

Awareness and Compliance of Site Engineers with Road Safety and Traffic Management: The Case of 2nd District, Negros Oriental

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Abstract. This descriptive-correlational study assessed the awareness of and compliance with the Department of Public Works and Highways (DPWH) road safety and traffic management protocols among field engineers on civil works projects in Negros Oriental's 2nd District. Using a validated questionnaire, data were gathered from 100 engineers (60 from private contractors and 40 from the DPWH). Engineers reported very high awareness of road safety (mean = 4.50) and traffic management standards (mean = 4.41); however, their self-rated compliance, although still high, was lower (mean = 4.13). Spearman's correlation confirmed that greater awareness predicted stronger compliance ($\rho = .52, p < .001$). Field implementation, however, was hindered by four key challenges: motorist non-compliance (89%), vandalism of signage (73%), constrained traffic flow management (62%), and insufficient hands-on training (60%). By quantifying the awareness-compliance gap and pinpointing context-specific barriers in a developing-country setting, the study deepens understanding of why high protocol knowledge does not always translate into safe on-site practices. The findings urge the DPWH and contractors to (1) intensify on-site monitoring and enforcement partnerships, (2) allocate budgets for rapid signage replacement, (3) deliver scenario-based training to site personnel, and (4) launch community road safety campaigns. Implementing these measures can convert engineers' strong knowledge base into consistently safe work zones, reducing accidents and project delays across Philippine infrastructure projects.

Keywords: DPWH; Compliance; Field engineers; Road safety; Traffic management.

1.0 Introduction

Road safety remains a pressing global issue, significantly impacting public health, economic stability, and societal well-being (Bullard et al., 2024). Despite numerous international efforts to curb road traffic accidents, they continue to rank as the leading cause of death and disability worldwide, resulting in substantial losses of life and property (Girija & Divya, 2024). The increasing prevalence of traffic accidents emphasizes a critical gap in ensuring adequate traffic management and infrastructure safety, posing challenges to sustainable development and global competitiveness.

Traffic-related incidents in the Philippines result in significant economic and societal losses, with traffic congestion alone costing the country approximately PHP 2.4 billion daily (Andoy, 2023). Road traffic accidents (RTAs) remain a growing concern, with fatalities increasing by 39% from 2011 to 2021 and an average of 12,000 deaths reported annually by the Department of Health (DOH, 2023). Studies suggest that road characteristics and environmental factors play a crucial role in pedestrian crashes in Metro Manila (Obinguar & Iryo-Asano, 2021), while Dela Cruz et al. (2021) highlight the complexity of traffic management systems and the need for comprehensive analysis to improve road safety. The severity of RTAs was recently underscored by a tragic accident in Negros Oriental in June 2024, where a collision between a car and a cement mixer truck resulted in four deaths and three injuries ("Four killed, three injured in Philippine road accident," 2024). These incidents underscore the pressing need for effective road safety measures and enhanced traffic management in the country.

Government initiatives such as the "Build! Build! Build!" program have sought to address infrastructure deficits and the challenges brought about by rapid urbanization and population growth (Chuenyindee et al., 2022). However, despite these interventions, the implementation and enforcement of road safety measures remain inconsistent across regions, reflecting the need for localized assessments and solutions. Additionally, existing studies on road safety in the Philippines have primarily focused on urban centers, such as Metro Manila, leaving gaps in understanding the challenges faced by engineers in less prominent regions, like Negros Oriental. Moreover, while general traffic management policies have been discussed, limited research exists that evaluates the compliance and awareness levels of site engineers, who are the key players in ensuring effective traffic and safety measures. This study aims to fill this gap by focusing specifically on the Negros Oriental 2nd District Engineering Office, making it unique in its localized scope and focus on the role of site engineers.

The purpose of this study is to assess the site engineers' awareness of and compliance with road safety and traffic management protocols in the Negros Oriental 2nd District. By identifying challenges and gaps in current practices, this research aims to provide actionable insights for enhancing traffic management strategies and improving road safety. The findings are expected to contribute to creating safer transportation systems, reducing accidents, and supporting the ongoing infrastructure developments in the region, thereby fostering economic growth and societal well-being.

2.0 Methodology

2.1 Research Design

This study employed a descriptive-correlational research design to effectively address the research questions. The descriptive aspect aims to measure and describe the extent of field engineers' awareness and compliance with road safety and traffic management protocols in civil works projects within the 2nd District of Negros Oriental. Additionally, it identifies the common challenges faced by these engineers and evaluates the effectiveness of current road safety strategies. The correlational component examines whether a significant relationship exists between the engineers' awareness and their adherence to road safety protocols. This design is well-suited for understanding both the levels of awareness and compliance as well as the factors influencing them.

Following the quantitative analysis, the second phase (qualitative) involved conducting interviews with selected field engineers to explore further and explain the patterns and findings that emerged from the survey data. Specifically, this phase aimed to gain deeper insight into the reasons behind levels of awareness, the nature of compliance behaviors, and the contextual factors influencing the implementation of road safety and traffic management strategies.

2.2 Research Locale

The research was conducted in the 2nd District of Negros Oriental, Central Visayas, Philippines. It comprises eight cities and municipalities: Dumaguete, Sibulan, San Jose, Amlan, Pamplona, Tanjay, Bais, and Mabinay. This district represents a mix of urban and rural areas, each with distinct challenges in road safety and traffic management due to varying levels of infrastructure, population density, and traffic flow. The environment encompasses construction sites, road networks, and field offices where civil works projects are actively undertaken, providing a real-world context for examining awareness and compliance levels.

2.3 Research Participants

The study involved 100 randomly selected field engineers, consisting of 40 DPWH site engineers and 60 private contractor engineers assigned to civil works projects within the district. These respondents represent both the

public and private sectors, ensuring a balanced perspective on road safety practices and challenges. Random sampling was employed to minimize selection bias and capture a diverse range of experiences, thereby enhancing the generalizability of the study's findings.

2.4 Research Instrument

A structured survey questionnaire was utilized as the primary instrument for data collection in this study. The questionnaire is divided into sections that align with the study's objectives: assessing awareness, measuring compliance, identifying challenges, and evaluating the effectiveness of current road safety and traffic management strategies. It incorporated Likert-scale items for quantitative analysis. To ensure content validity, the questionnaire was reviewed by experts in road safety, traffic management, and civil engineering. These experts assessed the relevance, clarity, and comprehensiveness of the items to confirm that the instrument adequately covers the constructs being studied. Feedback from the expert panel was used to refine the items, ensuring alignment with the research objectives and the theoretical framework underpinning the study. The reliability of the survey instrument was tested through a pilot study conducted with a small group of site engineers who were not part of the main sample. Internal consistency was also assessed using Cronbach's Alpha to evaluate the reliability of the Likert-scale items. A high Cronbach's Alpha value (above 0.70) indicates that the items within each section of the questionnaire consistently measure the intended constructs. This process ensures the reliability and trustworthiness of the data collected.

2.5 Data Gathering Procedure

The research followed a systematic process to ensure the credibility and reliability of the findings. The researcher began by securing the necessary approvals from the University Research Ethics Committee, the DPWH, and private contractor organizations operating in the 2nd District of Negros Oriental. This ensures that the study adheres to institutional and professional guidelines for ethical research. Following approval, the survey instrument underwent a pilot test with a small group of site engineers not included in the main sample. This step assessed the clarity, validity, and reliability of the questionnaire, with feedback incorporated into the final version to refine its quality. The finalized instrument was distributed to the 100 randomly selected field engineers. Data collection was conducted through a survey tailored to the accessibility and preferences of the respondents. This approach accommodates the busy schedules of the participating field engineers and ensures maximum response rates. Once collected, the data were compiled, cleaned, and subjected to statistical analysis. The findings were analyzed and interpreted in alignment with the study's objectives and theoretical framework.

2.6 Data Analysis

Completed questionnaires were checked, coded, and converted into composite awareness and compliance scores by averaging the relevant Likert-scale items. Descriptive statistics—frequencies, percentages, means, and standard deviations—summarized overall awareness, compliance, and the prevalence of specific implementation challenges. The internal consistency of the awareness and compliance scales was confirmed with Cronbach's α values above 0.80. To test the study's hypothesis, Spearman's rank-order correlation was used to examine the relationship between awareness and compliance, with a significance level of 0.05, given the ordinal nature of the data. This analytical sequence ensured a clear, reliable basis for interpreting how engineers' protocol knowledge translates into on-site practice.

2.7 Ethical Considerations

This study adhered to rigorous ethical standards to ensure the protection of the rights and welfare of all respondents. As a graduate school student at Foundation University, the researcher upholds the institution's commitment to ethical research practices. Prior to conducting the study, approval was obtained from the University Research Ethics Committee, and permissions were secured from the DPWH and private contractor organizations operating within the 2nd District of Negros Oriental. All participants were provided with a comprehensive informed consent form that outlined the study's purpose, objectives, and the voluntary nature of their participation. The form also assures the respondents of the confidentiality and anonymity of their responses. Personal and identifying information was collected, and data were stored securely to prevent unauthorized access. The respondents were informed that they have the right to withdraw from the study at any time without penalty or negative consequences. Transparency was maintained throughout the research process, with the participants encouraged to seek clarification on any aspect of the study if needed. This ethical approach ensures that the study aligns with the principles of respect, beneficence, and justice, as well as the academic and professional standards upheld by Foundation University Graduate School.

3.0 Results and Discussion

3.1 Road Safety Awareness and Compliance

Table 1 presents the extent of awareness and compliance of field engineers concerning road safety in civil works engineering projects within the district. The findings indicate “very high awareness” ($\bar{x} = 4.50$) and “high compliance” ($\bar{x} = 4.13$) among field engineers regarding road safety. As far as awareness is concerned, all individual indicators fall within the “Very High” category, with engineers particularly demonstrating strong knowledge about the proper use of road markings and the need for regular safety inspections, evidenced by the highest mean of 4.59.

Table 1. Extent of Awareness and Compliance of Field Engineers Concerning Road Safety of Civil Works Engineering Projects in the District

As a site engineer, I...		Awareness		Compliance	
		$\bar{x}$	VD	$\bar{x}$	VD
1.	I am aware of/compliant with DPWH policies on road safety standards and regulations.	4.49	VH	4.11	H
2.	I am aware of/compliant with the proper installation and maintenance of regulatory, warning, and guide signs for road safety.	4.48	VH	4.18	H
3.	I am aware of/compliant with the required placement of safety barriers, cones, and pedestrian protection measures at construction sites.	4.51	VH	4.13	H
4.	I am aware of/compliant with the proper use of road markings to guide motorists and pedestrians safely.	4.59	VH	4.23	VH
5.	I am aware of/compliant with work zone safety measures, including designated entry and exit points for vehicles and personnel.	4.41	VH	4.05	H
6.	I am aware of/compliant with the required visibility and reflectivity standards for road signs and pavement markings.	4.57	VH	4.15	H
7.	I am aware of/compliant with speed limit regulations and traffic calming measures in construction zones.	4.48	VH	4.05	H
8.	I am aware of/compliant with emergency response protocols for road safety incidents within work areas.	4.40	VH	4.01	H
9.	I am aware of/compliant with the need for regular inspections and maintenance of road safety signs and markings.	4.59	VH	4.14	H
10.	I am aware of/compliant with coordination requirements with local authorities to ensure road safety around project sites.	4.51	VH	4.23	VH
Composite		4.50	VH	4.13	H

Note: Verbal Description (VD); 4.21-5.00, Very High (VH); 3.41-4.20, High (H); 2.61-3.40, Moderate (M); 1.81-2.60, Low (L); 1.00-1.80, Very Low (VL)

This aligns with DPWH’s policy on the compulsory inclusion of road safety plans (DPWH, 2022), which mandates such considerations in every project design. This also supports the notion, as presented by Mannering and Washburn (2020), that mastering foundational principles in highway engineering is essential for field engineers to make informed decisions. However, despite this high awareness, compliance scores were notably lower, yielding a slightly lower composite mean of 4.13. This issue reflects what Tyler’s (2006) Theory of Regulatory Compliance explains: that compliance is influenced not only by rules but also by internal values and structural barriers. The observed gap may be linked to the disconnect between pre-construction meetings and actual on-site practices, as different personnel often execute the work. This resonates with Moreno’s (2023) findings on poor implementation, which are attributed to inadequate workforce, training, and coordination. Moreover, Dorado and Aviles (2024) emphasized the utility of data-driven tools such as machine learning in predicting accident-prone areas—tools that may not yet be widely accessible or utilized in the 2nd District, possibly contributing to these gaps in compliance.

The World Health Organization’s (2023) manual on helmet safety also echoes the importance of design interventions (e.g., signage, lane markings, visibility measures), underscoring the role of engineers in constructing safety-friendly environments. Although engineers know what to do, compliance is hindered by inconsistencies in execution, underscoring the need for more frequent on-site audits, as recommended by Shen et al. (2020), and stronger multidisciplinary collaboration. Compliance is rated lower than awareness because contractor personnel attending the pre-construction meeting differ from those assigned on-site. This discrepancy often leads to a disconnect between the communicated compliance requirements and the actual on-site practices. Hence, while awareness might be high among a select group, the actual compliance on the ground suffers due to this lack of consistent knowledge transfer and the varying personnel involved.

3.2 Traffic Management Awareness and Compliance

Table 2 illustrates the field engineers' awareness and compliance regarding traffic management in civil works projects. Similar to the previous table, awareness is consistently rated "Very High" with a composite mean of 4.41. Engineers demonstrated a strong understanding of protocols, including traffic control device placement, lane closures, detours, night visibility requirements, and coordination with traffic enforcement agencies. However, the compliance scores, while still within the "High" range, have a composite mean of 4.13. Only two items – placement of traffic control devices and coordination with enforcement agencies – achieved a "Very High" rating for compliance. This reflects a pattern similar to that seen in road safety, where engineers are highly aware of proper practices but encounter limitations that affect the full implementation of traffic management protocols.

Table 2. *Extent of Awareness and Compliance of Field Engineers Concerning Traffic Management of Civil Works Engineering Projects*

As a site engineer, I...		Awareness		Compliance	
		$\bar{x}$	VD	$\bar{x}$	VD
1.	I am aware of/compliant with DPWH traffic management protocols for work zones and construction projects.	4.55	VH	4.20	H
2.	I am aware of/compliant with the proper setup and placement of temporary traffic control devices to manage road users effectively.	4.50	VH	4.21	VH
3.	I am aware of/compliant with lane closure and detour guidelines to minimize traffic disruption.	4.41	VH	4.16	H
4.	I am aware of/compliant with proper sign placement distances to ensure smooth traffic flow.	4.38	VH	4.15	H
5.	I am aware of/compliant with night visibility requirements, including lighting and retro reflective materials for work zones.	4.50	VH	4.12	H
6.	I am aware of/compliant with procedures for coordinating with traffic enforcement agencies to ensure road user safety.	4.48	VH	4.23	VH
7.	I am aware of/compliant with real-time traffic monitoring and adjustments to minimize congestion in work areas.	4.26	VH	4.02	H
8.	I am aware of/compliant with guidelines on ensuring access for emergency vehicles and alternative routes for road users.	4.32	VH	4.11	H
9.	I am aware of/compliant with the requirement to conduct traffic impact assessments before and during roadwork activities.	4.35	VH	4.03	H
10.	I am aware of/compliant with public information dissemination strategies regarding roadwork and expected traffic adjustments.	4.31	VH	4.07	H
Composite		4.41	VH	4.13	H

The very high awareness scores affirm the effectiveness of departmental communications and training, as emphasized by the researcher's interview data and supported by Sidel's (2020) findings, which highlight the role of institutional and ecosystemic frameworks in urban traffic systems. However, consistent with challenges noted by Amoah and Simpeh (2021), compliance may be impacted by the disconnect between briefed personnel and those executing fieldwork, as well as external challenges such as vandalism of signages, a top issue identified by 73% of respondents in this study (refer to Table 3). The need for interdisciplinary collaboration, as promoted in the WHO (2023) traffic safety manual, is evident to ensure not only awareness but also the consistent application of traffic safety measures across all project phases. The result also supports the Theory of Reasoned Action (Ajzen & Fishbein, 1975), which posits that intention (awareness) does not always translate to behavior (compliance) without the influence of enabling social norms and systemic support.

Du et al. (2023) and Mokhtari et al. (2023) also discussed how technological solutions, such as smart traffic control systems and advanced traffic calming mechanisms, improve management; however, their adoption in the Philippine context is often slow. Likewise, Andoy (2023) found that malfunctioning traffic devices and narrow roads contribute to poor traffic management, consistent with the compliance barriers observed in your study. The mismatch between plans and execution, such as the non-reflectorized signage and misalignment of plans with on-ground realities, is a recurring theme also found in Subramanya et al.'s (2022) research on the challenges in digital integration and plan enforcement.

3.3 Correlation between Awareness and Compliance

Table 3 presents the results of the Spearman's Rank-Order Correlation analysis, which explored the relationship between field engineers' awareness and their compliance with road safety and traffic management protocols. The data reveal statistically significant positive correlations for both domains: road safety ($r_s = 0.331, p < .001$) and traffic management ($r_s = 0.347, p < .001$). These findings suggest that as field engineers' awareness increases, so does their likelihood of adhering to the expected standards and procedures on the ground.

Table 3. Relationship between the Extent of Field Engineers' Awareness and Their Compliance with Road Safety and Traffic Management

Variables	r_s	p	Decision	Remark
Road Safety Awareness and Compliance	0.331	<.001	Reject H_{01}	Significant
Traffic Mgmt. Awareness and Compliance	0.347	<.001	Reject H_{01}	Significant

Note: Spearman's Rank-Order Correlation at 0.05 Level of Significance

Although the correlation coefficients fall within the moderate strength range, the statistical significance suggests that awareness is a foundational driver of behavioral compliance. In other words, engineers who possess a strong grasp of protocols, regulations, and best practices are generally better equipped and more motivated to apply these in real-life settings. This aligns with the World Health Organization's (2023) conceptual framework in its *Pedestrian Safety* and *Helmet Safety* manuals, both of which emphasize that technical knowledge, when consistently reinforced, can lead to measurable improvements in safety outcomes. However, it is equally important to note that awareness alone does not guarantee full compliance. The gap between knowing and doing can be attributed to a range of systemic and situational barriers. Shen et al. (2020) argued that to sustain safety performance, engineering organizations must go beyond individual training and adopt institutionalized safety cultures that promote continuous evaluation, accountability, and performance benchmarking. Similarly, Subramanya et al. (2022) posited that compliance is not only a matter of knowledge but also of capacity—access to tools, systems, data, and trained personnel that support engineers in effectively executing safety and traffic management plans.

The findings also echo Sidel's (2020) eco-systemic analysis of transportation in Metro Manila, where fragmented policies and weak inter-agency coordination often hinder implementation, regardless of the professional competence of engineers and planners. In the context of the 2nd District of Negros Oriental, field engineers may understand what is required but still face real-world limitations such as inconsistent enforcement, poor public cooperation, and logistical constraints (e.g., stolen signage, non-compliant motorists, or lack of field support). Moreover, the results support the assertions of Moreno (2023) and Amoah and Simpeh (2021) that the practical implementation of safety measures depends heavily on the availability of resources, training, and support from contractors and local authorities. Engineers may be highly aware of traffic calming devices, required signage, or risk mitigation protocols. However, without appropriate funding, manpower, or enforcement mechanisms, the execution of these standards may be compromised.

3.4 Challenges in the Implementation of Road Safety and Traffic Management Measures

Table 4 presents a comprehensive overview of the common challenges encountered by field engineers in implementing road safety and traffic management measures during civil works projects. Notably, the most frequently reported issue—cited by 89% of respondents—is the non-compliance of motorists with posted safety regulations. This is followed by the widespread problem of vandalism or theft of safety signage and equipment (73%), which not only compromises the safety of construction workers but also increases the risk for road users.

Table 4. Common Challenges Field Engineers Face when Implementing Road Safety and Traffic Management (n=100)

Indicators		%
1.	Traveling motorists are not complying with the regulations.	89
2.	Vandalism or theft of safety signage and equipment, leading to increased risk for both workers and motorists	73
3.	Challenges in maintaining traffic flow while ensuring safety, potentially leading to congestion and frustration among motorists	62
4.	Inadequate training for workers on safety protocols and emergency response	60
5.	Shortage of personnel for traffic management and enforcement	58
6.	Insufficient public awareness about ongoing projects and the necessary precautions	50
7.	Difficulty in enforcing compliance with safety regulations among all parties involved	44
8.	Coordination issues between various stakeholders, including local authorities, contractors, and utility companies	43
9.	The contractor has failed to comply with the required standard safety signage.	36
10.	Safety signage does not meet the established standards and specifications.	36
11.	The approved traffic management plan does not coincide with the actual condition on the site.	34
12.	The contractor is not adhering to the approved plans and specifications	30
13.	Signages are not reflectorized as indicated in the approved plans and specifications.	29
14.	Design fails to prioritize pedestrian safety and accommodate diverse road users.	29
15.	Reluctance of stakeholders to adopt innovative or alternative approaches	28

These findings highlight how external factors beyond engineers' control can significantly hinder the effectiveness of even the most well-planned safety and traffic strategies.

Additional concerns include difficulty managing traffic flow while maintaining safety (62%), inadequate training for workers on safety protocols (60%), and shortages in personnel for enforcement (58%). These reflect internal and structural limitations within project execution teams. Moreover, half of the respondents reported a lack of public awareness and engagement during ongoing projects, while others pointed to coordination issues among stakeholders, including local authorities and contractors. Several engineers also identified contractor non-compliance with approved plans, use of non-reflectORIZED signage, and design flaws that neglect pedestrian safety as implementation barriers. Though reported less frequently, these issues reflect underlying systemic weaknesses that, if unaddressed, can compound over time and jeopardize the integrity of road safety protocols. The dominant concerns of motorist non-compliance and signage vandalism echo the findings of Andoy (2023), who observed similar patterns in Puerto Princesa City, where a lack of traffic discipline, poor infrastructure maintenance, and insufficient enforcement mechanisms hindered traffic management efforts. The cultural acceptance of rule violations and limited awareness of safety procedures among the general public further complicate these challenges.

Operational and manpower-related issues reinforce the conclusions of Amoah and Simpeh (2021), who found that field engineers often struggle with insufficient training, lack of quality safety equipment, and logistical disruptions, particularly during pandemic-affected periods. Moreno (2023) also documented these concerns in the context of road and bridge maintenance in the Zamboanga Peninsula, highlighting how budget constraints, poor planning, and human resource limitations critically affect the implementation of safety measures in regional settings. Meanwhile, the identified resistance to adopting innovative traffic safety solutions—such as smart traffic systems, digital signage, and GIS-integrated platforms—mirrors the insights of Subramanya et al. (2022). Their study emphasizes that high upfront costs, lack of training, and interoperability challenges often hamper technical innovation. This reluctance, especially in provincial or rural settings, can delay the modernization of traffic systems that are vital for both efficiency and public safety.

These layered challenges call for a collaborative, multi-stakeholder approach to road safety and traffic management—one that involves not only engineers and contractors but also local government units, enforcement agencies, and the commuting public. There is also a clear need for capacity-building programs, site-specific training modules, and resource allocation frameworks that take into account the unique needs of regional infrastructure projects, which are often overlooked in national urban-centric planning. Ultimately, these findings suggest that while field engineers play a crucial role in implementation, achieving sustainable safety outcomes requires systemic support, operational readiness, and community engagement to overcome the persistent challenges encountered in civil works environments.

4.0 Conclusion

This study enriches road-construction safety scholarship by quantifying the *awareness-compliance gap* among Filipino site engineers and pinpointing four field-level barriers—motorist behavior, signage loss, traffic-flow pressures, and limited on-site training—that constrain implementation far more than knowledge deficits. In documenting these obstacles, the research supplies a reliable baseline metric for awareness and compliance in a developing-country context. It furnishes a practical checklist that project managers can integrate into pre-construction risk audits. Translating these insights into practice calls for embedding explicit compliance indicators—such as real-time signage inventories and traffic-flow performance metrics—into routine progress reporting, allocating dedicated budgets for rapid signage replacement and community safety campaigns, and institutionalizing partnerships with traffic enforcement units rather than relying on ad-hoc coordination. Engineering curricula and continuing-education programs can further reinforce these measures by coupling technical road-design instruction with scenario-based modules on work-zone safety management, stakeholder negotiation, and public engagement, thereby equipping graduates for the behavioral complexities unveiled here. Looking ahead, longitudinal evaluations could assess whether such interventions meaningfully narrow the awareness-compliance gap, while cross-district studies might reveal regional nuances in the barrier typology. Mixed-methods designs that pair self-reports with site observations, sensor data, or video analytics would strengthen compliance assessments and cost-benefit analyses of anti-vandalism technologies, such as QR-coded or GPS-tagged traffic devices. These analyses could guide procurement policies aimed at preserving critical safety infrastructure. By reframing the distance between knowledge and execution as a systems problem amenable to targeted action, this work charts a clear path for practitioners, educators, and researchers committed to turning well-designed protocols into consistently safe Philippine work zones.

5.0 Contributions of Authors

This work is a solo endeavor. The researcher has dedicated his time and expertise to writing, editing, analyzing, and interpreting the data gathered for this study.

6.0 Funding

No funding agency was involved in this study.

7.0 Conflict of Interests

The author declares no conflict of interest.

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