

# 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

- Reviewing exactly what the message is trying to be delivered
- How to make it specific to designers so they understand the ask
- Challenged whether to align these to MCD Series or make Safety specific and more applicable generally ie: access / egress affects traffic management which then affects street furniture and technology boxes – one issue affecting many series numbers
- Change layout to landscape not portrait
- Include more photos
- Add links to where data analytics come from

### 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

### Outcomes and Next Steps

- Next 2 months will see at least 3 shares issued which will form the rules for developing and publishing more faster
- We are seeking good practice or poor practice examples of what makes a GPR survey work well and when it doesn’t. could PD members get in touch if you have any good or poor examples
- Working out where and how to store the shares onto the Supply Chain Hub website

Risk matrix for an event, incident or circumstance	Impact, severity, consequence	Minor	Moderate	Serious	Severe / Major	Extreme (1 or more people harmed)
		" Minor / slight harm requiring basic first aid, " minor damage or loss " Impairment of performance or function lasting less than 1hrs, able to return to worknormality within 8hrs	" Medical treatment to prevent deterioration, " minimal lost time, " moderate injury or illness, " moderate damage or loss " Impairment of performance or function lasting less than 8hr, Able to return to worknormality within 24hrs	" Serious harm: " serious injury or illness, " substantial damage or loss. " urgent treatment / surgery, " lost time incident 1-7 day " Impairment of performance or function lasting 1-7 days, Able to return to worknormality after 7 days	" Major / severe harm, " damage or loss, " Temporary disability; " over 7 day absence " Impairment of performance or function lasting more than 7 days or leading to change of work environment on grounds of mental impairment " significant external medical intervention sought	" Extreme Harm: " extreme loss or damage, " Fatality including suicide or " Permanent life changing injury or impairment, may require long-term treatment for remainder of life, " Never able to return to work.
Likelihood	Eliminated (0)	1	2	3	4	5
" Very low: " extremely / very unlikely " highly improbable	1	Low (1)	Low (2.3)	Low (3.3)	Low (4.3)	High (5.3)
" Low " unlikely " seldom,	2	Low (2.1)	Low (4.2)	Medium (6.3)	Medium (8.3)	High (10.3)
Medium may occur, may happen	3	Low (3.1)	Medium (6.1)	Medium (9)	High (12.32)	High (15.3)
" High " likely " probable	4	Low (4.1)	Medium (8.1)	High (12.1)	High (16)	Very High (20.3)
" Very High " Highly / very likely " very probable or repeated	5	Medium (5.1)	High (10.1)	High (15.1)	Very High (20.1)	Very High (25)
risk Low( 1, 2.1,2.3, 3.1,3.3, 4.1,4.2,4.3) band		residual risk arising is considered to be from a routine activity and industry practice is widely available to control the risk to SFAIRP (So far as is reasonably practicable)				
risk Medium (5.1, 6.1, 6.3, 8.1,8.3, 9) band		residual risk arising is considered to be from multiple activities or single complex activity, requiring additional measures over those required for routine activities to control the risk to SFAIRP				
risk High (5.3, 10.1,10.3, 12.1,12.3, 15.1,15.3, 16) band		residual risk arising is considered to be from a non-routine activity or of a highly specialised nature that requires complex control measures and specialist resources to control the risk to SFAIRP				
risk Very High (20.1,20.3, 25) band		requires project manager / director approval and recorded formal review				



## TECHNOLOGY – TRAFFIC LOOP BOX

Ref: 1500.001

### Issue

- Traffic loop box positioned on traffic side of safety barrier resulting in need for full lane traffic management deployment plus layby closure when there is a need to access the box.
- Need for box cover to be strong enough to support 40T HGV for kerb overrun



### Mitigation

Describe solutions within each phase identified below, include pictures

#### Client

#### Design

- Consider how assets will be maintained if they are located on traffic side of vehicle restraint systems, and move to non-vehicle side
- Consider ease of access for maintenance personnel to the chambers or other roadside equipment, and record within Maintenance and Repair Statement
- Ensure maintenance contractors are consulted with during design phase

#### Construction

- Raise observations or queries when product are placed in dangerous locations.
- Check Maintenance and Repair Statement during construction phase

#### Maintenance / Operations

- Raise safety observations with client and request improvement scheme to move roadside hazards into safer locations
- Ensure compliance with [SCSLG Incursions Working Group best practice](#) in TM deployment, maintenance and removal

#### Other LINKS

- [Maintenance & Repair Statement template](#)
- [DMRB GD 304 Designing H&S into maintenance](#)
- [MCDHW-1500 Highway communications spec.](#)
- [RtB 26 – Safety by Design](#)

### News – Actual Incident(s)

Since 2010 there have been 20 serious safety alerts issued within the [SafetyHub Alerts database](#) involving traffic management personnel, 5 of which were fatal.



[2010-07 IPV's struck by HGV's – Fatalities](#)  
[2019-10 Taper strike resulting in reportable injury](#)  
[2021-07 TM vehicle on H/S struck by MOP](#)

### Significant Risks

Activity Affected	Access to loop box	Access to loop box	Closure of Layby
Hazard	S: Struck by moving vehicle	S: Struck by moving vehicle	H: Delay / Pressure
Persons Affected	Road worker – TTM Installer	Road worker – loop maintainer	Road closure - personnel
Likelihood * Impact	4*4=H	2*4=M	2*3=M



## LIVE CARRIAGEWAY WORKING TRAFFIC LOOP BOX POSITIONING

Ref: 1500.001

### Description of Event

- A designer has positioned a traffic loop box on live carriageway side of vehicle restraint system.



### Hazard and Residual Risk

- Vehicle movement on live carriageway is a hazard to workers maintaining the traffic loop box with an assessed residual risk with an almost certain likelihood of extreme harm being incurred.
- Low load class of cover is a hazard to vehicles traversing the traffic loop box with an assessed residual risk of an unlikely likelihood of minor harm being incurred.

### National Highways Expectations

- Designers are required to provide a safe working area for workers maintaining street furniture.

### Potential Mitigation Measures

#### Design

- Provide a safe working area by positioning traffic loop box 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.

#### Construction

- Submit Request for Clarification to National Highways Project Manager and Raise safety observations when working area around street furniture does not meet National Highways expectations.

### Maintenance / Operations

- Submit Works Request to provide a safe working area and raise safety observation.
- Design suitable temporary traffic management 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](#)
- [CIRIA C686](#) Safe access for maintenance and repair. Guidance for designers.

### Consequences of inaction

- Failure to provide a safe working space requires Temporary Traffic Management (TTM) solutions to be implemented which has negative consequences for road users wellbeing.
- TTM creates a hazardous activity putting additional workers at risk of harm. In September 2021 there were 49 vehicle incursions reported by operations.

### Opportunities through safety by design

- Eliminate need for additional safety measures to mitigate working adjacent to moving vehicles such as TTM solutions before carrying out maintenance activity.
- Provide information in Maintenance and repair statement about 'means of safe access to the place of work'.



Send similar issues or best practice to the ?????? WLD Safety Share review group for consideration for upload to this sharing site



Please send details of examples where opportunities for design to eliminate or reduce risk of harm can be placed in a safety share to [xxemail@nationalhighways.co.uk](mailto:xxemail@nationalhighways.co.uk) so

LEAN	Material Reduction	Alternative Materials	Reduced Plant	Alternative Plant	Reduced Labour	Reduced Land	Reduced Transport-ation	Improved end user benefits	Reduced Activity Duration	Reduced Defects	Reduced Reportable Accidents
------	--------------------	-----------------------	---------------	-------------------	----------------	--------------	-------------------------	----------------------------	---------------------------	-----------------	------------------------------

LEAN	Material Reduction	Alternative Materials	Reduced Plant	Alternative Plant	Reduced Labour	Reduced Land	Reduced Transport-ation	Improved end user benefits	Reduced Activity Duration	Reduced Defects	Reduced Reportable Accidents
------	--------------------	-----------------------	---------------	-------------------	----------------	--------------	-------------------------	----------------------------	---------------------------	-----------------	------------------------------





## HIGHWAYS – Block Paving

Ref: 700.000

### Issue

- The A19 Norton to Wynyard project has four bridges with bridge pier extension works. These bridges have block paved revetments which needed to have the first 1 to 2m removed.
- Prior to works commencing, these have been hand removed and, when works were complete, they were been replaced by hand.



### Mitigation Design

The options to replace the revetments with stone slabs or with poured concrete slabs were explored. However, due to the limited areas involved, it was judged acceptable both in cost and carbon saving to remove, store, and replace the blocks.

### Construction

A three-man team were to remove the blocks manually on an inclined surface prior to works commencing. These were then to be stored on pallets in the main compound until works were complete. The blocks were then to be replaced by hand.

### Maintenance / Operations

Ongoing maintenance was considered as part of the design. It was considered that reusing the block paving would create no new additional maintenance issues. The use of paving slabs or a poured concrete slab may have created less maintenance; however, when considered in conjunction with the construction costs, it was decided that reusing the block paving was best option.

### Actual Incident

The block paving was removed manually and stored on pallets for each bridge revetment. The pallets were then stored in the main site compound.



Damaged blocks were disposed of as per site policies. The concrete pier extensions were poured. The blocks were brought back on site and hand laid; with a thin concrete strip being cast at the base of some of the piers due to a number of blocks being damaged.

### Lesson Learned

Whilst in this instance the blocks were re-used, is this a good detail? It required considerable manual handling on a steep incline with limited ability to use mechanical plant. The work choice was a consequence of the original design decisions made when the bridge was first built. Designers should do better!



## HIGHWAYS – Flag on Edge

Ref: 700.000

### 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 joints 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

LEAN

Material Reduction

Alternative Materials

Reduced Plant

Alternative Plant

Reduced Labour

Reduced Land

Reduced Transportation

Improved end user benefits

Reduced Activity Duration

Reduced Defects

Reduced Reportable Accidents



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

LEAN

Material Reduction

Alternative Materials

Reduced Plant

Alternative Plant

Reduced Labour

Reduced Land

Reduced Transportation

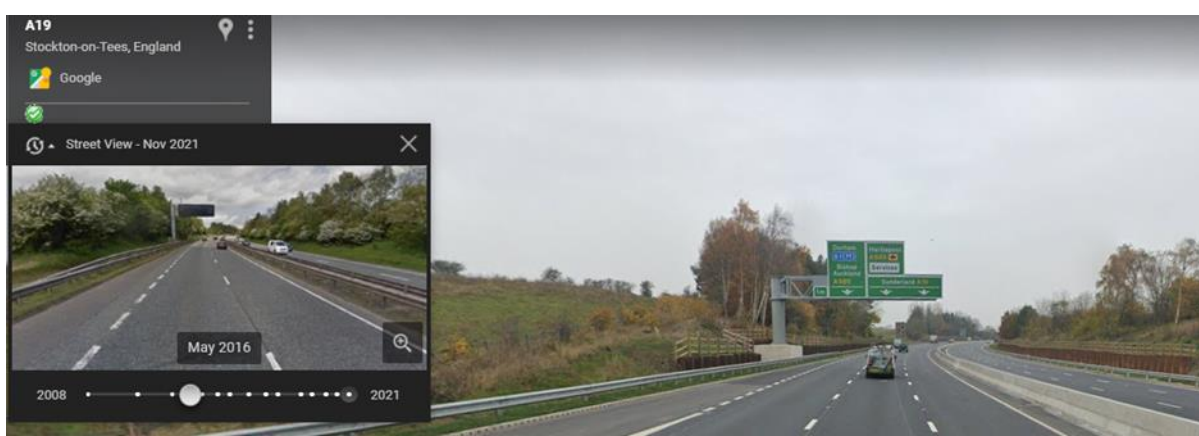
Improved end user benefits

Reduced Activity Duration

Reduced Defects

Reduced Reportable Accidents





When designing did we really consider all the factors?

- Which will need more maintenance interventions – cantilever ADS or relocated MS3?
- Which is safest installing a hard standing and higher height of sheet piles to get walkway behind barrier, or lane 1 closure that can only be deployed on Sunday afternoons?
- What challenges are made on design and client by maintainers?