
Bismarck School Crossing Study

Certification

I hereby certify that this report was prepared by me or under my direct supervision and that I am a duly registered professional engineer under the laws of the State of North Dakota.

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Bismarck-Mandan
Burleigh and Morton Counties
Metropolitan Area

Bismarck School Crossing Study

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On Behalf of the
Bismarck-Mandan
Metropolitan Planning Organization

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Resolution of Adoption

For the 2005 Bismarck-Mandan and Burleigh and Morton Counties Metropolitan Area Bismarck School Crossing Study

WHEREAS, the U.S. Department of Transportation requires the formulation, approval, and maintenance of a Metropolitan Transportation Plan for the urban area as a condition of federal transportation funding; and

WHEREAS, the Bismarck-Mandan Metropolitan Planning Organization has been designated by the Governor of North Dakota as the Metropolitan Planning Organization responsible for preparing and maintaining the Metropolitan Transportation Plan; and

WHEREAS, the Bismarck-Mandan Metropolitan Area Long Range Transportation Plan (2001) recommended the Bismarck School Crossing Study be conducted; and

WHEREAS, the Bismarck-Mandan Metropolitan Planning Organization after extensive public involvement and substantial consideration of technical, environmental, financial and social factors has prepared the Bismarck School Crossing Study, which is in compliance with federal transportation planning standards; and

WHEREAS, all cognizant State and Federal agencies have reviewed the School Crossing Study and indicated their full support; and

NOW, THEREFORE BE IT RESOLVED, by the Bismarck-Mandan Metropolitan Planning Organization Policy Board that it adopts the Project Decisions located in the 2005 Bismarck School Crossing Study and directs staff to publish the final document and distribute copies to all appropriate local governments and interested parties; and

BE IT FURTHER RESOLVED, that all jurisdictions and their elected officials and staff covered by the document are encouraged to cooperatively implement the recommendations of the Project Decisions located in the 2005 Bismarck School Crossing Study.

Certificate

The undersigned, duly qualified Chairman of the Bismarck-Mandan Metropolitan Planning Organization Policy Board, certify that the foregoing is a true and correct copy of a Resolution, adopted at a legally convened meeting of the Policy Board held on _____.

Claus Lembke
Chairman of Policy Board
Burleigh County Representative
Bismarck-Mandan MPO Policy Board

Date

Table of Contents

Comments.....	vii-xxiv
Chapter One—Introduction	
1.1 Introduction	1
1.2 Study Background	1-3
Study Process	4
Chapter Two—Issue Identification	
2.1 Introduction	5
2.2 Study Review Committee.....	5-6
2.2.1 Study Review Committee Meeting #1.....	6
2.2.2 Study Review Committee Meeting #2.....	7
2.2.3 Study Review Committee Meeting #3.....	7
2.2.4 Study Review Committee Meeting #4.....	7
2.3 Current and/or Existing Practices within the BECEP and the 15 Schools	7-8
2.4 Policies of Other School Districts	8-11
2.5 Public Surveys.....	11-12
2.6 Engineering Analysis	13-14
2.7 Site Visits	15
2.8 Resulting Issues.....	16
Chapter Three—Recommendations	
3.1 Education	17
School Crossing Safety Example of Brochure.....	18-19
3.2 City Ordinance Recommendations	20-21
3.3 Non-resolvable Issues	21
3.4 Citywide Recommendations.....	21-23
3.5 Recommendations for New Schools.....	23-25
Chapter Four—Individual School Recommendations	
4.1 Individual (School Recommendations)	26
Figures	
Figure 1.1—Bismarck Public School District Elementary Schools Map.....	2
Figure 1.2—Study Process	4
Figure 2.1—Issue Identification	5
Figure 2.2—How Do Students Get to and From Schools.....	11
Figure 2.3—Have you Reviewed Pedestrian Safety Rules With Your Child	12
Figure 2.4—Citywide Public Survey Totals.....	13
Figure 2.5—Relationships of School Size to Percent Walking	14
Figure 3.1—Concept Site Plan for New Schools	25
Appendix	
Appendix 1—Public Survey	
Appendix 2—Key Person Interviews & Site Observations	
Appendix 3—Crash Analysis	

Comments

School Crossing Study
Bismarck, ND

North Dakota Department of Transportation
Traffic Operations
Comments submitted on June 10, 2005

1. **Page 6 (First paragraph):**

The Figure # should be changed from “3.1” to “2.1”.

Revision has been made.

2. **Page 12 (Last sentence):**

The number of students does not add up to the previous total of 779 (i.e., $456+191+122=769$ not 779).

Not all surveys answered Question #1: How does your child get to/from school.

3. **Page 20:**

Check numbering 1, 2, 3, 1. First #3—clarify what the bullets are referring to—prohibit parking?

The numbers under #3 have been changed to a, b, c, etc.

4. **Page 22, Item 8:**

If installed, need either a speed limit or an “End School Zone” at each location.

Comment noted.

5. **Page 22, Item 10:**

Fluorescent green signs are not allowed. Fluorescent yellow green signs are an option to the MUTCD standard yellow background signs. There is no MUTCD requirement that all school signs in a city have to be the same color. It suggests that all school signs within an area be the same.

Revision has been made.

General:

It is not clear what signing is existing and where signing and pavement marking will be upgraded or installed.

An inventory of existing signing and crosswalk locations adjacent to the schools was provided by the NDSU Advanced Traffic Analysis Center (ATAC), and this information is found on the Issues And Observations maps. Recommended upgrades are found on the Recommendations maps.

Additional crosswalk pavement marking is recommended at some locations in the study. Ensure there is sidewalk leading to these crossings and if there isn't, the cost to add sidewalk should be included in the estimate.

These issues were addressed in the draft report.

How will parents know what areas are designated to be used for pick-up/drop-off zones?

The handicap parking areas and bus loading zones are the only zones that are signed. Signing of temporary loading zones becomes too difficult to enforce and results in a proliferation of signs. There are no on-street areas specifically signed for parent pick-up/drop-off, with any available on-street parking space is available for pick-up/drop-off. The city-wide recommendations have been revised to have schools encourage parents to spread out the loading zones by picking up students on all sides of school, preferably on the school side of the street.

Some recommendations are shown on map but not in narrative.

Revision has been made.

Recommendation Map should have the same legend characteristics and illustrations as shown on the Issues and Observation map. This would enhance the readability and aid in identifying all school crossing features.

A decision was made to not include all of the existing information and legend on the Recommendations to minimize complexity, scale and readability of the Recommendations maps.

The Safe Route to School map should include all traffic control devices along the route. Refer to MUTCD, Part 7 and Figure 7A-1. Should include any recommendations for improvements along the route.

The existing maps reflect the recommended improvements. An inventory of existing traffic control devices adjacent to the schools was provided by the NDSU ATAC. However, there is no existing inventory data for all streets citywide. A citywide survey of all traffic control devices is beyond the scope of this project. The city of Bismarck is currently developing a Geographical Information System (GIS) that will eventually include all traffic control devices. When the GIS is complete, the city will consider updating the safe-route-to-school maps at that time.

Is there a need to upgrade any of the existing flashing beacons or traffic signals associated with school crossings? What is the basis for determining where only static traffic control devices, flashing beacon or traffic signals should be installed?

Pedestrian counts were beyond the scope of the planning study. The recommendations did include proposed revisions to flashing beacons and traffic signals near several schools.

Parking restrictions: Consider something other than a 25 foot prohibition. The MUTCD suggests no parking a minimum of 30 feet in advance of a crosswalk at a traffic signal and 20 feet minimum at other locations. Consider installing "No Stopping School Days 8am-4pm"

signs with appropriate arrows in school crossing areas. These should cover a larger area than the no parking signs. Recommend somewhere in the area of 100 feet in advance and 25 to 50 feet beyond each crosswalk. This allows residents to park in this area during nonschool hours/days.

Recommendations have been revised to 30-foot prohibition at traffic signals. The 25-foot prohibition exceeds the MUTCD recommended minimum of 20 feet, and was developed in concurrence with the Study Review Committee. Current laws address the double parking issue for loading, stopping to unload is allowed under current law. A "No Stopping School Days 8am-4pm" would provide a confusing message to motorists that are faced with the decision to stop for an occupied crosswalk. The parking prohibition adjacent to school crossings provides improved visibility of pedestrians at times other than school arrival/departure, such as special events and play ground patronage.

Difficult to see existing or proposed signing on the aerial photos. Are there existing school advance signing wherever there is a school crosswalk sign? For the school crosswalk sign, does it include a diagonal downward pointing arrow sign?

The aerial photo base maps with the inventory of existing devices was provided by the NDSU Advanced Traffic Analysis Center. The clarity of the maps are compromised by the requirement to show the entire school vicinity on a 8.5" x 11" map. Any advanced signs that are not present are noted on the Issues And Observations maps.

Should include the average number of children crossing at each crosswalk. This would help determine the proper traffic control at each location.

Pedestrian counts were beyond the scope of the planning study due to budget constraints.

At T intersections where there are 2 crosswalks, parking should be prohibited between the crosswalks. Where parking is to be prohibited near a crosswalk, this prohibition should also apply to buses.

The recommended 25- foot parking prohibition effectively eliminates all parking between the noted locations.

BECEP at Richolt:

It is proposed to install an advance sign on 14th St for northbound traffic. It is also proposed to put a school crossing sign at the crosswalk with a downward 45 degree arrow. Is there advance signing for the crosswalk on the north leg for southbound traffic?

Yes.

What is proposed for the existing bus loading zone on the east side of the school? What will prevent motorists from using this as a loading zone?

The bus loading zone is recommended to be relocated southward on 14th Street away from the crosswalks and intersection of Avenue D. All bus loading zones are signed as “no parking - bus loading zone only”. A motorist parking in the bus loading zone would be in violation and subject to enforcement action, the same as current bus loading zones.

Why not leave the crossings on the south side of the roadway as continental style since they are adjacent to a school property and are signed crossings?

The school crossings are recommended to remain as continental style. The report and maps have been revised.

Centennial:

Mid Term recommendations—a “traffic signal” is scheduled for installation in 2005.

The traffic signal is not a recommendation of the School Crossing Study, but rather a separate action being implemented by the City in response to growing traffic.

Is the sidewalk connected on the south side of Springfield St to Century Ave? The aerial photo doesn't show it. This is the path identified on the Safe Route to School map.

A new sidewalk in this area is one of the recommendations.

Grimsrud:

Why was the bus loading zone moved?

It was in the area of greatest motorist parking demand and congestion.

What is proposed to prevent vehicles from backing up over the sidewalk at the parking lot entrance on the west side of the school?

Curb stops were considered but were ruled out because they create additional maintenance issues. After discussion with the Study Review Committee, the recommendation is to use a one-way entrance at the south approach to the parking area with angled parking instead of perpendicular parking to minimize vehicles backing onto the sidewalk.

Label St. Benedict St on the issues and observations map.

The map has been revised.

Highland Acres:

A bus loading zone is identified, but the narrative states that no children are bussed to this school and the layout says there is no parking in this area on school days from 8am to 4pm. One of the recommendations is to move the bus loading zone. What does this mean considering the above information?

The bus loading zone is signed inconsistently with a parking restriction between 8 am to 4 pm. The school does have several day care vans that use the bus loading zone. The bus loading zone is recommended to be eliminated altogether, with private vans competing with parents for available on-street parking. The Recommendations map has been revised to reflect no re-establishment of the bus loading zone.

Should discuss the U-turn problem in the “Key Issues” section.

Not all issues were considered “key issues”.

Miller:

Why close the sidewalk with the most direct route to the entrance identified as used the most by students? The survey states that 75% of students ride with their parents who pick them up along 20th St. Do not believe this will necessarily prevent students from crossing 20th Street at midblock locations.

The sidewalk is not ADA accessible and leads to a mid-block location where there is no school crossing. The recommendation is to install fencing behind the 20th Street sidewalk to direct students to the school crossing at the intersection of 20th Street and Jackson Avenue. We believe the fence will improve school crossing compliance during the times of peak congestion, which is when students are leaving the school.

Recommendation map should include painted crosswalk markings at Jackson and 23rd St.

Revision has been made.

Dorothy Moses:

Parent, bus and handicapped parking zones should be shown on the recommended map.

The Recommendations maps only show the recommended revisions. The bus loading zone is now recommended to be relocated away from the main entrance to the north side of the school along Columbia, and this will be reflected on the Recommendations map. The sidewalk at the new location is already paved to the curb, which is desirable at bus loading zones.

Rita Murphy:

On the recommended map the parent parking zone should be identified. Is the loading zone by the fence opening (south side of school) for buses or parents?

Parent parking zones are not identified as they consist of any on-street parking that is not restricted. The loading zone on the south side of the school is for buses, as indicated on the Issues And Observations map.

Label “Ave A”.

The map legend has been relocated on the Recommendations map so as not to block the base map street labels that were created by NDSU ATAC.

Jeannette Myhre:

What does the proposed sidewalk on Arbor Ave connect to? Does it tie to existing sidewalk to the west?

Yes.

Where is the parents pick-up/drop-off area proposed to be since parking on the west side of 12th will be prohibited and parking in the Cash Wise lot will not be possible?

Either on the northbound (east) side of 12th or along the internal circulation roadway/parking areas to the east of the school.

Geometric revision—design would not be adequate to prevent vehicles from entering off Expressway or making a left turn onto Expressway, or vehicles wanting to turn left would go thru the park parking lot and turn left from the other access.

The Recommendations map is conceptual, not to be considered a “design” for construction. The Bismarck School Crossing Study website address was provide to the consultant conducting the concurrent Bismarck Expressway Corridor Study, so that their recommendations regarding Bismarck Expressway can take into account the Bismarck School Crossing Study recommendations for Jeanette Myhre Elementary School. Additionally, the school will undergo a major remodel in next several years. The School District may consider relocating the main entrance to the east side of the school.

Label streets on the issues and observation map. How long are sidewalks (northeast part of the recommended map) going to be?

We are unable to edit the street label layer in the GIS base map provided by NDSU ATAC. Additional street names have been added in revised maps. There are no sidewalks in the northeast part of the Recommendation map. The recommended sidewalks along Arbor Avenue in the northwest part of the map are one block long.

Install painted crosswalk marking across east leg of Stardust Dr at 12th St. Install STOP sign at proposed right out only location leading to Bismarck Expressway.

Revisions have been made.

Northridge:

Was 4th St signing reviewed? Currently there is one “No Stopping” sign with the other parking restriction signs reading “No Parking”.

Yes.

How is it proposed to prevent vehicles from vehicles from turning left out of the alley? Will a Stop sign be installed for the alley traffic?

That is a design detail. It could be handled with a “No Left Turn” sign and enforcement, with reasonable compliance expected since it will be very difficult to turn left due to traffic queues and volumes from the 4th Street intersection. A Stop sign has been added to the recommendations. The bus loading zone has been revised to remain on 3rd Street due to geometric constraints of the alley. The school is also recommended to coordinate with the adjacent church to secure permission for student pick up/drop-off in the church parking lot.

Regarding the text recommendation for long term improvements (second bullet), who will be able to park on east side of 3rd St after changes are made?

The second bullet refers to more durable pavement markings. The first bullet has been revised to designate the alley as a parent loading zone.

Key issue 4—Is this happening at all crosswalks?

The parking across cross walks happens everywhere. The U-turns are primarily on 3rd Street in front of the school.

How do adjacent residents feel about having this traffic in the alley?

There is limited traffic through the alley in its present condition. The City has received requests from residents to pave the alley. We have received no negative comments regarding traffic on this issue.

Pioneer:

Identify “Braman Ave” on the issues and observations map. Will there be a bus loading zone or any handicapped parking area?

The maps and text have been revised to reflect relocation of the bus loading zone to the north side of the school.

Prairie Rose:

Buses load and unload in the middle of the parking lot? Were other options considered for the bus loading zone?

Yes. The existing system works better than the bus loading zone that was constructed adjacent to the westbound driving lane. A much larger parking lot was considered to allow bus parallel parking within the parking lot, but was ruled out due to high cost.

Identify street names. Where does the school staff park?

Street name has been added. Staff park west and south of the school buildings.

While small in numbers there are children who walk. Why not recommend that sidewalks be installed? Develop a Safe Route to School map.

The long term recommendations do recommend a sidewalk along the street frontage. We can't develop a Safe Route to School map for a rural school without pedestrian

facilities throughout the area. The citywide recommendations on page 22 of the report include installing sidewalks along all residential streets.

Riverside:

Lighting was brought up as a key issue but there is no recommendation to study the existing lighting.

The recommendations have been revised to include a review of the lighting.

Roosevelt:

[No comments]

Saxvik:

Identify parking zones and streets on the recommendation map.

There were no changes to the on-street loading zones, therefore they were not shown as a recommendation. Street names have been added to the maps.

Solheim:

Did the long term recommendation for lengthening the internal roadway take into account turning traffic volumes coming out of the school? How many vehicles continue on Reno and with the new proposal would have to make a left and then a right turn? Would it work operationally?

The majority of traffic is turning right when they leave the internal roadway.

Consider a crossing at Munich and the parking lot entrance.

There is an existing school crossing at Munich/Stuttgart just west of the parking lot entrance.

Will-Moore:

What is the purpose of the fence? It appears to block off both main entrances to the school.

Students exiting the building are directed to the school crossings by installing the fence, thus reducing unprotected mid-block pedestrian crossings.

Where are the loading zones to be placed?

They are not proposed to be moved from their existing location.

Appendix 3 (Crash Analysis): The damage amount for reporting is \$1000 not \$1500.

Revision has been made.

Mel Bullinger, PE
City Engineer, City of Bismarck
Comments submitted on June 20, 2005

General:

In Section 1.1 Introduction, where is the end quote in the second paragraph?

Revision has been made.

In Section 2.2 Study Review Committee, I was not part of the Committee.

Revision has been made.

In Section 2.3 Current and/or Existing Practices within BECEP and the 15 Schools, the first sentence should be revised to: "The Bismarck Public School District and city of Bismarck currently *have* no cohesive set of policies for the safety of students walking to and from school.

Revision has been made.

In the same Section (2.3), the second sentence in the second paragraph should be revised to: Other means of educating students and parents about traffic safety in the Bismarck School District *are* through the principals and teachers...

Revision has been made.

In the same Section (2.3), the last sentence of the 7th paragraph should be revised to: Six did add that the city will provide anything *related to traffic signing and striping* on the public right-of-way.

Revision has been made.

In Section 2.7 Site Visits, the second sentence should be revised to: The on-site visits were conducted during *the typical student* arrival and departure times, enabling the study team to observe motorist and pedestrian behavior while reviewing on-site conditions.

Revision has been made.

In Section 3.1 Education, the first paragraph discusses using a radar device and electronic sign board. Is this a viable option?

Yes, the NDDOT uses similar portable equipment.

In Section 3.1 Education, the 4th paragraph discusses an educational session with elementary students and their parents, is there a role of the PTO?

*The paragraph has been revised in order to incorporate the PTO:
Education could begin by hosting a joint session of elementary students and their parents. One possible organization to spearhead this endeavor is the PTO (Parent Teacher Organization). This session could "train" parents/motorists to learn the limitations of students and the students would learn safe behavior and how to interact with motorists. This session should incorporate principals, teachers, and law enforcement. It could be held*

during International Walk to School Week or during orientation at the beginning of the school year. This is also a chance to handout the Safe-route-to-school Maps, brochures, and access to the Bismarck School Crossing Study.

In the brochure on page 19, the “M” is missing from “MPH”.

Revision has been made.

In Section 3.2 City Ordinance Recommendations, in the 4th paragraph the second sentence, “fright” needs to be changed to “freight”.

Revision has been made.

On Figure 3.1, Concept site plan for new schools the intersection bumpouts for traffic may not necessarily be a good thing necessarily.

In the text, a statement was added that bumpouts are usually used adjacent to residential streets: Construct street corners at school crossings with sidewalk “bumpouts” to shorten walking distance, improve visibility of students approaching school crossings, physically prevent vehicles from parking across school crossings, and to function as a traffic calming device (typically used adjacent to residential streets).

BECEP:

Under Short-Term Recommendations, add \$ in front of 250.00.
Revision has been made.

Centennial Safe Route to School Map:

Move the text balloon to the correct intersection and add there is no sidewalk on the east side of Clydesdale Avenue.

Revision has been made.

Grimsrud Elementary School:

Delete the comment, “Need to deter older children from having parties on the roof.”

Revision has been made.

Mark A. Berg, PE
Traffic Engineer, City of Bismarck
Comments submitted on June 13, 2005

General:

Do you have any recommendations for the proper signing for drop off and pick up zones?

No signing is recommended for non-restricted on-street parking.

Centennial School:

A detailed layout of the on premises parking changes similar to Solheim would be beneficial.

A detailed layout has been added to the report.

Myhre:

Stardust Trailer park is private property and any comments concerning traffic control or sidewalks should not be included in this study.

Revision has been made.

The comment on left turn signal timing does not make sense for southbound traffic because there is not a southbound left turn signal phase, remove it.

The crossing guards mentioned there is a conflict with southbound left turns not being restricted during the pedestrian phase to cross Bismarck Expressway. The southbound left turns would need a left-turn arrow signal head and dedicated left turn phase in order to restrict the left turns during the pedestrian phase. This has been clarified in the report.

What would the benefit be for striping 12th Street as a 3-lane section?

The 12th Street Corridor Study recommended changing 12th Street to a 3-lane section.

Northridge:

Should there also be advance signing on Central Avenue for the crossing at 3rd Street for eastbound traffic?

Yes, revision has been made.

Saxvik:

At 16th Street and Rosser Avenue, this intersection is controlled by a 4-way Stop and 6-inch crossing lines are in place. They may need to be repainted.

Comment noted.

Billy Demaree, Principal
Jeannette Myhre Elementary School
Comments submitted on June 6, 2005

Jeannette Myhre

1. Key Issues on the School Summary page, item 4:

Item 4 states; "Crossing guard in front of the school is only in the morning." There is not a morning crossing on 12th Street, the 12th Street crossing guard is in the afternoon at dismissal time. The 12th Street and Expressway crossing guard is both before and after school.

Revision has been made.

Stacie Taylor

Comments submitted on June 7, 2005

Centennial School:

The corner of Ithica/Stevens has limited visibility when there are large vehicles parked close to the corner. The recommended 25-foot zone is a must as a minimum; however, not knowing how close vehicles currently park, I'm not sure that this will provide enough crosswalk visibility.

Comment noted.

During times of inclement weather, drop-offs are a problem when everyone needs to try to maneuver through the circular main drive to drop off their children. When the weather is fine (and there are staff/children on the playground), a majority of the drop-offs will occur at the south playground (my child included). I suggest better signage/right-of-way markings in the circular drive; and because of the increased amount of traffic during inclement weather, I strongly feel that the south playground entrance(s) should remain accessible.

Comment noted.

I also just want to note that regarding the crossing guard on Century Avenue, it is confusing whether or not both sides of the street should remain stopped. If both sides are to remain stopped, the crossing guard should use cones or something similar.

Comment noted.

James J. Coles

COLES LAW FIRM, P.C.

Comments submitted on June 10, 2005

Goal of the Study

The obvious goal of the study is to protect vulnerable children from traffic related accidents. However, in view of the child obesity epidemic in this country, shouldn't it also be a goal of the study to find ways to encourage our children to walk to school where possible?

Addressing obesity/health concerns for students is beyond the scope of this study. The study's goal was to develop an improvement plan to address pedestrian and motorist safety throughout the community by developing uniform recommendations that could be applied to public or private schools.

Omission of Bismarck High School

I was somewhat surprised that the study did not include any mention of BHS and the problems related to student/ traffic issues at that school. I realize that most students are driven to or drive themselves to BHS. However, a significant portion of the students park off campus or walk from home. ... The question that needs to be asked is not how many students walk to school, but how many cross those streets during the day. I think you will be surprised by the number. In view of the fact that the City traffic plan calls for these streets to be made into Truck Routes and expanded to three lanes, I think this is a significant issue which needs to be

addressed. ... I think the study should address the need for improvement on the crossing at 9th and D and probably 7th and D. ... Many of my comments deal with the traffic on 7th and 9th Streets which I believe was not fully addressed in your report. Even if the situation at BHS is not considered, those streets still impact students attending Will-Moore.

Again, the scope of the study was focused on the 15 elementary schools in Bismarck; the scope did not cover any of Bismarck's private schools, junior high/middle schools, or high schools. The reason for this is two-fold: First, elementary students are small and less visible to motorists; it is more difficult for children to judge traffic situations, because their peripheral vision is 1/3 narrower than an adult's; children do not always possess the capability to make sound judgments; and children can be easily distracted, especially when around other children. Secondly, this is the first study in the city of Bismarck that has been done regarding traffic and pedestrian/motorists. This provides a basis for the city and the school district. This will inevitably lead to other changes in the future with the other schools.

Will-Moore School

I can only assume that when Richholt School was open the number of students crossing 7th and 9th was fairly small. Now that Richholt is closed the students from that part of town must choose between Pioneer and Will-Moore. The walking map shows crossings at Avenues C and E on 9th and 7th. The Avenue C crossings both have lights. The biggest problem area would seem to be the crossings at Avenue E. There are two specific problems with pedestrian safety at that crossing on 9th. First, speed is a factor because 9th has no controls from Avenue C to Boulevard. The street is engineered to handle emergency traffic so speed bumps or similar measures are not workable. Second, visibility of any pedestrian, adult or child, at Avenue E is problematic at best. Cars are parked so close to the crosswalk that it is any person crossing has to be almost in the lane of traffic before they can be seen.

The citywide recommendation to restrict parking adjacent to crosswalks would improve visibility at the Avenue E crosswalks.

Adult crossing guards are currently used at 7th Street and Avenue E, with flashing beacons in-place at this crossing. The 7th Street crossing reportedly is used by 12 to 16 elementary students daily, with less than that using the 9th Street crossing on Avenue E.

A recommendation to conduct a detailed pedestrian crossing study at 9th Street and Avenue E has been added to the short-term recommendations.

Speed and Speed Regulation

The Draft Report (page 11) implies that 20 mph is the standard uniform speed limit in all school zones. I don't believe that is correct. That means that the speed limit on 7th and 9th Streets must be 20 mph between Avenues C and E. Is that correct? The police certainly don't know about it because they have enough trouble enforcing what appears to be a 25 mph limit. This would be a good place to point out that I have found no speed limit signs between Main Street and Boulevard on 9th Street, including the school zones for BHS and St. Mary's elementary.

The statute in question, NDCC 39-39-02 is far from a blanket speed limit for school zones. The statute actually provides:

1. Subject to the provisions of section 39-09-01 and except in those instances where a lower speed is specified in this chapter, it presumably is lawful for the driver of a vehicle to drive the same at a speed not exceeding:
 - b. Twenty miles [32.19 kilometers] an hour when passing a school during school recess or while children are going to or leaving school during opening or closing hours, unless a lower speed is designated or posted by local authorities.

... What about children late for school, children attending non-school functions, children going to and from the playground, children attending extracurricular activities or sports events, and children leaving or arriving, for whatever reason, outside regular opening and closing hours. For all of these, this statute does not apply.

What about driver perception and police enforcement? How can drivers really know when and where the lower limit applies and how can police know for sure which limit to enforce? The obvious answer is to provide for fixed posted limits for the legally defined school zone, which do not vary. The Draft Report alludes to this at Paragraph 3.2.

This issue has been added to the report with recommendations that the City consider school zone definitions and speed zones. The NDCC is a "one size fits all" approach that may not be appropriate in all cases. For instance, the Jeanette Myre Elementary School at 12th Street and Bismarck Expressway has a fence between the school grounds and Bismarck Expressway which prevents students from running out of the playground onto the street. The traffic signal is also complemented with adult school crossing guards during school arrival and departure. Establishing a 20 mph school zone speed limit on Bismarck Expressway in this area may not be appropriate given the other safety measures that have been implemented.

Speed Law Enforcement

The Draft Report seems to acknowledge that excessive speed is a critical factor and that police and public enforcement are part of the answer. The concept of public or neighborhood impact intrigues me, but I am not sure what that entails.

The details of the public or neighborhood monitoring traffic speeds and traffic laws in school zones was a recommendation provided in the study. The details of such an "organization" would necessitate coordination with the city of Bismarck Police Department, neighborhoods, and the city of Bismarck for all details.

Everyone understands police speed enforcement, but the Draft Report seems unable to grasp the basics of implementing police enforcement geared to maximize driver compliance. The answer has existed in state law for some time. Under NDCC 39-06.1-07, state law provides for a minimum fee of \$40.00 for speeding in a school zone. The obvious question is why doesn't Bismarck utilize the minimum fee? The answer is that the statute allows "home rule" cities like Bismarck to override the state law and Bismarck has done that. Some time ago Mayor Warford introduced an ordinance for a minimum fee for school zone speeding, but it was "tabled", (killed in other words) for further study. The state statute provides:

NORTH DAKOTA CENTURY CODE

TITLE 39. MOTOR VEHICLES
CHAPTER 39-06.1. DISPOSITION OF TRAFFIC OFFENSES

39-06.1-06 Amount of statutory fees.

The fees required for a noncriminal disposition pursuant to either section 39-06.1-02 or 39-06.1-03 must be as follows:

12. For a violation of a school zone speed limit under subdivision b of subsection 1 of section 39-09-02, or, notwithstanding subsection 2 of section 40-05-06 or section 40-05.1-06, of an ordinance in a city or home rule city for a violation of a speed limit dependent upon being on or near a school, fees for a noncriminal disposition are forty dollars for one through ten miles per hour over the posted speed; and forty dollars, plus one dollar for each additional mile per hour over ten miles per hour over the limit unless a greater fee would be applicable under this section.

13. For a violation of a highway construction zone speed limit under subsection 2 of section 39-09-02, a fee of eighty dollars for one through ten miles per hour over the posted speed; and eighty dollars plus two dollars for each mile per hour over ten miles per hour over the limit, unless a greater fee would be applicable under this section. The fee in this subsection does not apply to a highway construction zone unless individuals engaged in construction are present at the time and place of the violation and the posted speed limit sign states "Minimum Fee \$80".

... speeding in a construction zone carries a minimum fee of \$80.00, but speeding a school zone is only \$40.00. ... the City Commission needs to wrap up their "study" and enact a meaningful minimum fee for school zone speeding. That coupled with strict enforcement by the Bismarck Police and appropriate signage will slow traffic around our schools. Even the slowest witted driver will get the message when they see cars pulled over in the school zones.

This issue has been added to the report with recommendations regarding school zone definitions and speed zones.

Trucks in School Zones

The City Commission seems bound and determined to turn 7th and 9th Streets into big city freeways complete with full sized and fully loaded semi-truck traffic. The first question is whether those residential streets are even wide enough for such traffic. The next question is who really expects a full sized semi to yield to a pedestrian in a crosswalk. Truck traffic in all school zones should be strictly regulated allowing local trucks only and limited to a certain weight to eliminate full sized semi that should not be on residential streets in the first place.

The typical lane width is 11 to 12 feet wide for all roads and traffic mix, while both 7th and 9th Streets currently have lane widths within this range. A truck route study is beyond the scope of this study.

Crosswalk Clearances

The Draft Report is correct that the no parking zones around the school crosswalks need to be expanded and strictly enforced.

Comment noted.

Traffic Calming

The Draft Report seems to hold out little hope for traffic calming measures (Paragraph 3.3). I am not an expert on this topic, but it seems surprising that an engineering firm cannot come up with some ideas for effective traffic calming measures. High cost is cited as a problem, but if the calming measures are the most effective than increased cost may be justified. ...

Using speed bumps is effective, but difficult where snow and snow plowing is a factor. Speed dips, however, are workable and should be considered at strategic points.

Research generally shows that speed bumps and speed dips result in traffic attempting to make up for lost time by speeding up between the bump or dip. Speed dips create drainage issues that can be costly to construct without creating a potential for ice on the road.

Dividing traffic on multi-lane roadways to prevent lane changes and passing also tends to slow traffic. Again, raised dividers may not be compatible with snow plowing. However, the same goal could be achieved by making it illegal to pass other vehicles in the school zone. ... Essentially, all drivers must hold their positions until they exit the school zone. ...

We are not aware of any research that indicates a raised median slows traffic...typically when traffic conflicts are removed from in front of a motorist the speeds tend to increase.

Finally, I believe that it is well established that traffic slows when drivers perceive a narrowing of the roadway. Why not extend the walkways at strategic crosswalks in to the roadway. This would accomplish three goals. First, traffic would naturally slow. Second, the pedestrian would be much more visible to the drivers approaching the crosswalk. Finally, by standing on the extended walkway, the intentions of the pedestrian to cross are clearly evident.

This is a recommendation for new schools where the street design can be incorporated into initial construction. Retrofitting intersections with these design features can become quite costly, with the cost depending on local drainage patterns. Studies show these intersection designs insignificantly slow the average speed (by only a couple miles per hour), while having some effect in slowing the highest speeders (e.g. slowing the maximum recorded speeds from say 45 mph to 40 mph in a 25 mph zone). The greatest benefit of the intersection design is in bringing the pedestrian out to a place of high visibility, and then shortening their walking path between points of refuge.

Pedestrian Protocols

Have the Bismarck Police ever cited anyone for failing to yield to a pedestrian? If they want to they only have to spend about 15 minutes at the crosswalks at 9th and D and 9th and E. Driver regularly ignore people waiting to cross at those points.

... As a driver, I know it was difficult to tell if the person was actually going to cross or were simply standing at that point. The problem with at the current ordinance is that most people, and especially children, are afraid to enter the crosswalk for fear of being struck. ... How do other cities handle this? Well, in the Province of Manitoba, France and other European countries, the standard protocol is for the pedestrian to affirmatively signal his or her intention

to cross. This is generally done by facing the crosswalk and raising an out stretched arm visible to the traffic moving perpendicular to the arm signal. Establishing this type of ordinance based protocol would accomplish two goals. First, drivers would have a clear signal as to the pedestrian intentions. Second, law enforcement would be enhanced because police could see the arm signal and the result, i.e, driver compliance, or the lack thereof.

Comment noted.

Kathy Barnett
Solheim Elementary School
Comments submitted on June 13, 2005

Solheim School:

We have a very congested drop off/pick up area which is complicated by people parking along the yellow no-parking zone. We only wish we could have greater enforcement (i.e. police) come through here more often.

Comment noted.

Secondly, we really need a crossing guard on Munich and Reno. The driveway from the pick-up area dumps into Munich. Most cars turn right, meaning that they cross the ped. lane. We've had many near-accidents (and a couple of kids have actually been hit there) at that location. Of course, if more students would walk to school, or if parents were willing to park farther away, we'd have less congestion.

A recommendation has been added to consider the use of crossing guards at this location.

Dr. Claudia Tomanek
Dorothy Moses Elementary School
Comments submitted on June 27, 2005

After meeting with Mark Berg and Greg Busch, I was told that all that had to happen at Moses was for parents to abide by the rules of the road in front of Moses and that things were set up to work. Greg was especially frustrated by issues that we have at Moses because we have such good access all around the school.

Because I am concerned about the parking and pick-up situation at Moses in the front of the school, I decided to inquire with our Buildings and Grounds administration to see if we could adjust the pick-up and drop-off point for our Lincoln Bus. They agreed that we had adequate space so we moved the bus zone around the corner from where it is located now. This is something that I would have done with or without the KLJ study.

Comment noted.

Additional Comments

Add that priority sanding is currently being done to the citywide recommendations.

Revision has been made.

Add pedestrian countdown timer on traffic signals to the citywide recommendations.

Revision has been made.

Chapter One—Introduction

1.1 Introduction

One of the most pressing and controversial problems that different entities and agencies are faced with is the safety of children on their way to school and from school. This topic also concerns parents due to the potential severe consequences of a child/vehicular conflict. The safety of students is a collaborative effort, with different entities and agencies trying to find a single set of policies for student safety in a world of different schools where one-size-fits-all may not apply.

“The greatest threat children face today is motor vehicle crashes. While walking, bicycling or as a passenger in a motor vehicle, these crashes are the leading cause of death for children ages 5 to 14.”

“The problem escalates during the months kids are in school. Kids are vulnerable for several reasons:

- They are small and less visible to motorists.
- It is more difficult for children to judge traffic situations, because their peripheral vision is one-third narrower than an adult's.
- Children do not always possess the capability to make sound judgments.
- Children can be easily distracted, especially when around other kids¹.”

The Bismarck School District is the second-largest school district in the state of North Dakota, with approximately 10,400 students and 1,500 staff members. The District has over 500 classrooms in 15 grade schools; 3 middle schools; 2 senior high schools; an alternative high school; vocational center; and an early childhood program. Increasing traffic volumes in and around these school areas in the city of Bismarck raises concern for the safety of pedestrians, especially elementary school children. Students, parents, and faculty need access to the schools in an efficient, yet safe manner.

The purpose of the *Bismarck School Crossing Study* is to develop an improvement plan to address pedestrians and motorist safety throughout the community by developing uniform recommendations that could be applied to public and private schools. This study focused specific recommendations near Bismarck's 15 elementary schools and the Richholt BECEP (Bismarck Early Childhood Education Program). The *Bismarck School Crossing Study* also includes the development of Safe-route-to-school maps for each school. **Please refer to Figure 1.1 for a map of the Bismarck School District.**

1.2 Study Background

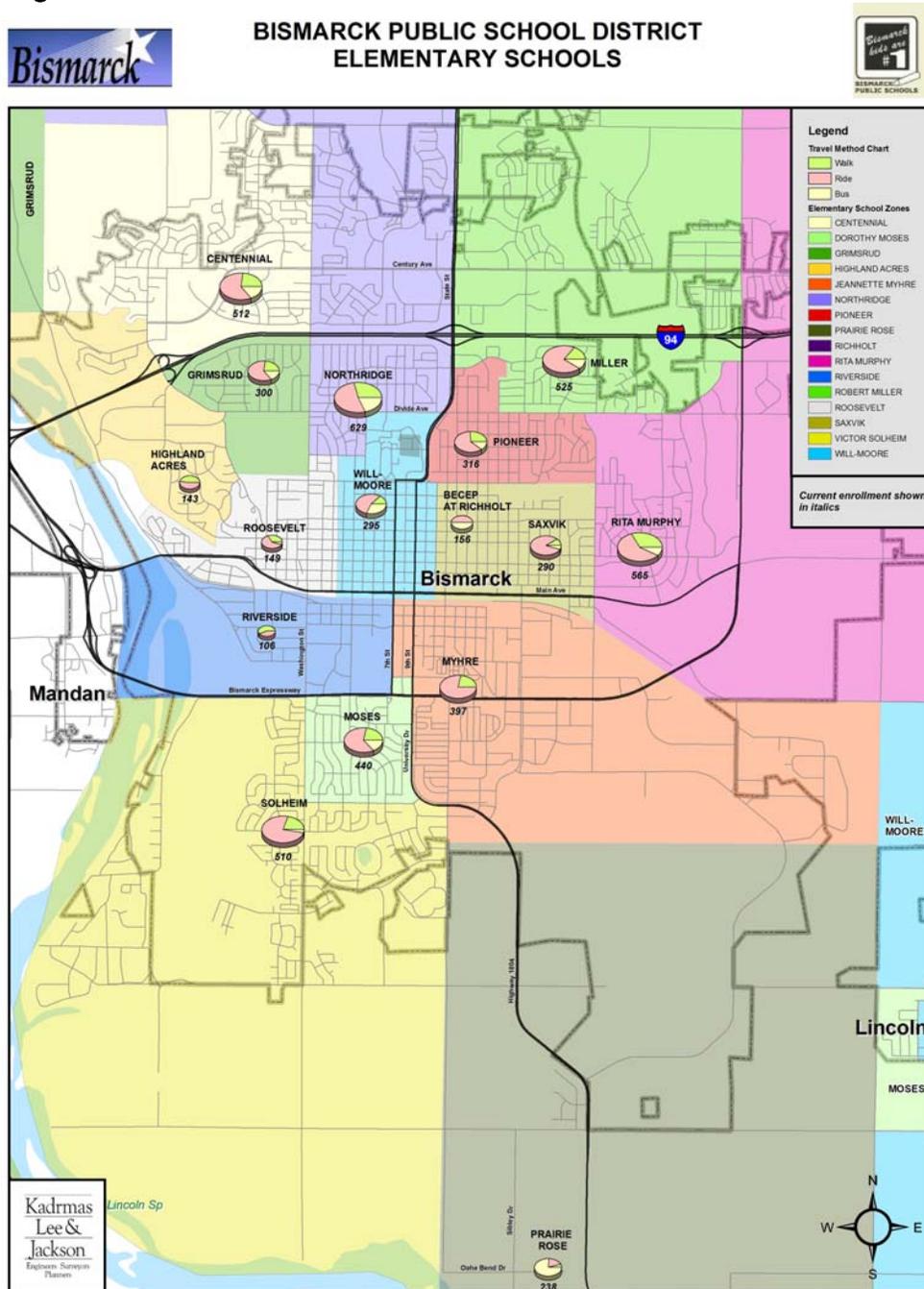
The United States Census Bureau defines an urbanized area as an area of continuous urban development comprising a population greater than 50,000 and less than 250,000

¹ Information based on the American Automobile Association's "School's Open" program.



persons. This definition crosses jurisdictional boundaries and therefore includes the cities of Bismarck, Mandan, and Lincoln, and the counties of Burleigh and Morton. Federal laws require that for urbanized areas to receive federal transportation funding assistance, they must participate in a MPO (Metropolitan Planning Organization) that maintains a continuous, comprehensive, and coordinated transportation planning process within the metropolitan planning area. The metropolitan planning area is defined as the area that can be reasonably expected to experience the influences of urban growth within a 20-year planning horizon. In the case of the Bismarck-Mandan metropolitan planning area, this area includes the jurisdictions of Lincoln, Bismarck, Mandan, Burleigh County, and Morton

Figure 1.1



County. The USDOT (United States Department of Transportation) provides federal funding assistance for MPO transportation planning activities through the FHWA (Federal Highway Administration) and FTA (Federal Transit Administration).

The *Bismarck School Crossing Study* utilized federal funding identified in the BMMPO (Bismarck-Mandan MPO) Unified Work Programs for 2004 and 2005. The UPWP (Unified Planning Work Program) serves as the principal budgetary document for the MPO. The federal funding participation is limited to 80 percent of the total project cost, with the city of Bismarck providing the remaining 20 percent of total project cost.

The *Bismarck School Crossing Study* provides analysis and recommendations for 15 elementary schools and the BECEP (Bismarck Early Childhood Education Program). The elementary schools include:

- BECEP at Richholt Elementary School
- Centennial Elementary School
- Grimsrud Elementary School
- Highland Acres Elementary School
- Robert Miller Elementary School
- Dorothy Moses Elementary School
- Rita Murphy Elementary School
- Jeannette Myhre Elementary School
- Northridge Elementary School
- Pioneer Elementary School
- Prairie Rose Elementary School
- Riverside Elementary School
- Roosevelt Elementary School
- Saxvik Elementary School
- Solheim Elementary School
- Will-Moore Elementary School

To effectively complete the *Bismarck School Crossing Study*, it must be recognized that different combined elements all influence the pedestrian environment around a school including:

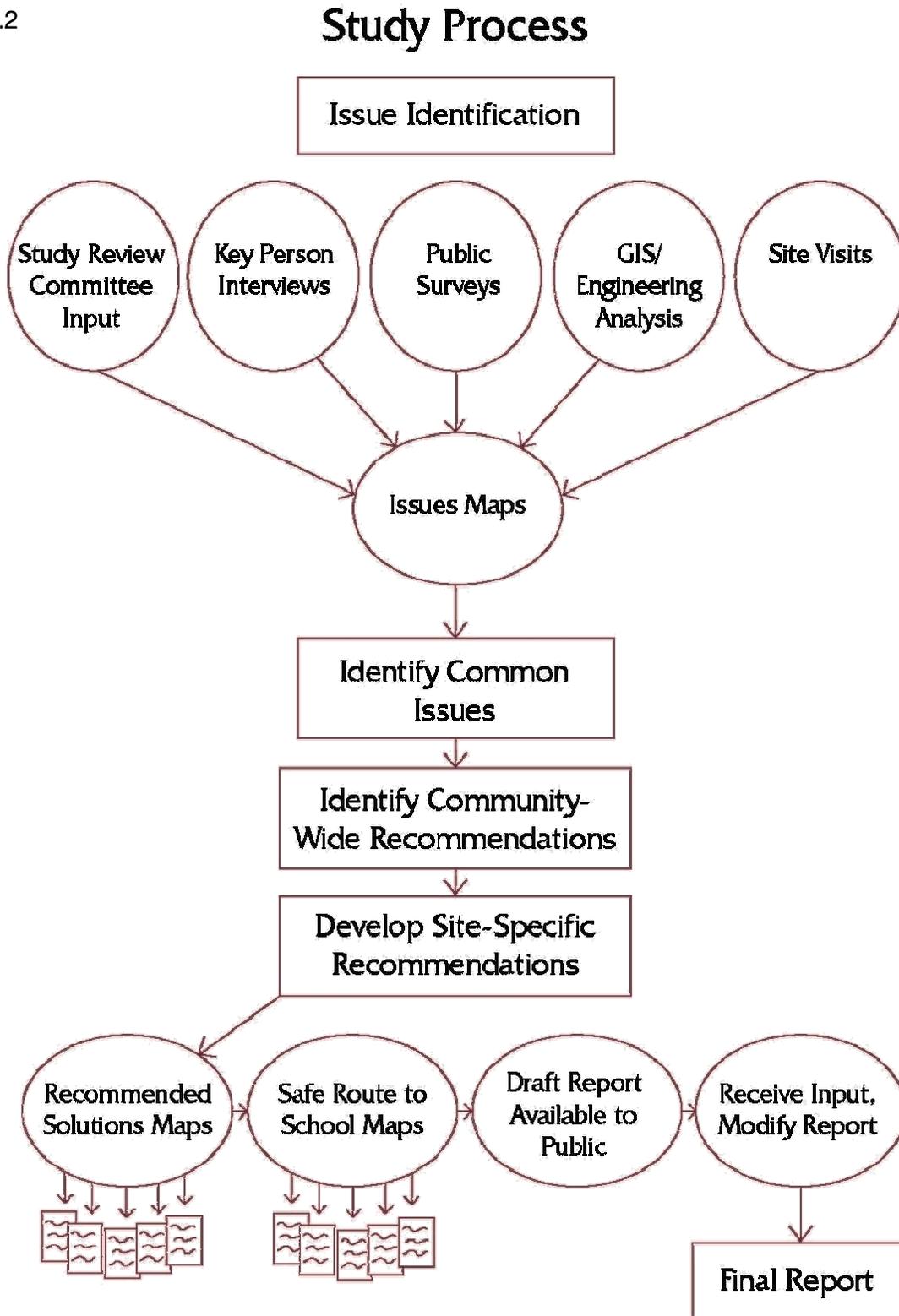
- Site layout, location, building design, and terrain
- School policies
- Local laws and levels of law enforcement
- Education on safety to pedestrians and motorists
- Human behavior and perceptions
- Engineering issues
- Maintenance activities

The study process illustrated on the following page was developed to identify issues and improvement recommendations based upon the above elements

The study process also included monthly coordination with the BMMPO TAC (Technical Advisory Committee) and Policy Board, and the city of Bismarck.



Figure 1.2



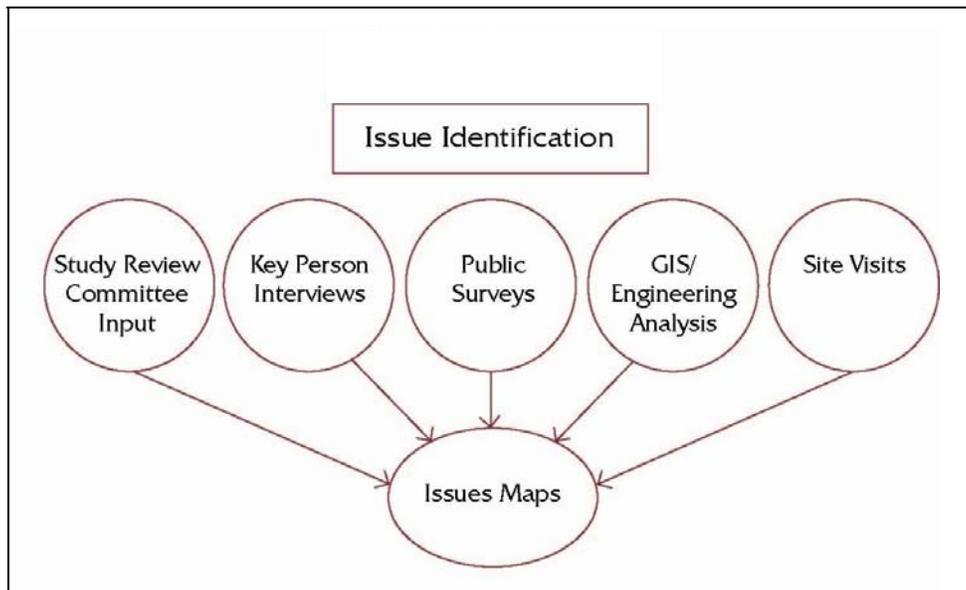
CHAPTER 2—ISSUE IDENTIFICATION

2.1 Introduction

This chapter presents the following information obtained through the issue identification process illustrated in Figure 2.1

- Study Review Committee
- Key Person Interviews / Policies & Practices
- Public Surveys
- GIS/Engineering Analysis
- Site Visits
- Common (Community-wide) Issues

Figure 2.1 Issue Identification



2.2 Study Review Committee

A Study Review Committee was developed to provide guidance, insight, and review and shape the recommendations provided by Kadmas, Lee & Jackson, Inc. The Study Review Committee is made up of the following members:

- Bismarck Traffic Engineer
- BMMPO Transportation Coordinator
- Bismarck Police Department Traffic Safety Officer
- Bismarck Public Schools Facilities & Transportation Director
- Bismarck Public Schools Safety Coordinator
- Bismarck Public Schools Community Relations Director
- Bismarck Public Schools Transportation Coordinator

Four Study Review Committee (Committee) meetings were to be conducted during different phases of project development. Three meetings have been conducted prior to the draft report, with the fourth meeting to review comments/responses that will be incorporated into the final report.

2.2.1 Study Review Committee Meeting #1

The first Committee meeting was held on October 21, 2004. The goals of the first meeting were to give the Committee an overview of the project, gather their input on opportunities, constraints, and initial identification of issues; review the proposed public surveys and website information; and the identification of the project goals.

The project goals that were decided at this first meeting include:

- Goal #1: Developing uniform guidelines that can be applied throughout the community to various situations for improving student safety at each school.
- Goal #2: Develop and distribute a safe-route-to-school map for each school neighborhood
- Goal #3: Develop specific recommendations for each school.

The improvements options could consist of policy revisions, simple signage or pavement marking revisions, implementation of crossing guards, or more costly improvements such as moving driveways, additional off-street parking areas, internal circulation roads, or loading zones.

At this first meeting, common issues for the elementary schools were discussed. These issues include: parking across crosswalks, double parking, ignoring traffic control devices by motorists, and students walking directly to their destination rather than following an indirect sidewalk or crosswalk.

The Committee noted that the schools used to have folding signs for crossing guards to place in the crosswalk, but too many signs were getting run over. Traffic cones are being used to help draw attention to crosswalks, but many of those are also getting run over. Currently, crossing guards walk out to the middle of the street, stop the traffic and/or place a traffic cone, return to the curb, and then allow students to proceed across the street. The Committee also noted that the walk-signal time for some traffic signals does not allow enough time for this process, resulting in students beginning their crossing with a "DON'T WALK" signal. The Committee suggested that the study team should acknowledge the changing conditions due to cold weather and snow. The inclement weather results in fewer students walking to school; and snow piles along the curb can complicate visibility and parking.



2.2.2 Study Review Committee Meeting #2

The second Committee meeting was held on February 22, 2005. The goals of this meeting were to give a report on the results from the parent surveys; the interviews with other school districts; the analysis of existing conditions; draft city-wide and individual school recommendations; and to identify alternatives for further study that were consistent with the project goals. Many of the survey responses cited issues that require law enforcement to correct. The Committee felt that installing additional signs (such as “STOP” or “Speed Limit” signs) would have minimal effect on changing motorist behavior. The Committee’s recommendation was to proceed with the development of improvement options, while recognizing the need to minimize a proliferation of traffic signs. Committee members were encouraged to take additional time to review and comment on the individual school improvement options.

2.2.3 Study Review Committee Meeting #3

The third Committee meeting was held on March 31, 2005. The goals of this meeting were to garner additional Committee feedback regarding the recommendations for individual schools. After a review of issues and potential solutions, the consensus was to not recommend angle parking as a solution anywhere due to the gridlock resulting from double parked motorists blocking in parked vehicles. Recommendations for each school were reviewed with some modifications noted. The project schedule was also reviewed with the plan to release a draft report before the end of the school year, receive comments through the middle of June, and hold the fourth Committee meeting in June to review proposed revisions that address comments received on the draft report, with a final report being issued in August 2005.

2.2.4 Study Review Committee Meeting #4

The fourth Committee meeting was held on June 18, 2005. The goal of the final meeting was to review the comments on the *Bismarck School Crossing Study* and responses to the comments. The Committee made minor revisions to the responses; these responses have been incorporated into this final report.

2.3 Current and/or Existing Practices within the BECEP and the 15 Schools

The Bismarck Public School District and city of Bismarck currently has no cohesive set of policies for the safety of students walking to and from school. The principals and janitors from each of the schools were interviewed to determine individual school issues and policies. The interviews were conducted using 11 issue areas for each principal. The standard issue areas provided a baseline when interviewing the different principals, as well as disseminating the information in order to properly analyze it. During this interview, one of the issue areas included questions of “Do you have any safety policies or how do you maintain safety for students around the school area? Do you have any brochure or guidelines that you give to the students? Do you receive any input from law enforcement?”



Almost all of the elementary schools (13) use newsletters and/or brochures as a tool for parents and students to learn about traffic safety. Other means of educating students and parents about traffic safety in the Bismarck School District are through the principals and teachers (7); the adopt-a-cop program (4); school board policies/crisis management handbook (2); school safety week; PTO (Parent Teacher Organization); and kindergarten orientation (1). Two schools that were surveyed do not have any means of educating students about traffic safety. The adopt-a-cop program was praised by the schools that have embraced that program.

Other practices common to all schools include:

- Having a staff member observe the departure of students for safety reasons.
- Load/unload busses where the students can be observed walking directly between the school doors and the busses.
- Not allowing daycare vans/mini-busses to use the school's bus loading zones.
- Providing ADA (Americans with Disabilities Act) accessible parking areas near the appropriate entrances.
- Revisions to traffic control on the public streets must be approved by the City Engineering Department.
- The decision to use adult school crossing guards is decided by each individual school, with each school responsible for the cost of their crossing guards. The crossing guards place orange plastic traffic cones in the crosswalk to improve motorist visibility and compliance, although the cones are frequently ran over.

Notes from each of these interviews is incorporated into the individual school's section found in Chapter 4 of this report.

2.4 Policies of Other School Districts

To aid in the development of the *Bismarck School Crossing Study*, interviews were conducted with the following nine other school districts regarding their existing school safety policies and procedures:

- Billings, Montana
- Devils Lake, North Dakota
- Dickinson, North Dakota
- Fargo, North Dakota
- Grafton, North Dakota
- Minot, North Dakota
- Valley City, North Dakota
- Williston, North Dakota
- Rapid City, South Dakota

The survey included discussion of eight issue areas:

- School walking routes
- Use of crossing guards
- Flashing beacons
- Signing



- Bussing
- Parking
- Loading zones
- Staggered class times

The superintendent of each school district and the city engineer were contacted for the telephone survey.

Bussing/Staggered Class Times

All of the school districts utilized staggered arrival and dismissal times for all except the elementary schools. The main reason to stagger times is primarily to accommodate bussing schedules. Only the Fargo School District staggered elementary schools starting time. These staggered arrival times, lowered equipment costs and busses were able to run on double routes.

All the other districts had standard class times between their elementary, junior high/middle school, and high school. It was indicated, that high school times are typically longer due to state requirements.

In the Minot District, the middle school and high school are on the same campus. This results in staggered class times to prevent congestion on campus. It is important to note that this is not a bussing issue, since the Minot District does not provide bussing.

All except one school provides some form of bussing for students; although, that school does provide bussing for special education students. All of the schools provide bussing for rural students, with one of the districts charging a fee for rural bussing. Only five of the districts provide some form of in-town bussing. Most of the in-town bussing is limited and generally fees are charged for in-town bussing.

Use of Crossing Guards/Crosswalks

None of the school districts interviewed have district-wide policies regarding school crossing guards. The school districts that do use crossing guards (6) have the principals of the schools determine their own needs.

Three of the school districts employ adult school crossing guards; one of those having an adult crossing guard in the afternoon only. The other three school districts use volunteer 6th graders as crossing guards. The volunteer 6th graders receive training and always have adult supervision. One of the school districts discontinued using 6th graders due to a liability issue. In the remaining two school districts are paid school crossing guards that are employed through the city police department.

One school district reported a problem with elementary students not using crosswalks. The majority of the school districts actively encourage the use of crosswalks by having teachers monitor crosswalks during arrival and dismissal times; to ensure crosswalks are used. The school districts usually provide some sort of in-school education for the use of crosswalks or safety education. One superintendent stated, "Elementary students are fairly good about using crosswalks; but junior high and high school students just cross anyplace they want."



Most schools (7) do not have visibility problems at crosswalks or have taken actions, such as installing “No Parking” signs to correct any problems. Two districts did report problems with parked cars; with one district stating it was only a minor problem with one school. Seven school districts reported having mid-block crossings; and all indicated no problems with the mid-block crossings and the crossings were installed because students were crossing in that location. Most of the locations were because the schools were on two-block tracts.

Parking/Loading and Unloading Zones

All of the school districts provide some form of loading zones for busses at their schools. Most of the districts have adequate parking for the busses, even though some are marginal. Only one school district reported not having enough room for adequate bus loading/unloading.

Seven school districts provide loading zones for cars, but only one of these districts indicated having enough car-loading zone space. Only four of the school districts have separate car and bus loading zones, which creates some space restrictions. One superintendent indicated having a space problem, but usually only for a short period of time during arrival and departure times. In the morning, it is usually a very minor problem due to parents dropping off students and then leaving. It is more of a problem in the afternoon when parents are waiting for their students. This district would like more space but find it difficult to justify.

Six school districts indicated that some parents do wait across the street from the school, but only four of the districts indicated this was a problem. The other two districts indicated this was not a problem.

All school districts reported that they provided some form of parking for the staff. All indicated that the staff parking was generally adequate except in a few instances of some space limitations. Only one school in one district is unable to provide any off-street parking for the staff. One school district provides electric plug-ins for the staff parking. All schools provide handicapped parking. All except one district provided some form of parent/visitor parking; only half indicated that it was adequate.

School Walking Routes

Only the Fargo School District had developed safe-route-to school maps.

Flashing Beacons/Signing

Most of the school districts indicated their cities were easy to work with regarding school signing, lights, and crosswalks. But, the cities have the final say for all signs within the public right-of-way. One school district, reported that the superintendent is a member of the city traffic committee.

All of the cities provide the signing for school crosswalks. Seven of the cities provide some flashing beacons at school crosswalks, with only two cities not providing any flashing



beacons. None of the cities have specific policies regarding signing or flashing beacons for schools or school crosswalks. Six districts did add that the city will provide anything related to traffic signing and striping on the public right-of-way.

All of the cities stated that they follow state law regarding school speed limit signing. The ND Century Code (39-09-02.1.b.) states that the school speed zone limit shall be 20 MPH unless set lower by the city. South Dakota and Montana statutes are similar to North Dakota's.

None of the cities have a specific ordinance for signing. They all use the state standards or "as by the City Engineer".

Half of the cities do not do anything special regarding schools or school safety measures. Two cities indicated having extra patrolling near the schools, both in the morning and after school. One city even has some of the officers out of the patrol cars near the crosswalks, especially at the beginning of the school year.

2.5 Public Surveys

At the beginning of the 2004-2005 school years, each elementary school was provided with a hand-out School Crossing Survey (surveys) and Safe Walking Procedures. The Safe Walking Procedures were provided with permission from the AAA (American Automobile Association). The schools gave the handout to students along with a "Safe Walker" sticker on National Walk Your Child To School Day, which was on Wednesday, October 6, 2004. Three posters of the handout were also provided to each school.

A news release to all local news media was provided to notify the public of the survey availability. Two notices were provided to each school for inclusion in their school newsletters; with the second notice included to improve survey responses.

The surveys were also available to be completed on-line via the Internet at the Bismarck Public School webpage. The surveys targeted adults who were either student's parents and/or motorists. Since parents are usually responsible for their children's transportation, the goal of the surveys was to identify issues parents had with their particular school transportation access. The survey had a total of eight questions, which included asking parents for their issues and concerns regarding school crossings and any recommendations they might have. *Please refer to the School Crossing Survey and Safe Walking Procedures in the Appendix.*

There were 779 survey responses submitted representing approximately 5570 elementary students; for a response rate of 14 percent of the student's. (Note: The 14 percent response rate assumes 1 student represented per survey response. Very few surveys represented non-student households). The survey responses were analyzed on a citywide and individual school basis.

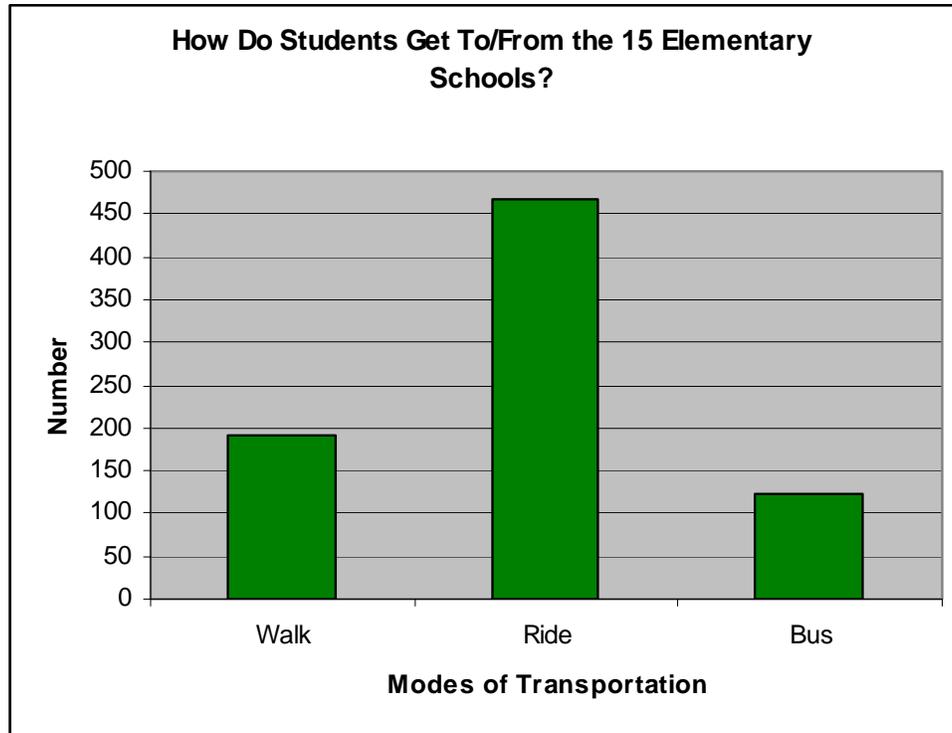


Citywide responses are illustrated below for two of the eight survey questions:

- (1) *How does your child get to/from school? Walk to School, Ride to School or Bus.*
- (2) *Have you reviewed pedestrian safety rules with your child? Yes or No.*

The overwhelming majority of 456 students (59%) ride to school, 191 (25%) students walk to school, and 122 (16%) students are bussed to school. *Please refer to Figure 2.2.*

Figure 2.2 How Do Students Get To/From Schools

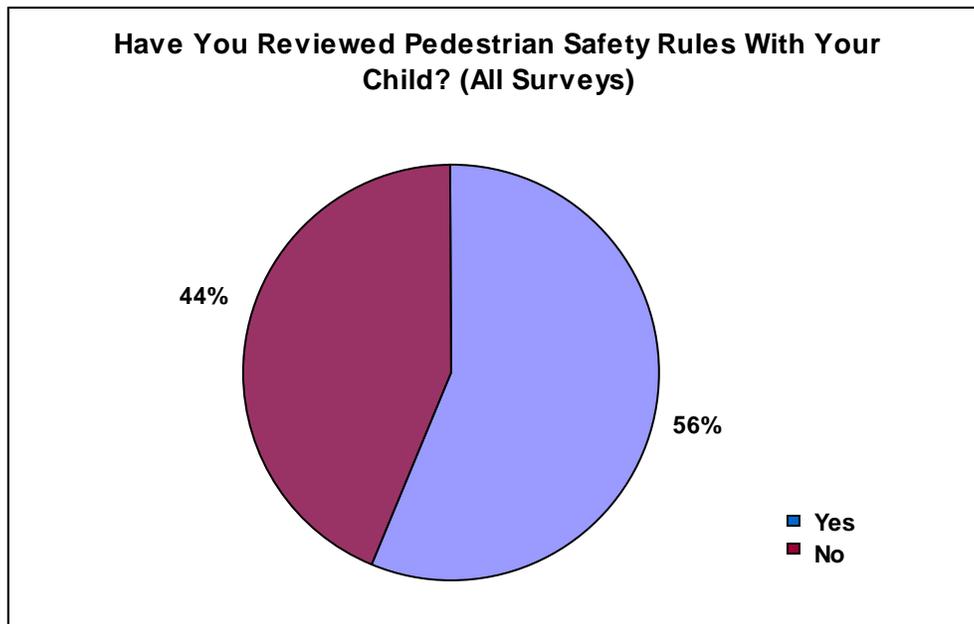


The survey included pedestrian safety rules entitled, *Best Route to School*, with ten “tips” that parents could review with their children about safely walking to school.

One of the questions on the survey was, *Have you reviewed pedestrian safety rules with your child?* A majority (56%) of the parents did review the pedestrian safety rules with their child. *Please refer to Figure 2.3.*

Each of the individual schools were encouraged to review the pedestrian safety rules with their students. This also gave teachers and administrators a chance to fill out the survey as well.

Figure 2.3 Have You Reviewed Pedestrian Safety Rules with Your Child?



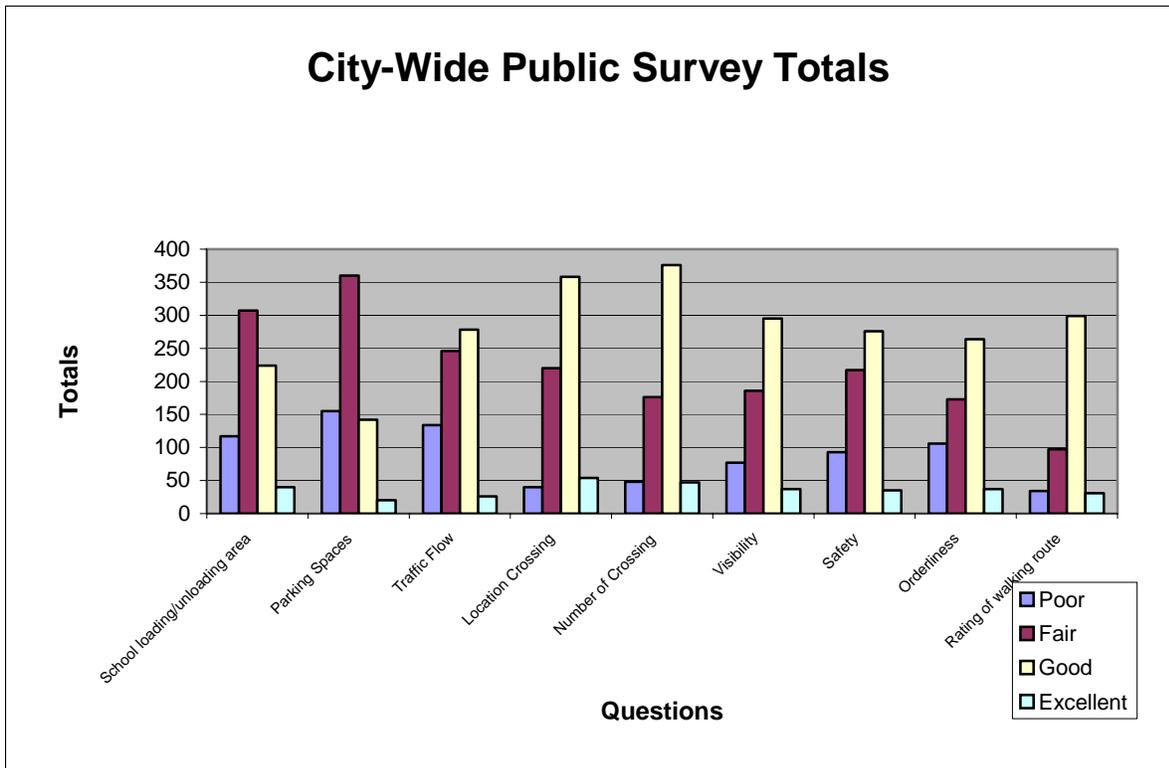
Survey responses also provided many issues and possible recommendations for the schools. These concerns and recommendations were incorporated into the individual school issues maps and were considered throughout the study. Citywide survey responses are illustrated in **Figure 2.4**. Survey responses for individual schools are summarized in Chapter 5 for each of the schools.

2.6 Engineering Analysis

The engineering analysis focused on the analysis of a three-year crash history, a review of signing and pavement marking, and on-site reviews of traffic circulation. The results of the engineering analysis were considered, with other data, to develop the issues and recommendations.

There were no engineering issues cited as contributing factors to the crashes. Many of the crashes were related to failure to yield, driver distraction, and/or poor weather conditions. The majority of crashes took place at intersections, often where stop signs or traffic signals were located. These traffic control devices can be effective in regulating traffic flow, assigning right-of-way, and reducing the severity of crashes; but often increase the frequency of less-severe rear-end crashes. The ratio of nighttime to daytime crashes was also determined. Typically if this ratio is over 2.0 street lighting may be justified, and if the ratio is between 1.0 and 2.0 street lighting may be considered. In the analysis, no school areas had a ratio approaching 2.0 or greater; therefore, no additional lighting is recommended based upon crash history alone. *Please refer to the Crash Analysis Report, located in Appendix 3.*

Figure 2.4 Citywide Public Survey Totals

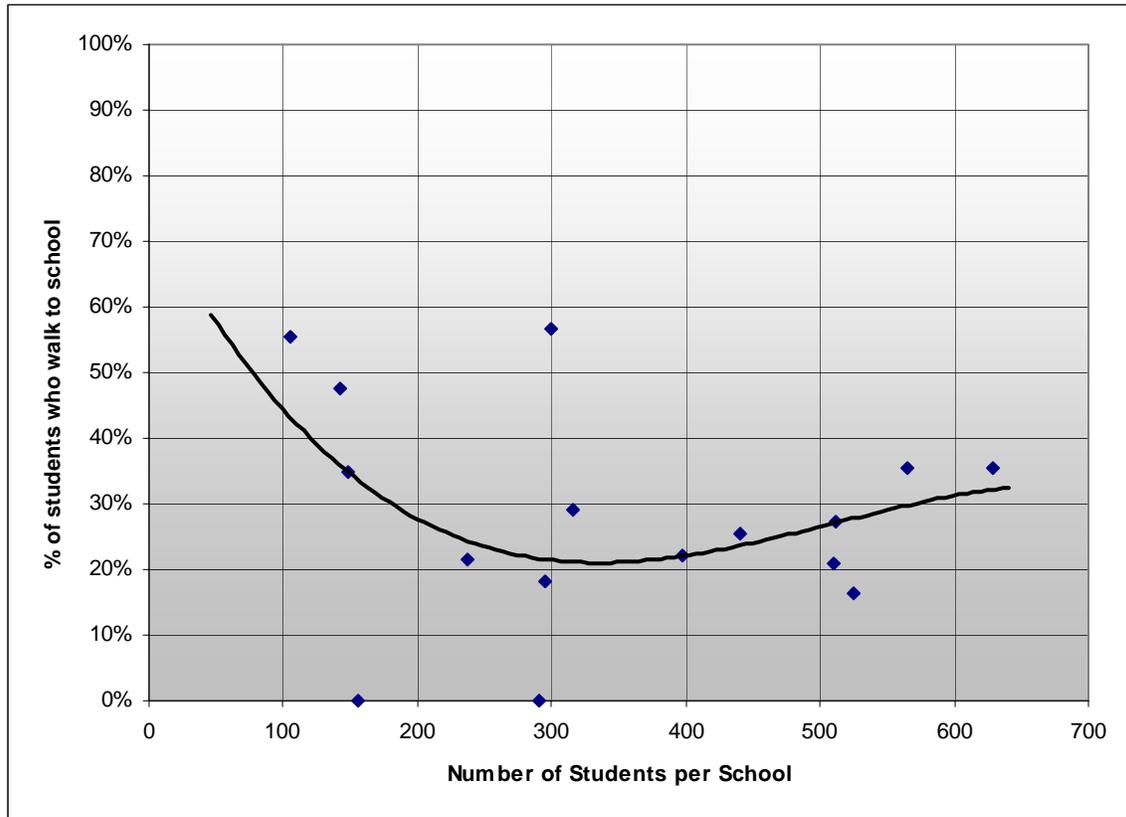


Information on existing signing and pavement marking was provided by the ATAC (Advance Transportation Analysis Center) of North Dakota State University. ATAC provided computerized maps (known as GIS or Geographic Information Systems) with aerial photography of each school highlighting existing school crossing locations, signing, loading zones, and school entrances. This GIS information was used as a basis for developing issues maps and recommendations maps of each school.

The lack of available parking was evaluated by comparing the number of school staff to the number of off-street parking spaces. This ratio was often in the range of two staff for every parking space, with one school having a ratio of 7:1. A review of the survey responses showed that smaller schools generally experienced higher percentages of students walking to school. It is recognized that most pedestrians are willing to walk a short distance. For example, elementary students typically walk at 3 feet per second (about 2 mph). If they limit their walking distance to 10 minutes, they would walk about 1800 feet or about 1/3 mile. Smaller schools have a smaller school district boundary, placing a larger percentage of the students within walking distance. As a school district becomes larger, the increase in students is from housing that is beyond the typical walk distance. What this means is that larger school districts should plan on a higher percentage of students being driven to school, and thus creates a greater requirement for loading zone space along the school street frontage. **Figure 2.5** illustrates this concept by comparing ridership survey results against the number of students per school.



Figure 2.5 Relationships of School Size to Percent Walking



2.7 Site Visits

Site visits were conducted at each of the 15 elementary schools and the Richholt BECEP. The on-site visits were conducted during the typical student arrival and departure times, enabling the study team to observe motorist and pedestrian behavior while reviewing on-site conditions. Observations from the site visits are included in the Record of Conversations regarding the interviews with school principals and janitors. *Please refer to the Record of Conversations, located in Appendix 1.*

The site visits focused on the following issues:

- Need, appropriateness, operation, and function of signing and pavement marking
- Existing pedestrian and motor vehicle traffic circulation patterns
- Parking and loading zones
- Lighting (qualitative only, this does not include illumination analysis)
- Intersection and cross walk horizontal sight distance
- Cross walks and the use of crossing guards
- Safe walking routes to schools, including any sidewalk improvements
- Access locations for school facilities
- ADA accessibility of sidewalks

2.8 Resulting Issues

There were many issues identified that fall into several major issue categories, yet are all inter-related:

- Enforcement
- Education
- Inadequate loading/unloading zones

At many schools the school staff must compete for off-street parking, resulting in some staff parking on the streets adjacent to the schools. The availability of parking/loading zones was the poorest rated issue from the surveys. Staff parking on the street reduces the available parking even further, which leads to congestion and parking violations, which then lead to reduced pedestrian visibility and safety.

Many survey and key interview responses cited high traffic speed as an issue. Traffic speed is a function of human behavior, and modifying human behavior is not something as easy as installing a new speed limit sign. Behavior modification requires consequences for not changing the behavior along with education of the consequences.

Aerial photography maps were created for each school identifying the issues and observations identified through the surveys, interviews, site visits, and analysis. These maps are found in Chapter 4, which is organized in alphabetical order of each individual school.

Safe-route-to-school maps were developed for each elementary school. The Safe-route-to-school maps include an educational component that provides schools, parents, and students safe walking procedures. These safe walking procedures are based upon the guidelines of the American Automobile Association and the National Safety Council. The Safe-route-to-school maps will also be provided to the Bismarck Public School District for posting on their webpage.



CHAPTER 3 – RECOMMENDATIONS

A review of the issues at all schools yielded a number of recommendations for improving student safety and traffic circulation. The recommendations fall into areas of education, revisions to city ordinances, and citywide recommendations. These citywide recommendations were then applied to specific applications at each school, coupled with additional recommendations unique to each school.

The recommendations for individual schools are prioritized for short (this year), medium (next year), or long-range (two years or beyond) implementation. More expensive recommendations were put into long-range to allow for budgeting of the improvements. Individual school recommendations along with safe-route-to-school maps are found in Chapter 4.

3.1 Education

Citizens and organizations can utilize a radar device and electronic sign board to measure speeds of passing vehicles in their neighborhoods. In addition, these groups can monitor for double parking, parking in crosswalks, and handicapped areas. Letters of warning can be sent to the registered owners of offending vehicles by the monitoring group. This program will promote neighborhood awareness and/or aid police in targeted enforcement.

Education for motorists should provide an understanding of the effect of motor vehicles on pedestrians. Motorists should also learn about the limitations of children.

Pedestrians of all ages should be reminded to practice safe behavior. Young pedestrians, in particular, need extra instruction on how to cross the street safely, on laws and regulations that apply to pedestrians, and on how to interact with motorists in the roadway environment.

Education could begin by hosting a joint session of elementary students and their parents. One possible organization to spearhead this endeavor is the PTO (Parent Teacher Organization). This session could “train” parents/motorists to learn the limitations of students and the students would learn safe behavior and how to interact with motorists. This session should incorporate principals, teachers, and law enforcement. It could be held during *International Walk to School Week* or during orientation at the beginning of the school year. This is also a chance to handout the Safe-route-to-school Maps, brochures, and access to the *Bismarck School Crossing Study*.

The *Bismarck School Crossing Study* is the first step in educating the community. As the city of Bismarck grows it is imperative to promote safety. Regulations, ordinances, and enforcement may all be in place; but, without education the implementation could be difficult. In summation, the *Bismarck School Crossing Study* revealed that education was a high priority for pedestrians and motorists. Educational material that could be used in a two-page handout and news release is shown on the following pages:



Example of the front of a brochure that could be used as one part of adult/driver education.

SCHOOL CROSSING SAFETY

STAY ALERT

20,000 pedestrians under 15 years old were injured in vehicle-related crashes

4,747 pedestrians were killed in traffic crashes

70,000 pedestrians were injured in traffic crashes

A pedestrian is injured in a traffic crash every **8 minutes**

Almost **22%** of all children between the **ages of 5 and 9** years old were **killed** in traffic crashes were pedestrians

17% of all traffic fatalities under age 16 were pedestrians

7% of all people under age 16 who were injured in traffic crashes were pedestrians

- Young children are shorter than adults; their typical eye height is 3 feet above the ground; and their field of vision is different.
- Children have 1/3 narrower peripheral vision than adults and are less able to determine the direction of sounds.
- Children are sometimes too small to be seen.
- The movements of children are less predictable than adults.
- Children have shorter attention spans and may grow impatient at crossings.
- Children have less experience and limited knowledge of traffic laws and driving patterns.
- Since children do not drive, they lack the understanding of what a driver's intentions might be at an intersection or crossing point.



Example of the back of a brochure that could be used as one part of adult/driver education.

DRIVERS

DRIVER SAFETY TIPS

Pedestrians in marked or unmarked crosswalks have the right-of-way.

Drivers must **yield when pedestrians** are in the driver's lane of travel.

When a school bus is stopped and flashing its red lights, drivers approaching from both directions must stop. Drivers cannot proceed until 1) the bus begins moving; or 2) the bus driver signals to let vehicles pass; or 3) the red lights are no longer flashing. When a school bus is equipped with yellow caution lights, these lights may be used as a warning that the school bus is about to stop and that the red flashing lights will soon come on.

20 MPH when you pass by a school during school recess or while children are going to or leaving school during opening or closing hours of school, unless otherwise posted.

Flashing beacons warn drivers about crosswalks. BE AWARE!

Watch for crossing guards and students in crosswalks.

Near schools:

- **SLOW DOWN**
- **STAY ALERT**
- **LOOK FOR CHILDREN**
- **OBEY TRAFFIC SIGNS**
- **BE READY**

For more information contact: Bismarck Public School District or the city of Bismarck



3.2 City Ordinance Recommendations

1. Define school zones and reword the appropriate city ordinances to prevent activities which reduce safety near schools.
2. Bismarck City Ordinance 12-16-03 states, "Every pedestrian crossing a roadway at any point other than within a marked crosswalk or unmarked crosswalk at an intersection shall yield the right-of-way to all vehicles upon the roadway." If school zones were defined, then motorists should yield to pedestrians, instead of pedestrians yielding to vehicles.
3. Enforce either by more policing or by implementing a citizen organization/neighborhood school watch organization to make sure the following are enforced Ordinance 12-13-02:
 - Within 10 feet of a crosswalk at an intersection.(This is recommended to be changed to 25 feet for school crossings).
 - Within 15 feet upon approach to any flashing beacon, stop sign, or traffic control signal located at the side of the roadway.
 - a) Ordinance 12-13-02 does not allow vehicles to park, "on the roadway side of any vehicle stopped or parked at the edge or curb of a street." However, Ordinance 12-13-17 states, "A vehicle may be allowed to double park for the purpose of loading or discharging passengers or for unloading freight when there is no alley reasonably available for such purpose and no other curb side parking space available and the freight to be unloaded is of a heavy or bulk nature, but only for such length of time as is absolutely necessary for such loading and unloading and conclusion of that business transaction." The Bismarck Police Department has argued that this ordinance only applies to the central business district. The recommendation is to reword Ordinance 12-13-17 to make sure it excludes school zones.
 - b) Ordinance 12-13-02 does not allow parking "at any place where official signs prohibit stopping" and Ordinance 12-13-16 states, "A person may not stop, stand or park a vehicle other than a bus in a bus stop or other than a taxicab in a taxicab stand when any such stop or stand has been officially designated and appropriately signed, except that the driver of a passenger vehicle may temporarily stop for the purpose of and while actually engaged in loading or unloading passengers when such stopping does not interfere with any bus or taxicab to enter or about to enter such zone." Recently a Bismarck Municipal judge ruled that this ordinance does not apply to school bus stops and dismissed a ticket that was issued for a parked car in a school bus loading zone. This ordinance needs to be reworded to exclude all parking in a school bus zone. Ordinance 12-13-02 needs to override some of the other ordinances, especially in school zones.



- c) Ordinance 12-06-06 states “The driver of any vehicle may not turn such vehicle so as to proceed in the opposite direction unless such movement can be made in safety and without interfering with other traffic; and a vehicle may not be turned so as to proceed in the opposite direction upon any curve, or upon the approach to or near the crest of a grade, where such vehicle cannot be seen by the driver of any other vehicle approaching from either direction within 500 feet.” U-turns are not prohibited in school zones. The wording is recommended to be revised to also exclude u-turns in school zones.

3.3 Non-resolvable Issues:

A number of issues have no recommendations for completely resolving the issue, such as:

- Vehicle crashes: Most of the crashes are due to failure to yield, driver inattention and poor weather. Minimizing congestion in front of a school may reduce the potential for crashes resulting from driver inattention. Sanding the road at crosswalks may reduce vehicle sliding through the crosswalk. There are no recommendations for reducing a motorist’s failure to yield.
- Inadequate off-street parking: Some schools simply do not have the room to add any additional off-street parking without impacting playground space or without excessive expense due to the terrain or site layout.
- Speeding: Modifying existing streets with new traffic calming measures to reduce speeds tends to be very expensive, can impact drainage patterns, and complicates snow removal. Enforcement of existing laws is usually the first option, but the benefits of increased law enforcement are usually short lived if the enforcement is not continuous.
- Motorist and pedestrian disrespect of traffic laws: The most effective way to reduce parking violations is to make parking convenient. Without convenient parking and law enforcement, people will take shortcuts to meet their personal needs. Fencing or other barriers may be effective for controlling pedestrian shortcuts.

3.4 Citywide Recommendations:

The following recommendations were based on a review of the public’s issues, interviews with school staff, engineering analysis and site reviews of Bismarck’s public elementary schools. These recommendations could be applied to existing schools as well as any planned additions or new schools.

1. Restrict school staff from parking on the school side of the street near main entrances, preferably from either side of the street. Staff parking in these areas contributes to the congestion due to a lack of parking spaces for pick up and drop-off. Where feasible, additional off-street parking for staff may be beneficial to maximize on-street parking availability for parents.
2. Restrict parking within 25 feet of crosswalks at unsignalized intersections to improve visibility and safety of students in school crossings. In many instances,



vehicles are parked up against or across the crosswalks, creating sight restrictions. Restrict parking to 30-foot prohibition at traffic signals. The 25-foot prohibition exceeds the MUTCD recommended minimum of 20 feet, and was developed in concurrence with the Study Review Committee. Current laws address the double parking issue for loading, stopping to unload is allowed under current law. A “No Stopping School Days 8am–4pm” would provide a confusing message to motorists that faced with the decision to stop for an occupied crosswalk. The parking prohibition adjacent to school crossings provides improved visibility of pedestrians at times other than school arrival/departure, such as special events and play ground patronage.

3. Separate bus loading zones from the front of the school where parents are also competing for space to pick up and drop-off students. It is recognized that it is desirable to have bus loading near a school entrance where students can be observed by school staff as the students move between the school and busses. Recommend schools to encourage parents to spread out the loading zones by picking up students on all sides of school, preferably on the school side of the street.
4. Sidewalks at a school entrance should direct students to crosswalks to minimize jay walking, not to a mid-block curb side location without any crosswalk. In some instances, fences may be beneficial to physically restrict pedestrian access from undefined mid-block crossings.
5. Provide wheelchair accessible parking as close as practical to wheelchair accessible doors.
6. Promote the use of one-way internal circulation roadways where internal circulation roadways exist or are planned.
7. Use adult crossing guards on adjacent major thoroughfares to improve motorist awareness of pedestrians.
8. Install “20 mph School Zone” signs around schools where applicable, even on 20 mph residential streets as a reminder to approaching traffic. Note that some schools have barrier fencing alongside some streets and a 20 mph school zone may not be applicable in some of those situations.
9. Use durable plastic crosswalk pavement markings rather than painted markings at designated school crossings for improved visibility.
10. Replace older yellow school crossing signs with current optional fluorescent yellow-green color signs to be consistent within a school zone, or ideally throughout the city. The mixing of standard yellow and fluorescent yellow-green sign backgrounds within a school zone should be avoided.
11. Periodic law enforcement is recommended at each school to improve motorist conformance with traffic control devices.



12. Consider the use of two-way “STOP” signs at intersections with school crossings adjacent to schools. The “STOP” signs would assign right-of-way to a street while also stopping some of the turning traffic at the school crossing.
13. Consider installing countdown timers on traffic signals for pedestrians at signalized intersections near schools. Review traffic signal timing for appropriate clearance intervals (yellow and all-red phases of the signal) and for appropriate pedestrian phase “walk” time, particularly with regard to providing enough time for crossing guards to complete their crossing activity.
14. Maintain placing higher priority street maintenance practices near school crossings, such as sanding during snow/ice conditions.
15. Install sidewalks along all residential streets. Several school districts, particularly Highland Acres; include streets with sidewalks absent from one or both sides of the street.
16. Provide an educational component for students, parents and the motoring public at least twice a year.
17. The City should consider school zone definitions and speed zones. The NDCC (North Dakota Century Code) is a “one size fits all” approach that may not be appropriate in all cases. For instance, the Jeanette Myhre Elementary School at 12th Street and Bismarck Expressway has a fence between the school grounds and Bismarck Expressway which prevents students from running out of the playground onto the street. The traffic signal is also complemented with adult school crossing guards during school arrival and departure. Establishing a 20 mph school zone speed limit on Bismarck Expressway in this area may not be appropriate given the other safety measures that have been implemented.
18. Provide safe-route-to-school maps to students annually. Post the maps on the Bismarck Public School District website and display poster size maps in the schools. The maps should be reviewed annually for changes in traffic control, district boundaries, new streets, or other circumstances. Each school should have a readily available supply of maps for students/parents as needed.

3.5 Recommendations for New Schools:

Three components of a school-based pedestrian improvement program include:

1. Providing physical facilities along school walking routes and adjacent to the school, including traffic control devices and traffic-calming tools, to manage speed and provide positive control at crossing locations.
2. Developing effective operations plans and safety programs consisting of supervisory control elements and student/adult education for school trip safety.
3. Effectively locating new schools to encourage safe pedestrian access.



Because children are smaller than adults, motorists may have difficulty seeing them at street crossings. Extra care is necessary in the vicinity of schools to ensure that utility poles, traffic control devices, mailboxes, and other street furniture do not inhibit motorists' ability to see children. Parked vehicles also inhibit visibility.

The location and site plan of a school can have a large influence on the mix of pedestrians and vehicles. Some existing schools are limited in their ability to meet parking demand for a variety of reasons:

- The school does not have public street access from all sides due to private property abutting the school property within the same city block.
- The school does not have public street loading access from all sides due to barriers such as a major drainage ditch, or an adjacent arterial street with no on-street parking.
- Steep terrain constraints that prohibit the expansion of off-street staff parking
- Inadequate land space to accommodate off-street staff parking, on-street loading zones, playgrounds and playfields. Long continuous street frontages maximize curbside parking for loading/unloading.

Street crossings with higher concentrations of students crossing are more desirable where traffic volumes and speeds are low. Locating a school along residential streets within the center of a residential neighborhood minimizes vehicle speeds and volumes.

Consideration of the sidewalk slopes on and approaching the school property affect the ability and cost to provide accessible walkways, and the walking distance from parking areas to the building.

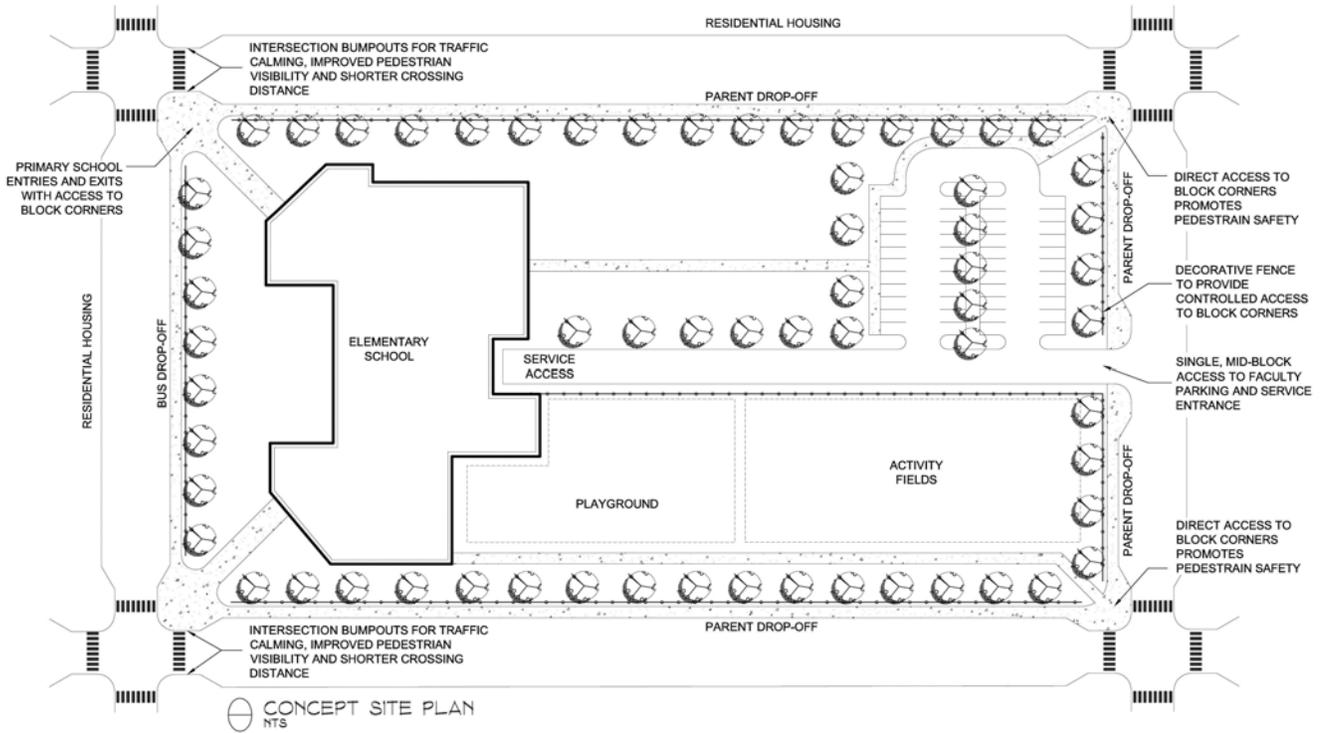
New schools are recommended to consider the following features:

1. Locate elementary schools along residential or collector streets with school loading access from all sides of a city block, rather than alongside an arterial street.
2. Minimize barriers to pedestrian traffic near schools
3. Align school doorways with sidewalks directly to the school crossings, which in most instances will be at the street corners
4. Use fencing and landscaping along street frontage of schools to direct pedestrians to the school crossings
5. Construct street corners at school crossings with sidewalk "bumpouts" to shorten walking distance, improve visibility of students approaching school crossings, physically prevent vehicles from parking across school crossings, and to function as a traffic calming device (typically used adjacent to residential streets)
6. Construct adequate off-street parking for all school staff
7. Locate service entrances away from student loading zones
8. Locate bus loading zones away from school crossings to maximize motorist visibility at school crossings
9. Consolidate curb-side mail delivery into cluster boxes along streets facing schools, or use mailman delivery on-foot
10. Use a rectangle shaped block for the school site to provide a long block face of uninterrupted loading zone



Additional recommendations regarding the school location and site layout are found in a number of publications including the *AASHTO Guide for the Planning, Design and Operation of Pedestrian Facilities*, 2004 Edition. A conceptual illustration incorporating the above features is shown in **Figure 3.1**.

Figure 3.1 Concept site plan for new schools



Chapter 4

4.1 Individual (School Recommendations) Included under separate cover

The following information is provided for each school:

- Summary sheet
- Public survey summaries
- Issues and observations map
- Recommendations map
- Safe-route-to-school map

The schools are presented in the following alphabetical order.

- BECEP at Richholt Elementary School
- Centennial Elementary School
- Grimsrud Elementary School
- Highland Acres Elementary School
- Robert Miller Elementary School
- Dorothy Moses Elementary School
- Rita Murphy Elementary School
- Jeannette Myhre Elementary School
- Northridge Elementary School
- Pioneer Elementary School
- Prairie Rose Elementary School
- Riverside Elementary School
- Roosevelt Elementary School
- Saxvik Elementary School
- Solheim Elementary School
- Will-Moore Elementary School



Parents...

Please complete the survey online at www.bismarck.k12.nd.us

...or mail to:
Jennifer Hafner
Kadmas, Lee & Jackson
PO Box 1157
Bismarck, ND 58502

The City of Bismarck is conducting a school crossing study that will include an analysis of 15 elementary schools and the Bismarck Early Childhood Education Program (BECEP) facility at the former Richholt School. At these schools, the study will evaluate existing school facilities, including walking routes between home and school, pick up and drop off zones, traffic and pedestrian flow on school property, school crossings, lighting, traffic control devices, and ordinances. The study will establish school walking route maps and develop a uniform application of policies, practices and standards for all schools regarding traffic control devices, crossing guards, drop off and pick up zones, parking, and busing. To accomplish this study, we are asking parents to complete this survey below. Thank you for helping us make our school crossings safer for our children.

School Crossing Study

- School: _____ Grade: _____
- How does your child get to/from school? Walk to School Ride to School Bus
- Please rate:

School loading/unloading area:	<input type="checkbox"/> Poor	<input type="checkbox"/> Fair	<input type="checkbox"/> Good	<input type="checkbox"/> Excellent
Parking spaces	<input type="checkbox"/> Poor	<input type="checkbox"/> Fair	<input type="checkbox"/> Good	<input type="checkbox"/> Excellent
Traffic Flow	<input type="checkbox"/> Poor	<input type="checkbox"/> Fair	<input type="checkbox"/> Good	<input type="checkbox"/> Excellent
- Please rate the school crossings near your school:

Location of crossings:	<input type="checkbox"/> Poor	<input type="checkbox"/> Fair	<input type="checkbox"/> Good	<input type="checkbox"/> Excellent
Comment: _____				
Number of Crossings:	<input type="checkbox"/> Poor	<input type="checkbox"/> Fair	<input type="checkbox"/> Good	<input type="checkbox"/> Excellent
Comment: _____				
Visibility:	<input type="checkbox"/> Poor	<input type="checkbox"/> Fair	<input type="checkbox"/> Good	<input type="checkbox"/> Excellent
Comment: _____				
Safety:	<input type="checkbox"/> Poor	<input type="checkbox"/> Fair	<input type="checkbox"/> Good	<input type="checkbox"/> Excellent
Comment: _____				
Orderliness:	<input type="checkbox"/> Poor	<input type="checkbox"/> Fair	<input type="checkbox"/> Good	<input type="checkbox"/> Excellent
Comment: _____				
- Have you reviewed pedestrian safety rules with your child? Yes No
- Do you have any school traffic crossing issues that should be looked into?
Please list: _____
- Do you have any suggested safety improvements? _____
- Please rate the safety of your child's walking route to school:

<input type="checkbox"/> Poor	<input type="checkbox"/> Fair	<input type="checkbox"/> Good	<input type="checkbox"/> Excellent
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Parents—protect your children by selecting the safest and easiest route between home and school. Pick the best one, then go over the directions with your child. Explain to your child why you chose that route and what your child can do to avoid danger. AAA's traffic safety experts have developed the following guidelines to help keep your child safe. Take a few minutes to go over them with your child. Remember, the same rules apply no matter where your child goes: to school, a bus stop, playground, or even a friend's house.

Best Route to School

Walk on sidewalks: Watch out for cars pulling into, and backing out of driveways.

Walk on the left, facing traffic, if there are no sidewalks: Staying to the left allows you to watch oncoming traffic and to get out of the way if necessary.

Cross only at corners: Avoid the dangerous practice of "jaywalking." Cross at intersections controlled by a traffic light wherever possible.

Stop and look all ways before crossing: If there's no traffic light, wait until oncoming cars are at least a block away before crossing. A car may still be able to stop if it is closer, but children are often badly frightened by "near" accidents.

Watch for turning cars: Children sometimes forget to look and unintentionally walk into the side of a turning vehicle.

Continue to look left, right, and left again as you cross: It's easy to miss an oncoming car.

Avoid crossing between parked cars: It's almost impossible for drivers to see youngsters who enter the roadway between parked cars.

Play away from traffic: Playgrounds, schoolyards, and your own backyards are the safest places to play.

Be especially alert in bad weather: Rain, snow, fog, and even umbrellas can obstruct vision. Also, drivers may be unable to stop quickly. Children should wear brightly colored and retro-reflective clothing.

Obey Police Officers, Adult Crossing Guards, and Traffic Signals: These "safety guardians" can greatly enhance a child's safety when going to and from school.

Provided by AAA

TALKED WITH: Michelle Hogan, BECEP at Richholt

RECORDED BY: Donovan Slag

PROJECT: School Crossing Study

SUBJECT: School Crossing Issues

DATE: October 21, 2004

Observations and facts:

- The Bismarck Early Childhood Education Program at Richholt has 156 kids. There are six headstart classes and four Early Childhood Special Classes. There are 18 students per headstart class and the Early Childhood Special Classes have 14 students per class.
- A majority of the students travel by bus. The bus loading zone, located on the east side of 14th Street, has enough space for five buses.
- BECEP has another facility at 1227 Park Avenue. That building has four classrooms with 18 students each. There are offices here for “Early Intervention” and “Right Track” programs. They share a parking lot with the Arcade Thrift Shop.
- The Headstart Program starts at 8:30 am and ends at 1:30 pm, Monday through Friday.
- The Early Childhood Special Classes run from 8:30 am to 3:15 pm, Monday through Thursday. There are separate morning and afternoon groups.
- Faculty parking is located between the wings of the school on the north side. Faculty parking is adequate.
- Students learn about many aspects of safety from the teachers.
- Parents receive a brochure with information on school policies and safety.
- Most students do not ride bicycle to school.
- Law enforcement has been contacted about the parent parking situation. The police said that the school can contact them and they will send someone to ticket illegally parked vehicles.
- Staff handicapped parking is adequate. Wheelchair buses stop in the front in the bus loading zone. Other handicapped vehicles park further down the street.
- School crossing guards are not needed.

Problems:

- The Richholt location and the Park Avenue facility do not have enough area for parent parking.
- Parents are parking in the bus zone. Parents do not have a convenient location to park.
- The loading and unloading zone on the west side of the Richholt School has congestion problems. There are two narrow access points for the loading zone; however motorists travel in and out at both access points creating gridlock.
- The crosswalks on Avenue C are not painted anymore.
- The south BECEP facility is located in an industrial area. Motorist speeds are very high on Park Avenue and there are no crosswalks in the vicinity. Pedestrian paths conflict with vehicle paths at the driveway.
- There was an accident at the south BECEP where a vehicle hit a bus, no one was injured.

Recommendations from the Principal:

- Need to find another location for BECEP students on Park Avenue. This location is not ideal since it is adjacent to industrial areas, vehicle speeds are too high, and there are many traffic problems for vehicles and pedestrians.

MEMO

Date: October 11, 2004

To: File

From: Swara Farheen

Re: School Crossing Study—Centennial Elementary School Observations

- October 4, 2004—Observation time was 7:30 am to 8:45 am and the temperature was 60°F.
- October 5, 2004—Observation time was 2:30 pm to 3:40 pm and the temperature was 51°F.
- The peak in traffic occurred at 7:50-8:35 am and 3:00–3:20 pm.
- The critical intersection for this school is the Century Avenue and Ithica Drive intersection.
- A crossing guard is present at this intersection from 8:00-8:30 am and 3:05-3:35 pm.
- Currently this intersection has flashing beacons with a timer; the beacon flashes from 8:00-8:30 am, 11:30-1:00 pm, and 3:00-3:30 pm.
- Students arrive at school from 7:45-7:50 am; usually students stay at school until 3:30 pm.
- The playground is fenced. It was observed most students play at the southern part of the playground.
- The availability of bicycle parking for students seems adequate.
- There is a one-way three-lane loop in front of the main entrance of the school. This is used by both bus/van unloading and parents dropping off students in the morning and is only used by bus/van loading in the afternoon.
- There is another one-way lane for visitors and parents, this is used by parents either to drop off or pick up students.
- Some parents block the handicap parking in this one-way lane to drop off or pick up students. Others block the handicap parking.
- The bus picks up about 12 students per day and four daycare vans pick up approximately 80-90 students.
- Century Avenue is a major roadway, with high speed and a high volume of traffic.
- The speed limit on Century Avenue is over 20 mph at the intersection.
- Noticed confusion among vehicles when stopping near the crosswalk with the crossing guard present. Century Avenue is a four-lane divided roadway with a raised median. While the crossing guard stops vehicles one way, vehicles on the other side do not stop. The crossing guard also crosses the raised median to stop vehicles on the other side, and then vehicles that were stopped start moving through the crosswalk. All while students are waiting to cross the street. Motorists' attention is focused on the crossing guard, not on the students.

- The Henry Street and Springfield Street intersection has low traffic and is in a quiet neighborhood.
- Ithica Drive is very busy from 3:00-3:30 pm due to parents picking up students. The intersection of Stevens Street and Ithica Drive seem to work properly; vehicles stopped before crosswalk, students crossed with caution, and no cars were parked in the crosswalk. Speed is also within limit.
- The staff parking lot is full. Some staff park in the visitor's parking lot, which is located on the southeast side of the building.

TALKED WITH: Rolland Messmer, Centennial Elementary

RECORDED BY: Swara Farheen

PROJECT: School Crossing Study

SUBJECT: School Crossing Issues

DATE: October 4, 2004

Observations and facts:

- There are approximately 512 students attending Centennial Elementary School.
- Mr. Messmer said they conducted a survey in September 2004. The results of the survey identified that 19 students crossed the Century Avenue and Ithica Drive intersection in the morning and about 56 students cross it in the afternoon.
- Currently this intersection has flashing beacons with a timer; the beacon flashes from 8:00-8:30 am, 11:30-1:00 pm, and 3:00-3:30 pm.
- Mr. Messmer said there was an accident two years ago and two girls were hit. One girl was lightly hit and the other was taken to the hospital.
- Information about safety for crossing streets and riding bicycles is published in the Centennial Parent Newsletter. Teachers review crosswalk rules and conduct a walk-through with students.
- The Centennial PTO also promotes and conducts crosswalk safety training. A past program included a token reward to reward correct use of crosswalks, parking, and role modeling for students. The crossing guards receive training from the safety coordinator of Bismarck (Greg Bush). The school has an adopt-a-cop who also helps promote safety in and around the school.
- Parents are informed about safety by newsletter and the Principal gives announcement about safety to the students.
- Mr. Messmer said the school police officer (adopt-a-cop) is there to watch traffic around the school upon request or makes random stops. The crossing guard also attempts to write down the license plate number of those vehicles involved in a violation to give the police. There are times when the officer will visit the homes of the violator.
- Mr. Messmer said police officers will issue speeding tickets on Century Avenue near the intersection. Nearby residents living on/or near Century Avenue will also report violations to police officers.
- Students start arriving at school between 7:45-7:50 am and often do not leave until 3:30 pm. The neighborhood children use the playground on the weekends.
- The playground is fenced and most students play at the southern part of the playground.
- There is adequate bicycle parking for students.
- There is a one-way three-lane loop in front of the main entrance of the school. This is used by both bus/van unloading and parents dropping off students in the morning and only used by bus/van loading in the afternoon.
- There is another one-way lane for visitors and parents. This is also used by parents either to drop off or pick up students.
- Some parents block the handicap parking in this one-way lane when they drop off or pick up students.
- The bus picks up about 12 students each day; and four daycare vans picking up about 80-90 students after school.

- Century Avenue is a high speed area.
- The Henry Street and Springfield Street intersection has low traffic.
- Ithica Drive has heavy traffic in the afternoon. The Stevens Street and Ithica Drive intersection is all right. Parents stop before crosswalk. Students cross the intersection with caution.
- Talked with the school custodian, Blake Graff, he had nothing to report.

Problems:

- The staff parking is not adequate; therefore, the staff uses both visitor parking lots, which is located on the east side of the school.
- Some parents block the handicap parking in the one-way lane when they drop off or pick up students.
- In the morning, parents use the handicap parking to drop off students. Mr. Messmer said tickets were issued to vehicles for parking in the handicap zone (approx. 50 tickets at \$100.00 each). After every incident, information was sent to parents regarding parking, stopping, or dropping off in the handicap zone.
- High vehicle speed on Century Avenue. Mr. Messmer said many cars do not maintain the 20 MPH speed limit in the crosswalk zone.
- Ithica Drive has high traffic volumes in the afternoon. Some parents park near fire hydrant.
- Questions were raised by Mr. Messmer about Century Avenue and the Ithica Drive intersections. The questions revolved around the shopping center which is currently being constructed and how much traffic will be added to Century Avenue.
- Talked with the crossing guard. She mentioned cars tend to pull up before she gets to the other side of the street or even before she lowers the “STOP” sign. This causes confusion and one student was injured by this type of situation. She has encountered close calls and believes drivers may not be aware of the rules of the road. Drivers cannot start moving until the crossing guard is off the street.

Recommendations from the Principal:

- Century Avenue and the Ithica Drive intersection need brighter street lights, increasing visibility in the morning and especially during the winter.
- The school needs additional staff parking areas/lots.
- The Century Avenue and Ithica Drive intersection needs to accommodate for pedestrians and additional traffic, especially when the shopping center is finished.
- Information on the purpose of crosswalks and traffic safety should be issued by the city and the state.
- Pamphlets or flyers should be issued to those applying for and/or renewing their drivers’ license.
- The crosswalk on Henry Street is not handicap accessible.
- “No Parking” signs need to be placed on Springfield Street to prevent vehicles from parking in the crosswalk.
- “Parking” signage needs to be placed to indicate where parking is allowed in the school zone.

MEMO

Date: October 14, 2004

To: File

From: Donovan Slag

Re: School Crossing Study: Grimsrud Elementary Observations

- October 13, 2004—cloudy 55°F.
- At 2:45pm, there are some cars parked along both sides of St. Benedict Drive.
- Parking lot for the faculty requires vehicles to drive onto the sidewalk.
- The intersection of Bell Street with St. Benedict Drive is offset – “dog-leg intersection”.
- Two buses arrive just before 3:00 pm and wait in the bus loading zone.
- Several students cross (eastbound) on the south leg of Bell Street/St. Benedict Drive intersection. This was after they had crossed the west leg of that same intersection. (It would’ve made more sense to cross the east leg of the intersection to get to their destination).
- Vehicle (GVC 568) heading eastbound going too fast (25-30 mph) along St. Benedict Drive.
- Vehicle parked between crosswalks on St. Benedict Drive blocks view of pedestrians.
- Peak traffic occurs at about 3:10 pm.
- Several pedestrians (students and parents) cross mid-block to get to their vehicles.
- Large SUV picks up student in through lane on St. Benedict Drive and then drives off, but stops for group of pedestrians crossing St. Benedict Drive.
- October 14, 2004—Morning observations, cloudy and windy, temperature is 45°F.
- At 7:40 am, there were about 1-2 parents per minute dropping off their students.
- At 7:50 am, there were about 2-3 parents per minute.
- Most parents drop their students off in the bus loading zone (yellow curb) or the handicapped zone.
- Faculty parking lot is about half full at 7:51 am.
- First bus arrives at loading zone at 8:00 am.
- Second bus arrives at 8:01 am.
- One student crosses the east leg of Griffin Street/St. Benedict Drive intersection.
- Just after 8:00 am, there is little or no through traffic, speeds are low (15-20 mph).
- An eastbound pickup stops in the through lane on St. Benedict Drive to drop off student at 8:07 am.
- At 8:07 am there are about 1-2 parents stopping by per minute.
- Several students are seen walking from the west on the south side of St. Benedict Drive; one student is on a bike. They cross St. Benedict Drive at the crosswalk,

the student on the bike crosses diagonally between the two crosswalks on Bell Street.

- A minivan stops on the crosswalk on the north side of St. Benedict Drive near the intersection of Griffen Street. After the students get out, the minivan does a U-turn on the crosswalk and then turns right to head south on Griffen Street. The minivan does this maneuver very quickly.
- A parent drops off their students in the faculty parking lot at 8:14 am; several students are walking from the north down Bell Street at this time.
- A student on the east side of Bell Street crosses St. Benedict Drive at 8:15
- A student and a parent cross mid-block at 8:24am.
- The four crosswalks in front of the school (on St. Benedict Drive) appear to have equal amounts of pedestrian traffic.
- A vehicle heading east on St. Benedict Drive does a U-turn at the intersection with Griffen Street and then drops off their student in the bus loading zone.
- A vehicle stops in the through lane of St. Benedict Drive to drop off their student while a vehicle waits behind them. The student getting out of the first vehicle then crosses in front of their parent's vehicle mid-block.
- An eastbound car drives past the intersection of St. Benedict Drive and Bell Street and stops on the crosswalk, lets their students out, then the vehicle backs up onto Bell Street and then turns left to go westbound on St. Benedict Drive.
- After dropping off student, a westbound vehicle does a U-turn on St. Benedict Drive so that they can go east.
- A vehicle pulls partway into the driveway of the faculty parking lot to drop off their student.

TALKED WITH: Barbara Livermont, Grimsrud Elementary
RECORDED BY: Donovan Slag
PROJECT: School Crossing Study
SUBJECT: School Crossing Issues
DATE: October 19, 2004

Observations and facts:

- There are 300 students at Grimsrud Elementary School.
- There are no crossing guards associated with Grimsrud and they are not needed at this time.
- There are two or three staff members watching students after school at the front entry; their main job is to monitor the students, not the traffic.
- Parents are informed of safety issues in the newsletter. Kindergarten orientation for parents provides information on motorist and pedestrian safety.
- All the teachers educate the students on safety.
- There is fencing around most of the playground with some access points.
- Bicycle parking doesn't seem to be an issue.
- A lot of parents park along the north side of St. Benedict Drive to pick-up or drop-off their students.
- Students begin arriving at 7:15am.
- Grimsrud participates in after-school programs.
- The crosswalks around the school are adequate.
- Faculty parking lot has room for more vehicles.
- No major accidents in the last few years.

Problems:

- An accident involving a bus hitting a parked vehicle required police assistance. A vehicle had parked in the bus loading zone, causing the bus to hit another parked vehicle.
- The principal has considered more fences around the north side of the playground. The school has had problems with older kids having parties on top of the building (they park their vehicle near the building and climb up onto the roof).
- Parents stop in the through lane (St. Benedict Drive) to pick up students.
- High speed has been seen on Bell Street.

Recommendations from the Principal:

- Examine the west side of the school—to utilize that area more efficiently. Try to encourage more school employees to park in the parking lot so the street parking along St. Benedict Drive can be used by parents.
- It may be ideal to have an area reserved for special education instructors' vehicles. This area would be located on the south side of the school along St. Benedict Drive.
- Make recommendations on what should be done about van drop-off zones.
- Evaluate the need for a crosswalk at the intersection of Nagel Drive and Marian Drive.

MEMO

Date: October 26, 2004

To: File

From: Swara Farheen

Re: School Crossing Study: Highland Acres Elementary Observations



- October 19, 2004—Morning observation and the temperature was 35°F.
- October 14, 2004—Afternoon observation and the temperature was 60° F.
- The peak was 8:15-8:35 am and 3:05-3:15 pm.
- The school has adequate bicycle parking, staff parking, and handicap parking.
- The school does not have bus service. There are 2-3 vans that pick up and drop off students per day.
- There is a playground supervisor who works from 8.00-8.30 am. No supervision is provided in the afternoon.
- Vehicles park and block the crosswalk in front of the main two entrances of the school on Prairie Drive.
- Vehicles park in the “No Parking” zone on Prairie Drive, both on the school side and on the other side of the street.
- I have seen vehicles making U-turns on Prairie Drive in the crosswalk. Based on my observation, this is a high priority issue for the school.
- The school is in a quiet neighborhood and the traffic volume is low, other than school commencement and dismissal times. Vehicle speed is more than 20 mph on Highland Acres Road. No speed limit signs were observed on Highland Acres Road.
- Students coming from vehicles parked on the other side of Prairie Drive cross the street without using the crosswalk. Some students cross this street to get in a vehicle parked on the other side of the street without using the crosswalk.
- Students walking to school by use the crosswalk; they are also cautious and look both directions before they cross.
- Street lighting is adequate.
- Now there are crosswalk signs on Midway Drive, Prairie Road, and Highland Acres Road.
- By 3:00 pm both sides of Prairie Drive and Midway Drive is full of vehicles waiting for students. Parents cross the street without using the crosswalk.
- By 3:15 pm most students have left the school.

- “No Parking” zones are extensively used by parents to drop students off and the students do not use the crosswalk.
- Many parents park in the handicap parking to drop off students.
- Vehicles are parked in the “No Parking” zone on the other side of the school, this blocks visibility of pedestrians using the crosswalk.
- Students that walk home to Coulee Drive use the intersection of Coulee Drive and Highland Acres Road. This intersection does not have a crosswalk. In addition, there is no sidewalk on the east side of Coulee Drive, which forces pedestrians to walk on the street.
- There is no crosswalk at the intersection of Pioneer Road and Prairie Road intersection.

TALKED WITH: Joyce Hinman, Highland Acres Elementary
RECORDED BY: Swara Farheen
PROJECT: School Crossing Study
SUBJECT: School Crossing Issues
DATE: October 14, 2004

Observations and facts:

- October 14, 2004—Observation time from 3:05-3:15 pm and the temperature was 60°F.
- October 19, 2004—Observation time from 8:15-8:35 am and the temperature was 35°F.
- There are approximately 143 students enrolled at Highland Acres.
- There are approximately 12-15 students in the blast program, these students stay at the school between 3:00-6:00 pm.
- Students arrive at school at 7:45 am.
- Information about safety is included in the school newsletter, which circulates at the beginning of the school year. Other surveys have been conducted about safety. The school has an adopt-a-cop.
- The school educates the students about safety. Police also talk to students about biking, head injuries, etc.
- The school has adequate bicycle parking, staff parking, and handicap parking.
- The school does not have bus service. There are 2-3 vans that pick up and drop off students per day.
- There is a playground supervisor who works from 8:00-8:30 am. There is no supervision provided in the afternoon.
- Many vehicles park in the crosswalk.
- Many vehicles park in the “No Parking” zone.
- High vehicle speeds were observed on Highland Acres Road.

Problems:

- Mrs. Hinman observed vehicles parked in handicapped parking.
- Mrs. Hinman observed high vehicle speed inside the school zone on Highland Acres Road.
- Mrs. Hinman observed vehicles parked in the crosswalks; and in the “No Parking” zone.
- Vehicles also park in the “No Parking” zone on the other side of the street.

Recommendations from the Principal:

- Playground needs fencing on the north side.
- The Highland Acres Road and Coulee Drive intersection needs a better marked crosswalk.
- The east side of Coulee Drive needs a sidewalk.
- A speed limit sign is needed on Highland Acres Road, no sign is present on Highland Acres Road.

- Police presence is preferred on Highland Acres Road to enforce the high speed area.

TALKED WITH: Maynard Gunderson, Robert Miller Elementary
RECORDED BY: Swara Farheen
PROJECT: School Crossing Study
SUBJECT: School Crossing Issues
DATE: October 12, 2004

Observations and facts:

- October 12, 2004—Observation time was in the afternoon and the temperature was 60°F. Peak traffic occurred from 3:05-3:15 pm.
- October 15, 2004— Observation time was in the morning and the temperature was 38°F. Peak traffic occurred from 8:20-8:35 am.
- There are approximately 525 students that attend Robert Miller Elementary, with 35 students in the Blast program who stay until 3:00-6:00 pm. Approximately 30 students arrive at 7:45 am for band class.
- Information about safety on crosswalks and double parking goes out in the newsletter at the beginning of the year. Currently, the school does not receive any input from the law enforcement about safety. Since November 2003, there had been no Adopt-a-Cop program. The school is looking into hiring a parent to be the officer for the school.
- Currently the school does not give training or does not give a “walk through” about safety to the students.
- The playground is fenced.
- Not many students ride bicycles.
- Some parents double park on 20th Street to drop-off or pick up students.
- There is a sidewalk on the east side of the school through the playground connecting 23rd Street. Some students use the sidewalk to be picked up or dropped off by their parents waiting on 23rd Street.
- Mr. Gunderson said the school presently has two buses carrying about 60 to 70 students. There are about 5 to 6 vans carrying 50 students. The school has a separate bus loading zone on 20th Street in front of the main entrance of the school.
- The kindergarten students are dismissed at 11:20 am. At those hours, parents are allowed to pick up children from the bus loading zone.
- The staff is told to park on the other side of Jackson Avenue, so that the side adjacent to the school can be used to pick up or drop-off students by parents.
- Most parents use 20th Street to pick up children at 3:05-3:15 pm.
- Mr. Gunderson said he cannot recall any accidents in the last 3-5 years.
- The school presently has no crossing guard.
- Talked with the head custodian, he mentioned that high vehicle speed is a problem on Jackson Avenue and on 20th Street in the afternoon.

Problems:

- Mr. Gunderson said that the major concern is 20th Street in the afternoon. Many parents park on the other side of 20th Street and students run to their parents' vehicles without using the crosswalks. Many parents double park to pick up children.
- There are not adequate parking spaces for staff, some staff park on Jackson Avenue.
- Vehicles have high speeds on Jackson Avenue, which become risky for some elementary students crossing the street.

Recommendations from the Principal:

- The 20th Street and the Jackson Avenue intersection may need a crossing guard.

MEMO

Date: October 5, 2004

To: File

From: Chowdhury Haider

Re: School Crossing Study: Dorothy Moses Elementary School Observations

- September 30, 2004—Observation time was 2:15 pm and the temperature was 49°F.
- October 1, 2004—Observation time was 7:50 am and the temperature was 32° F.
- Sight obstruction at the corner of Tulsa Drive and Columbia Drive; and Omaha Drive and Columbia Drive due to a vehicle parking at the corner of the curb.
- Children cross the street in front of the school without crosswalk. The school has a crossing guard at the 3rd Street and Omaha Drive intersection.
- Double parking beside the bus.
- Crosswalks are available around the school. The school doesn't have a mid-block crosswalk.
- The school has a large parking area around the school; however, parents use the on-street parking adjacent to the school entrance.
- Parents also park in the handicapped parking and bus loading and unloading area.
- The school needs more parking adjacent to the front entrance.
- There are two handicapped parking areas: one in front of the school and one in the staff parking area.
- Dorothy Moses houses the central kitchen; due to this more staff parking is needed.
- There are two bus loading/unloading areas are in front of the school.
- Flashing beacons exist on 3rd Street; and 3rd Street is a high speed area.
- The 3rd Street and Denver Avenue intersection is operated with a two-way stop control.
- Sidewalks and street lights are adequate.
- The playground is properly fenced.
- There are several entries to the school. The pavement condition is deteriorating in front of the school.
- The speed limit is approximately 20 mph in front of the school.
- Most of the cars maintain the speed limit in front of the school.

TALKED WITH: Dr. Claudia Tomanek, Dorothy Moses Elementary School

RECORDED BY: Chowdhury Haider

PROJECT: School Crossing Study

SUBJECT: School Crossing Issues

DATE: October 1, 2004

Observations and facts:

- School begins at 8:30 am and dismissal is at 3:05 pm.
- There are approximately 440 students.
- The school has two front entries.
- The school has a crisis management handbook; they have provisions for safety drills, presentations from law enforcement, etc. They also have a newsletter, which sometimes includes information on traffic safety, necessity of seat belts, etc.
- The school has adequate sidewalks, playgrounds, and fencing.
- There are several sidewalks around the school area, because some of the students walk to school.
- They have adequate bicycle parking.
- The school has a crossing guard at the 3rd Street and Omaha Drive intersection.
- The school has a designated bus loading and unloading area. This area sometimes is occupied by parents' vehicles.
- The parking area in front of school is not adequate for parent parking. Two-way lanes exit in front of the school. In the morning and afternoon, parents use both sides of the street for parking.
- One flashing beacon exists on 3rd Street, which is the west side of the school.
- The school hasn't had an accident in the last five years.

Problems:

- Inadequate parent and staff parking. It is difficult for busses to load and unload due to the irregular parked vehicles.
- People do not maintain the speed limit on 3rd Street, which is located on the back side of the school.

Recommendations from the Principal:

- The school doesn't have adequate parking for parents in front of the school.
- The south side of the school could be used for diagonal parking spaces.
- More safety improvement (crossing guard, flashing beacons. etc.) at the 3rd Street and Denver Avenue intersection.
- The need for more staff parking. In the early morning, they have extra staff because the school houses the central kitchen. In addition, they also have student teachers who use the staff parking lot.
- More law enforcement around the school to protect irregular parking in front of the school.
- Additional lights in the parking lot.

TALKED WITH: Angela Durbin, Rita Murphy Elementary
RECORDED BY: Swara Farheen
PROJECT: School Crossing Study
SUBJECT: School Crossing Issues
DATE: September 28, 2004

Observations and facts:

- September 22, 2004—Afternoon observation and the temperature was 45°F and overcast.
- The school has 565 students attending.
- Most of 31st Street is filled with parents waiting for students at 2:45 pm.
- Vehicles' bumpers are parked over the crosswalks—both crosswalks in front of the school were partially blocked by parents' vehicles.
- There is not a crosswalk in the front of the north school entrance door.
- “No Parking” area between the two crosswalks in front of the south school entrance.
- Parking along the street full by 2:45 pm.
- East Avenue C—students cross the street with using the crosswalk on the south leg of the intersection.
- The south side of the school is used for bus loading (East Avenue A).
- At East Avenue A and 31st Street, the west approach of this intersection does not have a crosswalk.
- Students are picked up in the faculty parking lot.
- Some double parking at the intersection of 31st Street and Avenue B on all three approaches.
- Some vehicles stop in the through lane to pick up students.
- Most vehicles stop for students at the crosswalk.
- Most students look both ways and walk in the crosswalks.
- September 23, 2004—Morning observation and the temperature was 45°F and overcast with light rain.
- At 7:30 am, very few students on the playground, no buses, and no students walking to school.
- Several students were dropped off in the handicapped zone on the west side of the school.
- Some students are dropped off just outside the bus zone.
- Students are dropped off on both sides of 31st Street.
- Students are exiting the vehicles from both sides and they do not cross at the crosswalk.
- Vehicles are parked in the crosswalks for short durations.
- Most motorists wait for pedestrians to cross in the crosswalks.
- Students cross mid-block on East Avenue A.
- Students cross mid-block on East Avenue A.
- There are two crosswalks on the west side (front) of the school, but only the north crosswalk is used by pedestrians, and the south one is inactive.
- Vehicles stop on both sides of the street and students cross where there is no crosswalk.
- The middle entrance (where there is no crosswalk) is heavily used by parents dropping off their children.

- At the intersection of 31st Street and East Avenue C, on the south side of the intersection there is a “No Parking Anytime” sign. This area is heavily used by parents dropping off students.
- The faculty parking lot is heavily used for dropping off students.
- Students cross that cross the roadway alone are very cautious and look both ways.
- Information regarding “safety” for students is included in the school newsletter three to four times a year. The information usually includes safety tips for around the school, parents dropping off/picking up students, and bus/daycare van loading/unloading. The newsletter also tells parents to pick up/drop off students, so the students do not need to cross the streets. Parents are also told not to double park and pedestrians are reminded to use the crosswalk.
- The school has fire drills, storm drills, and oil spill drills, etc. Currently, the school does not have a crossing guard and the principal does not believe the school has a need for one. The school staff provides afternoon supervision for students outside by parents’ vehicles and at the bus and van loading/unloading area.
- More parking spaces are needed for the faculty. Parents are told not to pick up/drop off students in the faculty parking lot; however, it is still being done. This makes that area very risky for the students because vehicles are backing up, especially at dismissal time. The school has available space for more faculty parking. The staff is now parking on 31st Street on the west side of the school.
- Mrs. Bailey has a positive view about the safe-walk-to-school maps.
- Mrs. Bailey has issue about the playground and its fencing.

Problems:

- More parking spaces are needed for the faculty. Parents are told not to pick up/drop off students in the faculty parking lot; however, it is still being done. This makes that area very risky for the students because vehicles are backing up, especially at dismissal time. The school has available space for more faculty parking. The staff is now parking on 31st Street on the west side of the school.
- The school is situated in a way that the school has seven crosswalks and a parking lot, which creates traffic circulation problems and may even create a potential safety hazard for children.
- The school does not have enough manpower to monitor seven crosswalks, the staff parking lot, and the bus and van loading areas.
- Talked with the head custodian, Tim Hoffman, and he mentioned that 31st Street is a high speed area (more than 35 mph) in the afternoon. He has noticed vehicles parked in the crosswalks and also making U-turns on 31st Street (even over the crosswalk). Some parents double park when picking up or dropping off students.

Recommendations:

- The Eastdale Drive crosswalk is the most hazardous of the seven and definitely needs a light or crossing guard.
- The problems with the other six crosswalks and the staff parking lot need to be resolved to prevent a tragedy.
- The situation may improve if the school could increase parent parking areas.
- The principal doesn’t believe more crosswalks will help. She would like to see fewer, but better defined. She believes this would lead to better education for students and parents.

- Need more space for the bus and van loading/unloading area. A 2nd grade boy was hit by a daycare van five years ago on Eastdale Drive and was injured. In the afternoon, students cross the street in front of school busses.

MEMO

Date: October 5, 2004

To: File

From: Swara Farheen

Re: School Crossing Study: Jeannette Myhre Elementary Observations

- September 30, 2004—Observation time was from 2:45 pm and the temperature was 55°F.
- October 1, 2004—Observation time was from 7:35 am to 8:45 am and the temperature was 32°F.
- The traffic peak in the morning was from 7:45-8:30 am and from 3:05-3:25 pm.
- Jeannette Myhre Elementary School is located adjacent to two major roadways: Bismarck Expressway (speed limit is 40 mph) and 12th Street.
- There are approximately 397 students at Jeannette Myhre Elementary School.
- There are approximately 5-50 students arriving before school starts between 6:30-7:30 am and approximately 200 students that stay after school until 6:00 pm.
- Cash Wise Foods parking lot is heavily used by parents to pick up students. By 3:00 pm, the on-street parking on 12th Street and on the other side of street, as well as in the Cash Wise Foods backside parking lots are filled with parents' vehicles.
- There are two crossing guards. One crossing guard is on duty from 3:05 to 3:20 pm on 12th Street, this guard helps students from the school towards the Cash Wise Foods parking lot. The other crossing guard is on duty at the same time at the 12th Street and Bismarck Expressway intersection.
- There is one crossing guard on duty from 7:45-8:30 am at the 12th Street and Bismarck Expressway intersection.
- There is flashing beacons for both crosswalks on 12th Street and Bismarck Expressway.
- The crosswalks are lit.
- There is no school bus service for the school. Most students walk to school or get dropped off or picked up by their parents.
- The playground is fenced on the Bismarck Expressway side, but there is no fencing on the 12th Street side.
- There are many students that play in the playground after school, during this time there is usually heavy traffic on 12th Street.
- Some parents pick up students from the parking lot on the north side of the school. Vehicles can enter and exit the parking lot on the north side of the school. The alley that connects to this parking lot is signed as a one-way.

- There are a number of handicap parking spots and a handicap accessible entrance.
- There are staff parking lots along the one-way alley.
- There is an entrance to a trailer court on the north side of the school where the alley turns southbound. Some students walk across the alley and use that entrance to get to the trailer courts.
- There is a flashing light with a school sign in between the two intersections on Bismarck Expressway.
- There is adequate parking for staff, visitors, and handicapped students.
- Vehicles either partially or fully block the crosswalk on 12th Street when picking up or dropping off students.
- Cash Wise Foods' parking lot is heavily used, especially in the afternoon to pick up students. It was observed that some students cross in the middle of 12th Street. The students run towards the Cash Wise Foods' parking lot to their parents' vehicles without using the crosswalk.
- There is adequate bicycle parking; however, the principal observed that the existing bicycle racks are too old for modern bicycles to properly fit in the racks.
- There is no crosswalk on Arbor Avenue and some students cross this street in the morning.

TALKED WITH: Bill Demaree, Jeannette Myhre Elementary
RECORDED BY: Swara Farheen
PROJECT: School Crossing Study
SUBJECT: School Crossing Issues
DATE: September 30, 2004

Observations and facts:

- September 30, 2004—Observation time was from 2:45 pm to 3:45 pm and the temperature was 55°F.
- October 1, 2004—Observation time was from 7:35 am to 8:45 am and the temperature was 32°F.
- The morning traffic peak occurred from 7:45-8:30 am and the afternoon traffic peak occurred from 3:05-3:25 pm.
- There are approximately 397 students at Jeannette Myhre Elementary School.
- There are approximately 45-50 students that arrive before school begins between 6:30-7:30 am and approximately 200 students that stay after school until 6:00 pm.
- The principal speaks to the students about safety and information is included in the school newsletter three to four times a year. Also students are reminded at the conclusion of each day about safety in crosswalks.
- Cash Wise Foods parking lot is heavily used by parents to pick up students. By 3:00 pm, the on-street parking on 12th Street and on the other side of street, as well as in the Cash Wise Foods backside parking lots are filled with parents' vehicles.
- There are two crossing guards. One crossing guard is on duty from 3:05 to 3:20 pm on 12th Street, this guard helps students from the school towards the Cash Wise Foods parking lot. The other crossing guard is on duty at the same time at the 12th Street and Bismarck Expressway intersection.
- There is one crossing guard on duty from 7:45-8:30 am at the 12th Street and Bismarck Expressway intersection.
- There is flashing beacons for both crosswalks on 12th Street and Bismarck Expressway.
- The crosswalks are lit.
- There is no school bus service for the school. Most students walk to school or get dropped off or picked up by their parents.
- The playground is fenced on the Bismarck Expressway side, but there is no fencing on the 12th Street side.
- There are many students that play in the playground after school, during this time there is usually heavy traffic on 12th Street.
- Some parents pick up students from the parking lot on the north side of the school. Vehicles can enter and exit the parking lot on the north side of the school. The alley that connects to this parking lot is signed as a one-way.
- There are a number of handicap parking spots and a handicap accessible entrance.
- There are staff parking lots along the one-way alley.
- A few parents pick up students in the one-way alley.
- There is adequate parking for staff, visitors, and handicapped students.

Problems:

- Vehicles either partially or fully block the crosswalk on 12th Street when picking up or dropping off students.
- Cash Wise Foods' parking lot is heavily used, especially in the afternoon to pick up students. It was observed that some students cross in the middle of 12th Street. The students run towards the Cash Wise Foods' parking lot to their parents' vehicles without using the crosswalk.
- Mr. Demaree is concerned about students' safety when dropped off in the morning in the Cash Wise Foods' parking lot and crossing 12th Street alone without a crossing guard.
- Parents drop off students in the Time Square parking lot, especially in winter and are allowed to cross the alone.
- There is adequate bicycle parking; however, the principal observed that the existing bicycle racks are too old for modern bicycles to properly fit in the racks.
- There is no crosswalk on Arbor Avenue and some students cross this street in the morning.
- Some students coming from the south side of 12th Street, cross the street without going to the intersection.
- There were two accidents: one eight years ago and the other ten years ago. The accidents were at the intersection of Bismarck Expressway and 12th Street. The drivers were apparently distracted by the crossing guards.
- A dog was hit by on Bismarck Expressway.
- Talked with the school's custodian, Gary Lindemann. Gary pointed out two issues. The first issue is high speed on 12th Street; vehicles are speeding during school hours. The second issue is the intersection of Bismarck Expressway and 12th Street: the pedestrian button does not work properly. Due to the heavy traffic on 12th Street, sometimes vehicles are backed up waiting for the signal to turn green.
- Visibility is hampered by snow piles on the northeast corner of the intersection of Bismarck Expressway and 12th Street.

Recommendations from the Principal:

- Extend the playground fence onto 12th Street.
- A crosswalk on Arbor Avenue may help students cross the intersection.
- There are few students crossing the intersection of Georgia Street and Bismarck Expressway, and something needs to be done at this intersection.
- Some parents drop off students in the visitor's parking lot, which blocks handicap parking.
- Students cross at the intersection of 9th Street and Arbor Avenue.

MEMO

Date: October 27, 2004

To: File

From: Swara Farheen

Re: School Crossing Study: Northridge Elementary Observations



- October 11, 2004—Afternoon observation and the temperature was 75° F.
- October 12, 2004—Morning observation and the temperature was 45° F.
- The traffic peak occurred at 7:50-8:30 am and at 3:05-3:15 pm.
- There are three exits to the school: one onto 3rd Street (used by kindergarten, first grade, and fifth grade); the other two exits, (one used by third and sixth grades and the other used by second and fourth grades) exit onto the alley on the east side of the building and then connect to a sidewalk on 4th Street.
- Currently, parents are told not to use the alley on the east side of the building. This alley connects Divide Avenue and 3rd Street and was used to drop off/pick up students. Students use this as a walkway to and from the playground area.
- Mr. Wolf said some parents sometimes drops off/pick up their students in this alley especially in winter.
- A vehicle was observed with high speed through this alley. Vehicles were also observed parallel parked in the alley.
- The school has a fenced playground all around it, with openings in different locations.
- Many parents park in the handicapped parking to drop off students.
- The roadway in front of the school is 3rd Street. 3rd Street has a hill crest at the intersection of Kavaney Drive and 3rd Street. There is also a crosswalk at this intersection. The majority of students use these two crosswalks.
- The street lighting is not adequate at the intersection of 3rd Street and Kavaney Drive, especially in the morning. The crosswalk on 3rd Street is heavily used by students. Some of the street lights on the west side of 3rd Street face the street and with proper uniformity could increase visibility at this crosswalk.
- Many vehicles were parked that blocked the crosswalks on 3rd Street. Vehicles were also parked in the “No Parking” area near the crosswalk, which hindered visibility for pedestrians.
- 4th Street has high speed traffic (at times more than 30 mph).
- Approximately 50 students cross 4th Street.
- Currently, the school has a crossing guard who works from 8:05-8:35 am and from 3:05-3:35 pm at the crosswalk on 4th Street. This crosswalk has a sidewalk that connects to the school’s entrance. This crossing has flashing beacons with a timer that flashes for about 45 minutes in the morning and in the afternoon.

- The traffic speed is high on Divide Avenue. There is a crosswalk at the Divide Avenue and 3rd Street. This intersection has flashing beacons with a timer that flashes for about 45 minutes in the morning and in the afternoon. There is a crossing guard on duty from 8:05-8:35 am and 3:05-3:35 pm.
- By 3:00 pm, the 3rd Street, Kavaney Drive, and Owens Avenue are almost full of parked vehicles waiting to pick up their students.
- Many parents park on the other side of 3rd Street and cross the street without using the crosswalk.
- Currently, cones are placed in the crosswalks every morning and afternoon.
- Buses are in the bus loading zone from 3:05-3:12 pm.
- The bus loading zone on the 3rd Street is used by parents to pick up students after 3:12 pm.
- By 3:25 pm, the majority of students have been picked up.
- Vehicles are parked near the fire hydrant and over the crosswalks.
- Parents double park to pick up students.
- One student crossed 4th Street without using the crossing guard.
- Students cross Divide Avenue after the crossing guard is off duty.
- Students ride bicycle in the staff parking lots and also ride bicycle on 3rd Street without using the sidewalk.
- Students talk and stand on 3rd Street around 3:30 pm.
- Cones are put on the crosswalks on 3rd Street, Kavaney Drive, Divide Avenue, and 4th Street.
- Some parents park on 4th Street to pick up students.
- Some parents use the handicapped parking to drop off students.
- Vehicles make U-turns on 3rd Street at the intersection of 3rd Street and Owens Avenue over the crosswalk in the afternoon.
- Students cross Divide Avenue using the crosswalk before the crossing guard begins duty in the morning.
- Vehicles make U-turns on 3rd Street just down the hill from the 3rd Street and Kavaney Drive in the morning; and also make U-turns at this intersection.
- Some parents drop off students in the staff parking lot.
- Parents double park on both sides of 3rd Street.
- The crosswalk at the intersection of 3rd Street and Kavaney Drive is heavily used.
- Many parents stop in the “No parking” zone to drop off students on 3rd Street.
- Traffic speed on 3rd Street is low to moderate (20-25 mph).
- Pavement markings in the intersection of Central Avenue and 3rd Street are not distinctively visible.

TALKED WITH: Lynn Wolf, Northridge Elementary
RECORDED BY: Swara Farheen
PROJECT: School Crossing Study
SUBJECT: School Crossing Issues
DATE: October 11, 2004

Observations and facts:

- October 11, 2004—Afternoon observation and the temperature was 75° F.
- October 12, 2004—Morning observation and the temperature was 45° F.
- The traffic peak occurred at 7:50-8:30 am and at 3:05-3:15 pm.
- There are three exits to the school: one onto 3rd Street (used by kindergarten, first grade, and fifth grade); the other two exits, (one used by third and sixth grades and the other used by second and fourth grades) exit onto the alley on the east side of the building and then connect to a sidewalk on 4th Street.
- There are approximately 629 students that attend Northridge Elementary; with 80 students in the blast program who stay until 3:00-6:00 pm.
- Northridge School is the largest (with respect to the number of students) school in Bismarck with one of the smallest playground/field areas.
- Currently, parents are told not to use the alley on the east side of the building. This alley connects Divide Avenue and 3rd Street and was used to drop off/pick up students. Students use this as a walkway to and from the playground area.
- Mr. Wolf said some parents sometimes drop off/ pick up their students in this alley especially in winter.
- A vehicle was observed with high speed through this alley. Vehicles were also observed parallel parked in the alley.
- Information about safety is included in the school newsletter. The school has participated in a Safety Week during the week of Labor Day. There are two adopt-a-cops who teach students about safety. They present to kindergartens, first graders, and second graders about safety.
- The school has a fenced playground.
- There are approximately 75 bicycle parking spaces, which the principal believes is adequate.
- The school has a bus loading zone on 3rd Street. The school provides bus loading supervision in the afternoon. Mr. Wolf and the bus zone supervisor said that many students cross 3rd Street without using the crosswalk.
- Mr. Wolf has observed many parents parking over the crosswalk and in the “No Parking” zone, which is unsafe for students using the crosswalk.
- Currently, the school has two handicapped parking spaces.
- 4th Street has high speed traffic (at times more than 30 mph).
- Approximately 50 students cross 4th Street.
- Currently, the school has a crossing guard who works from 8:05-8:35 am and from 3:05-3:35 pm at the crosswalk on 4th Street. This crosswalk has a sidewalk that connects to the

- school's entrance. This crossing has flashing beacons with a timer that flashes for about 45 minutes in the morning and in the afternoon.
- The traffic speed is high on Divide Avenue. There is a crosswalk at the Divide Avenue and 3rd Street intersection. This intersection has flashing beacons with a timer that flashes for about 45 minutes in the morning and in the afternoon. There is a crossing guard on duty from 8:05-8:35 am and 3:05-3:35 pm.
 - The principal identified that last year a middle school boy was hit by an elementary student's parent when dropping off a student at the intersection of Owens Avenue and 3rd Street. The accident occurred at approximately 7:30-7:45 am. Another elementary student was hit by a rear view mirror in the alley on the east side of the school.
 - The school has very small playground/green area for a large number of students.
 - Mr. Wolf said some parents sometimes drop-off/pick up their students in this alley especially in winter.
 - A vehicle was observed with high speed through this alley. Vehicles were also observed parallel parked in the alley.
 - The roadway in front of the school is 3rd Street. 3rd Street has a hill crest at the intersection of Kavaney Drive and 3rd Street. There is also a crosswalk at this intersection. The majority of students use these two crosswalks.
 - The street lighting is not adequate at the intersection of 3rd Street and Kavaney Drive, especially in the morning. The crosswalk on 3rd Street is heavily used by students. Some of the street lights on the west side of 3rd Street face the street and with proper uniformity could increase visibility at this crosswalk.
 - The crossing guards identified that traffic speed is high on both 4th Street and on Divide Avenue.
 - The head custodian is new to the school and could not identify any issues.

Problems:

- Pavement markings in the intersection of Central Avenue and 3rd Street are not distinctively visible.
- The yellow markings at the bus zone and in the "No Parking" zone are also faded.
- Vehicles make U-turns at the intersection of Kavaney Avenue and 3rd Street and the intersection of Owens Avenue and 3rd Street. A separate drop off zone is needed to prevent the U-turns.
- Many vehicles park in the crosswalks and in the "No Parking" area and there is not enough space to drop off or pick up students.
- Traffic speed is higher than 35 mph on both 4th Street and Divide Avenue.

Recommendations from the Principal:

- School needs a bigger playground.
- The intersection of Kavaney Avenue and 3rd Street needs brighter street lights to enhance the visibility of the crosswalk.
- The school needs more parking for parents and visitors.
- The school needs more crossing guards at the school's crosswalks.
- The pavement markings need to be repainted.

MEMO

Date: November 1, 2004

To: File

From: Swara Farheen

Re: School Crossing Study: Pioneer Elementary Observations



- October 13, 2004—Observation time was from 3:05-3:25 pm and the temperature was 48° F.
- October 18, 2004--Observation time was from 8:20-8:35 am and the temperature was 32° F.
- There are approximately 316 students that attend Pioneer Elementary School; with approximately 60 students in the blast program who stay until 3:00-6:00 pm.
- Students start arriving at school at 7:30 am.
- The playground is fenced.
- The number of bicycle parking is adequate.
- There are two main exits/entrances for this school. One is on the south side of the school building on Braman Avenue. The other one is on the west side of school building on 14th Street. The younger kids use 14th Street and the Braman Avenue entrance. The older kids use the 14th Street and the Laforest Avenue entrance.
- There is one crossing guard on duty in the crosswalk located on 16th Street and Braman Avenue. The crossing guard is on duty from 8:00-8:30 am and from 3:05-3:35 pm.
- There is no after-hour supervision in front of the school when students are waiting for their parents.
- Braman Avenue is used mostly by parents picking up/dropping off students. The older students are encouraged to use the northwest side entrance, so parents can wait for them either on Laforest Avenue or on 14th Street.
- Some parents double park on 14th Street and on Barman Avenue when picking up/dropping off students.
- Traffic speed on 14th Street, Laforest Avenue, 15th Street, and Braman Avenue is moderate.
- The intersection of Laforest Avenue and 15th Street has crosswalk signs. Pavement markings are not very distinct. Markings are on the west and the south side only.

- The intersection of Laforest Avenue and 14th Street has crosswalk signs. Pavement markings on the east and south side of the street only. Pavement marks are very light.
- The intersection of Braman Avenue and 15th Street has crosswalk signs on all legs. Pavement markings on all legs also. Markings are very light. A vehicle was parked in the crosswalk.
- Braman Avenue and 14th Street has crosswalk signs. Pavement markings on all legs. Vehicles were parked very close to the crosswalks and blocked visibility and vehicles were parked on the east leg over the crosswalk.
- Some parents use the “No Parking” area and the bus loading zone in front of the school entrance to pick up students. Vehicles were double parked in this area as well.
- The north leg of Braman Avenue and 16th Street has a crossing guard on duty for 30 minutes both in the morning and afternoon. There is a STOP sign on the east west side of that intersection. A crosswalk sign is located on the north south side.
- Traffic speed on 16th Street is higher than 20 mph. Vehicles were parked on both sides of 16th Street in the north leg, the vehicles blocked visibility of the crossing guard. The intersection has a crosswalk sign, but there are no signs before the intersection to slow down traffic.
- Street lighting is adequate.
- Most students use the south entrance in the morning.
- Some students are dropped off on Laforest Avenue so they can enter the playground directly.

TALKED WITH: Teresa Delorme, Pioneer Elementary
RECORDED BY: Swara Farheen
PROJECT: School Crossing Study
SUBJECT: School Crossing Issues
DATE: October 13, 2004

Observations and facts:

- October 13, 2004—Observation time was from 3:05-3:25 pm and the temperature was 48° F.
- October 18, 2004--Observation time was from 8:20-8:35 am and the temperature was 32° F.
- There are approximately 316 students that attend Pioneer Elementary School; with approximately 60 students in the blast program who stay until 3:00-6:00 pm.
- Information about safety is included in the school newsletter in the beginning of the school year. The school does not provide any announcements or classroom discussions about school crossing safety. The school does not have an adopt-a-cop this year. The school does not receive much education or additional programs on traffic safety.
- Currently, the school does not have any formal education for students about crosswalks or safe walk to school routes.
- Dr. Delorme said the number of current crosswalks is adequate.
- According to Dr. Delorme, most students receive rides from and to school from their parents; and approximately 40% (120) students walk.
- The playground is fenced.
- The number of bicycle parking spaces is adequate.
- There are no bus services for the school. There are two day care vans that pick up and drop off about 20 students per day.
- Staff parking is not adequate, so staff is forced to park on the surrounding streets.
- There is adequate handicapped parking for the school.
- There is not a traffic speed issue around the school area.
- There are two main exits/entrances for this school: one is on the south side of the school building on Braman Avenue and the other is on the west side of school building on 14th Street. The younger students use the 14th Street and the Braman Avenue entrance. The older students use the 14th Street and the Laforest Avenue entrance.
- There have been no accidents in last 3-5 years.
- There is one crossing guard on duty in the intersection of 16th Street and Braman Avenue from 8:00-8:30 am and from 3:05-3:35 pm.
- There is no after-hour supervision in front of the school when students are waiting for their parents.

Problems:

- Their main concern is the food/delivery loading area on the south side of the school and in the east side of the entrance. Vehicles tend to park there to pick up and drop off

- students, this becomes dangerous for students who are either waiting or playing in this area. There have been some close calls in this area.
- The crossing guard identified that 16th Street is a high speed area. There are vehicles parked on both sides of 16th Street. This reduces visibility for southbound vehicles and they cannot see the crossing guard until the crossing guard is in the middle of the street. Vehicles are traveling at high speeds at times when the crossing guard is in the middle of the street.
 - The head custodian identified the issue of the loading/unloading parking area on Braman Avenue. A “Do Not Enter” sign was placed in the entrance and that has seemed to correct the issue.

Recommendations from the Principal:

- Something needs to be done at the food/delivery loading area on the south side of the school and in the east side of the entrance. Vehicles tend to park there to pick up and drop off students, this becomes dangerous for students who are either waiting or playing in this area. There have been some close calls in this area.
- They are interested in materials and information/curriculum regarding crosswalk safety and pedestrian safety to educate elementary students.

TALKED WITH: Connie Herman, Prairie Rose Elementary School

RECORDED BY: Chowdhury Haider

PROJECT: School Crossing Study

SUBJECT: School Crossing Issues

DATE: October 5, 2004

Observations and facts:

- The school begins at 8:30 am and dismissal is at 3:05 pm.
- There are approximately 238 students at Prairie Rose School with one entrance in front of the school.
- The school informs the parents of traffic regulations letters.
- The principal estimates that approximately 80 to 85 percent of the students get dropped off by busses at the school entrance door.
- The school area has different signs—"Buckle Up", "Unauthorized Parking \$100 Fine", "Speed Limit", etc.
- In the front of school the speed limit is 15mph.
- Vehicle speeds are usually not an issue at this school.
- Playground location is all right, but the school doesn't have proper fencing along parts of the east side of the school. However, some parts of the east side are fenced.
- There are two handicapped parking spots and the school has adequate staff parking.
- The school has a designated bus loading and unloading area; however, busses are using parking lots for bus loading and unloading.
- In the parking area, the school has an entryway and exit driveway. The parking area is not adequate for parent parking. Two-way lanes exit in front of the school. At dismissal time, parents use the street for parking.
- There is adequate bicycle parking. There is no sidewalk around the school area; however, usually some students walk to school.
- The school has an afternoon crossing guard, the guard helps students cross the street.
- There are no flashing beacons associated with this school.
- The school has only one crosswalk in front of school parking lot.
- Four years ago, there was an accident near Oahe Bend. A student ran into a car with his bicycle.

Problems:

- Inadequate parent parking. Busses loading and unloading in the parking area which creates problems for traffic circulation. Parents make U-turns and back-up due to an inadequate traffic circulation area.
- Inadequate fencing on the east side of the school.
- Crossing guard needs to stay longer than 3:15 pm.

Recommendations from the Principal:

- Additional parking spaces for parents. The school doesn't have adequate parent parking, especially during special events.

- Concerned about the students' safety. The principal monitors the school traffic circulation system.
- Crossing guard needs to until to 3:30 pm.
- 80-85% of the students use the bus system, so a safe-route-to-school route is not required for Prairie Rose School.

TALKED WITH: Fran Rodenburg, Roosevelt Elementary
& Riverside Elementary

RECORDED BY: Donovan Slag

PROJECT: School Crossing Study

SUBJECT: School Crossing Issues

DATE: October 5, 2004

Observations and facts:

- There are 149 students at Roosevelt School.
- There are 106 students at Riverside School.
- Fran Rodenburg is the principal for both schools.
- There are no crossing guards at either school.
- In general, school safety is communicated to the students and parents through school system beliefs, family nights and school board policies.
- A "Police Youth Bureau" (PYB) officer is assigned to each school. Schools also participate in the "Adopt a Cop" program. The presence of law enforcement at drop-off and pick up times is minimal.
- The "Walk Your Child to School Day" has been very popular in past years; however, this year the PTO didn't want it to be a big event.
- Students begin gathering at Roosevelt between 7:00 to 7:15 am, many of these students are waiting for the bus that goes to Horizon Middle School.
- The worst traffic congestion occurs between 8:00 to 8:30 am and 2:50 to 3:15 pm.
- Riverside Elementary does not seem to have any major traffic problems or school crossing issues.
- Riverside has a before-school program and an after-school program that many students participate in.
- Traffic cones are used at Roosevelt on Avenue B. They are effective; however, it is difficult to retain them.
- Bus loading and unloading is not an issue. There haven't been any problems with vehicles parking in the bus loading zone.
- Handicapped parking is adequate at both schools.
- A supervisor is stationed in front of Roosevelt school from 3:00 to 3:15 pm to monitor students waiting for a ride.
- Most parents pick their children up on the north side of Roosevelt.

Problems at Roosevelt:

- Motorists don't yield well at the intersection of Avenue B and Anderson Street.
- East-west traffic travels too fast over the hill on Avenue B.
- Parents who are double parked or parked across the street occasionally will wave their children to their car, causing them to cross mid-block between cars.
- People generally don't respect the crosswalks; the addition of a new marked crosswalk will not dramatically improve the safety of the students.
- Not enough bicycle parking.

- There are some gaps in the fencing around the playground, students have run off.
- There is not enough parking for the faculty and for parents. The staff parking lot has about 16 spaces. Residents near the school have complained about parents parking in front of their property. Roosevelt Elementary holds staff development meetings for other teachers in the school district, resulting in more parking needs.
- A recommendation to have parents park in a certain area might not be an effective solution since it is difficult to change parent behavior. Suggestions to parents in newsletter aren't effective.
- Two accidents occurred last year at Griffin Street and Avenue B.
- A student was hit on Avenue B in front of Roosevelt a couple of years ago. It may have been caused by the parent waving their child to the vehicle.

Recommendations from the Principal:

- Need more law enforcement presence at both schools.
- Need a crossing guard on Avenue B or a signal would help.
- Traffic cones work well but they can't seem to keep them in stock, need to use a weighted cone or some other traffic control device that would not be stolen.
- Stop signs, preferably a four-way stop, would improve the safety at Avenue B and Griffin Street.
- Should have some bike parking on both sides (east and west) of Roosevelt school.

TALKED WITH: Ron Becker, Saxvik Elementary
RECORDED BY: Donovan Slag
PROJECT: School Crossing Study
SUBJECT: School Crossing Issues
DATE: October 1, 2004

Observations and facts:

- There are approximately 290 students at Saxvik School.
- Mr. Becker estimates that approximately 20 to 25 percent of the students that get dropped off by their parents are within walking distance of the school (less than 5 blocks distance).
- Older students have recess across the street on the east side of 22nd Street. There aren't any problems with students crossing here since 22nd Street has low traffic volumes. Playground location and fencing is adequate, especially the younger students' playground—that playground is completely fenced in.
- There is adequate parking for bikes, only a small minority of students ride bike to school. Mr. Becker said that a few students continue to ride bike well into the winter even during icy conditions.
- Morning drop-off is pretty much evenly distributed around the block, perhaps slightly more in the front (west side).
- The handicapped parking is adequate so long as non-handicapped people do not use that area. The only handicapped zone is on the west side near the front entrance. The east side does not have handicapped access, there are steps.
- The earliest students arrive at 7:30 am, breakfast starts at 7:45 am, school starts at 8:15 am, and dismissal is at 3:05 pm.
- There are no flashing beacons associated with this school.
- Safety is maintained by school staff presence outside during the loading and unloading time. Mr. Becker said he is out there every afternoon. The staff also visits with the students about school crossing safety.
- The school does not receive any input from law enforcement.
- Motorists yield well to students in the crosswalks.
- Vehicle speeds are usually not an issue at this school.
- There haven't been any accidents near the school in the last few years. A few blocks away a student ran into a car with his bike several years ago.

Problems:

- People parking at or partially blocking the crosswalk.
- Occasionally parents park illegally in the handicapped zone.
- Afternoon pick up time is more of a congestion problem than the morning drop-off time.
- Mr. Becker's biggest concern is students crossing on Rosser Avenue. There are a lot of students originating from the trailer court area near 26th Street. They need a safe location to cross Rosser Avenue.

- Motorists stop in through lane to pick up their children. Mr. Becker mentioned that it is usually the same people that do this and it is difficult to prevent them from doing that. It causes traffic to back up behind the stopped vehicle.
- School walk routes: students from areas to the west have to cross busy streets like East Avenue C and 16th Street. However if a new crosswalk was placed in one of these locations, it may not get enough use since it is difficult to funnel students to a certain crossing point.
- Parking is a problem for the staff. The staff parking lot is very small, most employees park on the streets. The available street parking only serves about a quarter of what the staff parking needs.

Recommendations from the Principal:

- Police presence makes a big difference; Mr. Becker said that even if they show up once a week it would have a large impact on the motorist's behavior. Any increase in patrolling would provide the most cost effective benefit.
- According to Mr. Becker, a crossing guard would provide benefit to any school. It would take care of issues such as vehicles parked too close to the crosswalks. A crossing guard on Rosser Avenue would allow students to cross safely to the south side. On 16th Street and East Avenue C areas, it wouldn't pay to have a crossing guard since it is difficult to focus pedestrians to a certain location.
- A parking lot addition would be unlikely to occur according to Mr. Becker, not only due to the cost but because there aren't any areas available for expansion.

TALKED WITH: Kathy Barnett, Solheim Elementary
RECORDED BY: Donovan Slag
PROJECT: School Crossing Study
SUBJECT: School Crossing Issues
DATE: October 1, 2004

Observations and facts:

- There are 510 students at Solheim School.
- There is a crossing guard on Washington Street near the intersection of Billings Drive.
- Students walking from the south follow the bike path up to the school.
- There is a flashing beacon on Washington Street that is activated by pushbutton and is on continuously during peak school traffic times. (Beacon is on at 7:45 am).
- There is always a staff member watching the students after school.
- Parents are informed of safety issues in a monthly newsletter.
- Students hear about safety issues nearly every day, 90% of the evening announcements made by Kathy Barnett talk about safety issues.
- There is fencing all around the entire school.
- Bicycle parking is adequate.
- A lot of parents don't park along the east-west portion of Munich Drive where there is plenty of parking available.

Problems:

- Two children have been hit at the intersection of Reno Drive and Munich Drive (east leg of intersection).
- Parents stop in the through lane to pick up children.
- Many parents don't like to pull into the diagonal parking slots because it is difficult to back out into the traffic.
- Traffic is too fast on Washington Street.
- There have been many near-miss accidents in the one way area.
- Motorists who park legally in the handicapped zone do not get out of their vehicle for their non-handicapped child.
- Vehicles from the staff parking lot leave in the driveway that is marked as entrance, causing congestion.
- Some motorists disobey the flashing beacon on Washington Street.
- Near the driveway marked "Entrance" there is a sidewalk on the south side, however, there is no crosswalk marked.

Recommendations from the Principal:

- A crossing guard is needed on the east leg of the Munich Drive and Reno Drive intersection.
- More law enforcement presence is necessary.
- Staff parking needs to be marked with signage.
- More parking areas in the front of the school would only cause more safety issues.

- More yellow paint is needed on some curbs in the area, especially near the one way entrance.
- Daycare vans have asked for a special loading zone, Kathy did not think that would be practical.
- Add sign that says “No right turn between 3:00-3:30” at the south leg of the intersection of Munich Drive and Reno Drive.

TALKED WITH: Jason Hornbacher, Will-Moore Elementary
RECORDED BY: Swara Farheen
PROJECT: School Crossing Study
SUBJECT: School Crossing Issues
DATE: October 6, 2004

Observations and facts:

- October 6, 2004—Observation time was in the afternoon and the temperature was 38°F.
- October 12, 2004—Observation time was in the morning and the temperature was 81°F degrees.
- The traffic peak occurred from 8:00-8:30 am and from 3:00–3:20 pm.
- There are approximately 295 students that attend Will-Moore Elementary; approximately 25 students stay after school until 3:00-6:00 pm.
- Students usually start arriving at 7:45 am.
- According to Mr. Hornbacher information about traffic safety and safety about crosswalks is included into the yearly newsletter. The school has an adopt-a-cop, who presents to kindergartners, first graders, and second graders about traffic safety for the last three years.
- The Assistant Principal works as a morning greeter every morning; he watches traffic on East Avenue E which is the roadway in front of the main entrance. The principal also watches traffic in the afternoon on East Avenue E two to three times a week.
- The school has adequate crosswalks and bicycle parking.
- The playground and fencing is adequate.
- The school has adequate staff and handicapped parking.
- Currently, the school has 3 buses that pick up 50-70 students and one daycare van that picks up 5 students per day. There are no issues about the bus loading/unloading zone.
- The traffic signs are adequate around the school area.
- Slow down cones are put on the intersection of East Avenue E and 4th Street, the intersection of East Avenue E and 5th Street, and the intersection of East Avenue F and 4th Street every morning and afternoon.
- The 7th Street and East Avenue E intersection have flashing beacons and pedestrian buttons. 7th Street is a one-way with high speed traffic.
- There were no major accidents in the last 3-5 years.
- A crossing guard works in the intersection of 4th Street and East Avenue E works 8:00-8:30 am and 3:05-3:35 pm. The intersection of 7th Street and East Avenue E has a crossing guard that works from 7:50-8:20 am and from 3:05-3:35 pm. This intersection has only the afternoon crossing guard working right now, there are in the process of finding a replacement for the morning crossing guard.
- Mr. Hornbacher likes the idea of the safe-route-to-school map.
- The head custodian, Daren Heim, identified parents crossing 5th Street behind the bus loading/unloading zone area without using the crosswalk. He also observed parents making U-turns in front of the main entrance of the school on East Avenue E in the morning.

Problems:

- The traffic speed on 4th Street and 5th Street is higher than 25 mph.
- Staff uses East Avenue E for on-street parking.
- High speed on 4th Street and 7th Street and students cross 4th Street without using the crosswalk.
- Parents double park on East Avenue E to pick up/drop off students.
- Parents park in the “No Parking” area.

Recommendations from the Principal:

- Regulating speed on 4th Street and 7th Street.
- Enforce double parking and no parking in signed areas.

Crash Analysis Report

Introduction

A crash analysis was completed for adjacent streets and intersections at all schools using the latest available crash history from the NDDOT, which includes “reportable crashes” occurring between January 1, 2001 and July 31, 2004. A “reportable crash” includes only those crashes reported to the Bismarck Police Department and also exceed \$1000 in property damage, an injury or a death. Due to the volume of crash history, individual investigating officer reports were not reviewed. Only the NDDOT crash history database information was used for the analysis. The goal of the crash history analysis is to determine if there are any physical or regulatory modifications that could be implemented in an attempt to reduce the potential and/or severity of crashes. However, many locations may not have readily identifiable solutions to reduce the potential for crashes.

Angle, left-turn and head-on crashes are often the most severe. While head-on crashes are usually infrequent, high frequencies of angle or left-turn collisions often suggest that traffic control devices and motorist visibility be evaluated. Rear end crashes, while often the most frequent; are usually less severe than angle, left-turn or head-on crashes. Rear end crashes are often associated with traffic congestion, stop signs and traffic signals. Minimizing motorist distractions, confusion, and congestion while maximizing motorist visibility are treatments that may reduce rear end crashes. Side swipe crashes are typically low frequency and are often associated with motorist distraction, congestion, parking maneuvers and/or poor weather conditions (ice/compacted snow, snow, wet or frost) with varying corrective measures. Non collisions are single vehicle crashes involving objects such as a fence, guard rail, snow bank, tree, sign or even a roll-over.

The following crash analysis of individual schools is reported in the alphabetical order of the schools.

Summary of Crash Analysis & Recommendations:

There were no engineering issues cited as contributing factors to the crashes. Many of the crashes were related to failure to yield, driver distraction and/or poor weather conditions. To improve visibility of students in school crossings, the recommendation is restrict parking within 25 feet of all school crossings. Another recommendation is to consider placing higher priority street maintenance practices near school crossings, such as sanding during snow/ice conditions. Several schools have traffic signals located nearby. It is recommended to review traffic signal timing for appropriate clearance intervals (yellow and all-red phases of the signal) and for appropriate pedestrian phase “walk” time, particularly with regard to providing enough time for crossing guards to complete their crossing activity.

The ratio of nighttime to daytime crashes was also determined. Typically if this ratio is over 2.0 street lighting may be justified, and if the ratio is between 1.0 and 2.0 street lighting may be considered. In the analysis, no school areas had a ratio approaching 2.0 or greater; therefore no additional lighting is recommended based upon crash history alone.

Crash Analysis Report

1. Centennial Elementary School

Table 1.1 summarizes the crashes that occurred at the intersection nodes and segment links surrounding the Centennial Elementary School study area. A total of 15 crashes occurred during the analysis period. A majority of these crashes may be due to driver inattention, distractions or poor weather conditions (ice/compacted snow, snow or wet). There were 10 crashes due to poor weather during the analysis period. The highest crash location includes two intersections with 6 crashes each at the Century Avenue/Ithica Drive intersection and at the Century Avenue/Aspen Avenue intersection.

The Century Avenue/Ithica Drive intersection had 1 rear-end, 3 angular, 1 left-turn and 1 non-collision type crash. The non-collision type crash involved two northbound children being struck by a westbound vehicle that failed to yield due to attention distraction in dry weather. One angular crash involved a southbound and an eastbound vehicle as the southbound vehicle failed to yield in dry condition. The second angular crash involved a southbound and an eastbound vehicle in snow condition as the southbound vehicle failed to yield. The third angular crash involved a northbound and a westbound vehicle as the northbound vehicle failed to yield due to ice and compacted snow conditions. The 1 rear-end collision involved two westbound vehicles as the rear vehicle was going too fast in wet weather and could not stop for the lead vehicle. The left-turn crash involved a westbound vehicle and a left-turning eastbound vehicle that failed to yield.

The Century Avenue/Aspen Avenue intersection had 5 angular crashes and one non-collision type crash. All of the angular crashes were in poor weather conditions involving a southbound and a westbound vehicle. The vehicles were going too fast for the poor weather conditions and could not stop and slid to hit the other vehicle. The 1 non-collision type crash involved an eastbound vehicle going too fast in wet weather, which lost control and struck the retaining wall adjacent to the sidewalk.

Crash Analysis Report

Table 1.1: Crash Summary Table for Centennial Elementary School

	Location	Number of Collision				Characteristics					Total
		2001	2002	2003	2004	Alcohol Related	Poor Weather	After Dark	Injuries	Fatalities	
Intersection	Century Ave & Ithica Drive	1	3	1	1	0	3	0	3	0	6
	Ithica Drive & Stevens Street	0	0	1	0	0	0	0	1	0	1
	W Century Ave & Springfield St	0	1	0	0	0	1	0	1	0	1
	West Century ave & Aspen Ave	0	1	3	2	0	6	0	0	0	6
Segment	Ithica Dr. bet Stevens & Springfield	0	0	1	0	0	0	0	1	0	1
	Totals	1	5	6	3	0	10	0	6	0	15

Table 1.2 summarizes the different crash types around Centennial Elementary School study area.

Table 1.2: Crash type around Centennial Elementary School

Location	Collision Type*				
	RE	A	LT	SW	O
Century Ave & Ithica Drive	1	3	1		1-ped
Ithica Drive & Stevens Street					1-pole
W Century Ave & Springfield St			1		
West Century ave & Aspen Ave		5			1
Ithica Dr. bet Stevens & Springfield					1
Totals	1	8	2	0	4

Table 1.3 shows crash history during different periods of time for Centennial Elementary School study area. There were 14 crashes that occurred in the daylight and 1 crash occurred at night. The ratio of night to day crashes is 0.1.

Crash Analysis Report

Table 1.3: Crash history during different period of time for Centennial Elementary School

Location	Collision Time			
	Day	Night	Dusk	Dawn
Century Ave & Ithica Drive	6			
Ithica Drive & Stevens St		1		
Century Ave & Springfield St	1			
Century Ave & Aspen Ave	6			
Ithica Dr. between Stevens & Springfield	1			
Totals	14	1	0	0

Recommendations:

Based on a review of the crash history, there are no geometric or traffic control modifications recommended to minimize crashes. A number of crashes occurred near school crossing during poor weather conditions. The recommendation is to consider placing higher priority street maintenance practices near school crossings, such as sanding during snow/ice conditions.

2. Dorothy Moses Elementary School

Table 5.1 summarizes the crashes that occurred at the intersection nodes and segment links surrounding the Dorothy Moses Elementary School study area. A total of 13 crashes occurred during the analysis period. A majority of these crashes may be due to several factors: driver inattention or distractions, weather conditions (ice/compacted snow), sight blocked due to parked car or collision with objects such as fence, light pole or street signs. There were 5 crashes (38%) due to poor weather, which includes ice/ compacted snow. A total of 11 intersection crashes occurred in that study area and 2 segment crashes.

The highest number of crashes (4) occurred at the Omaha Drive and 3rd Street intersection, and all were angular crashes. Two of these crashes involved a southbound and a westbound vehicle as a vehicle failed to yield. The other two crashes involved a northbound and an eastbound vehicle as a vehicle failed to yield.

Crash Analysis Report

Table 2.1: Crash Summary Table for Dorothy Moses Elementary School

	Location	Number of Collision				Characteristics					Total
		2001	2002	2003	2004	Alcohol Related	Poor Weather	After Dark	Injuries	Fatalities	
Intersection	3 rd St. & Tulsa Dr.	0	0	1	0	1	0	1	1	0	1
	Omaha Dr. and 3 rd St.	1	1	1	1	0	1	1	2	0	4
	Wichita Dr. and 3 rd St.	1	0	0	0	0	1	1	0	0	1
	3 rd St. and Reno Dr.	0	1	0	1	0	2	1	1	0	2
	Denver Ave. & 3 rd St.	0	0	0	1	0	1	0	0	0	1
	3 rd St. & Wachter Ave.	0	1	0	0	0	0	0	1	0	1
Segment	Bismarck Expy. & 2 nd St.	0	1	0	0	0	0	0	1	0	1
	Columbia Dr. between Omaha Dr. & Tulsa Dr.	0	0	1	0	0	0	0	0	0	1
	3 rd St. between Omaha Dr. & Wichita Dr.	1	0	0	0	0	0	0	1	0	1
	Totals	3	4	3	3	1	5	4	7	0	13

Table 2.2 shows different types of crashes within the study area. There were 2 rear-end crashes, 5 angle crashes, 1 side-wipe crash and 5 crashes of non-collision type. There were 2 crashes with bicycles, 1 crash with a pedestrian and 1 crash with a light pole.

Table 2.2: Crash Type around Dorothy Moses Elementary School

Location	Collision Type*				
	RE	A	LT	SW	O
3rd St. & Tulsa Dr.					1-pole
Omaha Dr. & 3rd St.		4			
Wichita Dr. & 3rd St.					1
3rd St. & Reno Dr.	1				1
Denver Ave. & 3rd St.	1-ped				
3rd St. & Wachter Ave.		1-cycle			
Bismarck Expy. & 2nd St.					1-cycle
Columbia Dr. between Omaha & Tulsa Dr.				1	
3rd St. between Omaha Dr. & Wichita Dr.					1
Totals	2	5	0	1	5

*RE-Rear End; A-Angle; LT-Left Turn; SW-Sideswipes; O-Other (Non-coll. w/Motor Veh., Head-On)

Crash Analysis Report

Table 2.3 shows crashes occurring during different period of time for the Dorothy Moses Elementary study area. There were a total of 13 crashes including intersections and segments. Of the 13 crashes, 9 crashes occurred in the daylight, 3 crashes occurred after dark and 1 crash occurred at dawn. The ratio of night to day crashes is 0.3.

Table 2.3: Crash history during different period of time for Moses Elementary School

Location	Collision Time			
	Day	Night	Dusk	Dawn
3rd St. & Tulsa Dr.				1
Omaha Dr. & 3rd St.	3	1		
Wichita Dr. & 3rd St.		1		
3rd St. & Reno Dr.	1	1		
Denver Ave. & 3rd St.	1			
3rd St. & Wachter Ave.	1			
Bismarck Expy. & 2nd St.	1			
Columbia Dr. between Omaha Dr. & Tulsa Dr.	1			
3rd St. between Omaha Dr. & Wichita Dr.	1			
Totals	9	3	0	1

Recommendations:

Based on a review of the crash history, the recommendation is to improve visibility at school crossings by restricting parking within 25 feet of the school crossings. Several crashes occurred near school crossing during poor weather conditions. The recommendation is to also consider placing higher priority street maintenance practices near school crossings, such as sanding during snow/ice conditions.

3. Grimsrud Elementary School

Table 3.1 summarizes the crashes that occurred at the intersection nodes the Grimsrud Elementary School study area. There were no segment crashes around this study area. A total of 2 crashes occurred during the analysis period. One of these crashes was a rear-end type due to mechanical failure of the vehicle. The crash occurred in ice or compacted snow condition also after dark. The other crash was rear-end type due to driver’s inattention. There were no injuries involved.

Crash Analysis Report

Table 3.1: Crash Summary Table for Grimsrud Elementary School

	Location	Number of Collision				Characteristics					Total
		2001	2002	2003	2004	Alcohol Related	Poor Weather	After Dark	Injuries	Fatalities	
Intersection	St. Benedict Dr. & North Griffin St.	0	1	0	0	0	1	1	0	0	1
	Turnpike Avenue & Bell Street	0	1	0	0	0	0	0	0	0	1
	Totals	0	2	0	0	0	1	1	0	0	2

Table 3.2 shows different types of crashes around the study area. Both crashes were rear-end type. Table 3.3 shows the crash history occurring during different period of time for Grimsrud Elementary School. Of the 2 crashes, 1 crash occurred in the daylight and 1 crash occurred after dark. The ratio of night to day crashes is 1.

Table 3.2: Crash Type around Grimsrud Elementary School

Location	Collision Type*				
	RE	A	LT	SW	O
**St. Benedict Dr. & Griffin Street	1				
Turnpike Avenue & Bell Street	1				
Totals	2	0	0	0	0

*RE-Rear End; A-Angle; LT-Left Turn; SW-Sideswipes; O-Other (Non-coll. w/Motor Veh., Head-On)

**The collision was due to mechanical problem of the vehicle.

Table 3.3: Crash during different period of time for Grimsrud Elementary School

Location	Collision Time			
	Day	Night	Dusk	Dawn
St. Benedict Dr. & North Griffin St.		1		
Turnpike Avenue & Bell Street	1			
Totals	1	1	0	0

Crash Analysis Report

Recommendations:

Based on a review of the crash history there are no geometric, traffic control or maintenance practice modifications recommended to minimize crashes.

4. Highland Acres Elementary School

Table 4.1 shows the crashes that occurred at the intersection nodes and segment links surrounding the Highland Acres Elementary School study area. There was only 1 crash during the analysis period in this study area. The driver was under the influence of alcohol, lost control of the vehicle and hit a tree. It occurred at daylight and in snow conditions. Table 4.2 shows the collision type. Table 4.3 shows the crash history during different period of time for Highland Acres Elementary School. The ratio of night to day crashes is 0.

Table 4.1: Crash Summary Table for Highland Acres Elementary School

	Location	Number of Collision				Characteristics					Total
		2001	2002	2003	2004	Alcohol Related	Poor Weather	After Dark	Injuries	Fatalities	
Segment	W. Coulee Road between Highland Acres Road & Pioneer Drive	0	0	1	0	1	1	0	0	0	1
	Totals	0	0	1	0	1	1	0	0	0	1

Table 4.2: Crash type around Highland Acres Elementary School

Location	Collision Type*				
	RE	A	LT	SW	O
W. Coulee Road between Highland Acres Road & Pioneer Drive					1-tree

*RE-Rear End; A-Angle; LT-Left Turn; SW-Sideswipes; O-Other (Non-coll. w/Motor Vehicle, Head-On)

Table 4.3: Crash history during different period of time for Highland Acres Elementary School

Location	Collision Time			
	Day	Night	Dusk	Dawn
W. Coulee Road between Highland Acres Road & Pioneer Drive	1			

Crash Analysis Report

Recommendations:

Based on a review of the crash history, there are no geometric, traffic control or maintenance practice modifications recommended to minimize crashes.

5. Jeannete Myhre Elementary School

Table 5.1 summarizes the 67 crashes that occurred at the intersection nodes and segment links surrounding the Jeannete Myhre Elementary School study area. A majority of these crashes may be due to several factors such as driver inattention or distractions, failure to yield, poor weather conditions or non-collisions. There were 26 crashes (39%) with poor weather during the analysis period.

The highest number of crashes (34) occurred at the East Bismarck Expressway and South 12th Street intersection, which is also where there is the most traffic. There were 13 rear-end crashes, 5 angle crashes, 10 left-turn crashes and 6 non-collision crashes.

There were 13 rear-end crashes at this intersection, 7 occurring with the eastbound vehicles. Three of these crash occurred with the northbound vehicles, two occurring with the westbound vehicles and one occurring with southbound vehicles. There were 10 left-turn crashes. Most of these crashes occurred with the westbound vehicles turning left and colliding with the eastbound through vehicles. Of the 5 angle crashes, the first crash occurred with a southbound and westbound vehicle as the vehicle failed to yield due to attention distraction. The second angle crash involved a northbound, westbound and a southbound vehicle in wet weather as a vehicle failed to yield and ran a red light. The third angle crash was with a southbound and a westbound vehicle as the vehicle was going too fast on ice and ran a red light. The fourth angle crash occurred with a westbound and a northbound vehicle as a vehicle failed to yield due to attention distraction in frost condition. The fifth angle crash involved a northbound and an eastbound vehicle as a vehicle was going too fast in icy conditions.

A total of 19 segment crashes occurred in this study area during the analysis period. The two segments that had many crashes were Bismarck Expressway between 18th Street and 12th Street, and 12th Street on the west side of the school between Bismarck Expressway and Arbor Avenue. These two segments each had 7 crashes. Of particular interest are those on 12th Street near the school crossing. This segment of 12th Street had 3 angular crashes. One of these crashes involved an eastbound 11 year old on a bicycle cycle as the northbound vehicle failed to yield. The driver was blinded by the glare coming from opposite vehicle. The second crash was with a westbound and a southbound vehicle as the vehicle failed to yield. The third crash was with a northbound and a westbound vehicle in wet weather as the driver failed to yield due to a vision obstruction.

There were 18 crashes of non-collision type in this study area during the analysis period. These crashes involved single vehicles crashing into a park sign, fence, tree, or snow bank.

Crash Analysis Report

Table 5.1: Crash Summary Table for Jeannete Myhre Elementary School

	Location	Number of Collision				Characteristics					Total
		2001	2002	2003	2004	Alcohol Related	Poor Weather	After Dark	Injuries	Fatalities	
Intersection	12 th St. & Arbor Ave.	0	2	3	0	1	2	2	0	0	5
	Boehm Dr. & Michigan Ave.	1	0	0	0	0	0	0	1	0	1
	16 th St. & 17 th St.	0	2	1	0	2	2	3	1	0	3
	18 th St. & Bismarck Expy.	0	1	3	1	0	2	0	0	0	5
	Bismarck Expy. & 12 th St.	9	7	13	5	1	13	8	11	0	34
Segment	Boehm Dr. between Michigan & 16 th St.	0	1	0	0	0	1	0	0	0	1
	16 th St. between Boehm Dr. & 17 th St.	1	2	0	0	0	2	1	0	0	3
	17 th St. between 16 th St. & 18 th St.	0	1	0	0	0	1	1	1	0	1
	Bismarck Expy. Between 18 th & 12 th St.	1	5	1	0	2	2	3	2	0	7
	12 th St. between Bismarck Expy. & Arbor	3	0	4	0	0	1	2	3	0	7
	Totals	15	21	25	6	6	26	20	19	0	67

Table 5.2 shows different types of crashes within the study area. There were 22 rear-end crashes, 10 angle crashes, 14 left-turn crashes, 3 side-wipe crash and 18 crashes of non-collision type.

Table 5.2: Crash type around Jeannete Myhre Elementary School

Location	Collision Type*				
	RE	A	LT	SW	O
12 th St. & Arbor Ave.	4				1
Boehm Dr. & Michigan Ave.					1
16 th St. & 17 th St.					3
18 th St. & Bismarck Expy.	1	2	1	1	
Bismarck Expy. & 12 th St.	13	5	10		6
Boehm Dr. between Michigan Ave. & 16 th St.			1		
16 th St. between Boehm Dr. & 17 th St.					3
17 th St. between 16 th St. & 18 th St.					1
Bismarck Expy. between 18 th St & 12 th St.	2		2	1	2
12 th St. between Bismarck Expy. & Arbor Ave.	2	3		1	1
Totals	22	10	14	3	18

*RE-Rear End; A-Angle; LT-Left Turn; SW-Sideswipes; O-Other (Non-coll. w/Motor Veh. , Head-On)

Table 5.3: Crash history during different period of time for Jeannete Myhre Elementary School

Crash Analysis Report

Location	Collision Time			
	Day	Night	Dusk	Dawn
12 th St. & Arbor Ave.	3	2		
Boehm Dr. & Michigan Ave.	1			
16 th St. & 17 th St.		3		
18 th St. & Bismarck Expy.	5			
Bismarck Expy. & 12 th St.	27	6	1	
Boehm Dr. between Michigan Ave. & 16 th St.	1			
16 th St. between Boehm Dr. & 17 th St.	2	1		
17 th St. between 16 th St & 18 th St.		1		
Bismarck Expy. between 18 th St. & 12 th St.	4	3		
12 th St. between Bismarck Expy. & Arbor Ave.	5	2		
Totals	48	18	1	0

Table 5.3 shows the crash history during different period of time for the study area. Throughout the study area there were a total of 67 crashes including intersections and segments. Of the 67 crashes, 48 crashes occurred during daylight and 18 crashes occurred during dark. The ratio of night to day crashes is 0.38.

Recommendations:

There were no engineering issues cited as contributing factors to any of the crashes. The recommendations based on the crash analysis are to review traffic signal timing for adequate clearance intervals (yellow and all-red phase), and for adequate walk time intervals with particular consideration given to the time required for the crossing guards. A number of crashes occurred near school crossing during poor weather conditions. Another recommendation is to consider placing higher priority street maintenance practices near the school crossings, such as sanding during snow/ice conditions.

6. Northridge Elementary School

Table 6.1 summarizes the crashes that occurred at the intersection nodes and segment links surrounding the Northridge Elementary School study area. A total of 32 crashes occurred during the analysis period. A majority of these crashes may be due to several factors including driver inattention or distractions, and weather conditions (ice/compacted snow, snow, or wet). There were 25 intersection crashes and 7 segment crashes in the study area. There were 10 crashes due to poor weather (31%) during the analysis period which includes ice/compacted snow, snow or wet weather.

The highest amount of crashes (11) occurred at the Divide Avenue/4th Street intersection. There were 6 rear-end crashes, 3 angular crashes and 2 left-turning crashes. One of the angular crashes involved a southbound, an eastbound and a westbound vehicle in dry weather as a vehicle failed to yield after running a red light. The second angular crash involved a southbound, an eastbound and a northbound vehicle in snow condition as a

Crash Analysis Report

vehicle ran a red light. Among the 2 left-turn crashes, the first one occurred with a southbound and a left turning eastbound vehicle. The crash occurred due to defective equipment. The second crash occurred after dark with a southbound and a left turning northbound vehicle. The left turning vehicle failed to yield.

Table 6.1: Crash Summary Table for Northridge Elementary School

	Location	Number of Collision				Characteristics					Total
		2001	2002	2003	2004	Alcohol Related	Poor Weather	After Dark	Injuries	Fatalities	
Intersection	Central Ave. & 3 rd St.	0	1	0	0	0	1	0	0	0	1
	Central Ave. & 4 th St.	1	1	3	0	1	3	0	2	0	5
	Divide Ave. & 4 th St.	4	4	3	0	0	4	2	1	0	11
	Divide Ave. & 3 rd St. (south side of Divide)	2	1	2	0	0	0	0	0	0	5
	3 rd St. & Divide Ave. (north of Divide)	1	1	0	0	0	0	0	1	0	2
	3 rd St. & Owens Ave.	0	1	0	0	0	0	0	1	0	1
Segment	4 th St. between Central & Divide Ave	1	2	2	0	0	2	4	1	0	5
	Divide Ave. between 4 th St. & 3 rd St.	0	0	2	0	0	0	0	0	0	2
	Totals	9	11	12	0	1	10	6	6	0	32

Table 6.2 shows different crash types within the study area. There were 16 rear-end crashes, 5 angle crashes, 5 left-turning crashes, 4 side-swipe crashes and 2 non-collision type crashes. There was 1 crash that involved a pedestrian at the intersection of 3rd Street and Owens Avenue.

Table 6.2: Crash type around Northridge Elementary School

Location	Collision Type*				
	RE	A	LT	SW	O
Central Ave. & 3 rd St.	1				
Central Ave. & 4 th St.	3	2			
Divide Ave. & 4 th St.	6	3	2		
Divide Ave. & 3 rd St. (south side of Divide)	1		3		1
3 rd St. & Divide Ave. (north of Divide)	2				
3 rd St. & Owens Ave.					1-ped
4 th St. between Central & Divide Ave.	1			4	
Divide Ave. between 4 th St. & 3 rd St.	2				
Totals	16	5	5	4	2

*RE-Rear End; A-Angle; LT-Left Turn; SW-Sideswipes; O-Other (Non-coll. w/Motor Veh., Head-On)

Crash Analysis Report

Table 6.3 shows the crash history during different period of time for the study area. Of the 32 crashes, 25 crashes occurred in the daylight, 6 crashes occurred after dark and 1 crash occurred at dusk. The ratio of night to day crashes is 0.2.

Table 6.3: Crash history during different period of time for Northridge Elementary School

Location	Collision Time			
	Day	Night	Dusk	Dawn
Central Ave. & 3 rd St.	1			
Central Ave. & 4 th St.	5			
E. Divide Ave. & 4 th St.	9	2		
Divide Ave. & 3 rd St. (south side of Divide)	4	1		
3 rd St. & Divide Ave. (north side of Divide)	2			
3 rd St. & Owens Ave.	1			
4 th St. between Central & Divide Ave.	1	3	1	
Divide Ave. between 4 th St. & 3 rd St.	2			
Totals	25	6	1	0

Recommendations:

There were no engineering issues cited as contributing factors to any of the crashes. The recommendations based on the crash analysis are to review traffic signal timing for adequate clearance intervals (yellow and all-red phase), and for adequate walk time intervals. A number of crashes occurred near school crossing during poor weather conditions. Another recommendation is to consider placing higher priority street maintenance practices near the school crossings, such as sanding during snow/ice conditions.

7. Pioneer Elementary School

Table 7.1 summarizes the 16 crashes that occurred at the intersection nodes and segment links surrounding the Pioneer Elementary School study area. A majority of these crashes may be due to driver inattention or distractions, or weather conditions. There were 7 crashes due to poor weather (44%) during the analysis period which includes ice/compacted snow, snow or wet weather.

The intersections that had the most crashes were at Braman Avenue/14th Street, and Braman Avenue/13th Street with 3 crashes each. The Braman Avenue/14th Street intersection had 1 rear-end, 1 angle and 1 sideswipe crash. The angular crash was with a northbound and a westbound vehicle as a vehicle failed to yield to the right. The Braman Avenue/13th Street intersection had 3 angular crashes. One of the angular crashes was with a northbound and a westbound vehicle in ice/compacted snow condition as the vehicles slid due to weather. The second crash was with a southbound and a westbound vehicle as a vehicle failed to yield to the right. The third crash was at dusk with an

Crash Analysis Report

eastbound and a northbound vehicle in ice/compacted snow condition as a vehicle failed to yield to the right.

Table 7.1: Crash Summary Table for Pioneer Elementary School

	Location	Number of Collision				Characteristics					Total
		2001	2002	2003	2004	Alcohol Related	Poor Weather	After Dark	Injuries	Fatalities	
Intersection	14 th St. & Braman Ave.	1	2	0	0	0	1	2	0	0	3
	14 th St. & LaForest Ave.	0	0	2	0	0	1	0	0	0	2
	15 th St. & LaForest Ave.	1	0	1	0	0	0	0	2	0	2
	15 th St. & Hanaford Ave.	0	0	1	0	0	1	0	0	0	1
	13 th St. & Hanaford Ave.	0	0	1	0	0		0	0	0	1
	Braman Ave. & 13 th St.	0	2	0	1	0	2	1	0	0	3
	13 th St. & LaForest Ave.	0	0	1	0	0	1	1	0	0	1
Segment	Braman Ave. between 13 th St. & 14 th St.	0	0	0	1	0	0	0	1	0	1
	Hanaford Ave. between 14 th St & 15 th St.	0	0	0	2	0	1	0	0	0	2
	Totals	2	4	6	4	0	7	4	3	0	16

Table 7.2 shows different crash types within the Pioneer Elementary School study area. There were 2 rear-end crashes, 9 angle crashes, 3 side-wipe crashes and 2 non-collision types crashes. There was 1 crash that involved a bicycle at the intersection of 15th Street/LaForest Avenue. There was 1 crash that hit a tree along Braman Avenue between 13th Street and 14th Street.

Table 7.2: Crash Type around Pioneer Elementary School

Location	Collision Type*				
	RE	A	LT	SW	O
14 th St. & Braman Ave.	1	1		1	
14 th St. & LaForest Ave.		2			
15 th St. & LaForest Ave.		2 (1 bicycle)			
15 th St. & Hanaford Ave.		1			
13 th St. & Hanaford Ave.				1	
Braman Ave. & 13 th St.		3			
13 th St. & LaForest Ave.					1
Braman Ave between 13 th St. & 14 th St.					1-tree
Hanaford Ave. between 14 th St. & 15 th St.	1			1	
Totals	2	9	0	3	2

Crash Analysis Report

Table 7.3 shows crash history during different period of time for Pioneer Elementary School study area. There were 12 crashes that occurred in the daylight, 3 crashes that occurred after dark and 1 crash occurred at dusk. The ratio of night to day crashes is 0.3.

Table 7.3: Crash history during different period of time for Pioneer Elementary School

Location	Collision Time			
	Day	Night	Dusk	Dawn
14 th St. & Braman Ave.	1	2		
14 th St. & LaForest Ave.	2			
15 th St. & LaForest Ave.	2			
15 th St. & Hanaford Ave.	1			
13 th St. & Hanaford Ave.	1			
Braman Ave. & 13 th St.	2		1	
13 th St. & LaForest Ave.		1		
Braman Ave. between 13 th St. & 14 th St.	1			
Hanaford Ave. between 14 th St. & 15 th St.	2			
Totals	12	3	1	0

Recommendations:

Based on a review of the crash history, there are no geometric or traffic control modifications recommended to minimize crashes. A number of crashes occurred near school crossing during poor weather conditions. The recommendation is to consider placing higher priority street maintenance practices near school crossings, such as sanding during snow/ice conditions.

8. Prairie Rose Elementary School

Table 8.1 summarizes the 12 crashes that occurred at the intersection nodes and segment links surrounding the Prairie Rose Elementary School study area. A majority of these crashes may be due to several factors: driver inattention or distractions, under influence of alcohol or drugs, non-collision type with deer, fence or bicycle, poor weather conditions, bus accident, motorcycle or car rollover and vision obstruction. There were 3 crashes due to poor weather (25%) during the analysis period which includes ice/ compacted snow, wet weather or frost. There were 6 crashes that occurred after dark. There were 2 crashes that were alcohol or drug related and 5 crashes that involved deer.

Crash Analysis Report

Table 8.1: Crash Summary Table for Prairie Rose Elementary School

	Location	Number of Collision				Characteristics					Total
		2001	2002	2003	2004	Alcohol Related	Poor Weather	After Dark	Injuries	Fatalities	
Intersection	48th Ave. & Sibley Rd.	1	0	0	0	0	0	0	0	0	1
	ND 1804 & 48th Ave.	2	1	0	0	2	2	1	1	0	3
Segment	Oahe Bend between Sibley & Apple Creek Rd.	1	0	0	0	0	0	0	1	0	1
	Sibley Rd. between Oahe Bend & 48th Ave.	0	0	1	2	0	0	3	1	0	3
	48th Ave. between ND 1804 & Sibley Rd.	1	0	0	0	0	0	0	0	0	1
	ND 1804 between 48th Ave. & Angus Drive	2	1	0	0	0	1	2	0	0	3
	Totals	7	2	1	2	2	3	6	3	0	12

Table 8.2 summarizes different crash types occurring within the study area. There were 2 rear-end crashes, 1 angle crash, 1 side-wipe crash, 4 non-collision type crashes, 5 crashes with deer, 1 crash with a fence, 1 crash with a bicycle.

Table 8.2: Crash type around Prairie Rose Elementary School

Location	Collision Type*				
	RE	A	LT	SW	O
48 th Ave. & Sibley Rd.	1				
48 th Ave. & ND 1804	1	1			1
Oahe Bend between Sibley & Apple Creek Rd.					1 bicycle
Sibley Rd. between Oahe Bend & 48th Ave.					3 (2 deer)
48 th Ave between ND 1804 & Sibley Rd.					1-deer
ND 1804 between 48th Ave. & Angus Drive				1	2-deer
Totals	2	1	0	1	8

*RE-Rear End; A-Angle; LT-Left Turn; SW-Sideswipes; O-Other (Non-coll. w/Motor Veh., Head-On)

Crash Analysis Report

Table 8.3: Crash history during different period of time for Prairie Rose Elementary School

Location	Collision Time			
	Day	Night	Dusk	Dawn
48 th Ave. & Sibley Rd.	1			
ND 1804 & 48th Ave.	2		1	
Oahe Bend between Sibley & Apple Creek Rd.	1	3		
Sibley Rd. between Oahe Bend & 48th Ave.				
48 th Ave. between ND 1804 & Sibley Rd.				1
ND 1804 between 48th Ave. & Angus Dr.	1	2		
Totals	5	5	1	1

Table 8.3 shows crash history during different periods of time for Prairie Rose Elementary School study area. There were 5 crashes that occurred in the daylight, 5 crashes that occurred after dark, 1 crash occurred at dusk and 1 crash occurred at dawn. The ratio of night to day crashes is 1.0.

Recommendations:

Based on a review of the crash history, the recommendations are to plan for future neighborhood sidewalks or multi-use trails to connect residential areas to the school. A number of crashes occurred near school crossing during poor weather conditions. The recommendation is to consider placing higher priority street maintenance practices near the school crossings and loading zone in front of the school, such as sanding during snow/ice conditions.

9.Richholt Elementary School

Table 9.1 summarizes the 19 crashes that occurred at the intersection nodes and segment links surrounding the Richholt Elementary School study area. A majority of these crashes around Richholt Elementary School may be due to several factors: driver inattention or distractions, weather conditions or with other parked vehicles. There were 10 crashes (53%) that occurred due to poor weather which involved ice or compacted snow, snow and wet weather conditions.

The three intersections that have the most crashes are at 13th Street/Avenue E, 14th Street/Avenue C and 13th Street/Avenue C. There were 3 angle crashes at 13th Street/Avenue E. The first crash was with a westbound and a northbound vehicle in dry conditions as the vehicle failed to yield to the right. The second crash involved a northbound and an eastbound vehicle in dry conditions as one of the vehicles failed to yield to the right. The third crash involved a southbound and an eastbound vehicle in ice/compacted snow as one of the vehicle slid while backing.

The 14th Street/Avenue C intersection had 1 rear-end, 1 angle and 1 left-turn crash. The angular crash was with an eastbound and a southbound vehicle as one of the vehicles

Crash Analysis Report

failed to yield. The left-turn crash was with an eastbound and a left-turning westbound vehicle as the turning vehicle failed to yield.

Table 9.1: Crash Summary Table for Richholt Elementary School

	Location	Number of Collision				Characteristics					Total
		2001	2002	2003	2004	Alcohol Related	Poor Weather	After Dark	Injuries	Fatalities	
Intersection	13 th St. & Ave. E	1	0	2	0	0	1	1	0	0	3
	14 th St. & Ave. E	0	1	0	1	0	1	1	1	1	2
	14 th St. & Ave. D	0	0	1	0	0	0	1	0	0	1
	14 th St. & Ave. C	0	2	1	0	0	1	0	0	0	3
	Ave. C & 13 th St.	0	2	1	0	0	1	0	0	0	3
	16 th St. & Boulevard Ave.	0	0	1	0	0	0	0	1	1	1
Segment	14 th St. between Ave. E & Ave. D	0	1	0	0	0	1	1	0	0	1
	14 th St. between Ave. C & Ave. D	0	0	0	2	0	2	1	0	0	2
	Ave. C between 13 th St. & 14 th St.	1	1	0	0	0	2	0	1	1	2
	13 th St. between Ave. C & Ave. D	1	0	0	0	0	1	0	0	0	1
	Totals	3	7	6	3	0	10	5	3	3	19

The 13th Street/Avenue C intersection had 3 angular crashes. One angular crash involved a northbound and a westbound vehicle in dry conditions as one of the vehicles failed to yield. The second crash involved a southbound and an eastbound vehicle in dry conditions as one of the vehicle failed to yield. The third crash involved a westbound and a northbound vehicle in ice/compacted snow as one of the vehicle failed to yield.

Table 9.2 shows different crash types within the study area. There were 3 rear-end crashes, 11 angle crashes, 1 left-turn crash, 1 side-wipe crash and 3 crashes of non-collision type. The non-collision type included 1 crash with a bicycle, 1 head-on crash and 1 crash that was a hit-and-run case where a vehicle crashed into the school building.

Crash Analysis Report

Table 9.2: Crash type around Richholt Elementary School

Location	Collision Type*				
	RE	A	LT	SW	O
13 th St. & Ave. E		3			
14 th St. & Ave. E		2			
**14 th St. & Ave. D					1
14 th St. & Ave. C	1	1	1		
13 th St. & Ave. C		3			
16 th St. & Boulevard Ave.					1 bicycle
14 th St. between Ave. E & Ave. D		1			
14 th St. between Ave. C & Ave. D	2				
Ave. C between 13 th St. & 14 th St.		1			1 head-on
13 th St. between Ave. C & Ave. D				1	
Totals	3	11	1	1	3

* RE-Rear End; A-Angle; LT-Left Turn; SW-Sideswipes; O-Other (Non-coll. w/Motor Veh, Head-On)

**crashed into the school building at the 14th St. & Ave. D intersection.

Table 9.3: Crash history during different period of time for Richholt Elementary School

Location	Collision Time			
	Day	Night	Dusk	Dawn
13 th St. & Ave. E	2	1		
14 th St. & Ave. E	1	1		
14 th St. & Ave. D		1		
14 th St. & Ave. C	3			
Ave. C & 13 th St.	3			
16 th St. & Boulevard Ave.	1			
14 th St. between Ave. E & Ave. D		1		
14 th St between Ave. C & Ave. D	1	1		
Ave. C between 13 th St. & 14 th St.	2			
13 th St. between Ave. C & Ave. D	1			
Totals	14	5	0	0

Throughout the Richholt Elementary School study area there were a total of 19 crashes. Of the 19 crashes, 14 crashes occurred in the daylight and 5 crashes occurred after dark. The ratio of night to day crashes is 0.3.

Recommendations:

Based on a review of the crash history, there are no geometric or traffic control modifications recommended to minimize crashes. A number of crashes occurred near school crossings during poor weather conditions. The recommendation is to consider placing higher priority street maintenance practices near school crossings, such as sanding during snow/ice conditions.

Crash Analysis Report

10. Rita Murphy Elementary School

Table 10.1 summarizes the 9 crashes that occurred at the intersection nodes and segment links surrounding the Rita Murphy Elementary School study area. There were 3 crashes (33%) due to poor weather which includes ice/compacted snow or wet weather. The highest number of crashes (4) occurred at the intersection of Rosser Avenue/Eastdale Drive. Only 1 segment crash occurred in this study area during the analysis period. There were no crashes after dark. Injuries resulted out of 4 of the 9 crashes.

The Rosser Avenue/Eastdale Drive intersection had the highest number of crashes in this study area. There were 2 angle crashes, 1 left-turn crash and 1 side-wipe crash. One angular crash was with a northbound and a westbound vehicle as one of the vehicle failed to yield after stop. The second angular crash was with a southbound and an eastbound vehicle as one of the vehicles failed to yield. The left-turning crash was with an eastbound and a westbound vehicle as the eastbound left turning vehicle failed to yield due to attention distraction. The side-wipe crash was with two eastbound vehicles and the reason was unclear.

Table 10.1: Crash Summary Table for Rita Murphy Elementary School

	Location	Number of Collision				Characteristics					Total
		2001	2002	2003	2004	Alcohol Related	Poor Weather	After Dark	Injuries	Fatalities	
Intersection	31 st St. & Ave. C	0	0	0	1	0	1	0	0	0	1
	Rosser Ave. & Eastdale Dr.	1	1	2	0	0	0	0	2	0	4
	31 st St. & Ave. A	0	0	1	1	0	0	0	2	0	2
	31 st St. & Ave. C	0	0	1	0	0	1	0	0	0	1
Segment	31 st St. between Ave. A & Ave. B	0	0	1	0	0	1	0	0	0	1
	Totals	1	1	5	2	0	3	0	4	0	9

Table 10.2 shows different crash types occurring in the study area. There were 4 angle crashes and 3 left-turning crashes in the entire study area.

Crash Analysis Report

Table 10.2: Crash type around Rita Murphy Elementary School

Location	Collision Type*				
	RE	A	LT	SW	O
31 st St. & Ave. C			1		
Rosser Ave. & Eastdale Dr.		2	1	1	
31 st St. & Ave. A		2			
31 st St. & Ave. C			1		
31 st St. between Ave. A & Ave. B				1	
Totals	0	4	3	2	0

*RE-Rear End; A-Angle; LT-Left Turn; SW-Sideswipes; O-Other (Non-coll. w/Motor Veh., Head-On)

Of the 9 crashes in the study area, all occurred during daylight. The ratio of night to day crashes is 0.

Table 10.3: Crash history during different period of time for Rita Murphy Elementary School

Location	Collision Time			
	Day	Night	Dusk	Dawn
31 st St. & Ave. C	1			
Rosser Ave. & Eastdale Dr.	4			
31 st St. & Ave. A	2			
31 st St. & Ave. C	1			
31 st St. between Ave. A & Ave. B	1			
Total	9	0	0	0

Recommendations:

Based on a review of the crash history, there are no geometric or traffic control modifications recommended to minimize crashes. Several crashes occurred near school crossings during poor weather conditions. The recommendation is to consider placing higher priority street maintenance practices near school crossings, such as sanding during snow/ice conditions.

11. Riverside Elementary School

Table 11.1 summarizes the 5 crashes that occurred at the intersection nodes and segment links surrounding the Riverside Elementary School study area. There was 1 crash (20%) due to poor weather, which is ice or compacted snow during the analysis period. There were 4 crashes that involved injuries. There were 2 crashes at the intersection nodes and 3 crashes occurred in segment links.

The intersection of Washington Street/Arbor Avenue had 2 crashes, the highest number of crashes with both being non-collision type crashes. Both of these crashes involved pedestrians. One of the crashes involved a 10 year old and a left turning vehicle, while and the other involved a 52 year old and a vehicle. This intersection is 3 blocks away from the school, across the street from Wal-Mart and includes a traffic signal.

Crash Analysis Report

Table 11.1: Crash Summary Table for Riverside Elementary School

	Location	Number of Collision				Characteristics					Total
		2001	2002	2003	2004	Alcohol Related	Poor Weather	After Dark	Injuries	Fatalities	
Intersection	Washington St. & Arbor Ave.	2	0	0	0	0	0	1	2	0	2
Segment	Griffin St. between Sweet Ave. & Memorial Highway	1	0	0	0	0	1	1	1	0	1
	Garden Dr. between Bowen Ave. and Anderson St.	0	0	1	0	0	0	0	0	0	1
	Washington St. between Arbor Ave. and Ivy Ave.	1	0	0	0	0	0	0	1	0	1
	Totals	4	0	1	0	0	1	2	4	0	5

Table 11.2 shows the different crash types that occurred in the study area. There were 2 angle crashes and 3 crashes with non-collision type. There were 4 crashes that involved pedestrians. Among them 2 crashes involved a 5 year old and 10 year old.

Table 11.2: Crash type around Riverside Elementary School

Location	Collision Type*				
	RE	A	LT	SW	O
Washington St. & Arbor Ave.					2-ped
Griffin St. between Sweet Ave. & Memorial Highway					1-ped
Garden Dr. between Bowen Ave. and Anderson St.		1			
Washington St. between Arbor Ave. and Ivy Ave.		1-ped			
Totals	0	2	0	0	3

*RE-Rear End; A-Angle; LT-Left Turn; SW-Sideswipes; O-Other (Non-coll. w/Motor Veh. , Head-On)

Table 11.3: Crash history during different period of time for Riverside Elementary School

Location	Collision Time			
	Day	Night	Dusk	Dawn
Washington St. & Arbor Ave.	1	1		
Griffin St. between Sweet Ave. & Memorial Highway		1		
Garden Dr. between Bowen Ave. and Anderson St.	1			
Washington St. between Arbor Ave. and Ivy Ave.	1			
Totals	3	2	0	0

Crash Analysis Report

Throughout the study area there were a total of 5 crashes, 3 occurred during daylight and 2 occurred during dark. The ratio of night to day crashes is 0.6.

Recommendations:

There were no engineering issues cited as contributing factors to any of the crashes. The recommendations based on the crash analysis are to review traffic signal timing for adequate clearance intervals (yellow and all-red phase), and for adequate walk time intervals at the Washington Street/Arbor Avenue traffic signal.

12. Robert Miller Elementary School

Table 12.1 summarizes the 3 crashes that occurred at the intersection nodes and segment links surrounding the study area during the analysis period. There were 2 crashes due to poor weather (67%), which includes ice or compacted snow and frost. There was 1 crash that caused injuries and 1 crash that occurred after dark. There was one angle crash at each of the intersections of 23rd Street/ Jackson Avenue and 22nd Street/Grant Avenue. The crash at 23rd Street/Jackson Avenue involved a westbound and a northbound vehicle in frosty condition at dawn with no reason cited for the crash. The crash at the 22nd Street/Grant Avenue intersection involved an eastbound and a northbound vehicle in ice/compacted snow condition and no reason given for the crash.

Table 12.1: Crash Summary Table for Robert Miller Elementary School

	Location	Number of Collision				Characteristics					Total
		2001	2002	2003	2004	Alcohol Related	Poor Weather	After Dark	Injuries	Fatalities	
Intersection	23 rd St & Jackson Ave.	0	0	1	0	0	1	0	1	0	1
	22 nd St & Grant Ave.	0	1	0	0	0	1	0	0	0	1
Segment	Grant Dr. between Harding Ave. & 23 rd St.	1	0	0	0	0	0	1	0	0	1
	Totals	1	1	1	0	0	2	1	1	0	3

Table 12.2 shows the crash types that occurred in the study area in the analysis period. There were 2 angle crashes and 1 side-wipe crash. Table 12.3 shows the different collision time for the study area during the analysis period. Of the 3 crashes, 1 crash occurred during daylight, 1 at dawn, and 1 crash occurred during dark. The ratio of night to day crashes is 1.

Crash Analysis Report

Table 12.2: Crash type around Robert Miller Elementary School

Location	Collision Type*				
	RE	A	LT	SW	O
23 rd St. & Jackson Ave.		1			
22 nd St. & Grant Ave.		1			
Grant Dr. between Harding Ave. & 23 rd St.				1	
Totals	0	2	0	1	0

*RE-Rear End; A-Angle; LT-Left Turn; SW-Sideswipes; O-Other (Non-coll. w/Motor Veh., Head-On)

Table 12.3: Crash history during different period of time for Robert Miller Elementary School

Location	Collision Time			
	Day	Night	Dusk	Dawn
23 rd St. & Jackson Ave.				1
22 nd St. & Grant Ave.	1			
Grant Dr. between Harding Ave. & 23 rd St.		1		
Totals	1	1	0	1

Recommendations:

Based on a review of the crash history, there are no geometric or traffic control modifications recommended to minimize crashes. One of the crashes occurred near a school crossing during poor weather conditions. The recommendation is to consider placing higher priority street maintenance practices near school crossings, such as sanding during snow/ice conditions.

13. Roosevelt Elementary School

Table 13.1 summarizes the 11 crashes that occurred at the intersection nodes and segment links surrounding the Roosevelt Elementary School study area. A majority of these crashes may be due to several factors: driver inattention or distractions, weather conditions (ice/compacted snow or wet) or collision with pedestrian. There were 3 crashes (27%) due to poor weather. There were 7 intersection crashes and 4 segment crashes in the study area.

The intersection of Rosser Avenue/Custer Park Street had the highest number of crashes with 2 crashes. There was 1 rear-end and 1 angular crash at that intersection. The angular crash was with an eastbound and a southbound vehicle as one of the vehicles failed to yield.

Crash Analysis Report

Table 13.1: Crash Summary Table for Roosevelt Elementary School

	Location	Number of Collision				Characteristics					Total
		2001	2002	2003	2004	Alcohol Related	Poor Weather	After Dark	Injuries	Fatalities	
Intersection	Hannifin St. & Ave. B	0	0	1	0	0	1	0	0	0	1
	Raymond St. & Ave. B	1	0	0	0	0	0	0	0	0	1
	Raymond St. & Ave. A	0	1	0	0	0	0	0	0	0	1
	Rosser Ave. & Custer Park St.	0	0	2	0	0	0	0	0	0	2
	Rosser Ave. & Hannifin St.	0	0	1	0	0	1	0	0	0	1
	Ave. B & Washington St.	0	0	1	0	0	0	1	1	0	1
Segment	Ave. B between Hannifin St. & Raymond St.	0	0	0	1	0	0	0	0	0	1
	Rosser Ave. between Hannifin & Raymond St.	1	0	0	0	0	1	0	0	0	1
	Rosser Ave. between Mandan & Washington St.	1	0	0	0	0	0	0	1	0	1
	Griffin St. between Ave. A & Ave. B	1	0	0	0	0	0	0	1	0	1
Totals		4	1	5	1	0	3	1	3	0	11

Table 13.2 shows the different crash types in the study area. There were 2 rear-end crashes, 3 angle crashes, 2 side-wipe crashes and 4 crashes of non-collision type. Three crashes involved pedestrians.

Table 13.2: Crash type around Roosevelt Elementary School

Location	Collision Type*				
	RE	A	LT	SW	O
Hannifin St. & Ave. B		1			
Raymond St. & Ave B		1			
Raymond St. & Ave A					1
Rosser Ave. & Custer Park St.	1	1			
Rosser Ave. & Hannafin St.	1				
Ave. B & Washington St.					1-ped
Ave. B between Hannafin St. & Raymond St.				1	
Rosser Ave. between Hannafin St. & Raymond St.				1	
Rosser Ave. between Mandan St. & Washington St.					1-ped
Griffin St. between Ave. A & Ave. B					1-ped
Totals	2	3	0	2	4

*RE-Rear End; A-Angle; LT-Left Turn; SW-Sideswipes; O-Other (Non-coll. w/Motor Veh. Head-On)

Crash Analysis Report

Table 13.3: Crash history during different period of time for Roosevelt Elementary School

Location	Collision Time			
	Day	Night	Dusk	Dawn
N Hannifin St. & Ave. B	1			
Raymond St. & Ave. B	1			
Raymond St. & Ave. A	1			
Rosser Ave. & Custer Park St.	2			
Rosser Ave. & Hannafin St.	1			
Ave. B & Washington St.		1		
Ave. B between Hannafin St. & Raymond St.	1			
Rosser Ave. between Hannafin St. & Raymond St.	1			
Rosser Ave. between Mandan St. & Washington St.	1			
Griffin St. between Ave. A & Ave. B	1			
Totals	10	1	0	0

Of the 11 crashes, 10 crashes occurred in the daylight and 1 crash occurred after dark. The ratio of night to day crashes is 0.1.

Recommendations:

Based on a review of the crash history, there are no geometric or traffic control modifications recommended to minimize crashes. Several crashes occurred near school crossing during poor weather conditions. The recommendation is to consider placing higher priority street maintenance practices near school crossings, such as sanding during snow/ice conditions.

14. Saxvik Elementary School

Table 14.1 summarizes the 11 crashes that occurred at the intersection nodes and segment links surrounding the Saxvik Elementary School study area. A majority of these crashes may be due to several factors including driver inattention or distractions, weather conditions (ice/compacted snow or muddy), mechanical problem of the vehicle. There were 6 crashes (55%) due to poor weather. A total of 8 intersection crashes and 3 segment crashes occurred in this study area during the analysis period.

The highest number of crashes (3) occurred at the intersection of 21st Street/Avenue B. There were 2 rear-end crashes and 1 side-wipe crash. The rear-end crashes were with southbound vehicles and the side-wipe crash involved a northbound and an eastbound vehicle.

Crash Analysis Report

Table 14.1: Crash Summary Table for Saxvik Elementary School

	Location	Number of Collision				Characteristics					Total
		2001	2002	2003	2004	Alcohol Related	Poor Weather	After Dark	Injuries	Fatalities	
Intersection	23rd St. & Ave. D	0	1	1	0	0	1	1	0	0	2
	23rd St. & East Ave A	1	0	0	0	0	0	0	1	0	1
	22nd St. & Rosser Ave.	0	1	0	1	1	1	1	1	0	2
	21st St. & Ave. B	0	2	1	0	0	2	1	0	0	3
Segment	23rd St. between Ave. A & Ave. D	1	0	0	0	0	1	0	0	0	1
	21st St. between Rosser Ave. & Ave. B	0	1	0	0	0	1	1	0	0	1
	21st St. between Ave. B & Ave. D	0	0	1	0	0	0	0	0	0	1
Totals		2	5	3	1	1	6	4	2	0	11

Table 14.2 shows different crash types for the study area. There were 3 rear-end crashes, 2 angle crashes, 1 left-turn crash, 2 side-wipe crashes and 3 crashes with non-collision types. There was 1 crash that involved pedestrian.

Table 14.2: Crash type around Saxvik Elementary School

Location	Collision Type*				
	RE	A	LT	SW	O
23rd St. & Ave. D		2			
23rd St. & Ave. A					1
22nd St. & Rosser Ave.	1				1-ped
21st St. N & Ave. B	2			1	
23rd St. between Ave. A & Ave. D			1		
21st St. between Rosser Ave. & Ave. B					1
21st St. between Ave. B & Ave. D				1	
Totals	3	2	1	2	3

*RE-Rear End; A-Angle; LT-Left Turn; SW-Sideswipes; O-Other (Non-coll. w/Motor Veh., Head-On)

Table 14.3 shows 11 crashes occurring at different period of time for the analysis period. Of the 11 crashes, 7 crashes occurred in the daylight and 4 crashes occurred after dark. The ratio of night to day crashes is 0.6.

Crash Analysis Report

Table 14.3: Crash history during different period of time for Saxvik Elementary School

Location	Collision Time			
	Day	Night	Dusk	Dawn
23rd St. & Ave. D	1	1		
23rd St. & Ave. A	1			
22nd St. & Rosser Ave.	1	1		
21st St. & Ave. B	2	1		
23rd St. between Ave. A & Ave. D	1			
21st St. between Rosser Ave. & Ave. B		1		
21st St. between Ave. B & Ave. D	1			
Totals	7	4	0	0

Recommendations:

Based on a review of the crash history, there are no geometric or traffic control modifications recommended to minimize crashes. Several crashes occurred near school crossing during poor weather conditions. The recommendation is to consider placing higher priority street maintenance practices near school crossings, such as sanding during snow/ice conditions.

15. Solheim Elementary School

Table 15.1 summarizes the 10 crashes that occurred at the intersection nodes and segment links surrounding the Solheim Elementary School study area. These crashes may be due to several factors: driver inattention or distractions or poor weather conditions (wet weather). There were 4 crashes that involved injuries during the analysis period. The highest number of crashes (5) occurred at the intersection of Washington Street/Munich Drive. The intersection had 2 rear-end and 3 angular crashes. All of the angle crashes involved a southbound and an eastbound vehicle in dry condition. The first crash occurred as a vehicle failed to yield with the driver’s vision obscured by another vehicle. The second crash was also due to failing to yield. The third crash was as the driver’s attention was distracted and failed to yield.

Crash Analysis Report

Table 15.1: Crash Summary Table for Solheim Elementary School

	Location	Number of Collision				Characteristics					Total
		2001	2002	2003	2004	Alcohol Related	Poor Weather	After Dark	Injuries	Fatalities	
Intersection	Stuttgart St. & Munich Dr.	0	0	0	1	0	0	0	0	0	1
	Washington St. & Munich Dr.	2	3	0	0	0	1	0	4	0	5
	Washington St. & Billings Ave.	0	1	0	0	0	1	0	0	0	1
Segment	Munich Dr. between Stuttgart Dr. & Reno Dr.	2	0	0	0	0	0	0	0	0	2
	Washington St. between Billings Ave. & Corporate Limits	0	0	1	0	0	0	1	0	0	1
Totals		4	4	1	1	0	2	1	4	0	10

Table 15.2 shows crash types around the study area. There were 3 rear-end crashes, 5 angle crashes, 1 side-wipe crash and 1 crash with a deer.

Table 15.2: Collision type around Solheim Elementary School

Location	Collision Type*				
	RE	A	LT	SW	O
Stuttgart St. & Munich Dr.		1			
Washington St. & Munich Dr.	2	3			
Washington St. & Billings Ave.	1				
Munich Dr. between Stuttgart Dr. & Reno Dr.		1		1	
Washington St. between Billings Ave. & Corporate Limits					1-deer
Totals	3	5	0	1	1

*RE-Rear End; A-Angle; LT-Left Turn; SW-Sideswipes; O-Other (Non-coll. w/Motor Veh., Head-On)

Table 15.3: Crash history during different period of time for Solheim Elementary School

Location	Collision Time			
	Day	Night	Dusk	Dawn
Stuttgart St. & Munich Dr.	1			
Washington St. & Munich Dr.	5			
Washington St. & Billings Ave.	1			
Munich Dr. between Stuttgart Dr. & Reno Dr.	1			1
Washington St. between Billings Ave. & Corporate Limits		1		
Totals	8	1	0	1

Crash Analysis Report

Throughout the study area there were a total of 10 crashes including intersections and segments. Of the 10 crashes, 8 crashes occurred in the daylight, 1 crash occurred after dark and 1 crash occurred at dawn. The ratio of night to day crashes is 0.1.

Recommendations:

Based on a review of the crash history, there are no geometric, maintenance or traffic control modifications recommended to minimize crashes.

16. Will More Elementary School

Table 16.1 summarizes the 10 crashes that occurred at the intersection nodes and segment links surrounding the study area. There were 4 crashes (40%) due to poor weather which includes ice or compacted snow, wet weather and frost during the analysis period. There were 4 crashes that caused injuries and 3 crashes occurred after dark.

The highest amount of crashes at one location was tied with 2 crashes each at 3 intersections: 4th Street/Avenue F, 5th Street/Avenue F, and 5th Street/Avenue E. The 4th Street/Avenue F intersection had 1 rear-end and 1 left-turn crash. The 5th Street/Avenue F intersection had 1 angle crash and 1 non-collision type crash with a light pole. The angular crash was with a northbound and an eastbound vehicle as a vehicle failed to yield and struck the other vehicle on right side. The 5th Street/Avenue E intersection had 2 angular crashes. One crash involved a northbound and an eastbound vehicle as a vehicle did not yield to right of way in ice/compacted snow condition after dark. The second crash was with an eastbound and a southbound vehicle as a vehicle failed to yield due to vision obstruction by a parked bus in wet weather.

Table 16.1: Crash Summary Table for Will More Elementary School

	Location	Number of Collision				Characteristics					Total
		2001	2002	2003	2004	Alcohol Related	Poor Weather	After Dark	Injuries	Fatalities	
Intersection	4 th St. & Ave. F	0	2	0	0	0	0	0	1	0	2
	5 th St. & Ave. F	1	0	1	0	1	1	1	0	0	2
	5 th St. & Ave. E	1	0	1	0	0	2	1	0	0	2
	4 th St. & Ave. E	1	0	0	0	0	0	1	0	0	1
	9 th St. & Ave. D	0	1	0	0	0	1	0	1	0	1
	7 th St. & Ave. C	0	1	0	0	0	0	0	1	0	1
	9 th St. & Ave. C	0	1	0	0	0	0	0	1	0	1
Totals		3	5	2	0	1	4	3	4	0	10

Crash Analysis Report

Table 16.2 summarizes the different crash types that occurred around the study area. There were 6 angle crashes and 4 crashes that were non-collision type. There were 3 crashes that involved pedestrians. A pedestrian crash at the intersection of 9th Street/Avenue D involved a vehicle going the wrong way and too fast for the compacted snow conditions. The second pedestrian crash was at the intersection of 7th Street/Avenue C had no clear contributing factors. The third pedestrian crash was at the intersection of 9th Street/Avenue C and involved a vehicle with failure to yield and improper backing and turning.

Table 16.2: Crash types around Will More Elementary School

Location	Collision Type*				
	RE	A	LT	SW	O
4 th St. & Ave. F	1		1		
5 th St. & Ave. F		1			1-pole
5 th St. & Ave. E		2			
4 th St. & Ave. E		1			
9 th St. & Ave. D					1-ped
7 th St. & Ave. C					1-ped
9 th St. & Ave. C					1-ped
Totals	1	4	1	0	4

*RE-Rear End; A-Angle; LT-Left Turn; SW-Sideswipes; O-Other (Non-coll. w/Motor Veh. , Head-On)

Throughout the study area there were a total of 10 crashes including intersections and segments. Table 16.3 shows the different crash time periods for the study area. Of the 10 crashes, 7 crashes occurred during daylight and 3 crashes occurred during dark. The ratio of night to day crashes is 0.43.

Table 16.3: Crash history during different period of time for Will More Elementary School

Location	Collision Time			
	Day	Night	Dusk	Dawn
4 th St. & Ave. F	2			
5 th St. & Ave. F	1	1		
5 th St. & Ave. E	1	1		
4 th St. & Ave. E		1		
9 th St. & Ave. D	1			
7 th St. & Ave. C	1			
9 th St. & Ave. C	1			
Totals	7	3	0	0

Recommendations:

Based on a review of the crash history, there are no geometric or traffic control modifications recommended to minimize crashes. Several crashes occurred near school crossing during poor weather conditions. The recommendation is to consider placing

Crash Analysis Report

higher priority street maintenance practices near school crossings, such as sanding during snow/ice conditions.