430 IACC Building – Fargo, ND 58105
Tel 701-231-8058 – Fax 701-231-1945
www.ugpti.org – www.atacenter.org

School Safety Study for Ben Franklin, Kelly, and Viking Elementary Schools

Final Report

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Prepared for:
Safe Kids of Grand Forks

Prepared by:
Advanced Traffic Analysis Center
Upper Great Plains Transportation Institute
North Dakota State University
Fargo, North Dakota

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1.0 INTRODUCTION

The Grand Forks School District, the City of Grand Forks, and the Grand Forks-East Grand Forks Metropolitan Planning Organization (MPO) have received comments regarding pedestrian safety around three elementary schools: Ben Franklin, J. Nelson Kelly, and Viking. SAFE KIDS Grand Forks has organized a Pedestrian Safety Task Force to address safety issues regarding getting children to and from school safely. A grant has been awarded by Federal Express to help with this process. The Task Force has retained ATAC to offer specific recommendations to improve the pedestrian safety around the schools. It should be pointed out that a city-wide school crossing study was performed in the year 2000 and several enhancements to pedestrian safety have been made over the past few years.

2.0 OBJECTIVES

The main objectives of this study are to evaluate the current traffic circulation and pedestrian safety conditions, identify safety issues, and propose enhancements for addressing these issues. ATAC will review and analyze the existing conditions around the schools based on site visits and school survey information. ATAC will primarily base their recommendations on a site visit conducted at each school and provide short-term and medium/long-term recommendations on the following:

- School facilities (including parking areas)
- School bus and parent pick-up and drop-off locations
- Traffic and pedestrian circulation within and around the school property
- Traffic control devices

3.0 DESCRIPTION OF STUDY AREAS

This study analyzes the pedestrian safety and traffic circulation of the Ben Franklin, Kelly, and Viking Elementary Schools. Descriptions of the schools' roadway characteristics, traffic control and pavement markings, parking characteristics, and pedestrian activities are provided in the following sections.

3.1 Ben Franklin Elementary School

Ben Franklin Elementary School is located along 20th St. between 11th Ave. S. and Westward Dr. (shown in Figure 1). The school has approximately 325 (2004) students ranging from kindergarten to 5th grade. The school is bordered


Westward Drive
Ben Franklin
Elementary School
20th St. S.
11th Ave. S.

by residential properties on all sides except for the west side, which consists of Ben Franklin Park.

Roadway Characteristics

Ben Franklin Elementary School can be accessed from both 20th St. and 11th Ave. S. Twentieth St., which is located east of the school, is a two-lane collector with an average daily traffic (ADT) of 4,700 near the school (2005 traffic counts). Eleventh Ave. S., located south of the school, is a two-lane local street with an ADT of 1,000 near the school area. A turnout lane on 11th Ave. S. provides a pick-up and drop-off zone for the school.

The area around the turnout lane provides several access points for pedestrians. Two sidewalks are located within the boulevard between the turnout lane and 11th Ave. S. It should be noted that neither of the two sidewalks provide curb ramps for disabled individuals. Crosswalks are designated at the sidewalks for crossing 11th Ave. S. In addition, two driveways exist along the north side of the turnout lane, which allow pedestrians access to the turnout lane. The east driveway accesses the turnout lane, while the west driveway is aligned with the east sidewalk and crosswalk.

The posted speed limits for 20th St. and 11th Ave. S. prior to entering the school zone are both 25 mph. Speed limits are reduced to 20 mph along 20th St. and 11th Ave. S. when children are present. In addition, speeds are reduced to 15 mph at key crosswalks when flashing beacons are active (start/end times).

Street parking around Ben Franklin is restricted on the side of the street closest to the school (near side). Parking is prohibited, except for buses, on the west side of 20th St. (east side of the school). In addition, parking is restricted along the north side of 11th Ave. S. by the turnout lane.

Traffic Control and Pavement Markings

Traffic control devices in the vicinity of Ben Franklin are primarily two-way stop control. Since 20th St. is the major street within the school area, the approaches of Westward Dr. and 11th Ave. S. operate under stop control.

In 1997, Parents for Safe Kids (PFSK) was formed at Ben Franklin Elementary School. The group consists of parents that volunteer as crossing guards one day per week. During the afternoon dismissal time, the crossing guards are located at the crosswalks on 11th Ave. S. and within the turnout lane.

Crosswalk markings around the area showed significant signs of wear. Most of the crosswalks were difficult to identify; however, this is common during the spring for our geographical area due to the materials and equipment used for snow and ice removal. It should be noted that 11th Ave. S. has seven pedestrian crosswalks between 20th St. and Westward Dr., providing motorists with an abundance of school crossing signs.

Parking Characteristics

Ben Franklin has a north parking lot off of 20th St., which is limited to school staff and MASH (an after school program) vehicles. Parents primarily use the turnout lane and 11th Ave. S. to drop-off and pick-up students, and to a lesser extent the east side of 20th St.

Pedestrian Activity

Ben Franklin students are only dismissed from the south side of the school. Therefore, most of the students either get picked up by parents in the turnout lane or cross 11th Ave. S. to get picked up on the south side of the street. Crossing guards exist at the crosswalks located within the turnout lane and 11th Ave. S. (which are typically parents of school children) to assist in guiding students across these areas.

3.2 Kelly Elementary School

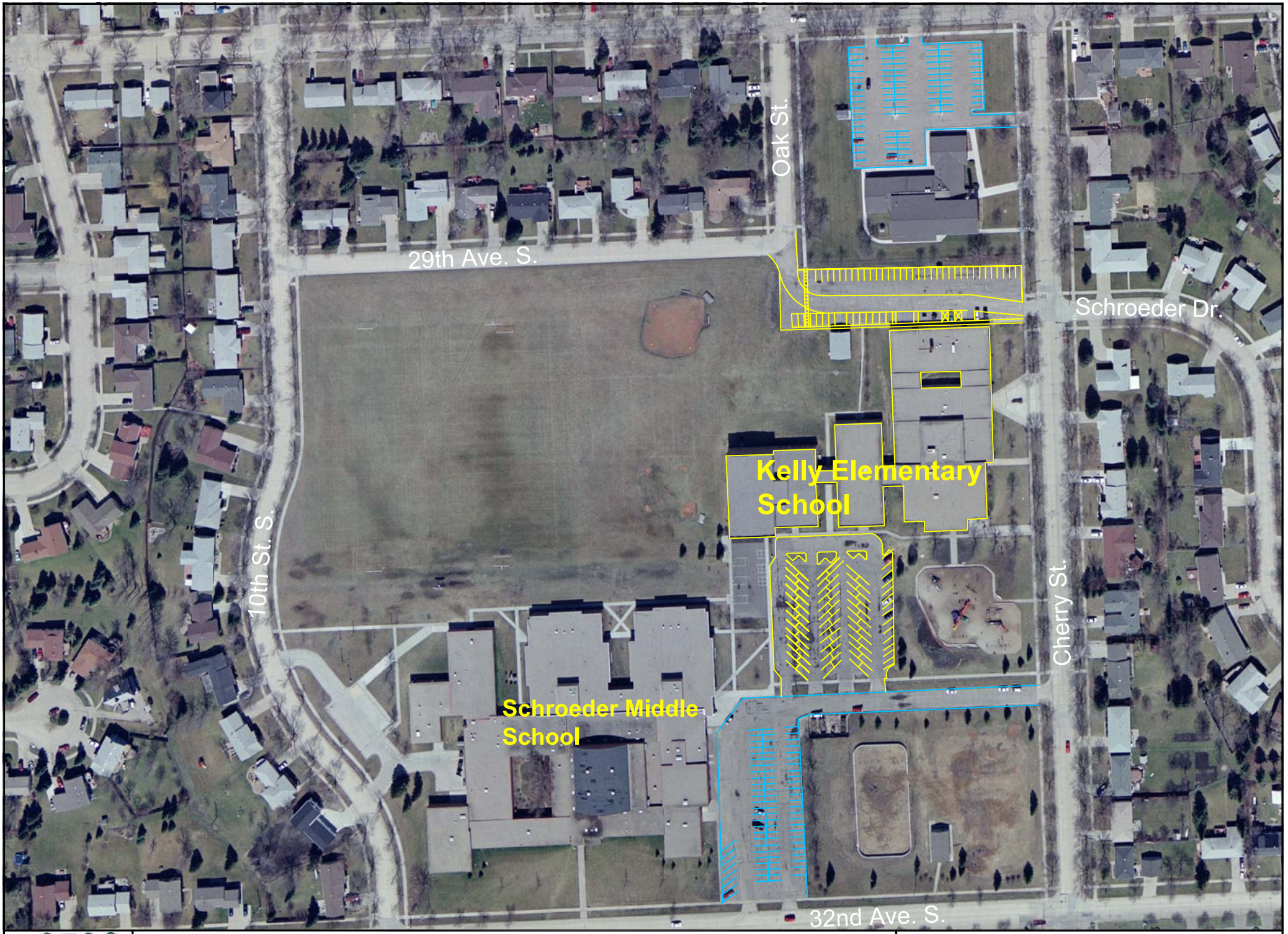
J. Nelson Kelly Elementary School (commonly referred to as Kelly Elementary School) is located along Cherry St. between Schroeder Dr. and 32nd Ave. S. (shown in Figure 2). The school has approximately 456 (2004) students ranging from kindergarten to 5th grade. The school is bordered by residential properties (north and east), city parks (south and west), and Schroeder Middle School (southwest).

Roadway Characteristics

Kelly Elementary School is primarily accessed on the north side by 29th Ave. S. and Oak St. (using the north parking lot) and on the east side by Cherry St. Twenty-ninth Ave. S. and Oak St. are two-lane local streets and provide one-way (eastbound) flow into the north parking lot. The north parking lot is also setup to act as a drop-off and pick-up zone for parents. Cherry St. is a two-lane local street and has an average daily traffic (ADT) of 2,850 near the school (2005 traffic counts). An access road is located south of the school and serves the south parking lot of Kelly and the east parking lot of Schroeder. South of Kelly Elementary School, Cherry St. intersects with 32nd Ave. S., which is a two-lane minor arterial road.

The posted speed limit for roadways entering the school area are 25 mph. Speed limits are reduced to 20 mph along Cherry St. and 32nd Ave. S. when children are present. In addition, speeds are reduced to 15 mph at key crosswalks when flashing beacons are active during school start and end times.

Street parking along Cherry St. near the school is partially restricted. Parking is prohibited (except for buses) on the west side of Cherry St. in front of the school. Parking is allowed south of the bus loading zone and on the east side of the Cherry St.


29th Ave. S.
Oak St.
Schroeder Dr.
Kelly Elementary School
10th St. S.
Cherry St.
Schroeder Middle School
32nd Ave. S.

TRAFFIC CONTROL AND PAVEMENT MARKINGS

Intersections near Kelly are controlled using STOP signs. Four-way stop control exists at the intersection of Cherry St. and 32nd Ave. S. The approaches of Schroeder Dr. and the access road intersecting with Cherry St. are also controlled by stop signs. Roads entering and exiting the north parking lot are not signed with any traffic control devices. Similar to Ben Franklin, crosswalk markings around the area showed significant signs of wear.

Parking Characteristics

Kelly Elementary School has parking lots on both the north and south side of the school. The north parking lot has parking stalls for school staff and has pavement markings that outline a drop-off and pick-up zone for parents to use. The south parking lot has parking stalls for both school staff and parents. This parking lot is set-up to provide one-way traffic circulation. Parents circulate counter-clockwise and park along the perimeter of the lot, while school staff circulate clockwise and park within the center of the lot.

Cherry St. provides a bus loading zone in front of the school, which accommodates three large buses and one small bus. Parents park south of the bus loading zone on the west side of Cherry St. and throughout the east side of Cherry St. In addition, vehicles may park along Schroeder Dr.

Pedestrian Activity

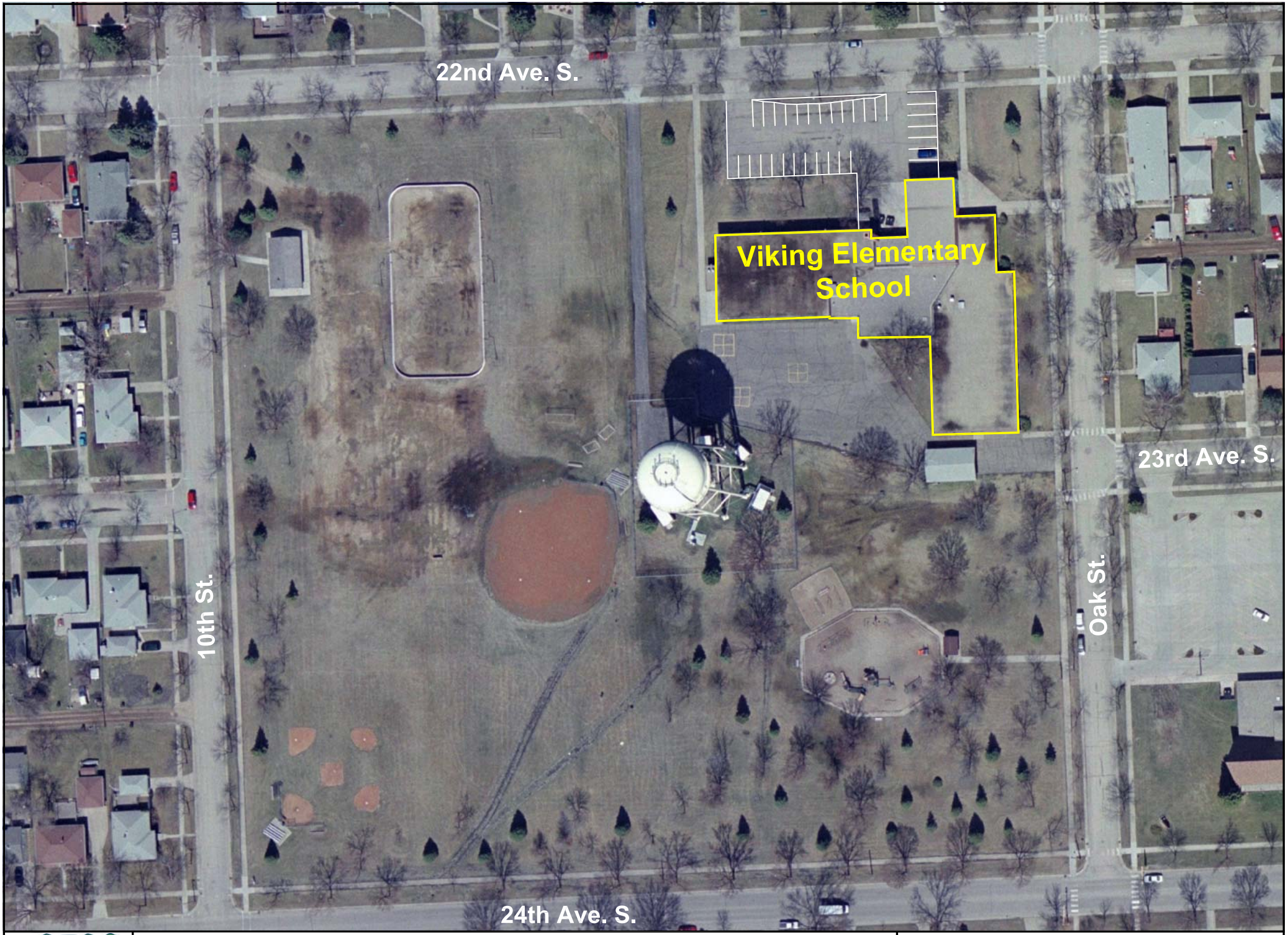
Based on site observations, students exited the school from the north, east, and south doors. A lot of students were picked up at both the north and south parking lots. To a lesser extent, some students were picked up on the east side of Cherry St. Students typically crossed Cherry St. using the crosswalks at Schroeder Dr. and the access road.

3.3 Viking Elementary School

Viking Elementary School is located along Oak St. and 22nd Ave. S. (shown in Figure 3). The school has approximately 325 (2006) students ranging from kindergarten to 5th grade. The school is bordered by residential properties to the north and east, while Cox Park is located to the south and west of the school.

Roadway Characteristics

Viking Elementary School is primarily accessed on the north side by 22nd Ave. S. and on the east side by Oak St. Twenty-second Ave. S. and Oak St. are both two-lane local streets. Twenty-fourth Ave. S., which is a two-lane collector, intersects with Oak St. south of the school and has an ADT of 3,300 near the school (2005 traffic counts).


22nd Ave. S.
Viking Elementary School
23rd Ave. S.
10th St.
Oak St.
24th Ave. S.

The posted speed limits for roadways entering the school area are 25 mph. Speed limits are reduced to 20 mph along Oak St. and 24th Ave. S. when children are present. In addition, speeds are reduced to 15 mph along Oak St. at the intersection with 22nd Ave. S. with a flashing beacon. Overhead flashing beacons are located at the crosswalks along 24th Ave. S. at Oak St. These flashing beacons are used to reduce the speed to 15 mph during school start and end times.

Traffic Control and Pavement Markings

Intersections near Viking are controlled primarily by stop signs. Two-way stop control exists at all the intersections bordering the school. Similar to the other schools, crosswalk markings around Viking Elementary School showed significant signs of wear.

Parking Characteristics

Viking Elementary School has one parking lot on the north side of the school. This parking lot is restricted to only school staff.

Street parking along Oak St. near the school is partially restricted. Parking is prohibited during school hours on the west side of Oak St. in front of the school and this location is identified as a bus loading and unloading zone. Parking is allowed south of the bus loading zone and on the east side of Oak St. Parking along 22nd Ave. S. is restricted during school hours on the south side of the street in front of the parking lot.

The bus loading zone on Oak St., which is identified by signs and cones, accommodates one large school bus. During dismissal time, parents primarily parked within the church parking lot on the east side of the school and along both sides of Oak St. In addition, parents parked along 22nd Ave. S. close to the intersection of Oak St.

Pedestrian Activity

Based on site observations, students primarily exited the school from the east doors. Most of the students crossed Oak St. using the crosswalks and were either picked up by parents that parked within the church parking lot or along Oak St.

Some students crossed Oak St. without using the crosswalks to access vehicles parked on the east side of the street. Students being picked up northeast and northwest of the school primarily used the crosswalks.

4.0 OPERATIONAL CHARACTERISTICS

The traffic characteristics for the school areas were observed by ATAC staff on Thursday, April 27th, 2006. ATAC staff (two at each school) obtained pictures of the current street signs, roadway, and parking characteristics prior to the afternoon school dismissal time. During the dismissal time, pictures and video were collected to assess the traffic operations, primarily at the critical areas, for the three schools. All of the observers noted that the overall traffic flow and pedestrian safety at all three schools were acceptable. The following sections will discuss the observations of each school area in more detail.

4.1 Ben Franklin Elementary School

Since students are dismissed only from the south doors of Ben Franklin, most of the vehicle and pedestrian activity was concentrated along the turnout lane and 11th Ave. S. Students used designated doors (corresponding to their class) to exit the school, which greatly contributed to a well-organized operation. Teachers supervised the student pick-up activity and actively assisted children as they recognized their parents. In addition, the school principal was very active in supervising the students and directing traffic in the turnout lane when needed to prevent cars from blocking the entrance.

Traffic flow within the turnout lane was generally smooth and vehicles did not block the travel (left) lane within the turnout lane (Figure 4). It was interesting that the turnout lane was almost full at 2:30 pm (about 30 minutes prior to dismissal time).

Figure 4. Vehicles parked along the turnout lane and 11th Ave. S.

Vehicle speed along both 11th Ave. S. and 20th St. appeared to be within the speed limit. In addition, vehicles were yielding to students and parents while crossing the roadways (note Figures 5 and 6).

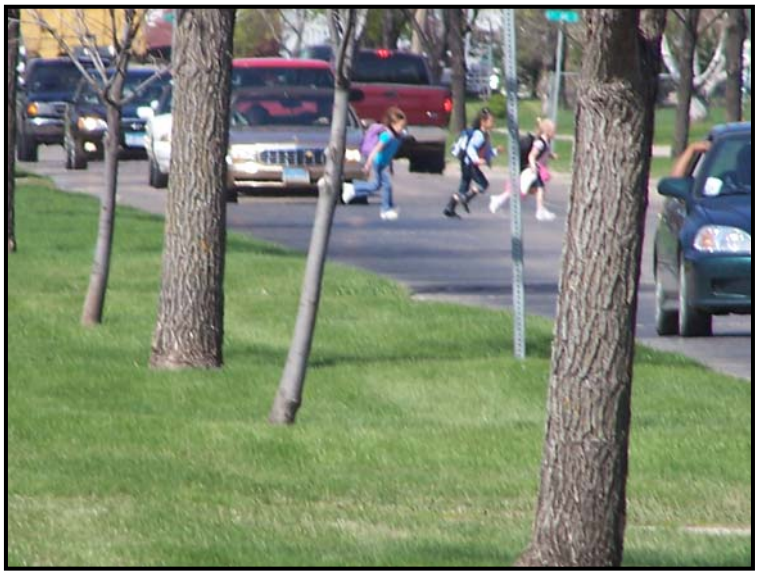


Figure 5. Vehicles yielding to students running across 20th St.

Figure 6. Vehicles yielding to pedestrians using the crosswalk at 20th St.

The crossing guards within the turnout lane and 11th Ave. S were effective at facilitating students crossing these areas. The crossing guards had the appropriate equipment (safety vests and a STOP paddle) and both students and vehicle drivers were receptive to there presence (Figure 7).

Figure 7. Crossing guard stopping traffic for students crossing 11th Ave. S.

4.2 Kelly Elementary School

Students were dismissed from north, south, and east doors of the school. A lot of children were picked up from the school using the north parking lot loading lane. Generally, vehicles pulled up to the front of the loading zone and vehicles filled in behind one another; however, this was not always experienced as noted in Figure 8 which shows the initial queue of vehicles waiting for students. As the dismissal time approached, approximately three rows of vehicles were lined up and waiting within the loading zone (Figure 9). Overall, vehicles appeared to arrive and depart from this zone in a safe and efficient manner. This is only possible since school staff do not depart from the lot until all students have departed the school grounds. It should also be noted that motorists departing from the north parking lot do not have any traffic control. Therefore, some motorists leaving the lot pulled out into traffic along Cherry St.

Figure 8. Initial vehicles parked in the north parking lot.

Figure 9. Vehicles waiting in the north parking lot near dismissal time.

The school buses have a loading zone identified along the west side of Cherry St. However, a vehicle was parked in the front part of the loading zone causing one of the buses to block the south crosswalk at Schroeder Dr. and Cherry St. (Figure 10). Students departing by school bus lined up and boarded the buses in an orderly fashion.

Figure 10. School bus is blocking the crosswalk at Cherry St. and Schroeder Dr.

The traffic operations along Cherry St. were also observed. Several vehicles parked along Cherry St. north of Schroeder Dr., along Schroeder Dr. near Cherry St., and along Cherry St. in front of the school. On a few occasions, parents parked too close to the intersections which blocked the sight vision of motorists entering the intersection. Since crosswalks are located at the access road (south side) and Schroeder Dr. (north side), almost all of the parents and students that accessed vehicles on the east side of Cherry St. did so without using a crosswalk (Figure 11).

Figure 11. Pedestrians crossing Cherry St. without using crosswalk.

Vehicle speed along Cherry St. appeared to be well within the speed limit. In addition, vehicles were yielding to students and parents while crossing the roadways (Figure 12).

Figure 12. Vehicles yielding to pedestrian using a crosswalk along Cherry St.

4.3 Viking Elementary School

Students primarily departed from the east doors of Viking Elementary School. Most of the pedestrian and vehicle activity was concentrated along Oak St. (Figure 13). A lot of parents parked in the church parking lot east of Viking and walked over to the school to pickup their children (Figure 14). In addition, parents parked along both sides of Oak St. even within the bus loading zone. Most of the students accessing vehicles parked on the east side of Oak St. did not use a crosswalk.

Figure 13. Vehicles parked along Oak St.

Figure 14. Pedestrian crossing activity at Oak St. and 23rd Ave. S.

Traffic cones were placed along the west side of Oak St. near the crosswalk at 23rd Ave. S. and south of 22nd Ave. S. along the bus loading zone. The cones helped to keep these areas free from vehicles. It should be noted that most of the west side of Oak St. was signed as a bus loading zone; however, only one bus was observed during the visit. In addition to using cones at the main crosswalk, a paraprofessional was positioned in the crossing area to monitor the crossing activity (note Figure 14).

Vehicle speed along Oak St. appeared to be well within the speed limit. In addition, vehicles were yielding to students and parents while crossing the roadways (Figure 15). It was also noted that some parents parked along 22nd Ave. S. were too close to Oak St.

Figure 15. Vehicle yielding to students at 22nd Ave. S and Oak St.

5.0 IMPROVEMENT STRATEGIES

Several issues regarding pedestrian safety and traffic circulation have been discussed for Ben Franklin, J. Nelson Kelly, and Viking Elementary Schools. The previous discussions were based on site visits conducted by ATAC staff on April 27, 2006. The overall safety and circulation for the three schools was good; however, different circumstance (e.g., winter weather conditions) will adversely impact school safety.

The SAFE KIDS coalition requested the three schools to conduct pedestrian safety/traffic circulation surveys to determine the areas of concern and possible solutions to the concerns. It is difficult to substantiate the frequency or severity of the survey comments, but several improvement strategies will be discussed to possibly resolve some of these issues.

In 2000, the National Highway Traffic Safety Administration (NHTSA) began funding the Safe Routes to School (SR2S) program. The goal of the program is to encourage school children to walk or bike to school safely. These programs provide a number of benefits, which include increasing the physical activity of children and reducing the traffic volume during morning and afternoon peak periods. Since most traffic safety issues at school areas involve traffic circulation and vehicle/pedestrian conflicts, a reduction in vehicle trips would improve school safety.

Of the three elementary school surveys, only Viking provided information related to how school children arrived/departed school. Approximately 25% of the children walked to and from school. This is above the national average of 15% (Nationwide Personal Transportation Survey, USDOT, 1995). Weather conditions are an important factor in walking and biking activities; however, our site visits noted that most of the school children were picked up by a parent or school bus (with the exception of Ben Franklin) even though the weather was very pleasant.

This study provides several short-term and medium-term engineering related improvements for each of the schools. A Draft Report discussing the proposed improvements was presented to the Pedestrian Safety Task Force on July 13, 2006. Based on discussions and feedback from the task force, some modifications were made to the initial improvements.

The proposed engineering improvements are one of three important components in providing a safe and efficient transportation system and school area. Education and enforcement are the other major components and efforts should be taken to address these areas as well.

Safety Education

Education is a continuous process for both parents and children. ATAC's observations found most of the unsafe acts around the school area were performed by parents of school children. The school administration and SAFE KIDS program have been very active in promoting safety; however, more needs to be done in this area, especially for parents. Presentations can be given to point out some of the major safety concerns and discuss the potential dangers of continuing the current practices. Ben Franklin has developed a traffic safety handbook, which is incorporated into the school handbook. Other schools can develop similar materials. This safety dissemination can be coordinated with the schools' fall open house.

Increased Enforcement

To assist with speed compliance, yielding to pedestrians in crosswalks, and illegal parking, a greater police presence would benefit the school areas. Although it may be difficult to provide police personnel at the school, requests should be made to enforce safety measures. During our site visits, a police car did drive by Ben Franklin School. In addition, a speed trailer was setup along 32nd Ave. S. near 10th St. S. to assist with speed control.

Engineering Enhancements

Engineering enhancements attempt to modify the traffic flow characteristics to increase efficiency and safety. This is achieved using a combination of street signs, pavement markings, and geometric devices. Several of the proposed improvements can be incorporated at all three schools and include the following:

- Repaint school crosswalks on an annual basis
- Replace school crossing signs that are in advance of and at the crossing in accordance with the current standard of the Manual on Uniform Traffic Control devices (2003 MUTCD), as shown below. This can be conducted when replacement signs are needed but it is recommended to keep all of the signs uniform at least to the school area. The target compliance date by the FHWA for implementing the school warning assemblies is January 17, 2011. It should be noted that this report will keep the existing signs in place. The school crossing signs shown below are those currently used at the three schools, while the school crossing signs on the following page follow the 2003 MUTCD.

School Advance Sign
In advance of school crossing
(1988 Rev. 6 MUTCD)

School Crossing Sign
At the school crossing
(1988 Rev. 6 MUTCD)

School Advance Warning Assembly
In advance of school crossing
(2000, 2003 MUTCD)

School Crosswalk Warning Assembly
At the school crossing
(2000, 2003 MUTCD)

- Install uniform devices at critical school crossings. The three schools have uniform overhead warning assemblies consisting of school speed limit, flashing beacons, and school crossing signs. Viking and Ben Franklin schools have supplemental devices at an additional crossing. It is recommended to implement consistent crossing devices. Two examples of such devices are shown below. The image on the left is similar to that used at the Viking Elementary School, while the image on right follows the 2003 MUTCD.

Warning assembly similar to
Viking Elementary School

Warning assembly complying
with 2003 MUTCD

- Install School Advance Warning, School Crosswalk Warning, and School Speed Limit signs sequentially in accordance to the MUTCD.
- A general recommendation regarding parking is to provide drop-off/pick-up areas on the near side of the street (closest to the school) and restrict parking on far side of the street (example signs are shown below). Near

side parking doesn't require students and parents to cross the street to access the vehicle. Since typical street widths don't provide adequate space for parking on both sides of the street and allow two-way traffic, parking/loading should be prohibited on the far side of the street during school hours. If vehicles park on the far side of the street to pick-up/drop-off students, crossing guards could be used to increase safety.

Far Side Parking Sign

Near Side Parking Sign

Several engineering strategies have been developed for each of the elementary schools. These strategies can be grouped into short-term and medium/long-term improvements. Short-term improvements can be implemented by the next school year and include traffic/pedestrian signs, pavement markings, and minor geometric changes. Medium-term improvements can be implemented in the next 1-5 years and are related to larger geometric improvements. The following sections discuss possible enhancements that can be implemented to improve school zone consistency, traffic flow, and pedestrian safety.

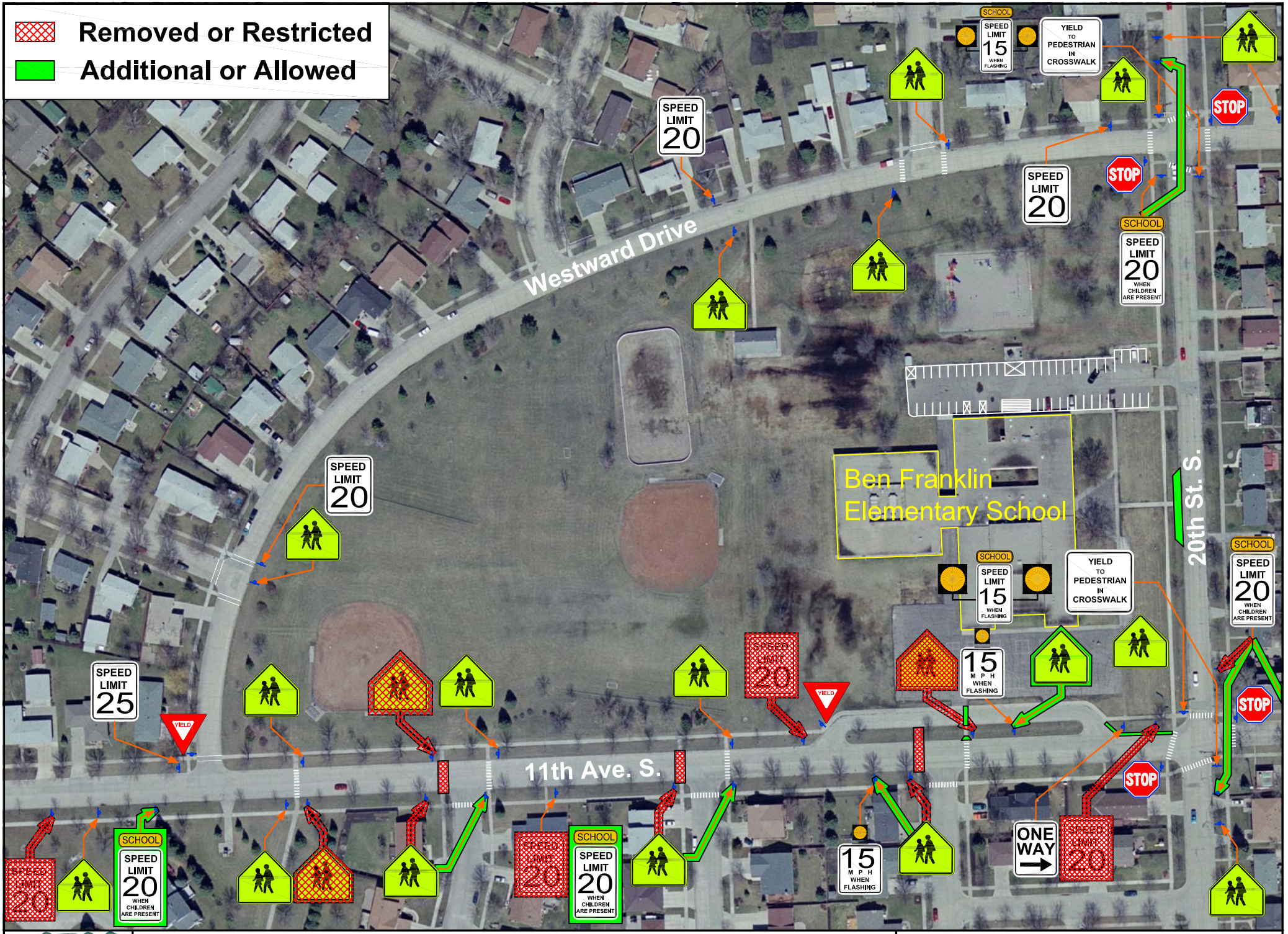
5.1 Ben Franklin Elementary School

Some of the school signs within the school area could be modified to improve school safety and reduce driver confusion. When 11th Ave. S. is viewed from the intersections of Westward Dr. and 20th St., drivers see a continuous flow of school crossing signs (Figure 16). All of these signs provide advanced warning and actual crosswalk locations; however, drivers may not be responsive to these signs since there are so many of the same devices within a short distance. To assist in this matter, two of the advanced school crossing signs could be removed at locations were they are not needed (Figure 17). In addition, three of the crosswalks along 11th Ave. S. could be removed to help channel the students into fewer crosswalks. These three crosswalks are located on the west side of T-intersections and the east side (school side) crosswalk would remain.

Figure 16. School crossing signs along 11th Ave. S.

School zone speed limit signs are intended to warn drivers about upcoming school areas. Therefore, these signs should be installed in advance of the school property, as prescribed in the MUTCD. It is recommended to remove the current 20 mph speed signs within the school area and replace them with School Speed Limit signs.

The crosswalks located south of the turnout lane have a 15 mph speed limit sign with a flashing beacon followed by a school crosswalk sign. These devices could be combined to be similar to those used at Kelly Elementary School.


Removed or Restricted
Additional or Allowed
Westward Drive
11th Ave. S.
20th St. S.
Ben Franklin
Elementary School
SPEED LIMIT 20
SPEED LIMIT 25
SCHOOL SPEED LIMIT 15 WHEN FLASHING
YIELD TO PEDESTRIAN IN CROSSWALK
SCHOOL SPEED LIMIT 20 WHEN CHILDREN ARE PRESENT
15 MPH WHEN FLASHING
ONE WAY
STOP
YIELD

To assist pedestrian safety within the turnout area, a raised pedestrian crosswalk could be constructed at the west driveway of the playground. At a minimum, curb ramps should be installed at the east sidewalk with in the boulevard to comply with American with Disabilities Act (ADA), as shown in Figure 18. In addition to removing the west crosswalk within the turnout lane, the west sidewalk should also be removed. This would assist in reducing the number of vehicle/pedestrian conflicts that could occur in this area. Painting the curb along the north side of 11th Ave. S. from 21st St. to the turnout entrance could also help discourage motorists from parking within this area.

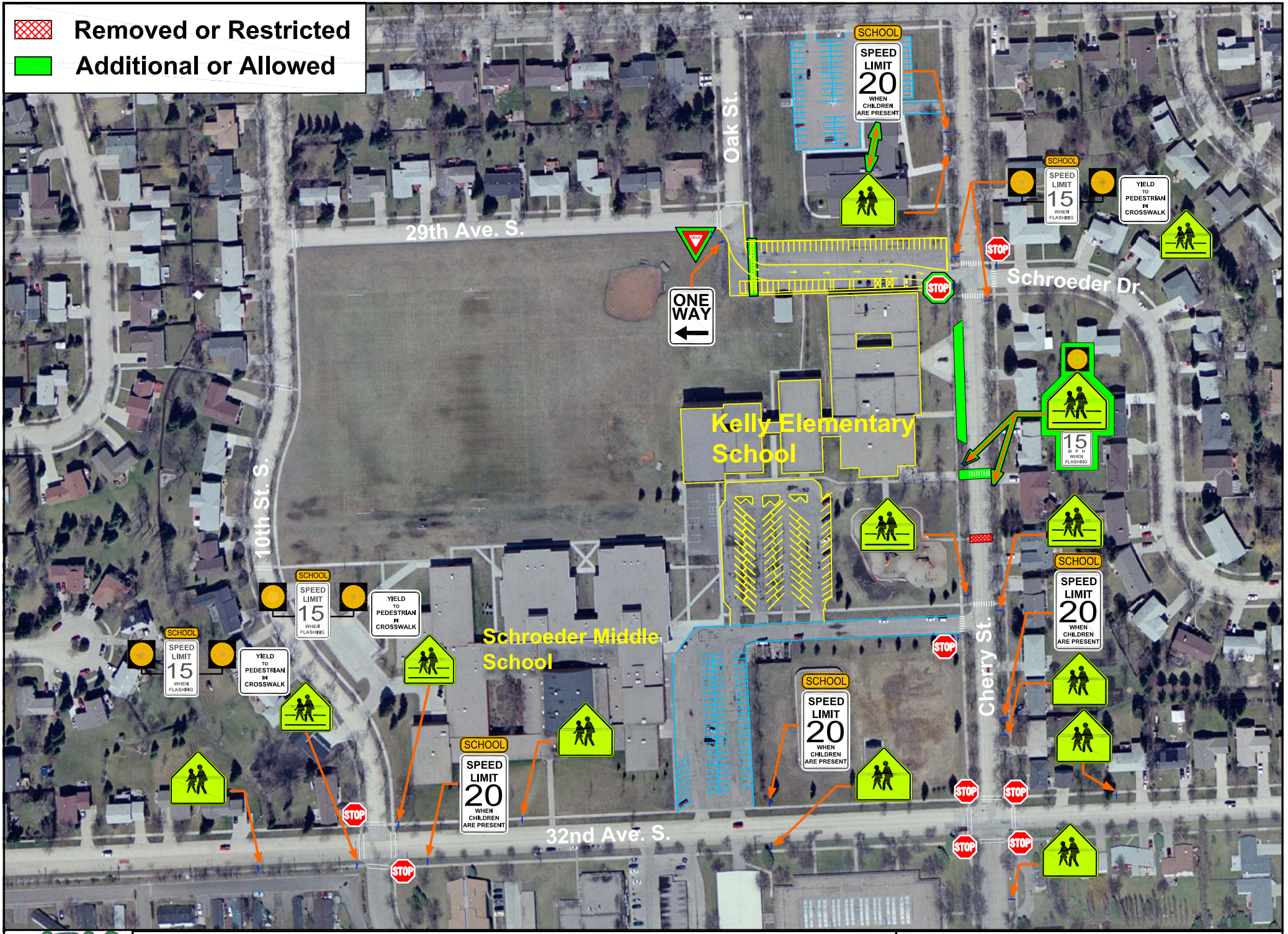
Figure 18. Sidewalks without curb ramps within the turnout lane boulevard.

Travel lanes along 20th St. can be restricted when vehicles are parked along the east side and buses are parking along the west side of the street. A bus turnout lane at the current bus loading zone would provide an additional level of safety for school children (Figure 17).

The pedestrian safety survey conducted this spring also pointed out the traffic control at the intersection of 11th Ave. S. and 20th St. Some parents recommended changing the current two-way stop control to either a four-way stop or a traffic signal. An engineering study would need to be performed at this intersection prior to changing the traffic control. The analysis would account for several factors, including crashes, vehicle volume, and pedestrian volume.

5.2 Kelly Elementary School

Overall, Kelly Elementary School had adequate school zone signs (speed limit and school crossing). However, the School Speed Limit sign and School Advance Warning sign along Cherry St. should be switched to follow the MUTCD sign sequence (Figure 19).


Removed or Restricted
Additional or Allowed
Oak St.
29th Ave. S.
10th St. S.
Schroeder Dr.
Cherry St.
32nd Ave. S.
Kelly Elementary School
Schroeder Middle School
ONE WAY
SCHOOL
SPEED LIMIT 20 WHEN CHILDREN ARE PRESENT
SPEED LIMIT 15 WHEN FLASHING
YIELD TO PEDESTRIAN IN CROSSWALK
15 M P H WHEN FLASHING
STOP

Since the north parking lot is used by numerous parents for picking up and dropping off students, traffic flow entering and exiting this parking lot is important. Since Oak St. aligns with the parking lot entrance, this movement should be considered the major movement. Therefore, it is recommended to install a YIELD sign along 29th Ave. S. at the intersection of Oak St. (Figure 19).

Currently, no traffic control exists at the exit of the north parking lot, as shown in Figure 20. During the site visit, some confusion was evident related to who had the right-of-way. Therefore, it is recommended to install a STOP sign at the exit of the parking lot, which is the minor street approach.

Figure 20. Exit of north parking lot illustrating no traffic control

A crosswalk is painted within the north parking lot, as shown in Figure 21. Not only does the crosswalk paint match the parking stall paint, it is also located within a parking stall. At a minimum, the pedestrian crossing should be painted white and the parking stall should be removed. During our site visit, it was hard to determine the level of usage for this crosswalk. If a lot of pedestrians use this crossing area, then it could be modified to a raised pedestrian crosswalk or the crosswalk could be moved west of the parking lot.

Figure 21. Crosswalk located within north parking lot

Due the large number of students attending Kelly Elementary school, allowing student drop-off/pick-up areas on both sides of Cherry St. is necessary. To assist in pedestrian safety crossing Cherry St., it is recommended to create a mid-block crosswalk south of the bus loading zone (Figure 19). The crossing can also incorporate a speed reduction and beacon similar to that at Viking Elementary school (Figure 19). Sidewalks and curb ramps will need to be constructed on both sides of Cherry St. at the crossing location. Since a driveway is located on east side of Cherry St., the crosswalk will need to angle to the north or south (depending on tree locations) to ensure it doesn't terminate within the driveway.

It is recommended to remove the crossing at the playground area (Figure 19). The crossing is in close proximity to both the proposed mid-block crossing and access road crossing and it has not been maintained very well.

A medium-term improvement relates to constructing a bus turnout lane along the west side of Cherry St. in front of the school (Figure 19). The turnout lane along with proper signs should reduce the number of illegal parking occurrences and improve pedestrian/vehicle safety. The turnout area can have a distance of approximately 185 ft, accommodating several buses and vans.

5.3 Viking Elementary School

A few of the school zone signs (speed limit and school crossing) should be modified for consistency as specified in the MUTCD. The School Speed Limit signs and School Advance Warning signs should be switched along 24th Ave. S. between 10th St. and Oak St. (Figure 22).

A few sign modifications should be made at the Oak St. and 23rd Ave. S. crosswalk. A pedestrian crossing sign is currently installed south of the crosswalk for northbound motorists. This sign should be changed to a School Crosswalk Warning sign. In addition, a School Crosswalk Warning sign should be installed at this crosswalk for southbound traffic (Figure 22).

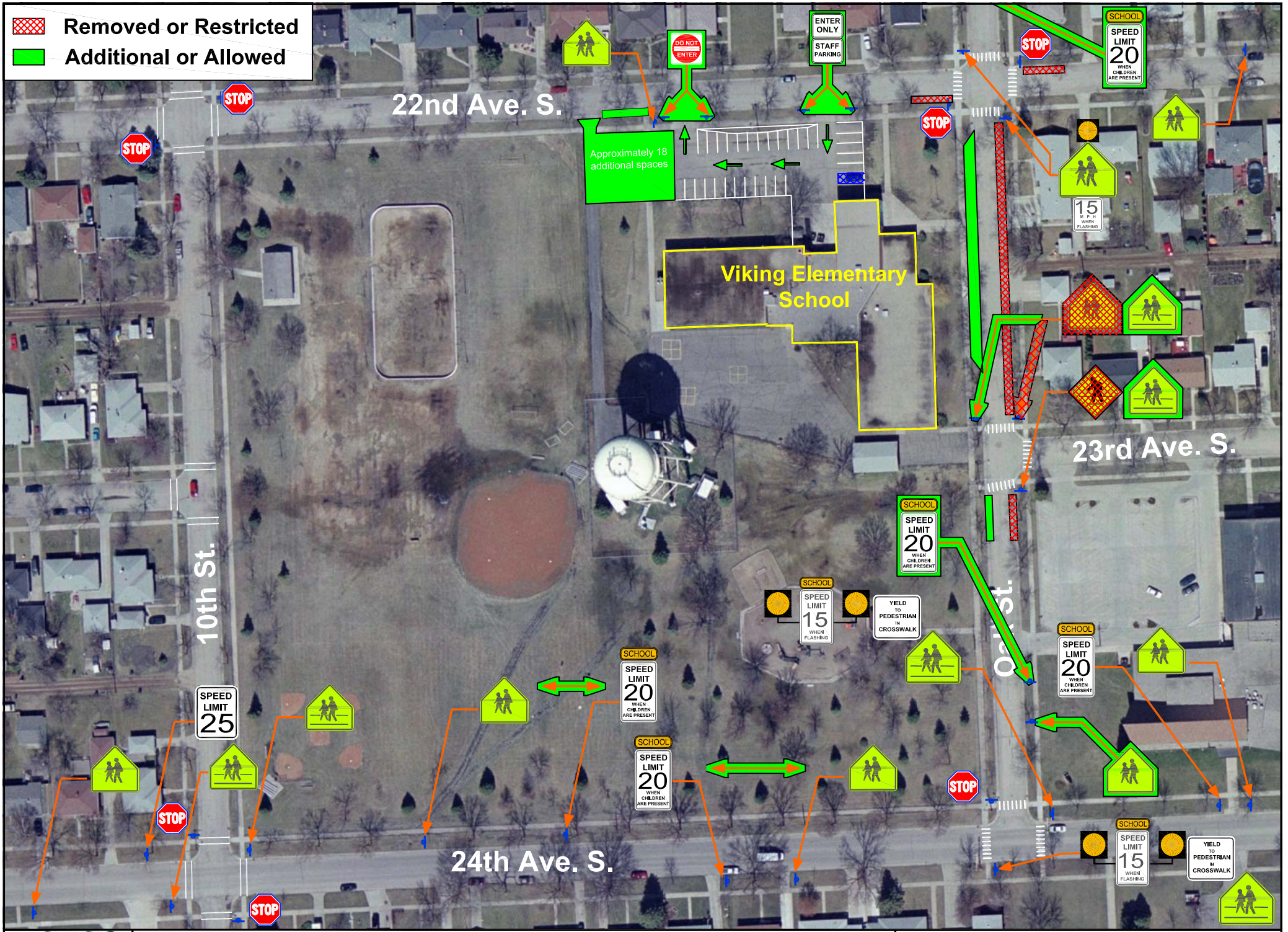
During the site visit, a paraprofessional monitored the school crossing at 23rd Ave. S. and Oak St. by standing in the middle of the intersection. To assist in the monitor's safety, high-visibility apparel, such as a vest**,** should be worn.

Although the north parking lot was not observed during our site visit, some improvements can be made based on survey results from the Viking Pedestrian/Traffic Survey Report. Since some issues were mentioned related to the parking lot's traffic circulation, providing one-way traffic would improve traffic flow. It is recommended to have vehicles enter the lot from the east driveway and exit from the west driveway (which would provide clock-wise flow). In addition, a handicap bus parking stall could be added to the north parking lot. The parking lot could also be expanded to the west, providing approximately 18 more parking stalls (Figure 22).

The traffic safety report also noted that parents blocked staff from exiting their parking stalls within the north parking lot. To eliminate this occurrence, the parking lot could be restricted to only school staff.

Currently, all school bus/van parking occurs along the west side of Oak St. northeast of the school. To assist in relieving congestion along Oak St., the bus/van parking can be moved to different locations. Parking for the large school buses can be moved to the south side of 22nd Ave. S. and west of the parking lot. In addition, school bus/van parking can exist along the west side of Oak St. south of 23rd Ave. S. (Figure 22).

Traffic flow along Oak St. is impeded especially during the dismissal time. This can be attributed to allowing parking on both sides of the two-way street. It is recommended to prohibit parking/loading along the east side of the street during school hours (e.g., 7AM-4PM on school days). This option would eliminate mid-block crossings by students accessing vehicles. Since it was recommended to move the school bus/van parking, the west side of Oak St. between 22nd Ave. S. and 23rd Ave. S. can be used by parents. In addition, a turnout lane along this area would provide safer loading zone (Figure 22).


Removed or Restricted
Additional or Allowed
22nd Ave. S.
23rd Ave. S.
24th Ave. S.
10th St.
Oak St.
Viking Elementary School
Approximately 18 additional spaces
DO NOT ENTER
ENTER ONLY
STAFF PARKING
STOP
SCHOOL SPEED LIMIT 20 WHEN CHILDREN ARE PRESENT
SCHOOL SPEED LIMIT 15 WHEN FLASHING
YIELD TO PEDESTRIAN IN CROSSWALK
SPEED LIMIT 25
15 MPH WHEN FLASHING

The intersection of 22nd Ave. S. and Oak St. becomes congested during the dismissal time. Parents park and wait very close to the intersection, creating unsafe conditions for pedestrians and vehicles (Figure 23). Installing no parking signs “HERE TO CORNER” along the east and west approaches would improve this issue.

Figure 23. Vehicles parking too close to intersection of 22nd Ave. S and Oak St.

6.0 SUMMARY AND CONCLUSION

School safety is an important issue for many cities. It is impossible to make a school zone completely safe and claims of unsafe behavior may be overstated by parents due to concerns for their children's safety. However, periodic evaluations of school areas are important, especially if significant changes occur to land development, traffic volume, pedestrian volume, crashes, etc. Although the three elementary schools did not exhibit any significant operational or safety issues, several engineering enhancements could be incorporated to improve traffic flow and school safety. These enhancements must be supplemented with safety education and law enforcement initiatives. Summaries of each school's proposed enhancements are as follows:

Ben Franklin Elementary School

- Move the 20th St. S. School Speed Limit signs further away from the school (short term)
- Reduce crosswalks and signs along 11th Ave. S. (short term)
- Remove the west sidewalk and crosswalk within turnout lane (short term)
- Paint the curb along the 11th Ave. S. near the turnout entrance (short term)
- Construct a speed table and curb ramps for turnout (medium term)
- Construct bus loading turnout lane along 20th St. (medium term)

Kelly Elementary School

- Switch School Advance Warning sign and School Speed Limit sign north of the school along Cherry St. (short term)
- Install a YIELD sign for 29th Ave. S. at the intersection with Oak St. (short term)
- Install a STOP sign for vehicles exiting the north parking lot (short term)
- Modify the crosswalk in the north parking lot (short/medium term)
- Add a mid-block crosswalk and flashing beacons between Schroeder Dr. and the access road (short term)
- Remove the playground crosswalk located north of the access road (short term)
- Construct a bus turnout lane along the west side of Cherry St. (medium term)

Viking Elementary School

- Switch School Advance Warning signs and School Speed Limit signs along 24th Ave. S. (short term)
- Modify School Crosswalk Warning signs at Oak St. and 23rd Ave. S. (short term)
- Install School Advance Warning sign and School Speed Limit signs along Oak St. prior to entering the school area (short term)
- Prohibit vehicle parking near the intersection of Oak St. and 22nd Ave. S. (short term)

- Restrict parking and loading along the east side of Oak St. during school hours (short term)
- Modify north parking lot to one-way circulation and restrict access to only school staff (short term)
- Expand the north parking lot to the west (medium term)
- Move school bus/van parking to 22nd Ave. S. (west of parking lot) and Oak St. (south of 23rd Ave. S.)
- Construct a loading turnout lane along the west side of Oak St. (medium term)