

INTERIM ADVICE NOTE 193/16
Requirements for the provision of access
arrangements on gantries

Summary – This document updates the requirements of BD 51 **PORTAL AND CANTILEVER SIGN/SIGNAL GANTRIES** in respect of the provision of access

Instructions for use - This IAN applies to all schemes on the Highways England network.

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1 Introduction

1.1 Background

Highways England has set out in the Health and Safety 5 year plan and in the Strategic Road Network Concept of Operations that “No one should be harmed when travelling or working on the strategic road network”. The 5 year plan focusses on improving safety performance of three high risk populations, namely road users, the supply chain and customer operations. Appropriate management of hazards and risk is a pre-requisite of health and safety legislation and Construction (Design and Management) Regulations 2015 (CDM 2015). Organisations should seek to avoid risks where possible, evaluating those risks that cannot be avoided and putting in place measures that control these risks at source.

Highways England has carried out a study of the gantry access requirements defined in BD51/14 “Volume 2 Highway Structures; Design (substructures and special structures), Materials; Section 2 Special Structures – Portal and Cantilever sign/signals gantries”. This study has demonstrated that there are circumstances where the provision of permanently fixed access on gantries can reduce risks to the road workers whilst not compromising the risks to road users.

This IAN therefore introduces amendment to BD51/14 that requires gantry access arrangements to be considered on a scheme by scheme and site by site basis thus avoiding the need to apply for a departure from standard (this could include assessment of individual sites, links or schemes) to align with the requirements set out for all other parts of the United Kingdom.

1.2 Scope

This IAN introduces changes to BD51/14 and sets out the requirements for designers in order to drive consistency in the assessment provision of gantry access arrangements

Category management implications have been investigated with Procurement, and whilst a new design incorporating access would be required, there are no category management obstacles to adopting an accessible gantry approach. Gantries are purpose built on a ‘just in time’ basis and no stocks are retained.

2 Requirements

2.1 Update to BD51/14

This IAN updates BD51/14 to require gantry access arrangements to be considered on a site by site or scheme basis so as to align with the requirements for all other parts of the United Kingdom. The proposed updating of DB51/14 will be as identified below:

- Section 3.26:
“3.26 Access arrangements for Gantries designed or constructed using this standard must be considered on a site by site basis taking account of the future maintenance needs of the gantry and the technology, lighting and signing equipment mounted on the gantry”

- and Annex F:
 - "F.1 Not used*
 - F.2 The designer must consider how inspection and maintenance access is to be undertaken and a methodology developed and submitted as part of the TA process. The design must include any fixing points, hard points, etc. required on the gantry structure to facilitate this access.*
 - F.3 The additional design requirements for gantries with fixed access are set out in this Annex."*

2.2 Construction (Design and Management) Regulations 2015 (CDM 2015)

Designers, Principal Designer and Clients have a statutory duty under the CDM 2015 regulations to reduce the health and safety and welfare risks for those maintaining completed highway schemes to be as low as reasonably practicable. Maintenance considerations are to include the maintenance of the gantry structure and the associated technology, lighting or signing equipment as well as how these maintenance activities can be integrated with other routine maintenance, maintenance renewal works or other improvement schemes.

2.3 Approach

The Principal Designer and Designers must demonstrate on a scheme by scheme basis that the chosen access provision for the gantries reduces the total safety risk exposure including the risks associated with lane closures to undertake maintenance and inspection works. This applies to any scheme, project or major maintenance intervention where gantries are being provided or existing gantries are being incorporated/retained within the scheme or project. (scheme includes all major maintenance interventions and major improvement schemes as well as SM-ALR schemes)

Scheme Designers and Principal Designers must therefore consider road worker safety as part of the application of the various standards of the Design Manual Roads and Bridges (DMRB) such that the achievement of the road worker safety objective can be demonstrated through the scheme Safety Report and the Maintenance and Repair Strategy Statement (MRSS). This will include consideration of how the asset will be accessed for maintenance.

The assessment of the provision of access to gantries within a scheme should take account of but not be limited to the following:

- The inspection and maintenance requirements over the whole life of the asset taking account of interventions and their frequency;
- The resultant need for temporary traffic management;
- Operating regime of the carriageway for example D3M or SM-ALR etc;
- Maintenance strategy including equipment restore times in the event of failure and off network access arrangements;
- Construction risks including ease and complexity of construction including substructure and superstructure;
- Safe taper positions and the temporary traffic management arrangements;
- Eventual demolition requirements.

3 Withdrawal Conditions

This document will remain in force until such time as this guidance is superseded by revised Highways England guidance

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5 Normative References

- DfT Design Manual for Roads & Bridges GD 04/12 Standard for Safety Risk Assessment on the Strategic Road Network.
<http://www.dft.gov.uk/ha/standards/dmr/vol0/section2/gd0412.pdf>
- Highways England Strategic network concept of operations
<https://www.gov.uk/government/publications/strategic-road-network-concept-of-operations>
- GD04/12 Safety Standard for risk Assessment on the Strategic Road Network
<http://www.standardsforhighways.co.uk/ha/standards/dmr/vol0/section2.htm>

6 Informative References

6.1 Highways England - Aiming for Zero and Road Worker Safety

Documents can be downloaded from the appropriate web site using the links provided:

- Highways England's Health and Safety 5 year plan
- <http://share/Share/llisapi.dll/overview/32826110>
- Guidance for Safer Temporary Traffic Management. 2002.
<http://webarchive.nationalarchives.gov.uk/+/http://www.highways.gov.uk/aboutus/1091.aspx>

6.2 Highways England Reports

- BD51/14 Volume 2 Highway Structures; Design (substructures and special structures), Materials; Section 2 Special Structures – Portal and Cantilever sign/signal gantries.
<http://www.standardsforhighways.co.uk/ha/standards/dmr/vol2/section2.htm>
- Highways Agency access to gantries on the strategic road network: Safety risk assessment. October 2014"

- GD04 - Embedment Specification for Support to Highways Agency Netserv - Gantry Access Review -Operational & Support Hazard Analysis (OSHA) (drafted by Mouchel)

WITHDRAWN

Appendix A - Questions and answers

Question 1 - Why do we need to consider maintenance in our designs?

Answer to question 1: There is a moral duty as well as a legal obligation under Health and Safety legislation to manage the risks to those that have to operate and maintain the facilities we design.

We are also looking to ensure that no harm comes to those that maintain our networks and this means that we need to reduce the risk exposure to those people working on our road. Implementing TTM is a high risk activity with severe consequences when things go wrong. People working within TTM closures or undertaking construction activities also have to work in an area with a high degree of residual risk.

Under the Construction (Design and Management) Regulations 2015 the Project team (Client, Principal Designer and Designer) have a duty to appropriately consider the risks to those that construct and maintain the scheme. The scheme's generic road worker safety objective is based on this legal requirement to eliminate hazards and manage risks to be as low as reasonably practicable (ALARP).

Regulation 8 states (with emphasis added):

“(1) A designer (including a principal designer) or contractor (including a principal contractor) appointed to work on a project must have the skills, knowledge and experience and, if they are an organisation, the organisational capability, necessary to fulfil the role that they are appointed to undertake, in a manner that secures the health and safety of any person affected by the project.”

The Guidance Managing health and safety in construction published with the CDM 2015 regulations also stated:

“Preparing or modifying designs

81 When preparing or modifying designs, a designer must take account of the general principles of prevention, and the pre-construction information provided to them, with the aim, as far as reasonably practicable, of eliminating foreseeable risks. Where this is not possible they must take reasonably practicable steps to reduce the risks or control them through the design process, and provide information about the remaining risks to other dutyholders. See paragraphs 82–90 for further guidance.

Taking account of the general principles of prevention in design work

82 The general principles of prevention are set out in Appendix 1 and provide a framework within which designers must consider their designs and any potential risks which may affect:

- a. workers or anyone else (eg members of the public) who may be affected during construction;*
- b. those who may maintain or clean the building once it is built; or*
- c. those who use the building as a workplace.*

Designs prepared for places of work also need to comply with the Workplace (Health, Safety and Welfare) Regulations 1992 (the Workplace Regulations), taking account of factors such as lighting and the layout of traffic routes.

83 Health and safety risks need to be considered alongside other factors that influence the design, such as cost, fitness for purpose, aesthetics and environmental impact. Working with contractors (including principal contractors) involved in the project can help identify the potential risks and ways they may be controlled.

84 Once the risks have been considered, the level of detail in the information provided to those who need it should be proportionate to the risks remaining. Insignificant risks can usually be ignored, as can those arising from routine construction activities, unless the design worsens or significantly alters these risks."

Question 2 - What factors need to be taken into account when considering access provision?

Answer to question 2 – The factors to be taken into account include all those activities that are required to be undertaken during the life of the facility. These should include:

- Structural inspections both general and detailed inspections;
- Electrical inspections;
- Planned maintenance activities – structures painting and defect repair;
- Planned Maintenance of technology;
- Unplanned maintenance technology – fault diagnosis
 - o Fault repair cabinets/cabling
 - o Equipment swap out or replacement;
- Temporary Traffic Management (TTM) measures required to gain access to the gantry;
- Access remote from live traffic lanes, including association with ERAs provision of pathways from parking areas to the gantry;
- Off network access;
- Operational constraints both from the point of view of the Traffic Officers and the Maintenance Service Provider;
- Physical site constraints;
- Hazards associated with working at height, manual handling, electrical working and implementing TTM.

The intent must be to ensure, irrespective of the solution deemed to be appropriate, that hazards are eliminated and residual risks managed to be as low as reasonably practicable. This will undoubtedly be achieved when the amount of traffic management needed to affect lane closures and gain vehicular access to the gantry is minimised and the risks associated with working at height eliminated.

Question 3 - Do we need agreement with Maintenance Service Provider (MSP) and how do we record this?

Answer to question 3: Agreement is required with the MSP in developing the Maintenance and Repair Strategy Statement (MRSS). Designers must consider the operational and maintenance requirements of all aspects of the proposed scheme not just the access requirements for gantries. Identification of the operational and maintenance requirements must be undertaken in conjunction with the MSP, TechMAC, RTMC and NRTS as appropriate to ensure that the needs of the maintainers and the requirements of the network are understood. Consultation and liaison with the MSP including the TechMAC, RTMC and NRTS will be required

throughout scheme development and should culminate in the development of the agreed maintenance and repair strategy. The agreed MRSS has to be endorsed by the scheme Project Safety and Control Group (PSCRG) for those schemes with a type 3 safety management system (that requires the setting up of a PSCRG). This would include all SM-ALR schemes.

Question 4- What about adverse impact on construction and fabrication?

Answer to question 4: The designer has to consider the hazards and risks associated with construction and fabrication. Access ladders and walkways will involve increased fabrication that might make the lifting of the gantry spans/cantilevers more complex. This increased complexity has to be offset against the whole life period of maintenance and ongoing risk to road workers. For example heavier construction might require larger cranes and more complex fixings however the lifting of spans and cantilevers is often undertaken during periods of carriageway closures so the increase in risk during construction might be considered proportional.

Question 5 - How do we optimise the access way and walkway on gantry?

Answer to question 5: Access ladders and walkways on gantries have to be designed to deliver maximum benefit. This includes:

- the ladders have to be easily accessible enabling a person to climb them with back pack of tools or replacement modules;
- Ability to lift light loads by pulley system up ladder opening;
- Access way designed to enable people to work without distracting road users;
- Enclosed space to eliminate hazards due to working at height;
- Easy access to equipment that has been designed to be repaired/swapped out from the walk way;
- All maintainable equipment designed to be maintained or replaced "tool free";
- Walkway constructed to allow safe working procedures and processes for working with small objects and tools so that work can be undertaken above live traffic lanes and to avoid distraction to road users;
- The structures and technology peer to peer groups are developing the specification for version 3 of the technology equipment and the standardisation of gantry provision so that maintenance of technology equipment on a gantry will be optimised either working from an fixed access arrangement or a mobile elevating platform;
- Ensure that those that have a need to gain access to the gantry can do so with minimal intrusion into live traffic lanes (minimising TTM requirements) through the use of ERAs with associated maintenance vehicle parking facilities and pathways in the verge.

Question 6 - Can we work over live traffic lane without lane closure beneath? What about risk of dropping objects?

Answer to question 6: Yes work within an appropriately designed walkway can be undertaken over a live traffic lane without implementing TTM to close that lane. The walkway must be designed to prevent small objects and tools from being dropped and must shield the worker to minimise distraction to road users. A risk assessment must be undertaken when intending to work on existing walkways to ensure the risks highlighted can be appropriately managed.

Working above live lanes from existing gantries with walkways must be re-assessed as it is possible that the swinging of the matrix signal in board leaves a void that items could fall through. This would require management of the risk of items falling or the closure of the trafficked lane beneath.

The swap out of the AMIs may still require the use of a MEWP with the closure of traffic lanes

Question 7 - Does the design of Smart Motorways to IAN161 or the design of Expressways mandate the provision of fixed access on gantry and the provision of a maintenance vehicle parking areas?

Answer to question 7: The requirements for Smart Motorways are defined in IAN161/15 which supports the requirement for the access arrangements to be assessed as required.. The provision of access arrangements does not prejudice the provision of maintenance vehicle parking areas or pathways. It will require that the risks to road workers shall be appropriately considered and their exposure to risk managed to be as low as reasonably practicable.

The design guidance for Expressways has yet to be produced but it is likely that gantry locations will be closely linked with an adjacent ERA. In addition the MS4 signals may also be smaller enabling the use of mechanism to lower the equipment to ground level and so avoid any working at height.

With ALR schemes it is likely that TTM would be needed to gain access to the gantry leg ladder as the adjacent lane 1 will be a live traffic lane (might previously have been a hard shoulder). Access to place a mobile elevated working platform (MEWP) under an AMI would then require additional lane closures. Maintenance of the technology equipment from a walkway would avoid these additional lane closures as a MEWP would not be required.

Question 8 - What about retrofitting existing gantries retained within scheme length?

Answer to question 8: The access arrangements for any facility including any retained gantries must be considered in developing the MRSS for the scheme. The requirement to manage road worker risk to be as low as reasonably practicable applies to any existing facility contained within the scheme length. This IAN is to be applied to the provision of new or the adoption of existing gantries within maintenance and improvement schemes. It does not apply to the whole sale issue of retrofitting on the network beyond scheme limits. Therefore the scheme must consider the appropriate access arrangements to be imposed on any existing gantries within the scheme limits.

Question 9 - What about the need for considering access arrangements on gantries remote from the scheme length (retrofit on existing or removal of fixed access).

Answer question 9: The scheme limits usually define the limits of the scheme's design responsibilities. There may be occasions when it is necessary to consider assets or facilities just beyond the defined scheme limits. Any works beyond the defined limits must be agreed with the Project Sponsor. This guidance should be applied to the consideration of any access arrangements on the new or existing gantries then deemed to be within the scheme limits. The Designer must record the reasoning and agreements for the access arrangements designed in the Design Strategy Report.

It should be noted that Highways England, as “Client” under CDM 2015 regulations retains, liability for how road worker risk is managed throughout the network. This applies to the maintenance of all assets and facilities including existing gantries. Interventions to undertake major network maintenance or improvement provide Highways England with the opportunity to improve the way maintenance is carried out and to reduce road worker risk to be as low as reasonably practicable. Duties imposed by the CDM 2015 regulations mean that as a responsible Client the Highways England should take such opportunities to reduce road worker risk whenever it is reasonably practicable to do so.

Question 10 - What are the changes planned for procurement including the next specification of the technology equipment and gantries to meet the proposed scheme programme

Answer to question 10: The current Category Management framework for gantries ended in late 2015. From work undertaken to develop a replacement framework and other gantry related activity on the Smart Motorway Programme (SMP) a number of issues have been identified which can impact on gantry provision for future programmes These include:-

- Safe access to gantries
- Provision of access on gantries
- Categorisation of gantry types
- Extent of gantry standardisation to be embraced in future (NB this is not necessarily the same as “standard” gantries”)
- Interface management on gantries
- Implementation of the new V3 specification for signals
- Scope for future competition/innovation in respect of gantry types
- Responsibilities for design/maintenance during the whole life cycle

A scoping study is identifying gantry needs within future programmes. The study will produce the outline of an Output specification by December 2015 which will consider the above features and advise the business case for development of the Output specification as a next stage. It is envisaged that the changes/benefits could be embraced by SMP tranche 3 and subsequent programmes, but this is to be determined by the study.

Question 11 -Will delivery programmes such as the Smart Motorways programme dictate a standard form of gantry on a series of scheme for example the delivery of the next tranche of SM-ALR schemes.

Answer to question 11: It is likely that various delivery programmes will consider the application of generic assessments to provide scheme consistency in terms of maintenance and construction. These delivery programmes will build on the learning from other scheme designs and the advice received from the Maintenance Service Providers. The Smart Motorways Programme has indicated that specific arrangements will need to be considered for each gantry and the option that best balances low operational risks with constructability will be selected. In some locations it may not be practicable to install man-access, although this is not anticipated to be frequent. If a small number of gantry sites are non-accessible there would still be a net benefit of providing man-access elsewhere.

Because man access “standard” gantry designs and Version 3 signals are not currently available there is a need to carefully consider the infrastructure interfaces, including the interim period in a scenario where Version 2 signals are installed (and would still require MEWP access). Designers of Tranche 2 SM-ALR schemes are to advise the current task and finish group investigating structural considerations so as to inform future designs of the nature of technical and delivery risks associated with structures and interfaces.

Question 12 – What were the changes that have prompted the re-evaluation of the way gantries are to be accessed?

Answer to question12: The restriction on the use of fixed access was made during a period where it was considered significant improvements in technology equipment reliability were about to be realised that would have significantly reduced the need for access to gantry mounted technology equipment. In the event this substantial improvement in performance was not realised requiring a re-evaluation of the maintenance and hence access requirements. The development of the All Lanes Running concept prompted the reassessment of all maintenance and operational requirements in order that risk to road workers would be managed to be as low as reasonably practicable.

In addition the HSE, in their evaluation of the SM-ALR concept development, raised concerns that the access arrangements at gantries should be re-examined to ensure that road worker risks were appropriately managed and that it could be demonstrated that the amount of TTM needed to maintain a SM-ALR scheme had been minimised.