

REVIEWER'S REPORT

Manuscript No.: IJAR- 58162

Title: Influence of stiffener geometry and anchor bolt loss on the mechanical and fatigue behavior of street lighting poles

Recommendation:

Accept

Rating	Excel.	Good	Fair	Poor
Originality	Yes			
Techn. Quality	Yes			
Clarity	Yes			
Significance		Yes		

Reviewer Name: Dr. Ashish Yadav

Detailed Reviewer's Report

Reviewer's Comment for Publication.

Acceptance Comment are mentioned below suitable for the paper titled "Influence of stiffener geometry and anchor bolt loss on the mechanical and fatigue behavior of street lighting poles"

Reviewer Comments: Accept

Reviewer Comments –

Introduction

The introduction clearly establishes the importance of street lighting poles in ensuring urban safety and highlights fatigue failure caused by cyclic wind loading as a critical engineering concern. The research gap regarding the influence of stiffener geometry and anchor bolt loss on fatigue performance is well identified, providing strong motivation for the study. The objectives are clearly stated and demonstrate the practical relevance of enhancing the durability and reliability of pole-base connections.

Literature Review

The literature review provides a relevant overview of previous studies on fatigue behaviour, pole-base failures, and structural reinforcement techniques. It effectively identifies the limitations of existing research, particularly the lack of comprehensive investigations into the combined effects of stiffener configurations and anchor bolt loss. This review adequately supports the novelty of the proposed work and establishes a solid foundation for the numerical analysis.

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Solution Approach

The proposed solution approach is systematic and technically sound, employing a detailed three-dimensional finite element model developed in ANSYS Workbench. The methodology considers all major structural components and evaluates multiple stiffener configurations under cyclic loading conditions, including the effect of anchor bolt loss. The modeling procedure is appropriate for achieving the study objectives and provides confidence in the reliability of the obtained results.

Results and Discussion

The results are clearly presented and demonstrate the significant influence of stiffener geometry and anchor bolt loss on stress distribution and fatigue life. The comparative analysis effectively shows that the third stiffener configuration offers the best structural performance by reducing stress concentrations while requiring less material. The discussion is well supported by numerical evidence and successfully relates the findings to practical engineering applications.

Conclusion

The conclusion effectively summarizes the major findings and confirms that optimizing stiffener geometry substantially enhances the fatigue performance of street lighting pole bases. The reported 28% improvement in service life demonstrates the practical value of the proposed design approach. Overall, the conclusions are consistent with the presented results and highlight the potential benefits of the study for improving the durability and maintenance of urban lighting infrastructure.