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## REVIEWER'S REPORT

**Manuscript No.: IJAR-59766**

**Title: Proposal for an offline digital leveling notebook for automatic calculation of theoretical elevations and monitoring deviations in road and sanitation works.**

**Recommendation:**
Accept

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

**Reviewer's ID: JPR- 015**

## *Detailed Reviewer's Report*

**Reviewer's Comment for Publication.**

Acceptance Comment are mentioned below suitable for the paper titled "**Proposal for an offline digital leveling notebook for automatic calculation of theoretical elevations and monitoring deviations in road and sanitation works"**

**Reviewer Comments: Accept**

**Reviewer Comments –**

### 1. Introduction

The paper addresses an important practical challenge in road construction and sanitation works, where conventional levelling procedures frequently depend on manual field books and calculations. The proposed TOPO KYJ application offers a digital alternative for improving the accuracy, efficiency, and reliability of elevation monitoring. The study highlights the importance of automating theoretical elevation calculations and identifying deviations during construction activities. Its focus on offline functionality makes the proposed solution particularly relevant for field applications where internet connectivity may be limited. Overall, the introduction establishes a clear practical motivation and identifies a relevant technological opportunity in construction surveying.

### 2. Literature Review

The study is positioned within the broader context of digital surveying, geometric levelling, construction monitoring, and automated engineering computations. The use of digital field books and computer-assisted surveying tools represents an important development in reducing human errors and improving data processing efficiency. The integration of horizontal alignment, vertical profiles, and cross-sectional geometry provides a comprehensive basis for determining theoretical elevations. The application also demonstrates the practical relevance of combining conventional surveying principles with modern web-

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based technologies. The literature background supports the need for a specialized digital solution for road and sanitation infrastructure projects.

**3. Solution Approach**

The proposed TOPO KYJ application presents a systematic and technically relevant solution through a standalone, client-side web application. It processes Covadis Excel exports and reconstructs horizontal alignments, vertical profiles, and cross-sections using numerical integration and geometric calculations. The application automatically determines theoretical elevations from chainage and offset information and calculates practical elevations using back-sight and fore-sight measurements. Furthermore, the automatic classification of deviations against 1 cm and 2 cm thresholds facilitates construction quality monitoring. The Excel and PDF export facilities, together with GPS-based localization and routing features, enhance the application's practical usability.

**4. Results and Discussion**

The proposed system demonstrates the potential to improve the speed, consistency, and reproducibility of levelling notebook preparation. The automatic generation of survey profiles at a default interval of 6.25 m and the provision of up to eight offsets per profile offer flexibility for field measurements. The deviation classification mechanism provides a straightforward approach to identifying elevation differences and supporting construction quality control. A particularly valuable feature is the restriction against extrapolating elevations beyond the available longitudinal profile range, which helps prevent unsupported theoretical estimates. The reported on-site comparative validation further strengthens the practical relevance of the proposed application and demonstrates its potential for real-world implementation.

**5. Conclusion**

The paper presents a useful and practically oriented digital solution for modernizing conventional levelling procedures in road and sanitation construction projects. The TOPO KYJ application effectively integrates geometric calculations, automated elevation determination, deviation monitoring, and digital reporting within an offline environment. Its potential to reduce manual calculations, minimize computational errors, and improve field documentation represents a meaningful contribution to construction surveying practices. The proposed system also provides scope for future integration with advanced surveying instruments and broader infrastructure monitoring platforms. Overall, the research offers a relevant technological contribution with practical application potential and merits acceptance for publication.