CSA Standard S37-13 –
Antennas, towers, and antenna-supporting structures

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Annex F (informative)
Corrosion protection of guy anchorages

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F.2 Corrosion protection

F.2.1 General
Although all anchorage steel located below grade should be hot dip galvanized, Clause 8.5.2 requires that anchorage steel located below grade and not encased in concrete have corrosion protection in addition to galvanizing.

F.2.2 Methods of protection
There are several methods that can be used to provide additional corrosion protection:

a) Encasement of the steel in a reinforced concrete collar with proper reinforcing at the interface between the collar and the main body of concrete to help prevent cracking. The concrete collar must provide a minimum coverage of 75 mm on all sides of the shaft or bolts.
b) Cathodic protection can be achieved by connecting a magnesium anode to the galvanized anchor shaft. This will effectively transfer the corrosion action from the anchor shaft to the anode. The anode should be sized to suit the exposed area of steel and the corrosion rate of the soil. This requirement should be established upon completion of the installation, by experts in this field, based on actual on-site measurement of potential differences. A life expectancy of about 20 years should be considered as a minimum. The effectiveness of the anode can be periodically checked. This should be done on a five-year basis in the early life of the anode and at more frequent intervals as it nears the end of its life expectancy.
c) Taping or painting of the anchor shaft with anti-corrosion products meeting the criteria of Clause F.2.3 is also effective in providing protection. The danger with this method is that the coating may be damaged in the installation or backfilling operations. If this happens, the corrosion will be concentrated at this location and could cause a serious problem. Cathodic protection might also be necessary when employing this method.

F.2.3 Characteristics of protective coatings
The additional corrosion protection system must remain

a. Crack-free and not become brittle or fluid over the anticipated service temperature range; and
b. Chemically stable, non-reactive with adjacent materials, and impervious to moisture.

F.3 Inspections
Inspection of existing installations is very important. Care must be exercised in excavating around the shaft that the structural capacity of the anchor is not so reduced that a failure might occur. Securing of the guys to an alternative anchorage is recommended if there is any question about the condition of the anchor shaft or the anchor block.

An inspection of all of the anchors, not just a random sample, is necessary. Experience has shown a wide variation in the corrosion action across a tower site.