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# Legal Compliance Assessment of Construction Safety Practices in Road Projects

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**ABSTRACT**

The construction industry is widely recognized as one of the most hazardous sectors, particularly in road construction projects where workers are exposed to severe risks associated with heavy equipment, moving traffic, and unpredictable environmental conditions. This study utilized a descriptive research design to assess the level of legal compliance in construction safety practices across various road projects and to identify the primary challenges affecting the implementation of these safety regulations. Through purposive sampling, data were collected via structured questionnaires from twenty-one (21) respondents, comprising project engineers and safety officers directly engaged in active road construction activities. The findings revealed a distinct divergence between policy and execution: administrative safety practices, such as securing work permits, maintaining documentation procedures, and conducting initial safety orientations, demonstrated relatively higher levels of legal compliance. Conversely, operational safety practices, including the execution of emergency preparedness drills and fostering active worker participation, demonstrated relatively lower levels of compliance, suggesting that while formal safety procedures are generally institutionalized, practical on-site enforcement remains inconsistent. Consequently, the study concluded that despite the existence of established safety regulations, critical gaps in field implementation continue to persist. To bridge these gaps, it is recommended that construction companies strengthen field supervision, mandate regular safety training alongside hands-on emergency drills, improve on-site hazard communication, and guarantee the absolute availability of adequate safety resources. Furthermore, continuous monitoring and stringent enforcement by relevant regulatory authorities are essential to cultivate a proactive safety culture and promote legally compliant road construction practices.

**Keywords:** *Construction Safety, Legal Compliance, Road Construction, Safety Regulations, Workplace Safety*

## INTRODUCTION

Construction safety remains a significant concern in road infrastructure projects because of the high-risk nature of construction activities involving heavy equipment, exposure to moving traffic, and varying environmental conditions. The construction industry is consistently recognized as one of the most hazardous sectors due to workers' exposure to physical risks, heavy machinery, elevated work areas, and dynamic working environments (Corpuz et al., 2019). These hazards negatively affect worker safety and may also lead to project delays, increased operational costs, reduced productivity, and poor project outcomes.

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In the Philippines, safety in construction projects is governed by regulatory frameworks such as the Occupational Safety and Health Standards (OSHS) and policies implemented by the Department of Labor and Employment (DOLE, 2020). These regulations are intended to ensure safe working conditions and reduce workplace accidents. However, despite the presence of these legal standards, workplace incidents and unsafe practices continue to occur, indicating gaps between policy requirements and actual on-site implementation (Cabual et al., 2025).

Previous studies have shown that compliance gaps persist due to weak enforcement, insufficient safety monitoring, limited worker participation, and inconsistent implementation of safety regulations (Dayrit et al., 2025). In road construction projects, where hazards are more complex because of traffic exposure and large-scale operations, strict compliance with safety regulations becomes even more necessary.

This study therefore seeks to assess the level of legal compliance in construction safety practices in road projects and identify challenges affecting legal compliance. The findings of this study may contribute to improving safety enforcement, strengthening management practices, and promoting safer construction environments.

Given these existing safety concerns and compliance issues in road construction projects, it becomes important to further examine the current implementation of construction safety practices and the challenges affecting legal compliance.

The construction industry in the Philippines is considered one of the most high-risk sectors (Corpuz et al., 2019) because of the nature of construction work, operational complexity, and the involvement of multiple stakeholders such as engineers, contractors, safety officers, laborers, and government agencies. Among various construction activities, road construction projects present unique safety challenges due to continuous exposure to traffic, operation of heavy equipment, changing site conditions, and the need for coordination among several project personnel.

To address these risks, the Philippine government has established legal frameworks such as the Occupational Safety and Health Standards (OSHS) and other regulations issued by the Department of Labor and Employment (DOLE). These regulations require construction companies to implement safety measures including the use of personal protective equipment (PPE), hazard communication, safety orientations, emergency preparedness procedures, and regular safety inspections.

Despite the existence of these regulations, studies and industry reports continue to reveal inconsistent compliance among construction projects. In some cases, safety procedures are formally documented but are not consistently practiced on-site. Factors such as inadequate supervision, insufficient training, lack of worker participation, and weak implementation of safety regulations may contribute to inconsistent safety compliance on construction sites.

Given these concerns, this study is important in evaluating the current level of legal compliance in construction safety practices among road construction projects. Specifically, the study seeks to identify areas where compliance is strong or weak and determine challenges affecting safety implementation. The findings may help construction companies, engineers, safety officers, and government agencies improve safety implementation and strengthen compliance with legal standards.

## Literature Review

Construction safety remains one of the most critical concerns in the construction industry due to the hazardous nature of construction activities and the increasing complexity of infrastructure projects. According to Dayrit et al. (2025), construction management practices play a significant role in ensuring project success through proper planning, monitoring, communication, and risk management. Effective construction management contributes to improved safety implementation, resource management, and compliance with regulatory standards.

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In construction projects, safety management requires not only formal regulations but also active implementation and monitoring of safety procedures. Cabual et al. (2025) emphasized that proactive safety measures such as Job Hazard Analysis (JHA) and Behavior-Based Safety (BBS) approaches significantly improve workplace safety culture and reduce accident risks in construction environments. Their study further explained that strong safety policy implementation, regular safety monitoring, and worker participation contribute to effective safety management practices.

Moreover, the implementation of safety policies and objectives is essential in promoting compliance with occupational safety standards. Cabual et al. (2025) found that organizations with strong safety leadership, continuous monitoring, and effective communication systems demonstrated higher levels of safety compliance and hazard prevention. The study highlighted that regular safety meetings, feedback mechanisms, and stakeholder involvement positively influence workplace safety performance.

Safety compliance is also influenced by the availability of proper training, safety equipment, and enforcement of regulations. Corpuz et al. (2019) stated that workers in high-risk occupations are often exposed to hazards such as toxic fumes, extreme temperatures, and physical injuries when safety practices are not properly implemented. Their findings revealed that insufficient training, limited access to personal protective equipment (PPE), and weak enforcement of safety rules contribute to inconsistent compliance with occupational safety standards.

Similarly, Corpuz et al. (2019) emphasized that safety awareness and compliance with PPE protocols are essential in minimizing workplace accidents and protecting workers from occupational hazards. The study recommended continuous safety education, regular safety audits, and stronger collaboration between organizations and regulatory agencies to improve safety implementation and worker protection.

Furthermore, effective communication and systematic monitoring are important components of safety management systems. Asignacion et al. (2019) explained that proper planning, communication systems, and monitoring procedures are necessary in ensuring operational efficiency and reducing workplace issues. Their study highlighted that inadequate monitoring and poor communication systems may negatively affect organizational performance and operational safety.

Overall, the reviewed literature suggests that construction safety compliance is strongly influenced by management commitment, worker participation, safety training, hazard communication, and consistent enforcement of safety regulations. Previous studies consistently support the importance of proactive safety management and continuous monitoring in improving workplace safety and minimizing construction-related hazards.

**Statement of the Problem**

This study aims to assess the level of legal compliance in construction safety practices in road projects and identify challenges affecting safety regulation implementation. Specifically, it seeks to answer the following questions:

1. What is the level of legal compliance in construction safety practices in road projects?
2. Which safety practices are the most and least complied-with?
3. What challenges affect the implementation of safety regulations?

**Significance of the Study**

This study provides valuable insights regarding the level of legal compliance in construction safety practices and its implications for improving workplace safety and project performance.

- Project Engineers and Safety Officers. The findings may help improve supervision, strengthen safety enforcement strategies, and enhance the implementation of safety programs and training.

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- Construction Companies. The results of the study may assist companies in minimizing operational risks, avoiding legal liabilities, improving productivity, and strengthening overall compliance with safety regulations.
- Government Agencies and Policymakers. The findings may serve as a basis for improving monitoring systems, strengthening policy implementation, and developing more effective construction safety programs.
- Future Researchers. The study may provide relevant information and references for future studies related to construction safety, legal compliance, and safety management practices.

Ultimately, the study contributes to promoting a stronger culture of safety and ensuring legally compliant and sustainable road construction practices.

## METHODS

### Research Design

This study employed a descriptive research design. The study was conducted to determine the current level of legal compliance in construction safety practices among selected road construction projects. Specifically, it focused on identifying the extent of compliance with safety regulations and determining the most and least complied-with safety practices.

This research design was considered appropriate because it enabled the researcher to describe existing safety practices and identify areas of strong and weak compliance with safety regulations. Through this approach, the study was able to identify strengths and gaps in construction safety compliance.

### Research Locale

This study was conducted in selected road construction projects in Nueva Ecija, Philippines. The respondents included project engineers and safety officers directly involved in the implementation and monitoring of construction safety practices. The selected locations were chosen due to the ongoing road infrastructure activities and the presence of personnel engaged in construction safety compliance and project supervision.

### Population and Sample of the Study

The population of the study consisted of project engineers and safety officers directly involved in selected road construction projects. These personnel were selected because of their direct involvement in implementing, monitoring, and enforcing construction safety practices and legal compliance requirements.

Using purposive sampling, a total of twenty-one (21) respondents were selected based on their experience and participation in safety-related activities within road construction projects. This sampling technique ensured that the respondents could provide reliable and relevant information regarding legal compliance and safety implementation.

The sample size was deemed appropriate for obtaining focused responses from personnel directly involved in construction safety implementation.

### Research Instruments

Data for this study were collected using structured questionnaires to assess construction safety practices and legal compliance.

***Structured Questionnaires.*** These were used to assess the respondents' knowledge, perceptions, and compliance with legal safety requirements. The questionnaire included items related to personal protective equipment (PPE), safety orientation, hazard communication, emergency procedures, and workplace safety practices.

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The research instrument was validated by experts in construction safety and research methodology. A pilot test was also conducted to evaluate the clarity, reliability, and consistency of the questionnaire. Necessary revisions were made based on the feedback obtained.

**Data Analysis**

The data gathered from the questionnaires were organized, tabulated, and analyzed systematically. Descriptive statistics such as frequency counts, percentages, weighted mean, and ranking were used to determine the level of compliance with construction safety practices and identify the safety practices with the highest and lowest levels of compliance among road construction projects.

**Scope and Limitations**

This study focused on selected road construction projects in the Philippines involving project engineers and safety officers directly engaged in construction safety implementation and monitoring.

The study primarily assessed compliance with legal safety regulations and the implementation of construction safety practices.

The study was limited by the relatively small sample size and the use of self-reported responses, which may be influenced by personal bias. Additionally, site-specific conditions, project schedules, and environmental factors may have affected the respondents' perceptions regarding safety practices
Despite these limitations, the study provided meaningful insights into the current status of legal compliance in construction safety practices among road construction projects.

**Ethical Considerations**

Ethical standards were strictly observed throughout the conduct of the study. Participation of respondents was voluntary, and informed consent was secured prior to data collection.

The confidentiality and anonymity of the respondents were protected at all times, and all information gathered was used strictly for academic and research purposes only.

The study adhered to ethical principles involving human participants by ensuring respect for respondents' rights, privacy, dignity, and safety throughout the research process.

## RESULTS AND DISCUSSION

**Profile of Respondents**

The respondents of the study consisted of project engineers and safety officers involved in selected road construction projects in the Philippines. Table 1 shows the distribution of respondents according to their roles.

Table 1. *Profile of Respondents*

| Respondent Type | Frequency | Percentage (%) |
|---|---|---|
| Project Engineers | 12 | 57.14% |
| Safety Officers | 9 | 42.86% |
| Total | 21 | 100% |

*Interpretation:* The majority of the respondents were project engineers, representing 57.14% of the total respondents, while safety officers comprised 42.86%.

The distribution of respondents provided perspectives from personnel directly involved in project supervision, safety implementation, and monitoring of construction safety practices. This helped the study

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obtain relevant information regarding both administrative and operational safety compliance in road construction projects.

**Level of Legal Compliance in Construction Safety Practices**

The level of legal compliance in construction safety practices was assessed using survey questionnaires answered by the respondents. Weighted mean and verbal interpretation were utilized to determine the extent of compliance with construction safety regulations.

Table 2. *Level of Legal Compliance in Construction Safety Practices*

| Safety Practice | Weighted Mean | Verbal Interpretation |
|---|---|---|
| Use of Personal Protective Equipment (PPE) | 4.35 | Highly Complied |
| Safety Orientations and Briefings | 4.28 | Highly Complied |
| Hazard Communication | 3.95 | Complied |
| Work Permits and Documentation | 4.42 | Highly Complied |
| Emergency Preparedness Drills | 3.76 | Complied |
| Availability of Safety Signages | 4.10 | Complied |
| Site Safety Monitoring | 4.20 | Highly Complied |
| Overall Weighted Mean | 4.15 | Complied |

*Interpretation:* The results reveal that the respondents generally complied with legal safety practices implemented in road construction projects, as reflected by the overall weighted mean of 4.15 interpreted as “Complied.”

Among the identified practices, work permits and documentation obtained the highest weighted mean of 4.42, interpreted as “Highly Complied.” This indicates that construction companies prioritize documentation and compliance records because these are regularly monitored by management and government authorities.

The use of personal protective equipment (PPE) and site safety monitoring also obtained high compliance ratings, indicating that respondents recognize the importance of protective measures and regular supervision in minimizing workplace hazards.

On the other hand, emergency preparedness drills obtained the lowest weighted mean of 3.76, although still interpreted as “Complied.” This suggests that while emergency procedures exist, actual participation and implementation of drills may not be conducted consistently. Hazard communication also received relatively lower ratings compared to administrative safety measures, indicating the need for improved communication between management and workers regarding workplace hazards.

The findings imply that administrative safety practices are generally more established and consistently implemented than operational safety activities requiring active worker participation. This finding is consistent with Cabual et al. (2025), who emphasized that active worker participation and continuous safety implementation are critical in improving construction safety compliance.

**Most and Least Complied Safety Practices**

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The study also identified the most and least complied with safety practices based on the weighted mean rankings.

Table 3. *Ranking of Safety Practices According to Level of Compliance*

| Safety Practice | Weighted Mean | Rank |
|---|---|---|
| Work Permits and Documentation | 4.42 | 1 |
| Use of Personal Protective Equipment (PPE) | 4.35 | 2 |
| Safety Orientations and Briefings | 4.28 | 3 |
| Site Safety Monitoring | 4.20 | 4 |
| Availability of Safety Signages | 4.10 | 5 |
| Hazard Communication | 3.95 | 6 |
| Emergency Preparedness Drills | 3.76 | 7 |

*Interpretation:* The findings indicate that work permits and documentation ranked first among all safety practices.

This may be attributed to strict monitoring requirements imposed by management and government regulatory agencies.

The use of PPE and safety orientations were also among the most complied practices because these are commonly required before entering construction sites.

Meanwhile, emergency preparedness drills ranked last, suggesting inconsistencies in the conduct of practical safety exercises. Hazard communication also ranked low, which may indicate insufficient interaction between management and workers regarding safety concerns and risk reporting.

These results demonstrate that construction companies tend to prioritize formal and document-based compliance more than participatory and behavioral safety activities. This supports the findings of Dayrit et al. (2025), which highlighted the importance of monitoring, documentation, and management practices in ensuring construction project compliance and operational efficiency.

**Challenges Affecting the Implementation of Safety Regulations**

The respondents also identified several challenges affecting the effective implementation of construction safety regulations.

Table 4. *Challenges Affecting the Implementation of Safety Regulations*

| Challenges | Frequency | Percentage (%) |
|---|---|---|
| Lack of Continuous Safety Training | 6 | 28.57% |
| Insufficient Safety Equipment | 5 | 23.81% |
| Weak Enforcement of Safety Policies | 4 | 19.05% |
| Limited Worker Participation | 3 | 14.29% |
| Time Constraints and Work Pressure | 3 | 14.29% |
| Total | 21 | 100% |

*Interpretation:* The results reveal that lack of continuous safety training was identified as the most common challenge affecting safety compliance. Similarly, Corpuz et al. (2019) found that insufficient training and weak enforcement of safety practices contribute to inconsistent compliance with occupational safety standards. This indicates that regular safety education and reinforcement are necessary to maintain workers' awareness and participation.

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Insufficient safety equipment and weak enforcement of safety policies were also identified as significant concerns affecting safety compliance.

Insufficient safety equipment further affects compliance because workers may not always have access to adequate protective resources while performing construction activities.

The findings imply that improving construction safety requires not only compliance with formal regulations but also continuous training, consistent enforcement, and sufficient provision of safety resources.

The findings of the study reveal that legal compliance in construction safety practices is generally evident in administrative procedures such as work permits, documentation, and safety orientations. These practices demonstrated high levels of compliance because they are formally required, documented, and regularly monitored by management and regulatory agencies.

However, operational safety activities requiring active worker participation, such as emergency preparedness drills and hazard communication, showed relatively lower compliance levels. This indicates that although safety policies and procedures are established, practical implementation and behavioral participation remain inconsistent.

These findings suggest that improving construction safety requires a combination of administrative compliance and active participation from both management and workers. Construction companies should strengthen safety culture through continuous training programs, regular monitoring, and consistent enforcement of safety regulations.

The findings are consistent with the studies of Cabual et al. (2025) and Dayrit et al. (2025), which emphasized the importance of safety implementation, monitoring, and worker participation in improving construction safety compliance.

Overall, the results emphasize the need for continuous safety monitoring, worker participation, and stronger implementation of construction safety regulations.

**Summary**

This study assessed the level of legal compliance in construction safety practices in road construction projects. The study utilized a descriptive research design involving project engineers and safety officers directly engaged in road construction activities. Data were gathered through structured questionnaires.

The findings revealed that the respondents generally complied with legal safety practices implemented in road construction projects. Administrative safety practices such as work permits, documentation, safety orientations, and the use of personal protective equipment (PPE) obtained high compliance ratings. These practices were consistently implemented because they are formally required and regularly monitored by both management and government agencies.

However, operational safety practices such as emergency preparedness drills and hazard communication received relatively lower compliance ratings. The findings suggest that while safety procedures and policies are present, practical implementation and active worker participation remain inconsistent in some construction sites.

Lastly, the study identified several challenges affecting the implementation of safety regulations, including lack of continuous safety training, weak enforcement of safety policies, insufficient safety equipment, limited worker participation, and time constraints during project implementation.

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## CONCLUSIONS

Based on the findings of the study, the following conclusions were drawn:

1. Road construction projects generally demonstrate compliance with legal construction safety practices, particularly in administrative and documentation-related activities.
2. Work permits and documentation were identified as the most complied-with safety practices, while emergency preparedness drills and hazard communication were the least complied-with practices.
3. Operational safety activities requiring active participation and behavioral compliance are less consistently implemented compared to formal administrative safety procedures.
4. Several challenges continue to affect effective safety implementation, particularly insufficient safety training, weak policy enforcement, inadequate safety resources, and limited worker participation.
5. Improving construction safety compliance requires not only the existence of safety policies and regulations but also consistent implementation, active participation, and effective enforcement of safety regulations.

### Recommendations

In light of the findings and conclusions of the study, the following recommendations are proposed:

1. Construction companies should strengthen the implementation and monitoring of both administrative and operational safety practices to ensure full compliance with legal safety requirements.
2. Regular safety training programs, seminars, and emergency preparedness drills should be conducted to improve workers' knowledge, awareness, and preparedness regarding workplace hazards and emergency situations.
3. Management should enhance hazard communication by conducting regular toolbox meetings, safety briefings, and establishing effective reporting systems for workplace hazards and incidents.
4. Construction firms should ensure the continuous availability and proper maintenance of personal protective equipment (PPE), warning signages, and emergency response equipment on construction sites.
5. Project managers and safety officers should conduct regular site inspections and compliance audits to strengthen enforcement of safety regulations and identify areas needing improvement.
6. Government agencies and regulatory authorities should intensify monitoring and enforcement activities to ensure that construction companies consistently comply with Occupational Safety and Health Standards (OSHS) and other related safety regulations.
7. Future researchers may conduct similar studies involving larger sample sizes, different construction sectors, or additional variables related to construction safety and legal compliance to further improve the findings of the study.

## References

Asignacion, A. P., Gomez, R. H., Jr., Mallari, M. O., Villar, M. J. M., & De Lara, R. J. L. (2019). Assessment of a network infrastructure: A basis for new network topology proposal. *International Journal of Engineering and Advanced Technology*, *9*(2).

Cabual, R. P. A., Mallari, M. O., & Florencondia, N. T. (2025). Proactive safety in Cabanatuan City projects: Implementing Job Hazard Analysis and Behavior-Based Safety approaches. *ICONIC Research and Engineering Journals*, *8*(11).

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Corpuz, J. R., Buenaventura, J. V., Mallari, M. O., & Florencondia, N. T. (2019). Safety engineering practices for welders in Cabanatuan City, Nueva Ecija: A study for enhancing occupational safety standards. *ICONIC Research and Engineering Journals*, *2*(9).

Dayrit, H. S., Manalang, M. A. T., Mallari, M. O., Florencondia, N. T., & Pascual, L. E. (2025). Assessment of the construction management challenges of Mechanical, Electrical/Electronics, Plumbing, Fire Protection and Sanitary (MEPFS) projects. *ICONIC Research and Engineering Journals*, *8*(11).

Department of Labor and Employment. (2020). *Occupational safety and health standards (OSHS)*. Department of Labor and Employment.

Republic Act No. 11058. (2018). *An act strengthening compliance with occupational safety and health standards and providing penalties for violations thereof*. Official Gazette of the Republic of the Philippines.