

Technical Bulletin

TB 0270A – Timber Crossarm Defects

Purpose

This technical bulletin is to align the defect categorisation of timber crossarms with that used for timber poles.

Background

On average Endeavour Energy closes approximately 3,600 crossarm defects per year. The majority of these defect types are due to degradation and splitting.

Physical testing has been conducted on crossarms with varying levels of degradation to associate the remaining strength of a crossarm to the level of degradation. Through this testing, it was found that a reduction of up to 20% of the cross-sectional area of the crossarm can occur and continue to maintain a safety factor of at least 100% (e.g. safety factor of 2).

New Requirement

When assessing crossarms for **degradation**, it will now only be considered a defect if a crossarm has lost 20% or more of its cross-sectional area. This can either be purely from one direction, or from all directions. Figures 1 and 2 below demonstrate this concept.

For the degradation to be considered a defect it does not need to be the entire length of the crossarm, any degradation that meets these requirements along the crossarm shall be considered a defect.

This technical bulletin does not impact the way in which crossarms are defected for splitting. Photos of split crossarm defects have been added to this technical bulletin for completeness.

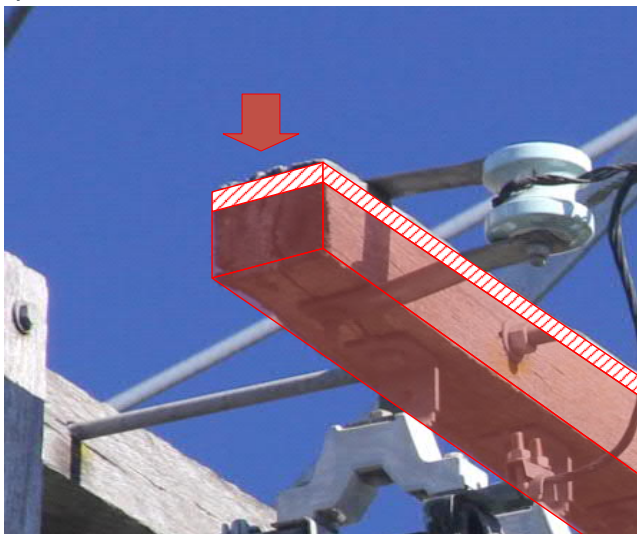


Figure 1 – 20% reduction from one direction (on a 100x100mm crossarm, this would equate to 80mm in height remaining)

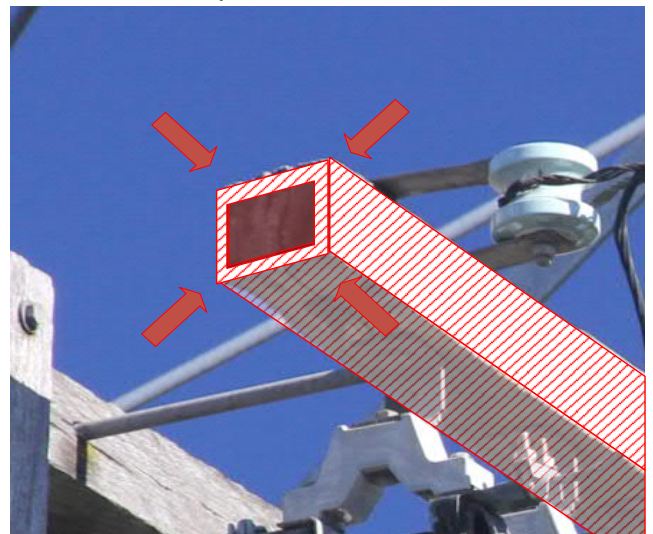
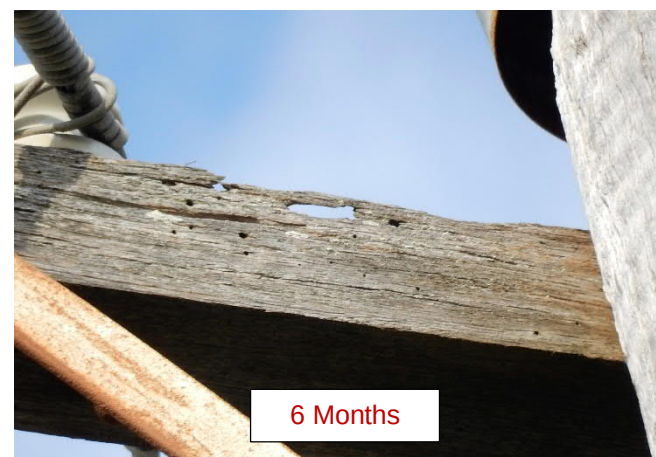
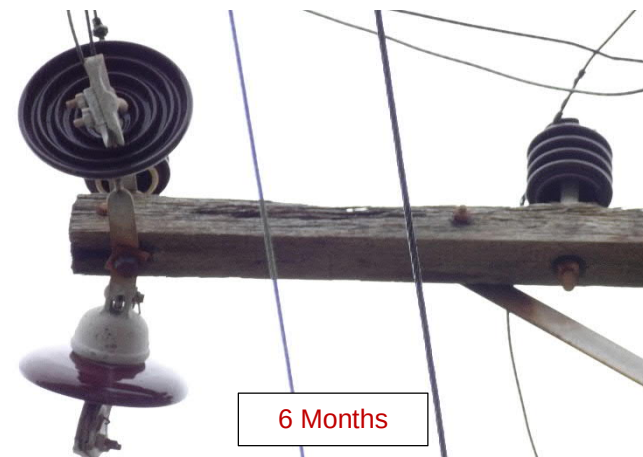
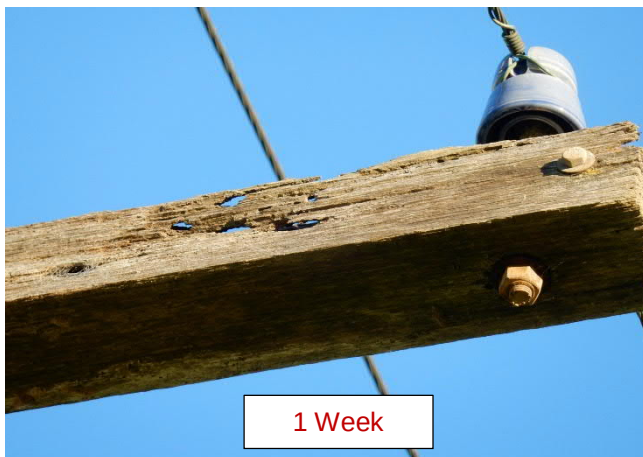


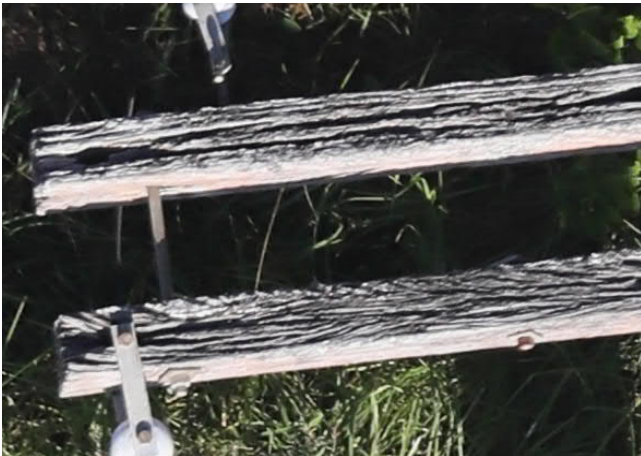
Figure 2 – 20% reduction from multiple directions (on a 100x100mm crossarm, this would equate to 83mm in height and 90mm width remaining)

The determination of the degree of degradation is intended to be subjective (e.g. done by eye) and provide inspectors with more information than historical references to minor, moderate and major.

Ground photos of crossarm defects as per the new requirements are shown below. If the condition of the crossarm is not degraded to the extent shown below, then the arm is to be considered structurally sound and not a defect:



Aerial photos of crossarm degradation defects as per the new requirements are shown below. If the condition of the crossarm is not degraded to the extent shown below, then the arm is to be considered structurally sound and not a defect:



Aerial photos of crossarm split defects:



Impacted Standards

The contents of this technical bulletin will be included in the next update of the following standards:

- MMI 0001 – Pole and line inspection and treatment procedures – Annexure 9;
- MMI 0001 Supplementary - Defect Handbook

Implementation

This requirement will be effective immediately.

Annexure 1 – Timber crossarm defects

The following table replaces the crossarm defects table in MMI 0001 “Pole and line inspection and treatment procedures” Annexure 9 and MMI 0034 “ Pre-summer bushfire inspections” Annexure 1.

Crossarm <i>Note: Where a defective crossarm is installed on a raiser bracket, this must be shown in the defect photo and also noted in the workorder comments. In such cases, the pole may be replaced as well to bring the construction to standard.</i>	Priority
Crossarm has deterioration but loss of cross-sectional area $\leq 20\%$	Not a defect
Crossarm has deterioration and loss of cross-sectional area of $\geq 20\%$ and $<30\%$	6 months
Significant decay $\geq 30\%$ loss of cross-sectional area with holes that can be seen through or major splitting that compromises mechanical strength. Failure is imminent.	1 Week
Crossarm splitting and the insulator has the potential to slip out. Lateral strain on the insulator	3 Months
Crossarm splitting and the insulator has the potential to slip out. No lateral strain on the insulator	6 Months
Crossarm splitting. The top condition of the crossarm is difficult to determine from ground level, but it is likely that the splitting seen from ground level warrants replacement.	6 Months to 12 Months
Crossarm has rotated and insulator is under strain, for: • A single brace construction, where the brace is buckled, loose or missing. • A two brace crossarm construction, where both braces are buckled, loose or missing.	6 Months
Crossarm has not moved, for: • A single brace crossarm where the brace is buckled, loose or missing. • A two brace crossarm, where both braces are buckled, loose or missing	6 Months
A two brace crossarm, where one brace is buckled, loose or missing.	6 Months