

Safety Alert

M1 J39-42 Smart Motorway: Pile Connection Defect

28th February 2019

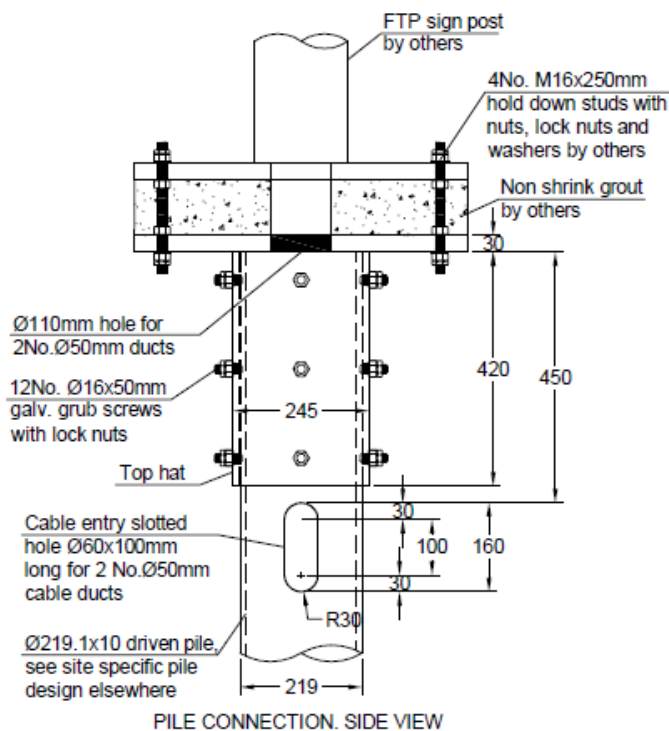
The following pages of this safety alert were issued by Highways England's supply chain partner:

**BMJV - Bam Nuttall and Morgan Sindall
Joint Venture**

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The M1 J39-42 Smart Motorway opened to traffic in 2016 using temporary pVMS (portable Variable Message Signs) for the deployment of temporary traffic management in lieu of permanent ROTTMS (Remotely Operated Temporary Traffic Management Signs). In 2018 bmJV revisited the scheme to install the new, larger permanent ROTTMS.

During the commissioning phase it was identified that one of the new ROTTMS had rotated out of alignment from the carriageway. The ROTTMS post was mounted on a "top hat" sleeved over a driven steel tubular pile. The top hat connection design specified 12no. grub screws torqued to 100Nm with lock nuts fitted. The pile design and top hat connection detail developed for the original, smaller ROTTMS was checked in 2018 to accommodate the new, larger 12b ROTTMS and was confirmed as suitable.



There was no material failure or collapse, but upon investigation it was evident that the top hat grub screws were no longer providing an adequate frictional connection and no lock nuts were fitted. The sign was removed and checks on all other structures mounted on this pile connection detail were immediately undertaken. It was identified that none of the top hats had lock nuts installed, and in some cases hex head bolts had been used instead of grub screws, though no further rotations or movement was identified.

On review of the QITP (Quality Inspection Test Plan) and installation check sheets there was no verification that the specified grub screw torque had been applied and there was no reference to the requirement for lock nuts to be fitted.

Though this particular connection detail is bespoke to M1 J39-42 Smart Motorway, the lack of understanding of the design requirements or verification records of compliance with the design is applicable to all works.



This advice should be used and the information discussed with your team highlighting the following points:

- **Critical design requirements and hold points (such as specified torque values and the requirement for securing lock nuts) need to be clearly identified and verified on installation check sheets**
- **Critical design requirements are to be briefed to install teams and supervisors to ensure compliance with the design**

SHEQ Alert date:	01/02/2019	Display until:	01/02/2020
Distribution:	bmJV ✓	Highways England ✓	Supply Chain ✓
Communication:	Toolbox talks / briefings ✓	Noticeboards ✓	SHEQ update ✓

Everyone has the right to be

100% Safe