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Assessment of Safety, Health and Environmental (SHE) Practices in High-Rise Commercial Building Construction - A Case Study of Hinduja Housing Finance Corporate Office Project

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Abstract: ***This paper examines how Safety, Health and Environment (SHE) practices are applied in a live high-rise commercial construction project at the Hinduja Housing Finance Corporate Office under the supervision of Qualtech Engineers Pvt. Ltd. The work brings together site inspections, safety audits, document reviews, photographs and discussions with project staff to understand how safety, worker health and environmental protection are managed during construction. Attention is given to hazard control, use of personal protective equipment, labour welfare, emergency preparedness, statutory compliance and environmental measures such as dust control, waste management and water conservation. The assessment also compares existing practices with Indian regulations and relevant international standards to identify strengths as well as areas that require further improvement. Based on the observations, an integrated SHE framework is proposed to support safer construction activities, better work quality, higher productivity and responsible environmental performance. The paper also highlights the need for stronger safety education, wider use of digital technologies and closer collaboration between industry and academic institutions to build a more capable and sustainable construction sector in India.***

Keywords: Safety, Health and Environment; Construction Safety; Occupational Health; Environmental Management; High-Rise Construction

1. Introduction

The construction industry is a major contributor to national economic growth, infrastructure development and employment generation. It plays a vital role in developing highways, bridges, airports, railways, industrial facilities, commercial buildings, hospitals and housing projects. During periods of economic slowdown, governments often stimulate economic recovery by increasing investments in infrastructure projects, which generate employment, promote industrial activity and create long-term economic benefits.

Despite its importance, construction remains one of the most hazardous industries due to work at height, excavation, lifting operations, temporary electrical installations and the involvement of a large workforce. Occupational accidents, health hazards and environmental impacts continue to affect project safety, productivity, quality and overall project performance.

Safety, Health and Environment (SHE) management has therefore become an essential part of modern construction management. Effective implementation of SHE not only prevents accidents and protects workers but also improves construction quality, productivity, regulatory compliance and environmental sustainability.

The present study evaluates the implementation of SHE management practices at the Hinduja Housing Finance Corporate Office Project under the Project Management Consultancy of Qualtech Engineers Pvt. Ltd. Based on field observations, safety audits and document review, the study proposes a practical SHE implementation framework for improving construction safety and project performance.

1.1 Aim of the Study

To evaluate the implementation of Safety, Health and Environment (SHE) practices in a live high-rise commercial building project and to propose an integrated SHE framework that promotes a safe, healthy and quality working environment while improving productivity, sustainability and national economic growth.

1.2 Objectives of the Study

- To assess the implementation of SHE practices in a live construction project.
- To evaluate compliance with Indian statutory requirements and relevant international standards.
- To identify major construction hazards and existing risk control measures.
- To evaluate PPE usage, safe work practices, occupational health and labour welfare.
- To assess environmental protection measures adopted at the project.
- To identify best practices and areas for improvement through site observations and SHE audits.
- To propose an integrated SHE framework for enhancing safety, quality and productivity.

1.3 Research Gap

Most previous studies have focused separately on construction safety, occupational health or environmental management. Limited research has examined their integrated implementation in live high-rise commercial construction projects in India. This study addresses this gap through a practical field-based assessment using site inspections, structured SHE checklists and safety audits, and proposes an integrated framework for improving overall construction performance.

2. Literature Review

2.1 Construction Industry and Economic Development

- Role of construction in GDP.
- Infrastructure investment during economic crises.
- Employment generation.
- Need for sustainable construction.

2.2 Construction Safety and Occupational Health

- Accident trends in construction.
- Hazard identification and risk assessment.
- Occupational health and worker welfare.
- PPE and safe work practices.

2.3 Environmental Management in Construction

- Dust, noise and waste management.
- Water conservation.
- Sustainable construction practices.

2.4 Indian Regulatory Framework

- BOCW Act and Rules.
- Occupational Safety, Health and Working Conditions Code.
- National Building Code (NBC).
- Relevant Indian Standards.

2.5 International Standards and Best Practices

- ISO 45001.
- ISO 14001.
- ILO guidelines.
- International best practices.

2.6 Previous Studies and Research Gap

- Review of published research.
- Gaps in existing literature.
- Justification for the present study.

2.7 Future Directions for Strengthening SHE in Engineering Education and Construction Practice

This allows you to discuss:

- Mandatory SHE subject in engineering curricula.
- Dedicated SHE budget (PPE, training, worker welfare, emergency preparedness, audits).
- Current shortcomings in construction safety practice.
- Digital SHE (AI, BIM, drones, IoT).
- ESG integration.
- The need for an integrated SHE framework.

This title sounds forward-looking and fits naturally at the end of the literature review, leading directly into your **Research**

3. Research Methodology

3.1 Research Approach

The present study adopts a **field-based case study approach** to evaluate the implementation of Safety, Health and Environment (SHE) management practices in a live high-rise commercial construction project. The study is based on systematic site observations, document review, photographic records, interaction with project personnel and a structured SHE assessment to evaluate compliance, identify best practices and recommend measures for continuous improvement.

3.2 Project Details

The study was conducted at the **Hinduja Housing Finance Corporate Office Project**, a high-rise commercial building comprising **Double Basement, Ground Floor and Ten Upper Floors**. The project was selected because of its scale, complexity and comprehensive implementation of Safety, Health and Environment (SHE) practices. **Qualtech Engineers Pvt. Ltd.** executed the major civil construction works, providing an appropriate live construction environment for evaluating practical SHE implementation.

3.3 Site Visits and Field Observations

Multiple site visits were undertaken during various stages of construction to observe ongoing activities, identify hazards and assess compliance with established SHE requirements. Particular attention was given to work-at-height safety, excavation, lifting operations, housekeeping, temporary electrical installations, PPE usage, labour welfare and environmental protection measures.

3.4 SHE Audit Checklist

A structured SHE audit checklist was developed to evaluate project performance. The checklist covered:

- Management commitment.
- PPE compliance.
- Hazard identification and risk assessment.
- Safe work procedures.
- Occupational health and labour welfare.
- Environmental management.
- Emergency preparedness.
- Documentation and statutory compliance.

3.5 Data Collection

Data were collected through:

- Site inspections and direct observations.
- Review of SHE manuals, permits and statutory records.
- Interaction with project managers, site engineers, safety officers and workers.

- Photographic documentation of construction activities and safety practices.

3.6 Assessment Methodology

The collected information was analysed using a structured SHE assessment framework. Compliance with statutory requirements, industry best practices and project-specific safety measures was evaluated to identify strengths, deficiencies and opportunities for continuous improvement. Based on the findings, an integrated SHE implementation framework has been proposed to enhance construction safety, quality, productivity and environmental performance.

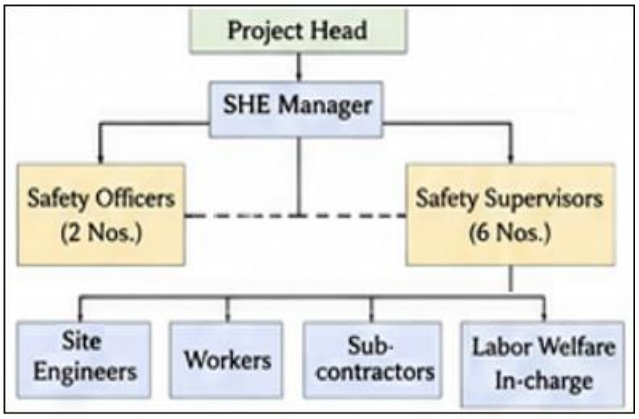
4. Results and Discussion

A brief introductory paragraph:
This section presents the findings of the field-based assessment of Safety, Health and Environment (SHE) management practices implemented at the Hinduja Housing Finance Corporate Office Project. The evaluation is based on systematic site observations, SHE audit checklists, document review and interaction with project personnel. The findings are discussed under major SHE components with emphasis on compliance, best practices and opportunities for improvement.

Then organize it as follows:

4.1 SHE Implementation at Site

- SHE organization chart
- Project lifecycle flow diagram
- Site layout showing safety zones



4.2 PPE Compliance

- PPE matrix
- Worker wearing complete PPE
- Helmet
- Safety shoes
- Gloves
- Safety goggles
- Reflective jacket
- Safety harness
- Ear protection
- Dust mask
- Face shield


Safety Helmet


Safety shoes


Handy Gloves


Safety goggles


Ear Muffs


Safety Harness


Reflective Jacket

4.3 Occupational Health Measures

- Dust suppression by water sprinkling
- Covered material storage
- Waste segregation bins
- Green belt
- Sedimentation tank
- Wheel washing
- Noise monitoring
- Spill control
- Rainwater conservation


Medical Check Up

First Aid Box


Health Awareness Session

4.4 Environmental Management

- Dust suppression by water sprinkling
- Covered material storage
- Waste segregation bins
- Green belt
- Sedimentation tank
- Wheel washing
- Noise monitoring
- Spill control
- Rainwater conservation


Water Sprinkling (Dust Control)


Water Segregation (Bin System)


Material Covered (Stockyard)


Green Belt Development

Worker Welfare

- Labour accommodation
- Toilets
- Bathing facilities
- Dining hall
- Recreation room
- Safety induction class
- Toolbox talk
- Safety awards
- Suggestion box


Toolbox Talk


Safety Video Screening


Drinking Water Point


Labour Hut

4.7 Emergency Preparedness

The project maintained an effective emergency preparedness system through fire extinguishers, first-aid facilities, emergency contact displays, evacuation routes and assembly points. Periodic mock drills and emergency response training enhanced workers' preparedness and minimized potential risks during emergencies.

4.8 SHE Performance Indicators

SHE performance was evaluated through PPE compliance, housekeeping, safety training, work-at-height safety, environmental practices and worker welfare. Regular inspections, audits and toolbox talks helped improve compliance and supported continual improvement in overall safety performance.

4.9 Discussion of Findings

The study indicates that effective implementation of SHE practices significantly improved workplace safety, worker health, environmental protection and project efficiency. Continuous training, management commitment and adoption of modern safety technologies can further strengthen SHE performance.

4.10 Future Directions for Strengthening SHE in India

India's construction industry should strengthen SHE through compulsory safety education in engineering courses, dedicated SHE budgets, regular competency development and wider adoption of AI, BIM, IoT and digital safety monitoring. Integration of SHE with ESG principles will further promote sustainable and safer construction practices.

5. Conclusion, Recommendations and Future Roadmap

5.1 Conclusion

- Summary of findings from the case study.
- Importance of SHE in improving safety, productivity and sustainability.

5.2 Institutional Gaps in SHE Education in India

- Very few universities offer dedicated degree programmes in Construction Safety.
- SHE is generally taught as a small part of Civil Engineering and not as a core subject.
- Shortage of qualified safety professionals and faculty.
- Limited practical training and industry exposure.

5.3 Existing Institutions Offering Safety Education

Briefly discuss institutions such as:

- National Safety Council (NSC)
- Central Labour Institute (CLI)
- National Institute of Construction Management and Research (NICMAR)
- Indian Institutes of Technology (selected safety research)
- NITs and selected engineering universities
- State technical universities offering safety-related electives

5.4 Recommendations

- Introduce **mandatory SHE** as a core engineering subject.
- Establish SHE laboratories and simulation centres.
- Make industrial safety internships compulsory.
- Create university–industry partnerships.
- Allocate dedicated SHE budgets in projects.
- Strengthen certification and competency development.

5.5 Future Roadmap

- AI-based safety monitoring.
- BIM and IoT integration.
- Digital permit-to-work systems.
- ESG integration.
- National competency framework for construction safety professionals.

This chapter will clearly distinguish your dissertation by moving beyond the case study and proposing a **national framework for strengthening SHE education and practice in India**, which aligns with the original contribution you wanted to make.

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