Crash Analysis Studio

Session 21: Fargo, North Dakota
Held on September 20, 2024

Session Participants:

- **Cody Christianson**, P.E., ENV SP, Transportation Project Manager & Active Transportation Services group leader with Bolton & Menk; Multimodal design enthusiast; Fargo native
- **Arlette Preston**, Former City Commissioner; Fargo Local Conversation Leader; Strong Towns Member; Entrepreneur; Community health and safety advocate
- **Tommy Schmidt**, AIA, Project Architect at JLG Architects; City of Fargo Planning Commission member; concerned community member
- **Edward Erfurt**, Director of Community Action at Strong Towns
- **Tony Harris** (moderator), Community Engagement Coordinator at Strong Towns

Summary of Crash Event

- The crash occurred around 5:50 a.m. (CT) on September 13th, 2023 on the north side of 13th Avenue SW in the middle westbound lane.

- Deborah Hopper was walking north when she was struck by motorist Abun Gofor, who was driving a 2008 Chevrolet Silverado at the time of the collision.

- Cameras from a nearby apartment complex provided footage of the crash. Based on this footage, media sources indicate the following:
    - The light had been green for about 30 seconds.
    - Hopper did not have a walk signal.
    - Gofor did not appear to be speeding or distracted by his phone.

- Hopper succumbed to her injuries and passed away due to the collision.

- No charges were filed against Gofor.

- At its intersection with 32nd Street S, the east portion of 13th Avenue SW has seven traffic lanes.
    - Three of these lanes serve eastbound through traffic.
    - Three of these lanes serve westbound through traffic.
    - One lane is dedicated to left-hand turns by westbound motorists.

- The speed limit on 13th Avenue SW is 35 miles per hour (mph).

- All four legs of the intersection are signalized and marked with dedicated crossing spaces.
    - There are also sidewalks and planter areas on all sides of the intersection.
    - There are bus stops in the northeast, northwest, and southwest corners of the intersection.

- Weather reports tell us that it was humid, partly cloudy, and still dark at the time of the collision on September 23, 2023 in Fargo.

Primary Contributing Factors

There are people walking along 13th Avenue SW and 32nd Street S even though the infrastructure along these roadways is dangerous–and in some instances, deadly–for them. The design of 13th Avenue SW and its intersection with 32nd Street S demonstrates inadequate concern for the safety of non-motorists–including pedestrians, cyclists, and transit riders–that travel outside of privately owned automobiles.

Designers acknowledge the existence of pedestrians and cyclists at this location by constructing sidewalks - which have recently been improved - around the intersection and a shared use path on the south side of 13 Avenue SW. This intersection includes pedestrian crossing signals with push button activators; however, as shared by the panelists, the timing of these signals is not adequate for an average walker to safely cross the entire intersection safely.

Motorists operating cars, trucks, buses, or other automobiles at this intersection can access seven traffic lanes, all of which are wider than typical measurements for urban streets. These infrastructure elements communicate conflicting messages to road users; they do not equally prioritize non-motorists and drivers in this environment.

Multiple bus routes, such as the 20 and the 15, pick up at the intersection of 13th Avenue SW and 32nd Street S. Riders are required to cross through this intersection for at least one leg of their journey. Though buses were not yet running for the day at the time this crash occurred, transit riders from neighborhoods south of the crash location frequent this intersection regularly. Despite the presence of multiple bus stops at this intersection, designers have not fully addressed the risk incurred by transit riders when crossing 13th Avenue SW and navigating nearby streets.

These same professional parties have elected to use design standards near the crash location that assume a high volume of motorists and prioritize the throughput of this volume above all other standards. The peak volume of this street is only present during very limited travel periods, such as morning and evening rush hour for commuters. Typical volumes are far below the capacity that is provided for on these streets. The standards applied to these streets also cater to traffic traveling at speeds higher than the posted limit. The wide through travel lanes on 13th Avenue SW are exemplary of roadway characteristics that poorly communicate behavioral expectations to drivers.

This street also lacks infrastructure features that protect non-motorists, specifically pedestrians and cyclists. The city of Fargo has neither painted dedicated bike lanes nor installed street lighting that adequately illuminates the silhouettes of travelers walking or rolling through the intersection. The presence of dedicated left turn lanes on both the eastbound and westbound sides of 13th Avenue SW decreases friction necessary to slow down traffic in this area, particularly outside of peak travel times. These design elements create an environment where motorists may be likely to surpass the posted speed limit or otherwise disregard non-motorists moving through the area.

Session participants identified the following primary factors that contributed to this crash:

1. **Both the documented travel speed and the design speed of 13th Avenue SW are incompatible with pedestrian and cyclist traffic that is encouraged at this intersection and in the area surrounding it.**
    a. The current speed limit on 13th Avenue SW is 35 mph.
    b. A speed study conducted for this studio indicated that 65% of eastbound motorists–and 44% of westbound motorists–exceeded the posted speed limit. When averaged together, 54% of motorists exceeded the posted speed limit.
    c. The study stated the 85th percentile speed, or the speed at which 85% of drivers traveling at or below, was 40 mph.
    d. A pedestrian safety analysis states that fatality rates climb for automobile collisions involving pedestrians at 25 mph. When automobile speeds exceed 40 mph, 45% of pedestrian collisions are found to be fatal. The posted limit approaches the edge of lethality, particularly for pedestrians like Deborah Hopper.
    e. Of the 554 motorists tracked, only 8 motorists were found to be traveling at speed limits of 46 mph or higher.
    f. 295 motorists–or 53% of the sample–were driving between 36 and 44 mph. This data distribution may suggest that this space communicates to drivers that it is a low-risk behavior to travel at speeds likely to result in fatalities for pedestrian crashes.
    g. By design, vehicle travel speeds on 13th Avenue SW subject non-motorist users–including pedestrians, public transit riders, and cyclists–and motorist users to substantive danger.

2. **The signal timing for crossing the 13th Avenue SW and 32nd Street S intersection is not designed to accommodate non-motorist usability or safety.**
    a. Given the intersection's recorded distance of 106 feet and pedestrian crossing time of 31 seconds, a healthy and able-bodied adult traveling by foot would need to walk 3.4 feet per second to safely cross this intersection in the allotted time.
        i. The Manual on Uniform Traffic Control Devices (MUTCD) recognizes that additional crossing time may be necessary based on age and abilities of an area's non-motorist population.

ii. Pedestrians walking slower or entering the crosswalk midlight may be stranded in the middle of the crossing when the lights change.
iii. With no pedestrian push button on the median in the center of the intersection, a non-motorist who stopped mid-crossing would have to wait the duration of a full signal interval–without a designated refuge space–to continue crossing with a signal.
iv. This circumstance may result in drivers having a green light while pedestrians are still crossing the intersection.

b. A local panelist found the wait interval after pushing the pedestrian crossing light at this intersection lasted for just over 60 seconds.
   i. Organizations like the Federal Highway Administration (FHWA) urge for wait times closer to 30 seconds.
   ii. Pedestrians are more likely to engage in risky behavior and cross without a signal due to longer wait times.
   iii. Long wait times to receive a pedestrian crossing signal and short crossing pedestrian light timing encourage pedestrians to undertake risky decision making while navigating the intersection.

3. **13th Avenue SW and its intersection with 32nd Street S prioritize automobile traffic throughput over all other design objectives, especially non-motorist safety.**
   a. A basic stopping distance calculator indicates a car - in good condition, with an alert motorist, on a dry road - traveling at 35 mph will need at least 96 feet of stopping distance. Additional stopping distance may be necessary given environmental factors, the condition of the automobile, motorist reaction time, and travel speed.
      i. Though the motorist in this crash was reportedly not speeding, more than half of the drivers tracked during the speed study were exceeding the speed limit; these motorists would need additional stopping time under the circumstances of this crash to avoid striking a pedestrian.
      ii. A driver traveling at 40 mph would need approximately 150 feet of stopping distance to adequately slow down after seeing a pedestrian crossing at the upcoming intersection.
   b. The dedicated left turn lane at this intersection reduces line of sight for motorists traveling in the through traffic lanes. While a shorter left-side sight line does not impact their ability to travel through the intersection, it does heighten the likelihood they will not be aware of crossing pedestrians.
   c. The dedicated left-turn lane also reduces line of sight for northbound pedestrians crossing this intersection; this reduction is further compounded when automobiles in this lane are larger vehicles, such as pickup trucks or box trucks.
      i. This reduced sight line is likely to impact pedestrian decision-making and view of oncoming traffic while crossing.
      ii. These stacked vehicles may obscure pedestrians caught in the intersection after the light changed.

d. Drivers entering into the intersection from dedicated right turn lanes on 32nd Street S experience wide curb radii that require minimal deceleration to navigate; these maneuvers further dull their awareness of non-motorists.
e. Non-directional ramps for pedestrians and non-motorists neither facilitate safe directional crossings nor meet the Americans with Disabilities Act (ADA) and the Architectural Barriers Act (ABA) Accessibility Guidelines for the Public Right-of-Way (PROWAG)[1]. These standards are particularly important for individuals with compromised eyesight or individuals using mobility devices.

4. **13th Avenue SW is over-engineered and overbuilt for its traffic volume.**
    a. Annual Average Daily Traffic (ADT) for 13th Avenue SW near its intersection with 32nd Street S indicates[2] the necessity to accommodate 25,465 vehicles per day.
    b. The 13th Avenue SW street section is composed of six through lanes–3 in each direction–and dedicated left-turn lanes with long queueing areas.
    c. According to the Highway Capacity Manual the planning level of capacity of a 6 lane road with left turn lanes is 55,300 vehicles per day[3] or more than double the current volume.
    d. Overall road width may demand pedestrians, cyclists, and other non-motorists judge gaps across as many as seven lanes at once.
    e. This requires non-motorists to simultaneously evaluate oncoming vehicle speed, both westbound and eastbound, and estimate their ability to move in between and beyond said vehicles.

5. **Visibility within the 13th Avenue SW and 32nd Street S intersection is limited–and likely decreased–by design aspects of the built environment.**
    a. Photographs illustrate that the view corridor for both drivers and non-motorists entering into this intersection is long; the current lighting apparatus in dark conditions inadequately illuminates pedestrians and creates glare on the roadway.
    b. Street lighting that illuminates only from the top-down may do a poor job of making pedestrians and cyclists more visible to motorists; this style of lighting could create blind spots for both drivers and cyclists.
    c. Lighting placed above the roadway does better illuminating the tops of people than their sides; overhead highway style lights make it difficult for motorists to see the profiles of pedestrians during approach at this intersection and others like it.
    d. According to sun graphs for Fargo, the crash occurred an hour and twelve minutes before sunrise; lack of natural lighting would have further decreased visibility on the morning of September 13, 2023.

---

[1] See U.S. Access Board About PROWAG for additional details.
[2] See Metropolitan Council of Governments (MCOG) Urban Area AADT Map for additional detail.
[3] See Highway Capacity Manual, Sixth Edition: A Guide for Multimodal Mobility Analysis.

6. **13th Avenue SW is a thoroughfare that is a mix between a street and a road, a type of hybrid road design commonly referred to as a stroad[4].**
    a. Common in the United States and Canada, stroads are wide arterials that often provide access to suburban subdivisions, strip malls, drive-through fast food restaurants, and other automobile-oriented commercial establishments.
    b. The physical design of 13th Avenue SW attempts to simultaneously accomplish two aims that typically conflict with each other:
        i. Encourage fluid connectivity to move people from one location to another.
        ii. Satisfy the needs of non-motorists–traveling both on foot and by bicycle–that interact with the space as a neighborhood street.

Recommendations

Fargo city leadership, technical staff, and community members should all agree upon the desired user behavior along 13th Avenue SW–particularly at its intersection with 32nd Street S–as the initial step toward improving safety at the collision location for all road users. Elected officials must communicate that the design intent of 13th Avenue SW is to prioritize safety, particularly for non-motorist users; officials must direct and guide staff and community members to achieve and maintain this type of safety.

Roadway design was a major contributing factor for this crash. The roadway section of 13th Avenue SW is designed to move high throughputs of traffic through the area at high speeds, even though high throughputs are only encountered at peak times during rush hour. Though the intersection displays many characteristics typical of urban streets, 13th Avenue SW also features seven travel lanes that–through their excessive widths–prioritize high speed automobile travel and throughput over all other design objectives. The shared pedestrian and cyclist path on the southern side of 13th Avenue SW only relieves non-motorists from conflict with drivers by placing them at odds with one another. Public investment in both of these usage modalities is creating suboptimal conditions where pedestrians and cyclists do not feel safe crossing the street, and motorists are frustrated they cannot drive as fast as the road is designed for them to travel. This crash is representative of the outcome of the current design approach.

The 13th Avenue SW and 32nd Street S intersection is currently designed and built in a way that makes this intersection dangerous for even the most careful of drivers. There are many things that the city can do–a lot of them quickly and cheaply–to make this intersection substantially safer. The panelists of the studio shared numerous recommendations that could be taken in both the near term and long term at the intersection of 32nd Street S and 13th Avenue SW.

Immediate:

1. Elected officials of Fargo should provide direction and guidance to municipal staff for the desired user behavior along 13th Avenue SW–particularly at its intersection with 32nd Street S–as the initial step toward improving safety for all road users.

[4] The Stroad (October 2017).

    a. Elected leadership should prepare a resolution[5] to this effect that states:
        i. Safety for all users shall be the top design priority above all others for this location.
        ii. All future planning and design efforts for these streets shall be contextual to an urban character safe for all users.
        iii. Temporary safety measures should be implemented until more permanent measures are made when dangerous conditions are identified or if the desired user behavior is not achieved.
2. Review and adjust signal timing along the 13th Avenue SW corridor.
    a. Reduce signal timings and cycle length to discourage high-risk crossing behavior by pedestrians, cyclists, and other non-motorists that frequent the area.
    b. Increase the duration of the pedestrian walk signal through the introduction of a leading pedestrian interval (LPI).
    c. Test two-stage crossing along 13th Avenue SW to see how effectively it shortens pedestrian clearance intervals from the current wait time that exceeds sixty seconds.
    d. Ensure traffic signals along 13th Avenue SW are synchronized so that motorists can navigate the corridor fluidly, even when operating at lower speeds.
3. Deploy temporary measures such as–but not limited to– orange cones, orange barrels, paint, and/or delineator sticks to extend the curbs and tighten the curb radius at the intersection to provide extra pedestrian refuge space and assist in denoting direction of travel.
4. Utilize cones, barriers, and delineator sticks to eliminate dedicated right-hand turn lanes on 32nd Street S and similar north/south cross streets that intersect with 13th Avenue SW.
5. Explore the conversion of the curb lane on 13th Avenue SW into a dedicated bus-only lane[6].This study could be initiated using quick-build strategies and temporary materials such as barriers, cones, and paint; readjust as necessary.
6. Pursue optical narrowing by introducing vertical elements–such as additional street trees–along the north and south sides of 13th Avenue SW.
7. Extend the center median further toward the intersection to provide mid-crossing refuge for pedestrians and non-motorists, especially for those that may be crossing 13th Avenue SW at a slower pace. This could be initiated using quick-build strategies and temporary materials such as bollards and paint.
8. Review the existing conditions at this intersection for compliance with the Americans with Disabilities Act (ADA) and the Architectural Barriers Act (ABA) Accessibility Guidelines for the Public Right-of-Way (PROWAG)[7].
    a. Where deficiencies are found, initiate quick-build strategies and use temporary materials such as barriers, cones, and paint until permanent improvements can be made.

---

[5] These resolutions should be shared at the state level with the North Dakota Department of Transportation (NDDOT).
[6] An example sketch by panelist Tommy Schmidt is available here.
[7] See U.S. Access Board About PROWAG for additional details.

9. Adjust the lighting at the intersection to better illuminate non-motorists using sidewalks and crosswalks.
    a. This may include temporary lighting added to existing posts or the installation of new bollard lights.
10. Solicit local residents and city staff–including planners, engineers, and law enforcement officers–to conduct a walk audit of the area around the crash location so that they can observe the existing conditions and driver behaviors first-hand.
11. Form an interdisciplinary team of city staff–including those who participated in a walk audit of the intersection–from multiple departments to act as rapid responders[8] to automobile collisions.
    a. This team should convene following a serious crash and be responsible for documenting factors that contribute to crashes as demonstrated in this Crash Analysis Studio. These findings should be shared with the elected leadership and the public.
    b. Grant this team agency to immediately implement short term or temporary physical improvements to the street that respond to the contributing factors of the crash. These should be quick build projects undertaken with available resources that can be deployed in a matter of days. Charge the team with the authority to implement the immediate actions suggested in this report; encourage them to work toward near-term and long-term recommendations.
12. Review city street standards and identify opportunities to improve existing standards or adopt new details that would address the contributing factors to this crash. Pursue opportunities that increase compliance to Guidelines for PROWAG and overall safety for all users.

Near Term (within the next 12 months):

13. Monitor the effectiveness of pilot bus-only lanes by collecting data on travel times, impact on traffic, and compliance; given that bus-only lanes are successful, take steps to convert them into permanent fixtures.
14. Update city standards to include development details that maintain better accommodation for all users and include the use of temporary, inexpensive, and quickly deployable materials.
    a. Develop a city standard for a kit of parts specifically for interim improvements that can be deployed rapidly when a safety issue or a contributing factor to a crash is identified. This would include items such as–but not limited to– temporary bollards, temporary paint, and temporary curbing materials.
    b. These details may include permanent versions of temporary measures, such as–but not limited to–materials for right-sizing lane widths and curb extensions.
15. Explore reconfiguring 13th Avenue SW from its current form of 6 lanes to 4 or fewer. This type of roadway reconfiguration is described by the Federal Highway Administration (FHA) as a Road Diet[9].

---

[8] For more information on rapid response models, see Pedestrian Safety Gets Big Boost From New Cincinnati Initiative (January 2023).
[9] See Proven Safety Countermeasures, Road Diets (Roadway Reconfiguration).

a. A Road Diet typically involves converting an existing four-lane undivided roadway to a three-lane roadway consisting of two through lanes and a center two-way left-turn lane (TWLTL). According to the FHA A Road Diet, or roadway reconfiguration, can improve safety, calm traffic, provide better mobility and access for all road users, and enhance overall quality of life.
b. Experts on roadway capacity indicate that four lane roads with left turn lanes can accommodate 31,000 vehicles per day.
c. Reducing lanes will reduce the overall distance and time that pedestrians, cyclists, and other non-motorists have to cross the street.
d. This could be initiated using quick-build strategies and temporary materials such as barriers, cones, and paint; readjust as necessary.
e. This study should also examine the conversion of the traffic signals at this intersection into a single lane roundabout.

Long Term and Systematic:

16. Proceed with reconfiguring 13th Avenue SW from its current form of 7 lanes to 4 or fewer lanes as part of long-term maintenance and redevelopment.
    a. Transform successful temporary cycling lanes and bus-only lanes into permanent structures.
    b. Expanding the width of the center median to make it ADA compliant and a source for additional lighting that illuminates pedestrian profiles.
17. In conjunction with reconfiguring 13th Avenue SW, evaluate the need for signalized intersections and assess the feasibility of installing a roundabout or traffic circle at this intersection.

Concluding Statement

The series of design flaws present along 13th Avenue SW and at the crash location are dangerous for Fargo residents and community members. Design emphasis that prioritizes traffic flow over non-motorist safety and usability has caused injuries and deaths in communities across North Dakota and in locations throughout North America. In Fargo, local leaders and citizens need to lead by example by treating 13th Avenue SW as a people-centric place; road user behavior and expectations will slowly change to help standardize this treatment as common practice.

By evaluating the numerous factors that contribute to a crash, we believe that designers, decision-makers, and the general public can move beyond the current approach, which seeks only to assign blame to involved parties, to a model that helps change the way these spaces are designed, developed, and cared for. Substantive changes to 13th Avenue SW and 32nd Street S should prioritize pedestrian safety alongside motorist usage. Further transformation of this intersection into a place treated and cared for like a local roadway stands to benefit Fargo, its residents, and its visitors.