Crash Analysis Studio

Session 16: Nice, California
Held on April 26, 2024

Session Participants:

- **Don Kostelec**, Transportation planning expert with specialization in Complete Streets, Safe Systems design, and ADA[1] compliance; host of The Planning Commission Podcast; writer and news site contributor; Master of Urban Planning and policy from University of Illinois at Chicago
- **Danny Wind**, Lakeport Resident; Strong Towns Member; Pedestrian and Bicycle Advisory Committee (PBAC) member; Transportation safety advocate
- **Thomas Aceves**, Western Region Town Hall Council Member; Pedestrian and Bicycle Advisory Committee (PBAC) member; Vision of Hope village volunteer; concerned road cyclist and resident of Nice
- **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 7:38 p.m. (PT) on February 14, 2024 in the eastbound lane of Highway 20, just west of Benton Avenue.
    - A detailed crash report from law enforcement was unavailable; a local expert was not granted access to a copy since their name was not listed in the report and they did not qualify as a party of interest.
    - At the time of writing, a publicly available crash report was also not yet posted on the California Statewide Integrated Traffic Records System (SWITRS).

- 56-year-old Dawn Marie Johnson was driving eastbound at approximately 40 miles per hour (mph) when she struck a 67-year-old woman while she was crossing from the south side to the north side of the highway.
    - Despite revival attempts by medics, the pedestrian succumbed to her injuries and passed away at the scene of the collision.

- Along this segment, Highway 20 features one eastbound and one westbound through traffic lanes; there is a center lane dedicated for turns in both directions off of the highway.

- The speed limit on Highway 20 at the collision location is 40 mph; it is common knowledge that the limit fluctuates along Highway 20 and sometimes climbs higher than 50 mph.

[1] The Americans with Disabilities Act

Primary Contributing Factors

This section of Highway 20 is impacted by substantive design deficiencies that heighten the likelihood of collisions. While the local government maintains control over roads that intersect with this highway, the California Department of Transportation, or CalTrans, maintains control over Highway 20 and state routes like it. The issues identified can–at least in part–be traced back to the conflicting expectations and interests of these two authorities and their respective transportation systems.

Highway 20's design and topography prioritizes motorized traffic flow and may cause drivers to make decisions that put pedestrian and motorist safety at risk. Transportation professionals have maintained thoroughfare features such as a dedicated center turn lane, wide unmarked shoulders, a variety of roadway grades, and a 40 mph speed limit while neglecting to institute adequate speed management measures. When paired with roadway width, this speed limit exacerbates other tensions by setting the expectation that motorists can move swiftly through this corridor. These design choices communicate to motorists that this space is designed for automobiles and prioritizes unrestricted movement through the town of Nice.

Simultaneously, both motorists and non-motorists who navigate this area encounter very little distinction from the areas dedicated to the movement of cars and the private driveways and parking areas along the street. There are no access control measures in place, as each commercial property has a driveway apron the full extent of the property or the entire corner of an intersection. Among all the asphalt, traffic signage and commercial signage become visual clutter, further confusing drivers. The perceived width of Highway 20 in the urban center of Nice is both physically and optically wider than portions of the highway in both directions outside the city.

CalTrans has made significant investments in marked pedestrian crossings and in signage to warn drivers these crossings are potentially being used by pedestrians. However, the panelists pointed out that pedestrians must grapple with incomplete infrastructure, including but not limited to partial sidewalks, unsignalized crossings, crosswalks that do not connect to pedestrian paths, and traffic signs impeding the path of travel. This section of Highway 20 and the city streets of Nice do not have any street lighting. The local experts reported during the studio that the Lake Area Planning Council has indicated that some motorists report trepidation about hitting pedestrians when traveling near the crash location. All road users sacrifice some degree of safety as a cost for the dysfunction between these incompatible travel systems.

Session participants also noted that pedestrian and motorist behaviors–as well as the condition of the motorist's 1995 Buick–may have had more substantive impact than was able to be determined with the data available for review. This data might indicate the effectiveness of the Buick's headlights and braking system, the severity of visual impairment along Highway 20 the night of the crash, the curve and steep grade of the road, and whether or not the motorist was driving while distracted. These details may remain unknown until a crash report or further

information from the California Statewide Integrated Traffic Records System (SWITRS) becomes available.

Session participants identified the following as factors that contributed to this collision:

1. **Highway 20 is designed to facilitate and prioritize high speed motor vehicle traffic in a manner that is dysfunctional with non-motorist usage of locally controlled, intersecting roads and ultimately incompatible with California state law**
    a. The placement of 10 foot wide through traffic lanes alongside excessively wide unmarked shoulders–one 26.5 feet wide and the other 24 feet wide–does not maintain desired safety impacts organizations like NACTO[2] typically associate with narrower lanes.
    b. Highway 20 lacks access control elements on both of its sides through both the location of the crash and the areas surrounding it.
        i. When paired with a lack of curbs and only one partial sidewalk, the unmarked shoulders create a delineated space with little edge definition.
        ii. The absence of friction communicates to motorists that speeding is an acceptable behavior within this environment.
    c. Topographic features along the highway–including a dip near Hudson Avenue, narrower corners, and wide angles–may disorient drivers and impact their decision-making.
    d. Roadway engineers have created multiple points of potential conflict along this highway by allowing unrestricted parking on the shoulders of the road that align with poorly defined edges of business driveways and on-site parking lots.
    e. California Vehicle Code Section 21954 states that pedestrians on roadways should yield right-of-way to all vehicles to avoid immediate hazards, and also states that, “this section shall not relieve the driver of a vehicle from the duty to exercise due care for the safety of any pedestrian upon a roadway.”
        i. Travel at and beyond the posted speed limit through the crash location may limit drivers’ peripheral vision and reduce their awareness of pedestrians or other non-motorists.
        ii. This speed dynamic–in combination with other design elements listed above–may prevent motorists from exercising due care for pedestrians seeking to cross this roadway.

2. **The design speed, and observed travel speed, of Highway 20 is incompatible with pedestrian travel.**
    a. A recent speed study indicated that 69% of motorists exceeded the posted limit of 40 mph.
    b. This study stated the 85th percentile speed, or the speed which 85% of drivers were traveling or below, to be 48 mph.
    c. Of the 543 motorists tracked during the study, 34 of them (6% of them) were driving at or above 50 mph. Nearly 63% of the tracked motorists, 342 of them to

[2] National Association of City Transportation Officials

be exact, were traveling between 42 and 48 mph. This data distribution suggests that this space communicates to drivers that speeding is a low-risk behavior in this environment.

d. 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, a majority of pedestrian collisions are likely to be fatal. Many of the speeds documented in this area surpass the 40 mph threshold.
e. Travel at the 40 mph speed limit poses risk to pedestrians during clear weather; a motorist traveling at this speed with the environmental and weather conditions present during this crash would pose even higher risk to the safety of pedestrians.
f. Vehicle travel speeds on Highway 20 clearly subject motorists and non-motorists to serious danger and risk.

3. **Pedestrian infrastructure essentials and refuge spaces necessary for safe pedestrian navigation are incomplete or absent along Highway 20, particularly between Howard Avenue and Benton Avenue where the collision took place.**
    a. Signage to inform the driver of the presence of pedestrians and pedestrian marked pedestrian crossings are not consistent in placement and relationship to the crossings.
        i. Pedestrian signage throughout Nice is located behind the pavement at the edge of the right of way; it may be obstructed or may not be visible for drivers.
        ii. The 40 mph speed limit sign obstructs the pedestrian crossing sign for westbound traffic entering into Nice.
        iii. Signs have been omitted or relocated where there is excessive pavement or wide driveway aprons, likely due to conflicts with motorists who have hit signs.
        iv. Vehicular needs and interests prevail when conflicts between motorists operating automobiles and pedestrian traffic occur.
        v. Organizations like AASHTO[3] and ITE[4] note that pedestrians should not be expected to walk more than 300 feet out of their way in urban areas (600 feet elsewhere) to take advantage of a controlled crossing.
    b. The marked crosswalks on either side of the crash location–950 feet from one another–both lack adequate crosswalk signage, median islands, and any connectivity to sidewalks.
        i. Pedestrians, when provided a choice, will find the most direct route to their destination.

[3] American Association of State Highway and Transportation Officials (AASHTO). *Guide for the Planning, Design, and Operation of Pedestrian Facilities (2nd Edition)*. 2021.
[4] Institute of Transportation Engineers (ITE). *Designing Walkable Urban Thoroughfares: A Context Sensitive Approach*. 2010.

ii. The marked crosswalks do not connect to the active commercial businesses along the corridor, making it less likely pedestrians will use them.

c. With no median refuge area and the highway's wide unmarked shoulders and wide turn radius, non-motorist users are forced to navigate an 83.5 foot crossing all at once; this poses additional safety risk when non-motorist sightlines are limited, especially due to rain, darkness, or glare.
    i. There is no area for a pedestrian to safely stand at the edge of the right of way where marked crosswalks have been installed. In several locations, like the south side of Highway 20 at Howard Avenue, the crosswalk stops short of the edge of pavement.
    ii. An able-bodied pedestrian moving at an average speed of 3.5 feet per second may need to triple their walking distance and double their trip duration to use one of the marked crosswalks, both of which require improvements to meet ADA standards.
    iii. These long crossings are pedestrian infrastructure features that unnecessarily expose pedestrians to vehicles driving at lethal speeds.
    iv. A motorist traveling at 40 mph covers nearly 60 feet per second. In the ten seconds that it could take a pedestrian to cross only the motor vehicle travel lanes, a motorist would travel nearly 600 feet. This means a pedestrian must ensure that traffic is clear for 600 feet in one direction and 600 feet in another direction before making a decision to cross.

4. **Both environmental circumstances and aspects of the built environment limit visibility along the segment of Highway 20 where the crash occurred.**
    a. There are no streetlights or overhead lighting sources present at the crash location; this limits motorist and pedestrian visibility in both clear conditions and adverse weather.
    b. According to sun graphs for Nice, the collision occurred at least 22 minutes after twilight; this may have significantly impaired both motorist and pedestrian visibility.
    c. The curvature of the road alignment and the banking grades may have directed the car's headlights away from the street. Driving at 40 mph, the driver would not have the adequate awareness to stop if someone was crossing the street in low light conditions.

5. **Highway 20 penetrates Nice's local transportation network in a way that forces drivers to put non-motorists at higher levels of risk, particularly if they are traveling at night or through adverse weather conditions.**
    a. Rain on the day of–and during the week of–the crash increased the stopping distance necessary for the motorist to not hit this pedestrian.
        i. A typical 80-foot stopping distance on a dry road doubles to approximately 160 feet on a wet road.

ii. The motorist from Lucerne may have been familiar with this area, but still lack the knowledge or experience to recognize and act upon a stopping distance that is double what is usually required.

b. Commercial signage placed along Highway 20 features colored and bright lights to attract motorists to these businesses; these signs also create glare and visual cues that may distract both motorists and pedestrians from the roadway.

Related Contributing Factors

Session participants identified the following related factor that contributed to this crash:

6. **The pedestrian's age made her substantively more susceptible to traumatic injury or death, especially given the speed at which she was hit.**
    a. The American Automobile Association (AAA) conducted a study in 2011 to investigate the relationship between impact speed and a pedestrian's risk of death or severe injury.
        i. This study indicates that 70-year-old pedestrians struck at any given speed experienced–on average–a risk of death approximately equal to the average risk for 30-year-old pedestrians struck by a vehicle traveling 10.4 mph faster.
        ii. This data illustrates that 70-year-old pedestrians struck at 40 mph experience approximately a 70% chance of fatality; this risk percentage is nearly double the risk experienced by 30-year-old pedestrians.

Recommendations

To make adequate provisions for the safety of people walking and biking near the crash location, elected officials need to continue to provide direction and guidance on how to treat this segment of Highway 20. This part of Highway 20 within Nice functions as a downtown urban street section amidst residential neighborhoods where local community members and visitors routinely bike, walk, and shop; it should be treated in accordance with the way the area is actually used.

Speed was a major contributing factor for this crash. The posted speed of 40 mph is a lethal speed and incompatible for pedestrian travel in an urban condition like Nice. The physical design of the street, along with unrestricted access to driveways give drivers queues that they can drive faster than the posted speed. This was evident in a recent speed study for this studio that indicated that 69% of motorists exceeded the posted limit of 40 mph.

There are a multitude of ways to address these factors and minimize the likelihood of future collisions, fatalities, and traumatic injuries. Along Highway 20 and near the crash location, the following practices should be adopted.

Immediate:

1. Elected officials of Nice and Lake County should provide direction and guidance that Highway 20 through Nice should be an urban street that prioritizes safety above all other objectives.
    a. Each elected body should prepare a resolution[5] to this effect that states:
        i. All future planning and design efforts are contextual to city character.
        ii. Temporary safety measures should be implemented until more permanent measures are made.
        iii. Local demand for no further pedestrian deaths on Highway 20 in Nice.
    b. Officials should advocate for a 25 mph posted speed limit and a 25 mph design speed, as supported by the AASHTO Green Book[6] when identifying a target speed for a route of this nature.
    c. Officials should support CalTrans in implementing their Complete Streets redesign initiative–which includes construction of bike lanes–earlier than the targeted finish dates of 2029 or 2031.
        i. Locals may also support the work of District Supervisor Eddie Crandell, who may continue to advocate for Pedestrian Hybrid Beacons and/or Rectangular Rapid Flashing Beacons (RRFBs) in this area.[7]
2. Solicit CalTrans representatives and local transportation authorities to conduct a walk audit of the area around the crash location to observe the existing conditions.
    a. Begin at the park and bus stop near Howard Avenue and walk to the gas station.
    b. Highlight the pedestrian experience with sightlines and road grades.
    c. Generate a list of short-term and long term actions that can be achieved through existing maintenance programs and budgets; items such as signage, painting, and future repaving should be included and attended to as quickly as possible.
    d. Conduct an additional walk audit during nighttime conditions.
3. Review current design standards, maintenance practices, and their real-time implementation within Nice.
    a. Assess the placement and installation of traffic signs at intersections and at crosswalks for conflicts.
    b. Coordinate work between the state and city; identify and execute any actions necessary for better alignment.
4. Use temporary materials such as extruded curbing, delineators, bollards, concrete parking wheel stops, and paint along the outer boundaries of Highway 20 to:
    a. Connect existing sidewalks
    b. Create areas of refugee at the edge of the right of way at each crosswalk, and
    c. Create areas of refuge in the medians

[5] These resolutions should be shared at both the state level with CalTrans and the district level with the MPO.
[6] AASHTO. *A Policy on the Geometric Design of Highways and Streets* (7th Edition). 2018.
[7] Supervisor Crandell recently advocated for a Rectangular Rapid Flashing Beacon (RRFB) at the Highway 20 crosswalk near East Lake School.

5. Use bright orange jersey barriers, wooden barricades, and other temporary materials to better define the portion of Highway 20 as an urban street with a target speed[8] of 25 mph.
    a. Erect one or more median islands[9] along Highway 20; begin by building these near the crash location and at areas where left hand turns are either infeasible or not critical to driver navigation.
    b. Better define the existing intersections with city controlled streets using bollards and paint. Relocate signage as need
6. Speak with business owners along Highway 20 to determine feasibility of immediate access point and parking restrictions; if they are willing to implement these restrictions, help them to do so with temporary materials.
    a. Locals may also engage businesses to discuss the use of the park near Howard Avenue as a community space.
7. Explore temporary lighting options with a focus on existing crosswalks and commercial businesses with high pedestrian traffic. This might include the following:
    a. Erect standalone solar fixtures that could be installed within the public right of way.
    b. Utilize existing poles on both public and private properties.
    c. Work with property owners to add lights to poles and buildings on private property.
8. Form an interdisciplinary team of staff from multiple municipal departments to act as rapid responders[10] to automobile collisions. This team should be responsible for documenting contributing factors of a crash; grant them agency to immediately implement short term or temporary improvements to the street. For this crash, charge the team with immediate recommendations from this report as well as recommendations for systematic, long-term changes.

Near Term (within the next 12 months):

9. Continue to support elected officials with safe streets advocacy and CalTrans with their Complete Streets redesign initiative.
10. Erect permanent median island pockets in places where temporary medians were deemed to successfully assist pedestrians and non-motorists with crossing this highway.
11. Install overhead street lighting on alternate (E/W) sides of the permanent crossing to better illuminate pedestrians and non-motorist users that utilize this piece of infrastructure.
12. Use observations from walk audits and other immediate actions to determine where to install a Rectangular Rapid Flashing Beacon (RRFB) for pedestrian crossing and install said RRFB.

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[8] This is in keeping with the protocol outlined by the American Association of State Highway and Transportation Officials (AASHTO) and CalTrans via A Policy on Geometric Design of Highways and Streets (2018).
[9] For an example, reference Indianapolis: Give Us Safe Streets TODAY (October 2023).
[10] For more information on rapid response models, see Pedestrian Safety Gets Big Boost From New Cincinnati Initiative (January 2023).

13. Partner with business owners along Highway 20 that agree to consolidation or removal of immediate access point to implement permanent changes.
14. Begin to remove extra asphalt in locations that have been determined to be excessive or not necessary.
15. Lower the posted speed of Highway 20 in Nice to 25 mph as temporary measures and additional pedestrian accommodations are made in the city; install digital speed feedback signs consistent with the CalTrans *Traffic Calming Guide*[11] and apply other conspicuity measures to highlight the change.
16. Evaluate a full redesign of Highway 20 that changes the street section by:
    a. Physically transforming roadway character through temporary measures that support a design speed of 25 mph or lower.
    b. Removing the center turn lane during the next repaving project to facilitate right sizing of Highway 20.
    c. Installing smart traffic signals that respond to pedestrian presence and are programmed to adjust timing based on weather conditions and time-of-day to improve crossing security.
    d. Further accommodation for all users through sidewalks and additional crosswalks.

Long Term and Systematic:

17. Implement a full redesign of Highway 20 that changes the street section into an urban roadway section that accommodates all users.
18. Engage property and business owners in reimagining how the park space near Howard Avenue could be better leveraged to make the crash location into a people-oriented place–one where regular and frequent commerce is encouraged.

Concluding Statement

The series of design flaws present along Highway 20 and at the crash location are dangerous for Nice residents and Lake County community members. Design emphasis that prioritizes traffic flow over non-motorist safety and usability has caused injuries and deaths in communities across California and in locations throughout North America. In Nice, local leaders and citizens need to lead by example in treating Highway 20 as an urban street section rather than a high-speed roadway; road user expectations and behavior may 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 Highway 20 should prioritize pedestrian safety alongside motorist usage. The transformation of this highway into a place that is treated and cared for like a local roadway stands to benefit the city of Nice and its residents.

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[11] CalTrans. *Traffic Calming Guide: A Compendium of Strategies*.