

QUALITY MANAGEMENT OF TRANSPORT ENGINEERING CONSTRUCTIONS IN VIETNAM RESPONSIBILITIES AND OBLIGATIONS OF RELATED PARTIES

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Abstract: Management of transport engineering construction quality is a very serious problem in need of attention in Vietnam today. This determines the quality, progress and cost of construction of works. This article deals with the responsibilities, obligations, and coordination of the relevant parties, including owner, contractor, design consultant, and construction supervision consultant in the field of transport engineering construction quality.

1. Introduction

Traffic is the backbone of the whole social-economic system. Under the condition that Vietnam is on the path of development, the improvement of transport system plays a very special role. The fact indicates that rapidly urbanized regions have a faster economic growth, higher population density and higher building density. As such, the role of construction managers is increasingly recognized as an indispensable factor for the development and assurance of quality of the transport engineering system.

The development of the technical infrastructure system in Vietnam is completely spontaneous and does not meet the requirements of urban development [2]. The process of construction of traffic works involves five key aspects, including quality, safety, cost, construction schedule, and the environment. Poor management in construction of traffic system will result in many other factors, such as bad and non-synchronized technical infrastructure system quality, delayed project progress, increased costs, polluted environment and occupational accidents [2].

In the construction period, quality management at the construction site includes the quality management supervision of three subjects as the owners, the contractor and the design consultant organization. The responsibilities of contractors who supply materials and equipment for the construction of works are also mentioned.

At present, the investment capital for transportation infrastructure is more and more limited; the state budget can only meet a small part, so that it must mobilize other social resources [1], while traffic works are under requirement of highly technical specification and time-consuming construction. Construction of traffic work completely depends on the weather and is more complex than that of civil engineering or industrial construction.

Currently, there are not many studies on quality management of traffic works in Vietnam [1]. This article emphasizes the responsibilities and obligations of the relevant parties, from that, to propose solutions for improving the quality management of traffic works.

2. Current situation of quality management of traffic works in Vietnam

Vietnam is on the innovation impetus in all aspects, in which transport infrastructure is the main face of the country. There were many high quality traffic projects such as the overpass 46 in Vinh City, Nghe An Province which is "an project of international stature constructed in a very short time and well-controlled quality". In addition, there were many small and large projects built with high quality to meet development demand of society.

In order to get the results above mentioned, firstly, Vietnam has been establishing and perfecting the quality of technical normative documents system towards regional and international integration to become a engineering quality management tool [7]. The second is that the team of builders has developed their specialty and experience towards professionalization and specialization quickly. This is the direct element creating more and more high quality building products.



Figure 1: *Overpass 46B was completed 9 months earlier than the proposed progress*
(From: <http://vietnamnet.vn/>)

In addition to the above-mentioned achievement, the work of quality control in the construction of traffic works is still limited. Statistics from the Ministry of Transportation show that 25% of the projects violates the stage of investment preparation and project approval; more than 32% of the projects violates in design consultancy work; 20% of the projects violates the tender regulations; more than 23% of the projects violates the supervision consultancy; and 25% of the projects violates the acceptance work, payment and investment capital [8].

Specific limitations are as follows:

2.1. *Improper contractor selection*

Many holding corporations have their subsidiaries operating in the same field. In fact, such subsidiaries often use the capacity of their holding corporation for tendering but use their own capacity for actual implementation. As a result, in many cases human resources and financial capacity of a subsidiary does not ensure the construction progress and construction quality. It is inevitable that personnel who take part in field work are not

the same personnel proposed in the tender documents. On the other hand, a subsidiary must be independent in its financial capacity so during the construction process, material reserve is difficult.

The personnel of a contractor are not arranged as in the tender with faulty workmanship, not enough internal supervisors, even to leave work to construction team's discretion resulting in poor construction quality.

During the construction process, a contractor has not yet deployed a quality management system according to the scale of the work. Stipulation of the responsibilities of each individual and each section for the quality management of construction works is not attached special importance. The inspection and testing of materials, structures, materials and equipment before construction according to standards, requirements of design and construction contracts are still only formality and countermeasure.

Bidding document of the almost contractors are unclear on the type of materials used for the works but only indicating a series of firms that are "equivalent". This is not contrary to regulations but creating many legal loopholes, making difficulty in management of the procurement resulting in poor quality of construction.

2.2. Unsound investor's responsibilities

Representatives of an investor always must arrange at least one person at the site to participate in monitoring with the supervision consultant. However, in reality, representatives of an investor in field have not fully developed his capacity and authority. Investor's supervisor's capacity is bad and supervision consultant is irresponsible; this results in poor construction quality. The acceptance process is not close due to supervisor of an investor and supervision consultants do not have a thorough understanding of the acceptance process.

The project for consolidation and improvement of the section through Nam Dan to Nghe An town: construction without job superintendent, supervision, signs, protection, and safe system (figure 2).



Figure 2: *Building without signs and barriers*

(From: <http://quehuongngaynay.vn/>)

2.3. Poor shopping management

Materials and equipment to be supplied for construction do not meet the general technical requirements as indicated in bidding document, and are not high-quality items.

The East-West Highway, from the tunnel crossing the Saigon River to Cat Lai overpass, is about 6.5 km long and officially operated from 20th November 2011, but due to many reasons, after half a year, East-West Highway pavement has been degraded and, sunk deeply resulting in dangerous situation for truck drivers (figure 3).



Figure 3: Road from Giong Ong To bridge to Luong Dinh Cua highway
(From: <http://pda.vietbao.vn/>)

2.4. Low design quality

Design consultants and verification consultants are irresponsible, making wrong estimates, lacking quantity and work; At once, contractors does not check again the executed work quantity resulting in import of many material but not used up so that material is stored in warehouse for replacement in case of damage or repair. This is also wasteful. The design is not exact to the actual field, or wrong geological prediction. This results in design changes. These design changes are often treated slowly, about 3-6 months for their design.

3. Improving the efficiency of construction quality management of traffic works in Vietnam - responsibilities and obligations of related parties

Construction quality management of engineering works consists of activities of units in charge of management of investor and construction contractor through measures such as quality planning, quality control, quality assurance and quality improvement of construction [6]. Quality management of the works includes all functional activities of investor and contractor such as preparation and approval of construction measures, supervision of works during

the investment implementation or work acceptance, quality inspection of the works during the termination of investment (figure 4).

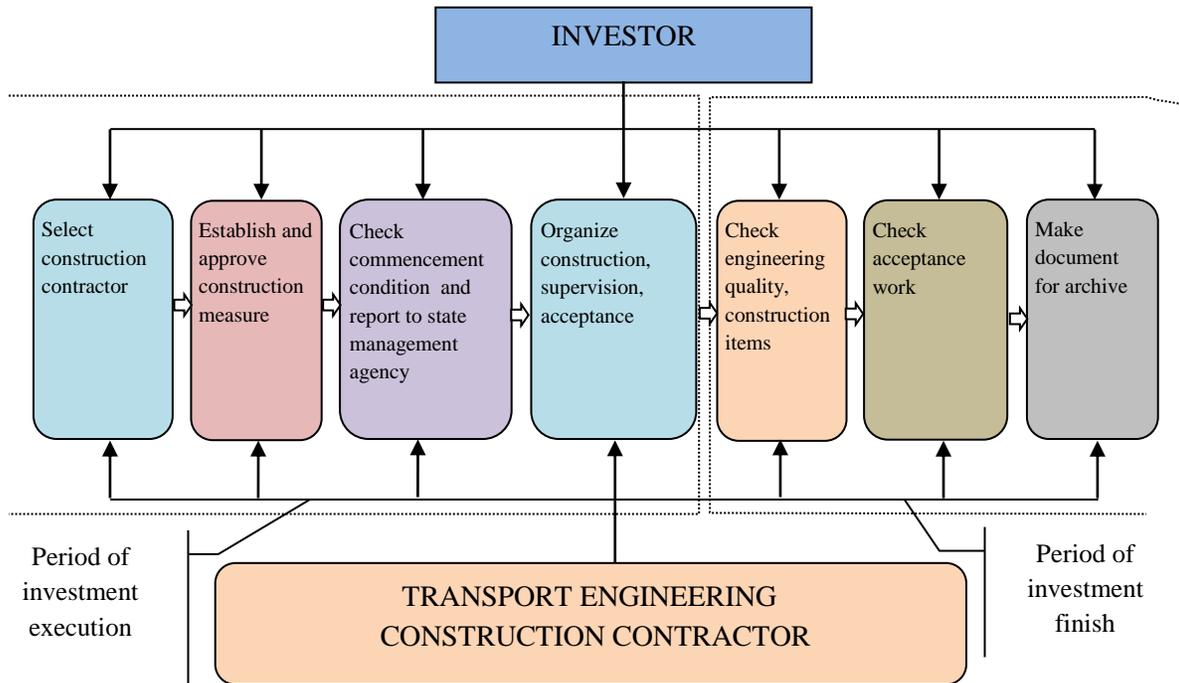


Figure 4: Construction quality management diagram

In the construction market, quality of works is formed through the long production process with the participation of many people and units, so that it is necessary to clearly define the scope of specific responsibilities for each party. The assignment of responsibilities is stipulated by economic contracts, based on the principle of voluntariness and negotiation. But all voluntary agreement must be in accordance with the regulations of the State. These are legal documents on management of investment and construction, standards and construction specifications. Each party involved in the construction process must have the necessary capacity to perform the job, whether it is a design consultant, construction contractor or owner's supervisor.

3.1. Responsibilities of an Investor

- Selecting organizations and individuals who are qualified according to regulations to perform the construction of works, supervising the construction of works, testing and inspecting the quality of works and works and other construction consultancy.
- Informing about tasks and powers of individuals in the quality management system of an investor and the construction supervision contractor to the contractors concerned for coordinated implementation
- Checking the suitability of construction contractors' capability comparing with bidding document and construction contracts, including: manpower, construction

equipment, specialized construction laboratories, quality management systems of construction contractor.

- Checking the mobilization and arrangement of manpower resources of construction supervision contractors comparing with the requirements of construction contracts [3].

- Inspecting and supervising during the construction process, including:

- + Checking materials, components, construction products, equipment installed in the works; Carrying out quality control tests when necessary;

- + Checking construction methods, which clearly specify the measures to ensure safety for people, machines, equipment and works of construction contractors;

- + Inspecting, urging and supervising the work construction contractor and other contractors to carry out work in the field;

- + Requesting design contractors to adjust in case of having errors, unreasonable design.

- Complying with the regulations on environmental protection for construction works in accordance with the law on environmental protection.

- Organizing verification of the quality of construction items and all construction works when there are doubts about the quality or in case having requirement of the State management agencies.

- Organizing acceptance of construction works.

- Organizing establishment of completion document of construction works.

- Postponing or suspending construction of construction contractors when it is considered that construction quality does not meet the technical requirements and construction methods are not safe.

- Presiding, combining with concerned parties for treating and overcoming problems which is difficult or arose in the course of construction of works.

- Making reports on the completion of the construction works for operation or making unscheduled reports upon the request and sending to the state management agencies in charge of construction.

3.2. Responsibilities of construction contractors

- Setting up a quality management system in line with the scale of works, to define the responsibilities of each individual and each section for the quality management of construction works.

- Assigning responsibility for quality management of construction works between the parties in case of application of the form of general construction contractors, general design and construction contractor, general design contractor, general contractor of technological and construction equipment supply, general contractors of establishment of investment projects and other forms of general contractors (if any).

- Receiving and managing construction sites, preserving site located marks and landmarks.

- Preparing and approving the construction measures, which clearly stipulate the measures to ensure the safety of people, machines, equipment and construction schedule, unless otherwise stipulated in the contract.

- Carrying out the inspection and testing of materials, structures, materials and equipment of works and technological equipment prior to construction and installation into construction works in accordance with the standards and requirements of the design and requirements of the construction contract [5].

- Carrying out construction in accordance with the construction contract, construction permit, design drawings to ensure quality of the works and safety in construction.

- Timely notifying investor of discrepancies between design drawings, contract documents and site conditions.

- Correcting errors and defects in the quality for executed works; To assume and combine with the investor in overcoming the consequences of incidents in the work construction process; Making report in incidents and combining with relevant parties to assess the causes of the incidents.

- Making the construction schedule according to regulations.

- Making as-constructed drawing according to regulations.

- Reporting to investor on progress, quality, quantity, work safety and environmental sanitation at the investor's request [5].

- Returning the plane, moving the materials, machinery, equipment and other assets out of the construction site after the works have been accepted and handed over, unless otherwise agreed in the contracts.

3.3. Responsibilities of contractors in charge of manufacturing, producing and supplying materials, products, equipment, components used for construction works

- Ensuring the quality of materials, products, equipment and construction components according to national technical standards, meeting the design requirements.

- Providing the investor with full information and documents related to the products and goods under the provisions of the Law on product and goods quality and other relevant laws, ensuring the stipulation on label of the product.

- Executing agreements with the investor on the process and methods of inspection of the materials, products, equipment and construction component quality before and during the production process as well as in the process of supply, use and installation.

3.4. Responsibilities of construction supervision contractors

- Appointing a qualified person to perform the duties of the chief supervisor and other supervisory positions.

- Making organization diagram and terms of reference of supervision, including duties, powers and obligations of supervisory titles, to make plan and procedure of quality control, inspection, acceptance, method of management of relevant files and documents in the process of construction supervision.

- Carrying out construction supervision in accordance with the law on quality control of construction works.

4. Conclusion

Starting from the reality in Vietnam, transport construction contractors are on the path of specialization and professionalism, so the application of models of international

modern quality management systems is really not appropriate and formalistic. From that situation, together with limitations in the quality management of construction contractors, the article mentioned the responsibilities and obligations of the concerned parties in order to improve the efficiency of the engineering quality management work. In general, in order to achieve traffic works with criterion of low cost, fast progress, technical quality assurance, there should be good coordination between the parties, including owner, design consultant and construction contractor.

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TÓM TẮT

QUẢN LÝ CHẤT LƯỢNG THI CÔNG XÂY DỰNG CÔNG TRÌNH GIAO THÔNG TẠI VIỆT NAM - TRÁCH NHIỆM VÀ NGHĨA VỤ CÁC BÊN LIÊN QUAN

Quản lý chất lượng thi công xây dựng công trình giao thông đang là vấn đề nóng cần được quan tâm hiện nay tại Việt Nam, nó quyết định đến chất lượng, tiến độ và giá thành xây dựng của công trình. Bài báo này đề cập đến trách nhiệm, nghĩa vụ và sự phối hợp giữa các bên liên quan bao gồm: chủ đầu tư, nhà thầu thi công, tư vấn thiết kế, tư vấn giám sát công trình trong lĩnh vực quản lý chất lượng công trình.