SCHEDULE "E"

Town of Cardston

Licensed Occupant: Communication Clearances Overview

Electrical Distribution System Operational Documents

Version 1.023

Contents

1. Licensed Occupant Communication Clearances Overview:

This document outlines the requirements for Licensed Occupant aerial communication lines on Cardston Electric Utility owned poles. The minimum code clearances listed in AEUC 6th Edition (2022) Table 5 does not show all the considerations needed to be taken into account when designing, building and maintaining ground clearances. This document expands upon the requirements for a variety of additional ground clearance categories. It also provides the requirements for additional factors that need to be taken into account. Details behind these factors are provided after the tables in this document.

Below is a visual to help guide users on how these considerations may be taken into account.

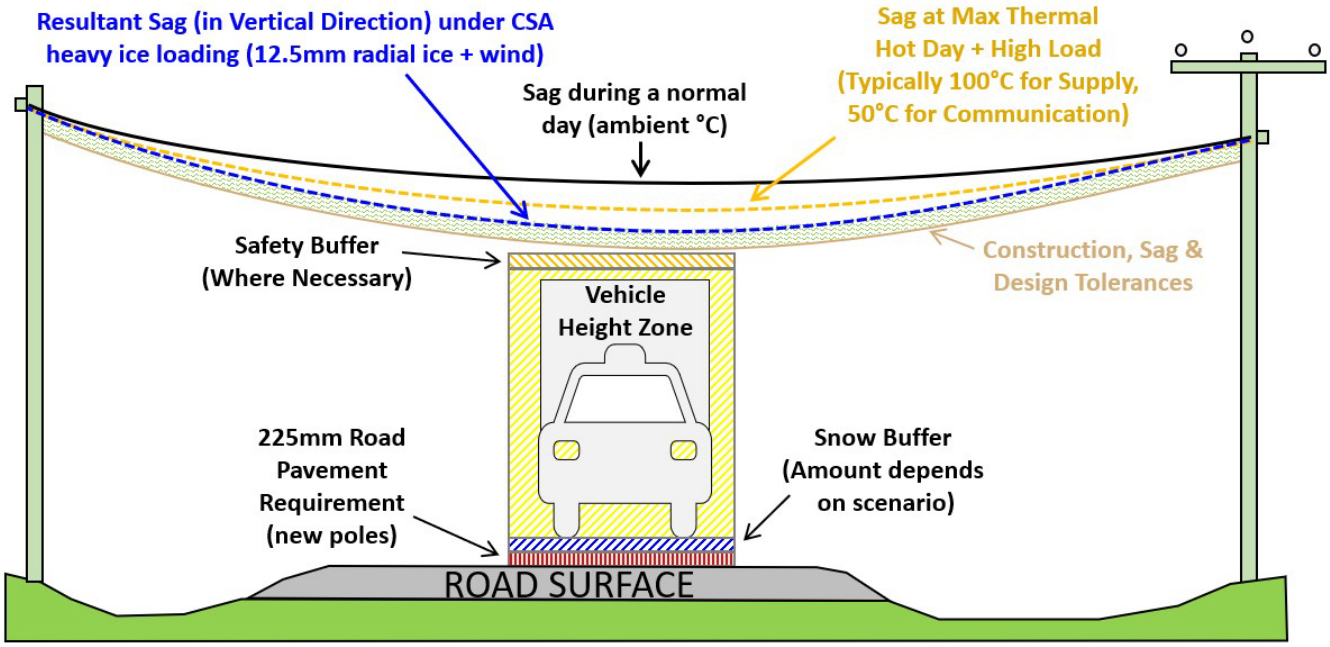

Figure 1 – Vertical Clearance Visual Guide

Vertical clearance requirements at the maximum sag of the aerial conductor are shown in Tables 1 & 2. Table 1 is used for the design stage. Table 2 is used to verify that final as-built clearances are acceptable and within design requirements. In addition, the clearance requirements are further specified for the following cases.

- 'New Poles' – Clearances used for new construction, rebuilds (i.e. a series of new poles being set in the ground) or in retrofits (changing individual poles in an existing line).
- 'Existing Poles' – Clearances used for aerial conductors strung on structures that are already existing and not being replaced. This may include addition of new conductors or moving existing conductors on existing poles.

Table 1 – Minimum Vertical Clearances for Aerial Conductors Under Maximum Sag

Design Clearances

Ground Clearance Category H= Expected Max Vehicle or Equipment Height	Communication Cables or Guys	
	Existing Poles	New Poles
Agricultural / Farmland / Pipeline ROW (Crossing or Alongside) (H ≤ 5.3 m) → Also default assumption for High Pressure Pipeline Right of Way	5.8	6.0
Driving Surface of Roads, Streets, Lanes, Alleys: Default (H ≤ 5.3 m)	5.8	6.2
→ Allowed reductions for changes to existing lines in urban areas (2):		
• Streets/Lanes for Residential Use Only (local access)	5.6	6.0
• Alleys (incl. Residential) or Entrances to Commercial / Light Industrial	5.3	5.5
• Driveways for Residential Use Only (H ≤ 4.15 m)	4.8	5.0
Alongside (Not Crossing) Roads, Streets, Lanes, Alleys: Default (H ≤ 5.3 m)	5.8	6.0
→ Allowed reductions for changes to existing lines in urban areas (2):		
• Commercial or Light Industrial: Alongside Streets/Lanes/Entrances	5.2	5.4
• Commercial or Light Industrial: Alongside Alleys	4.9	5.1
• Residential Use Only: Alongside Streets/Alleys/Driveways (H ≤ 4.15 m)	4.8	5.0
Pedestrian, access only (H ≤ 3.6 m)	4.1	4.3
→ Service drop to consumer's point of attachment (pedestrian access)	3.9	4.1
Highway Crossing (Primary and Secondary Numbered Highways) (3)	8.2	8.4
Object: Building with readily accessible surfaces (windows, fire escapes, service masts, antennas, balconies)	0.5	0.7
Object: Building (portions with normally inaccessible surfaces)	0.5	0.7
Object: Normally inaccessible structures (signs, traffic lights)	0.5	0.7

Notes:
(1) This includes a 0.2 m requirement for future paving as per CSA C22.3 No.1 5.3.1.1 (d). This may be removed if the street has curbs and storm gutters (practice is to match existing pavement level)..
(2) Vehicles over 4.15 m require over-height permits, however utility notification is not required unless the vehicle is over 5.3 m. Urban areas are allowed to have reduced vehicle height assumptions depending on the case.
(3) New highway crossings are designed with added clearance to reduce escorted line moves. These are not mandated by code.

Table 2 – Minimum Vertical Clearances for Aerial Conductors under Maximum Sag

As-Built After Construction Complete

Ground Clearance Category H= Expected Max Vehicle or Equipment Height	Communication Cables or Guys	
	Existing Poles	New Poles
Agricultural / Farmland / Pipeline ROW (Crossing or Alongside) (H ≤ 5.3 m) → Also default assumption for High Pressure Pipeline Right of Way	5.6	5.6
Driving Surface of Roads, Streets, Lanes, Alleys: Default (H ≤ 5.3 m)	5.6	5.8
→ Allowed reductions for changes to existing lines in urban areas (2):		
• Streets/Lanes for Residential Use Only (local access)	5.4	5.6
• Alleys (incl. Residential) or Entrances to Commercial / Light Industrial	5.1	5.1
• Driveways for Residential Use Only (H ≤ 4.15 m)	4.6	4.6
Alongside (Not Crossing) Roads, Streets, Lanes, Alleys: Default (H ≤ 5.3 m)	5.6	5.6
→ Allowed reductions for changes to existing lines in urban areas (2):		
• Commercial or Light Industrial: Alongside Streets/Lanes/Entrances	5.0	5.0
• Commercial or Light Industrial: Alongside Alleys	4.7	4.7
• Residential Use Only: Alongside Streets/Alleys/Driveways (H ≤ 4.15 m)	4.6	4.6
Pedestrian, access only (H ≤ 3.6 m)	3.9	3.9
→ Service drop to consumer's point of attachment (pedestrian access)	3.7	3.7
Highway Crossing (Primary and Secondary Numbered Highways) (3)	8.0	8.0
Object: Building with readily accessible surfaces (windows, fire escapes, service masts, antennas, balconies)	0.3	0.3
Object: Building (portions with normally inaccessible surfaces)	0.3	0.3
Object: Normally inaccessible structures (signs, traffic lights)	0.3	0.3

Notes:

(1) This includes a 0.2 m requirement for future paving as per CSA C22.3 No.1 5.3.1.1 (d). This may be removed if the street has curbs and storm gutters (practice is to match existing pavement level)..

(2) Vehicles over 4.15 m require over-height permits, however utility notification is not required unless the vehicle is over 5.3 m. Urban areas are allowed to have reduced vehicle height assumptions depending on the case.

(3) New highway crossings are designed with added clearance to reduce escorted line moves. These are not mandated by code.

2. Defining the 'Alongside' Roadway Categories

As a code minimum, aerial lines require driving surface clearances if they are too close horizontally to the driving surface. Under max horizontal swing (blowout) conditions, if the aerial lines could come within flashover distance of the edge of the driving surface then the applicable roadway crossing clearance shall be used. See Figure 2. If they are further away, then the 'Alongside' roadway category can be used. Generally, this alongside category extends to the edge of the road right of way.

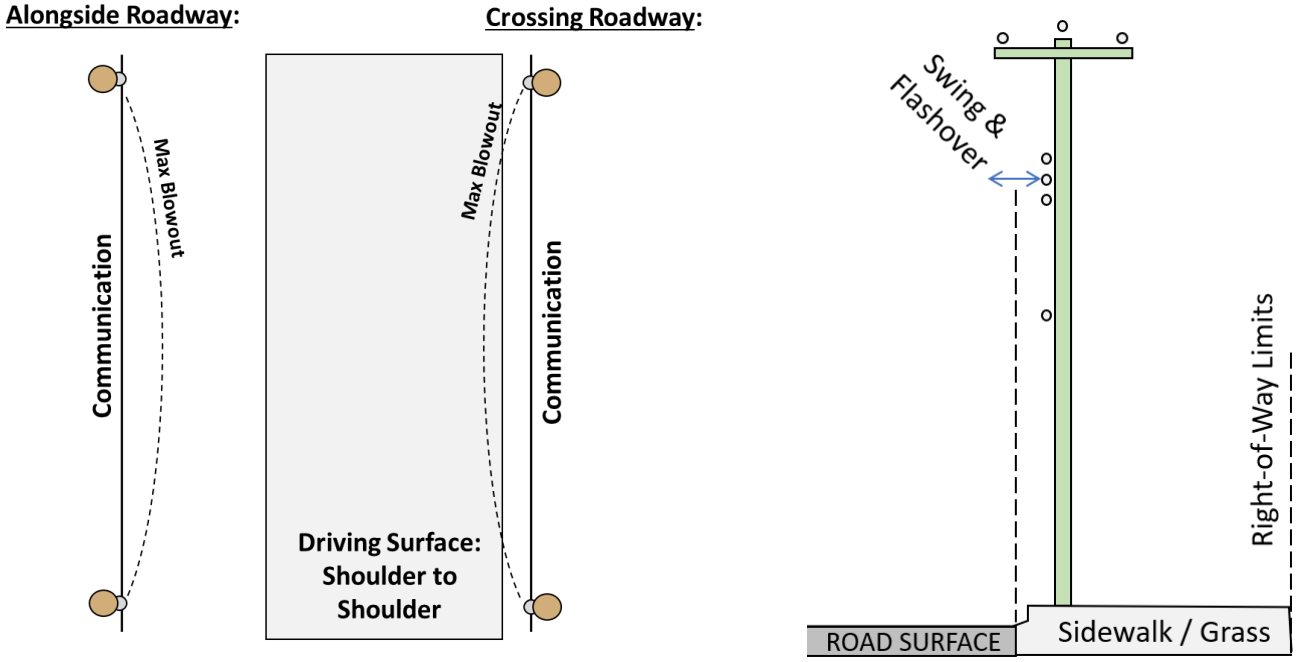

Figure 2 – How to Determine Whether Crossing or Alongside a Roadway

The 'Alongside' roadway categories has reduced risk assumptions or vehicle height assumptions when compared to the driving surface. The type of driving surface may further affect the assumption of vehicle height categories expected.

When changing aerial lines on existing structures, some reductions are allowed in certain urban situations as per the requirements in Table 1 & 2. An exception is allowed if there is a permanent physical obstruction/barrier blocking vehicle access to the area under the aerial lines, or steep terrain prevents tall vehicles from accessing this area. See "Portions of roadway right-of-way that are inaccessible to road vehicles" clearance category.

3. Construction Tolerances

New poles only (225 mm):

- CAN/CSA O15-15 clause 5.1.2, "Wood Utility Poles and Reinforcing Stubs": Pole heights may be up to 75mm (3 inches) shorter than specified.
- Setting Depth: ± 150 mm (6 inches)

New and existing poles (175 mm, so for new poles the total tolerance is 225 + 175 = 400 mm):

- Framing: ± 25 mm (1 inch)
- Sag tolerance or other factors: ± 125 mm
- Survey tolerance of ± 25mm

4. Additional Clearance Factors

Snow depth:

- For equipment taller than 5.3 m, these are not generally transported at times when the snow is not cleared away. For equipment under 5.3 m, it is case dependent.
- Pedestrian / snowmobiles: Some compaction is expected. 0.2m included as a bare minimum.
- Vehicle traffic: Considerable snow compaction is expected, especially for taller vehicles. Generally, at least 0.1 m is added for alleys, entrances, driveways and beside streets.
- Some areas should assume more depending on area and site specifics. See CAN/CSA C22.3 No.1, "Overhead Systems", 5.3.1.1 (e).

Roads (public thoroughfares):

- 225 mm for future road paving is required for new line construction or when existing lines have rebuilt

  poles. See CAN/CSA C22.3 No.1, "Overhead Systems", 5.3.1.1 (d).

Pipeline Right of Ways

- Since 2013, AEUC has decreased requirements for pipeline right of way clearances. However typically these are still in agricultural type areas, so the assumption is that agricultural clearances should be used over these pipelines.

Licensed Occupant Communication Circuits

- Licensed Occupant communication circuits are under the responsibility of the communication company to ensure they meet the required ground clearances. However, their clearances can still impose a risk to Cardston Electric Utility poles and the public. Therefore, agreement on the required ground clearance requirements for communication circuits shall be made and the Cardston Electric Utility may check designs to help ensure these ground clearances requirements are being followed.