

Research of Sandy Hook Elementary, the New and Improved.

Research Report

December 9th, 2022

By

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Introduction

School safety has been a part of the political discussion all over the world about both large scale (a country) and small (a city). According to US News, for the school year 2020-2021 alone, there were a total of 93 schools that had an active shooter that resulted with casualties (not including threats), and according to EdWeek, there have been 30 school shootings where there were injuries, including 28 people killed, just in the year 2022 so far. The fact that these numbers keep increasing from previous decades, and that the school year is just starting after having to combat a pandemic, people and families fear sending their kids to schools for more reasons than one.

That is why I am studying possible floor plans and materials that ideally prevent the event from happening, or if the tragic event occurs, then the possibility for reinforcements to arrive before there are injuries is greater. I plan on using AnyLogic to study the average foot traffic of secondary age students as well as to see how an emergency plays out. I will stimulate both one and multiple shooters, and the police department on scene right away and later. Once I have a floor plan that can help students stay safe, I will research materials that are thicker and stronger to prevent bullets going through.

Safety is always the number one concern to parents and school officials, that is why I believe that the floor plans and materials can be strategically chosen to provide more safety for students and staff.

Methodology

Using Sandy Hook's new floor plan, Appendix D, and AnyLogic, a software that helps show simulations with different floor plans and different agents, I was able to create an average day for the students and staff, as well as the simulation of an active shooter.

AnyLogic uses simple forms to create barriers, such as walls to create a room, as well as *nodes* to create the sense of a goal or a place for the agents in the simulation. With the floor plan, I created the necessary walls and spaces that are true in the design to ensure accurate data of pedestrian traffic in different situations.

Agents were created to represent different types of students and one person is shown as a dot in the simulation where each type was assigned a color, shown in Table A.

Throughout the process, networks were created to make the people move to a certain room and to a certain schedule to show what an average day looks like in elementary school.

Table A: Key to Agent Types and their Corresponding Color

Agent Type	Color
Teacher / Administration	Green
Preschoolers	Teal
Kindergarteners	Yellow
First Graders	Navy

Results

After learning the program AnyLogic, I entered in a normal day of grades Pre-K through 1st grade on the first floor of the new Sandy Hook Elementary school. Once an average day went through, I added an 'agent' to act out an active shooter to see how fast students and staff can take shelter. With the new design of the school, it was clear that the safety of the students and staff were their number one priority. Shown in images below, there were storage rooms that had no windows and only one entrance throughout the entire school, so no matter where a person or a class was, there was somewhere reachable that they could either take shelter or get out of the school.

Figure #1: Preschool Classrooms on an Average Day (11 o'clock in the morning)



As seen in Figure #1, you can see a normal school day, specifically the preschoolers, at about 11 o'clock in the morning, most classes are in their classrooms, some are walking in the halls, some are in the library and in the gymnasium. However, even though it is not always likely, events, including weather or emergencies, can change the course of student's schedules. In Figure #2, it simulates what an average lockdown could look like, this specific example is a kindergarten class was in the hallway and went to the nearest storage room.

Figure #2: Kindergarten Class taking shelter in a storage room



The significant differences between a lock down and a real emergency, is that the reaction time for each class and the location of each class can be different. In a lockdown drill, the office announces that it's a practice drill over the speakers and that all classrooms must perform as if it was real. In this case, all teachers and students know at the same time as everyone else, so if there were an active shooter, that intruder wouldn't have gotten far throughout the school. In a real emergency, the only time the alarm would go over the speakers to communicate that there needs to be a lockdown is when the office knows. If the intruder enters in a different door, whether a maintenance door or is already in the school, the office wouldn't be the first to know. Some classes would have already heard or seen the shots before someone in the office could have sounded the alarm. From the simulation, there is a distinction between how many are already hiding after one minute of the announcement, and how many are hiding after one minute the intruder is in the school.

Another major difference is that most practice drills happen when most, if not all, classes are in their classrooms and the teachers are usually told ahead of time, yet, in a real emergency, there are no early notifications. Some classes will be in their rooms, but some may be in the halls, in the library, etc., and that is when all the practice they did before isn't as useful. If one class was walking in the hall when the alarm starts or they hear the intruder, they need to quickly evaluate and determine what to do. Even though no amount of practice can make a clear path of what to do, if there were at least a variety of locations practiced, a teacher and the students would have more confidence thinking of a plan to keep safe no matter where they are in the school.

However, with Sandy Hook's new floor plan, safety during an emergency was clearly a priority during the design. Seen in the figures and the floor plan, storage and mechanical spaces are throughout the school and most have no windows, and only one door to enter or exit. Meaning that if the class was in the hallway and needed to seek shelter, they would have a space to go relatively close.

Conclusion

Creating and researching Sandy Hook's floor plan in the simulation shows how they learned from the tragic event and found new ways to keep students safe yet still create an effective learning environment. Having storage and mechanical spaces throughout the school, bathrooms and open classrooms and offices, creates security no matter where the people may be in the building.


The pieces that I would like to take away are the secure spaces throughout the building and the materials that were used in construction. Some, however, that I believe would help the goal of safety, are more doors to outside throughout the school, such as in classrooms. All classrooms are on an exterior wall, and if there was an emergency, such as an active shooter, the ability to exit the building in general could be an option more most classrooms and they would be able to run from the situation and get to safety rather than hide and wait.

The Sandy Hook shooting swept the nation with the tragic news, but hopefully, with the updated school, it can create a fresh and safer start for children and parents, to start strong for a better future. No amount of practice drills, certain material, cameras and security can eliminate the chance of a dangerous event, but there are ways to start, and Sandy Hook Elementary is an example of just that.

Appendix

Appendix A – Bennett Elementary Circulation

<https://acrobat.adobe.com/link/review?uri=urn:aaid:scds:US:ec308529-954b-3394-b9ee-eeed37d3aac43>



A photograph of a large sign for Bennett Elementary. The sign is dark red with white text. The top part of the sign reads "Bennett Elementary" with a logo. Below that, it lists various events: "PTA MTG 10/8 6:30PM", "PICTURES 10/7-8 8:30AM", "P/T CONFS 10/10,14,15 3-7", and "FMCT PLAY 10/11 6:30PM". At the bottom of the sign, it says "2000 58th Ave. So. Donated by Bennett PTA". The sign is located in a parking lot with a school building in the background.

Bennett Elementary
2000 58th Avenue S, Fargo, ND 58104

DISTRICT
Fargo Public School District #1

GRADES
K-5

AVERAGE ENROLLMENT
536

ARRIVAL
8:20 a.m.

DISMISSAL
2:42 p.m.

FARGO SAFE ROUTES TO SCHOOL PLAN

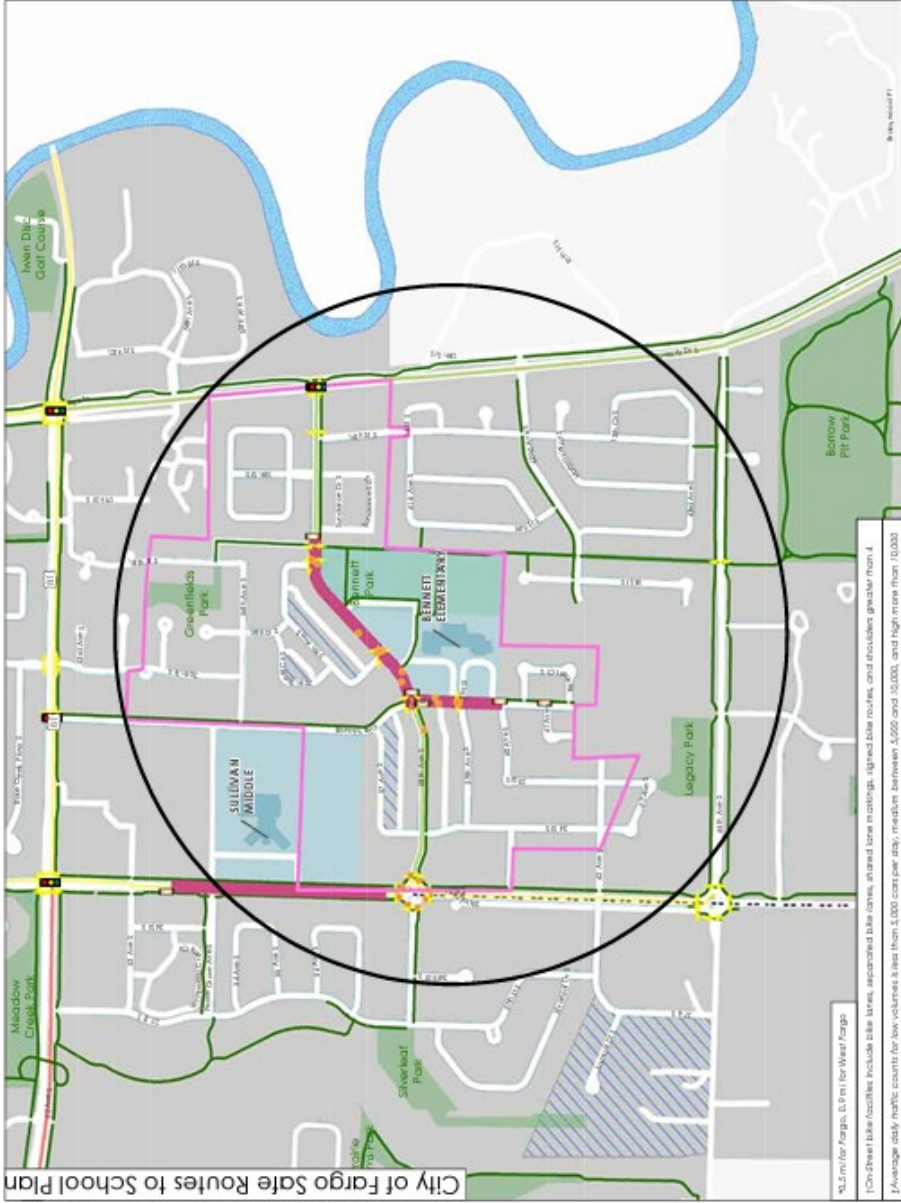
Existing Conditions

Bennett Elementary is a kindergarten through 5th grade school in the Fargo Public School District. It is located approximately six miles south of Downtown Fargo in the city's Bennett neighborhood. The neighborhood consists primarily of residential single-family homes. Within the Bennett boundaries, per capita income and household income are much higher than the district average. Seventeen percent of Bennett students are eligible for free and reduced lunch programs. Around three percent of students participate in English Language Learners programs.

The Bennett school facility was constructed in 2000. The campus is bound by 21st Street S to the west, 58th Avenue S to the north, approximately 16th Street S and Sundance Square S to the east, and 60th Avenue S to the south. The surrounding roads are generally low traffic roadways serving the residential developments. However, some speeding was observed during the field review. School speed zones are designated along 58th Avenue S from Bishops Boulevard / 21st Street S to east of Bennett Park, and along 21st Street S from 58th Avenue S to 60th Avenue S. Within the walk zone, there are some sidewalk gaps, mostly associated with undeveloped parcels.

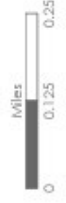


▲ Along 58th Avenue, speed is observed to be an issue. There are many unprotected crosswalks along this segment.



Existing Conditions Bennett Elementary

- School Study Area*
 - Walk Zones
 - Building Footprints
 - School Grounds
 - Park
 - Environmental Justice Areas
 - School Speed Zone
 - Shared Use Path
 - On-Street Bike Facility†
 - Sidewalk
 - Curbcut
 - Pedestrian Crossing Sign
 - 4-Way Stop Sign
 - HWY Signal
 - Other Flashing Sign
 - Signalized Intersection
- Traffic Volume‡**
- Low
 - Medium
 - High



*S.U.M. for Fargo, D.U.M. for West Fargo
 †On-Street bike facilities include bike lanes, segregated bike lanes, shared lane markings, signed bike routes, and shoulders greater than 4
 ‡Average daily traffic counts for low volumes is less than 5,000 cars per day, medium between 5,000 and 10,000, and high more than 10,000

Circulation Challenges

58th Avenue S, north of the campus, is perceived by caregivers as a barrier to walking and biking. There are sidewalk gaps, observed high speed traffic, and poor yielding compliance. The field review indicated the intersection with 20th Street S has low pedestrian visibility. Drivers along the corridor do not expect to see pedestrians crossing at this location.

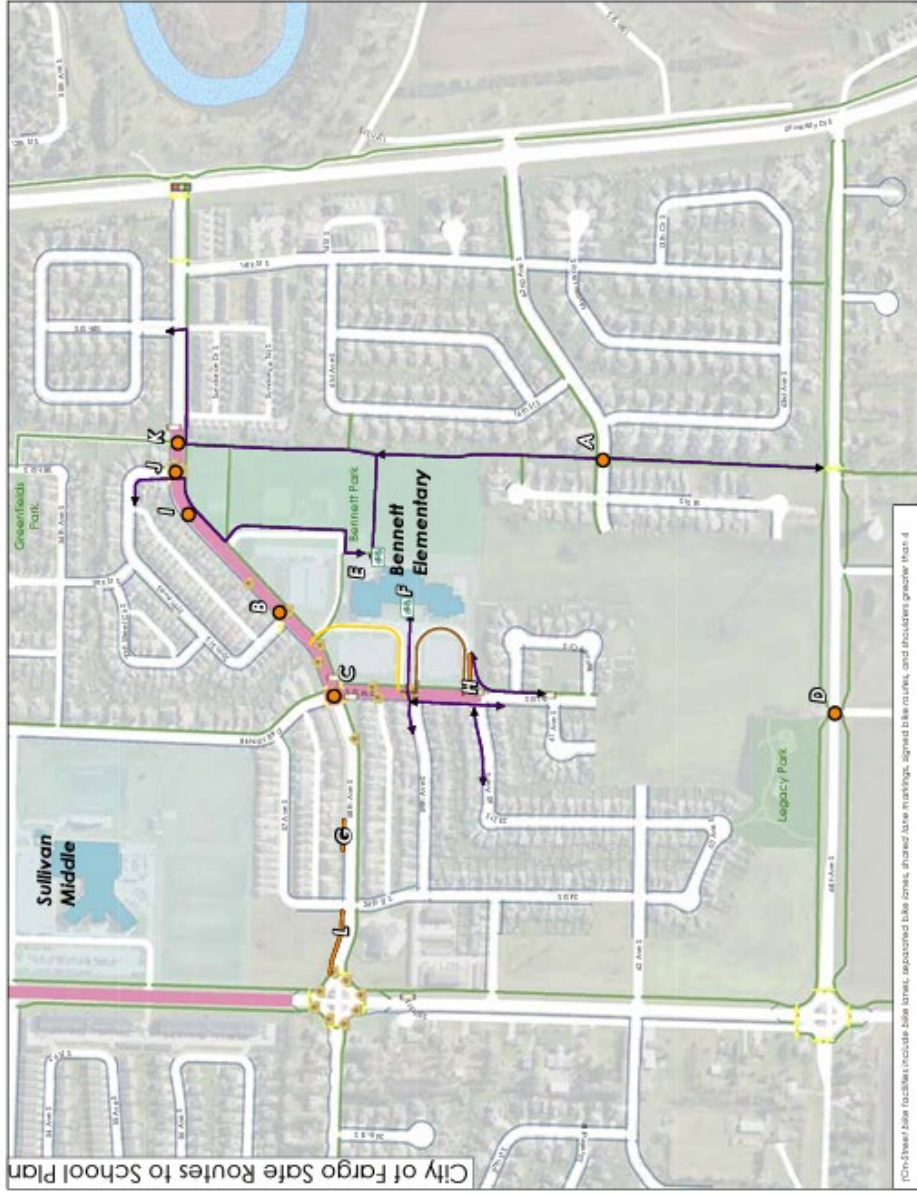
64th Avenue S is outside of the school's current walk zone but was identified as a potential barrier due to the wide lanes and observed high speed traffic.

The shared use path along the eastern edge of the property is a primary north-south circulation route for students walking and biking to school. This trail crosses 58th Avenue S and 62nd Avenue S. There is a flashing beacon at the 58th Avenue S crossing and a bicycle crossing sign at the 62nd Avenue S crossing. During the field review, it was observed that drivers were not anticipating trail users to cross at these locations.

On the west side of the property, incomplete sidewalk networks encourage students to cut across the green space to get to the building.

BENNETT ELEMENTARY CHALLENGES

LOCATION	CHALLENGE
A 62nd Ave S / trail east of 18th St S	Drivers not expecting trail users to cross
B 58th Ave S / 20th St S	Poor driving yielding and stopping compliance Pedestrian visibility is low
C 58th Ave S / 21st St S	Long crossing distances
D 64th Ave S / 21st St S	Wide roadway planned to connect Bennett to future development
E Back of school	Comb style rack does not allow locking of frame and can lead to wheel damage
F Front of school	Comb style rack does not allow locking of frame and can lead to wheel damage
G 58th Ave S between 24th St S and Bishops Blvd	No sidewalk or space for people walking
H Front of school	No sidewalk along shortest path of travel Students cut across green space as shortcut
I 58th Ave S west of 18th St S	Vehicle speeds observed to be high around curve in road
J 58th Ave S / 18th St S	Long crossing distances
K 58th Ave S / trail crossing	Drivers not expecting trail users to cross
L 58th Ave S between 24th St S and 25th St S	No sidewalk or space for people walking



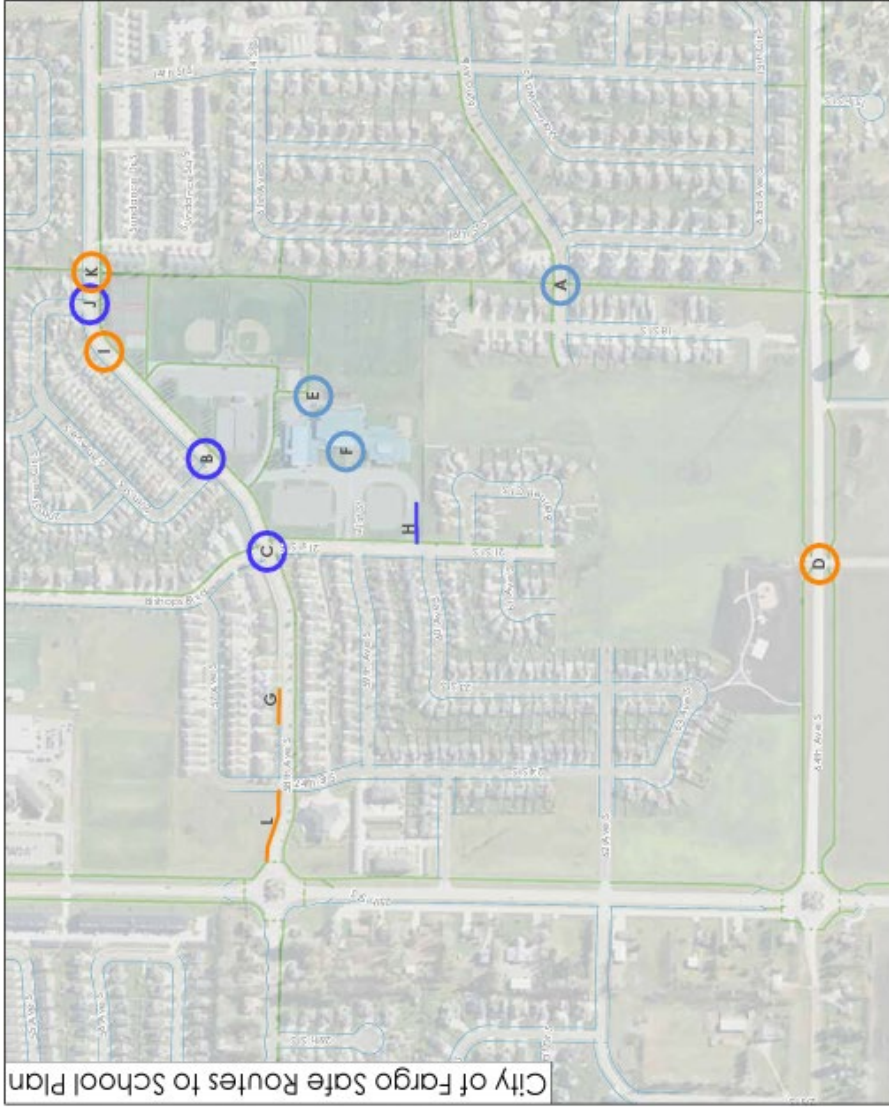
Opportunities for improvement

Due to the identified challenges crossing 58th Avenue S, high impact opportunities for improvement were focused along and across this street in order to make crossings more comfortable for students and families walking to Bennett Elementary. By improving visibility, shortening crossing distances and making it clearer and more obvious where drivers should expect to see people crossing, challenges will likely decrease along 58th Avenue S.

As this area of Fargo grows to the south of school, it will be important to provide comfortable and low stress connections for students and families. In particular, the crossing of 64th Avenue S at 21st Street S should be considered for improvement as more families begin living south of school.

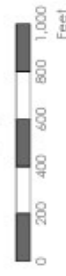
Sidewalks should be installed to connect the existing sidewalk on campus to 21st Street S because many students use and will use 21st Street S to access school.

BENNETT ELEMENTARY OPPORTUNITIES FOR IMPROVEMENT			
LOCATION	POTENTIAL SOLUTION	LEAD AGENCY	IMPACT
A 62nd Ave S / trail crossing	Install high visibility crosswalk; consider installing curb extensions and/or raised crosswalk	City of Fargo	Low
B 58th Ave S / 20th St S	Straighten crossing and extend median safety island; install RRFB	City of Fargo	High
C 58th Ave S / 21st St S	Evaluate the need for left turn lanes; install curb extensions	City of Fargo	High
D 64th Ave S / 21st St S	Provide enhanced pedestrian and bicycle crossing of 64th Ave S with future development	City of Fargo	Medium
E Back of school	Install bike parking to provide two points of contact with bicycle frame (e.g., Inverted U or Post and Ring style rack)	Fargo Public Schools	Low
F Front of school	Install bike parking to provide two points of contact with bicycle frame (e.g., Inverted U or Post and Ring style rack)	Fargo Public Schools	Low
G 58th Ave S between 24th St S and Bishops Blvd	Install sidewalk to fill gap	City of Fargo	Medium
H Front of school	Install sidewalk from 21st along south side of driveway	Fargo Public Schools	High
I 58th Ave S west of 18th St S	Evaluate the need for left turn lane; consider extending median from Location J to this point	City of Fargo	Medium
J 58th Ave S / 18th St S	Install traffic calming including median safety island	City of Fargo	High
K 58th Ave S / trail crossing	Install RRFB; install traffic calming including median safety island	City of Fargo	Medium
L 58th Ave S between 24th St S and 25th St S	Install sidewalk to fill gap	City of Fargo	Medium



**Infrastructure Opportunities
Bennett Elementary**







- Opportunities for Improvement Locations**
- High Impact
 - Medium Impact
 - Low Impact
- Opportunities for Improvement Segments**
- High Impact
 - Medium Impact
 - Low Impact
 - Shared Use Path
 - Sidewalk
 - Building Footprint
 - School grounds

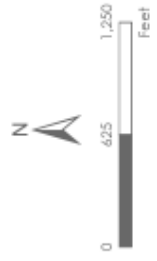


METROCOG

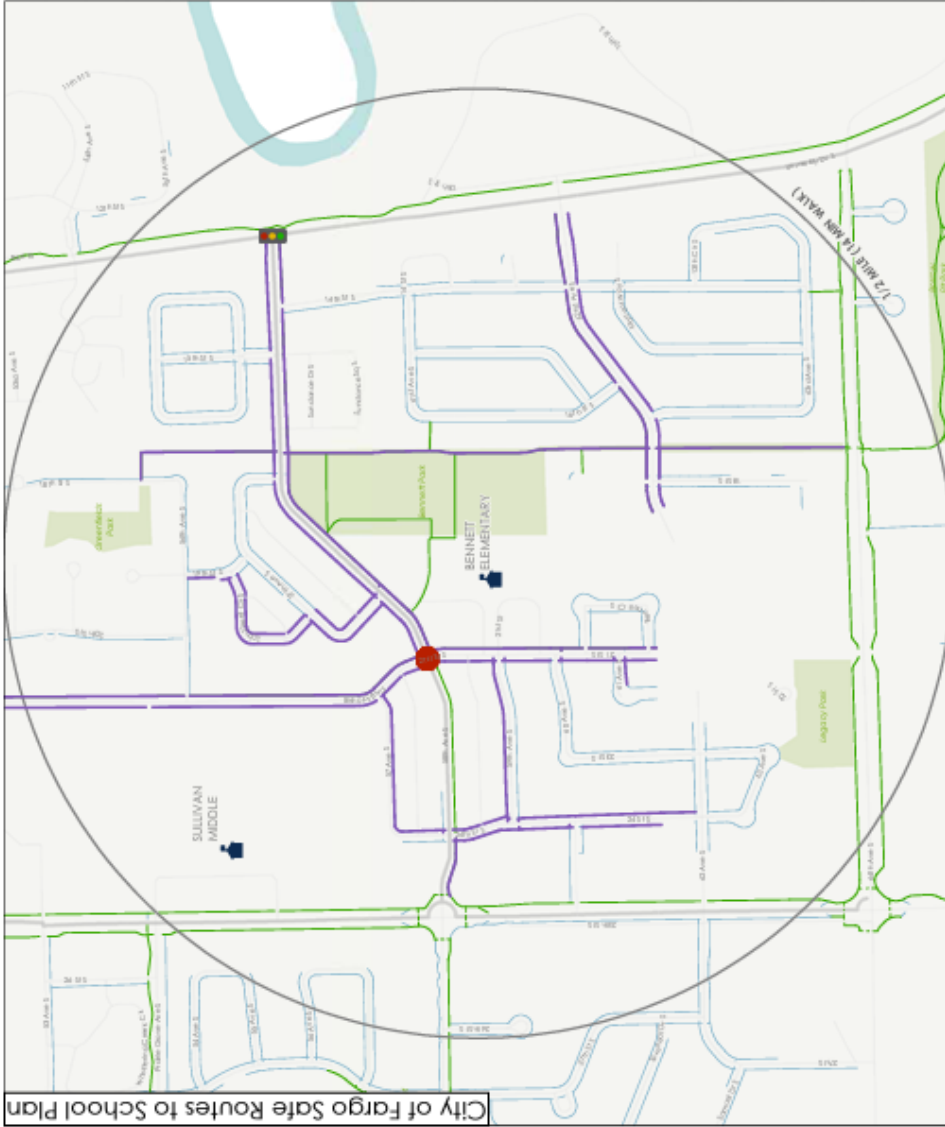
City of Fargo Safe Routes to School Plan

Suggested Routes to School
Bennett Elementary

-  Suggested routes
-  Sidewalks
-  Shared Use Path
-  All-way stops
-  Traffic signal
-  Pedestrian crossing signal



METROCOG



City of Fargo Safe Routes to School Plan

Appendix B – Article from News4SA: Student inside school told 9-1-1 ‘send the police now’ as cops waited outside (Vertuno & Spagot, 2022)

Written by: Jim Vertuno and Elliot Spagot on May 28th, 2022

UVALDE, Texas (AP) — Students trapped inside a classroom with a gunman repeatedly called 911 during this week's attack on a Texas elementary school, including one who pleaded, "Please send the police now," as officers waited more than an hour to breach the classroom after following the gunman into the building, authorities said Friday.

The commander at the scene in Uvalde — the school district's police chief — believed that 18-year-old gunman Salvador Ramos was barricaded inside adjoining classrooms at Robb Elementary School and that children were no longer at risk, Steven McCraw, the head of the Texas Department of Public Safety, said at a contentious news conference.

"It was the wrong decision," he said.

Friday's briefing came after authorities spent three days providing often conflicting and incomplete information about the more than an hour that elapsed between the time Ramos entered the school and when U.S. Border Patrol agents unlocked the classroom door and killed him.

Three police officers followed Ramos into the building within two minutes. In the next half hour, as many as 19 officers piled into the hallway outside. But another 47 minutes passed before the Border Patrol tactical team breached the door, McCraw said.

were no longer at risk.



As the gunman fired at students, law enforcement officers from other agencies urged the school police chief to let them move in because children were in danger, two law enforcement officials said.

The officials spoke on condition of anonymity because they had not been authorized to speak publicly about the investigation.

One of the officials said audio recordings from the scene capture officers from other agencies telling the school police chief that the shooter was still active and that the priority was to stop him.

Ramos killed 19 children and two teachers inside the room. His motive remained unclear, authorities said.

There was a barrage of gunfire shortly after Ramos entered the classroom where officers eventually killed him, but those shots were "sporadic" for much of the time that officers waited in the hallway, McCraw said. He said investigators do not know if children died during that time.

Throughout the attack, teachers and children repeatedly called 911 asking for help, including the girl who pleaded for the police, McCraw said.

Young survivors of the attack said they pretended to be dead while waiting for help.

Miah Cerrillo, 11, told CNN that she covered herself with a friend's blood to look dead. After the shooter moved into an adjacent room, she could hear screams, more gunfire and music being blared by the gunman. Samuel Salinas, 10, who also played dead, told ABC's "Good Morning America" that the assailant shot teacher Irma Garcia before firing on the kids.

Questions have mounted over the amount of time it took officers to enter the school to confront the gunman.

It was 11:28 a.m. Tuesday when Ramos' Ford pickup slammed into a ditch behind the low-slung Texas school and the driver jumped out carrying an AR-15-style rifle. Five minutes after that, authorities said, Ramos entered the school and found his way to the fourth grade classroom where he killed the 21 victims.

But it was not until around 12:50 p.m. that police killed Ramos, McCraw said, when shots could be heard over a 911 call from a person inside the classroom as officers breached the room.

What happened during that time frame, in a working-class neighborhood near the edge of Uvalde, has fueled mounting public anger and scrutiny over law enforcement's response to Tuesday's rampage.

"They say they rushed in," said Javier Cazares, whose fourth grade daughter, Jacklyn Cazares, was killed in the attack, and who raced to the school as the massacre unfolded. "We didn't see that."

According to the new timeline provided by McCraw, after crashing his truck, Ramos fired on two people coming out of a nearby funeral home, officials said.

Contrary to earlier statements by officials, a school district police officer was not at the school when Ramos arrived. When that officer did respond, he unknowingly drove past Ramos, who was crouched behind a car parked outside and firing at the building, McCraw said.

At 11:33 a.m., Ramos entered the school through a rear door that had been propped open and fired more than 100 rounds into a pair of classrooms, McCraw said. He did not address why the door was propped open.

Two minutes later, three local police officers arrived and entered the building through the same door, followed soon after by four others, McCraw said.

Within 15 minutes, officers from different agencies had assembled in the hallway, taking sporadic fire from Ramos, who was holed up in a classroom.

Ramos was still inside at 12:10 p.m. when the first U.S. Marshals Service deputies arrived. They had raced to the school from nearly 70 miles (113 kilometers) away in the border town of Del Rio, the agency said in a tweet Friday.

But the commander inside the building — the school district's police chief, Pete Arredondo — decided the group should wait to confront the gunman, on the belief that the scene was no longer an active attack, McCraw said.

The crisis came to an end at 12:50 p.m., after officers used keys from a janitor to open the classroom door, entered the room and fatally shot Ramos, he said.

Arredondo could not be reached for comment Friday. No one answered the door at his home, and he did not reply to a phone message left at the district's police headquarters.

Gov. Greg Abbott, who at a Wednesday news conference lauded the police response, said Friday that he was "misled," and he's "livid."

In his earlier statements, the governor told reporters, he was repeating what he had been told. "The information that I was given turned out, in part, to be inaccurate," he said.

Abbott said exactly what happened needs to be "thoroughly, exhaustively" investigated.

The governor previously praised law enforcement for their "amazing courage by running toward gunfire" and their "quick response."

On Friday, Abbott had been set to attend the annual convention of the National Rifle Association, which is being held across the state in Houston. Instead he addressed the gun-rights group's convention by recorded video and went to Uvalde.

At the convention, speaker after speaker took the stage to say that changing U.S. gun laws or further restricting access to firearms isn't the answer.

"What stops armed bad guys is armed good guys," Texas Sen. Ted Cruz told those gathered in Houston.

Former President Donald Trump was among Republican leaders speaking at the event, where hundreds of protesters angry about gun violence demonstrated outside, including some who held crosses with photos of the Uvalde victims.

The motive for the massacre — the nation's deadliest school shooting since Newtown, Connecticut, almost a decade ago — remained under investigation. Authorities have said Ramos had no known criminal or mental health history.

During the siege, frustrated onlookers urged police officers to charge into the school, according to witnesses.

"Go in there! Go in there!" women shouted at the officers soon after the attack began, said Juan Carranza, 24, who watched the scene from outside a house across the street.

Cazares said that when he arrived, he saw two officers outside the school and about five others escorting students out of the building. But 15 or 20 minutes passed before the arrival of officers with shields, equipped to confront the gunman, he said.

As more parents flocked to the school, he and others pressed police to act, Cazares said. He heard about four gunshots before he and the others were ordered back to a parking lot.

"A lot of us were arguing with the police, 'You all need to go in there. You all need to do your jobs.' Their response was, 'We can't do our jobs because you guys are interfering,'" Cazares said.

The many chilling details of the attack were enough to leave parents struggling with dread.

Visiting a downtown memorial to those killed, Kassandra Johnson of the nearby community of Hondo said she was so worried the day after the attack that she kept her twin boys home from school.

Before she sent the 8-year-olds back, she studied the school building, figuring out which windows she would need to break to reach them. And she drew hearts on their hands with marker, so she could identify them if the worst happened, Johnson said, as she put flowers near 21 white crosses honoring the victims.

"Those kids could be my kids," she said.

Appendix C – Article from the Palestine Herald – Press: *TIMELINE: Texas elementary school shooting, minute by minute (Bleiberg & Murphy, 2022)*

Written by: Jake Bleiberg and Sean Murphy Associated Press

In the hours and days following the fatal shooting of 19 children and their two teachers at Robb Elementary School in Uvalde, Texas, on Tuesday, authorities gave shifting and at times contradictory information of what happened and how they responded.

The investigation of the massacre is ongoing, but much is already known about the nearly two hours that passed between when authorities say Salvador Ramos shot his grandmother and when police radio traffic indicated that the 18-year-old gunman was dead and the siege was over.

TIMELINE

Sometime after 11 a.m. — Ramos shoots his grandmother in the face, according to Texas Public Safety Director Steve McCraw. Gilbert Gallegos, 82, who lives across the street from Ramos and his grandmother, heard a shot as he was in his yard. He runs to the front and sees Ramos speed away in a pickup truck and Ramos' grandmother coming toward him pleading for help. Covered in blood, "She says, 'Berto, this is what he did. He shot me,'" according to Gallegos, whose wife calls the police to report the shooting.

11:27 a.m. — Video shows a teacher, whom authorities haven't publicly identified, propping open an exterior door of the school, McCraw said.

11:28 a.m. — The teacher exits to retrieve a phone and then returns through the exit door, which remains propped open, McCraw said. It's not clear why the teacher was retrieving a phone. Department of Public Safety spokesman

Travis Considine said Thursday that investigators hadn't determined why the door was propped open.

11:28 a.m. — Ramos crashes the pickup into a drainage ditch behind the school, McCraw said. Two men at a nearby funeral home hear the crash and run out to see what happened. They see Ramos jump out of the passenger side carrying an AR-15-style rifle and a bag full of ammunition. The men run and Ramos fires at them but doesn't hit them. One of the men falls but both make it back to the funeral home. A panicked teacher then emerges from the school and calls 911.

11:30 a.m. — 911 receives a call saying there was a crash and a man with a gun at the school, McCraw said.

11:31 a.m. — Ramos begins shooting at the school from the school parking lot as police cars begin to arrive at the funeral home, McCraw said. Ramos then makes his way around the school building.

The school district police officer who was working that day wasn't on campus around this time, contrary to previous reports, McCraw said Friday. The officer drives to the school "immediately" after getting the 911 call and approaches someone at the back of the school who he thought was the gunman. As the officer "sped" toward the man, who turned out to be a teacher, McCraw said the officer "drove right by the suspect who was hunkered down behind" a vehicle.

11:32 a.m. — Ramos fires multiple shots at the school and then makes his way toward the open door, McCraw said.

11:33 a.m. — Five minutes after crashing the pickup, Ramos enters the school and begins shooting into two adjoining classrooms, 111 and 112, McCraw said. He fires more than 100 rounds.

11:35 a.m. — Three city police officers enter the school through the same door that Ramos used and are later followed by four other officers, McCraw said, putting a total of seven inside the building. Two officers receive “grazing wounds” from Ramos, McCraw said.

11:37 a.m. — Gunfire continues, with 16 rounds being shot in total, McCraw said. It’s unclear who fired the shots.

11:51 a.m. — A police sergeant and other law enforcement begin to arrive, McCraw said.

12:03 p.m. — A female (age unknown) calls 911 and whispers that she’s in classroom 112, McCraw said. The call lasts 1 minute, 23 seconds.

12:03 p.m. — Officers continue to enter the school, with as many as 19 officers in the hallway near the room where Ramos is holed up, McCraw said.

12:06 p.m. — Anne Marie Espinoza, a spokeswoman for the Uvalde Consolidated Independent School District, posts on the district’s Facebook page: “All campuses are under a Lockdown Status.

“Uvalde CISD Parents: Please know at this time all campuses are under a Lockdown Status due to gunshots in the area. The students and staff are safe in the buildings. The buildings are secure in a Lockdown Status. Your cooperation is needed at this time by not visiting the campus. As soon as the Lockdown Status is lifted you will be notified.”

“Thank you for your cooperation!”

12:10 p.m. — The female (age unknown) who called 911 at 12:03 p.m. calls 911 again and says there are multiple dead, McCraw said. She calls again at

12:13 p.m. and then again at 12:16 p.m., when she says there are eight to nine students alive.

12:10 p.m. — The first group of deputy U.S. marshals from Del Rio arrive from nearly 70 miles (113 kilometers) away to assist the various other law enforcement officers already on scene, according to the Marshals Service.

12:15 p.m. — U.S. Border Patrol tactical team members arrive with shields, McCraw said.

12:19 p.m. — Another girl in room 111 calls 911 and ends the call when a fellow student tells her to hang up, McCraw said.

12:21 p.m. — Ramos fires his gun again and officers believe he's at one of the door of one of the adjoining classrooms, McCraw said. Police move down the hallway.

12:21 p.m. — Three shots can be heard during a 911 call, McCraw said.

Around this time, police are stuck in the hallway because both classroom doors are locked and they must seek keys from a school employee.

12:36 p.m. — A child calls 911 for 21 seconds.

Around this time, a girl calls 911 and is told to stay on the line and stay very quiet, McCraw said. The girl says, "He shot the door."

12:43 p.m. —The girl urges the 911 dispatcher to "please send the police now."

12:46 p.m. — The girl says she can "hear the police next door."

12:47 p.m. — She again asks 911 to "please send the police now."

12:50 p.m. — Officers open the doors with keys from a school employee, enter the classroom and kill Ramos, McCraw said. Shots can be heard over the 911 call.

12:51 p.m. — Officers can be heard moving children out of the room, McCraw said.

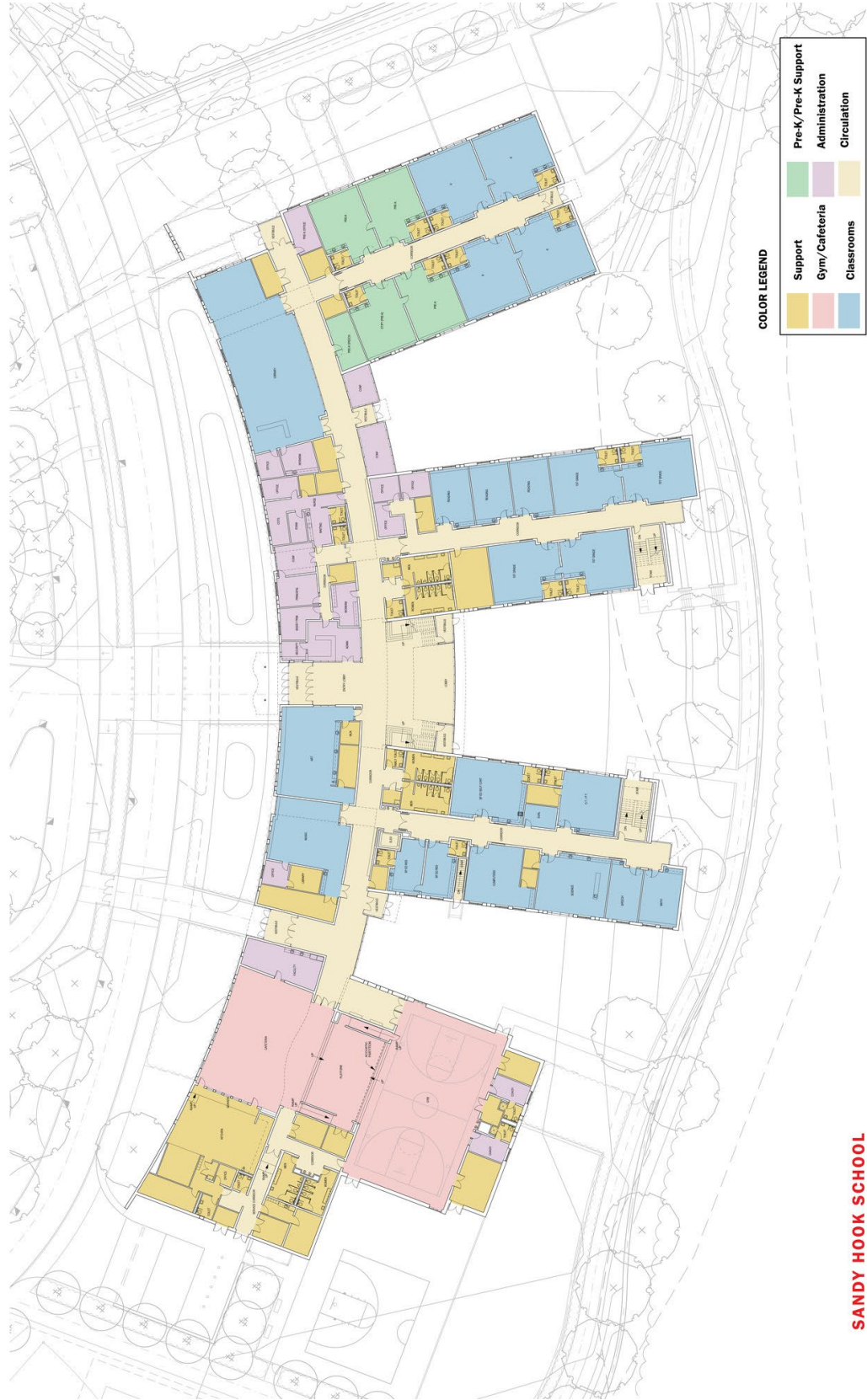
12:58 p.m. — Law enforcement radio chatter says Ramos has been killed and the siege is over, said Victor Escalon, regional director for the Texas Department of Public Safety.

Appendix D – Sandy Hook Elementary Floor Plan

<https://archive.curbed.com/2018/2/22/17042004/sandy-hook-elementary-school-design-security-safety>

SVIGALS + PARTNERS

Architecture + Art



COLOR LEGEND

Support	Pre-K/Pre-K Support
Gym/Cafeteria	Administration
Classrooms	Circulation



MAY 14, 2014

SANDY HOOK SCHOOL
First Floor Plan

Appendix E – Horace Mann Circulation

Horace Mann Elementary

FARGO SAFE ROUTES TO SCHOOL PLAN 81

Horace Mann Elementary

1025 3rd Street N, Fargo, ND 58102

DISTRICT

Fargo Public School District #1

GRADES

K-2

AVERAGE ENROLLMENT

355 (with Roosevelt)

ARRIVAL

8:40 a.m.

DISMISSAL

3:02 p.m.



Existing Conditions

Horace Mann Elementary is a kindergarten through 2nd grade school in the Fargo Public School District. It is located less than one mile north of Downtown Fargo in the city's Horace Mann Neighborhood. The neighborhood consists primarily of single-family residential land uses. Within the Horace Mann boundaries, per capita incomes and median household incomes are significantly lower than the district average. More than 41 percent of students are eligible for free and reduced lunch programs. Less than four percent of students participate in English Language Learners programs.

The Horace Mann school facility was constructed in 1915. In 2008, Horace Mann Elementary and Roosevelt Elementary schools were joined together with kindergarten through 2nd grades housed at the Horace Mann campus, while grades 3 through 5 attend Roosevelt Elementary. Prior to 2008, both schools included kindergarten through 5th grade.

The Horace Mann campus is bound by 3rd Street N to the west, 11th Avenue N to the north, 2nd Street N to the east, and 10th Avenue N to the south. The roads surrounding the campus consist of local roads with primarily localized traffic patterns. There are sidewalks on both sides of the roadway throughout the walk zone. There are designated school speed zones on 2nd Street N between 11th Avenue N and 10th Avenue N and along Broadway between 12th Avenue N and 11th Avenue N. Parents and caregivers dropping off and picking up use the parking lot on the east, but occasionally drop students off in the same loop as buses on the west, creating potential conflicts between users. Along the western edge of the parking lot driveway, there are no pedestrian facilities, which limits access to the school building from 10th Avenue N.



▲ Intersections along 2nd Street N have inconsistent pavement markings and long crossing

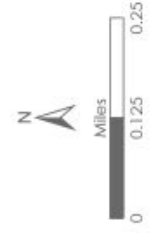


▲ There is no pedestrian space along the western edge of the parking lot, connecting 10th Avenue N to the school building.

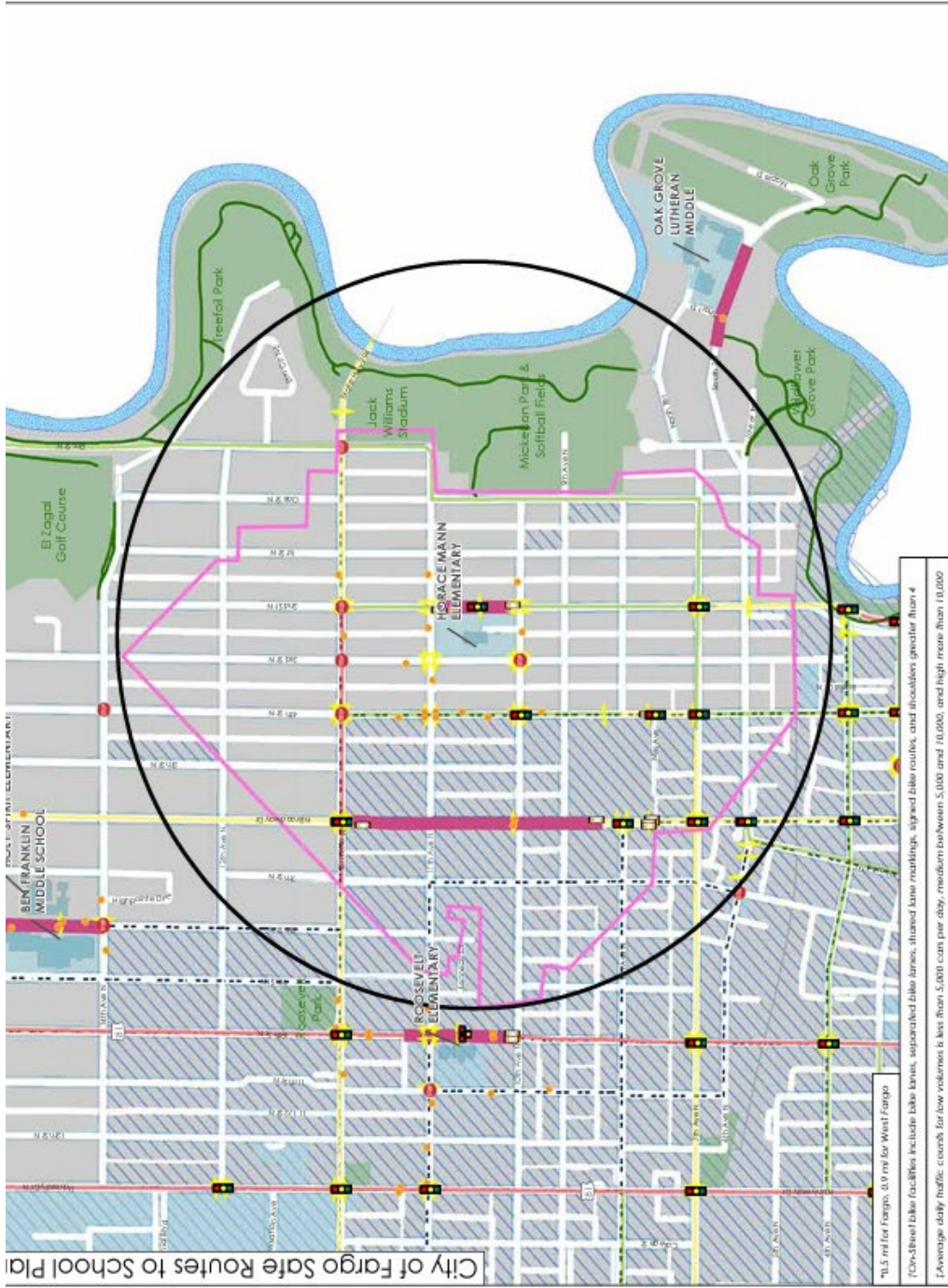
Existing Conditions Horace Mann Elementary

- School Study Area*
 - Walk Zones
 - Building Footprints
 - School Grounds
 - Park
 - Environmental Justice Areas
 - School Speed Zone
 - Shared Use Path
 - On-Street Bike Facility†
 - Sidewalk
 - Crosswalk
 - Pedestrian Crossing Sign
 - 4-Way Stop Sign
 - HAWK Signal
 - Other Flashing Sign
 - Signalized Intersection
- Traffic Volumes‡**
- Low
 - Medium
 - High

*Horace Mann serves grades K-2



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City of Fargo Safe Routes to School Plan

†0.5 mi for Fargo, 0.9 mi for West Fargo

‡Classification facilities include bike lanes, separated bike lanes, separated bike markings, signed bike routes, and shoulders greater than 4 feet wide. Average daily traffic: 1,000 or less, 1,000-5,000 cars per day, 5,000-10,000 cars per day, 10,000-20,000 cars per day, and 20,000 or more cars per day.

Circulation Challenges

The Horace Mann campus is a traditional neighborhood school, with a smaller campus and fewer vehicle spaces than some of the newer schools, often resulting in unique congestion and potential conflicts. On the west side, the loop is used by both parents and caregivers and buses, creating conflict and congestion.

On 2nd Street N and 3rd Street N, there are multiple locations that would benefit from improved crossings and pavement markings. There is a mid-block traffic signal on 2nd Street N that may need to be re-timed to be more responsive to the pedestrian activation. In multiple field observations, the time between activation and walk signal varied from eight seconds to 40 seconds.

HORACE MANN ELEMENTARY CHALLENGES

LOCATION	CHALLENGE
A 2nd St N / 10th Ave N	Inconsistent crosswalk marking Long crossing distances
B 2nd St N / 11th Ave N	Inconsistent crosswalk marking Long crossing
C 3rd St N / 10th Ave N	Driver yielding compliance is low
D 3rd St N / 11th Ave N	Long crossing distances
E 2nd St N midblock	Phasing and timing of pedestrian crossing varies
F Bus / parent Drop	Private vehicles use the loop to drop students off while students from bus also use it to walk into school Potential conflicts between users
G South side of Building	Lack of separation from driveway and pedestrian areas
H Access to building between 10th Ave N and south entrance	Lack of separation from driveway and pedestrian areas
I Eastside of building near playground	Comb style rack does not allow locking of frame and can lead to wheel damage

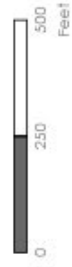
Observed Circulation & Challenges Horace Mann Elementary

Key

- Bus Circulation
- Challenge
- Shared Bus and Vehicle Lane
- Vehicle Drop-off and Pick-up
- Observed Walking and Biking Routes
- Bike Rack
- Challenge

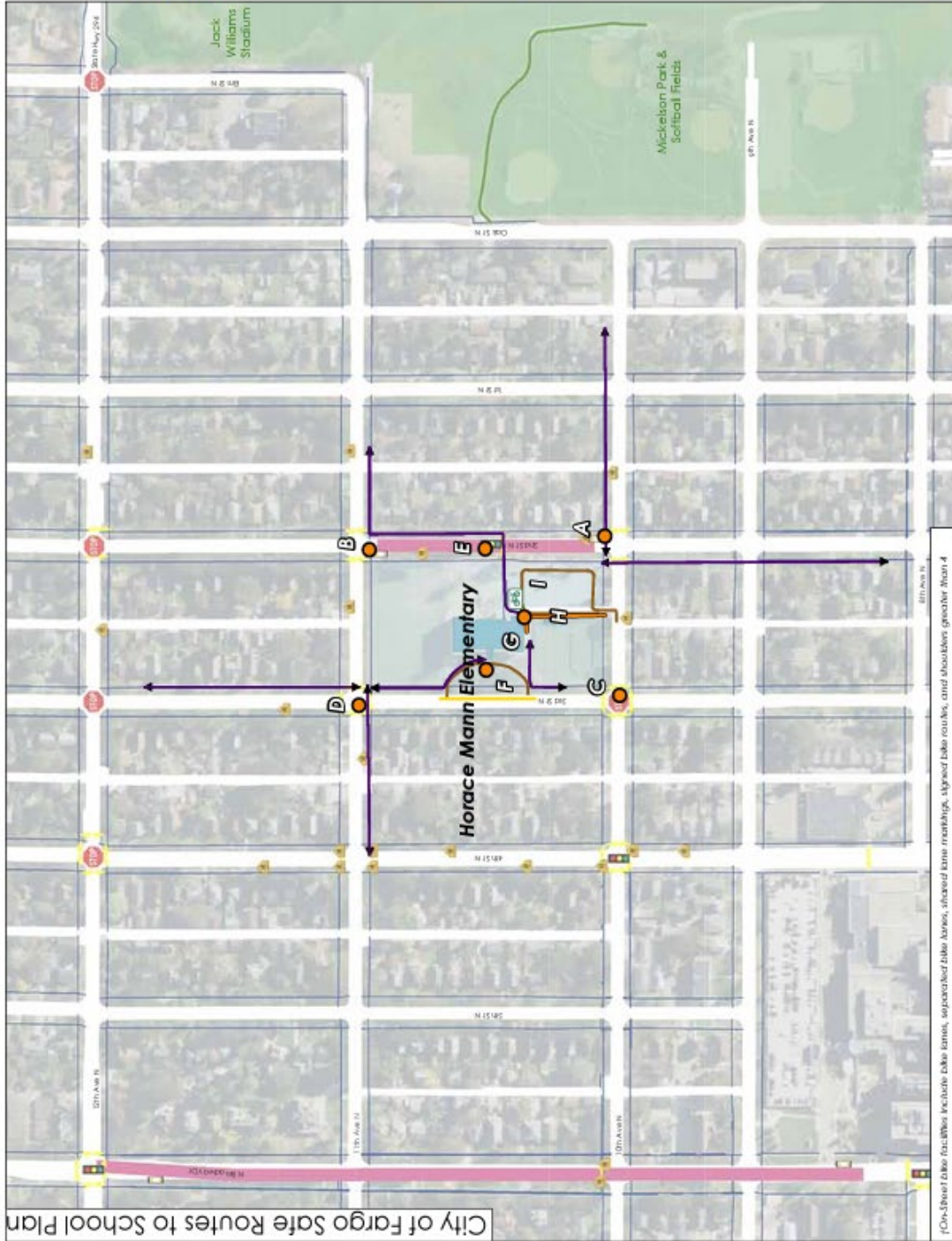
Existing Infrastructure

- Building Footprints
- School Grounds
- School Speed Zones
- On-Street Bike Facility
- Sidewalk
- Shared Use Path
- Crosswalk Marking
- Signalized Intersection
- HAWK Signal
- Other Flashing Sign
- Pedestrian Crossing Sign
- 4-Way Stop Sign



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*Original Content from AM Maps -
Not All Features Present on All Maps



City of Fargo Safe Routes to School Plan

[On-Street bike facilities include bike lanes, separated bike lanes, shared bike lanes, signalized bike routes, and boulevards greater than 4

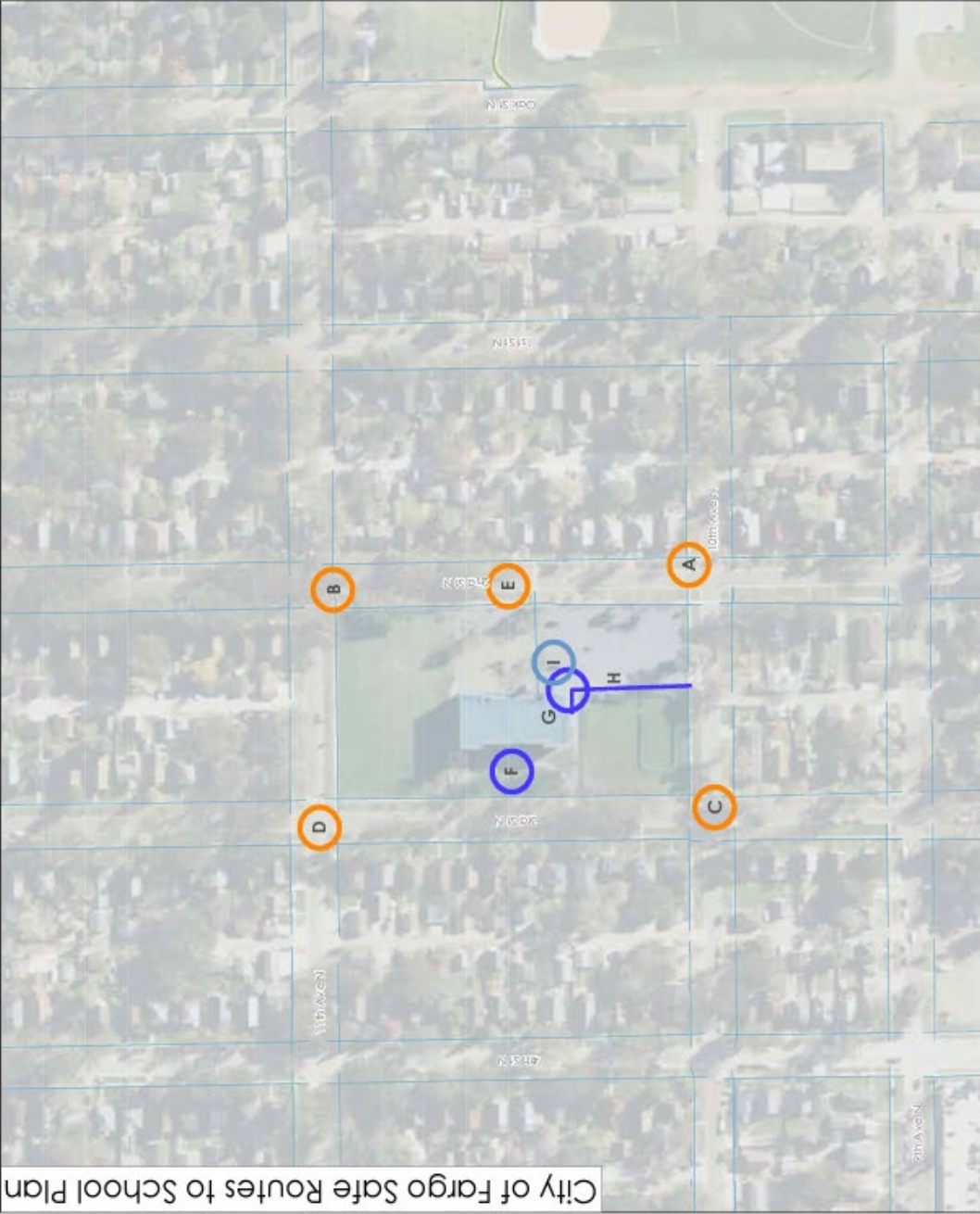
Opportunities for improvement

Because the streets surrounding Horace Mann have relatively low traffic volumes and speeds, the highest impact opportunities for improvement are located on school grounds. In particular, installing a separated and raised space for people walking to the south door would likely increase comfort for students and families and decrease the chances for conflict between drivers and people walking. Additionally, the bus loop on the west side of school should be closed to parents and caregivers dropping and pick up students – this would limit potential conflicts.

Curb extensions on the four corners of campus to shorten crossings, increase visibility, and calm traffic are of lower impact because of existing traffic volumes and speeds, but should be considered to increase comfort for students and families.

HORACE MANN ELEMENTARY OPPORTUNITIES FOR IMPROVEMENT

LOCATION	POTENTIAL SOLUTION	LEAD AGENCY	IMPACT
A 2nd St N / 10th Ave N	Consider curb extensions on north and west crossings or median safety island on 10th Ave; install forward stop bars	City of Fargo	Medium
B 2nd St N / 11th Ave N	Consider curb extensions on south and west crossings or median safety island on 10th Ave; install forward stop bars	City of Fargo	Medium
C 3rd St N / 10th Ave N	Install curb extensions (prioritize north and east crossings); install forward stop bars	City of Fargo	Medium
D 3rd St N / 11th Ave N	Install curb extensions (prioritize south and east crossings); install forward stop bars	City of Fargo	Medium
E 2nd St N midblock	Evaluate signal timing and phasing for consistency	City of Fargo	Medium
F Bus / parent drop	Close loop to personal vehicle traffic; install bus loop and one-way signage	Fargo Public Schools	High
G South side of building	Install raised and separated curb space; install ADA compliant curb ramp	Fargo Public Schools	High
H Access to building between 10th Ave N and south entrance	Install raised curb space with separation from vehicle drop-off lane; connect to existing sidewalk network	Fargo Public Schools	High
I East side of building near playground	Install bike parking to provide two points of contact with bicycle frame (e.g., Inverted U or Post and Ring style rack)	Fargo Public Schools	Low



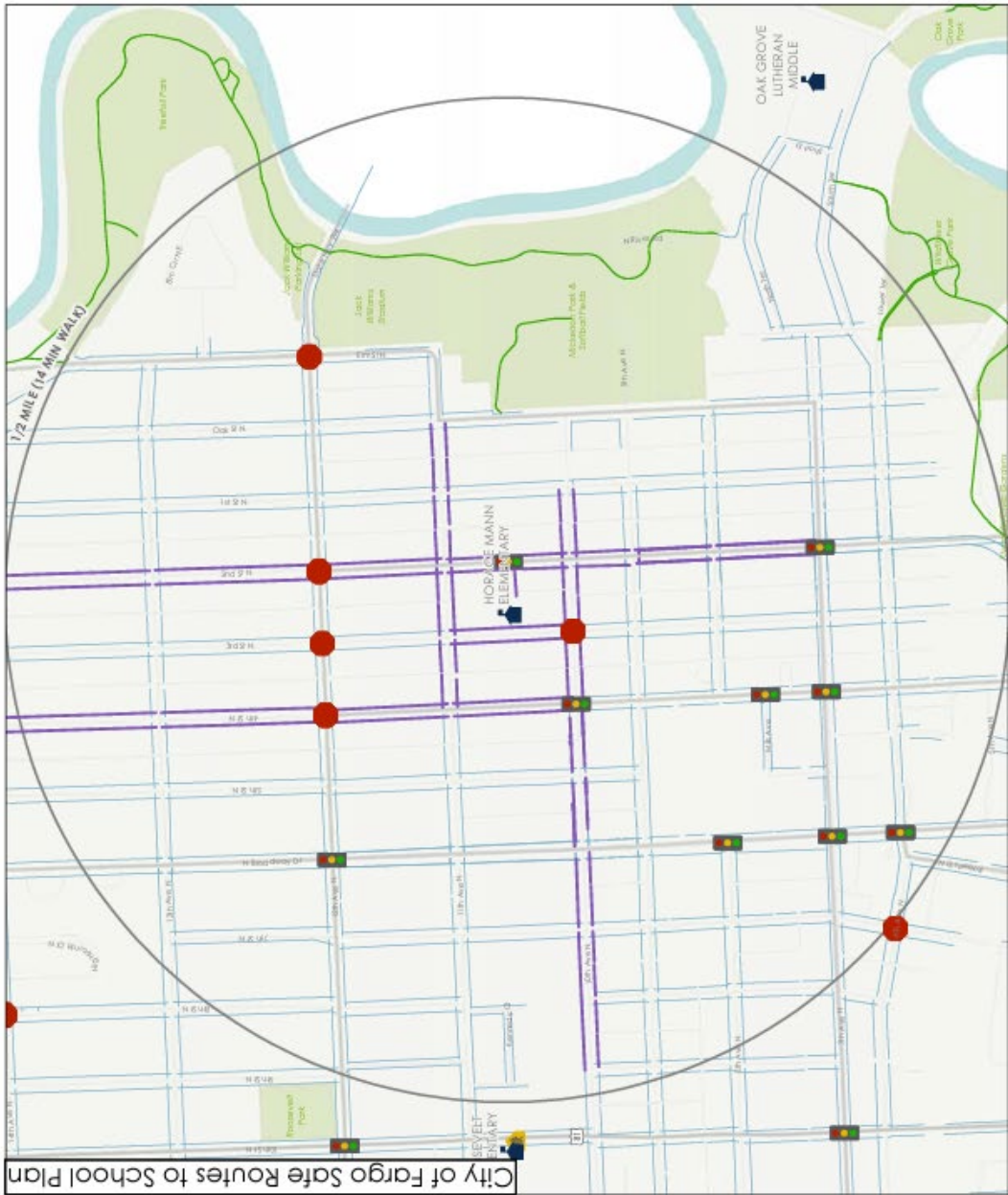
Infrastructure Opportunities Horace Mann Elementary

- Opportunities for Improvement Locations
 - High Impact
 - Medium Impact
 - Low Impact
- Opportunities for Improvement Segments
 - High Impact
 - Medium Impact
 - Low Impact
- Shared Use Path
- Sidewalk
- Building footprint
- School grounds



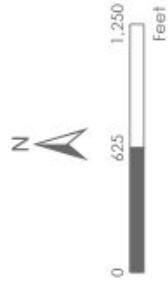
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City of Fargo Safe Routes to School Plan



Suggested Routes to School
Horace Mann Elementary

- Suggested routes
- Sidewalks
- Shared Use Path
- All-way stops
- Traffic signal
- Pedestrian crossing signal



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