

PDWG Task Group – Safety Shares

Summary on a page

Purpose of the Meeting - to investigate whether a Design Close Calls process similar to that used by Network Rail might provide learning and sharing benefits for health, safety and wellbeing considerations for the National Highways community

Attendees

- Martin Partington (Jacobs) - Chair
- Doug Potter (Arcadis)
- Sophie Gwynne (Arcadis)
- Rob Butcher (Jacobs)
- Sam Allin (Jacobs)

Attendees

- Tang Solomon (Arcadis)
- Sam Allin (Jacobs)

Apologies

- Jim Gallagher (National Highways)
- Tim Goddard (Arcadis)
- Stephanie Goldsmith (Skanska))

Last meeting reviewed 3 specific draft safety shares

- There was no meeting in April due to Easter holiday impact, however
- This enabled time to be spent on developing the safety share template and developing how the wording enables a share to be developed that has specific meaning and targeted audiences

3 Draft Shares

- Location of technology box affecting maintenance safety and need to expose more people ie: Traffic Management
- Use of flags instead of faster laying materials
- Bridge abutment slopes – what’s the options, linking to all past information
- Expanded to a further 6 being developed, some are within this presentation

We've come quite a way

The original layouts were in portrait, but you will see they are now landscape

They were wordy, and the messaging was a mixed

In some cases there was no linkage to other information



Issue

A19 Norton to Wynyard had a requirement for low height retaining walls along the north and southbound carriageways. Over-excavation of the slopes along the A19 posed a significant risk of slope instability during the temporary works phase. Flag on edge was utilised as a solution.



Mitigation

Design

Initially various options were considered, with differing material costs, impact on the environment, time /complexity to install, aesthetic appearance, maintenance demands and safety, all being part of the consideration. The flag on edge solution, it was felt involved a minimum temporary works excavation footprint, generating reduced volumes of arisings. Construction was considered to be relatively straightforward and low tech, meaning multiple trades were not all vying to work in the same constrained site area at the same time, and measures could be implemented to mechanise lifting and placing of paving flags as required to minimise manual handling.

Construction

Although mechanised lifting was originally specified, with 1000 x 600mm slabs to be used, actual site access restrictions meant that hand installation of the flag on edge was required. Smaller 300 x 600mm slabs were eventually used to reduce the extensive manual handling.

Maintenance / Operations

The use the smaller slabs would mean that they would be more easily replaced; however, the increased number of joins would increase potential water ingress and weed growth.

Actual Incident

A three-man team using a small mechanical excavator installed ~433m of flag on edge paving on both north and southbound carriageways during night and day shifts. There were no H&S incidents or injuries from manual handling during the installation.

Lesson Learnt

Working area had not been considered during design development. Alternatively, a pre-cast L section, or TCB, could have been substituted for the flag on edge. This could have been placed mechanically and backed up with concrete. There would have been a considerable reduction in manual handling, a reduced duration of the works and consequently this would have limited the exposure of the workforce to injury; and also enabled the TM to have been removed earlier reducing the impact on the travelling public



Significant Risks

A risk comparison has been undertaken on side 2 of this Safety Share to highlight the potential benefits (hazard reductions) that could have been achieved by utilising an alternative form of construction.



Send similar issues or best practice to the ????????@????????? Peer review group for consideration for upload to this sharing site



Description of Event

A designer has specified a block paving finish for a bridge revetment

Population at Risk

Construction Workers, Maintainers and Inspectors

Hazardous Activity and Residual Risk Description

- Constructing, maintaining and inspecting a bridge revetment may expose workers to tripping on uneven ground hazards, slipping and falling on slopes with an assessed residual risk of an almost certain likelihood of minor harm and a may happen likelihood of moderate harm being incurred.



Photo of a bridge revetment without surface stabilization treatment

Potential consequences of this event

- This residual risk may require a safe working at height solution to be designed and implemented, such as a rope access system.
- A finish that cannot be easily and quickly maintained or one with a short design life which increases the number of man-hours to which workers are exposed to the hazards and risks.
- A soft landscaped revetment exposes maintenance and inspection workers to a higher number of man-hours compared with a hard landscaping finish.

Safety Hub Alert Database

- Sub-category 2 Slips trips & falls (same level) for Housekeeping has 13 alerts.

Potential Mitigation Measures

Design

- Design bridges without sloping revetments.
- Specify revetment with a hard landscaped finish.
- Evaluate block paving with sprayed concrete solutions.

Construction

- Submit Request for Clarification.
- Raise safety observations.

Maintenance / Operations

- Submit Works Request to provide a hard landscaped finish and raise safety observation.
- Design suitable engineering controls when working on sloping revetments.



Photo of a bridge revetment with block paving surface treatment

Further Guidance and Reading

- BD 97/12 – The Assessment of scour and other Hydraulic Actions at Highways Structures.
- CD 351 The design and appearance of highway structures
- LD 117 Landscape design
- DMRB GD 304 – Designing health and safety into maintenance
- RtB 26 – Safety by Design
- CIRIA C543 Bridge detailing guide
- CIRIA C686 Safe access for maintenance and repair. Guidance for designers



Please send ideas for Whole Life Design safety shares to wellbeing@nationalhighways.co.uk

LEAN

Improved end user benefits

Reduced Defects

Reduced Reportable Accidents

**Description of Event***A flag on edge solution was designed as a low-level retaining structure***Population at Risk**

Construction and Maintenance Workers, Inspectors and Travelling Members of Public (MoP)

Hazardous Activity and Residual Risk Description

- Construction of low-level retaining structure using flag on edge that requires manual handling with an assessed residual risk of 'an almost certain' likelihood of extreme harm being incurred.
- A flag on edge retaining structure has a shorter design life than other solutions, increased construction period and requires a shorter interval between inspections.

Potential consequences of this event

- In 2021 HSE estimated that there were 40,000 workers suffering with musculoskeletal disorders.
- The musculoskeletal disorder incident rate is 1.8%.
- Extended period of TTM required leading to greater exposure to workers and public.

Safety Hub Alert Database

- Sub-category 2 MoP incursions has 8 alerts including 1 fatality.



Photo of flag on edge retaining structure

Potential Mitigation Measures**Design**

- Eliminate manual handling of materials by designing a pre-cast concrete panel solution that requires mechanical handling.

Construction

- Ensure mechanical handling option is used.
- Minimise TTM requirements.

Maintenance / Operations

- Periodically assess safety and serviceability of retaining structures in accordance with CS459.
- Submit Works Request and raise safety observations.
- Design a suitable TTM solution before working on live carriageway.

Further Guidance and Reading

- CS 459 The assessment of bridge substructures, retaining structures and buried structures
- DMRB GD 304 – Designing health and safety into maintenance
- RtB 8 – Manual Handling
- RtB 26 – Safety by Design
- INDG 143 Manual handling at work – a brief guide
- L23 Manual handling, Manual handling operations regulations 1992. Guidance on regulations.
- CIS No 57 Handling kerbs: Reducing the risks of musculoskeletal disorder (MSDs)



Photo precast concrete panels



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LEAN

Alternative
MaterialsAlternative
PlantReduced
LabourImproved
end user
benefitsReduced
Activity
DurationReduced
DefectsReduced
Reportable
Accidents



Bridge Strike – Material Deliveries

Ref: WLD.XXX

Description of Event

Material delivery location in proximity to overhead structure.

Population at Risk

Construction Workers, Maintenance Workers and Rail and Road Users

Hazardous Activity and Residual Risk Description

- Driving off with Tipper Lorry in unsafe condition
- Tipper lorry operations in close proximity to overhead structures with an assessed residual risk of an almost certain likelihood of major harm.

Potential consequences of this event

- Impact to overhead bridge structure causing damage to rail infrastructure, line and road closure and potentially injuries to road and rail users.
- The residual risk requires additional checking that delivery vehicles are safe to re-join the carriageway.

Safety Hub Alert Data Base

- Subcategory 2, overhead hazards has 7 alerts relating to bridge strikes including 2 with injury.

Potential Mitigation Measures

Design

- Confirm that there are safe road access and egress routes to the site and that these are highlighted in the PCI.
- Material delivery or storage areas within the site should be considered within the PCI and sited at locations where safe access can be gained.
- The location of warning devices e.g., goalposts should be considered in the PCI.



Photo of wagon having hit bridge deck with tipper body dislodged and resting on road and against the rail edge beam.

- ECI is recommended to highlight potential hazards that could be present along internal and external site access and egress routes.

Construction

- In this instance the process was changed for the acceptance of delivery tickets. Tickets could not be signed off by the site team until the delivery vehicle had been inspected and deemed safe to leave the site.
- Additional checks were introduced to ensure that the vehicle was safe to join the carriageway after delivery/offload of the materials.
- Temporary goalposts could also have been provided dependent on the location of the structure in relation to the site.

Maintenance / Operations

- This is applicable to maintenance works e.g., re-surfacing operations.
- Raise safety observations.

Further Guidance and Reading

- TBC



Photo of tipper body having collided with bridge deck. Rail bridge was shut until structural inspections could take place to ensure track and edge beam were undamaged.

To be presented to subgroup. Confirm if this is to be developed into a safety share.



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Reduced
Reportable
Accidents

**Description of Event***Principal Contractor and Designer required work to be done at night. They did not consider how lighting may be secured to a scaffold tower.***Population at Risk**

Maintenance Worker, Contractor and Inspectors

Hazardous Activity and Residual Risk Description

- Working below temporary scaffold.
- Working at night with unsecured lighting equipment on scaffold towers has an assessed residual risk of an almost certain likelihood of minor to moderate harm.

Potential consequences of this event

- The residual risk requires the Principal Contractor to account for safe working at height during nighttime shifts.

Safety Hub Alert Data Base

- Subcategory 1 scaffolding with subcategory 2 falling item has 7 alerts including 2 with injury.



Photo of worksite, tower on left was where the light fell from

Potential Mitigation Measures**Design**

- Provide a safe working area by specifying exclusion zones around mobile scaffold towers.
- Ensure the Principal Contractor provides information and instructions for workers on working at height. All working at height should have a specific Risk Assessment and Permit to Work.
- Toe boards to be specified in design in accordance with PASMA guidance.

Construction

- Always request toe boards to be fitted when there is a risk of materials/equipment falling from height and ensure exclusion zones in place.
- Consideration should be given to whether it was necessary to carry out the work at night. If not, this would eliminate the need to introduce an additional light on the scaffold tower. Ensure all attachments are suitable fixed and secure

Maintenance / Operations (Unsafe)

- Use stop work authority.
- Raise safety observations.
- Submit works request to provide toe boards.

Further Guidance and Reading

- RtB26 – Safety by Design
- TBC

To be presented to subgroup. Confirm if this is to be developed into a safety share.



Photo of Night Searcher Task light – approx. 2 kg in weight

Please send ideas for Whole Life Design safety shares to wellbeing@nationalhighways.co.uk

LEAN

Alternative Plant

Reduced Labour



Reduced Reportable Accidents



Description of Event

A designer has positioned assets (a traffic loop box) on live carriageway side of vehicle restraint system

Population at Risk

Maintenance Contractor Workers and Inspectors

Hazardous Activity and Residual Risk Description

- Live carriageway working exposes workers maintaining and inspecting assets to the potential of being struck by a Member of Public (MOP) vehicle with an assessed residual risk of an almost certain likelihood of extreme harm being incurred.
- A low load class of an asset cover is a hazard to vehicles driving on the shoulder with an assessed residual risk of an unlikely likelihood of minor harm being incurred.

Potential consequences of this event

- The residual risk requires Temporary Traffic Management (TTM) solution to be designed and implemented, which has a negative impact on the road users' wellbeing.
- Putting TTM solutions in place is a hazardous activity placing workers at risk of harm. In September 2021 National Highways performance report showed 49 vehicle incursions reported by operations.



Photo of an Impact Protection Vehicle following a vehicle strike

Safety Hub Alert Database

- Sub-category 2 MOP incursions has 8 alerts including 1 fatality.

Potential Mitigation Measures

Design

- Provide a safe working area by positioning assets set back from a suitable vehicle restraint system.
- Provide information and instructions for workers on load class of cover and safe route from maintenance vehicle to working area within a Maintenance and Repair Statement.



Photo of a traffic loop box on live carriageway side of vehicle restraint system

Construction

- Submit Request for Clarification to National Highways Project Manager.
- Raise safety observations.

Maintenance / Operations

- Submit Works Request to provide a safe working area and raise safety observation.
- Design a suitable TTM solution before working on live carriageway.

Further Guidance and Reading

- [DMRB TD 131](#) Roadside technology and communications
- [DMRB GD 304](#) – Designing health and safety into maintenance
- [RtB 26 – Safety by Design](#)



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LEAN

Reduced
Plant

Reduced
Labour

Reduced
Transport-
ation

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Reduced
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Duration

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Reduced
Reportable
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Monthly Highlights

Designing for Maintenance

MS3's **previously** had had off carriageway access

- a layby and a hard standing –
- one or two maintenance persons parked, walk down a path behind a barrier and accessed the MS3's.

Handover (**Now**): One of the MS3's is pictured.

- Sheet pile too close behind barrier
- no steps down from verge, behind,
- no path from repositioned layby down the road.
- Handover certificate excerpts above stated “it is not deemed that Incident Management requirements are greatly different to existing” GREEN status.
- No residual risks identified in the H&S file information.



OD have been engaged in the regional process to agree the compliance strategy and any MOUs with category 1 responders.	Yes	Status: GREEN <i>It is not envisaged that the A19 scheme will have any effect on the current processes which will remain in place.</i>
OD work instructions for the scheme are available and accessible [Text Wrapping Break] and have been approved by the OD Incident Management Requirements team for use.	Yes	Status: GREEN <i>The scheme CTI is returning a D3AP to operational use with limited existing Technology it is not deemed that Incident Management requirements are greatly different to existing.</i>

Access (**Now**)

installing temporary traffic management out of hours on a Sunday.

1. increased work force exposure (deploying and within TM – TTM is highest risk activity),
 2. decreased breaks (fatigue is silent killer),
 3. increased carbon impact
- MS3's are aging and will require increased no of interventions as time moves on (1-3 above likelihood will increase)

Outstanding issues

Who will be using these, and how will they be found

- one source of truth
- which websites:
 - Supply chain Safety Hub,
 - National Highways Home, Safe and Well,
 - or both: saved on one but a webpage developed for both

Ensure the key risk and event are clear, as are the mitigations.

Ensure the messaging is clear and understandable.

Outcomes and Next Steps

- This presentation has given a better flavour of what a Safety Share is and the issues being considered before publishing
 - There are a further 5-10 in draft stages
 - Next meeting on 25th May will finalise the layout and content of the shares in this presentation
 - Early June, shares to be published and posted on Supply Chain Hub site
 - End of July develop page for Home, Safe and Well site or link back to Supply Chain Hub site
 - Every meeting after that aim to get 2-3 shares completed and published
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