



## Traffic Engineering and Parking Divisions

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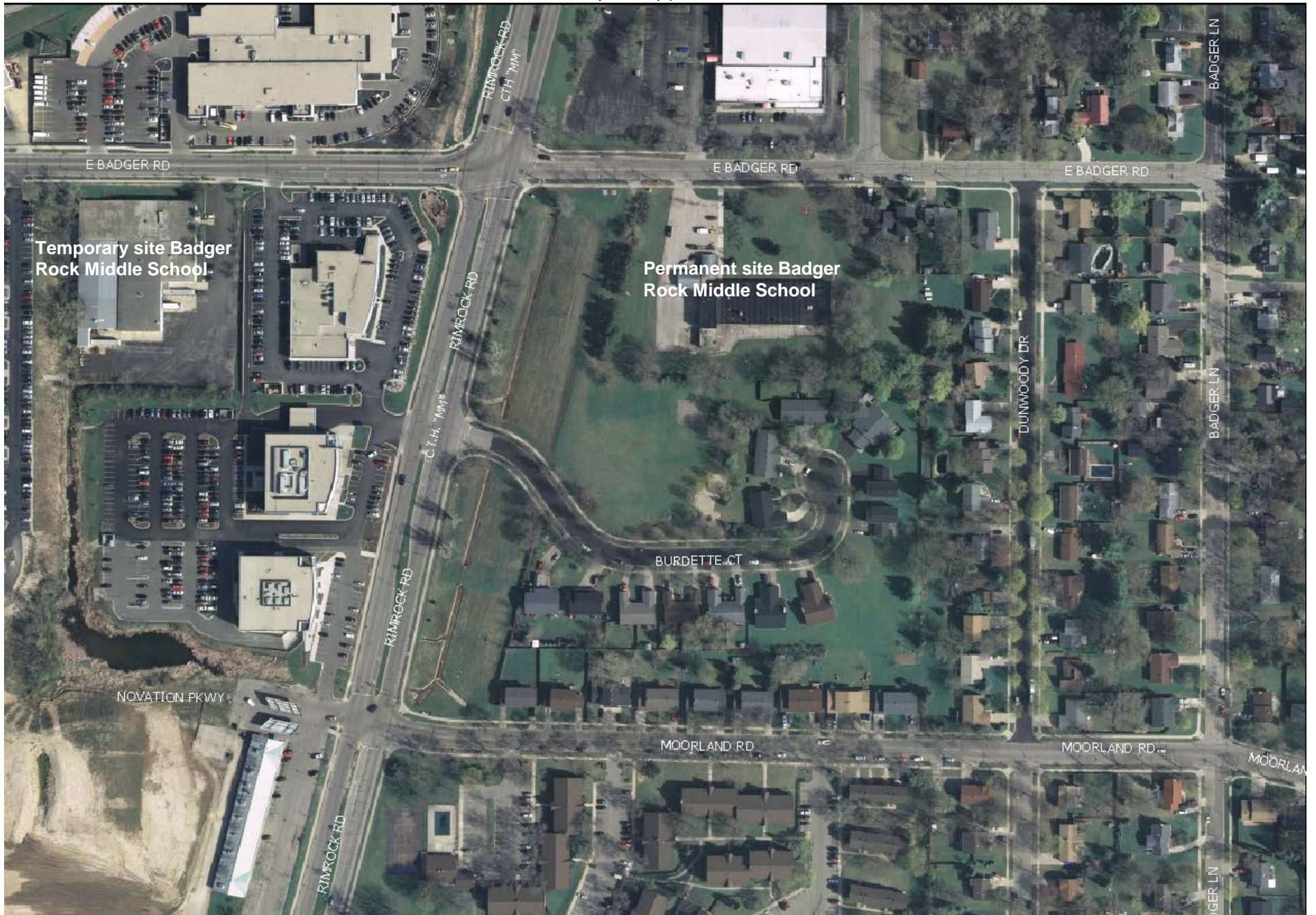
### **Staff Report to Pedestrian-Bicycle-Motor Vehicle Commission Request for a temporary Adult School Crossing Guard assignment for Badger Rock Middle School at the intersection of Rimrock Road and Badger Road**

Badger Rock Middle School is a new charter school that opened September 2011 with approximately 50 6<sup>th</sup> grade students. Other grades will be added one per year for the next 2 years. The school is currently housed in a temporary location on Badger Road just west of Rimrock Road. Their permanent home, a new building, is under construction on Badger Road just east of Rimrock Road. Their permanent site will hopefully open in January. The majority of students attending Badger Rock from the neighborhoods within walking and bicycling distance of the school site live in the neighborhood south of Badger Road and east of Rimrock Road. The Principal has requested a temporary Adult School Crossing Guard assignment at Rimrock and Badger Roads until their permanent location is ready for occupancy.

The School Crossing Protection Criteria, which is recommended by the Pedestrian-Bicycle-Motor Vehicle Commission and adopted by the Common Council, does not consider middle school students as part of the evaluation criteria. The assignment of Adult School Crossing Guards, per the adopted policy, is intended only for elementary school aged children. None-the-less, the PBMVC, at their September meeting when this item was first on their agenda, requested staff to present data for their use in evaluating this request. A School Crossing Analysis worksheet for this location is attached. An aerial view of the intersection with the temporary and permanent school sites labeled is also attached.

The intersection of Rimrock and Badger is signalized. Crosswalks are marked across the south, east and west legs of the intersection. Pedestrian signals with push buttons are in place for the three crossings with marked crosswalks. Dane County has installed advance school crossing signs as well as school crossing signs at the south crosswalk across Rimrock. Traffic Engineering maintains the traffic signal and sets the signal timing. TE received a complaint from a teacher and students at the school who had observed the crossing and noted that some of the pedestrian signals were not working. We repaired and/or replaced dim/burned out pedestrian signals. In addition, we extended the pedestrian crossing cycle by 6 seconds, from 32.5 seconds to 38.5 seconds. This pedestrian cycle does not come on unless the pedestrian button is pushed. Countdown pedestrian signals have been approved for installation.

To Beltline (North ↑)



Temporary site Badger  
Rock Middle School.

Permanent site Badger  
Rock Middle School

NOVATION PKWY

MOORLAND RD

MOORLAND RD

MOORLAN

E BADGER RD

E BADGER RD

E BADGER RD

BADGER LN

BADGER LN

DGER LN

RIMROCK RD  
CTH "MM"

RIMROCK RD

CTH "MM"

RIMROCK RD

RIMROCK RD

DUNWOODY DR

BURDETTE CT

**SCHOOL CROSSING ANALYSIS**  
**City of Madison**  
**Department of Transportation**  
**Traffic Engineering Division**

School Badger Rock Middle School

Crossing Location Rimrock Road at Badger Road

Elementary School Children Crossing Rimrock Road

					POINTS					
					a.m.	p.m.				
<b>1) Number of elementary students crossing</b> <b>MIDDLE School</b> a.m. peak hour (7:35 to 8:30) <u>3</u> all three crossed at Moorland, not Rimrock p.m. peak hour (3:15 to 4:00) <u>13</u> only 1 actually crossed Rimrock at Badger, others continued south on the west side of Rimrock. Most of the others were observed crossing Rimrock at Moorland					<b>number</b> 0 - 19 20 - 29 30 - 34 35 - 39 40 - 49	<b>points</b> 0 4 8 12 16	<b>number</b> 50 - 74 75 - 99 100-124 125-149 150+	<b>points</b> 20 24 28 32 36	0	0
<b>2) Gap Availability</b>  crossing distance = <u>100</u> feet  minimum safe crossing time = <u>33</u> seconds  % safe crossing time = <u>at least 33</u> % a.m. <u>At least 22</u> % p.m.					<b>% safe gap time</b> 80 + 70 - 79 60 - 69 55 - 59 50 - 54	<b>points</b> 0 4 8 12 16	<b>% safe gap time</b> 45 - 49 40 - 44 30 - 39 20 - 29 0 - 20	<b>points</b> 20 24 28 32 36	28	32
<b>3) Motor Vehicle Speed</b>  85th percentile speed = <u>est. 0 - 25</u> mph a.m. <u>Est. 0 - 25</u> mph p.m.  All traffic conflicting with this crossing is turning traffic at a signal, generally from being stopped, so low speed					<b>mph</b> 0 - 25 26 - 30 31 - 35	<b>points</b> 0 2 4	<b>mph</b> 36 - 40 41 - 45 46 +	<b>points</b> 6 8 10	0	0
<b>4) Sight Distance</b>  available sight distance: _____ feet _____ bound _____ feet _____ bound  ratio: available sight distance / design stopping distance _____ feet _____ bound _____ feet _____ bound					<b>design stopping distance</b> <b>85th %ile speed</b> 25 - 30 mph 31 - 35 mph 36 - 40 mph 41 - 45 mph 46 + mph	<b>stopping distance</b> <b>feet</b> 200 240 275 310 350	<b>ratio</b> 2.1 + 1.5 - 2.0 1.0 - 1.5 < 1.0	<b>points</b> 0 1 5 15	0	0
<b>5) Safety History - Previous Five Years</b>  a) Number of reported crashes at study location involving elementary school children going to or coming from school. MIDDLE <u>0</u> reported crashes  New school, so no history possible					<b>crashes</b> 0 1 each add'l	<b>points</b> 0 5 20			0	0
b) Reported crashed not involving children going to or coming from school, but of types and/or at times that could conflict with school crossing at this location.  <u>3</u> reported crashes. Type: <u>total crashes last 5 years of types that might</u> Endanger a pedestrian in the south crosswalk  _____ reported crashes. Type: _____  _____ reported crashes. Type: _____								<b>points</b> 0 - 5 0 - 5 0 - 5	1	1
<b>6) Other Factors</b> Foreign traffic route. For each approach in excess of four. For complex signal or crossing design. For simple signal or crossing design. Safer crossing one block out of the way. Large percentage of grades K and 1 students (over 40%). An intersection of two arterial streets where total weekday traffic approach volume exceeds 25,000 vehicles. Children crossing multiple crosswalks at an intersection. Stopped buses and/or other obstructions. Volume of turning traffic not reflected in gap availability.								<b>points</b> 0 to +5 +5 +5 to +10 -5 to -10 -10 0 to +5 +4 0 to +10 0 to +5 0 to +5	5	5
<b>TOTAL HAZARD RATING</b>									34	38



## Interpretation of Hazard Rating

Using the hazard rating as a guide, the following measures are appropriate:

1. **Mark as a school crossing** when the hazard rating is greater than 20 points at a crossing used by at least 25 elementary school students during the peak crossing hour. The Traffic Engineer is authorized to mark such a crossing with appropriate warning signs and special crosswalk markings.

2. **Install flashing beacons** if any one of the following conditions is met:

a. The 85th percentile speed is in excess of 40 mph measured at existing school crossing signs which have been in place at least 30 days.

b. The street crossed is a U.S. or State Trunk Highway on which a significant percentage of "foreign " drivers can be expected.

c. The ratio of sight distance to safe stopping distance is less than 1.5.

d. The hazard rating is greater than 30 at an unguarded location where at least 25 elementary students cross and the available safe crossing gaps are less than 50 percent.

3. **Recommend the assignment of an adult school crossing guard** when the hazard rating is greater than 40 points at a crossing used by at least 25 elementary school students during the peak crossing hour.

If the school has only grades K through 2, recommend the assignment of an adult school crossing guard in the hazard rating is greater than 30 points at a crossing used by at least 15 elementary school students during the peak crossing hour.

4. **Recommend the discontinuance of adult school crossing guard protection** at a crossing where the hazard rating falls below 30 points or if the number of elementary school students crossing during the peak hour in less than 15.

At the intersection of two arterial streets where the total weekday entering traffic volume exceed 25,000 vehicles, the total number of students crossing at the intersection will be used to compare to the minimum of 15 students required to retain an adult school crossing guard.

### Remarks

Estimating the gap availability at a signalized intersection where the pedestrian cycle does not come up unless the button is pushed is difficult since unless a pedestrian calls the cycle, there is no gap. Looking at the potential conflicts, pedestrians crossing the south leg of Rimrock conflict with three movements

- Eastbound right turns on green
- Westbound left turns on green
- Northbound right turns on red

During the morning study, staff observed 32 cycles when Badger Road had the green, which is when pedestrians crossing Rimrock would have the walk cycle if they pushed the button.

In 11 additional cycles there was only 1 turning movement across this crosswalk.

There were 5 cycles with 2 conflicting turning movements,

and 2 each with 3 and 4 turning movements.

Thus the morning gap availability is estimated as at least 33% (11/32 cycles with no conflicts)

During the afternoon study, staff observed 23 cycles when Badger Road had the green

During 5 of these 23 cycles there was no turning movements across the south crosswalk.

During 7 cycles there was only 1 turning movements across the south crosswalk.

There were 5 cycles when there 2 turning movements across the south crosswalk.

1 with 3 turning movements, 3 with 4 turning movements, and 1 each with 5 and 6 turning movements.

Thus the afternoon gap availability is estimated as at least 22% (5/23 cycles with no conflicts)

### Recommendations

Recommend not assigning an Adult School Crossing Guard at this location. Even if these were elementary school students using this crossing, it does not meet the adopted criteria. Changes have already been made to improve the conditions for pedestrian crossings, including adding advance school crossing and school crossing signs by the Town of Madison, lengthening the time a pedestrian has to cross Rimrock, and approval of countdown pedestrian signal installation.

by Arthur Ross, Pedestrian-Bicycle Coordinator

Date October 18, 2011