

Main Economic Factors of Formation of Construction Product Quality

Mammadov Israfil Rafi

Azerbaijan University Architecture and Construction, Azerbaijan

Abstract: The stages of formation of end construction product quality, scientific-researches and design – investigation work, production and complication of building cycle, organization of installation and special works, completion of construction product and etc. Have been considered in the article. It has been mentioned that, factors of formation of construction product quality can be combined into three main groups: factors of the production forces, factors of production relations factors in the sphere of organization and management of construction cycle stages.

Keywords: Factors, Stages, Formation, Quality, Construction, Product

I. INTRODUCTION

In the reproducing process quality of construction product (intermediate and end) is produced, revealed and supported at its all four stages (production, distribution, exchange and consumption). Herewith, any of intermediate construction product is individual product of labour and has its own consumption cost and is included into the content of end production of construction either as a raw material or as labour facilities. Quality of the construction production at each of the stages of its formation is provided by:

- Quality of objects of labour-materials and raw material taking part directly or indirectly in labour processes forming qualitative construction product:
- Quality of facilities of labour-facilities of orgtechnics, tools, devices, apparatus, equipment technological tools, construction machines and technoque providing labour quality:
- Quality of connecting people, objects and labour facilities in the process of researches, designing production and delivery of material-technical resources and requirement to construction product put forward by state, social, economic purposes and scientific programmes.

At the stage of formation of designing research works the connection happens and implementation into the practice of construction and fields of economy using its production, the best achievements of national and foreign scientific-research, testing–constructing and experimental developments is determined.

At this period analysis and justification of material and cost parameters and also useful properties of construction product are carried out. Technico-economical and other qualitative indices of construction product are set up by project-research documentation and business plan technical level and progression of selected production processes are progression of selected production processes are determined both at the stages of object formation and its exploitation period Rate of innovation and diversification in the construction of its mechanization, increase of labour productivity of the representatives of construction cycle, reduce of its terms, cost, labour volume and material volume are connected with the stage of design-investigation works. At this stage project-documentation or business-plan of necessary quality should be created which must provide increase of efficiency of included main funds at the expense of progression of project solutions, reduce of terms of their development, rational consumption of resources, durable increase of technico-economic indices of production decrease of exploitation expenditure and outstripping growth of labour productivity Herewith, there is possibility to prognize carrying out works on reconstruction, modernization, equipment and replanning of operating objects with minimum investments on these purposes and in a short period.

At the stage of projecting–research works not only defining of concrete indices of end product quality takes place but also all other stages of making main funds are connected and achievements of innovation and diversification have a touch with real possibilities of the construction.

Projecting-research works in the construction is the most complex activity process of various organizations and specialists to achieve the common purpose-development of the required project – estimate documentation or business plan on some necessary object with the given useful properties. At this stage in the creation of construction product, researches geologists, geodesists, architects, constructors builders and customers take part.

Projecting research works in the construction works can be divided into three inter connected individual periods preprojecting works (collection and preparation of initial data for projecting and grounding of necessity placing and constructing the object on the given territory); researches for period of projecting; period of development of projecting estimate documentation or business plans.

This Project-research works are the most important stage of formation of the quality of end and intermediate construction product. The product of this stage is project-estimate documentation or business-plan which are used with the definite effect on the following stages of formation of the end construction product quality and correspond to the requirements of their senders on state, field and territorial levels. Besides it, project-estimate documents or business plan serves as an initial document for estimation the results of the activity of the following participants, making and consuming the construction product, stimulating and controlling by this process.

Useful properties of construction product are formed also at the stage of production and complete set of construction cycle. Stage of construction complete set by material technical resources and influence on formation of the quality of end product are the followings:

- First of all, at this stage new consuming costs are not formed, only movement of objects and labour facilities for the demands of construction takes place from the sphere of production into the sphere of consumption (production and non-production).
- For the second, process of complete set is the beginning of real formation of end product quality.
- For the third, providing of construction cycle by the necessary material-technical resources influences considerably on the durability of this process and formation of useful properties of construction product.

Any deviations of provided resources from the requirements of production works of technology, necessary qualitative parameters causes super norm reserves of these resources, worsening of consuming properties of the formed and lengthen process of its formation.

Material providing of the stage of formation of final product quality of the construction and responsibility for its results are distributed among customers, contractors, subcontractors, project designing, equipping organizations and plants-suppliers. Wherein, all participants of the construction cycle are simultaneously completed with raw materials, objects and facilities for part consumption in creation of final and intermediate construction product. Increase of the quality of final construction product and support of useful properties of the supplied resources at the stage of the equipment can be achieved at the expense of:

- Providing necessary conditions of transporting and, stories of the product;
- Correspondence of the useful properties of the provided product to the quality of final construction product;
- Maintaining useful properties of material technical resources for construction during their delivery, displacement and storage;
- Further strengthening and equipping supplies to the product building areas, produced in the stationary conditions;
- Reduction of delivery time and improvement of the quality of supplied resources considering project-budget documentation of the processes of production, delivery and realization.

The third stage of formation of useful properties of final construction product is the production of construction-assembling works, on which considerable part of all expenditures on the object construction is used. Currently, more than half of the total budget cost accounted for construction-assembling works.

At the stage of construction-assembling or special works by combining work force and means of production the further formation of useful properties of construction product takes place both at the expense of considered project-budget documentation or business plans and supplied completing organizations of material-technical resources and at the expense of organization and management the labour process directly at the construction site. Wherein, useful properties of the means of production, at the disposal of organization carrying out these works and qualification of their workers influence on the quality of the product made in the process of construction-assembling and special works.

As a result of finishing of the stage construction product is presented in the form of the object with all completed works, except commissioning and some other ones.

The stage of completion of the product is final in formation of its quality. During it first completion of all considered works second, achievement of project indices and preparation of the object to the exploitation conditions. At this stage checking of correspondence of useful properties of the formed construction products to the properties considered in the

project is carried out. During the completion of the object product quality is found out and compared with normative and actual conditions of project–research, completing, construction, specialized organizations and customers. Bringing the object to the project indices its, formation is completed and it enters into the last phase of reproducibility cycle-consumption.

At the period of consumption such important indices of quality as reliability, durability, and maintainability and etc. Thus, objective evaluation of the quality formed in the process of reproducibility of construction product can be revealed only at the period of its exploitation. These evaluation are practically initial data for improving and development of labour processes ting final construction product with necessary useful properties and simulating improvement of its quality parameter. That’s why, their generalization, analysis and registering for determination of further directions of the development of construction period are extremely important.

Formation of the quality of final construction product is connected with a number of factors influencing its useful properties. These factors can be joined into three main groups:

- Factors on the side of productive forces;
- Factors on the side of industrial relations;
- Factors in the sphere of organizations and management of the stages of construction cycle.

Groups of these factors are interrelated, they complete each other and in dialectic unity and that’s why, they should be considered in working out and realization of practical programs directed to the increase of efficiency and quality of construction. Simultaneously it should be considered that, among all varieties of these factors in each concrete stage of the development of construction in particular, each of these groups has distinguishing level of the influence on the quality of construction product.

At present from plenty factors influencing increase of the level of useful properties of production construction the most important ones can be chosen.

From the side of industrial forces the quality of construction product is closely connected with the qualification of personnel, natural factor, manufacturability and progressiveness of the production, labour efficiency and also interchangeability and increase of readiness of intermediate construction product. In the system of these factors connected with the improvement of the quality of construction product increase of the level of special knowledge, improvement of skills level and industrial skills of each worker engaged in the formation of qualitative product both in industrial and in non-industrial sphere play significant role.

Influence of these factors on the quality of production is quite big, because it depends both on workers ability and efficiency of the used labour tools, labour quality. However, these factors aren’t used enough in the construction lack of related normative indices of the quality of intermediate and final construction product, methodics of prognosis and stimulating of work quality at all stages of its formation is significant obstacles in the organization of constant increase of qualification of construction workers and also qualitative improving of labour tools and used in the construction of material resources. Stimulating, of increase of the quality of workers labour should be carried out on all stages of the production and management. Natural factor in the construction influences significantly the quality of the product. The reason of it is that the process of the making of the final construction product takes place in the open air, that’s why it, the people and labour tools are connected directly with the changes of envioned.

Thus, observations show that working ability of builders and assemblers working in minimum air temperature. Construction product and tools can be destructed premature under the nature –climatic conditions and reduce their qualitative indices.

Influence of nature factor in the construction can be weaken at the expense of improving influencing and creation and application of labour tools more completely adapted to the data of nature-climatic conditions and technology of the processes of construction cycle. Where in at this stage he speech idea is not creation and improvement of individual labour tools, but it is about the necessity of implementation into the construction practice of highly effective systems of machines and mechanisms allowing to increase the labour quality of workers in any technological flow and at all construction cycle generally.

Use of machines system promoting improvement of technology of the industry, increase of raw material processing level, mechanization level of processes of improvement of labour tools, simultaneously brings not only to the improvement but also to the growth of the volumes of manufactureal construction product.

Quality of each following labour process directly depends on useful properties of the afflieb row material or intermediate product while its carrying out. In the construction the components are the standards, initial data for designing, project-budget documents or business plan, material-technical resources providing the construction process of capacities development and etc. For providing the given quality of construction product it is required the quality of each intermediate the element of final to correspond the final quality of level of the given product. However, this condition isn't performed yet in the construction.

Thus, the results of the carried out sociologicistic analysis in Baku showed that improvement of the construction product quality independently on the method of production currently is constrained, first of all because of the imperfection of project-budget documents or business plan, (48%) secondly, because of the low-quality untimeless of the delivery of initial data, materials raw materials, complecting units and equipment (33%) thirdly, unequipmont and shortage of high technical level of the equipment used in projecting, constructing and completion of new capacities (19%). Further increase of interchangeability and unification f the production and labour tools in the construction well bring to reduction in construction terms, decrease of expenditures on the manufacturing and exploitation of the product and simultaneously will increase of its service time at the expense of the improvement of the quality and division of the labour in the carrying out of works.

Factors of quality improvement of the product away of the production relations can be grouped due to:

- a) Relation subjects (worker and society; worker and enterprise; institution, enterprise and institution, enterprise; institution and society);
- b) Economy level (on the region level: spheres; territories and spheres; at government level; at the inter government level and etc.);
- c) Importance of the system of reproducibility and public life generally;
- d) Reproducibility phases (manufacture, distribution, exchange and consumption).

Quality of the construction product depends on the level of concentration, cooperation combining and specialization of construction process.

The main index characterizing the level of concentration in the construction is the growth of specific weight of mighty enterprises and organization in total industrial power of the given branch. This criterion is typical for all organization of construction cycle, making construction product of the given quality. High quality of the concentration allows each powerful organization (project, construction, complecting, specialized and etc). Better to use materials, mechanisms, machines and workers which create conditions for application more powerful and new technics, wide development of manufacturing of materials, equipment and construction, increase of labour productivity and decrease of product cost in simultaneous improvement of its quality. As a result big organizations in comparison with less powerful and analogous in profile as a rule carry out their work with considerably less expenditures on it, service term and better quality.

At present cooperation and combination of industries in the process of creation of final construction product are the main factors influencing on reduction of time of construction cycle and quality increase. Participation of big quantity of organizations in making final construction product with given level of useful properties, territorial scattering of this product and participants of its creation, complexity of operative registering of production processes in a given time period-all these create objective difficulties in providing reliability and durability of cooperated relahoks and combination of production processes in projecting, complecting, construction and completion of objects.

As a result, ethnicity and technology of production process are violated, terms of manufacturing of construction product are prolonged and its quality is worsen. The further increase of stability and reliability of cooperation of relations and combination of industries at all stages of the formation of final construction product will promote acceleration of cycle rep in the construction and increase of the quality of its product. For successful formation of these processes it is necessary to increase the roles of agreement of the graphics of work and improvement of economic levers and stimulus with their orientation to the achievement of final goal-creation of the one to the exploitation of the object with sufficient useful properties.

Increase of the quality of construction product is connected with the level of specialization of the participants of the construction cycle. The process of defining of specialization in the construction is expressed in the formation of new subfields and industries in the sphere.

Division of the labour inside each individual industrial process to the fields or subfields directly influence on the increase of useful properties of construction product. From one side, improvement of the quality of construction product promotes defining of specialization and cooperation. Wherein, need in providing uniformity & stability of useful properties of final construction product and its components gradually turns into one of the necessary conditions of the

process of deepening of the specialization as the quality of the raw material, units and knots should correspond to the quality of final construction product. If this condition in the economy practice isn't followed, then production specialization and cooperation not providing necessary level of the quality of intermediate and final product can make significant economic and moral harm to the society. Thus, development of detail, object, field, regional, intersectoral and intergovernmental specialization in the construction and also in other fields of economics allows manufacturers of construction product to concentrate attention on the improvement of such product and increase of its quality. These processes really create new possibilities due to the use of more improved specialized technique, progressive technologies, advanced methods of organization and labour and more qualified personnel.

Unfortunately, it should be noted that at present this factor in the construction isn't used sufficiently. Factors of quality increase of construction product standing at the side of industrial relations can be realized only by the increase of level increase of concentration, cooperation and combining of the construction at a simultaneous continue of deepening of industrial specialization and its further generalization. Real limits of these processes should be determined, based on correspondence to the development level of industrial forces, and also long-term planning and prognoses of the development of the economy and its consumers in construction product. Where in, a full arrangement such economic and moral levels as commercial calculation, duct cost, improvement of stimulation systems results and labour quality. Improvement of the control of the construction cycle stages is the next group of factors of the increase of construction product quality. Influence of these factors mostly are determined by the level of industrial forces development level and industrial relations of the society, however increase of the efficiency of this field or organization considerably depends on the right registering of their relation with the quality of final construction product specific peculiarities of the construction and modern level of its development allow to separate from the total by of the factors forming quality of construction product the followings, from the consideration of which depends on practical solution of the given problem:

- correspondence of qualification and quality of workers in all levels of the planned volume of the construction and consumption of economy in the construction product;
- providing of balance and grounding of construction plans;
- interrelation of stimulation forms and responsibility if each worker of the organization with final results and labour quality;
- level of complexity and perfectness of technological processes at all stages of construction cycle;
- establishing of durable cooperated relations between participants of construction process for providing correspondence of production volume, quality and delivery terms of the intermediate product to the quality level and terms of formation of final construction product. Thus, factors influencing formation of useful properties of construction product should be combined into three groups;
- factors on the side of the development of production forces (qualification of personnel, level of technology and progressivity of the production, efficiency of the labour tools, nature-climatic factor, interchangeability and increase of readiness of intermediate product);
- factors on the side of industrial relations (level of specialization, concentration, cooperation and combination of process of construction, commercial calculation, prices on product, system of stimulation of labour results and etc.);
- factors in the sphere of control of construction cycle (planning, organization structure and methods, combination of industrial and territorial approach to the development and realization of construction plans).

These three groups of factors are in dialectic unity and complete each other.

At each definite stage of the development of the economy and construction each group of factors has various level of influence on the quality of construction product. All these factors should be considered in planning and control of the construction which will promote to the improvement of quality of construction product and increase of its efficiency.

II. CONCLUSION

The main ways of the solution of improvement of construction product quality are:

- consequent orientation of the participants of construction cycle to the improvement of work quality and increase of consistency of their activity at all stages of formation of construction product;
- justification of criteria characterizing the consuming cost both final and intermediate production of the construction;
- precise distinction duties and rights, increase of the responsibility of the control bodies;
- increase of material and moral stimulation for achievement of high indices of construction product quality;
- achievement of unity of activities of industrial and territorial control bodies on the increase of construction product quality.

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