

City of Grand Junction Public Works Department 250 North 5<sup>th</sup> Street Grand Junction, CO 81501-2668 Phone: (970) 244-1555 FAX: (970) 256-4022

December 11, 2003

Mr. Robert Jenkins 1000n. 9<sup>th</sup> Street Suite 35 Grand Junction, Co 81501

RE: TEDS Exception from Minimum Access Spacing – St. Mary's Hospital

Dear Robert:

Please find attached the committee's decision on the above request. You may use this decision to proceed through the development review process.

If you have any question concerning this decision, please feel free to contact the Development Engineer in charge of your project or me at (970) 244-1557.

Sincerely,

Tim Moore Public Works Manager

C: Rick Dorris, Development Engineer (256-4034) Pat Cecil, Development Services Supervisor

\DE#46-03 St. Mary's



#### **City of Grand Junction**

Department of Public Works and Utilities Engineering Division 250 North Fifth Street Grand Junction, CO 81501-2668 FAX: (970) 256-4011

#### **DESIGN EXCEPTION #DE46-03**

То:	Mark Relph, Director of Public Works & Utilities
Copy to:	Rick Dorris, Development Engineer Pat Cecil, Development services Supervisor
From:	Tim Moore, Public Works Manager
Date:	November 24, 2003
RE:	Request to Reduce Minimum Access Spacing on a Principal Arterial Street - St. Mary's Hospital

#### DESCRIPTION OF THE SITUATION

As part of the implementation of the Master Site Plan for St. Mary's Hospital, the proposed plan for access onto Patterson Road is to consolidate four existing driveways spaced along the Hospital's Patterson Road frontage into a single access point at Mira Vista. Meetings conducted by St. Mary's staff with local residents along Mira Vista indicated a strong opposition to the alternative of combining local access with the Hospital traffic. As an alternative to combining access with Mira Vista, St. Mary's proposed to construct an access point on Patterson Road adjacent to Hospital frontage as shown on the attached site plan.

Section 6.2.8, *Spacing and Offsets* says, "Unsignalized intersections must be T-intersections and spaced at least 600 feet apart, measured centerline to centerline. Unsignalized four legged intersections may be allowed on arterial streets provided that the design for the intersection precludes left turns onto and through movements across the arterial".

The applicant's request is for a full movement access point located approximately 687 feet west of 7<sup>th</sup> Street and approximately 385 feet east of Mira Vista.

- 2. The full movement access shall be periodically re-evaluated by SMH and the City. Reevaluation analyses to be performed by SMH shall include traffic studies, analysis of accident data, Level of Service (LOS) considerations and other relevant factors in accordance with then adopted standards. All analyses shall be submitted to and approved by the City. Re-evaluation(s) shall occur with each successive Master Site Plan update or other application for development (as required by the City's Zoning and Development Code) on the west campus of SMH.
- 3. If subsequent traffic analyses indicate significant safety concerns as evidenced by increased numbers and severity of accidents, delays or impedance to the through movement function of Patterson Road, the access may be required to be modified to limit some of the access movements. The cost work BE The BEFANGIBILITY of SMH.
- 4. The location of the access authorized by this Exception shall be coordinated/constructed with existing driveways on the north side of Patterson Road.

en Recommended by:

RECOMMENDED Approved as Requested:

Denied:

12/11/03 TATE:

2/12/02

\DE#46-03 St. Mary's 11-03

#### **MEMORANDUM**

#### CITY OF GRAND JUNCTION ENGINEERING DEPARTMENT

TO: Mike McDill George Miller Jody Kliska Lisa Cox

FROM: Rick Dorris

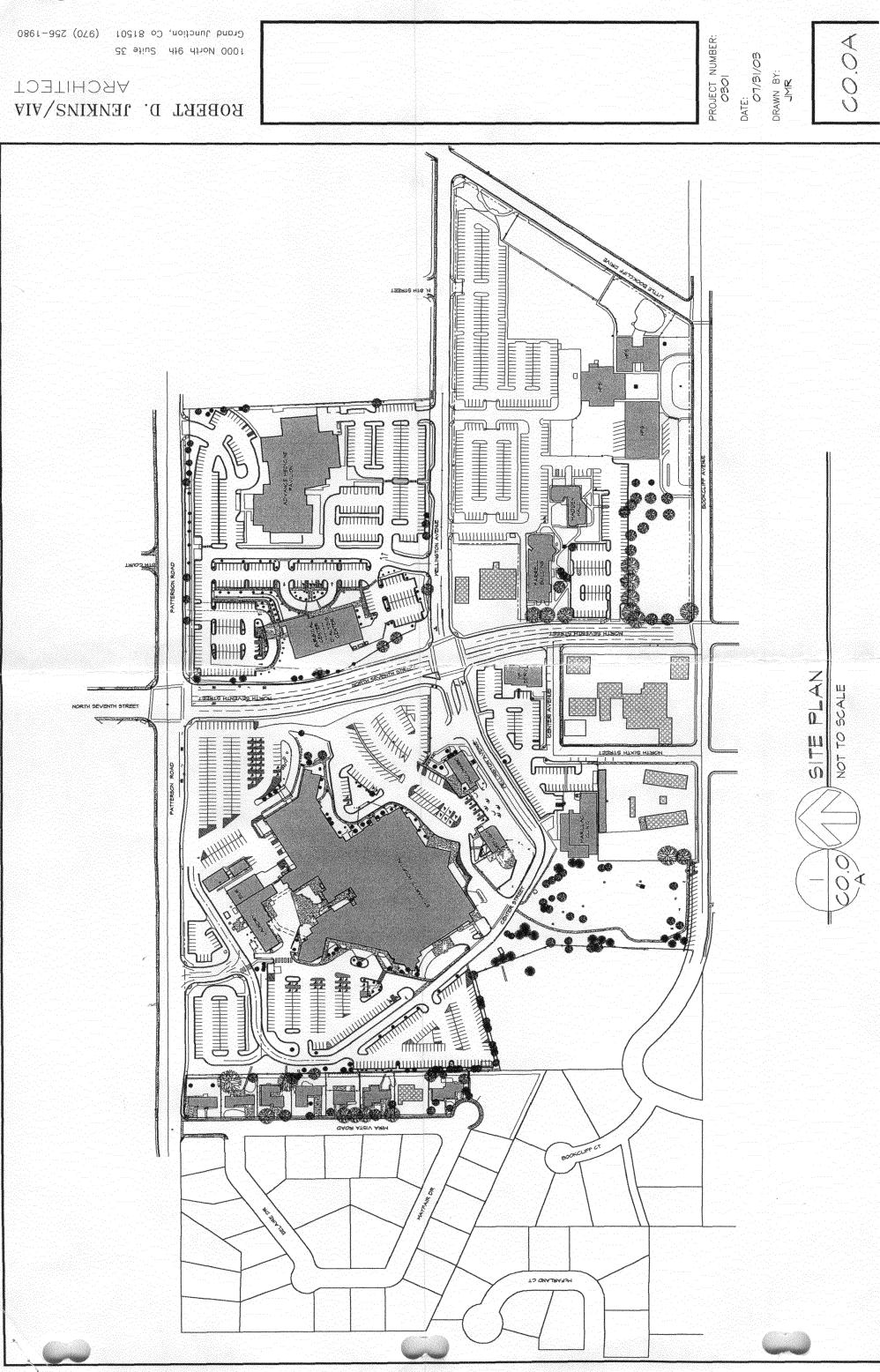
DATE: August 1, 2003

SUBJECT: St. Mary's Access Drawing, Information Only

Rob Jenkins dropped off this drawing today. It is their sketch plan for access to conduct their next neighborhood meeting. It has not been Engineered, simply drawn up. Rob knows they need a TEDS exception for intersection spacing on Patterson.

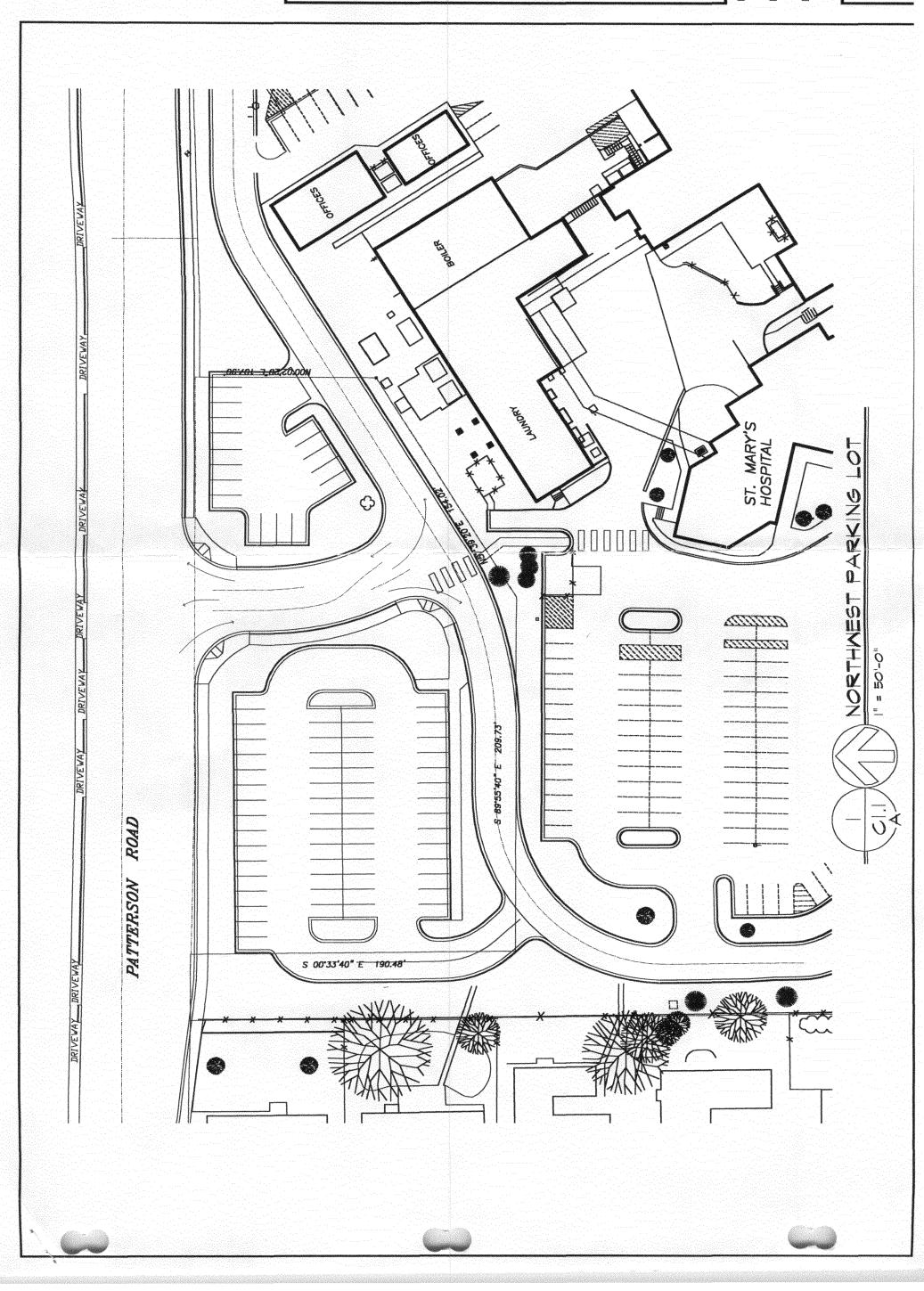
I asked him if their traffic consultant evaluated the stacking for their road and he said no. They want to see if we are somewhat agreeable prior to Engineering it. They are also hoping this will be full motion. I am concerned that the  $7^{th}$  street que may back up over it.

Please review this drawing for both positive items and challenges and email me your feedback.



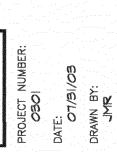






### ROBERT D. JENKINS/AIA

1000 North 9th Suite 35 Grand Junction, Co 81501 (970) 256-1980







### **ROLLAND ENGINEERING**

405 RIDGES BOULEVARD, SUITE A GRAND JUNCTION, COLORADO 81503 Phone: (970) 243-8300 • Fax (970) 241-1273 E-Mail: rolleng@bresnan.net



October 29, 2003

City of Grand Junction City Engineer Mr. Michael G. McDill, P.E. 250 N. 5<sup>th</sup> Street Grand Junction, CO 81501

RE: St. Mary's Hospital West Campus Patterson Access TEDS Design Exception

Dear Mike,

This letter is presented as a formal request for a design exception to the City of Grand Junction **TEDS manual, section 6.2.8** for the above referenced project and as partial response to the August 12, 2003 letter from Rick Dorris, City Development Engineer.

As part of the implementation of the Master Site Plan for St. Mary's Hospital, the proposed plan for access onto Patterson Avenue is to consolidate 4 existing driveways spaced along the Hospital's Patterson frontage into a single access point. There is insufficient distance between existing Mira Vista Road on the west and 7<sup>th</sup> Street on the east to place an access point that meets the TEDS requirement of 600 foot spacing for a principal arterial street.

The original alternative that was considered was to combine Mira Vista Road and the Hospital's Patterson Road entrance at one location:

A proposed access point approximately 200 feet east of existing Mira Vista, in which the existing Mira Vista would be closed off at Patterson (as shown on the current St. Mary's Master Site Plan). Traffic to and from Mira Vista would be routed through the north west corner of the Hospital's property onto Patterson Road.

Meetings were held with local residents who use Mira Vista to evaluate the functionality and safety aspects of this alternative. The response from the local residents was predominantly in opposition to this alternative so it is not being pursued.

The newly proposed access onto Patterson Road is located 385 feet east of Mira Vista Road and 687 feet west of 7<sup>th</sup> street. This location fits the design of St. Mary's Master Plan Development and the current access needs of the Hospital. The proposed access will be designed as "full movement" and will include a dedicated right turn lane into the Hospital for eastbound Patterson Road traffic.

We feel that there is an inherent safety benefit in reducing the number of access points from four to one. Also, some of the traffic issues exist and will continue to exist regardless of any changes (or no change) to the Hospital's Patterson access.

An in-depth traffic analysis has been prepared (submitted separately) to further address the impacts of this proposed access including the remaining 7 items of concern in the August 12, 2003 letter from Rick Dorris.

The consolidation of the 4 existing accesses on the Hospital's frontage of Patterson Road to this single access at this location appears to be the best solution to this issue. We would like this design exception be approved for the reasons stated above.

Sincerely ROLYAN D Engineering Kent Shaffer

Cc: Robert D. Jenkins Architect

Patterson Access TEDS Design Exception Page 2 of 2

TEDS EXCEPTION REVIEW St. Mary's Hospital Patterson Access October 22, 2003 Jody Kliska Transportation Engineer

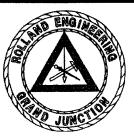
- 1. The response to Question 1 just says "no second full access is not a reasonable or sensible alternative for St. Mary's or for the City of Grand Junction" without providing a list of needs or evaluation criteria that should be considered and is not responsive. Examples of needs that should be considered could include emergency access to the site from outside providers; shorter ambulance travel time to and from the northern part of the city; allowing the campus ring a higher functionality; more convenient access to the north section of the campus; congestion relief to the single access point at 7<sup>th</sup> & Wellington; combines four existing access points into a single Patterson Road access.
- 2. The response to question 2 does not give adequate justification to increasing the existing traffic by 10% for projected future. Is 10% a reasonable and adequate increase for an additional 338 parking spaces on site?
- 3. No measurement of existing Patterson Road gaps was provided. A study conducted by the City in 1997 for a site ½ mile east found that inadequate gaps existed for left-turn exiting traffic onto Patterson Road during the p.m. peak hour. It is assumed that this has not improved in the past six years and that adequate gaps do not currently exist for left-turn exiting traffic from this site.
- 4. The analysis of future eastbound right-turn demand at 7<sup>th</sup> & Patterson suggests additional storage is necessary and may require dedication of additional right-of-way to provide adequate storage. The eastbound through queues will block the proposed access during p.m. peak now and in the future, according to the analysis. Looking at hourly volume data collected by the City last month suggests that volumes throughout the day are fairly constant and that queuing is not just a peak hour phenomenon. This section of Patterson Road is the most heavily traveled segment of the road. A copy of the data is attached.
- 5. Eastbound left-turn queues at the signal suggest that a <sup>3</sup>/<sub>4</sub> movement may work for entering westbound left-turn traffic for the proposed access. However, there is nothing provided in the report that shows the location of opposing accesses in the vicinity of the proposed access. Table 1 assumes a single access exists opposing the proposed access; however, there are multiple accesses opposite the vicinity of the proposed access that could be affected by the proposed access.
- 6. Figure 2 would be the preferable design to ensure adequate on-site storage without affecting the operations of the campus ring road.
- The Summary points out the need for a second access, but a more compelling argument is made for limiting the access to <sup>3</sup>/<sub>4</sub> movement, based upon the first two sentences in the summary. The document is silent on the effects, if any, to the existing Mira Vista Drive.

Patterson Road Volu	mes west of 7 <sup>th</sup> Street S	eptember 25, 2003	
Hour	WB	EB	Total
7 a.m.	569	333	902
8 a.m.	1035	751	1786
9 a.m.	937	770	1707
10 a.m.	948	758	1706
11 a.m.	976	816	1792
12 p.m.	1085	993	2078
1 p.m.	1095	1137	2232
2 p.m.	1085	1111	2196
3 p.m.	1028	1108	2136
4 p.m.	1169	1188	2357
5 p.m.	1214	1301	2515
6 p.m.	1094	1304	2398
7 p.m.	857	964	1821

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### **ROLLAND ENGINEERING**

405 RIDGES BOULEVARD, SUITE A **GRAND JUNCTION, COLORADO 81503** Phone: (970) 243-8300 • Fax (970) 243-1273 email: rolleng@bresnan.net



November 18, 2003

City of Grand Junction Mr. Rick Dorris, P.E. **City Development Engineer** 250 N. 5<sup>th</sup> Street Grand Junction, CO 81501

RE: St. Mary's Hospital West Campus Patterson Access **TEDS Design Exception** 

Dear Rick,

Attached is the gap analysis, as requested by City Traffic Engineering, for Patterson Road prepared by traffic consultant Michael Baker Jr. Inc. This data is being provided as an addendum to the TEDs exception request letter sent to Michael G. McDill, City Engineer dated October 29, 2003 for the proposed St. Mary's Hospital main entrance onto Patterson Road.

Please let us know if you require any additional information in the evaluation of the TEDs exception request.

Sincerely, RQL/LAMD Engineering

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RECEIVED

NOV 1 8 2003

Cc: Robert D. Jenkins Architect COMMUN an Shina and

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### **Patterson Road Gap Analysis**

#### Introduction

This document is an addendum to the traffic analysis for the TEDS exception for the St. Mary's Hospital Patterson Road access. The gap analysis presented here addresses:

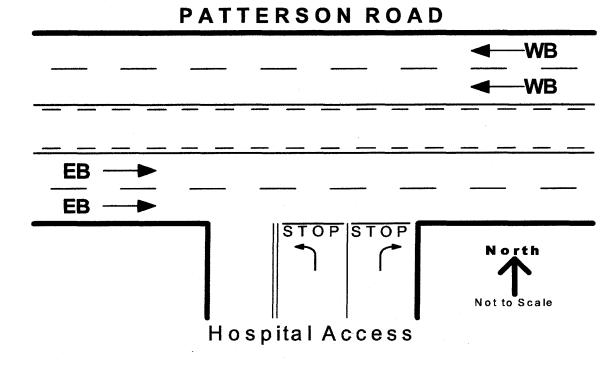
### Q3: Availability of gaps in Patterson Road traffic at peak hour that would allow exiting left turning traffic.

#### **Data Collection**

The gaps in Patterson Road traffic were observed on Thursday, November 7, 2003, between 7-9 am and 4-6 pm. The gaps were observed at the proposed access location. The time required to make left-turns was also observed at the current Hospital accesses.

#### Minimum Gap Length for Left-Turns

Vehicles making a left-turn from the current Hospital accesses onto Patterson Road were observed to determine the minimum gap length necessary to execute a left-turn. Table 1 lists the different types of left-turns and minimum gap lengths.



#### Figure 1 Hospital Access Diagram

Page 1

Type of Left-Turn	Description	Minimum Gap
Standard Left-Turn	Gap closes due to conflicting EB and WB (or just WB) traffic on Patterson Rd. Minimum gap includes time to cross EB traffic and merge with WB traffic.	6 sec
Additional Left-Turns During Same Gap	<ul> <li>Two or more vehicles turn left during the same gap. The second left-turn vehicle still requires a six second gap, but two of those seconds occur at the end of the first vehicles' left-turn.</li> <li>Required Gap</li> <li>1 vehicle turns left = 6 sec</li> <li>2 vehicles turn left = 10 sec</li> <li>3 vehicles turn left = 14 sec</li> </ul>	4 sec
Left-Turn (no WB Patterson Rd traffic)	Gap closes due to conflicting EB traffic on Patterson Rd, but there is no conflicting WB traffic. A smaller minimum gap is needed because the vehicle turning left does not have to merge with WB traffic; it only has to cross the EB traffic.	4 sec
Two-Stage Left-Turn	Left-turn vehicle crosses EB traffic and then waits in the median lane for an opportunity to merge with WB traffic. <i>(Even though this type</i> of left-turn occurs, it was NOT considered in the gap analysis.)	NOT USED

#### Table 1 – Minimum Gap Length for Left-Turns

Notes:

EB – Eastbound, WB – Westbound

#### **Observed Gaps**

The minimum gap lengths listed in Table 1 were used to determine the total number of gaps available for left-turn vehicles. The observed gaps were measured using a stop watch. Only gaps that met the minimum gap lengths listed in Table 1 were recorded. Also, gaps used by vehicles turning left from Patterson Road into the current Hospital accesses were not recorded.

Table 2 lists a summary of the gap analysis. The columns in Table 2 are prior to the table. Table 3 (after the Conclusion) lists the same data as Table 2, but in five-minute increments and it also lists gap size.

- **# of Actual Left-Turns** Based on traffic volumes counted on Wednesday, September 17. (Refer to the original traffic analysis.)
- Total # of Gaps Based on gaps observed on Thursday, November 7.
- Estimated # of Left-Turns Possible Based on "Total # of Gaps" and the size of the gaps. For example, a 10 second gap would count as one "Total Gap", but "Estimated # of Left-Turns Possible" would be two.
- # of Queues that Block the Proposed Access Based on queuing from the Patterson Rd / 7<sup>th</sup> Street traffic signal observed on Thursday, November 7. There are no left-turn gaps when queuing from this signal backs up past the proposed access.

Period	# of Actual Left-Turns	Total # of Gaps	Estimated # of Left-Turns Possible	# of Queues that Block the Proposed Access
AM Peak Hour (7:30-8:30 am)	21	115	171	0
PM Peak Hour (4:30-5:30 am)	35	52	74	9

#### Table 2 – Gap Data (Summary)

#### <u>Conclusion</u>

Table 2 shows that adequate gaps exist in the AM and PM peak hour to accommodate the left-turn demand. The gaps on Patterson Road are directly related to the traffic signal operations at 7<sup>th</sup> Street and 1<sup>st</sup> Street. These signals are coordinated and currently operate on a 110 second cycle length. Due to signal coordination, adequate gaps exist on a fairly consistent pattern. This pattern corresponds to the 110 second cycle length of the signals.

Time	# of Actual Left-Turns	Total # of Gaps	ш о	<b>4-5</b> sec (1 LT)	6-9 sec (1 LT)	<b>10-13</b> sec (2 LT)	1 <b>4-17</b> sec (3 LT)	18-21 sec (4 LT)	> 21 sec (5+ LT)	# of Queues that Block the Access
				AM P	eak H	<b>lour</b>				na dan serte serte Sentensi
7:15		10	14	2	4	4				
7:20	4	12	18	2	7	2			1	
7:25		12	17	4	6	1			1	
7:30		9	12	3	4	1	1			
7:35	8	14	22	4	6	1	2	1		5. A
7:40		11	16	3	5	1	2			·
7:45		9	12	5	2	1	1			
7:50	5	5	8		3	1	1			
7:55		5	5		5					
8:00		9	19	2	3	1	1	1	1	
8:05	4	10	13	4	4	1	1			
8:10		9	15		4	4	1			
AM Peak Hour Total	21	115	171	29	53	18	10	2	3	0
	21	115					10	2	3	0
Hour Total	21			29 PM P	eak H	our	10	2	3	0
Hour Total 4:30		5	7		eak H 3	our 2		2	3	0
Hour Total 4:30 4:35	<b>21</b> 9	5 6	7 11		eak H 3 3	OUF 2 1	2	2	3	
Hour Total 4:30 4:35 4:40		5 6 4	7 11 8		eak H 3 3 1	OUF 2 1 2		2	3	0 2
Hour Total 4:30 4:35 4:40 4:45		5 6 4 5	7 11		eak H 3 3	OUF 2 1	2	2	3	
Hour Total 4:30 4:35 4:40 4:45 4:50	9	5 6 4	7 11 8 6 12		eak H 3 3 1 4 4	OUF 2 1 2 1 4	2	2	3	
Hour Total 4:30 4:35 4:40 4:45 4:50 4:55	9	5 6 4 5 8	7 11 8 6	2M 2	eak H 3 3 1 4	OUF 2 1 2 1 2	2	2	3	
Hour Total 4:30 4:35 4:40 4:45 4:50	9	5 6 4 5 8 4	7 11 8 6 12 5	2M 2	eak H 3 3 1 4 4 2	OUT 2 1 2 1 4 1	2	2	3	
Hour Total 4:30 4:35 4:40 4:45 4:50 4:55 5:00	9	5 6 4 5 8 4 6	7 11 8 6 12 5 7	2M 2	eak H 3 3 1 4 4 2 4	OUT 2 1 2 1 4 1 1 1	2	2	3	2
Hour Total 4:30 4:35 4:40 4:45 4:55 5:00 5:05	9	5 6 4 5 8 4 6 3 2 2 2	7 11 8 6 12 5 7 4	2M 2	eak H 3 3 1 4 4 2 4	OUT 2 1 2 1 4 1 1 1 1	2	2	3	2
Hour Total 4:30 4:35 4:40 4:45 4:55 5:00 5:05 5:05 5:10 5:15 5:20	9	5 6 4 5 8 4 6 3 2 2 2 3	7 11 8 6 12 5 7 4 4 4 2 3	2M 2 1 1	eak H 3 3 1 4 4 2 4 2 4 2 1 2	OUT 2 1 2 1 4 1 1 1 1	2	2	3	2
Hour Total 4:30 4:35 4:40 4:45 4:50 4:55 5:00 5:05 5:10 5:15	9 10 7	5 6 4 5 8 4 6 3 2 2 2	7 11 8 6 12 5 7 4 4 4 2	<b>PM P</b> 1 1	eak H 3 3 1 4 4 2 4 2 4 2 1	OUT 2 1 2 1 4 1 1 1 1	2	2	3	2

Table 3 – Gap Data (Five-Minute Increments)

Page 4

	Total #	Estimated #	4-5	6-9	10-13	14-17	18-21	> 21	# of Queues
Time	of Gaps	of Left-Turns	sec	sec	sec	sec	sec	sec	that Block
	UI Gaps	Possible	(1 LT)	(1 LT)	(2 LT)	(3 L T)	(4 LT)	(5+ LT)	the Access
7:15	10	14	2	4	4				
7:20	12	18	2	7	2			1	
7:25	12	17	4	6	1			1	
7:30	9	12	3	4	1	1			
7:35	14	22	4	6	1	2	1		
7:40	11	16	3	5	1	2			
7:45	9	12	5	2	1	1			
7:50	5	8		3	1	1			
7:55	5	5		5					
8:00	9	19	2	3	1	1	1	1	
8:05	10	13	4	4	1	1	-		
8:10	9	15		4	4	1			
Peak Hour	115	171	29	53	18	10	2	3	
Total	115	171	23	55	10	10	2	5	
	and the second				des de Allagé Si de Colorador				
4:30	5	7		3	2				
4:35	6	11		3	1	2			
4:40	4	8		1	2	1			2
4:45	5	6		4	1				
4:50	8	12		4	4				
4:55	4	5	1	2	1				
5:00	6	7	1	4	1				-
5:05	3	4		2	1				
5:10	2	4			2				2
5:15	2	2	1	1	-				3
5:20	3	3	1	2					2

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Page 5

Grand Junction - St. Mary's Hospital Patterson Access

5:25	4	5		3	1			
Peak Hour Total	52	74	4	29	16	3		9

#### **MEMORANDUM**

#### CITY OF GRAND JUNCTION ENGINEERING DEPARTMENT

TO: Tim Moore Jody Kliska Lisa Cox

FROM:

Rick Dorris

DATE: November 12, 2003

SUBJECT: St. Mary's Patterson Road Access TEDS Exception Review

Jody has certainly done a thorough review. I have a couple of extra points to add.

- 1. At the bottom of page two they have increase the hospital traffic by 10% stating the hospital doesn't plan on expanding its current facility. This information is not accurate. In fact, the hospital plans on expanding its current facility by 60,000 to 80,000 square feet. I would certainly expect that in the next 20 years.
- 2. According to the que lengths on page 6, the AM peak hour que backs up to within 100' of Mira Vista rendering this proposed access to be right in right out. Seems like combining with Mira Vista might at least remedy the queing problem in 2023 for the AM peak. The PM peak hour que backs up almost to First Street rendering the subject access point a right in right out, probably with major difficulty even making a right out.
- 3. I observed the queing from 7<sup>th</sup> Street about 3:00 PM one afternoon. Traffic was backing up to the proposed access at almost every red light. In my opinion, this access must be further from 7<sup>th</sup> Street.



#### **City of Grand Junction**

Department of Public Works and Utilities Engineering Division 250 North Fifth Street Grand Junction, CO 81501-2668 FAX: (970) 256-4031

August 12, 2003

Mr. Rob Jenkins 1000 North 9th, Unit 35 Grand Junction, CO 81501

Reference: St. Mary's Patterson Access

Dear Rob,

The proposed new access for the hospital, based on your July 31, 2003 drawing does not meet the minimum TEDS spacing requirement of 600' on a principal arterial street. A TEDS exception would be necessary. Please follow the criteria in chapter 14 of TEDS and analyze and answer the following items.

- 1. Describe the need for the access. What happens if no access is allowed?
- 2. The anticipated peak hour traffic volumes at the access.
- 3. Availability of gaps in Patterson Road traffic at peak hour that would allow exiting left turning traffic.
- 4. Analysis of queues from the signal at 7th & Patterson to determine if entering/exiting traffic from the proposed access will interfere with existing signal operations, now and in the future.
- 5. If limited access (3/4 movement or right-in, right-out), design the appropriate limiting device.
- 6. Effects on opposing driveways.
- 7. Analysis of access throat length and storage for queued vehicles.

The City can't determine if this access is acceptable, or not, without the Traffic Engineer's analysis of the above items. It would be prudent to have the approved, or denied, TEDS exception in hand prior to meeting with the neighbors. Otherwise, I suspect we would simply discuss this option not knowing if it will work.

Page 2 of 2

Please call me if you have any questions.

Sincerely,

Rick Dorris, PE City Development Engineer

Cc: Mike McDill Jody Kliska George Miller Lisa Cox Bob Blanchard

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# **TEDS** Exception

ke

**Prepared For:** 

# St. Mary's Hospital Patterson Access

Grand Junction, Colorado

October 2003

### INTRODUCTION

This document was prepared to address Grand Junction City (City) comments related to the TEDS exception needed for the St. Mary's Hospital Access on Patterson Road. The City comments are contained in a letter to Mr. Rob Jenkins dated August 12, 2003. Appendix A contains the letter. The seven questions in the letter are addressed in this document.

### Q1: Describe the need for the access. What happens if no access is allowed?

In conformance with Master Site Plan 2000, St. Mary's Hospital will reorganize vehicular circulation on the West Campus, will close a total of six (6) curb cuts (three on Patterson Road and three on North Seventh Street), and will construct two (2) new entrances to the campus, one on Patterson Road and one on North Seventh Street. The North Seventh Street entrance will begin at the intersection of Seventh and Wellington and will turn into the Hospital Site directly east of Saccomanno Education Center. The new Patterson Road entrance is proposed to be located approximately 250' east of the west property line. This proposal provides for approximately 380' separation between Mira Vista Drive and the proposed new entrance, and more than 680' between the new entrance and Seventh Street.

St. Mary's Hospital is a Regional Health Care Facility. It provides Western Colorado and Eastern Utah with a Level Two Trauma Center that depends upon adequate, easy, and absolutely dependable access to the Hospital Site. If the Seventh & Wellington intersection is closed for any reason, St. Mary's Hospital must rely on a second full access entrance. "No second full access entrance" is not a reasonable or sensible alternative for St. Mary's or for the City of Grand Junction.

Text provided by Rob D. Jenkins, Architect

#### Q2: The anticipated peak hour traffic volumes at the access.

#### **Existing Traffic Volumes**

The traffic volumes at the four St. Mary's Hospital (Hospital) accesses on Patterson Road were counted on Wednesday, September 17, between 7-9 am and 3-6 pm. The City provided current traffic counts for Patterson Road.

Table 1 shows the difference between the peak hour at the existing four Hospital accesses and the Patterson Road peak hour. Figure 1 shows the existing traffic

volumes. The middle portion of Figure 1 shows the four Hospital accesses combined into one access. The analysis focused on the Patterson Road peak because the traffic volumes are much higher on Patterson Road. Appendix B contains the peak hour traffic volumes for the four Hospital accesses.

Period	Location	Peak Hour	Traffic Volumes at Existing Four Hospital Accesses <sup>1</sup>					
I EIIUU	LUCATION	r ear nuu	Er	nter	E	xit	Total	
			Left	Right	Left	Right	Total	
AM	Hospital Access	7:30-8:30 am	125	86	21	91	323	
(7-9 am)	Patterson Rd	7:15-8:15 am	123	89	17	87	317	
PM	Hospital Access	3:00-4:00 pm	69	58	21	135	283	
(3-6 pm)	Patterson Rd	4:30-5:30 pm	52	42	35	116	245	

#### Table 1 – Peak Hour Traffic Volumes

Notes:

1 – This includes traffic to and from the County Health Building.

#### **County Health Building**

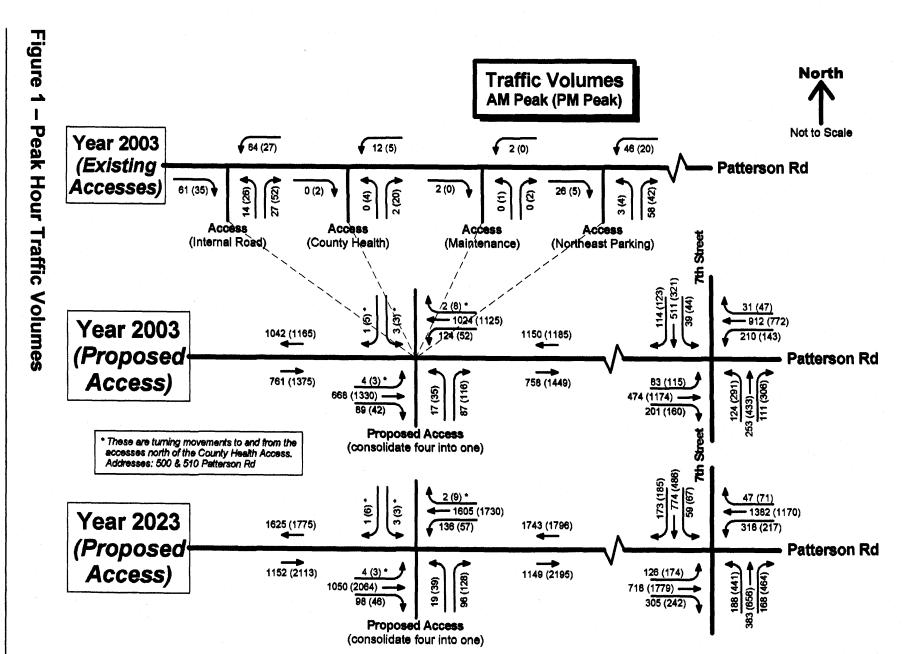
The County Health Building moved its operation off-site at the beginning of October 2003. The building will be demolished with the reconstruction of the accesses. The traffic volumes at the Hospital accesses include traffic to and from the County Health Building. The County Health traffic was included in the analysis to account for the changes in parking spaces discussed below.

#### Parking Changes

The reconstruction of the Hospital accesses, internal road, and relocation of the County Health Operations will result in a net decrease of 50 parking spaces; currently there are approximately 500 parking spaces. The planned parking structure near the 7<sup>th</sup> Street / Wellington Avenue will result in a net increase of 338 parking spaces.

#### Future (Year 2023) Traffic Volumes

The F½ Area Corridor Study projected a 2.1% annual growth rate (AGR) for traffic on Patterson Road. This was estimated using the Mesa County RTPO travel model. Year 2023 traffic volumes on Patterson Road were projected using the 2.1% AGR. The existing traffic volumes entering and exiting at the Hospital accesses were increased by 10%. The 10% increase is based on the parking changes and the Hospital not anticipating expanding its current facility. Figure 1 shows the projected year 2023 traffic volumes.



Page 3

Grand Junction – St. Mary's Hospital Patterson Access

### Q3: Availability of gaps in Patterson Road traffic at peak hour that would allow exiting left turning traffic.

The availability of gaps in Patterson Road traffic was estimated using the Highway Capacity Software (HCS 2000). The four Hospital accesses were combined into one access and analyzed as a stop-controlled intersection. Table 1 shows the results of the analysis. Appendix C contains the analysis output.

#### Future Improvements

The Hospital plans to construct an **eastbound right-turn deceleration** lane on Patterson Road at the Hospital access. This improvement is included in the year 2003 and 2023 analyses.

Year	Period			V/C Ratio	Queue (veh)	Delay (sec)	LOS
		EB	Left	0.1	1	11	В
		WB	Left	0.2	1	11	В
	AM	NB	Left	0.1	1	20	С
		ND	Right	0.2	1	12	В
2003		SB	Left/Right	0.1	1	- 29	D
2003	a nama maga falan. Ani kafa (ka mara ka mara ka	EB	Left	0.1	1	11	В
		WB	Left	0.1	1	12	В
	PM	NB	Left	0.2	1	24	С
			Right	0.2	1	10	Α
		SB	Left/Right	0.1	1	19	С
		EB	Left	0.1	1	14	В
		WB	Left	0.3	2	16	С
	AM	NB	Left	0.2	1	28	D
			Right	0.3	1	15	В
2023		SB	Left/Right	0.1	1	70	F
2023		EB	Left	0.1	1	14	В
		WB	Left	0.2	1	20	C ·
	PM	NB	Left	0.4	2	66	<b>F</b>
			Right	0.2	1	12	В
		SB	Left/Right	0.1	1	26	la B. ∖

#### Table 1 – Hospital Access and Patterson Road (Stop-Controlled Analysis)

Page 4

The stop-controlled analysis showed that during the year 2023 PM peak vehicles making a left-tum exiting the Hospital will have to wait an average of over one minute (LOS F) for a sufficient gap in Patterson Road traffic. Drivers who frequent the hospital will become accustom to long delays at this access and may choose to exit the Hospital onto 7<sup>th</sup> Street and then make a left-turn onto Patterson Road.

# Q4: Analysis of queues from the signal at 7<sup>th</sup> & Patterson to determine if entering/exiting traffic from the proposed access will interfere with existing signal operations, now and in the future.

The queuing from the Patterson Road and 7<sup>th</sup> Street signalized intersection was estimated using the Signal 2000 software. Table 2 shows the approach LOS and queues that will back up on the west side of the intersection. Appendix D contains the analysis output.

#### Future Improvements to Patterson Road and 7<sup>th</sup> Street

The Hospital dedicated right-of-way for the City to construct an **eastbound rightturn lane** at this intersection. The estimated construction year for this project is year 2005. This improvement was included in the year 2023 analysis, but it was not included in the year 2003 analysis. For comparison, the year 2023 analysis was run without the eastbound right-turn lane. The results are shown at the bottom of the Table 2.

Year	Period	Approach	Delay	LOS		ST Appro	
					Right	Thru	Left
	i de la compañía. T	Overall	30	С		[	
		North Approach	40	D+	4		
	AM	South Approach	26	C+	Shared <sup>1</sup>	442	122
		East Approach	25	C+	4		
		West Approach	30	C			
2003		Overall	32	C		a salatin salatin s	
		North Approach	47	D	<b>{</b>		
	PM	South Approach	31	C	Shared <sup>1</sup>	1008	164
	1 171	East Approach	22	C+		1000	104
		West Approach	34	C			
		These Approach		<u> </u>			
		Overall	76	E			
		North Approach	115	F	610	620	
	AM	South Approach	39	D+	(0002)	(0053)	356
		East Approach	85	F	(200 <sup>2</sup> )	(825 <sup>2</sup> )	
2023		West Approach	51	D			
2023		Overall	102	F		Conservation of	
		North Approach	142	F			
	PM	South Approach	112	F	217	2357	351
		East Approach	47	D			
		West Approach	118	F			
				4.			
Yea	r 2023 A	Inalysis WITH	HOUT Ea	astboun	d Right-	Turn La	ne
		Overall	91	F		1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -	
		North Approach	131	F			
	AM	South Approach	40	D+	Shared <sup>1</sup>	1440	406
		East Approach	68	E			
2023		West Approach	121	F			
2020		Overall	139	F		i destative status	
		North Approach	204	F			
	PM	South Approach	154	F	Shared <sup>1</sup>	2952	384
		East Approach	48	D			
		West Approach	167	F			

#### Table 2 – Patterson Road and 7<sup>th</sup> Street

(Queuing Analysis)

Notes:

1 – The right-turn (RT) queue is accounted for in the thru queue because the outside lane is shared.

2 – Signal 2000 (Queue Model #1) calculates the RT lane queue at 610 ft, but the planned RT lane is only 200 ft long. This means that 410 ft of the RT queue will back into the thru lanes. The thru traffic will adjust to this, causing the thru lane queues to be approximately 825 ft.

The planned Hospital access is 600 feet west of the Patterson Road / 7<sup>th</sup> Street intersection. The queuing analysis shows that queues will back up past the Hospital access in all analysis periods except the year 2003 AM peak. The queuing analyses results for year 2003 AM and PM peak are consistent with queues observed during the traffic counts on September 17.

When queues back up farther than 600 feet and block the Hospital access, the average time to exit or enter at the access may be longer than shown in Table 1. The stop-controlled analysis does not account for queuing that blocks the access.

#### Year 2023 Analysis WITHOUT the Eastbound Right-Turn Lane

In the year 2023 PM peak, the construction of the eastbound right-turn lane will improve the overall intersection delay by over 30 seconds. It will also reduce the eastbound thru-lane queuing by 600 feet.

### Q5: If limited access (3/4 movement or right-in, right-out), design the appropriate limiting device.

Limited access is not recommended at this time.

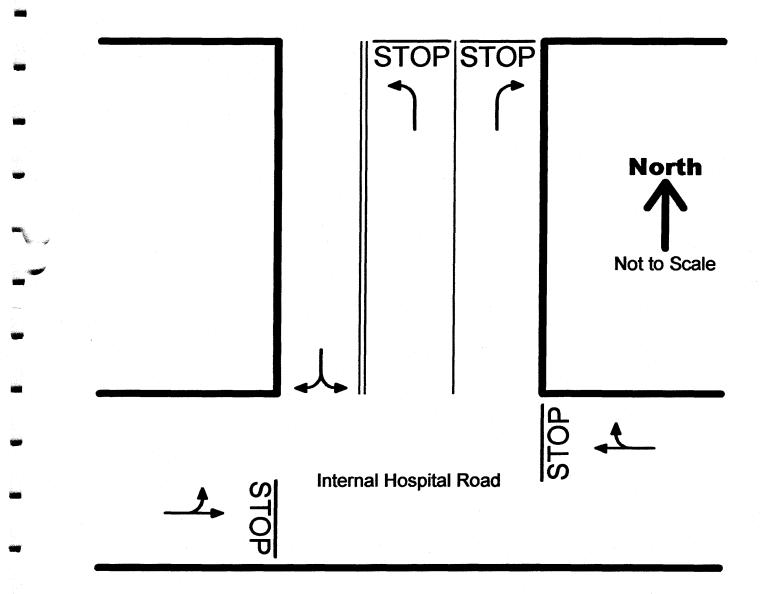
#### Q6: Effects on opposing driveways.

Table 1 shows that vehicles exiting the businesses on the north side of Patterson Road (across from the County Health Building) during the year 2023 AM peak will have to wait an average of over one minute (LOS F) for a sufficient gap in Patterson Road traffic.

### Q7: Analysis of access throat length and storage for queued vehicles.

Table 1 shows that the maximum queue for vehicles exiting the Hospital access (northbound) is two vehicles. The current access configuration will accommodate two queued vehicles in the left-turn lane and two queued vehicles in the right-turn lane. Figure 2 shows how the access could be reconfigured to accommodate four vehicles in the left-turn lane and four vehicles in the right-turn lane.



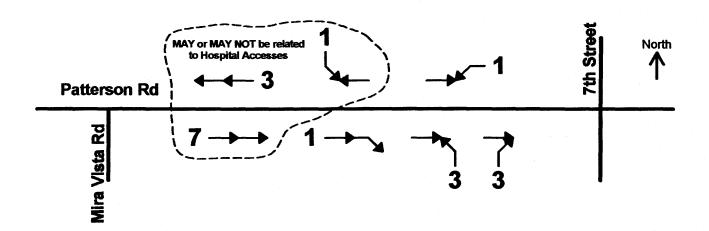




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#### **CRASH HISTORY**

Crash data for Patterson Road between 7<sup>th</sup> Street and Mira Vista Road was obtained from the City. The crash data covers January 1<sup>st</sup> 2000, to October 1<sup>st</sup> 2003. Crashes that occurred within 250 feet of 7<sup>th</sup> Street were not included because they are attributed to the 7<sup>th</sup> Street intersection, not the mid-block accesses. Figure 3 shows the number of crashes that occurred on this section of Patterson Road. Appendix E contains the crash data obtained from the City.



#### Figure 3 – Crash History

The following crashes may or may not be related to the Hospital accesses:

- Westbound rear-end crashes (3)
- Southbound left-turn crash (1)
- Eastbound rear-end crashes (7)

Note: Two of the seven eastbound rear-end crashes were same-direction side-swipe crashes. They were grouped with the rear-end crashes for simplicity.

None of these 11 crashes were fatal and only three involved injuries. Theses crashes could have been caused by:

- Queuing from 7<sup>th</sup> Street
- Turning movements to and from accesses on the north side of Patterson Road
- Vehicles entering or exiting the Hospital

The other eight crashes involve turning movements in and out of the Hospital. None of these eight crashes were fatal or involved injuries. They were "fender-benders".

### SUMMARY

The capacity analysis shows that drivers will experience long delays (an average of over one minute) during the PM peak as they attempt to make left-turns onto Patterson Road from the Hospital access.

The queuing analysis of Patterson Road and 7<sup>th</sup> Street showed that queues will back up and block the Hospital access. The queues blocking the access may cause the delays to be much longer than one minute.

The construction of the eastbound right-turn lane at Patterson Road and 7<sup>th</sup> Street will decrease year 2023 PM Peak delay by over 30 seconds. This will also reduce the thrulane queuing by 600 feet.

The crash history shows that over the past 3.75 years the current Hospital accesses averaged two "fender-bender" crashes per year. There were also another three crashes per year on Patterson Road that may or may not be attributed to the Hospital accesses.

Even though the capacity analysis shows that left-turns out of the Hospital will experience long delays, the City should allow a full access for the following reasons:

- Access Consolidation the consolidation of four accesses (current) into one access (planned) will reduce the conflict points on Patterson Road between 7<sup>th</sup> Street and Mira Vista Road. This reduction of conflict points will contribute to "improved traffic operations and fewer collisions". Source: TRB Access Management Manual, page 8.
- **Right-turn Lane** The addition of a right-turn deceleration lane at the Hospital access will improve safety by allowing right-turn vehicles into the Hospital to move out of thru traffic. This will also improve capacity because eastbound thru vehicles will not have to slow down as much for vehicles turning right ahead of them.
- **Crash History** The number of crashes is low and the severity of the crashes (fatal, injuries, or fender-benders) is also low. In the last 3.75 years turning movements into or out of the Hospital averaged two crashes per year. None of these crashes were fatal or involved injuries. There were another three crashes per year that may or may not be related to the Hospital access.

Note: If the number of crashes or the severity increases in the future, changing the access to  $\frac{3}{4}$  (prohibit left-turns out of the access) or  $\frac{1}{2}$  (prohibit all left-turns at the access) should be investigated as an option to reduce the crashes or severity.

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# Appendices

Appendix A	Letter to Rob Jenkins Regarding City Comments
Appendix B	Table A1 – Peak Hour Traffic Volumes Table A2 – Patterson Road Hospital Access: Peak Hour Traffic Volumes
Appendix C	Hospital Access Analysis Output
Appendix D	Patterson Road / 7th Street Queuing Analysis Output
Appendix E	Patterson Road Crash Data

### **Appendix A**

Letter to Rob Jenkins Regarding City Comments



#### **City of Grand Junction**

Department of Public Works and Utilities Engineering Division 250 North Fifth Street Grand Junction, CO 81501-2668 FAX: (970) 256-4031

August 12, 2003

Mr. Rob Jenkins 1000 North 9th, Unit 35 Grand Junction, CO 81501

Reference: St. Mary's Patterson Access

Dear Rob,

The proposed new access for the hospital, based on your July 31, 2003 drawing does not meet the minimum TEDS spacing requirement of 600' on a principal arterial street. A TEDS exception would be necessary. Please follow the criteria in chapter 14 of TEDS and analyze and answer the following items.

- 1. Describe the need for the access. What happens if no access is allowed?
- 2. The anticipated peak hour traffic volumes at the access.
- 3. Availability of gaps in Patterson Road traffic at peak hour that would allow exiting left turning traffic.

4. Analysis of queues from the signal at 7th & Patterson to determine if entering/exiting traffic from the proposed access will interfere with existing signal operations, now and in the future.

- 5. If limited access (3/4 movement or right-in, right-out), design the appropriate limiting device.
- 6. Effects on opposing driveways.

7. Analysis of access throat length and storage for queued vehicles.

The City can't determine if this access is acceptable, or not, without the Traffic Engineer's analysis of the above items. It would be prudent to have the approved, or denied, TEDS exception in hand prior to meeting with the neighbors. Otherwise, I suspect we would simply discuss this option not knowing if it will work.

Page 2 of 2

Please call me if you have any questions.

Sincerely,

~

Rick Dorris, PE City Development Engineer

Cc: Mike McDill Jody Kliska George Miller Lisa Cox Bob Blanchard

### **Appendix B**

Table B1 – Peak Hour Traffic VolumesTable B2 – Patterson Road Hospital Access: Peak Hour Traffic Volumes

# Table B1 - Peak Hour Traffic Volumes

St. Mary's Hospital Access to Patterson Rd

							water and the							Annu	ial Gr	owth Ra	ate (A	<u>GR)<sup>1</sup> =</u>	2.1%
				South	bound			West	ound			North	bound			Eastb	ound		Total
			R	T		Ped	R	T	L	Ped	R	T	L	Ped	R	Т	L	Ped	IUtai
	2002	AM Peak						1126		-						742			1868
	2002	PM Peak						1161		-				_		1419			2580
Patterson Rd /	2003	AM Peak	1		3	5	2	1024	124	2	87	-	17		89	668	4	2	2023
Hospital Access <sup>2</sup>		PM Peak	5		3	**	8	1125	52	2	116		35		42	1330	3	2	2723
	2023	AM Peak	1		3		2	1605	136	2	96	-	19		98	1050	4	2	3018
		PM Peak	6		3		9	<u>1730</u>	<u>57</u>	2	128		39		46	2064	3	2	4089
	0000	AM Peak	112	500	38	9	30	893	206	4	109	248	121	1	197	464	81	101	2999
	2002	PM Peak	120	314	43	4	46	756	140	3	300	424	285	3	156	1150	113	77	3847
Patterson Rd /	2003	AM Peak	114	511	39	9	31	912	210	4	111	253	124	1	201	474	83	101	3063
7th Street	2005	PM Peak	122	321	44	4	47	772	143	3	306	433	291	3	160	1174	115	77	3928
	2023	AM Peak	173	774	59	10	47	1382	318	4	168	383	188	1	305	718	126	111	4641
		PM Peak	185	486	67	4	71	1170	217	3	464	656	441	3	242	1779	174	85	5952
		AM Peak	36	242	109		35	790	170		119	102	127		104	583	21		2438
	2002	PM Peak	49	148	54		68	904	156		131	213	228		251	1170	67		3439
Patterson Rd /	2003	AM Peak	37	247	111		36	807	174		121	104	130		106	595	21		2489
1st Street	2003	PM Peak	50	151	55		69	923	159		134	217	233		256	1195	68		3510
	2023	AM Peak	56	374	168		55	1223	264		183	158	197		161	902	32		3773
	LVLV	PM Peak	76	229	83		105	1399	241		203	329	353		388	1811	103		5320

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### Table B2a - Intersection Turning Movement Count (AM Peak) Summary

Project: St. Mary's Hospital - Patterson Rd Access Location: Grand Junction, Colorado EB/WB Road: Patterson Rd NB/SB Road: Hospital Accesses (4) Counted by: Mark Bunnell Count Date: 9/17/2003 Peak Season Adjust: 1

Time		Main Acce	ss (West)		C	ounty Healt	n Bldg. Acc	888	Ho	spital Mainte	nance Acce	88		Main Acce	ess (East)		Total
AM	Left IN	Right IN	Left OUT	<b>Right OUT</b>	Left IN	Right IN	Left OUT	Right OUT	Left IN	Right IN	Left OUT	<b>Right OUT</b>	Left IN	Right IN	Left OUT	Right OUT	Volume
7:00-7:15	10	13	2	2	0	0	0	0	0	0	0	0	15	11	1	10	64
7:15-7:30	14	13	0	3	0	0	0	0	0	0	0	0	8	10	0	8	56
7:30-7:45	19	10	3	9.	3	0	0	1	1	0	0	0	17	7	1	16	87
7:45-8:00	16	24	8	7	5	0	0	1	1	1	0	0	10	4	0	22	99
8:00-8:15	15	14	3	8	4	Ō	0	0	0	1	0	0	11	5	2	12	75
8:15-8:30	14	14	2	6	1	0	1	1 1	0	0	0	0	8	6	1	8	62
8:30-8:45	17	17	5	7	1	0	0	2	0	0	0	0	6	1	0	7	63
8:45-9:00	22	6	5	3	0	0	0	3	1	0	1	0	9	3	0	9	62
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totais =	127	111	28	45	14	0	1	8	3	2	1	0	84	47	5	0	568

Intersection Peak Hour: 7:30-8:30 AM

	Intersection	323
	EB:	172
Peak Hour	WB:	17
Volumes	NB:	4
	SB:	130

	Intersection:	0.84
Peak Hour	EB:	0.78
	WB:	0.71
Factors	NB:	0,50
	SB:	0.79

#### Hospital Access Peak Hour (7:30-8:30 pm) - Traffic Volumes at Hospital Access ONLY

Turning Movement Volumes and Peak Hour Factors

Volume:	64	62	16	30	13	0	1	3	2	2	0	0	46	22	4	58
PHF:	0.84	0.65	0.50	0.83	0.65	0,00	0.25	0.75	0.50		0.00	0.00	0.68	0.79	0.50	0.66

EN	TER	E)	(IT	
LEFT	RIGHT	LEFT	RIGHT	TOTAL
125	86	21	91	323

### Patterson Road Peak Hour (7:15-8:15 pm) - Traffic Volumes at Hospital Access ONLY

Turning Movemen	t Volumes and Peak Hour Factors

		o and i oan	TIOUT T UOIO													
Volume:	64	61	14	27	12	0	0	2	2	2	0	0	46	26	3	58
PHF:	0.84	0.64	0.44	0.75	0.60	0.00	0.00	0.50	0.50	0.50	0.00	0.00	0.68	0.65	0.38	0.66

EN'	ER	E	XIT	
LEFT	RIGHT	LEFT	RIGHT	TOTAL
124	89	17	87	317

### Table B2b - Intersection Turning Movement Count (PM Peak) Summary

Project: St. Mary's Hospital - Patterson Rd Access Location: Grand Junction, Colorado EB/WB Road: Patterson Rd NB/SB Road: Hospital Accesses (4)

Counted by: Mark Bunnell Count Date: 9/17/2003 Peak Season Adjust: 1

1

1

Time		Main Acc				ounty Healt	h Bidg. Acc	988		spital Mainte	nance Acc	986		Main Acce			Total
PM	Left IN	Right IN	Left OUT	<b>Right OUT</b>	Left IN	Right IN	Left OUT	<b>Right OUT</b>	Left IN	Right IN	Left OUT	<b>Right OUT</b>	Left IN	Right IN	Left OUT	Right OUT	Volume
3:00-3:15	6	14	1	11	4	0	0	7	0	0	0	0	7	2	1	15	68
3:15-3:30	13	15	4	22	3	3	1	4	0	0	0	0	8	7	2	10	92
3:30-3:45	8	9	6	20	3	1	0	3	1	0	0.	1	3	1	2	11	69
3:45-4:00	9	5	2	13	2	0	1	6	0	0	0	0	2	1	1	12	54
4:00-4:15	8	4	7	7	0	0	0	3	0	0	1	0	6	1	2	7	46
4:15-4:30	6	6	9	13	0	1	1	5	0	0	0	0	4	1	0	5	51
4:30-4:45	7	10	5	17	2	0	4	3	0	0	0	0	2	2	0	4	56
4:45-5:00	10	10	7	10	0	1	0	7	0	0	0	1	13	1	3	11	74
5:00-5:15	3	6	7	17	2	1	0	5	0	0	0	1	2	1	0	10	55
5:15-5:30	- 7	9	7	8	1	0	0	5	0	0	1	0	3	1	1	17	60
5:30-5:45	3	11	5	10	2	0	0	1	0	0	0	0	4	3	2	6	47
5:45-6:00	9	10	11	7	0	1	1	3	0	1	0	0	9	3	0	10	65
Totals =	89	109	71	155	19	8	8	52	1	1	2	3	63	24	14	0	737
	ntomostion	Peak Hour	· · · · · · · · · · · · · · · · · · ·	3:00-4:00	DIA	1				Untermention	283	7		r	Intersection	. 0.66	1
L	IIIGISSCION	Feat Hour		3.00-4.00		1				Intersection				[			
									Peak Hour	EB:				Peak Hour	EB		
									Volumes	WB:		4		Factors	WB NB		
										NB:				1	SB		
									L	SB:	85	2			55	U./9	

#### Hospital Access Peak Hour (3:00-4:00 pm) - Traffic Volumes at Hospital Access ONLY

Turning Mov	ement Volu	imes and Pe	ak Hour Fac	tors												
Volume:	36	43	13	66	12	4	2	20	1	0	0	1	20	11	6	48
PHF:	0.69	0.72	0.54	0.75	0.75	0.33	0.50	0.71	0.25	0.00	0.00	0.25	0.63	0.39	0.75	0.80

ENT	ER	E	KIT	
LEFT	RIGHT	LEFT	RIGHT	TOTAL
69	58	21	135	283

### Patterson Road Peak Hour (4:30-5:30 pm) - Traffic Volumes at Hospital Access ONLY Turning Movement Volumes and Peak Hour Factors

	Citient Condition		A Fleen Facto								-					
Volume:	27	35	26	52	5	2	4	20	0	0	1	2	20	5	4	42
PHF:	0.68	0.88	0.93	0.76	0.63	0.50	0.25	0.71	0.00	0.00	0.25	0.50	0.38	0.63	0.33	0.62

EN	TER	E	(IT	
LEFT	RIGHT	LEFT	RIGHT	TOTAL
52	42	35	116	245

## Appendix C

Hospital Access Analysis Output (summary version) Hospital Access Analysis Output (long version)

C

General Informatio	n		Site	Infor	matio	n				
							Patters	on Ro	1 - Ho	spital
Analyst	Mark Bu	nneli		section			Access			-
Agency/Co. Date Performed	9/20/200	13		diction			Grand .	luncti	on Ci	ty
Analysis Time Period	AM Pea		-Anat	/sis Ye	ar		2003			
		······································	/L							
Project Description S		pital Access to								
East/West Street: Patte	the second se						ital Acces	<u>s +</u>		
ntersection Orientation:	East-West		Study	Period	l (hrs):	0.25			` 	
Vehicle Volumes a	nd Adjust	ments								
Major Street		Eastbound					Westbo	ound		
Novement	1	2	3			4	5			6
	<u> </u>	T	R			L	T		<b> </b>	R
/olume	4	668	89		12		1024		<u> </u>	2
Peak-Hour Factor, PHF	0.83	0.83	0.8		0.0		0.83		<u> </u>	0.83
Hourly Flow Rate, HFR Percent Heavy Vehicles	4	804	107		14		1233	)	<b> </b>	2
	0		<u> </u>	Vay Lei						
Median Type RT Channelized	<u> </u>			vay Le	n TUM	Lane				0
anes	1	2	1		1		2			0
Configuration		$\frac{2}{T}$					$\frac{2}{T}$			
Jpstream Signal	<u> </u>	1	+^		L		1			
linor Street	I	Northbound					<u> </u>			
Annor Street	7	Northbound	9			0		ouna		12
NOVETICIN	1		R				<u>т</u>			12 R
/olume	17	0	87		3		0			1
Peak-Hour Factor, PHF	0.83	0.83	0.8	3	0.8		0.83			, ).83
ourly Flow Rate, HFR	20	0	104		3		0.00			1
Percent Heavy Vehicles	2	0	2		0		0	·····-		0
Percent Grade (%)		0					0			
lared Approach			1				N			
Storage		0	1				0			
T Channelized		- <u> </u>	0							0
anes	1	0	1		0		0			0
Configuration	<u> </u>	- <u> </u>	R							
elay, Queue Length, a		Service	^``	1						
pproach	EB	WB		Northbo	ound		C	South		4
lovement	<u></u> 1	<u><u>vv</u>b</u> 4	7	8		9	10			_
ane Configuration	 	4 L				9 R	10	_	1	12
								<u> </u>		
(vph)	4	149	20	ļ		104		4		
(m) (vph)	642	741	268			595		15		L
/c	0.01	0.20	0.07			).17		0.0		
5% queue length	0.02	0.75	0.24			).63		0.0	)8	
ontrol Delay	10.6	11.1	19.5		1	2.3		29.	.3	
OS	В	В	С			В		D	)	
pproach Delay				13.5				29.		L

ť

General Information	) N		Site	Inform	nation			_
Analyst	Mark Bu	innell	Inters	section	<u> </u>		on Rd - H	ospital
Agency/Co.						Access		
Date Performed	9/20/200	)3		diction			unction (	City
Analysis Time Period	PM Pea		Anah	sis Yea	ar	2003		
				0.4				
Project Description S East/West Street: Pati		pital Access to			Street: Hos	nital Acces	<u>.</u>	
Intersection Orientation		F			(hrs): 0.25	ulai Acces	<u>5 T</u>	
			Suuy	Fellou	(115). 0.25			
Vehicle Volumes a	ind Adjust							·
Major Street Movement	+	Eastbound			A	Westbo		
		$-\frac{2}{T}$	3 R		4	5 T	<u> </u>	<u>6</u> R
Volume	3	1330	42		52	1125		8
Peak-Hour Factor, PHF		0.96	0.9		0.96	0.96		0.96
Hourly Flow Rate, HFR		1385	43	_	54	1171		8
Percent Heavy Vehicles			-		2	-		_
Median Type	T		Two V	Vay Let	t Turn Lane			
RT Channelized	1	T	0	T		T		0
Lanes	1	2	1		1	2		0
Configuration	L	T	R		L	Т		TR
Upstream Signal		1				1		
Minor Street	T	Northbound				Southbo	und	
Vovement	7	8	9		10	11		12
	L	Т	R		L	Т		R
/olume	35	0	116		3	0		5
Peak-Hour Factor, PHF		0.96	0.96		0.96	0.96		0.96
Hourly Flow Rate, HFR		0	120		3	0		5
Percent Heavy Vehicles	2	0	2		0	0		0
Percent Grade (%)		0				0		
Flared Approach		N			·	N		
Storage		0				0		
RT Channelized			0					0
anes	1	0	1		0	0		0
Configuration	<u>L</u>		R			LR		
Delay, Queue Length,								
Approach	EB	WB		Northbo	ound	S	outhbou	nd
Novement <sup>·</sup>	1	4	7	8	9	10	11	12
ane Configuration	L	L	L		R		LR	
v (vph)	3	54	36		120		8	T
C (m) (vph)	598	590	229		854		265	1
//c	0.01	0.09	0.16		0.14	1	0.03	1
5% queue length	0.02	0.30	0.55		0.49		0.09	+
Control Delay	11.1	11.7	23.6		9.9		19.0	+
.OS	B	B	23.0 C			t	79.0 C	+
				42.4				
Approach Delay	·			13.1		1	19.0	

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General Informati	00		Site	Informa	tion			
						Pattors	on Rd - He	nenital
Analyst	Mark Bu	nnell	Inters	ection		Access	///////////////////////////////////////	зрка
Agency/Co.			Juriso	diction			unction C	ity
Date Performed	9/20/200		Analy	sis Year		2023		
Analysis Time Period	AM Pea	<u>K</u>						
Project Description		pital Access to	Patterson	Rd		· · · · · · · · · · · · · · · · · · ·		
East/West Street: Pat	the second s				reet: Hosp	ital Acces	s +	
Intersection Orientatior	n: East-West	f	Study	Period (h	ors): 0.25			
Vehicle Volumes a	and Adjust	ments						
Major Street		Eastbound				Westbo	und	
Movement	11	2	3		4	5		6
	L	T	R					R
Volume Rook Hour Forton DHR	4	1050	98	<del>,                                     </del>	<u>136</u> 0.83	1605		2
Peak-Hour Factor, PH Hourly Flow Rate, HFR		0.83	0.8		<u> </u>	0.83 1933		<u>0.83</u> 2
Percent Heavy Vehicle		1205			2	1955		
Vedian Type	<u> </u>		Two V	Vav I off 7	 Furn Lane	<u> </u>		
RT Channelized		1	0		ann Lane	1		0
anes	1	2	1		1	2		0
Configuration	$\frac{1}{L}$	<u> </u>	R		L	$\frac{z}{T}$		TR
Upstream Signal		1				1		
Winor Street	T	Northbound		<del>- 1</del> -	Southbound		und	
Movement	7	8	9		10	11		12
	L	Т	R		L	T		R
/olume	19	0	96		3	0		1
Peak-Hour Factor, PHF	0.83	0.83	0.83	3	0.83	0.83		0.83
Hourly Flow Rate, HFR	22	0	115		3	0		1
Percent Heavy Vehicles	s 2	0	2		0	0		0
Percent Grade (%)		0				0		
Flared Approach		N				N		
Storage	1	0	T			0		
RT Channelized			0					0
anes	1	0	1		0	0		0
Configuration	L		R			LR		
Delay, Queue Length,	and Level of	Service						
Approach	EB	WB	1	Northbour	nd	S	outhboun	d
Novement	1	4	7	8	9	10	11	12
ane Configuration	L	L	L		R		LR	T
(vph)	4	163	22		115		4	1
C (m) (vph)	399	506	181		482		59	1
	0.01	0.32	0.12		0.24		0.07	1
5% queue length	0.07	1.38	0.12		0.24		0.07	
Control Delay	14.1	1.50	27.6		14.8		70.4	
	and the second							
.OS	В	С	D	40.0	В		F	1
pproach Delay	<u> </u>	<del>_</del>		16.9			70.4	

10/5/2003

General Informatio	n		Site	Inforr	mati	ion				
Analyst	Mark Bu	nnell	Inters	section			Patterso Access	on Rd - H	ospital	
Agency/Co.			Juris	diction				unction C	Litv	
Date Performed	9/20/200			sis Yea	ar		2023		<u></u>	
Analysis Time Period	PM Pea	k								
Project Description S	. Mary's Hos	pital Access to	Patterson	Rd						
East/West Street: Patte							ital Acces	s +		
ntersection Orientation:	East-West	ł	Study	Period	l (hrs	s): 0.25				
Vehicle Volumes a	nd Adjust	ments								
Major Street		Eastbound	•				Westbo	und		
Movement	1	2	3			4	5		6	
	L	Т	R			L	Т		R	
Volume	3	2064	46			57	1730		9	
Peak-Hour Factor, PHF	0.96	0.96	0.9			0.96	0.96		0.96	
Hourly Flow Rate, HFR	3	2150	47			59	1802		9	
Percent Heavy Vehicles	0	<u> </u>	<u> </u>		A 7	2	-	I		
Median Type				vay Lei	πίμ	m Lane	r			
RT Channelized			0						0	
Lanes	1	2				1	2 T		0	
Configuration	L	<u> </u>	<u>R</u>			L	$\frac{T}{1}$		TR	
Jpstream Signal	[						1			
Minor Street		Northbound	the second se			10	Southbo		40	
Movement	7	8 T	9			10	11 T			
1	L 20		R			L 3	<u> </u>		R	
Volume Peak-Hour Factor, PHF	<u>39</u> 0.96	0.96	128 0.96			<u> </u>	0.96		<u>6</u> 0.96	
Hourly Flow Rate, HFR	40	0.90	133			3	0.90		6	
Percent Heavy Vehicles	2	0	2			0	0		0	
Percent Grade (%)		0	1	+		· · · · · ·	0			
Flared Approach			1				Ň		_	
		0		<u> </u>						
Storage			+			-	0			
RT Channelized			0					<u> </u>	0	
<u>anes</u>	1 L	0	1 R			0	0		0	
Configuration							LR			
Delay, Queue Length, a					<sup>-</sup>					
Approach	EB	WB		Northbo	ound			outhbour		
Novement	1	4	7	8	-+	9	10	11	12	
ane Configuration	L	L	L			R		LR	<u> </u>	
v (vph)	3	59	40			133		9		
C (m) (vph)	392	2 <b>9</b> 4	97			_640		181		
/c	0.01	0.20	0.41			0.21		0.05		
5% queue length	0.02	0.73	1.70			0.78		0.16	T	
Control Delay	14.3	20.3	66.0			12.1		25.9	1	
.OS	В	С	F			B		D	1	
Approach Delay		_		24.6	L	_		25.9	1	
Approach LOS				<u> </u>				25.9 D		

### \_TWO-WAY STOP CONTROL SUMMARY\_\_\_\_\_

	Mark Bun	nell					
Analyst:	Mark Dun						
Agency/Co.:							
<b>Date Performe</b>	d: 9/20/2	2003					
<b>Analysis Time</b>	Period: AM I	Peak					
Intersection:		n Rd - Hos	nital Acce	<b>CC</b>			
Jurisdiction:		nction City					
Units: U. S. Cu							
Analysis Year:							
Project ID: St.			s to Patte	rson Rd			
East/West Stre	et: Patter	son Rd					
North/South St	treet: Hospi	ital Access	+				
Intersection Or	rientation: Ė	N	Study of	eriod (hrs):	0.25		
		Vehicle Vehicle	olumes an	nd Adjustme	ents		
Major Street:	Approach	Eastbou		Westbou			
	ement 1		4 5	6			
IAICAC				U			
	LT	R   L	TR				
Values		00 00	404	004 0		 	
Volume		68 89		024 2			
Peak-Hour Fac		0.83 0.8		0.83 0.83			
Hourly Flow Ra				49 1233	2		
Percent Heavy	<b>Vehicles</b>	0 -	- 2				
Median Type	TWLTL	-					
RT Channelize		No					
lanes	1 7	1	1 2 0				
Lanes	1 2		1 2 0	тр			
Configuration	Ľ	TR	LT				
Configuration Upstream Sign Minor Street:	Approach ment 7	T R Yes Northbou 8 9	LT Y und   10 11	Ves Southbou	und		
Configuration Upstream Sign Minor Street: / Move Volume Peak Hour Fac Hourly Flow Ra	Approach ment 7 L T 17 tor, PHF ate, HFR	T R Yes Northbou 8 9 R   L 87 0.83 20	L T y 10 11 T R 3 0.83 0 104 3	/es Southbou 12 1 .83 0. 1	und .83		
Configuration Upstream Sign Minor Street: / Move Volume Peak Hour Fac Hourly Flow Ra Percent Heavy	Approach ment 7 L T 17 tor, PHF ate, HFR Vehicles	T R Yes Northbou 8 9 R   L 87 0.83 20 2 2	L T y und 10 11 T R 0.83 0 104 3 2 0	/es Southbou 12 1 .83 0.			
Configuration Upstream Sign Minor Street: / Move Volume Peak Hour Fac Hourly Flow Ra Percent Heavy Percent Grade	Approach ment 7 L T 17 ctor, PHF ate, HFR Vehicles (%)	T R Yes Northbou 8 9 R   L 87 0.83 20	L T y 10 11 T R 3 0.83 0 104 3	/es Southbou 12 1 .83 0. 1			
Configuration Upstream Sign Minor Street: / Move Volume Peak Hour Fac Hourly Flow Ra Percent Heavy Percent Grade Median Storag	Approach ment 7 L T 17 ctor, PHF ate, HFR Vehicles (%) e 4	T R Yes Northbou 8 9 R   L 87 0.83 20 2 2	L T y und 10 11 T R 0.83 0 104 3 2 0 0	/es Southbou 12 1 .83 0. 1 0			
Configuration Upstream Sign Minor Street: / Move Volume Peak Hour Fac Hourly Flow Ra Percent Heavy Percent Grade Median Storag Flared Approa	Approach ment 7 L T 17 tor, PHF ate, HFR Vehicles (%) e 4 ch: Exists?	T R Yes Northbou 8 9 R   L 87 0.83 20 2 2	L T y und 10 11 T R 0.83 0 104 3 2 0 0	/es Southbou 12 1 .83 0. 1			
Configuration Upstream Sign Minor Street: A Move Volume Peak Hour Fac Hourly Flow Ra Percent Heavy Percent Grade Median Storag Flared Approac	Approach ment 7 L T 17 tor, PHF ate, HFR Vehicles (%) e 4 ch: Exists? rage	T R Yes Northbou 8 9 R   L 87 0.83 20 2 2 0	L T y und 10 11 T R 0.83 0 104 3 2 0 0	/es Southbou 12 1 .83 0. 1 0			
Configuration Upstream Sign Minor Street: / Move Volume Peak Hour Fac Hourly Flow Ra Percent Heavy Percent Grade Median Storag Flared Approat Stor RT Channelize	Approach ment 7 L T 17 tor, PHF ate, HFR Vehicles (%) e 4 ch: Exists? rage d?	T R Yes Northbou 8 9 R   L 87 0.83 20 2 2 0 No	L T y ind 10 11 T R 3 0.83 0 104 3 2 0 0	/es Southbou 12 1 .83 0. 1 0			
Configuration Upstream Sign Minor Street: / Move Volume Peak Hour Fac Hourly Flow Ra Percent Heavy Percent Grade Median Storag Flared Approat Stor RT Channelize Lanes	Approach ment 7 L T 17 tor, PHF ate, HFR Vehicles (%) e 4 ch: Exists? rage d? 1	T R Yes Northbou 8 9 R   L 87 0.83 20 2 2 0 No 1	L T y ind 10 11 T R 3 0.83 0 104 3 2 0 0 104 3 2 0 0	/es Southbou 12 1 .83 0. 1 0			
Configuration Upstream Sign Minor Street: / Move Volume Peak Hour Fac Hourly Flow Ra Percent Heavy Percent Grade Median Storag Flared Approat Stor RT Channelize	Approach ment 7 L T 17 tor, PHF ate, HFR Vehicles (%) e 4 ch: Exists? rage d?	T R Yes Northbou 8 9 R   L 87 0.83 20 2 2 0 No	L T y ind 10 11 T R 3 0.83 0 104 3 2 0 0	/es Southbou 12 1 .83 0. 1 0			
Configuration Upstream Sign Minor Street: / Move Volume Peak Hour Fac Hourly Flow Ra Percent Heavy Percent Grade Median Storag Flared Approat Stor RT Channelize Lanes	Approach ment 7 L T 17 tor, PHF ate, HFR Vehicles (%) e 4 ch: Exists? rage d? 1	T R Yes Northbou 8 9 R   L 87 0.83 20 2 2 0 No 1	L T y ind 10 11 T R 3 0.83 0 104 3 2 0 0 104 3 2 0 0	/es Southbou 12 1 .83 0. 1 0			
Configuration Upstream Sign Minor Street: / Move Volume Peak Hour Fac Hourly Flow Ra Percent Heavy Percent Grade Median Storag Flared Approat Stor RT Channelize Lanes	Approach ment 7 L T 17 tor, PHF ate, HFR Vehicles (%) e 4 ch: Exists? rage d? 1 L	T R Yes Northbou 8 9 R   L 87 0.83 20 2 2 0 No 1 R	L T y und 10 11 T R 0.83 0 104 3 2 0 0 0 0 LR	/es Southbou 12 1 .83 0 1 0 No	.83		
Configuration Upstream Sign Minor Street: / Move Volume Peak Hour Fac Hourly Flow Ra Percent Heavy Percent Grade Median Storag Flared Approat Stor RT Channelize Lanes Configuration	Approach ment 7 L T 17 tor, PHF ate, HFR Vehicles (%) e 4 ch: Exists? rage d? 1 L Dela	T R Yes Northbou 8 9 R   L 87 0.83 20 2 2 0 2 2 0 No 1 R y, Queue L	L T y und 10 11 T R 0.83 0 104 3 2 0 0 0 0 LR Length, an	Yes Southbou 12 1 .83 0 1 0 No No	.83 Service		
Configuration Upstream Sign Minor Street: / Move Volume Peak Hour Fac Hourly Flow Ra Percent Heavy Percent Grade Median Storag Flared Approat Stor RT Channelize Lanes Configuration	Approach ment 7 L T 17 tor, PHF ate, HFR Vehicles (%) e 4 ch: Exists? rage d? 1 L Dela EB WB	T R Yes Northbou 8 9 R   L 87 0.83 20 2 2 0 No 1 R y, Queue L Northl	L T Y Ind 10 11 T R 3 0.83 0 104 3 2 0 0 104 3 2 0 N 0 0 LR LR LR LR	/es Southbou 12 1 .83 0 1 0 No No	.83 Service		
Configuration Upstream Sign Minor Street: / Move Volume Peak Hour Fac Hourly Flow Ra Percent Heavy Percent Grade Median Storag Flared Approat Stor RT Channelize Lanes Configuration	Approach ment 7 L T 17 tor, PHF ate, HFR Vehicles (%) e 4 ch: Exists? rage d? 1 L Dela	T R Yes Northbou 8 9 R   L 87 0.83 20 2 2 0 No 1 R y, Queue L Northl	L T y und 10 11 T R 0.83 0 104 3 2 0 0 0 0 LR Length, an	/es Southbou 12 1 .83 0 1 0 No No	.83 Service		
Configuration Upstream Sign Minor Street: / Move Volume Peak Hour Fac Hourly Flow Ra Percent Heavy Percent Grade Median Storag Flared Approat Stor RT Channelize Lanes Configuration	Approach ment 7 L T 17 tor, PHF ate, HFR Vehicles (%) e 4 ch: Exists? rage d? 1 L Dela EB WB 1 4	T R Yes Northbou 8 9 R   L 87 0.83 20 2 2 0 2 2 0 No 1 R y, Queue L Northl 7 8	L T 10 10 11 T R 3 0.83 0 104 3 2 0 0 104 3 2 0 0 LR 0 LR ength, an bound 9   10	/es Southbou 12 1. .83 0. 1 0 No No d Level of Southb 11 12	.83 Service		
Configuration Upstream Sign Minor Street: / Move Volume Peak Hour Fac Hourly Flow Ra Percent Heavy Percent Grade Median Storag Flared Approat Stor RT Channelize Lanes Configuration	Approach ment 7 L T 17 tor, PHF ate, HFR Vehicles (%) e 4 ch: Exists? rage d? 1 L Dela EB WB 1 4	T R Yes Northbou 8 9 R   L 87 0.83 20 2 2 0 2 2 0 No 1 R y, Queue L Northl 7 8	L T 10 10 11 T R 3 0.83 0 104 3 2 0 0 104 3 2 0 0 LR 0 LR ength, an bound 9   10	/es Southbou 12 1 .83 0 1 0 No No	.83 Service		
Configuration Upstream Sign Minor Street: / Move Volume Peak Hour Fac Hourly Flow Ra Percent Heavy Percent Grade Median Storag Flared Approach Stor RT Channelize Lanes Configuration Approach Movement Lane Config	Approach ment 7 L T 17 tor, PHF ate, HFR Vehicles (%) e 4 ch: Exists? rage d? 1 L Dela EB WB 1 4   L L	T R Yes Northbou 8 9 R   L 87 0.83 20 2 2 0 No 1 R y, Queue L Northl 7 8 L F	L T 10 10 10 10 10 10 10 10 2 0 0 10 10 10 10 10 10 10 10	/es Southbou 12 1 .83 0 1 0 No No d Level of 5 Southb 11 12 LR	.83 Service		
Configuration Upstream Sign Minor Street: / Move Volume Peak Hour Fac Hourly Flow Ra Percent Heavy Percent Grade Median Storag Flared Approat Stor RT Channelize Lanes Configuration Approach Movement Lane Config v (vph)	Approach ment 7 L T 17 tor, PHF ate, HFR Vehicles (%) e 4 ch: Exists? rage d? 1 L Dela EB WB 1 4   L L   4 149 2	T R Yes Northbou 8 9 R   L 87 0.83 20 2 2 0 No 1 R y, Queue L Northl 7 8 L F 0 10	L T 10 10 10 10 10 10 10 10 10 10	res Southbou 12 1. .83 0. 1 0 No No d Level of Southb 11 12 LR 4	.83 Service		
Configuration Upstream Sign Minor Street: / Move Volume Peak Hour Fac Hourly Flow Ra Percent Heavy Percent Grade Median Storag Flared Approat Stor RT Channelize Lanes Configuration Approach Movement Lane Config v (vph) C(m) (vph)	Approach ment 7 L T 17 tor, PHF ate, HFR Vehicles (%) e 4 ch: Exists? rage d? 1 L Delay EB WB 1 4   L L   4 149 2 642 741	T R Yes Northbou 8 9 R   L 87 0.83 20 2 2 0 No 1 R y, Queue L Northl 7 8 L F 0 10 268	L T 10 10 10 10 10 10 10 10 10 10	/es Southbou 12 1. .83 0. .83 0. .83 0.	.83 Service		
Configuration Upstream Sign Minor Street: / Move Volume Peak Hour Fac Hourly Flow Ra Percent Heavy Percent Grade Median Storag Flared Approat Stor RT Channelize Lanes Configuration Approach Movement Lane Config v (vph) C(m) (vph) v/c 0.	L Approach ment 7 L T 17 tor, PHF ate, HFR Vehicles (%) e 4 ch: Exists? rage d? 1 L  EB WB 1 4   L L   4 149 2 642 741 01 0.20 0.	T R Yes Northbou 8 9 R   L 87 0.83 20 2 2 0 2 2 0 No 1 R y, Queue L Northl 7 8 L F 0 10 268 07 0.	L T y und 10 11 T R 3 0.83 0 104 3 2 0 0 104 3 2 0 N 0 0 LR 0 LR 0 104 3 2 0 104 3 2 0 104 3 2 0 104 3 2 0 104 3 2 0 104 3 2 0 104 3 2 0 104 3 2 0 10 10 10 11 10 11 T R 10 10 10 10 10 10 10 10 10 10	/es Southbou 12 1 .83 0 1 0 No No d Level of 5 Southb 11 12 LR 4 152 0.03	.83 Service oound		
Configuration Upstream Sign Minor Street: / Move Volume Peak Hour Fac Hourly Flow Ra Percent Heavy Percent Grade Median Storag Flared Approat Stor RT Channelize Lanes Configuration Approach Movement Lane Config v (vph) C(m) (vph)	L Approach ment 7 L T 17 tor, PHF ate, HFR Vehicles (%) e 4 ch: Exists? rage d? 1 L  EB WB 1 4   L L   4 149 2 642 741 01 0.20 0.	T R Yes Northbou 8 9 R   L 87 0.83 20 2 2 0 No 1 R y, Queue L Northl 7 8 L F 0 10 268 07 0. 0.75 0.24	L T 10 10 10 10 10 10 10 10 10 10	/es Southbou 12 1 .83 0 1 0 No No d Level of 5 Southb 11 12 LR 4 152 0.03	.83 Service oound		

lin.

Approach LOS	· · · · · · · · · · · · · · · · · · ·	13.5 B	29.3 D		
HCS20	00: Unsignalize	d Intersections	Release 4 1c		
	<b>--</b>				
Phone: E-Mail:		Fax:			
<u></u>	TWC	D-WAY STOP (	CONTROL(TW	SC) ANALYSIS_	 
Analyst:	Mark Bunnell				
Agency/Co.:	0/00/0000				
Date Performed: Analysis Time P					
Intersection:	Patterson Rd -		SS		
Jurisdiction: Units: U. S. Cus	Grand Junction	n City			
Analysis Year:	2003				
Project ID: St N	lary's Hospital A	ccess to Patte	rson Rd		
East/West Stree	: Patterson R				
East/West Stree North/South Stree Intersection Orie	t: Patterson R et: Hospital Ac	cess +	eriod (hrs): 0.2	5	
East/West Stree North/South Stree	t: Patterson R et: Hospital Ac ntation: EW	ccess + Study pe	eriod (hrs): 0.2		
East/West Stree North/South Stree	t: Patterson R et: Hospital Ac ntation: EW Ve Ve	ccess + Study pe chicle Volumes 2 3 4			
East/West Stree North/South Stree Intersection Orie	t: Patterson R et: Hospital Ac ntation: EW	ccess + Study pe chicle Volumes	eriod (hrs): 0.2 and Adjustmen		
East/West Stree North/South Stree Intersection Orie Major Street Mor	t: Patterson R et: Hospital Ac ntation: EW Ve /ements 1 L T R 4 668 8	coess + Study pe chicle Volumes 2 3 4 L T R 89 124 102	eriod (hrs): 0.2 and Adjustmen 5 6 24 2	ts	 
East/West Stree North/South Stree Intersection Orie Major Street Mor Volume Peak-Hour Facto	t: Patterson R et: Hospital Ad ntation: EW vements 1 L T R 4 668 8 or, PHF 0.83	ccess + Study pe ehicle Volumes 2 3 4 L T R 89 124 102 0.83 0.83 0	eriod (hrs): 0.2 and Adjustmen 5 6 24 2 .83 0.83 0.83	ts	
East/West Stree North/South Stree Intersection Orie Major Street Mor	t: Patterson R et: Hospital Ad ntation: EW <u>vements 1</u> L T R <u>4 668 8</u> or, PHF 0.83 Volume 1	coess + Study pe chicle Volumes 2 3 4 L T R 89 124 102	eriod (hrs): 0.2 and Adjustmen 5 6 24 2 .83 0.83 0.83 308 1	ts	 
East/West Stree North/South Stree Intersection Orie Major Street Mor Volume Peak-Hour Facto Peak-15 Minute Hourly Flow Rate Percent Heavy V	t: Patterson R et: Hospital Ad ntation: EW vements 1 L T R 4 668 8 or, PHF 0.83 Volume 1 e, HFR 4 8 ehicles 0	ccess + Study pe 2 3 4 L T R 89 124 102 0.83 0.83 0 201 27 37	eriod (hrs): 0.2 and Adjustmen 5 6 24 2 .83 0.83 0.83 308 1	ts	 _
East/West Stree North/South Stree Intersection Orie Major Street Mor Volume Peak-Hour Facto Peak-Hour Facto Peak-15 Minute Hourly Flow Rate Percent Heavy V Median Type	t: Patterson R et: Hospital Ad ntation: EW /ements 1 L T R 4 668 8 or, PHF 0.83 Volume 1 b, HFR 4 8 ehicles 0 TWLTL	Study period         2       3       4         2       3       4         L       T       R         89       124       102         0.83       0.83       0         201       27       37         804       107       144         -       -       2       -	eriod (hrs): 0.2 and Adjustmen 5 6 24 2 .83 0.83 0.83 308 1	ts	
East/West Stree North/South Stree Intersection Orie Major Street Mor Volume Peak-Hour Facto Peak-15 Minute Hourly Flow Rate Percent Heavy V Median Type RT Channelized Lanes	t: Patterson R et: Hospital Ad ntation: EW vements 1 L T R 4 668 8 or, PHF 0.83 Volume 1 e, HFR 4 8 vehicles 0 TWLTL 1 2 1	ccess + Study part 2 3 4 L T R B9 124 102 0.83 0.83 0 201 27 37 804 107 144 2 - No 1 2 0	eriod (hrs): 0.2 and Adjustmen 5 6 24 2 .83 0.83 0.83 308 1 9 1233 2 	ts	
East/West Stree North/South Stree Intersection Orie Major Street Mov Volume Peak-Hour Facto Peak-15 Minute Hourly Flow Rate Percent Heavy V Median Type RT Channelized Lanes Configuration	t: Patterson R et: Hospital Ad ntation: EW vements 1 L T R 4 668 8 vr, PHF 0.83 volume 1 e, HFR 4 8 chicles 0 TWLTL 1 2 1 L T R	Coess + Study period 2 3 4 L T R B9 124 102 0.83 0.83 0 201 27 37 B04 107 144 2 - No 1 2 0 L T T	eriod (hrs): 0.2 and Adjustmen 5 6 24 2 .83 0.83 0.83 308 1 9 1233 2 	ts	
East/West Stree North/South Stree Intersection Orie Major Street Mor Volume Peak-Hour Facto Peak-15 Minute Hourly Flow Rate Percent Heavy V Median Type RT Channelized Lanes	t: Patterson R et: Hospital Ad ntation: EW vements 1 L T R 4 668 8 vr, PHF 0.83 volume 1 e, HFR 4 8 chicles 0 TWLTL 1 2 1 L T R	Coess + Study period 2 3 4 L T R B9 124 102 0.83 0.83 0 201 27 37 804 107 149 2 - No 1 2 0 L T T	eriod (hrs): 0.2 and Adjustmen 5 6 24 2 .83 0.83 0.83 308 1 9 1233 2 	ts	
East/West Stree North/South Stree Intersection Orie Major Street Mov Volume Peak-Hour Facto Peak-15 Minute Hourly Flow Rate Percent Heavy V Median Type RT Channelized Lanes Configuration	t: Patterson R et: Hospital Ad ntation: EW /ements 1 L T R 4 668 8 or, PHF 0.83 Volume 1 e, HFR 4 8 ehicles 0 TWLTL 1 2 1 L T R ? Yes	Study performed         2       3       4         2       3       4         L       T       R         89       124       102         0.83       0.83       0         201       27       37         804       107       144         -       -       2         No       1       2       0         5       Yes       Yes         8       9       10	eriod (hrs): 0.2 and Adjustmen 5 6 24 2 .83 0.83 0.83 308 1 9 1233 2 	ts	
East/West Stree North/South Stree Intersection Orie Major Street Mov Volume Peak-Hour Facto Peak-15 Minute Hourly Flow Rate Percent Heavy V Median Type RT Channelized Lanes Configuration Upstream Signal	t: Patterson R et: Hospital Ad ntation: EW /ements 1 L T R 4 668 8 or, PHF 0.83 Volume 1 b, HFR 4 8 ehicles 0 TWLTL 1 2 1 L T R ? Yes	Study personant stu	eriod (hrs): 0.2 and Adjustmen 5 6 24 2 .83 0.83 0.83 308 1 9 1233 2  R s	ts	
East/West Stree North/South Stree Intersection Orie Major Street Mov Volume Peak-Hour Facto Peak-15 Minute Hourly Flow Rate Percent Heavy V Median Type RT Channelized Lanes Configuration Upstream Signal	t: Patterson R et: Hospital Ad ntation: EW /ements 1 L T R 4 668 8 or, PHF 0.83 Volume 1 e, HFR 4 8 ehicles 0 TWLTL 1 2 1 L T R ? Yes	Study period         2       3       4         2       3       4         L       T       R         89       124       102         0.83       0.83       0         201       27       37         804       107       144         -       -       2         No       1       2       0         L       T       T       T         8       9       10       L         L       T       R       R	eriod (hrs): 0.2 and Adjustmen 5 6 24 2 .83 0.83 0.83 308 1 9 1233 2  R s	ts	
East/West Stree North/South Stree Intersection Orie Major Street Mov Volume Peak-Hour Facto Peak-15 Minute Hourly Flow Rate Percent Heavy V Median Type RT Channelized Lanes Configuration Upstream Signal Minor Street Mov Volume Peak Hour Facto	t: Patterson R et: Hospital Ad ntation: EW /ements 1 L T R 4 668 8 volume 1 e, HFR 4 8 vehicles 0 TWLTL 1 2 1 L T R 2 Yes rements 7 L T R 17 87 r, PHF 0.83	Study period         2       3       4         2       3       4         L       T       R         89       124       102         0.83       0.83       0         201       27       37         804       107       144         -       -       2         No       1       2       0         L       T       T       T         8       9       10       L         T       R       7       3       1         0.83       0.83       0.83       0.83	eriod (hrs): 0.2 and Adjustmen 5 6 24 2 .83 0.83 0.83 308 1 9 1233 2  R s 11 12 3 0.83	ts	
East/West Stree North/South Stree Intersection Orie Major Street Mon Volume Peak-Hour Facto Peak-15 Minute Hourly Flow Rate Percent Heavy V Median Type RT Channelized Lanes Configuration Upstream Signal Minor Street Mov Volume Peak Hour Facto Peak-15 Minute	t: Patterson R et: Hospital Ad ntation: EW /ements 1 L T R 4 668 8 /olume 1 e, HFR 4 8 /ehicles 0 TWLTL 1 2 1 L T R 2 Yes /ements 7 L T R 17 87 r, PHF 0.83 /olume 5	Study performed study performed study performed study performed study performed study performance study performan	eriod (hrs): 0.2 and Adjustmen 5 6 24 2 .83 0.83 0.83 308 1 9 1233 2  R s 11 12	ts	
East/West Stree North/South Stree Intersection Orie Major Street Mov Volume Peak-Hour Facto Peak-15 Minute Hourly Flow Rate Percent Heavy V Median Type RT Channelized Lanes Configuration Upstream Signal Minor Street Mov Volume Peak Hour Facto Peak-15 Minute V Hourly Flow Rate Percent Heavy V	t: Patterson R et: Hospital Ad ntation: EW /ements 1 L T R 4 668 8 or, PHF 0.83 Volume 1 b, HFR 4 8 ehicles 0 TWLTL 1 2 1 L T R ehicles 0 TWLTL 1 2 1 L T R ? Yes rements 7 L T R 17 87 r, PHF 0.83 /olume 5 b, HFR 20 ehicles 2	Study period         2       3       4         2       3       4         L       T       R         89       124       102         0.83       0.83       0         201       27       37         804       107       144         -       -       2         No       1       2       0         L       T       T       T         8       9       10       L         T       R       7       3       1         0.83       0.83       0.83       0.83	eriod (hrs): 0.2 and Adjustmen 5 6 24 2 .83 0.83 0.83 308 1 9 1233 2  R s 11 12 3 0.83	ts	
East/West Stree North/South Stree Intersection Orie Major Street Mor Volume Peak-Hour Facto Peak-15 Minute Hourly Flow Rate Percent Heavy V Median Type RT Channelized Lanes Configuration Upstream Signal Minor Street Mov Volume Peak Hour Facto Peak Hour Facto Peak-15 Minute Hourly Flow Rate Percent Heavy V Percent Grade (9	t: Patterson R et: Hospital Ad ntation: EW $\sqrt{ements}$ 1 L T R 4 668 8 or, PHF 0.83 Volume 1 2, HFR 4 8 ehicles 0 TWLTL 1 2 1 L T R 1 2 1 L T R 2 Yes rements 7 L T R 17 87 r, PHF 0.83 Volume 5 2, HFR 20 ehicles 2 6, 0 0	$\begin{array}{c} \text{ccess +} & \text{Study period} \\ \text{shicle Volumes} \\ 2 & 3 & 4 \\ \text{L} & \text{T} & \text{R} \\ \hline & & & & & \\ 89 & 124 & 102 \\ 0.83 & 0.83 & 0 \\ 201 & 27 & 37 \\ 0.83 & 0.83 & 0 \\ 201 & 27 & 37 \\ 0.83 & 0.83 & 0.8 \\ \hline & & & & & & \\ 8 & 9 & 10 \\ \text{L} & \text{T} & \text{R} \\ \hline & & & & & & \\ \hline & & & & & & \\ 8 & 9 & 10 \\ \text{L} & \text{T} & \text{R} \\ \hline & & & & & & \\ \hline & & & & & & \\ 8 & 9 & 10 \\ \text{L} & \text{T} & \text{R} \\ \hline & & & & & & \\ \hline & & & & & & \\ 8 & 9 & 10 \\ \text{L} & \text{T} & \text{R} \\ \hline & & & & & & \\ \hline & & & & & & \\ \hline & & & &$	eriod (hrs): 0.2 and Adjustmen 5 6 24 2 .83 0.83 0.83 308 1 9 1233 2  R s 11 12 3 0.83 0 1	ts	
East/West Stree North/South Stree Intersection Orie Major Street Mov Volume Peak-Hour Facto Peak-15 Minute Hourly Flow Rate Percent Heavy V Median Type RT Channelized Lanes Configuration Upstream Signal Minor Street Mov Volume Peak Hour Facto Peak-15 Minute V Hourly Flow Rate Percent Heavy V	t: Patterson R et: Hospital Ad ntation: EW Verements 1 L T R 4 668 8 or, PHF 0.83 Volume 1 a, HFR 4 8 ehicles 0 TWLTL 1 2 1 L T R 1 2 1 L T R 2 Yes rements 7 L T R 17 87 r, PHF 0.83 Volume 5 a, HFR 20 ehicles 2 b, HFR 20 ehicles 2 b, HFR 20 ehicles 2 b, 0 4	Study performed study s	eriod (hrs): 0.2 and Adjustmen 5 6 24 2 .83 0.83 0.8 308 1 9 1233 2  R s 11 12 3 0.83 0 1 0	ts	

		Р	edestria	an Volume	es and a	Adjustments		
Movement	S			5 16		• <u>• • • • • • • • • • • • • • • • • • </u>		
Flow (ped/ Lane Widtl Walking S Percent Bl	n (ft) beed (ft/s	12.0						
				Upstream	Signal	Data		
		low Typ	e Tin		h Spee	Distance ed to Signal et		
S2_Left-Tu		1700		11 100		2000		
Through S5 Left-Tu		1700 1700	5 3 3 1	9 100 11 100	35 35	2000 600		
Through		1700	5 3		35	600		
Worksheet	3-Data fo	or Compu	uting Eff	ect of De	lay to N	lajor Street Ve	hicles	
<del></del>		<u> </u>	ovemen		vement			
Shared In v Sat flow ra	volume, n le, major	najor rt ve th vehick	ehicles: es:					
Shared In v Sat flow ra Sat flow ra	volume, n le, major le, major	najor rt ve th vehick rt vehicle	ehicles: es: es:					
Shared In v Sat flow ra Sat flow ra Number of	volume, n le, major le, major major str	najor rt ve th vehick rt vehicle eet throu	ehicles: es: s: gh lane:	S:	Calcul	ation		
Shared In v Sat flow ra Sat flow ra Number of Worksheet	volume, n te, major te, major major str 4-Critica	najor rt ve th vehicle rt vehicle eet throu I Gap and	ehicles: es: s: gh lane:	S:	Calcul	ation		
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Shared In v Sat flow ra Sat flow ra Number of Worksheet Critical Gaj Movement t(c,base) t(c,hv) P(hv) t(c,g) Grade/100 t(3,lt)	volume, n te, major major str 4-Critical 0 Calculat 1 L L 4.1 4 2.00 2. 0 2 0.00 0.0	najor rt ve         th vehicle         rt vehicle         eet through         I Gap and         ion         4         7         L       T         0.1       7.5         00       2.00         2       0.20       0.2         0.20       0.2       0.00         0       0.00       0.00	ehicles: es: gh lanes d Follow 8 R 1 2.00 2 20 0.10 0.00 ( 0.00 ( 0.00 (	s: up Time 9 10 L T 9 7.5 2.00 2.0 0 0.20 0 0 0.20 0 0 0.00	11 1 R 6.9 0 2.00 0 0.20 0. 0 0.00 0.00	2 0 2.00 10 0.00 00		
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Computation i	-Queue Clearance	e Time at	Upstre	eam Sign	al		
		ment 2		vement 5			
	V(t) V	(I,prot) V	/(t) V(	l,prot)			
V prog	595 - 515 - 5	111	912	124	00 2400		
	n Flow Rate, s (vp	h) 340 3	5	400 34 3	00 3400	•	
Arrival Type Effective Gree	5 (sec)			3 37 11			
Cycle Length,			100		00		
Rp (from Exhib		1.667	1.000		1.000		
	icles arriving on g				.617 0.1	10	
g(q1)	6.1			3.2			
g(q2)	2.5			0.1			
g(q)	8.6	3.0 1	8.6	3.4			
Computation 2	-Proportion of TW				ocked		
		ment 2	-	vement 5			
	V(t) V	(l,prot) V	(t) V(	l,prot)			
alpha	<u> </u>	350	0.3	50	<u></u>		 
beta		741	0.74				
Travel time, t(a		38.87		11.662			
Smoothing Fac		0.09		0.249			
	onflicting flow, f	0.650	0.121		0.090		
Max platooned	flow, V(c,max)	123	5 10	2 222	9 188		
Min plateened							
	flow, V(c,min)	2000					
Duration of blo	cked period, t(p)	0.0	0.0	11.5	0.0		
	cked period, t(p)		0.0		0.0		
Duration of blo Proportion time	cked period, t(p) blocked, p	0.0 0.0	0.0	11.5	0.0		
Duration of blo Proportion time	cked period, t(p)	0.0 0.0	0.0	11.5	0.0		
Duration of blo Proportion time	cked period, t(p) blocked, p	0.0 0.0	0.0	11.5	0.0		
Duration of blo Proportion time Computation 3 p(2) p(5)	cked period, t(p) blocked, p -Platoon Event Pe	0.0 0.0	0.0	11.5	0.0		
Duration of blo Proportion time Computation 3 p(2)	cked period, t(p) blocked, p -Platoon Event Pe 0.000 0.115 0.11	0.0 0.0 rriods F	0.0	11.5	0.0		 
Duration of blo Proportion time Computation 3 p(2) p(5) p(dom) p(subo)	cked period, t(p) blocked, p -Platoon Event Pe 0.000 0.115 0.11 0.00	0.0 0.0 riods F 5 0	0.0	11.5	0.0		 
Duration of blo Proportion time Computation 3 p(2) p(5) p(dom) p(subo)	cked period, t(p) blocked, p -Platoon Event Pe 0.000 0.115 0.11	0.0 0.0 rriods F	0.0	11.5	0.0		 
Duration of blo Proportion time Computation 3 p(2) p(5) p(dom) p(subo) Constrained or	cked period, t(p) blocked, p -Platoon Event Pe 0.000 0.115 0.11 0.00	0.0 0.0 riods F 5 0	0.0	11.5	0.0		
Duration of blo Proportion time Computation 3 p(2) p(5) p(dom) p(subo)	cked period, t(p) blocked, p -Platoon Event Pe 0.000 0.115 0.11 0.00 unconstrained?	0.0 0.0 riods F 5 0 U	0.0 100 Result	11.5	0.0		
Duration of blo Proportion time Computation 3 p(2) p(5) p(dom) p(subo) Constrained or Proportion	cked period, t(p) blocked, p -Platoon Event Pe 0.000 0.115 0.11 0.00 unconstrained?	0.0 0.0 riods F 5 0 U (2)	0.0 100 Result (3)	11.5 0.115	0.0		
Duration of blo Proportion time Computation 3 p(2) p(5) p(dom) p(subo) Constrained or Proportion unblocked	cked period, t(p) blocked, p -Platoon Event Pe 0.000 0.115 0.11 0.00 unconstrained? (1) Single-stage	0.0 0.0 riods F 5 0 U (2)	0.0 Result (3) Stage P	11.5	0.0		
Duration of blo Proportion time Computation 3 p(2) p(5) p(dom) p(subo) Constrained or Proportion unblocked for minor movements, p(	cked period, t(p) blocked, p -Platoon Event Pe 0.000 0.115 0.11 0.00 unconstrained? (1) Single-stage x) Process	0.0 0.0 riods F 5 0 U (2) Two-S	0.0 Result (3) Stage P	11.5 0.115	0.0		
Duration of blo Proportion time Computation 3 p(2) p(5) p(dom) p(subo) Constrained or Proportion unblocked for minor movements, p( p(1)	cked period, t(p) blocked, p -Platoon Event Pe 0.000 0.115 0.11 0.00 unconstrained? (1) Single-stage x) Process 0.885	0.0 0.0 riods F 5 0 U (2) Two-S	0.0 Result (3) Stage P	11.5 0.115	0.0		
Duration of blo Proportion time Computation 3 p(2) p(5) p(dom) p(subo) Constrained or Proportion unblocked for minor movements, p( p(1) p(4)	cked period, t(p) blocked, p -Platoon Event Per 0.000 0.115 0.11 0.00 unconstrained? (1) Single-stage x) Process 0.885 1.000	0.0 0.0 riods F 5 0 U (2) Two-S Stage	0.0 00 Result (3) Stage P	11.5 0.115	0.0		
Duration of blo Proportion time Computation 3 p(2) p(5) p(dom) p(subo) Constrained or Proportion unblocked for minor movements, p( p(1) p(4) p(7)	cked period, t(p) blocked, p -Platoon Event Pe 0.000 0.115 0.11 0.00 unconstrained? (1) Single-stage x) Process 0.885	0.0 0.0 riods F 5 0 U (2) Two-S Stage	0.0 Result (3) Stage P	11.5 0.115	0.0		
Duration of blo Proportion time Computation 3 p(2) p(5) p(dom) p(subo) Constrained or Proportion unblocked for minor movements, p( p(1) p(4) p(7) p(8)	cked period, t(p) blocked, p -Platoon Event Pe 0.000 0.115 0.11 0.00 unconstrained? (1) Single-stage x) Process 0.885 1.000 0.885 1.00	0.0 0.0 riods F 5 0 U (2) Two-S Stage	0.0 00 Result (3) Stage P	11.5 0.115	0.0		
Duration of blo Proportion time Computation 3 p(2) p(5) p(dom) p(subo) Constrained or Proportion unblocked for minor movements, p( p(1) p(4) p(7) p(8) p(9)	cked period, t(p) blocked, p -Platoon Event Pe 0.000 0.115 0.11 0.00 unconstrained? (1) Single-stage x) Process 0.885 1.000 0.885 1.00 1.000	0.0 0.0 riods F 5 0 U (2) Two-S Stage 0 (	0.0 00 Result (3) Stage P 9 1	11.5 0.115	0.0		
Duration of blo Proportion time Computation 3 p(2) p(5) p(dom) p(subo) Constrained or Proportion unblocked for minor movements, p( p(1) p(4) p(7) p(8) p(9) p(10)	cked period, t(p) blocked, p -Platoon Event Pe 0.000 0.115 0.11 0.00 unconstrained? (1) Single-stage x) Process 0.885 1.000 0.885 1.00	0.0 0.0 riods F 5 0 U (2) Two-S Stage 0 (	0.0 00 Result (3) Stage P	11.5 0.115	0.0		
Duration of blo Proportion time Computation 3 p(2) p(5) p(dom) p(subo) Constrained or Proportion unblocked for minor movements, p( p(1) p(4) p(7) p(8) p(9) p(10) p(11)	cked period, t(p) blocked, p -Platoon Event Pe 0.000 0.115 0.11 0.00 unconstrained? (1) Single-stage x) Process 0.885 1.000 0.885 1.00 1.000	0.0 0.0 riods F 5 0 U (2) Two-S Stage 0 (	0.0 00 Result (3) Stage P 9 1	11.5 0.115	0.0		
Duration of blo Proportion time Computation 3 p(2) p(5) p(dom) p(subo) Constrained or Proportion unblocked for minor movements, p( p(1) p(4) p(7) p(8) p(9) p(10) p(11) p(12)	cked period, t(p) blocked, p -Platoon Event Per 0.000 0.115 0.11 0.00 unconstrained? (1) Single-stage 0.885 1.000 0.885 1.000 0.885 0.885 0.885 0.885	0.0 0.0 riods F 5 0 U (2) Two-S Stage 0 (	0.0 00 Result (3) Stage P 9 1	11.5 0.115	0.0		
Duration of blo Proportion time Computation 3 p(2) p(5) p(dom) p(subo) Constrained or Proportion unblocked for minor movements, p( p(1) p(4) p(7) p(8) p(7) p(8) p(10) p(11) p(12) Computation 4	cked period, t(p) blocked, p -Platoon Event Per 0.000 0.115 0.11 0.00 unconstrained? (1) Single-stage (1) Single-stage 0.885 1.000 0.885 1.000 0.885 0.885 1.000 0.885 0.885 1.000 0.885 0.85	0.0 0.0 riods F 5 0 U (2) Two-S Stage 0 (	0.0 00 Result (3) Stage P 9 1	11.5 0.115	0.0		
Duration of blo Proportion time Computation 3 p(2) p(5) p(dom) p(subo) Constrained or Proportion unblocked for minor movements, p( p(1) p(4) p(7) p(8) p(9) p(10) p(11) p(12)	cked period, t(p) blocked, p -Platoon Event Per 0.000 0.115 0.11 0.00 unconstrained? (1) Single-stage (1) Single-stage 0.885 1.000 0.885 1.000 0.885 0.885 1.000 0.885 0.885 1.000 0.885 0.85	0.0 0.0 riods F 5 0 U (2) Two-S Stage 0 (	0.0 00 Result (3) Stage P 9 1	11.5 0.115	0.0		

s 3400 3400 3400 Px 0.885 1.000 0.88				
V c,u,x 956 913 151		755 258		
Cr,x 727 742 83	596 55	747		
Cr,x 727 742 83 C plat,x 643 742 73	596 55 596 49			
C plat, x 043 142 13	050 45	001		
Two-Stage Process				
7 8	10 11			
Stage1 Stage2 Stage1	Stage2 Stage	e1 Stage2 Stage	1 Stage2	
V(c,x) 814 914	1534 410			
s 3400 3400	3400 3400			
P(x) 1.000 0.885	0.885 1.000	)		
V(c,u,x) 814 591	1291 410			
C(r,x) 338 460	176 595		· · · · · · · · · · · · · · · · · · ·	
C(plat,x) 338 407	156 595			
	100 000			
				,
Worksheet 6-Impedance and Cap	bacity Equation	IS		
Step 1: RT from Minor St.	9	12	<u> </u>	
Conflicting Flows	404	620		· · · · · · · · · · · · · · · · · · ·
Potential Capacity	596	661		
Pedestrian Impedance Factor	1.00	1.00		
Movement Capacity	595	660		
Probability of Queue free St.	0.83	1.00		
Step 2: LT from Major St.	4	1		
Conflicting Flows	913	1237		
Potential Capacity	742	643		
Pedestrian Impedance Factor	1.00	1.00		
Movement Capacity	741	642		
Probability of Queue free St.	0.80	0.99		
Maj L-Shared Prob Q free St.				
Step 3: TH from Minor St.	8	11		
-			····	
Conflicting Flows Potential Capacity				
Pedestrian Impedance Factor	1.00	1.00		
Cap. Adj. factor due to Impeding		79 0.79		
Movement Capacity				
Probability of Queue free St.	1.00	1.00		
Step 4: LT from Minor St.	7	10		· · · · · · · · · · · · · · · · · · ·
Conflicting Flows	1728	1944		
Potential Capacity		49		
Pedestrian Impedance Factor	1.00	1.00		
Maj. L, Min T Impedance factor	0.79	0.79		
Maj. L, Min T Adj. Imp Factor.	0.84	0.84		
Cap. Adj. factor due to Impeding r				

Worksheet 7-Computation of the Effect of Two-stage Gap Acceptance

Step 3: TH from Minor St.	8		
•	o	11	
Part 1 - First Stage			
Conflicting Flows			
Potential Capacity	394	209	
Pedestrian Impedance Fac		1.00	
Cap. Adj. factor due to Imp		99 0.80	
Movement Capacity	391	167	
Probability of Queue free S		1.00	
Part 2 - Second Stage			
Conflicting Flows			
Potential Capacity	209	352	
Pedestrian Impedance Fac		1.00	
Cap. Adj. factor due to Imp		<b>80</b> 0.99	
Movement Capacity	167	349	
Part 3 - Single Stage	······································		<u></u>
Conflicting Flows			
Potential Capacity			
Pedestrian Impedance Fac		1.00	
Cap. Adj. factor due to Imp	eding mymnt 0.	79 0.79	
Movement Capacity			
Result for 2 stage process			
8	0.98 0.98		
y 2			
Ct Deshahility of Ourses from f		4.00	
Probability of Queue free S	št. 1.00	1.00	
Step 4: LT from Minor St.	7	10	
Part 1 - First Stage	<u></u>	<u></u>	<u></u>
Conflicting Flows	814	1534	
Potential Capacity	338	156	
Pedestrian Impedance Fac		1.00	
Cap. Adj. factor due to Imp		99 0.80	
Movement Capacity	335	124	
Part 2 - Second Stage			
Conflicting Flows	914	410	
Potential Capacity	407	595	
Pedestrian Impedance Fac		1.00	
	$\alpha \alpha $	BO 0.82	
Cap. Adj. factor due to Imp			
		488	
Cap. Adj. factor due to Imp Movement Capacity Part 3 - Single Stage			
Cap. Adj. factor due to Imp Movement Capacity Part 3 - Single Stage			
Cap. Adj. factor due to Imp Movement Capacity Part 3 - Single Stage Conflicting Flows	325	488	
Cap. Adj. factor due to Imp Movement Capacity	325 1728 73	488 1944	
Cap. Adj. factor due to Imp Movement Capacity Part 3 - Single Stage Conflicting Flows Potential Capacity Pedestrian Impedance Fac	325 1728 73 tor 1.00	488 1944 49	
Cap. Adj. factor due to Imp Movement Capacity Part 3 - Single Stage Conflicting Flows Potential Capacity Pedestrian Impedance Fac Maj. L, Min T Impedance fac	325 1728 73 tor 1.00 ictor 0.79	488 1944 49 1.00	
Cap. Adj. factor due to Imp Movement Capacity Part 3 - Single Stage Conflicting Flows Potential Capacity Pedestrian Impedance Fac	325 1728 73 tor 1.00 ictor 0.79 or. 0.84	488 1944 49 1.00 0.79 0.84	
Cap. Adj. factor due to Imp Movement Capacity Part 3 - Single Stage Conflicting Flows Potential Capacity Pedestrian Impedance Fac Maj. L, Min T Impedance fa Maj. L, Min T Adj. Imp Fact	325 1728 73 tor 1.00 ictor 0.79 or. 0.84	488 1944 49 1.00 0.79 0.84	
Cap. Adj. factor due to Imp Movement Capacity Part 3 - Single Stage Conflicting Flows Potential Capacity Pedestrian Impedance Fac Maj. L, Min T Impedance fa Maj. L, Min T Adj. Imp Fact Cap. Adj. factor due to Imp	325 1728 73 tor 1.00 ictor 0.79 or. 0.84 eding mvmnt 0.8 61	488 1944 49 1.00 0.79 0.84 34 0.69	
Cap. Adj. factor due to Imp Movement Capacity Part 3 - Single Stage Conflicting Flows Potential Capacity Pedestrian Impedance Fac Maj. L, Min T Impedance fa Maj. L, Min T Adj. Imp Fact Cap. Adj. factor due to Imp Movement Capacity	325 1728 73 tor 1.00 ictor 0.79 or. 0.84 eding mvmnt 0.8 61	488 1944 49 1.00 0.79 0.84 34 0.69	

		268						
Worksheet 8-Sha	red Lane Ca	lculations	<b>i</b>					
Movement	L T		9 10 L T	11 R	12		<u></u>	
Volume (vph) Movement Capac Shared Lane Cap	city (vph)	20 268	104 3 59		1 21 152	660		
Worksheet 9-Con	nputation of	Effect of I	Flared M	linor S	street A	pproaches		
Movement	LT		9 10 L T	11 R	12			
C sep Volume Delay Q sep	268 20	59 10		1	660 			
Q sep +1 round (Qsep +1)								
n max C sh SUM C sep	<del></del>		152					
n Cact								
Worksheet 10-De	lay, Queue I	.ength, ar	nd Level	of Se	rvice			
Movement Lane Config	1 4 7 L L L	8 9 R		11 LR	12	<u>,</u>	<u></u>	. ·
3			1	4				
v (vph) 4 C(m) (vph) 6		104 268 0.1	595	15	52			
v (vph) 4 C(m) (vph) 6 v/c 0.01 95% queue length Control Delay	642 741 2 0.20 0.07 1 0.02 0.7 10.6 11.1	268 0.1 5 0.24	595	15 0.03 3 2	52 0.08 9.3			
v (vph) 4 C(m) (vph) 6 v/c 0.01 95% queue lengtr Control Delay LOS B Approach Delay	642 741 2 0.20 0.07 1 0.02 0.7 10.6 11.1	268 0.1 5 0.24 19.5	595 7 0.63 12.3	15 0.03 3 2	0.08			
v (vph) 4 C(m) (vph) 6 v/c 0.01 95% queue length Control Delay LOS B Approach Delay Approach LOS	642 741 2 0.20 0.07 1 0.02 0.7 10.6 11.1 B C	268 0.1 5 0.24 19.5 B 13.5 B	595 7 0.63 12.3 D	15 0.03 2 29.3 D	0.08 9.3			
v (vph) 4 C(m) (vph) 6 v/c 0.01 95% queue length Control Delay	642 741 2 0.20 0.07 1 0.02 0.7 10.6 11.1 B C ared Major L	268 0.1 5 0.24 19.5 B 13.5 B	595 7 0.63 12.3 D	15 0.03 2 29.3 D	0.08 9.3			
v (vph) 4 C(m) (vph) 6 v/c 0.01 95% queue length Control Delay LOS B Approach Delay Approach LOS	642 741 2 0.20 0.07 0.02 0.7 10.6 11.1 B C ared Major L ared Major L tream 2 or 5 stream 3 or 6 ow rate for str	268 0.1 5 0.24 19.5 B 13.5 B T Impeda Movemen 0.99	595 7 0.63 12.3 D nce and nt 2 M 0.8	15 0.03 2 29.3 D Delay	0.08 9.3			

HCS2000: Unsignalized Intersections Release 4.1c

### \_\_\_\_\_TWO-WAY STOP CONTROL SUMMARY\_\_\_\_\_

Agency/Co.: Date Perform		
иате Репот	ed: 9/20/2003	
	e Period: PM Peak	
Intersection:	Patterson Rd - Hospital Access	
Jurisdiction:	Grand Junction City	
Units: U. S. C		
Analysis Yea		
•	t. Mary's Hospital Access to Patterson Rd	
East/West St		
	Street: Hospital Access +	
	Drientation: EW Study period (hrs): 0.25	
	Vehicle Volumes and Adjustments	
Major Street:		- <u></u>
	rement 1 2 3 $ $ 4 5 6	
Volume	3 1330 42 52 1125 8	
Peak-Hour F		
Hourly Flow		
Descent Lisse	<i>r</i> y Vehicles 0 – – 2 – –	
Median Type		
Median Type RT Channelia	xed? No	
Median Type RT Channeliz Lanes	xed? No 1 2 1 1 2 0	
Median Type RT Channeliz Lanes Configuration	xed? No 121 120 LTR LTTR	
Median Type RT Channeliz Lanes Configuration Upstream Sig Minor Street:	xed? No 1 2 1 1 2 0 L T R L T TR mal? Yes Yes Approach Northbound Southbound	
Median Type RT Channeliz Lanes Configuration Upstream Sig Minor Street:	zed? No 121 120 LTR LTTR gnal? Yes Yes	
Median Type RT Channeliz Lanes Configuration Upstream Sig Minor Street: Mov	Xed?       No         1 2 1       1 2 0         L T R       L T TR         Inal?       Yes         Yes       Yes         Approach       Northbound         Southbound       Southbound         rement       7       8       9       10       11       12         L       T       R         L       T       R         35       116       3       5	
Median Type RT Channeliz Lanes Configuration Upstream Sig Minor Street: Mov Volume Peak Hour Fa	Xed?       No         1 2 1       1 2 0         L T R       L T TR         Inal?       Yes         Approach       Northbound         Southbound       Southbound         rement       7       8       9       10       11       12         L       T       R         L       T       R         35       116       3       5         actor, PHF       0.96       0.96       0.96       0.96	
Median Type RT Channeliz Lanes Configuration Upstream Sig Minor Street: Mov Volume Peak Hour Fa Hourly Flow F	Xed?       No         1 2 1       1 2 0         L T R       L T TR         Inal?       Yes         Yes       Yes         Approach       Northbound         Southbound       Southbound         rement       7       8       9       10       11       12         L       T       R         L       T       R         35       116       3       5         actor, PHF       0.96       0.96       0.96         Rate, HFR       36       120       3       5	
Median Type RT Channeliz Lanes Configuration Upstream Sig Minor Street: Mov Volume Peak Hour Fa Hourly Flow F Percent Heav	Xed?       No         1 2 1       1 2 0         L T R       L T TR         Inal?       Yes         Yes       Yes         Approach       Northbound         Southbound       Southbound         rement       7       8       9       10       11       12         L       T       R         L       T       R         35       116       3       5         actor, PHF       0.96       0.96       0.96         Rate, HFR       36       120       3       5         y Vehicles       2       2       0       0	
Median Type RT Channeliz Lanes Configuration Upstream Sig Minor Street: Mov Volume Peak Hour Fa Hourly Flow F Percent Heav Percent Grad	xed?       No         1 2 1       1 2 0         L T R       L T TR         gnal?       Yes         Yes       Yes         Approach       Northbound         Southbound       Southbound         rement       7       8       9       10       11       12         L       T       R         L       T       R         35       116       3       5         actor, PHF       0.96       0.96       0.96         Rate, HFR       36       120       3       5         y Vehicles       2       2       0       0         e (%)       0       0       0       0	
Median Type RT Channeliz Lanes Configuration Upstream Sig Minor Street: Mov Volume Peak Hour Fa Hourly Flow F Percent Heav Percent Grad Median Stora	Xed?       No         1 2 1       1 2 0         L T R       L T TR         Inal?       Yes         Yes       Yes         Approach       Northbound         Southbound       Southbound         rement       7       8       9       10       11       12         L       T       R         L       T       R         35       116       3       5         actor, PHF       0.96       0.96       0.96         Rate, HFR       36       120       3       5         y Vehicles       2       2       0       0         e (%)       0       0       0       0         ge       4       4       120       3       5	
Median Type RT Channeliz Lanes Configuration Upstream Sig Minor Street: Mov Volume Peak Hour Fa Hourly Flow F Percent Heav Percent Grad Median Stora Flared Appro	xed?       No         1 2 1       1 2 0         L T R       L T TR         gnal?       Yes         Approach       Northbound         Southbound         Approach       Northbound         Southbound         rement       7         35       116       3         12       T         35       116       3         35       116       3         35       116       3       5         actor, PHF       0.96       0.96       0.96         Rate, HFR       36       120       3       5         y Vehicles       2       2       0       0         ge       4       4       A       A         ach:       Exists?       No       No	
Median Type RT Channeliz Lanes Configuration Upstream Sig Minor Street: Mov Volume Peak Hour Fa Hourly Flow F Percent Heav Percent Grad Median Stora Flared Appro	xed?       No         1 2 1       1 2 0         L T R       L T TR         ynal?       Yes         Yes       Yes         Approach       Northbound         Southbound       Southbound         rement       7       8       9       10       11       12         L       T       R         L       T       R         35       116       3       5         actor, PHF       0.96       0.96       0.96         Rate, HFR       36       120       3       5         y Vehicles       2       2       0       0         ge       4       4       A       A         ach:       Exists?       No       No	
Median Type RT Channeliz Lanes Configuration Upstream Sig Minor Street: Mon Volume Peak Hour Fa Hourly Flow F Percent Heav Percent Grad Median Stora Flared Appro St RT Channeliz	xed?       No         1 2 1       1 2 0         L T R       L T TR         ynal?       Yes         Yes       Yes         Approach       Northbound         Southbound       Southbound         rement       7       8       9       10       11       12         L       T       R         L       T       R         35       116       3       5         actor, PHF       0.96       0.96       0.96         Rate, HFR       36       120       3       5         vVehicles       2       2       0       0         ge       4       A       A       A         ach:       Exists?       No       No	
Median Type RT Channeliz Lanes Configuration Upstream Sig Minor Street: Mov Volume Peak Hour Fa Hourly Flow F Percent Heav Percent Grad Median Stora Flared Appro	xed?       No         1 2 1       1 2 0         L T R       L T TR         ynal?       Yes         Yes       Yes         Approach       Northbound         Southbound       Southbound         rement       7       8       9       10       11       12         L       T       R         L       T       R         35       116       3       5         actor, PHF       0.96       0.96       0.96         Rate, HFR       36       120       3       5         y Vehicles       2       2       0       0         ge       4       A       A       A         ach:       Exists?       No       No         1       1       0       0	

Approach LOS		· · · · · · · · · · · · · · · · · · ·		
11000000-1				
	Insignalized Intersec	aions Release 4.1C		
Phone: E-Mail:	Fax:			
	TWO-WAY ST	FOP CONTROL(TWS	C) ANALYSIS	 
	Bunnell			
Agency/Co.: Date Performed:	9/20/2003			
Analysis Time Period				
Intersection: Pat	terson Rd - Hospital	Access		
	nd Junction City			
Units: U. S. Customa	ry 103			
Analysis Year: 20	03			
Project ID: St Man/s	Hospital Access to	Patterson Pd		
Project ID: St. Mary's East/West Street:		Patterson Rd		
East/West Street:	Patterson Rd	Patterson Rd		
	Patterson Rd Hospital Access +	Patterson Rd udy period (hrs): 0.25		
East/West Street: F North/South Street:	Patterson Rd Hospital Access + on: EW Stu	udy period (hrs): 0.25		
East/West Street: F North/South Street: Intersection Orientatio	Patterson Rd Hospital Access + on: EW Stu	udy period (hrs): 0.25 umes and Adjustments	3	
East/West Street: F North/South Street:	Patterson Rd Hospital Access + on: EW Stu	udy period (hrs): 0.25	5	
East/West Street: F North/South Street: Intersection Orientation Major Street Moveme L	Patterson Rd Hospital Access + on: EW Stu Vehicle Volu nts 1 2 3 T R L T	udy period (hrs): 0.25 umes and Adjustments 4 5 6 R	3	
East/West Street: F North/South Street: Intersection Orientatio	Patterson Rd Hospital Access + on: EW Stu Vehicle Volu nts 1 2 3 T R L T 3 1330 42 52	udy period (hrs): 0.25 umes and Adjustments 4 5 6	3	
East/West Street: F North/South Street: Intersection Orientation Major Street Moveme L Volume 3 Peak-Hour Factor, PH Peak-15 Minute Volur	Patterson Rd         Hospital Access +         bon: EW       Students         Vehicle Volu         nts       1       2       3         T       R       L       T         I330       42       52         IF       0.96       0.96       0.96         ne       1       346       11	udy period (hrs): 0.25 umes and Adjustments 4 5 6 R 1125 8 96 0.96 0.96 0.96 14 293 2	ş	
East/West Street: F North/South Street: Intersection Orientation Major Street Moveme L Volume 3 Peak-Hour Factor, PH Peak-15 Minute Volur Hourly Flow Rate, HF	Patterson Rd         Hospital Access +         bon: EW       Students         Vehicle Volu         nts       1       2       3         T       R       L       T         3       1330       42       52         IF       0.96       0.96       0.9         ne       1       346       11         R       3       1385       43	udy period (hrs): 0.25 umes and Adjustments 4 5 6 R 1125 8 96 0.96 0.96 0.96 14 293 2 54 1171 8	\$	
East/West Street: F North/South Street: Intersection Orientation Major Street Moveme L Volume 3 Peak-Hour Factor, PH Peak-15 Minute Volur Hourly Flow Rate, HF Percent Heavy Vehicl	Patterson Rd         Hospital Access +         Don: EW       Students	udy period (hrs): 0.25 umes and Adjustments 4 5 6 R 1125 8 96 0.96 0.96 0.96 14 293 2	ş	
East/West Street: F North/South Street: Intersection Orientation Major Street Moveme L Volume 3 Peak-Hour Factor, PH Peak-15 Minute Volur Hourly Flow Rate, HF Percent Heavy Vehicl Median Type T	Patterson Rd         Hospital Access +        Vehicle Volu-        Vehicle Volu-         nts       1         T       R       L         T       R       L         T       R       L         T       R       L         T       R       L         T       R       1330         42       52         IF       0.96       0.96         Ine       1       346         R       3       1385       43         es       0       -       -         WLTL       -       -       -	udy period (hrs): 0.25 umes and Adjustments 4 5 6 R 1125 8 96 0.96 0.96 0.96 14 293 2 54 1171 8	ş	
East/West Street: F North/South Street: Intersection Orientation Major Street Moveme L Volume 3 Peak-Hour Factor, PH Peak-15 Minute Volur Hourly Flow Rate, HF Percent Heavy Vehicl	Patterson Rd         Hospital Access +         bn: EW       Students         Vehicle Volution         nts       1       2       3         T       R       L       T         3       T       R       L       T         3       1330       42       52         IF       0.96       0.96       0.96         Ine       1       346       11         R       3       1385       43         es       0       -       -         WLTL       No       1       2         1       2       1       1       2	udy period (hrs): 0.25 umes and Adjustments 4 5 6 R 1125 8 96 0.96 0.96 0.96 14 293 2 54 1171 8	3	
East/West Street: F North/South Street: Intersection Orientation Major Street Moveme L Volume 3 Peak-Hour Factor, PH Peak-15 Minute Volur Hourly Flow Rate, HF Percent Heavy Vehich Median Type T RT Channelized? Lanes Configuration	Patterson Rd         Hospital Access +	udy period (hrs): 0.25 umes and Adjustments 4 5 6 R 1125 8 96 0.96 0.96 0.96 14 293 2 54 1171 8 2 0 T TR	<b></b>	
East/West Street: F North/South Street: Intersection Orientation Major Street Moveme L Volume 3 Peak-Hour Factor, PH Peak-15 Minute Volur Hourly Flow Rate, HF Percent Heavy Vehicl Median Type T RT Channelized? Lanes	Patterson Rd         Hospital Access +         bn: EW       Students         Vehicle Volution         nts       1       2       3         T       R       L       T         3       T       R       L       T         3       1330       42       52         IF       0.96       0.96       0.96         Ine       1       346       11         R       3       1385       43         es       0       -       -         WLTL       No       1       2         1       2       1       1       2	udy period (hrs): 0.25 umes and Adjustments 4 5 6 R 1125 8 96 0.96 0.96 0.96 14 293 2 54 1171 8 2	3	
East/West Street: F North/South Street: Intersection Orientation Major Street Moveme L Volume 3 Peak-Hour Factor, PH Peak-15 Minute Volur Hourly Flow Rate, HF Percent Heavy Vehicl Median Type T RT Channelized? Lanes Configuration Upstream Signal?	Patterson Rd Hospital Access + on: EW Stu Vehicle Volu nts 1 2 3 T R L T 3 1330 42 52 IF 0.96 0.96 0.9 ne 1 346 11 R 3 1385 43 es 0 2 WLTL No 1 2 1 1 2 L T R L Yes	udy period (hrs): 0.25 umes and Adjustments 4 5 6 R 1125 8 96 0.96 0.96 0.96 14 293 2 54 1171 8 2 0 T TR Yes	5	
East/West Street: F North/South Street: Intersection Orientation Major Street Moveme L Volume 3 Peak-Hour Factor, PH Peak-15 Minute Volur Hourly Flow Rate, HF Percent Heavy Vehich Median Type T RT Channelized? Lanes Configuration	Patterson Rd Hospital Access + on: EW Stu Vehicle Volu nts 1 2 3 T R L T 3 1330 42 52 IF 0.96 0.96 0.9 ne 1 346 11 R 3 1385 43 es 0 2 WLTL No 1 2 1 1 2 L T R L Yes	udy period (hrs): 0.25 umes and Adjustments 4 5 6 R 1125 8 96 0.96 0.96 0.96 14 293 2 54 1171 8 2 0 T TR	<b>3</b>	
East/West Street: F North/South Street: Intersection Orientation Major Street Moveme L Volume 3 Peak-Hour Factor, PH Peak-15 Minute Volur Hourly Flow Rate, HF Percent Heavy Vehicl Median Type T RT Channelized? Lanes Configuration Upstream Signal? Minor Street Moveme L Volume 3	Patterson Rd         Hospital Access +         Vehicle Volu         It is	udy period (hrs): 0.25 umes and Adjustments 4 5 6 R 1125 8 96 0.96 0.96 0.96 14 293 2 54 1171 8 2 0 T TR Yes 10 11 12 R	5	
East/West Street: F North/South Street: Intersection Orientation Major Street Moveme L Volume 3 Peak-Hour Factor, PH Peak-15 Minute Volum Hourly Flow Rate, HF Percent Heavy Vehicl Median Type T RT Channelized? Lanes Configuration Upstream Signal? Minor Street Moveme L Volume 3 Peak Hour Factor, PH	Patterson Rd         Hospital Access +	udy period (hrs): 0.25 umes and Adjustments 4 5 6 R 1125 8 96 0.96 0.96 0.96 14 293 2 54 1171 8 2 0 T TR Yes 10 11 12 R 5 0.96 0.96	5	
East/West Street: F North/South Street: Intersection Orientation Major Street Moveme L Volume 3 Peak-Hour Factor, PH Peak-15 Minute Volum Hourly Flow Rate, HF Percent Heavy Vehicl Median Type TT RT Channelized? Lanes Configuration Upstream Signal? Minor Street Moveme L Volume 3 Peak Hour Factor, PH Peak-15 Minute Volum	Patterson Rd         Hospital Access +         Vehicle Volu         nts       1       2       3         T       R       L       T         Its       1       2       3       T         Its       1       2       3       T         Its       1       2       3       5         Its       1       3       1385       43         No         Its       1       3       1385       43         No         Its       7       8       9         T       R       L       T         5       116       3         F       0.96       0.96         No         T       R       L       T         5       116       3         F       0.96       0.96         No       1       2         T       R       L       T         T       R       L       T         T       T       T	udy period (hrs): 0.25 umes and Adjustments 4 5 6 R 1125 8 96 0.96 0.96 0.96 14 293 2 54 1171 8 2 0 T TR Yes 10 11 12 R 5 0.96 0.96 1 1	5	
East/West Street: F North/South Street: Intersection Orientation Major Street Moveme L Volume 3 Peak-Hour Factor, PH Peak-15 Minute Volur Hourly Flow Rate, HF Percent Heavy Vehicl Median Type T RT Channelized? Lanes Configuration Upstream Signal? Minor Street Moveme L Volume 3 Peak Hour Factor, PH Peak-15 Minute Volum Hourly Flow Rate, HF	Patterson Rd         Hospital Access +         Vehicle Volu         Its       1       2       3         T       R       L       T         Its       1       2       3         T       R       L       T         Its       1       2       3         It       0.96       0.96       0.96       0.96         It       3       1385       43       9         It       3       1385       43       9         It       1       2       1       1       2         It       2       1       1       2       1       1       2         It       2       1       1       2       1       1       2         It       2       1       1       2       1       1       2         It       3       7       8       9       7       R       L       T         It       3       16       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3<	udy period (hrs): 0.25 umes and Adjustments 4 5 6 R 1125 8 96 0.96 0.96 0.96 14 293 2 54 1171 8 2 0 T TR Yes 10 11 12 R 5 0.96 0.96 1 1 3 5	5	
East/West Street: F North/South Street: Intersection Orientation Major Street Moveme L Volume 3 Peak-Hour Factor, PH Peak-15 Minute Volum Hourly Flow Rate, HF Percent Heavy Vehick Median Type T RT Channelized? Lanes Configuration Upstream Signal? Minor Street Moveme L Volume 3 Peak Hour Factor, PH Peak-15 Minute Volum Hourly Flow Rate, HFI Percent Heavy Vehick	Patterson Rd         Hospital Access +         Vehicle Volu         Its       1       2       3         T       R       L       T         Its       1       2       3         T       R       L       T         Its       1       2       3         IF       0.96       0.96       0.96         Ine       1       346       11         R       3       1385       43         es       0       -       -       2         MLTL       No       1       2       1       2         MLTL       No       1       2       1       2         Its       7       8       9       7       R       L       T         5       116       3	udy period (hrs): 0.25 umes and Adjustments 4 5 6 R 1125 8 96 0.96 0.96 0.96 14 293 2 54 1171 8 2 0 T TR Yes 10 11 12 R 5 0.96 0.96 1 1 3 5 0 0	<b>}</b>	
East/West Street: F North/South Street: Intersection Orientation Major Street Moveme L Volume 3 Peak-Hour Factor, PH Peak-15 Minute Volur Hourly Flow Rate, HF Percent Heavy Vehicl Median Type T RT Channelized? Lanes Configuration Upstream Signal? Minor Street Moveme L Volume 3 Peak Hour Factor, PH Peak-15 Minute Volum Hourly Flow Rate, HF	Patterson Rd         Hospital Access +         Vehicle Volu         Its       1       2       3         T       R       L       T         Its       1       2       3         T       R       L       T         Its       1       2       3         It       0.96       0.96       0.96       0.96         It       3       1385       43       9         It       3       1385       43       9         It       1       2       1       1       2         It       2       1       1       2       1       1       2         It       2       1       1       2       1       1       2         It       2       1       1       2       1       1       2         It       3       7       8       9       7       R       L       T         It       3       16       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3<	udy period (hrs): 0.25 umes and Adjustments 4 5 6 R 1125 8 96 0.96 0.96 0.96 14 293 2 54 1171 8 2 0 T TR Yes 10 11 12 R 5 0.96 0.96 1 1 3 5	5	

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Movements	······································		destrian 4 15	Volume 16	s and /	Adjustments_	· · · · · · · · · · · · · · · · · · · ·		
Flow (ped/hr)		0 0	2 2	2					
Lane Width (f	t)		2.0 12.	0 12.0					
Walking Spee Percent Block			4.0 4 0 0	1.0 4.0 0	)				
					······			<u></u>	
			Up	stream	Signal	Data			
Pro						Distance			
Flo vpt		v Type s	Time ec sed	-	•	ed to Signal et			
							1997 - A.		········
S2 Left-Tum		700 3 1700 5		110 110	35 35	2000 2000			
Through S5 Left-Tum			3 21	110	ათ 35	2000 600			
Through		700 5		110	35	600			
<u></u>									
Worksheet 3-	Data for (	Computii	ng Effect	t of Dela	ay to M	lajor Street V	ehicles		
	· · · · ·	Μον	ement 2	Mov	ement	5	<u> </u>		
		11104	VIIICIII Z	10101	CHICHL				
Shared In volu Sat flow rate,	ime, maj major th	or th veh or rt veh vehicles	nicles: icles: :						
Shared In volu Sat flow rate, Sat flow rate,	ime, maj major th major rt v	or th veh or rt vehi vehicles vehicles:	nicles: icles: :				······································		
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Shared In volu Sat flow rate, Sat flow rate, Number of ma Worksheet 4-0 Critical Gap C	ume, maj major th major rt v ijor stree Critical G alculation	or th veh or rt vehicles vehicles: t through ap and F	nicles: icles: : n lanes: =ollow-up	o Time (	Calcula	ation			
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t(c,base) t(c,hv) 2.	ume, major the major the major street Critical G alculation 1 4 L L 4.1 4.1 00 2.00	or th veh or rt vehicles vehicles: t through ap and F 7 7 7.5 2.00	nicles: icles: : n lanes: =ollow-up 8 9 R L 6.9 2.00 2.0	0 Time ( 10 T 7.5 20 2.00	Calcula 11 1 R 6.9 0 2.00	ation 2			
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Computation	I-Queue Clearance Time at Upstream Signal	
	Movement 2 Movement 5	
	V(t) V(l,prot) V(t) V(l,prot)	
V prog	1195 55 772 291	
	on Flow Rate, s (vph) 3400 3400 3400 3400	
Arrival Type	5 3 5 3	
Effective Gree		
Cycle Length,		
Rp (from Exh		
-	hicles arriving on green P 0.727 0.118 0.894 0.191	
g(q1)	10.5 1.6 2.6 7.6 14.9 0.0 1.6 0.7	
g(q2)	14.9 0.0 1.6 0.7 25.5 1.6 4.3 8.3	
g(q)	23.3 1.0 4.3 0.3	
Computation	2-Proportion of TWSC Intersection Time blocked	
	Movement 2 Movement 5	
	V(t) V(l,prot) V(t) V(l,prot)	
alpha	0.350 0.350	
beta	0.741 0.741	
Travel time, t(	a) (sec) 38.873 11.662	
Smoothing Fa	ctor, F 0.090 0.249	
	conflicting flow, f 0.835 0.038 0.626 0.236	
	flow, V(c,max) 2584 18 1499 728	
Min platooned	flow, V(c,min) 2000 2000 2000 2000	
Duration of bl	ocked period, t(p) 23.2 0.0 0.0 0.0	
	ocked period, t(p) 23.2 0.0 0.0 0.0	
Duration of ble Proportion tim	ocked period, t(p) 23.2 0.0 0.0 0.0	
Duration of ble Proportion tim	ocked period, t(p) 23.2 0.0 0.0 0.0 e blocked, p 0.211 0.000 Platoon Event Periods Result	
Duration of ble Proportion tim Computation 3	ocked period, t(p) 23.2 0.0 0.0 0.0 e blocked, p 0.211 0.000 Platoon Event Periods Result 0.211	
Duration of ble Proportion tim Computation 3 p(2) p(5)	Ocked period, t(p)         23.2         0.0         0.0           e blocked, p         0.211         0.000           -Platoon Event Periods         Result           0.211         0.000	
Duration of ble Proportion tim Computation 3 p(2) p(5) p(dom)	Ocked period, t(p)         23.2         0.0         0.0           e blocked, p         0.211         0.000          Platoon Event Periods         Result           0.211         0.000           0.211         0.000	
Duration of ble Proportion tim Computation 3 p(2) p(5) p(dom) p(subo)	bcked period, t(p)       23.2       0.0       0.0         e blocked, p       0.211       0.000         I-Platoon Event Periods       Result         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000	
Duration of ble Proportion tim Computation 3 p(2) p(5) p(dom) p(subo)	Ocked period, t(p)         23.2         0.0         0.0           e blocked, p         0.211         0.000          Platoon Event Periods         Result           0.211         0.000           0.211         0.000	•
Duration of bk Proportion tim Computation 3 p(2) p(5) p(dom) p(subo) Constrained o Proportion	becked period, t(p)         23.2         0.0         0.0           e blocked, p         0.211         0.000           e-Platoon Event Periods         Result           0.211         0.000           0.211         0.000           0.211         0.000           0.211         0.000           runconstrained?         U	•
Duration of bk Proportion tim Computation 3 p(2) p(5) p(dom) p(subo) Constrained o Proportion unblocked	becked period, t(p)       23.2       0.0       0.0       0.0         e blocked, p       0.211       0.000         -Platoon Event Periods       Result         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         1       0.000         1       (1)         (2)       (3)	•
Duration of bk Proportion tim Computation 3 p(2) p(5) p(dom) p(subo) Constrained o Proportion unblocked for minor	becked period, t(p)       23.2       0.0       0.0       0.0         e blocked, p       0.211       0.000         e-Platoon Event Periods       Result         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.000       0.211         0.000       0.211         0.000       0.211         0.000       0.211         0.000       0.211         0.000       0.211         0.000       0.211         0.000       0.211         0.000       0.211         0.000       0.211         0.000       U         (1)       (2)       (3)         Single-stage       Two-Stage Process	•
Duration of bk Proportion tim Computation 3 p(2) p(5) p(dom) p(subo) Constrained o Proportion unblocked	becked period, t(p)       23.2       0.0       0.0       0.0         e blocked, p       0.211       0.000         -Platoon Event Periods       Result         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         r unconstrained?       U         (1)       (2)       (3)         Single-stage       Two-Stage Process	
Duration of ble Proportion tim Computation 3 p(2) p(5) p(dom) p(subo) Constrained of Proportion unblocked for minor movements, p	becked period, t(p)       23.2       0.0       0.0       0.0         e blocked, p       0.211       0.000         -Platoon Event Periods       Result         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         runconstrained?       U         (1)       (2)       (3)         Single-stage       Two-Stage Process         (x)       Process       Stage I         1.000       Stage I	•
Duration of ble Proportion tim Computation 3 p(2) p(5) p(dom) p(subo) Constrained o Proportion unblocked for minor movements, p p(1) p(4)	becked period, t(p)       23.2       0.0       0.0       0.0         e blocked, p       0.211       0.000         -Platoon Event Periods       Result         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         runconstrained?       U         (1)       (2)       (3)         Single-stage       Two-Stage Process         (x)       Process       Stage I         1.000       0.789	•
Duration of bk Proportion tim Computation 3 p(2) p(5) p(dom) p(subo) Constrained o Proportion unblocked for minor movements, p p(1) p(4) p(7)	becked period, t(p)       23.2       0.0       0.0       0.0         e blocked, p       0.211       0.000         -Platoon Event Periods       Result         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         runconstrained?       U         (1)       (2)       (3)         Single-stage       Two-Stage Process         (x)       Process       Stage I         1.000       Stage I	•
Duration of bk Proportion tim Computation 3 p(2) p(5) p(dom) p(subo) Constrained of Proportion unblocked for minor movements, p p(1) p(4) p(7) p(8)	becked period, t(p)       23.2       0.0       0.0       0.0         e blocked, p       0.211       0.000         e-Platoon Event Periods       Result         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.000       0.211         0.000       0.211         0.000       0.789         (1)       (2)       (3)         Single-stage       Two-Stage Process         (x)       Process       Stage I         1.000       0.789       0.789         0.789       0.789       1.000	-
Duration of bk Proportion tim Computation 3 p(2) p(5) p(dom) p(subo) Constrained of Proportion unblocked for minor movements, p p(1) p(4) p(7) p(8) p(9)	becked period, t(p)       23.2       0.0       0.0       0.0         e blocked, p       0.211       0.000        Platoon Event Periods       Result         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.000       runconstrained?         U       (1)       (2)       (3)         Single-stage       Two-Stage Process         (x)       Process       Stage I         1.000       0.789       0.789         0.789       0.789       1.000         0.789       0.789       1.000	•
Duration of bk Proportion tim Computation 3 p(2) p(5) p(dom) p(subo) Constrained o Proportion unblocked for minor movements, p p(1) p(4) p(7) p(8) p(9) p(10)	becked period, t(p)       23.2       0.0       0.0       0.0         e blocked, p       0.211       0.000         e-Platoon Event Periods       Result         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.000       0.211         0.000       0.211         0.000       0.789         (1)       (2)       (3)         Single-stage       Two-Stage Process         (x)       Process       Stage I         1.000       0.789       0.789         0.789       0.789       1.000	-
Duration of ble Proportion tim Computation 3 p(2) p(5) p(dom) p(subo) Constrained of Proportion unblocked for minor movements, p p(1) p(4) p(7) p(8) p(9) p(10) p(11)	bcked period, t(p)       23.2       0.0       0.0       0.0         e blocked, p       0.211       0.000         I-Platoon Event Periods       Result         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.000       Two-Stage Process         (x)       Process       Stage I         1.000       0.789       0.789         0.789       0.789       1.000         0.789       1.000       0.789	-
Duration of bk Proportion tim Computation 3 p(2) p(5) p(dom) p(subo) Constrained o Proportion unblocked for minor movements, p p(1) p(4) p(7) p(8) p(9) p(10)	becked period, t(p)       23.2       0.0       0.0       0.0         e blocked, p       0.211       0.000        Platoon Event Periods       Result         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.000       runconstrained?         U       (1)       (2)       (3)         Single-stage       Two-Stage Process         (x)       Process       Stage I         1.000       0.789       0.789         0.789       0.789       1.000         0.789       0.789       1.000	
Duration of bk Proportion tim Computation 3 p(2) p(5) p(dom) p(subo) Constrained o Proportion unblocked for minor movements, p p(1) p(4) p(7) p(8) p(9) p(10) p(11) p(12) Computation 4	bcked period, t(p)       23.2       0.0       0.0       0.0         e blocked, p       0.211       0.000         I-Platoon Event Periods       Result         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         order       0.211         0.000       0.211         0.000       0.211         0.000       0.211         0.000       0.211         0.000       0.33         Single-stage       Two-Stage Process         Process       Stage I         1.000       0.789         0.789       0.789         0.789       1.000         0.789       1.000         1.000       0.789         1.000       0.789         1.000       0.789	-
Duration of bk Proportion tim Computation 3 p(2) p(5) p(dom) p(subo) Constrained of Proportion unblocked for minor movements, p p(1) p(4) p(7) p(8) p(9) p(10) p(11) p(12) Computation 4	bcked period, t(p)       23.2       0.0       0.0       0.0         e blocked, p       0.211       0.000         I-Platoon Event Periods       Result         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         runconstrained?       U         (1)       (2)       (3)         Single-stage       Two-Stage Process         (x)       Process       Stage I         1.000       0.789       0.789         0.789       0.789       1.000         0.789       1.000       0.789         1.000       0.789       1.000         and 5       Process       Process	-
Duration of bk Proportion tim Computation 3 p(2) p(5) p(dom) p(subo) Constrained o Proportion unblocked for minor movements, p p(1) p(4) p(7) p(8) p(7) p(8) p(10) p(11) p(12) Computation 4	bcked period, t(p)       23.2       0.0       0.0       0.0         e blocked, p       0.211       0.000         I-Platoon Event Periods       Result         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         0.211       0.000         order       0.211         0.000       0.211         0.000       0.211         0.000       0.211         0.000       0.211         0.000       0.33         Single-stage       Two-Stage Process         Process       Stage I         1.000       0.789         0.789       0.789         0.789       1.000         0.789       1.000         1.000       0.789         1.000       0.789         1.000       0.789	

s 3400 3400 340				
Px 1.000 0.789 0.7 V c,u,x 1181 903 17		604 592		
V c,u,x 1181 903 17		JUH JJZ		
Cr,x 599 749 56	1084 72	454		
C plat,x 599 591 44	855 57	454		
Two-Stage Process	40 44			
7 8 Classif Stass? Class	10 11	1 Classo Classo	Clane?	
Stage1 Stage2 Stage	i Stagez Stage	i Stagez Stage	Slagez	
V(c,x) 1393 693	1285 698			
s 3400 3400	3400 3400			
P(x) 0.789 1.000	1.000 0.789			
V(c,u,x) 856 693	1285 0			
C(r,x) 319 400	177 1029			
C(plat,x) 252 400	177 812			
Worksheet 6-Impedance and Ca	anacity Equation	\$		
Step 1: RT from Minor St.	9	12		
·			·	
Conflicting Flows	694	592		
Potential Capacity	855	454		
Pedestrian Impedance Factor	1.00	1.00		
Movement Capacity	854	453		
Probability of Queue free St.	0.86	0.99		
Step 2: LT from Major St.	4	1		
Conflicting Flows	1430	1181		
Potential Capacity	591	599		
Pedestrian Impedance Factor	1.00	1.00		
Movement Capacity	590	598		
Probability of Queue free St.	0.91	0.99		
Maj L-Shared Prob Q free St.				
Step 3: TH from Minor St.	8	11		
		••	· · · · · · · · · · · · · · · · · · ·	
Conflicting Flows				
Potential Capacity				
Pedestrian Impedance Factor	1.00	1.00		
Cap. Adj. factor due to Impeding	i mvmnt 0.9	90 0.90		
Movement Capacity		4.65		
Probability of Queue free St.	1.00	1.00		
Step 4: LT from Minor St.	7	10	<u> </u>	
Conflicting Flows	2086	1983	<u></u>	
Potential Capacity		57		
Pedestrian Impedance Factor	1.00	1.00		
Maj. L, Min T Impedance factor	0.90	0.90		
Maj. L, Min T Adj. Imp Factor.	0.92	0.92		
	V.JL	0.02		

Worksheet 7-Computation of the Effect of Two-stage Gap Acceptance

· ·			
Part 1 - First Stage	· · · · · · · · · · · · · · · · · · ·		
Conflicting Flows			
Potential Capacity	297	237	
Pedestrian Impedance Fac		1.00	
Cap. Adj. factor due to Imp	eding mvmnt 0.	99 0.91	
Movement Capacity	295	215	
Probability of Queue free S	t. 1.00	1.00	
Part 2 - Second Stage			
Conflicting Flows			
Potential Capacity	236	281	
Pedestrian Impedance Fac	tor 1.00	1.00	
Cap. Adj. factor due to Imp		91 0.99	
Movement Capacity	214	279	
Part 3 - Single Stage			
Conflicting Flows			
Potential Capacity			
Pedestrian Impedance Fac	tor 1.00	1.00	
Cap. Adj. factor due to Imp	edina mymnt 0	90 0.90	
Movement Capacity	••••••••••••••••••••••••••••••••••••••		
• •		·	
Result for 2 stage process:			
a 	0.98 0.98		
y Ct			
	4 00	4.00	
Probability of Queue free S	t. 1.00	1.00	
Step 4: LT from Minor St.	7	10	an a
Part 1 - First Stage			
Conflicting Flows	1393	1285	
Potential Capacity	252	177	
Pedestrian Impedance Fac		1.00	
Cap. Adj. factor due to Imp		99 0.91	
Movement Capacity	250	161	
Part 2 - Second Stage			
Conflicting Flows	693	698	
Potential Capacity	400	812	
Pedestrian Impedance Fac		1.00	
Cap. Adj. factor due to Imp			
Movement Capacity	359	694	
Part 3 - Single Stage			
Conflicting Flows	2086	1983	
Potential Capacity		57	
Pedestrian Impedance Fac		1.00	
Maj. L, Min T Impedance fa		0.90	
Maj. L, Min T Adj. Imp Fact		0.92	
Cap. Adj. factor due to Imp			
Movement Capacity	40	45	
Doguitta for True stars -			
Results for Two-stage proc a	ess: 0.98 0.98		н. 1917 — Полона Салана, страна страна 1917 — Полона Салана (страна) — Салана (страна) — Салана (страна) — Салана 1917 — Салана (страна)
	0.66 0.19		
/	11 hh 11 14		

Worksheet 8-Share	ed Lane Calculation	S				
Movement	78 LTR		11 12 R			
Volume (vph) Movement Capacit Shared Lane Capa		120 3 854	5 157 265	453		-
Worksheet 9-Com	outation of Effect of	Flared Min	or Street A	pproaches		
Movement	78 LTR		11 12 R			
C sep Volume Delay		54 157 20 3	453 5			
Q sep Q sep +1 round (Qsep +1)					•	
n max C sh		265				
n Cact						
n C act Worksheet 10-Dela Movement		and Level of 9 10 1	1 12			
n C act Worksheet 10-Dela Movement	4 7 8	ind Level of	1 12			
n C act Worksheet 10-Dela Movement Lane Config Lane Config t v (vph) 3 C(m) (vph) 59 v/c 0.01 95% queue length Control Delay 1 LOS B Approach Delay	4 7 8 L L 1 54 36 120 8 590 229 0.09 0.16 0.	and Level of 9 10 1 R Ll 0 8 854 14 0.0 9.9 C	11 12 R 265 03 0.09 19.0 9.0			
n C act Worksheet 10-Dela Movement Lane Config L v (vph) 3 C(m) (vph) 59 v/c 0.01 95% queue length Control Delay 1 LOS B Approach Delay Approach LOS	4 7 8 L L I 54 36 120 8 590 229 0.09 0.16 0. 0.02 0.30 0.55 1.1 11.7 23.6 B C A 13.1	and Level of 9 10 1 R Ll 0 8 854 14 0.0 9.9 C 19 C	265 03 0.09 19.0			
Movement Lane Config L v (vph) 3 C(m) (vph) 59 v/c 0.01 95% queue length Control Delay 1 LOS B Approach Delay Approach LOS	4 7 8 L L I 54 36 120 8 590 229 0.09 0.16 0. 0.02 0.30 0.55 1.1 11.7 23.6 B C A 13.1 B	and Level of 9 10 1 R Ll 0 8 854 14 0.0 9.9 C 19 C 19 C	265 03 0.09 19.0			
n C act Worksheet 10-Dela Movement Lane Config L v (vph) 3 C(m) (vph) 59 v/c 0.01 95% queue length Control Delay 1 LOS B Approach Delay Approach Delay Approach LOS Worksheet 11-Shar	4       7       8         L       L       L         54       36       120         98       590       229         0.09       0.16       0.         0.02       0.30       0.55         1.1       11.7       23.6         B       C       A         13.1       B         ed Major LT Imped       Moveme         0.99         eam 2 or 5         ream 3 or 6       vrate for stream 2 or vrate for stream 3 or 6	and Level of 9 10 1 R Ll 0 8 854 14 0.1 9.9 C 19 C 19 C 19 C 19 C 19 0.49 9.9 C 19 0.49 9.9 C 19 0.49 9.9 C 19 0.49 9.9 C 19 0.49 9.9 C 19 0.49 9.9 C 19 0.49 9.9 C 19 0.49 9.9 C 19 0.49 19 19 10 19 10 10 10 10 10 10 10 10 10 10	11 12 R 265 03 0.09 19.0 9.0 elay			

HCS2000: Unsignalized Intersections Release 4.1c

### \_\_\_\_\_TWO-WAY STOP CONTROL SUMMARY\_\_\_\_\_

D.:	unnell					
	0.0000					
	0/2003					
ime Period: A						
		ospital Acc	ess			
	Junction C	ity				
		·				
		ess to Patt	erson Rd			
n Orientation:	EW	Study p	period (hrs):	0.25		
	Vehicle	Volumes a	nd Adiustm	ents		
et Approach	Fastb					
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4						
			163 1933	32		
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Signal?	Yes		Yes			
lovement 7 L T			1 12			
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	i <b>?</b>		No			
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	N					
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ION	LK	LR				
	: St. Mary's He to Street: Patt th Street: Patt th Street: Ho on Orientation: eet: Approach Movement 1 L T 4 r Factor, PHF w Rate, HFR eavy Vehicles rope TVVL elized? 1 tion Signal? eet: Approach Movement 7 L T 19 r Factor, PHF w Rate, HFR eavy Vehicles rade (%) orage 4	Year:       2023         : St. Mary's Hospital Accellation:       Exterson Rd         th Street:       Patterson Rd         th Street:       Hospital Accellation:         work       Vehicle         vehicle       Vehicle         vehicle       Vehicle         vehicle       Vehicle         vehicle       Vehicle         vehicle       Vehicle         vehicle       Vehicle         vehicles       0         vehicles       1         vehicles       1         vehicles       1         vehicles       2         vehicles       2	Year: $2023$ : St. Mary's Hospital Access to Patterth Street:Patterson Rdth Street:Hospital Access +on Orientation:EWStudy p	Year: $2023$ : St. Mary's Hospital Access to Patterson Rd: Street:Patterson Rdth Street:Hospital Access +on Orientation:EWStudy period (hrs):	$\begin{array}{llllllllllllllllllllllllllllllllllll$	<pre>/ear: 2023 : St. Mary's Hospital Access to Patterson Rd : Street: Patterson Rd th Street: Hospital Access + on Orientation: EW Study period (hrs): 0.25 // Vehicle Volumes and Adjustments // R   L T R // 1 050 98 136 1605 2 r Factor, PHF 0.83 0.83 0.83 0.83 0.83 0.83 w Rate, HFR 4 1265 118 163 1933 2 eavy Vehicles 0 2 // rpe TWLTL elized? No // 1 2 1 1 2 0 tion L T R L T TR Signal? Yes Yes // Factor, PHF 0.83 0.83 0.83 0.83 w Rate, HFR 22 115 3 1 eavy Vehicles 2 2 0 0 rade (%) 0 0 orage 4 proach: Exists? No Storage elized? No // 1 0 0</pre>

Approach LOS		70.4 F		 
HCS2000: Unsignalize	ed Intersections R	Release 4.1c		
Phone: E-Mail:	Fax:			
TW	D-WAY STOP CO	ONTROL(TWSC	) ANALYSIS_	
Analyst: Mark Bunnell			- - -	
Agency/Co.:				
Date Performed: 9/20/2003 Analysis Time Period: AM Peak				
	- Hospital Access	5		
Jurisdiction: Grand Junctio Units: U. S. Customary	n City			
Analysis Year: 2023				
Project ID: St. Mary's Hospital /		ion Rd		
East/West Street: Patterson F North/South Street: Hospital A				
Patterson F North/South Street: Hospital A Intersection Orientation: EW	ccess +	iod (hrs): 0.25		
North/South Street: Hospital A Intersection Orientation: EW	ccess + Study peri ehicle Volumes a	nd Adjustments		
North/South Street: Hospital A Intersection Orientation: EW	ccess + Study peri ehicle Volumes a			
North/South Street: Hospital A Intersection Orientation: EW Major Street Movements 1 L T R	ccess + Study peri ehicle Volumes a 2 3 4 5 L T R	nd Adjustments 5 6		 <u></u>
North/South Street: Hospital A Intersection Orientation: EW Major Street Movements 1 L T R Volume 4 1050 Peak-Hour Factor, PHF 0.83	ccess + Study peri ehicle Volumes a 2 3 4 5 L T R 98 136 1605 0.83 0.83 0.8	nd Adjustments 5 6 5 2 13 0.83 0.83		
North/South Street: Hospital A Intersection Orientation: EW Major Street Movements 1 L T R Volume 4 1050 Peak-Hour Factor, PHF 0.83 Peak-15 Minute Volume 1	ccess + Study peri ehicle Volumes a 2 3 4 5 L T R 98 136 1605 0.83 0.83 0.8 316 30 41	nd Adjustments 5 6 5 2 33 0.83 0.83 483 1		 
North/South Street: Hospital A Intersection Orientation: EW Major Street Movements 1 L T R Volume 4 1050 Peak-Hour Factor, PHF 0.83 Peak-15 Minute Volume 1 Hourly Flow Rate, HFR 4 Percent Heavy Vehicles 0	ccess + Study peri ehicle Volumes a 2 3 4 5 L T R 98 136 1605 0.83 0.83 0.8	nd Adjustments 5 6 5 2 33 0.83 0.83 483 1		
North/South Street: Hospital A Intersection Orientation: EW Major Street Movements 1 L T R Volume 4 1050 Peak-Hour Factor, PHF 0.83 Peak-15 Minute Volume 1 Hourly Flow Rate, HFR 4 Percent Heavy Vehicles 0 Median Type TWLTL	Study period         ehicle Volumes a         2       3       4       4         2       3       4       4         L       T       R         98       136       1605         0.83       0.83       0.8         316       30       41         1265       118       163         -       -       2       -	nd Adjustments 5 6 5 2 33 0.83 0.83 483 1		
North/South Street: Hospital A Intersection Orientation: EW Major Street Movements 1 L T R Volume 4 1050 Peak-Hour Factor, PHF 0.83 Peak-15 Minute Volume 1 Hourly Flow Rate, HFR 4 Percent Heavy Vehicles 0 Median Type TWLTL RT Channelized? Lanes 1 2 1	Study period           ehicle Volumes at         2         3         4         4           2         3         4         4           L         T         R         7           98         136         1605         0.83         0.83           316         30         41         1265         118         163	nd Adjustments 5 6 5 2 33 0.83 0.83 483 1		
North/South Street: Hospital A Intersection Orientation: EW Major Street Movements 1 L T R Volume 4 1050 Peak-Hour Factor, PHF 0.83 Peak-15 Minute Volume 1 Hourly Flow Rate, HFR 4 Percent Heavy Vehicles 0 Median Type TWLTL RT Channelized? Lanes 1 2 1 Configuration L T R	Ccess + Study peri ehicle Volumes a 2 3 4 5 L T R 98 136 1605 0.83 0.83 0.8 316 30 41 1265 118 163 2 - No 1 2 0 L T TR	nd Adjustments 5 6 3 0.83 0.83 483 1 1933 2 -		
North/South Street: Hospital A Intersection Orientation: EW Major Street Movements 1 L T R Volume 4 1050 Peak-Hour Factor, PHF 0.83 Peak-15 Minute Volume 1 Hourly Flow Rate, HFR 4 Percent Heavy Vehicles 0 Median Type TWLTL RT Channelized? Lanes 1 2 1	Ccess + Study peri ehicle Volumes a 2 3 4 5 L T R 98 136 1605 0.83 0.83 0.8 316 30 41 1265 118 163 2 - No 1 2 0 L T TR	nd Adjustments 5 6 3 0.83 0.83 483 1 1933 2 -		
North/South Street: Hospital A Intersection Orientation: EW Major Street Movements 1 L T R Volume 4 1050 Peak-Hour Factor, PHF 0.83 Peak-15 Minute Volume 1 Hourly Flow Rate, HFR 4 Percent Heavy Vehicles 0 Median Type TWLTL RT Channelized? Lanes 1 2 1 Configuration L T R	Study period         ehicle Volumes at       2       3       4       5         2       3       4       5       5       4       5         98       136       1605       0.83       0.83       0.83       0.83       0.83       316       30       41         1265       118       163       -       -       2       -         No       1       2       0       L       T       TR         s       Yes       Yes       Yes       Yes	nd Adjustments 5 6 3 0.83 0.83 483 1 1933 2 -		
North/South Street: Hospital A Intersection Orientation: EW Major Street Movements 1 L T R Volume 4 1050 Peak-Hour Factor, PHF 0.83 Peak-15 Minute Volume 1 Hourly Flow Rate, HFR 4 Percent Heavy Vehicles 0 Median Type TWLTL RT Channelized? Lanes 1 2 1 Configuration L T R Upstream Signal? Ye Minor Street Movements 7 L T R	Study period         ehicle Volumes a       2       3       4       5         2       3       4       5	nd Adjustments 5 6 3 0.83 0.83 483 1 1933 2 -		
North/South Street: Hospital A Intersection Orientation: EW Major Street Movements 1 L T R Volume 4 1050 Peak-Hour Factor, PHF 0.83 Peak-15 Minute Volume 1 Hourly Flow Rate, HFR 4 Percent Heavy Vehicles 0 Median Type TWLTL RT Channelized? Lanes 1 2 1 Configuration L T R Upstream Signal? Ye Minor Street Movements 7 L T R Volume 19 9 Peak Hour Factor, PHF 0.83	Study period         ehicle Volumes at       2       3       4       5         2       3       4       5       4       5         98       136       1605       0.83       0.83       0.83         98       136       1605       0.83       0.83       0.83         98       136       1605       0.83       0.83       0.83         98       136       1605       0.83       0.83       0.83         98       136       1605       118       1633         -       -       2       -       No         1       2       0       L       T       TR         s       Yes       8       9       10       1         L       T       R       1       0.83       0.83	nd Adjustments 5 6 3 0.83 0.83 483 1 1933 2 - 11 12 0.83		
North/South Street: Hospital A Intersection Orientation: EW Major Street Movements 1 L T R Volume 4 1050 Peak-Hour Factor, PHF 0.83 Peak-15 Minute Volume 1 Hourly Flow Rate, HFR 4 Percent Heavy Vehicles 0 Median Type TWLTL RT Channelized? Lanes 1 2 1 Configuration L T R Upstream Signal? Ye Minor Street Movements 7 L T R Volume 19 9 Peak Hour Factor, PHF 0.83 Peak-15 Minute Volume 6	Study period         ehicle Volumes at       2       3       4       5         2       3       4       5       4       5         98       136       1605       0.83       0.83       0.83       0.83         98       136       1605       0.83       0.83       0.83       0.83         98       136       1605       0.83       0.83       0.83       0.83         98       136       1605       118       1633       -       -       -       -       -       No       1       2       0       L       T       T       T       R       -       -       -       -       -       No       1       2       0       L       T       T       T       R       -	nd Adjustments 5 6 3 0.83 0.83 483 1 1933 2 -		
North/South Street: Hospital A Intersection Orientation: EW Major Street Movements 1 L T R Volume 4 1050 Peak-Hour Factor, PHF 0.83 Peak-15 Minute Volume 1 Hourly Flow Rate, HFR 4 Percent Heavy Vehicles 0 Median Type TWLTL RT Channelized? Lanes 1 2 1 Configuration L T R Upstream Signal? Ye Minor Street Movements 7 L T R Volume 19 9 Peak Hour Factor, PHF 0.83 Peak-15 Minute Volume 6 Hourly Flow Rate, HFR 22 Percent Heavy Vehicles 2	Study period         ehicle Volumes at       2       3       4       5         2       3       4       5       5       1       6       1       6       1       6       3       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       3       1	nd Adjustments 5 6 3 0.83 0.83 483 1 1933 2 - 11 12 0.83		
North/South Street: Hospital A Intersection Orientation: EW Major Street Movements 1 L T R Volume 4 1050 Peak-Hour Factor, PHF 0.83 Peak-15 Minute Volume 1 Hourly Flow Rate, HFR 4 Percent Heavy Vehicles 0 Median Type TWLTL RT Channelized? Lanes 1 2 1 Configuration L T R Upstream Signal? Ye Minor Street Movements 7 L T R Volume 19 9 Peak Hour Factor, PHF 0.83 Peak-15 Minute Volume 6 Hourly Flow Rate, HFR 22 Percent Heavy Vehicles 2 Percent Grade (%) 0	Study period         ehicle Volumes at       2       3       4       5         2       3       4       5       1       6       6       6       6       3       1       6       3       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       3       1	nd Adjustments 5 6 3 0.83 0.83 483 1 1933 2 - 11 12 0.83 0 1		
North/South Street: Hospital A Intersection Orientation: EW Major Street Movements 1 L T R Volume 4 1050 Peak-Hour Factor, PHF 0.83 Peak-15 Minute Volume 1 Hourly Flow Rate, HFR 4 Percent Heavy Vehicles 0 Median Type TWLTL RT Channelized? Lanes 1 2 1 Configuration L T R Upstream Signal? Ye Minor Street Movements 7 L T R Volume 19 9 Peak Hour Factor, PHF 0.83 Peak-15 Minute Volume 6 Hourly Flow Rate, HFR 22 Percent Heavy Vehicles 2	Study period         ehicle Volumes at       2       3       4       5         2       3       4       5       5       1       6       1       6       1       6       3       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       3       1	nd Adjustments 5 6 3 0.83 0.83 483 1 1933 2 - 11 12 0.83 0 1		

Movements Flow (ped/hr) Lane Width (ft) Walking Speed (ft/se Percent Blockage	13 14 15 0 0 2 12.0 12.0 12 c) 4.0 4.0	Volumes and 16 2	, ajaonionto	<u> </u>	
Lane Width (ft) Walking Speed (ft/se	12.0 12.0 12 c) 4.0 4.0				
Lane Width (ft) Walking Speed (ft/se	12.0 12.0 12 c) 4.0 4.0				
g.	0 0 0	4.0 4.0 0			
	U	ostream Signa	Data		
	t Arrival Green	Cycle Prog.	Distance		
Flow Flo vph vpt	w Type Time א sec se		ed to Signal eet		
S2 Left-Turn 168 Through 902	1700 3 20 1700 5 52	150 35 150 35	2000 2000		
S5 Left-Turn 188	1700 3 52		600	· · ·	
Through 1382	1700 5 62		600		
Worksheet 3-Data for	r Computing Effec	t of Delay to I	Major Street Veh	nicles	
<u></u>	Movement	2 Movemen	15		
Shared in volume, ma					
Shared In volume, ma Sat flow rate, major the					
Sat flow rate, major r					
Number of major stre					
			· · · · · · · · · · · · · · · · · · ·		
Worksheet 4-Critical	Gap and Follow-L	ıp Time Calcu	lation		
Critical Gap Calculati	00				
	4 7 8 9	10 11	12		
	LTRL	TR			
LL	LTRL		9		
L L t(c,base) 4.1 4.	LTRL	7.5 6.9			
L L t(c,base) 4.1 4. t(c,hv) 2.00 2.0 P(hv) 0 2	L T R L 1 7.5 6.9 00 2.00 2.00 2 2 2 0	7.5 6.9 .00 2.00 2.0 0	0 2.00		
L L t(c,base) 4.1 4. t(c,hv) 2.00 2.0 P(hv) 0 2 t(c,g) 0	L T R L 1 7.5 6.9 00 2.00 2.00 2 2 2 0 0.20 0.20 0.10	7.5 6.9 .00 2.00 2.0 0 0.20 0.20 0	0 2.00 .10		
L L t(c,base) 4.1 4. t(c,hv) 2.00 2.0 P(hv) 0 2 t(c,g) 0 Grade/100	L T R L 1 7.5 6.9 00 2.00 2.00 2 2 2 0 0.20 0.20 0.10 0.00 0.00 0.	7.5 6.9 .00 2.00 2.0 0 0.20 0.20 0 00 0.00 0.00	0 2.00 .10 ) 0.00		
L L t(c,base) 4.1 4. t(c,hv) 2.00 2.0 P(hv) 0 2 t(c,g) 0 Grade/100 t(3,lt) 0.00 0.00	L T R L 1 7.5 6.9 0 2.00 2.00 2 2 2 0 0.20 0.20 0.10 0.00 0.00 0.0 0 0.00 0.00	7.5 6.9 .00 2.00 2.0 0 0.20 0.20 0 00 0.00 0.00	0 2.00 9.10 0 0.00 00		
L L t(c,base) 4.1 4. t(c,hv) 2.00 2.0 P(hv) 0 2 t(c,g) 0 Grade/100 t(3,lt) 0.00 0.00 t(c,T): 1-stage 0.00 0	L T R L 1 7.5 6.9 0 2.00 2.00 2 2 2 0 0.20 0.20 0.10 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00	7.5 6.9 00 2.00 2.0 0 0.20 0.20 0 0.00 0.00 0.00 0.00	0 2.00 9.10 0 0.00 00 0.00 0.00		
L L t(c,base) 4.1 4. t(c,hv) 2.00 2.0 P(hv) 0 2 t(c,g) 0 Grade/100 t(3,lt) 0.00 0.00 t(c,T): 1-stage 0.00 0 2-stage 0.00 0 t(c) 1-stage 4.1 4	L T R L 1 7.5 6.9 0 2.00 2.00 2 2 2 0 0.20 0.20 0.10 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00	7.5       6.9         .00       2.00       2.0         0       0       0         0.20       0.20       0         0.20       0.20       0         0.00       0.00       0.00         0.00       0.00       0         0.00       1.00       1.         7.5       6.	0 2.00 .10 0 0.00 00 0.00 0.00 00 0.00 9		
L L t(c,base) 4.1 4. t(c,hv) 2.00 2.0 P(hv) 0 2 t(c,g) 0 Grade/100 t(3,lt) 0.00 0.00 t(c,T): 1-stage 0.00 0	L T R L 1 7.5 6.9 0 2.00 2.00 2 2 2 0 0.20 0.20 0.10 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00	7.5 6.9 00 2.00 2.0 0 0.20 0.20 0 0.00 0.00 0.00 0.00	0 2.00 .10 0 0.00 00 0.00 0.00 00 0.00 9		
L L t(c,base) 4.1 4. t(c,hv) 2.00 2.0 P(hv) 0 2 t(c,g) 0 Grade/100 t(3,lt) 0.00 0.00 t(c,T): 1-stage 0.00 0 2-stage 0.00 0 t(c) 1-stage 4.1 4 2-stage 4.1 4. Follow-Up Time Calc	L T R L 1 7.5 6.9 0 2.00 2.00 2 2 2 0 0.20 0.20 0.10 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00 1.00 .1 7.5 6.9 1 6.5 6.9 ulations	7.5       6.9         .00       2.00       2.0         0       0       0         0.20       0.20       0         0.20       0.20       0         0.00       0.00       0.00         0.00       0.00       0         0.00       1.00       1.         7.5       6.	0 2.00 .10 0 0.00 00 0.00 0.00 00 0.00 9		
L L t(c,base) 4.1 4. t(c,hv) 2.00 2.0 P(hv) 0 2 t(c,g) 0 Grade/100 t(3,lt) 0.00 0.00 t(c,T): 1-stage 0.00 0 2-stage 0.00 0 t(c) 1-stage 4.1 4 2-stage 4.1 4. Follow-Up Time Calc Movement 1	L T R L 1 7.5 6.9 0 2.00 2.00 2 2 2 0 0.20 0.20 0.10 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00 1.00 .1 7.5 6.9 1 6.5 6.9 ulations 4 7 8 9	7.5       6.9         .00       2.00       2.0         0       0       0.20       0         0.20       0.20       0.0       0         00       0.00       0.00       0         0.00       0.00       0.00       0         0.00       1.00       1.       7.5       6.         6.5       6.5       6.5       1.9         10       11       1       1	0 2.00 .10 0 0.00 00 0.00 0.00 00 0.00 9		
L L t(c,base) 4.1 4. t(c,hv) 2.00 2.0 P(hv) 0 2 t(c,g) 0 Grade/100 t(3,lt) 0.00 0.00 t(c,T): 1-stage 0.00 0 2-stage 0.00 0 t(c) 1-stage 4.1 4 2-stage 4.1 4. Follow-Up Time Calc	L T R L 1 7.5 6.9 0 2.00 2.00 2 2 2 0 0.20 0.20 0.10 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00 1.00 .1 7.5 6.9 1 6.5 6.9 ulations	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	0 2.00 .10 0 0.00 00 0.00 0.00 00 0.00 9 9		

Computation	I-Queue Clearance Time		
	Movement		
	V(t) V(l,prot)	) V(t) V(l,prot)	
V prog	902 168		
<b>Total Saturati</b>	on Flow Rate, s (vph)	3400 3400 3400 3400	
Arrival Type	5 3	5 3	
Effective Gre	n, g (sec) 52	20 62 17	
Cycle Length		150 150 150	
Rp (from Exh		7 1.000 1.667 1.000	
	nicles arriving on green P	0.578 0.133 0.689 0.113	
g(q1)	16.8 6.4		
g(q2)	13.3 0.3	39.8 0.4	
g(q)	30.1 6.8	58.8 7 <i>.</i> 8	
Computation		tersection Time blocked	
	Movement		
	V(t) V(l,prot)	) V(t) V(l,prot)	
alpha	0.350	0.350	
beta	0.741	0.741	
Travel time, to		.873 11.662	
Smoothing Fa		.090 0.249	
		50 0.121 0.659 0.090	
		083 195 2240 272	
		000 2000 2000 2000	
Duration of Dr	cked period, t(p) 6.1	1 0.0 52.4 0.0	
	· · · · · ·	1 0.0 52.4 0.0 0.041 0.349	
Proportion tin	e blocked, p	0.041 0.349	
Proportion tin			
Proportion tin	e blocked, p	0.041 0.349	
Proportion tin Computation p(2)	e blocked, p B-Platoon Event Periods	0.041 0.349	
Proportion tin Computation p(2) p(5)	e blocked, p B-Platoon Event Periods 0.041	0.041 0.349	
Proportion tin Computation p(2) p(5) p(dom)	e blocked, p B-Platoon Event Periods 0.041 0.349	0.041 0.349	
Proportion tin Computation p(2) p(5) p(dom) p(subo)	e blocked, p B-Platoon Event Periods 0.041 0.349 0.349 0.349 0.041	0.041 0.349	
Proportion tin Computation p(2) p(5) p(dom) p(subo) Constrained o	e blocked, p B-Platoon Event Periods 0.041 0.349 0.349 0.349 0.041	0.041 0.349 Result	
Proportion tin Computation p(2) p(5) p(dom) p(subo) Constrained of Proportion	e blocked, p B-Platoon Event Periods 0.041 0.349 0.349 0.041 r unconstrained?	0.041 0.349 Result	
Proportion tin Computation p(2) p(5) p(dom) p(subo) Constrained of Proportion unblocked	e blocked, p B-Platoon Event Periods 0.041 0.349 0.349 0.041 r unconstrained? (1) (2)	0.041 0.349 Result U (3)	
Proportion tin Computation p(2) p(5) p(dom) p(subo) Constrained of Proportion unblocked for minor	e blocked, p B-Platoon Event Periods 0.041 0.349 0.349 0.041 r unconstrained? (1) (2) Single-stage Two	0.041 0.349          Result         U         (3)         ro-Stage Process	
Proportion tin Computation p(2) p(5) p(dom) p(subo) Constrained of Proportion unblocked for minor movements, p	e blocked, p B-Platoon Event Periods 0.041 0.349 0.349 0.041 r unconstrained? (1) (2) Single-stage Two (x) Process Sta	0.041 0.349 Result U (3)	
Proportion tin Computation p(2) p(5) p(dom) p(subo) Constrained of Proportion unblocked for minor movements, p p(1)	e blocked, p B-Platoon Event Periods 0.041 0.349 0.349 0.041 r unconstrained? (1) (2) Single-stage Two (x) Process Sta	0.041 0.349          Result         U         (3)         ro-Stage Process	
Proportion tin Computation p(2) p(5) p(dom) p(subo) Constrained of Proportion unblocked for minor movements, p p(1) p(4)	e blocked, p B-Platoon Event Periods 0.041 0.349 0.349 0.041 r unconstrained? (1) (2) Single-stage Two (x) Process Sta 0.651 0.959	0.041 0.349 Result U (3) to-Stage Process age I Stage II	
Proportion tin Computation p(2) p(5) p(dom) p(subo) Constrained of Proportion unblocked for minor movements, p p(1) p(4) p(7)	e blocked, p B-Platoon Event Periods 0.041 0.349 0.349 0.041 r unconstrained? (1) (2) Single-stage Two (x) Process Sta	0.041 0.349          Result         U         (3)         ro-Stage Process	
Proportion tin Computation p(2) p(5) p(dom) p(subo) Constrained of Proportion unblocked for minor movements, p p(1) p(4) p(7) p(8)	e blocked, p B-Platoon Event Periods 0.041 0.349 0.349 0.041 r unconstrained? (1) (2) Single-stage Two (x) Process Sta 0.651 0.959 0.630 0.959	0.041 0.349 Result U (3) to-Stage Process age I Stage II	
Proportion tin Computation p(2) p(5) p(dom) p(subo) Constrained of Proportion unblocked for minor movements, p p(1) p(4) p(7) p(8) p(9)	e blocked, p B-Platoon Event Periods 0.041 0.349 0.349 0.041 r unconstrained? (1) (2) Single-stage Two (x) Process Sta 0.651 0.959 0.630 0.959 0.959	0.041 0.349 Result U (3) o-Stage Process age I Stage II 0.651	
Proportion tin Computation p(2) p(5) p(dom) p(subo) Constrained of Proportion unblocked for minor movements, p p(1) p(4) p(7) p(8) p(9) p(10)	e blocked, p B-Platoon Event Periods 0.041 0.349 0.349 0.041 r unconstrained? (1) (2) Single-stage Two (x) Process Sta 0.651 0.959 0.630 0.959	0.041 0.349 Result U (3) to-Stage Process age I Stage II	
Proportion tin Computation p(2) p(5) p(dom) p(subo) Constrained of Proportion unblocked for minor movements, p p(1) p(4) p(7) p(8) p(9) p(10) p(11)	e blocked, p B-Platoon Event Periods 0.041 0.349 0.349 0.041 r unconstrained? (1) (2) Single-stage Two (x) Process Sta 0.651 0.959 0.630 0.959 0.959	0.041 0.349 Result U (3) o-Stage Process age I Stage II 0.651	
Proportion tin Computation p(2) p(5) p(dom) p(subo) Constrained of Proportion unblocked for minor movements, p p(1) p(4) p(7) p(8) p(9)	e blocked, p B-Platoon Event Periods 0.041 0.349 0.349 0.041 r unconstrained? (1) (2) Single-stage Two (x) Process Sta 0.651 0.959 0.630 0.959 0.959	0.041 0.349 Result U (3) o-Stage Process age I Stage II 0.651	
Proportion tin Computation p(2) p(5) p(dom) p(subo) Constrained of Proportion unblocked for minor movements, p p(1) p(4) p(7) p(8) p(9) p(10) p(11) p(12)	e blocked, p B-Platoon Event Periods 0.041 0.349 0.349 0.041 r unconstrained? (1) (2) Single-stage Two (x) Process Sta 0.651 0.959 0.630 0.959 0.630 0.651 0.651	0.041 0.349 Result U (3) o-Stage Process age I Stage II 0.651	
Proportion tin Computation p(2) p(5) p(dom) p(subo) Constrained of Proportion unblocked for minor movements, p p(1) p(4) p(7) p(8) p(9) p(10) p(11) p(12) Computation	e blocked, p B-Platoon Event Periods 0.041 0.349 0.349 0.041 r unconstrained? (1) (2) Single-stage Two (x) Process Sta 0.651 0.959 0.630 0.959 0.630 0.651 0.651 0.651 0.651 0.651	0.041 0.349 Result U (3) o-Stage Process age I Stage II 0.651	
Proportion tin Computation p(2) p(5) p(dom) p(subo) Constrained of Proportion unblocked for minor movements, p p(1) p(4) p(7) p(8) p(9) p(10) p(11)	e blocked, p B-Platoon Event Periods 0.041 0.349 0.349 0.041 r unconstrained? (1) (2) Single-stage Two (x) Process Sta 0.651 0.959 0.630 0.959 0.630 0.651 0.651 0.651 0.651 0.651	0.041 0.349 Result U (3) o-Stage Process age I Stage II 0.651	

s 3400 3400 3400 Px 0.651 0.959 0.63				
V c,u,x 1152 1299 20		2610 0	•	
Сг,х 614 529 31	504 12	1091		
C plat,x 400 507 20	483 8	710		
Two-Stage Process				
7 8 Changed Changel Changed	10 11		- A Stage?	
Stage1 Stage2 Stage1	Stagez Stage	er stagez sta	yer Stayez	
V(c,x) 1275 1292	2262 640			
s 3400 3400	3400 3400	<b>_</b>		
P(x) 0.959 0.651	0.651 0.959	9		
V(c,u,x) 1185 160	1651 523			
C(r,x) 201 826	105 510	· · · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · ·
C(plat,x) 193 537	68 489			
Worksheet 6-Impedance and Ca	pacity Equation	าร		
Step 1: RT from Minor St.	9	12		<u></u>
Conflicting Flows	634	970		<u></u>
Potential Capacity	483	710		
Pedestrian Impedance Factor	1.00	1.00		
Movement Capacity	482	709		
Probability of Queue free St.	0.76	1.00		
Step 2: LT from Major St.	4	1		
Conflicting Flows	1385	1937	······································	
Potential Capacity	507	400		
Pedestrian Impedance Factor	1.00	1.00		
Movement Capacity	506	399		
Probability of Queue free St.	0.68	0.99		
Maj L-Shared Prob Q free St.				
Step 3: TH from Minor St.	8	11		
Conflicting Flows				
Potential Capacity				
Pedestrian Impedance Factor	1.00	1.00		
Cap. Adj. factor due to Impeding (	m <b>vmnt 0</b> .	67 0.67		
Movement Capacity Probability of Queue free St.	1.00	1.00		
-				
Step 4: LT from Minor St.	7	10		
Conflicting Flows	2567	2902		
Potential Capacity	20	8		
Pedestrian Impedance Factor	1.00	1.00		
Maj. L, Min T Impedance factor	0.67	0.67		
Maj. L, Min T Adj. Imp Factor.	0.74 nvmnt 0.1	0.74 74 0 <i>.</i> 56		

Worksheet 7-Computation of the Effect of Two-stage Gap Acceptance

S	tep 3: TH from Minor St. 8 11
P	Part 1 - First Stage
	Conflicting Flows
	Potential Capacity 254 103
	Pedestrian Impedance Factor 1.00 1.00
	Cap. Adj. factor due to Impeding mymnt 0.99 0.68
	lovement Capacity 251 70
	Probability of Queue free St. 1.00 1.00
•	
	art 2 - Second Stage
	Conflicting Flows
	Potential Capacity 102 222
	Pedestrian Impedance Factor 1.00 1.00
	Cap. Adj. factor due to Impeding mvmnt 0.68 0.99
N	lovement Capacity 69 219
Ē	Part 3 - Single Stage
	Conflicting Flows
	otential Capacity
	Pedestrian Impedance Factor 1.00 1.00
	cap. Adj. factor due to Impeding mymnt 0.67 0.67
	lovement Capacity
Ŕ	esult for 2 stage process:
a	
y	
r C	t in the second
-	robability of Queue free St. 1.00 1.00
ŝ	tep 4: LT from Minor St. 7 10
	art 1 - First Stage
	onflicting Flows 1275 2262
Ρ	otential Capacity 193 68
	edestrian Impedance Factor 1.00 1.00
С	ap. Adj. factor due to Impeding mymnt 0.99 0.68
	lovement Capacity 191 46
P	art 2 - Second Stage
	onflicting Flows 1292 640
	otential Capacity 537 489
	edestrian Impedance Factor 1.00 1.00
	ap. Adj. factor due to Impeding mymnt 0.68 0.75
	ovement Capacity 364 369
P	art 3 - Single Stage
	onflicting Flows 2567 2902
	otential Capacity 20 8
	edestrian Impedance Factor 1.00 1.00
	aj. L, Min T Impedance factor 0.67 0.67
IVI	
	aj. L., Min T Adj. Imp Factor. 0.74 0.74
M	ap. Adj. factor due to Impeding mymnt 0.74 0.56
M Ca	
M Ca	ovement Capacity 15 5
M Ca M	ovement Capacity 15 5 esults for Two-stage process:
M Ca M	ovement Capacity 15 5

	red Lane Calculations	
Movement	7 8 9 10 11 12 L T R L T R	
Volume (vph) Movement Capa Shared Lane Ca	22 115 3 1 city (vph) 181 482 45 709 pacity (vph) 59	Э
Worksheet 9-Co	nputation of Effect of Flared Minor Street Appro	aches
Movement	7 8 9 10 11 12 L T R L T R	
C sep Volume Delay Q sep Q sep +1 round (Qsep +1)	181 482 45 709 22 115 3 1	
n max C sh SUM C sep n C act	59	
Worksheet 10-D Movement Lane Config	elay, Queue Length, and Level of Service	
Movement Lane Config v (vph) 4 C(m) (vph) v/c 0.0 95% queue lengt Control Delay LOS E Approach Delay	1 4 7 8 9 10 11 12 L L R LR 163 22 115 4 399 506 181 482 59	
Movement Lane Config v (vph) 4 C(m) (vph) v/c 0.0 95% queue lengt Control Delay LOS E Approach Delay Approach LOS	1       4       7       8       9       10       11       12         L       L       L       R       LR         163       22       115       4         399       506       181       482       59         0.32       0.12       0.24       0.07         0.03       1.38       0.41       0.92       0.21         14.1       15.5       27.6       14.8       70.4         C       D       B       F       16.9       70.4	
Movement Lane Config v (vph) 4 C(m) (vph) v/c 0.0 95% queue lengt Control Delay LOS E Approach Delay Approach LOS	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	

HCS2000: Unsignalized Intersections Release 4.1c

Anah	vst: Mark Bunnell	
	cy/Co.:	
	Performed: 9/20/2003	
	vsis Time Period: PM Peak	
	section: Patterson Rd - Hospital Access	
	diction: Grand Junction City	
	: U. S. Customary	
	rsis Year: 2023	
	ct ID: St. Mary's Hospital Access to Patterson Rd West Street: Patterson Rd	
	Vest Street: Patterson Rd I/South Street: Hospital Access +	
	section Orientation: EW Study period (hrs): 0.25	
	Vehicle Volumes and Adjustments	
Majo	r Street: Approach Eastbound Westbound	
	Movement 1 2 3   4 5 6	
	LTRILTR	
Volur	ne 3 2064 46 57 1730 9	
	ne 3 2064 46 57 1730 9 -Hour Factor, PHF 0.96 0.96 0.96 0.96 0.96	
	y Flow Rate, HFR 3 2150 47 59 1802 9	
	ent Heavy Vehicles $0 - 2 - 2$	
	an Type TWLTL	
	hannelized? No	
Lane		
Confi	guration LTR LTTR	
Upstr	eam Signal? Yes Yes	
Minoi	Street: Approach Northbound Southbound	
	Movement 7 8 9   10 11 12 L T R   L T R	
Volur	ne 39 128 3 6	
	Hour Factor, PHF 0.96 0.96 0.96 0.96	
Hour	y Flow Rate, HFR 40 133 3 6	
	ent Heavy Vehicles 2 2 0 0	
	ent Grade (%) 0 0	
	an Storage 4	
riare	d Approach: Exists? No Storage	
PTC	hannelized? No	
Lanes		
	guration L R LR	
		<u> </u>
	Delay, Queue Length, and Level of Service	
Appro		
	ment 1 4   7 8 9   10 11 12	
Lane	Config L L   L R   LR	
	) 3 59 40 133 9	
V (VIN		
v (vpt C(m)	(vph) 392 294 97 640 181	

Approach LOS		С	D			 
HCS20	00: Unsignaliz	ed Intersecti	ons Release 4	.1c		
Phone:		Fax:				
E-Mail:						
	TW	O-WAY STO		TWSC) ANAI	YSIS	
Analyst: Agency/Co.:	Mark Bunnell					
Date Performed:	9/20/2003	•				
Analysis Time Po						
Intersection: Jurisdiction:	Patterson Rd Grand Junctio		ACCESS			
Units: U. S. Cust	omary					
Analysis Year:	2023					
Project ID: St. N	lary's Hospital	Access to Part Rd	atterson Rd			
Project ID: St. N East/West Street North/South Street	lary's Hospital . t: Patterson   et: Hospital A	Rđ	atterson Rd			
Project ID: St. N East/West Stree	lary's Hospital . t: Patterson   et: Hospital A	Rd Access +	atterson Rd ly period (hrs):	0.25		
Project ID: St. N East/West Street North/South Street	lary's Hospital : Patterson et: Hospital A ntation: EW	Rd Access + Stud	ly period (hrs):		н. 1914 - С.	
Project ID: St. N East/West Street North/South Street	lary's Hospital t: Patterson et: Hospital A ntation: EW 	Rd Access + Stud /ehicle Volun 2 3	ly period (hrs): nes and Adjust 4 5 6			<b>.</b> .
Project ID: St. M East/West Street North/South Street Intersection Orie	lary's Hospital A t: Patterson et: Hospital A ntation: EW	Rd Access + Stud /ehicle Volun 2 3	ly period (hrs): nes and Adjust			• .
Project ID: St. M East/West Street North/South Street Intersection Orie Major Street Mov	lary's Hospital A t: Patterson et: Hospital A ntation: EW vements 1 L T R 3 2064	Rd Access + Stud /ehicle Volun 2 3 L T I 46 57	ly period (hrs): nes and Adjust 4 5 6 R 1730 9	ments		
Project ID: St. M East/West Street North/South Street Intersection Orie Major Street Mov Volume Peak-Hour Factor	lary's Hospital A t: Patterson et: Hospital A ntation: EW /ements 1 L T R 3 2064 or, PHF 0.96	Rd Access + Stud /ehicle Volun 2 3 L T 1 46 57 5 0.96 0.96	ly period (hrs): nes and Adjust 4 5 6 R 1730 9 5 0.96 0.96	ments		-
Project ID: St. M East/West Street North/South Street Intersection Orie Major Street Mov Volume Peak-Hour Facto Peak-15 Minute	lary's Hospital A t: Patterson het: Hospital A ntation: EW vements 1 L T R 3 2064 or, PHF 0.96 Volume 1	Rd Access + Stud /ehicle Volun 2 3 L T 1 46 57 5 0.96 0.96 538 12	ly period (hrs): nes and Adjust 4 5 6 R 1730 9 5 0.96 0.96 15 451 2	ments		 • .
Project ID: St. M East/West Street North/South Street Intersection Orie Major Street Mov Volume Peak-Hour Facto Peak-Hour Facto Peak-15 Minute V Hourly Flow Rate Percent Heavy V	lary's Hospital t: Patterson   tet: Hospital A ntation: EW //ements 1 L T R 3 2064 or, PHF 0.96 //olume 1 b, HFR 3 /ehicles 0	Rd Access + Stud /ehicle Volun 2 3 L T 1 46 57 5 0.96 0.96	ly period (hrs): nes and Adjust 4 5 6 R 1730 9 5 0.96 0.96	ments		  
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Project ID: St. M East/West Street North/South Street Intersection Orie Major Street Mov Volume Peak-Hour Facto Peak-Hour Facto Peak-15 Minute V Hourly Flow Rate Percent Heavy V	lary's Hospital t: Patterson tet: Hospital A ntation: EW //ements 1 L T R 3 2064 or, PHF 0.96 /olume 1 b, HFR 3 ehicles 0 TWLTL	Rd (ccess + Stud /ehicle Volun 2 3 L T 1 46 57 5 0.96 0.96 538 12 2150 47 - 2 No	ly period (hrs): nes and Adjust 4 5 6 R 1730 9 5 0.96 0.96 15 451 2	ments		• .
Project ID: St. M East/West Street North/South Street Intersection Orie Major Street Mov Volume Peak-Hour Factor Peak-15 Minute V Hourly Flow Rate Percent Heavy V Median Type RT Channelized? Lanes Configuration	lary's Hospital A ter Patterson et Hospital A ntation: EW //ements 1 L T R 3 2064 or, PHF 0.96 //olume 1 e, HFR 3 /ehicles 0 TWLTL 1 2 1 L T R	Rd Access + Stud 2 3 L T 1 46 57 5 0.96 0.96 538 12 2150 47 2 No 1 2 0 R L T	ly period (hrs): nes and Adjust 4 5 6 R 1730 9 5 0.96 0.96 15 451 2 59 1802 9  0 TR	ments		• .
Project ID: St. M East/West Street North/South Street Intersection Orie Major Street Mov Volume Peak-Hour Factor Peak-15 Minute V Hourly Flow Rate Percent Heavy V Median Type RT Channelized? Lanes Configuration	lary's Hospital A ter Patterson et Hospital A ntation: EW //ements 1 L T R 3 2064 or, PHF 0.96 //olume 1 e, HFR 3 /ehicles 0 TWLTL 1 2 1 L T R	Rd Access + Stud 2 3 L T 1 46 57 5 0.96 0.96 538 12 2150 47 2 No 1 2 0 R L T	ly period (hrs): nes and Adjust 4 5 6 R 1730 9 5 0.96 0.96 15 451 2 59 1802 9 	ments		• .
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Project ID: St. M East/West Street North/South Street Intersection Orie Major Street Mov Volume Peak-Hour Facto Peak-15 Minute V Hourly Flow Rate Percent Heavy V Median Type RT Channelized? Lanes Configuration Upstream Signal Minor Street Mov Volume Peak Hour Facto Peak-15 Minute V Hourly Flow Rate Percent Heavy V Percent Grade (%	lary's Hospital A t: Patterson f tet: Hospital A ntation: EW Vements 1 L T R 3 2064 or, PHF 0.96 Volume 1 e, HFR 3 Vehicles 0 TVVLTL 1 2 1 L T R 2 Ye rements 7 L T R 39 1 r, PHF 0.96 Volume 10 c, HFR 40 ehicles 2 6 0 0	Rd Access + Stud 2 3 L T 1 46 57 5 0.96 0.96 538 12 2150 47 2 No 1 2 0 R L T S 8 9 1 L T F 28 3 0.96 33	ly period (hrs): nes and Adjust 4 5 6 1730 9 5 0.96 0.96 15 451 2 59 1802 9  0 TR Yes 0 11 12 R 6 0.96 0.96 1 2 3 6 0	ments		
Project ID: St. M East/West Street North/South Street Intersection Orie Major Street Mov Volume Peak-Hour Facto Peak-15 Minute V Hourly Flow Rate Percent Heavy V Median Type RT Channelized? Lanes Configuration Upstream Signal Minor Street Mov Volume Peak Hour Facto Peak-15 Minute V Hourly Flow Rate Percent Heavy V	lary's Hospital A Patterson f et: Hospital A ntation: EW //ements 1 L T R 3 2064 or, PHF 0.96 /olume 1 e, HFR 3 'ehicles 0 TWLTL 1 2 1 L T R ? Ye /ements 7 L T R 39 1 r, PHF 0.96 /olume 10 e, HFR 40 ehicles 2 6) 0 4	Rd Access + Stud /ehicle Volun 2 3 L T 1 46 57 5 0.96 0.96 538 12 2150 47 - 2 No 1 2 0 R 8 9 1 L T F 28 3 0.96 33 4 133 3 2 0	ly period (hrs): nes and Adjust 4 5 6 1730 9 5 0.96 0.96 15 451 2 59 1802 9  0 TR Yes 0 11 12 R 6 0.96 0.96 1 2 3 6 0	ments		

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Movements		P 13	Pedesti 14	rian V 15	olume: 16	s and /	Adjustments_		 
Flow (ped/hr) Lane Width (f	<del>,</del> <del>1</del> )	•	0 2		) 12.0				
Walking Spee			.0 4.						
Percent Block	kage	0	0	0	0				
				_Ups	stream	Signal	Data		
Pro							Distance		
Flo vpl		ow Typ h	Ne II Sec	ime sec	-	•	ed to Signal et		
S2 Left-Tum	83 1720	1700 1700	3	15 76	150 150	35 35	2000		
Through S5 Left-Turn		1700	5 3	70 32	150	35 35	2000 600		
Through	1170	1700	5	60	150	35	600		
	Data fo	r Compi	uting E	ffect	of Dela	ay to M	lajor Street V	ehicles	
	· · · · · · · · · · · · · · · · · · ·		oveme			ement	-		 · · · · · · · · · · · · · · · · · · ·
Shared In volu Sat flow rate, Sat flow rate,	ume, m major t major r	ajor rt ve h vehick t vehicle	ehicles es: es:	5:	<u></u>				
Shared in volu Sat flow rate, Sat flow rate,	ume, m major t major r	ajor rt ve h vehick t vehicle	ehicles es: es:	5:					
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Shared In voli Sat flow rate, Sat flow rate, Number of ma Worksheet 4- Critical Gap C Movement L t(c,base) t(c,hv) 2 P(hv) 0 t(c,g) Grade/100	ume, m major t major r ajor stre Critical Critical Calculati 1 L 4.1 4. .00 2.0 2 (	ajor rt ve h vehicle eet throu Gap and Gap and Gap and J 7.5 0 2.00 2 0.20 0.2 0.00	ehicles es: gh lan d Follo 8 R 0 2.00 2 20 0. 0.00	s: w-up 9 L 6.9 0 2.0 0 10 0 0.00	10 T 7.5 0 2.00 0.20 0. 0 0.00	11 1 R 0 2.00 0 20 0. 0 0.00	2 ) 2.00 10 0.00		
Shared In voli Sat flow rate, Sat flow rate, Number of ma Worksheet 4- Critical Gap C Movement L (c,base) t(c,hv) 2 P(hv) 2 P(hv) 0 t(c,g) Grade/100 t(3,tt) 0.0	ume, m major t major r ajor stre Critical Critical Calculati 1 L 4.1 4. .00 2.0 2 ( 0 0.00	ajor rt ve h vehicle eet throu Gap and Gap and A 7 L T 1 7.5 0 2.00 2 0.20 0.2 0.00 0 0.00	ehicles es: gh lan d Follo 8 R 0 2.00 20 0. 20 0. 0.00 0	s: w-up 9 L 6.9 0 2.0 0 10 0 0.00	10 T 7.5 00 2.00 0.20 0. 0.20 0. 0 0.00 0.00	11 1 R 0 2.00 0 2.00 0 0.00 0.00 0.00	2 ) 2.00 10 0.00 )0		
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Shared In voli Sat flow rate, Sat flow rate, Number of ma Worksheet 4- Critical Gap C Movement L t(c,base) t(c,hv) 2 P(hv) 2 P(hv) 2 P(hv) 2 P(hv) 2 Critical Gap C Movement L t(c,base) t(c,base) t(c,c) 2 P(hv) 0 t(c,g) Grade/100 t(c,T): 1-stage 2-stage	ume, m major t major r ajor stre Critical Critic	ajor rt ve h vehick t vehick eet throu Gap and Gap and I 7.5 0 2.00 2 0.20 0.2 0.20 0.2 0.00 1.0 0.00 1.0 .1 7.5	ehicles es: igh lan d Follo 8 R 0 2.00 20 0. 0 20 0. 0 0 0 0 1.0	s: w-up 9 L 6.9 0 2.0 0 10 0 0.00 0.00 0 0. 6.9	10 1 T F 7.5 0 2.00 0.20 0. 0.20 0. 0.00 0.00 0 0.00 0 0.00 0 7.5	11 1 R 0 2.00 20 0. 20 0. 0.00 0.00 0	2 0 2.00 10 0.00 00 .00 0.00 00 0.00		
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Computation	1-Queue Clearance Time at Upstream Signal
	Movement 2 Movement 5
	V(t) V(l,prot) V(t) V(l,prot)
V prog	1720 83 1170 441
<b>Total Satura</b>	tion Flow Rate, s (vph) 3400 3400 3400 3400
Arrival Type	5 3 5 3
Effective Gre	
Cycle Length	
Rp (from Ex	
	ehicles arriving on green P 0.844 0.100 0.667 0.213
g(q1)	11.8 3.3 17.2 15.3
g(q2)	63.4 0.1 23.1 2.3
g(q)	75.2 3.4 40.3 17.6
3(4/	
Computation	2-Proportion of TWSC Intersection Time blocked
	Movement 2 Movement 5
	V(t) V(l,prot) V(t) V(l,prot)
alpha	0.350 0.350
beta	0.741 0.741
Travel time,	
Smoothing F	
	f conflicting flow, f 0.782 0.038 0.626 0.236 ed flow, V(c,max) 2656 35 2127 797
Min platoone	d flow //(c min) 2000 2000 2000 2000
	ed flow, V(c,min) 2000 2000 2000 2000
Duration of b	blocked period, t(p) 61.2 0.0 31.0 0.0
Duration of b	
Duration of b Proportion tin	blocked period, t(p) 61.2 0.0 31.0 0.0
Duration of b Proportion tin Computation	olocked period, t(p) 61.2 0.0 31.0 0.0 me blocked, p 0.408 0.207 o 3-Platoon Event Periods Result
Duration of b Proportion tin Computation p(2)	olocked period, t(p) 61.2 0.0 31.0 0.0 me blocked, p 0.408 0.207 0 3-Platoon Event Periods Result 0.408
Duration of b Proportion tin Computation p(2) p(5)	olocked period, t(p) 61.2 0.0 31.0 0.0 me blocked, p 0.408 0.207 3-Platoon Event Periods Result 0.408 0.207
Duration of b Proportion ti Computation p(2) p(5) p(dom)	olocked period, t(p)         61.2         0.0         31.0         0.0           me blocked, p         0.408         0.207           3-Platoon Event Periods         Result           0.408         0.207           0.408         0.207           0.408         0.207           0.408         0.207           0.408         0.207
Duration of b Proportion tin Computation p(2) p(5) p(dom) p(subo)	Olocked period, t(p)         61.2         0.0         31.0         0.0           me blocked, p         0.408         0.207           3-Platoon Event Periods         Result           0.408         0.207           0.408         0.207           0.408         0.207           0.408         0.207
Duration of b Proportion tin Computation p(2) p(5) p(dom) p(subo)	olocked period, t(p)         61.2         0.0         31.0         0.0           me blocked, p         0.408         0.207           3-Platoon Event Periods         Result           0.408         0.207           0.408         0.207           0.408         0.207           0.408         0.207           0.408         0.207
Duration of b Proportion tin Computation p(2) p(5) p(dom) p(dom) p(subo) Constrained	Olocked period, t(p)         61.2         0.0         31.0         0.0           me blocked, p         0.408         0.207           3-Platoon Event Periods         Result           0.408         0.207           0.408         0.207           0.408         0.207           0.408         0.207
Duration of b Proportion tin Computation p(2) p(5) p(dom) p(subo) Constrained Proportion	blocked period, t(p)         61.2         0.0         31.0         0.0           me blocked, p         0.408         0.207           0.3-Platoon Event Periods         Result           0.408         0.207           0.408         0.207           0.408         0.207           0.408         0.207           0.408         0.207           0.408         0.207
Duration of b Proportion tin Computation p(2) p(5) p(dom) p(subo) Constrained Proportion unblocked	blocked period, t(p)       61.2       0.0       31.0       0.0         me blocked, p       0.408       0.207         0.3-Platoon Event Periods       Result         0.408       0.207         0.408       0.207         0.408       0.207         0.408       0.207         0.408       0.207         0.100       0.100         0.
Duration of b Proportion tin Computation p(2) p(5) p(dom) p(subo) Constrained Proportion unblocked for minor	blocked period, t(p)       61.2       0.0       31.0       0.0         me blocked, p       0.408       0.207         a 3-Platoon Event Periods       Result         0.408       0.207         0.408       0.207         0.408       0.207         0.408       0.207         0.408       0.207         0.408       0.207         0.408       0.207         0.408       0.207         0.408       0.207         0.408       0.207         0.408       0.207         0.408       0.207         or unconstrained?       U         (1)       (2)       (3)         Single-stage       Two-Stage Process
Duration of b Proportion tin Computation p(2) p(5) p(dom) p(subo) Constrained Proportion unblocked for minor movements,	olocked period, t(p) 61.2 0.0 31.0 0.0 me blocked, p 0.408 0.207 3-Platoon Event Periods Result 0.408 0.207 0.408 0.207 or unconstrained? U (1) (2) (3) Single-stage Two-Stage Process p(x) Process Stage I Stage II
Duration of b Proportion tin Computation p(2) p(5) p(dom) p(subo) Constrained Proportion unblocked for minor movements, p(1)	blocked period, t(p)       61.2       0.0       31.0       0.0         me blocked, p       0.408       0.207         3-Platoon Event Periods       Result         0.408       0.207         0.408       0.207         or unconstrained?       U         (1)       (2)       (3)         Single-stage       Two-Stage Process         p(x)       Process       Stage I         0.793       0.793
Duration of b Proportion tin Computation p(2) p(5) p(dom) p(subo) Constrained Proportion unblocked for minor movements, p(1) p(4)	blocked period, $t(p)$ 61.2 0.0 31.0 0.0 me blocked, p 0.408 0.207 0.408 0.207 0.408 0.207 0.408 0.207 or unconstrained? U (1) (2) (3) Single-stage Two-Stage Process p(x) Process Stage I Stage II 0.793 0.592
Duration of b Proportion tin Computation p(2) p(5) p(dom) p(subo) Constrained Proportion unblocked for minor movements, p(1) p(4) p(7)	blocked period, t(p)       61.2       0.0       31.0       0.0         me blocked, p       0.408       0.207         3-Platoon Event Periods       Result         0.408       0.207         0.408       0.207         or unconstrained?       U         (1)       (2)       (3)         Single-stage       Two-Stage Process         p(x)       Process       Stage I         0.793       0.793
Duration of b Proportion tin Computation p(2) p(5) p(dom) p(subo) Constrained Proportion unblocked for minor movements, p(1) p(4) p(7) p(8)	blocked period, t(p)       61.2       0.0       31.0       0.0         me blocked, p       0.408       0.207         3-Platoon Event Periods       Result         0.408       0.207         0.408       0.207         0.408       0.207         0.408       0.207         or unconstrained?       U         (1)       (2)       (3)         Single-stage       Two-Stage Process         p(x)       Process       Stage I         0.793       0.592       0.793         0.488       0.592       0.793
Duration of b Proportion tin Computation p(2) p(5) p(dom) p(subo) Constrained Proportion unblocked for minor movements, p(1) p(4) p(7) p(8) p(9)	blocked period, t(p)       61.2       0.0       31.0       0.0         me blocked, p       0.408       0.207         0.408       0.207         0.408       0.207         0.408       0.207         0.408       0.207         0.408       0.207         or unconstrained?       U         (1)       (2)       (3)         Single-stage       Two-Stage Process         p(x)       Process       Stage I         0.793       0.592       0.793         0.592       0.793         0.592       0.793
Duration of b Proportion tin Computation p(2) p(5) p(dom) p(subo) Constrained Proportion unblocked for minor movements, p(1) p(4) p(7) p(8) p(9) p(10)	blocked period, t(p)       61.2       0.0       31.0       0.0         me blocked, p       0.408       0.207         3-Platoon Event Periods       Result         0.408       0.207         0.408       0.207         0.408       0.207         0.408       0.207         or unconstrained?       U         (1)       (2)       (3)         Single-stage       Two-Stage Process         p(x)       Process       Stage I         0.793       0.592       0.793         0.488       0.592       0.793
Duration of b Proportion tin Computation p(2) p(5) p(dom) p(subo) Constrained Proportion unblocked for minor movements, p(1) p(4) p(7) p(8) p(9) p(10) p(11)	blocked period, $t(p)$ 61.2 0.0 31.0 0.0 me blocked, p 0.408 0.207 0.408 0.207 0.408 0.207 0.408 0.207 or unconstrained? U (1) (2) (3) Single-stage Two-Stage Process p(x) Process Stage I Stage II 0.793 0.592 0.488 0.592 0.793 0.592 0.488 0.793 0.592
Duration of b Proportion tin Computation p(2) p(5) p(dom) p(subo) Constrained Proportion unblocked for minor movements, p(1) p(4) p(7) p(8) p(9) p(10) p(11)	blocked period, t(p)       61.2       0.0       31.0       0.0         me blocked, p       0.408       0.207         0.408       0.207         0.408       0.207         0.408       0.207         0.408       0.207         0.408       0.207         or unconstrained?       U         (1)       (2)       (3)         Single-stage       Two-Stage Process         p(x)       Process       Stage I         0.793       0.592       0.793         0.592       0.793         0.592       0.793
Duration of b Proportion tin Computation p(2) p(5) p(dom) p(subo) Constrained Proportion unblocked for minor movements, p(1) p(4) p(7) p(8) p(9) p(10) p(11) p(12)	blocked period, t(p)       61.2       0.0       31.0       0.0         me blocked, p       0.408       0.207         0.408       0.207         0.408       0.207         0.408       0.207         0.408       0.207         0.408       0.207         0.408       0.207         0.408       0.207         0.408       0.207         0.408       0.207         0.408       0.207         or unconstrained?       U         (1)       (2)       (3)         Single-stage       Two-Stage Process         P(x)       Process       Stage I         0.793       0.592       0.793         0.488       0.793       0.592         0.488       0.793       0.592         0.488       0.793       0.592         0.793       0.592       0.793
Duration of b Proportion tin Computation p(2) p(5) p(dom) p(subo) Constrained Proportion unblocked for minor movements, p(1) p(4) p(7) p(8) p(7) p(8) p(10) p(11) p(11) p(12) Computation Single-Stage	blocked period, t(p)       61.2       0.0       31.0       0.0         me blocked, p       0.408       0.207         0.3-Platoon Event Periods       Result         0.408       0.207         0.408       0.207         0.408       0.207         or unconstrained?       U         (1)       (2)         (3)       Single-stage         Process       Stage I         0.793         0.592       0.793         0.488       0.793         0.592       0.793         0.592       0.793         0.793       0.592         0.793       0.592         0.793       0.592         0.793       0.592         0.793       0.592
Duration of b Proportion tin Computation p(2) p(5) p(dom) p(subo)	blocked period, t(p)       61.2       0.0       31.0       0.0         me blocked, p       0.408       0.207         0.3-Platoon Event Periods       Result         0.408       0.207         0.408       0.207         or unconstrained?       U         (1)       (2)         (3)       Single-stage         Process       Stage I         Stage I       Stage II         0.793       0.592         0.488       0.592       0.793         0.592       0.488       0.592         0.488       0.793       0.592         0.793       0.592       0.793         0.793       0.592       0.793         0.793       0.592       0.793         0.793       0.592       0.793

s 3400 3400 3400 Px 0.793 0.592 0.44			
V c,u,x 1399 1370 29		595 258	
Cr,x 495 497 7	1084 13	747	
C plat,x 393 294 3	641 6	593	
Two-Stage Process	<u></u>		
7 8	10 11		
Stage1 Stage2 Stage1	Stage2 Stage	1 Stage2 Stage	1 Stage2
V(c,x) 2158 1019	1926 1081		
s 3400 3400	3400 3400		
P(x) 0.592 0.793	0.793 0.592	) •	
V(c,u,x) 1301 398	1542 0		
C(r,x) 170 599	123 1029		······································
C(plat,x) 101 475	98 609		
			an a
Worksheet 6-Impedance and Ca	pacity Equation	S	
Step 1: RT from Minor St.	9	12	
Conflicting Flows	1077	908	
Potential Capacity	641	593	
Pedestrian Impedance Factor	1.00	1.00	
Movement Capacity	640	592	
Probability of Queue free St.	0.79	0.99	
Step 2: LT from Major St.	4	1	
Conflicting Flows	2199	1813	
Potential Capacity	2 <del>94</del>	393	
Pedestrian Impedance Factor	1.00	1.00	
Movement Capacity	294	392	
Probability of Queue free St.	0.80	0.99	
Maj L-Shared Prob Q free St.			
Step 3: TH from Minor St.	8	11	
Conflicting Flows			
Potential Capacity			
Pedestrian Impedance Factor	1.00	1.00	
Cap. Adj. factor due to Impeding Movement Capacity	mvmnt 0.7	79 0.79	
Probability of Queue free St.	1.00	1.00	
Step 4: LT from Minor St.	7	10	
-			
Conflicting Flows	3177	3007	
Potential Capacity	3 6		
Pedestrian Impedance Factor	1.00	1.00	
Maj. L, Min T Impedance factor	0.79	0.79	
Maj. L, Min T Adj. Imp Factor.	0.84	0.84	
Cap. Adj. factor due to Impeding r	nvmnt 0.8		

8 Step 3: TH from Minor St. 11 Part 1 - First Stage Conflicting Flows **Potential Capacity** 138 141 Pedestrian Impedance Factor 1.00 1.00 Cap. Adj. factor due to Impeding mymnt 0.99 0.80 **Movement Capacity** 137 113 Probability of Queue free St. 1.00 1.00 Part 2 - Second Stage **Conflicting Flows Potential Capacity** 140 127 Pedestrian Impedance Factor 1.00 1.00 Cap. Adi. factor due to Impeding mymnt 0.80 0.99 Movement Capacity 112 126 Part 3 - Single Stage **Conflicting Flows** Potential Capacity Pedestrian Impedance Factor 1.00 1.00 Cap. Adj. factor due to Impeding mymnt 0.79 0.79 Movement Capacity Result for 2 stage process: 0.98 0.98 а У Ċt Probability of Queue free St. 1.00 1.00 7 Step 4: LT from Minor St. 10 Part 1 - First Stage **Conflicting Flows** 2158 1926 Potential Capacity 101 98 Pedestrian Impedance Factor 1.00 1.00 Cap. Adj. factor due to Impeding mymnt 0.99 0.80 **Movement Capacity** 100 78 Part 2 - Second Stage **Conflicting Flows** 1019 1081 Potential Capacity 475 609 Pedestrian Impedance Factor 1.00 1.00 Cap. Adj. factor due to Impeding mymnt 0.79 0.79 Movement Capacity 376 479 Part 3 - Single Stage Conflicting Flows 3177 3007 Potential Capacity 3 6 Pedestrian Impedance Factor 1.00 1.00 Maj. L, Min T Impedance factor 0.79 0.79 Maj. L, Min T Adj. Imp Factor. 0.84 0.84 Cap. Adj. factor due to Impeding mymnt 0.83 0.66 Movement Capacity 2 4 Results for Two-stage process: а 0.98 0.98 0.26 0.18 У

Worksheet 7-Computation of the Effect of Two-stage Gap Acceptance

Worksheet 8-Sha	red Lane Cal	culations				
Movement	7 L T	8 9 R L	10 1 T F		· <u>·····························</u> ········	
Volume (vph) Movement Capac Shared Lane Cap		) 13 97	33 640	6 76 181	592	
Worksheet 9-Con	nputation of E	ffect of Fla	red Mino	r Street	Approaches	
Movement	7 L T	8 9 R L	10 1 T F		<u></u>	
C sep Volume Delay Q sep Q sep +1 round (Qsep +1)	97 40	640 133	76 3	592 6		
n max C sh SUM C sep n C act			181		<b></b>	
Worksheet 10-De	lay, Queue Le	ength, and	Level of	Service		
Movement Lane Config	1 4 7 L L L	89 R	10 1 LR			
v/c 0.01 95% queue length	59 40 392 294 9 0.20 0.41 0.02 0.73 14.3 20.3 6 C F	0.21 1.70	9 0 0.78 2.1 D 25 D	0.16 25.9		
	ared Major LT	Impedanc	e and De	lay		
Worksheet 11-Sha					<u></u>	
Worksheet 11-Sha	N	lovement	2 Move	ement 5		

# **Appendix D**

Patterson Road / 7<sup>th</sup> Street Queuing Analysis Output

(m. - )

#### St. Mary's Hospital Patterson Access Patterson Rd & 7th Street Year 2003 - AM Peak

SIGNAL2000/TEAPAC[Ver 1.01.00] - Capacity Analysis Summary

Intersection Averages for Int # 0 - Patterson Rd & 7th Street Degree of Saturation (v/c) 0.73 Vehicle Delay 29.6 Level of Service C

10/05/03 18:58:39

						-
5q 45	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	<b>I</b>
- D/LD. 	*	+ + +	1	<b>^</b>	^	-
/i\	* *>	+++		++++	++++	-
	~>	<+ + +> V	A ++++	< <del>++++</del> ****	<++++ 	
		•	++++ V	V		
orth	<+ +	<pre></pre>	+>	+>	****> ****	
•	+	+++	+	+	v	
	G/C=0.110	G/C=0.250	G/C=0.110	G/C=0.040	G/C=0.290	1
ļ	G= 11.0"	G= 25.0"	G= 11.0"	G= 4.0"	G= 29.0"	
ļ	Y+R= 3.0" OFF= 0.0%	Y+R= 5.0"	Y+R= 3.5" OFF=44.0%	Y+R= 3.5" OFF=58.5%	Y+R= 5.0" OFF=66.0%	
-						-
C	=100 sec	G= 80.0 sec	= 80.0% Y=20	$0.0 \ \text{sec} = 20$	.0% Ped= 0.	$0 \sec = 0.0\%$
			L Comvigo Dot			
Lane Grou	Width/   p   Lanes	g/C Read Used	Service Rat		//c   Delay	L   Queue     S  Model 1
N Appr	oach				40.3	D+
RT+TH	24/2  0		585   914	753  0.8		*D+  477 ft
LT	12/1  0	.000 0.100	346   432	47 0.1	LO9   18.8	*B   39 ft
<b>C A</b> mmu	ee eb				25.7	<u>C</u> .
S Appr	oacn ===========				23./ =============	C+
RT		.209  0.485	674 763			B+  99 ft
TH		.202 0.250 .073 0.100	606 943 194 256			C   160 ft   *C+  159 ft
E Appr	oach				24.8	<b>C</b> +
====== RT+TH	24/2  0	.314  0.365	1361   1362	1136  0.8	34   20.5	C+  550 ft
LT		.235 0.180	65 325	253 0.7		
	oach				30.0	C
w Appr						
W Appr ====== RT+TH	24/2 0	.264  0.290	927   1001	813  0.8	12   28.3	*C   442 ft

St. Mary's Hospital Patterson Access Patterson Rd & 7th Street Year 2003 - AM Peak

SIGNAL2000/TEAPAC[Ver 1.01.00] - Summary of Parameter Values

		-		
	Parameters for :	Int # 0 - Patte	erson Rd & 7th St	reet
METROAREA	NONCBD			
SIMULATION PERIC	DD 15			
LEVELOFSERVICE	C D			
NODELOCATION	0 0			
QUEUEMODELS 1	90 25 40			
Approach Para	umeters			
APPLABELS	N	E	S	W
GRADES	0.0	0.0	0.0	0.0
PEDLEVELS	9	4	1	101
BIKEVOLUMES	0	0	0	0
PARKINGSIDES	NONE	NONE	NONE	NONE
PARKVOLUMES	0	0	0	0
BUSVOLUMES	0	0	0	0
RIGHTTURNONREDS	0	0	0	0
UPSTREAMVC	0.00	0.85	0.00	0.75
Movement Para	meters			
MOVLABELS	RT TH LT	RT TH LT	RT TH LT	RT TH LT
VOLUMES	114 511 39	31 912 210	111 253 124	201 474 83
WIDTHS	0.0 24.0 12.0	0.0 24.0 12.0	12.0 24.0 12.0	0.0 24.0 12.0
LANES	0 2 1	0 2 1	1 2 1	021
GROUPTYPES	NORM NORM NORM	NORM NORM NORM	NORM NORM NORM	NORM NORM NORM
UTILIZATIONS	1.00 1.00 1.00	1.00 1.00 1.00	1.00 1.00 1.00	1.00 1.00 1.00
TRUCKPERCENTS	0.0 1.1 0.0	0.0 1.4 0.0	2.6 0.7 0.0	2.7 1.6 0.0
PEAKHOURFACTORS	0.83 0.83 0.83	0.83 0.83 0.83	0.83 0.83 0.83	0.83 0.83 0.83
ARRIVALTYPES	3 3 3	5 5 3	3 3 3	5 5 3
ACTUATIONS	NO YES YES	NO NO YES	YES YES YES	NO NO YES
REQCLEARANCES	5.0 5.0 3.0	5.0 5.0 3.5	5.0 5.0 3.0	5.0 5.0 3.5
MINIMUMS	5.0 5.0 5.0	5.0 5.0 5.0	5.0 5.0 5.0	5.0 5.0 5.0
STARTUPLOST	4.0 4.0 4.0	4.0 4.0 4.0	4.0 4.0 4.0	4.0 4.0 4.0
ENDGAIN	4.0 4.0 3.0	4.0 4.0 3.5	4.0 4.0 3.0	4.0 4.0 3.5
STORAGE	0 0 0	0 0 0	0 0 0	0 0 0
INITIALQUEUE	0 0 0	0 0 0	0 0 0	0 0 0
IDEALSATFLOWS	1900 1900 1900	1900 1900 1900	1900 1900 1900	1900 1900 1900
FACTORS	1.00 1.00 1.00	1.00 1.00 1.00	1.00 1.00 1.00	1.00 1.00 1.00
DELAYFACTORS	1.00 1.00 1.00	1.00 1.00 1.00	1.00 1.00 1.00	1.00 1.00 1.00
NSTOPFACTORS	1.00 1.00 1.00	$1.00 \ 1.00 \ 1.00$	$1.00 \ 1.00 \ 1.00$	$1.00 \ 1.00 \ 1.00$
SATURATIONFLOWS	0 3656 1804	0 3731 1805	1573 3774 1805	0 3451 1805
Phasing Param		· · · · · · · · · · · · · · · · · · ·		
SEQUENCES	45 ALL			
PERMISSIVES	YES NO	YES NO	LEADLAGS	LEAD LEAD
OVERLAPS	NO NO	YES NO	OFFSET	0.00 1
CYCLES		30	PEDTIME	0.0 0
GREENTIMES	11.00 25.00		.00	
YELLOWTIMES	3.00 5.00		.00	
	3 9	26	11	
EXCESS	11			

**\$\$\$** 

10/05/03 19:02:59 St. Mary's Hospital Patterson Access Patterson Rd & 7th Street Year 2003 - PM Peak

SIGNAL2000/TEAPAC[Ver 1.01.00] - Capacity Analysis Summary

Intersection Averages for Int # 0 - Patterson Rd & 7th Street Degree of Saturation (v/c) 0.73 Vehicle Delay 31.8 Level of Service C

Sq 6		Phase	1	Pł	nase 2		Pha	se	3	 	Phase	4	F	ha	se 5				
//\		* * *>			•		* * . * * . <* * - V	+>		·	~	 **** /		- <b>-</b> -	۸ +++ <+++				
Norti 	h     	<+ + +			<* + * + * +	+>  +   +		F 4 F 4 F 4				+> + +	* * *   * * *						
		G/C=0.0 G= 8. (+R= 3. )FF=99.	0"   0"	G= Y+F	C=0.07 8.0 R= 3.0 =10.0	"	G/C=0 G= Y+R= OFF=2	19. 5.	.0"	G= Y-	/C=0.1 = 12 +R= 3 FF=41	.0" .5"	G=   Y+	R=	0.391 43.0" 5.0" 55.9%				
	C=1	L10 sec	Ģ	G= 90	.0 se	с =	= <b>81.8</b> %	6	Y=19	. 5	sec =	= 17	. 7%	Pe	ed= 0	.0 s	ec =	0	. 0%
Lai   Gi		Width   Lane		g leqd	J/C Use	d	Servi @C (\	ice /pł	e Rate	e    \	Adj /olume		v/c	.	HCM Delay		Qi  Mo		
N Ap	pproa	ich			- 1894 - anno 1864 - 2013 - 1864 -										46.5	D			
RT+1	TH LT	24/2   12/1	0.  0.	259 035	0.17		1 134		620 276		461 46	0.	740 160		47.9 32.4	*D  *C		23	
S Ap	oproa	ıch													31.3	с			
ר	RT FH _T	12/1   24/2   12/1	10.	255	0.42  0.27  0.16	3 İ	544 575 295		671 1029 386		319 451 303	0.  0.  0.	438		23.2 33.3 36.7	C-   C  *D-	25	21 59 55	ftİ
E Ap	oproa	ch					بله بنيد جور بي كلد بين.								22.0	C-	+		
RT+1   L	ГН .T	24/2   12/1	0.  0.	261 238	0.39  0.10	L   5	1453 1		1453 181		853 149	0.			15.9 57.0	B  *E-		1 8	
W Ap	oproa	ch	مندر برور میں در مربور میں میں میں میں میں میں میں میں میں میں	فحر بنية بينوسي			****								33.7	С			
RT+T   L	ГН .Т	24/2   12/1		386 232	0.391  0.109	L   5	1410 1		1424 175		1390 120	0.9  0.6			32.2 51.3	*C   D	100   16	8 1	

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St. Mary's Hospital Patterson Access Patterson Rd & 7th Street Year 2003 - PM Peak

#### SIGNAL2000/TEAPAC[Ver 1.01.00] - Summary of Parameter Values

		Parameters for	Int # 0 - Patte	erson Rd & 7th St	reet
	METROAREA	NONCBD			
	SIMULATION PERIO				
	LEVELOFSERVICE	C S			
	NODELOCATION	0 0			
	QUEUEMODELS 1	90 25 40			
	Annnoach Dana	motone			
	Approach Para	N	E	S	W
	APPLABELS	0.0	0.0	0.0	0.0
	GRADES			3	77
	PEDLEVELS	4	3		
	BIKEVOLUMES	0	0	0	0
	PARKINGSIDES	NONE	NONE	NONE	NONE
	PARKVOLUMES	0	0	0	0
	BUSVOLUMES	0	0	0	0
	RIGHTTURNONREDS	0	0	0	0 75
	UPSTREAMVC	0.00	0.85	0.00	0.75
	Movement Para	motors			
	MOVLABELS	RT TH LT	RT TH LT	RT TH LT	RT TH LT
	VOLUMES	122 321 44		306 433 291	160 1174 115
	WIDTHS	0.0 24.0 12.0	0.0 24.0 12.0	12.0 24.0 12.0	0.0 24.0 12.0
and the second s	LANES	0 2 1	0 2 1	1 2 1	0 2 1
	GROUPTYPES	NORM NORM NORM	NORM NORM NORM	NORM NORM NORM	NORM NORM NORM
أغد	UTILIZATIONS	1.00 1.00 1.00	1.00 1.00 1.00	1.00 1.00 1.00	1.00 1.00 1.00
	TRUCKPERCENTS	0.0 1.1 0.0	0.0 1.4 0.0	2.6 0.7 0.0	2.7 1.6 0.0
	PEAKHOURFACTORS	0.96 0.96 0.96	0.96 0.96 0.96	0.96 0.96 0.96	0.96 0.96 0.96
	ARRIVALTYPES	3 3 3	5 5 3	3 3 3	5 5 3
	ACTUATIONS	NO YES YES	NO NO YES	YES YES YES	NO NO YES
	REOCLEARANCES	5.0 5.0 3.0	5.0 5.0 3.5	5.0 5.0 3.0	5.0 5.0 3.5
	MINIMUMS	5.0 5.0 5.0	5.0 5.0 5.0	5.0 5.0 5.0	5.0 5.0 5.0
	STARTUPLOST	4.0 4.0 4.0	4.0 4.0 4.0	4.0 4.0 4.0	4.0 4.0 4.0
	ENDGAIN	4.0 4.0 3.0	4.0 4.0 3.5	4.0 4.0 3.0	4.0 4.0 3.5
	STORAGE				
	INITIALQUEUE	Ŏ Ŏ Ŏ	ŏŏŏ	Õ Õ Õ	Õ Õ Õ
	IDEALSATFLOWS	1900 1900 1900	1900 1900 1900	1900 1900 1900	1900 1900 1900
	FACTORS	$1.00 \ 1.00 \ 1.00$	1.00 1.00 1.00	1.00 1.00 1.00	1.00 1.00 1.00
	DELAYFACTORS	$1.00 \ 1.00 \ 1.00$	$1.00 \ 1.00 \ 1.00$	1.00 1.00 1.00	$1.00 \ 1.00 \ 1.00$
	NSTOPFACTORS	$1.00 \ 1.00 \ 1.00$	$1.00 \ 1.00 \ 1.00$	1.00 1.00 1.00	$1.00 \ 1.00 \ 1.00$
	SATURATIONFLOWS	0 3607 1803	0 3718 1805	1571 3774 1804	0 3642 1805
	Phasing Param				
	SEQUENCES	64 ALL			
	PERMISSIVES	YES NO	YES NO	LEADLAGS	LEAD LEAD
	OVERLAPS	NO NO	YES NO	OFFSET	0.00 1
	CYCLES		30	PEDTIME	0.0 0
	GREENTIMES	8.00 8.00		.00	
	YELLOWTIMES	3.00 3.00		.00	
	CRITICALS	3 9	26	11	
	EXCESS	11			

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10/05/03 19:05:09 St. Mary's Hospital Patterson Access Patterson Rd & 7th Street Year 2023 - AM Peak

SIGNAL2000/TEAPAC[Ver 1.01.00] - Capacity Analysis Summary

Intersection Averages for Int # 0 - Patterson Rd & 7th Street Degree of Saturation (v/c) 0.93 Vehicle Delay 75.5 Level of Service E

Sq _35	Phase 1	Phase 2	Phase	3	Phase	4	Phase 5		
LD/LD ·	^ <* + +>		A ****	++++	<+	+++ +++ *** +>	^ *** <***		
1 -	* + + * + + G/C=0.113	+ + +   + + +   G/C=0.280	   G/C=0.(	+   +   80	G/C=0.0	+	++++ v G/C=0.287		
	G= 17.0" Y+R= 3.5" OFF= 0.0%	G= 42.0" Y+R= 5.0" OFF=13.7%	G= 12 Y+R= 3 OFF=45	0"	G= 14. Y+R= 5. OFF=55.	0"   0"	G= 43.0" Y+R= 5.0" OFF=68.0%		
-	C=150 sec	G=128.0 sec =	= 85.3%	Y=22	.0 sec =	14.	7% Ped= 0	.0 se	c = 0.0
Lane   Grou	Width/  1p   Lanes	g/C Reqd Used	Service   @D (vpł	Rat	e  Adj  Volume	v,	HCM /c   Delay		Queue  Model 1
N Appr	roach						114.6	F	
RT+TH   LT	24/2  0   12/1  0	.348  0.280 .188  0.273	825   173	1017 228		1.1  0.2		*F   D+	1294 ft 109 ft
S Appr	roach						39.0	D+	
RT   TH   LT	24/2 0	.219  0.647 .207  0.417 .132  0.107	1017   1494   192	1017 1572 224	461	0.19	3   29.2	B+   C  *F	160 ft 284 ft 467 ft
E Appr	oach						84.6	F	
RT+TH	24/2  0   12/1  0	.432  0.413   .258  0.193	1542   192	1542 346	1722   383	1.11		*E  *F	1866 ft 814 ft
W Appr	oach						50.9	D	
RT TH LT	24/2 0	.273  0.287   .236  0.287   .182  0.077	390   1072   1	398 1072 120	865	0.92	7 37.8	D D+ *F	610 ft 620 ft 356 ft

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10/05/03 19:06:00 St. Mary's Hospital Patterson Access Patterson Rd & 7th Street Year 2023 - AM Peak

#### SIGNAL2000/TEAPAC[Ver 1.01.00] - Summary of Parameter Values

	Intersection METROAREA	Parameters for NONCBD	Int # 0 - Patte	erson Rd & 7th St	reet
	SIMULATION PERIO				
	LEVELOFSERVICE	D D			
	NODELOCATION	õõ			
	QUEUEMODELS 1	90 Ž25 40			
	QUEUERODEES I	30 23 40			
	Approach Para APPLABELS	meters N	Е	S	w
	GRADES	0.0	0.0	0.0	0.0
		10	4	1	
		0	0	$\frac{1}{0}$	111
	BIKEVOLUMES	•	•	•	0
	PARKINGSIDES	NONE	NONE	NONE	NONE
	PARKVOLUMES	0	0	0	0
	BUSVOLUMES	0	0	0	0
	RIGHTTURNONREDS	0	0	0	0
	UPSTREAMVC	0.00	0.95	0.00	0.95
	Movement Para	meters			
	MOVLABELS	RT TH LT		RT TH LT	RT TH LT
	VOLUMES	173 774 59	47 1382 318	168 383 188	305 718 126
	WIDTHS	0.0 24.0 12.0	0.0 24.0 12.0	12.0 24.0 12.0	12.0 24.0 12.0
5100	LANES	0 2 1	0 2 1	1 2 1	1 2 1
	GROUPTYPES	NORM NORM NORM	NORM NORM NORM	NORM NORM NORM	NORM NORM NORM
	UTILIZATIONS	1.00 1.00 1.00	1.00 1.00 1.00	1.00 1.00 1.00	$1.00 \ 1.00 \ 1.00$
	TRUCKPERCENTS	0.0 1.1 0.0	0.0 1.4 0.0	2.6 0.7 0.0	2.7 1.6 0.0
	PEAKHOURFACTORS	0.83 0.83 0.83	0.83 0.83 0.83	0.83 0.83 0.83	0.83 0.83 0.83
	ARRIVALTYPES	3 3 3	5 5 3	3 3 3	5 5 3
	ACTUATIONS	NO YES YES	NO NO YES	YES YES YES	NO NO YES
	REQCLEARANCES	5.0 5.0 3.0	5.0 5.0 3.5	5.0 5.0 3.0	5.0 5.0 3.5
	MINIMUMS	5.0 5.0 5.0	5.0 5.0 5.0	5.0 5.0 5.0	5.0 5.0 5.0
	STARTUPLOST	4.0 4.0 4.0	4.0 4.0 4.0	4.0 4.0 4.0	4.0 4.0 4.0
	ENDGAIN	4.0 4.0 3.0	4.0 4.0 3.5	4.0 4.0 3.0	4.0 4.0 3.5
	STORAGE	0 0 0	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	0 0 0
	INITIALQUEUE	ŏŏŏ	ŏŏŏ	ŏŏŏ	ŏŏŏ
	IDEALSATFLOWS	1900 1900 1900	1900 1900 1900	1900 1900 1900	1900 1900 1900
	FACTORS	1.00 1.00 1.00	1.00 1.00 1.00	1.00 1.00 1.00	1.00 1.00 1.00
	DELAYFACTORS	1.00 1.00 1.00	1.00 1.00 1.00	1.00 1.00 1.00	$1.00 \ 1.00 \ 1.00$
	NSTOPFACTORS	1.00 1.00 1.00	$1.00 \ 1.00 \ 1.00$	1.00 1.00 1.00	$1.00 \ 1.00 \ 1.00$
	SATURATIONFLOWS	0 3656 945	0 3730 1805	1573 3774 1805	1390 3740 1805
	SATURATION LONG	0 3030 343	0 5750 1005	1979 9774 1009	1990 9740 1009
	Phasing Param				
	SEQUENCES	35 ALL			
	PERMISSIVES	YES NO	YES NO	LEADLAGS	LEAD LEAD
	OVERLAPS	NO NO	YES NO	OFFSET	0.00 1
	CYCLES	100 150	10	PEDTIME	0.0 0
	GREENTIMES	17.00 42.00		.00	
	YELLOWTIMES	3.50 5.00	3.50 5.00 5	.00	
	CRITICALS	9 2	12 6	5	
	EXCESS	11	-		

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10/05/03 19:07:02 St. Mary's Hospital Patterson Access Patterson Rd & 7th Street Year 2023 - PM Peak

SIGNAL2000/TEAPAC[Ver 1.01.00] - Capacity Analysis Summary

Intersection Averages for Int # 0 - Patterson Rd & 7th Street Degree of Saturation (v/c) 1.05 Vehicle Delay 101.8 Level of Service F

sq 44	Phase 1	Phase 2	Phase 3	Phase 4	
LD/LD - /i\   North 	+ + +> <* *	* * +   * * +   <* * +>   V   <+ + +>   + + +   + + +	A **** ++++ V +> + +	^ +++++ <+++++ ****> +++++ V	
	G/C=0.213 G= 32.0" Y+R= 3.5" OFF= 0.0%	G/C=0.167   G= 25.0"   Y+R= 5.0"   OFF=23.7%	G/C=0.107 G= 16.0" Y+R= 3.5" OFF=43.7%	G/C=0.400 G= 60.0" Y+R= 5.0" OFF=56.7%	
C	C=150 sec	G=133.0 sec =	= 88.7% Y=17	7.0 sec = 11.3%	Ped= 0.0 sec = 0.0%
Lane   Grou	Width/  Ip   Lanes	g/C Reqd Used	Service Rat @D (vph) @E	te  Adj     Volume  v/c	HCM   L   Queue     Delay   S  Model 1
N Appr	roach				142.0 F
RT+TH	24/2  0   12/1  0	.257  0.167 .038  0.207	175   550 353   409	)   699  1.163 )   70  0.165	153.2  *F   883 ft   30.0   C   87 ft
S Appr	oach				112.4 F
RT   TH   LT	24/2 0	.364  0.307 .247  0.167 .266  0.207	373   458 184   578 353   409	683 1.086	94.1   F  1006 ft    123.9   F   801 ft    114.5  *F  1028 ft
E Appr	oach				46.5 D
RT+TH   LT		.336  0.400 .204  0.103	1487   1487 1   171	1293  0.870   226  1.209	24.6   C+  871 ft    171.5  *F   584 ft
W Appr	oach		: :		117.5 F
RT   TH   LT	12/1  0   24/2  0   12/1  0	.460  0.400	589   589 1496   1496 1   171	1853 1.239	18.6   B   217 ft   133.7  *F  2357 ft   89.4   F   351 ft

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10/05/03 19:07:50 St. Mary's Hospital Patterson Access Patterson Rd & 7th Street Year 2023 - PM Peak

SIGNAL2000/TEAPAC[Ver 1.01.00] - Summary of Parameter Values

Intersection METROAREA SIMULATION PERIO LEVELOFSERVICE NODELOCATION QUEUEMODELS 1	Parameters for NONCBD DD 15 D D 0 0 90 25 40	Int # 0 - Patte	erson Rd & 7th St	reet
Approach Para	umeters			
APPLABELS	N	E	S	W
GRADES	0.0	0.0	0.0	0.0
PEDLEVELS	4	3	3	85
BIKEVOLUMES	0	0	0	0
PARKINGSIDES	NONE	NONE	NONE	NONE
PARKVOLUMES	0	0	0	0
BUSVOLUMES	Ō	0	Ō	Ō
RIGHTTURNONREDS	Ō	Ő	Ō	Ō
UPSTREAMVC	0.00	0.95	0.00	0.95
Movement Para				
MOVLABELS	RT TH LT		RT TH LT	RT TH LT
VOLUMES	185 486 67		464 656 441	242 1779 174
WIDTHS	0.0 24.0 12.0		12.0 24.0 12.0	12.0 24.0 12.0
LANES	0 2 1		1 2 1	1 2 1
GROUPTYPES	NORM NORM NORM		NORM NORM NORM	NORM NORM NORM
UTILIZATIONS	$1.00 \ 1.00 \ 1.00$		1.00 1.00 1.00	$1.00 \ 1.00 \ 1.00$
TRUCKPERCENTS	0.0 1.1 0.0		2.6 0.7 0.0	2.7 1.6 0.0
PEAKHOURFACTORS	0.96 0.96 0.96		0.96 0.96 0.96	0.96 0.96 0.96
ARRIVALTYPES	3 3 3		3 3 3	5 5 3
ACTUATIONS	NO YES YES		YES YES YES	NO NO YES
REQCLEARANCES	5.0 5.0 3.0		5.0 5.0 3.0	5.0 5.0 3.5
MINIMUMS	5.0 5.0 5.0		5.0 5.0 5.0	5.0 5.0 5.0
STARTUPLOST	4.0 4.0 4.0		4.0 4.0 4.0	4.0 4.0 4.0
ENDGAIN	4.0 4.0 3.0		4.0 4.0 3.0	4.0 4.0 3.5
STORAGE	0 0 0		0 0 0	0 0 0
INITIALQUEUE	0 0 0 0			
IDEALSATFLOWS	1900 1900 1900		1900 1900 1900	1900 1900 1900
FACTORS	1.00 1.00 1.00		$1.00 \ 1.00 \ 1.00 \ 1.00 \ 1.00$	$1.00 \ 1.00 \ 1.00$ $1.00 \ 1.00 \ 1.00$
DELAYFACTORS	$1.00 \ 1.00 \ 1.00 \ 1.00 \ 1.00$		$1.00 \ 1.00 \ 1.00$ $1.00 \ 1.00$	$1.00 \ 1.00 \ 1.00 \ 1.00 \ 1.00$
SATURATIONFLOWS	0 3607 1805	0 3718 1805	1569 3774 1805	1472 3740 1805
SATURATION LONS	0 2001 1003	0 3/10 1003	1909 3774 1803	14/2 3/40 1803
Phasing Param	eters			
SEQUENCES	44 44			
PERMISSIVES	YES NO	YES NO	LEADLAGS	LEAD LEAD
OVERLAPS	NO NO	YES NO	OFFSET	0.00 1
CYCLES	150 150	10	PEDTIME	0.0 0
GREENTIMES	32.00 25.00	16.00 60.00		
YELLOWTIMES	3.50 5.00	3.50 5.00		
CRITICALS	92	6 11		
EXCESS	11			

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10/05/03 19:09:55 St. Mary's Hospital Patterson Access Patterson Rd & 7th Street - No Eastbound Right-Turn Lane Year 2023 - AM Peak 10/16/03 10:36:44

#### SIGNAL2000/TEAPAC[Ver 1.01.00] - Capacity Analysis Summary

Intersection Averages for Int # 0 - Patterson Rd & 7th Street Degree of Saturation (v/c) 1.01 Vehicle Delay 91.4 Level of Service F

Sq 35 LD/LD -	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	
20/20		* * +   * * +		۸ ++++	^ ++++	
/\		<* * +>		< <del>++++</del> ****	<++++	
	•	V A	^ ++++  **** V	v		
North 	<* + +> * + +	·  <+ + +>   + + +	+>	+>	****> ****	
•	* + +	+++	+	+	V	
	G/C=0.113	G/C=0.267	G/C=0.073	G/C=0.093	G/C=0.307	
	G= 17.0" Y+R= 3.0"	G= 40.0" Y+R= 5.0"	G= 11.0" Y+R= 3.5"	G= 14.0" Y+R= 5.0"	G= 46.0" Y+R= 5.0"	
	OFF=99.7%	OFF=13.3%	OFF=43.3%	OFF=53.0%	OFF=65.7%	
C	C=150 sec	G=128.0 sec	= 85.3% Y=22	1.5  sec = 14	.3% Ped= 0.0	sec = 0.0%
Lane Grou	Width/  1p   Lanes	g/C Reqd Used	Service Rat   @D (vph) @B	te Adj   E Volume N	//c Delay	L Queue S Model 1
N Appr	roach	4			137.0	F
RT+TH	24/2  0		760   962 159   219	1141  1.1   71  0.2		*F  1372 ft  D   111 ft
LT 		.188  0.260	139   21			D   111 ft
S Appr	roach				40.1	D+
RT		.219  0.623	975 981		06   12.3	B+  170 ft
TH		.207 0.400 .132 0.107	1418   1509   192   224			C   292 ft  *F   467 ft
						، هذه مانه هاي هاي مانه هيه ميه منه الله علي منه منه منه مانه مانه .
E Appr	oach	والمحافظ والمحافظ والمحافظ والمحافظ والمحافظ والمحافظ والمحافظ والمحافظ والمحافظ والمحافظ والمحافظ والمحافظ والمحافظ			67.7	E
RT+TH		.432  0.433				D  1727 ft
LT	12/1  0	.258 0.187	170   333	383  1.1	.36   130.5	*F   859 ft
W Appr	oach				120.6	F
RT+TH		.345  0.307	1057   1057			*F  1440 ft
LT	12/1  0	.182  0.070	1   108	152  1.2	06   177.5	*F   406 ft

1	St. Mary's Hospi Patterson Rd & 7 Year 2023 - AM P	'th Street - No	Access Eastbound Right-	Turn Lane	10/16/03 10:38:28
	SIGNAL2000/TEAPA	C[Ver 1.01.00]	- Summary of Para	ameter Values	
	Intersection METROAREA SIMULATION PERIO LEVELOFSERVICE NODELOCATION QUEUEMODELS 1	NONCBD	Int # 0 - Patto	erson Rd & 7th S	treet
	Approach Para APPLABELS GRADES PEDLEVELS BIKEVOLUMES PARKINGSIDES PARKVOLUMES BUSVOLUMES RIGHTTURNONREDS UPSTREAMVC	meters N 0.0 10 0 NONE 0 0 0 0.00	E 0.0 4 0 NONE 0 0 0 0.95	S 0.0 1 0 NONE 0 0 0 0.00	W 0.0 111 0 NONE 0 0 0 0.95
•	Movement Para MOVLABELS VOLUMES WIDTHS LANES GROUPTYPES UTILIZATIONS TRUCKPERCENTS PEAKHOURFACTORS ARRIVALTYPES ACTUATIONS REQCLEARANCES MINIMUMS STARTUPLOST ENDGAIN STORAGE INITIALQUEUE IDEALSATFLOWS FACTORS DELAYFACTORS NSTOPFACTORS SATURATIONFLOWS	meters         RT TH LT         173       774       59         0.0       24.0       12.0         0       2       1         NORM NORM NORM       NORM       NORM         1.00       1.00       1.00         0.0       1.1       0.0         0.0       1.1       0.0         0.0       1.1       0.0         0.0       1.00       1.00         0.83       0.83       0.83         3       3       3         NO       YES       YES         5.0       5.0       3.0         5.0       5.0       3.0         5.0       5.0       5.0         4.0       4.0       4.0         0       0       0         0       0       0         1.00       1.00       1.00         1.00       1.00       1.00         1.00       1.00       1.00         0       3656       945	47       1382       318         0.0       24.0       12.0         0       2       1         NORM       NORM       NORM         1.00       1.00       1.00         0.0       1.4       0.0         0.83       0.83       0.83         5       5       3         NO       NO       YES         5.0       5.0       5.0         4.0       4.0       4.0         4.0       4.0       3.5         0       0       0         1900       1900       1900         1.00       1.00       1.00         1.00       1.00       1.00	RT       TH       LT         168       383       188         12.0       24.0       12.0         1       2       1         NORM       NORM       NORM         1.00       1.00       1.00         2.6       0.7       0.0         0.83       0.83       0.83         3       3       3         YES       YES       YES         5.0       5.0       3.0         5.0       5.0       5.0         4.0       4.0       4.0         4.0       4.0       3.0         0       0       0         1900       1900       1900         100       1.00       1.00         1.00       1.00       1.00         1.00       1.00       1.00         1.00       1.00       1.00         1.573       3774       1805	305 718 126 0.0 24.0 12.0 0 2 1 NORM NORM NORM 1.00 1.00 1.00
	Phasing Parama SEQUENCES PERMISSIVES OVERLAPS CYCLES GREENTIMES YELLOWTIMES CRITICALS EXCESS	eters 35 35 YES NO NO NO 100 150 17.00 40.00 3.00 5.00 9 2 11		LEADLAGS OFFSET PEDTIME .00 11	LEAD LEAD 0.00 1 0.0 0

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St. Mary's Hospital Patterson Access Patterson Rd & 7th Street - No Eastbound Right-Turn Lane Year 2023 - PM Peak 10/16/03 10:39:20

SIGNAL2000/TEAPAC[Ver 1.01.00] - Capacity Analysis Summary

Intersection Averages for Int # 0 - Patterson Rd & 7th Street Degree of Saturation (v/c) 1.16 Vehicle Delay 139.1 Level of Service F

Sq 44   Phase 1   Phase 2   Phase 3   Phase 4   LD/LD	
. + + + +   .   ^	
/// +> <* * +> <	
North         <*         <+ + +>         +>   ****>                     *         + + +         +   ****	
*   +++  +  v	
G/C=0.200   G/C=0.147   G/C=0.100   G/C=0.433   G= 30.0"   G= 22.0"   G= 15.0"   G= 65.0"	
Y+R= 3.0"   Y+R= 5.0"   Y+R= 5.0"   Y+R= 5.0"   OFF= 0.0%   OFF=22.0%   OFF=40.0%   OFF=53.3%	
C=150 sec G=132.0 sec = $88.0\%$ Y=18.0 sec = $12.0\%$	Ped= 0 0 sec = 0 0%
	· ca= 0:0 5cc = 0:0/
Lane  Width/  g/C   Service Rate  Adj     Group   Lanes  Reqd Used   @D (vph) @E  Volume  v/c	HCM   L   Queue     Delay   S  Model 1
N Approach	204.3 F
RT+TH         24/2         0.257         0.147         24         472         699         1.321           LT         12/1         0.041         0.193         332         385         70         0.175	221.5  *F  1010 ft    32.7   C   91 ft
S Approach	154.4 F
RT   12/1  0.364  0.280   321   411   483  1.100	126.9   F  1112 ft
TH         24/2         0.247         0.147         25         496         683         1.235           LT         12/1         0.266         0.193         332         385         459         1.148	184.8   F   923 ft   138.2  *F  1100 ft
E Approach	47.6 D
RT+TH         24/2         0.336         0.433         1611         1611         1293         0.803           LT         12/1         0.204         0.097         1         158         226         1.299	19.0   B   720 ft    211.0  *F   639 ft
W Approach	167.1 F
RT+TH         24/2         0.527         0.433         1578         1578         2105         1.334           LT         12/1         0.190         0.097         1         158         181         1.040	172.1  *F  2952 ft    109.7   F   384 ft
	103.7   F   304  L

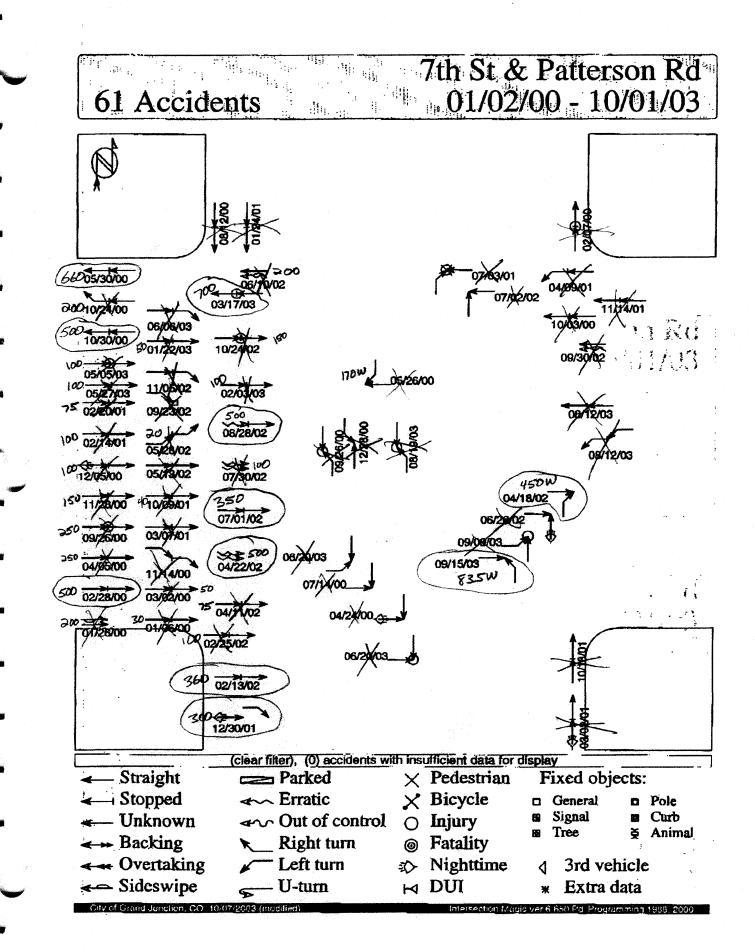
10/16/03 St. Mary's Hospital Patterson Access Patterson Rd & 7th Street - No Eastbound Right-Turn Lane 10:39:55 Year 2023 - PM Peak SIGNAL2000/TEAPAC[Ver 1.01.00] - Summary of Parameter Values Intersection Parameters for Int # 0 - Patterson Rd & 7th Street METROAREA NONCBD SIMULATION PERIOD 15 n LEVELOFSERVICE D 0 NODELOCATION 0 QUEUEMODELS 1 90 25 40 **Approach Parameters** APPLABELS F N 0.0 GRADES 0.0 0.0 0.0 PEDLEVELS Δ 85 3 3 0 BIKEVOLUMES 0 0 O PARKINGSIDES NONE NONE NONE NONE PARKVOLUMES 0 0 0 0 BUSVOLUMES 0 0 0 0 RIGHTTURNONREDS 0 0 0 0 0.95 0.00 0.95 UPSTREAMVC 0.00 Movement Parameters MOVLABELS TH LT RT RT TH RT RT TH LT LT TH LT 71 1170 217 242 1779 486 464 656 441 174 VOLUMES 185 67 0.0 24.0 12.0 WIDTHS 0.0 24.0 12.0 12.0 24.0 12.0 0.0 24.0 12.0 LANES 0 2 1 0 2 1 1 2 1 0 2 1 NORM NORM NORM NORM NORM NORM NORM NORM NORM GROUPTYPES NORM NORM NORM 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 UTILIZATIONS 1.00 1.00 1.00 1.4 2.6 0.7 TRUCKPERCENTS 0.0 1.1 0.0 0.0 0.0 0.0 2.7 1.6 0.0 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96 PEAKHOURFACTORS 0.96 0.96 0.96 ARRIVALTYPES 3 3 3 5 5 3 3 3 3 5 5 3 ACTUATIONS NO YES YES NO YES YES YES YES NO NO NO YES 5.0 5.0 5.0 5.0 REQCLEARANCES 5.0 3.0 3.5 5.0 5.0 3.0 5.0 3.5 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 MINIMUMS 5.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 STARTUPLOST 4.0 4.0 4.0 4.0 4.0 3.0 4.0 3.5 4.0 ENDGAIN 3.5 4.0 4.0 4.0 4.0 3.0 4.0 4.0 STORAGE 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 INITIALQUEUE 0 0 0 0 0 0 O 1900 1900 1900 **IDEALSATFLOWS** 1900 1900 1900 1900 1900 1900 1900 1900 1900 FACTORS  $1.00 \ 1.00 \ 1.00$ 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 DELAYFACTORS 1.00 1.00 1.00 1.00 1.00 1.00 **NSTOPFACTORS** 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0 3718 1805 SATURATIONFLOWS 0 3606 1805 1569 3774 1805 0 3642 1805 Phasing Parameters 44 SEQUENCES 44 PERMISSIVES YES LEAD YES NO NO LEADLAGS LEAD **OVERLAPS** NO NO YES NO OFFSET 0.00 1 CYCLES 150 150 10 PEDTIME 0.0 0 30.00 22.00 15.00 65.00 GREENTIMES YELLOWTIMES 5.00 5.00 3.00 5.00 CRITICALS 9 2 6 11 11 **EXCESS** 

## **Appendix E**

### Patterson Road Crash Data

Note: Crashes occurring between Mira Vista Road and 250 feet west of 7<sup>th</sup> Street are circled on the diagrams and the data sheets.





970-256-4115

Intersection Magic VER 6.650 City of Grand Junction, CO 10/08/2003

Accident listing 01/02/2000 - 10/01/2003 7th St & Patterson Rd Sorted by <DATE;TIME;ACC#>

	CASE ID	DATE	TIME	DIS	DIR	TYPE	F	IN	NU	DRIV	LIGH	WEAT	VEH	PE	DRI	EV
	00-00760	01/06/200	7.15	30	Mee	Rear	0	n	2	22	Davi	None	Ctra		No	т
		01/26/200							2	20		Rain			No	
-		02/07/200					Ő		3	43	· · ·	None			No	
_	00-009940							<b>D</b>	2	47		None			No	
		03/02/200					ŏ		2	65		None			No	
		04/05/200					ŏ		3	39		None			No	
-	@00-019959				neo	Broad			2	43		None			No	
		05/26/200			Wes				2	80		None			No	
	00-027102								2	19		None			No	
		07/14/200							2	79		None			No	
	<sup>&gt;</sup> 200-042785					Rear	õ		2	25		None			No	
		09/26/200				Appro		-	2	18		None			No	
		09/26/200					•	1	3	24		None			No	
-		10/03/200					0		2	50		None			No	
		10/24/200					0		2	21		Rain			No	
	00-058509							<b>D</b>	2	33		None			No	
NAME:		11/14/200				Rear	0	and the second se	2	69		None			No	
		11/28/200		1.1	Wes		0	-	2	47	the second second second second second second second second second second second second second second second s	None			No	
		12/05/200					0		2	22		None			No	
ة سينية	@00-069260						0		2	81		None			No	
		01/24/200				Rear	0		2	16		None			No	
		02/14/200					0		2	46		Rain			No	
		02/20/200		1 N. M. M. M. M.			0		2	18		None			No	
		03/02/200				Rear	0		2	21		None			No	
	01-012775					Rear	0		2	22		None			No	
		04/09/200			Eas	Rear	0		2	48	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	None			No	
	<b>@</b> 01-037489						0	1	2		<ul> <li>A 199 (199 (1997) - 199</li> </ul>	None	그렇게 전하는 것이 없다.			
	01-058473	10/09/200	13:08	40	Wes	Rear	0	0	2	25		None			No	Ι
	01-060258	10/18/200	11:45	0	지역의 가지 동네는	Rear	0	0	2	33	Dayl	None	Stra		No	I
	01-065430	11/14/200	11:11	40	Eas	Rear	0	0	3	90	Dayl	None	Stra		No	I
	01-073966	12/30/200	5:54 (	300	Wes	Broad	0	D	2	56	Dark	Snow	Righ		No	I
	02-007825	02/13/200	14:39 (	360	Wes)	Rear (	0	0	2	20	Dayl	None	Star		NO	I
	02-010109						0		2	31		None			No	I
	02-018851						0		3	63	Dayl	None	Star		No	I
	02-020368										Dayl	None	Righ		No	I
	02-021264	04/22/200	17:43	500	Wes)							None			No	I
فعقدد	02-025493					Rear				46	Dayl	None	Stra		No	I
	02-028749								2	17		None			No	I
	02-031609					Sides	0	0	2	100	Dayl	None	Chan		No	I
	0 02-035358	06/26/200	23:00	0		Broad				31	Dark	None	Stra		No	I
	02-036309	07/01/200	15:17 (	350	Wes)	Rear C	0	Ø			Dayl	None	Stra		No	
	902-036483					Broad						None			No .	
	02-042694											None			No	
	02-049260											None			No	
-	. 202-054678	09/23/200	9:10	0		Emban	0	0	1	30	Dayl	None	Righ		No	I

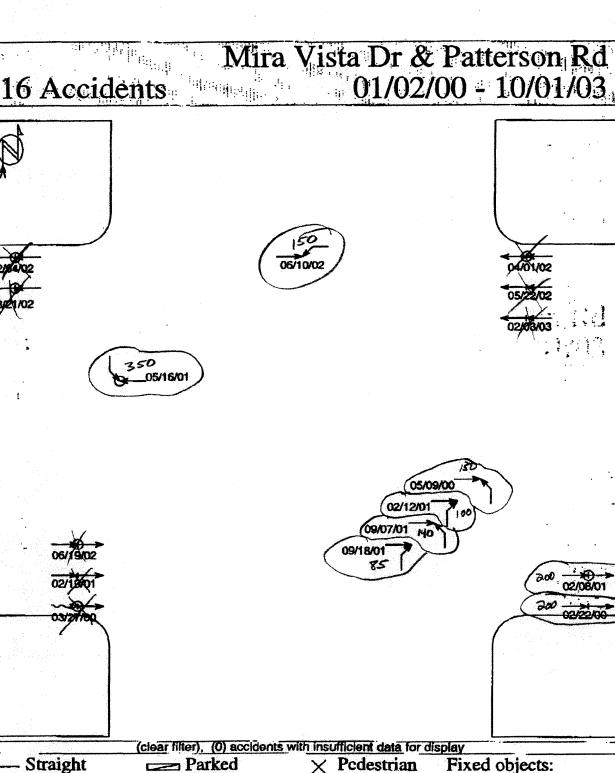
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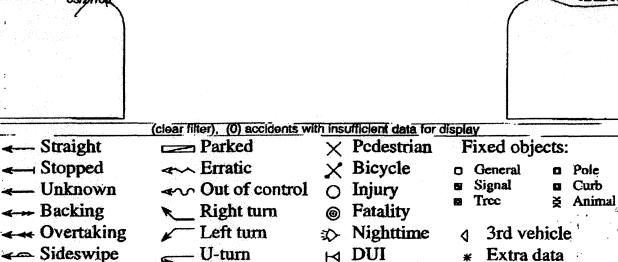
970-256-4115 T0:8012550404

F.007	Ρ	•	004
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	02-056224	09/30/200	16:00	100	Eas	Sides	0	0	2	22	Dayl None	Chan	No I
-	02-061062	10/24/200	12:58	150	Wes	Rear	0	1	2	21	Dayl None	Stra	No I
ant		11/05/200	14:22	0		Rear	0	0	2	75	Dayl None	Stra	No I
	03-004370	01/22/200	15:08	50	Wes	Rear	0	0	2	60	Dayl None	Star	No I
	03-006833	02/03/200	14:56	100	Wes	Rear	0	0	3	48	Dayl None	Stra	No I
	03-014891	03/17/200	9:33	700	Wes	)Rear <	T	2)	2	30	Dayl Rain	Stra	No I
	03-024945	05/05/200	15:35	100	Wes	Rear	0	1	2	47	Dayl None	Star	No I
	03-029825	05/27/200	14:02	100	Wes	Rear	0	0	2	25	Dayl None	Stra	No I
-	03-032161	06/06/200	14:15	0		Rear	0	0	2		Dayl None	Stra	Not
	03-035378	06/20/200	14:55	100	Nor	Broad	0	0	2	25	Dayl None	Left	No I
	<b>@03-035456</b>	06/20/200	20:30	0		Broad	0	1	2	60	Dark None	Stra	No I
	03-047310	08/12/200	14:36	250	Eas	Rear	0	0	2	68	Dayl None	Left	No I
	03-047311	08/12/200	14:37	250	Eas	Rear	0	0	2	15	Dayl None	Stra	No I
	<b>@03-048936</b>	08/19/200	14:31	0		Appro	0	1	2	21	Dayl None	Left	No I
	. @03-053574	09/09/200	6:20	0		Broad	0	1	2		Dark None	Left	Not
	× 03-055044	09/15/200	13:45	835	Wes	Broad	0	0	2	55	Dayl None	Left	No I

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City of Grand Junction, CO 10/08

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Extra data

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970-256-4115

Intersection Magic VER 6.650 City of Grand Junction, CO 10/08/2003

Accident listing 01/02/2000 - 10/01/2003 Mira Vista Dr & Patterson Rd Sorted by <DATE;TIME;ACC#>

CASE, ID D	ATE T	IME DI	S DIR	TYPE	F	IN	NU	DRIV	LIGH	WEAT	VEH	PE	DRI	.V
00-008930 0	2/22/200 1	5:50 20	) Eas	Rear	0	0	2		Dayl	None	Othe		Not	
00-014775 0	3/27/200 1	5:46 0		Rear	0	1	2	19	Dayl	None	Chan		No	I
00-02277900	5/09/200 1	6:32 (15)	Eas	Broad	0	0	2	70	Dayl	None	Left		No	T
01-007222 0	2/08/200 1	7:19 20	) Eas	Rear	0	22	3	33	Dark	None	Stra		No	I
01-0080160	2/12/200 1	5:54 (10)	) Eas	Broad	0	$\mathbf{\tilde{o}}$	2	19	Dayl	None	Righ		No	I
01-009362 0	2/19/200 1	3:10 0		Rear	Ō	O	2	17	Dayl	None	Stra		No	I
01-0270150	5/16/200 1	0:28 (5)	) Eas	)Broad	Ø	3)	3	93	Dayl	None	Left		No	I
01-0517730	9/07/200 8	:14 (14)	Eas	Broad	O	D	2	84	Dayl	None	Left		No	I
01-053824 0	9/18/200 1	0:56 85	Eas	Broad	0	Ø	2	75	Dayl	None	Righ		No	I
02-006115 0	2/04/200 1	4:00 60	) Wes	Rear	0	4	3	16	Day1	None	Stra		No	I
02-016714 0	4/01/200 1	7:12 0		Rear	0	1	4	37	Dayl	None	Slow		No	Τ
02-027522 0	5/22/200 1	4:15 0		Rear	0	0	2	15	Day1	None	Stra		No	I
02-0316340	6/10/200 1	5:56 15	) Eas	Appro	0	Ø	2	23	Dayl	None	Left		No	I
02-033621 0	6/19/200 1	5:47 0		Rear	0	2	2	21	Dayl	None	Stra		No	I
02-047602 0	8/21/200 1	4:52 42	) Wes	Rear	0	1	2	68	Day1	None	Stra		No	I
03-006794 0	2/03/200 1	1:45 0		Rear	0	0	4	76	Dayl	None	Stra		No	I