



CGTI
Créateur de pylônes



TOWER MAINTENANCE

Suggestions

Towers are an essential part of telecommunication networks. To that extent they require regular maintenance, just like other components and elements of such networks.

Introduction

For self-supporting towers maintenance is vital to insure lasting quality and safety.

Maintenance is even more critical for guyed masts.

A lack of maintenance will invalidate the warranty clause.

Basic Principles

Regularly check the tower's external condition.

If necessary, carry out maintenance work and repairs.

Maintenance price is not included in our supply prices.

Frequency of maintenance checks

The inspection of the structure must be done:

- Regularly throughout the life-cycle of the structure,
- Each time a new antenna installation takes place,
- After every important weather event: storm, hurricane, etc.

In this context we suggest:

- The first inspection of each tower should be done no later than 6 months after its installation and erection.
- Subsequent maintenance visits should be done once a year.

Qualified Personnel

All inspections and maintenance visits should be done by employees with qualified knowledge of telecom tower manufacture or maintenance.

CGTI will not guarantee its tower structures if they are not maintained by its own personnel.

TOWER MAINTENANCE

Detailed content of inspections

Maintenance checks will be carried out in the shortest delay according to observed irregularities.

If irregularities involve safety concerns for employees or for the structure itself, maintenance interventions should be immediately carried out in cooperation with the tower manufacturer.

Main structure:

- Check that there are no structure components missing.
- Check that bars are neither warped, nor punctured nor split; if they are, defective part(s) must be replaced.
- Check that structure's components are not oxidized.
- Check that draining holes (pipe leg members, pipe lattice parts, etc.) are not blocked.

Guy wires

- Check the general condition of guy wires and accessories.
- Check that each cable that is part of the guy wire is neither broken nor warped.
- Measure the tension of each guy wires by a strand dynamometer and compare the result with the value stated in the manufacturer's documentation. Tension should be measured when wind is relatively still. Wind velocity above 25 m/s (90km/h) will likely lead to misleading measurements. Tension can be considered satisfactory within a difference of 15% with the tension value stated by the manufacturer. Guy wires must not be over tightened. Excessive tension may cause alignment problems and even a cable break. It may even cause permanent warping of tower structural parts.
- For every case, we suggest to simultaneously tighten diametrically opposed guy wires. Extreme precaution must be taken while tightening: 3 turns of a tightening device will increase the tension of a 45m-long guy wire by about 250kg. The value of initial tension must be about 10% of the value of the guy wire-breaking load.
- Check possible guy wire's corrosion.
- Check that the guy wire tightening system is properly greased.

Bolting parts

- Check that there are neither bolts and nuts nor other bolting parts (washers, pins, etc.) missing. If they are, immediate corrective action is required.
- Check that bolts are correctly tightened.
- Check that bolts are not oxidized.
- Check anchorage rod in concrete.

Verticality

- Check structure's verticality with the appropriate devices (such as theodolite). Measurements should be made in two different planes with a 90° angle difference.

Antennas and accessories

- Check that antennas and antenna supports are in good condition.
- Check that coaxial cables are in good condition.
- Check that fixing clamps are in good condition.

Safety components

- Check that the access ladder is in good condition.
- Check that all safety components are present and complete.
- Check that the fall arrestor system is functioning properly.
- For a fall arrestor system with cable, check that the cable has not been over-tightened (due to a fall for instance).
- Check that the anti-climbing door is functioning properly.

Lightning and grounding system

- Check that all lightning and grounding components are present and complete, including the lightning arrestor, copper strip, connection plate, etc.
- Check the grounding connection of coaxial cables.
- Measure the resistance of the grounding system.

Night beaconing

- Check that all beaconing components are present.
- Check condition and proper functioning of beaconing components (light bulb, power cables, fixing parts, photoelectric cell, connections, etc.).
- Check grounding of the night beaconing.

Day marking

- Check paint's condition.

Anti-corrosion protection

- Check galvanization's condition.
- Check oxidization of the structure, bolting parts and accessories.
- For guyed masts, check oxidization of guys.

Towers in salty environments

- Check the proper condition of the tower structure when it is located in a salty environment. If rain showers are not frequent enough to clean the tower of salt settlements, a regular washing of the tower structure should be carried out.

Concrete blocks

- Check the proper condition of aboveground concrete block parts. There must not be any water stagnancy.
- Check the proper condition of anchor setting in the concrete block.

Tower loading

Report number, types and heights of antennas currently installed on the tower, in order to compare the results with the initial loading that was considered in the structure design.

Other accessories

- Maintenance will be done according to the specific requirements of the accessories' manufacturer (ex. lift).

MAINTENANCE PLANNING FOR STEEL TOWERS

The inspection of the points listed below is never included in our tower price quote or installation price quote. The customer must indicate their choices so that CGTI can provide a cost estimate.

The inspection of the outlined points shall be done every year, after each important storm or hurricane, and after each change in the tower load.

List of inspection points to be conducted every year
<i>STRUCTURE</i>
➤ Guy wires' tension for guyed masts
➤ Structure verticality checked with appropriate device for guyed masts
➤ Structure verticality for self supporting towers
➤ Tightening of the main structure's bolting parts (10%)
➤ Tightening of the accessories' bolting parts
➤ Verification of bars' geometry
➤ Antennas and accessories' steadiness
<i>SAFETY</i>
➤ Opening/closing of the anti-climbing door
➤ Opening/closing of the working platform's trap
➤ Fixing the fall arrestor system
➤ Correct placing and proper installation of safety components
➤ Test the fall arrestor system with individual equipment
<i>EARTHING</i>
➤ Condition of the lightning rod
➤ Condition of the lightning arrestor
➤ Condition and fixing of the copper strip
➤ Connection of the concrete block copper belting onto the copper strip
➤ Connection of coaxial cables grounding onto the copper strip
➤ Connection between the bottom coaxial grounding cable and the collection copper bar fixed on the concrete block
➤ Resistance measure of the lightning protection electrodes
➤ Tightening of the brass bolts of the lightning protection electrodes
<i>NIGHT BEACONING</i>
➤ Proper functioning of the night beaconing
➤ Condition of electrical connectors and grounders
➤ Condition and repair of energy cables
<i>GALVANISATION - DAY MARKING</i>
➤ Locating galvanization discrepancies
➤ Locating paint coating (day marking)
<i>CIVIL WORK</i>
➤ Checking the horizontality of concrete blocks
➤ Checking the above ground concrete blocks parts, horizontal cable tray
<i>MISCELLANEOUS</i>
➤ Reporting of antennas types, numbers and heights
➤ In salty environment, washing the tower structure