

# Utilizing the Management of Construction Works At Hoa Binh Construction Group Joint Stock Company

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**Abstract -** In the past few years, when Vietnam starts to integrate into the international economy, the country's aspect is constantly innovating. Therefore, the economic life of the people is increasingly improved, the economy is growing and developing more and more. Of course, with the continuous development and improvement of economic professions and other fields of life, the face of the country is changing day by day. The emergence of construction works to meet the needs of the industrialization and modernization of the country along with the process of international economic integration, continuous development, is the competition between companies in the domestic construction industry together and between foreign companies and joint ventures. One of the competitive factors of businesses in the construction sector is not only the size and nature of the works but also the quality of construction works. This is a very important factor, determining the competitiveness of businesses operating in the construction field. Because construction works have the character of complete units, unitary, fixed, and cannot be moved and limited capital, so the importance of construction quality management is extremely great.

Currently, there have been many incidents related to the quality of construction works, their consequences are extremely great, unpredictable, causing considerable damage to the state and society. Therefore, the problem raised here is the construction management. That shows that the quality of construction works, construction products need to continue to be paid attention and promoted in all stages of the construction investment process.

Hoa Binh Construction Group is the leading contractor in Vietnam, the main products of Hoa Binh Construction Group are major projects in the field of civil construction, industrial works and infrastructure, Hoa Binh is one of the construction enterprises that has affirmed its reputation through construction works. However, in the intrinsic aspects of construction management, inefficiencies are inevitable, problems in work quality due to errors in construction management. Therefore, construction quality management is always focused to improve the brand and competitiveness in the construction market.

**Keywords -** Construction, management, quality, HBC, Hoa Binh construction group

## I. INTRODUCTION

### A. Overview of construction management and quality

On the basis of general concepts about the quality of construction works can be understood as the assurance of

safety, sustainability, technical and artistic requirements of the works but must conform to the standards and standards. construction, provisions in relevant legal documents and economic contracts.

Construction management is the process of controlling and monitoring well all activities taking place on the construction site to ensure compliance with design drawings, technical criteria and construction standards applied in the project. The quality of a work construction is a combination of many factors, so in order to manage the work's quality in the construction phase, it is necessary to control and manage the factors affecting the public quality. Process in this period, including: People, materials, machinery and equipment and solutions - construction technology.

Improve construction management to bring high quality to construction works, help businesses achieve economic efficiency, save resources, due to rational use, saving resources i.e. energy, labor, tools and capital... Improving the quality of construction management has the same meaning as increasing output while saving labor. Improving product quality makes businesses develop in both quality and quality. From there, create leverage for businesses to grow and develop in a sustainable way, improve their competitiveness in the construction market.

### B. Perspective about completing construction management

Mr. Le Viet Hai, Chairman of Hoa Binh Construction Group, said: "The next decade (2020 - 2030) is a golden opportunity when Vietnam enters a period of golden population, in which the number of people of working age is 2 times larger than a dependent. This is a condition for the country to break through to become a great power. The golden population and industriousness of Vietnamese people are a huge advantage in the supply chain, an opportunity for the construction industry from the residential segment to industry infrastructure.

Moreover, Vietnamese construction enterprises have applied innovative and effective modern construction technology to meet the high requirements of quality, speed, safety and reasonable price.

In fact, many Vietnamese companies have constructed very large projects such as Hoa Binh, Lai Chau, Son La hydroelectric plants, Thang Long bridge, 500 kV line and Bai Chay cable stayed bridge, Deo Ca tunnel. A series of Hoa Phat steel plant projects in Dung Quat - Quang Ngai, Vinfast automobile factory in Hai Phong are all built by Vietnamese companies with very fast completion speed.

Many construction companies have the ability to manage several dozen high-rise buildings at the same time with thousands of apartments such as Vinhomes Grand Park in Ho Chi Minh City or Vinhomes Ocean Park in Hanoi. Manufacturing and processing factories in industrial zones across Vietnam are also built by Vietnamese businesses to ensure safety and quality. "

From the comments of the Chairman of Hoa Binh Construction Group shows the importance of improving the management of construction activities. Step by a new era, we must improve our skills, perfect the system to meet new needs and new problems, be ready for a journey to make Vietnam one of the most prestigious countries in the construction industry.

### C. The urgency of the subject

The quality of construction works is not only directly related to the safety of community lives, the effectiveness of construction investment projects, but also is an important factor to ensure the sustainable development of each country.

Improving the quality of project requires many combined solutions. Besides the factors of technology innovation, materials, construction techniques, the human factor is still the decisive factor. Construction management and supervision play a key role throughout the project implementation.

Competition is characteristic of the market mechanism. Construction corporations and groups not only compete domestically but also with foreign countries in ensuring the quality of construction works, especially in the current development conditions of our country.

At Hoa Binh Construction Group Joint Stock Company, quality control is currently focused on improving the brand and competing in the construction market. However, besides the achieved results, there are still shortcomings and weaknesses, the method of organizing the quality management of projects is not really effective. From that reality, being aware of the importance of the organization, construction management, with the knowledge that has been studied, researched and actual work, I chose the topic "Complete construction management improvement at Hoa Binh Construction Group Joint Stock Company".

## II. CONSTRUCTION SITUATION AT HOA BINH CONSTRUCTION COMPANY

In 1987, Hoa Binh Construction Office was established with a team of 5 founders and 20 employees, specializing in the construction of civil construction projects. On December 1, 2000, based on inheriting all forces of Hoa Binh Construction Office, Hoa Binh Construction and Real Estate Joint Stock Company was established under the license issued

by the Department of Planning and Investment of Ho Chi Minh City. In June 2017, Construction and Real Estate Joint Stock Company changed its name to Hoa Binh Construction Group Joint Stock Company.

After 33 years of construction and development, Hoa Binh has made rapid progress while ensuring safety, prestige and quality. From the construction of housing projects, Hoa Binh has become one of the leading general contractors in Vietnam; From the role of a subcontractor, Hoa Binh has strongly affirmed its brand as the general contractor for projects of international scale and stature such as Sai Gon Center, Duc House, Celadon City ... Up to now, Hoa Binh has made a mark with more than 400 projects from North to South, contributing to the construction and modernization of the country.

Hoa Binh Construction Group is constantly developing and growing. Revenue grew strongly, specifically in the 10-year period from 2006 (starting to be listed on the stock market) to 2019, the company increased revenue by 91.8 times (from 205 billion a year). 2006 to 18,822 billion VND in 2019). During this journey, Hoa Binh is one of the most competitive and efficient businesses in construction. From subcontractors for foreign companies in large-scale projects, Hoa Binh has become the main contractor and has risen to the role of general contractor for many projects with high technical and artistic requirements.

As one of the largest construction contractors in Vietnam, Hoa Binh has made great contributions to domestic construction about the quantity of construction project, quality of construction with high technical expertise. In particular, in the trend of internationalization, Hoa Binh is also the first construction contractor of Vietnam to enter overseas markets in Malaysia (Le Yuan Residence project, Desa Two project) and Myanmar (GEMS project). The slogan of Hoa Binh's internationalization strategy "Brand positioning - International standard".

Construction situation at Hoa Binh Construction Company:

The company has stepped up the quality control, construction progress of each building, each work item. The supervision, quality management, construction progresses are assigned to specific leaders in the company and projects. Project managers are assigned to regular weekly checks, briefings with investors, supervision consultants, construction management boards to promptly grasp the situation, take measures to direct, drastic if necessary.

For valuable, large-scale projects with complex technical requirements, the company has set up executive boards to directly command the site, urge engineering, quality, timeline management, and finalization. Seriously implementing internal acceptance.

Some projects have high technical requirements and featured, the company has cooperated closely with the construction team to create construction measures, detailed progress and absolute compliance during the construction.

The main sources of materials imported into the project are strictly monitored by the terms of quality and quantity through the supply contract. Thereby, the company has also managed to disburse the purchase of materials.

The company regularly maintains periodic construction reports so that the company leaders can grasp and have timely adjustment measures when necessary.

The direction of construction, construction quality management has made positive changes. The works constructed by the company, especially the key projects, are progress and quality guaranteed. Actively exploit the domestic construction market, and at the same time expand relations with traditional foreign partners such as Myanmar, Cambodia, and Malaysia. The construction works are always highly appreciated by the investor about the quality, construction progress and hygiene, safety, since then the company's reputation has been improved.

Thus, the quality control, construction progress of each building, work item in the company are promoted. Quality control, supervision and construction progress are disseminated to each Project Director, company leader. One of the principles of construction management is the commitment guaranteed of leadership, the company's leaders know and understand the importance of quality, construction quality management to develop, from there to declare to lower levels.

The successful application of advanced construction methods that shorten the progress while ensuring the quality of the work (such as the Top-down method) is a significant success, it can be said that it is a competitive factor of the company to other companies in the schedule, construction progress, and quality. And above all, the principle of the company's construction management is always "do it right from the beginning".

### III. FACTORS AFFECTING CONSTRUCTION MANAGEMENT AT HOA BINH CONSTRUCTION COMPANY

#### A. Human resource management

Hoa Binh Construction Group has 3,795 managers, staff at the headquarters and site buildings (College, intermediate level, professional, university and post-graduate ...); 4,020 organic workers (technical workers, unskilled workers) and 21,100 subcontractors. With the current employees, the Group always ensures to supply abundant human resources for different projects.

Technical workers have the largest number of employees in the company, in 76.65% of the common worker group). A special feature of the construction is the high technical workers because they need more expertise in work. As for common workers, they only do odd jobs like cleaning, porters ..., so this department does not account for a large proportion. The university level resources have increased; this also improves the quality resources for the company. However, the company's postgraduate level is not much, only accounting for about 0.1% of entire employees.

The level of labor determines the product quality and labor productivity. If the labor force is highly qualified, it will create conditions to improve productivity and save costs. Conversely, if the skilled labor is not enough to complete the job, the job will not be completed on time, the lack of quality will jam all other jobs, the result will increase repair costs or waiting costs.

Managers also contribute significantly to detecting inefficiencies in management activities, detecting technical flaws, wasting human resources. Besides, employee's consciousness also affects construction business performance. When the awareness of workers and managers is high, it will reduce waste of construction material, time and solving work quickly.

#### B. The management of construction materials, construction equipment

Like any other manufacturing business, the construction business in the production and business process must calculate the costs spent and earned. Especially in the market economy, in order to survive and develop, enterprises must have a reasonable measure of management of materials and equipment. The management of construction materials and construction equipment must be organized from the purchasing stage, hiring, transporting to reserve and preparation for the construction. Management must be organized to promptly promote the supply of materials and equipment for the construction, to check and supervise the material consumption at the site in order to contribute to reducing unnecessary fees, increase profits for the company. To achieve that, the enterprise must have a working capital amount and use it appropriately, strictly manage them from purchasing to use, respond to both production and saving, preventing the infringement of national property and company property.

Raw materials are an important part, part forming the building, like the skin, flesh and bones of the building. Raw materials are very important factors affecting the quality of the building. So what quality of raw materials is considered to be guaranteed?

With the current state of raw materials, such as cement, sand, and stone, in addition to the good type, there is always a fake quantity with unsatisfactory quality or rather poor quality. If using this type, it will adversely affect the building, even affect human life (when the work is completed and put into use). Therefore, during the construction process, if it is not detected in time, some workers will be poorly aware, for the purpose of personal gain, mixed the fake in the construction process.

The management of construction machines and equipment plays an important role in ensuring labor safety and construction progress. Ineffective machines and equipment management can lead to the situation that businesses have to wait weeks to repair the machines, affecting profits, costs incurred, and construction progress.

### C. Construction management

A construction project can face many risks if it does not have a good construction plan and is well managed and implemented. The contractor will implement the construction based on the plan and expected budget for the project.

The construction process helps the investor and the contractor understand the work quantity to plan construction as well as monitor, thereby controlling the construction progress. The contractor will give a reasonable method and try to gather resources to construct with the best progress and achieve the best quality, quickly put the project into operation.

Based on the design, work volume, work characteristics, work construction progress and through survey, a project managed and implemented must satisfy the following conditions:

- Organize the masterplan for construction.
- Organize well construction works including foundation, superstructure, finishing.
- Organization and installation of the system
- Connecting, aligning, checking and testing the system
- Guide to use and transfer technology, warranty, complete procedures and relevant legal documents.

### D. Investing deeply in machinery, equipment and production tools

Production machines, equipment, and tools are a factor that significantly affects the quality of the project. Because, if the quality control work is not good, but construction machinery and equipment are not modern, take a lot of time, delay progress, even unsafe for workers, etc... finally it will affect the quality of the project, and of course an inevitable consequence will affect the competitiveness and reputation of the company in the market (especially in the current period).

Recognizing that importance, the contractor must focus on investing deeply in machinery, equipment and production tools. When implementing construction projects, if necessary, the company will ensure investment in modern equipment, a harmonious combination of investment in width and depth. The total number of current equipment of the company is quite abundant and new, which helps the company to implement projects using machinery and equipment with high initiative. In addition, the company still has certain difficulties, there are also broken machines that have not been repaired in time or some old machines with low capacity, or wasting in using machines, high idle time, ineffective.

### E. State and industry management mechanism and policies

Activities in any industry would need to have the general direction of the State. In the construction industry is not an exception, all construction companies must comply with certain mechanisms and policies of the State, which are legal documents such as the Construction Law, the Bidding Law, Decrees and other sub-laws such as the Building Materials Decree are also common bases for the company to comply.

These legal documents create an equal competition mechanism for all companies in the market.

### F. Fierce competition from competitors in the construction industry

In an open mechanism and a large market, construction businesses also have great opportunities to expand their operations because the current demand is still very large, otherwise, our country is in a period of change. Building and infrastructure are still weak, so Hoa Binh Construction Group Joint Stock Company also identifies those great opportunities and challenges, should increasingly improve to stand firm and expand its business market.

Otherwise, the company will have to face fierce competitors, other large construction corporations such as Coteccons, An Phong, Ricoms, and Fecon. In addition, the company also faces other potential competitors because the construction industry is a potential industry and has many untapped prospects. Currently, there are many companies and groups in other sectors that want to penetrate this market. This has great pressure on businesses in the general industry and Hoa Binh company. But the construction industry also has certain standards of financial capacity, technology, size, reputation and brand name. Therefore, large companies in the industry also have certain advantages and if they doing well in their job, it is not easy for potential competitors to penetrate the market.

### G. Natural and difficult conditions from the Covid 19 pandemic

Weather conditions are also a factor affecting the construction work. Vietnam is a place with complicated weather conditions, storms, floods, landslides ... are factors causing a delay in many projects. Geographical conditions are also a major factor affecting the construction process, making it difficult for technical experts to make construction plans, increasing costs due to transportation in complicated and unfavorable terrain, or extend the schedule

The COVID-19 pandemic is raging over the world, causing unprecedented negative impacts on the global economy and Vietnam also. It can be seen clearly that the deep impact of the Covid -19 epidemic effects on all industries such as aviation, tourism, real estate ... The construction industry is inevitably heavily affected. It is estimated that businesses are most affected in the second quarter of 2020, thus making the growth rate in the first 6 months only reach 2.98%.

However, on the positive side, the negative effects on the economy of Covid -19 translation as a process of "natural filtration" in the market, is also considered a test for enterprises, including construction businesses. While there are companies declaring bankruptcy, dissolving, or suspending business in the short term, there are also companies that continue to affirm their reputation and brand name in this difficult period.

In that difficulty, Hoa Binh Group has had a lot of effective solutions to ensure the safety of thousands of employees in more than 80 big and small projects across the country, and at the same time offer restructuring solutions of

activities of the Group to suit the timing of the outbreak. With the timely response of the company's leaders, Hoa Binh overcame the crisis and ranked No. 1 in the Top 10 prestigious construction contractors in 2020 (according to Vietnam Report).

#### IV. SOLUTIONS TO COMPLETE CONSTRUCTION MANAGEMENT AT HOA BINH CONSTRUCTION COMPANY

##### A. Improving the quality of work design creates prerequisites for construction management

Construction design consultancy is one of the essential activities in construction investment activities. It has a decisive role in the socio-economic efficiency of a construction investment project from the investment preparation stage, implementing the investment to the stage of project exploitation. Simultaneously, design consultancy contributes to creating a new environment, a new space that satisfies the requirements of production, daily life and human life both physically and mentally. However, in the past, design consultancy activities have not entirely performed their role, leading to design quality, revealing many shortcomings and weaknesses. The design does not guarantee the quality, is not suitable for construction planning, natural conditions, architectural regulations, current standards ... causing waste of investment capital, high cost of works, quality the unsecured quantity of works affecting the exploitation and use process the works are put into operation.

Essential functions of quality management, requirements and purposes of design quality management of construction work in general and civil works in particular, the purpose of applying ISO 9001 - 2008 on quality management construction work design quantity. Understanding the basic concepts and requirements of quality and quality management will be a prerequisite for implementing construction management works in the future. Good design quality and good design management will ensure the requirements of construction quality, appropriate construction planning to meet the project phases' aesthetics and investment efficiency. Design quality management in construction plays a vital role in ensuring and improving the quality of works, proactively preventing corruption, preventing construction losses preventing. Unfortunate incidents occurred, creating stable political security, contributing to the economic development of the country.

Quality of construction works should be paid attention to right from when the idea is formed, from the planning, project formulation to the survey, design, construction ... to the exploitation stage, use and dismantle the works after the service period has expired. The quality of construction works is reflected in the quality of construction planning, quality of construction investment projects, quality of the survey, and design drawings.

##### B. Improving construction supervision capacity

Construction supervision is the work of inspecting, urging, directing, and evaluating people participating in the work. Construction supervision is subject to construction work

items, relevant laws, regulations, policies and technical standards, written work contracts as support, and real rules show work, use construction efficiency as purpose. Supervision is a critical area because there are timely supervision and direction to avoid losses in construction. If the construction quality is not strictly monitored, the construction time is not on schedule, and if not monitored, the number of lost materials will be huge.

Hoa Binh Construction Company still faces many problems in construction:

The company still lacks a team of engineers to oversee both quantity and expertise.

- Almost all work items are done under the contracting mechanism. Small teams take on the responsibility of building construction for the company and are only concerned with their construction. When there is no close supervision, the linkage between teams is not clear, work may overlap, or team conflict with each other affecting the overall construction quality.

- There is a situation of material loss or carelessness; the result is not achieved as the target set.

- And the phenomenon of running according to schedule or arranging ineffective plans.

- In addition to the standards and legal regulations on construction supervision, the company should perfect the following to improve construction management:

+ Urge and inspect the team to strictly comply with construction contracts and technical standards of works.

+ Check the quality of materials, structures and equipment that are constructed

+ Manage construction progress. The work construction progress made by a contractor must be consistent with the project's overall progress approved by the investor. For large-scale construction works and prolonged construction period, the work construction progress is made for each period by a month, quarter or year. The investor, the construction contractor, the supervision consultant and related parties are responsible for monitoring and supervising the construction progress of the work and adjusting the progress if the construction progress is at some stage. A section is lengthened but must not affect the overall progress of the project. In case the overall progress of a project is considered to be prolonged, the investor must report to the investment decider for deciding to adjust the project's overall progress.

+ The work construction must be done according to the approved design volume. Construction volume is calculated and confirmed between investors, construction contractors, supervision consultants by time or construction stage, and the approved design volume for construction—Department of acceptance and payment under the contract.

+ Organize the design unit and the construction team to take over the pre-acceptance test of the whole project, sign the payment documents

+ In all cases, the supervision engineer must listen to the construction unit's opinion, comply with the instructions of the

construction management agency, promptly summarize lessons learned, and regularly improve the supervision level. Close.

Scientifically organizing the construction supervision system creates conditions for businesses to grasp the actual situation at the site and make timely adjustments. Avoid wasting resources when things go wrong.

#### *C. Effective management of construction machines, equipment, material's resources*

Machinery, equipment and raw materials have a direct impact on the performance of construction. The proper arrangement of machinery and equipment and the appropriate use of raw materials will allow a close combination of labor and production materials to suit the company's production duties requirements.

At the company, there are many types of machinery and equipment with diversified types and good quality. However, in the current production and business conditions with the number of projects spread across the country, machines' movement is strenuous, leading to machines moving to buildings near the headquarters. Many, but at a different site, there is a lack of machinery. In some localities, the company chooses to hire machinery and equipment from other companies to serve their work, so it also affects quite a lot on cost, initiative, and construction quality. On the other hand, an equally crucial subjective cause that significantly affects the efficiency of using machines and equipment is that the management of machinery and equipment is still weak. Furthermore, this is the primary cause of the limited use of machinery and equipment, such as: using too much capacity of many types of machines and equipment; many are still damaged but not repaired in time, or the plan to move to different projects is still unreasonable.

The company's equipment management department needs to develop a master construction machinery plan for each project and construction teams and teams, at least one month in advance on machine types, the quantity, time of the machine, and the gathering place of the machinery equipment. On that basis, I plan to move back and forth between works so that the most optimal. Enterprises, construction teams can also base on this plan of the enterprise to build their plans, creating an active construction position.

Regarding the gathering location, the company should spread out the machinery and equipment that the company has for each geographic area to suit the construction works. Besides, it is necessary to be very flexible based on grasping the machine rental market, where the construction site is located.

However, when the company's construction equipment has many limitations in the current context, and the company has many construction contracts, the proper use of machinery is essential. To perform well in that context, the company needs to set up a team of engineers who will calculate the amount of waste of machinery needed for each specific project in terms of quantity and time. How long does it take to construct? Then, these engineers compare with the existing machines and develop specific solutions for each project. When many

projects are constructed close to each other, the terrain has good traffic and construction time is different. We can develop a plan to make the most of the equipment's capacity.

Managing the economical use of raw materials is a prerequisite to lower costs, reduce costs, and improve enterprises' efficiency and business. Accurate planning of material needs, the right volume and timing required is an essential basis for keeping stock levels at a minimum. Although there have been many efforts to use materials efficiently and economically, the loss is inevitable in the production process. Besides, there are interruptions in construction due to the inadequate supply of materials or the improper supply of materials or the increased cost of materials and the cost of transporting materials. In particular, the loss of raw materials makes the actual quantity of materials in the construction decrease, forcing many work items to reduce materials not as expected.

To ensure the requirement of improving the efficiency of production and business activities, reducing the cost of storage in the production process, supplying the right materials at the right time when needed, the company should apply the planning method. Raw material demand assessment (MRP). Building an MRP begins with a final product production schedule and then converts to the need for parts, details, and materials needed in different stages. The end product determines the expected need for lower-level components and components depending on the product structure. MRP calculates the number of parts, parts in each stage for each product type in close relation to the available stock and determines when to issue an order or production order for each part. that part.

The MRP seeks to identify the relationships between production schedules, orders, intake and product demand. This relationship is analyzed from when a work item or work is constructed to the end of it.

To implement the above solution well, the company needs to make appropriate and reasonable investments due to such activities as propaganda, education on the sense of saving materials, training of materials management staff, training workers in the economical use of raw materials. Adequate and appropriate material control and protection of staff recruited.

#### *C. Choose the form of organization, the production team*

In the construction works, team organization and production are more important because the work in this industry require high collectivity. At Hoa Binh Construction Corporation, the organization of labor inappropriately leads to difficulties in management. To increase business efficiency, the company minimized labor costs by creating framework teams while working on site. The establishment of a framework team brings many advantages when performing jobs such as: Flexibility in mobilizing human resources, there is no binding on preferential allowances, insurance for employees ... That has decreased a lot of expenses. In addition, the company does not incur additional travel costs of workers when working in different locations. However, this model also brings the company a lot of difficulties in organizing and operating because construction workers are basically self-

employed workers that the company hires from outside through construction contractors. Therefore, the company cannot control the working time and skills of employees.

To overcome the limitations in choosing the structure of organizing production teams, in each specific project the company should consider its available conditions, the investor's requirements on progress, quality and considers the volume of a particular type of work to determine which structure of production team organization is appropriate.

For project has big value, long construction time, investors require high quality and construction progress, the company should organize a specialized team. Because when organizing the specialized team, they will complete the jobs with high technical requirements, shortening the construction time.

#### *D. Management of labor safety and working environment on the construction site*

Construction contractors must establish safety measures for workers, equipment, construction equipment and works before executing construction. Safety measures involving multiple parties must be agreed upon by the parties.

Safety measures and safety rules must be publicly displayed on the construction site for everyone to know and obey. Dangerous positions on the construction site must be instructed and warned in case of accidents. Construction contractors, investors and related parties must regularly inspect and supervise occupational safety on the site. When an unsafe incident occurs, it is necessary to suspend the construction or direct the construction until the remedy is completed before continuing the construction. The person who lets the violation of occupational safety occur under his management must be responsible for before the law.

Hoa Binh Construction Company is always responsible for organizing, guiding, disseminating, and training labor safety regulations. For some jobs with strict occupational safety requirements, the employee must have an occupational safety training certificate under the law on occupational safety. It is strictly forbidden to use untrained and trained workers for occupational safety. Construction contractors are responsible for providing full personal protective equipment and occupational safety for employees as prescribed when using workers on site.

The Company must implement measures to ensure workers' environment on-site and protect the surrounding environment, including measures against dust, noise, waste disposal and site cleaning. For construction works in urban areas, measures to cover up and clear up waste must be taken to the right place as prescribed. In the process of transporting construction materials, waste must take measures to ensure safety and environmental sanitation.

Construction contractors, investors must be responsible for inspecting and supervising the implementation of the construction environment protection, at the same time subject to the inspection and supervision of the State management agency on the environment. In case the construction contractor fails to comply with the regulations on environmental

protection, the environmental state management agency has the right to suspend the construction and request the contractor to take the correct measures. Environmental protection measures Persons who let acts of damaging the environment occur during the construction process must be held responsible before the law and compensate for damage caused by their faults.

#### *E. Application of technology for construction management*

For the construction industry, science and technology always play an essential role in improving labor productivity and production efficiency, significantly contributing to shortening progress, improving quality and reducing construction costs. Construction management is always a headache for all construction businesses. A work or a project is the collection of many things, many changes, many arising and need the coordination of many different parties. Among the many problems that a construction site encounters, progress, information exchange, and work coordination are the three most challenging issues.

In the era of industrial revolution 4.0, the application of new technology is also applied in all aspects of management in general and construction management in particular. Today's applications allow managers to manage more closely and easily, applications that will help do just that with visual measurement displays. Applications will help us manage right from the drawing stage. All drawings, changes, ideas, communications, opinions from the parties will be seamless and uninterrupted. Thereby, the parties can grasp everything very merely, raise their opinions in time so that the project can continue to improve everything, and also tools for progress management, workload management.

One of the most useful applications is BIM (Building Information Modeling) technology applied to everything from design, construction, operation, maintenance ... BIM is the process of building and using technical models. The number for the entire project life cycle, from design, construction to operation, maintenance and dismantling. All data related to these activities are stored and exploited through a unified information model and linked. Therefore, the application of BIM technology will facilitate the exchange and cooperation between the parties involved, optimize the design, construction and management of works.

Currently, BIM technology is compulsory in the construction industry of the UK, USA, Singapore ... In Vietnam, the application of BIM in design, construction and operation management is being implemented under the Scheme. "Application of BIM in the design, construction and operation of works" was approved by the Prime Minister in Decision No. 2500 / QD-TTg dated December 22, 2016. The Ministry of Construction has issued the Project Implementation Plan and guidance on applying BIM technology in the pilot phase. It is expected that from 2021, the critical application of BIM technology for construction works in Vietnam's territory.

BIM technology is applied in construction investment processes, such as architectural design (idea, research analysis); structural design (design plan, structure diagram

analysis); electromechanical and water design (building design plans, optimizing design, reducing collisions; input and detailed statistics of items, components, materials, equipment; sequence simulation construction and erection with optimal solutions; for structural and detailed fabrication; total site management, construction process, construction feasibility assessment, labor safety; timely settlement of problems conflict in the construction process; building life cycle management Improved volume extraction and cost estimation, this stage is done quickly and accurately thanks to the volume-related information. Materials and costs are stored in the building model, so it is easy to update and extract.

During the construction process, BIM technology is used to manage construction stages in a 3D space model. The outstanding benefits are Contact and non-contact management. Through the building sequence's spatial simulation, all participating contractors are accessible by the on-site method or via the network. Content related to work during the process is fully updated according to functions, anticipating shortcomings with investors, management boards. Timely, quickly and accurately, through the BIM model, direct and fastest information to the clues, avoid unfortunate mistakes due to slow information, anti-wastefulness. Managing volume, types, materials and construction equipment through the BIM model automatically provides timely, complete quantity, same quality and type. Increasing transparency, the BIM system, when operating under the standard software program, fully and clearly shows all construction-related content, human intervention is difficult to erase traces, testing will play show easy.

Currently, many projects constructed by Hoa Binh Construction Group have been applied to a BIM system, which is highly appreciated by the investor in optimizing cost, time, management, level of risk, quality. ... Among them are Jamila Khang Dien, Saigon Center, The Peak Mid Town, Flora Mizuki, Midori The Park View, The Ascent - Thao Dien Condominiums ... The BIM system was put into application by the company in 2011; step by step, complete the BIM database with a team of qualified, knowledgeable, breakthrough thinking and skilled personnel. The more complex the projects, the more they must apply BIM solutions such as some modern technologies such as VR-Walk through; AR-Augmented Reality; Laser scan; R&D Topic 2019. The company also signed a strategic cooperation agreement with Autodesk. Accordingly, the two sides will work together in technology Autodesk supports Hoa Binh to improve technical capacity related to building information modelling (BIM), contributing to improving and enhancing productivity force of Hoa Binh.

Because BIM is a new technology, it requires professional qualifications and a certain level of information technology to apply a scientific and practical working process. When implementing a project, it is necessary to agree between the investor and the parties on BIM technology in construction. The BIM application also increases many related costs such as training in software, costs of purchasing software, upgrading computer systems ... (mostly design and construction management). Nevertheless, BIM application is an inevitable trend, bringing many benefits to the construction industry and construction management. Therefore, businesses need to pay

attention to, soon have specific guidelines, plans, and roadmaps to apply BIM to help implement projects achieve better results.

## V. CONCLUSION AND PROPOSAL

### A. Conclusion

Essay with the topic "Completing the work construction management at Hoa Binh Construction Group Joint Stock Company" is practical, in order to step by step, improve the quality of construction works in present and future of Hoa Binh Construction Group, at the same time contribute to improving the efficiency of state management in construction investment. It is essential to properly assess the current status of construction work quality management at the Project to determine the causes of inefficiency in the quality management of construction works. Based on these reasons to offer optimal solutions in improving the efficiency of construction management.

The essay has studied the relevant scientific bases such as Construction quality management; Factors affecting the efficiency of construction management; Criteria and method of construction management evaluation; General legal regulations on construction management; to apply to the study and evaluation of the work quality management in terms of construction, thereby proposing economical and feasible solutions to improve the efficiency of construction management build later.

### B. Proposals

To have construction works that meet technical and aesthetic requirements, ensure quality, use economically and efficiently invest.

- Recommendation to the investor:

+ Improve the management apparatus, evaluate the professional qualifications of experts in charge of some departments based on job requirements, and coordinate well with project stakeholders.

+ The Investor requires full legal capacity and capacity to perform project management. Investors who are not qualified to manage must hire a professional consultant but must have construction specialists in the PMU to guide the investor in the implementation process. Avoid assigning all stages of the process to a project management consultant, construction supervision consultant.

+ Selecting a specialized team to inspect, manage, advise leaders, and take responsibility for project construction management before the law.

- Proposals to state management agencies:

+ Improve the professional capacity of state management agencies when participating in construction projects. Strengthening coordination in the quality management of construction works among the parties when participating in construction investment under construction law.

+ State management agencies on construction from central to local should review and systematize legal documents

to serve as a basis for formulating and promulgating documents to consolidate or amend or supplement, canceling inappropriate documents, ensuring the understanding and implementation of agreed terms in all regions, between subjects, limiting inconsistencies, creating gaps in reality. Current, affecting construction management.

- The author of the thesis also presented the development directions and goals of Hoa Binh Construction Company in construction management. On that basis, the essay proposed essential solutions and important recommendations to improve construction management at Hoa Binh Construction Group Joint Stock Company in particular and construction companies in Vietnam in general in the coming time. She contributed to promoting the constructive face of Vietnam in the international arena, affirming that Vietnam is always a dynamic and prestigious country in the renovation period.

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