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A Study on the Effectiveness of the Safety and Health Management Ledger System for Construction Project Clients

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Abstract

Purpose: The role of the person placing an order under the Occupational Safety and Health Act and the legal standards and effectiveness of the safety and health ledger system were analyzed.

Research design, data and methodology: The role of the person placing an order under the Occupational Safety and Health Act is analyzed and presented through legal analysis. **Results:** In order to apply the part about the importance of the safety and health ledger system effectively, legal education is required to improve the safety awareness of the person placing an order and to properly understand the laws and regulations. **Conclusions:** The In order for the part of the importance of the safety and health ledger system to be applied effectively, continuous development is necessary to be given responsibility for education and safety and health

Keywords : Occupational Safety and Health Act, Construction Order Construction, Safety Management Organization, Safety and Health Register Act Liability, Responsibility and Authority

JEL Classification Code : K23, L52, L74

1. Introduction

Although safety management is consistently emphasized in industrial sites, the number of fatalities in Korea remains

high compared to the OECD average. Particularly, the fatal accident rate in the construction industry is pointed out as a serious issue.

In this context, the responsibilities of construction project

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clients (ordering parties) in safety and health management have been increasingly emphasized. The changes made to the Occupational Safety and Health Act have clarified their obligations. One of the core systems requiring the client's involvement is the preparation and implementation management of the safety and health ledger. However, if the roles and responsibilities of clients are not clearly established or lack effectiveness, the prevention of industrial accidents becomes limited.

Therefore, this study aims to analyze the roles and obligations of construction project clients under the safety and health ledger system and seek improvements for making the system more effective.

1.1. Review of Existing Prior Studies

Minsoo Kim et al. (2020) reported that the active participation of the person placing an order significantly contributed to the decline of accident rate at the construction site. They revealed that the on-site accident rate tended to decrease significantly when the person placing an order adopted an active safety management plan including the preparation of the safety and health ledger. The Korea Occupational Safety and Health Agency (2021) presented empirical data that the accident rate was 15% lower than the average at workplaces where the orderer's input of the safety and health budget and on-site inspection were strengthened. According to the study, the more attention the orderer paid to safety and health inspections and budget allocation at the site, the more the accident rate decreased significantly.

Park Young-ho (2019) pointed out that the safety and health ledger is being operated formally and acts as a burden to field practitioners. Park Young-ho warned that if the safety and health ledger is not properly utilized, there may be a limit to fulfilling the safety management responsibilities of the person placing an order. Lee Jung-min (2022) emphasized that in order for the head of safety and health to support the advancement of safety management practices in the field, the fulfillment of the responsibilities of the person placing an order must be premised. Lee Jung-min pointed out that without the active participation of the person placing an order, the head of safety and health can end up with simple documentation work, and argued that policy support is necessary to boost the effectiveness of the system.

The construction industry is classified as one of the sectors experiencing the highest incidence of industrial accidents, and in particular, the responsibility of the person placing an order has been strengthened since the enforcement of the Serious Accident Punishment Act. Accordingly, the safety and health ledger system is attracting attention as a key means to document and track the fulfillment of safety and health responsibilities of the person placing an order.

However, the current system has the following limitations:

Safety and health registers tend to be formally prepared or simply treated as archival documents in practice.

Depending on the level of participation or understanding of the client, there are variations in the operation level of the system, quantitative effectiveness analysis, or qualitative evaluation criteria, so this study aims to present guidelines for future policy improvement and practical application by analyzing the actual level and effectiveness of the safety and health ledger system, focusing on construction work cases, and deriving improvement measures to strengthen the role of the client.

2. The Theoretical Background of the Safety and Health Register

2.2. Role of Construction Order

Considering the business owner's work as stipulated in the Occupational Safety and Health Act, the obligation and responsibility for the safety and health management of workers at construction sites are concentrated on the construction company, and the person placing an order only manages the construction aspect as a supervisor, but the responsibility and obligation are insufficient even though he is the final decision maker. Under the provisions of the Occupational Safety and Health Act, a person placing an order for construction work refers to a person who contracts for construction work and does not lead the overall management and management of the construction work. However, it stipulates that those who re-contract for the contracted construction work is excluded. Therefore, the person placing an order for construction work is not legally responsible for not actually controlling, operating, or managing the construction or facilities, equipment, and places during the construction period. Accordingly, the role of the person placing an order was emphasized in the entire change in the Occupational Safety and Health Act, which has been in effect since January 16, 2020, and among them, the head of the Safety and Health Department is a document introduced to allow the person placing an order to systematically perform safety and health management in the construction work place, and plays a role in analyzing risk factors in the workplace in advance and clearly describing

measures to prevent it. The person placing an order is a key management tool that enables safety management from the beginning of the project. The safety and health obligations required by the Occupational Safety and Health Act to the person placing an order shall consist of Articles 67 to 76 for the prevention of industrial accidents such as construction industries as outlined in Section 3 of the Occupational Safety and Health Act, and the primary contents are shown in Table 1.

Table 1: Duties of the Client under the Occupational Safety and Health Act

provisions	Law	content
Article 67	Measures for the Prevention of Industrial Accidents by Construction Orderers	Obligations to take measures to be taken during the planning, design, and construction stages of the construction project order: Preparation of the basic safety and health ledger, design safety and health ledger, and construction safety and health ledger
Article 68	Safety and Health Coordinator	If more than one construction work is carried out in the same place, a safety and health coordinator must be placed for mixed work
Article 69	Prohibition of shortening construction period and changing	construction method Construction period calculated according to design drawing, etc. shall not be shortened
Article 70	Extension of construction period	Construction is delayed due to reasons for force majeure or the responsibility of the construction contractor, or the period is extended when the construction is suspended
Article 71	Request for design change	The reason for requesting design change is specified, and the construction contractor and the construction contractor are obligated to change the design
Article 72	Accumulation of occupational safety and health management	expenses, etc. of construction works, etc Expenses used for the prevention of industrial accidents are recorded in the contract amount or place of business
Article 73	Industrial Accident Prevention Map of Construction Work	Signing a guidance contract to prevent construction industrial accidents
Article 75	Special Situations involving the organization and operations of the consultative body on Safety and Health, etc	Organization and operation of a consultative body on safety and health, which consists of the same number of worker members and user members
Article 76	Safety Measures of Contractors for Construction of Machinery, Equipment, etc	Safety measures and health measures when machinery, equipment, or equipment prescribed by Presidential Decree are installed, operated, or dismantled

2.2. Understanding the Health and Safety Register System

With the comprehensive revision of the Occupational Safety and Health Act now in effect on January 16, 2020, the obligation of the person placing an order for construction work has been

strengthened, and the basic safety and health ledger, design and health ledger, and construction safety and health ledger are prepared and confirmed for each stage of construction planning, design and health, as shown in Table 2 for the methods and procedures for confirming the implementation of the safety and health ledger.

Table 2: Requirement to submit reports on the preparation of safety and health records for construction activities

Sortation	content
Purpose of Article 1	Matters necessary for the planning, design, and construction step-by-step measures of construction work to be carried out by the construction orderer to prevent industrial accidents of workers shall be determined.
Article 3 Scope of application	It applies to construction work with a total construction amount of 5 billion won or more.
Article 4 Method of preparation of the health and safety ledger	Where two or more construction works are ordered separately, the person placing an order, the designer, and the contractor shall prepare a safety and health ledger, respectively.
Article 5 Preparation of the Basic Safety and Health Register, etc	The person placing an order shall prepare a basic safety and health ledger at the planning stage of the construction work
Article 6 Preparation of the Design, Safety and Health Register, etc	After receiving the basic safety and health ledger from the client, the designer is required to prepare a safety and health ledger suitable for the design based on it
Article 7 Preparation of the Public Safety and Health Register, etc	The contractor shall prepare a construction safety storage register based on the design safety and health register received from the client.
Article 8 Confirmation of implementation of the Public Safety and Health Register	It is required to be checked with a minimum frequency of once every three months after the commencement of construction whether the contractor has implemented the safety and health measures plan in accordance with the construction safety and health ledger.

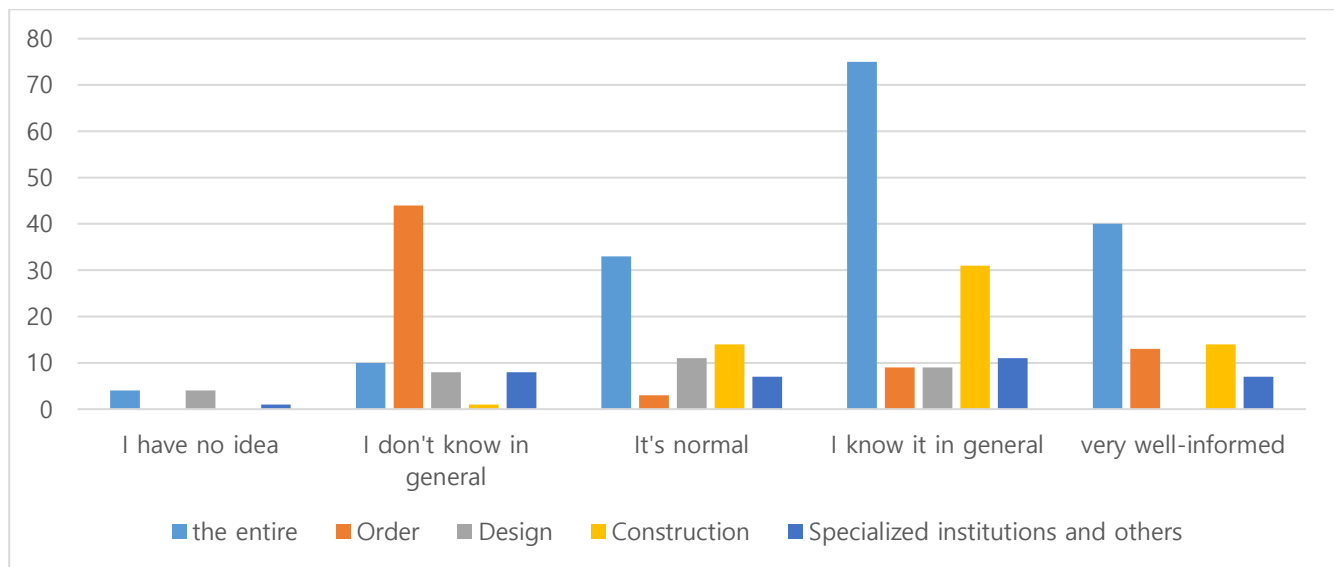
3. Problem

Based on the questionnaire produced based on the Likert 5-point scale and the nominal scale, a survey was conducted on public institution design managers, contractors, professional institutions, and other persons in charge of public enterprises. The survey period was conducted for a week from October 10 to October 17, 2023, and 162 copies were distributed offline and 162 copies were collected and used as research analysis data. After the implementation of the safety and health ledger, the safety and health ledger is still recognized as an orderer, but the necessity of the system is showing a insufficient distribution of surveys compared to the cognitive distribution. Even if implemented, the safety and health ledger is recognized as a simple document work, and the revision is not managed after formal preparation. The distribution of responses to the recognition of the safety and health ledger system was conducted on a using a 5-point Likert scale to analyze the results of the response to whether

the contents of the system were well known by referring to the results of the safety and health ledger system improvement plan for construction workers, according to the Korea Safety and Health Agency. As a result of analyzing the results of the response to the fact-finding survey on the safety and health ledger system of construction companies, the average of 4.22 respondents from ordering organizations, 2.78, the average of respondents from construction companies, and 4.24 affiliated with construction disaster prevention organizations and other organizations were found to be 3.14 on average for respondents from ordering organizations, 3.38 on average for respondents from design companies, and 3.44 for construction companies. The distribution can be observed in the responses regarding the necessity of the system Table 4.

Table 3: Distribution of Responses Regarding Awareness of the Safety and Health Ledger

Sortation	the entire	Order	Design	Construction	Specialized institutions and others
I have no idea	4 (2.5%)	0 (0.0%)	4 (2.5%)	0 (0.0%)	1 (0.6%)
I don't know in general	10 (6.1%)	1 (0.6%)	8 (4.9%)	1 (0.6%)	8 (4.9%)
It's normal	33 (20.4%)	3 (1.8%)	11 (6.7%)	14 (8.6%)	7 (4.3%)
I know it in general	75 (46.3%)	19 (11.8%)	9 (5.6%)	31 (19.1%)	11 (6.8%)
very well-informed	40 (24.7%)	13 (8.0%)	0 (0.0%)	14 (8.7%)	7 (4.4%)

**Figure 1:** Distribution graph of responses to awareness of safety and health directors**Table 4:** Distribution of Responses Regarding the Perceived Necessity of the Safety and Health Ledger

Sortation	the entire	Order	Design	Construction	Specialized institutions and others
It's not like that	24 (14.8%)	6 (3.7%)	2 (1.2%)	15 (9.3%)	1 (0.6%)
in general, no	30 (18.5%)	4 (2.5%)	6 (3.7%)	12 (7.4%)	8 (4.9%)
be normal	40 (24.7%)	11 (6.8%)	10 (6.2%)	12 (7.4%)	7 (4.3%)
That's generally the case	41 (25.3%)	9 (5.5%)	6 (3.7%)	15 (9.3%)	11 (6.8%)
That's very much the case	27 (16.7%)	6 (3.7%)	8 (4.9%)	6 (3.7%)	7 (4.4%)

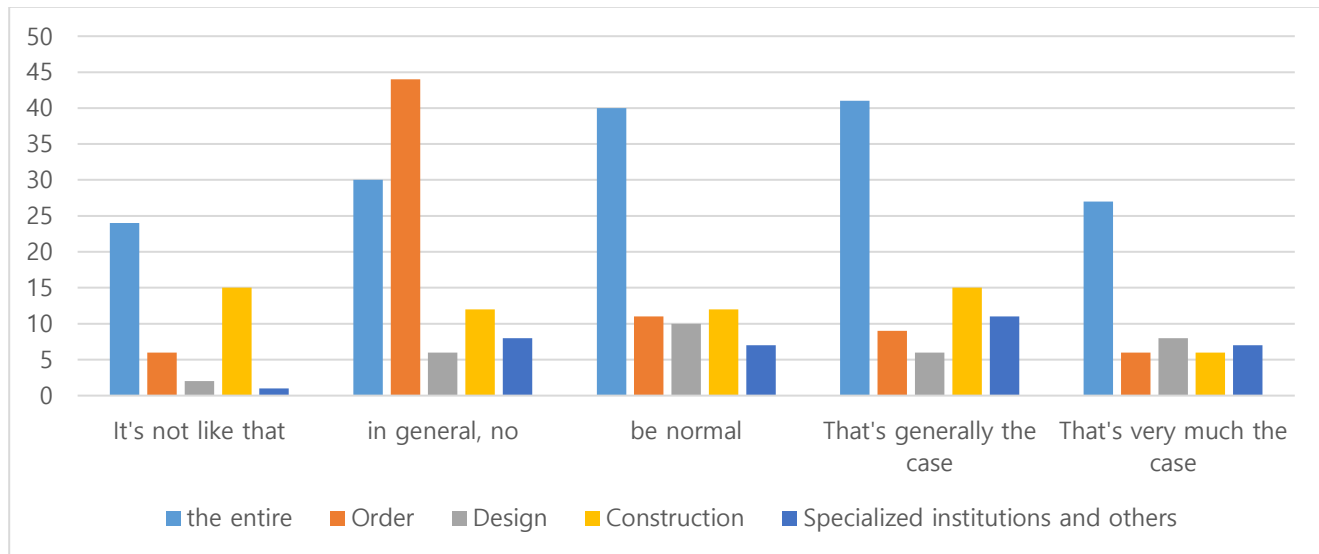


Figure2: Distribution graph of Responses Regarding the Perceived Necessity of the Safety and Health Ledger

Among the problems of the safety and health ledger, an opinion can be heard that it is a show-type report. It is an opinion that it is not helpful for practical safety management because the author's knowledge of safety and health is insufficient, and the recognition is low. Rather than writing it directly, it is often carried out in the form of entrusting the safety and health ledger to an external safety agency, and even if it is prepared, it can be seen that it is prepared with the minimum contents in the attached form.

The main body of the preparation is that the basic safety and health ledger is prepared by the owner, the design safety and health ledger is prepared by the contractor, and the construction and safety and health ledger is prepared by the construction company, but the review costs, expert advice costs, and preparation costs incurred by the absence of the calculation of the cost of the preparation are not clearly determined, so there are cases where they are not willing to write it.

In the case of a public period orderer, there is a safety advisory group and requests an expert to review the appropriateness, but otherwise, there may be differences in the level of the safety and health ledger due to the ability of the orderer and lack of support from experts.

All of these problems can be seen because of a lack of interest in safety and health. Despite the obligation of the person placing an order when revising the Occupational Safety and Health Act, the person placing an order needs time and effort to revise safety management and improve communication safety and health management systems.

3. Conclusion

The safety and health ledger system is applied to construction work for construction projects with a value of 5 billion won or more and is a device that systematically reflects the safety and health responsibilities of the construction contractor. However, in the case of those who place an order of public institutions, there is a perception of the system, whereas those who place an order of private institutions have low interest in writing even if they are not familiar with or do not recognize the system itself. Even in the survey results of this study, the recognition of the necessity of the safety and health ledger remained at the 'normal' level.

In order to resolve this problem, the initial requirement is to actively promote the purpose and importance of safety and health ledger. In particular, small and medium-sized private order sites are obligated to provide system guidance during the licensing process, and it is necessary to secure the expertise and effectiveness of preparation by providing consulting for the implementation of the system. In addition, the participation of field practitioners or experts is required so that the contents can be used in the actual field, not just in simple form.

The supervisory authority should not only conduct a formal inspection of whether the safety and health ledger is implemented, but also thoroughly manage actual site confirmation, feedback, and implementation of measures. The fact that the current implementation inspection report is focused on structural factors such as formwork, copper barry, and temporary soil barriers overlaps with the safety management plan in accordance with the Construction Technology Promotion Act, and the lack of a periodic

implementation management system of the safety management plan itself also needs to be improved. Therefore, the implementation inspection of the safety and health ledger should be established as a means for practical safety management rather than a formal procedure and should be operated so that feedback and measures from recipients can be reflected in the site. Furthermore, the work method of the construction site should be shifted away from the existing document center and converted to a real-time information collection and inspection system using drones and online-based technologies.

In conclusion, the safety and health ledger system is an important system that allows construction contractors to perform practical responsibilities and roles for safety, and it should be continuously developed into an effective system.

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Legislation Referred

Occupational Safety and Health Act
Construction Technology Promotion Act
Serious Accidents Punishment Act