

Crash Analysis Studio

Session 8: Charlotte, North Carolina

Held on August 25, 2023

Session Participants:

- **Chris Miller**, Civil Engineer licensed in Tennessee and North Carolina; Former analyst with the Tennessee Department of Transportation; Active member of Charlotte Urbanists
- **Jaden Blank**, Road safety enthusiast; Former Charlotte resident and community member; Concerned citizen
- **Chris Konecnik**, Airline captain; Active member of Strong Towns and Charlotte Urbanists; Transportation safety advocate
- **Edward Erfurt**, Director of Community Action at Strong Towns
- **Tony Harris** (moderator), Action Team Coordinator at Strong Towns

Summary of Crash Event

- The crash occurred at 6:54 a.m. (EST) on February 14, 2022 at the intersection of West Mallard Creek Church Road and Claude Freeman Drive.
 - A crash report was unavailable; a request was made but local authorities explained that access to these reports is only granted to qualifying parties directly associated with the documented collision.
- A 64-year-old eastbound motorist struck 19-year-old Michael-Luther Black while he was running southbound across West Mallard Creek Church Road.
 - Black sustained serious injuries at the time of the collision.
 - Media sources state Black died on the scene at 7:04 a.m.
- Media coverage also indicates the following:
 - The motorist was uninjured, stayed on the scene, cooperated, and was not issued a charge.
 - Authorities stated that the motorist was neither impaired nor speeding at the time of the crash.
 - Law enforcement stated that the motorist had a “solid green light” and that there was a “solid red hand” on the pedestrian crossing signal.
- Media coverage indicates that the speed limit on West Mallard Creek Church Road was 45 mph at the time of the crash; this was still the speed limit when the session was held.

Primary Contributing Factors

The design of West Mallard Creek Church Road includes sidewalks and bike lanes, but demonstrates little to no concern for the safety of pedestrians, cyclists, and other non-motorist users traveling without a privately-owned and operated vehicle or automobile.

Designers acknowledge the existence of pedestrians and cyclists at this location by constructing sidewalks and unprotected bike lanes. Road width and overall lane design illustrate that neither the sidewalks nor the bike lanes are implemented in a manner that prioritizes non-motorist safety, accessibility, or usage.

Designers have recognized that motorists make mistakes and have provided ample margin for error through forgiving design features, including wide through traffic lanes, dedicated left-turn lanes, and even dedicated right-turn lanes. These roadway components speak to designers' caution concerning automobile-on-automobile crashes.

When assessing collisions between motorists and pedestrians or cyclists, designers elected to not create a similar margin for error. Unprotected bike lanes, particularly one nestled between a turn lane and through traffic traveling at lethal speeds, can only be safe given consistently flawless user behavior. Short pedestrian crossing times mixed with long wait intervals may encourage or force risky behavior – even by users that prefer to exercise more caution.

Multiple bus routes, such as the 54 and the 50, use West Mallard Creek Church Road. Bus stops for these routes do not have a relationship to adjacent land uses or riders' final destinations. This circumstance forces transit riders to walk excessive distances within this corridor, and ultimately prioritizes traffic flow over the needs of non-motorist users.

Along West Mallard Creek Church Road and at its intersection with Claude Freeman Drive, transportation systems for motorists and non-motorists have been designed and implemented with dangerous levels of incompatibility. This conflict is one underlying cause of the collision that killed Michael-Luther Black. Without substantive changes to West Mallard Creek Church Road and similar roadways, fatalities like this one will remain statistically inevitable.

Design and transportation professionals have intentionally chosen to expose non-motorists to unnecessary major risks by placing them in an environment constructed to prioritize high-speed through traffic.

Additionally, session participants identified the following primary factors that contributed to this crash:

- 1. The crossing along the west side of the Claude Freeman Drive and West Mallard Creek Church intersection is not designed to prioritize pedestrian safety or usability.**

- a. Given the intersection's recorded distance of 106.5 feet and pedestrian crossing time of 31.75 seconds, a healthy and able-bodied adult traveling by foot would need to walk 3.35 feet per second to safely cross this intersection in the allotted time.
 - i. Pedestrians walking slower or entering the crosswalk midlight may be stranded in the middle of the crossing when the lights change.
 - ii. This circumstance may result in drivers having a green light while pedestrians are still crossing the intersection.
- b. The wait interval between pedestrian crossing windows is estimated to last around 90 seconds; this may pose timing difficulties for pedestrians relying on public transit schedules.
- c. Overall road width may demand cyclists and pedestrians judge gaps across as many as six lanes at once.
 - i. 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.
- d. There is no pedestrian refuge in the middle of the crosswalk, which limits options for users that may need or want to exercise more caution when crossing.

2. West Mallard Creek Church Road and its intersection with Claude Freeman Drive prioritize through traffic of automobiles by disregarding non-motorists and their safety.

- a. A [basic stopping distance calculator](#) indicates a car - in good condition, with an alert motorist, on a dry road - traveling at 45 mph will need at least 145 feet of stopping distance. Additional stopping distance may be necessary given the condition of the car, motorist reaction time, environmental factors, and travel speed.
 - i. Though the motorist in this crash was reportedly not speeding, close to 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.
- 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 southbound pedestrians crossing this intersection which is further compounded when automobiles in this lane are larger vehicles such as box trucks or pickup 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.

3. Public transit bus stop locations and options exacerbate navigational difficulties for pedestrians that rely on limited public transit options.

- a. The location of the bus stops have no relationship to adjacent land uses or riders' destinations; this forces transit riders to walk excessive distances within this corridor.
 - i. Multiple bus routes, such as the 54 and the 50, have stops located between signalized intersections; one such stop is over 675 feet from the intersection.
 - ii. The 54 route turns onto Claude Freeman Drive; the bus stop is over 180 feet from the intersection.
 - iii. These stops are not adjacent to a destination or development and require transit riders to unnecessarily spend extended time along the corridor. These locations prioritize freeflow vehicle movement over the needs of transit riders who are traveling on foot.
- b. The 54 bus route and routes with similar schedules may force pedestrians to assume risk when crossing that would be unnecessary with additional pick-up locations or more frequent pick-ups from existing stops.
 - i. As of May 2023, the 54 bus begins pick-ups at 7:52 a.m., with scheduled stops occurring approximately every 40 minutes after that until 9:53 p.m.

4. The design speed, and the documented travel speed, of West Mallard Creek Church Road is incompatible with people traveling by bike or foot.

- a. West Mallard Creek Church Road facilitates high speed motor vehicle travel.
 - i. Travel lanes are wide enough to make motorists comfortable traveling at a design speed higher than the posted 45 mph limit. Three of the through traffic lanes and the south-side, right-turn lane on the west leg of the intersection are 12' wide; this width is typical on highways and other high-speed roadways.
 - ii. Four through traffic lanes allow fast-moving cars to pass slow-moving traffic, even during brief periods of congestion.
 - iii. At the crash location, eastbound traffic has access to a dedicated left turn lane to go north on Claude Freeman Drive; this lane is designed to remove turning automobiles from the stream so they do not impede through traffic.
- b. The current speed limit on West Mallard Creek Church Road is 45 mph.
 - i. A speed study indicated that 44% of tracked motorists exceeded the posted limit.
 - ii. The study also illustrated the 85th percentile speed, or the speed which 85% of drivers were traveling at or below, to be 50 mph.
 - iii. The [Insurance Institute for Highway Safety](#) states that fatality rates climb for automobile collisions involving pedestrians at 25 mph. When automobile speeds exceed 40 mph, pedestrian collisions are likely to be fatal.

- iv. By design, vehicle travel speeds on West Mallard Creek Church Road subject non-motorists, cyclists, transit riders, and pedestrians to serious danger.

5. West Mallard Creek Church Road is placed within a street network that communicates to motorists not to expect encounters with cyclists or pedestrians.

- a. Westbound traffic encounters lane going on the north side of the intersection after having had access to a dedicated right-turn lane onto Claude Freeman Drive. This design communicates to motorists that they are the primary, prioritized users within this environment.
- b. Placement of a bike lane between a right-turn lane and through traffic on the south side of the intersection discourages cyclists from utilizing infrastructure reportedly intended for their usage¹. If non-motorists are not regularly frequenting the intersection, motorists are less likely to expect them.

Recommendations

To make sufficient provisions for the safety of people walking and biking near the crash location, a policy-level decision needs to be made regarding the goals and intent of the area. Elected officials need to provide direction and guidance on whether West Mallard Creek Church Road is to be treated as a high-speed roadway, or treated as a road amidst residential neighborhoods where community members are expected to routinely walk and bike.

If it is determined that West Mallard Creek Church Road should be treated as a high-speed roadway, infrastructure modifications need to be made. Current sidewalks and bike lanes would need to be removed from West Mallard Creek Church Road and the intersection where the crash occurred. Barriers could be constructed to block these paths almost immediately, though more permanent long-term provisions would need to be designed and implemented. The bus stops would need to be relocated at the signalized intersections, on side streets, or within adjacent developed parcels. In this scenario, pedestrians and cyclists would need robust alternative options in the surrounding area. One option could be converting one or more of the existing wide sidewalks north of West Mallard Creek Church Road into a multi-use path (MUP) or paths. This scenario may also require rerouting local buses to make routine pick-ups and drop-offs north of the crash location.

If the expectation is that this road and this intersection will accommodate all users, pedestrian, transit uses, biking, and vehicles, the following practices should be adopted:

Immediate:

- 1. Make crossing this intersection safer for non-motorists by:
 - a. Re-timing the pedestrian signals and wait intervals.

¹ Jaden Blank stated he saw no cyclists in the bike lanes during the speed study.

- b. Extending the mid-roadway median and creating an ADA²-compliant pedestrian refuge that is four feet wide or wider.
 - c. Reducing the speed limit from 45 mph to 40 mph or 35 mph.
 - d. Painting a tighter turning radius at each corner to encourage full stops and greater awareness of pedestrians.
2. On the west side of the intersection, move the left-turn only stop bar back to increase visibility for both through traffic motorists and non-motorist roadway users, especially southbound pedestrians.
3. Move the existing bus stops closer to the signalized intersections and near transit destinations such as housing developments, or where there are safe and direct pedestrian connections to commercial uses.

Near Term (within the next 12 months):

4. On the northwest side of the intersection where the gore lane is present, insert a curb lining or curb extension to decrease crossing length and increase pedestrian safety.
5. Restripe the eastbound lanes of West Mallard Creek Church Road to redistribute space for cyclists and motorists.
 - a. Narrow all travel lanes to 10-11' wide
 - b. Run the southside bike lane up against the outside edge of the road - instead of alongside through traffic - to increase the likelihood cyclists will safely utilize the road and, as a result, raise driver awareness of non-motorist users.
 - c. Provide a buffer between the bike lane and travel lanes, using excess street width, paint and vertical elements such as bollards
6. Install a half-height bump out on the north side of the intersection that shortens the crossing distance and increases pedestrian accessibility.

Long Term and Systematic:

7. Reduce the total crossing length of the west side of the intersection by pursuing the following rebuilding efforts on West Mallard Creek Church Road:
 - a. Permanently replace the northside gore lane with concrete.
 - b. Entirely eliminate the southside, dedicated right-turn lane.
 - c. Reduce lane widths.
 - d. Widen the center median and incorporate a pedestrian refuge area.
8. Reconstruct infrastructure for pedestrians and cyclists that is consistent with the character of this road and adjacent land uses.
 - a. Sidewalks should be located at the edge of the right of way, as far away from the travel lanes and as close to the adjacent development as possible.
 - b. Protected bike lanes or a dedicated cycle path should be provided along West Mallard Creek Church Road.

² Americans with Disabilities Act

Concluding Statement

The series of design flaws present along West Mallard Creek Church Road and at the crash location are dangerous and common, both within and beyond Charlotte. Design emphasis that prioritizes traffic flow at high speeds over pedestrian safety and usability has caused injuries and deaths in communities across North Carolina and in locations throughout North America.

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. In Charlotte, we believe substantive changes to this intersection should prioritize pedestrian safety and value non-motorist roadway usage alongside motorist roadway usage.