

ENGINEERING REPORT – STRUCTURAL CONDITION ASSESSMENT

June 06, 2025

Augusta Township

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ATTENTION: Shannon Geraghty, MPA – Chief Administrative Officer

Reference: EFI # 25-7991 – North Augusta Ball Diamond Light Poles

1.0 PURPOSE

At the request of Augusta Township, EFI Engineering was retained to assess the condition of the remaining light poles in the outfield at the North Augusta Ball Diamond, following the structural failure of one pole during a wind event in May 2025. This report provides a professional engineering opinion on the condition of the remaining three poles based on a non-destructive, visual inspection. This report outlines the limitations, risks, and recommendations for short- and long-term action.

2.0 BACKGROUND

The poles in question were originally used as hydro utility poles and were repurposed and installed at the ball diamond around 1992. They are now over 30 years old, well beyond the standard service life for such structures.

- One pole failed in May 2025 during a wind event, breaking near its base. Inspection of the butt-end showed significant rot and internal voids.
- Beattie Dukelow Electrical recommended replacement of all remaining poles based on visible aging and assumed deterioration. As a minimum they recommended cutting off the top 5' of each pole and reinstalling the light fixtures at a more secure location.
- Chris Brown, Hydro One employee but not on behalf of Hydro One, performed bore tests on the remaining poles and reported >90% shell strength, but did not produce a formal engineering opinion.
- EFI was engaged to provide a stamped engineering assessment and recommendations for municipal action.

3.0 METHODOLOGY

EFI Engineering has reviewed the reports by Dukelow and Brown. We also visited the site on June 5, 2025, to visually inspect the three remaining outfield poles. The visual inspection included:

- Review from grade using binoculars.
- Selected areas of the existing poles were probed using a screwdriver.
- Review of pole connections, fixtures, and hardware integrity.
- No destructive or internal testing was performed by EFI.

4.0 FINDINGS

- The remaining poles appear to be straight.
- The poles have checked cracks and some rotting at their bases. These cracks start at the surface but can extend inward, sometimes up to or past the neutral axis of the pole.
- Bore testing showed strong shell integrity below grade based on report by 3rd party hydro employee, not confirmed by EFI Engineering.
- Visible top-end decay is present, particularly in one pole.
- Crossarms and light fixtures appear to be securely attached after Dukelow tightened what they found during their inspection, however the top of pole integrity is questionable.
- All poles exhibit signs of long-term weathering consistent with advanced age.

5.0 ENGINEERING DISCUSSION

Wood utility poles degrade over time due to moisture ingress, fungal attack, ultraviolet radiation, freeze-thaw cycling, and mechanical fatigue. The degradation accelerates at critical zones, including:

- The base (typically at grade or down to 450mm below) where persistent moisture promotes internal rot.
- The pole top, which is exposed to rain and lacks protection if uncapped.
- Points of mechanical fastening or stress (e.g., crossarms, brackets), where splitting or cracking may occur.

These poles were installed over 30 years ago and were already used at the time of installation. Their original service history is unknown, and no records of preservative retreatment, internal inspections, or routine maintenance are available. As such, these poles have exceeded both their expected and conservative service life windows.

The failure of one pole during typical wind conditions is a significant data point. It indicates that unseen internal deterioration has reached a critical threshold in at least one member. Given the

uniform age, exposure, and construction of the remaining poles, it is highly likely that they exhibit similar degradation profiles—some of which may be undetectable through surface inspection alone.

Sudden failures in aging wood poles are often catastrophic and offer no visible warning signs. Failures may occur not only at the base but also at mid-height or near the top where decay and fungal cavities undermine the strength. These failures are more common in poles beyond 25 years of age—particularly when maintenance has been minimal or nonexistent.

Given this, EFI Engineering cannot and does not confirm the continued reliability or non-failure of the remaining poles.

6.0 PROFESSIONAL OPINION

While the poles show no current visible signs of imminent structural failure at grade, EFI Engineering must stress that visible inspections are inherently limited in scope. With the poles' advanced age, unknown maintenance history, and hydro-origin repurposing, their continued use poses an elevated risk of sudden and unpredictable structural failure.

It is the professional opinion of EFI Engineering that the poles are a risk to life safety. The only way to ensure public safety is to take the poles out of service immediately and replace them with new CSA-compliant units. Continued use beyond this point cannot be supported by engineering confidence and should be considered a temporary measure undertaken solely at the discretion and liability of Augusta Township.

7.0 CONDITIONS FOR TEMPORARY USE (TOWNSHIP-ASSUMED RISK)

- Weekly inspections must be performed by a trained and designated municipal inspector and logged with photographic documentation.
- Adoption of Dukelow's suggestion to cut the top 5' off each pole and re-attached the lighting fixtures at the new more structurally sound height... if internal voids or rot is found at new top, the pole must be taken out of service.
- Drone or elevated platform inspection of pole tops must be conducted biweekly to identify cracking, fungal growth, or voids.
- An anemometer or local weather station data must be used to proactively close the field in advance of forecasted winds exceeding 50 km/h.
- Public signage must be installed at all entrances stating that the poles are under temporary inspection and are nearing end-of-life.

- A daily pre-use inspection checklist must be completed and signed by the field supervisor prior to any event.
- Any observed movement, new cracking, or deterioration must result in immediate shutdown of the site until further engineering review.
- Unsupervised or informal use of the field should be restricted outside of scheduled and monitored activity periods, particularly when Township personnel or designated supervisors are not present.

8.0 CONCLUSION

EFI Engineering advises that these poles have exceeded their expected lifespan by a significant margin. Their continued use introduces a material public safety risk that cannot be mitigated through visual inspection alone. While limited non-destructive testing by a self-reported knowledgeable person showed sufficient shell thickness at the base, this does not provide assurance against hidden internal decay or top-end failure. Furthermore, the non-destructive testing was not performed by a firm willing to stand by their findings in guarantee of non-failure. Given the advanced age of the poles, the repurposed nature, the lack of service history and maintenance, the already failed pole as a very significant data point, and the public safety involved, we don't believe that any firm could be found to make such a commitment.

The only course of action that eliminates public safety risk is the immediate decommissioning and replacement of all remaining poles. Should Augusta Township elect to extend their use, such a decision must be accompanied by enhanced inspection protocols, documented monitoring, and full acceptance of all liability arising from potential failure.

Respectfully submitted,



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EFI Engineering