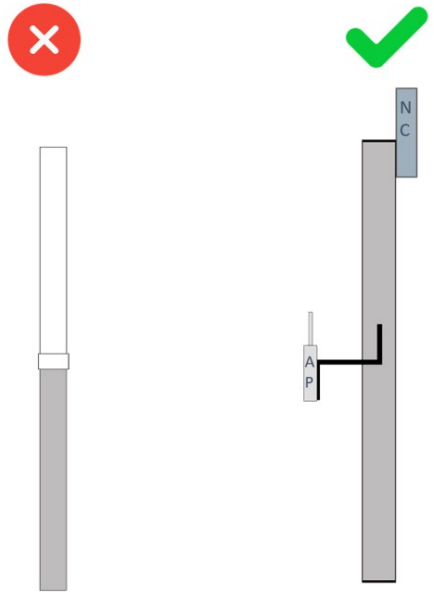
Wifi Device Installation Requirements Guide

Viasat Community Internet
Revision – 2020.12.15

Contents

PVC

PVC is no longer required for host site or coverage point installs and should be removed during maintenance visits if it is causing issues. See Complete Equipment List for details and recommendations on required material.



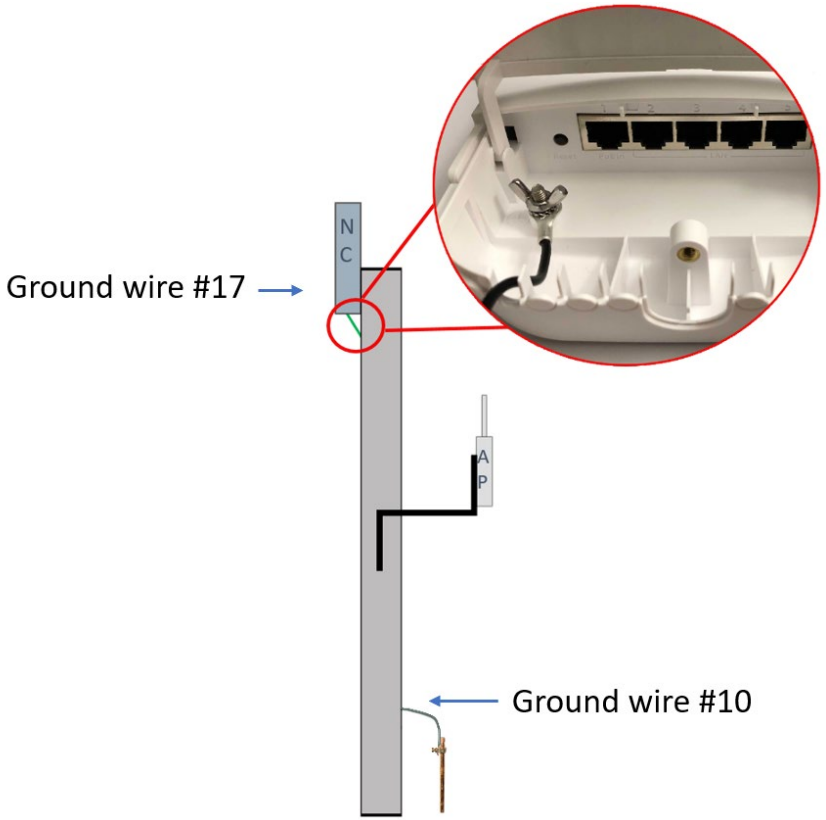
Grounding

All galvanized steel poles must be grounded. If no grounding source exists, then a grounding rod must be installed. The NC must be grounded by following these instructions:

1) connect ground wire #17 from the NC grounding screw inside its lid to the top of the metal pole

2) connect ground wire #10 from the bottom of the metal pole to a grounding rod

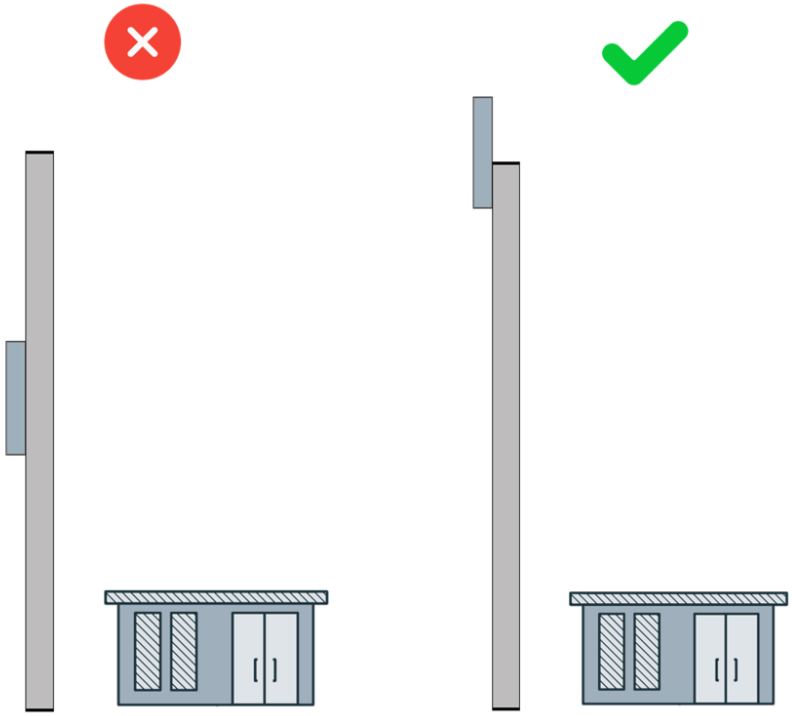
The same grounding rod used for the satellite dish install can be used for the WiFi pole but the ground wire must use a different ground clamp. Photos of all ground connections to the metal pole and ground rod must be included in the Post-Install/As-Built Report.



NOTE: A grounding bus is required if the distance from the pole to the grounding source is over 6.5 meters. If a grounding bus is used it is acceptable to run an additional 6.5 meters of grounding wire 10 awg (or thicker) from the grounding bus to the grounding source.

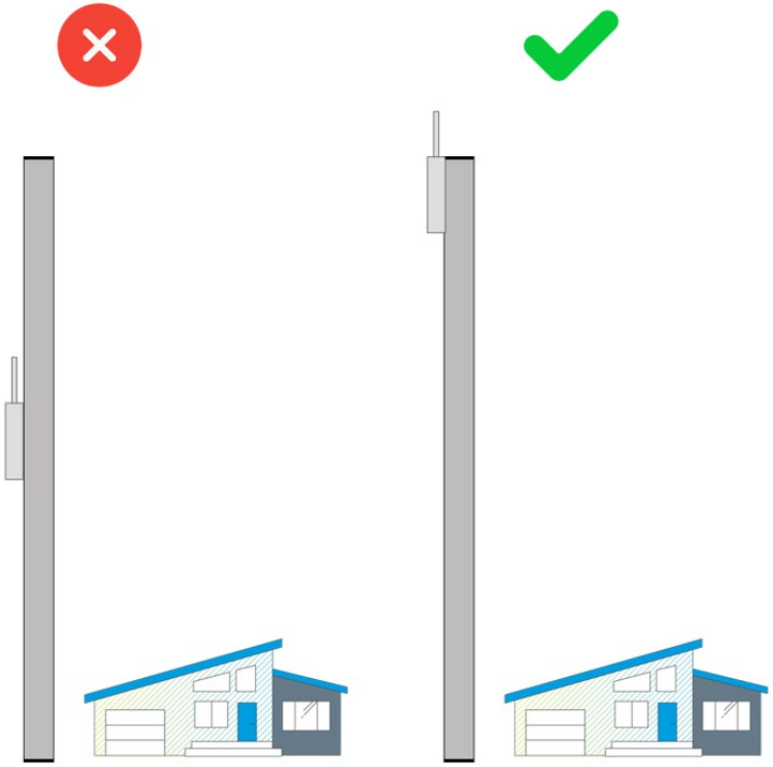
NC Positioning

The NC must be installed at the top of the metal pole so that its upper half is FULLY ABOVE the metal.



AP Positioning

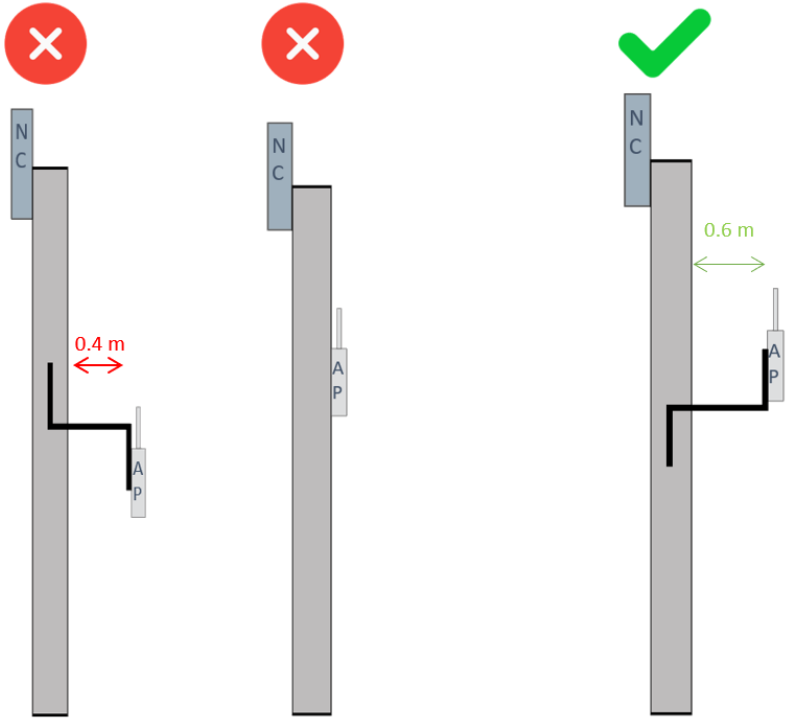
For coverage point installs or any time the AP is installed on its own metal pole, it must be installed at the top of the pole so that antennas are FULLY ABOVE the metal.



AP Bracket:

If an NC and AP are installed on the same pole at the host site, it must be installed on a metal bracket that keeps the installed AP a minimum of 0.5 meters from the metal pole.

The AP antennas must be installed FULLY ABOVE any metal on the metal bracket.

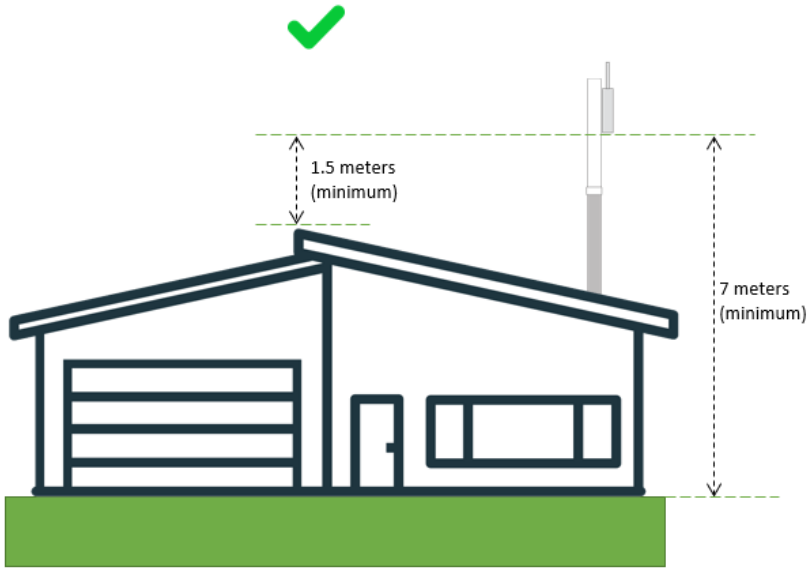


Here are examples of what can be combined into an acceptable bracket:

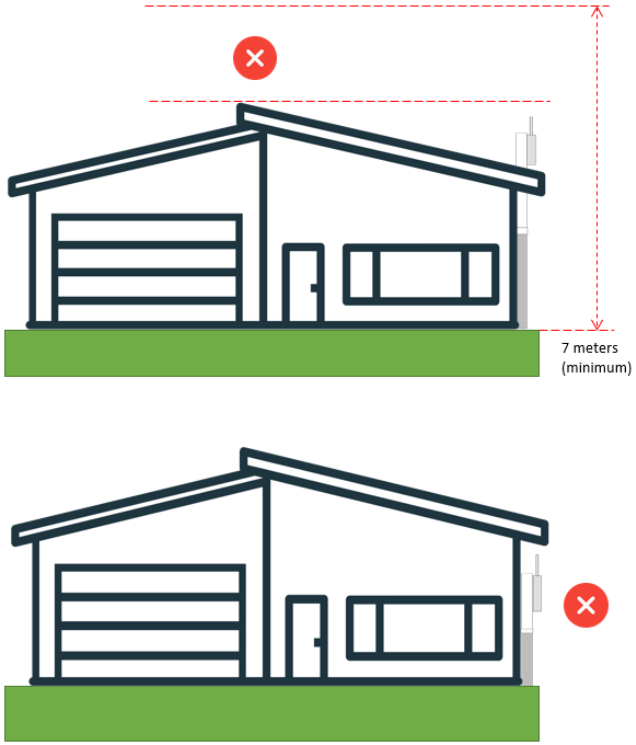
Height

All WiFi devices must be installed at a minimum

of 1.5 meters (preferably 3 meters) above the peak roof line and a minimum of 7 meters from the ground. WiFi devices must not be installed against a wall.

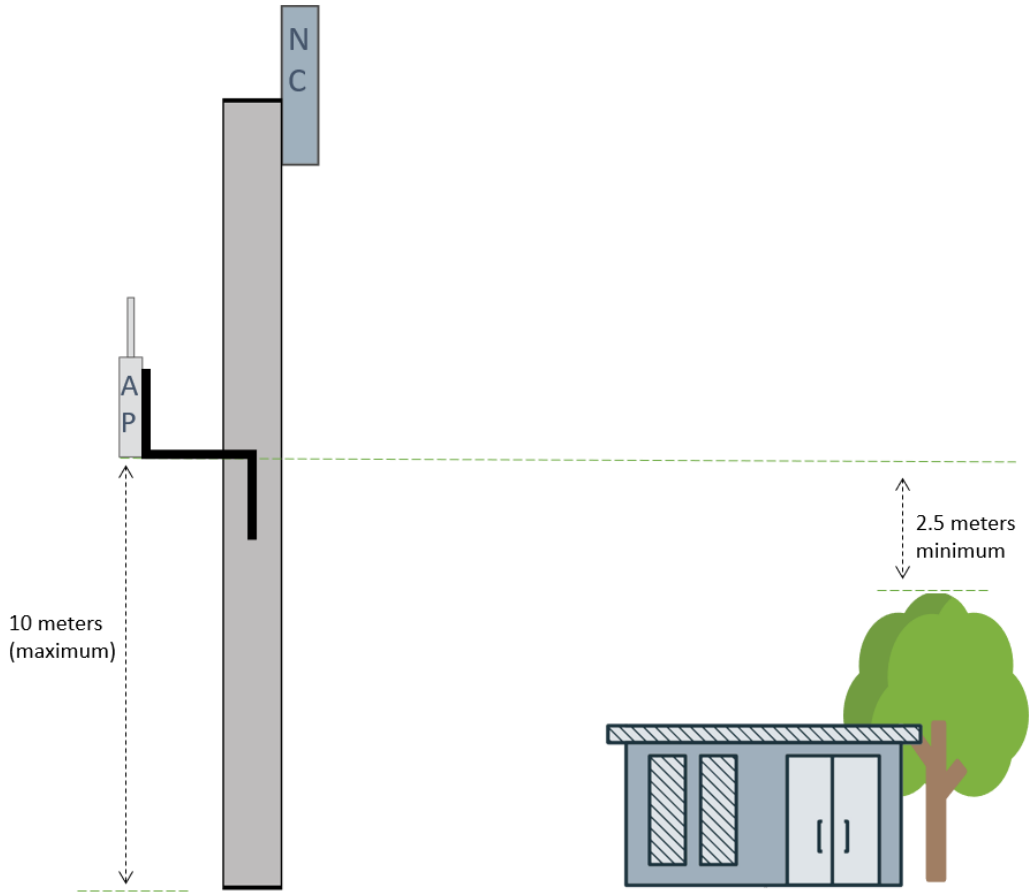


Max heights from the ground vary per device. For the NC the max height is 25 meters. For the AP, the max height is 15 meters



AP Height

The APs must be installed a minimum of 2.5 meters above the tallest tree or building within a 50-meter radius (including the building being installed on) with a maximum height of 10 meters from the ground.



NC Height

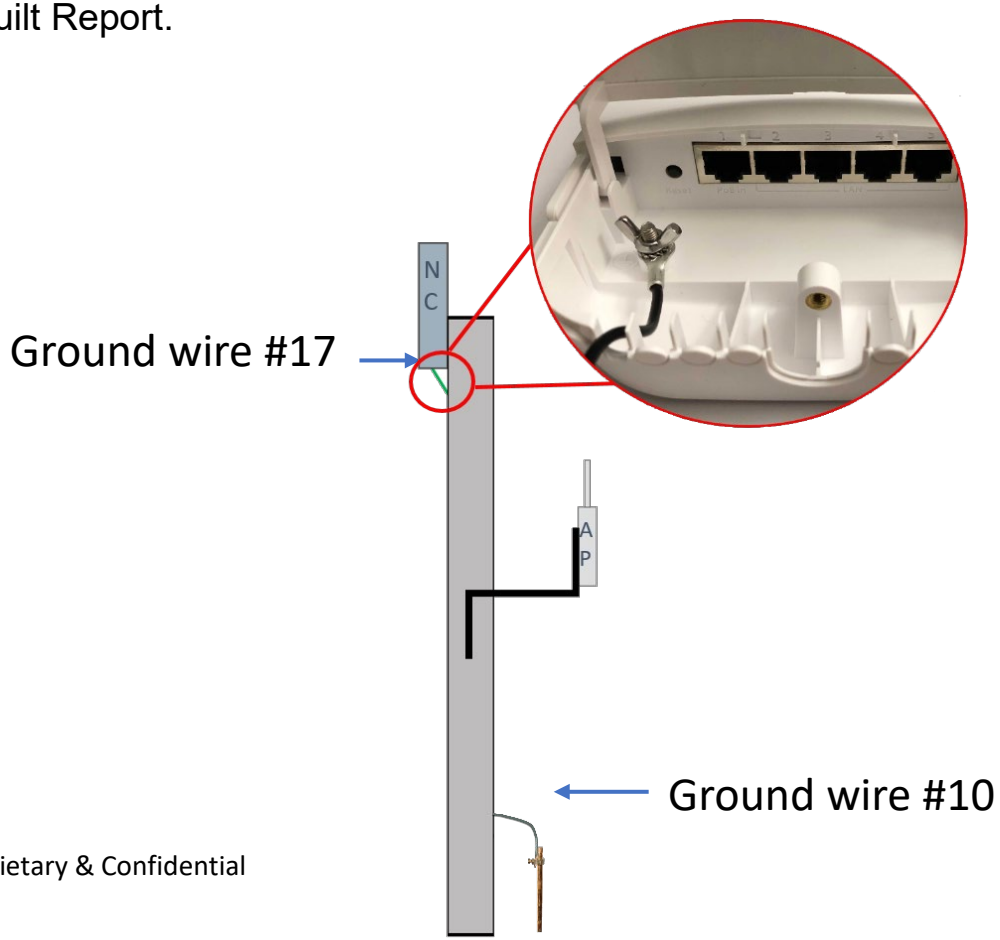
The NC must be installed a minimum of 2 meters above any tree or building within a 100-meter radius (including the building being installed on) and must be installed as high as necessary in order to obtain direct line of sight to all target coverage points. There is no maximum height requirement for the NC.

Grounding

The NC must be grounded by following these instructions:

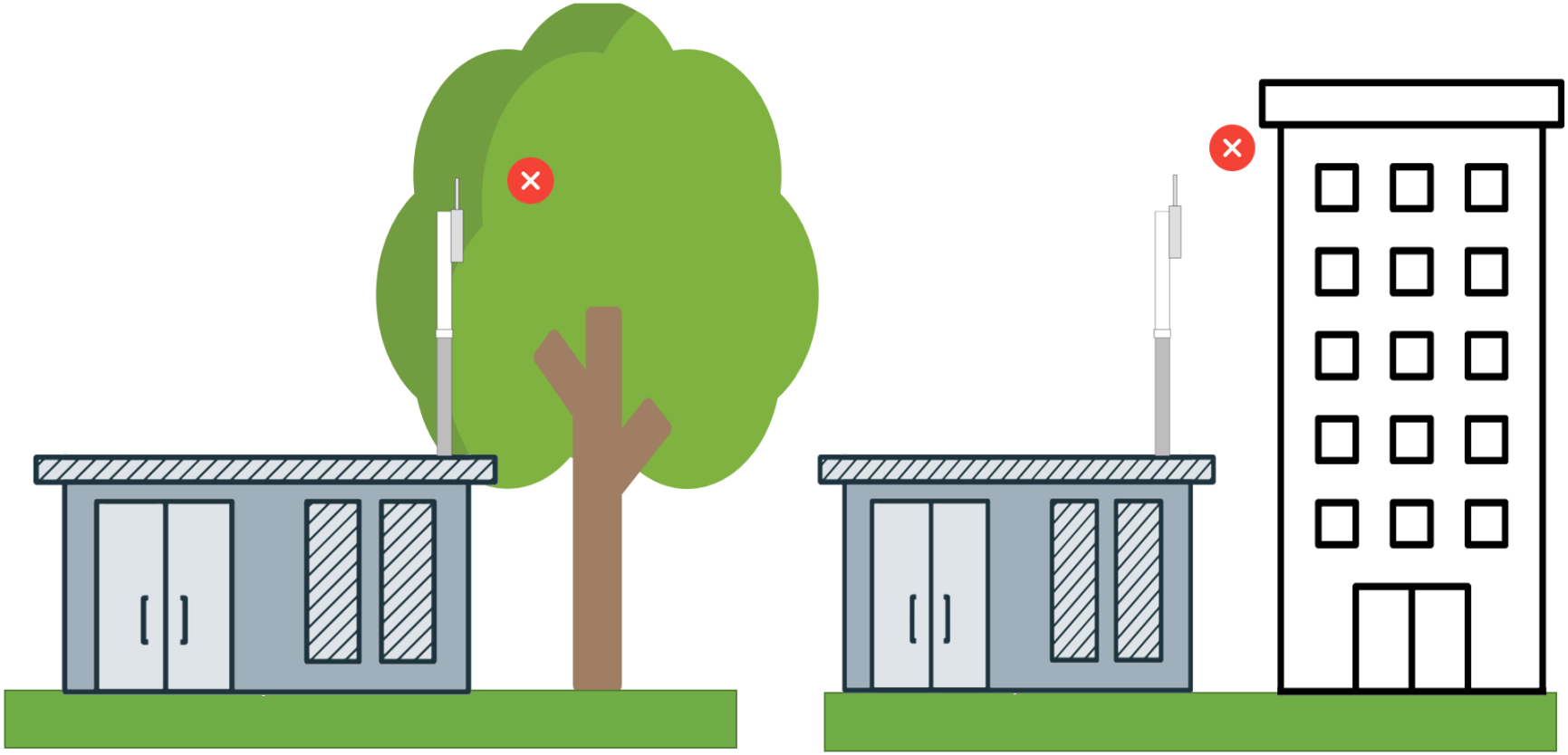
1) connect ground wire #17 from the NC grounding screw inside its lid to the top of the metal pole a
2) connect ground wire #10 from the bottom of the metal pole to a grounding rod.

The same grounding rod used for the satellite dish install can be used for the WiFi pole but the ground wire must use a different ground clamp.
Photos of all ground connections to the metal pole and ground rod must be included in the Post-Install/As-Built Report.



Object Interference

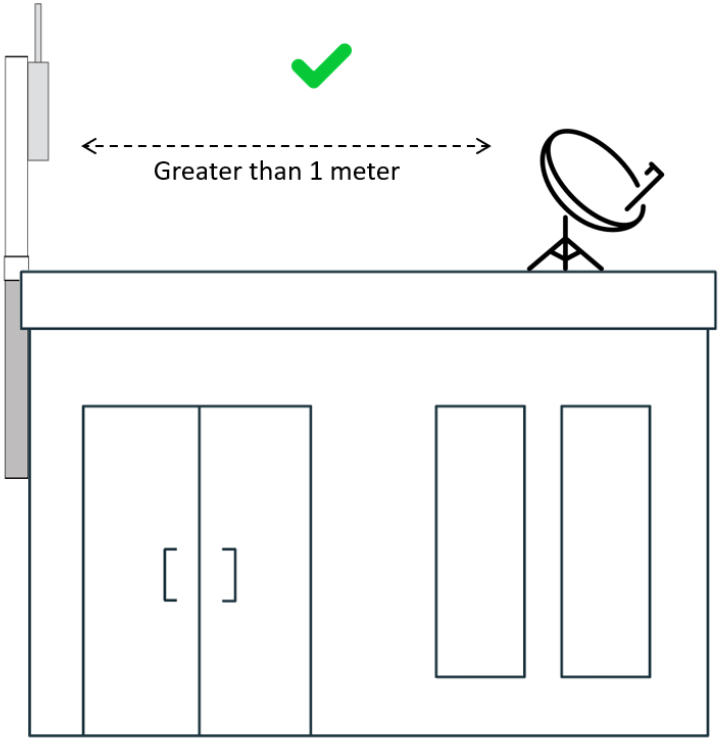
Devices must not be installed against a wall or below the roof line and must be installed higher than any surrounding foliage or buildings (with guy wire and anchors, if necessary).



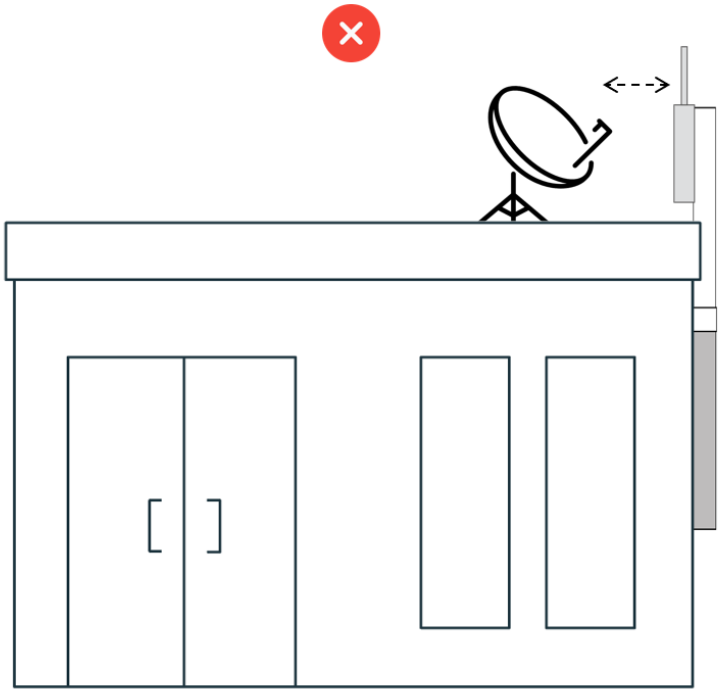
Device Adjacency

Devices must be installed at least 1 meter away from any other telecommunications device, electrical transformers, microwaves, or other WiFi antennas on the building as well as 1 meter from any power lines.

At least 1 meter away from other telecommunication device

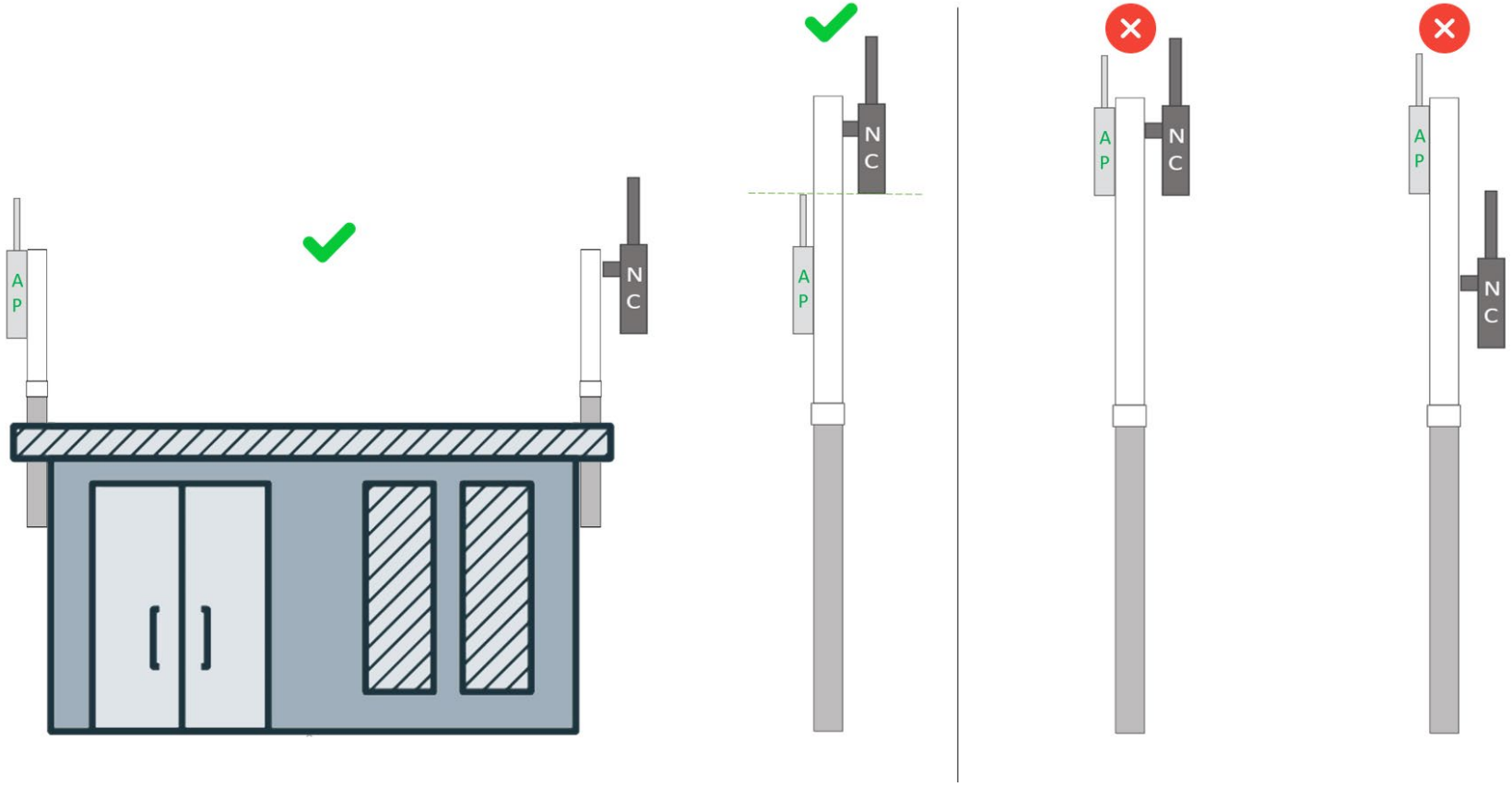


Less than 1 meter away from other telecommunication device



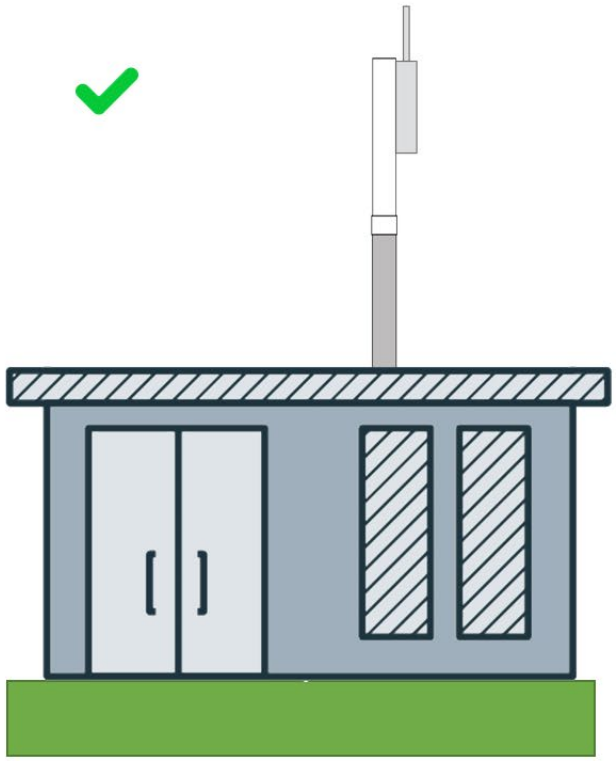
NC Placement

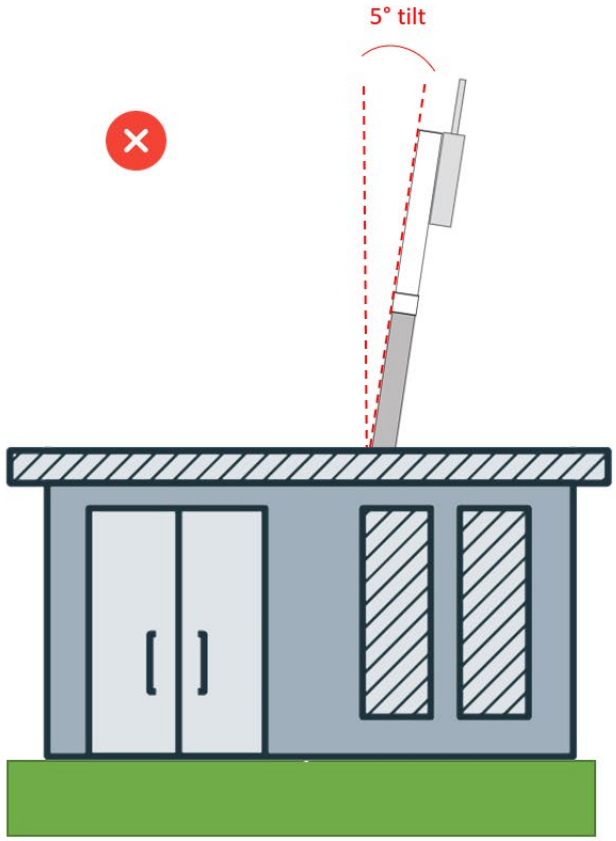
The NC (Network Controller) can be installed on a pole by itself but **If the AP is installed on the same pole as the NC, it must be installed FULLY UNDER THE NC**.



Verticality

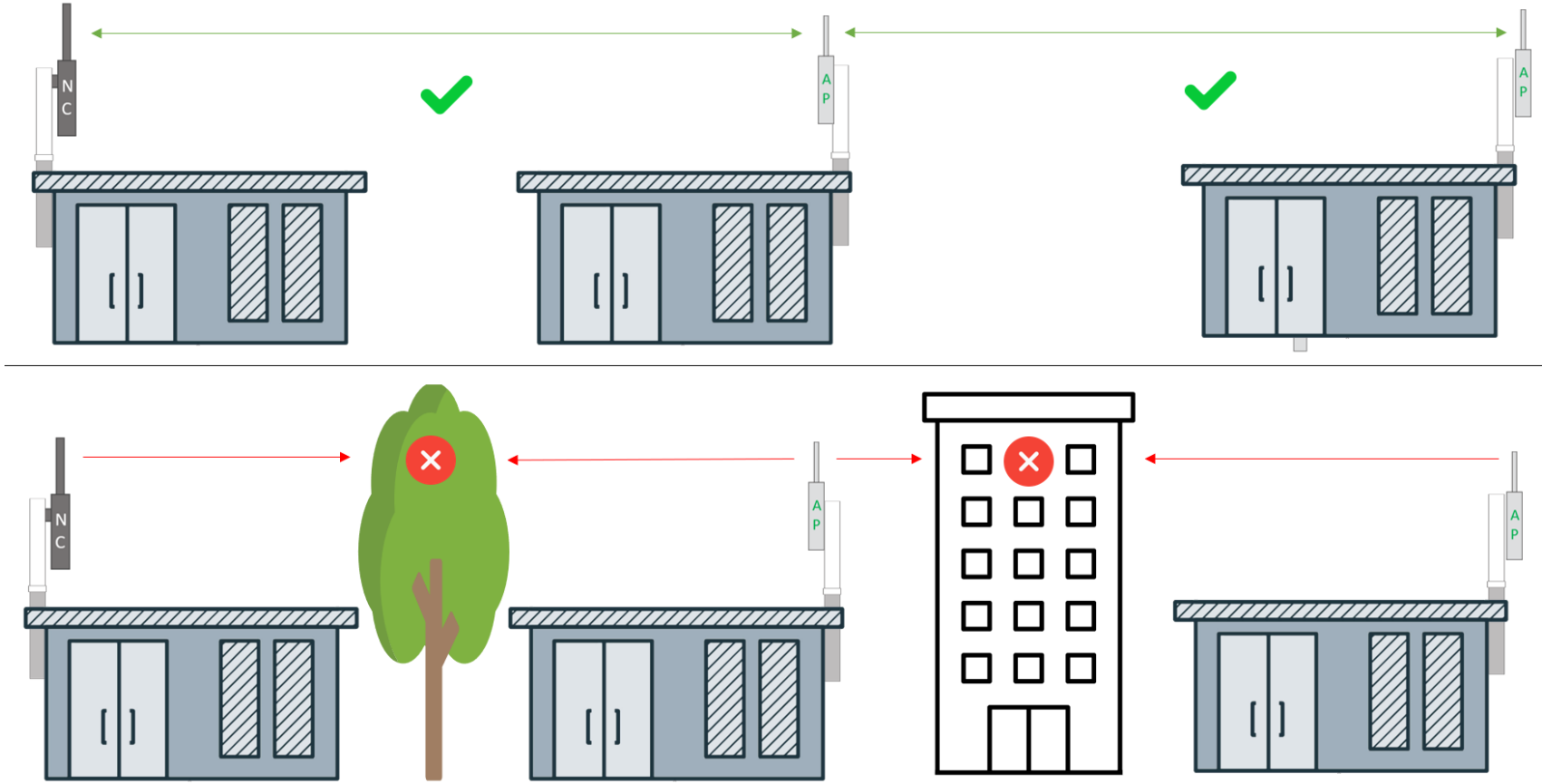
Devices must be installed vertically with no more than a 1 degree tilt on the pole – if there is too much tilt then the install will be rejected upon review by Support.





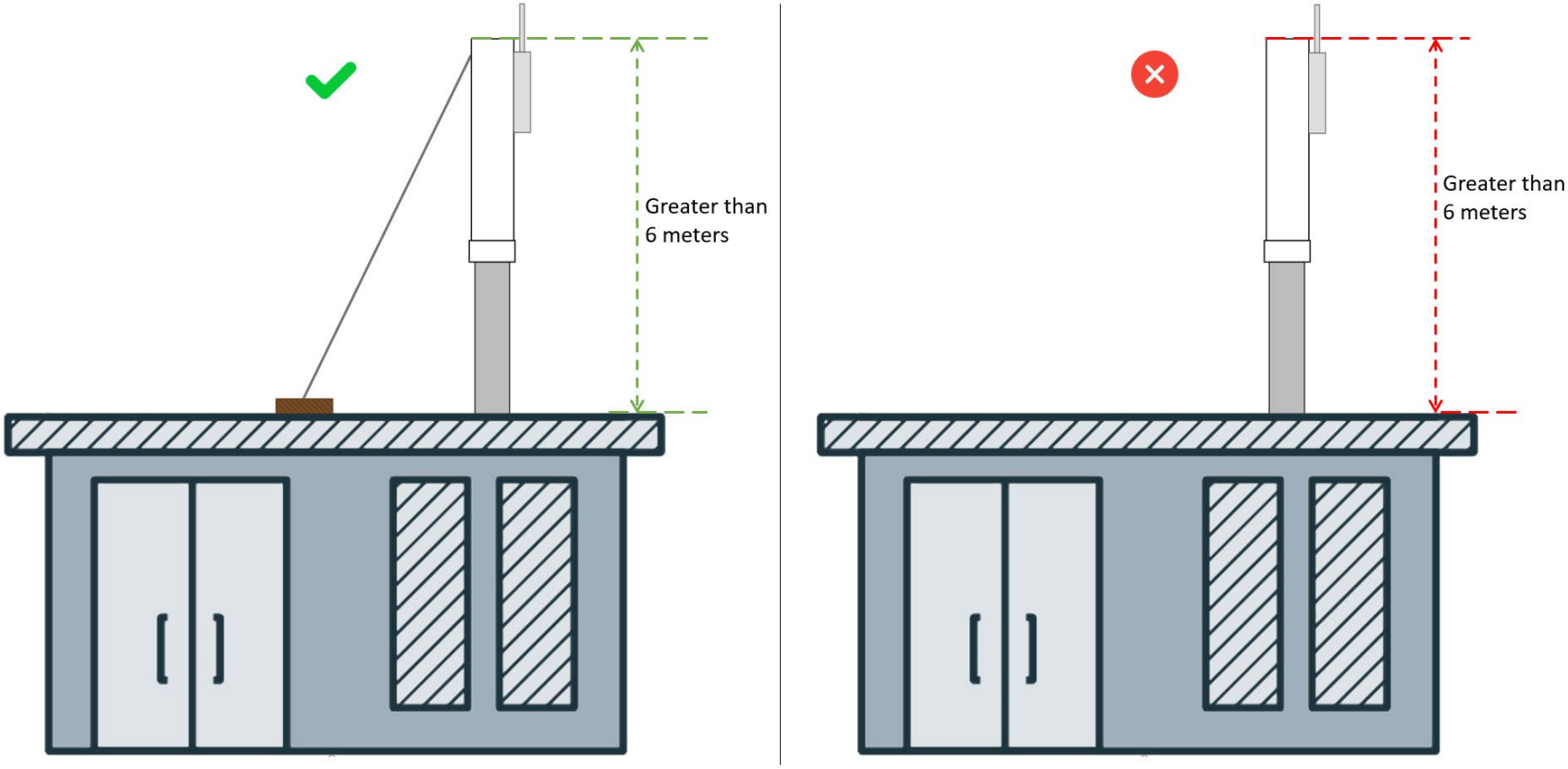
Line of Sight

The NC (Network Controller) must have clear line of sight to all first ring Coverage Points. All second ring Coverage Points must have clear line of sight to first ring Coverage Points.



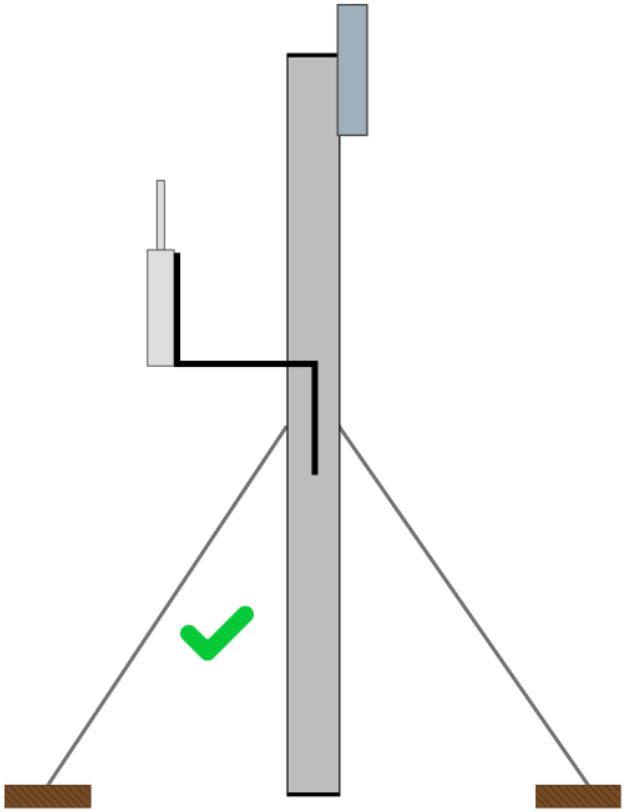
Sturdiness

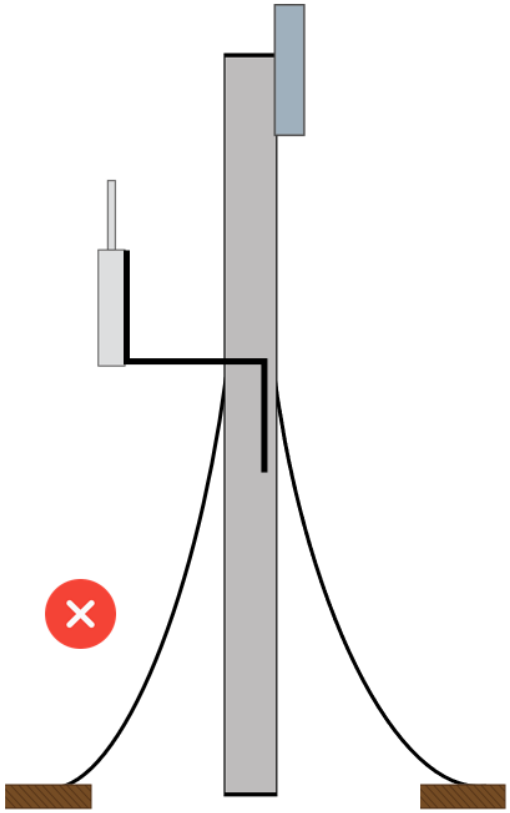
If the pole length is greater than 6 meters (including the PVC) it must be reinforced with guy wires/anchor to ensure it will not tilt, even with strong wind.



Guy Wires

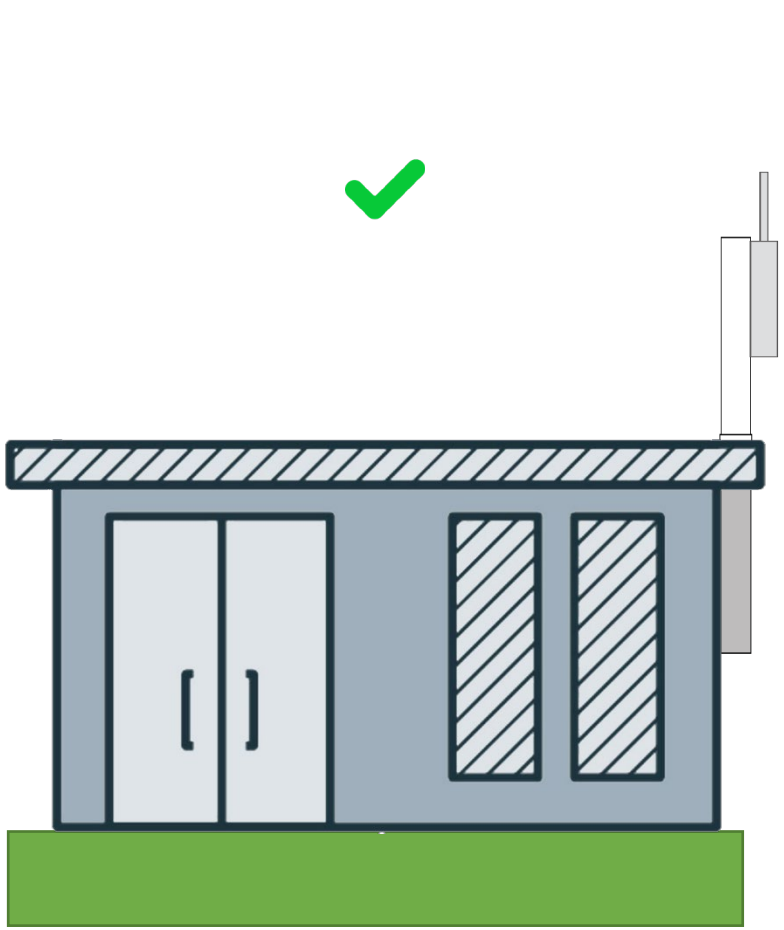
When guy wires/anchors are installed, the wire must be installed tightly so that pulling the wire does not move the WiFi pole.

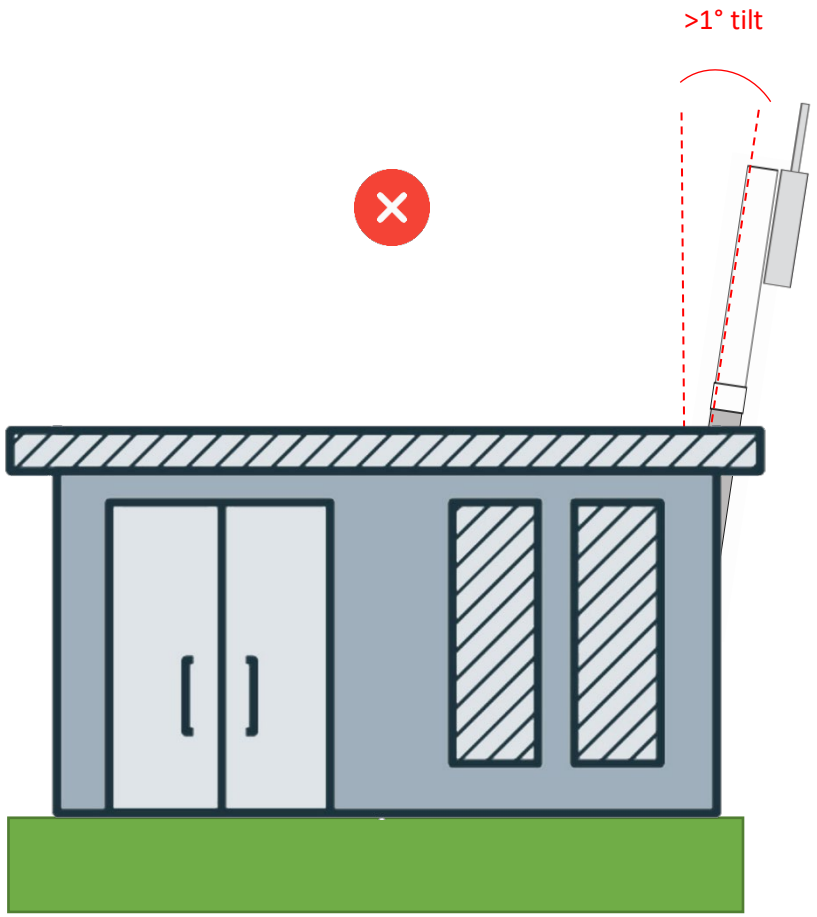




Verticality

Devices must be installed vertically with no more than a **1-degree** tilt on the pole – if there is too much tilt then the install will be rejected upon review by Support.

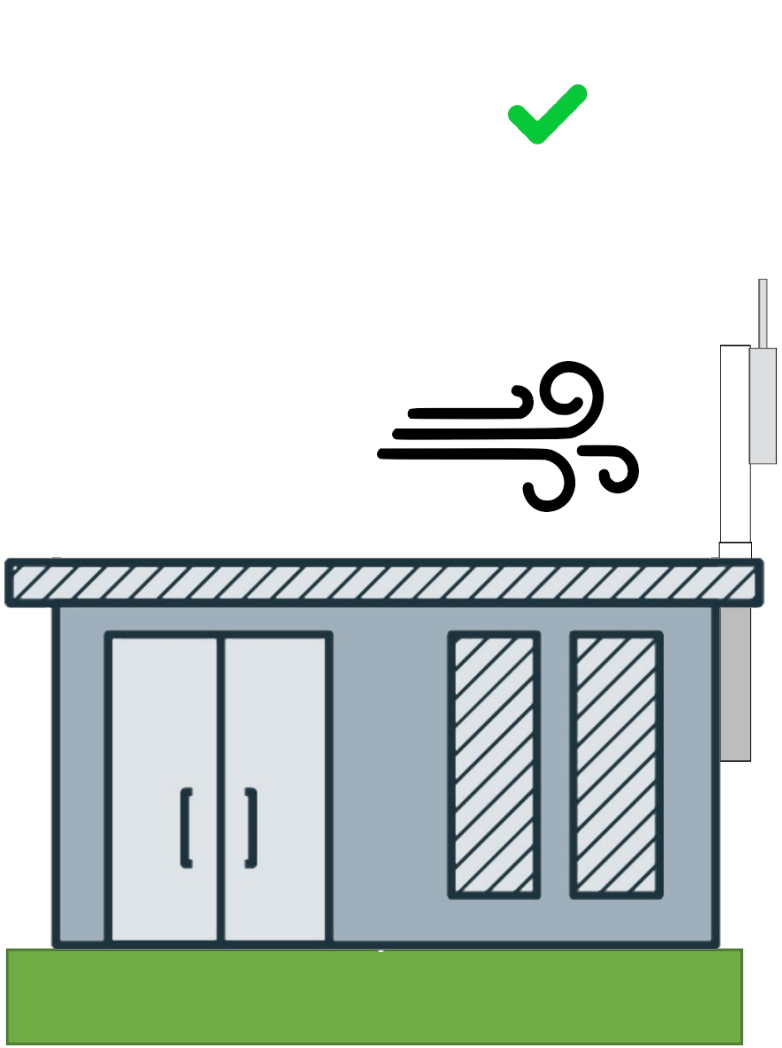


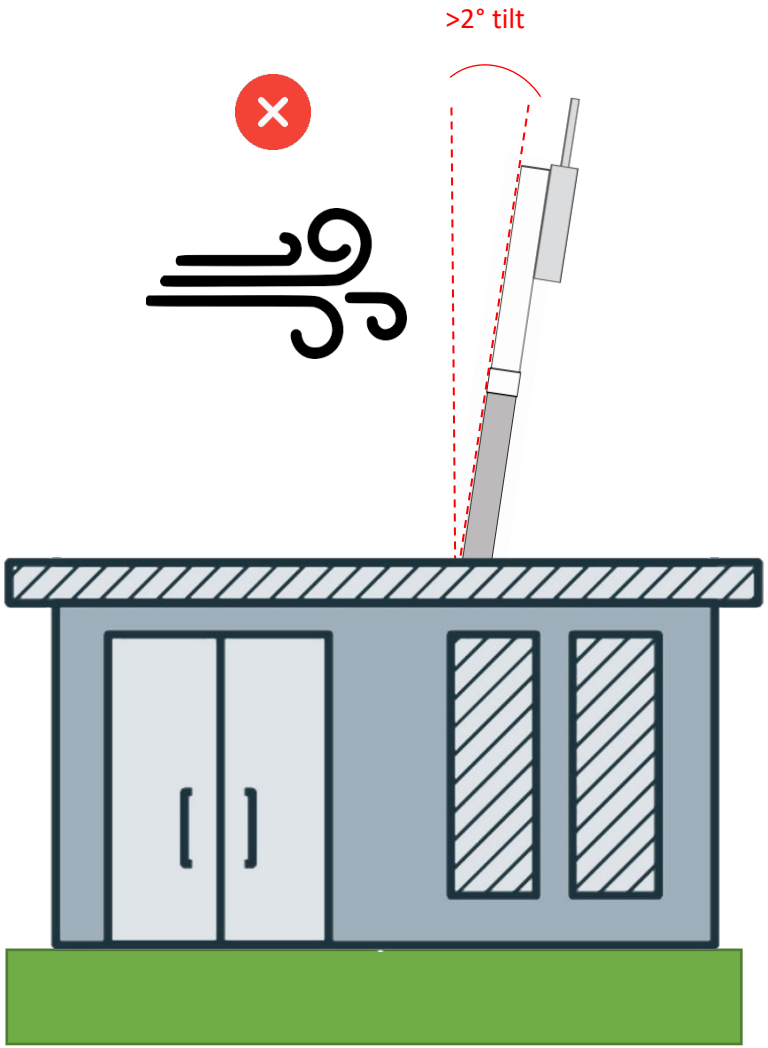


Wind Requirements

The max allowable sway of the WiFi poles due to wind or pushing/pulling the pole at both the host site and coverage points is **2 degrees**. We require a minimum of **two points of secure contact** when installing the pole to achieve this.

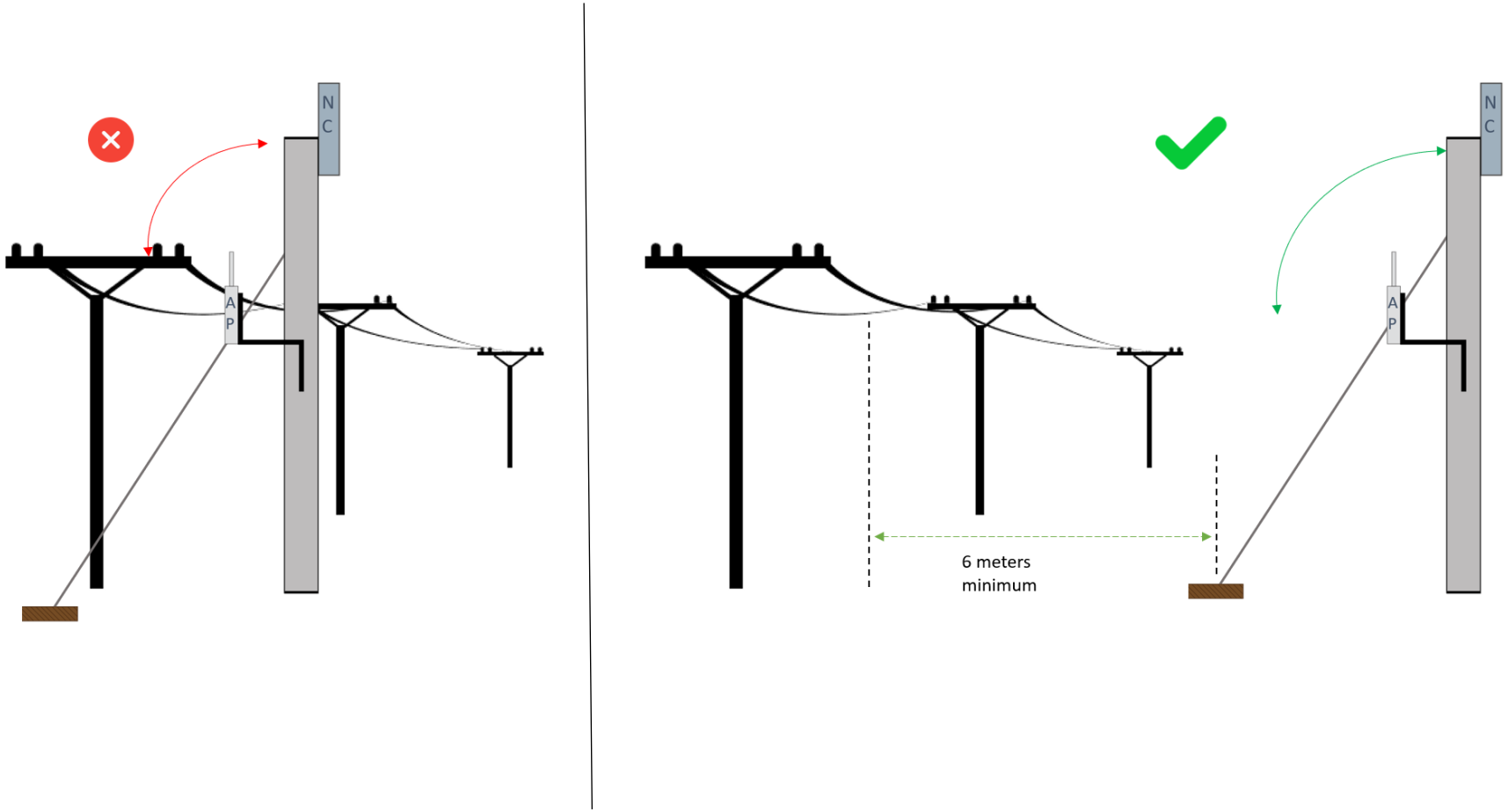
WiFi poles must be able to withstand a minimum of **60 mile-per-hour winds** without subsequent technician maintenance.





Power Lines

The WiFi pole must never be able to contact power lines should they fall. Guy wires must be installed a minimum of 6 meters from power lines.



AP Orientation and Tightening

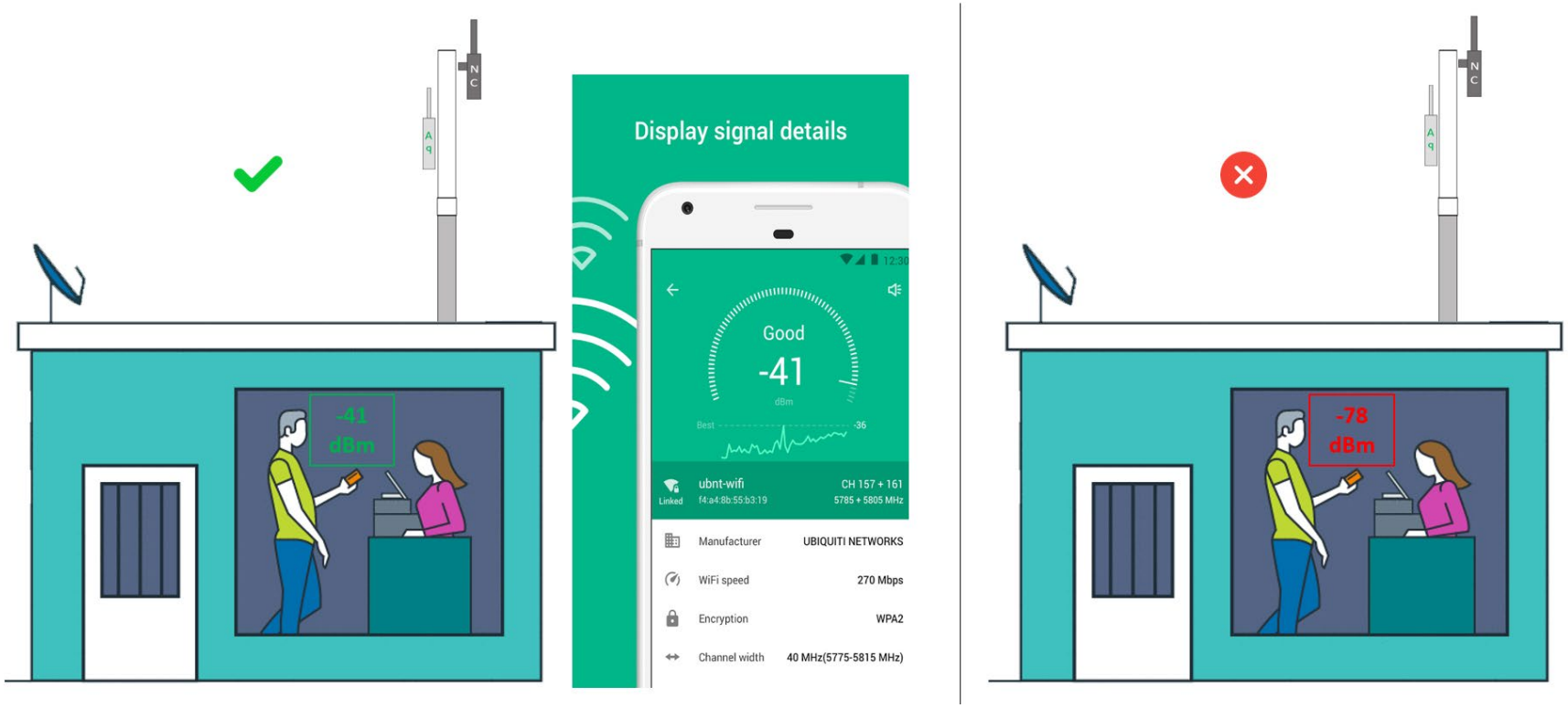
The WIM AP antennas must be oriented vertically with the hinge opening facing directly behind the device as shown below. Zip ties must be used around the antenna hinge to keep it from tilting after installation.

Signal Strength at POS location

After installation, the technician must verify that the signal strength at the exact location where the host plans to sell pins through the POS is higher than -75 dBm. Use a WiFi analyzer app such as WiFiMan to get this value.

If it is lower than -75 dBm (for example -78 dBm), then the AP must be relocated or an additional device must be added until this value is above -75 dBm.

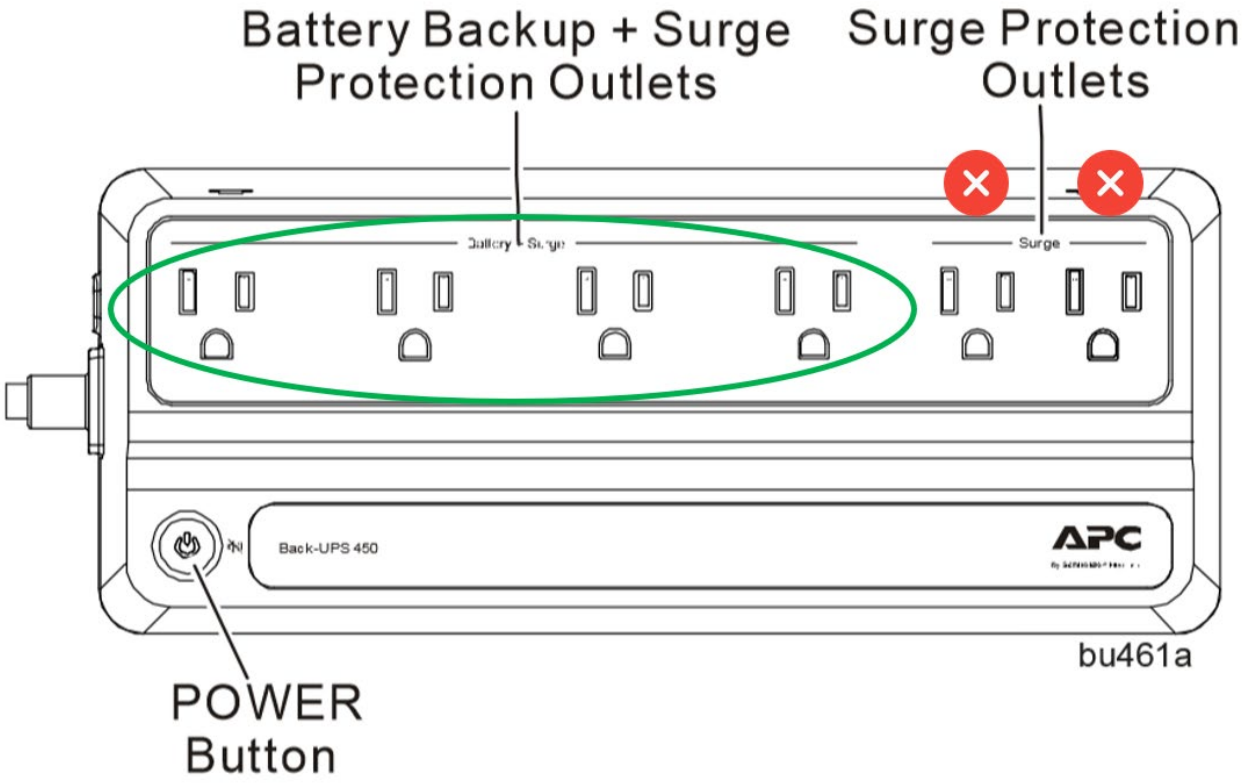
**Note – the closer this number is to zero, the better the signal strength will be.*



Electrical Power

All device power supplies must be plugged into a Battery Backup + Surge Protection outlet on the UPS, not a surge protection-only outlet.

Below is an example of an APC UPS, but models may vary.



Metal Clamps

All WiFi devices must be installed to the PVC with metal clamps. Be careful not to tighten so tightly that the plastic device mounting bends or breaks.

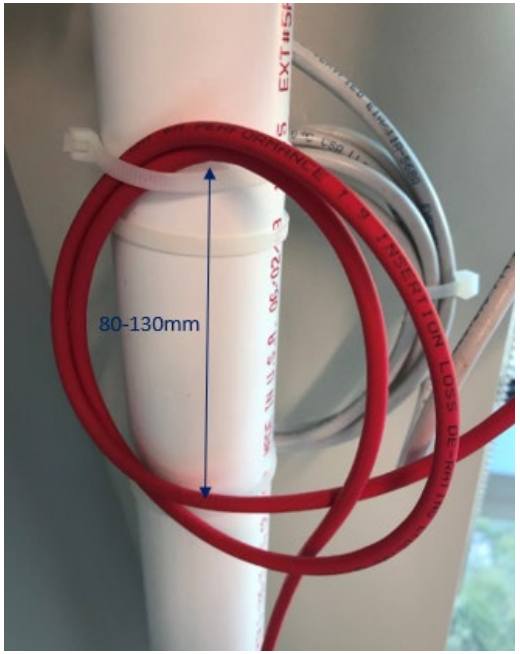
UV Ethernet Cabling

The installer must use **UV** ethernet cable on all device installations and must **TEST EVERY CABLE** before installing.

The length of any installed ethernet cable must be less than 100 meters.

Service Loops

All cable routing must leave enough slack for service loops. All installs must include a service loop with a 80-130mm diameter.



Refer to the RJ45 Cable Termination Guide for installing connectors on ethernet cable.

NOTE: Max functional length of ethernet cable is 100 meters.

Cable Routing Requirements

Cable Routing Requirements	
1	For horizontal cable runs, attach the cables to the wall surface using screw or nail clips every 45 to 70 centimeters.
2	For vertical cable runs, attach cables to the all surface with screw or nail clips every 76 to 91 centimeters.
3	Keep the cable run as straight as possible but remember to use the correct bend radii of **2.5 centimeters**. Follow horizontal and vertical elements (such as the siding) at every opportunity.
4	Diagonal or aerial cable runs are not allowed.
5	Service loops must be created at the top of the pole.
6	Remember! **Never put a 90-degree bend in any cable run.**
7	These cables can be routed into the building in the same way as the RG6 cabling installed for the satellite ODU