



Structure, Tower &
Antenna Council
Conseil des structures,
pylônes et antennes

STAC Alert

Date: December 21, 2016

Alert Reference #: SA-0001

Hazard: Corroded Guy Wire with Fibre Core

ISSUE:

A Canadian carrier recently discovered a hazardous situation related to FIBRE CORE GUY LINES with excessive corrosion and potential breakage. These guy cables can be found on older sites that were constructed in the 1970's or earlier.



Severely corroded and broken wire rope fibre core guy

SAFETY PRECAUTION:

This bulletin is to inform the readers how to visually identify wire rope guys from the ground on telecommunications structures and distinguish between fibre core and steel core wire rope.

ACTION:

Prior to climbing any guyed tower, the following procedure must be followed:

1. **DO NOT CLIMB** any guyed tower until you perform an inspection of the guy lines to determine if it is Fibre Core. See procedure
2. If the site is a Fibre Core Guyed Tower, suspend all work and **DO NOT CLIMB**. Report all sites with fibre core guy lines to your carrier rep or construction project manager immediately.
3. If the site is not a Fibre Core guyed tower, work may proceed.



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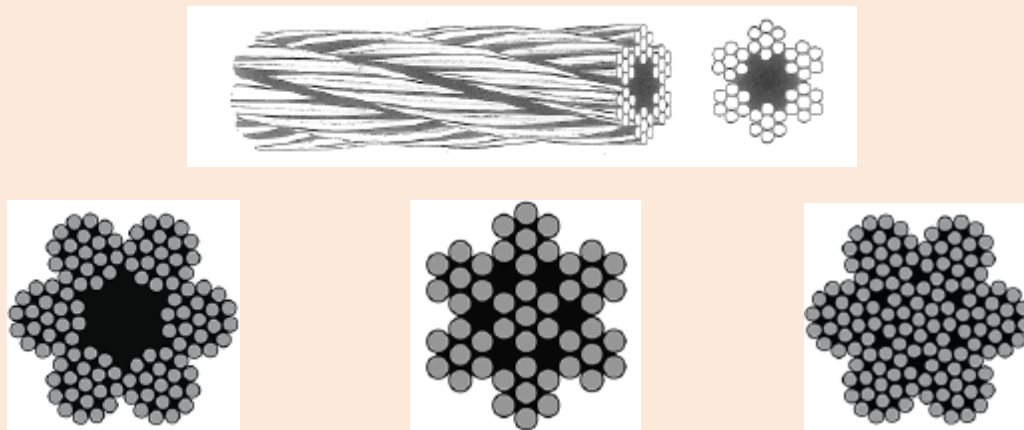
Ref. #: SA-0001

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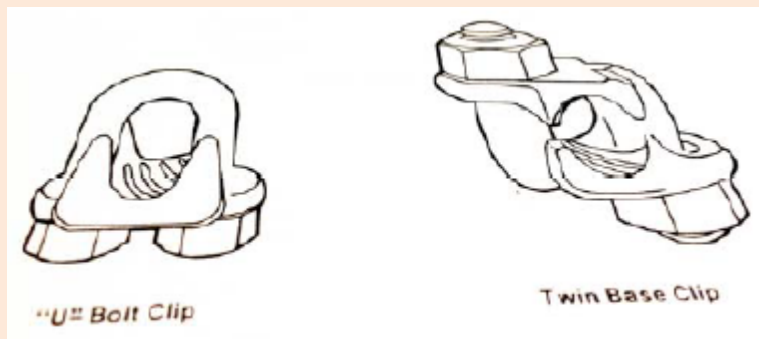
GUY WIRE IDENTIFICATION:

Upon arrival at a site, perform an inspection of the tower guy wires as illustrated below to determine if the site has fibre core guy cables installed.

The first visual clue in identifying wire rope is that it will have many more strands than a typical guy strand or bridge strand. Wire rope will have strands that are made up of additional smaller individual strands. This is illustrated below where you can see the outside of the wire rope guy and a cross section of the inside where multiple distinct bundles of stands are observed:



The second visual clue to identify wire rope guys is that they will be terminated at the anchors with either twin based u-bolt clips (Crosby clips) or fist grips. Wire rope guys may be terminated on the tower end with a factory swaged mechanical connection, but this may not be visible from the ground and is not necessarily a distinguishing feature of wire rope guys. Wire rope guys do not use preforms. An illustration of the two types of termination hardware on wire rope guys is shown below:





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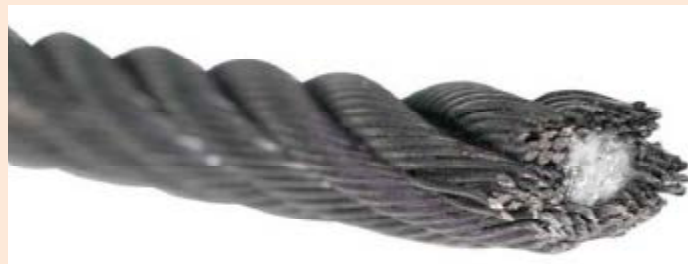
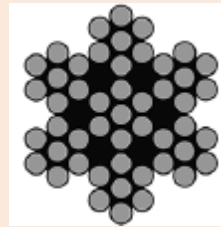
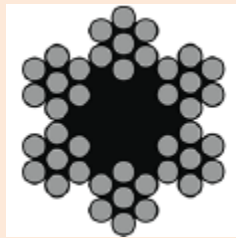
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Wire rope guys may have one of two types of cores: Fiber core is a non-metallic, rope-like core or steel core which is a bundle of steel strands like the other bundles of steel strands that make up the wire rope. In the field, the only way to positively confirm the type of core is to look at a cross section of the guy. This can be observed by looking at the end of the guy tail at the termination.

If you compare the two cross sections of wire rope illustrated below, the one on the left is referred to as 6x7 FC for 6 bundles of 7 strands each with a fibre core. The cross section on the right shows the central void filled with an addition bundle of strands. This type of wire rope is referred to as 7x7 SC for 7 bundles of 7 strands with a wire rope core. You may also see this written on drawings as IWRC (inner wire rope core). When viewing either of these guys from the outside they will appear identical. The cross section has to be viewed to classify the core of the wire rope.



Fibre core wire rope in new condition



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FAULTY CABLE:

Due to the fact that these guy wires were installed in the seventies or earlier, the galvanized coating will very likely be breaking down and corrosion will be observed. The CSA S37 standard required wire rope guys to conform to CSA G4 which required them to be galvanized. The corrosion that is happening to the individual strands may or may not be obvious. A steel core wire rope has strands in the center that are not visible anywhere on the outside. The fiber core may be wicking moisture and may be accelerating corrosion on the inside of the wire rope. Pitting and corrosion may be obvious from the outside but this is not always the case. Wire rope can corrode from the inside out.

Note: Proximity of the structure to the ocean can make this situation worse.



Fibre core wire rope in very poor, corroded condition



Wire rope fibre core with extensive corrosion, pitting, and broken strands visible on the exterior.



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ADDITIONAL CABLE IDENTIFICATION:



Wire rope guys terminated with clips at an anchor.
Note the lower guys appear corroded but the upper guys show the galvanized coating mostly intact.



Wire rope fibre core with a corroding exterior surface and the fibre core visible in cross section at the termination.



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Wire rope guys at the anchor



Wire rope guy termination at the tower end



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SAFETY DISCUSSION:

Inform all field staff about this alert, and discuss during regular crew safety meetings to ensure hazards are evaluated and safety addressed.

Note: Please share this bulletin with others in your organization

REPORT:

Report back all sites with Fiber Core guy lines to your carrier rep or construction project manager immediately.

CONTACT:

If you have questions about this bulletin, or to get information or advice, please contact:
Nick Kyonka at 613-233-4888 or info@stacouncil.ca

The Structure, Tower and Antenna Council (STAC) helps ensure communications antennas in Canada continue to be constructed with the highest regard to worker safety.

STAC is a non-profit Council of the Canadian Wireless Telecommunications Association, representing and providing a collaborative forum for Canadian wireless communications carriers, tower owners/operators, tower and rooftop equipment engineering service suppliers, and wireless communication facilities construction and maintenance contractors.

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