Response to [redacted], P.E. pertaining to:

- Shoal Creek waterflow
- Mechanisms that prevent overtopping
- Sediment and gravel bar removal around bridge infrastructure
- Maintenance records
- Potential West Ave bridge watermain vulnerability
- In-person inspection of creek to finalize www.austinshoalcreek.com

05/04/2026 by austinshoalcreek.com

Contents

[redacted], P.E.
[redacted]
Austin, Texas [redacted]

Monday, May 4, 2026

Dear [redacted],

Thank you for the very detailed, and timely, response. This document includes excerpts.

Unfortunately, the questions posed by the case study on austinshoalcreek.com haven't been answered definitively; it's not an easy task. I lack the scientific literacy required to interpret watershed graphs and other scientific reports. None of the literature and references provided, from what I can glean, speak to bridges and the mechanisms that prevent measured 12–16-foot surface water elevation from overtopping bridges downstream which span only 8.5-14 feet in height; span heights that become lower when sediment and gravel bars are factored in.

While I don't disagree with any material provided or your attempts to elucidate subjects, hopefully the remarks and revealing visual aids in this document can help further the reasonable request to have an in-person field inspection (originally planned, but cancelled due to weather) to hear explanations of the facts at hand with points of reference in plain view. A field inspection would facilitate the most critical sense in the field of science (and human understanding): vision.

The sediment pictured is within normal ranges of accumulation we would expect to see in the creek. Shoal Creek does carry a regular bedload of cobbles and gravels and they accumulate in gravel bars within the channel bottom. In 2016, Watershed Protection conducted a study to assess the flood reduction benefits of removing debris, sediment, and gravel along Shoal Creek between 15th Street and Lady Bird Lake. Based on the findings of that study, it was determined that removal of sediment bars and gravel provided minimal flood mitigation benefits. The water surface elevation decreases ranged from 0 to 3 inches. I'd be happy to provide that study or describe it in more detail.

I did read the 2016 study as it's far less complex than, say, a FEMA floodplain report with several hundred pages of technical analysis. However, I'm not qualified to interpret it.

The 2016 study is concerned with overall surface elevation whereas what I have observed pertains to bridges and what is impeding them, and could impede them, locally. The W 6 St, W 5 St and West Ave bridges have been the areas that strike me as interesting because they all span below 14 feet high and, in the last decade, readily accommodate an annual average of one (1) twelve (12) foot, or higher, water events.

I've had to infer by myself that the W 6 St, W 5 St and West Ave bridges don't overtop because spillways like N Lamar Blvd or the parking lot by 800 West Ave possibly reduce the volume of water along the creek during the regular 12–16-foot water events.

I took the opportunity to examine the creek this past Saturday for a couple of hours to get better photographs than the 2016 study provides. The photos, and what I conclude with them, may be engaging for you and your colleagues, if not of some use. With that, let's put some sensible boots on the ground.

Photographed upstream are the east span and footer of the W 6 St bridge.

The photographs above are downstream under the east span of the W 6 St bridge. The photograph directly to the left faces upstream.

It's worthy to note that in addition to obstructing waterflow under bridges, gravel and gravel bars provide the relative level ground that encourages people to camp out and burn fires under piers using wood and propane.

These photographs show how the east span of the W 6 St bridge feeds directly into the foundational areas of Sammie's (has partial erosion prevention measures in place) and Taquero Mucho (has no erosion prevention measures in place other than a reinforced foundation).

The photographs above and to the right form a pan of the creek by turning right (west) from downstream at Sammie's and returning upstream towards the east footer of the W 6 St bridge.

Erosion and obstruction may not be a concern here, despite appearing to be so. The erosion prevention measures in place across the creek on the west side (top left) look like an appropriate and needed remedy on the east side, from the layman's perspective.

Attempting to Track Change at W 5 St Bridge

Here is what the W 5 St bridge looks like facing upstream in 1997, 2016 and 2026.

Important to note is that it <u>appears</u> the middle span cleared out naturally between 1997-2016.

The W 5 St bridge was renovated in 2008 and the work may have had the gravel bar removed as can be seen on the next page.

c. 2008

Source: https://en.wikipedia.org/wiki/West_Fifth_Street_Bridge_at_Shoal_Creek#/media/File:West_Fifth_Street_Bridge_at_Shoal_Creek_South_Side_Austin.jpg

The east travelling 4 commuter bus confirms this is the W 5 St bridge. The temporary fencing under the west span and wheel marks under the middle span revealing uneven brown earth and finer gravel, point to construction work of some kind taking place here. What cannot be determined is if the gravel bar was removed in part or its entirety.

Records are hard to track, and the City of Austin manages over 1,400 bridges. While the spans can reaccumulate gravel over time, it is worth determining if there is benefit to the conveyance that unobstructed spans provide this bridge, especially given the W 5 St bridge's very low ground clearance and accommodation of Austin Energy utility pipes.

May 5, 2026

Photographed above is the W 5 St bridge on May 5, 2026. The support columns in front of the Whole Foods sign was not present in the photograph on the previous page, circa 2008.

The cranes in the background of the 2016 photograph on page 9. were constructing the Whole Foods addition, which was completed in late 2021 as the next page shows.

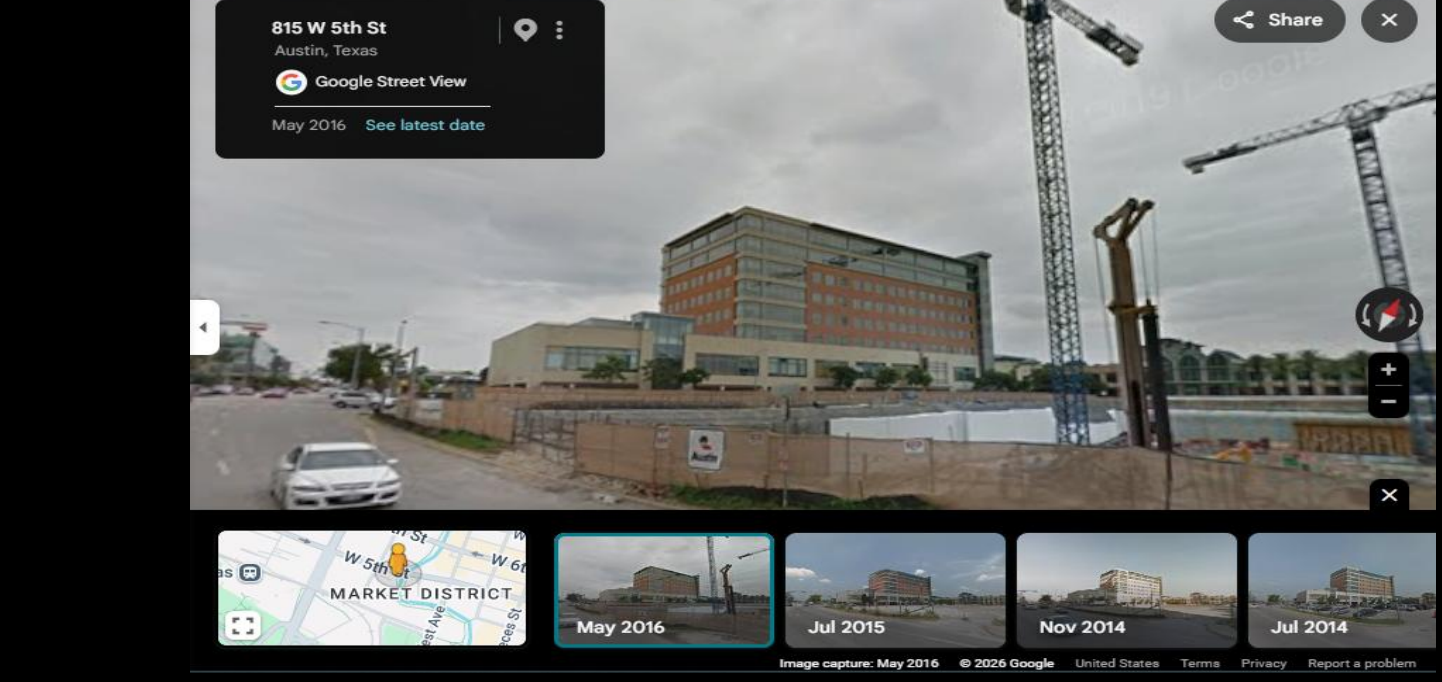
815 W 5th St
Austin, Texas
Google Street View
May 2016 See latest date
Share
MARKET DISTRICT
May 2016
Jul 2015
Nov 2014
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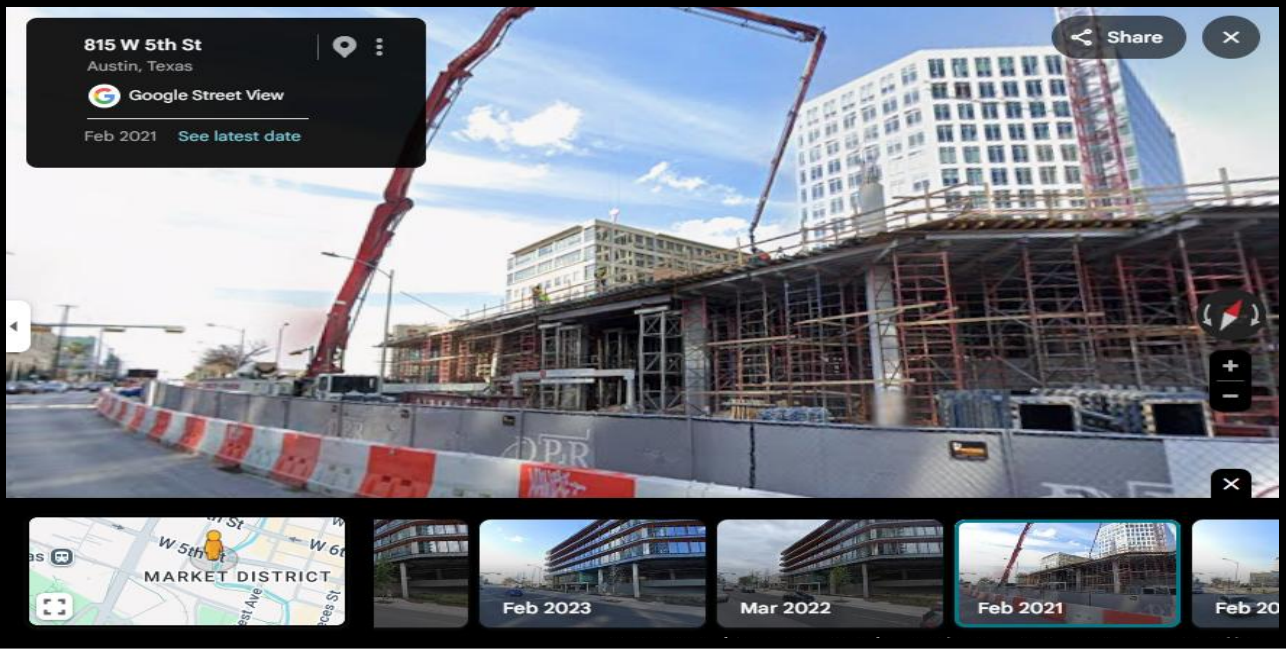
Image capture: May 2016 © 2026 Google United States Terms Privacy Report a problem

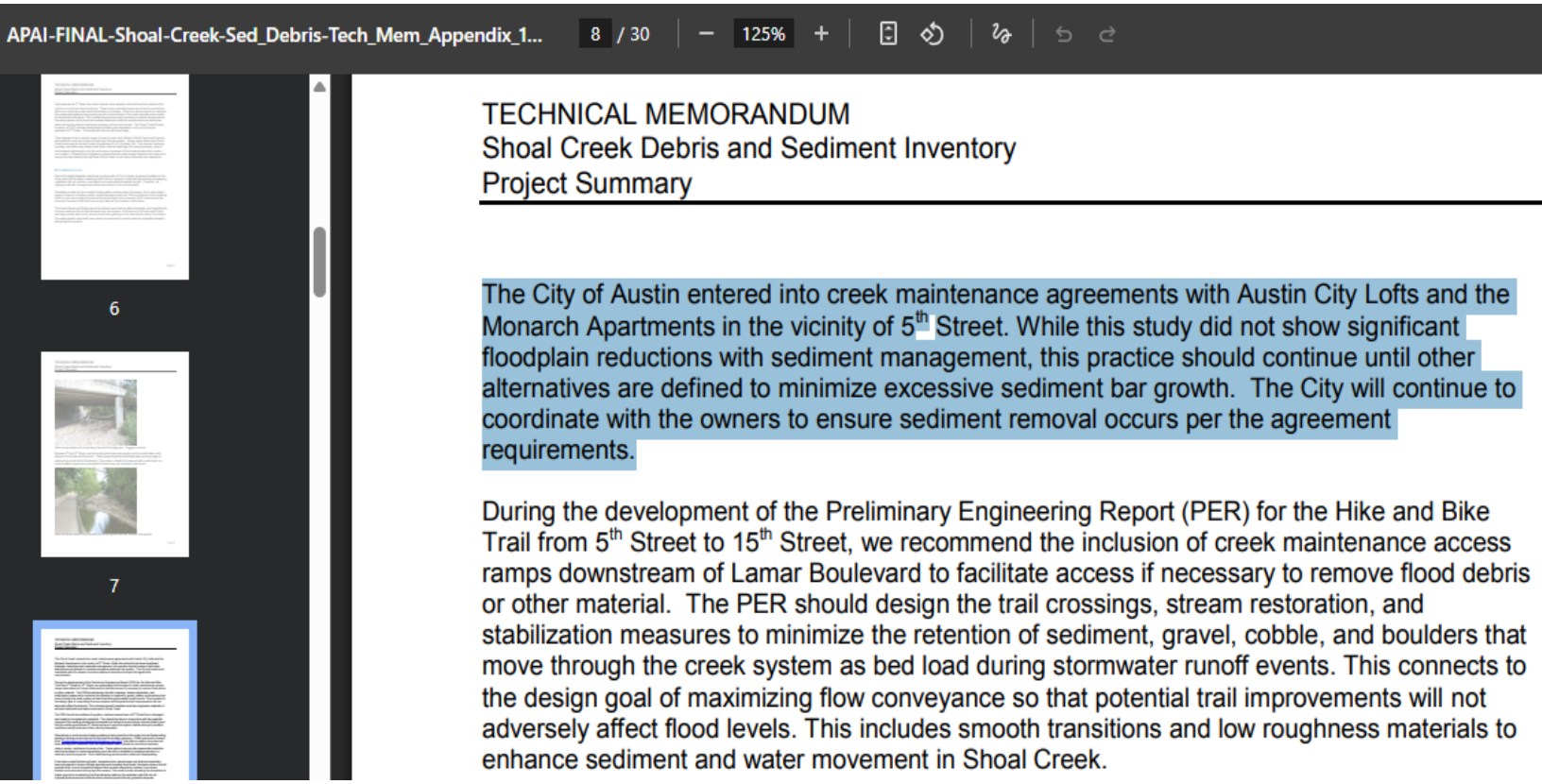

July 13, 2016


815 W 5th St
Austin, Texas
Google Street View
Feb 2021 See latest date
Share
MARKET DISTRICT
Feb 2023
Mar 2022
Feb 2021


May 2, 2026


May 2, 2026

The 2016 study mentioned the need to monitor the W 5 St area, but if the gravel bar had been manually lowered/removed, as the 2008 photograph suggests, it is possible the people who conducted the 2016 field inspection were unaware of as much.



Standing in the W 5 St bridge middle span facing upstream, you can see how the sediment and gravel under this bridge blocks waterflow on a calm day after rain.

What could understandably be inferred here is that even on a good day this bridge is obstructed, and waterflow struggles to convey as a result.

Facing downstream it's worth noting that this buildup is not natural but is the result of waterflow coming into resistance from a manmade structure.

The damage to Austin Water utility pipes happens because, as indicated by snagged branches, waterflow in this area constantly reaches the height of the bridge spans, which have their designed capacity reduced by sediment and gravel.

The branches stuck under the bridge could be from nesting birds, though it’s doubtful.

Water travelling under the west span of the W 5 St bridge has an 81 inch clearance when the height of the utility pipes is factored in; parts of the middle span have even less room.


2016


2026

The gravel bar under the east span has grown slightly since 2016. Water is slow to drain downstream just past the span of the W 5 St bridge.

Above is what the W 5 St bridge looks like upstream (left) and downstream (right) during flooding, as documented on August 22, 2022.

FINDINGS

As shown above, the largest reduction in the floodplain elevation occurs during a 10-year storm at Lamar Boulevard. Other floodplain reductions are on the order of 0 to 3 inches. From a review of the flood profile that is included in the Appendix, the existing bridges backup water during all the studied flood events. This "backwater" effect creates a higher water surface elevation at the bridge and extends upstream. Thus, one could excavate large quantities of sediment from the channel but when the water level is controlled, or held higher by downstream constraints, there is limited benefit to sediment removal. As noted in the flood profile in the Appendix, a higher water surface elevation can be viewed upstream of the bridges, this is called the "backwater" generated by the bridge.

5 of 17

My takeaway from this is, i) while removing sediment and gravel from the W 6 St and W 5 St bridge could improve waterflow it might simply encourage more volume from upstream and thereby negate the benefit of sediment and gravel bar removal and, ii) if removing sediment and gravel bars could improve waterflow conveyance at both bridges, it would only be beneficial if the new added volume could convey through and beyond the West Ave bridge.

Would sediment and gravel bar removal in the immediate vicinity of the W 6 St and/or W 5 St bridge areas, i) improve conveyance in those areas and, ii) remove constraints?

An in-person walk would answer fetching deductions and questions like this in under a minute with the aid of immediate visual reference in real-time.

From a floodplain standpoint, the areas of concern that may affect flooding potential are as follows:

- Lamar: Sediment underneath the bridge, and large sediment sand bar downstream of the bridge.
- 10th Street: Sediment underneath the bridge.
- 9th Street: The pedestrian trail which passes underneath 9th Street creates a significant blockage; however, the removal of the trail is a larger project than the SCC is capable of undertaking. There is also sediment build up underneath 9th Street, but because of the pedestrian trail crossing, the removal of the sediment is unlikely to reduce the flood depth and sediment is likely to be deposited again in the area during the next storm event that causes significant flow in Shoal Creek. There is a large sediment bar downstream of the gabion mat; however, because there is little vegetation on this bar, it is likely recently placed and may migrate with subsequent storm events.
- 6th Street: Sediment underneath bridge; especially on the right (west) side adjacent to the pedestrian trail, and on the downstream left (east) side culvert.
- 5th Street: Sediment underneath the bridge. This area is currently under a maintenance agreement with the Austin City Lofts to perform sediment abatement activities when the sediment is above the footer bump-out on the bridge piers. Currently, there are some areas which are above this elevation and there are areas which are lower. It is very likely that the sediment, if spread out in this immediate area, would be below the point of requiring maintenance.
- There are a few areas of erosion noted and any projects done to mitigate the erosion will need to be analyzed to ensure no adverse flooding impact. These areas include:
    - Just downstream of Lamar on the left bank

To the naked eye of pedestrians and cyclists who are not hydrologists or structural engineers, the areas around the W 6 St and W 5 St bridges look poorly maintained and have gravel up to over three (3) feet above pier footers.

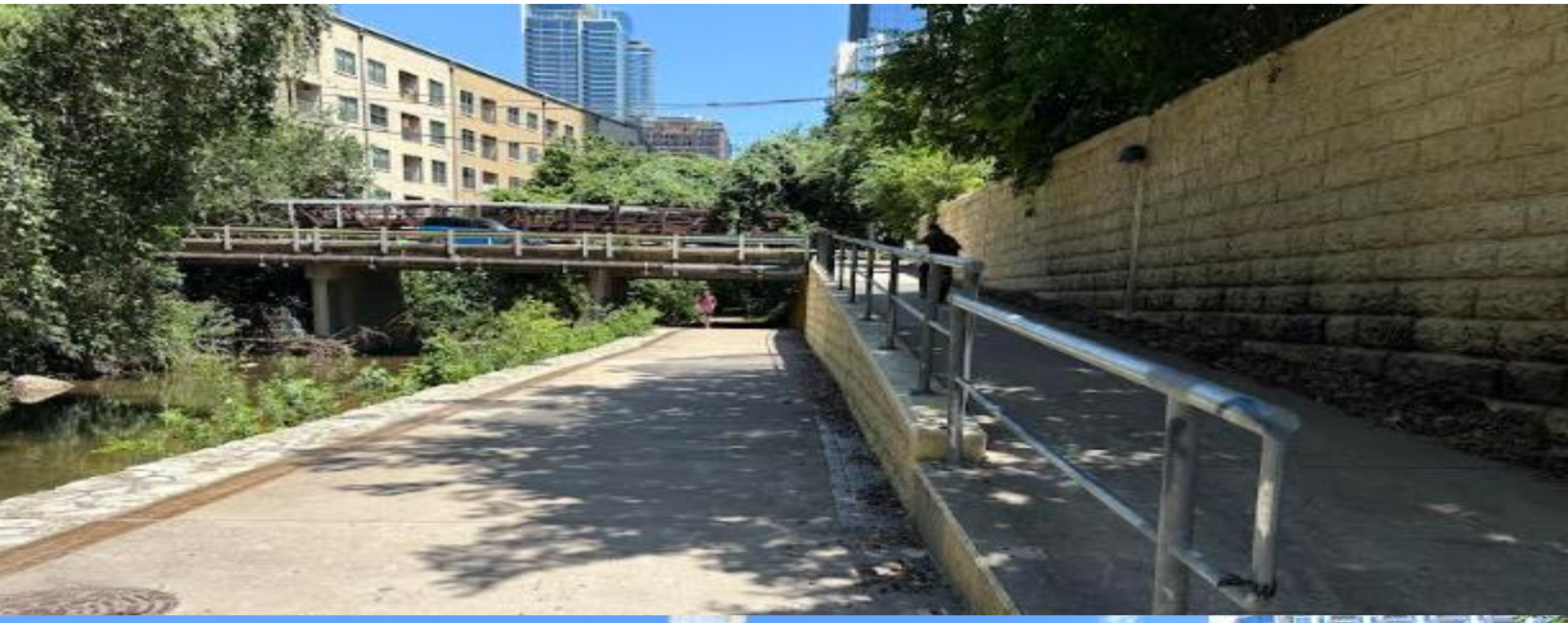
If removing gravel and sediment along the creek makes an insignificant impact on water surface elevation, does sediment and gravel being 50-65 inches in height before, under and after bridges mitigate no risks to bridges themselves, their utility pipes, overtopping and/or property in the immediate area?

Lastly, the study did not appear to address solid, tree supporting, embankments formed before and past bridge spans because of the bridges being where they are. Perhaps these embankments provide erosion mitigation that is worth the obstruction?

Potential West Ave Bridge Utility Risk

An important question is whether water surface elevation and obstruction matter at the West Ave bridge? Like the W 5 St bridge, the West Ave bridge does not have a lot of area for floodwater conveyance but appears to have less obstacles downstream from it.

The bridge has what appears to be a pressurized utility drinking water pipe spanning directly in front of it. Based on what I've observed, the pipe could be susceptible to damage from flood debris.



Photographed right are the conditions the pipe was exposed to on August 22, 2026.

The flooding damaged the railing along the pathway ramp.

It could be supposed the pipe is designed to withstand impacts and debris collecting on it during floods. The concern here is drawn from breaches to Austin Enegy utility pipe encasements at W 5 St from debris strikes. If this was a confirmed risk, an economical solution could be welding something akin to a steel shield in front of the pipe. Such a meausre may also make sense for utility pipes at low lying bridges like the W 5 St bridge.

I asked around with some folks that have worked in the City for a long time and are aware of the crossing and guardrail at W. 6th Street. There are no records and it's been that way for over 20 years. I don't think I'm going to be able to illuminate this history any further. I do think it's reasonable to assume that it was damaged and replaced with a standard TxDOT guardrail to protect vehicular traffic. I do not know if it meets code for pedestrian traffic, but I can reach out to the Sidewalk Program if you would like.

Your inquiry would help me complete the website. The assumption that a car damaged the original barrier is likely correct given the implementation of a highway guardrail. Unfortunately, assumptions can't verify the question posed; the guardrail may have been put in to accommodate overtopping after the devastation of, for example, the flood in 1981.

At the risk of coming across as curt or demanding, *though in no way towards you*, it's a reasonable presumption, and expectation, that records of changes to a historical landmark were made and kept. The average person thinks government has the records for the maintenance it performs; it's crucial for budget tracking and accountability *in principle*.

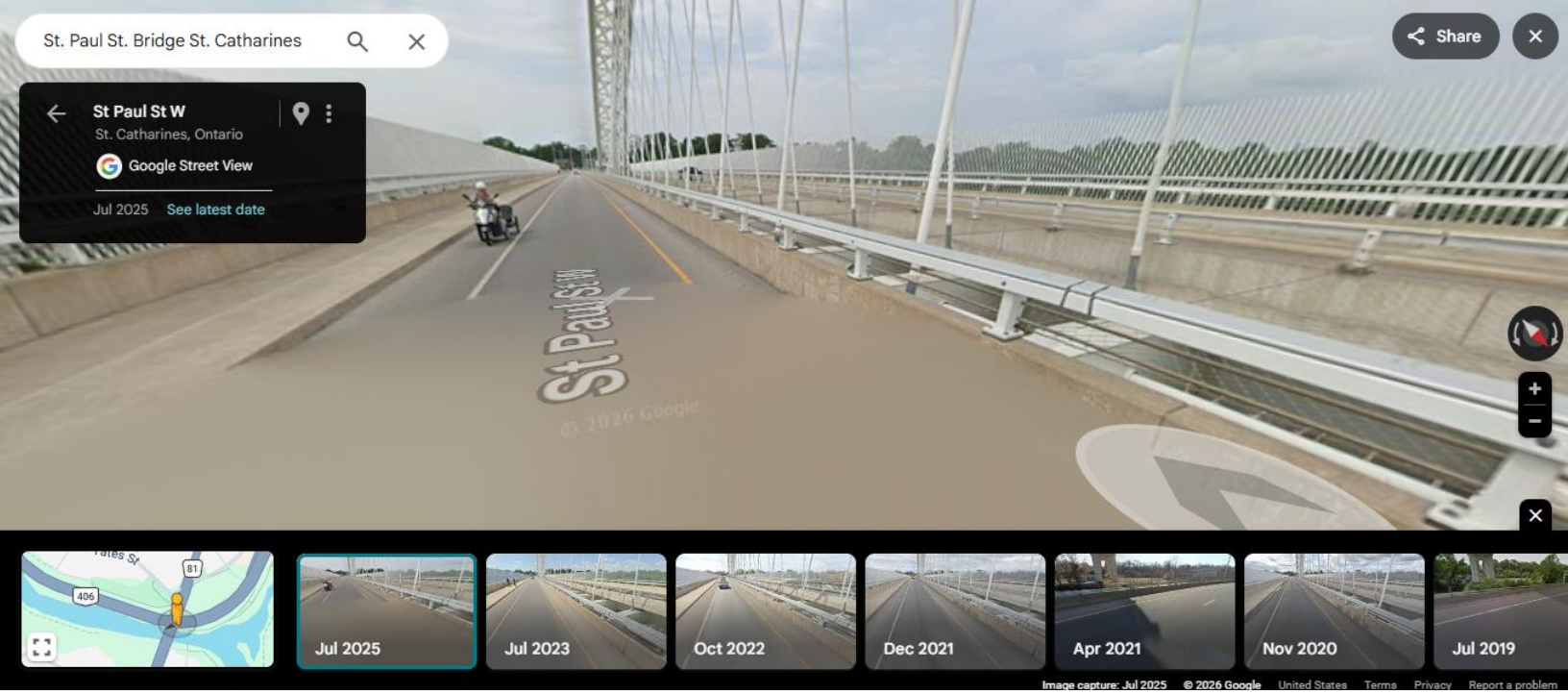
What is significant here, beyond my curiosity, is that had a bicyclist, drunk pedestrian or child fallen off the W 6 St bridge, a strong liability claim against the City of Austin and/or State could have been devised by a talented attorney. The approximately 28-inch guardrail could not have reasonably prevented children from easily climbing under or over it, and its short height could not have reasonably prevented people from toppling over it if they moved into it without balance. The guardrail was not to height code (generally 42 inches), especially given the hazard next to it. The matter could be seen as moot now given the bridge was restored in 2024, *if not for the principle*.

As an aside, bridge and street safety is something I notice for reasons involving witnessing accidents involving cars/motorcycles/bicycles/pedestrians (combinations of all), and because of the tens of millions of dollars municipalities correctly spend trying to improve the issue. Unreported injuries and visits to hospitals involving Uber/Share scooters and bikes (offered and operated without helmets) and E-Bikes (capable of speeds more than 30mph) are not reliably accounted for. These modes of transport frequently hurt operators in solo accidents or accidents involving other operators and pedestrians. Such a claim, however, cannot be readily verified.

While walking with some friends on a bridge last summer up in St. Catharines, Ontario for a high school reunion, we noticed that despite the best efforts of a city to make the bridge safe for people (bike lanes and suicide prevention barriers) the most critical component of safety was missing.

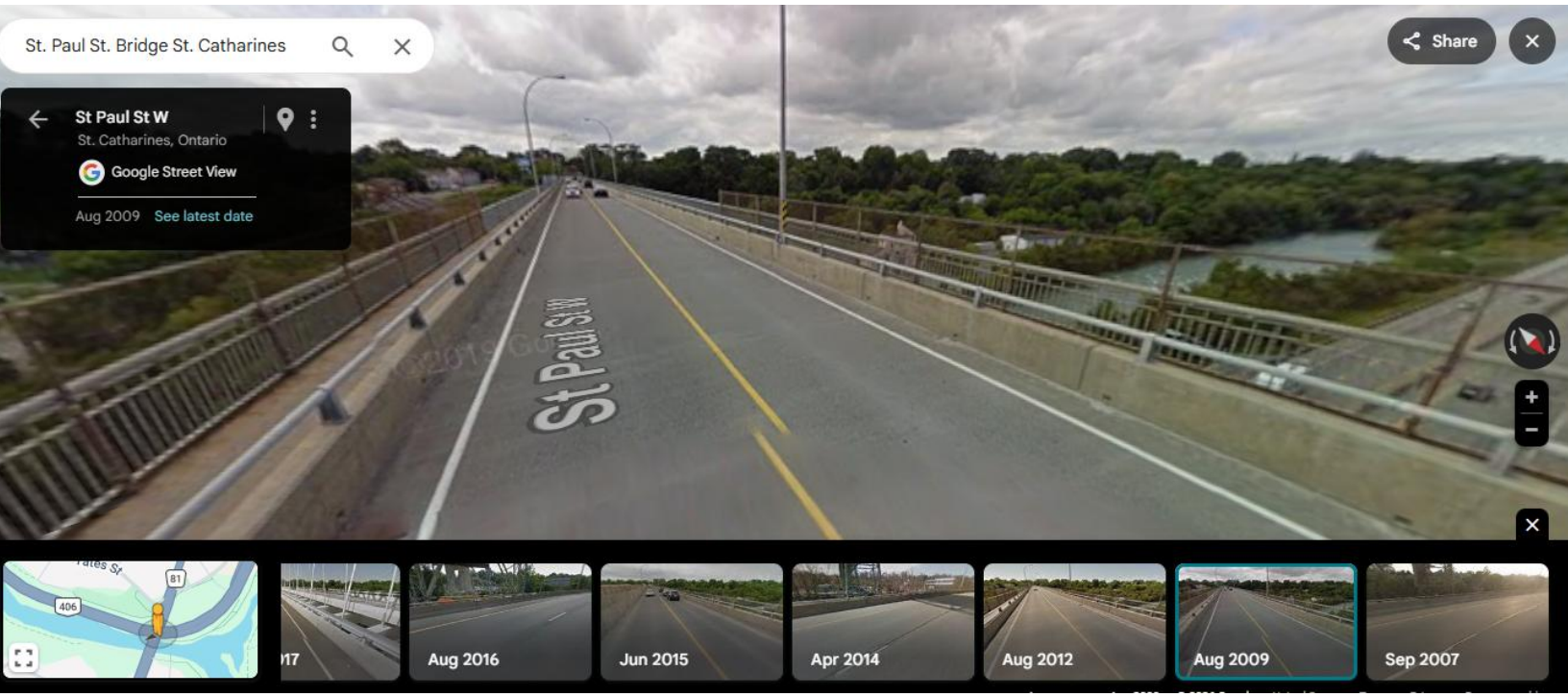
A guardrail to protect us from the oncoming traffic.

[redacted] (dude in the gray hat) was really hammered and noticed how close a commercial truck passed by him. [redacted] (named after a city in Sri Lanka and given to him to overcome his easy to pronounce last name [redacted]) is the dude with the vodka smile taking the picture. I'm the dude in the middle of it all.

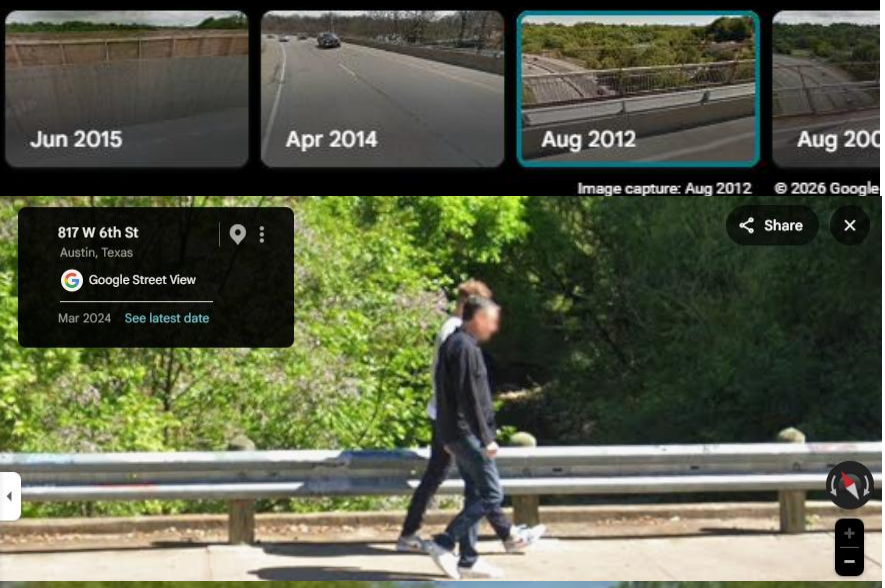


Above is the current bridge in St. Catharines without guard railings.

Below is the old bridge which had a sturdy and safe guardrail to prevent vehicles from hitting pedestrians and to prevent pedestrians accidentally falling into traffic.



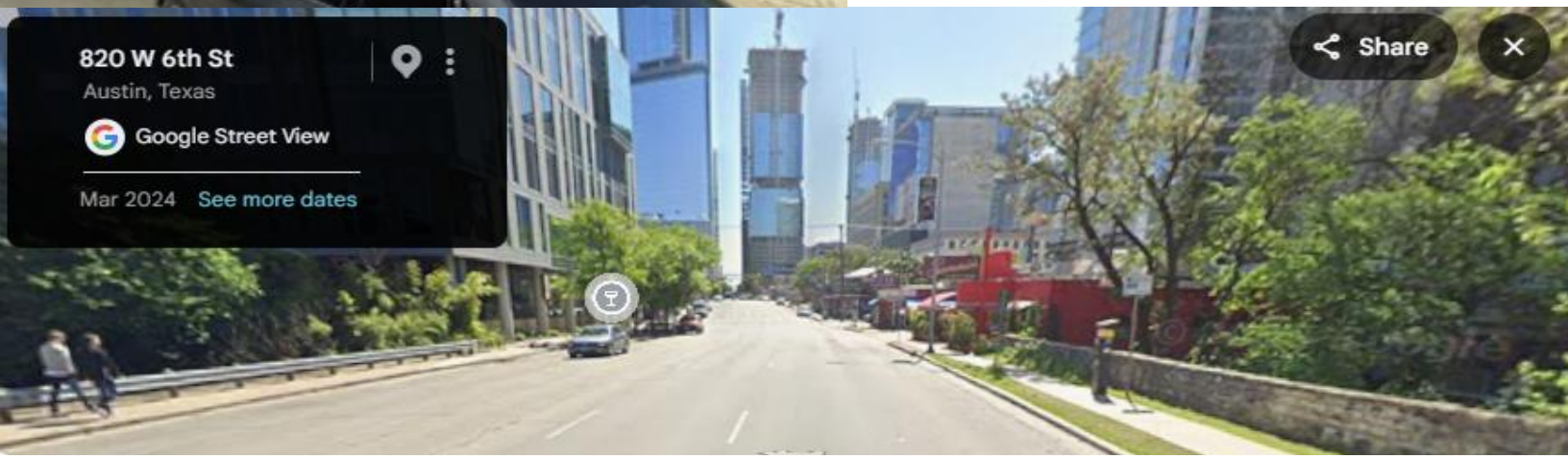
The top screen capture gives a better height perspective to show how the old St. Catharines bridge guardrail could reasonably protect people vs. the old W 6 St bridge highway styled guardrail.



The screen capture of the two men walking along the W 6 St bridge in 2024 shows how the guardrail was below their pocket and could not reasonably prevent them from falling over the guardrail if they moved towards it without balance.

The screen capture beneath the two men in 2024 shows the restored parapet and how it comes to waist height on adults standing on scooters. The parapet has the height and width to reasonably prevent people from accidentally toppling over it.

The bottom screen capture shows the height disparity between the north and south W 6 St bridge pedestrian safety measures.



Austin attracts many tourists and new residents who are unfamiliar with flooding and who are oblivious to the notion that a public walkway can turn into a death trap in a matter of seconds during flash floods – or what seems to many people to be a heavy downpour while they're on a scenic excursion, commute or jog.

Here is a link to a brief exchange I had with a woman who struggled to get off the creek pathway on August 22, 2022: https://www.youtube.com/shorts/3vpkEQGov4A

As a person who understands the prohibitive costs and logistics associated with signage, clear markings at pathway entrances alerting people to the dangers of rain along Shoal Creek should be considered. Signage with pictures of what flooding looks like along the creek may be better than words and graphics alone.

I've only ever spotted one (1) of these:

Conclusion

The 100-year floodplain is the land that is predicted to flood during a 100-year storm, which has a 1% chance of occurring in any given year. For reference, the 100-year rain event for the City of Austin is approximately 12 inches in a 24 hour period. The City maintains models of the floodplains in order to understand flood risk and enforce regulations that prevent development in these areas. The majority of development in the floodplain occurred prior to modern drainage regulations that were adopted starting the late 70s. The mission of the [redacted] s to analyze this flood risk and implement programs, projects, and policies that reduce the risk to residents. This website lets you see the 100-year floodplains modeled for Austin's creeks. : https://maps.austintexas.gov/floodpro/

For instance, here is a screenshot of one of your areas of interest around 6th Street. This shows that the bridge is expected to overtop and the floodplain is about 400' wide.

12 inches of rain falling in a day is not a concern compared to 3-5 inches of rain falling in under an hour which occurs in Austin with frequency, and challenges bridges. Contemplating a 100-year probable rain event means little in a city dubbed "Flash Flood Alley" by those aware of the environment here that gave rise to the expression.

As mentioned, given the substantial real-time evidence of a flood event I provided to likeminded creek geeks such as yourself, it's only reasonable that I'd be given the time to inspect the area as originally planned; it'd be fun too.

An in-person walk may provide professionals with added perspective and would certainly give me the visual reference points needed to better grasp and finalize the answers to the questions I have but still don't know.

Please note that all names, including yours, and faces displayed in any of my written works would be redacted to maintain personal privacy if it were published online.

Regards,

[redacted]