

Technical Bulletin

TB 0257 – Construction requirements for underslung earth-wires

Purpose

To define the construction requirements for USEW's and the approval process that must be followed prior to installation.

Actions

Justification & approval

Installation of USEW is not a standard practice and should generally be avoided.

Where the designer considers that USEW is necessary, a dispensation request must be submitted to Substation Primary Design Manager for assessment and approval. Proposals from ASP's must be submitted via Network Connections. The dispensation shall include an assessment of standard and alternate constructions and how they are not technically feasible.

The earthing assessment will detail the specific earthing requirements to be achieved.

Design requirements

Permitted conductors:

- Mercury – 7/4.50 AAC
- Hydrogen – 7/4.50 AAAC
- Cherry – 6/4.75+7/1.60 ACSR/GZ

The conductor material should generally be matched with other conductors in the span, to achieve a similar sag profile.

Installation of USEW is limited to three (3) consecutive spans.

Pole loading must be checked by the designer in accordance with MDI0031 Clause 6.1. Installation of USEW must not proceed if the pole strength is exceeded.

Clearances must be checked by the designer. Installation of USEW must not proceed if required clearances are not be achieved.

- Ground clearance must be checked with the USEW at 50°C, aligning with the requirement for OHEW/OPGW in MDI0031 Clause 3.16.1. The minimum ground clearance for USEW is as per the 'Bare LV / earth-wire' entry in MDI0031 Table 14.

Clearance between circuits at the pole must be checked in accordance with MDI0031 Clause 5.5.4 and Drawing 012000:

- o Minimum vertical clearance to HV is 1500mm.
- o Minimum vertical clearance to LV and SL is 350mm.

- Mid-span clearances between circuits must be checked in accordance with MDI0031 Clause 5.5. As the voltage of the USEW is zero, 'U' in the calculation is simply the phase-earth voltage of the adjacent circuit.
- The temperatures of the conductors for clearance checks shall be as MDI0031 Clause 5.5.5.1.

Construction requirements

Refer to Figure 1 and Figure 2 below for termination and intermediate construction assemblies.

An USEW marker (green and yellow disk, stock code 1564830, see Figure 3) must be installed on each pole, positioned next to the insulator supporting the USEW.

Implementation

The requirements of this technical bulletin apply to all new proposals and installations of USEW.

Impacted Standards

The contents of this technical bulletin will be included in the next update of the following standard(s):

- MCI 0005 – Overhead Construction standard

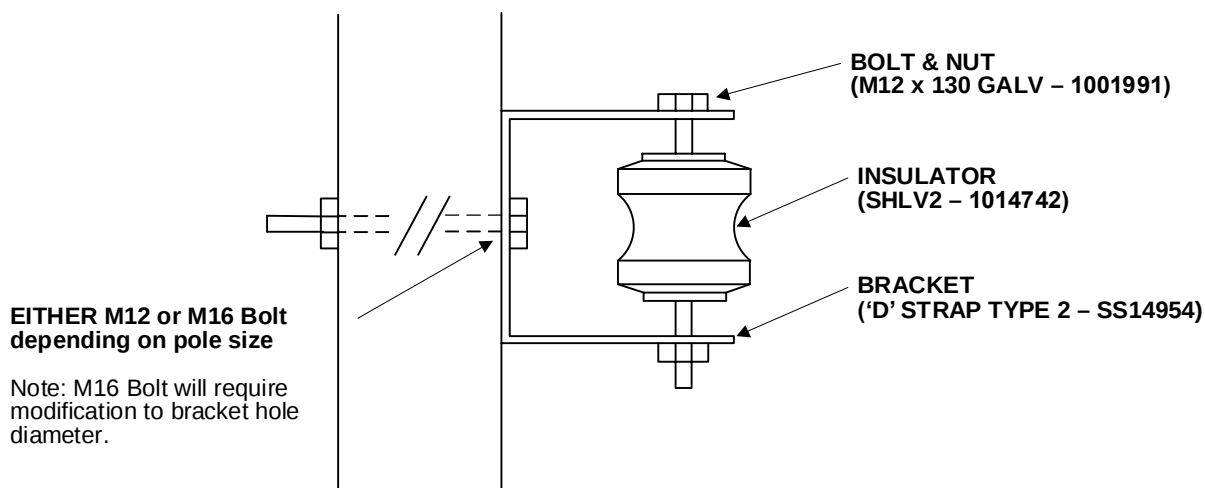


Figure 1 - Termination assembly

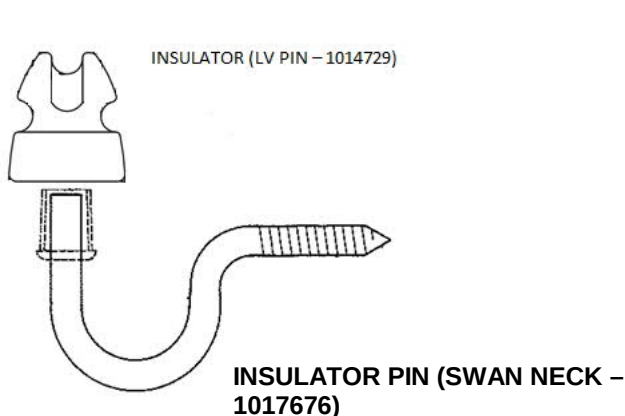


Figure 2 - Intermediate assembly

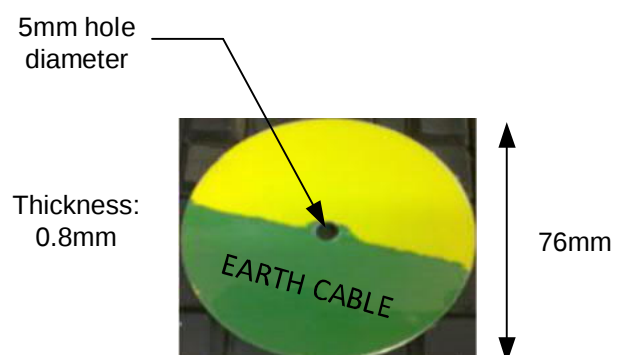


Figure 3 – USEW Marker Disc