

Tamar Bridge resurfacing project FAQ's

How often does the bridge need to be resurfaced ?

The Tamar Bridge generally needs to be resurfaced every 20 – 25yrs.

When was it last resurfaced?

The bridge was last fully resurfaced at the time of the strengthening and widening project in 1999-2001. However, the Plymouth side span was resurfaced in 2011 as the surfacing material failed prematurely at that location due to the difficult traffic loading conditions – slow moving, heavy goods vehicles, braking as they approached the toll booths.

How often is the bridge inspected?

Routine inspections of the bridge surfacing are carried out every four months and during the last two years these inspections have revealed that the existing surface is nearing the end of its serviceable life and requires replacement.

Why is the resurfacing taking place now ?

The project was originally due to be carried out during 2020, but was postponed until this year because of the coronavirus pandemic and the need to complete the kerb replacement works before resurfacing. Delaying the project again could result in further damage to the surfacing material, leading to cracks which then enables water to penetrate onto the steel plates underneath with the potential for corrosion to occur.

How much will the resurfacing project cost and who is paying for it?

The surfacing materials used on large cable supported bridges such as the Tamar Bridge are more costly than standard road construction. The approved budget for the project is £6 million and will be funded from toll income. That project cost also covers replacement of the illuminated lane studs and includes the costs of design and supervision

Why does the bridge need to be resurfaced and what happens if it is not resurfaced?

Our bridge deck surfacing is very different to standard road construction and is only 40-55mm thick. The purpose of the bridge deck surfacing is to provide a safe durable running surface for vehicles and also to protect the steel deck from wear and damage due to corrosion and fatigue.

Just like standard road construction, bridge deck surfacing has a limited lifespan as the millions of loading cycles from traffic eventually cause deterioration. The deck of the Tamar Bridge needs to be resurfaced every 20 to 25 years to prevent damage occurring to the steel deck. In the last 20 years the Bridge has carried around 300 million vehicles.

The lifespan of our surfacing depends on many factors including the type and thickness of the materials used, quality of workmanship, the number of vehicles using the bridge, the number of heavy goods vehicles, the axle weights of

vehicles and environmental factors such as wind or hot and cold temperatures that cause the bridge to move or vibrate. In general, taking these factors into account, and when combined with our regular inspection regime, we can predict the expected life of the bridge deck surfacing.

Our inspections and surfacing assessments have determined that the material has worn out and is nearing the end of its useful life. If the surfacing material is not replaced in time, there is a risk that the underlying steel bridge deck could be damaged either by corrosion or through fatigue and that cracking could occur in the deck and deck welds. Additionally, if the surfacing is not replaced in good time then it would start to crack and break up, creating an unsafe running surface for bridge users.

Reliable waterproof patch repairs are difficult to achieve on steel bridge decks, can be intrusive and will not be as durable as full resurfacing. Carrying out this type of patch repair work would cause significant and frequent disruption to our users as well as putting workers at more risk while carrying our repairs adjacent to live traffic.

What materials are used in the resurfacing?

A specialist, asphalt material will be used to resurface the bridge deck. At just 45mm thick, this material is much thinner and lighter than the materials used in standard road construction. It is also more expensive due to other factors and processes required during the resurfacing process.

What does the resurfacing process involve?

Resurfacing the steel bridge deck involves a series of highly complex processes, the majority of which need to be carried out in dry and mild weather conditions. These processes are:

- removing the majority of the existing surfacing material using a road planer – a thin layer is left bonded to the steel deck so that the steel deck is not damaged by the aggressive teeth on the road planer
- removing the remaining thin layer either by hand using mechanical hand tools or using a large flat blade on a suitable digger/dozer machine
- blasting the steel deck with grit/shot using an enclosed mobile blasting machine - this process removes any stubborn remains of existing surfacing and deck waterproofing material, and provides a clean deck, enabling engineers to thoroughly inspect the steel deck and welds for cracks or damage
- carrying out repairs to any identified damage on the deck as required
- applying paint 'primer' to the bare steel deck to protect the steel from corrosion
- applying a two-layer waterproofing system on to the primer - this provides vital corrosion protection to the steel deck
- applying a 'tack-coat' on to the waterproofing - the 'tack-coat' helps the surfacing material bond to the waterproofing material creating a composite surfacing system
- laying the surfacing material in two thin layers using a special surfacing machine that runs on rails - the rails are set up to ensure that the contractor achieves the correct material thickness while also providing a smooth running surface

- applying road markings and installing a replacement illuminated road stud system.

In addition to the bridge deck resurfacing works we are also taking the opportunity to resurface the toll plaza area, bridge approaches and will also replace all six of the bridge expansion/movement joints.

Why can't you just patch the areas which are showing signs of wear?

Reliable waterproof patching repairs are difficult to achieve on steel bridge decks and would not be as durable as full resurfacing. Adopting this approach would also require more frequent repairs to be carried out, leading to closures of lanes over a longer period, and increasing the potential disruption to bridge users.

Why does the work have to be done during this summer?

The work must be carried out when there is the highest chance of prolonged dry or fine weather and the period from April to September provides this opportunity. Many of the processes outlined above require dry and mild weather conditions. These conditions will give the contractor the best opportunity to achieve the highest quality of workmanship, which in turn will provide the longest service life for the bridge deck surfacing.

Who is carrying out the resurfacing?

The main contractor for the project is VolkerLaser, an experienced civil engineering contractor with extensive experience working on many types of bridges and complex bridge works. They will be supported by a number of specialist subcontractors.

How long will it take?

The project will take approximately 6 months to complete between April and September 2021. However, there is some significant preparation work to be completed off site before the contractor starts work on the bridge deck. Lane restrictions will commence in mid-April 2021.

Why does it take so long to carry out?

There are a number of construction processes that need to be undertaken in a certain order, similar to a factory production line. The removal of old material has to be undertaken very carefully to avoid damage to the underlying steel deck. Many of the processes require applied materials to become dry or fully cured before the next process can happen and this all adds to the overall time for the works to be completed.

How will you ensure that the works are carried out in a Covid safe way?

We will ensure that works are carried in a Covid-secure manner and that all contractors adhere to current Government guidelines. Our project team will be made fully aware of the guidelines in place at the time and they will be briefed regularly at site safety inductions and toolbox talks. Regular reviews will be undertaken at monthly contract meetings. Additionally, we will ensure that the

latest Construction Leadership Council Site Operating Procedures are rigorously enforced. For more information on the last procedures please follow this link: <https://www.constructionleadershipcouncil.co.uk/news/site-operating-procedures-version-7-published/>

Why can't you do the work at night?

There are a few reasons why we cannot undertake the works solely at night. The various sequential processes involved mean that the deck surface between processes will either not be safe for vehicles or needs to be left for materials to cure properly. It is also not practicable to undertake the work in small sections as most of the plant and equipment is optimised for larger areas. Once work starts on an area of the bridge deck or cantilever, that area cannot be used by traffic until the resurfacing operation is complete.

In addition there are many residential properties near the bridge and some of the resurfacing processes are noisy. This would cause unacceptable noise to our neighbours and the noise generated by the work would also breach environmental legislation and noise limits designed to protect the public in such circumstances.

Additionally, undertaking construction work at night is generally less efficient and does not generally achieve the same quality end product, while also introducing additional hazards and greater risks for the workforce. Temperature and humidity at night would also be more likely to be outside the acceptable ranges for some of the more sensitive materials.

How many lanes will be open at any one time?

The bridge normally operates four lanes of traffic with a dedicated pedestrian and cycle lane. However, during this work the bridge will be reduced to three traffic lanes, utilising the south cantilever pedestrian and cycle lane as an additional traffic lane.

Will the North and South cantilevers be resurfaced as well?

Yes, both of the cantilever lanes will be fully resurfaced as part of the project.

Will the South cantilever be closed during the whole of the works? If so, will there be a free shuttle bus service (including provision for cyclists)?

Yes, the south cantilever will be closed to pedestrians, cyclists and mobility scooters for the duration of the works. This will allow the lane to be fully resurfaced as well as acting as an additional traffic lane while other areas of the bridge are being worked on. The contractor will provide a free bus service to enable the affected user groups to cross the bridge safely. More detail will be provided in due course.

Will the crossing remain open during the works ?

Yes – the crossing will remain open throughout the works to the majority of traffic. However the traffic management arrangements and lane restrictions mean that drivers of 'abnormal loads' will be required to use alternative routes. We are working closely with Highways England, Devon and Cornwall Police and

local councils to sign the diversion routes, and these will be shared with hauliers and other organisations as soon as possible.

Will some vehicles be prevented from using the bridge during the works?

Yes, due to the traffic management arrangements and lane restrictions required to undertake the work 'abnormal' loads in excess of 2.9m (9' 6") wide will not be permitted to use the crossing. There may also be times when abnormally heavy vehicles in excess of 44 tonnes will only be allowed to cross the bridge at certain times of the day. Hauliers will be notified about the restrictions in due course via our website and through the ESDAL2 system. Cyclists are strongly advised to use the free bus service provided.

How will you let people know about the works?

Advanced warning signs will be placed at key locations on the A38 and the local traffic network, as well as on the relevant motorway junctions. Regular updates on the project will be posted on the Tamar Crossings website and social media channels, and provided to motoring organisations and the local media. This will include details on any traffic congestion or delays which will also be displayed on electronic messaging signs along the A38 at Manadon Junction and Treulefoot Roundabout.

Are you planning to erect warning signs well in advance of the bridge to enable people to use other routes?

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Tamar Bridge resurfacing project frequently asked questions

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How long will it take?

The project will take approximately 6 months to complete between April and September 2021. However, there is some significant preparation work to be completed off site before the contractor starts work on the bridge deck. Lane restrictions will commence in mid-April 2021.

Why does it take so long to carry out?

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Vital project to resurface the Tamar Bridge to begin in April.

22 March 2021

Work on a vital project to resurface the deck of the Tamar Bridge is due to begin in April.

The complex resurfacing project is expected to take approximately six months to complete, with all three lanes on the main deck and both the north and south cantilevers being resurfaced. As well as resurfacing the bridge deck, Tamar Crossings are also taking the opportunity to resurface the toll plaza area and the bridge approaches, and will be replacing all six of the bridge expansion / movement joints.

The project is currently due to be finished by the end of September, when all the lanes will be re-opened to traffic.

Three traffic lanes will be kept open throughout the works to help minimise disruption to bridge users, with the south cantilever used as an additional traffic lane when necessary. This means that the south cantilever will be closed to pedestrians, cyclists and mobility scooter users for the duration of the works. As with the kerb replacement project, a free bus service will be provided to enable these groups to cross the bridge.

Constructed between 1959 and 1961, the iconic suspension bridge was last fully resurfaced at the time of the strengthening and widening project in 1999-2001. As part of that project the original concrete deck was replaced by an orthotropic steel deck – this uses steel plate with stiffening ribs underneath.

The purpose of the bridge deck surfacing is to provide a safe durable running surface for vehicles and also to protect the orthotropic steel deck from wear due to corrosion and fatigue. Just like standard road construction, bridge deck surfacing has a limited lifespan as the millions of loading cycles from traffic eventually cause deterioration. The deck of the Tamar Bridge needs to be resurfaced every 20 to 25 years to prevent damage occurring to the steel deck. In the last 20 years the Bridge has carried around 300 million vehicles.

Routine inspections of the bridge surfacing are carried out every four months. During the last two years these inspections have revealed that the existing surface is nearing the end of its serviceable life and requires replacement.

The resurfacing work is being carried out by VolkerLaser, a specialist civil engineering contractor with extensive experience of working on bridges. It will be overseen by Tamar Crossing's Engineering Manager Richard Cole.

A specialist, thin asphalt material will be used to resurface the bridge deck. At just 45mm thick, this material is much thinner and lighter than the materials used in standard road construction. It is also more expensive due to other factors and processes required during the resurfacing process. The £6m cost of the project is being met by Tamar Crossings funded from toll income. That project cost also covers replacement of the illuminated lane studs and includes the costs of design and supervision.

The project was originally due to be carried out during 2020, but was postponed until this year because of the coronavirus pandemic and the need to complete the kerb replacement works. Delaying the project again could result in further damage to the surfacing material, leading to cracks which then enables water to penetrate onto the steel plates underneath with the potential for corrosion to occur.

Patching repairs are difficult to carry out on steel bridge decks and would not be as durable as full resurfacing. Adopting this approach would also require more frequent repairs to be carried out, leading to closures of lanes over a longer period, and increasing the potential disruption to bridge users.

All of the works will be carried out in a Covid-secure manner, with contractors required to adhere to Government guidance. Tamar Crossings will also ensure that the latest Construction Leadership Council Site Operating Procedures are rigorously enforced.

While work on the project will officially begin at the beginning of April, significant preparation work needs to take place before the contractor starts work on the bridge deck. As a result lane restrictions will not be introduced until the middle of April.

Resurfacing the steel bridge deck involves a series of highly complex procedures, the majority of which need to be carried out in dry, mild weather conditions.

These include first removing the majority of the existing surface material using a road planer, with a thin layer left on the steel deck to prevent damage from the teeth of the planing machine. The remaining layer is then removed by hand. An enclosed mobile blasting machine is used to remove any remains of the surfacing or deck waterproofing material, producing a clean surface which can be inspected for cracks or damage.

Following repairs to any damaged areas, the contractors will apply a paint 'primer' to the deck followed by a two layer water proofing system to provide vital corrosion protection to the steel deck plates.

A 'tack coat' is applied to help the surfacing material bond to the waterproofing, creating a composite surfacing system. Two thin layers of the surfacing material is then applied using a special machine which runs on rails. This helps to ensure the correct thickness of the material is applied, whilst also providing a smooth running surface.

The final process involves laying the road markings and installing the replacement illuminated road stud system.

"We recognise that the timing of the project means that the resurfacing will be continuing over the summer period" said Richard Cole.

"Unfortunately the need to carry out the majority of the works during dry and mild weather means that we cannot move the project to the winter months. Delaying the scheme for another year would lead to further deterioration in the surface of the deck ."

"It is also not possible to carry out the works solely at night as the lanes cannot be re-opened to traffic until the resurfacing has been completed. Working at night also introduces other issues, such as worker safety and noise. Using heavy plant and machinery at night would have a major impact on the lives of the people close to the bridge."

While the crossing will remain open throughout the works, the traffic management arrangements and lane restrictions mean that drivers of 'abnormal loads' may be restricted during certain phases of the project. Full details of abnormal load restrictions will be shared with hauliers via ESDAL2 and our website which will also include a suggested diversion route for wide vehicles.

Advanced warning signs will be placed at key locations on the A38 and the local traffic network, as well as on the main motorway junctions.

Regular updates on the project will be posted on the Tamar Crossings website and social media channels, and provided to motoring organisations and the local media. This will include real time information of any traffic congestion or delays which will also be displayed on electronic messaging signs on the A38 and local roads.

"We are, of course ,very conscious of the importance of the Tamar Bridge as a vital transport link between Cornwall and Devon" said David List, Tamar Crossings General Manager. **"This is a major once in 20-25 years scheme which is essential for the safety of bridge users and in ensuring a long service life for the structure."**

“We will be working closely with contractors and partners to deliver the resurfacing project safely, efficiently and with as little disruption to bridge users as possible. ”

Ends

Notes to editors

For further information or to do interviews on the project please contact Trisha Hewitt at trisha.hewitt@tamarcrossings.org.uk or phone 07946654121

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Resurfacing the steel bridge deck involves a series of highly complex procedures, the majority of which need to be carried out in dry, mild weather conditions.

These include first removing the majority of the existing surface material using a road planer, with a thin layer left on the steel deck to prevent damage from the teeth of the planing machine. The remaining layer is then removed by hand. An enclosed mobile blasting machine is used to remove any remains of the surfacing or deck waterproofing material, producing a clean surface which can be inspected for cracks or damage.

Following repairs to any damaged areas, the contractors will apply a paint 'primer' to the deck followed by a two layer water proofing system to provide vital corrosion protection to the steel deck plates.

A 'tack coat' is applied to help the surfacing material bond to the waterproofing, creating a composite surfacing system. Two thin layers of the surfacing material is then applied using a special machine which runs on rails. This helps to ensure the correct thickness of the material is applied, whilst also providing a smooth running surface.

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Regular updates on the project will be posted on the Tamar Crossings website and social media channels, and provided to motoring organisations and the local media. This will include real time information of any traffic congestion or delays which will also be displayed on electronic messaging signs on the A38 and local roads.

“We are, of course ,very conscious of the importance of the Tamar Bridge as a vital transport link between Cornwall and Devon” said David List, Tamar Crossings General Manager. **“This is a major once in 20-25 years scheme which is essential for the safety of bridge users and in ensuring a long service life for the structure.”**

“We will be working closely with contractors and partners to deliver the resurfacing project safely, efficiently and with as little disruption to bridge users as possible. “

Ends