

A14 Cambridge to Huntingdon

Under Bridge Revetment Paving RIDDOR Incident

PDWG Presentation - October 2019

Paving of Revetment Slopes Under Bridges





Safety Alert

Form
HSW Notification

A14 Integrated
Delivery Team

NOTE: Delete Notification Types to leave the relevant Notification

Alert						
Section No. (Highlight relevant section):	1	2	3	4	5	6
Location of incident:	BN07 East Bound		Incident - Date:	13/07/2019	Time:	12:48
Injury Severity:	Major Injury		Level of investigation completed:	High		
A14 Reference No:	2019-895-3		Potential severity:	Major		
Alert Completed by:	Colin Redpath		People Involved:	Pavers		

<p>Details of Incident:</p> <p>Operatives were laying paving slabs as part of the under bridge projection works. They had removed a 600mm x 600mm x 50mm paver, weighing 41KG to allow them to re bed it.</p> <p>The slab was temporarily stored on its edge on the already laid pavers, on a level surface.</p> <p>The injured operative was leaning on his right knee, with his left leg partly extended behind him, using his foot for support. Without warning, the slab moved from the vertical position falling on the operatives left foot, which rotated parallel to the surface, and his lower leg which took the force of the falling slab.</p> <p>As a result of this contact the operative left site and attended Huntingdon hospital where he received initial treatment. He was taken home where he attended Northern General Hospital Sheffield.</p> <p>An X-Ray confirmed a fracture of the fibula.</p>	<p>Photos:</p>  <p>Re-enactment of the incident</p>  <p>Suspected slab position on operative</p>
<p>Positive Controls / Aspects evident during the investigation:</p> <ul style="list-style-type: none"> ➤ Early engagement between structures team and designers in relation to underbridge protection. ➤ Safe system of working on the slope to install pavers ➤ Prompt reporting to A 14 of the incident. ➤ Assisting the IP to Hospital and to get Home 	<p>Key Learning Points:</p> <ul style="list-style-type: none"> ➤ Distance between top of slope and beam, slope gradient, width available behind Vehicle Restraint System, location of services, associated HS&W requirements etc. of the product chosen will all impact on to material and methodology to be used. ➤ Where concrete products are to be used the design should look at products reducing manual handling, cutting (Silica, noise, HAV exposure) or materials. ➤ Slabs are to be stored flat

Basic Risk Factor:



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Rev	7
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Adopted Site Methodology



A14 DRA Entry

Atkins Project (Health and Safety) Risk Register for use by Designers engaged in Design Risk Management under CD									
Project:		A14 Cambridge to Huntingdon				Author(s):			
Design Phase:		Detailed Design				◀ e.g. Strategy/ Concept or Scheme or Detailed PLUS Prelim. or Final ◀ or say "whole project" ◀ when undertaking option appraisal of alternative solutions			
Spec Series or Element:		Section 3							
Option Ref. (if relevant)									
Hazard Identification						Eliminate (Hazard Elimination) or (Reduce (Risk Reduction) and Control)			
A	B	C	D	E	F	G	H	I	
	Placing 600x600mm paving slabs on slope in front of each abutment.	Abutment slopes.	S3A,S3B	1. Manual handling injuries. 2. Workforce	Construction	Some form of hard standing is required on the slopes under the bridge, since vegetation will not grow in this area. So risk cannot be eliminated.	Specify slab size that can be installed by contractor mechanically with no need for manual handling.		

der CDM 2015

der CDM 2015							ATKINS	
Date of this Revision:				Revision No.			designoutrisk  RED AMBER GREEN	
Control) - CDM 2015 Regulation 9 - Duties of designers							Version + date v19 26th June 2015	
Inform - Communication of Residual Risk - but only if Significant						Notes		
I	J	K	L	M	N	O	P	
	Contractor has confirmed that paving slabs will be installed using a vacuum lifting device fitted to a machine that is large enough to reach the top of the slope, thereby avoiding manual handling (email Chilcott / Argyle 20-09-16 at 1404).	Risk to be highlighted on drawings.	Remains a risk but highlighted.		Drawings			

Safety Alert

Paving slab RIDDOR incident

16 September 2019

The following pages of this safety alert were issued by
Highways England's supply chain partner:



A14 Integrated Delivery Team
working on
the A14 Cambridge to Huntingdon scheme


Form
HSW Notification

A14 Integrated
Delivery Team

Designers Safety Alert

Section No. (Highlight relevant section):	1	2	3	4	5	6
Location of incident:	BN07 East Bound		Incident -	Date: 13/07/2019	Time:	12-48
Injury Severity:	Major Injury		Level of investigation completed:	High		
A14 Reference No:	2019-895-3		Potential severity:	Major		
Alert Completed by:	Designers (Tim Bowes)		People Involved:	Pavers		

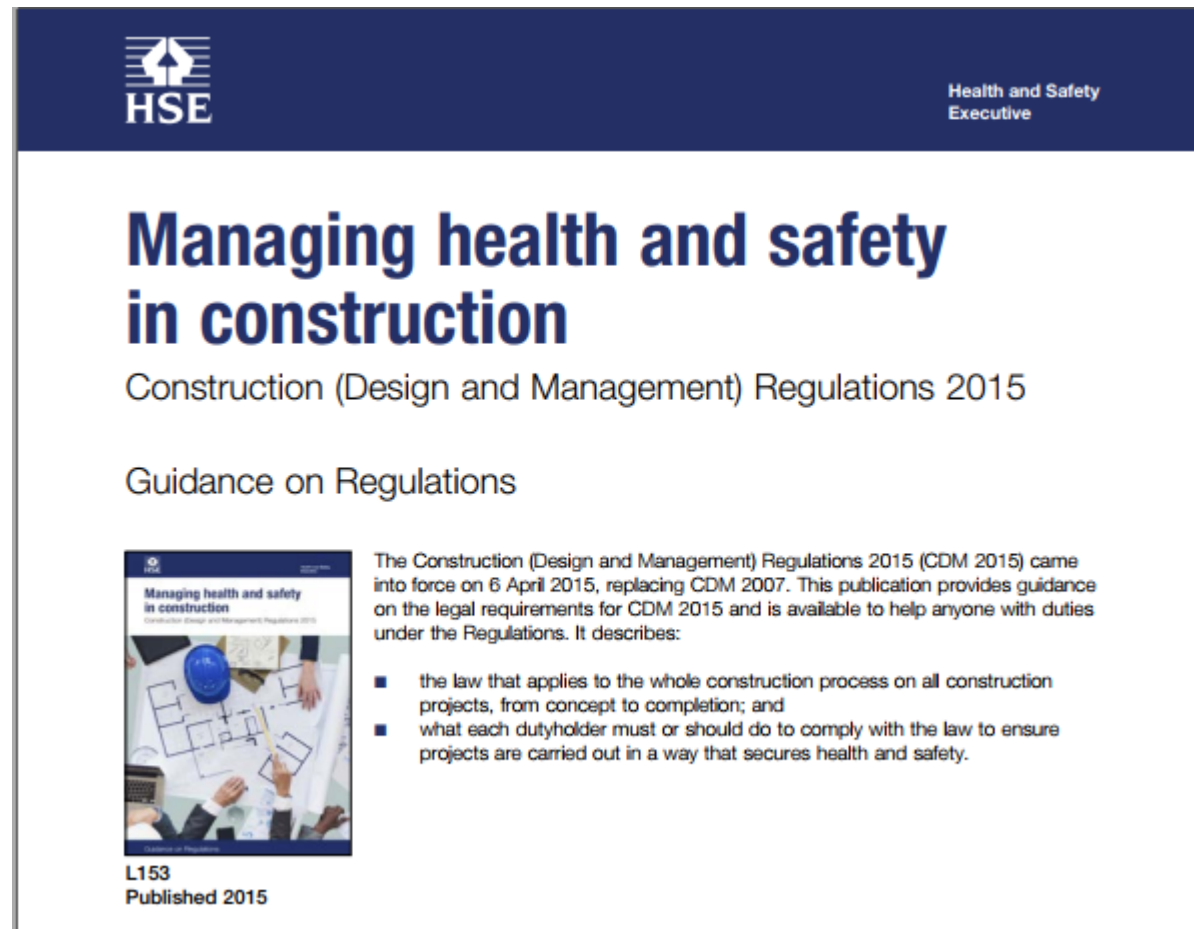
<p>Details of Incident:</p> <p>Operatives were laying paving slabs as part of under-bridge slope projection works. They had removed a 600mm x 600mm x 50mm paver, weighing approximately 41kg, temporarily storing it on it's edge on the already laid pavers on a near-level surface, to allow them to adjust the bedding. Without warning, the slab fell on the operatives' foot, twisting the ankle and fracturing the fibula.</p> <p>The slab unit size was agreed with the contractor during the design phase where it was also agreed to employ mechanical handling techniques to lay the slabs. Notwithstanding this the collaborative approach of the wider team and joint consideration of the risk did not prevent the incident occurring during an unplanned part of the operation.</p> <p>While the large size and weight of the concrete paving slab was not attributed to be the root cause of the incident it was considered to be a contributory factor to the injury.</p> <p>During the investigation into the incident the design solution to deliver the required function of the finished surface under bridges has been investigated in respect of:</p> <ul style="list-style-type: none"> the specification (with measures to mitigate against risks) of large, heavy concrete units, whether it was reasonable to expect mechanical lifting was feasible during all stages of the construction process, and whether the design reduced risk to 'As Low As Reasonably Practicable'. 	<p>Photos:</p>  <p>Re-enactment of the incident</p>  <p>Suspected slab position on operative</p>
<p>Positive Controls / Aspects evident during the investigation:</p> <ul style="list-style-type: none"> Early engagement between designers and construction team in relation to agreed underbridge protection specification and methodology. Hazard warnings shown on drawings and SHE box entries linking manual handling risk and mechanical handling requirement to Design Risk Assessment record. 	<p>Key Learning Points:</p> <ul style="list-style-type: none"> Designers shall take account of their CDM duties to reduce risk to 'As Low As Reasonably Practicable' while considering construction, maintenance and decommissioning of the asset. Consider alternative solutions, not just 'what has always been done'. Length of sloped surface, gradient, width available behind Vehicle Restraint System, location of services, associated HS&W requirements etc, will all impact on the materials and products chosen and the construction methodology to be used. Where concrete products are to be used the designer should look at solutions reducing manual handling risks, cutting (exposure to Silica dust, noise and vibration (Hand Arm Vibration Syndrome)) and material wastage. Slabs are to be stored flat at all times.

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Secondary Activities Considered?



The Law - Construction (Design and Management) Regulations 2015



Underbridge Paving
Lessons Learnt Workshop
Date: August 2019

much more than a road

Action Taken

- Function
- Solutions
 - Slab size
 - Mechanical Laying - Machine control GPS/LPS
 - Plastic products (Fire Resistant?)
 - Grasscrete
 - Geogrids
 - Stone Pitching
 - Gabion Baskets / Matresses
 - Concrete Canvas
 - Sprayed concrete / Shotcrete
 - Sprayed Asphalt



Examples

Discussion and Questions?