph)	380	2293	445	65	2109	50	348	146	0	76	163	112
Turn Type	Prot		Perm	Prot		Perm	Prot			pm+pt		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6				4		4
Actuated Green, G (s)	19.3	72.7	72.7	5.4	58.8	58.8	8.0	17.7		16.1	12.9	12.9
Effective Green, g (s)	20.3	74.7	74.7	6.4	60.8	60.8	9.0	18.7		18.1	13.9	13.9
Actuated g/C Ratio	0.17	0.62	0.62	0.05	0.51	0.51	0.08	0.16		0.15	0.12	0.12
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0	6.0	5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	1.5	5.0	5.0	1.5	5.0	5.0	1.5	1.5		1.5	1.5	1.5
Lane Grp Cap (vph)	581	3165	985	183	3020	802	374	525		382	410	183
v/s Ratio Prot	c0.11	c0.45		0.02	0.35		c0.07	0.04		0.01	0.05	
v/s Ratio Perm			0.28			0.03				0.02		c0.07
v/c Ratio	0.65	0.72	0.45	0.36	0.70	0.06	0.93	0.28		0.20	0.40	0.61
Uniform Delay, d1	46.6	15.6	11.9	54.8	22.6	15.1	55.2	44.7		44.2	49.2	50.5
Progression Factor	1.12	0.53	0.35	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.7	0.5	0.5	0.4	1.4	0.1	29.1	0.1		0.1	0.2	4.2
Delay (s)	53.0	8.7	4.7	55.2	24.0	15.2	84.3	44.8		44.3	49.4	54.7
Level of Service	D	A	A	E	C	B	F	D		D	D	D
Approach Delay (s)		13.1			24.5			69.9			51.3	
Approach LOS		B			C			E			D	

Intersection Summary			
HCM Average Control Delay	24.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	68.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Lane Util. Factor	0.97	0.91	1.00	0.97	*0.80	1.00	0.94	0.95		0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	5961	1583	4990	3313		3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.45	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	5961	1583	4990	3313		1627	3539	1583
Volume (vph)	330	1730	435	200	2270	180	630	235	175	105	190	240
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	359	1880	473	217	2467	196	685	255	190	114	207	261
RTOR Reduction (vph)	0	0	184	0	0	111	0	141	0	0	0	117
Lane Group Flow (vph)	359	1880	289	217	2467	85	685	304	0	114	207	144
Turn Type	Prot		Perm	Prot		Perm	Prot			pm+pt		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6				4		4
Actuated Green, G (s)	21.6	58.8	58.8	13.1	50.3	50.3	13.0	23.1		18.1	14.1	14.1
Effective Green, g (s)	22.6	60.8	60.8	14.1	52.3	52.3	14.0	24.1		20.1	15.1	15.1
Actuated g/C Ratio	0.19	0.51	0.51	0.12	0.44	0.44	0.12	0.20		0.17	0.13	0.13
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0	6.0	5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	1.5	5.0	5.0	1.5	5.0	5.0	1.5	1.5		1.5	1.5	1.5
Lane Grp Cap (vph)	647	2576	802	403	2598	690	582	665		348	445	199
v/s Ratio Prot	c0.10	c0.37		0.06	c0.41		c0.14	0.09		0.01	0.06	
v/s Ratio Perm			0.18			0.05				0.04		c0.09
v/c Ratio	0.55	0.73	0.36	0.54	0.95	0.12	1.18	0.46		0.33	0.47	0.72
Uniform Delay, d1	44.1	23.2	17.9	49.9	32.6	20.2	53.0	42.2		43.0	48.7	50.4
Progression Factor	1.16	0.60	0.43	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.4	1.1	0.8	0.7	9.3	0.4	96.6	0.2		0.2	0.3	10.5
Delay (s)	51.6	15.1	8.4	50.6	41.8	20.6	149.6	42.4		43.2	49.0	60.9
Level of Service	D	B	A	D	D	C	F	D		D	D	E
Approach Delay (s)		18.8			41.1			107.4			53.2	
Approach LOS		B			D			F			D	

Intersection Summary			
HCM Average Control Delay	44.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	72.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

APPENDIX F

Arapahoe Road Corridor Recommended Improvements
Signalized Intersection Laneage

Arapahoe Road Corridor Study
Recommended Alternative - Study Area Signalized Intersection Lane Configurations

Intersection Approach	Number of Lanes		
	Left	Through	Right
Arapahoe Rd/ Yosemite St			
Northbound	2	2	1
Southbound	2	2	Shared
Eastbound	2	3	1
Westbound	2	3	1
Arapahoe Rd/ I-25 SB			
Southbound	3		1
Eastbound		5	
Westbound		3	
Arapahoe Rd/ I-25 NB			
Northbound	2+	1	1+
Southbound			1
Eastbound		3	
Westbound		5	Shared
Arapahoe Rd/ Boston St			
Northbound	2	2	Shared
Southbound	2	2	1
Eastbound	2	3	1
Westbound	2	4	1
Yosemite St/ Costilla Ave			
Northbound		2	1
Southbound	1	2	
Westbound	1		1
Costilla Ave/ Boston St			
Northbound	1	2	Shared
Southbound	1	2	Shared
Eastbound	1	2	Shared
Westbound	1	2	Shared
Peakview Ave/ Dayton St			
Northbound	1	1	1
Southbound	1	1	Shared
Eastbound	1	2	Shared
Westbound	1	2	1
Arapahoe Rd/ Dayton St			
Northbound	1	2	Shared
Southbound	2	2	1
Eastbound	2	3	1
Westbound	2	3	1
Havana At-Grade Intersection Option			
Northbound	3	3	1+
Southbound	2	3	1
Eastbound	2	3	1
Westbound	2	3	1
Havana Diamond Interchange Option			
WB Havana Ramps/ Havana St			
Northbound	2	3	
Southbound		4	Shared
Westbound	2	1	Shared
EB Havana Ramps/ Havana St			
Northbound		5	Shared
Southbound	2	2	
Eastbound	2	1	Shared

Arapahoe Road Corridor Study
Recommended Alternative - Study Area Signalized Intersection Lane Configurations

Intersection Approach	Number of Lanes		
	Left	Through	Right
Havana Junior Interchange Option			
WB Havana Ramps/ Peakview Ave			
Northbound	1	1	1+
Southbound	1	1	1
Eastbound	1	2	Shared
Westbound	1	2	1
EB Havana Ramps/ Briarwood Ave			
Southbound	1		1
Eastbound	2	2	
Westbound		2	Shared
Costilla Ave/ Havana St			
Northbound	2	3	1
Southbound	2	3	1
Eastbound	2	2	1
Westbound	2	2	1
Peakview Ave/ Havana St			
Southbound	1		1
Eastbound	1	2	
Westbound		2	1
Costilla Ave/ Havana St			
Northbound	2	3	1
Southbound	2	3	1
Eastbound	2	2	1
Westbound	2	2	1
Peakview Ave/ Lima St			
Northbound	1	2	Shared
Southbound	1	2	Shared
Eastbound	1	2	Shared
Westbound	1	2	Shared
Arapahoe Rd/ Lima St			
Northbound	2	1	2
Southbound	1	2	1
Eastbound	2	3	1
Westbound	2	3	1
Briarwood Ave/ Lima St			
Northbound	1	2	Shared
Southbound	1	2	Shared
Eastbound	1	2	1
Westbound	1	2	1
Easter Ave/ Lima St			
Northbound	1	2	1
Southbound	2	2	Shared
Eastbound	1	3	Shared
Westbound	2	3	1
Peakview Ave/ Peoria St			
Northbound	1	2	1
Southbound	1	2	Shared
Eastbound	1	2	1
Westbound	1	2	Shared

Arapahoe Road Corridor Study
Recommended Alternative - Study Area Signalized Intersection Lane Configurations

Intersection Approach	Number of Lanes		
	Left	Through	Right
Arapahoe Rd/ Peoria St			
Northbound	3	2	Shared
Southbound	3	2	1
Eastbound	2	3	1
Westbound	2	3	1
Briarwood Ave/ Peoria St			
Northbound	1	2	Shared
Southbound	1	2	1
Eastbound	1	2	Shared
Westbound	1	2	1
Easter Ave Intersection Options			
Easter Ave/ Havana St (4-way)			
Northbound	1	3	1
Southbound	2	3	Shared
Eastbound	Shared	1	Shared
Westbound	2	1	1
Easter Ave/ Havana St (Realigned to Havana)			
Northbound	2	3	
Southbound		3	1
Eastbound	2		1
Easter Ave/ Havana St (Realigned to Dry Creek)			
Southbound	2		1
Eastbound	2	3	
Westbound		3	1
Easter Ave/ Peoria St (4-way)			
Northbound	2	2	Shared
Southbound	1	2	1
Eastbound	2	1	1+
Westbound	1	1	Shared
Easter Ave/ Peoria St (Realigned)			
Southbound	2		1
Eastbound	2	3	
Westbound		3	1
Peakview Ave/ Revere Pkwy			
Northbound		2	Shared
Southbound	2	2	
Westbound	1		1
Briarwood Ave/ Revere Pkwy			
Northbound	1	2	1
Southbound	1	2	Shared
Eastbound	1	1	1
Westbound	2	1	1
WB Revere Ramps/ Peakview Ave			
Northbound	2		1
Eastbound		2	Shared
Westbound	1	2	
EB Revere Ramps/ Briarwood Ave			
Southbound	1		2
Eastbound	2	2	
Westbound		2	Shared

Arapahoe Road Corridor Study
Recommended Alternative - Study Area Signalized Intersection Lane Configurations

Intersection Approach	Number of Lanes		
	Left	Through	Right
Peakview Ave/ Potomac St			
Northbound	1	2	
Southbound		2	Shared
Eastbound	1		1
Arapahoe Rd/ Potomac St			
Northbound	2	2	2
Southbound	2	2	1
Eastbound	2	3	1
Westbound	2	3	1
Briarwood Ave/ Potomac St			
Northbound	1	2	Shared
Southbound	1	2	1
Eastbound	1	2	Shared
Westbound	1	2	Shared
Broncos Pkwy/ Potomac St			
Northbound	2	2	1
Southbound	2	2	1
Eastbound	1	3	1
Westbound	2	3	1
Jordan Diamond Interchange Option			
WB Jordan Ramps/ Jordan Rd			
Northbound	2	1	
Southbound		1	1
Westbound	2	1	Shared
EB Jordan Ramps/ Jordan Rd			
Northbound		2	1
Southbound	1	2	
Eastbound	1	1	Shared
Briarwood Ave/ Jordan Rd			
Northbound	1	2	Shared
Southbound	1	2	Shared
Eastbound	2	1	1
Westbound	1	1	Shared
Jordan Junior Interchange Option			
WB Jordan Ramps/ Jordan Rd			
Northbound	1	1	
Southbound		1	1
Eastbound	1		1
EB Jordan Ramps/ Briarwood Ave			
Southbound	1		1
Eastbound	1	2	
Westbound		2	Shared
Briarwood Ave/ Jordan Rd			
Northbound	1	2	Shared
Southbound	1	2	Shared
Eastbound	2	1	1
Westbound	1	1	Shared
Broncos Pkwy/ Jordan Rd			
Northbound	2	2	1
Southbound	2	2	1
Eastbound	1	3	1
Westbound	2	3	1

Arapahoe Road Corridor Study
Recommended Alternative - Study Area Signalized Intersection Lane Configurations

Intersection Approach	Number of Lanes		
	Left	**Through**	**Right**
Broncos Pkwy/ Parker Rd			
Northbound	2	3	Shared
Southbound	1	3	1
Eastbound	2	1	1
Westbound	1	1	1
Arapahoe Rd/ Cornerstar			
Northbound	2		1
Eastbound		3	1
Westbound	2	3	
Arapahoe Rd/ NW Parker Ramp			
Southbound	2+	1	3
Eastbound		5	
Westbound	2	3	
Arapahoe Rd/ Lewiston Way			
Northbound	2	1	1
Southbound	2	1	1
Eastbound	2	3	1
Westbound	1	3	1

1+ = One exclusive right turn lane and one shared thru/right turn lane