

Extending the Life of an Existing Footbridge Asset for 10 Years Within an 8 Hour Working Period

What is the situation?

The railway industry as a whole has witnessed a continual rise in the number of passenger and freight services across the country. This increase in services has reduced the amount of time available to the network maintainer and owner to implement repairs and inspections on the variety of ageing assets on the network.

The current forecast for 2030 shows a 34% increase in passenger traffic and a 40% increase in freight traffic. This essentially means that the already reduced possessions will continue to become even smaller and more pressured in order to complete necessary work on the infrastructure.

At present the assets within the buildings and architecture team are gradually ageing and as they age they will require complex, expensive and time consuming remedial work to be undertaken, in order to revive the assets back to a serviceable state that will allow them to remain operational for years to come.



fig. 1



fig. 2

One of the main challenges is station footbridges; there is often a need to erect an alternative footbridge when the existing one is under repair, as the repairs usually take a long time for a variety of reasons. With a number of structures under deconstruction, the hidden critical elements are found to be in a poorer state than previous thought and therefore, the remediation that had been proposed is no longer fit for purpose.

With future possession demand set to become more constrained and more difficult to obtain, it is important that repair work can be completed in the shortest time frame as possible, giving an extended period of life back to the asset to allow it to function until the next remediation can take place.



fig. 3

Priority problems

Specific priority problems

- Insufficient access to maintain footbridges at an efficient rate to maintain serviceability and safety.
- Insufficient time to carry out the existing way of working.
- Existing repairs do not always give enough life expectancy back to the asset.
- Insufficient knowledge of condition pre work.

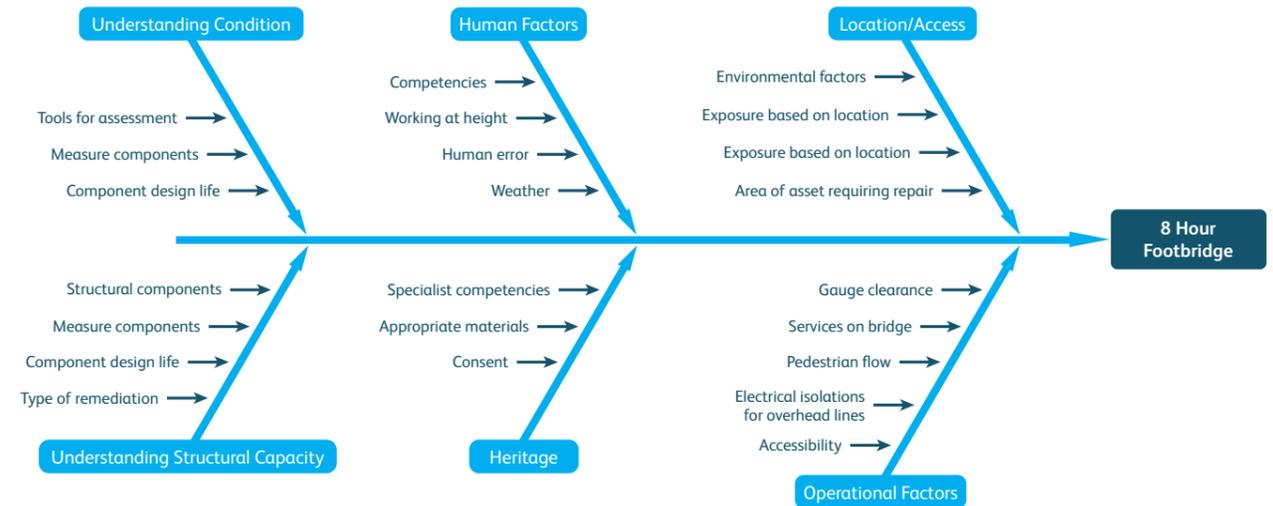
Related goals

- Reduce the amount of time taken to remediate a footbridge.
- Extend the life of an asset whilst keeping the cost of the remediation as low as possible.
- Minimise the amount of work required by patch repairs.

Benefits

- Reduce the amount of time needed to remediate the assets.
- Reduction in cost of possession time.
- Reduction in cost of compensation for taking control of lines for an extended time.
- Reduction in cost of alternative measures for bridge remediation.
- Increase the sustainability of the assets by increasing their condition scores.

Analysis of causes



Scope

Explore how existing projects are done for a footbridge extension of life by 10 years, and process how this can be reduced to meet the 8 hour target working time.

Any techniques of remediation may be used to achieve this goal of 8 hours; however it can be no more than this, and must extend the life of the footbridge for 10 years. Thus, ensuring the remediation adds a sufficient amount of design life back to the asset and ensures no extra work is needed in the near future.

The remediation may differ for different bridges however; the set-up on site, planning and all the methods used must fit into an 8 hour window for any bridge design.

Specific research needs

To address these challenges it is expected that R&D actions will need to address the following aspects:

- What remediation will need to be made in order to extend the life of the asset by 10 years?
- How can a footbridge asset be remediated in 8 hours?
- To create a tool, process and mechanism that will be able to come in and whatever the remediation, it will be able to do the remediation that is needed, whilst keeping to within the 8 hour time window whilst also giving 10 years to the extended life of the bridge.
- There will be a need for the assessment tool to be easy for engineers to interface with and work with to get the correct solution as easy as possible whilst on site. There will be a need for the tool, processes and mechanism to be flexible and deploy for the wide range of different scopes and problems.