# Mackinac Bridge FAQ's for Falling Ice

## How often does the Mackinac Bridge Authority close the bridge due to falling ice?

Since 1995 (as far back as we have records for partial and total closures), the Authority has closed the bridge 44 times for ice. The first noted closure was on Jan. 30, 1998, when the bridge was closed for two hours and 50 minutes. The most recent was April 6, 2026, when the bridge was closed for two hours and 17 minutes. There have been 44 falling ice closures in the past 31 years, or an average of about 1.4 each year (as of April 2026). Falling ice closures usually happen in January, February, March, or April, though there have been a few in November and December over the years. They usually follow mixed precipitation or freezing rain events that coat the bridge, or when accumulated snow melts during the day, and freezes as ice at night.

Our friends at the National Weather Service found no increased frequency of freezing rain advisories or warnings around the bridge, though we are seeing more brief warmups during winter in recent years, which may be contributing to falling ice events.

## How long does a typical falling ice closure last?

The shortest closure was 37 minutes on Nov. 29, 2001. The longest closure to date was 30 hours and 4 minutes in a closure that started April 2, 2025 and ended April 3, 2025. The average closure lasts about five hours and 41 minutes. Over the last 31 years, which is roughly 271,560 hours, the bridge has been closed 250 hours and 18 minutes for falling ice, a little more than 0.09 percent of the time.

## What does the Mackinac Bridge Authority do to prevent falling ice closures?

There's really very little that can be done to prevent this type of closure. Like partial and full closures for high winds and blizzards, falling ice closures are the result of weather that is difficult to predict or prevent. Ice usually forms during freezing rain or mixed precipitation events on the upper main and suspender cables, or on the flat surfaces of the towers, typically in the later winter/early spring months. When temperatures rise or winds pick up, that ice is knocked loose and falls to the bridge deck several hundred feet below. Because there are no anti-icing or de-icing technologies on the bridge, Authority staff generally just need to wait until the ice has stopped falling (either because it has all cleared or temperatures have dropped and it stops falling) to reopen the bridge to traffic. To further complicate matters, the weather at the tower tops is different than the weather at the road deck. It can be colder up there, keeping the ice frozen longer and causing longer closures.

## Have there been any studies about how to prevent ice from forming on suspension bridges, or how to knock it off once it has formed?

A comprehensive review of the subject appeared in the January 2022 issue of Science Direct, "A review of ice and snow risk mitigation and control measures for bridge cables." The review concluded:

“Due to the rising incidence of icing events on bridges all around the world, a growing number of ice and snow mitigation technologies for bridge cables were proposed and tested in the past two decades. The known systems have been reviewed and divided into two categories and six subcategories based on their application.

It was shown that the most basic methods based on manual removal of snow and ice are highly unreliable, labour-intensive and even dangerous for the workers undertaking the task. These methods are mostly used when bridge operators and authorities encounter the problem of icing for the first time without any experience, and different methods are usually sought afterwards if the risk persists.

The efficiency and safety of operation can be greatly improved by employing mechanical systems, which might be either automated or operated remotely. A few systems tested in the past showed promising de-icing results, but extreme weather events, costly installation or possible adverse aerodynamic effects put stop to their full-scale implementation. Chain-link collars are the only mechanical system currently used in the industry on the Port Mann and Alex Fraser bridges in Canada. Despite some of its drawbacks and potentially high operation costs, the system has been operating for several years now and it is closely monitored. On top of that, two novel solutions utilising the movement of the cable sheathing either by internally-induced vibrations or by means of a motorised unit have been recently proposed and await laboratory and field testing.

Even though thermal systems were considered as a potential anti-icing or de-icing technology in several investigations, none of the systems was economically acceptable due to their considerable power consumption or installation costs. The best candidate, the Pulse Electro-Thermal De-icing (PETD) system, was installed for a trial run on the Uddevalla Bridge in Sweden. It performed reliably and demonstrated very low energy requirements, however, it was decided that the installation cost was not cost-effective and additional aerodynamic evaluation would be required. Nonetheless, the research in this field is still ongoing as many new cable heating techniques have been proposed in recent years.

In the case of maintenance-free passive systems, several innovative methods based on cable surface modifications designed to improve ice and snow retention showed promising results in preliminary wind tunnel tests. More detailed investigation both in the wind tunnel and outdoors is therefore expected to further evaluate their viability for field application.

The review of various chemicals and coatings tested for bridge cable application revealed that none of them can effectively prevent or remove ice or snow accretions. Furthermore, low durability resulting in additional costs for repeated application and environmental impact are of concern as well. Nevertheless, the development in this field is ongoing and a suitable solution may be eventually found.

The last category looked at available ice detection and monitoring methods that should facilitate traffic management in the case of icing events. Many bridge operators around the world already have such systems in place to prevent damage and injuries by timely bridge closures. These systems are currently the safest option to deal with the problem of ice and snow accretion on bridges and should be used in conjunction with suitable ice and snow mitigation methods for bridge cables in the future.”

## The Authority claims that falling ice is dangerous, but I've been stopped for a closure and I can't even see ice falling on the bridge deck. Is it really such a hazard for people crossing the bridge inside vehicles?

Falling ice is definitely dangerous and a hazard for people even when they are inside their vehicles. Sheets of ice as large as garage doors fall from the flat surfaces of the bridge towers, ice spears that form on the suspender cables fall straight down toward the bridge deck, and chunks that have formed on upper cables fall hundreds of feet (the tower tops are more than 300 feet above the roadway). Some of those pieces that have survived the fall are as large as a loaf of bread, and windshields and roofs have been caved in on both Authority and private vehicles. This is not a theoretical danger. Unless you have a telescope, it would be difficult to see the falling ice from the shore, but our staff gets as close as they safely can to monitor falling ice, and it's definitely scary. You wouldn't stand beneath your garage eaves when icicles were falling, would you? You certainly don't want to be under this ice when it's falling.

## I heard the new paint the Authority is using is causing more ice to form on the bridge. Even if it isn't, what about using icephobic paint to prevent ice formation?

It's not the paint, we've been assured by our painting contractors and other experts. Icephobic paint is certainly something we can explore for future painting, but that type of paint is currently only in the research stages for the aviation industry. In 2020, the Authority completed a four-year, $12.8 million dollar repainting project on the bridge towers (the first time those structures have been completely stripped and repainted since the bridge was opened in 1957). Painting the bridge cables is an ongoing process, so there is potential to introduce some paint advances in future work.

## Is there anything the Authority can do to speed the falling ice process so the bridge can reopen?

During past falling ice closures, maintenance staff has driven fully loaded plow trucks across the bridge to help shake ice loose. In very narrow circumstances, when the bulk of ice has formed on the underside of the main cables, steeplejacks have gone out onto the cables to knock ice loose. Often, however, surfaces are too slippery to safely allow maintenance workers out onto the cables.

## Why doesn't the Authority install heat cables to the surfaces that ice up, or run a current through the bridge's metal structure to prevent ice from forming?

Some type of heating system could be possible but running a current through the bridge could result in corrosion of some bridge components, and heat cables would be costly to install and maintain. Other methods, such as devices that "patrol" cables to prevent ice from forming, are being tried on other bridges, but would be difficult to retrofit to a bridge like the Mighty Mac. So far, the Authority has not found a cost-effective and practical solution relative to the infrequent, short-term closures resulting from falling ice, nor one that wouldn't potentially damage the bridge. Icing is a problem for cable bridges around the world in climates like ours and no one has developed a practical solution to this infrequent but annoying problem.

## Has the Authority tried shooting fireworks or driving a bulldozer across the bridge to shake the ice loose? How about a fruit or nut tree shaker, or loud horns?

We've heard many ideas to shake ice loose from the bridge, and while some of them might have some limited potential success, they also come with risks of damaging the structure. We've also heard some far more outlandish ideas: shooting it down (yes, with guns), using hair dryers attached to drones, or blasting the ice with tunes from Ted Nugent on an amplifier set to "11," which we take as tongue-in-cheek suggestions. We're willing to hear any and all ideas, but so far we've not found one that is safe and effective.

## Has the Authority considered building a second deck on the bridge, one that could shield traffic from falling ice?

Not really. The Authority is currently saving up to replace the existing deck, at an estimated cost of several hundred million dollars, but it's unlikely the current superstructure could support a second deck. Again, for the few times falling ice closes the bridge, and the relatively short duration of those closures, it wouldn't be a cost-effective mitigation, even if it was possible.

## Why doesn't the Authority provide regular updates during a falling ice closure about when the bridge will reopen?

Simply put, it's because we don't know when the bridge will reopen. Once ice begins falling from the towers or cables, shaken loose though higher winds or rising temperatures, it's impossible to know when that will end. Sometimes closures end because the ice has melted and completely cleared; sometimes it's because temperatures have dropped and the ice freezes back into place. We can and do look at weather forecasts and our own atmospheric equipment so we can alert our X (@MackinacBridge) followers that conditions are likely to result in falling ice, as well as during closures to see when winds or temperatures are likely to fall (or rise), but the ice has a mind of its own and leaves at its own speed.

Please refrain from calling the Authority office for updates during a closure; until the bridge reopens, there will be no different information available.

## I wouldn't travel to the bridge if I thought there was a possibility of a closure. How can I find out when the bridge might have to close for falling ice, and how can I find out when the bridge has been reopened?

The Authority website (www.MackinacBridge.org/conditions) is updated with current travel conditions for the bridge, including closures. Closure information is also posted on the Authority's X page, @MackinacBridge. People who are interested in receiving text messages about bridge closures can sign up for Mackinac County 911 & Emergncy Management's RAVE Alert System updates. There is no cost to receive these updates, aside from any texting fees from the participant's mobile coverage plan. To opt into this text alert system, text "MacBridge" to 67283. During closures, the Michigan Department of Transportation (MDOT) helps post information on their message signs farther away from the Straits. Once in the Straits area, drives can tune to AM radio 530 or 1610 for updates. As drivers approach the Mackinac Bridge, advisories are posted on dynamic message signs on US-2 and I-75. Local radio stations also share information about closures.

We try to stay in touch with customers during closures, but as we said, there aren't a lot of updates that we can give aside from announcing the closure has ended. Predicting when that will occur isn't something we can do.

## So I've been stranded in St. Ignace or Mackinaw City due to a falling ice closure and I have no idea how long the closure will last. What is the Mackinac Bridge Authority doing to make sure I don't run out of gas, or provide restroom facilities, or provide food or beverages?

While we certainly sympathize with being stuck in a closure of uncertain duration, the Authority isn't equipped to aid travelers in that way. We do know from experience that the two communities have responded to the needs of travelers during past closures, though nobody likes to be unexpectedly delayed. We won't pick favorites for local businesses to patronize, but there are great places to eat, fuel up, and be as comfortable as possible during the wait. In the case of longer closures, local schools and some churches have opened their doors as warming shelters.

## I hear what the Authority is saying about the danger of falling ice, but I'm willing to take the risk. I mean, what are the chances? I'll sign a liability waiver; why can't you just let me go?

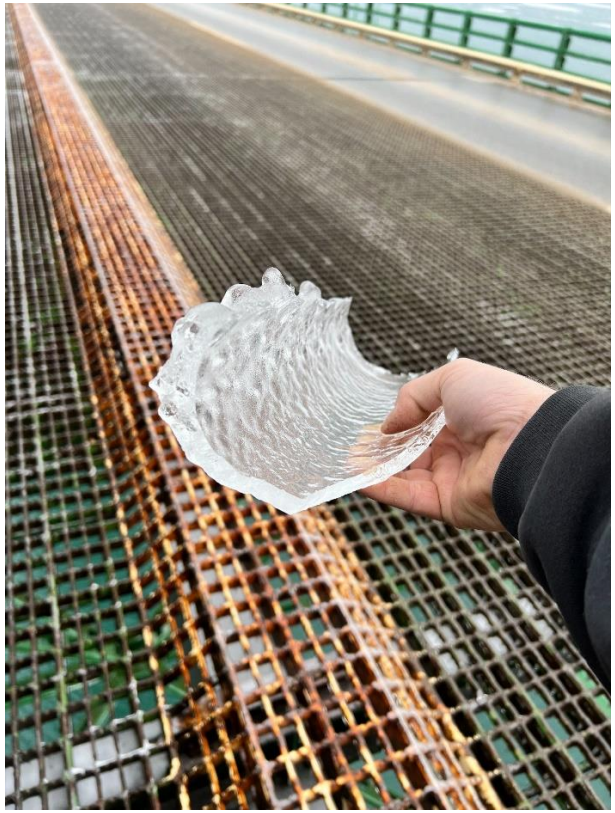
We can't, and won't, allow non-emergency traffic across the bridge during a falling ice closure. We've seen up close the size and shape of the ice that falls from the towers and cables, as well as the damage it has done to vehicles over the years. A piece like that coming through your windshield from 300 feet up? Deadly. If a motorist was allowed to cross at their own risk and was struck by falling ice, Authority and emergency personnel would then be at risk responding to the situation. We know this is a dangerous situation, so there's no waiver you could sign that would let us in good conscience allow you to risk it.

## So you say the bridge is closed, but who's going to stop me?

Not us, as we're not a law enforcement agency, but our partners with local police departments and the Michigan State Police sure will. In fact, they've done it before, and those who have tried didn't make it across. We urge you not to attempt it.

## What about in cases of emergencies? I have to get to a medical appointment, or my child is alone at home, or I need my medication and don't have it with me. Will you let me cross then?

The Authority can't be the arbitrator for what constitutes an emergency. If you approach our staff asking to cross due to an emergency, you are welcome to call 911, or they can do so for you, and law enforcement officers can (as appropriate) take the necessary steps to get you across for your emergency situation.

## Where can I see videos of falling ice?

Some photos and videos have been included in a video about the dangers of falling ice on the Mackinac Bridge.