Crash Analysis Studio – Boone, North Carolina Session Transcript

Introductory Trailer

Chuck Marohn: I want to give you two scenarios. Scenario number one a plane crashes. Scenario number two, two cars collide. In scenario number one, we pull out all the stops – we bring in the NTSB, we try to figure out exactly what went wrong. Scenario number two – we send out the cops, we sweep up the mess, and we go on our way.

John Pattison: If we, collectively – everyone on this call and the broader Strong Towns movement – if we do this right, we're going to save thousands of lives.

Edward Erfurt: Mayors and local council members want to do the right thing. They have the ability to solve it. We're going to help provide those tools for them.

Session

Tony Harris: All right. Hi everyone. I know people are still filing in, but I do believe I will slowly get us started.

I want to start off by saying thank you for joining us on this summer Friday. And please let me welcome you to the Strong Towns Crash Analysis Studio. We're really glad that you're here with us today. My name is Tony Harris and I am the Community Engagement Coordinator at Strong Towns. And in a couple moments I will introduce you to the rest of our expert panel. But first, let's talk about why we're here today.

The National Safety Council estimates that over 44,000 people died in automobile crashes throughout 2023 in the United States alone.

We know that hundreds of thousands more suffer traumatic injuries during these collisions. And despite the best efforts of public safety officials, these crashes are still happening and affecting all of our lives.

Now there's a prevalent misconception that car crashes are caused solely by mistakes that drivers make. Looking at your phone, changing the radio, speeding, drinking alcohol. When a crash occurs, the North American response is to send out law enforcement and insurance agencies to assign blame. We ask questions like, who made the mistake that caused this crash and who should we blame? The reality however, is that crashes are caused by multiple factors, not just driver error. When a traumatic crash occurs, we need to identify all the contributing factors and learn all we can from the experience so that we can reduce the number of traumatic injuries and deaths in our communities.

So what you're going to see now is a crash analysis studio session, drawing from the best practices of the medical profession. We have convened a panel to review a crash that happened in Boone, North Carolina.

Now during this collision, a woman named Diana Angeles was hospitalized after being struck by a pickup truck while crossing a street downtown.

Thankfully, she did survive. So today I'll start by introducing you to our panel, then review the facts of the crash. And with our guests, we will assess the design factors that contributed to the collision.

And I want to emphasize again that our goal is not to assign blame. Rather our objective is to learn as much as possible about what happened and identify the many factors that contributed to this unfortunate event.

So I'm now going to introduce our panel and we'll begin with Don Alek. Don has worked in the field of transportation planning and design for more than 20 years. This includes work in the public and private sector with clients ranging from state departments of transportation to cities to nationwide nonprofits. His specialty areas include safe systems, design, complete Streets, a DA compliance, and overall traffic safety.

He is a host of the Planning Commission podcast and a frequent contributor to national planning and transportation news sites such as Streets Blog. Don has a MA Master of Urban Planning and Policy from the University of Illinois at Chicago and a Bachelor of Political Science and Journalism from Western Carolina University. So welcome. Next we have Laura Buck, who has lived in Boone since 2017. She studied sustainable development at Appalachian State University and she became interested in food sovereignty while she was a student.

Laura works at a food pantry where she is in charge of the food recovery kitchen and she lives on Howard Street nearby the intersection where the crash occurred. Laura is a safety enthusiast and wants her neighbors in Boone to feel secure as they travel throughout the area.

And then our third panelist today is Jonah by Jonah is a multimodal transportation planner who works with the Knoxville Regional Transportation Planning Organization, the TPO there. And Jonah recently completed his master's degree at Appalachian State University. He lived nearby the crash location during the 2023 to 2024 academic school year. And Jonah asked us about joining our panel when he saw some coverage about this session online. So very glad that you found us, Jonah. Thank you for joining us today.

And then finally we have Edward Erfurt, who is the Director of Community Action at Strong Towns. Edward is a trained architect and urban designer with over 20 years of public sector and private sector experience. And Edward has a skilled eye when it comes to evaluating the safety issues posed by intersections, roads, and streets like the ones that we're gonna look at today.

So now I will walk us through the details of this crash in Boone and I'm gonna do that by sharing my screen.

So let's start with what we know about this particular collision. So we know that Diana Angeles was walking eastbound across South Depot Street at a designated crossing and that a westbound motorist on Howard Street turned left to go south on Depot and that's when he struck Ms. Angeles. Now the motorist stated that he was unable to see her over the hood of his truck. He didn't realize that he was going to strike her until it was already happening.

We know from the crash report that the crash occurred at 12:49 PM on August 21st, 2023. So that's almost a year ago. And weather reports tell us that it was partly cloudy in Boone on the day of the collision.

Now, witnesses to the crash state that the motorist did not appear to look for pedestrians before making his turn. And upon impact, Ms. Angeles was thrown to the ground and I believe a pair of headphones that she was wearing or had on her person helped break her fall. And then she was transported to Watauga Watauga Medical Center. I hope I pronounced that correctly, where medical professionals stated that she had a concussion.

So here is a map of the Howard and Depot intersection in Boone where the crash occurred. You see Depot Street here and then Howard Street here and the red pin marking the area where the crash happened.

And then our nominator and local expert, Laura also managed to get a photo of the truck at the crash location. And this is from the day and time of the collision.

Now on this slide here, you see a zoomed in visual of the intersection.

And so the yellow rectangle represents Miss Angeles headed east on Howard crossing Depot Street and then the larger orange rectangle. This represents the motorist right? And he was headed west on Howard and then made this left hand turn to go south on Depot.

And then what we did was we outlined the approximate collision location in red.

So we know that the speed limit on Howard Street is 20 miles per hour.

The west side of Howard Street after the intersection with Depot actually turns into a one-way street.

And though the intersection itself is unsigned, there are stop signs on each leg other than of course West Howard.

And there are visible crosswalks along each leg of the intersection.

We know that Depot Street has one northbound and one southbound lane for through traffic. And then there's also a parking lane, and that's true on both sides of Depot Street. The location of that parking lane just alternates block by block.

The speed limit on Depot Street is also 20 miles per hour and its sidewalks make it a really walkable area.

And we also know that Depot Street intersects with King Street to the north of this intersection, I believe, which is King Street, is the main commercial roadway in downtown Boom.

So next up we have some photos that Laura helped to pull together for us to give us like a better grasp of what this intersection sort of looks and feels like. So I'm gonna move through these briefly.

First we have this shot, which is looking south and southwest toward the crosswalk where the crash occurred. So down here I believe where you see this building with the awning and the light here would be this crosswalk where the crash happened.

Next we have a shot of the intersection looking east and northeast. So this crosswalk on the right hand side would be where the collision occurred.

And then this next shot is looking northwest. So I believe this photo was taken from the southeast corner that Miss Angeles would've reached after crossing Depot.

And then our final two shots here, the one on the left hand side is looking east on Howard Street. So this was taken just west of the intersection in the area where Howard Street becomes a one-way street. And then the photo on the right hand side shows a view of South Depot Street. This has just taken a little bit north of the intersection.

So Lara helped us get measurements of the intersection where the crash happened as well. So you can see here that the northbound and southbound lanes on Depot Street are each 13 and a half feet wide. And then that parking lane on the right hand side of South Depot seven and a half feet wide. So that makes the distance across those three lanes 34 and a half feet. And then when you add in the sidewalks and the lamp areas on either side, that distance jumps up to 55 and a half feet.

So the development pattern that we're looking at here features some pretty clear urban characteristics that you might associate with, you know, a downtown area, whether it be the one where you live or a one that you've visited before. Right? So this intersection features access to a few different retail establishments and multiple food establishments. So you're gonna find the Lost Province Brewing Company, the Footsloggers Outdoor store is on one of the corners of this intersection I believe. And then Little Wing Ice Cream is one of a few different

food joints that are nearby as well. And so I'm gonna take us to the surrounding area map just to point out a couple other things that I have listed here.

So Appalachian State University is just south of the intersection. So the intersection is marked with that red circle here. And then when you go south you hit the university.

And I wanted to note that Howard Street, which is running through the circle, can be used to access Appalachian Street and Water Street. And both of those connect up to King Street, which is kind of highlighted in yellow here. And I believe to my knowledge, king Street is a highway, right? So it's often marked as either Highway 3 21 or 4 21 and I think they meet somewhere in this area, area near Wildcraft Eatery.

So Laura and I believe her colleague Alex, conducted a speed study for us as well. I know that Laura went out a few different times and collected speed data along Depot Street. The one that I'm gonna look at, the collection of data that I'm looking at today was conducted during a two hour period on May 27th I believe. And I think that Laura conducted this under free flow track traffic circumstances.

So during that time period there were 167 cars tracked. 6% of those cars were going over the speed limit. Again, that speed limit I believe is 20 miles per hour. Only one motorist was traveling at 10 miles per hour or faster over the speed limit. So when we did our calculations, we found that 85% of drivers were found to be traveling at or below 20 miles per hour.

But I did want to note that in my conversations with Laura, we, well, she stated to me actually, you know, many drivers that were going over 15 miles per hour did not come to a full stop at the intersection. And it also seems like people driving pickup trucks might have been less likely to come to a full stop as well. So we might explore that a little bit later as we advance in our conversation.

So I'm gonna stop sharing my screen and I would like to turn to our panel now and maybe we can start with Don, you know, if you could tell us what you think might have contributed to this particular collision just based on what we've gone over today and what you've reviewed up until this point. And I'll invite you, Don, if you want to, you know, share your screen and look at anything on street view or anything else that you've prepared, please feel free.

Don Kostelec: Alright, thanks Tony. Yeah, that should be up there. And thanks to Laura and Jonah and the field work they did to help get a vantage point of this.

I was looking through the participants, it's good to see some recognizable names from my time in Asheville and Western North Carolina. Apologize in advance for being a Western Carolina alum talking about stuff up by App State, but I did see Western Beat app and football in person, which I think is rarer than an alien abduction. So at least I have that for me.

Yeah, some, some items to consider here. As Tony summarized in the crash report and, and what was there. I think one had this same crash occurred on a higher speed facility, we probably would be talking about a very different set of circumstances. So luckily in these situations where you have older streets, a more walkable town center, tighter turning radii and things like that, at least the severity can be lessened in that. But it's also something when we provide street design like this, we're still treating the pedestrians as second class road users. And how can we up that, how can we change that dynamic? So first, you know, factors outside of road design, but it relates to road design is the design of the vehicles.

And I think we're, if you've paid any attention, you've seen essentially the the new street legal monster trucks that everybody has. And when we look at this vehicle, it certainly lifted from its stock consideration from that. If you look at the window tinting and when we see a lot of traffic safety campaigns that say make eye contact, they really don't account for the current design of vehicles. You can't make eye contact. You've probably all been walking or biking and maybe a

motorist is waving you across, but you only see them from the driver's side window and you can't even see them to know that that's occurring.

And unfortunately despite the myth that the National Highway Traffic Safety Administration regulates vehicles for safety, they do not in other states, there's fender requirements where even these wheels would be illegal without being covered by offender. And that's for other safety reasons. North Carolina does not have that law. And then finally, a standard design, whether it's your city, North Carolina, DOT, really anything nationwide is on a new street is to build a six inch high curb. That's been our standard for decades. Well the Federal Highway Administration has found that vertical curbs of six inches can only have deflection of vehicles at speeds at 25 miles an hour and below.

And that research was done in the 1980s on sedans, not while we've had all of these increases in vehicle size.

Other factors with vehicle size, the height of this one is more likely to strike a person in the vital organs area. Whereas if this was a lower profile sedan, the greater likelihood you would be hit and brought up on the car and maybe hit in your legs, still not something you want to experience, but certainly more survivable. And then even at a low speed, when we look at the weight of these vehicles, if you're hit at 40 or 50 miles an hour, the chances aren't good no matter what the vehicle is. But when we slow things down to 20 and we look at these vehicles that can be 6,000 pounds or more versus a small sedan of 2000 pounds, the energy transfer that occurs between the vehicle and the human body can make those slow speeds much more catastrophic.

So if you follow pedestrian safety, that graphic you've all seen about 40 miles an hour, a 10% survival rate, 20 miles an hour and 90% survival rate. Again, that's not been updated to account for the increased mass of vehicles and things. So as you're advocating for these things with your DOT, with your city, with your metropolitan planning organization, keep those things in mind

because vehicle design has not yet been incorporated into our current transportation and traffic engineering elements of that. Luckily the studies are starting to show the issues with this. But again, the automobile lobby is heavy and it's something our federal government is, is still struggling to tackle.

From the other things that I saw on this one in terms of contributing factors and stuff, I'll start with things that could be done. Now you could put in LED flashers around the stop sign with pedestrian push buttons. So had this scenario been this way and this person was wishing to cross and hit that button, the flasher would've started going, this has allowed completely 100% within the manual on uniform traffic controlled devices. So a traffic engineer can't tell you they can't do it because of that document. It's just combining different applications.

The example I'm showing here is in Grand Forks, North Dakota at an intersection by a school. And what happens when you push this button, all four legs, all four stop signs start flashing. I'm working with a company right now that produces this. They say this can be retrofitted at an existing location for anywhere from six to $10,000 depending on some of the underground conditions. So not a very hard thing to do can happen at any hallway stop. Other things that could be easy to do would be starting with some curb extensions in this area. Curb extensions are neck downs, reduce the pedestrian exposure, increase pedestrian visibility, give more street friction.

So vehicles are slowing down and are put on notice for that. And what you can do in any of your towns is go out and look at these areas where we've already prohibited parking next to next to the curb or next to the corner, any of these cross hatched areas. Some sort of curb extension can be put in there at minimum. They're certainly much more elaborate ones. The good thing in Boone, you just have to go a few blocks east on Howard Street to college and you will find curb extensions that are already there. So you have a good example actually on the exact same street, a few blocks to the east you can do some easy and now things you can go out with some

street paint and some temporary materials and create those curb extensions while you work, work on a full project.

Portland, Maine at the top, Portland gets some snow. So we can't really use that excuse in Boone. And on the right in Asheville, North Carolina, Asheville on bikes with their street tweaks program went out and did this kind of treatment at a local intersection to basically give it some definition and and provide some other factors. Here in the middle you'll see they use temporary curbing, temporary rubber curbing. You can create curb extensions with these and flex posts and other things. This does not have to be expensive at all.

Curb extensions also there, there's a whole litany of excuses you'll hear about curb extensions. Oh well we've got drainage issues for that. Well that's why we have floating curb extensions where you can see the arrows I have have left the gutters open. So drainage could still flow through there and not disrupt that. Certainly a more elaborate project that addresses drainage can be done. But drainage shouldn't be an excuse to not do curve extensions.

The second thing you can do for these is we will hear, well we have big vehicles that have to turn. That's great. We can accommodate that. We can do mountable curb ramps with mountable aprons in a tight area like the one in Boone. And it's very similar to what you see on the inside of a roundabout, like I said on on Howard Street just to the east. Not only are there curb extensions, there's this small roundabout that's there in a pretty tight area and a turning vehicle, especially an emergency service vehicle, can mount that. And it's not the same intrusion mountable aprons. Here's two examples of those. One I showed you in the drainage, it's a little more abrupt but it shows it can be done.

This is in Boise, Idaho. It also snows here. So we can do that. The one on the right is also kind of a modified version of a mountable curb apron. This is an example where for 95% of the vehicles a rolled curbing that sits out there beyond the typical curb line will help those vehicles and slow them down. Yet an emergency service vehicle, a turning truck can get over that no problem.

And you can just see the difference it's created in this particular situation. This one is in the Ballard neighborhood in Seattle, Washington. So not as much of the snow issue, but you can see the concept there.

Curb extensions in snow. I will stress this, it is not a problem. I run into so many issues with public works directors going, oh we can't do this because of snowplows. Wrong sandpoint Idaho, 58 inches of snow boom gets 40, they have curb extensions all over the place. You know what they did here? They put an iron ribbon on top of the curb so the snowplows don't chunk away at the concrete. Again, a simple, simple fix to actually help the plow operators in doing that. This is Grand Forks North Dakota, again a mid-block curb extension, one that has the drainage features but also in an area that gets pretty substantial snow.

They put the reflective tubular markers so the plow drivers know where these things are when they're plowing the streets.

I have a picture of this one somewhere 'cause I was doing workup there, but even in Alaska they have lots of curb extensions. This is Palmer, Alaska up there. It works just fine. And if you want more on this and in your in communities where you kind of hear the same thing about snow, Minnesota Department of Transportation, last June released this document designing and implementing maintainable pedestrian safety countermeasures. There's a whole chapter on design and snow removal best practices. And I love this diagram at the bottom because it shows the curb extension isn't the problem for plow drivers or sweepers, a poorly designed curb extension is.

So in the graphic on the left, those are abrupt angles, abrupt edges. That's hard for that plow, that sweeper to find the edge of that. Versus on the right side you see one that's a much more gradual and curva linear design. So that's just some food for thought for you. I will send the link to this because this document has a lot of really good things in it. Some other options you can pursue here, a raised intersection, one that that backs that up, puts the raised contours in

advance of the crosswalks and acts as a traffic calming tool to get through an area like this. This is from NACTO, the National Association of City Transportation Officials.

Again, this is federally endorsed design guidance. So there's no reason for your your local people or N-C-D-O-T to go, oh no no we can't do that because it's not in AASHTO and M-U-T-C-D and all these other things. They'll throw al you at you. So you can look there. Raised crosswalks in lieu of a full raised intersection. You could do raised crosswalks. This is the Federal Highway administration document showing they can reduce pedestrian crashes by 45%. So we kinda like those odds when we can get 'em. And if you think there isn't raised intersections in the high country, I've got news for you over in Linville, North Carolina.

I was part of this project in the late two thousands. We actually got a raised intersection on the N-C-D-O-T system. So when they tell you they can't do it, you got it down the road. Now unfortunately Streetview hasn't been through there since 2009 and so if any of you are so nice enough, next time you think Linville will take a picture of this and send it to me, I would love to have it. But just to show you, there are raised intersections in the high country. It's actually on a state route that's up there. So again, we can't use that as an excuse.

Other things you can do with raised crosswalks, you'll still hit the same drainage issues for these we can preserve the preserve the drainage flows by what's called a slot drain that basically spans the curb and does that. So again, don't let that be the excuse to not do it.

I've actually used the Howard Street striped pedestrian lanes in trainings and crossings for years because I think it's a very good application in a very low speed, low volume traffic environment. But I think in some situations it could be enhanced by doing what we would call an extruded curb or using what you see in the lower right hand corner, what are called hard line delineators. The top left shows this quote unquote pedestrian lane kinda coming straight into there. Not only is that an A DA problem with the way it's done, there's really nothing there to protect the pedestrian from other vehicles that are there.

The other treatments I show can be done quickly, cheaply. They preserve drainage lines and just provide some definition for that. The bottom right one is actually a bridge that had no sidewalks. Where I'm standing and taking the picture is on the side where there's a high school, one middle school. So this is what a state DOT did with these hard line delineators. They're about 30 bucks a piece, they're not expensive and we can use those on curb extensions and other things. And then finally, as Tony said, I'm a ADA guru in a lot of ways and there's a lot of brand new non-compliant infrastructure across North Carolina.

And in fact, even though a couple of these corners have recently been done, none of these four corners comply with a DA requirements. And that's really the floor. ADA is the floor. It's often viewed as the ceiling. But imagine a person with a vision disability in this curb ramp in the foreground where the arrow is between the two, you know what are called truncated dome pads. That blind individual could walk into the middle of that intersection and not have the required warnings for them. That's a huge, huge issue on this particular corner. I don't know what's going on there.

Black truncated domes are, can be interpreted by low vision people as holes and they will try to avoid them. Guide dogs will try to avoid them because of those same things. And this one is pretty new because the street view from only three or four years ago shows it wasn't done. And as I said before in the left image, what's a pedestrian? What's a blind pedestrian in this pedestrian lane to do to find the cues and to navigate this area properly? Because if you're just walking in the direction I'm looking, they're looking on this pedestrian lane and walk into that intersection and get hit, guess what? The police are gonna say, oh the person wasn't in the crosswalk.

You need to cross in the crosswalk. And we end up with a lot of victim blaming because our engineering doesn't put people in the right place, especially if they have disabilities. So that's a quick run through of stuff that I think is, is the menu of options for this. Don't let snow drainage

be kind of the reasons to not do it. There are plenty of engineering solutions that can get at these things as well as some temporary treatments that I think could, could help with the conditions today.

Tony Harris: Great, thank you Don. That's really helpful to think about, you know, vehicle size and kind of how this particular type of vehicle might have moved through this place and the impacts when there is a crash or a collision on the human body. And I think some of the, the recommendations and actions that you laid out, laid out are really helpful for me to be thinking about like the future of this intersection too.

If I could take us to Laura next, you know, to to comment on factors and like what you're seeing in this space and maybe even if there's anything about like your lived experiences here that you'd like to share. That would be, that would be great.

Laura Buck: Yeah. Hi. So living on Howard Street, we know me and all my neighbors, we know that it's super dangerous to be a pedestrian and try to navigate the street.

And so part of that is just because I think that the design of Howard Street, there was a lot of big ideas for it. There have been a lot of big ideas for it over the years, but none of them have come to completion yet. So they're kind of like these like half done ideas and then the pedestrians are put in dangerous situations. And so you see like in the newspaper articles that I was sifting through in 2010, that's when Howard Street, the this portion of Howard Street becomes a one way with the promise of bollards that was seen as an easy solution that could be done in a day, but there's only ever evidence of one being placed there.

And that bollard is no longer there.

But then in 2011, the next year you see that there's a story about a pickup truck turning and hitting a pedestrian that's crossing and that is actually what led the intersection to become a

four-way stop. Before that it was unmarked with signage, but even with the stop signs that hasn't changed, vehicle behavior cars are still not stopping at that intersection. And I think part of that, we really got the answers in our speed study. We very early on we're able to see that if a car is going over 15 miles an hour, they're not gonna stop and the speed limit is 20. And so cars are really having to take it upon themselves to kind of go the extra mile, go slower than the road is telling them they need to go in order to actually come to a complete stop for pedestrians.

And so this really concerns me with the lack of visibility with higher trucks, taller vehicles for individuals under five foot children and wheelchair users. So I, I really like the solutions that talk about having raised crosswalks 'cause I think we'll kind of get to that solution. But then the other thing that I was surprised by was when I went out and I measured the intersection, seeing that we have 13 foot wide lanes. And when I put that into the street design software, I was getting warnings and I was saying, don't, don't make a street this wide that's so unsafe, why would you ever do that? And it's like, that's Howard Depot street that we are just encouraging cars to fly through that and, and then putting the pedestrians at risk.

And so I think that there's a lot of hope and promise that it's like, okay well we can, we can make these lanes narrower, we can really improve the visibility for pedestrians and then really improve the foot traffic for our downtown businesses.

Tony Harris: Yeah, absolutely. Well put, I, I appreciate that connection that you drew between visibility and also, at least for me, visibility and vehicle size I think are kind of related here. For sure, for sure. Jonah, would you like to go next on factors?

Jonah Bird: Yeah, of course. I have a PowerPoint here that I'm gonna pull up and while I'm doing that I just want to note how important it was for me to be here today, how grateful I am. 'cause like Tony said, I live no more than 200 yards from where this occurred.

So when I got the chance to be a part of this and be here talking with y'all about it, I had to jump at it. So, okay, so you should be able to see my screen now. I just wanted to kind of take a step back and look at this intersection in the context of the larger area.

So I've highlighted Appalachian State University, that's the western edge of the campus there to the north and south. You have these two major thoroughfares. You have West King Street and you have River Street and West King Street. If you've ever been to Boone as a tourist, this is where you've gone. This is where you've walked and seen all the shops and everything. And it's really, it's, I mean it's the best part of Boone in my opinion, but it is also very automobile centric.

It's consistently backed up with traffic, especially during rush hour. And then to the south you have River Street, which is essentially a four way four lane highway straight through town. It kind of bisects the campus to the south and the downtown to the north.

So you constantly have pedestrians trying to cross back and forth between those two areas. And then you have Howard Street in the middle and Howard Street is predominantly pedestrian.

You have students constantly going back and forth from west to east trying to get to class in the morning and then from east to west trying to get back from class in the afternoon. And as you can probably guess, that creates a big issue when you have cars trying to get from the slower traffic of West King Street down to the faster traffic of River Street. They're taking waters and Braille Street to the West and Depot Street in the center there. And that obviously creates a lot of conflicts as those travelers meet.

So I also wanted to kind of zoom in and take a look at what interventions have taken place here. Like Laura mentioned the, I think the best way to describe what's been going on with Howard

Street is that it's been pretty beleaguered by attempts to do something about it without much success.

Like she said, Howard Street became one way in 2011 on the west side.

This intersection actually wasn't a four-way stop until 2017. And both of those interventions came about because of pedestrians being struck.

One thing that Laura also mentioned that I wanted to kinda give a visual for were these flex posts. The Ballards, this is the intersection, 2012 looking west down Howard Street.

I want you to take a look at this one here that flex post beer later.

Edward Erfurt: Hey Jonah, I don't think your slides are advancing,

Jonah Bird: Are they not? Okay, I,

Edward Erfurt: I think we're on your presenter view.

Jonah Bird: Oh, I see. Okay.

Edward Erfurt: So if you go to share screen, yeah, just switch the other

Jonah Bird: Stop sharing here. Yeah, thank you for pointing that out for me.

Edward Erfurt: Switch to entire screen, that should probably fix it.

Jonah Bird: Okay, so I'll run through this quickly again just in case you didn't see,

Jonah Bird: So yeah, you see West King Street to north or street south Howard Street in the middle with pedestrians and Depot Street is where cars are trying to make that connection between King Street and River Street.

Jonah Bird: Right Here's the intersection, Okay. And here we are in 2012 with those flex posts probably very newly installed. Let's take a look at this flex post here.

A year later that post is gone. Whether it was removed or whether it was struck by har and damaged, I have no idea, I'm willing to bet it was struck by a car.

Three years later, 2016, they're all gone. They've all been either removed or hit in 2018. There's been no attempt to replace 'em. And I can say now in 2024 they're still not there.

And while that didn't necessarily have a real, probably real impact on the incident that we're talking about, I think it does kinda give a good indicator of how the pedestrian infrastructure of this street has been treated by drivers in the past and how that might've contributed to this specific incident.

Don did touch on this quite a bit. I did also want to highlight the size and weight factor of the, the vehicles at play.

This incident occurred with a Chevy Avalanche and as you might have seen from the photo, it was a lifted Chevy Avalanche.

So that is a massively high hood height for, for any vehicle.

And just recently in March there's a study that came out that said for every 10 centimeters of extra hood height, that increases the pedestrian fatality risk by 22%.

So at these slower speeds, you know that that risk was thankfully very low for the pedestrian, but still just that, that extra risk from the hood height cannot be understated.

And then finally, I wanted to share with you on the topic of Howard Street and the, the projects that have been proposed, this is rendering from I believe 2016 that was proposed by consultant.

I do know the town is attempting to move forward with the, the project. I don't know if it will be moving forward in this form, but I do want to just point out here to the east side of the, of the image you have, they're turning that into a one-way heading west. And you can see there is infrastructure for bikes and pedestrians. I don't know if this is a buffered protected bike lane with actual solid curbs.

Obviously that would be ideal if they gave actual protection for those cyclists and pedestrians.

But that is all I have on my end, so

Tony Harris: Great. Thank you Jonah. Yeah, those visuals were really helpful to give a, to give a feel for the place in some of the historical happenings that have gone on there. Edward, could we come to you next on, on factors and then after that we can move toward recommendations?

Edward Erfurt: Yeah, I'm looking at this intersection and I'm hearing from our local experts things that I think we need to acknowledge and really put forward.

There are a lot of pedestrians in this space and I think Jonah identified that, that the relationship of where this intersection is within the city, that we have to acknowledge there are lots of pedestrians at this location. That is a contributing factor because at the same time there's also vehicle traffic that is occurring at this intersection.

Understanding the context on the ground, understanding the parking lots and all the driveway cuts. We are forcing people onto this road.

What if I step back from the intersection? Why would somebody come here? Well, on, when I look at the map and I go back to what, what Jon was sharing with us, understanding the, the traffic and volume of of drivers on both river is it

Tony Harris: And King

Edward Erfurt: And King, we put traffic lights, there're traffic lights that, that are on Depot Street at this area so that we're channeling people from all the parking lots plus all the cut through traffic here.

So we're bringing lots of pedestrians there. We're channeling cars at this location. So those are contributing factors and, and a bit of a recipe for disaster.

When we think about the design of this intersection, when I look at the, also some of the contributing factors that were shared with the vehicles and I, I think Don shared something that I would share too, that the, you have a large vehicle not only as large the size of the vehicle, not only is it have the aftermarket lift package that's RA raising the driver up quite a bit.

You also have tint on the windows, which is a contributing factor because it does make it harder for a driver to see when you're going through an intersection.

And also the really unfortunate thing is that our victim of this particular crash is only about five feet tall.

So this could have as easily have been a child at this intersection, not just an adult. So when we look at how this intersection lays out, you have some incompatibilities with vehicles and pedestrians and then you go and you put an extra tall vehicle with an extra sharp person and that exacerbates that.

There are well-intentioned things that I see that are occurring on Howard Street. So some of the well-intentioned things about adding a bike lane on this particular road, well-intentioned, but we're adding another thing into a very slow volume area. So we've, at the city, they've channelized where the cyclists go, which gives priority to the cars to go faster. And then that cycling track in certain areas have diminished the ability for the sidewalk.

So there's all of these compromises that are there and making Howard Street one way, you're forcing this turn.

So you're forcing a turn which is contributing to induced demand. At this intersection at what transportation experts would tell us the most dangerous part of a vehicle is turn movements.

So that's there, they're rolling to the intersections.

There is a phrase in my neighborhood, there's something that everybody jokes in my neighborhood and we're not alone in it.

The, the joke in our neighborhood is the stop signs are not for the locals.

This is something we need to recognize that does not show up in our textbooks and doesn't show up in all the pictures that we have there. When we become comfortable as drivers in locations, when we're in an environment that allows us to go, the fact that you could get to 20 miles an hour with all the conflicts, the parked cars, the cyclists, the pedestrians, all of these

things that you could get up to that speed on this road and you're at that speed of kind of slow but not slow enough to stop and not fast enough to break the speed limit on it.

But as somebody that would be familiar with this area and your destination, when you look down these streets, it's a pretty clear view because they pushed all the traffic, the parked cars back, the extra wide lanes you would roll. It would be, I, I could see as a local that you would roll through this intersection and, and the observations from our, all of our local experts on this are reflective of that and, and frankly could have been a contributing factor in this crash rolling through that intersection because the speed would be consistent with the injuries that are being reported out of the crash. This is not somebody that has been at a full stop, has looked at the whole intersection and then made that turn.

This is also a really tight intersection when we think about it being a very dense area, but they're very car oriented features that have been added to this intersection.

So the lane widths are really wide, that allows for a lot of driver correction, makes it hard for pe slower moving pedestrians to know what is, what the driver's full intention is.

Maybe the victim wouldn't have crossed the street if a turn signal was used, but we don't know because the lanes are, are quite wide.

There is parking on different sides of the street in different locations. So as a driver there are lots of things that could be distracted to me. As I, as we come close into this intersection, we could see that there's lots of driveways that are very close to the intersection.

So there's these non-descript areas as well intentioned as making it. So cars can't park at this area of the intersection, kind of daylighting what is there.

We actually have a condition that you can park right up at the intersection here. So if I'm coming through this intersection, let's just walk through that approach.

There are a dozen different things my eyes are looking towards at this particular intersection in an approach and it's the same in every direction.

So is this car gonna back out? Is this one gonna turn, is somebody gonna park there? Is there a, you know, there's no pedestrian environment here. There's kind of this bike lane, maybe I wanna see what's hanging on the, one of the windows of a restaurant. So there's a lot of driver distraction here and we can see where stop signs and things are pushed further away from that intersection. So the stopping distance here. So there's a lot of distraction that I could see here. So just to build on all of those things I, I think this particular intersection, unlike others that we've talked about in crash analysis studio, when we talk about speed being a contributing factor, it's not the speed of somebody's zipping down the road at an aggressive amount of speed on these particular roads going over about 10 to 12 miles per hour would be fast.

Considering everybody in this environment. It's a very short stretch of road. There's lots of contributing things to it.

The size, the weight, the hefta, the vehicle, this vehicle is not unique to this driver or to bo. These are vehicles that we see in broad areas that we have to recognize that are in, in these areas.

We have to recognize that additional features that are legal can contribute to that. Much like tinted windows, big radio or lots of dials in the dashboard can also be very distracting. So when we, when we are providing this additional comfort level of pulling cars back from the intersection to make it wider, opening up the wider intersection, having wider lanes, adding more controlled features, closing the one lane on Howard well intentioned, but that is now removing a conflict point of car to car interaction contributes to that. So again, we're not

looking for pedestrians, we don't see another car which I'm driving, I'm thinking car to those pieces and, and then the fact that we have an area that we are channeling cars through, through one way traffic, through signalization, through other congestive issues on top of being the primary pedestrian route for a lot of residents are all of these contributing factors to this particular crash.

So for me it's way more than just a distracted driver. There's a lot of contributing factors I see at this intersection.

Tony Harris: Great, thank you Edward. That's a really helpful elaboration.

I think if we're ready we could move on to recommendations to improve safety at this particular intersection.

I know Don started us off a little bit in speaking about like LED flashers talked a little bit about curb extensions, some of the drainage concerns that might come up. Don, can I ask if, if you have any further recommendations you'd like to pose that would be great.

Don Kostelec: Yeah, sorry for jumping the gun on that.

Tony Harris: No worries.

Don Kostelec: My apologies I led into that off factors. No, those were the major ones. Kind of given the more of the fixed environment here. I agree completely with Edward. I think the Howard Street design that Jonah showed is a little bit of, of an over-engineering of that. Especially given how short this street is. I think some of the shared street and other concepts would do a better job at allowing for all those things treating motorists as guests. And I even think for Depot Street, given it's relatively short and doesn't have a real high transportation

function, a target speed, which is a engineering term that would get at that 10 to 15 miles an hour, would certainly treat motorists as guests in this area.

The closest shared street I think you guys have to, and if somebody wants to go look at it on street view is Wall Street in Asheville. It's been there for a while. I think it could have some other features given what we know now. But I think the, the Contraflow bike lane and everything that Jonah showed is probably a little too much and in the end a little too, a little more costly than it needs to be to get this area correct. Some other things that I sorted through in my own mind on this particular intersection would certainly be you. You could look at something like a mini roundabout, but I think it's too tight for that.

I think the roundabout I showed further east on Howard was an area that was rebuilt and and much more generous dimensions for it. Certainly not a full roundabout. There are lots of other things that can be done in these areas to enhance existing signage. Even the photo you showed Laura of a utility pole that's, you know, obstructing the stop sign. I think things like those flashers can help with that in some ways. And I know it's a struggle in North Carolina with Duke energy but, but even trying to get the economic development project that would underground the utility lines or or push them elsewhere through here, it just creates a lot of other street clutter and removes from the economic development potential and other things of this street that would, that would bolster it.

But I mean I think you could take a look at Depot and Howard in any form of shared street slow street concept and find the best practices around the country and start to apply those in this area. There's just a lot that could be done long term if there is a kind of more physical infrastructure project planned.

Tony Harris: Great, yeah, thanks for sharing that. Particularly the pieces around physical infrastructure.

Maybe Jonah would you like to go next on any recommendations that we haven't covered or that you would like to expand on?

Jonah Bird: Sure, yeah, I just wanna highlight again just how long they've been talking about redeveloping Howard Street. It's, it's been the subject of a lot of talks for several decades as as far as I'm aware.

But something I'm really big on and I think could definitely be used here are quick builds.

Especially given how long it's taken for stuff to get off the ground with this project.

In the meantime, I think it would be really smart to do those quick interventions with very low cost quick turnaround at least by, you know, municipal standards.

The, the big thing for me would be center line hardening, especially on Depot Street and if you're not familiar with the term, that's essentially putting some kind of prefabricated barrier, for lack of a better term on the center line of the street. So that could be those flex posts that we were looking at. Some kind of delineator where that forces the, the driver turning from Howard Street onto Depot Street to pay very close attention to their turning radius. They can't cut that turn that will force 'em to pay attention and hopefully notice any pedestrians before something happens. There have been studies that show expected 12% reduction in turning speeds and up to a 46% reduction in crashes where those are implemented and also up to a hundred percent reduction in proportion of drivers crossing that center line 'cause they simply can't.

Looking more midterm obviously first step would be to make those quick build interventions permanent, like Don was talking about really engineering the, the intersection with those curb bumpouts and and things like that. But long term, what I think I would really like to see is just to have Howard Street Pedestrianized.

I really don't think Boone would be losing a lot in terms of traffic capacity.

The proportion of pedestrians to cars I think really justifies that.

And not just from a transportation safety aspect of it, but also the potential economic benefits of it.

A a big reason that Howard Street has been the subject of this redevelopment is because it's just such a great area to, to redevelop and integrate into the downtown area.

Like I said, when people go to Boone, they're going obviously for the mountains but also for King Street. It's what makes Boone Boone.

So to extend that downtown onto Howard Street I think would just be such a huge benefit to Boone. There are already some really good great businesses there.

If you like coffee, go to e News. Shameless plug some of the best coffee I've ever had.

And yeah, I think that that would be what I would like to see long term. Obviously there would be some challenges with that, that they use Howard Street for access to a lot of parking lots, especially for the town hall for ECRS, which is one of the more prominent employers in the region and other various businesses. There's a, a hotel that uses a parking lot back there.

So that would definitely take, you know, traffic studies, feasibility studies, but that's what I would really like to see long term. If they don't want to go that far, like Don was saying, a a shared street would be I think a happy medium.

Don Kostelec: Yeah, I was just gonna add to your, as I was looking at that, I think in just scanning through aerials and street view, it appears that most of the large parking lots that have an access to Howard also have an access to either King or Rivers or depot or the other street. So I think that's a way to find solutions for what you're talking about.

Jonah, we, one of the interesting outgrowths of, of Covid, and you can look up eighth Street where I am here in Boise, is we had a similar street that for years people had talked about pedestrianized and oh no, you know, gosh, we've got 11 parking spaces on it, we've gotta preserve, oh my gosh, we have trash trucks. Well, CO prompted putting street dining on the sidewalk and turning the street into a pedestrian way. And that's just been finalized and formalized because it was so successful. One of their downtown organizations goes out in the morning to meet trash trucks and other delivery services to take down the bollards and allow them access.

So that's not an issue if there is a hotel that uses it, there are ways to do parking passes and other things that would allow visitors that type of access. If you can figure out some of the other things. And then I think for those of you in the community, we know from studies that businesses grossly overestimate the amount of business they receive from drivers.

And I think in an area like downtown Boone, especially with the college, it wouldn't surprise me if that's the case. So even going into some of the businesses along here and and trying to get at those mode shares, you might surprise them and finding that that out and certainly would help any other downtown business interests that could be skeptical.

Tony Harris: Great, thank you. Laura, maybe we should come to you next on recommendations.

Laura Buck: Yeah, the, the recommendations that I would like to see is with the, the utility poll that's sort of blocking the, the stop signs and maybe even on all three sides, just putting a stop ahead sign to warn drivers about reducing their speed. Maybe give 'em a benefit of the doubt

that they might slow down a little bit more, but then also really encouraging them to slow down with strips that, that cause friction and like force them to slow down and look for pedestrians. And then, yeah, I'd like to see the raised crosswalks and narrow lanes.

Tony Harris: Excellent, thank you. Edward, anything additional from you in the way of recommendations?

Edward Erfurt: Yeah, I, I heard lots of really good recommendations and I, I just wanna highlight some of these.

There has been multiple injuries at this intersection. We are talking about one when we hear that in addition. So that should be a call to action in itself. Don also pointed out that at the intersection there have been improvements there that don't meet American for Disabilities Act through Proac, which has now been adopted. So that is a call to action.

And then Jonah has also shared that Boone has experimented everything here, but only about halfway, nothing fully completed.

So there's a lot of call to actions I think at this particular intersection. There needs to, like every city when we have some sort of incident like this that multiple people are identifying are a struggle in the community, we should make a blanket statement that nobody else should be injured, let alone killed at this intersection.

So there's a lot of, as we've talked about, there's lots of different things there. I think like tomorrow something, if we think about quick build, something that could be done, not only are there the center line hardening, but I think in the middle of the intersection of Howard and Depot, you could put bollards right in the middle of the intersection.

Like that's something that could be done immediately in that intersection that would add friction where cars would actually have to see and know that they have to work through that.

I think understanding this intersection and making it very clear at a municipal level and sharing this out, that at this intersection safety is boone's number one priority. That any investment, any effort, any engineering at this safety should be the top priority. What that might sacrifice is the faster movement of cars, but it's already marked at a 25 mile or 20 mile per hour speed limit, which is below what most streets are at.

There's already the addition of crosswalks and cyclists in this area. So all of the different things are here. So really being very deliberate that anything done at this intersection, safety should be the top priority going outta that intersection these lanes are way too wide and a decision has to be made about what all could be done at this intersection with those.

When I look at the street widths, when we look at the math, you actually could go down to two nine foot lanes, which is a slow volume, you know, slow speed, lower volume street, it has lots of friction, there's lots of driveways and curb cuts as a yield street type condition that people can see at the end of the block. Somebody is coming and I need to kind of move over that would, that would really slow the cars and make drivers way more aware of their driving. Mind you, the vehicle widths, even those big trucks are well under that nine foot dimension. And sticking parking or an accommodated use for cyclists or pedestrians on one or both sides of the street should be the whole way through.

That can be done with paint and bollards at so times. We would even encourage you to go out tomorrow with tires and straw bales, like use the tools available today to do that.

I would do it in conjunction with the students and the neighbors and the businesses that are there. I would encourage, much like somebody would do for a festival to close the street down to go out there and experiment, experiment with these temporary measures of narrowing the

street with paint, bollards, cones, straw bales, do that work, observe over the next week what happens if cars are running over. All that stuff. If pedestrians are moving things out, adjust. So doing those quick bill pieces long term for this particular road, both depot, Howard, I would real, when I look at the way the parking is on this street, I am seeing that there, there's some deliberate intentional things of offsetting the parallel parking on Depot Street on one side or the other.

I would not be so timid at the intersection.

I would actually go and narrow the lanes up, tighten them up and offset the through movement of the intersection on Howard and Depot.

So that is way more deliberate that when you go through the intersection, you actually as a driver have to turn your wheel to get into the other lane. It will make people way more aware of what's going around. So, and that may be when we look at the curb extensions that will be required to be put in to meet pro ag, to put the curb extensions out to go and tighten up the intersection and make it safer for the pedestrian and to deal with all the utilities and all of those pieces.

That's your opportunity to do it.

I also wanna really reinforce long term at this intersection on Howard Street to different things that I think are worth exploring.

One leg of Howard Street is one way and the other is two way.

If there's not enough room to make things happen or there one, there's an I desire to do something quickly.

What I would suggest is have the one side of Howard with one way traffic, one direction and the other side of Howard and one way traffic the exact opposite direction.

And both of those should be one way towards Depot or vice versa. You figure out which way, but make it so that it's much more deliberate in the traffic movement in those areas. So at that intersection you have more opposing friction and long term. Looking at this, if we think pedestrian first and safety first on this street, I would really look to the work of Gail Architects, the work of Ben Hamilton Bailey of Shared Streets. There is an a huge advancement in the engineering world of making a space where we invite cars in that are people first.

They have lots of different terms, warn offs, flush streets, shared streets.

There's lots of places in historic communities that have high levels of tourism that utilize this type of feature.

These are festival streets, these are areas that are flush without curbing that allows you to transition businesses into this type of street.

It is, if you look at the work that has been done in these cities, the traveling isn't necessarily straight. The adjacent businesses have the ability to push out into that space as a priority. The pedestrians feel comfortable in it.

I would if, if there was gonna be a big volume, you know, long term investment project here, stormwater, underground and utilities of all those features, that's the type of investment and, and frankly the places they're done, it ends up being a lot cheaper because it's flush. You're using all hardscape materials and you're piggybacking on a lot of other things.

So do the quick build stuff. Get pylons, cones, straw bales, paint, do that tomorrow.

That could be the one way the flashers, the hardening of the center lines, adding stuff, the middle intersection. Do that tomorrow. Do that sort set up by mid midweek next week. Tell people what you're doing about it. And then when we look at the long range plans, understand that this is a people first place. Understand and promote safety first. And that would start with a resolution of the council to say that this is a safety priority for them. This is safety first in this area to ship the mindset of the engineers to know what the priority of the community is because there's lots of places have streets like this that have been able to convert to a very safe environment and still meet all the functions of a modern city of getting cars through and to parking lots and access businesses.

Don Kostelec: And I think I would just add, you brought not you inspired to things, Edward, and I'll share these 'cause it was stuff that came to mind.

Some of this hard center line he talked about. You can see here of these little rubber bumps coming out from the crosswalk. This is in the Hawthorne neighborhood in Portland. And again, it just helps with that left turning vehicle that they have to physically go around and is probably a little bit more, I would say, acceptable or accepted than a bollard, you know, that could get hit. But you can kind of see the effect here. The other one would be, and I know you if you've heard of something called a pedestrian scramble or the Barnes dance, you've probably heard a lot of it at Signalize intersections. And that's not always the case.

This is downtown Ketchum, Idaho. It's where Sun Valley is.

This is a four-way stop. Where in that they have created in essence the pedestrian scramble across all of those legs of the intersection. And again, there's advanced signage and other things, but again, showing that motorists are a guest to this space. Given the Howard Street configuration in this location, there's no reason to not allow pedestrians to cross in any direction. And maybe that would heighten this awareness of a motorist crossing of, hey, you know, look for pedestrian crossing in all directions, including diagonally.

Edward Erfurt: And, and a lot of that work is, is like a tomorrow thing. You can buy the, you can buy delineators, you can buy those, those bumps out of catalog. I, I'm amazed how many counties, cities, and states already have 'em in their yard.

This is just applying it in a different space.

Don Kostelec: You can find 'em on Amazon.

Edward Erfurt: Yeah, I mean these are things that are quickly deployable and they're not permanent.

So I, I always want to stress for communities at cities, and this, this may be, I I'm gonna assume that this is what's occurring in Boom Boone, is that there's a, there's this thought out there in many, many, many, many municipal governments that failure, we, we have this adversity to failure that whatever we do, whatever we design, we've had enough public meetings, we have enough engineering on it, we've got enough money that we put into it for the once in a lifetime project to make it perfect.

If that was the thinking of Apple and Google, we would not be having this conversation here in this platform. We would not have a whole new platform for phones and all the technologies that can provide us all of those private sector companies understood that failure is an option. So using low tech, simple things out of the yard, like they already are being used in Boone, like those giant concrete sewer pipes with plantings in it, using those things, those are temporary. It allows us to experiment. If we fail, we fail small.

And these are small things that we can learn from and we can learn from that failure and adjust those things so we can quickly deploy them. It's really cheap to deploy. We get feedback from everybody that uses that intersection. Even people from out of town that use that intersection

that we can observe. And because it's cheap and easy to deploy, we can adjust as necessary. Once we figure all that stuff out, then we can go to those bigger projects and pay for concrete and re asphalting the road.

But yeah, I, I would do that because, and, and I would just reinforce for the folks that are listening that are in the municipality, allow for that experimentation, that failure is an acceptable option we can learn from, but we should do it by testing small things that are readily available that we can fail small on, but learn big with

Tony Harris: Absolutely well stated. Okay, if we are ready, I will go ahead and move us into our closing for today. Thank you everyone for offering up some great recommendations and sharing your perspectives with us. I'm just gonna pull my screen back up one more time and move us through some acknowledgements, some thanks that I'd like to offer up. So first I would like to say thank you to our panelists today. So Jonah, Don, Laura, Edward, thank you so much for being here with us and giving us your time and energy. I wanna give a special thanks to Laura for nominating this crash in the first place and gathering all the information and resources that we needed.

And I know there were maybe some other community members who helped with resource gathering too. So a big thank you to them.

I'd like to offer our appreciation to our sponsor for this event and anonymous donor. And I'd like to say thank you to the strong town staff team who have helped with preparing for today and who have been helping with the Crush now, the studio in general.

So you can find a recording of this session and all of our crash analysis studio sessions by going to strong towns.org/crash-studio.

And our next virtual studio session will take place sometime this autumn. You'll be able to see more information about that session on our website soon. And then on our site, you can also find links to our free academy course for establishing a crash analysis studio in your own community. And if you happen to be interested in having strong town staff, visit your community to co-host an in-person studio or give a talk about transportation safety or host another event. You can fill out an inquiry form through our site as well.

So on behalf of my colleagues and the assembled panel, thank you for watching this session of the Crash Analysis Studio. Keep doing what you can to build a strong town. Take care.