

Safety Alert

Duct Bracket Failure

6 August 2021

Background information

- On the 18 July, brackets securing a steel duct to the underside of a bridge, over the A282 trunk road, failed. The duct fell on the trunk road below causing damage to customers' vehicles and minor injury to at least one vehicle occupant. The incident led to the road being closed.
- The duct was installed when the bridge was built in 1992 to carry a future gas main and has remained unused since construction.
- The duct was fixed using a proprietary system consisting of hangers formed from threaded steel bars and couplers, fixed to a track cast into the underside of the deck slab. The duct was secured with a two-piece steel circular clamp bolted on either side.
- Initial investigation of the incident indicates that the installed system had a low level of redundancy and was insufficient to support the duct in the event of a single bracket failure. The brackets failed progressively along the length of the duct, but it has not yet been possible to identify where the initial failure occurred.
- Failure was identified in the pipe clamps at the majority of locations, including 'pull-through' of the clamping bolts. Additionally, a failure was also identified in a coupler connection to one hanger.
- Corrosion to the brackets was identified to all components.



Lessons Learnt

- Inspectors should be aware of the risks associated with similar systems fixed to the underside of structures and record their condition during inspections
- Current standards require that the structural design of new or modified hanger/fixing system include redundancy checks to avoid failure of a single component leading to the failure of the entire system.
- For legacy systems of this type it should not be assumed that they have an adequate factor of safety and redundancy.
- The design or modification of such systems requires approval of the Technical Approval Authority in accordance with CG 300.