

# REQUIREMENTS FOR ANTENNA SITE SELECTION

## Overview

### Introduction

The choice of an antenna site will depend on the nature of the local intervening terrain. Planning should be preceded by a careful study of terrain maps whenever possible, by surveying, in order to obtain detailed information concerning the availability, accessibility, and feasibility of desirable sites.

## Technical Factors

### Definition

Technical factors that effect Antenna site selection are factors that relate to the characteristics of equipment being used and the nature of the Antenna. To obtain efficient transmission and reception, the factors listed below should be considered.

### Factors

Technical factors that effect Antenna site selection include;

- Location
- Terrain
- Ground conditions
- Foliage
- Manmade obstruction
- Bridges
- Buildings
- Suspended power lines
- Roads
- Other electrical equipment
- Noisy areas

### Location

A site must be located in a position that will ensure communication with the other stations with which it is to operate.

### Terrain

Hills and mountains between stations normally limit the range of radio sets. In mountainous or hilly terrain, positions relatively high on the slopes should be selected. Locations at the base of a cliff or in a deep ravine or valley should be avoided. For operation at frequencies above 30 MHz (VHF & UHF), a location that will give line-of-sight (LOS) communication should be selected whenever possible.

### Ground Conditions

Dry ground has resistance, therefore, limits the range of the radio set. If possible, the station should be located near moist ground, which has much less resistance. Water, and in particular salt water, will greatly increase the distances that can be covered and also provides a better earth ground for the equipment.

## **Foliage**

Trees with heavy foliage absorb radio waves, with leafy trees causing a greater detriment than evergreens. The antenna should be kept clear of all foliage and dense brush.

## **Man-Made Obstructions**

Many manmade obstructions should be avoided when selecting an antenna site. The most common of these obstructions are listed below.

## **Bridges**

A position in a tunnel or beneath an underpass or steel bridge should be avoided. Transmission and reception under these conditions are almost impossible because of high absorption of RF waves.

## **Buildings**

Buildings located in the transmission path, particularly steel and reinforced concrete structures hinder transmission and reception.

## **Suspended Power Lines**

All types of pole wire lines, such as telephone and high power lines, should be avoided when selecting a site for a radio station. Such wire lines absorb power from radiating antennas located in their vicinity. They also introduce hum and noise interference in receiving antennas.

## **Roads**

Positions adjacent to heavily traveled roads and highways should be avoided. In addition to the noise and confusion caused by cars and trucks, ignition systems in these vehicles may cause electrical interference.

## **Other Electrical Equipment**

Avoid electrical interference from other electrical equipment by avoiding the following:

- Other commercial communication sites
- Battery charging units
- Generators

## **Noisy Areas**

Radio stations should be located in relatively quiet areas. Copying weak signals require great concentration by the operator, and his or her attention should not be diverted by extraneous noises.