

#### **Your Presenters**



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# The FRP Legacy Footbridge



# Progress so far

The map to the right displays the locations of the various jobs that have been looked at and quoted/ in the process of quoting for.

- 61 locations identified so far
- 40 projects quoted and budget quotes (8 outside of rail)
- 4 Single Source Awards- STA's
- 1 competitive tender award
- Location of Footbridges Tendered
- Order or commitment received from Network Rail
- Framework Tender Submitted
- Provisional design for Legacy Bridge option
- Order or commitment received from Northern Rail



Constructed from Fibre Reinforced Polymer (FRP) materials, the bridge is a light weight, low-carbon structure that is highly durable and requires little or no maintenance.

#lowcarbon #durability #lowmaintenance

https://lnkd.in/g\_-2VqRH

# Funding secured for new Lostwithiel footbridge

www.railtechnologymagazine.com



### The Legacy FRP Footbridge and The Legacy AFA Footbridge with Modular Lift Units



**Engineering Today, Protecting Tomorrow** 



#### Trust Taziker – Engineering Today, Protecting Tomorrow

With over 50 years operating within the Infrastructure industry, we have expanded our service capabilities to build a reputation as one of the leading multi-disciplinary engineering specialists in the UK. We operate across a variety of sectors, with Taziker offering a self-delivery capability, through our in-house team.



# The Challenges:

#### The network lacks accessible footbridges due to installation time and cost

Accessible footbridges, with lifts, are prohibitively expensive and complex to install, leaving many passengers struggling

All current footbridges are expensive to maintain



"Safety is at the heart of everything we do"

## The Challenges:

#### Current concrete and steel bridge designs have a large carbon footprint

Building new footbridges with concrete or steel does not meet Network Rail's high standards and goals for decarbonisation



"Consciously working to improve our impact on the environment"

# The Challenges:

Every year people are tragically losing their lives on level crossings on the UK Rail network

Footbridge alternatives at these locations would significantly mitigate unnecessary injuries and the disastrous preventable loss of life.

There is an ongoing issue with the lack of footbridges on the UK rail network.

This is leading to unnecessary injuries and loss of life.

# Teen killed on track where footbridge promised for 20 years.

Evie Wright's family described her as a 'typical teenager' who was 'happy' and 'loved life'.



Evie Wright died at the Corondale crossing in Weston-super-Mare.

A popular schoolgirl died after being hit by a train on a level crossing just yards away from where a footbridge has been planned for two decades. Evie Wright, 15, was walking home to Kemp Way in Weston-Super-Mare on March 6, 2018, when she stepped out on to the Corondale Road crossing. Train driver Simon Knight

slammed on the emergency brake but tragically could not avoid hitting the muchloved teenager.

Today (February 14) an inquest into Evie's death at Avon Coroners Court heard she died of multiple injuries.

The Worle School pupil loved sports and was described as a happy, loving girl and a 'typical teenager', playing music, and always dancing around the house.

Family pays heartbreaking tribute to 15-year-old Evie, killed by train





### There is a clear need for more footbridges, So why aren't more being built?

#### Current footbridge designs are:

- Expensive to commission
- Disruptive to build
- Costly to maintain
- Need regular painting
- Subject to rust and rot
- Not built to last without regular and routine maintenance



#### The Solution:

Taziker set about changing this, with a low-cost, easy to install, maintenance-free footbridge solution that will:

- Provide Access for All at Stations
- Provide a cost effective footbridge to replace Pedestrian Crossings
- Cut Network Rail's carbon footprint
- Save time and money
- Save lives

#### The Legacy FRP footbridge meets all the requirements for an affordable, deliverable footbridge for the UK rail network.

- Cost-effective
- Flexible, modular design
- Off site Modular Construction
- Quick to install in just days
- Environmentally sustainable
- Long lasting with low maintenance
- A traditional aesthetic
- Non-conductive for use with OLE
- Also available as an AFA footbridge with easy to install modular lift units
- All RAL colour combinations are available

"Taziker specialise in delivering project innovation"



#### Legacy Footbridge

The Taziker design and unique connection details/ solutions which makes up the Legacy Bridge is unique and protected by our intellectual property.





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#### The Legacy FRP Footbridge... cuts manufacturing costs

We use the latest design technology to cut manufacturing times

Sections can be mass-produced using CNC Machines, cost-effectively to consistently high standards

Lifts can be manufactured and delivered to site as complete modules ready for rapid installation

#### The Legacy FRP Footbridge... saves time and money on installation

- **Simplified foundation design** due to significantly reduced weight.
- Easy delivery with pre-assembled sections and modular lift units delivered by road and rail
- **Rapid deployment** foundations in 3-4 days, installation in one weekend
- **Modular lift units** Plug and Play modular lift units can be installed in a fraction of the normal time

#### Costs are cut across the installation with:

- No extensive site compounds
- No installation of access roads
- Reduced need for power and facilities on site
- No need to reinstate the site
- Concrete-free foundations don't require wet trades

#### The Legacy FRP Footbridge... means less passenger disruption

- Foundations can be installed outside of ROTR possessions, during normal working hours behind barriers
- A Standard single span Legacy footbridge can be installed within a single ROTR weekend possession.
- Plug and play lift can be added within a second ROTR weekend possession (with an extra day for foundations).

"Easy and efficient Installation"





### The Legacy FRP Footbridge... is sustainable

FRP Footbridges have a 58% lower carbon footprint than similar concrete or steel bridges.

The Legacy FRP footbridge helps Network Rail meets its sustainability targets:

- Lightweight reducing transportation emissions
- UK sourced materials further reducing transportation emissions
- Low waste little waste generated during production, virtually none on site
- Stronger structures saving resources
- **Resistance** resists corrosion, rot, mildew, mold, insects
- **Concrete-free** innovative foundation solutions
- Minimal site set up reduces the impact on the local environment
- Maintenance Minimal Maintenance required

#### The Legacy FRP Footbridge fits any location

Two design ranges allow for 12m to 20m spans and 21m to 35m spans



The Legacy FRP Footbridge design allows flexibility and practically to suit all locations. Options are available with or without roofs.

# The Legacy FRP Footbridge... is built to last

- A 100-year structural design life, and covered with an advanced protective coating system
- Both the structure and the coating have been extensively tested to demonstrate their enduring performance







Protective Coating System 100year coating design life How do we achieve this?

Advanced Vitreflon700HB fluoropolymer paints by A&I Coatings

- Coating life expectancy: 100 years
- Manufacturer's Warranty Period: 40 years
- Confidence level on durability:
  - Case studies reflecting 35 years field service with Fluoropolymer Technology
  - 48,000 hrs accelerated weathering with UVB (equivalent to over 200 years' service exposure)
  - Adhesion testing, coating to substrate, after 21,000 hours accelerated weathering (equivalent to over 100 years' service exposure)

#### New Structural Solutions Facility at Frontier Park, Blackburn





Frontier Park is located two miles east of Blackburn centre and immediately adjacent to Junction 6, M65, with direct access to Whitebirk Roundabout and Whitebirk Drive, the town's premier employment area.

The M65 is the primary economic corridor through East Lancashire linking Blackburn with the M6 and M61 at Bamber Bridge to the south of Preston some 11 miles distant and to Burnley, 10 miles to the east. The M66 is approximately 11 miles away via the M65 and A56. This provides excellent access to M60/M62, and the Greater Manchester conurbation.

#### New Structural Solutions - FRP & Steelwork Facility







Located at Junction 6 off the M65 our new Facility boast a 100 Square feet of fabrication bays which will be split into 3 sections:

- Bay -1 Heavy Fab Bay 124 m long 20m wide with 4 Over Head cranes maximum lifting of 60te.
- Bay-2 A Light Bay 100 m long 20m Wide with 20ton Max lifting capacity.
- Bay 3 A FRP / GRP bridge building Bay with 20t capacity and over 40 m long working area for self delivery and storage.
- A 120m x40m yard so complete Trial erections of large structure and storage facility.

### The Legacy FRP Footbridge... never looks out of place, timeless design

- Can be designed to match the local environment
- Sympathetic styles help to achieve local community support
- Finishes can be used to create heritage-type structures
- Range of Architectural features, including lattice panels, available to blend seamlessly with existing structures and stations





Millom Footbridge

Strathbungo Footbridge

Settle Station Footbridge

### The Legacy FRP Footbridge

Footbridge 13.5M Span with "Heritage" style Lattice Panels

Featuring level coping detail, vertical tubular infill parapets and double handrail to stairways.





#### The Legacy Triple Stairway FRP Footbridge

#### "Heritage" style Lattice Panels to main span

FRP Footbridge with bridge span inclined coping detail and vertical tubular infill parapets to stairways





# What is FRP?

FRP = Fibre Reinforced Polymer, a mix of fibres held together with a polymer resin.

Includes additives for UV protection and fire retardancy.

"The Legacy Footbridge" uses pultruded FRP with 60-70% glass to 30-40% resin for a very light but strong product.

![](_page_25_Figure_4.jpeg)

![](_page_25_Picture_5.jpeg)

![](_page_26_Figure_0.jpeg)

# The Legacy FRP Footbridge: Improving the existing solution

#### 1: Footbridge and Stair Supports.

- Option for a single tubular support in steel or traditional trestles in FRP are both available.
- Single tubular supports do have the advantage of being unclimbable and resilient to vandalism and accidental damage, however the FRP trestles create a 100% FRP Solution.
- Both options are suitable for all forms of micro pile foundations
- Bridge deck cambered to drain run off water to discrete drainage points in outer corner of landing platforms

![](_page_27_Picture_6.jpeg)

![](_page_27_Picture_7.jpeg)

![](_page_27_Picture_8.jpeg)

RapidRoot Foundation Solution for the Tubular Post Support Design Option.

![](_page_27_Picture_10.jpeg)

### The Legacy FRP Footbridge: Micropile technology

- 2: Fast, cost effective foundations
- Concrete free foundations are quicker and easier to install
- Suitable for RapidRoot and Screwfast Helical Piles
- Can be installed behind Vortok Barriers during normal working hours
- Up to 80% faster to install with no weather delays and no curing time
- Up to 60% cheaper than concrete foundations

![](_page_28_Picture_7.jpeg)

RapidRoot Foundation Solution for the Tubular Post Support Design Option.

![](_page_28_Figure_9.jpeg)

### The Legacy FRP Footbridge: Technical Innovations

#### **3:** Stair tread anti-slip surface

- All new, high-tech design
- Anti slip surface guaranteed for 30 years
- Impressive anti-slip performance
- Easy-clean, aesthetically pleasing
- BS 476 Class 1 Fire Resistant quality

The stair tread anti-slip surface utilises a double layer of fused aluminium oxide near diamond hard anti-slip aggregate and silicon carbide to ensure heavy durability against wear

![](_page_29_Picture_8.jpeg)

"Maximum durability against heavy usage"

### The Legacy FRP Footbridge: Technical Innovations

#### 4: Safety lighting

- Numerous lighting options available
- Solar and wind powered lighting for remote locations
- The discreet lighting is designed to achieve the required lighting levels whilst minimising light pollution

![](_page_30_Picture_5.jpeg)

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### The Legacy AFA FRP Footbridge: Technical Specification

#### **5:** Plug and play lift units

- Specifically designed for Network Rail
- Totally reliable with redundant belt drive system and robust curved door
- Ready to install pre-configured and factory tested
- Safely maintainable from ground level, within the lift car or via video playback
- Fully trackable with remote monitoring via dialup/mobile broadband connection

![](_page_32_Picture_7.jpeg)

![](_page_32_Picture_8.jpeg)

### The Legacy AFA FRP Footbridge: Access for All

The lift units are designed to provide easy access for all through a number of design features:

- 1600 Kg Capacity
- 1.1m wide door opening
- 1.6m x 2.1m long Lift Car internal sizes to allow for wheelchair rotation when a through lift
- Large approved lift control buttons
- Intercom within the lift for emergencies
- Full light panel in the car roof
- Rain canopy

![](_page_33_Picture_9.jpeg)

![](_page_33_Picture_10.jpeg)

![](_page_33_Picture_11.jpeg)

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### The Legacy AFA FRP Footbridge: Modular Lift Units

The Legacy AFA FRP Footbridge has been specifically designed for Network Rail to reduce the cost and complexity of lift installation and provide true access for all.

Modular plug and play lift units make accessible footbridges cost-effective and easy to install across the network

![](_page_36_Picture_3.jpeg)

![](_page_36_Picture_4.jpeg)

#### The Legacy AFA FRP Footbridge: Simple, cost-effective lift maintenance

- **Totally reliable** with redundant belt drive system and robust curved door
- Safely maintainable from ground level, within the lift car or via video playback
- Fully trackable with remote monitoring via dialup/mobile broadband connection

![](_page_37_Picture_4.jpeg)

![](_page_37_Picture_5.jpeg)

![](_page_37_Figure_6.jpeg)

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#### The Legacy AFA FRP Footbridge Main Span with "Heritage Lattice Panels"

This design concept incorporates Level Coping detail, Vertical Tubular Infill Parapets and double handrail top Stairways and Lift accessways and Lifts

![](_page_39_Picture_2.jpeg)

![](_page_39_Picture_3.jpeg)

#### The Legacy AFA FRP Footbridge Access for all Modular lifts with "Heritage" Lattice Panels

The Legacy footbridge aesthetic compliments existing Network Rail structures and sits Naturally in with its surroundings

![](_page_40_Picture_2.jpeg)

![](_page_40_Picture_3.jpeg)

#### **FRP Rail Platforms**

At some stations, the existing platforms may be insufficient in length and width to site a new AFA Footbridge.

However, we have the ideal solution in the form of the FRP Rail Platform that can be installed and supported using the same type of concrete free micro-pile foundations used to support the FRP AFA Footbridge and Lift units.

All fabricated using Pultruded FRP Class 1 Structural Sections with Anti-slip decking to match the footbridge and stairs

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![](_page_41_Picture_5.jpeg)

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# Summary

An affordable, accessible, sustainable solution for footbridge installation that puts passengers first.

#### Affordable

- Highly cost-effective in both initial construction costs and installation
- Durable, low-maintenance design cuts whole of life costs
- Low-cost, rapid installation with minimal possessions
  Accessible
- Accessible for all with plug & play lift units that can be deployed anywhere
- Simple, modular installation significantly reduces installation costs
- Smart design for easy maintenance and repair on site **Sustainable**
- Environmentally friendly compared to steel or concrete bridge designs
- Durable materials and coatings with 100 year life span
- Concrete-free foundations for reduced carbon footprint

![](_page_43_Picture_12.jpeg)

### The Legacy FRP Footbridge: The solution you need

Taziker has the affordable answer to solve your footbridge installation problems.

To discuss how we can work with you to deliver your next footbridge project efficiently and costeffectively, talk to our team today.

Taziker, the multi-disciplined engineering specialists.

![](_page_44_Picture_4.jpeg)

![](_page_44_Picture_5.jpeg)

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# Taziker

# The multi-disciplinary engineering specialists

- Taziker is proud to be an approved contractor for Network Rail.
- Taziker has been trusted with some of the most iconic UK structures, from the Forth Bridge in Scotland to the Iron Bridge in Telford.
- Taziker has worked on wide range of projects, from station platform replacement on the Welsh Coast, to bridge timber repairs in the Fens.
- Taziker has an in-depth insight into the demands of the rail network in terms of safety, performance and economics and appreciate the duty of care to passengers and freight operators and the need to minimise disruptions.

![](_page_46_Picture_0.jpeg)

### Quality assured for 50 years

With the Taziker FRP Legacy Footbridge, quality is assured at every stage, from materials and manufacturing, to enduring performance.

#### An approved Principal Contractor for Network Rail

**UK Manufacturing** – local fabrication allows bespoke and long lengths to be manufactured with fewer splice plate connections.

**Colour range** – can be produced in any RAL colour to match to the environment, including standard grey, black, green and yellow.

Quality guaranteed – all profiles are produced to EN13706 E23 standard using a ISO9001 certified and controlled processes. Fire resistance – all FRP materials are manufactured to BS 476 Class 1 Fire Resistant quality.

![](_page_47_Picture_0.jpeg)

# **Trust Taziker**

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