



Highways Safety Hub Team Newsletter

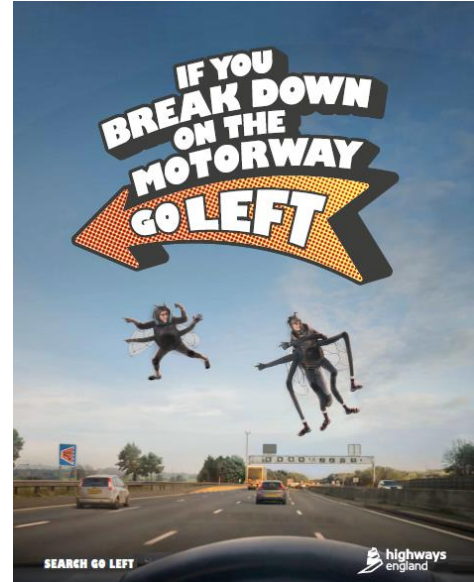
March 2021

Highways England Breakdown Campaign Launched

Safety is our number one priority – any death on our roads is one too many. While our roads are amongst the safest in the world, we recognise there is always an opportunity to make journeys safer, easier and more reliable for users.

Highways England's 2021 Breakdowns campaign aims to improve road users' awareness and confidence around what to do in the event of a breakdown on a motorway, including those without a hard shoulder, helping people feel more capable and equipped should it happen to them.

This is our biggest ever campaign, covering prime-time TV, advertising to radio, out-of-home display and social media advertising, plus video-on-demand to partnership activity – all supported by a campaign toolkit.



Our Message

If you get into trouble on the motorway, stay calm and exit at the next junction or service area. If that's not possible:

1. Put your **left** indicator on and move to the **left** lane
2. Exit **left** onto an emergency area or onto the hard shoulder
3. Put your hazards on
4. Get behind a safety barrier where it is safe / possible to do so and keep well away from moving traffic
5. Call Highways England on **0300 123 5000** then a breakdown provider for help

If you're in a live lane and cannot safely leave your vehicle, keep your seatbelts and hazards on, and call **999**

More supporting messages can be found on the campaign website:

www.highwaysengland.co.uk/breakdowns

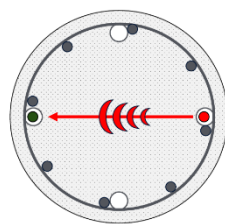
Eliminating Harm in Piling Operations

The A19 is a strategic major road running North-South between Doncaster and Newcastle. Testo's Junction is located between Sunderland and Newcastle and suffers from congestion resulting in unreliable journey times and inhibition of economic growth in the local area as well as increasing the risk of accidents and carbon emissions. Testo's junction is the last at-grade roundabout junction on the A19 and is used by approximately 80,000 vehicles every day.

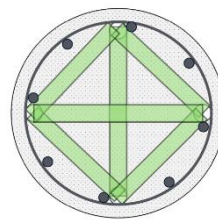


For construction of a new road bridge, pressures needed to be transferred to the low-lying rock via 40 No. 1050mm diameter piles x 26m deep for the piers and 94 No. 1200mm diameter piles x 30m deep for the abutments. During the procurement phase of the piling package Costain sought early contractor involvement from the specialist subcontractor to implement a different way of integrity testing the piles.

Within the Works Information there was a requirement for Crosshole Sonic Logging (CSL) on 30 working piles. CSL is used to determine the structural integrity of concrete within the pile. By casting steel reservation tubes down the full length of the pile, ultrasonic signal pulses are passed through the pile from a source in one tube to a receiver opposite. Both the time between pulse generation and signal reception and the strength of the received signal gives a relative measure of the quality of the concrete between the transmitter and receiver. By casting 4 steel tubes into the pile only 25% of the total concrete within the pile is sampled, focusing on the pile core zone. It is well documented by the Federation of Piling Specialists, that installation of sonic logging tubes presents a **major hazard to operatives**. There is a risk of entrapment of limbs when attaching the steel tubes to the reinforcement cages – this is exacerbated when two cages need joining.



Crosshole sonic logging sending signal across pile



25% of pile CSL testing

In order to eliminate the risk of injury, the team investigated different options of integrity testing and identified the opportunity to carry out Thermal Integrity Profiling (TIP). TIP is a non-destructive method of testing that utilises the heat generated by the curing cement during hydration within the pile to evaluate their integrity. A new method for carrying out TIP has recently been developed jointly by Cementation Skanska, Cambridge University and ARUP called CemOptics. CemOptics uses distributed fibre optic sensors to measure the temperature of the concrete as it hydrates. By being able to easily roll the fibre optic cable down the length of the pile cage prior to instalment, this **eliminates the hazard of joining ducts or CSL tubes**. Another benefit is that 50% of the concrete is

analysed and early results can be received 48hrs after testing instead of waiting for the concrete to cure for a minimum of 7 days.

The use of CemOptics was presented to the designers, Jacobs, and Highways England and implemented. In addition to safety benefits the time savings from using CemOptics on the 30 working piles was calculated at £251,000.

Zero Trim Piles trialled at HS2 London Tunnels

The SCS team working on the HS2 London Tunnels contract have sought to 'think different' when it came to trimming piles.

Traditionally piles are trimmed or broken down using percussive breaking or a cropping method such as Elliott, but this is time consuming and costly and results in damage to the projecting reinforcement. The established methods also have potentially very significant health and environmental impacts. For example, the works in Euston are close to residents and minimising or eliminating the noise from percussive breaking has a massive advantage and demonstrated to regulators the project are making considerable effort to eliminate these impacts. The SCS team decided that this was unacceptable and sought a better solution using the available technology.



A team led by Deon Louw from the piling specialist Cementation Skanska and Lee Piper the works superintendent, which included the design house and subcontractor Hercules Services have devised a method of pile reduction that means there is little or no physical breaking required. The method involves the reduction of the pile caps when the concrete is wet using a vacuum excavator to easily reduce the pile to the correct height.

The method needed to meet the ICE Specification for Piling and Embedded Retaining Walls (SPERWall) standard and be approved by HS2. Therefore, the team needed to undertake a trial to demonstrate that the method was workable and would meet these standards by maintaining the pile integrity.

The trial was undertaken on non-contract piles to demonstrate the effectiveness of the vacuum excavator at removing the concrete and to calibrate the power required to not over-vacuum.

The trial was undertaken on 12 November 2020 at Hercules Site Service Ltd site. This was undertaken on manhole excavations, including a representative reinforcement cage, concrete poured under support fluid/water, and a study of how age of concrete affects the ability to remove with the vacuum pump. Three trials were carried out to demonstrate the effective removal of freshly poured concrete from manhole rings to replicate a rotary bored pile. The three trials were as follows:

Manhole 1

Concrete poured 400mm from the top of the manhole ring and then topped up with polymer support fluid.

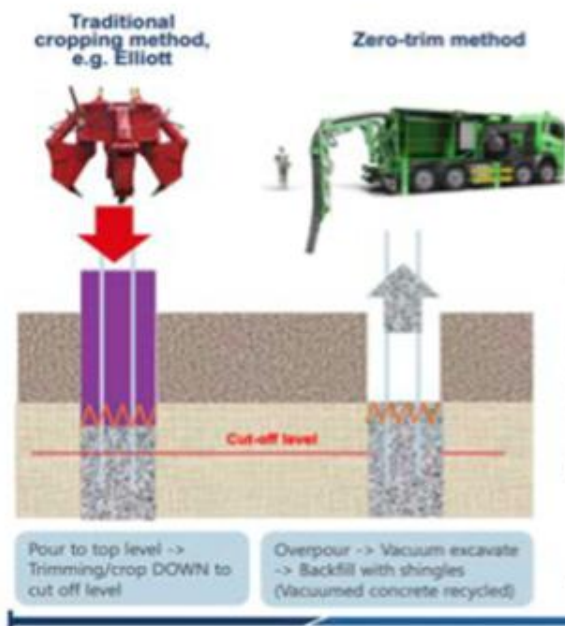
Manhole 2

1050mm OD reinforcement cage placed into the manhole ring. Concrete added to approximately 400mm from the top of the manhole ring and then topped up with polymer support fluid.

Manhole 3

400mm of polymer support fluid added to the manhole ring and then concrete added until at the top of the manhole ring. The trials clearly demonstrated that the vacuum excavator has the capability to remove freshly poured concrete from a pile bore. The process easily removes the excess concrete from the annulus between the cage and the “casing” and will have minor impact on the piling process/duration as demonstrated it takes a matter of minutes to remove the excess concrete and polymer. The method reduced the amount of pile trimming to virtually ZERO has the potential to be a “game changer” within the industry.

The cost savings from using the method are estimated to be nearly £400,000 and the health and safety and environmental benefits are likely to be even greater.



	No repair on reinforcement needed
	No noise from drilling and breaking – reduced risks to workforce and stakeholders
	No lifting of equipment required
	H&S Risks associated with hand cropping eliminated – HAVS, confined space, silicosis, working at height
	Integrating capping beam reinforcement made easier
	Benefit of Vac Ex for other high-risk utilities activities

The Bystander Effect

Bystander effect, or **bystander apathy**, is a social psychological theory that states that individuals are less likely to offer help to a victim when there are other people present; the greater the number of bystanders, the less likely it is that one of them will help.



Case studies:-

March 1967 A lady was stabbed and murdered while walking home. Allegedly 38 witnesses watched the stabbings but did not intervene or even call the police until after the attacker fled.

May 2011 A man walked into the sea about 150 yards offshore and where waters were neck deep. Police expected the firefighters to enter the water; Firefighters expected the Police to do so. Finally, a good Samaritan entered the water and pulled him to shore. He died in hospital.

September 2019 A 16-year-old boy was stabbed in the chest during a fight with a fellow student and died of his injuries. Watching the fight was a group of 50 to 70 other students. News reports indicate that none of the people witnessing the fight came to his aid. Instead, many in the group took videos for social media as he lay bleeding.

Does this sound familiar? How many times have you heard the phrase, 'Don't Walk By'? Be honest with yourself ... how many times have you walked past an unsafe condition or behaviour, expecting someone else to report it?

What can you do?

Be empowered to intervene; stop the 'at risk' behaviour and / or address the 'at risk' condition if you are able to do so. If not, report it immediately or at the earliest opportunity. Do not continue working if there is potential for injury, damage or environmental incident.

Do take the lead and **do not** be expectant on someone else to address the issue. You may need to suspend the work activity until it is made safe.

1. Always raise the issue and report it.
2. Encourage everyone to be empowered without fear of reprisal.
3. Don't walk by!

Source: Crossrail Safety Briefing



Rollover Prevention

With an estimated 100 rollover incidents in the industry in the last 3 years (this stat was collected prior to 2015) CEMEX have taken the lead in producing an awareness video, as well as investing in technology and training to help prevent the overturning of articulated vehicles by looking at the causes. Links to two YouTube videos are as follows:



<https://www.youtube.com/watch?v=1zeGPALj-jk>

https://www.youtube.com/watch?v=z3m_NthltNM

For further resources please visit safequarry.com

Contractors trial 3D smartphone 'X-ray vision' of buried services

Morrison Utility Services and Eurovia UK are trialling new technology that gives workers a 3D picture of underground services on smartphones to help avoid cable and pipework strikes.

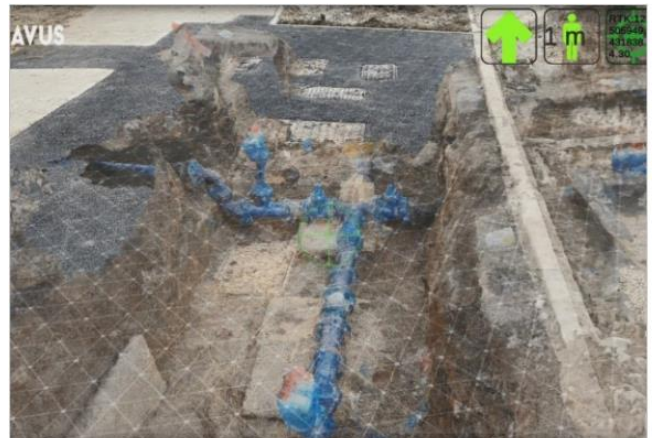
The Augmented Visualisation of Underground Services technology has been piloted on Thames Water and Yorkshire Water contracts.

Morrison Utility Services engineers are using AVUS to plan and manage works more effectively by mapping and viewing buried services in 2D or 3D augmented reality prior to excavation.

The technology offers precise pipe location identification to within 5cm as well.

Teams can also now record as-is or as-built services before reinstatement building up a video database for safer future care and maintenance.

The resulting footage is used to create detailed 3D point cloud models ensuring accurate visual records and 'x-ray vision' of the work completed, utility layout and geology for future works.



The initial trial was successfully conducted by a Morrison Utility Services team working on a bypass and pressure relief valve (PRV) installation in Roehampton, South London.

Andy Carter, MUS Director of IT, Innovation and Improvement, said: “AR is paving the way for many operational processes in our sector to become safer and simpler – this technology is a real industry game changer.

“As well as safer working, the geo-positioning precision offered by the technology means that the essential infrastructure works that we undertake can be delivered more quickly and more efficiently to keep disruption to the public to a minimum.”

Eurovia UK Director of Innovation, Yogesh Patel, added: “When we developed the AVUS technology, we always knew that it would make a big impact on the safety and success of planning and programming of works.

“We all have a collective responsibility to manage our infrastructure safely and sustainably. AVUS is a step in the right direction towards this vision.”

Source: Construction Enquirer

Raising the Bar Checklist

This will help check compliance with the guidance by highlighting significant elements. A link is posted below that will direct you to the Highways Safety Hub website where there are also a lot of interesting items. Also consider joining the Twitter group which gives out lots of useful information regarding changes and uploads including the latest safety alerts.

<https://www.gov.uk/government/collections/health-and-safety-for-major-road-schemes-raising-the-bar-initiative>

Safety Alert Database - All Alerts

Safety alerts etc. index listing – Issue 09 (28 Feb 2021): Eliud Kipchoge breaks the 2-hour Marathon Barrier

This database contains **2,019**no. document entries, including SHEQ alerts, bulletins, learning, best practice, guidance and other docs, produced onto an Excel File, that provides links to each document.

Although containing messages that cover S, H, E and Q topics, for ease of reference the database is titled “**Safety alerts etc. index listing**”.

To use the database download the excel spreadsheet to your desktop, enable editing and then use sorting columns to find the information you need.

Please ensure your firewall allows access to Google Drive to view linked alert documents.

How to access

- The latest “Safety alerts etc. index listing”, has been posted on the Highways safety hub web site, nested in the alerts tab page; <http://www.highwayssafetyhub.com/all-alerts-database.html>
- It can be used by opening the Excel File copy held on the web site, or by opening after saving a copy onto your own PC.
- To access individual documents from the links in column “G”, users will need internet access – All documents have been uploaded onto the index listing from a Google Drive account

Trivia note: Issue 09, containing 2,019 document entries, is referred to as the “Eliud Kipchoge breaks the 2-hour Marathon Barrier” >

On Sat 12 Oct 2019, Kenyan athlete, Eliud Kipchoge (34) broke the 2-hour Marathon Barrier. The Olympic gold medalist and world-record holder became the first human in history to run 26.2 miles in under two hours. Kipchoge accomplished this breathtaking feat with relative ease in Vienna, finishing the test in 1 hour, 59 minutes and 40 seconds.