

technical memorandum



bridges and other highway structures series

Provision of services on existing state highway structures

TM-4007

September 2013

Purpose

These requirements are intended to assist utility operators to prepare suitable documentation for review by the NZ Transport Agency. In order to allow sufficient time to check the proposal it is suggested a preliminary notification of work be submitted.

Requirements for gas mains are not addressed within this document. For these, reference should be made to the Transport Agency's *Bridge manual* clause 4.12.5, the *State highway control manual*, and any site specific requirements deemed appropriate by the Transport Agency. The *Bridge manual* and *State highway control manual* also provide details for the handling of services on new state highway structures.

Requirements

Proposals shall as far as possible meet the requirements set out below, and any other site specific requirements deemed appropriate by the Transport Agency. Where considered necessary, additional works (such as strengthening) may be required to ensure that the performance of the structure is not compromised.

- Proposals shall include details of the services to be installed including the proposed location, the method of fixing and support, and the weight to be supported.
- Where cast-in service ducts exist, use of these shall be explored fully and used in preference to externally mounted ducting.
- Services shall not unduly reduce the capacity of the structure they are attached to. The attachments shall not reduce the serviceability or durability of the structure.
- Attachments shall not be visually intrusive. To the extent practicable, the proposed services shall not be visible from the road or other public spaces.
- The position of the service ducts shall not obstruct the view of information plaques or interfere unreasonably with future bridge maintenance, particularly regularly maintained items.
- Services shall be supported at regular centres (typically no greater than 2.0m) to prevent sagging of the services. They shall not be attached to road-side barriers or pedestrian balustrades.
- Service ducts shall be positioned to avoid the build-up of debris, particularly from the carriageway.
- Services are not to reduce clearances to traffic, or to waterways beneath the bridge.

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- The design life of all attachments, including service cradles, mounting brackets etc shall be consistent with the design life of the infrastructure being installed.
 - All attachments (bolts and threaded bar, nuts and washers etc) permanently fixed into concrete structures shall be Grade 316 stainless steel, hot dipped galvanised steel or of other equivalent durability. Electro-plated coatings are not acceptable.
 - Chemical anchors shall be used for all fixings – mechanical anchors are not acceptable. All fixings shall be installed in accordance with the manufacturer’s specification. It is not permissible to cut or core through any reinforcement unless expressly agreed with the Transport Agency. Holes for fixings shall be formed using a rotary hammer drill (diamond coring is specifically unacceptable), with an edge distance of not less than 75mm. Should reinforcing steel be struck, the hole shall be abandoned, cleaned out using compressed air and backfilled with Sikadur UA epoxy repair mortar or a similar approved mortar. The location of the hole shall then be moved to avoid conflict with reinforcing steel.
 - Isolation washers and sleeves (eg nylon) shall be provided at all dissimilar metal to metal fixings to electrically isolate the proposed works from the fixings. Attachments to steel structures by either welding or bolting shall be compatible with the structural material and all corrosion protection shall be restored. For concrete structures the presence of steel reinforcing shall be considered and the location of reinforcing bars or prestressing tendons determined before drilling wherever possible.
 - The applicant shall demonstrate that the proposed services can tolerate both thermal and seismic induced expansion, contraction and rotation at bridge movement joints.
 - Sufficient provision shall be made by the service provider to enable temporary relocation of the service (ie provision of cable loops cables at the abutments) without the need to splice extra length in.
 - No coring through structural elements, including retaining walls, is permitted without prior approval of the Transport Agency.
 - All services shall be clearly and permanently labelled with the owning entity’s name and the specific contents of the conduit.

Utility operators shall be aware that approval to install services does not constitute a design review. The utility operator shall remain responsible for the design, design review and installation and on-going maintenance of services and service support systems. Any damage to the structure as a result of the attachment of services is to be repaired at the utility operator’s expense, to the satisfaction of the Transport Agency.

Endorsed by: National Structures Manager