



# CITY OF RAPID CITY

## Engineering Services

300 Sixth Street  
Rapid City, SD 57701-2724

### MEMORANDUM

TO: Public Works Committee/Common Council

FROM: Robert Ellis, P.E.  
City Engineer

THROUGH: Dirk Jablonski, P.E.  
Director of Public Works

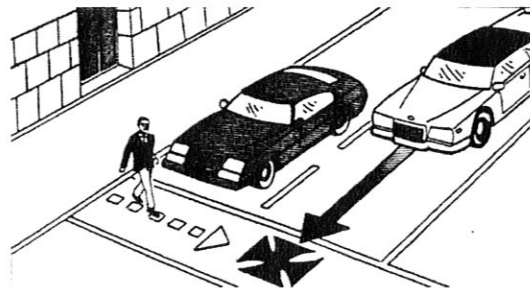
SUBJECT: Evaluation of Existing Mid-block Pedestrian Crossings  
5<sup>th</sup> Street, south of Fairmont Blvd. (Rapid City Regional Hospital)  
Mt. Rushmore Road at Meade Street

DATE: October 10, 2007

In response to a citizen's concerns, Mayor Hanks asked Engineering Services to conduct an evaluation of the existing mid-block pedestrian crossings at the referenced locations and to report to the Public Works Committee the findings of the evaluation. A location map for both crossings is attached for reference.

#### General

- 1) By both State law (32-27-1) and Rapid City ordinance (10.36.010), vehicular traffic must yield to a pedestrian within a crosswalk.
- 2) The pedestrian crash type typically associated with unsignalized mid-block crossings of multi-lane roads is the "multiple threat" crash type, which is illustrated below:



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OPPORTUNITY

EQUAL OPPORTUNITY EMPLOYER

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This crash type is characterized by a pedestrian entering the roadway in front of a properly stopped vehicle and being hit by a vehicle in an adjacent lane that has failed to yield the right-of-way.

### **5<sup>th</sup> Street, south of Fairmont Boulevard**

- 3) The average daily traffic in this section is 17,800 vehicles per day (12,120 northbound and 5,680 southbound).
- 4) The crossing currently has advance warning signs, at-crossing signs and pedestrian activated flashing yellow beacons.
- 5) There were no pedestrian crashes reported at this crossing between 2002 and 2006.
- 6) Pedestrian counts were conducted on Wednesday, 09/26/07, between 0700 and 1700. The instances of potential multiple threat crashes were also recorded. The results of the count summarized below:

HOUR	PEDESTRIANS USING CROSSING	# OF PEDESTRIANS NOT USING BEACONS	CROSSINGS WITH NO TRAFFIC PRESENT	POTENTIAL MULTIPLE THREAT CRASHES
0700	29	1	2	0
0800	27	1	5	0
0900	24	1	4	0
1000	27	4	3	0
1100	24	0	3	0
1200	44*	3	2	0
1300	28	2	1	0
1400	41**	2	3	0
1500	24	1	2	0
1600	21	1	1	0
TOTAL	289	16	26	0
* Spike in crossings appeared to be lunchtime related.				
** Spike in crossings appeared to be related to the conclusion of a meeting (multiple group crossings within 10 minute period).				

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- 7) The 2003 Manual on Uniform Traffic Control Devices (MUTCD) includes a warrant for the installation of a traffic signal based on pedestrian needs that specifies,

“The need for a traffic control signal at an intersection or midblock crossing shall be considered if an engineering study finds that both of the following criteria are met:

- A. The pedestrian volume crossing the major street at an intersection or midblock location during an average day is 100 or more for each of any 4 hours or 190 or more during any 1 hour; and
- B. There are fewer than 60 gaps per hour in the traffic stream of adequate length to allow pedestrians to cross during the same period when the pedestrian volume criterion is satisfied. Where there is a divided street having a median of sufficient width for pedestrians to wait, the requirement applies separately to each direction of vehicular traffic.”

Based on the pedestrian data collected, this crossing does not meet the warrants for the installation of a traffic signal.

- 8) During the data collection, some pedestrians activated the crossing beacons and stood on the curb waiting for traffic to stop. In all of these instances, traffic on the near side of the street did not immediately stop. There was a 100% vehicle compliance rate when the pedestrian made eye contact with approaching traffic and initiated their crossing.
- 9) Pedestrian interviews were not conducted, however based on observation (hospital staff parking on the west side at the beginning of the day) and appearances (visible ID badges or hospital related attire), no patients were observed using the crossing nor were any observed being transported by hospital or clinic staff. The lack of pedestrian facilities on the west side of the hospital campus (i.e. no pedestrian marking or signing in the hospital parking lot) suggest that use of the crossing is intended to be limited to staff.
- 10) The crossing is immediately adjacent to the driveway used by ambulances accessing the Emergency Department. There were no conflicts observed

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- 11) The following speed data near the pedestrian crossing was collected on Tuesday and Wednesday, 10/02-03/07:

	POSTED SPEED LIMIT (MPH)	AVERAGE TRAVEL SPEED (MPH)	85 <sup>TH</sup> PERCENTILE TRAVEL SPEED (MPH) (1)	10 MPH PACE GROUP (2)
<b>NORTHBOUND</b>	30	31.2	36	27 – 36
<b>SOUTHBOUND</b>	30	25.1	31	21 – 30
(1) The speed at which 85% of the traffic traveled at or below.				
(2) The 10 mph range at which most traffic traveled.				

- 12) The existing crossing treatment is consistent with the recommended guidelines of both the FHWA's Safety Effects of Marked vs. Unmarked Crosswalks at Uncontrolled Locations (2002) and the National Cooperative Highway Research Program's Report 562, Improving Pedestrian Safety at Unsignalized Crossings (2006).

#### **Mount Rushmore Road at Meade Street**

- 1) The average daily traffic in this section is 25,850 vehicles per day (13,660 northbound and 12,190 southbound).
- 2) The crossing was installed several years ago primarily to facilitate pedestrian traffic between motels and restaurants. Several of the eastside motel sites have subsequently been redeveloped.
- 3) The crossing presently has advance warning and crossing signs.
- 4) The City of Rapid City (on behalf of the Rapid City Metropolitan Planning Organization) has retained a consultant to prepare the Mt. Rushmore Road Corridor Study. One of the work elements included in the study is the evaluation and development of recommendations for enhancing pedestrian and bicyclist use in the corridor. The study will consider both existing and future land-uses in developing its recommendations.

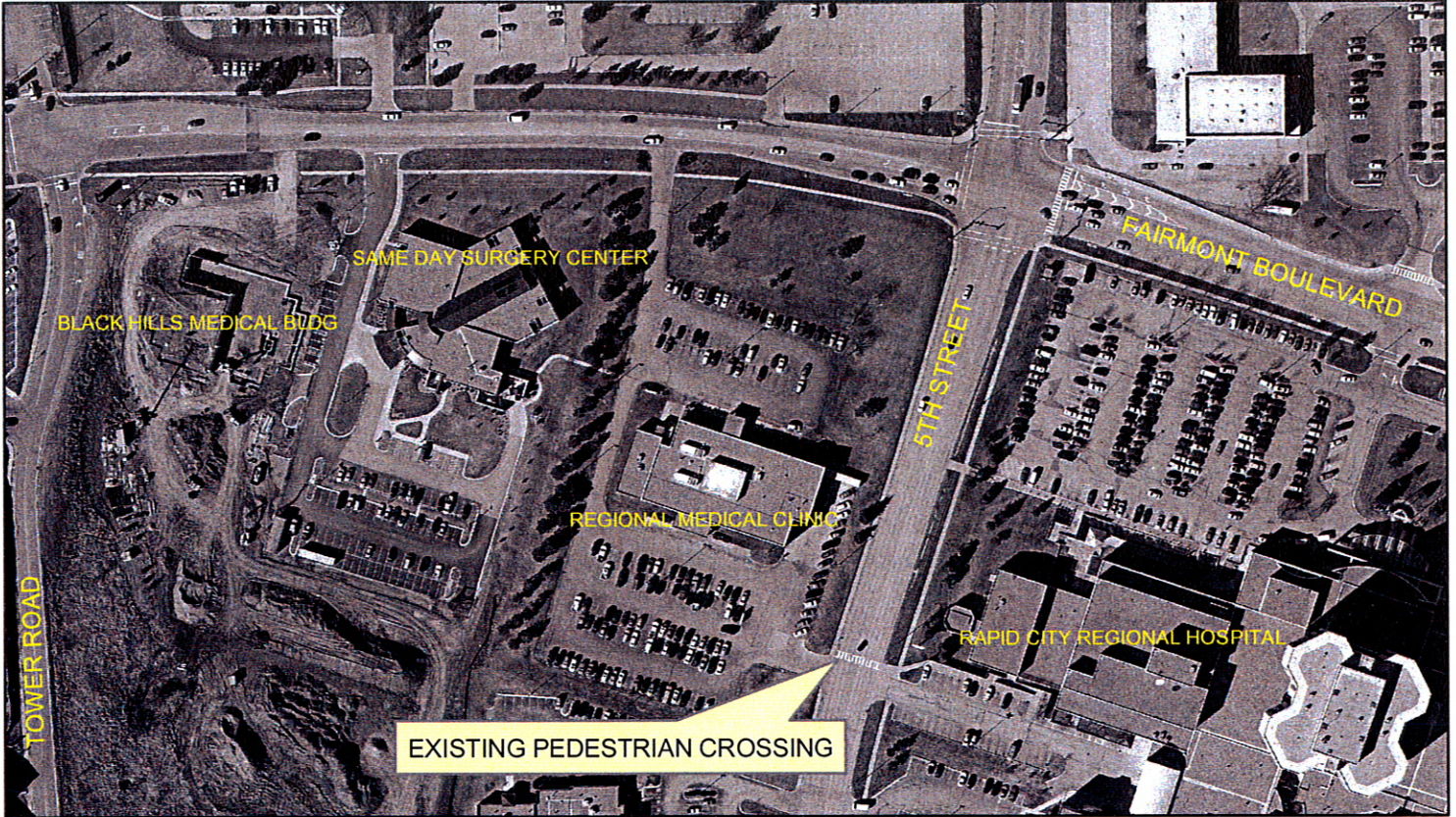
#### **Recommendations**

- 1) No revisions are recommended for the 5<sup>th</sup> Street pedestrian crossing.
- 2) Consideration of revisions at the Mt. Rushmore Road pedestrian crossing should be deferred until the completion of the Mt. Rushmore Road Corridor Study (Summer 2008).

RE:JL

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### LOCATION MAP 5th Street, south of Fairmont Boulevard Existing Pedestrian Crossing



### LOCATION MAP Mt. Rushmore Road at Meade Street Existing Pedestrian Crossing

